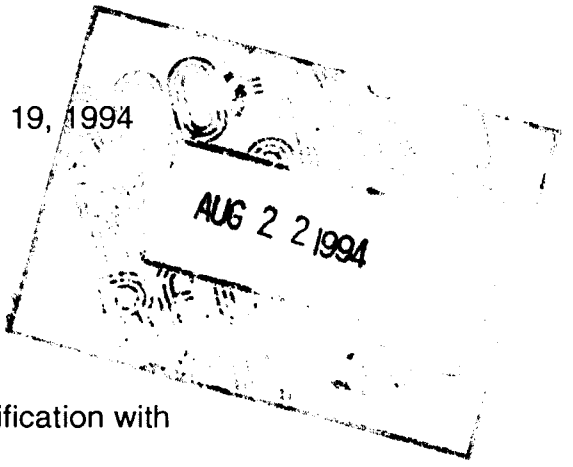
Public Service Company of New Mexico



August 19, 1994

Mr. William K. Honker, Chief
RCRA Permits Branch (GH-P)
Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Subject: Revised copy of Notification of Class III Modification with Attachments and Public Notices
Person Generating Station, NMT360010342

Dear Mr. Honker,

On July 11, 1994, Public Service Company of New Mexico (PNM) initiated a Class III permit modification to remove a natural pit area from its federal Hazardous Waste Permit on July 11, 1994. It appears that a portion of Appendix 2 was inadvertently omitted from the supporting documentation sent out for your review. I am enclosing a revised document.

To insure that all available copies are complete, we have replaced the three other documents that were initially distributed. Those copies include one document sent to the New Mexico Environment Department, one document sent to the San Jose Community Council (a local organization), and the document that was placed in the South San Jose Community Center for public review. According to the Community Center Director, there have been no requests to review this document since it has been available. There have been no other requests for copies of this document since the beginning of the review period.

Please contact me at 505-848-2998 should anything additional be required.

Sincerely,

Ron D. Johnson
Sr. Environmental Scientist

cc: Mr. Benito Garcia - NMED
Attachments: Notification of Class III Modification
with Attachments and Public Notices

Alvarado Square
Albuquerque, New Mexico 87158

Attachments for the Notification of Class III Modification

Person Generating Station
Broadway Boulevard at Rio Bravo Boulevard
Albuquerque, New Mexico

NMT 360010342

submitted by
Public Service Company of New Mexico
Alvarado Square
Albuquerque, New Mexico 87158

July 1994

Public Service Company of New Mexico

PUBLIC NOTICE

The Public Service Company of New Mexico (PNM) is applying for a Class III modification of its federal Hazardous Waste Permit to remove a natural pit area, designated as a Solid Waste Management Unit, from the permit. PNM desires to perform environmental remediation activities on this natural pit area located at Person Generating Station. The facility is a non-operational power generating station located on the northeast corner of Rio Bravo and Broadway Boulevard, Albuquerque, New Mexico. The activities involve removing all soil contamination from the natural pit area and testing of the remaining soil to ensure "clean closure" of the pit. The remediation work plan has been tentatively approved by the EPA. In order to complete these clean-up activities, PNM must apply for and receive modification to its existing federal Hazardous Waste Permit.

The government office processing the permit modification request is

United States Environmental Protection Agency, Region 6
Hazardous Waste Management Division
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733
(214) 655-6770
Attention: Richard Mayer

The name and address of the permittee are

Public Service Company of New Mexico
Alvarado Square
Albuquerque, New Mexico 87158
(505) 848-2998
Attention: Ron D. Johnson, Senior Environmental Scientist

The permittee's compliance history during the life of the permit being modified is available from the EPA contact person listed above. Further information may also be obtained by contacting Ron D. Johnson, Sr. Environmental Scientist, at the address provided above. Pertinent documentation is available for public inspection at the South San Jose Community Center, 400 San Jose Avenue, SE, Albuquerque, New Mexico (Mon-Fri 8am-8pm).

Any person who wishes to comment on this permit modification should submit written comments to the EPA contact person listed above by September 9, 1994. All persons having an interest in this permit modification are invited to attend a public meeting to be held at 5:30 pm on August 18, 1994 at the South San Jose Community Center, 400 San Jose Avenue, SE, Albuquerque, New Mexico.

Alvarado Square
Albuquerque, New Mexico 87158
505/848-2700

Federal Hazardous Waste Permit

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION VI

HAZARDOUS WASTE PERMIT (HAZARDOUS AND SOLID WASTE AMENDMENTS, 1984)

PERMITTEE: Public Service Company of New Mexico

OWNER: Public Service Company of New Mexico

LOCATION: Person Generating Station
Broadway Boulevard at Rio Bravo Boulevard
Albuquerque, New Mexico

ID NUMBER: NMT 360010342

EFFECTIVE DATE: August 31, 1988

EXPIRATION DATE: August 31, 1998

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6901, et seq.) and the Hazardous and Solid Waste Amendments of 1984 (HSWA), a permit is issued to Public Service Company of New Mexico (hereafter called the Permittee) to conduct a hazardous waste post closure care program at the location stated above.

The Permittee must comply with all the terms and conditions of this permit. This permit consists of the conditions contained herein (including the attachments). Said conditions are needed to insure that the permittee's hazardous waste management activities comply with all applicable, Federal, statutory and regulatory requirements. Applicable requirements are those which are found in, referenced in or incorporated into that version of the RCRA or the regulations promulgated pursuant to the RCRA that are in effect on the date this permit is issued. (See 40 CFR 270.32 (c).)

This permit is issued in part pursuant to the provisions of Sections 201, 202, 203, 206, 207, 212, 215, and 224 of HSWA which modified Sections 3004 and 3005 of RCRA. These require corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage, or disposal facility seeking a permit, regardless of the time at which the waste was placed in such unit and provide the authority to review and modify the permit at any time. The decision to issue this permit is based on the assumption that all information contained in the permit application is accurate and that the facility will be

operated as specified in the permit application. The permit application consists of information submitted to the New Mexico Environmental Improvement Division (NMEID) on May 5, 1986. This application was revised and resubmitted by the permittee to NMEID on November 3, 1986. Any inaccuracies found in the information may be grounds for termination or modification of this permit (see 40 CFR 270.41, 270.42 and 270.43) and potential enforcement action.

Under Federal Law, this permit is effective on the effective date specified above unless a petition to the Administrator of the U.S. Environmental Protection Agency is filed in accordance with the requirements of 40 CFR 124.19.

Issued this 26th day of August, 1988

by Allyn M Davis
Allyn M. Davis, Director
Hazardous Waste Management Division

CONTENTS

A. STANDARD

A.1 Effect of Permit.

The Permittee is allowed to manage hazardous waste in accordance with the conditions of this permit. Any treatment, storage, or disposal of any hazardous waste not authorized in this permit is prohibited. A full RCRA permit consists of this permit which addresses the provisions of the Hazardous and Solid Waste Amendments of 1984 (HSWA) and the State of New Mexico permit which addresses the portion of the RCRA program for which the State is authorized. Compliance with a full RCRA permit during its term of effectiveness will be considered compliance, for purposes of enforcement, with Subtitle C of the Resource Conservation and Recovery Act (RCRA), except for those requirements not included in the permit which become effective by statute, or which are promulgated under 40 CFR 268 restricting the placement of hazardous waste in or on the land. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Section 7003 of RCRA (42 U.S.C. 6973), Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law governing protection of public health or the environment.

A.2 Permit Actions.

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR Parts 270.41, 270.42, 270.43, and in HSWA Section 212. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the permittee, does not stay the applicability or enforceability of any permit condition. Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology as well as changes in applicable regulations.

A.3 Duration of Permit.

This permit is effective until the expiration date unless terminated, revoked, or reissued. This permit will be reviewed by EPA five (5) years after the effective date. At that time, this permit will be modified as necessary to ensure compliance with then current requirements.

A.4 Severability.

The provisions of this permit are severable. If any provision

of this permit is held invalid, the remainder of this permit shall not be affected thereby. If the application of any provision of this permit is held invalid, the application of such provision to other circumstances shall not be affected thereby.

A.5 Duty to Comply.

The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance constitutes a violation of RCRA and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application.

A.6 Duty to Reapply.

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must submit a new application for a new permit at least one hundred eighty (180) days before this permit expires. In addition, the Permittee must submit, one hundred eighty (180) days prior to five (5) years from the effective date, any additional information and proposed process changes to modify this permit to ensure compliance with the current requirements and to consider improvements in the state of control and measurement technology.

A.7 Permit Expiration.

This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has complied with Permit Condition A.6 and through no fault of the Permittee, the Regional Administrator has not issued a new permit as set forth in 40 CFR Part 124.15.

A.8 Need To Halt Or Reduce Activity Not A Defense.

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

A.9 Duty to Mitigate.

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment and shall carry out such

measures as are reasonable to prevent significant adverse impacts on human health or the environment.

A.10 Proper Operation and Maintenance.

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, adequate spare parts inventory, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of a back-up or auxiliary facility or similar systems only when necessary to achieve compliance with the conditions of the permit.

A.11 Duty to Provide Information.

The Permittee shall furnish to the Regional Administrator, within a reasonable time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Regional Administrator, upon request, copies of records required to be kept by this permit.

A.12 Inspection and Entry.

The Permittee shall allow the Regional Administrator, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

(a) Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

A.13 Retention of Records.

The Permittee shall maintain records to show compliance with this permit for three (3) years after this permit is terminated or reissued. This time period is automatically extended during the course of any unresolved enforcement action. This time period may be extended at the request of the Regional Administrator at any time.

A.14 Notices of Planned Physical Facility Changes.

The Permittee shall give notice to the Regional Administrator as soon as possible of any planned physical alterations or additions of solid waste management units at the permitted facility. Physical alterations or additions shall include all hazardous and solid waste activities and underground tanks. Construction of new units may not begin until a permit or permit modification has been issued.

A.15 Anticipated Noncompliance.

The Permittee shall give advance notice to the Regional Administrator of any planned changes in the permitted facility or activity which may result in noncompliance with HSWA permit requirements.

A.16 Transfer of Permits.

This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 40 CFR Part 270.41(b)(2) or 270.42(d). Before transferring ownership or operation of the facility, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Part 264 and 40 CFR Part 270.

A.17 Twenty-four Hour Reporting of Hazardous Noncompliance.

The Permittee shall report to the Regional Administrator any noncompliance with this HSWA permit which may endanger human health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. The following shall be included as information which must be reported orally within twenty-four (24) hours:

(a) Information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies; and

(b) Any information of a release or discharge of hazardous waste,

or of a fire or explosion from the facility, which could threaten the environment or human health outside the facility. The description of the occurrence and its cause shall include:

(i) Name, address, and telephone number of the owner or operator;

(ii) Name, address, and telephone number of the facility;

(iii) Date, time, and type of incident;

(iv) Name and quantity of material(s) involved;

(v) The extent of injuries, if any;

(vi) An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and

(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

A.18 Follow-up Written Report of Hazardous Noncompliance.

A written submission shall also be provided within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times), and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Permittee need not comply with the five day written notice requirement if the Regional Administrator waives that requirement and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.

A.19 Other Noncompliance.

At the time monitoring reports are submitted, the Permittee shall report all other instances of noncompliance with HSWA permit conditions not otherwise required to be reported. The reports shall contain the information listed in Permit Condition A.17.

A.20 Other Information.

Where the Permittee becomes aware that he or she failed to

submit any relevant facts on solid waste management units in the permit application, or submitted incorrect information required by HSWA, or in any report to the Regional Administrator, the Permittee shall promptly submit such facts or information.

A.21 Signatory Requirement.

All reports or other information requested by the Regional Administrator shall be signed and certified according to 40 CFR Part 270.11.

B. SPECIFIC CONDITIONS

B.1 Specific Waste Ban and Waste Analysis

The permittee shall not land dispose any hazardous wastes restricted by 40 CFR 268 unless:

(a) the waste meets treatment standards specified in 40 CFR 268.40,41 42,or 43 (51 Federal Register 40642,11/7/86);

(b) a variance from the treatment standards has been granted pursuant to 40 CFR 268.44;

(c) a petition has been granted for a case-by-case extension to the effective date, pursuant to 40 CFR 268.5 (51 Federal Register 40639, 11/7/86);

(d) a "no-migration" petition has been granted pursuant to 40 CFR 268.6 (51 Federal Register 40640, 11/7/86); or

(e) the land treatment unit is exempt under 40 CFR 268.4 (51 Federal Register 40639, 11/7/86).

The Permittee shall modify the Waste Analysis Plan as appropriate to comply with the additional requirements of 40 CFR 268.7 (51 Fed. Reg. 40641 (November 7, 1986) as amended by 52 Fed.Reg. 21016 (June 4, 1987)). Changes to the Waste Analysis Plan will be processed as minor modifications, pursuant to 40 CFR 270.42.

B.2 Waste Minimization.

The permittee shall certify annually by October 1 for the previous year ending August 31:

(a) That the permittee has a program in place to reduce the volume and toxicity of all hazardous wastes which are generated by the permittee's facility's operation to the degree determined to be economically practicable; and

(b) That the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment.

The Permittee shall include this certification in the operating record.

B.3 Dust Suppression.

As stated in 40 CFR 266.23(b), the permittee shall not use waste or used oil, or other material which is contaminated with dioxin or other hazardous waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment.

B.4 Solid Waste Management Units (SWMUs)

(a) The permittee shall immediately notify the Regional Administrator of any release of hazardous waste or hazardous constituents that may have occurred from any Solid Waste Management Unit (SWMU) at the facility regardless of when the release occurred or may have occurred, and regardless of when the waste was placed in any unit. A release occurring from any SWMU will constitute grounds for a major permit modification as necessary to incorporate into the permit appropriate corrective action, or other actions as deemed necessary by the Regional Administrator. Pursuant to such amendment, the permittee shall then take timely corrective action for such releases. Also, if the permittee becomes aware of any SWMU not identified in B.4.(b) the permittee must:

(i) immediately notify the Regional Administrator in accordance with condition A.19, and

(ii) Within forty-five (45) days of becoming aware of a Solid Waste Management Unit, submit a preliminary assessment of information regarding the SWMU(s) to determine if there has been or is currently is a release from the unit(s). Information to be submitted shall be in accordance with 40 CFR 270.14(d), (52 FR 45799, December 1, 1987). The permittee is to contact the Regional Administrator for guidance regarding the required information to be submitted. Based upon this information, the Regional Administrator will modify this permit accordingly.

(b) The Regional Administrator has determined that the following solid waste management unit(s) exist at the facility which receive, have received, or have had the potential for receiving, hazardous waste and/or hazardous constituents:

(i) Four (4) Leach Fields

(ii) Bone Yard Area

(iii) Spin-off-Filter

(iv) Natural Pit Area

(v) Waste Oil Tank

B.5 Definitions

(a) Release -
any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous waste.

(b) Solid waste management unit -
"any unit at the facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous wastes" (50 FR 278702, July 15, 1985). The SWMUs definition includes container storage units; tanks; surface impoundments; waste piles; land treatment units; landfills; incinerators; underground injection wells; physical, chemical and biological treatment units; recycling units; and areas contaminated by routine and systematic discharges from process areas.

C. CORRECTIVE ACTIONS

1. This permit implements Section 3004(U) of RCRA (Section 206 of the Hazardous and Solid Waste Amendments of 1984) and Federal regulations promulgated as 40 CFR 264.101, requiring corrective action as necessary to protect human health and the environment from all releases of hazardous waste or hazardous constituents from any SWMU, regardless of when the waste was placed in the unit.

2. The Permittee shall undertake and complete each of the actions to the satisfaction of the Regional Administrator (RA) in accordance with the terms, procedures, and schedules which are set forth in permit condition C.4 (Corrective Action for Continuing Releases), and Attachment 1, Corrective Action Plan (CAP).

3. The Permittee shall submit to the RA for review and approval the draft workplans and draft reports required by permit condition C.4 and by Task V and Task IX of the CAP. Upon the RA approval of such plans and reports, the plans and reports will become final and be incorporated into this permit. If the RA disapproves any portion of the plans or reports that portion disapproved shall be modified according to EPA comment. If the RA determines that any plans or reports are grossly deficient, the Permittee will be so notified and deemed to be in violation of this permit.

4. Failure to submit the required information or falsification of any submitted information is grounds for termination of this permit 40 CFR 270.43). The permittee shall certify all information submitted as required by 40 CFR 270.11(d).

C.4 Corrective Action for Continuing Releases

RCRA facility Investigation

corrective measures study

This section of the permit requires the Permittee to perform a RFI and CMS to address releases from SWMUs to specified media (i.e., soil, groundwater, surface water, and air). The Permittee shall propose corrective measures as warranted by the results of the approved RFI Report and the approved CMS Report.

(a) Scope of Work for a RFI

(1) The Scope of Work for a RFI at Person Generating Station, detailed on pages 1 through 11 in Attachment 1, attached to this permit, is hereby incorporated into this permit as though fully set forth herein. The scope of the RFI shall include the following unit in the specified media:

Natural Pit Area - Release Verification to Soil

(2) The Permittee shall submit all plans and reports required by the RFI to the Director of the New Mexico Environmental Improvement Division (Director) under the schedule detailed as Facility Submission Summary, page A-9 of Attachment 1, under the Scope of Work for a RCRA Facility Investigation.

(3) The Permittee shall prepare the RFI Work Plan and undertake the facility investigations in accordance with the following:

(i) Development of the RFI Work Plan and reporting of data shall be in accordance with EPA 530/SW-. 87-001, RFI Guidance;

(ii) EPA and the Director reserve the right to split samples. The Permittee shall notify the RA and the Director at least 10 days prior to any sampling activity;

(iii) Any deviations from the approved RFI Work Plan which are necessary during the facility investigation shall be fully documented and described in the quarterly reports and in the draft RFI report.

(b) Scope of Work for a CMS

(1) The Scope of Work for a CMS at Person Generating Station, detailed in pages A-10 through A-20 in Attachment 1, attached to this permit is hereby incorporated into this permit as though fully set forth herein.

(2) The Permittee shall submit all plans and reports required by the CMS to the RA and the Director under the schedule detailed as Facility Submission Summary, page A-21 of Attachment 1, under Scope of Work for a Corrective Measures Study.

D. SCHEDULES OF COMPLIANCE

1. All plans and reports required in permit condition C., CORRECTIVE ACTIONS, shall contain time schedules for including interim milestones for completing specified activities. The time between interim milestones shall not exceed one year.

2. Extensions of the due date for submittals may be granted by the RA based on the permittee's written request demonstrating that sufficient justification for the extension exists.

3. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) calendar days following each schedule date as required by 40 CFR 270.30 (1) (5)

4. Any failure by the permittee to adhere to the milestones established in the approved RFI Work Plan, RFI Schedule, or the CMS Schedule shall constitute a violation of this permit.

5. The Permittee shall submit a copy of all draft and final plans and draft and final reports to the Director at the time such plans and reports are submitted to the RA.

E. PERMIT MODIFICATION

If the RA finds that corrective measures are warranted after the approval of the RFI Report and CMS Report, the RA will propose a permit modification to this permit to incorporate corrective measures designed to protect human health and the environment from releases of hazardous waste or constituents released from SWMU(s) at the facility. The permit will be modified pursuant to 40 CFR 270.41 and will include financial assurance for corrective measures implementation as required by 40 CFR 264.101.

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

August 31, 1988

CERTIFIED RETURN RECEIPT REQUESTED

Ms. Lawrie C. Chisholm
Director, Environmental Sciences
Public Service Company of New Mexico
Alvarado Square
Albuquerque, New Mexico 87158-0248

RE: Post-Closure Care Permit
NMT 360010342

Dear Ms. Chisholm:

Enclosed is the post-closure care permit for the Person Generating Station. This permit will become effective 30 days after your receipt thereof unless it is appealed in accordance with the Hazardous Waste Management Regulations (HWMR-4), Section 303.G.

If you have any questions please call Mr. C. Kelley Crossman on my staff at (505) 827-2923.

Sincerely,

Kirkland L. Jones
Acting Director

KLJ/CKC/pv

cc: Janie Hernandez, EPA (6H-HS)

RCRA Facility Investigation Report of Findings

RCRA FACILITY INVESTIGATION (RFI)
REPORT OF FINDINGS

REVISED

For Person Generating Station Hazardous
Waste Storage Facility - Natural Pit Area
(NMT360010342)

August 20, 1990

TABLE OF CONTENTS

Certification Statement

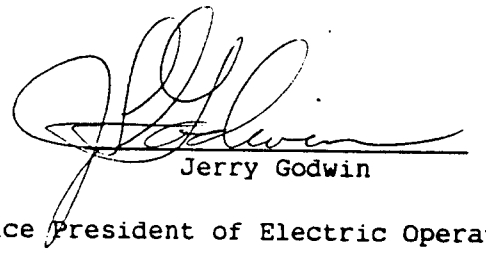
Document:
RCRA FACILITY INVESTIGATION (RFI)
REPORT OF FINDINGS

REVISED

For Person Generating Station Hazardous
Waste Storage Facility - Natural Pit Area
(NPT360010342)

August 20, 1990

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with 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.



Jerry Godwin

Vice President of Electric Operations

1.0 Introduction

In November 1986, Public Service Company of New Mexico (PNM), submitted its "Permit Application for a Hazardous Waste Storage Facility at Person Generating Station", hereafter permit application, for the waste oil storage tank located at Person Generating Station. The permit was approved and became effective on August 31, 1988. That permit has the EPA designation of NMT360010342.

Paragraph C.4(a) of the permit required that PNM perform a RCRA Facility Investigation (RFI) for the Solid Waste Management Unit (SWMU), identified as the Natural Pit Area, to assess and verify any release of hazardous waste to soil.

An RFI Workplan was prepared and submitted to EPA in Janaury 1989. On March 1, 1989, EPA notified PNM of several modifications it wanted to see in the workplan. These modifications were made and the workplan was resubmitted to EPA in late March 1989.

On July 31, 1989, EPA notified PNM by letter that the RFI Workplan had been approved. The letter included two revisions which EPA added to the workplan. These revisions are further discussed in Section 2.0 of this report. A revised workplan did not need to be submitted, rather EPA instructed PNM to immediately initiate implementation of the approved RFI Workplan (as revised).

Soil sampling was conducted on August 1-2, 1989. This RFI report presents the analytical results from the soil samples and outlines our plan of action for further investigation of the site.

2.0 Departures From the RFI Workplan

This section deals with Person RFI activities which departed from the RFI Workplan as submitted in March 1989. Included as departures are revisions to the Workplan made by EPA in its approval letter. They are identified here because they were not included in the Workplan as written, but were added to the Workplan by reference in the EPA approval letter.

Other departures discussed here include changes in procedures made after the Workplan was submitted. In all cases these changes were made because preliminary testing of proposed procedures showed them to be unworkable in the field. These changes were discussed with EPA prior to actual implementation.

2.1 EPA Revisions

In the July 31, 1989 letter (See Appendix A) approving the RFI Workplan, EPA incorporated two revisions to the Workplan by reference to the letter. They were minor in nature but are included here since they are not present in the current Workplan as written.

Depth of Sampling

The Workplan states that soil borings will be at one foot intervals down to 5 feet. EPA added the following requirement:

> "If soil borings from the 4 to 5 foot sampling intervals indicate contamination, then further soil sampling will be required to determine the vertical extent of contamination."

Statistical Analysis

The Workplan describes tolerance interval analysis as the selected statistical method for the data. The method, as described, is sensitive to the normality of the data. In the event that the data are not normally distributed, or cannot be transformed to normal for analysis, the EPA added the following requirement:

> "If data from soil borings does not conform to procedures described in Section 5.3, then a different statistical procedure will be used. This different procedure must be approved by the Administrative Authority."

2.2 Procedural Revisions

In early July 1989, PNM personnel tested the hand auger method described in Section 7.2 of the Workplan. The hand auger was found to be unusable for the following two reasons:

1. The soil type at the study area is a gravelly sand with very low cohesion. It was very easy to core into, but more

often than not the plug would not stay in the coring bucket, but would fall back down into the hole. It was felt that using the hand auger would exacerbate attempts to collect samples in a timely manner and would cause great disturbance to the soil sample.

2. The hand auger was impossible to operate without causing upper levels of the soil to fall down into the hole. It was felt that if the hand auger was used it would be impossible to prevent upper layers of contamination from penetrating to deeper layers. This would cause two problems: a) cross contamination in the analysis, and b) dispersion of the contamination to deeper soil layers.

To address these concerns, a drilling contractor was hired. The contractor used a drilling rig and core sampling device which typically provides undisturbed and intact soil cores. The soil cores were taken from a split tube sampler which penetrated the soil from the inside of a continual rotary auger tube. Separate split tube samplers were used for each suceeding sampling depth.

The auger and split spoon sections were steam cleaned on site prior to and after the drilling of each hole.

3.0 Description of Sampling Activities

3.1 Sampling Objective

The sampling and analysis scheme employed for this RFI was designed to determine the presence and extent of various organic and metallic parameters in the soil of the Natural Pit area at Person Station. The specifics of the scheme are described in detail in Sections 5.0 and 6.0 of the RFI workplan, and will not be repeated here. Except for the procedural departure noted above in Section 2.2 of this report (split tube and rotary auger combination used instead of a hand auger) the proposed sampling scheme was followed exactly.

The basic approach was to collect soil samples at one foot intervals down to five feet from several locations inside the Natural Pit for comparison to like samples taken from a "background" location. The Natural Pit samples were taken from the approximate locations shown on Exhibit 5, Sampling Map for the Natural Pit Area, of the RFI workplan (sample numbers 5, 6, 7 and 8). This map is also contained in this report as Exhibit 1.

Background sample locations (sample numbers 1, 2, 3 and 4) were not specified in the RFI workplan but were selected at the time of sampling. The background sample locations selected were located just east of the northeast corner of the Person Station property boundary. This area was believed to be more suitable for background analysis than any area within the Person Station property boundary. A map showing the approximate locations of the background samples is presented as Exhibit 2 of this report.

3.2 Sampling Team

The sampling team consisted of five persons with the following duties. Two persons operated the drilling rig. One person handled all containers and documented date and time of collection on sampling sheets and labels. One person collected the samples from the split tube assemblies and placed representative amounts in the sampling containers. This person also set aside a portion of the sample for soil characterization. The fifth person took photographs of each core section and the sampling operations in general and provided other assistance as needed. All photographs are contained as Exhibit 3 of this report.

3.3 Soil Descriptions

The soils underlying the RFI site are describe in detail by the Soil Conservation Service (SCS) in a collective document, the Bernalillo County Soil Survey (USDA-SCS, 1977) (Provided as Table III-3, in Attachment 1 of the RFI workplan, "Assessment of Exposure Potentials of Person Generating Station"). The soil mapping unit of the RFI vicinity is desribed in the SCS as the Bluepoint-Kokan association comprising two fairly identifiable soil series. A reconnasisance hand augering of the study area identified the RFI study area to consist specifically of the

Kokan soil series.

The background sample location (samples 1, 2, 3 and 4) was consequently selected in a Kokan soil series location.

Each depth interval at each sampling location was examined for physical soil properties to verify consistancy in soil type between the investigation samples (samples 5, 6, 7 and 8) and the background samples (samples 1, 2, 3, and 4). Soil examinations were performed in the field by the same individual.

Representative samples were collected from each soil sampling increment to be analyzed and were described for texture, color, and calcareousness. Soil texture was determined utilizing a wet soil ribbon technique. Reaction to a 10% solution of hydrochloric acid identified calcareousness. A Munsell Soil Color Chart was used to describe the sample color while dry and wet. In some cases the sample was already wet due to rain. No attempt was made to artificially dry the sample for a dry color description.

In general, all samples were a gravelly sand, slightly calcareous, and of a very pale brown color (dry), pale brown color (wet). This description is consistant with the Kokan soil series described in detail by the Soil Conservation Service and presented in the Bernalillo County Soil Survey.

Only one sample location (number 4 - background) varied slightly from the above description. Beneath the top foot, the soil became a gravelly loamy sand, slightly calcareous, and of a light yellow brown color (dry), yellowish brown (wet). This description probably still tends to follow the characteristics of the Kokan series.

Other variations in color were noted at sample location number 7 (0-36 inches) and at sample location number 8 (0-10 inches). This was due to obvious soil contamination from the fuel oil spill described in Section 3.2.1 of the RFI workplan. The fuel oil imparted a dark brown to black color to the soil.

Soil description charts for all sampling locations and depth intervals are presented as Exhibit 4 of this report.

3.4 Sample Collection and Preservation

Sampling occurred over a two day period commencing August 1, 1989 and ending August 2, 1989. Sample locations 1, 2, 3, 4, 5 and 8 were drilled on August 1; while 6 and 7 were drilled on August 2. It should be noted that sampling was to occur early on August 1, 1989. Due to looseness of sandy soil at sample locations, a small tracked dozer was needed to provide access to sampling locations and move the drill rig.

The rotary auger/split tube sampling procedure was capable of withdrawing approximately 18 inches of undisturbed soil core per split tube sampler assembly. Due to the extreme dryness and fine grain

particles of deeper samples, some sample material was lost. There was, however, sufficient sample to perform needed analysis in all cases. Each split tube was pulled out of the hole, laid across a metal rack, and opened. A photograph was taken of the section, then a representative sample from each one foot interval was removed with stainless steel sampling spoons and placed in 8oz wide mouth glass jars. The jars were QA/QC checked and supplied by Eagle Picher Environmental Services. A copy of the Certificate of Analysis for the container lot used in this investigation is contained as Exhibit 5 of this report.

Each sample jar was pre-labeled as to sample location number, and depth interval. The date and time of collection, and name and signature of sample collector were written on the label after each sample was collected. The sample was then taped and placed on ice in a large cooler.

Documentation for each sample was also maintained on sample logs. An example log is shown in Exhibit 1 of the RFI workplan. Chain of custody forms (See Exhibit 2 of the RFI workplan) were used to track movement of the samples from collection through delivery to the analytical laboratory.

Samples collected on August 1, 1989 were delivered to the laboratory early on August 2, 1989. Samples collected on August 2, 1989 were delivered to the laboratory later on the same day.

3.5 Quality Assurance

Several steps were taken to ensure the quality of the results obtained from the sampling procedure. As mentioned above, a rotary auger - split tube sampling procedure was used to minimize cross contamination between soil layers. The rotary drills and split spoon samplers were steam cleaned before and after each hole to prevent cross contamination between sample locations. Individual split tube samplers were used for each successive sample interval.

All team members involved in the handling of samples wore latex examination gloves.

Two soil blanks were provided by the analytical laboratory. One blank contained soil washed in methyl alcohol, the other blank contained soil washed in an acetone/hexane solvent.

The laboratory also provided containers of the reagent solvents above for use in generating two additional field blanks from the initial cleaning of the sampling spoons. These solvents were also used for the cleaning of the spoons between each sample collection.

Laboratory precision was assessed by the submittal of sample duplicates from sample location number 7. The duplicates were collected at the same time and consisted of placing similar amounts of soil from each interval of the soil core into their respective sample jars.

The analytical laboratory also selected several samples from the set to analyze in duplicate. For purposes of analysis these duplicate results are averaged into a single value and reported as such in this report.

4.0 Data Results

Exhibit 6 of this report contains a copy of the analytical data report prepared by Assaigai Laboratories, Inc. The data tables contained in this report are extracted from the laboratory data report.

4.1 Heavy Metals Analysis

Natural Pit and background samples were analyzed for arsenic, cadmium, chromium, and lead. As more fully described in Section 8.4 of the RFI workplan, the approach on heavy metals analysis was to statistically compare results from background samples to results from sample locations within the natural pit.

Because it was felt that the results may be sensitive to moisture content of the soil sample, a percent moisture analysis was performed by the laboratory on each sample. The statistical analysis was then done in duplicate (uncorrected for moisture content and corrected for moisture content). Both results are reported here, but it was found that correcting for moisture content made no difference in this study as to which samples exceeded their threshold limit.

Exhibit 7 of this report contains the Tolerance Interval Analysis spreadsheet listings for the four background sample locations (1,2,3 and 4), corrected for moisture content and uncorrected. Since each natural pit sample was to be compared to its corresponding depth from the background, the listings in Exhibit 7 are organized by metal with statistical parameters based on all background samples from each depth. Thus, there are four samples for each depth on which to perform the Tolerance Interval Analysis. The Threshold Limit (TL) was calculated from:

$$TL = AVG + K * SD$$

where,

AVG = arithmetic mean of the four samples
K = Tolerance Factor for 95% coverage and 95% confidence
SD = standard deviation of the four samples

The Tolerance Factor (K) was taken from Table 5 of Appendix B in the EPA document Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities. Table 5 is reproduced in Exhibit 8 of this report.

After calculating the Threshold Limit for each heavy metal at each depth, all Natural Pit samples were compared against their corresponding threshold limit. Tables 1 and 2 of this report show the comparison of each Natural Pit sample with its Threshold Limit. Table 1 is uncorrected for moisture content while Table 2 is corrected for moisture content.

Sample values, as reported by the laboratory were corrected for moisture content by the following formula:

$$Mc = \frac{Mr}{1 - (W/100)}$$

where,

Mc = Metal concentration, corrected
Mr = Metal concentration, reported
W = Percent moisture as reported

As mentioned above, correcting for moisture content made no difference as to which samples exceeded their corresponding Threshold Limits in this study.

The results of this analysis are further discussed in Section 5 of this report.

Table 1

Analytical Results from Natural Pit Area - Metals
(Uncorrected For Moisture Content)

ARSENIC (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	5.08	14.89	5.2*	3.9	7.6	6.6*	5.1
1 - 2	5.08	8.93	31.2*	2.4	5.2	5.1	3.8
2 - 3	3.55	9.71	<2.0	2.2	6.7	13.9	2.2
3 - 4	3.23	10.74	<2.0	2.2	6.7	5.5	5.8
4 - 5	3.52	5.13	2.3	3.9	2.9	2.4	2.0

CADMIUM (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	2.98	22.10	0.6	0.1*	0.2	0.2	<0.1
1 - 2	1.11	6.45	2.4	0.2	<0.1	<0.1	<0.1
2 - 3	0.36	1.38	0.6	<0.1	<0.1	0.2	<0.1
3 - 4	0.46	3.56	0.2	<0.1	<0.1	<0.1	<0.1
4 - 5	2.05	19.43	<0.1	0.1	<0.1	<0.1	<0.1

CHROMIUM (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	4.50	10.68	6506*	5.6	22.3*	16.6*	6.1
1 - 2	4.20	11.76	89.6*	3.5*	6.3	5.5*	4.6
2 - 3	2.95	9.21	3.1	3.7	12.3	10.3	<2.0
3 - 4	3.38	4.75	3.0	2.5	8.8	6.2	2.2
4 - 5	3.40	5.95	2.2	3.0	2.4	1.6	3.8

LEAD (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	10.93	34.32	12.4*	14.4	38.4*	44.8*	7.1
1 - 2	6.72	24.59	71.2*	7.8	6.9	6.3	4.4
2 - 3	3.67	4.73	4.4	6.9	5.1	4.9	3.3
3 - 4	3.65	6.34	3.1	4.5	3.9	3.9	4.0
4 - 5	4.07	7.42	4.2	4.1	3.4	3.5	4.5

* Average from duplicate results reported by lab.

Table 2

Analytical Results from Natural Pit Area - Metals
(Corrected For Moisture Content)

ARSENIC (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	5.35	15.91	5.5*	4.1	7.9	6.8*	5.2
1 - 2	5.17	9.03	33.7*	2.5	5.4	5.3	4.0
2 - 3	3.60	9.97	<2.0	2.2	6.8	14.2	2.4
3 - 4	3.30	11.01	<2.0	2.2	6.8	5.6	5.9
4 - 5	3.63	5.23	2.3	4.0	2.9	2.4	2.0

CADMIUM (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	3.15	23.56	0.6	0.1*	0.2	0.2	<0.1
1 - 2	1.14	6.62	2.6	0.2	<0.1	<0.1	<0.1
2 - 3	0.36	1.38	0.6	<0.1	<0.1	0.2	<0.1
3 - 4	0.46	3.56	0.2	<0.1	<0.1	<0.1	<0.1
4 - 5	2.10	19.93	<0.1	0.1	<0.1	<0.1	<0.1

CHROMIUM (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	4.73	11.55	6832*	5.9	23.3*	17.3*	6.2
1 - 2	4.30	11.86	96.3*	3.6*	6.5	5.7*	4.8
2 - 3	3.02	9.50	3.2	3.8	12.5	10.5	<2.0
3 - 4	3.45	4.97	3.1	2.6	8.9	6.3	2.2
4 - 5	3.50	6.05	2.2	3.0	2.4	1.6	3.8

LEAD (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	11.47	36.47	13.1*	15.0	40.1*	46.4*	7.2
1 - 2	6.88	25.18	76.6*	8.1	7.1	6.5	4.6
2 - 3	3.77	4.83	4.5	7.0	5.2	5.0	3.6
3 - 4	3.75	6.44	3.2	4.6	4.0	3.9	4.0
4 - 5	4.17	7.52	4.3	4.2	3.4	3.5	4.5

* Average from duplicate results reported by lab.

4.2 Heavy Organics

Natural Pit samples were also analyzed for Oil and Grease, Toluene, Napthalene, and Polychlorinated Biphenyls (PCBs). These parameters were not measured in the background samples. As stated in the RFI workplan, any level of presence in the samples would constitute contamination. For these parameters, the Threshold Limit was set to the nominal detection limit of the parameter as supplied by the analytical laboratory. Table 3 shows the comparison of each Natural Pit sample with the nominal detection limit (Threshold Limit) for that parameter. The results are further discussed in Section 5 of this report.

Table 3

Analytical Results from Natural Pit Area - Heavy Organics

Oil and Grease (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	50	<50	<50	35427	62640	7381
1 - 2	NA	50	<50	<50	68692	59566	<50
2 - 3	NA	50	<50	<50	17285	13596	<50
3 - 4	NA	50	<50	<50	835	176	<50
4 - 5	NA	50	<50	<50	<50	<50	<50

Toluene (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	0.25	<0.25	<0.25	0.34	0.32	<0.25
1 - 2	NA	0.25	<0.25	<0.25	1.7	1.9	<0.25
2 - 3	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3 - 4	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4 - 5	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

Napthalene (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
1 - 2	NA	0.25	<0.25	<0.25	5.7	5.6	<0.25
2 - 3	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3 - 4	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4 - 5	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

PCB (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1 - 2	NA	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2 - 3	NA	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3 - 4	NA	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4 - 5	NA	1.0	<1.0	<1.0	<1.0	<1.0	<1.0

* Average from duplicate results reported by lab.

4.3 Solvents

Natural Pit samples were also analyzed for 1,1,1-Trichloroethane (TCA), Perchloroethylene (PCE), and Trichloroethylene (TCE). These parameters were not measured in the background samples. As stated in the RFI workplan, any level of presence would constitute contamination. For these parameters, the Threshold Limit was set to the nominal detection limit of the parameter as supplied by the analytical laboratory. Table 4 shows the comparison of each Natural Pit sample with the nominal detection limit (Threshold Limit) for that parameter. The results are further discussed in Section 5 of this report.

Table 4

Analytical Results from Natural Pit Area - Solvents

1,1,1 - TCA (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
1 - 2	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2 - 3	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3 - 4	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4 - 5	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

PCE (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
1 - 2	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2 - 3	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3 - 4	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4 - 5	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

TCE (ug/g)

Depth (ft)	Background Average	Threshold Limit	Site # 5	Site # 6	Site # 7A	Site # 7B	Site # 8
0 - 1	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
1 - 2	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2 - 3	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3 - 4	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4 - 5	NA	0.25	<0.25	<0.25	<0.25	<0.25	<0.25

* Average from duplicate results reported by lab.

5.0 Findings

5.1 Heavy Metals

Background

In general, heavy metal concentrations tended to decrease with depth at the background sampling locations. This trend was most obvious for lead concentrations and least for cadmium concentrations.

A requirement for use of the Tolerance Interval Analysis procedure was that the data be normally distributed. The Coefficient of Variance (CV in the listings of Exhibit 7) was used as an indicator of normality. This method was described in Section 4.2.2 of the EPA document Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, February 1989. If the CV exceeds 1.00, there is evidence that the data are not normally distributed.

Only for the parameter cadmium, did CV values exceed 1.00. Usually this would have required that the data be transformed and made normal for the statistical comparison. This was not done, however, because the analytical results from the Natural Pit samples were extremely low for cadmium and it was intuitively obvious that no amount of transformation would yield Natural Pit values above the background Threshold Limits.

The CV for all sampling intervals for arsenic, chromium, and lead were below 1.00 and the data was assumed to meet the normality requirement for use of the Tolerance Interval Analysis procedure.

Natural Pit

The results obtained for three of the heavy metal parameters were not expected based on information about the Natural Pit known at the time the sampling scheme was designed. Historical use of the Natural Pit area did not indicate that high concentrations of heavy metals would be found.

Values slightly above the threshold limits for arsenic, chromium and lead were seen at sample location number 7. This was not totally unexpected as this site was characterized by number 6 fuel oil contamination down to about four feet. Chromium exceedances were seen in the top interval (0-1 foot) and in the intervals 2-3 feet and 3-4 feet. An arsenic exceedance occurred at the 2-3 foot level. Lead values exceeded their threshold limits at the 0-1 foot interval and the 2-3 foot interval. The magnitude of the exceedances ranged from about 5 times background average down to 1.5 times background average.

An unexpected finding was the presence of a "hot spot" of contamination at sample location number 5. Chromium levels were 1500 times the background average in the first foot of the soil and 20 times the background average in the 1-2 foot interval. Below that level, concentrations were identicle to background values. Sample values exceeding the threshold limit for arsenic and lead were also detected in

the 1-2 foot interval at this sample location. The magnitude was 6 times the background average for arsenic and 10 times the background average for lead. The top interval (0-1 foot) did not show exceedences for these parameters.

Only one other threshold limit exceedance was detected. The 2-3 foot interval at sample location number 6 showed lead concentrations slightly above the background. This is probably not significant for the following reasons. The measured value (6.9 mg/kg) fits neatly in the decreasing progression of data from 14.4 mg/kg at the 0-1 foot interval to 4.1 mg/kg at the 4-5 foot interval. The progression mimics that seen in the background data. A close look at the background data (See Exhibit 7) shows that the four samples used to calculate the Threshold Limit are closely grouped in concentration. This yielded a very small standard deviation (0.20 mg/kg) which in turn caused the threshold limit to be very restrictive. It is therefore believed that this exceedance is an anomaly of the method and not a true contamination event.

5.2 Heavy Organics

Background

No background samples were analyzed for the four heavy organic parameters (Oil and Grease, Toluene, Napthalene, and PCB). These parameters were assumed to be absent in the background soil. For comparison purposes the Threshold Limit was set to the nominal detection limit for each parameter as reported by the analytical laboratory.

Natural Pit

No PCBs were detected at any depth interval at any sample location.

No heavy organic parameters were detected at sample location numbers 5 and 6. Sample location number 8 showed some Oil and Grease in the 0-1 foot interval only. No other heavy organic parameter was detected at sample location number 8.

At sample location number 7, where the fuel oil number 6 contamination was present, Oil and Grease was detected down to 4 feet, Toluene and Napthalene were detected down to 2 feet.

5.3 Solvents

Background

No background samples were analyzed for the three chlorinated solvent parameters (1,1,1-TCA, PCE, TCE). These parameters were assumed to be absent in the background soil. For comparison purposes the Threshold Limit was set to the nominal detection limit for each parameter as reported by the analytical laboratory.

Natural Pit

No chlorinated solvents were detected at any depth interval of any sample location.

5.4 Quality Assurance

Field Blanks

The analytical laboratory provided two soil trip blanks for delivery to field and back (identified on the laboratory sheets as PNM-0-1 and PNM-0-2). The first soil blank had been washed with methyl alcohol reagent and the second soil blank had been washed with an acetone/hexane solvent reagent.

The first soil blank was analyzed for PCB content. No detectable levels (<1.0 ug/g) were found.

The second soil blank was analyzed for PCE, TCE, 1,1,1-TCA, Toluene, and Napthalene. No detectable levels (<0.25 ug/g) were found.

The laboratory also provided containers of the reagent solvents describe above for use in cleaning of the sampling spoons between uses. The initial cleaning of the spoons with each solvent was collected and submitted for laboratory analysis (identified on the laboratory analysis sheets as PNM-0-3 and PNM-0-4). The methyl alcohol wash was analyzed for PCB content. No detectable levels (<1.0 ug/g) were found. The acetone/hexane wash was analyzed for PCE, TCE, 1,1,1-TCA, Toluene, and Napthalene. No detectable levles (<0.1 ug/ml) were found.

Laboratory Duplicates

The laboratory randomly selected numerous samples for duplicate analysis. The paired results listed by parameter are shown in Table 5. This table also summarizes the percent difference between pairs and shows the mean and standard deviation of the data values (if sufficient numbers of pairs are available). Pairs comprised of non-dectable values are shown but not included in the summary. Only analytical results for chromium, lead, and Oil and Grease were sufficient for statistical analysis.

The standard deviation of the percent differences were 43.4%, 34.1%, and 3.0% for chromium, lead, and Oil and Grease, respectively.

Field Duplicates

Samples from sample location number 7 were split in the field and provided to the laboratory for duplicate analysis. The paired results listed by parameter are shown in Table 6. This table also summarizes the percent difference between pairs and shows the mean and standard deviation of the data values (if sufficient numbers of pairs are available). Pairs comprised of non-detectable values are shown but not included in the summary.

For the heavy metals, the standard deviation of the percent difference were 7.8%, 8.6%, and 48.3% for chromium, lead, and arsenic, respectively. Only one valid pair was available for cadmium (0.0% difference), thus no standard deviation could be calculated.

The standard deviation of the percent difference for Oil and Grease analysis was 55,7%. The standard deviation of the percent difference for Toluene was 8.8%.

No statistical summation was possible for Napthalene, PCB, 1,1,1-TCA, PCE, or TCE.

Table 5

Precision Assessment for Laboratory Duplicates

	Arsenic			Cadmium			Chromium		
	A	B	%Diff	A	B	%Diff	A	B	%Diff
	2.7	7.7	185	0.2	0.2	0.0	6.1	6.5	6.6
	26.8	35.7	33.2	<0.1	<0.1	--	3.1	3.3	6.5
				<0.1	<0.1	--	12900	111	-99.1
							169.1	10.0	-94.1
							3.5	3.4	-2.9
							22.0	22.5	2.3
							22.0	11.3	-48.6
							5.3	5.7	7.5
N	2	2	2	1	1	1	8	8	8
Mean	--	--	--	--	--	--	1641	21.7	-27.7
Std.Dev	--	--	--	--	--	--	4256	34.2	43.4

	Lead			Oil and Grease			PCB		
	A	B	%Diff	A	B	%Diff	A	B	%Diff
	13.9	11.0	-20.9	7463	7299	-2.2	<1.0	<1.0	--
	58.0	84.4	45.5	< 50	< 50	--	<1.0	<1.0	--
	39.0	37.7	-3.3	< 50	< 50	--	<1.0	<1.0	--
	59.0	30.6	-48.1	865	804	-7.1	<1.0	<1.0	--
				59677	59454	-0.4	<1.0	<1.0	--
				14117	13075	-7.4			
N	4	4	4	4	4	4	--	--	--
Mean	42.5	40.9	-6.7	20531	20158	-4.3	--	--	--
Std.Dev.	18.3	26.9	34.1	23082	23099	3.0	--	--	--

Table 5
(Continued)

Precision Assessment for Laboratory Duplicates

	PCE			TCE			TCA		
	A	B	%Diff	A	B	%Diff	A	B	%Diff
	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	<0.25	--
N	--	--	--	--	--	--	--	--	--
Mean	--	--	--	--	--	--	--	--	--
Std.Dev	--	--	--	--	--	--	--	--	--

	Napthalene			Toluene		
	A	B	%Diff	A	B	%Diff
	<0.25	<0.25	--	<0.25	<0.25	--
N	--	--	--	--	--	--
Mean	--	--	--	--	--	--
Std.Dev	--	--	--	--	--	--

Table 6

Precision Assessment for Field Duplicates

	Arsenic			Cadmium			Chromium		
	A	B	%Diff	A	B	%Diff	A	B	%Diff
	7.6	6.6	-13.2	0.2	0.2	0.0	22.2	16.7	-24.8
	5.2	5.1	- 1.9	<0.1	<0.1	--	6.3	5.5	-12.7
	6.7	13.9	107.5	<0.1	0.2	--	12.3	10.3	-16.3
	6.7	5.5	-17.9	<0.1	<0.1	--	8.8	6.2	-29.5
	2.9	2.4	-17.2	<0.1	<0.1	--	2.4	1.6	-33.3
N	5	5	5	1	1	1	5	5	5
Mean	5.8	6.7	11.4	--	--	--	10.4	8.1	-23.3
Std.Dev	1.7	3.9	48.3	--	--	--	6.7	5.1	7.8

	Lead			Oil and Grease			PCB		
	A	B	%Diff	A	B	%Diff	A	B	%Diff
	38.4	44.8	16.7	35427	62640	76.8	<1.0	<1.0	--
	6.9	6.3	-8.7	68692	59566	-13.3	<1.0	<1.0	--
	5.1	4.9	-3.9	17285	13596	-21.3	<1.0	<1.0	--
	3.9	3.9	0.0	835	176	-78.9	<1.0	<1.0	--
	3.4	3.5	2.9	< 50	< 50	--	<1.0	<1.0	--
N	5	5	5	4	4	4	--	--	--
Mean	11.5	12.7	1.4	20531	20158	-4.3	--	--	--
Std.Dev.	13.5	16.1	8.6	23082	23099	3.0	--	--	--

Table 6
(Continued)

Precision Assessment for Field Duplicates

	PCE			TCE			TCA		
	A	B	%Diff	A	B	%Diff	A	B	%Diff
	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	<0.25	--
	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	<0.25	--
	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	<0.25	--
	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	<0.25	--
	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	<0.25	--
N	--	--	--	--	--	--	--	--	--
Mean	--	--	--	--	--	--	--	--	--
Std.Dev	--	--	--	--	--	--	--	--	--

	Napthalene			Toluene		
	A	B	%Diff	A	B	%Diff
	<0.25	<0.25	--	0.34	0.32	-5.9
	5.7	5.6	-1.8	1.7	1.9	11.8
	<0.25	<0.25	--	<0.25	<0.25	--
	<0.25	<0.25	--	<0.25	<0.25	--
	<0.25	<0.25	--	<0.25	<0.25	--
N	1	1	1	2	2	2
Mean	--	--	--	--	--	--
Std.Dev	--	--	--	--	--	--

6.0 Future Action

6.1 General Discussion

The results of this investigation indicate that in certain areas of the Natural Pit residual fuel oil contamination still exists and remains a source for the release of miscellaneous organic compounds into the environment. Chlorinated solvents and PCBs were not detected, and only small amounts of Napthalene and Toluene were detected. The fuel oil contaminated areas did not appear to be a source of heavy metal compounds.

Statistically significant concentrations of chromium and arsenic were detected at another site within the Natural Pit. It cannot be determined from this investigation whether or not this represents movement of heavy metals away from the fuel oil contamination areas, or if a second contamination source exists.

Either way, it is doubtful that the level of heavy metal contamination detected would exceed any regulatory threshold for designation of the soil as "hazardous".

6.2 Additional Sampling

PNM will initial a second sampling phase known as "Phase II" which will consist of three soil borings with locations indicated in Exhibit 9. These borings will be sampled at the following intervals: 0 - 1', 1 - 2', 4 - 5', and 9 -10'. Each sampling interval will be analyzed for lead, chromium, and arsenic. Background comparisons will be made to the same background samples collected during the initial sampling phase. Because no background sample was collected at the 9 - 10' interval, this new depth will be compared to the 4 - 5' background sampling depth. For the Phase II sampling, PNM will adhere to all requirements and conditions of the RFI Workplan.

6.3 Soil Removal and Disposal

All recommendations for removal and disposal of contaminated soil will be contained in the Phase II Report of Findings.

Appendix A

Appendix A

EPA RFI Approval Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

JUL 3 1 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Ron D. Johnson
Public Service Company of New Mexico
Alvarado Square
Albuquerque, New Mexico 87158

RE: RFI Workplan - Public Service Company - NMT360010342

Dear Mr. Johnson:

We have completed a review of your response to our March 1, 1989, letter regarding deficiencies in your RFI Workplan. We have determined the Workplan to be approvable with the revisions that are described below:

Page 9 of the revised RFI Workplan; Added to 2nd paragraph: If soil borings from the 4 to 5 foot sampling intervals indicate contamination, then further soil sampling will be required to determine the vertical extent of contamination.

Page 18 of revised RFI Workplan; Added to 5th paragraph: If data from soil borings does not conform to procedures described in Section 5.3, then a different statistical procedure will be used. This different procedure must be approved by the Administrative Authority.

Therefore, the approved RFI Workplan consists of the original January 11, 1989, submittal, plus your March 29, 1989, response to our notice of deficiency, and the above revisions.

You shall immediately initiate the implementation of this approved RFI Workplan, with the above stated revisions, according to the schedule contained in the Workplan. If you have any questions concerning this matter, please contact Rich Mayer of my staff at (214) 655-6785.

Sincerely yours,

WK Hornbuckle

Allyn M. Davis
Director
Hazardous Waste Management Division

cc: Kelley C. Crossman
New Mexico Environmental Improvement Division

Exhibit 1

Exhibit 1

Sampling Map for the Natural Pit Area

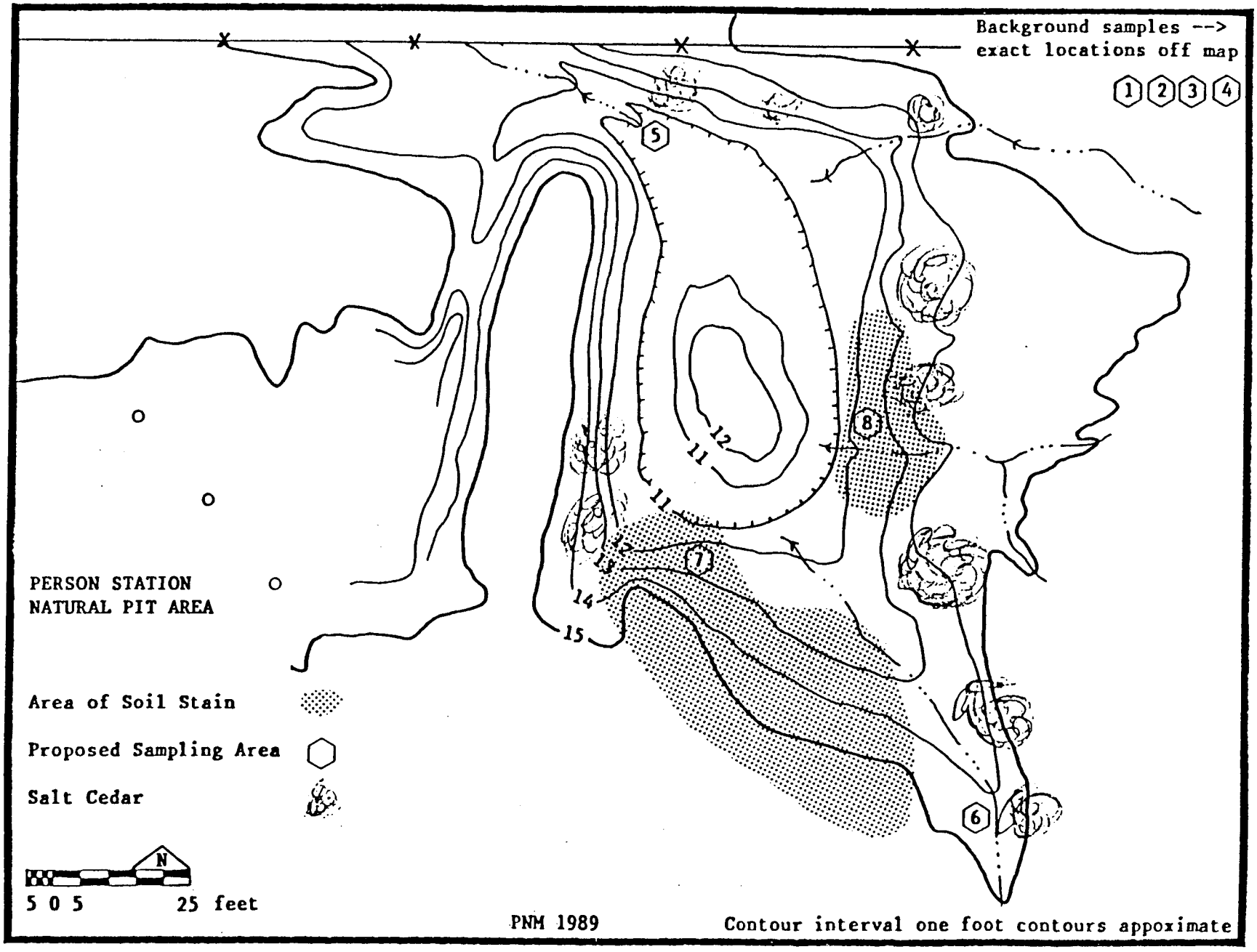

Background samples --> exact locations off map
1
2
3
4
5
6
7
8
12
11
11
12
13
14
15
PERSON STATION
NATURAL PIT AREA
Area of Soil Stain
Proposed Sampling Area
Salt Cedar
N
5 0 5
25 feet
PNM 1989
Contour interval one foot contours appoximate

Exhibit 2

Exhibit 2

Sampling Map for the Background Samples

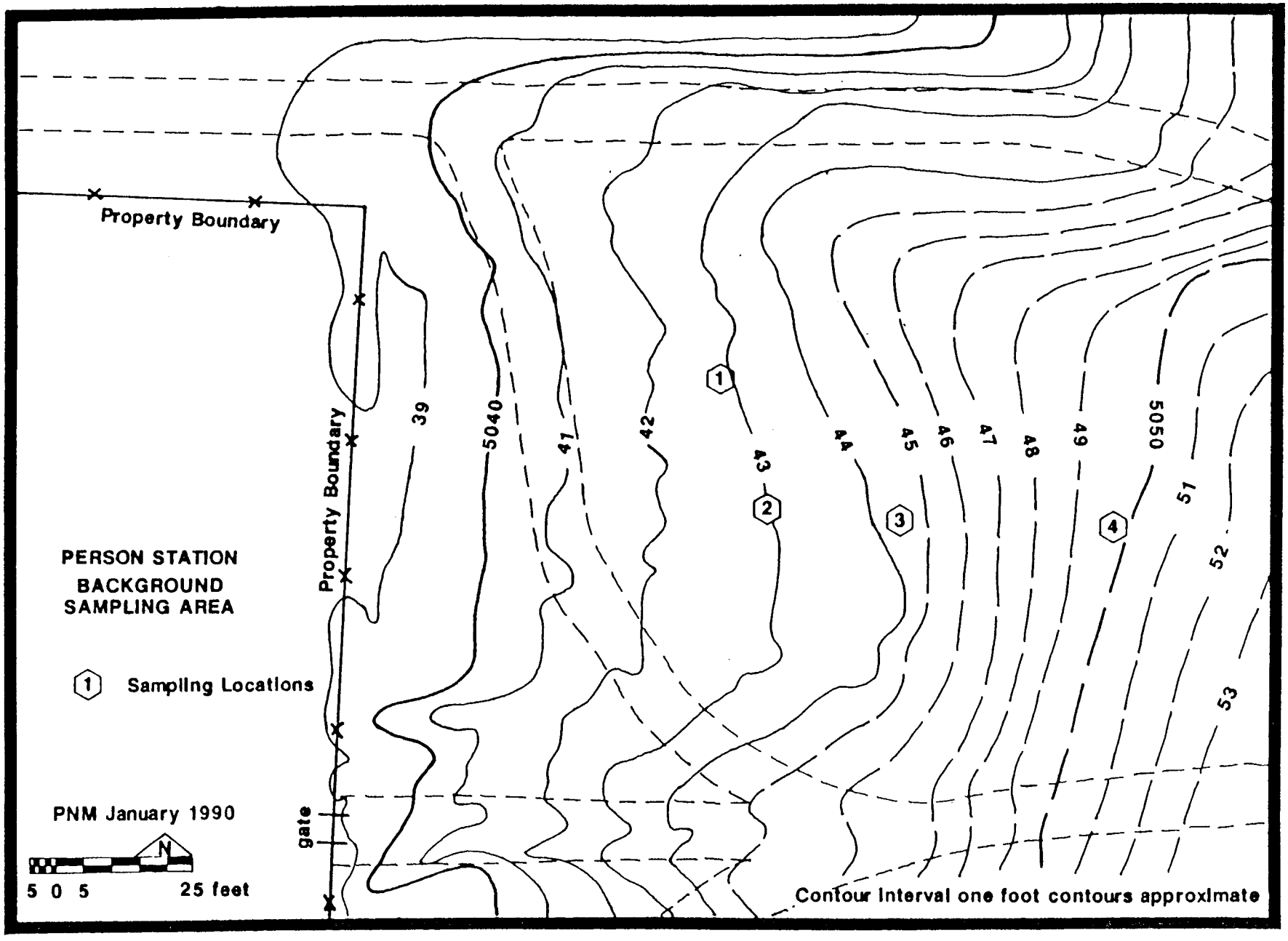

Property Boundary
Property Boundary
gate
39
5040
41
42
43
44
45
46
47
48
49
5050
51
52
53
1
2
3
4
PERSON STATION
BACKGROUND
SAMPLING AREA
1 Sampling Locations
PNM January 1990
N
5 0 5
25 feet
Contour Interval one foot contours approximate

Exhibit 3

Exhibit 3

Photographs of the Sampling Activities

(For original photographs see Report of Findings January 18, 1990)

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 1 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: STEAM CLEANING PROCEDURE FOR AUGER DRILL BITS

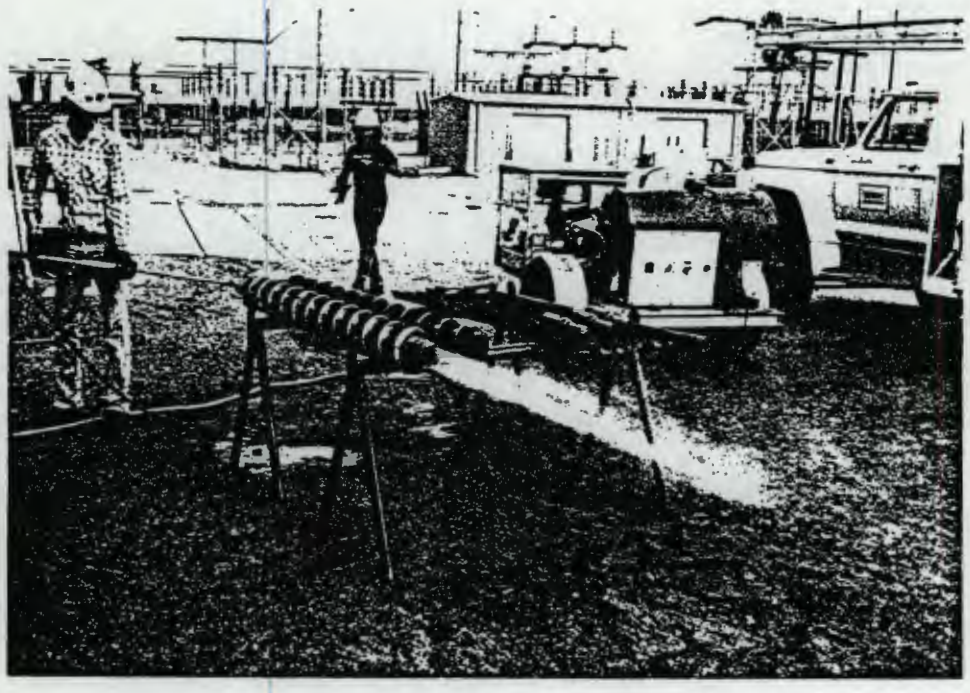
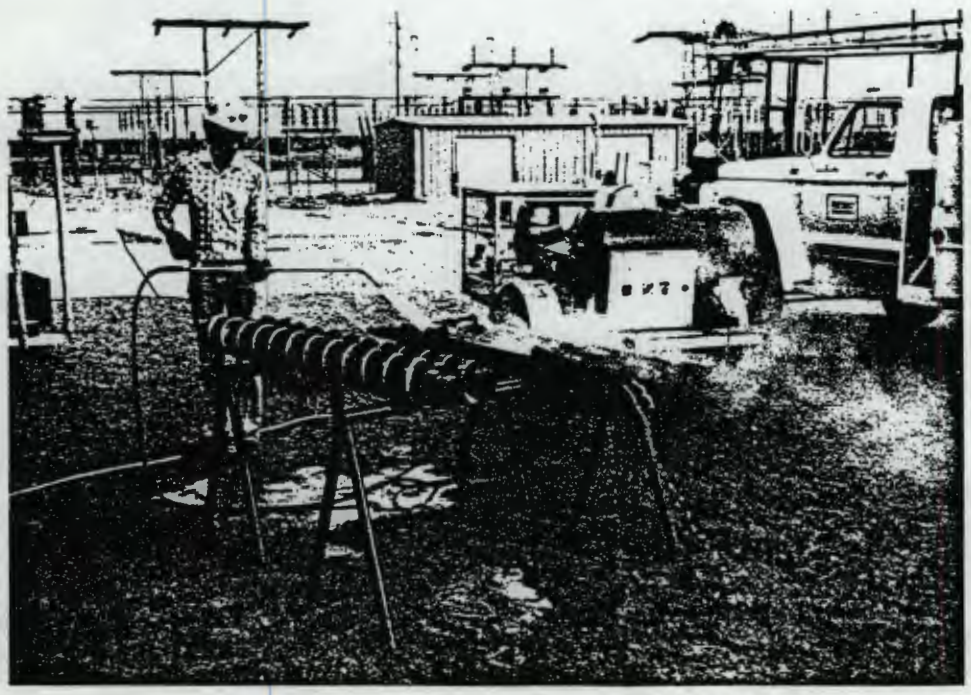


PHOTO NO. 2 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: STEAM CLEANING PROCEDURE FOR SPLIT SPOON SAMPLERS



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 3 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: DRILL RIG SETUP FOR SOIL CORE SAMPLING

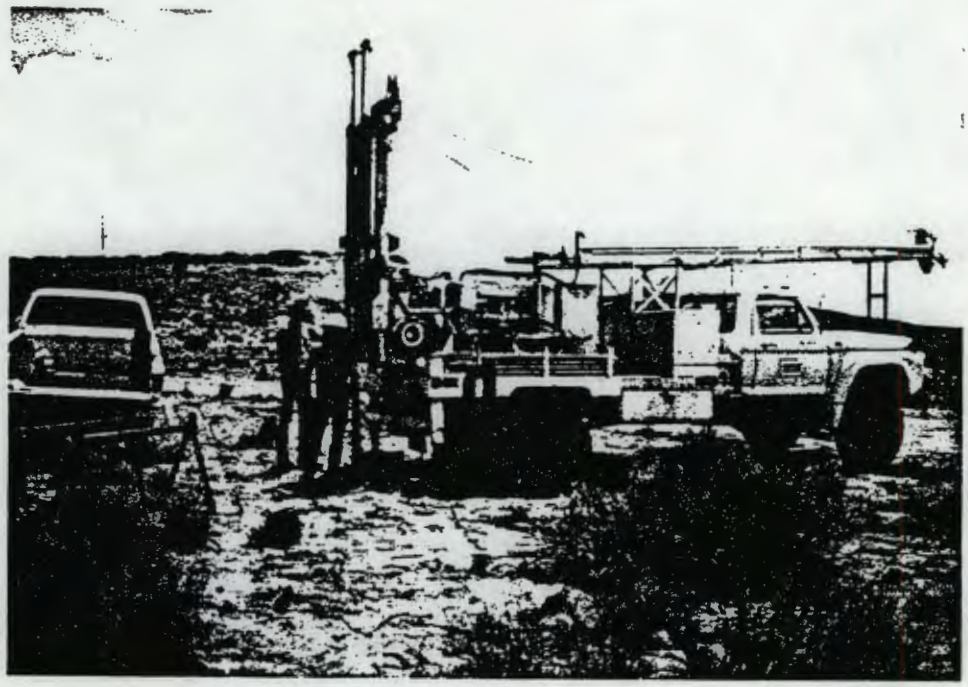
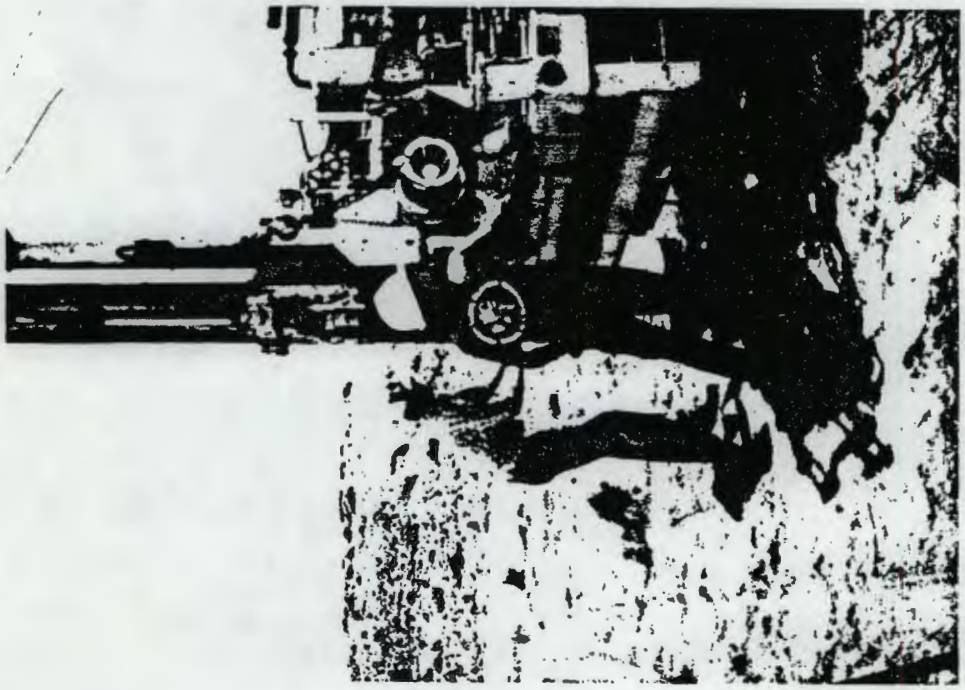


PHOTO NO. 4 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: DRILL RIG SETUP FOR SOIL CORE SAMPLING



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 5 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: REMOVAL OF SPLIT SPOON SAMPLER FROM AUGER

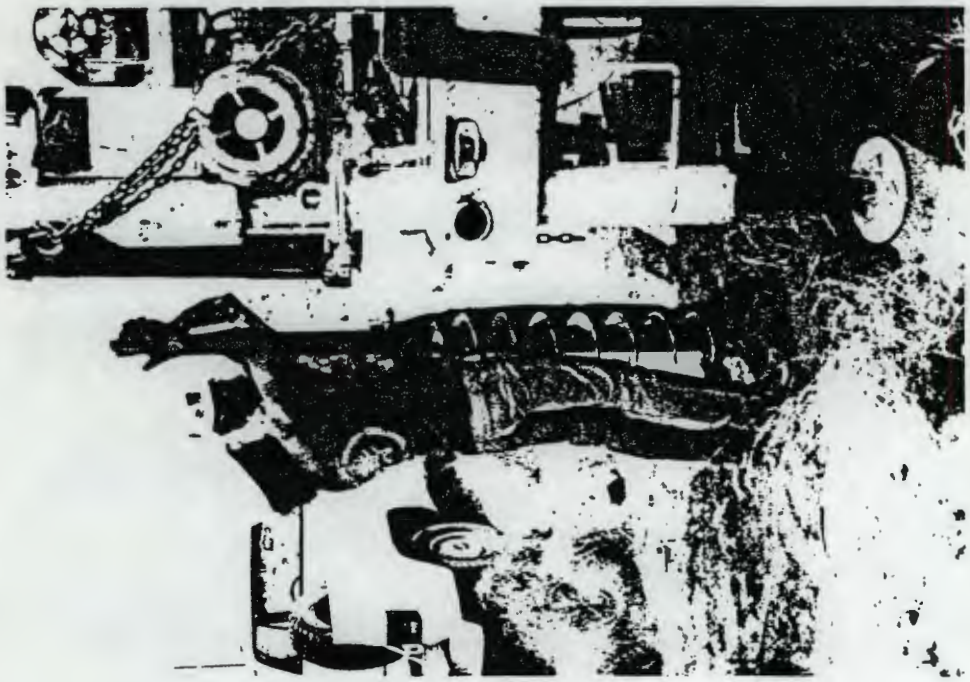


PHOTO NO. 6 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: POSITIONING SPLIT SPOON SAMPLER FOR SAMPLE REMOVAL

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 7 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: SAMPLE COLLECTION

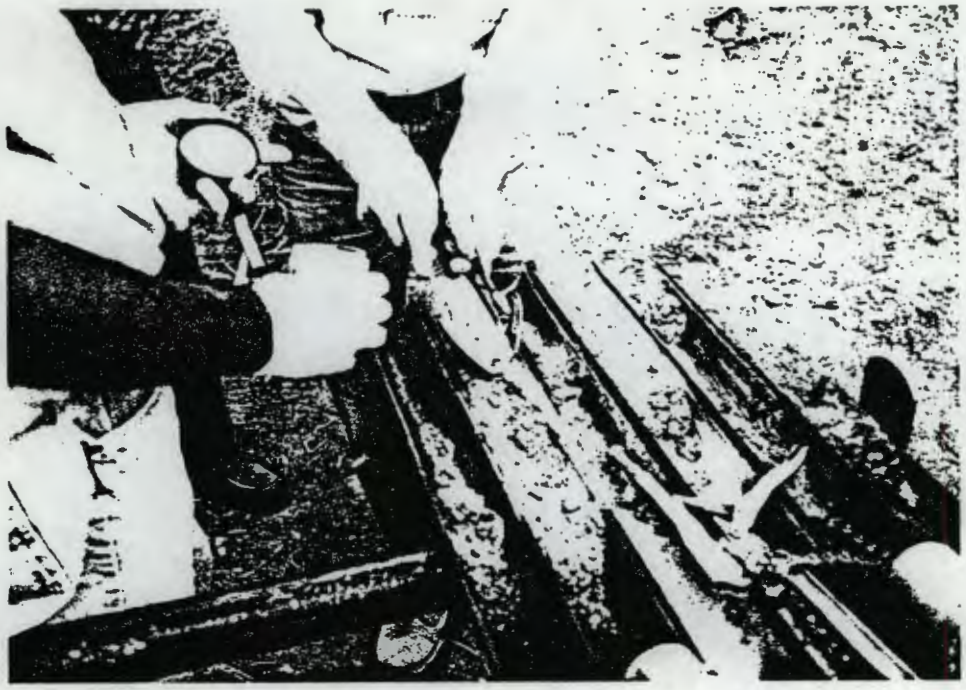
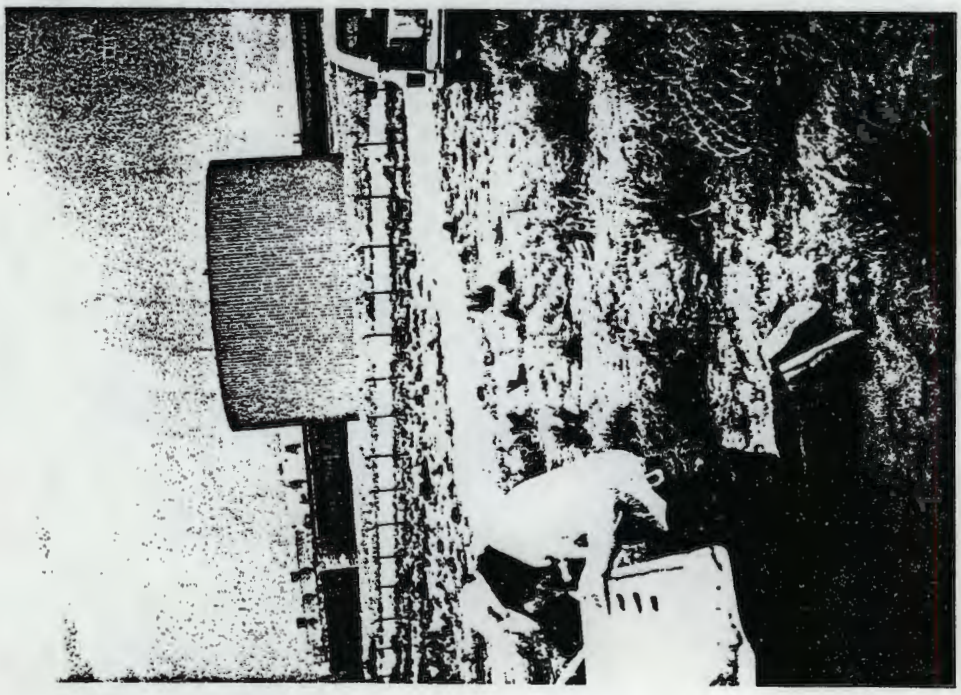


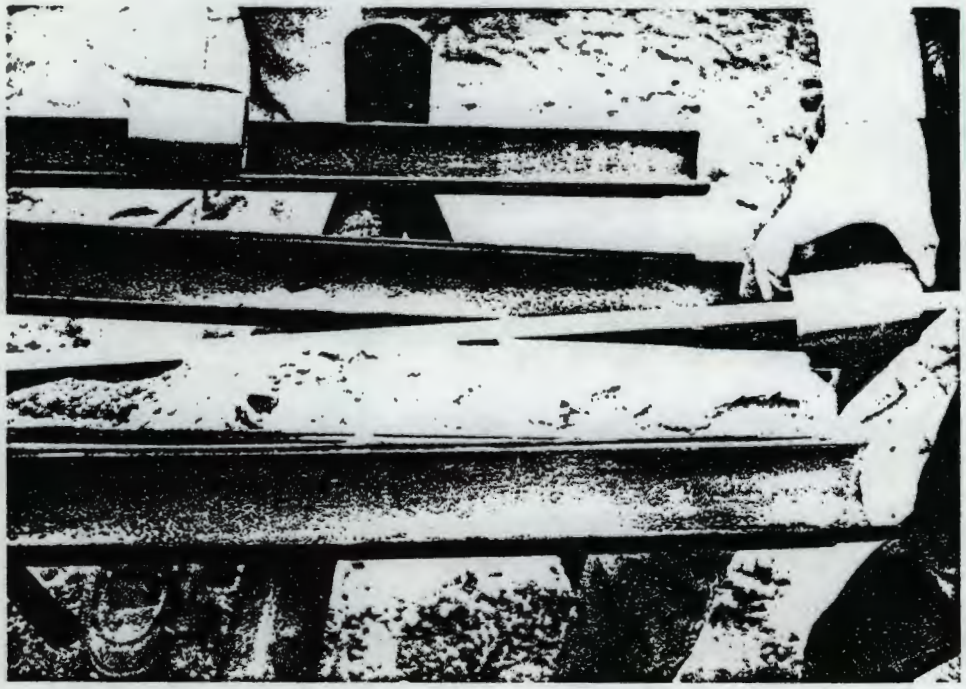
PHOTO NO. 8 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CHARACTERIZATION OF SOIL SAMPLE COLOR



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 9 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 1 DEPTH 0-20"

PHOTO NO. 10 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 1 DEPTH 20-40"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 11 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 1 DEPTH 40-60"

PHOTO NO. 12 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 2 DEPTH 0-20"

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 13 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 2 DEPTH 20-40"

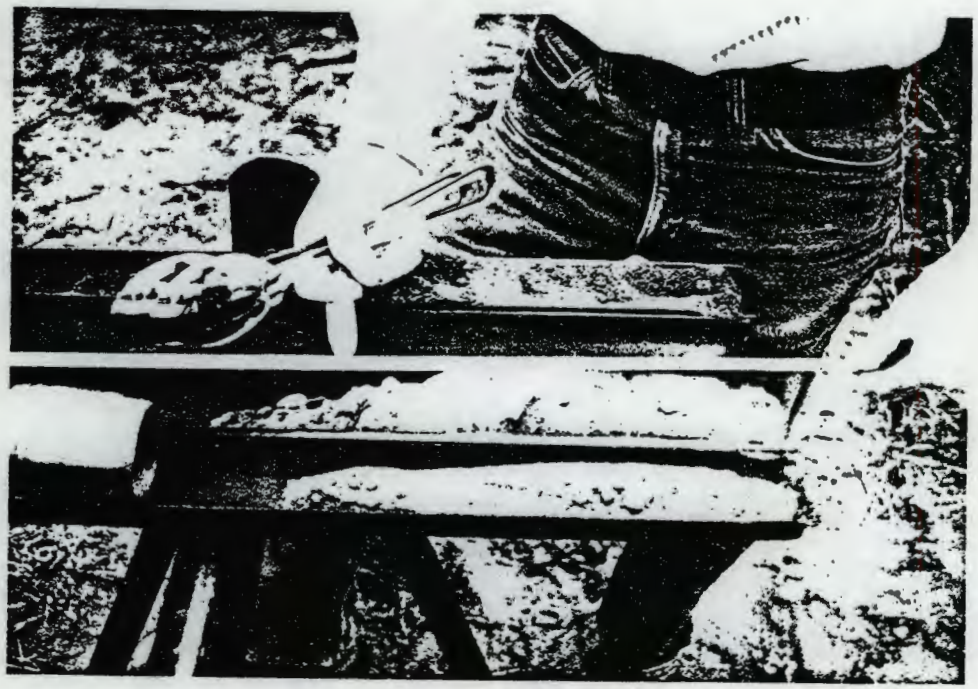


PHOTO NO. 14 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 2 DEPTH 40-60"

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 15 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 3 DEPTH 0-20"

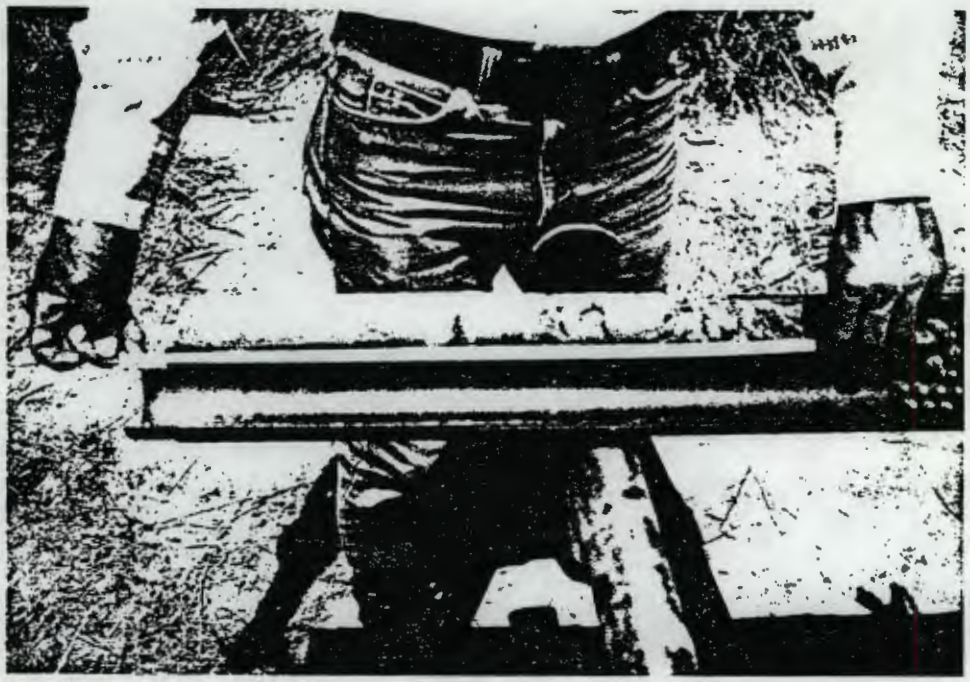


PHOTO NO. 16 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 3 DEPTH 20-36"

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 17 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 3 DEPTH 36-60"

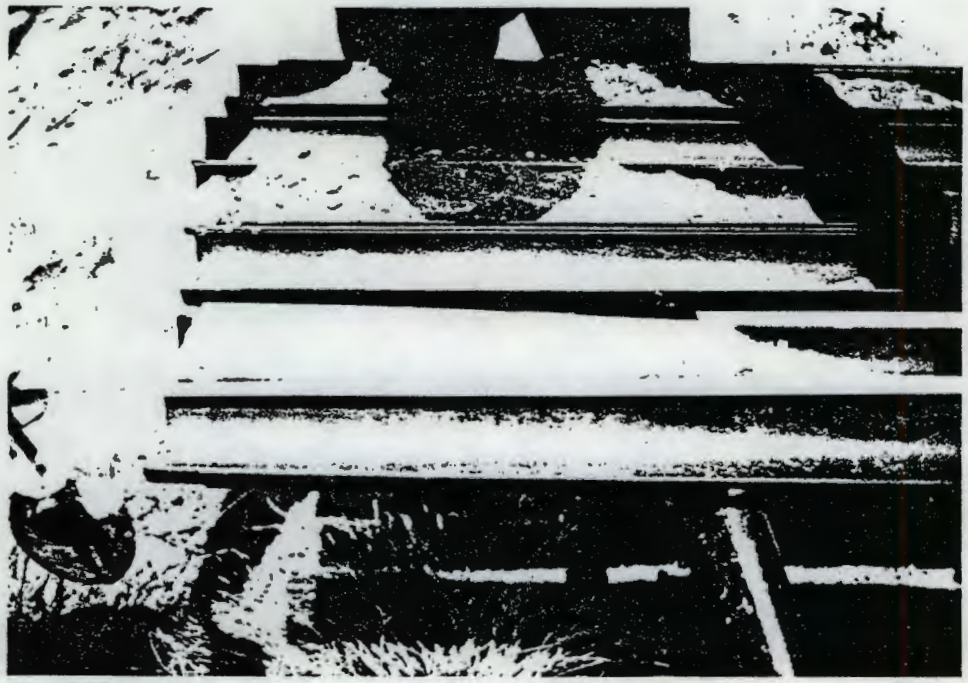
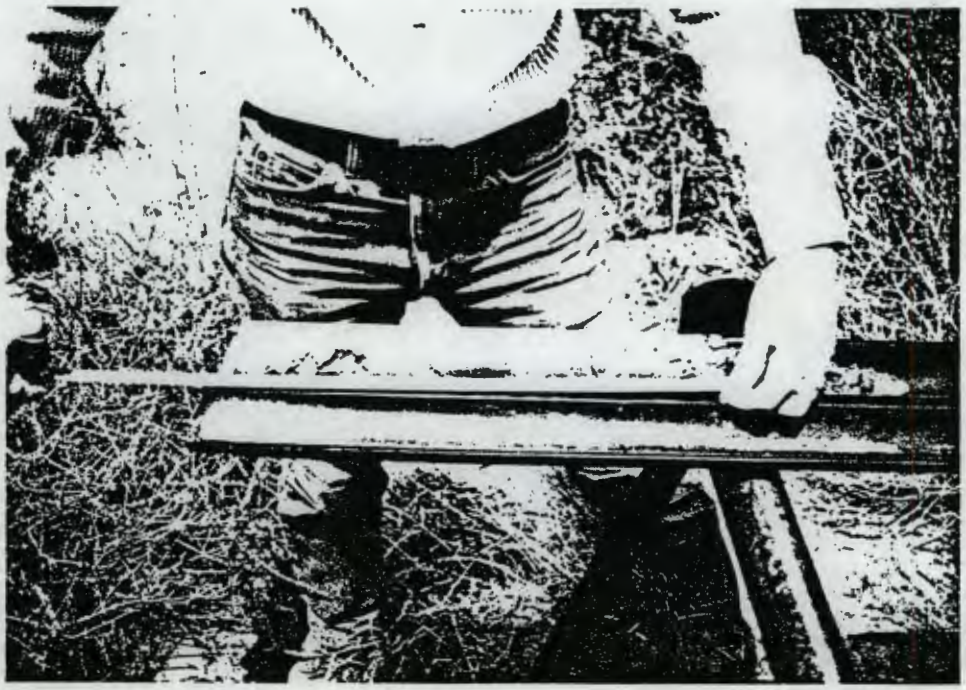


PHOTO NO. 18 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 4 DEPTH 0-20"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 19 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 4 DEPTH 20-36"

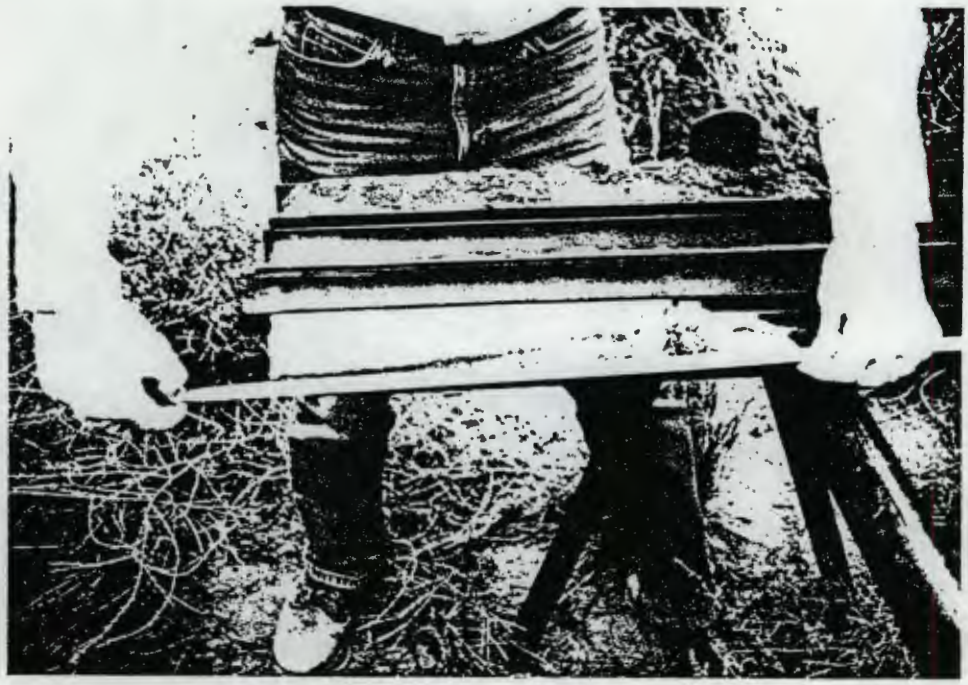
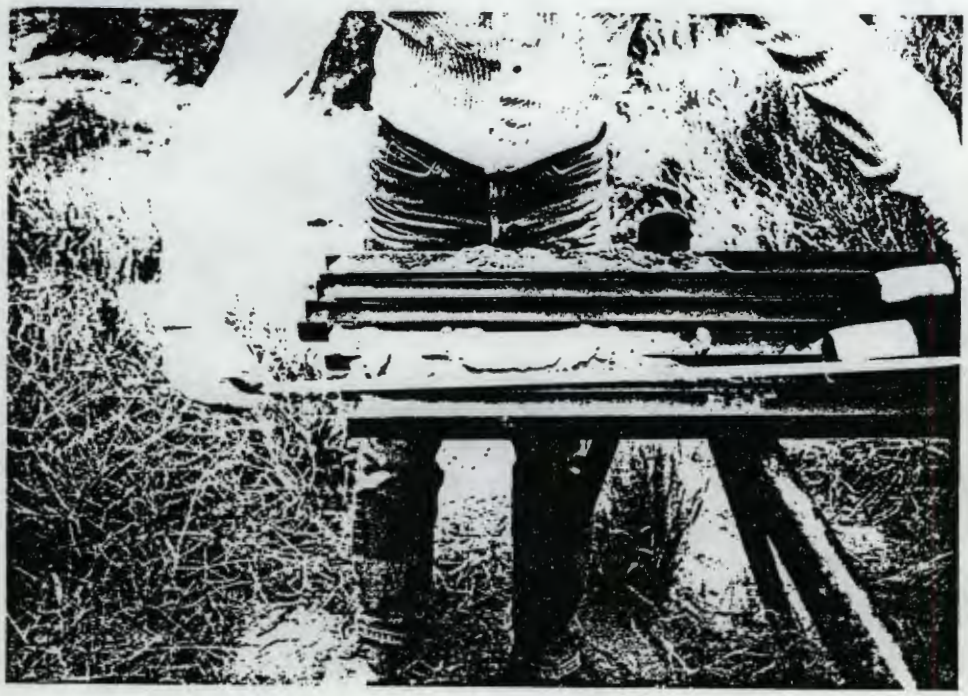


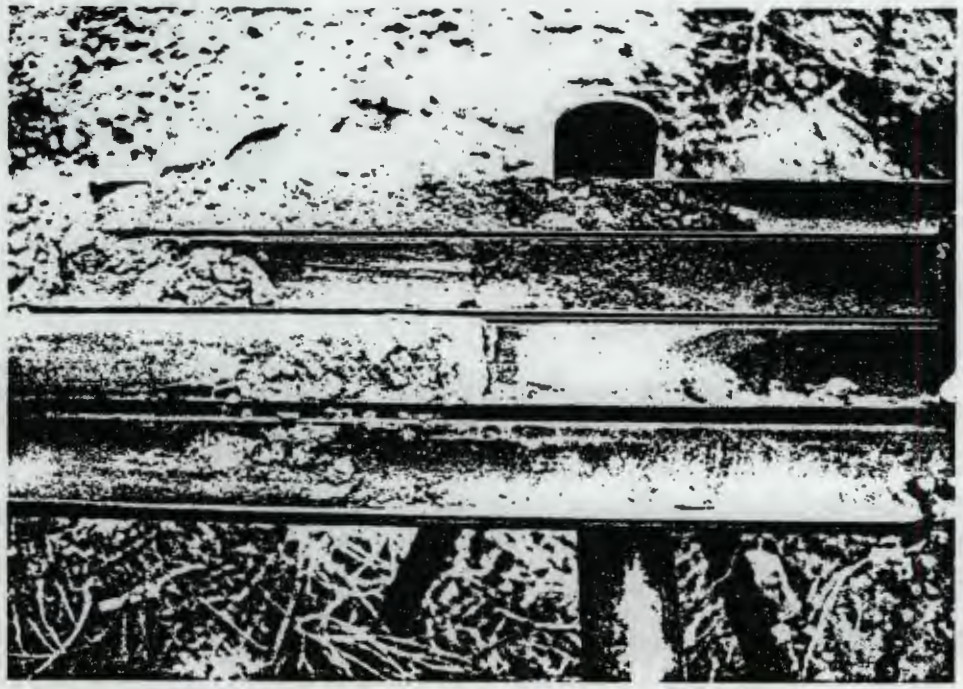
PHOTO NO. 20 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 4 DEPTH 36-40"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 21 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 5 DEPTH 0-20"

PHOTO NO. 22 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 5 DEPTH 20-35"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 23 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 5 DEPTH 35-60"

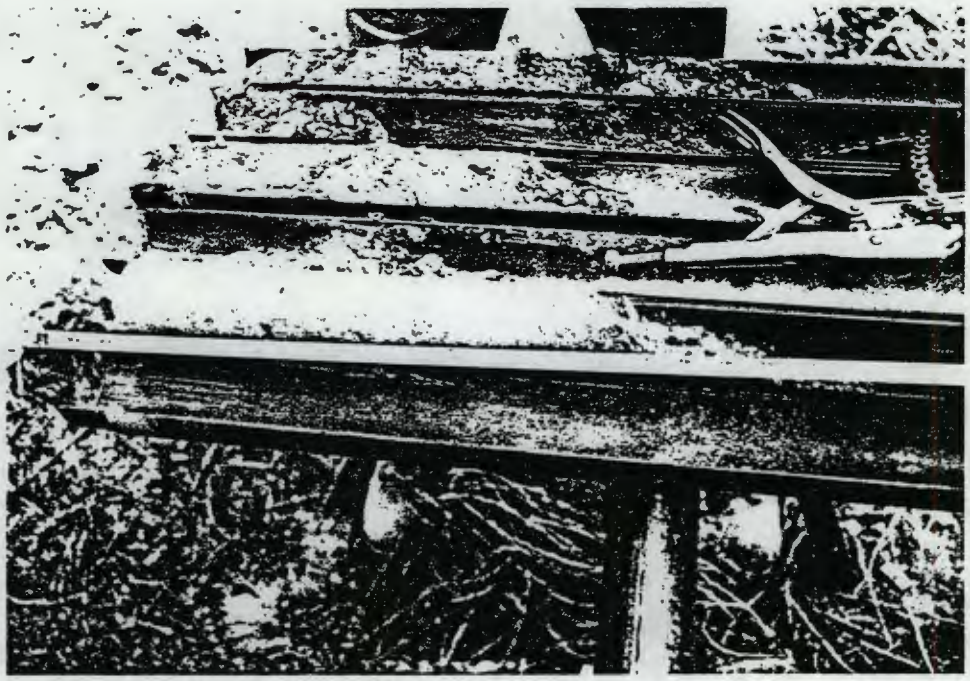
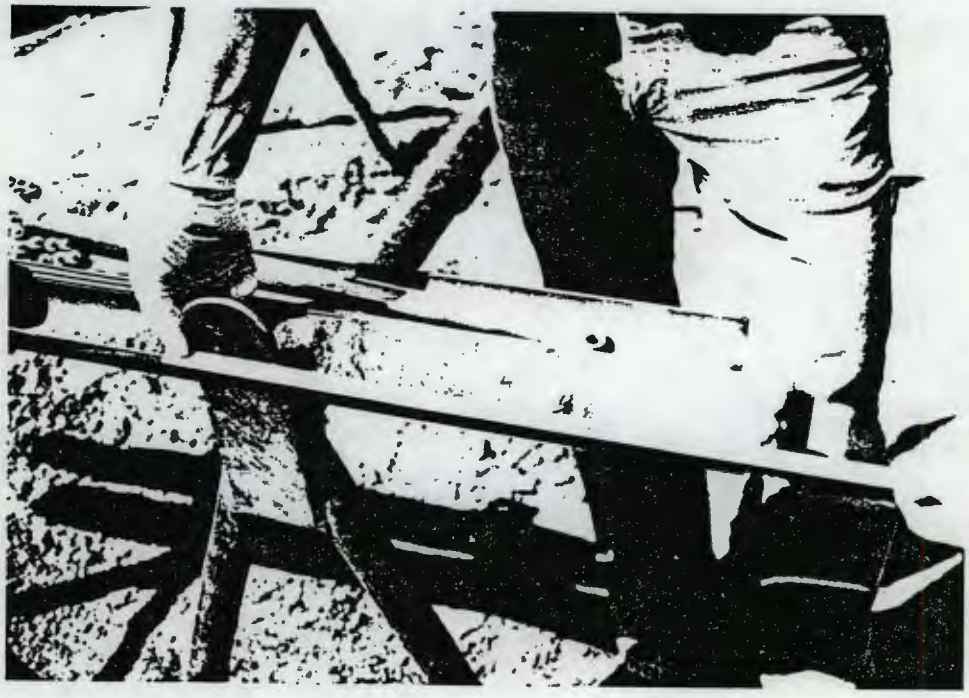


PHOTO NO. 24 DATE TAKEN: 8/2/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 6 DEPTH 0-20"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 25 DATE TAKEN: 8/2/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 6 DEPTH 20-40"

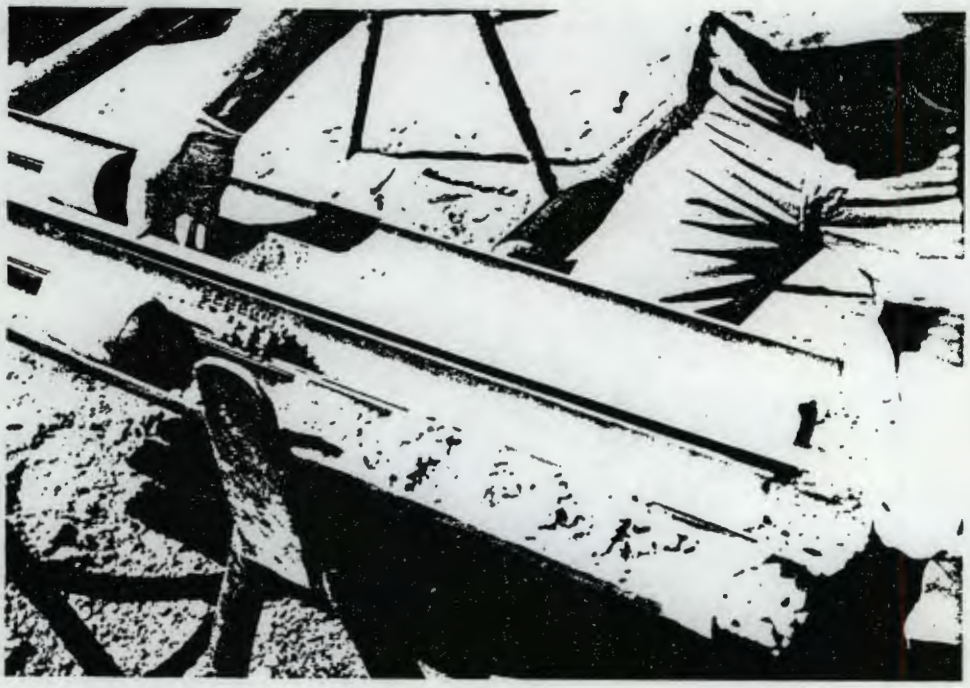


PHOTO NO. 26 DATE TAKEN: 8/2/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 6 DEPTH 40-60"

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 27 DATE TAKEN: 8/2/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 7 DEPTH 0-20"

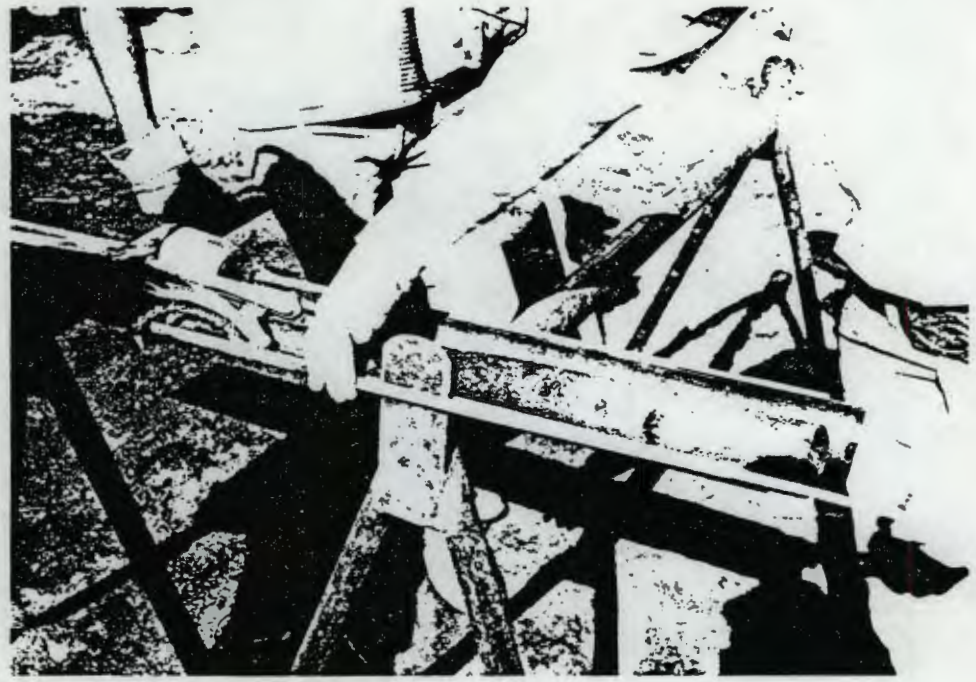
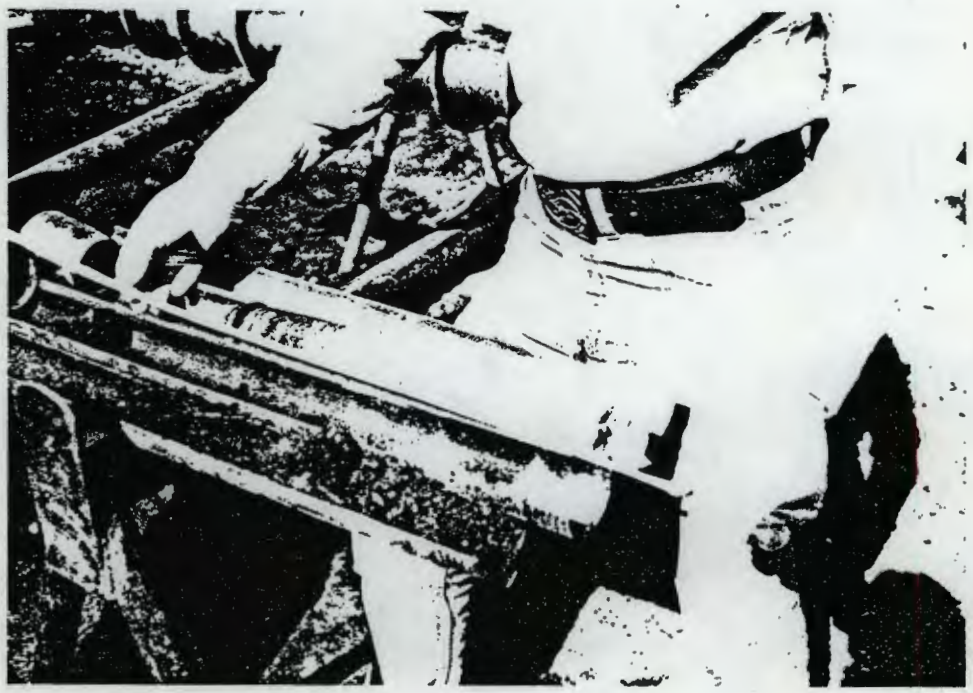


PHOTO NO. 28 DATE TAKEN: 8/2/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 7 DEPTH 20-40"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 29 DATE TAKEN: 8/2/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 7 DEPTH 40-60"

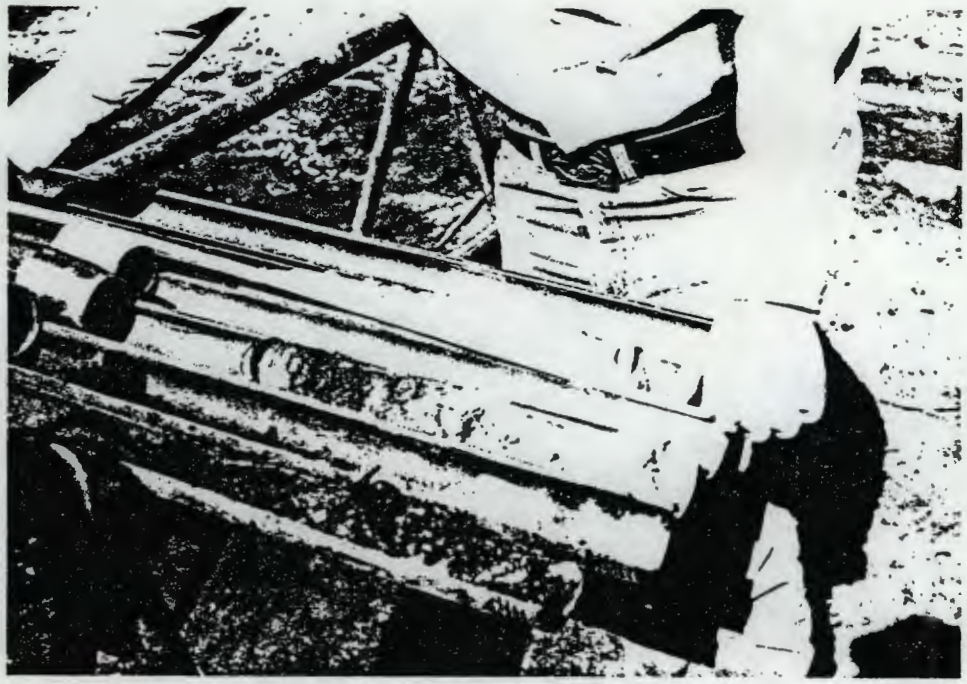
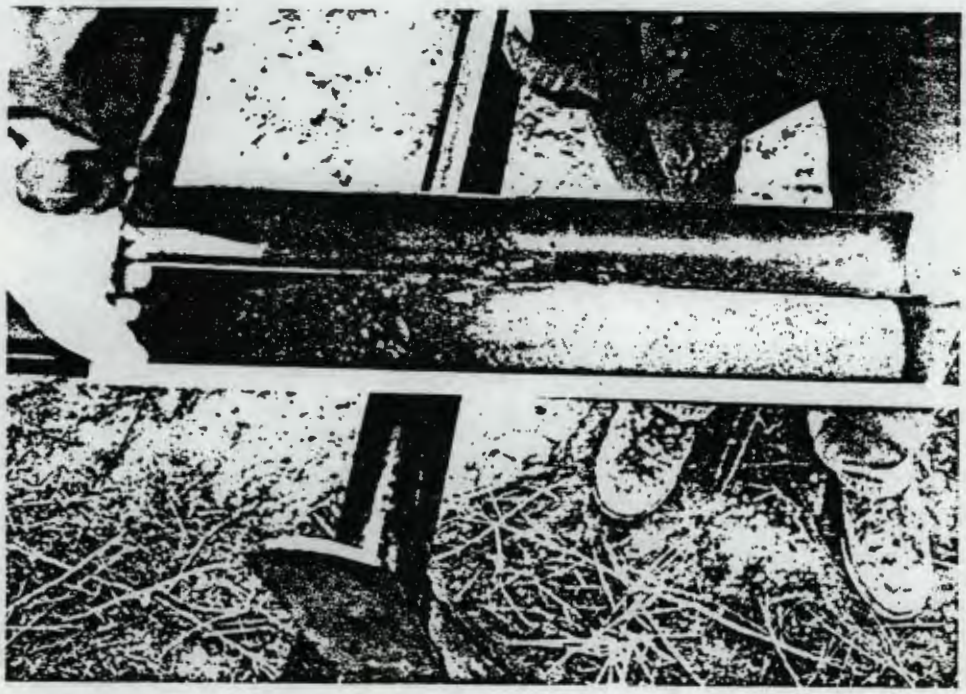


PHOTO NO. 30 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 8 DEPTH 0-20"



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
AUGUST 1-2, 1989

PHOTO NO. 31 DATE TAKEN: 8/1/89 TAKEN BY: H.L. PLUM
DESCRIPTION: CORE SAMPLE. LOCATION NO. 8 DEPTH 20-44"

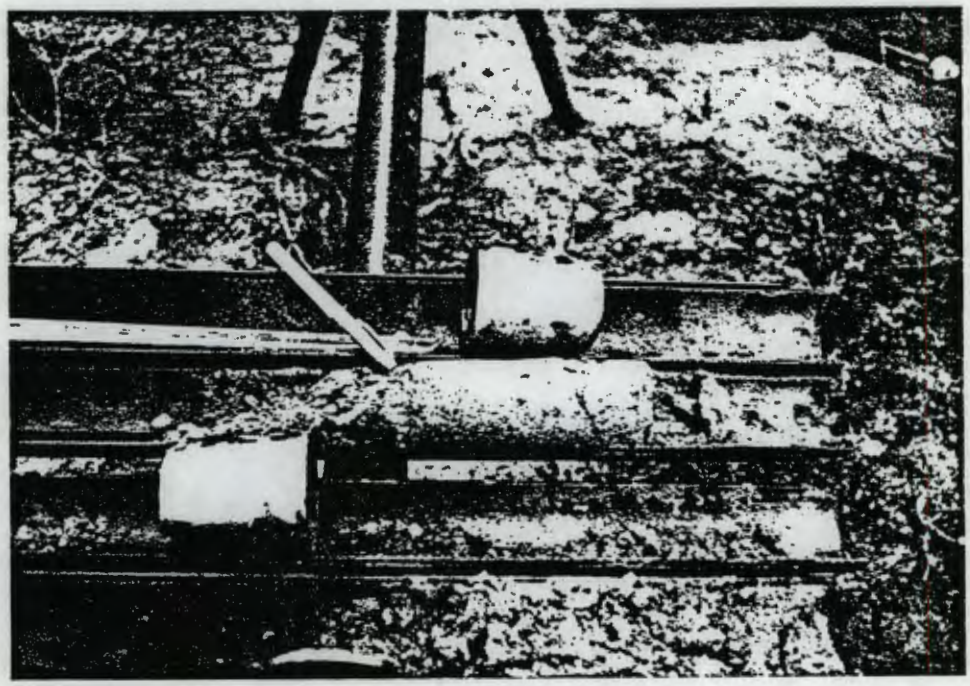


PHOTO NO. DATE TAKEN: TAKEN BY:
DESCRIPTION:

Exhibit 4

Exhibit 4

Soil Description Charts

SOIL DESCRIPTION CHART

PROJECT: PERSON STATION RFI
LOCATION: PERSON GENERATING STATION
DATE: AUGUST 1-2, 1989
LOGGER: JOHN FERRAIUOLO

KEY:

SOIL TYPE REACTION TO HCL	
WET COLOR*	DRY COLOR*

* MUNSELL SOIL COLOR CHART

BACKGROUND SAMPLE LOCATIONS

DEPTH INTERVAL (FEET)	1		2		3		4	
0	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)
1	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/4 YELLOWISH BRWN	10YR 6/4 LT YELLOW BRWN
2	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/4 YELLOWISH BRWN	10YR 6/4 LT YELLOW BRWN
3	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/4 YELLOWISH BRWN	10YR 6/4 LT YELLOW BRWN
4	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/4 YELLOWISH BRWN	10YR 6/4 LT YELLOW BRWN
5								

SOIL DESCRIPTION CHART

PROJECT: PERSON STATION RFI
LOCATION: PERSON GENERATING STATION
DATE: AUGUST 1-2, 1989
LOGGER: JOHN FERRAIUOLO

KEY:

SOIL TYPE REACTION TO HCL	
WET COLOR*	DRY COLOR*

* MUNSELL SOIL COLOR CHART

NATURAL PIT SAMPLE LOCATIONS

DEPTH INTERVAL (FEET)	5		6		7		8 ***	
0	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND NO CALCAREOUS REACTION (ORG. CONTAM)		GRAVELLY SAND VERY SLIGHTLY CALCAREOUS 0-10" ORG.CONT.	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 2/2 VRY DRK BROWN	NA (SOIL MOIST)	10YR 2/2 VRY DRK BROWN	NA (SOIL MOIST)
1	GRAVELLY SAND SL. CALCAREOUS **		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND NO CALCAREOUS REACTION (ORG. CONTAM)		GRAVELLY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 2/1 BLACK	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)
2	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND 0-5" VRY SL CAL 0-5" ORG CONTAM 5-12" SL CALCAR		GRAVELLY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 4/3 BROWN 10YR 5/3 BROWN	0-5" NA 10YR 6/3 PA BRWN	10YR 6/3 PALE BROWN	NA (SOIL MOIST)
3	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CARCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 6/3 PALE BROWN	NA (SOIL MOIST)
4	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PALE BRWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 5/3 BROWN	10YR 6/3 PALE BROWN	10YR 6/3 PALE BROWN	NA (SOIL MOIST)
5								

Exhibit 5

Exhibit 5

Certificate of Analysis for Sampling Containers

Certificate of Analysis

Environmental Services Laboratory Analysis

Metals Analysis

Bottle Type & QA Level: F, Level 1

Description : 8 oz. Clear Glass

Lot No.: F9040084 Date: 3-13-89

This is to certify that this lot was tested and found to comply with Eagle Picher specification for this product.

Compound Analyzed	Quantity Found(ug/L)
Silver	<5.0
Aluminum	<80.0
Arsenic	<5.0
Barium	<50.0
Beryllium	<1.0
Calcium	<5000.0
Cadmium	<1.0
Cobalt	<35.0
Chromium	<10.0
Copper	<15.0
Iron	<75.0
Mercury	<0.2
Potassium	<3000.0
Magnesium	<5000.0
Manganese	<10.0
Sodium (glass)	<5000.0
Sodium (polyethylene)	<3000.0
Nickel	<40.0
Lead	<8.0
Antimony	<5.0
Selenium	<2.0
Thallium	<5.0
Vanadium	<10.0
Zinc	<40.0

Approved: Julie Bright

Date : 3-13-89

EAGLE PICHER
ENVIRONMENTAL SERVICES
200 9TH AVE. N.E. • MIAMI, OKLAHOMA 74354 • (800) 331-7425

Certificate of Analysis

Environmental Services Laboratory Analysis

Pesticide Extractables

Bottle Type & QA Level: F, Level 1

Description : 8 oz. Clear Glass

Lot No.: F9040084 Date: 3-13-89

This is to certify that this lot was tested and found to comply with Eagle Picher specifications for this product.

Compound Analyzed	Quantity Found(ng/Bottle)
alpha-BHC	<.03
gamma-BHC(Lindane)	<.03
beta-BHC	<.03
Heptachlor	<.03
delta-BHC	<.03
Aldrin	<.03
Heptachlor epoxide	<.03
Endosulfan I	<.03
4,4'-DDE	<.06
Dieldrin	<.06
Endrin	<.06
4,4'-DDD	<.06
Endosulfan II	<.06
4,4'-DDT	<.06
Endosulfan sulfate	<.06
Methoxychlor	<.30
Endrin Ketone	<.06
Chlordane(tech)	<.30
Toxaphene	<.30
Arochlor-1016	<.30
Arochlor-1221	<.30
Arochlor-1232	<.30
Arochlor-1242	<.30
Arochlor-1248	<.30
Arochlor-1254	<.60
Arochlor-1260	<.60

Approved: Jul Beight

Date : 3-13-89

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Certificate of Analysis

Environmental Services Laboratory Analysis

Base/Neutral/Acid Extractables

Bottle Type & QA Level: F, Level 1

Description : 8 oz. Clear Glass

Lot No.: F9040084 Date: 3-13-89

This is to certify that this lot was tested and found to comply with Eagle Picher specifications for this product.

Compound Analyzed	Quantity Found(ng/Bottle)
Phenol	<5.
Bis(2-Chlorethyl)ether	<5.
2-Chlorophenol	<5.
1,3-Dichlorobenzene	<5.
1,4-Dichlorobenzene	<5.
Benzyl Alcohol	<5.
2-Methylphenol	<5.
Bis(2-Chloroisopropyl)ether	<5.
4-Methylphenol	<5.
N-Nitroso-di-n-propylamine	<5.
Hexachloroethane	<5.
Nitrobenzene	<5.
Isophorone	<5.
2-Nitrophenol	<5.
2,4-Dimethylphenol	<5.
Benzoic Acid	<5.
Bis(2-Chloroethoxy)methane	<5.
2,4-Dichlorophenol	<5.
1,2,4-Trichlorobenzene	<5.
Naphthalene	<5.
4-Chloroaniline	<5.
Hexachlorobutadiene	<5.
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	<5.
2-Methylnaphthalene	<5.
Hexachlorocyclopentadiene	<5.
2,4,6-Trichlorophenol	<5.
2,4,5-Trichlorophenol	<5.
2-Chloronaphthalene	<5.
2-Nitroaniline	<5.
Dimethylphthalate	<5.
Acenaphthylene	<5.
2,6-Dinitrotoluene	<5.
3-Nitroaniline	<5.
Acenaphthene	<5.
2,4-Dinitrophenol	<5.
4-Nitrophenol	<5.

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Certificate of Analysis

Lot: F9040084

BNA Page 2

Dibenzofuran	5.
2,4-Dinitrotoluene	5.
Diethylphthalate	5.
4-Chlorophenyl-phenyl ether	5.
Fluorene	5.
4-Nitroaniline	5.
4,6-Dinitro-2-methylphenol	5.
N-Nitrosodiphenylamine	5.
4-Bromophenyl-phenylether	5.
Hexachlorobenzene	5.
Pentachlorophenol	5.
Phenanthrene	5.
Anthracene	5.
Di-N-Butylphthalate	5.
Fluoranthene	5.
Pyrene	5.
Butylbenzylphthlate	5.
3,3'-Dichlorobenzidine	5.
Benzo(a)anthracene	5.
Chrysene	5.
Bis(2-ethylhexyl)phthalate	5.
Di-n-Octylphthalate	5.
Benzo(b)fluoranthene	5.
Benzo(k)fluoranthene	5.
Benzo(a)pyrene	5.
Indeno(1,2,3-cd)pyrene	5.
Dibenz(a,h)arthracene	5.
Benzo(g,h,i)perylene	5.

Approved: Juli Beights

Date : 3-31-89

EAGLE PICHER

ENVIRONMENTAL SERVICES

200 9TH AVE. N.E. • MIAMI, OKLAHOMA 74354 • (800) 331 7425

Exhibit 6

Exhibit 6

Laboratory Data Report

ASSAIGAI ANALYTICAL LABORATORIES

REVISED: October 19, 1989

To:
PNM - Albuquerque
Alvarado Square
Albuquerque, NM 87158
ATTN: Ron Johnson

Work Order No. 1651
Date: 31 August 1989

SAMPLE ID: Person Station RFI, Generating Station

DATE RECEIVED: 2 August 1989

SAMPLE IDENTIFICATION

ANALYTE	PNM-1-1	PNM-1-2	PNM-1-3	PNM-1-4	PNM-1-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	5.0 mg/Kg	3.9 mg/Kg	3.8 mg/Kg	3.4 mg/Kg	3.8 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	2 mg/Kg	2.2 mg/Kg	0.4 mg/Kg	1.5 mg/Kg	7.9 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	4.8 mg/Kg	4.2 mg/Kg	3.7 mg/Kg	3.1 mg/Kg	2.7 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	18.2 mg/Kg	12.7 mg/Kg	3.7 mg/Kg	4.2 mg/Kg	3.1 mg/Kg	7421	8/11/89	0.5 mg/Kg
Moisture	5.19 %	2.35 %	1.45 %	1.48 %	2.21 %			

SAMPLE IDENTIFICATION

ANALYTE	PNM-2-1	PNM-2-2	PNM-2-3	PNM-2-4	PNM-2-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	8.2 mg/Kg	5.9 mg/Kg	2.0 mg/Kg	(2.0 mg/Kg	3.0 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	9.3 mg/Kg	2.1 mg/Kg	0.6 mg/Kg	0.2 mg/Kg	0.2/0.2 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	6.1/6.5 mg/Kg	6.6 mg/Kg	4.2 mg/Kg	3.8 mg/Kg	4.0 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	11.1 mg/Kg	5.3 mg/Kg	4.0 mg/Kg	2.8 mg/Kg	4.0 mg/Kg	7421	8/11/89	0.5 mg/Kg
* Moisture	6.28 %	2.21 %	2.21 %	1.89 %	1.67 %			

SAMPLE IDENTIFICATION

ANALYTE	PNM-3-1	PNM-3-2	PNM-3-3	PNM-3-4	PNM-3-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	3.3 mg/Kg	5.0 mg/Kg	3.1 mg/Kg	3.4 mg/Kg	3.7 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	0.4 mg/Kg	0.1 mg/Kg	0.4 mg/Kg	(0.1 mg/Kg	(0.1/(0.1	7131	8/14/89	0.1 mg/Kg
Chromium	3.8 mg/Kg	3.0 mg/Kg	(2.0 mg/Kg	3.1/3.3 mg/Kg	3.2 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	6.2 mg/Kg	4.7 mg/Kg	3.5 mg/Kg	3.7 mg/Kg	4.3 mg/Kg	7421	8/11/89	0.5 mg/Kg
* Moisture	3.71 %	2.06 %	1.45 %	2.15 %	2.29 %			

P.O. Box 90430 • Albuquerque, New Mexico 87199-0430 • (505) 345-8964

WORK ORDER NO: 1651
DATE: 31 August 1989

SAMPLE IDENTIFICATION

ANALYTE	PNM-4-1	PNM-4-2	PNM-4-3	PNM-4-4	PNM-4-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	3.8 mg/Kg	5.5 mg/Kg	5.3 mg/Kg	5.1 mg/Kg	3.6 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	0.2 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	0.1 mg/Kg	(0.1 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	3.1 mg/Kg	3.0 mg/Kg	2.9 mg/Kg	3.4 mg/Kg	3.7 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	8.2 mg/Kg	4.2 mg/Kg	3.5 mg/Kg	3.9 mg/Kg	4.9 mg/Kg	7421	8/11/89	0.5 mg/Kg
% Moisture	3.86 %	1.66 %	2.61 %	2.58 %	2.34 %			

SAMPLE IDENTIFICATION

ANALYTE	PNM-8-1	PNM-8-2	PNM-8-3	PNM-8-4	PNM-8-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	5.1 mg/Kg	3.8 mg/Kg	2.2 mg/Kg	5.8 mg/Kg	2.0 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	(0.1 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	6.1 mg/Kg	4.6 mg/Kg	(2.0 mg/Kg	2.2 mg/Kg	3.8 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	7.1 mg/Kg	4.4 mg/Kg	3.3 mg/Kg	4.0 mg/Kg	4.5 mg/Kg	7421	8/11/89	0.5 mg/Kg
Oil & Grease	7463/7299 ug/g	(50 ug/g	(50 ug/g	(50 ug/g	(50 ug/g	9071 modified	8/4/89	50 ug/g
PCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/9, 8/10/89	0.25 ug/g
TCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/9, 8/10/89	0.25 ug/g
Toluene	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/9, 8/10/89	0.25 ug/g
Naphthalene	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/9, 8/10/89	0.25 ug/g
1,1,1-TCA	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/9, 8/10/89	0.25 ug/g
PCB ARCCLOR	(1.0 ug/g ---	(1.0 ug/g ---	(1.0/(1.0 ug/g ---	(1.0 ug/g ---	(1.0/(1.0 ug/g ---	3540/ 8080	8/6/89	1.0 ug/g ---
% Moisture	1.42 %	4.26 %	1.76 %	0.96 %	0.95 %			

WORK ORDER NO: 1651

DATE: 31 August 1989

SAMPLE IDENTIFICATION

ANALYTE	PNM-5-1	PNM-5-2	PNM-5-3	PNM-5-4	PNM-5-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	2.7/7.7 mg/Kg	26.8/35.7	(2.0 mg/Kg	(2.0 mg/Kg	2.3 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	0.6 mg/Kg	2.4 mg/Kg	0.6 mg/Kg	0.2 mg/Kg	(0.1 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	12900/111	169.1/10.0	3.1 mg/Kg	3.0 mg/Kg	2.2 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	13.9/11.0	58/84.4	4.4 mg/Kg	3.1 mg/Kg	4.2 mg/Kg	7421	8/11/89	0.5 mg/Kg
Oil & Grease	(50 ug/g	(50 ug/g	(50/(50 ug/g	(50 ug/g	(50 ug/g	9071 modified	8/4/89	50 ug/g
PCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/8, 8/9/89	0.25 ug/g
TCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/8, 8/9/89	0.25 ug/g
Toluene	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/8, 8/9/89	0.25 ug/g
Naphthalene	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/8, 8/9/89	0.25 ug/g
1,1,1-TCA	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/8, 8/9/89	0.25 ug/g
PCB AROCLOR	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	3540/ 8080	8/6/89	1.0 ug/g ---
Moisture	4.78 %	7.07 %	2.11 %	2.32 %	1.66 %			

SAMPLE IDENTIFICATION

ANALYTE	PNM-0-1	PNM-0-2	PNM-0-3	PNM-0-4	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS	NOMINAL DETECTION LIMITS
PCE	---	(0.25 ug/g	(0.1 ug/mL	---	8010	8/8/89	0.1 ug/mL	0.25 ug/g
TCE	---	(0.25 ug/g	(0.1 ug/mL	---	8010	8/8/89	0.1 ug/mL	0.25 ug/g
Toluene	---	(0.25 ug/g	(0.1 ug/mL	---	8020	8/8/89	0.1 ug/mL	0.25 ug/g
Naphthalene	---	(0.25 ug/g	(0.1 ug/mL	---	8020	8/8/89	0.1 ug/mL	0.25 ug/g
1,1,1-TCA	---	(0.25 ug/g	(0.1 ug/mL	---	8010	8/8/89	0.1 ug/mL	0.25 ug/g
PCB AROCLOR	(1.0 ug/g ---	---	---	(1.0 ug/g ---	3540/ 8080	8/6/89	---	1.0 ug/g

Oil Moisture Content: Method #26, pg 107; Agriculture Handbook #60, US Dept. of Agriculture,(1969)

Moisture Content Analysis was performed over a period of 2 weeks, 8/15/89-8/29/89.

ample digestion for Metals (Total): EPA Method 3050

Purge and Trap: EPA Method 5030

ASSAIGAI
ANALYTICAL
LABORATORIES

REVISED: October 19, 1989

To:
PNM - Albuquerque
Alvarado Square
Albuquerque, NM 87158
ATTN: Ron Johnson

Work Order No. 1656
Date: 31 August 1989

SAMPLE ID: Person Station RFI

DATE RECEIVED: 2 August 1989

SAMPLE IDENTIFICATION

ANALYTE	PNM-6-1	PNM-6-2	PNM-6-3	PNM-6-4	PNM-6-5	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	3.9 mg/Kg	2.4 mg/Kg	2.2 mg/Kg	2.2 mg/Kg	3.9 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	0.1/0.1 mg/Kg	0.2 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	0.1 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	5.6 mg/Kg	3.5/3.4 mg/Kg	3.7 mg/Kg	2.5 mg/Kg	3.0 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	14.4 mg/Kg	7.8 mg/Kg	6.9 mg/Kg	4.5 mg/Kg	4.1 mg/Kg	7421	8/14/89	0.5 mg/Kg
Oil & Grease	(50 ug/g	(50 ug/g	(50 ug/g	(50 ug/g	(50/(50 ug/g	9071 modified	8/4/89	50 ug/g
PCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/10, 8/11/89	0.25 ug/g
TCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/10, 8/11/89	0.25 ug/g
Toluene	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/10, 8/11/89	0.25 ug/g
Naphthalene	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/10, 8/11/89	0.25 ug/g
1,1,1-TCA	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/10, 8/11/89	0.25 ug/g
PCB AROCLOR	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0/(1.0 ug/g ---	3540/ 8080	8/8/89	1.0 ug/g ---
% Moisture	4.30 %	3.21 %	1.55 %	2.06 %	1.60 %			

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WORK ORDER NO: 1654
DATE: 31 August 1989

SAMPLE IDENTIFICATION

ANALYTE	PNM-7-1-A	PNM-7-2-A	PNM-7-3-A	PNM-7-4-A	PNM-7-5-A	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	7.6 mg/Kg	5.2 mg/Kg	6.7 mg/Kg	6.7 mg/Kg	2.9 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	0.2 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	22/22.5	6.3 mg/Kg	12.3 mg/Kg	8.8 mg/Kg	2.4 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	39/37.7	6.9 mg/Kg	5.1 mg/Kg	3.9 mg/Kg	3.4 mg/Kg	7421	8/11/89	0.5 mg/Kg
Oil & Grease	35427 ug/g	68692 ug/g	17285 ug/g	865/804 ug/g	(50 ug/g	9071 modified	8/4/89	50 ug/g
PCE	(0.25 ug/g	(0.25 ug/g	(0.25/(0.25	(0.25 ug/g	(0.25 ug/g	8010	8/14/89	0.25 ug/g
TCE	(0.25 ug/g	(0.25 ug/g	(0.25/(0.25	(0.25 ug/g	(0.25 ug/g	8010	8/14/89	0.25 ug/g
Toluene	0.34 ug/g	1.7 ug/g	(0.25/(0.25	(0.25 ug/g	(0.25 ug/g	8020	8/14/89	0.25 ug/g
Naphthalene	(0.25 ug/g	5.7 ug/g	(0.25/(0.25	(0.25 ug/g	(0.25 ug/g	8020	8/14/89	0.25 ug/g
1,1,1-TCA	(0.25 ug/g	(0.25 ug/g	(0.25/(0.25	(0.25 ug/g	(0.25 ug/g	8010	8/14/89	0.25 ug/g
PCB AROCLOR	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0/(1.0 ug/g ---	3540/ 8080	8/8/89	1.0 ug/g ---
% Moisture	4.34 %	3.24 %	1.90 %	1.30 %	1.41 %			

ORK ORDER NO: 1654
ATE: 31 August 1989

SAMPLE IDENTIFICATION

ANALYTE	PNM-7-1-B	PNM-7-2-B	PNM-7-3-B	PNM-7-4-B	PNM-7-5-B	EPA METHOD NUMBER	DATE OF EXTRACTION/ ANALYSIS	NOMINAL DETECTION LIMITS
Arsenic	7.8/5.4	5.1 mg/Kg	13.9 mg/Kg	5.5 mg/Kg	2.4 mg/Kg	7060	8/15/89	2.0 mg/Kg
Cadmium	0.2 mg/Kg	(0.1 mg/Kg	0.2 mg/Kg	(0.1 mg/Kg	(0.1 mg/Kg	7131	8/14/89	0.1 mg/Kg
Chromium	22/11.3	5.3/5.7 mg/Kg	10.3 mg/Kg	6.2 mg/Kg	1.6 mg/Kg	7190	8/15/89	2.0 mg/Kg
Lead	59/30.6	6.3 mg/Kg	4.9 mg/Kg	3.9 mg/Kg	3.5 mg/Kg	7421	8/11/89	0.5 mg/Kg
Oil & Grease	62640 ug/g	59677/59654	14117/13075	176 ug/g	(50 ug/g	9071 modified	8/4/89	50 ug/g
PCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/15/89	0.25 ug/g
TCE	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/15/89	0.25 ug/g
Toluene	0.32 ug/g	1.9 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/15/89	0.25 ug/g
aphthalene	(0.25 ug/g	5.6 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8020	8/15/89	0.25 ug/g
1,1,1-TCA	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	(0.25 ug/g	8010	8/15/89	0.25 ug/g
PCB AROCLOR	(1.0 ug/g ---	(1.0 ug/g ---	(1.0 ug/g ---	(1.0/(1.0 ug/g ---	(1.0 ug/g ---	3540/ 8080	8/8/89	1.0 ug/g ---
% Moisture	3.65 %	3.45 %	2.03 %	1.14 %	1.31 %			

Soil Moisture Content: Method #26, pg 107; Agriculture Handbook #60,
US Department of Agriculture, (1969).
isture Content Analysis was performed over a period of 2 weeks, 8/15/89-8/29/89.

ample digestion for Metals (Total): EPA Method 3050
rge and Trap: EPA Method 5030

Exhibit 7

Exhibit 7

Tolerance Interval Analysis for Sample Locations 1, 2, 3, and 4 (Background)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

BACKGROUND CORE SAMPLES
PARAMETER: ARSENIC (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	5.00	3.90	3.80	3.40	3.80
2	8.20	5.90	2.00	1.00	3.00
3	3.30	5.00	3.10	3.40	3.70
4	3.80	5.50	5.30	5.10	3.60
N	4	4	4	4	4
AVG	5.08	5.08	3.55	3.23	3.52
MAX	8.20	5.90	5.30	5.10	3.80
MIN	3.30	3.90	2.00	1.00	3.00
STD.DEV.	1.91	0.75	1.20	1.46	0.31
CV	0.38	0.15	0.34	0.45	0.09
K(N)	5.14	5.14	5.14	5.14	5.14
TL	14.89	8.93	9.71	10.74	5.13

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

PARAMETER: CADMIUM (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	2.00	2.20	0.40	1.50	7.90
2	9.30	2.10	0.60	0.20	0.20
3	0.40	0.10	0.40	0.05	0.05
4	0.20	0.05	0.05	0.10	0.05
N	4	4	4	4	4
AVG	2.98	1.11	0.36	0.46	2.05
MAX	9.30	2.20	0.60	1.50	7.90
MIN	0.20	0.05	0.05	0.05	0.05
STD.DEV.	3.72	1.04	0.20	0.60	3.38
CV	1.25	0.93	0.55	1.30	1.65
K(N)	5.14	5.14	5.14	5.14	5.14
TL	22.10	6.45	1.38	3.56	19.43

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

PARAMETER: CHROMIUM (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	4.80	4.20	3.70	3.10	2.70
2	6.30	6.60	4.20	3.80	4.00
3	3.80	3.00	1.00	3.20	3.20
4	3.10	3.00	2.90	3.40	3.70
N	4	4	4	4	4
AVG	4.50	4.20	2.95	3.38	3.40
MAX	6.30	6.60	4.20	3.80	4.00
MIN	3.10	3.00	1.00	3.10	2.70
STD.DEV.	1.20	1.47	1.22	0.27	0.49
CV	0.27	0.35	0.41	0.08	0.15
K(N)	5.14	5.14	5.14	5.14	5.14
TL	10.68	11.76	9.21	4.75	5.95

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

PARAMETER: LEAD (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	18.20	12.70	3.70	4.20	3.10
2	11.10	5.30	4.00	2.80	4.00
3	6.20	4.70	3.50	3.70	4.30
4	8.20	4.20	3.50	3.90	4.90
N	4	4	4	4	4
AVG	10.93	6.72	3.67	3.65	4.07
MAX	18.20	12.70	4.00	4.20	4.90
MIN	6.20	4.20	3.50	2.80	3.10
STD.DEV.	4.55	3.47	0.20	0.52	0.65
CV	0.42	0.52	0.06	0.14	0.16
K(N)	5.14	5.14	5.14	5.14	5.14
TL	34.32	24.59	4.73	6.34	7.42

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

BACKGROUND CORE SAMPLES
PARAMETER: ARSENIC (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	5.30	4.00	3.90	3.50	3.90
2	8.70	6.00	2.00	1.00	3.10
3	3.40	5.10	3.10	3.50	3.80
4	4.00	5.60	5.40	5.20	3.70
N	4	4	4	4	4
AVG	5.35	5.17	3.60	3.30	3.63
MAX	8.70	6.00	5.40	5.20	3.90
MIN	3.40	4.00	2.00	1.00	3.10
STD.DEV.	2.05	0.75	1.24	1.50	0.31
CV	0.38	0.14	0.34	0.45	0.09
K(N)	5.14	5.14	5.14	5.14	5.14
TL	15.91	9.03	9.97	11.01	5.23

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

PARAMETER: CADMIUM (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	2.10	2.30	0.40	1.50	8.10
2	9.90	2.10	0.60	0.20	0.20
3	0.40	0.10	0.40	0.05	0.05
4	0.20	0.05	0.05	0.10	0.05
N	4	4	4	4	4
AVG	3.15	1.14	0.36	0.46	2.10
MAX	9.90	2.30	0.60	1.50	8.10
MIN	0.20	0.05	0.05	0.05	0.05
STD.DEV.	3.97	1.06	0.20	0.60	3.46
CV	1.26	0.94	0.55	1.30	1.65
K(N)	5.14	5.14	5.14	5.14	5.14
TL	23.56	6.62	1.38	3.56	19.93

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

'ERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

PARAMETER: CHROMIUM (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	5.10	4.30	3.80	3.10	2.80
2	6.70	6.70	4.30	3.90	4.10
3	3.90	3.10	1.00	3.30	3.30
4	3.20	3.10	3.00	3.50	3.80
N	4	4	4	4	4
AVG	4.73	4.30	3.02	3.45	3.50
MAX	6.70	6.70	4.30	3.90	4.10
MIN	3.20	3.10	1.00	3.10	2.80
STD.DEV.	1.33	1.47	1.26	0.30	0.49
CV	0.28	0.34	0.42	0.09	0.14
K(N)	5.14	5.14	5.14	5.14	5.14
TL	11.55	11.86	9.50	4.97	6.05

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
'OLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

PARAMETER: LEAD (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	19.20	13.00	3.80	4.30	3.20
2	11.80	5.40	4.10	2.90	4.10
3	6.40	4.80	3.60	3.80	4.40
4	8.50	4.30	3.60	4.00	5.00
N	4	4	4	4	4
AVG	11.47	6.88	3.77	3.75	4.17
MAX	19.20	13.00	4.10	4.30	5.00
MIN	6.40	4.30	3.60	2.90	3.20
STD.DEV.	4.86	3.56	0.20	0.52	0.65
CV	0.42	0.52	0.05	0.14	0.16
K(N)	5.14	5.14	5.14	5.14	5.14
TL	36.47	25.18	4.83	6.44	7.52

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

Exhibit 8

Exhibit 8

Tolerance Factors (K) for One-Sided Normal Tolerance Intervals with Probability Level (Confidence Factor) Y = 0.95 and Coverage P = 95%

TABLE 5. TOLERANCE FACTORS (K) FOR ONE-SIDED NORMAL TOLERANCE INTERVALS WITH PROBABILITY LEVEL (CONFIDENCE FACTOR) Y = 0.95 AND COVERAGE P = 95%

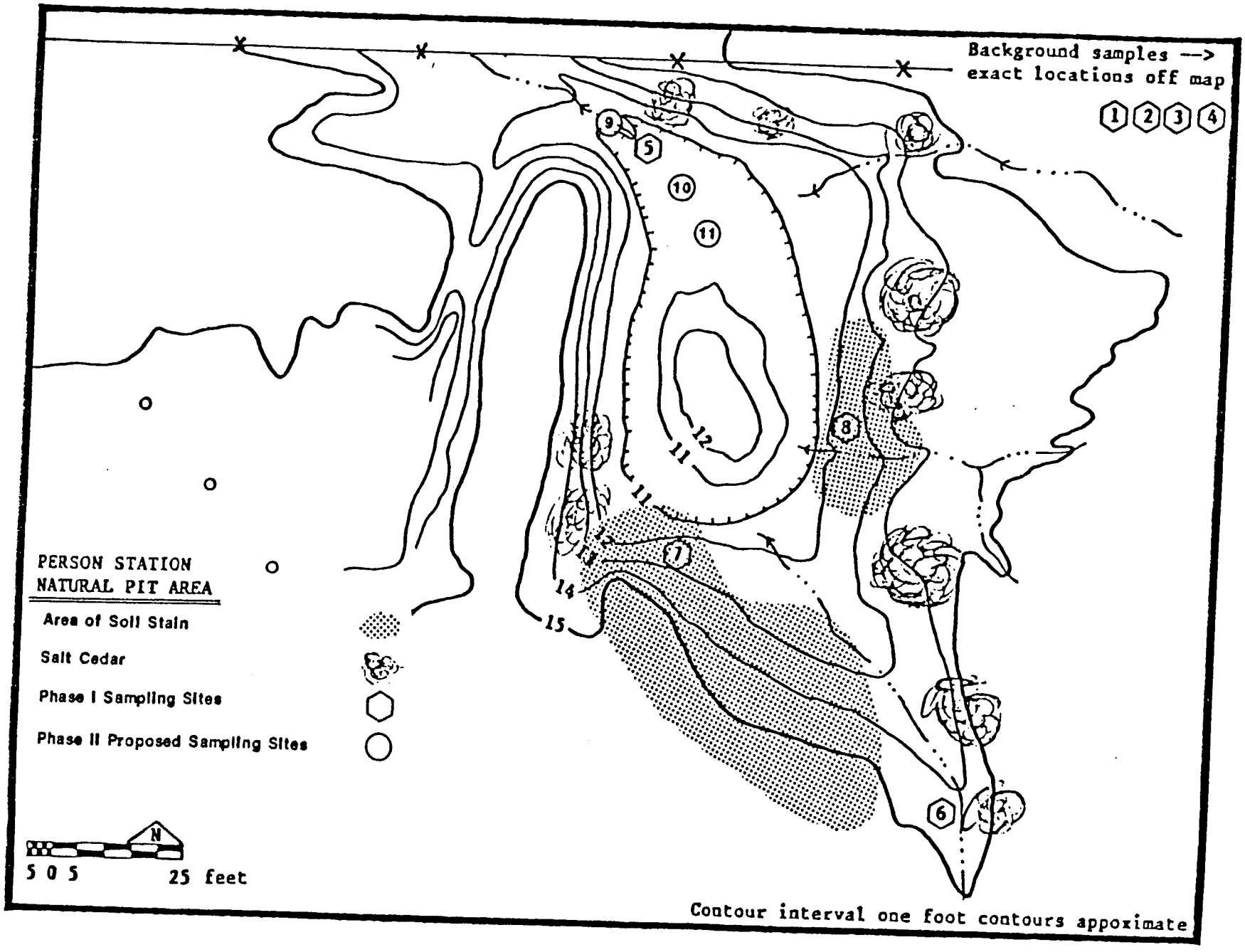
n	K	n	K
3	7.655	75	1.972
4	5.145	100	1.924
5	4.202	125	1.891
6	3.707	150	1.868
7	3.399	175	1.850
8	3.188	200	1.836
9	3.031	225	1.824
10	2.911	250	1.814
11	2.815	275	1.806
12	2.736	300	1.799
13	2.670	325	1.792
14	2.614	350	1.787
15	2.566	375	1.782
16	2.523	400	1.777
17	2.486	425	1.773
18	2.543	450	1.769
19	2.423	475	1.766
20	2.396	500	1.763
21	2.371	525	1.760
22	2.350	550	1.757
23	2.329	575	1.754
24	2.309	600	1.752
25	2.292	625	1.750
30	2.220	650	1.748
35	2.166	675	1.746
40	2.126	700	1.744
45	2.092	725	1.742
50	2.065	750	1.740
		775	1.739
		800	1.737
		825	0.736
		850	1.734
		875	1.733
		900	1.732
		925	1.731
		950	1.729
		975	1.728
		1000	1.727

SOURCE: (a) for sample sizes ≤ 50: Lieberman, Gerald F. 1958. "Tables for One-sided Statistical Tolerance Limits." *Industrial Quality Control.* Vol. XIV, No. 10. (b) for sample sizes ≥ 50: K values were calculated from large sample approximation.

Exhibit 9

Exhibit 9

Sampling Map for Phase II Sampling


Background samples --> exact locations off map
1
2
3
4
9
5
10
11
12
11
11
8
7
13
14
15
6
PERSON STATION
NATURAL PIT AREA
Area of Soil Stain
Salt Cedar
Phase I Sampling Sites
Phase II Proposed Sampling Sites
N
5 0 5
25 feet
Contour interval one foot contours appoximate

PNM 1990

RCRA Facility Investigation Report of Findings, Phase II

[redacted]

RCRA FACILITY INVESTIGATION (RFI)
REPORT OF FINDINGS

PHASE II

For Person Generating Station Hazardous
Waste Storage Facility - Natural Pit Area
(NMT360010342)

August 28, 1990

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Certification Statement

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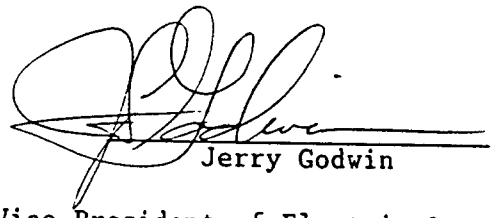
RCRA FACILITY INVESTIGATION (RFI)
REPORT OF FINDINGS

PHASE II

For Person Generating Station Hazardous
Waste Storage Facility - Natural Pit Area
(NMT360010342)

August 28, 1990

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with 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.



Jerry Godwin

Vice President of Electric Operations

1.0 Introduction

In November 1986, Public Service Company of New Mexico (PNM), submitted its "Permit Application for a Hazardous Waste Storage Facility at Person Generating Station", hereafter permit application, for the waste oil storage tank located at Person Generating Station. The permit was approved and became effective on August 31, 1988. That permit has the EPA designation of NMT360010342.

Paragraph C.4(a) of the permit required that PNM perform a RCRA Facility Investigation (RFI) for the Solid Waste Management Unit (SWMU), identified as the Natural Pit Area, to assess and verify any release of hazardous waste to soil.

An RFI Workplan was prepared and submitted to EPA in Janaury 1989. On March 1, 1989, EPA notified PNM of several modifications it wanted to see in the workplan. These modifications were made and the workplan was resubmitted to EPA in late March 1989.

On July 31, 1989, EPA notified PNM by letter that the RFI Workplan had been approved. The letter included two revisions which EPA added to the workplan. A revised workplan did not need to be submitted, rather EPA instructed PNM to immediately initiate implementation of the approved RFI Workplan (as revised).

Soil sampling was conducted on August 1-2, 1989. An RFI report titled "RCRA Facility Investigation (RFI), Report of Findings, For Person Generating Station Hazardous Waste Storage Facility - Natural Pit Area", was submitted to EPA on January 18, 1990 and contained the analytical results from the soil sampling.

On May 30, 1990, EPA notified PNM that it had completed its review of the RFI Report and had concluded that the report was approvable with revisions enclosed with that letter. The revisions included the requirements for additional soil sampling and supplementary report as part of "Phase II" of the investigation. A copy of the EPA approval letter is contained in Appendix A of this report. Specific requirements for the additional sampling are described in Section 3.0 of this report.

2.0 Departures From the RFI Workplan

This section describes Person RFI activities which departed from the RFI Workplan as submitted in March 1989. Included as departures are revisions to the Workplan made by EPA in its approval letters. They are identified here because they were not included in the Workplan as written, but were added to the Workplan by reference in the EPA approval letter.

Other departures discussed here include changes in procedures made after the Workplan was submitted. In most cases these changes were made because preliminary testing of proposed procedures showed them to be unworkable in the field. These changes were discussed with EPA prior to actual implementation. One last departure resulted from miscommunication with the analytical laboratory.

2.1 EPA Revisions

In the July 31, 1989 letter (See Appendix A) approving the RFI Workplan, EPA incorporated two revisions to the Workplan by reference to the letter. They were minor in nature and were discussed in the initial Report of Findings. The first revision, dealing with depth of sampling, is not relevant to Phase II sampling and is not discussed here. The second revision, dealing with statistical analysis, remains relevant and is repeated here.

Statistical Analysis

The Workplan describes tolerance interval analysis as the selected statistical method for the data. The method, as described, is sensitive to the normality of the data. In the event that the data are not normally distributed, or cannot be transformed to normal for analysis, the EPA added the following requirement:

> "If data from soil borings does not conform to procedures described in Section 5.3, then a different statistical procedure will be used. This different procedure must be approved by the Administrative Authority."

2.2 EPA Revisions for Phase II

In the May 30, 1990 letter (See Appendix A) EPA approved the initial Report of Findings, with two revisions. One revision requested the inclusion of a certification statement as required by 40 CFR 270.11 in all submissions to EPA. The second revision required additional sampling to be conducted as Phase II of the RFI.

Certification

A certification statement was added to the revised initial Report of Findings and the report was resubmitted to EPA. A certification is also a part of this report.

Additional Sampling

Three additional soil borings in a location as shown on the sampling map attached to the May 30, 1990 EPA letter were required. Depths of sampling intervals were prescribed as 0 - 1', 1 - 2', 4 - 5', and 9 - 10'. Each sampling interval was to be analyzed for lead, chromium and arsenic. Analytical results were to be compared to background data by depth interval as collected during the initial phase of sampling. Because the initial sampling phase did not include a depth interval at 9 - 10', EPA allowed the use of the 4 - 5' background interval for comparison at this new depth.

2.3 Procedural Revisions

Soil Coring Method

In early July 1989, PNM personnel tested the hand auger method described in Section 7.2 of the Workplan. The hand auger was found to be unusable for the following two reasons:

1. The soil type at the study area is a gravelly sand with very low cohesion. It was very easy to core into, but more often than not the plug would not stay in the coring bucket, but would fall back down into the hole. It was felt that using the hand auger would exacerbate attempts to collect samples in a timely manner and would cause great disturbance to the soil sample.

2. The hand auger was impossible to operate without causing upper levels of the soil to fall down into the hole. It was felt that if the hand auger was used it would be impossible to prevent upper layers of contamination from penetrating to deeper layers. This would cause two problems: a) cross contamination in the analysis, and b) dispersion of the contamination to deeper soil layers.

To address these concerns, a drilling contractor was hired. The contractor used a drilling rig and core sampling device which typically provides undisturbed and intact soil cores. The soil cores were taken from a split tube sampler which penetrated the soil from the inside of a continual rotary auger tube. Separate split tube samplers were used for each suceeding sampling depth.

The auger and split spoon sections were steam cleaned on site prior to and after the drilling of each hole.

Analytical Method for Lead

The RFI workplan prescribes the use of EPA method 7421 for the analysis of lead. This method was used for lead analysis in the initial sampling phase. Miscommunication between the investigators and the analytical laboratory resulted in EPA method 7420 being used in the Phase II analysis. The difference between the two methods is the detection limit (0.5 mg/kg for method 7421 versus 10 mg/kg for method 7420). The

consequence of this is that Phase II analytical results using the less sensitive method had to be compared against background results quantified at a lower detection limit. This does not appear to have had a major impact on interpretation of the results, however.

3.0 Description of Sampling Activities

3.1 Sampling Objective

The sampling and analysis scheme employed for Phase II of this RFI was designed to determine the presence and extent of the metal elements arsenic, chromium, and lead in the soil of the Natural Pit area at Person Station. Because the initial sampling phase revealed elevated levels of these elements at sample Site #5, this location has been focused on for the Phase II sampling. Except for the procedural departure noted above in Section 2.3 of this report (split tube and rotary auger combination used instead of a hand auger) the proposed sampling scheme, as described in Sections 5.0 and 6.0 of the RFI Workplan, were followed exactly.

The basic approach was to collect soil samples at the following one foot intervals: 0 - 1', 1 - 2', 4 - 5', and 9 - 10', at three designated locations as shown on the sampling map contained in Exhibit 1. The analytical results were then compared to results from like samples taken from a "background" location during the initial Phase of sampling. Since no background interval was taken at the 9 - 10' depth, the 4 - 5' background interval was used for comarison to the new 9 - 10' interval.

Background sample locations (sample Sites #1, #2, #3 and #4) were not specified in the RFI workplan but were selected at the time of the inital sampling phase. The background sample locations selected were located just east of the northeast corner of the Person Station property boundary. This area was believed to be more suitable for background analysis than any area within the Person Station property boundary. A map showing the approximate locations of the background samples is presented as Exhibit 2 of this report.

3.2 Sampling Team

The sampling team consisted of five persons with the following duties. Two persons operated the drilling rig. Two persons handled all duties associated with the collection and documentation of the samples, including the handling of containers, documenting date and time of collection on sampling sheets and labels, collection of samples into containers, and the taking of photographs of each sampling interval. All photographs are contained as Exhibit 3 of this report. The fifth person collected representative soil samples from each interval for characterization as described below.

3.3 Soil Descriptions

The soils underlying the RFI site are described in detail by the Soil Conservation Service (SCS) in a collective document, the Bernalillo County Soil Survey (USDA-SCS, 1977) (Provided as Table III-3, in Attachment 1 of the RFI workplan, "Assessment of Exposure Potentials of Person Generating Station"). The soil mapping unit of the RFI vicinity is desribed in the SCS as the Bluepoint-Kokan association comprising two fairly identifiable soil series. A reconnasisance hand augering of the

study area identified the RFI study area to consist specifically of the Kokan soil series.

The background sample location (Site #1, #2, #3 and #4) was consequently selected in a Kokan soil series location.

Each depth interval at each sampling location was examined for physical soil properties to verify consistancy in soil type between the investigation samples (Site #9, #10, and #11) and the background samples (Site #1, #2, #3, and #4).

Representative samples were collected from each soil sampling interval to be analyzed and were described for texture, color, and calcareousness. Soil texture was determined utilizing a wet soil ribbon technique. Reaction to a 10% solution of hydrochloric acid identified calcareousness. A Munsell Soil Color Chart was used to describe the sample color while dry and wet.

In general, all samples were a gravelly sand, slightly calcareous, and of a very pale brown color (dry), pale brown color (wet). This description is consistant with the Kokan soil series described in detail by the Soil Conservation Service and presented in the Bernalillo County Soil Survey.

Soil description charts for all sampling locations and depth intervals are presented as Exhibit 4 of this report.

3.4 Sample Collection and Preservation

Sampling occurred over a one-half day period on June 27, 1990.

The rotary auger/split tube sampling procedure was capable of withdrawing approximately 24 inches of undisturbed soil core per split tube sampler assembly. The auger/split tube assembly was operated in the following manner. The auger was initially advanced down to a depth of 4 feet. Only about the upper two feet of the soil interval would actually enter the split tube sampler. Because of the extreme dryness and fine grain consistancy of the soil, the two foot plug would "freeze" in the split tube and prevent any further entrance of deeper material. The auger subsequently would bore the hole in total. Soil samples would then be collected from the the split spoon for the 0 - 1′ and 1 - 2′ intervals. A clean split spoon would then be assembled into the auger and the auger assembly would be advanced from the four foot depth down to 9 feet. Again, only about the upper two feet in this interval would actually be collected (corresponding to the 4 - 6′ interval). A sample was then collected from the 4 - 5′ interval. A third split spoon was then assembled into the auger and the auger assembly was advanced two additional feet from 9 feet down to 11 feet. The split spoon was then removed and a sample collected from the 9 - 10′ interval.

Each split tube was pulled out of the hole, laid across a metal rack, and opened. A photograph was taken of the section, then a representative sample from each designated one foot interval was removed with stainless steel sampling spoons and placed in 8 ounce wide mouth

glass jars. The jars were QA/QC checked and supplied by Eagle Picher Environmental Services. A copy of the Certificate of Analysis for the container lot used in this investigation is contained as Exhibit 5 of this report.

Each sample jar was pre-labeled as to sample location number, and depth interval. The date and time of collection, and name and signature of sample collector were written on the label after each sample was collected. No preservation was needed for these samples.

Documentation for each sample was also maintained on sample logs. An example log is shown in Exhibit 1 of the RFI workplan. Chain of custody forms (See Exhibit 2 of the RFI workplan) were used to track movement of the samples from collection through delivery to the analytical laboratory.

The samples were delivered to the lab on the same day as collected, June 27, 1990.

3.5 Quality Assurance

Several steps were taken to ensure the quality of the results obtained from the sampling procedure. As mentioned above, a rotary auger - split tube sampling procedure was used to minimize cross contamination between soil layers. The rotary drills and split spoon samplers were steam cleaned before and after each hole to prevent cross contamination between sample locations. Individual split tube samplers were used for each successive sample interval.

All team members involved in the handling of samples wore latex examination gloves.

Laboratory precision was assessed by the submittal of sample duplicates from sample Site #9. The duplicates were collected at the same time and consisted of placing similar amounts of soil from each interval of the soil core into their respective sample jars.

The analytical laboratory also selected several samples from the set to analyze in duplicate. For purposes of comparison to background these duplicate results are averaged into a single value and reported as such in this report.

4.0 Data Results

Exhibit 6 of this report contains a copy of the analytical data report prepared by Assaigai Laboratories, Inc. The data tables contained in this report are extracted from the laboratory data report.

4.1 Heavy Metals Analysis

Natural Pit samples were analyzed for arsenic, chromium, and lead. As more fully described in Section 8.4 of the RFI workplan, the approach on heavy metals analysis was to statistically compare results from background samples to results from sample locations within the natural pit.

In the initial sampling phase, moisture content on each sample was conducted to determine if correction for moisture content was needed in order to more accurately perform statistical comparisons between Natural Pit samples and background samples. It was determined that moisture content correction did not effect whether or not a sample exceeded its corresponding Threshold Limit. For this reason, moisture content analysis was not performed or corrected for in the Phase II investigation.

Exhibit 7 of this report contains the Tolerance Interval Analysis spreadsheet listings from the four background sample locations (Site #1, #2, #3 and #4) for samples collected during the initial sampling phase. Since each natural pit sample is compared to its corresponding depth from the background, the listings in Exhibit 7 are organized by metal with statistical parameters based on all background samples from each depth. Thus, there are four samples for each depth on which to perform the Tolerance Interval Analysis. The Threshold Limit (TL) was calculated from:

$$TL = AVG + K * SD$$

where,

AVG = arithmetic mean of the four samples
K = Tolerance Factor for 95% coverage and 95% confidence
SD = standard deviation of the four samples

The Tolerance Factor (K) was taken from Table 5 of Appendix B in the EPA document Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities. Table 5 is reproduced in Exhibit 8 of this report.

After calculating the Threshold Limit for each heavy metal at each depth, all Natural Pit samples were compared against their corresponding Threshold Limit. Table 1 of this report shows the comparison of each Natural Pit sample with its Threshold Limit.

Table 1

Analytical Results from Natural Pit Area - Metals
Phase II
(Uncorrected For Moisture Content)

ARSENIC (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 9A	Site # 9B	Site # 10	Site # 11
0 - 1	5.08	14.89	2.5	2.7*	24.5	28.0
1 - 2	5.08	8.93	2.3	1.8	25.7*	219.0
4 - 5	3.52	5.13	1.2	1.4	2.1	3.5
9 -10**	3.52	5.13	1.2	1.5	1.6	1.7

CHROMIUM (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 9A	Site # 9B	Site # 10	Site # 11
0 - 1	4.50	10.68	6.0	9.0*	64.0	66.0
1 - 2	4.20	11.76	7.0	6.0	89.0*	632.0
4 - 5	3.40	5.95	5.0	4.0	5.0	<2.0
9 -10**	3.40	5.95	5.0	6.0	4.0	6.0

LEAD (mg/kg)

Depth (ft)	Background Average	Threshold Limit	Site # 9A	Site # 9B	Site # 10	Site # 11
0 - 1	10.93	34.32	<10.0	<10.0*	33.0	28.0
1 - 2	6.72	24.59	<10.0	<10.0	48.0*	202.0
4 - 5	4.07	7.42	<10.0	<10.0	<10.0	10.0
9 -10**	4.07	7.42	<10.0	<10.0	<10.0	15.0

* Average from duplicate results reported by lab.
** Background average and Threshold Limit values derived from 4 - 5 foot depth interval. No background samples were taken at 9 - 10 depth interval.

5.0 Findings

5.1 Heavy Metals

Background

In general, heavy metal concentrations tended to decrease with depth at the background sampling locations. This trend was most obvious for lead concentrations and least for cadmium concentrations.

A requirement for use of the Tolerance Interval Analysis procedure was that the data be normally distributed. The Coefficient of Variance (CV in the listings of Exhibit 7) was used as an indicator of normality. This method was described in Section 4.2.2 of the EPA document Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, February 1989. If the CV exceeds 1.00, there is evidence that the data are not normally distributed.

For the three parameters of interest in the Phase II sampling (Arsenic, Chromium, and Lead) the CV was less than 1.00, and the data was assumed to meet the normality requirement for use of the Tolerance Interval Analysis procedure.

Natural Pit

Values well above the Threshold Limits for arsenic, chromium and lead were seen at sample Site #10 and Site #11. No Threshold Limit exceedance was seen at sample Site #9.

Arsenic TL exceedances were seen only in the top 2 sampling intervals (i.e, 0 - 2′) at sample Sites #10 and #11. Values ranged from 5 times to 200 times the background average. No arsenic TL exceedances were detected in the 4 - 5′ interval or the 9 -10′ interval.

Chromium TL exceedances were seen primarily in the top 2 sampling intervals at sample Sites #10 and #11. Values ranged from 15 times to 150 times the background average. Additionally, the Chromium TL was slightly exceeded in the 9 - 10′ interval at Site #11 (TL = 5.95 mg/kg, sample result = 6.0 mg/kg).

Lead TL exceedances were seen primarily in the top 2 sampling intervals at Site #10 and Site #11. Values ranged from 3 times to 30 times the background average. Analytical results did show that the Lead levels dropped off significantly below the 2 foot depth level.

The pattern of TL exceedances indicate that the heavy metal contamination is limited to the Natural Pit area only. Sample Site #9, showed no TL exceedances. This site is located down drainage from the rest of the Natural Pit area. It is approximately 10 feet down drainage from Site #5, sampled during the initial sampling phase.

5.2 Quality Assurance

Laboratory Duplicates

The laboratory randomly selected several samples for duplicate analysis. The paired results listed by parameter are shown in Table 2. The data are insufficient to analyze by metal parameter. When the data are lumped as shown in Table 2, a mean and standard deviation of the values can be calculated. The analysis shows relatively good agreement for the laboratory duplicates. The standard deviation of the percent differences for all sample pairs was 9.6%.

Field Duplicates

Samples from sample Site #9 were split in the field and provided to the laboratory for duplicate analysis. The paired results listed by parameter are shown in Table 3. This table also summarizes the percent difference between pairs and shows the mean and standard deviation of the data values (if sufficient numbers of pairs are available). Pairs comprised of non-detectable values are shown but not included in the summary.

For the heavy metals, the standard deviation of the percent difference were 17.5%, and 23.8% for chromium, and arsenic, respectively. All samples analyzed for lead at Site #9 were below the laboratory detection limit, thus no standard deviation could be calculated.

Table 2

Precision Assessment for Laboratory Duplicates
Phase II

Parameter	A	B	%Diff
Arsenic	2.7	2.6	-3.8
Arsenic	25.0	26.4	5.3
Chromium	9.0	9.0	0.0
Chromium	91.0	87.0	-4.6
Lead	<10.0	<10.0	---
Lead	53.0	43.0	-23.2
N	5	5	5
Mean	36.1	33.6	-5.3
Std.Dev	32.5	30.2	9.6

Table 3

Precision Assessment for Field Duplicates
Phase II

	Arsenic			Chromium			Lead		
	#9A	#9B	%Diff	#9A	#9B	%Diff	#9A	#9B	%Diff
	2.5	2.7	7.4	6.0	9.0	33.3	<10.0	<10.0	--
	2.3	1.8	-27.8	7.0	6.0	-16.7	<10.0	<10.0	--
	1.2	1.4	14.3	5.0	4.0	-25.0	<10.0	<10.0	--
	1.2	1.5	14.3	5.0	6.0	16.7	<10.0	<10.0	--
N	4	4	4	4	4	4	--	--	--
Mean	1.8	1.8	2.0	5.8	6.2	2.1	--	--	--
Std.Dev	0.6	0.5	17.5	0.8	1.8	23.8	--	--	--

6.0 Additional Action and Conclusions

6.1 TCLP Analysis

The analytical results from both the initial sampling phase and Phase II showed statistically elevated levels of certain heavy metal compounds in the natural pit above levels seen in background sampling. Total analysis is typically not used to determine if contaminated soil is a hazardous waste, only that some level of contamination has occurred.

Current EPA RCRA regulations stipulate the use of the EP Toxicity Test to determine if a non-listed waste is a hazardous waste. Additionally, new EPA regulations have replaced the EP Toxicity Test with the Toxicity Characteristic Leachate Procedure (TCLP) for this same determination, effective September 25, 1990.

When the laboratory results for Phase II total analysis became available, the laboratory was instructed to run a TCLP analysis for lead, chromium, and arsenic on the sample from Site #11, 1 - 2′ depth (Laboratory Number Sta #11 11-2). This soil sample gave the highest total results. The TCLP was chosen instead of the EP Toxicity test because the TCLP is believed to be more conservative on results and obviously is the method of choice by the EPA.

The analytical results for the TCLP analysis are shown in Table 4 and the TCLP laboratory data report is contained in Exhibit 6. The results show that none of the three heavy metal constituents tested, gave results above their respective TCLP standard. The highest leachate result was obtained from arsenic at 1.2 mg/L. Lead and chromium leached a similar amount at 0.20 mg/L and 0.19 mg/L, respectively. The TCLP regulatory standard for each is 5.0 mg/L.

6.2 Conclusions

Based on the TCLP analysis it is apparent that the heavy metal contamination detected does not indicate the presence of a hazardous waste in the natural pit area. The data also support the conclusion that the contamination is confined to the upper few feet of the natural pit area and has not migrated either vertically or horizontally.

The findings of the initial sampling phase detected no levels of chlorinated solvents or PCBs. Only small amounts of toluene and napthalene, associated with the known fuel oil contamination, were detected. Heavy metal results were similar to that seen in the Phase II sampling reported here.

Based on these results our conclusion is that there is no regulatory reason to require removal of the soil in the Natural Pit area at Person Generating Station. The results do not support the hypothesis that the Natural Pit represents an area of release of a hazardous waste. Based on these results, PNM recommends that the Natural Pit soil be left in-situ and undisturbed. Excavation and removal of the soil to a landfill would not represent a demonstrable benefit to health or the environment.

Table 4

TCLP Analytical Results
Phase II

Sample ID: Sta #11 11-2

Analyte	Total Result (mg/kg)	TCLP Result (mg/L)	TCLP Standard (mg/L)
Chromium	632	0.19	5.0
Lead	202	0.20	5.0
Arsenic	219	1.2	5.0

Appendix A

Appendix A

EPA RFI Approval Letters

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

JUL 3 1 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Ron D. Johnson
Public Service Company of New Mexico
Alvarado Square
Albuquerque, New Mexico 87158

RE: RFI Workplan - Public Service Company - NMT360010342

Dear Mr. Johnson:

We have completed a review of your response to our March 1, 1989, letter regarding deficiencies in your RFI Workplan. We have determined the Workplan to be approvable with the revisions that are described below:

Page 9 of the revised RFI Workplan; Added to 2nd paragraph: If soil borings from the 4 to 5 foot sampling intervals indicate contamination, then further soil sampling will be required to determine the vertical extent of contamination.

Page 18 of revised RFI Workplan; Added to 5th paragraph: If data from soil borings does not conform to procedures described in Section 5.3, then a different statistical procedure will be used. This different procedure must be approved by the Administrative Authority.

Therefore, the approved RFI Workplan consists of the original January 11, 1989, submittal, plus your March 29, 1989, response to our notice of deficiency, and the above revisions.

You shall immediately initiate the implementation of this approved RFI Workplan, with the above stated revisions, according to the schedule contained in the Workplan. If you have any questions concerning this matter, please contact Rich Mayer of my staff at (214) 655-6785.

Sincerely yours,

WK Honker

Allyn M. Davis
Director
Hazardous Waste Management Division

cc: Kelley C. Crossman
New Mexico Environmental Improvement Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

May 30, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ron D. Johnson
Environmental Analyst
Alvarado Square
Albuquerque, New Mexico 87158

RE: RFI Report - Public Service Company NMT360010342

Dear Mr. Johnson:

We have completed a review of your RCRA Facility Investigation (RFI) Report dated January 25, 1990. We have determined the Report to be approvable with enclosed revisions. These revisions include additional soil sampling requirements to ensure that no releases are occurring from the Natural Pit area. Therefore, the approved RFI Report consists of the above referenced document and the enclosed revisions.

You shall immediately initiate the implementation of this RFI Report, as approved. Also, submission of a "Phase II" RFI report detailing the results of the additional sampling requirements shall be due to EPA within 90 days of your receipt of this letter.

If you have any questions, your staff may contact Rich Mayer at (214) 655-6775.

Sincerely yours,

amDavis

Allyn M. Davis
Director
Hazardous Waste Management Division

Enclosure

cc: Elizabeth Gordon
New Mexico Environmental
Improvement Division

REVISIONS TO THE PUBLIC SERVICE COMPANY RFI WORKPLAN

Below are the revisions which EPA has made to the Public Service Company (PSC) RFI Report, dated January 25, 1990.

Page 24 of the RFI Report, Section 6.2 - Additional Sampling; the paragraph below has been added to Section 6.2:

PSC shall take three soil borings with locations indicated on Figure 1. These borings shall be sampled at the following intervals: 0 - 1', 0 - 2', 4 - 5', and 9 - 10'. Each sampling interval shall be analyzed for lead, chromium, and arsenic. PSC may use the background soil samples from the 4 - 5' interval to compare to the active 9 - 10' soil sample interval. For these additional soil sampling requirements (Phase II), PSC shall comply with all requirements of the approved RFI Workplan (July 31, 1989).

Page 1 of the RFI Report, Section 1.0 - Introduction; the following shall be required for all RFI Reports, Workplans, quarterly progress reports, and all other reports required by the permit (required by Permit Condition C.4., page 11):

"Public Service Company shall certify all information submitted as required by 40 CFR 270.11(d)."

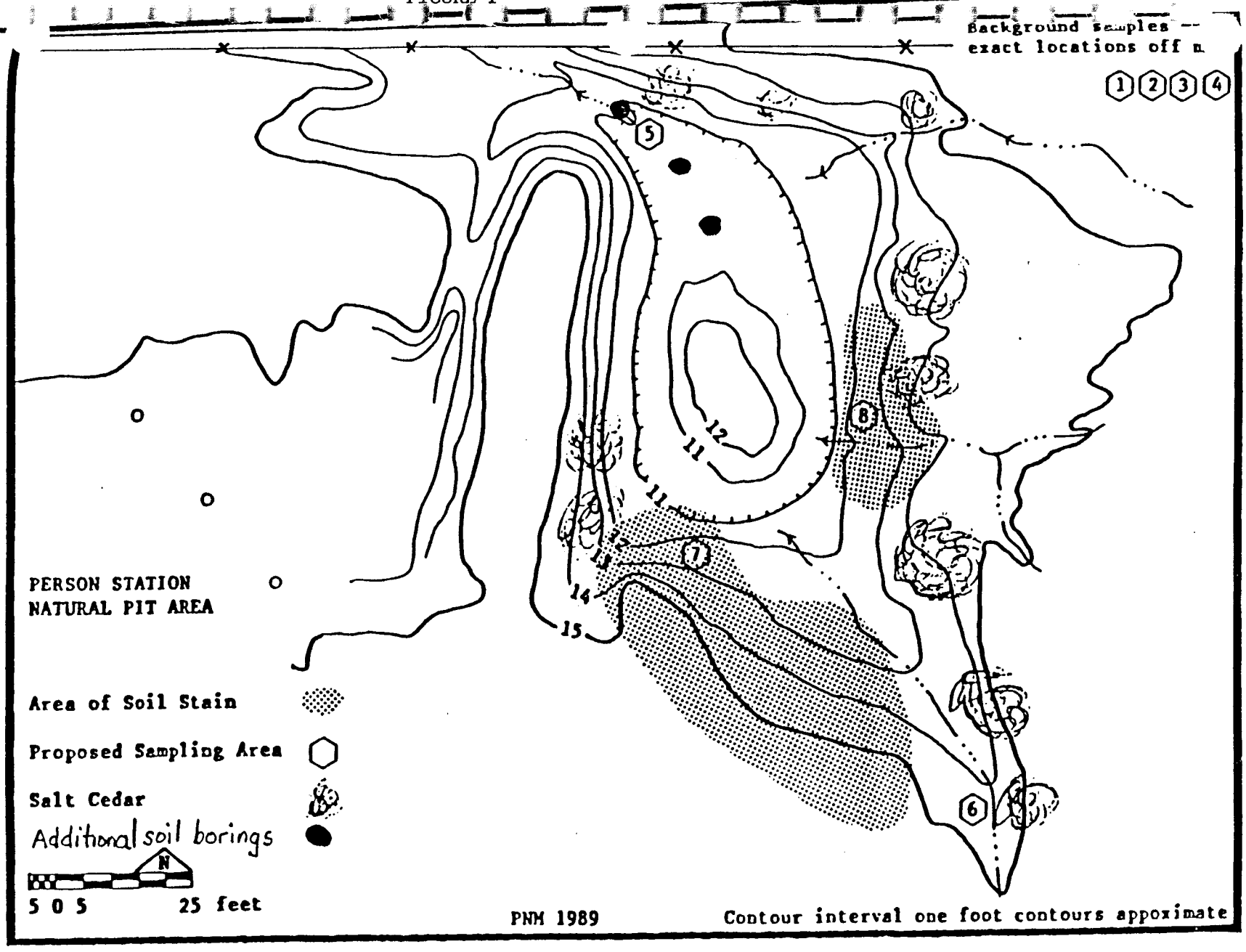
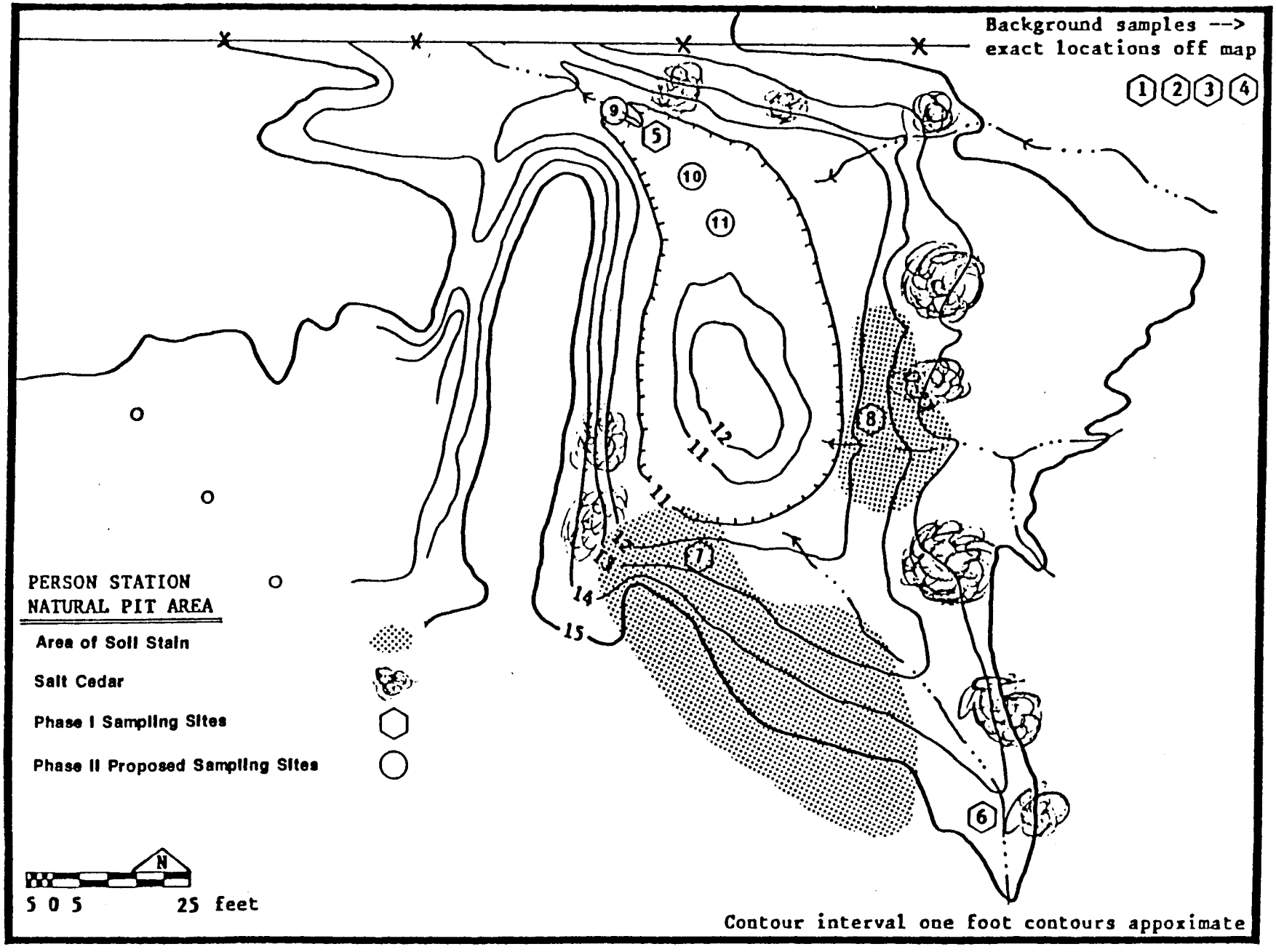

Background samples -- exact locations off m
1
2
3
4
5
6
7
8
11
12
13
14
15
PERSON STATION
NATURAL PIT AREA
Area of Soil Stain
Proposed Sampling Area
Salt Cedar
Additional soil borings
N
5 0 5
25 feet
PNM 1989
Contour interval one foot contours approximate

Exhibit 1

Exhibit 1

Sampling Map for the Natural Pit Area


Background samples --> exact locations off map
1 2 3 4
9
5
10
11
12
11
11
13
14
15
8
7
6
PERSON STATION
NATURAL PIT AREA
Area of Soil Stain
Salt Cedar
Phase I Sampling Sites
Phase II Proposed Sampling Sites
N
5 0 5
25 feet
Contour interval one foot contours appoximate

PNM 1990

Exhibit 2

Exhibit 3

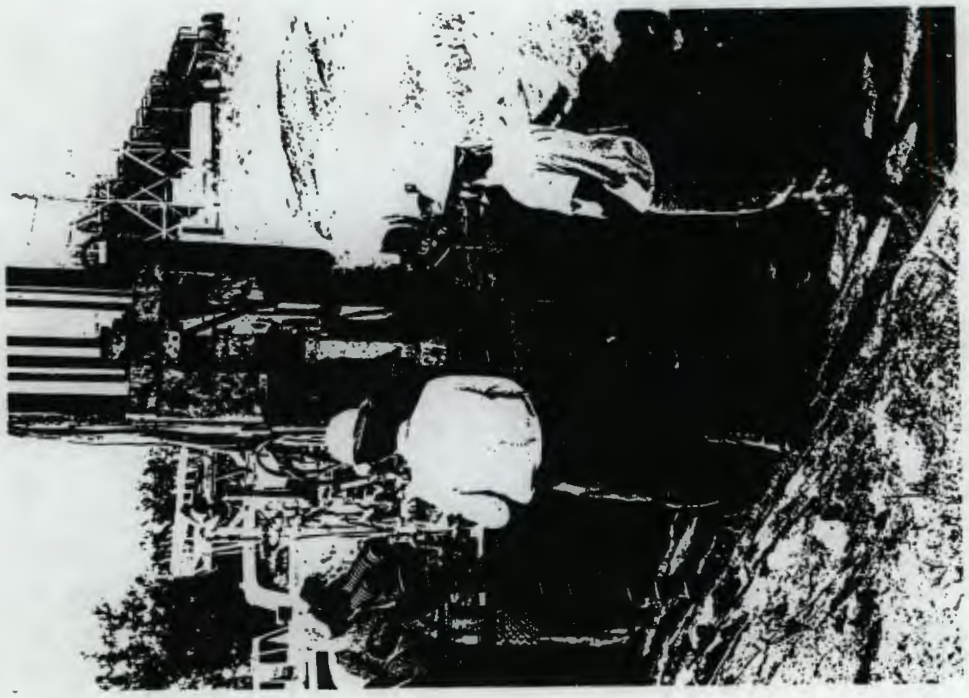
Exhibit 3

Photographs of the Sampling Activities

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
PHASE II
JUNE 27, 1990

PHOTO NO. 1 DATE TAKEN: 06/27/90 TAKEN BY: R.D.JOHNSON
DESCRIPTION: STEAM CLEANING PROCEDURE FOR AUGER/SPLIT SPOON ASSEMBLY

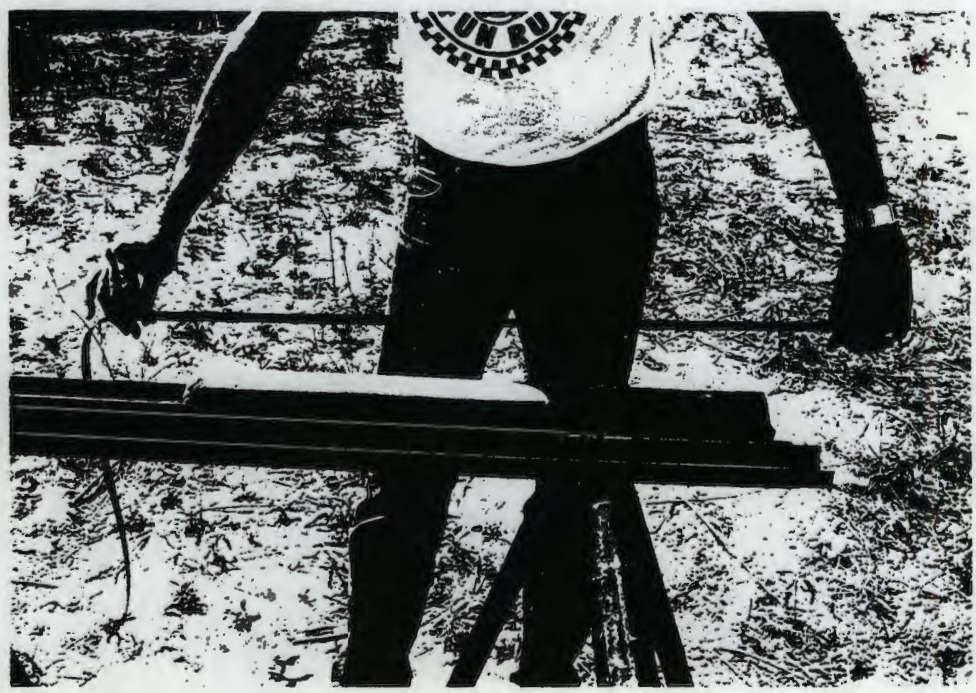
PHOTO NO. 2 DATE TAKEN: 06/27/90 TAKEN BY: R.D.JOHNSON
DESCRIPTION: DRILL RIG SETUP



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
PHASE II
JUNE 27, 1990

PHOTO NO. 3 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 9 DEPTH 0-4'

PHOTO NO. 4 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 9 DEPTH 4-9'



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
PHASE II
JUNE 27, 1990

PHOTO NO. 5 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 9 DEPTH 9-11'

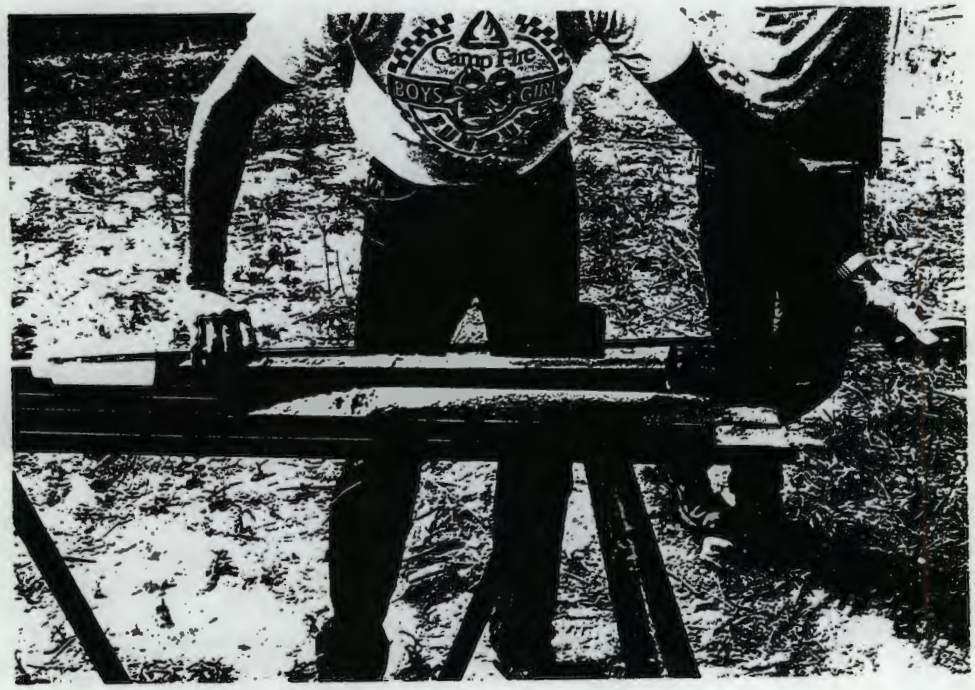
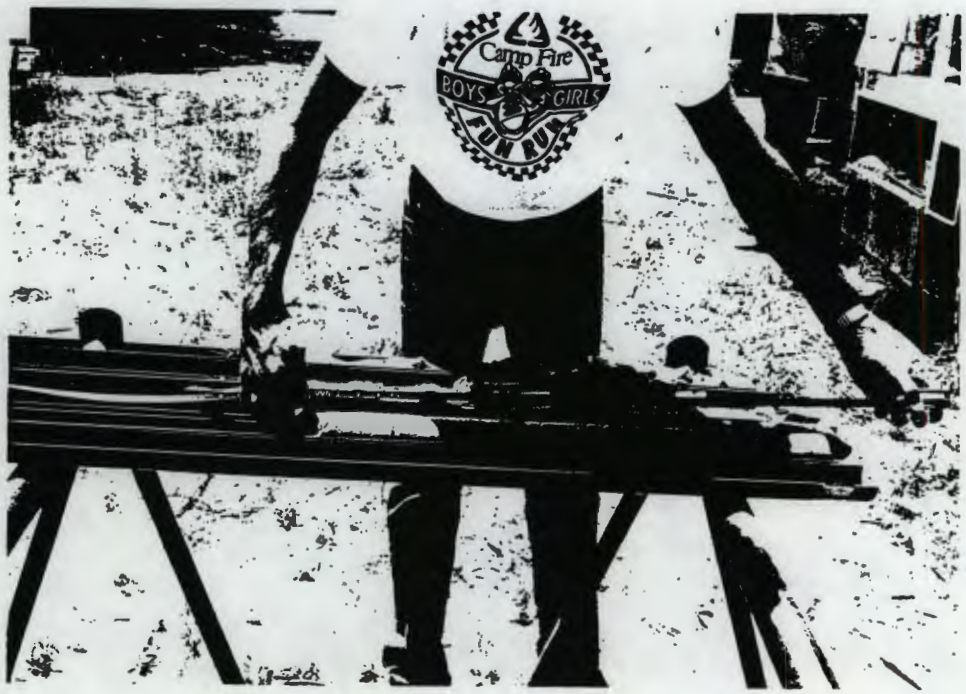


PHOTO NO. 6 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 10 DEPTH 0-4'

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
PHASE II
JUNE 27, 1990

PHOTO NO. 7 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 10 DEPTH 4-9'

PHOTO NO. 8 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 10 DEPTH 9-11'



PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
PHASE II
JUNE 27, 1990

PHOTO NO. 9 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 11 DEPTH 0-4'

PHOTO NO. 10 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 11 DEPTH 4-9'

PERSON STATION RCRA FACILITY INVESTIGATION
PHOTOGRAPHIC RECORD
PHASE II
JUNE 27, 1990

PHOTO NO. 11 DATE TAKEN: 06/27/90 TAKEN BY: E.B.BECKETT
DESCRIPTION: CORE SAMPLE. LOCATION NO. 11 DEPTH 9-11'

PHOTO NO. DATE TAKEN: TAKEN BY:
DESCRIPTION:

Exhibit 4

Exhibit 4

Soil Description Charts

SOIL DESCRIPTION CHART

PROJECT: PERSON STATION RFI
LOCATION: PERSON GENERATING STATION
DATE: AUGUST 1-2, 1989
LOGGER: JOHN FERRAIUOLO

KEY:

SOIL TYPE REACTION TO HCL	
WET COLOR*	DRY COLOR*

* MUNSELL SOIL COLOR CHART

DEPTH INTERVAL (FEET)

BACKGROUND SAMPLE LOCATIONS

	1		2		3		4	
0	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	NA (SOIL MOIST)
1	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	NA (SOIL MOIST)	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 5/4 YELLOWI SH BRWN	10YR 6/4 LT YELL OW BRWN
2	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 5/4 YELLOWI SH BRWN	10YR 6/4 LT YELL OW BRWN
3	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 5/4 YELLOWI SH BRWN	10YR 6/4 LT YELL OW BRWN
4	GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY SAND SL. CALCAREOUS		GRAVELLY LOAMY SAND SL. CALCAREOUS	
	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 6/3 PALE BROWN	10YR 7/3 VERY PA LE BRWN	10YR 5/4 YELLOWI SH BRWN	10YR 6/4 LT YELL OW BRWN
5								

SOIL DESCRIPTION CHART

PROJECT: PERSON STATION RFI
LOCATION: PERSON GENERATING STATION
DATE: JUNE 27, 1990
LOGGER: RICHARD McCULLUM

KEY:

SOIL TYPE REACTION TO HCL	
WET COLOR*	DRY COLOR*

DEPTH INTERVAL (FEET)	SAMPLE LOCATION 9		10		11	
0	COARSE MED SAND SL. CALCAREOUS		COARSE MED SAND SL. CALCAREOUS		COARSE MED SAND *** SL. CALCAREOUS	
	10YR 6/4 LT YELLOW BRWN	10YR 7/3 VERY PALE BRWN	10YR 5/4 YELLOWISH BRWN	10YR 6/4 LT YELLOW BRWN	10YR 6/6 BRWNISH YELLOW	10YR 7/3 VERY PALE BRWN
1	COARSE MED SAND SL. CALCAREOUS		COARSE SAND W/MIXED GRAVEL ** CALCAREOUS		COARSE MED SAND W/MIXED GRAVEL **** CALCAREOUS	
	10YR 7/4 VERY PALE BRWN	10YR 7/2 LIGHT GRAY	10YR 6/4 LT YELLOW BRWN	10YR 6/3 PALE BROWN	2.5YR 4/2 WEAK RED	2.5YR 6/2 PALE RED
2						
4	MEDIUM SAND SL. CALCAREOUS		MED-FINE SAND CALCAREOUS		MEDIUM SAND SL. CALCAREOUS	
	10YR 7/6 YELLOW	10YR 7/3 PALE BROWN	10YR 5/3 BROWN	10YR 6/4 LT YELLOW BRWN	10YR 6/4 LT YELLOW BRWN	10YR 7/3 PALE BROWN
5						
9	MED-FINE SAND SL. CALCAREOUS		MED-FINE SAND SL. CALCAREOUS		MEDIUM SAND SL. CALCAREOUS	
	10YR 6/4 LT YELLOW BRWN	10YR 7/3 PALE BROWN	10YR 7/6 YELLOW	10YR 7/4 VERY PALE BRWN	10YR 6/4 LT YELLOW BRWN	10YR 7/3 PALE BROWN
10						

NOTES:
- * MUNSELL SOIL COLOR CHART
- ** ACCUMULATIONS OF $CaCO_3$ BELOW A CLAY LAYER 1.35 FT FROM SURFACE APPROX. .4 FT THICK, SAND LOAM TEXTURE.
- *** DARK LAYER (10YR 4/3 - DARK BROWN) APPROX. 1 FT FROM SURFACE.
- **** SANDY LOAM AT 1.5 - 2 FT; $CaCO_3$ ACCUMULATION AT 2 - 2.5 FT; COARSE SAND W/MIXED GRAVEL FROM 2.5 - 4 FT.

Exhibit 5

Exhibit 5

Certificate of Analysis for Sampling Containers

Certificate of Analysis

Environmental Services Laboratory Analysis

Metals Analysis

Bottle Type & QA Level: F, Level 1

Description : 8 oz. Clear Glass

Lot No.: F9040084 Date: 3-13-89

This is to certify that this lot was tested and found to comply with Eagle Picher specification for this product.

Compound Analyzed	Quantity Found(ug/L)
Silver	<5.0
Aluminum	<80.0
Arsenic	<5.0
Barium	<50.0
Beryllium	<1.0
Calcium	<5000.0
Cadmium	<1.0
Cobalt	<35.0
Chromium	<10.0
Copper	<15.0
Iron	<75.0
Mercury	<0.2
Potassium	<3000.0
Magnesium	<3000.0
Manganese	<10.0
Sodium (glass)	<5000.0
Sodium (polyethylene)	<3000.0
Nickel	<40.0
Lead	<8.0
Antimony	<5.0
Selenium	<2.0
Thallium	<5.0
Vanadium	<10.0
Zinc	<40.0

Approved: Julie Bright

Date : 3-13-89

EAGLE PICHER
ENVIRONMENTAL SERVICES
200 9TH AVE. N.E. • MIAMI, OKLAHOMA 74354 • (800) 331-7425

Certificate of Analysis

Environmental Services Laboratory Analysis

Pesticide Extractables

Bottle Type & QA Level: F, Level 1

Description : 8 oz. Clear Glass

Lot No.: F9040084 Date: 3-13-89

This is to certify that this lot was tested and found to comply with Eagle Picher specifications for this product.

Compound Analyzed	Quantity Found(ng/Bottle)
alpha-BHC	<.03
gamma-BHC(Lindane)	<.03
beta-BHC	<.03
Heptachlor	<.03
delta-BHC	<.03
Aldrin	<.03
Heptachlor epoxide	<.03
Endosulfan I	<.03
4,4'-DDE	<.06
Dieldrin	<.06
Endrin	<.06
4,4'-DDD	<.06
Endosulfan II	<.06
4,4'-DDT	<.06
Endosulfan sulfate	<.06
Methoxychlor	<.30
Endrin Ketone	<.06
Chlordane(tech)	<.30
Toxaphene	<.30
Arochlor-1016	<.30
Arochlor-1221	<.30
Arochlor-1232	<.30
Arochlor-1242	<.30
Arochlor-1248	<.30
Arochlor-1254	<.60
Arochlor-1260	<.60

Approved: Jul Bright

Date : 3-13-89

EAGLE PICHER

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Certificate of Analysis

Environmental Services Laboratory Analysis

Base/Neutral/Acid Extractables

Bottle Type & QA Level: F, Level 1

Description : 8 oz. Clear Glass

Lot No.: F9040084 Date: 3-13-89

This is to certify that this lot was tested and found to comply with Eagle Picher specifications for this product.

Compound Analyzed	Quantity Found(ng/Bottle)
Phenol	<5.
Bis(2-Chlorethyl)ether	<5.
2-Chlorophenol	<5.
1,3-Dichlorobenzene	<5.
1,4-Dichlorobenzene	<5.
Benzyl Alcohol	<5.
2-Methylphenol	<5.
Bis(2-Chloroisopropyl)ether	<5.
4-Methylphenol	<5.
N-Nitroso-di-n-propylamine	<5.
Hexachloroethane	<5.
Nitrobenzene	<5.
Isophorone	<5.
2-Nitrophenol	<5.
2,4-Dimethylphenol	<5.
Benzoic Acid	<5.
Bis(2-Chloroethoxy)methane	<5.
2,4-Dichlorophenol	<5.
1,2,4-Trichlorobenzene	<5.
Naphthalene	<5.
4-Chloroaniline	<5.
Hexachlorobutadiene	<5.
4-Chloro-3-methylphenol (para-chloro-mete-cresol)	<5.
2-Methylnaphthalene	<5.
Hexachlorocyclopentadiene	<5.
2,4,6-Trichlorophenol	<5.
2,4,5-Trichlorophenol	<5.
2-Chloronaphthalene	<5.
2-Nitroaniline	<5.
Dimethylphthalate	<5.
Acenaphthylene	<5.
2,6-Dinitrotoluene	<5.
3-Nitroaniline	<5.
Acenaphthene	<5.
2,4-Dinitrophenol	<5.
4-Nitrophenol	<5.

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Certificate of Analysis

Lot: F9040084

BNA Page 2

Dibenzofuran	<5.
2,4-Dinitrotoluene	<5.
Diethylphthalate	<5.
4-Chlorophenyl-phenyl ether	<5.
Fluorene	<5.
4-Nitroaniline	<5.
4,6-Dinitro-2-methylphenol	<5.
N-Nitrosodiphenylamine	<5.
4-Bromophenyl-phenylether	<5.
Hexachlorobenzene	<5.
Pentachlorophenol	<5.
Phenanthrene	<5.
Anthracene	<5.
Di-N-Butylphthalate	<5.
Fluoranthene	<5.
Pyrene	<5.
Butylbenzylphthlate	<5.
3,3'-Dichlorobenzidine	<5.
Benzo(a)anthracene	<5.
Chrysene	<5.
Bis(2-ethylhexyl)phthalate	<5.
Di-n-Octylphthalate	<5.
Benzo(b)fluoranthene	<5.
Benzo(k)fluoranthene	<5.
Benzo(a)pyrene	<5.
Indeno(1,2,3-cd)pyrene	<5.
Dibenz(a,h)anthracene	<5.
Benzo(g,h,i)perylene	<5.

Approved: Juli Beights

Date : 3-31-89

EAGLE PICHER
ENVIRONMENTAL SERVICES
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Exhibit 6

Exhibit 6

Laboratory Data Reports

ASSAIGAI
ANALYTICAL
LABORATORIES

PNM - Albuquerque
Alvarado Square
Albuquerque, NM 87158
ATTN: Ron Johnson

WORK ORDER: 3210
DATE: 11 July 1990
RECEIVED: 27 June 1990

PROJECT: Person RFI Phase II
DATE OF ANALYSIS: 6 July 1990
DATE OF EXTRACTION: 2 July 1990

	ANALYTES		
SAMPLE ID	Total Arsenic	Total Chromium	Total Lead
Sta #9A 9-1-A	2.5 mg/kg	6.0 mg/kg	<10.0 mg/kg
Sta #9A 9-2-A	2.3 mg/kg	7.0 mg/kg	<10.0 mg/kg
Sta #9A 9-3-A	1.2 mg/kg	5.0 mg/kg	<10.0 mg/kg
Sta #9A 9-4-A	1.2 mg/kg	5.0 mg/kg	<10.0 mg/kg
Sta #9B 9-1-B	2.7 mg/kg	9.0 mg/kg	<10.0 mg/kg
Sta #9B 9-1-B - Duplicate	2.6 mg/kg	9.0 mg/kg	<10.0 mg/kg
Sta #9B 9-2-B	1.8 mg/kg	6.0 mg/kg	<10.0 mg/kg
Sta #9B 9-3-B	1.4 mg/kg	4.0 mg/kg	<10.0 mg/kg
Sta #9B 9-4-B	1.5 mg/kg	6.0 mg/kg	<10.0 mg/kg
Sta #10 10-1	24.5 mg/kg	64.0 mg/kg	33.0 mg/kg
Sta #10 10-2	25.0 mg/kg	91.0 mg/kg	53.0 mg/kg
Sta #10 10-2 - Duplicate	26.4 mg/kg	87.0 mg/kg	43.0 mg/kg
Sta #10 10-3	2.1 mg/kg	5.0 mg/kg	<10.0 mg/kg
Sta #10 10-4	1.6 mg/kg	4.0 mg/kg	<10.0 mg/kg
Sta #11 11-1	28.0 mg/kg	66.0 mg/kg	28.0 mg/kg
Sta #11 11-2	219 mg/kg	632 mg/kg	202 mg/kg
Sta #11 11-3	3.5 mg/kg	<2.0 mg/kg	10.0 mg/kg
Sta #11 11-4	1.7 mg/kg	6.0 mg/kg	15.0 mg/kg
NOMINAL DETECTION LIMIT	1.0 mg/kg	2.0 mg/kg	10.0 mg/kg
EPA METHOD NUMBERS *	7060	7190	7420

* EPA METHOD for Extraction is 3050.

QUALITY CONTROL DATA

ANALYTE	QUALITY CONTROL DATA KNOWN VALUE	QUALITY CONTROL DATA FOUND VALUE
Arsenic	0.50 mg/L	0.48 mg/L
Chromium	0.10 mg/L	0.10 mg/L
Lead	0.10 mg/L	0.10 mg/L

Thank you for contacting Assaigai Analytical Laboratories. An invoice is enclosed.

Sincerely,

Nicole Oglethorpe
Supervisor - Inorganics Division

ASSAIGAI ANALYTICAL LABORATORIES

REVISED 8/28/90

TO: PNM - Albuquerque
Alvarado Square
Albuquerque, NM 87158
ATTN: Ron Johnson

DATE: 22 August 1990
WORK ORDER NO: 3460

PROJECT: Person RFI, Phase II
SAMPLE ID: Sta #11 - 11-2
RECEIVED: 14 August 1990
ANALYZED: 21, 22 August 1990
ANALYST: Joe Bovenzi
SAMPLE TYPE: Soil
ANALYSIS REQUESTED: TCLP for Metals
METHOD: Extraction - EPA Method #1311
Analysis - Arsenic - EPA Method 7060
Chromium - EPA Method 7190
Lead - EPA Method 7420

ANALYTE	ANALYTICAL RESULTS	NOMINAL DETECTION LIMITS
Arsenic	1.2 mg/L	0.010 mg/L
Chromium	0.19 mg/L	0.02 mg/L
Lead	0.20 mg/L	0.10 mg/L

QUALITY CONTROL DATA

ANALYTE	KNOWN VALUE	FOUND VALUE
Arsenic	0.050 mg/L	0.049 mg/L
Chromium	0.10 mg/L	0.11 mg/L
Lead	0.10 mg/L	0.11 mg/L

An invoice for services is enclosed. Thank you for contacting Assaigai Laboratories.

Sincerely,

Nicole Oglethorpe
Supervisor - Inorganic Division

P.O. Box 90430 • Albuquerque, New Mexico 87199-0430 • (505) 345-8964

Exhibit 7

Exhibit 7

Tolerance Interval Analysis for Sample Locations 1, 2, 3, and 4 (Background)

ERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

BACKGROUND CORE SAMPLES
PARAMETER: ARSENIC (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	5.00	3.90	3.80	3.40	3.80
2	8.20	5.90	2.00	1.00	3.00
3	3.30	5.00	3.10	3.40	3.70
4	3.80	5.50	5.30	5.10	3.60
N	4	4	4	4	4
AVG	5.08	5.08	3.55	3.23	3.52
MAX	8.20	5.90	5.30	5.10	3.80
MIN	3.30	3.90	2.00	1.00	3.00
STD.DEV.	1.91	0.75	1.20	1.46	0.31
CV	0.38	0.15	0.34	0.45	0.09
K(N)	5.14	5.14	5.14	5.14	5.14
TL	14.89	8.93	9.71	10.74	5.13

' CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

ıRAMETER: CADMIUM (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	2.00	2.20	0.40	1.50	7.90
2	9.30	2.10	0.60	0.20	0.20
3	0.40	0.10	0.40	0.05	0.05
4	0.20	0.05	0.05	0.10	0.05
N	4	4	4	4	4
AVG	2.98	1.11	0.36	0.46	2.05
MAX	9.30	2.20	0.60	1.50	7.90
MIN	0.20	0.05	0.05	0.05	0.05
STD.DEV.	3.72	1.04	0.20	0.60	3.38
CV	1.25	0.93	0.55	1.30	1.65
K(N)	5.14	5.14	5.14	5.14	5.14
TL	22.10	6.45	1.38	3.56	19.43

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

PARAMETER: CHROMIUM (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	4.80	4.20	3.70	3.10	2.70
2	6.30	6.60	4.20	3.80	4.00
3	3.80	3.00	1.00	3.20	3.20
4	3.10	3.00	2.90	3.40	3.70
N	4	4	4	4	4
AVG	4.50	4.20	2.95	3.38	3.40
MAX	6.30	6.60	4.20	3.80	4.00
MIN	3.10	3.00	1.00	3.10	2.70
STD.DEV.	1.20	1.47	1.22	0.27	0.49
CV	0.27	0.35	0.41	0.08	0.15
K(N)	5.14	5.14	5.14	5.14	5.14
TL	10.68	11.76	9.21	4.75	5.95

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMETALS.WK1

PARAMETER: LEAD (MG/KG)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	18.20	12.70	3.70	4.20	3.10
2	11.10	5.30	4.00	2.80	4.00
3	6.20	4.70	3.50	3.70	4.30
4	8.20	4.20	3.50	3.90	4.90
N	4	4	4	4	4
AVG	10.93	6.72	3.67	3.65	4.07
MAX	18.20	12.70	4.00	4.20	4.90
MIN	6.20	4.20	3.50	2.80	3.10
STD.DEV.	4.55	3.47	0.20	0.52	0.65
CV	0.42	0.52	0.06	0.14	0.16
K(N)	5.14	5.14	5.14	5.14	5.14
TL	34.32	24.59	4.73	6.34	7.42

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

,RSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

BACKGROUND CORE SAMPLES
PARAMETER: ARSENIC (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	5.30	4.00	3.90	3.50	3.90
2	8.70	6.00	2.00	1.00	3.10
3	3.40	5.10	3.10	3.50	3.80
4	4.00	5.60	5.40	5.20	3.70
N	4	4	4	4	4
AVG	5.35	5.17	3.60	3.30	3.63
MAX	8.70	6.00	5.40	5.20	3.90
MIN	3.40	4.00	2.00	1.00	3.10
STD.DEV.	2.05	0.75	1.24	1.50	0.31
CV	0.38	0.14	0.34	0.45	0.09
K(N)	5.14	5.14	5.14	5.14	5.14
TL	15.91	9.03	9.97	11.01	5.23

' CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
.OLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

PARAMETER: CADMIUM (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	2.10	2.30	0.40	1.50	8.10
2	9.90	2.10	0.60	0.20	0.20
3	0.40	0.10	0.40	0.05	0.05
4	0.20	0.05	0.05	0.10	0.05
N	4	4	4	4	4
AVG	3.15	1.14	0.36	0.46	2.10
MAX	9.90	2.30	0.60	1.50	8.10
MIN	0.20	0.05	0.05	0.05	0.05
STD.DEV.	3.97	1.06	0.20	0.60	3.46
CV	1.26	0.94	0.55	1.30	1.65
K(N)	5.14	5.14	5.14	5.14	5.14
TL	23.56	6.62	1.38	3.56	19.93

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

ERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

PARAMETER: CHROMIUM (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	5.10	4.30	3.80	3.10	2.80
2	6.70	6.70	4.30	3.90	4.10
3	3.90	3.10	1.00	3.30	3.30
4	3.20	3.10	3.00	3.50	3.80
N	4	4	4	4	4
AVG	4.73	4.30	3.02	3.45	3.50
MAX	6.70	6.70	4.30	3.90	4.10
MIN	3.20	3.10	1.00	3.10	2.80
STD.DEV.	1.33	1.47	1.26	0.30	0.49
CV	0.28	0.34	0.42	0.09	0.14
K(N)	5.14	5.14	5.14	5.14	5.14
TL	11.55	11.86	9.50	4.97	6.05

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
OLERANCE LIMIT (TL = AVG + K*SD)

PERSON STATION RCRA FACILITY INVESTIGATION (RFI) DATA ANALYSIS
SAMPLING CONDUCTED AUGUST 1-2, 1989
METALS ANALYSIS LOTUS FILE NAME: PSMOIST.WK1

PARAMETER: LEAD (MG/KG) (CORRECTED FOR MOISTURE CONTENT)

	DEPTH				
HOLE #	0-1 FT	1-2 FT	2-3 FT	3-4 FT	4-5 FT
1	19.20	13.00	3.80	4.30	3.20
2	11.80	5.40	4.10	2.90	4.10
3	6.40	4.80	3.60	3.80	4.40
4	8.50	4.30	3.60	4.00	5.00
N	4	4	4	4	4
AVG	11.47	6.88	3.77	3.75	4.17
MAX	19.20	13.00	4.10	4.30	5.00
MIN	6.40	4.30	3.60	2.90	3.20
STD.DEV.	4.86	3.56	0.20	0.52	0.65
CV	0.42	0.52	0.05	0.14	0.16
K(N)	5.14	5.14	5.14	5.14	5.14
TL	36.47	25.18	4.83	6.44	7.52

IF CV >1.0 DATA MAY NOT BE NORMALLY DISTRIBUTED
TOLERANCE LIMIT (TL = AVG + K*SD)

Exhibit 8

Exhibit 8

Tolerance Factors (K) for One-Sided Normal Tolerance Intervals with Probability Level (Confidence Factor) Y = 0.95 and Coverage P = 95%

TABLE 5. TOLERANCE FACTORS (K) FOR ONE-SIDED NORMAL TOLERANCE INTERVALS WITH PROBABILITY LEVEL (CONFIDENCE FACTOR) Y = 0.95 AND COVERAGE P = 95%

n	K	n	K
3	7.655	75	1.972
4	5.145	100	1.924
5	4.202	125	1.891
6	3.707	150	1.868
7	3.399	175	1.850
8	3.188	200	1.836
9	3.031	225	1.824
10	2.911	250	1.814
11	2.815	275	1.806
12	2.736	300	1.799
13	2.670	325	1.792
14	2.614	350	1.787
15	2.566	375	1.782
16	2.523	400	1.777
17	2.486	425	1.773
18	2.543	450	1.769
19	2.423	475	1.766
20	2.396	500	1.763
21	2.371	525	1.760
22	2.350	550	1.757
23	2.329	575	1.754
24	2.309	600	1.752
25	2.292	625	1.750
30	2.220	650	1.748
35	2.166	675	1.746
40	2.126	700	1.744
45	2.092	725	1.742
50	2.065	750	1.740
		775	1.739
		800	1.737
		825	0.736
		850	1.734
		875	1.733
		900	1.732
		925	1.731
		950	1.729
		975	1.728
		1000	1.727

SOURCE: (a) for sample sizes ≤ 50: Lieberman, Gerald F. 1958. "Tables for One-sided Statistical Tolerance Limits." *Industrial Quality Control.* Vol. XIV, No. 10. (b) for sample sizes ≥ 50: K values were calculated from large sample approximation.

Letter - RE: Phase II RFI Report

[redacted]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

FEB 25 1991

Ron D. Johnson
Public Service Company
Environmental Analyst
Alvarado Square
Albuquerque, New Mexico 87158

RE: Phase II RFI Report - Public Service Company (PSC)
NMT360010342

Dear Mr. Johnson:

We have completed a review of your RCRA Facility Investigation Phase II (RFI) Report dated August 28, 1990. We have determined the Report to be approvable and generally agree with its finding of no further action on the Natural Pit Area.

However, the Environmental Protection Agency (EPA) believes that two additional Administrative controls are needed for the Natural Pit Area. They include:

1) Survey plat of the Natural Pit Area according to procedures required in 40 CFR 264.116; and

2) That warning signs are posted marking the unit location to alert any oncoming persons to this area.

Before EPA can approve removing this unit (approve a Class III permit modification) from the permit, PSC must certify and send documentation providing completion of the two above mentioned Administrative controls within 90 days of the date of this letter. After EPA receives and approves those requirements, PSC may request, from EPA, a Class III permit modification under 40 CFR 270.42, to remove the Natural Pit Area from further investigation in the permit. However, if new information, studies, or investigations at a later date indicates a release from the Natural Pit, then EPA could rescind this determination. In addition, if in the future PSC decides to remove the contaminated soil from the Natural Pit, EPA will require PSC to submit a removal plan for approval before removal occurs.

If you have any further questions concerning the above discussed issues, please contact Rich Mayer of my staff at (214) 655-6775.

Sincerely yours,

Allyn M. Davis
Director
Hazardous Waste Management Division

cc: Kathy Sisneros, NMEID

Letter - RE: Proposed Remediation Work Plan

PNM PUBLIC SERVICE COMPANY OF NEW MEXICO
ALVARADO SQUARE ALBUQUERQUE, NEW MEXICO 87158

July 09, 1991

Certified Mail
Return Receipt Requested

Mr. Rich Mayer
Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Dear Mr. Mayer

Subject: Proposed Remediation Workplan,
Natural Pit SWMU, Person
Generating Station, NMT360010342

Public Service Company of New Mexico (PNM) is seeking approval from EPA to excavate and remove contaminated soil from the Solid Waste Management Unit (SWMU) identified in RCRA permit NMT360010342 as the "Natural Pit".

PNM is hereby submitting a proposed RCRA Facility Investigation (RFI) Remediation Work Plan for the Natural Pit and is requesting approval from EPA to conduct this activity. The enclosed remediation plan follows the format of previous work plans submitted to you for the original Natural Pit RFI. Additionally, this work plan references those previous plans and their subsequent reports of findings.

If you have any questions, or need additional information, please contact me at (505) 848-2998.

Sincerely,

Ron Johnson

Ron D. Johnson
Sr. Environmental Scientist

RDJ:vrm

enclosure: RFI Remediation Work Plan
Person Generating Station
Natural Pit Area, NMT360010342

cc: Ed Horst, New Mexico Environment Department

Letter - RE: Installation of Administrative Controls

[redacted]

PNM PUBLIC SERVICE COMPANY OF NEW MEXICO
ALVARADO SQUARE ALBUQUERQUE, NEW MEXICO 87158

September 03, 1991

Certified Mail
Return Receipt Requested

Mr. Rich Mayer
Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Dear Mr. Mayer:

Subject: Installation of Administrative Controls - Person Generating Station Natural Pit, NMT360010342

I certify under penalty of law that this document and all enclosures were prepared under my direction or supervision in accordance with 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.

Jack D. Maddox, Director
Resources and Nuclear Services

Pursuant to your letter of February 25, 1991, Public Service Company of New Mexico (PNM) is hereby certifying that the adminstrative controls specified in that letter for the Person Station Natural Pit have been performed. Specifically, those controls include:

1) Survey plat of the Natural Pit Area according to procedures required in 40 CFR 264.116; and
2) Warning signs are posted marking the unit location to alert any oncoming persons to this area.

The warning signs were posted on May 24, 1991, at three access locations to the Natural Pit.

A survey plat of the Natural Pit was prepared and filed with the Bernalillo County Zoning Division on August 26, 1991. A copy of the filing is enclosed.

Please contact me at (505) 848-2998, should anything additional be required.

Sincerely,

Ron Johnson

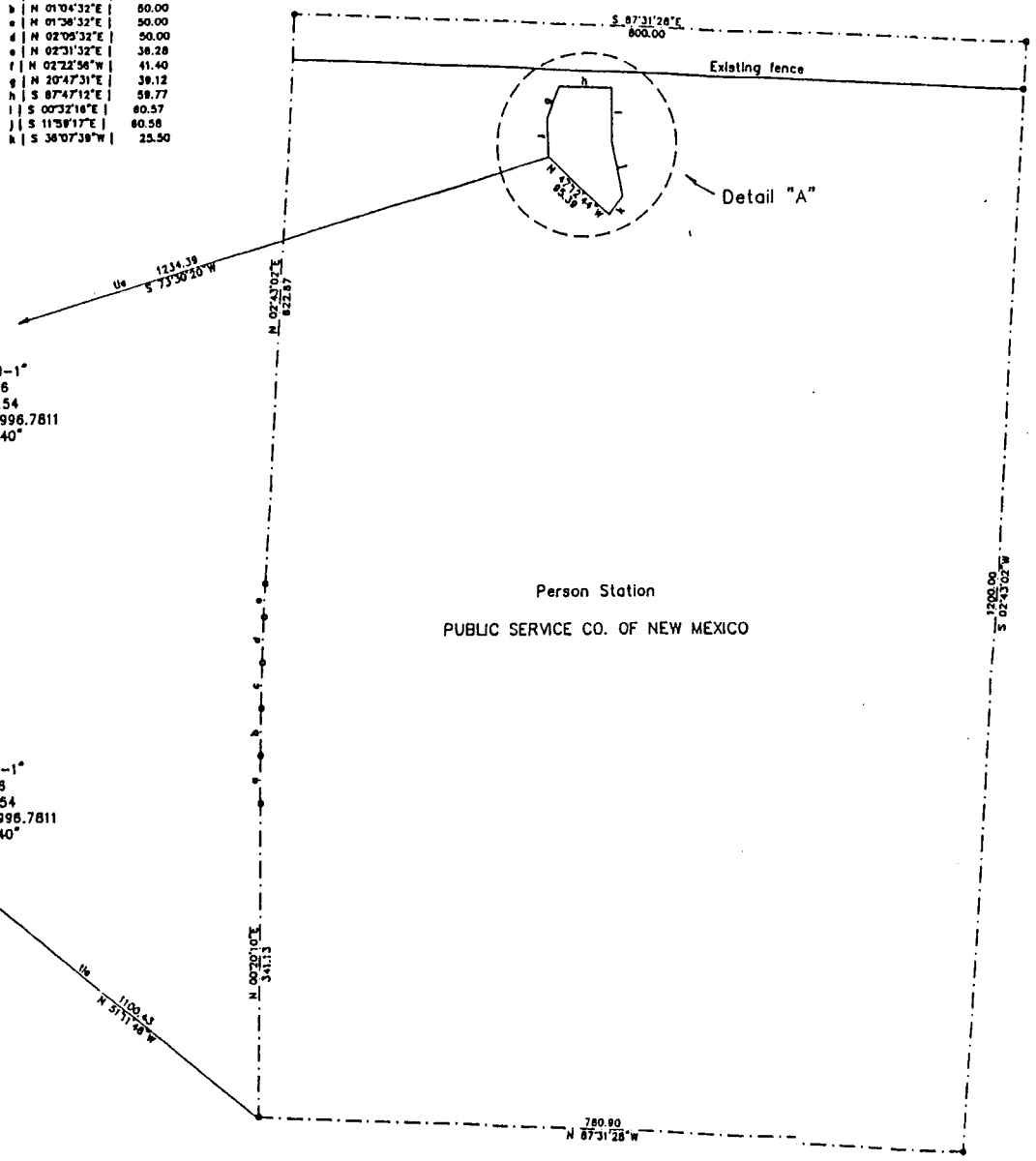
Ron D. Johnson
Sr. Environmental Scientist

RDJ:krl
Enclosure: Survey Plat for Natural Pit

cc: Mr. Benito Garcia - NMED

LINE TABLE

LABEL	BEARING	DISTANCE
a	N 00°35'02"E	50.00
b	N 01°04'32"E	50.00
c	N 01°36'32"E	50.00
d	N 02°05'32"E	50.00
e	N 02°31'32"E	38.28
f	N 02°22'56"W	41.40
g	N 20°47'31"E	39.12
h	S 87°47'12"E	58.77
i	S 00°32'16"E	60.57
j	S 11°58'17"E	80.58
k	S 38°07'38"W	25.50



Addendum A

Note:

The identified areas as described as Detail "A" contains an unknown quantity of waste material known to contain the hazardous constituents of arsenic, chromium and lead. The identified area also contains approximately 300 cubic yards of Number 6 fuel oil contaminated soil.

The use of this property is restricted pursuant to 40 CFR Subpart G Regulations.

Removal of the contaminated soils from this location is subject to approval by the Regional Administrator, Environmental Protection Agency and must satisfy the criteria of 40 CFR 264.117(c).

Bernalillo County Zoning Division
Approved
Date 8/26/91
Comments C0483

SURVEYOR'S CERTIFICATION

I, Leonard G. Martinez, New Mexico Professional Land Surveyor No. 9801, certify that this map was prepared from field notes of actual surveys made by me or under my supervision; and that it is true and correct to the best of my knowledge and belief.

Leonard G. Martinez

Leonard G. Martinez, N.M.L.S. No. 9801

SCALE IN FEET
0 50 100 200
Scale: 1" = 100'

Notes:

1. All Bearings are grid bearings.
2. All distances are ground distances.

PERSON GENERATION STATION
TSD FACILITY
WITHIN SEC. 8, T.9 N., R.3 E., N.M.P.M.
BERNALILLO COUNTY, NEW MEXICO
PUBLIC SERVICE CO. OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO

DWN BY: L.G.M. DATE: 08-21-91
CKD BY: K.P.C. SCALE SHOWN
A-747-C

RCRA Facility Investigation, Remediation Work Plan

RCRA Facility Investigation (RFI)
Remediation Work Plan

For Person Generating Station Hazardous Waste Disposal Facility - Natural Pit Area (NMT360010342)

July 1991

TABLE OF CONTENTS

1.0 Introduction and Background

In 1988 the Environmental Protection Agency (EPA) issued a hazardous waste permit (NMT360010342-1) pursuant to its authority under the Hazardous and Solid Waste Amendments of 1984 for the Person Generating Station. That permit identified the Natural Pit at Person Station as a Solid Waste Management Unit (SWMU) requiring investigation for release of hazardous constituents to the environment.

In March 1989, Public Service Company of New Mexico (PNM), submitted to EPA a RCRA Facility Investigation (RFI) Work Plan for the Natural Pit area at Person Generating Station. That work plan detailed methods and procedures used by PNM in the investigation of potential releases of contaminants into the environment from the Natural Pit.

Final work plan approval from EPA was issued in July 1989. Field sampling under the work plan was conducted in August 1989. Results from the Phase I sampling confirmed the presence of visual fuel oil contamination in two areas of the Natural Pit. The Phase I sampling also revealed the presence of chromium, lead, and arsenic contamination in the upper two feet of the soil at one location within the Natural Pit.

After review of the results contained in the document "RFI Report of Findings", January 18, 1990, EPA requested additional soil bore sampling for heavy metal contamination in proximity to the location where the heavy metals were discovered in the Phase I sampling. This Phase II sampling was conducted in June 1990.

The Phase II sampling results confirmed the presence of chromium, lead, and arsenic contaminants above background levels. The contamination again was only seen in the upper two feet of the soil.

The heavy metal contamination appeared to be confined to a central area within the Natural Pit and was not migrating out of the pit (no contamination was found down slope from the contaminated areas). This information was supplied to EPA in the document "RFI Report of Findings, Phase II", August 28, 1990. After reviewing the report results EPA notified PNM that no remedial action was necessary. PNM was required to file a survey plat with the local deed authority specifying the location and contents of the Natural Pit, and was required to post warning signs around the Natural Pit.

2.0 Person Station Demolition Project

In 1991, PNM management decided that Person Generating Station would not be restarted and that opportunities for sale or salvage of plant equipment should be investigated. Additionally, certain environmental issues associated with the property were to be addressed and remediated, if needed.

The contamination in the Natural Pit was identified as an area which would be remediated under this project. Because the Natural Pit is a SWMU associated with the Person Station Hazardous Waste Disposal Permit it was recognized by PNM that remediation of the Natural Pit would require prior approval from EPA.

This document is the remediation work plan for the Natural Pit submitted to EPA for their consideration and approval.

3.0 Work Scope Overview

Phase I and Phase II sampling indicated that the heavy metal contamination is localized within the Natural Pit to a central area and down to a depth of two feet. This remediation work plan proposes a grid sampling scheme to specifically identify the exact location and the horizontal extent of the heavy metal contamination. Once identified, the contaminated soil will be removed to an industrial cell at an appropriately permitted landfill for disposal. Post removal soil sampling will be conducted to verify that the contaminated soil has been removed.

The Phase I sampling also verified visual evidence of fuel oil contaminated soil within the Natural Pit. Since the fuel oil contamination and the heavy metal contamination are unrelated to each other, remediation of the fuel oil contamination will be performed differently.

Fuel oil contaminated soil will be removed based on visual observation of contaminated areas. Removed soil will be placed into an industrial cell of an appropriately permitted landfill. Post removal soil sampling will be conducted to verify that the contaminated soil has been removed.

4.0 Work Scope

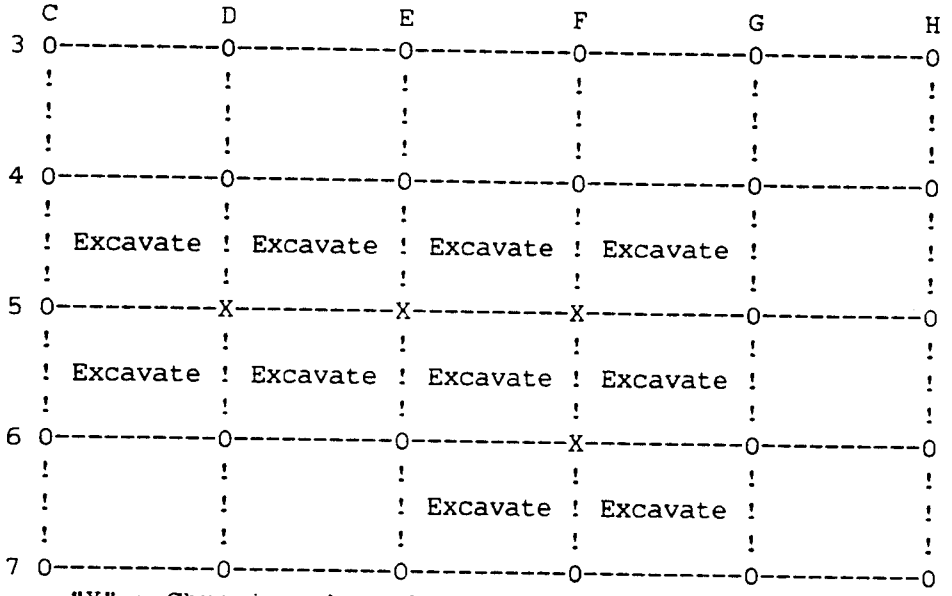
4.1 Heavy Metal Contamination

An approximate 2600 square feet area of the Natural Pit will be grided at 5 foot intervals. The grided area will encompass all sample locations found to contain heavy metal contamination during Phase I and Phase II sampling. At each grid line intersection a stake will be placed to mark the location for subsequent soil sampling. Grid intersections will be identified using an alphanumeric numbering scheme. North-south grid lines will be alphabetic, east-west grid lines will be numerical. A grid intersection will be identified by its intersecting grid lines, e.g., "C-4". Map 1 in the Appendix shows the general contour of the Natural Pit and illustrates how the Natural Pit will be grided for sampling.

Soil samples will be collected from the 0-1 foot depth interval using a hand augering soil sampler. Samples will be analyzed for total chromium only as an indicator of heavy metal contamination. The presence of chromium contamination at concentrations above threshold limits established in the Phase I RFI sampling will be used to determine if an adjacent 5 foot by 5 foot soil section will need to be excavated.

If a grided soil section has four surrounding samples which do not show elevated levels of chromium, that section will be considered clean and will not be excavated. Figure 4.1 is an example showing several grided sections. An "X" at the intersection indicates a soil sample with chromium levels above background thresholds, a "0" at the intersection indicates a soil sample with chromium levels at background. The figure also shows which grid section will be excavated down to two feet based on the sample results shown.

Figure 4.1
Excavation Scheme for Heavy Metal Contamination



Excavated soil sections will removed down to a depth of two feet. It is anticipated that the contaminated sections will all lie adjacent to one another. Once excavation is complete an additional round of soil sampling will be conducted to confirm that no additional excavation is needed.

For confirmation, one soil sample from the center of each excavated grid section will be collected from the new soil surface. Samples will be analyzed for total chromium. The presence of chromium contamination at concentrations above threshold limits established in the Phase I RFI sampling will be used to determine if additional excavation is needed.

The contaminated soil will be bulk loaded and transported to an industrial cell in an appropriately permitted landfill.

4.2 Fuel Oil Contamination

Fuel oil contamination areas are easily identified by their dark discoloration relative to the surrounding natural soil color. Thus, no additional sampling is needed to define their extent. PNM proposes to remove the fuel oil contaminated soil down to the depth of visible contamination plus one additional foot. A one foot buffer of soil around the contaminated area will also be removed.

The New Mexico Environmental Improvement Division, Special Waste Bureau, has established a guideline standard of 100 ppm Total Petroleum Hydrocarbons (TPH) for remediation of petroleum contaminated soils. The excavation bottom and sides will be sampled for TPH to confirm that remaining soil TPH levels are below 100 ppm. Additional excavation will be performed if needed.

Excavated fuel oil contaminated soil will be bulk loaded and transported to an industrial cell at an appropriately permitted landfill.

5.0 Quality Assurance / Quality Control (QA/QC) Procedures

The QA/QC procedures described here apply primarily to the proposed grid sampling for chromium, though good QA/QC practices will also be employed for collection and analysis of TPH samples for verification of the fuel oil contamination remediation.

5.1 Sample Custody

Sample custody will be documented using chain-of-custody forms shown in Exhibit 1 of this work plan. The chain-of-custody forms will be used to document custody of the sample containers during field sampling up to delivery to the analytical laboratory.

The form will provide documentation of sample identification number, date and time of sample collection, dates and times of all relinquishments and receipts, and signatures of all persons either relinquishing the samples or receiving them.

Sample containers will be pre-marked using a numbering scheme which identifies the facility name, the sample location, and the replicate (if applicable). For example, duplicate samples from the grid intersection of the C line and the 4 line will be identified as PNM-C-4-A, and PNM-C-4-B.

5.2 Sampling Procedures

Sampling will be done by a team of three persons. One person will be responsible for collecting the sample and placing it into the proper container. A second person will be responsible for all associated documentation. The third person will assist the person doing the sampling, primarily being responsible for cleaning the sampling device after each sample is collected.

The soil samples will be collected using a three inch diameter hand auger capable of removing an approximate six inch length of core per insertion. The soil will be removed from the auger bucket and a representative sample will be immediately transferred into a glass sampling jar. The sampling jars will be supplied by the analytical laboratory.

Each filled jar will be sealed with a self adhesive custody seal and placed into the shipping container.

To prevent cross-contamination between samples, the hand auger will be cleaned between samples using soapy water and then rinsed with deionized (or distilled) water.

5.3 Replicates

For every 10 samples collected, one duplicate sample will be collected for precision assessment. To do this, the auger sample will be divided into two samples. One of the samples will be used for the original sample, while the other sample will be used for the replicate. To

distinguish replicate sample identification numbers, the suffix "A" will be attached to the original sample identification, and "B" will be attached to the replicate sample identification.

5.4 Analytical Procedures

Sample analysis will be performed by the analytical laboratory using EPA approved methodology described in SW-846, "Test Methods for Evaluating Solid Waste", or other EPA approved method. The analyte, sample preservation, and maximum holding times for the soil samples proposed in this work plan are listed below in Table 5.4.

A brief discussion of the various aspects of QA/QC performed by the laboratory are described in the following subsections.

Table 5.4
Summary of Sample Methodology

Analyte	Sample Preparation Method	Analytical Method	Detection Limit (mg/kg)	Preser-vation	Maximum Holding Time
Chromium	3050	6010	0.5	None	6 mos
TPH	NA	418.1	20	4 oC	28 d

TPH = Total Petroleum Hydrocarbon

5.4.1 Sample Storage Holding Time / Preservation

The laboratory will ensure that each analyte will be analyzed prior to the expiration of its maximum holding time as shown in Table 5.4. These holding times are in accordance with EPA guidelines as specified in Table 2-16 of the SW-846.

TPH samples will be held at 4 degrees Centigrade while awaiting analysis.

5.4.2 Sample Preparation

Sample preparation involves the extraction of the analyte of concern from the sampling medium (soil) to a medium which can be directly analyzed (liquid). The SW-846 manual details exact procedures, approved by EPA, for preparation of the sample prior to analysis. These procedures will be used by the laboratory. The methods to be used for this study are shown in Table 5.4 and described briefly below:

Sample Preparation Method	Description
3050	Acid digestion of sediments, sludges, and soils, used to prepare samples for analysis by flame or furnace atomic absorption spectroscopy or by inductively coupled argon plasma spectroscopy. This procedure will be used for Chromium.

5.4.3 Analytical Methods

The laboratory will use EPA approved methods for analysis in this work plan. The method numbers correspond to specific procedures detailed in the SW-846 methods or "Methods for Chemical Analysis of Water and Wastes" (EPA 600/4-79-020). The methods to be used in this project are listed in Table 5.4 and described briefly below:

Analytical Method	Description
6010	Inductively coupled plasma atomic emission (ICP) method for determining trace elements (including chromium) in solution.
418.1	Modified method from "Methods for Chemical Analysis of Water and Wastes" (EPA 600/4-79-020) for the determination of Total Petroleum Hydrocarbons (TPH) in soils.

5.4.4 Calibration Procedures, QA/QC

A complete description of all laboratory calibration procedures, and QA/QC activities is beyond the scope of this work plan. The laboratory adheres to established calibration and QA/QC procedures set forth in the EPA approved methods detailed in the SW-846 manual. Those procedures are incorporated into this work plan by reference to the SW-846 manual.

5.4.5 Data Reduction, Validation, and Reporting

Laboratory data reduction and validation procedures will be as specified in SW-846. Reports will be provided to PNM which contain sample analysis date, EPA method(s) used, detection limits, and result. QA/QC data (spike recoveries, laboratory duplicates) will also be reported to PNM.

6.0 Data Management Procedures

6.1 Data Collection

Data will be collected by a team of three field personnel. One person will be responsible for the sampling, and one for the documentation involved with the samples, such as completion of the sample log form. The third person will be responsible for cleaning the sampling device between samples and providing assistance as needed to the other two persons.

Each sample and sample location will be characterized on a sampling log form (Exhibit 2) stating the following:

- Name of sampler
- Purpose of sampling
- Date and time of sampling
- Sample type (e.g., soil)
- Sampling location, description, and grid coordinates
- Sampling method, sample containers, and preservation (if any)
- Sample weight or volume
- Number of samples taken
- Sample identification number(s)
- Field observations
- Field measurements made (e.g., pH, temperature)
- Weather conditions
- Name and signature of person responsible for observation

A chain of custody form (Exhibit 1) will be completed for the tracking of all samples from their collection through their delivery to the analytical laboratory.

6.2 Data Management

Data generated under this work plan will be managed in the following way. A complete paper trail of all chain of custody forms, sampling log forms, sampling maps, and laboratory analysis sheets will be kept in an organized fashion within the PNM corporate file system. Duplicate copies of this information will be maintained by the analyst as the working data at a location which allows easy reference for completion of the remediation project.

6.3 Data Presentation

Data will be reported primarily in tabular format. The scope of this remediation project does not require extensive and complicated data presentation to enable a reviewer to understand the results. Map and/or graphical displays showing location and constituent concentrations will also be used if needed to clarify the data.

6.4 Statistical Treatment of Data

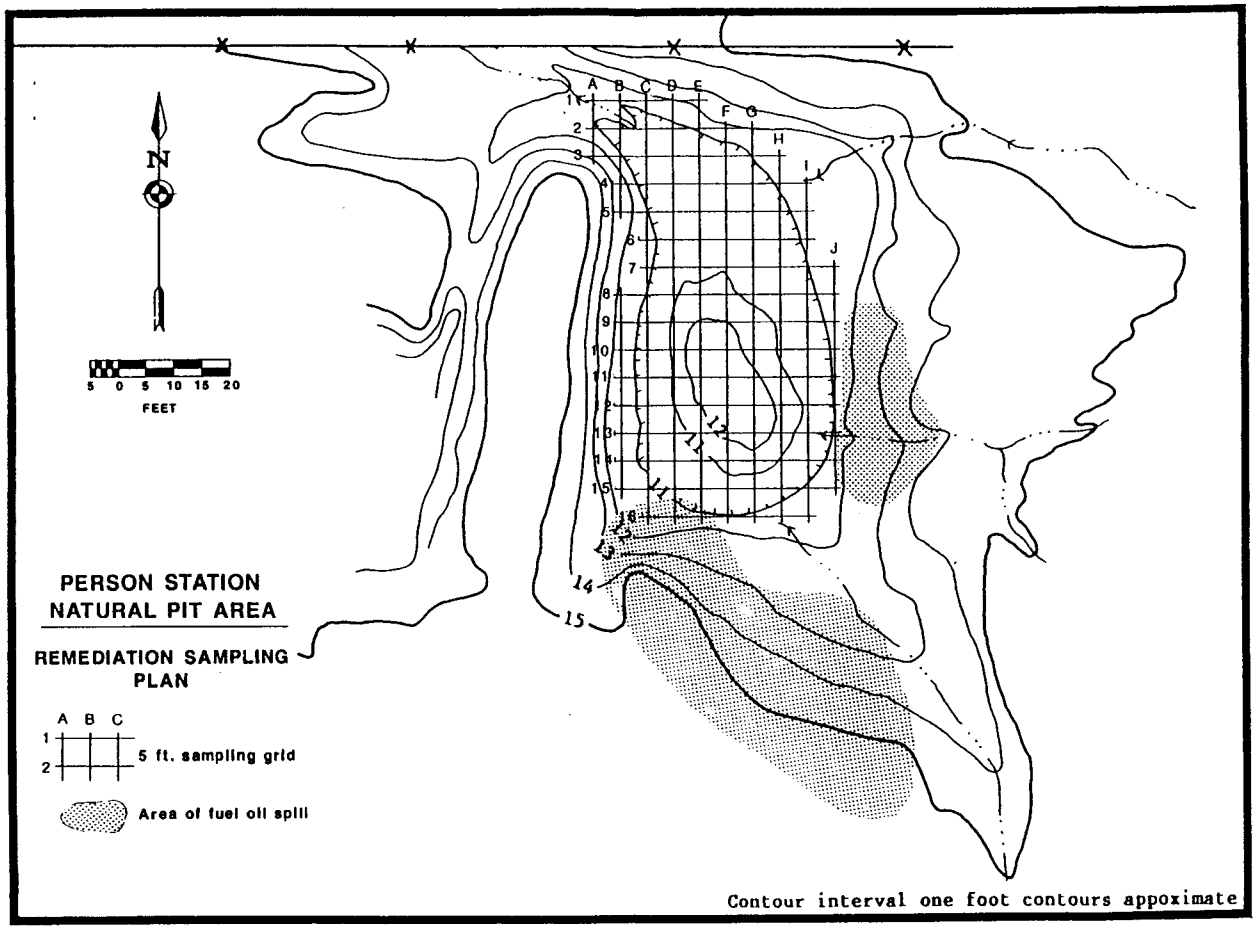
Samples collected for chromium analysis will be compared to background values and threshold limits found in the sampling performed as Phase I

of the RFI release investigation. A sample will be considered contaminated above background if the laboratory result exceeds the threshold limit for the 0-1 foot depth interval for chromium reported in the Phase I Report of Findings. Background sample data was analyzed using Tolerance Interval Analysis as described in the EPA document Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, February 1989. The tolerance limit (threshold limit) established for the 0-1 foot level for background chromium was 10.68 mg/kg. Thus, samples collected having total chromium greater than 10.68 mg/kg will be considered contaminated and will mark a soil grid to be removed.

7.0 Health and Safety Procedures

PNM used HASP Version 2.01, a computer aide program developed by the EPA to produce a Health and Safety Plan for the sampling and remediation work to be performed under this work plan. A copy of the plan is contained in this document as Exhibit 3.

Map 1



PNM - APRIL, 1991

Exhibit 1

Exhibit 1

ılyticalTechnologies,Inc.
Phoenix, Arizona

Chain of Custody

DATE_____ PAGE___ OF___

PROJECT MANAGER:

COMPANY:
ADDRESS:

BILL TO:
COMPANY:
ADDRESS:

SAMPLERS: (Signature)

( ) .
PHONE NUMBER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	LAB ID

Petroleum Hydrocarbons (418.1)	(MOD 8015) Gas/Diesel	Diesel/Gasoline/BTXE (MOD 8015/8020)	BTXE (8020)	Chlorinated Hydrocarbons (601/8010)	Aromatic Hydrocarbons (602/8020)	MTBE		Pesticides/PCB (608/8080)	Herbicides (615/8150)			Base/Neutral/Acid Compounds GC/MS (625/8270)	Volatile Organics GC/MS (624/8240)				SDWA Primary Standards	SDWA Secondary Standards	SDWA Volatiles (502.1/503.1)	The 13 Priority Pollutant Metals	The 8 EP Tox Metals by EP Tox Prep. (1310)	The 8 EP Tox Metals by Total Digestion	The 8 EP Tox Metals by TCLP			NUMBER OF CONTAINERS

PROJECT INFORMATION	
PROJECT NO.:	
PROJECT NAME:	
P.O. NO.:	
VIA:	
TAT: ☐ 24HR ☐ 48 HRS ☐ 1 WK ☐ 2 WKS	

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
INTACT?	
RECEIVED GOOD COND./COLD	
LAB NUMBER	

SAMPLE DISPOSAL INSTRUCTIONS

☐ ATI Disposal ☐ Return ☐ Pickup (will call)

Comments:

RELINQUISHED BY: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date	Printed Name: Date	Printed Name: Date
Company:	Company:	Company:
RECEIVED BY: 1.	**RECEIVED BY: 2.**	**RECEIVED BY: (LAB) 3.**
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Analytical Technologies, Inc.

Exhibit 2

Exhibit 2

PUBLIC SERVICE COMPANY OF NEW MEXICO
SAMPLE LOG

Sample No.

Project Name/Location:		
Sampling Date	Sampling Time	Purpose:
Sample Location Description/Coordinates:		

Sample Type						
Air	Water			Soil		Wipe	Sludge
	Surface	Ground	Tap	Core	Surface		
[]	[]	[]	[]	[]	[]	[]	[]
	Amount Purged:						

Sample Amount:	Units:
Sample Container Description:	
Preservation: [] YES [] NO - If Yes, Type and Amount:	

Field Measurements					
Temperature	pH	Conductivity			
Weather Conditions:					
Remarks:					

Name of Sampler(s)	Signature(s)
_____	_____
_____	_____
_____	_____

Exhibit 3

Exhibit 3

SITE HEALTH AND SAFETY PLAN

Site Name : Person Station Natural Pit

Date : 04/26/91
Prepared By :Ron Johnson
Public Service Co of NM

With the assistance of HASP

1.0 INTRODUCTION

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs.

1.1 Scope and Applicability of the Site Health and Safety Plan

The purpose of this Site Health and Safety Plan is to define the requirements and designate protocols to be followed at the Site during investigation and remediation activities. Applicability extends to all PNM employees, contractors, subcontractors, and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards in table 3.1 and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known contaminants, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- NIOSH Pocket Guide to Chemical Hazards
- (ACGIH) Threshold Limit Values

1.2 Visitors

All visitors entering the contamination reduction zone and exclusion zone at the the Site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring (Sec. 6.0), training (Sec. 4.0), and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be requested to leave the work area. All nonconformance incidents will be recorded in the site log.

2.0 KEY PERSONNEL/IDENTIFICATION OF HEALTH AND SAFETY PERSONNEL

2.1 Key Personnel

The following personnel and organizations are critical to the planned activities at the Site. The organizational structure will be reviewed and updated periodically by the site supervisor.

Public Service Company of New Mexico

Site Supervisor:	Steve Anderson, Engineering Dept.
Health and Safety:	Dan Pacheco, Occupational Health and Safety Dept.
Environmental Officer:	Ron Johnson, Environmental Services Dept.

Others

Subcontractor for earh moving operation

2.2 Site Specific Health and Safety Personnel

The Site Health and Safety Officer (HSO) has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120 (see Section 4.0 of this HASP).The HSO is also responsible for conducting site inspections on a regular basis in order to ensure the effectiveness of this plan.

The HSO at the site is Dan Pacheco.

Designated alternates include:

- Ron Johnson
- Elaine Beckett

2.3 Organizational Responsibility

Site Supervisor: The site supervisor is responsible for overall site management and coordination of work performed under this health and safety plan.

The Site Supervisor is Steve Anderson.

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSIS

3.1 Historical Overview of Site

This HASP defines the hazards and methods to protect personnel from those hazards as identified in previous site work or background information. For a thorough overview of historical information concerning the Site see the following documents:

- RCRA Facility Investigation (RFI)
  Work Plan - Revision 1.0
  For Person Generating Station
  Hazardous Waste Storage Facility
  Natural Pit Area (NMT360010342)
  March 1989

- RCRA Facility Investigation (RFI)
  Report of Findings - Revised
  For Person Generating Station
  Hazardous Waste Storage Facility
  Natural Pit Area (NMT360010342)
  August 20, 1990

- RCRA Facility Investigation (RFI)
  Report of Findings - Phase II
  For Person Generating Station
  Hazardous Waste Storage Facility
  Natural Pit Area - (NMT360010342)
  August 28, 1990

3.2 Task by Task Risk Analysis

The evaluation of hazards is based upon the knowledge of site background presented in Section 3.1, and anticipated risks posed by the specific operation.

The following subsections describe each task/operation in terms of the specific hazards associated with it. In addition, the protective measures to be implemented during completion of those operations are also identified.

The Person Station Natural Pit area is a topographic feature leading to the surface drainage arroyo running along the northern edge of the Person Station property. It consists of a natural depression falling off from the surrounding land to the north, south, west, and east. The surface is mostly exposed soil and rock with scattered indigenous vegetation. Several areas of discolored soil can also be seen in this area. The discoloration is dark brown to black in color and is due to disposal of fuel oil contaminated soil in the natural pit.

PNM completed an RFI consisting of two Phases of soil sampling in 1989 and 1990. Upon completion of reporting and approval of work by EPA, the EPA determined that the soil could be left in place pending the commencement of administrative controls including the placement of warning signs around the pit, and a notification to the local deed authority. PNM has complied with those administrative controls but also wishes a more permanent solution and thus as part of this project intends to remove the contaminated soil from the Natural Pit area.

Table 3.1 provides a summary of hazards and protective measures planned for each task at the Site.

TABLE 3.1
TASK ANALYSIS
CHEMICAL HAZARDS OF CONCERN

CONTAMINANT	TLV	SOURCE/ CONCENTRATION	ROUTES OF EXPOSURE	MONITORING METHOD
*** Grid layout ***		Surface Soil Sampling ***		Soil Excavation ***
ARSENIC	0.20 mg/m^3	Surface Soil- 1 to 220 mg/kg Subsurface Soil- 1 to 220 mg/kg	Inhalation Ingestion Contact	NIOSH : Not Available PIP : Not Available FIP : Not Available
CHROMIUM	0.50 mg/m^3	Surface Soil-1 to 6500 mg/kg Subsurface Soil- 1 to 6500 mg/kg	Inhalation Ingestion Contact	NIOSH : Not Available PIP : Not Available FIP : Not Available
LEAD	0.15 mg/m^3	Surface Soil- 1 to 200 mg/kg Subsurface Soil- 1 to 200 mg/kg	Inhalation Ingestion Contact	NIOSH : Not Available PIP : Not Available FIP : Not Available

TLV = Threshold Limit Value for 8 hour Time Weighted Average.
IDLH: Not Available for these contaminants.

3.3 Task Hazard Descriptions

3.3.1 Grid layout and Surface Soil Sampling

General Hazards

General hazards associated with site walk-throughs, site surveys, and sampling grid layout include the following:

- SWMU soil accumulation on clothing and shoes.
- Exposure to irritant and toxic plants and sticker bushes may cause allergic reactions to personnel.
- Surfaces covered with heavy vegetation and under growth create a tripping hazard.
- Back strain due to carrying instruments.
- Native wildlife such as rodents, ticks, and snakes present the possibility of insect bites and associated diseases such as Lyme disease.
- Electrical hazard due to fallen lines.
- Heat stress/cold stress exposure.
- On-site chemical hazards depending on contaminant location and contact or disturbances of contaminated areas.
- Nails in wood and other sharps which may cause puncture wounds.

Hazard Prevention

- The use of breathable disposable coveralls and disposable (washable) boot covers.
- The use of half-face respirators (disposable).
- Employ work practices which do not generate dust.
- Wear long sleeved clothing and slacks to minimize contact with irritant and toxic plants and to protect against insect bites. Appropriate first aid for personnels' known allergic reactions.
- Be alert and observe terrain while waling to minimize slips and falls. Steel toed boots provide additional protection.
- Use proper lifting techniques to prevent back strain.
- Avoid wildlife when possible. In case of an animal bite, perform first aid and capture the animal, if possible, for rabies testing. Perform a tick check after leaving a wooded or vegetated area. The use of appropriate insect repellent is advised.
- Ensure all maintenance is performed on vehicles before going to the field. A site surveillance on foot might be required to choose clear driving paths.
- Ensure fallen power lines are not energized.
- Avoid buildings which are not structurally sound.
- Implement heat stress management techniques such as cooler work hours, fluid intake, and work/rest regimines.

3.3.2 Soil excavations

Hazards encountered during soil and test pit excavation include both chemical and physical agents, and are as follows:

- Exposure to airborne contaminants released during intrusive activities.
- Falling during access/egress or while monitoring or dismounting equipment, or stumbling into excavation.
- An overhead hazard can result from material, tools, rock, and/or soil falling into the excavation.
- Congested work area due to too many workers in a small area.
- Employee and heavy equipment mishaps (run-overs, roll overs, etc.).

Hazard Prevention

- Adequate wetting of soil to be removed prior to and during removal, if necessary, to prevent dust generation.
- Monitor for airborne contaminants. Allow test pits to purge and/or use personal protective equipment.
- Keep employees upwind of operations.
- Equipment operators will be required to wear protective equipment/clothing as appropriate.
- Provide ramps or ladders to trenches to allow safe access and egress.
- To prevent overexertion, limit manual lifting and emphasize mechanical means where practical.
- Maintain ample work room between workers.
- Limit employees (on foot) to a minimum during heavy equipment operations.

4.0 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained in accordance with the standard. At a minimum, all personnel are required to be trained to recognize the hazards on-site, the provisions of this HASP, and the responsible personnel.

4.1 Preassignment and Annual Refresher Training

Prior to arrival on-site, each employer will be responsible for certifying that his/her employees meet the requirements of preassignment training. Consistent with OSHA 29 CFR 1910.120 paragraph (e)(3), each employee should be able to provide a document certifying dates of 24 hours training of training for workers occasionally on-site for a specific task, or 40 hours of training for general site workers. An employee may also grandfather experienced personnel. Personnel must receive 8 hours of annual refresher training.

4.2 Site Supervisors Training

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), individuals designated as site supervisors require an additional 8 hours of training.

The following individuals are identified as site supervisors:

Name	Title/Responsibility
Steve Anderson	Project Manager, Site Supervisor
Ron Johnson	Sr. Environmental Scientist, Env. Officer
Dan Pacheco	Certified Industrial Hygienist, HSO

4.3 Training and Briefing Topics

The following items will be discussed by a qualified individual at the site pre-entry briefing(s), as well as daily or periodic site briefings.

Training	Frequency
Site characterization and analysis, Sec 3.0	Site Specific
Physical hazards, Table 3.3.	Site Specific
Chemical hazards, Table 3.1.	Site Specific
Animal bites and stings	Site Specific
Site control, Sec. 8.0; [29 CFR 1910.120(d)	Site Specific
Backhoe	Site Specific
Personnel protective equipment, Sec. 5.0	Site Specific
Respiratory protection, Sec. 5.8	Site Specific

5.0 PERSONAL PROTECTIVE EQUIPMENT TO BE USED

This section describes the general requirements of the EPA designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site.

5.1 Levels of Protection

Personnel wear protective equipment when response activities involve known or suspected atmospheric contamination, when vapors, gases, or particulates may be generated by site activities, or when direct contact with skin-affecting substances may occur. Full facepiece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxicants. Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selected is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, splashes of

liquids, or other direct contact with material due to work being done
- Knowledge of chemicals on-site along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

5.2 Level A Personnel Protective Equipment:

Not Applicable to this HSAP.

5.3 Level B Personnel Protective Equipment:

Not Applicable to this HASP.

5.4 Level C Personnel Protective Equipment:

- Air-purifying respirator, half-face, cartridge-equipped (MSHA/NIOSH approved) for soil removal work.
- Disposable half-face mask or half-face cartridge respirator for sampling and grid layout work.
- Disposable coveralls (breathable)
- Gloves (outer), chemical-resistant
- Gloves (inner), chemical-resistant
- Boots (outer), steel toe
- Boot covers (outer), chemical-resistant (disposable)
- Hard hat (for soil removal only)

5.5 Level D Personnel Protective Equipment:

- Coveralls
- Gloves
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Safety glasses
- Hard hat

5.6 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or findings of investigations.

When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase, such as the start of drum sampling or work that begins on a different portion of the site.
- Change in job tasks during a work phase.
- Change of season/weather.
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
- Change in work scope which effects the degree of contact with contaminants.

5.7 Work Mission Duration

Before the workers actually begin work in their PPE ensembles, the anticipated duration of the work mission should be established. Several factors limit mission length, including:

- Suit/Ensemble permeation and penetration rates for chemicals (section 5.8).
- Ambient temperature and weather conditions (heat stress, cold stress).
- Capacity of personnel to work in PPE.

5.8 Chemical Resistance and Integrity of Protective Material

The following specific clothing materials are recommended for the site:

Grid layout - (Level D)

Gloves - NITRILE
Boots - Steel Toe
Outer Garment/Coveralls - Disposable

Surface soil sampling - (Level D)

Gloves - NITRILE
Boots - Steel Toe
Outer Garment/Coveralls - Disposable

Soil excavations - (Level C modified)

Inner Gloves - N/A
Boots/Boot Covers - Steel Toe
Outer Gloves - Work Gloves
Outer Garment/Coveralls - Disposable

5.9 Standard Operating Procedures for Respiratory Protection Devices

The following subsections define standard operating procedures for air purifying respirators.

5.9.1 Cleaning and Disinfecting Air Purifying Respirators(APR)

APRs in routine use should be cleaned and disinfected at least daily. Where respirators are used only occasionally, or when they are in storage, the cleaning interval is weekly or monthly, as appropriate.

5.9.1.1 Daily Cleaning Procedure

The steps to be followed for cleaning and disinfecting daily are as follows:

- Respirator Disassembly. Respirators are taken to a clean location where the filters, cartridges or canisters are removed, damaged to prevent accidental reuse, and discarded.
- Cleaning. In most instances, the cleaning and disinfecting solution provided by the manufacturer is used, and is dissolved in warm water in an appropriate tub. Using gloves, the respirator is placed in the tub

and swirled for a few moments. A soft brush may be used to facilitate cleaning.

- Rinsing. The cleaned and disinfected respirators are rinsed thoroughly in water to remove all traces of detergent and disinfectant. This is very important for preventing dermatitis.
- Drying. The respirators may be allowed to dry in room air on a clean surface. They may also be hung upside down like drying clothes, but care must be taken not to damage or distort the facepieces.
- Reassembly and Inspection. The clean, dry respirator facepieces should be resembled and inspected in an area separate from the disassembly area to avoid contamination. Special emphasis should be given to inspecting the respirators for detergent or soap residue left by inadequate rinsing. This appears most often under the seat of the exhalation valve, and can cause valve leakage or sticking.

5.9.1.2 After Routine Use in Exclusion Zone

The steps to be followed for cleaning and disinfecting in the field are as follows:

- The mask may be washed/rinsed with soap and water, then
- At a minimum, the mask should be wiped with disinfectant wipes (benzoalkaloid or isopropyl alcohol), and allowed to air dry in a clean area.

5.9.2 APR Inspection and Checkout

1. Visually inspect the entire unit for any obvious damages, defects, or deteriorated rubber.
2. Make sure that the facepiece harness is not damaged. The serrated portion of the harness can fragment which will prevent proper face seal adjustment.
3. Exhalation Valve - pull off plastic cover and check valve for debris or for tears in the neoprene valve (which could cause leakage).
4. Inhalation Valves (two) - screw off cartridges/canisters and visually inspect neoprene valves for tears. Make sure that the inhalation valves and cartridge receptacle gaskets are in place.
5. Make sure that you have the correct cartridge.
6. Don and perform negative pressure test.

5.9.3 Storage of Air Purifying Respirators

OSHA requires that respirators be stored to protect against:

Dust
Sunlight
Heat
Extreme cold
Excessive moisture
Damaging chemicals
Mechanical damage

Storage of respirators should be in a clean, secure area which minimizes the chance for contamination or unsanitary conditions.

5.10 Standard Operating Procedures for Personal Protective Clothing

5.10.1 Inspection

Proper inspection of PPE features several sequences of inspection depending upon specific articles of PPE and it's frequency of use. The different levels of inspection are as follows:

Inspection of equipment as it is issued to workers.

Inspection after use or training and prior to maintenance.

Periodic inspection of stored equipment.

Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.

The primary inspection of PPE in use for activities at the Site will occur prior to immediate use and will be conducted by the user. This ensures that the specific device or article has been checked-out by the user, and that the user is familiar with its use.

Table 5.1 Sample PPE Inspection Checklists

CLOTHING

Before use:

- Determine that the clothing material is correct for the specified task at hand.
- Visually inspect for:
  - imperfect seams
  - non-uniform coatings
  - tears
  - malfunctioning closures
- Flex product:
  - observe for cracks
  - observe for other signs of shelf deterioration
- If the product has been used previously, inspect inside and out for signs of chemical attack:
  - discoloration
  - swelling
  - stiffness

During the work task, periodically inspect for:

- Evidence of chemical attack such as discoloration, swelling, stiffening, and softening. Keep in mind, however, that chemical permeation can occur without any visible effects.
- Closure failure.
- Tears.
- Punctures.
- Seam Discontinuities.

GLOVES

Before use:

- Visually inspect for:
  - imperfect seams
  - tears, abrasions
  - non-uniform coating
  - pressurize glove with air; listen for pin-hole leaks.

5.11 Specific Levels of Protection Planned for the Site

The following levels of protection will be utilized during activities at the Site:

- o Level C modified
- o Level D

Table 5.2 presents the level of protection planned for the completion of individual task assignments and the specific components of each protective ensemble.

Table 5.2
SPECIFIC LEVELS OF PROTECTION PLANNED FOR THE TASK ASSIGNMENTS AT THE SITE

Level A Tasks

- o No Activities

Level B Tasks

- o No Activities

Level C Tasks

- o Grid layout
- o Surface Soil Sampling
- o Soil excavations

Level D Tasks

- o General Work Observation
- o Sealed sample labeling and processing

6.0 MEDICAL SURVEILLANCE REQUIREMENTS

Medical monitoring programs are designed to track the physical condition of employees on a regular basis as well as survey preemployment or baseline conditions prior to potential exposures. The medical surveillance program is a part of each employers Health and Safety program.

6.1 Baseline or Preassignment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials, each employee must receive a preassignment or baseline physical. The contents of the physical is to be determined by the employers medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the Site is as follows:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Chest X-ray (every 2 years).
- EKG.
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry, including hematology, serum analyses, and heavy metals toxicology.

The preassignment physical should categorize employees a fit-for-duty and able to wear respiratory protection.

6.2 Periodic Monitoring

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate. The employers medical consultant should prescribe an adequate medical which fulfills OSHA 29 CFR 1910.120 requirements. The preassignment medical outlined above may be applicable.

All personnel working in contaminated or potentially contaminated area's at the Site will verify currency (within 12 months) with respect to medical monitoring. This is done by indicating date of last physical on the safety plan agreement form.

6.3 Site Specific Medical Monitoring

For activities at the Site, the following specific tests will be required prior to individuals entering the Exclusion Zone or Contamination Reduction Zone.

None

6.4 Exposure/Injury/Medical Support

As a follow-up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing. Depending upon the type of exposure, it is critical to perform follow-up testing within 24-48 hours. It will be up to the employers medical consultant to advise the type of test required to accurately monitor for exposure effects.

6.5 Exit Physical

Not Required.

7.0 FREQUENCY AND TYPES OF PERSONAL AIR MONITORING/SAMPLING

The scope of this work plan will require the use of personal air monitoring instrument, initially at the outset of each task assignment.

7.1 General

Air sampling during soil removal will be conducted as appropriate. Typically, samples will be taken downwind of the soil removal process. No area samples will be required during the grid layout and sample acquisition tasks.

8.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program.

8.1 Buddy System

During all Level B activities or when some conditions present a risk to personnel, the implementation of a buddy system is mandatory. A buddy system requires at least two people who work as a team; each looking out for each other. For example, Level B operations generally require three people. Table 8.1 lists those tasks which require a buddy system and any additional site control requirements.

8.2 Site Communications Plan

Successful communications between field teams and contact with personnel in the support zone is essential. The following communications systems will be available during activities at the Site.

- Hand Signals

Signal	Definition
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I am alright/I understand
Thumbs down	No/negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

8.3 Work Zone Definition

The three general work zones established at the Site are the Exclusion Zone, Contamination Reduction Zone, and Support Zone. Figure 8.1 provides a site map with the work zones designated on it.

The Exclusion Zone is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to personnel. Entry into the Exclusion Zone requires the use of personnel protective equipment.

The Contamination Reduction Zone is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal

protection as defined in the decontamination plan.

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. Personal protective equipment is therefore not required.

8.4 Nearest Medical Assistance

Figure 8.2 provides a map of the route to the nearest medical facility which can provide emergency care for individuals who may experience an injury or exposure on-site. The route to the hospital should be verified by the HSO, and should be familiar to all site personnel.

The following individuals on-site have current certification in CPR and/or first aid:

- Jean Arya

8.5 Safe Work Practices

Table 8.2 provides a list of standing orders for the Exclusion Zone.

Table 8.3 provides a list of standing orders for the Contamination Reduction Zone.

8.5 Emergency Alarm Procedures

The warning signals described in section 10.4 "Evacuation Routes and Procedures," will be deployed in the event of an emergency. Communication signals will also be used according to section 8.2.

TABLE 8.1. PERSONNEL REQUIREMENTS

Task	Buddy System	Line of Sight	Comments
**Grid layout	YES	NO	
**Surface soil sampling	YES	NO	
**Soil excavations	YES	NO	

FIGURE 8.1
SITE MAP DEPICTING WORK ZONES

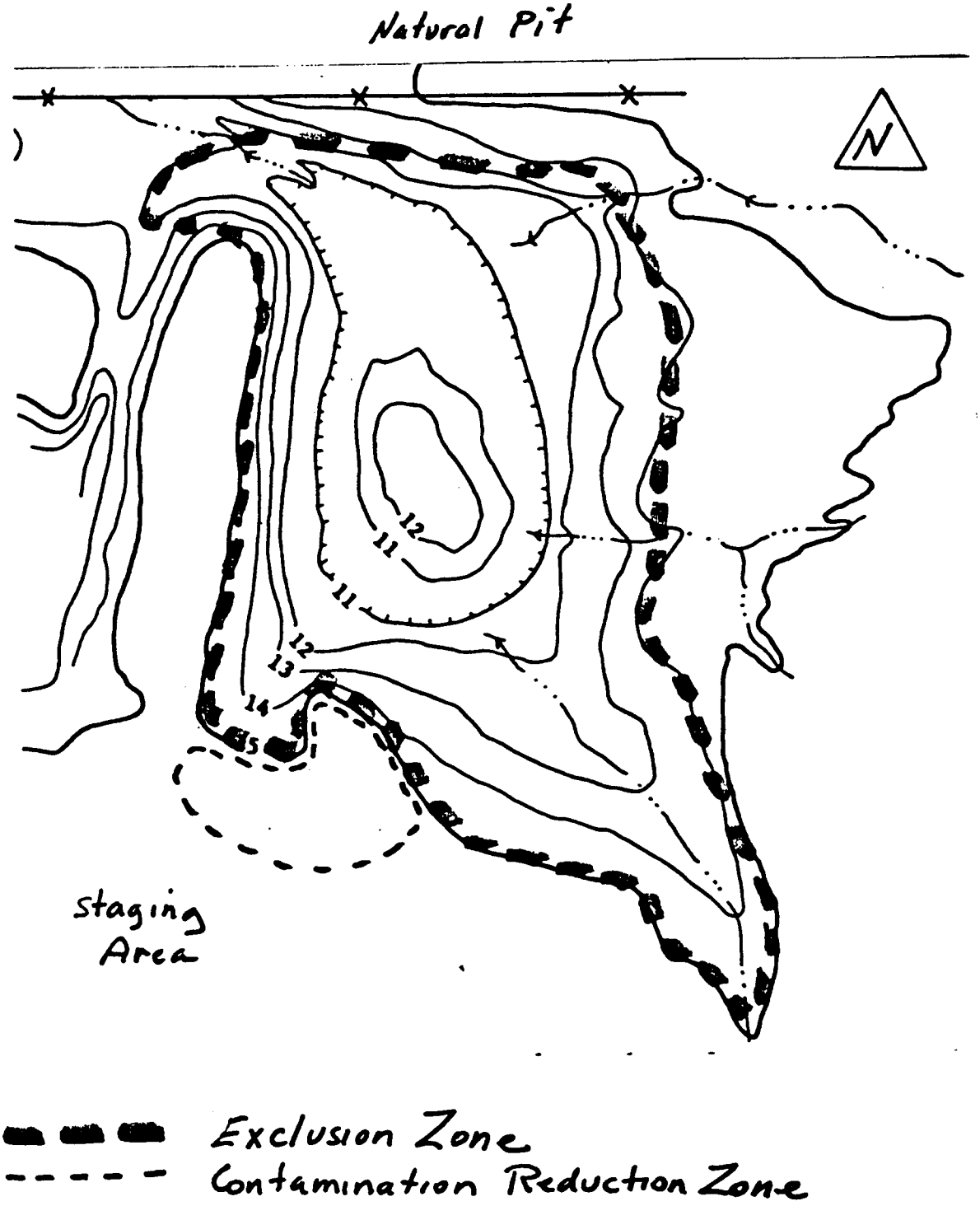


FIGURE 8.2
MAP DEPICTING ROUTE TO NEAREST MEDICAL FACILITIES

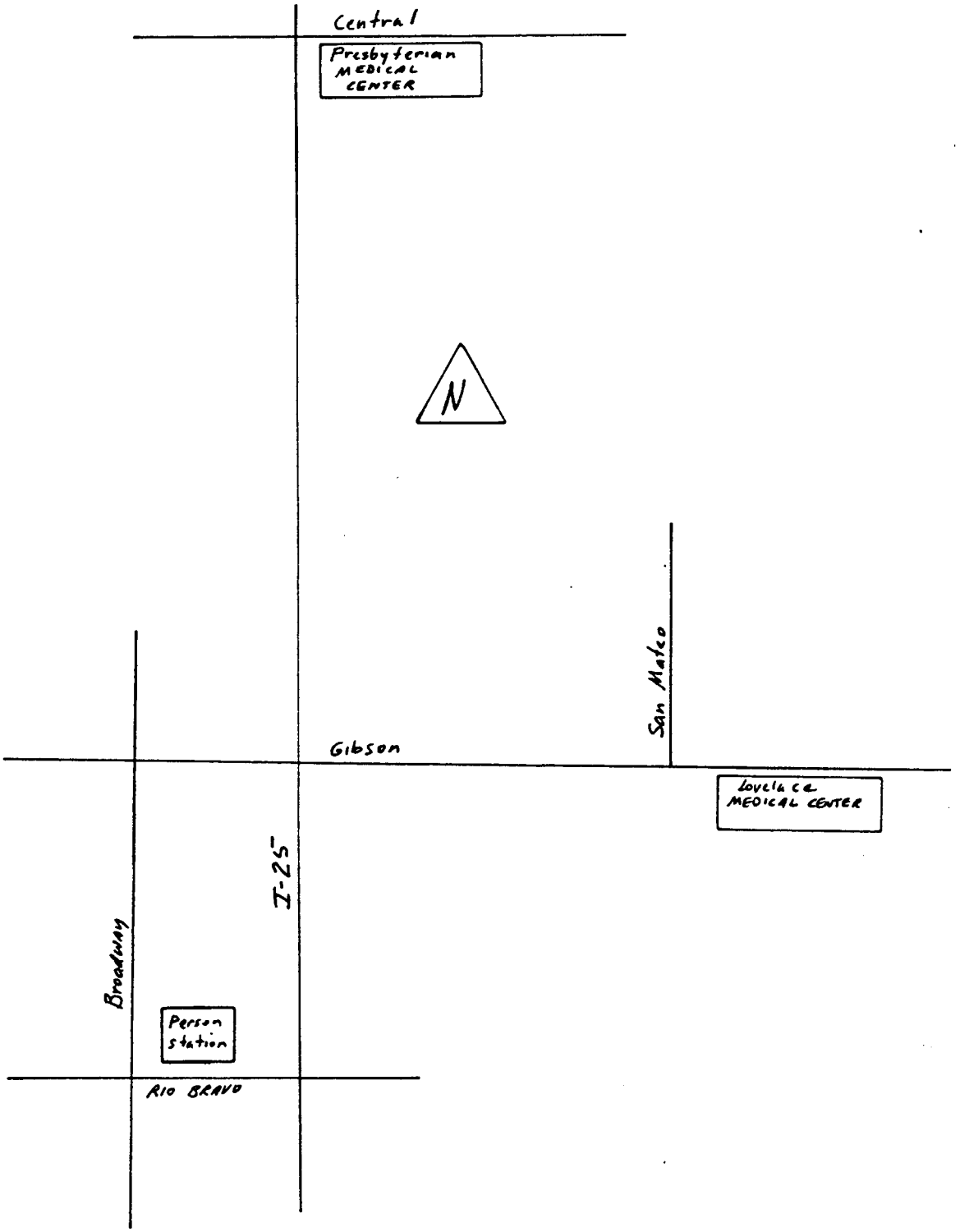


TABLE 8.2
STANDING ORDERS FOR EXCLUSION ZONE

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Check-in on entrance to this zone.
- Check-out on exit from this zone.
- Implement the communications system.
- Wear the appropriate level of protection as defined in the Safety Plan.
- Exit decontamination or outer protective clothing removal occurs before entering into the contamination reduction zone.

TABLE 8.3
STANDING ORDERS FOR CONTAMINATION REDUCTION ZONE

- No smoking, eating, or drinking in this zone.
- No horse play.
- No matches or lighters in this zone.
- Wear the appropriate level of protection.
- Assure equipment and employees are properly decontaminated before entry into this zone from the exclusion zone.

9.0 DECONTAMINATION PLAN

Table 5.2 lists the tasks and specific levels of protection required for each task. Consistent with the levels of protection required, Figures 9.1 through 9.3 provide a step by step representation of the personnel decontamination process for Levels A through C. These procedures should be modified to suit site conditions and protective ensembles in use.

9.1 Standard Operating Procedures

Decontamination involves the orderly controlled removal of contaminants. Standard decontamination sequences are presented in Figures 9.1, 9.2, and 9.3. All site personnel should minimize contact with contaminants in order to minimize the need for extensive decon.

9.2 Levels of Decontamination Protection Required for Personnel

The levels of protection required for personnel assisting with decontamination will be Level D .

The Site Safety Officer is responsible for monitoring decontamination procedures and determining their effectiveness.

9.3 Equipment Decontamination

Sampling equipment will be decontaminated in accordance with procedures as defined in the work plan, Decontamination Procedures. Pressurized water rinse will be sufficient for decontamination of non-sampling equipment and heavy machinery.

9.4 Disposition of Decontamination Wastes

All equipment and solvents used for decontamination shall be decontaminated or disposed of properly. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures.

10.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

10.1 Pre-Emergency Planning

During the site briefings held periodically/daily, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. Table 10.1 identifies the hazardous conditions associated with specific site activities. The plan will be reviewed and revised if necessary, on a regular basis by the HSO. This will ensure that the plan is adequate and consistent with prevailing site conditions.

10.2 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The HSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the project manager in his/her mission within the parameters of their scope of work.

The Site Supervisor is Steve Anderson.

The HSO is Dan Pacheco.

Alternates are:

- Ron Johnson
- Elaine Beckett

10.3 Emergency Recognition/Prevention

Table 3.1 provided a listing of chemical hazards onsite. Additional hazards as a direct result of site activities are listed in Table 10.1 as are prevention and control techniques/mechanisms. Personnel will be familar with techniques of hazard recognition from preassignment training and site specific briefings. The HSO is responsible for ensuring that prevention devices or equipment is available to personnel.

10.4 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Evacuate the premises immediately when the vehicle horn is sounded continuously for 10 seconds or greater.

Personnel will be expected to proceed to the closest exit with your buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the Re-entry alarm is sounded or an authorized individual provides further instructions.

TABLE 10.1
EMERGENCY RECOGNITION/CONTROL MEASURES

Hazard	Specific Condition/ Location	Prevention\Control
Fire/Explosion	Vehicles Oil contaminated Soil	Park vehicle away from weeds Fire Extinguisher Don't leave vehicle runningunattended
Spill		Berms/Dikes Sorbent Materials Foams
Air Release		Water Spray Evacuation Routes Proper soil handling techniques

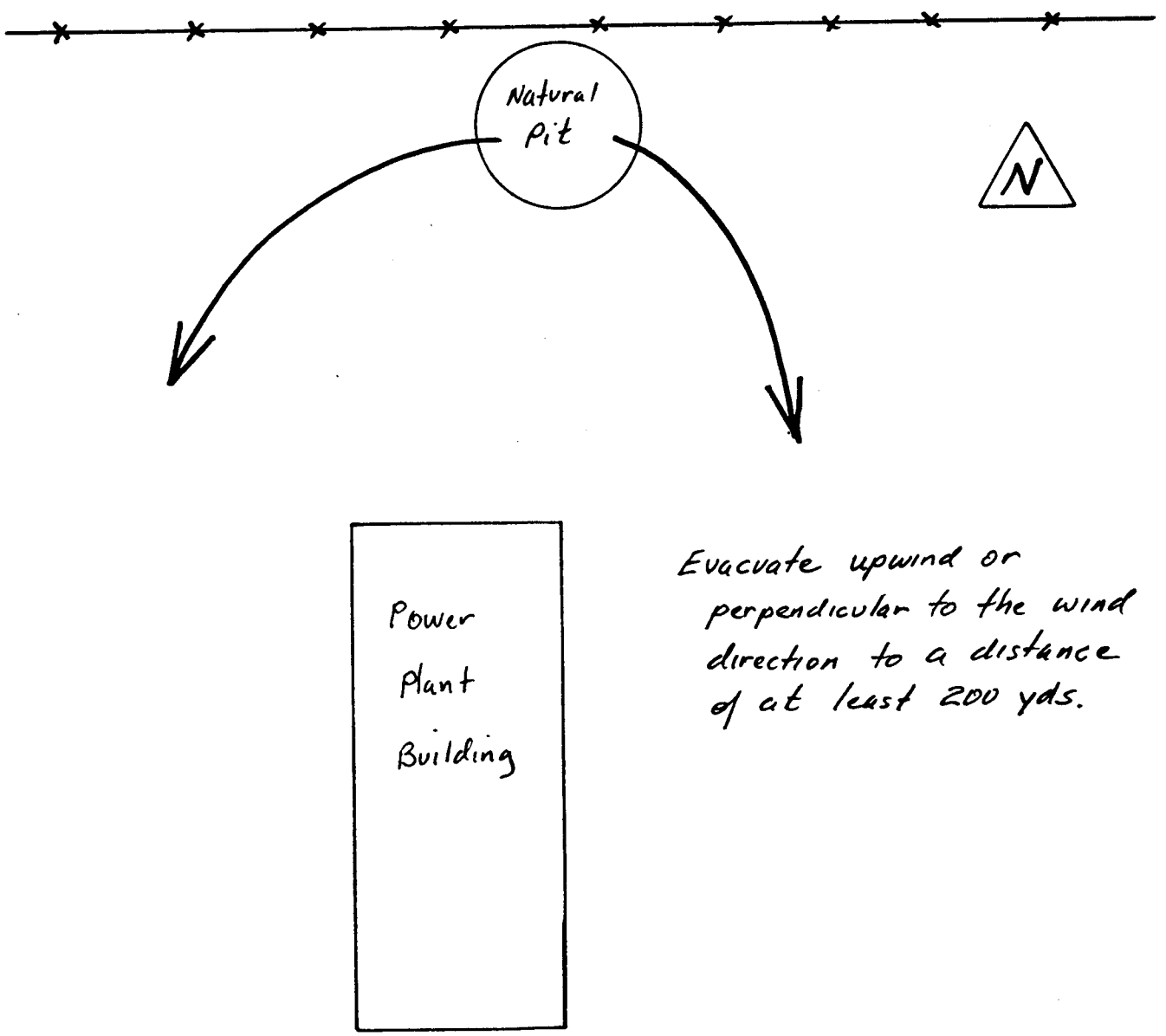
Figure 10.1 provides a map depicting evacuation routes for the site and immediate area. Also indicated are muster areas and safe distances in the event of a major incident.

10.7 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies.

Organization	Contact	Telephone
Ambulance:		911
Police:		911
Fire:		911
State Police:	District Office	841-9256
Hospital 1:	Lovelace Medical Center	262-7222
Hospital 2:	Presbyterian Hospital	841-1111
Poison Control Center		843-2551
Regional EPA:	Richard Mayer	214-655-6775
State Authority:	Bruce Swanton	1-827-2923
National Response Center		800-424-8802
Center for Disease Control		404-488-4100
Chemtrec		800-424-9555

FIGURE 10.1
EVACUATION ROUTES AND SAFE DISTANCES



10.8 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket.) First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the project manager.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Table 3.1.

Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary.

10.9 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the project manager or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available onsite to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

10.10 Spill or Leaks

In the event of a spill or a leak, site personnel will:

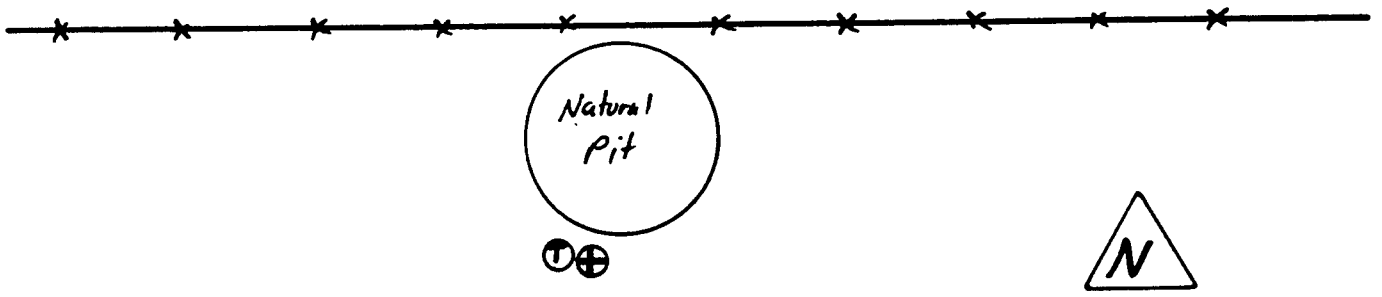
- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials

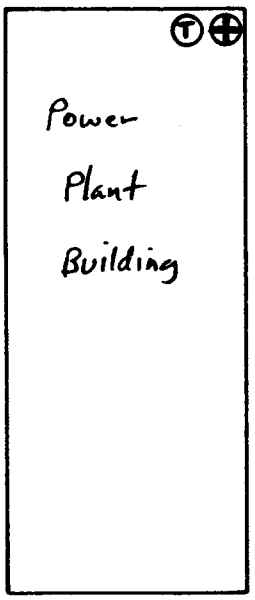
10.11 Emergency Equipment/Facilities

Figure 10.2 provides a map of the site and identifies the location of the following emergency equipment:

- Site Telephone
- First Aid Kit

FIGURE 10.2
SITE MAP WITH EMERGENCY EQUIPMENT LOCATED





Ⓣ - Telephone

⊕ - First Aid Kit

11.0 CONFINED SPACE ENTRY PROCEDURES

No confined space entry will be required during the inplementation of this work plan.

12.0 SPILL CONTAINMENT PROGRAM

The procedures defined in this section comprise the spill containment program in place for activities at the Site.

- All drums and containers used during the clean-up shall meet the appropriate DOT, OSHA, and EPA regulators for the waste that they will contain.

- Drums and containers shall be inspected and their integrity assured prior to being moved. Drums or containers that cannot be inspected before being moved because of storage conditions, shall be positioned in an accessable location and inspected prior to further handling.

- Operations on site will be organized so as to minimize the amount of drum or container movement.

- Employees involved in the drum or container operations shall be warned of the hazards associated with the containers.

- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (absorbent, pillows, etc.) will be stationed in the immediate area. The spill containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred.

- Drums or containers that cannot be moved without failure, shall be emptied into a sound container.

- Fire extinguishing equipment meeting 29 CFR part 1910. subpart 1 shall be on hand and ready for use to control fires.

NOTE: The following Level of Protection modifications were made by the plan preparer:

Level B changed to Level C - Modified for Grid layout

Reasons:
Risk of inhalation is very small during grid layout.

Level B changed to Level C - Modified for Surface soil sampling

Reasons:
Risk of inhalation is very small for surface soil sampling.

Level B changed to Level C - Modified for Soil excavations

Reasons:
Risk of inhalation is moderate for equipment operator, dust generation will be minimized by use of sprayed water.

Letter - RE: Remediation Work Plan Review

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE SUITE 1200
DALLAS TEXAS 75202-2733

FEB 14 1992

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Ron D. Johnson
Environmental Analyst
Public Service Company
Alvarado Square
Albuquerque, New Mexico 87158

Dear Mr. Johnson:

We have completed a review of your Remediation Work Plan for the Natural Pit, submitted July 9, 1991, and feel that the plan is acceptable. However, since this plan is considered a final remedy for the pit, the Environmental Protection Agency (EPA) cannot officially approve the plan until all public participation procedures have been met (public comment period/hearing).

In addition, before the Environmental Protection Agency (EPA) can rescind the two administrative controls (required by a February 26, 1991 EPA letter) required for the Natural Pit Area (NPA), EPA must review and agree with the soil removal report/results on the NPA. Furthermore, before EPA can remove this unit from the permit, Public Service Company must (PSC) initiate a Class III permit modification, according to 40 CFR 270.42(c).

Since the soil removal plan is a final remedy for the pit and since a Class III modification requires an automatic hearing, it may be beneficial for PSC not to implement the soil removal plan until after the public hearing/comment period ends (risk of potential public comments contrary to PSC's proposed remedy). However, PSC may implement the proposed remedy before the Class III permit modification is initiated, if PSC feels that no public objections/concerns are likely.

If you have any further questions, please contact Richard Mayer of my staff at (214) 655-6775.

Sincerely yours,

Jack Diveta

for Allyn M. Davis, Director
Hazardous Waste Management Division (6H)

cc: Kathleen Sisneros, NMED

Letter - RE: Class III Permit Modification for the NPA with Fact Sheet

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

JAN 20 1994

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Ron D. Johnson
Environmental Analyst
Public Service Company
Alvarado Square
Albuquerque, New Mexico 87158

RE: Class III Permit Modification for the Natural Pit Area - Public Service Company (PSC) - NMT360010342

Dear Mr. Johnson:

On February 26, 1991, the Environmental Protection Agency (EPA) tentatively approved a finding of no further action (two administrative controls were required) for the Natural Pit Area (NPA). On September 3, 1991, PSC sent a letter to EPA demonstrating completion of the two administrative controls.

Later, PSC made a decision to voluntarily clean close the NPA, even though a tentative no further action finding had been approved by EPA. On July 9, 1991, PSC submitted a voluntary Remediation/Soil Removal Plan. On February 14, 1992, EPA sent out a tentative approval letter on the voluntary Remediation/Soil Removal Plan for the NPA. In both letters, EPA instructed PSC that a Class III permit modification was needed in order to remove the NPA from the permit.

However, neither letter from EPA imposed a date/deadline by which a Class III permit modification should have been initiated. Therefore, EPA is requiring that PSC initiate a Class III permit modification for the NPA to EPA by April 30, 1994.

If you have any further questions regarding this letter, please contact Richard Mayer of my staff at (214) 655-7442.

Sincerely yours,

for William K. Honker, P.E.
Chief
RCRA Permits Branch (6H-P)

cc: Benito Garcia, NMED

PUBLIC SERVICE COMPANY (PSC) FACT SHEET

- On February 26, 1991, EPA approved no further action on the Natural Pit Area (NPA). However, since there was some metal contamination in the upper 2 feet above background (chromium and lead) but below corrective action levels, EPA required PSC to put up warning signs around the NPA and to put this unit in the county plat.

- Since then, PSC has decided to remove all soil contamination from the NPA so that they can sell the property. Therefore, PSC submitted a remedial soil removal plan to EPA.

- This plan requires the removal of all contaminated soil and testing of the remaining soil to ensure "clean closure". EPA tentatively approved this plan on February 14, 1992.

- However, before this unit can be removed from the HSWA permit, PSC must initiate a Class III permit modification. Class III permit mods automatically require a public hearing. In the above mentioned approval letters, EPA did not require a date by which PSC must initiate a Class III mod for the NPA.

- Since PSC still has not initiated a Class III permit mod, EPA is requiring PSC to initiate a modification by April 30, 1994.

- NMED is presently requiring corrective action on a underground RCRA tank (which did not have a bottom) which had releases into the ground water.