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**CONSOLIDATED CONSENT AGREEMENT/
FEDERAL FACILITY COMPLIANCE AGREEMENT
MONTHLY PROGRESS REPORT PERIOD ENDING
JUNE 30, 1991**

06/30/91

**106
REPORT**

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

Introduction

The Consent Agreement (CA) under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Sections 120 and 106(a) and the Federal Facility Compliance Agreement (FFCA) between the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA), signed April 9, 1990 and July 18, 1986, respectively, require that monthly reports be submitted to the U.S. EPA regarding progress made to meet the provisions of those agreements. This report fulfills those requirements by describing actions undertaken at the Feed Materials Production Center (FMPC) during the period June 1 through June 30, 1991 and planned actions for the period July 1 through July 31, 1991.

Work completed in June by the DOE includes the following:

- The scope of work for Part 5, Groundwater Modeling and Geochemical Investigation Selected Relocation of the South Plume Well Field, was submitted to the U.S. EPA for review on June 4, 1991.
- The 100% Design Review Drawings and Specifications for Part 2 of the South Groundwater Contamination Plume were issued to the Ohio and U.S. EPAs for informational purposes on June 7, 1991.
- The revised Plant 1 Continuing Release Removal Action Work Plan was submitted to the U.S. EPA and the Ohio EPA on June 14, 1991.
- The 100% Design Drawings and Specifications for Plants 2/3 and 9 groundwater extraction systems were Certified for Construction in mid-June.
- The Certified for Construction package necessary to implement Removal Action 4, Silos 1 and 2, was issued on June 20, 1991.
- The contract for the fabrication of the trailer-mounted Wastewater Treatment System for Part 3 of the South Groundwater Contamination Plume was awarded on June 21, 1991. The Certified for Construction package for the utilities service portion was issued on June 28, 1991.

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WORK ASSIGNMENTS AND PROGRESS

Descriptions of work progress are presented in the following sections and/or enclosures to this report:

- o CA Section IX - Removal Actions.
- o CA Section X - Remedial Investigation/Feasibility Study.
- o Enclosure A - Wastewater Flows and Radionuclide Concentrations under CA Section XXIII.B.
- o Enclosure B - FFCA: Initial Remedial Measures and Other Open Actions.
- o Enclosure C - Drilling/Boring Logs.

CA Section IX. Removal Actions

This section provides an update of activities associated with the implementation of Removal Actions (RAs) at the FMPC during June 1991. Information is presented for each of the removal actions identified in the Consent Agreement and the four recently agreed upon Removal Actions:

- o RA No. 1, Contaminated Water Beneath FMPC Buildings.
- o RA No. 2, Waste Pit Area Runoff Control.
- o RA No. 3, South Groundwater Contamination Plume.
- o RA No. 4, Silos 1 and 2.
- o RA No. 5, K-65 Decant Sump Tank.
- o RA No. 6, Waste Pit 6 Residues.
- o RA No. 7, Outfall Pipeline Replacement (Previously Outfall Pipeline Investigation and Repair).
- o RA No. 8, Plant 1 Pad Continuing Release.

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RA No. 1, Contaminated Water Beneath FMPC Buildings

Plant 6 - Pumping and collection of the perched water from underneath Plant 6 began on May 31, 1991. Consistent with the U.S. EPA modifications to the Plant 6 Perched Groundwater Removal Action Work Plan, the water will be treated prior to mixing with other waste streams. The water is currently being collected in a tank located in Plant 6. Approximately 20,000 gallons of water located in the Plant 6 clarifier pit are awaiting removal and treatment. The available storage capacity for the water at Plant 6 and Plant 8 is approximately 8,000 gallons. Once this capacity is filled, pumping will be discontinued until the Plant 8 treatment system is available. The startup date for the treatment system is July 24, 1991. The carbon absorption treatment system in Plant 8 will be used to treat the perched groundwater from Plants 2/3, 6, 8, and 9. The water pumped from Plant 6 will be stored consistent with the approved work plan prior to treatment. The milestone for pumping and treatment of the Plant 6 perched water was updated to reflect the schedule as based upon durations outlined in the removal action work plan and the resolution of the work plan dispute.

Plants 2/3 and Plant 9 - The design work necessary to locate and design the extraction and treatment systems specified by the approved work scope continued on schedule. Engineering activities associated with the detailed design and procurement of piping and equipment to support the removal and treatment of contaminated perched water beneath Plant 9, Plants 2/3, and Plant 8 are underway. The 90% complete design drawings and specifications for Plants 2/3 and 9 extraction systems arrived from the Architect/Engineer (A/E) in early May. The 100% Certified For Construction (CFC) drawings were completed in mid-June.

Activities in July will focus on the procurement and installation of equipment for the Plant 8 treatment system and procurement activities for Plant 9.

All activities are on schedule to support the deliverables identified in the three U.S. EPA approved Removal Action Work Plans.

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RA No. 1, Contaminated Water Beneath FMPC Buildings (cont'd.)

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Pumping and treatment of the Plant 6 perched groundwater operational.	Open, on schedule.	July 24, 1991
Initiate Pumping in Plant 9.	Open, on schedule.	August 20, 1991
Initiate Pumping in Plants 2/3 and 8.	Open, on schedule.	November 1, 1991

RA No. 2, Waste Pit Area Runoff Control

The Work Plan for the Waste Pit Area Runoff Control Removal Action was approved with modifications by the U.S. EPA on January 10, 1991 and conditional approval was received from the Ohio EPA on April 2, 1991.

A modified Sampling and Analysis Plan and a revised schedule based on the conditions and modifications imposed/made to the project were submitted to the U.S. EPA and the Ohio EPA on May 14, 1991.

In order to satisfy one of the conditions stipulated by the U.S. EPA for the approval of the Waste Pit Area Runoff Control EE/CA, Permeability Studies in the Waste Pit Area were initiated. These tests were to determine if the clays in the detention area could meet the required maximum permeability of 1×10^{-7} cm/sec. Laboratory analysis of the results from the permeability testing in the north and east detention areas indicated permeability in the range of 1×10^{-7} cm/sec. However, field studies showed permeability factors as high as 1×10^{-3} cm/sec. Due to these results, modifications to the design have been initiated in the detention areas.

Construction activities were initiated on June 6, 1991 with the issuance of the construction work order to Rust Engineering. The results of the pre-excavation soil sampling indicated additional sampling will be required in some areas to further characterize the nature and extent of HSL materials contamination.

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RA No. 2, Waste Pit Area Runoff Control (cont'd.)

Planned activities in July include continuing the evaluation of the analytical results of the pre-excavation samples and the initiation of excavation activities.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Initiation of Bid/Award construction activities with issuance of the construction work order.	Completed. June 6, 1991.	June 1991
Completion of construction/system testing (system operational).	On schedule.	July 1992

RA No. 3, South Groundwater Contamination Plume

Part 1

The Work Plan for Part 1 (alternate water supply for two industrial users) of the South Plume Removal Action was approved by the U.S. EPA on January 3, 1991. The Ohio EPA approved the Work Plan for Part 1 provided that two comments were satisfactorily resolved. Responses to these comments are being prepared. The U.S. Army Corps of Engineers (COE) reached an agreement with the owner of the property where the Part 1 test well is to be installed. The Ohio EPA has inspected the well field and found the site acceptable.

By the end of June, the COE had obtained Right of Entry from approximately half of the affected property owners where the alternate water supply mains are to be located. The Right of Entry permits surveying, exploration, and construction. The COE archaeologist completed a cultural resource investigation (archaeological/historical survey) of the Part 1 well site area and found no reason to delay the proposed well test activities. Based on the COE findings, approval to proceed on the test well activities was granted by the DOE/FSO. This information will be included in a formal report to be submitted to the Ohio State Historic Preservation Officer for all areas in the South Groundwater Contamination Plume Removal Action that are affected by construction activities.

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Part 1 (cont'd.)

The Scope of Work and Cost Account Plan for testing the quality and quantity of the water from the proposed well site were finalized. Processing of the proposal through the required change control process was initiated in late June. Procurement of materials, mobilization, and drilling of the test well are expected by mid-July.

Parts 2 & 3

Part 2 (pump from leading edge of South Plume and discharged to Great Miami River) and Part 3 (the installation and operation of an Interim Advanced Wastewater Treatment System [IAWWT] to reduce contaminant loading discharged to the Great Miami River to a level less than 1,700 pounds per year) were prepared as one Work Plan and submitted to the U.S. EPA on December 17, 1990. The Work Plan for Parts 2 and 3 of the South Plume Removal Action was disapproved by the U.S. EPA on January 17, 1991. The Ohio EPA comments were received on January 18, 1991.

The preliminary drawings for Part 2 were issued to the U.S. EPA for informational purposes on February 6, 1991.

A meeting was held on February 8, 1991 at the Ohio EPA Dayton office to discuss key comment items and FMPC's initial responses. The U.S. EPA did not attend the meeting. Several changes resulted from the meeting and were reflected in the revised Work Plan and responses to comments. The Ohio EPA stated that, based on the latest groundwater information discussed at a meeting held on February 1, 1991 at Advanced Sciences, Inc. (ASI) offices, relocation of the well field to the north should be considered.

A second meeting was held February 20, 1991 at the Ohio EPA Dayton office. The U.S. EPA and the Paddy's Run Road Site (PRRS) representatives were in attendance. A discussion on relocating the well field determined that, if possible, the well field should be moved north to minimize the impact on the PRRS plume. The Work Plan was revised to reflect an evaluation of this relocation.

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Parts 2 & 3 (cont'd.)

Due to the delay required to evaluate relocating the well field, the project was split into two construction packages. The first package, which is the most time consuming to construct, contains the transfer pump station, groundwater discharge pipeline, outfall pipeline, and associated appurtenances. The second package contains the well field details. Construction will be delayed on the well field package until the issues on the well field relocation are resolved.

A letter was issued to the U.S. EPA on February 15, 1991 entitled "Installation of a New Effluent Line and its Incorporation into the South Plume Removal Action." The letter summarized a recently completed study which indicated that the DOE would not attempt to repair the existing outfall pipeline but would instead replace the existing line with a new pipeline. The DOE also stated that a twenty-day extension was needed to make the necessary changes to the Work Plan to reflect this decision.

A revised work plan for Parts 2 and 3 of the South Plume Removal Action, which addressed the aforementioned items, was submitted to the U.S. EPA on March 11, 1991. The Work Plan was approved by the Ohio EPA on April 12, 1991 and by the U.S. EPA on April 26, 1991, provided that fifteen and two comments, respectively, were satisfactorily resolved.

A meeting was held with the U.S. EPA on May 22, 1991 to discuss the scope of work prepared to determine the location of the South Plume Removal Action Part 2 well field. After much discussion, it was determined that the well field could not be successfully installed near New Haven Road because of the organic contaminants in this area from the PRRS plume. Therefore, it was determined that the proposed well field and transfer pump station would be relocated north of the Albright & Wilson Americas facilities. However, a Part 5, in support of Part 2, would be added to the South Plume Removal Action to determine the exact relocation. Part 5 would include groundwater sampling to determine what portion of the greater-than 30 $\mu\text{g/l}$ of total uranium is downstream of the well field and the boundary of the Paddy's Run Road Site (PRRS). The DOE will determine the impact of these changes on the project schedules and funding.

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Parts 2 & 3 (cont'd.)

The 100% Design Review drawings and specifications for Part 2 were issued on May 31, 1991. The design package did not reflect the May 22, 1991 decision to relocate the well field and transfer pump station. ASI/IT initiated the computer modeling required to relocate the Part 2 well field in early June. The design package was sent to the Ohio and U.S. EPAs for informational purposes on June 7, 1991.

The work plan for Part 3 was prepared as one Work Plan with Part 2 as described above (the installation and operation of an Interim Advanced Wastewater Treatment [IAWWT] System to reduce contaminant loading discharged to the Great Miami River to a level less than 1,700 pounds per year). The Design Basis Document for the IAWWT was issued to the U.S. EPA for informational purposes on March 19, 1991. Comments were received from the Ohio EPA on the IAWWT design basis document. Responses to the comments were issued on May 30, 1991. The IAWWT System will be handled as a two-part design: the trailer package, which includes the treatment system and trailer unit; and the Utilities Services package, which includes all utilities and support systems. The IAWWT trailer package specifications were finalized and issued for bid on May 16, 1991. The bids were received on June 6, 1991. The contract for the fabrication of the trailer package was awarded on June 21, 1991. The 100% drawings and specifications utility portion of the project were Certified for Construction (CFC) on June 28, 1991.

Part 4

Part 4 of the South Groundwater Contamination Plume Removal Action Work Plan involves groundwater monitoring and institutional controls. Homeowner wells continue to be sampled on a monthly basis along Route 128 where previous above-background levels of uranium have been detected. Sampling of other homeowner and RI/FS wells continued.

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Part 5

A work plan for Part 5 (Groundwater Modeling and Geochemical Investigation Selected Relocation of the South Plume Well Field) was prepared and submitted to the U.S. EPA for review on June 4, 1991. Comments were received from the Ohio EPA on June 25, 1991. A major concern was the proposed reduction in the drinking water standard to 20 µg/l from 30 µg/l total uranium based on the latest proposed drinking water standard. This proposed drinking water standard would require extensive investigation to verify the southern extent of the 20 µg/l original contamination.

Summary

Work in June included the following activities: continuation of design work for Parts 1 and 2, working with the Corps of Engineers to obtain easements for Parts 1 and 2, finalizing a scope of work to determine the location for the relocated Part 2 well field, completion and issuance of the drawings and specifications for the utilities portion of Part 3, issuance of the Part 5 Work Plan, finalization of the Scope of Work for the Part 1 well field testing, receiving bids on the IAWWT trailer specification and issuing the contract for fabrication of the trailer unit, and reviewing the 100% Design Review drawings for the Part 2 transfer pump station and associated appurtenances package.

Activities in July will focus on the approval of the Part 1 well field testing scope of work, Cost Account Plan, and subsequent installation of the Part 1 test well; determining the location of the relocated Part 2 well field; determining the changes required due to relocation of the well field and transfer pump station; responding to comments on the Part 5 Work Plan; and completing the cultural resource investigation based on the relocation of the Part 2 well field and transfer pump station.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Issue Revised Work Plan for Parts 2 & 3 to the U.S. EPA for approval.	Completed	March 11, 1991

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Summary (cont'd.)

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Issue Design Basis Document for IAWWT to the U.S. EPA for informational purposes.	Completed	March 19, 1991
Parts 2 & 3 Revised Work Plan approved by the U.S. EPA.	Completed	April 26, 1991
Issue Scope of Work for Part 5.	Completed	June 4, 1991
Receive bids for IAWWT trailer portion of Part 3.	Completed (June 6, 1991)	June 7, 1991
Issue 100% Design Review Drawings and specifications for Part 2 to the U.S. EPA for informational purposes.	Completed (June 7, 1991)	June 14, 1991
Award contract for fabrication of IAWWT trailer portion of Part 3.	Completed	June 21, 1991
Begin Test Well installation for Part 1.	Open	July 18, 1991
Determine location of relocated Part 2 Well Field from computer modeling.	Open	TBD
Respond to comments from the U.S. and Ohio EPAs on the Part 5 Work Plan.	Open	July 25, 1991

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RA No. 3, South Groundwater Contamination Plume (cont'd.)

Summary (cont'd.)

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Respond to remaining comments from the Ohio EPA for Part 1.	Open	July 26, 1991
Respond to remaining comments from the U.S. EPA and Ohio EPA on Parts 2 and 3.	Open	August 15, 1991

RA No. 4, Silos 1 and 2

The Silos 1 and 2 Removal Action Work Plan was submitted to the U.S. EPA on November 5, 1990. The U.S. EPA approval of the Silos 1 and 2 Removal Action Work Plan was received on November 30, 1990.

The detailed design efforts necessary to implement the Removal Action were completed with the issuing of the Certified For Construction (CFC) package on June 20, 1991. The construction activities associated with modifying the Radon Treatment System (RTS) are forecasted to be completed the first week of July.

Work in July will center on awarding the contracts associated with the procurement of the equipment necessary to complete the installation of the bentonite. Also, a demonstration of the mapping equipment is scheduled to take place in Silo 4 on July 26, 1991.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Complete installation of bentonite slurry into Silos 1 and 2.	Open	December 1, 1991

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RA No. 5, K-65 Decant Sump Tank

The K-65 Decant Sump Tank Removal Action Work Plan was submitted to the U.S. EPA for approval on December 10, 1990. The U.S. EPA conditional approval of the K-65 Decant Sump Tank Removal Action Work Plan was received on January 10, 1991. The responses to the issues included in the conditional approval were submitted to the U.S. EPA on February 8, 1991. A revised implementation schedule was included in those responses.

Pumping and removal of the decant liquid was initiated on March 26, 1991. Removal of the liquid from the K-65 decant sump tank was completed on April 16, 1991 when the liquid was transferred to the holding tanks in Plant 2/3.

The analytical results for the general water quality parameters, Hazardous Substance List (HSL) volatile organics, HSL semi-volatile organics, and HSL pesticide organics were received. Results obtained from the IT Laboratory from the Decant Sump water samples showed that no HSL chemicals were present, precluding the requirement for the sludge samples to undergo full HSL analyses. Sludge samples were collected from the decant sump in late June 1991. The sludge samples will be shipped to the IT Laboratory in July for full radiological analyses only.

The liquid pumped from the K-65 decant sump tank will be stored in the Plant 2/3 holding tanks until the analytical results are available and a RCRA determination is made. The analytical results and the RCRA determination will define the treatment required for the decant sump liquid.

<u>KEY MILESTONES</u>	<u>STATUS</u>	<u>DUE DATE</u>
Complete the removal of the liquid from the K-65 decant sump tank.	Completed (April 16, 1991)	April 26, 1991

RA No. 6, Waste Pit 6 Residues

This removal action was completed on December 19, 1990.

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RA No. 7, Outfall Pipeline Replacement (Previously Outfall Pipeline Investigation and Repair)

A letter was issued to the U.S. EPA on February 15, 1991 entitled "Installation of a New Effluent Line and its Incorporation into the South Plume Removal Action." The letter summarized a recently completed study which indicated that the DOE would not attempt to repair the existing line in situ or an equivalent relining alternative. The construction of the new effluent line has been incorporated into RA No. 3, South Groundwater Contamination Plume. Please see that Removal Action for further information.

RA No. 8, Plant 1 Pad Continuing Release

The revised Plant 1 Pad Continuing Release Removal Action Work Plan was submitted to the U.S. EPA and the Ohio EPA on June 14, 1991. The removal action consists of three phases. Phase I implements the run-on/off control measures. Phase II addresses the installation of 80,000 square feet of a new covered and controlled concrete storage pad. Phase III involves activities to upgrade the remaining 375,000 square feet of the existing Plant 1 storage pad. Upgrading activities include installation of a polymeric vapor barrier over the existing concrete and the installation of concrete above the barrier with epoxy sealant. In addition, 22,000 square feet of the Phase III work area will be enclosed beneath a Sprung structure.

In June, activities included analysis of the additional sampling to characterize potential HSL contaminants for the Phase II work area.

Activities in July will include the receipt of analytical results and, pending the U.S. EPA approval of the revised work plan, the mobilization of the construction contractor.

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CA Section X. Remedial Investigation and Feasibility Study (RI/FS)

This section provides an update on RI/FS Operable Units (OUs), Community Relations, and Field Activities for June 1991. Status information is presented for each of the five Operable Units identified in the Consent Agreement. The five Operable Units are described below:

- o Operable Unit 1 (OU 1): Waste Pits 1-6, clearwell, burn pit.
- o Operable Unit 2 (OU 2): Other Waste Units - (fly ash piles, lime sludge).
- o Operable Unit 3 (OU 3): Production area and suspect areas outside production area (including effluent line to Great Miami River).
- o Operable Unit 4 (OU 4): Silos 1, 2, 3, and 4.
- o Operable Unit 5 (OU 5): All environmental media (i.e., including groundwater, surface water, soils, air, flora, fauna, etc.).

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Operable Unit 1: Waste Pits 1 - 6, Burn Pit, and Clearwell

1.1 Remedial Investigation

a. Status of Work - Key Milestones

Submittal of the Operable Unit 1 Remedial Investigation (RI) Report has been placed on hold pending the completion of additional waste pit sampling. A revised schedule for completing the RI Report was developed and submitted to the U.S. EPA and the Ohio EPA on June 28, 1991. The waste pit sampling was started in June 1991 and is scheduled for completion in 1991. A description of completed field activities is presented in Section 7.0, Site Characterization, in this document.

During June, a manpower-loaded schedule for the completion of all Operable Unit 1 RI/FS activities was finalized and individual activity description libraries were prepared for each of the scheduled activities. These efforts were completed in order to support the in-progress Consent Agreement negotiations.

b. Issues/Problems

The approved sampling program for Operable Unit 1 does not include sampling of Pits 5 and 6 and the Clearwell. Samples from these areas are required to support treatability testing. Pit 5 and the Clearwell have been declared Hazardous Waste Management Units (HWMUs). As a result of this determination, the RCRA requirements are expected to significantly impact the development of the Work Plans.

c. Corrective Actions

A Work Plan Addendum is being prepared to collect the required samples.

d. Planned Activities for July 1991

Continue work on the Work Plan Addendum for Pits 5 and 6 sampling to support treatability testing.

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Operable Unit 1: Waste Pits 1 - 6, Burn Pit, and Clearwell

1.2 Feasibility Study

a. Status of Work - Key Milestones

Submittal of the Feasibility Study (FS) Report is on hold pending the completion of the additional waste pit sampling and treatability studies. Revised FS schedules were developed that include the additional sampling and treatability studies.

The draft Treatability Work Plan was submitted for internal review on June 3, 1991.

	<u>Activity</u>	<u>Comment</u>
	Issue draft Feasibility Study Report to the U.S. EPA on March 25, 1991.	The U.S. EPA and the DOE have agreed to renegotiate the delivery date for this report.
b.	Issues/Problems	
	None to report.	
c.	Corrective Actions	
	None required.	
d.	Planned Activities for July 1991	
	Incorporate internal review comments in the draft Treatability Work Plan.	

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**SCHEDULES FOR THE SUBMITTAL OF PRIMARY DOCUMENTS UNDER THE
TERMS OF THE CONSENT AGREEMENT ARE ON HOLD PENDING THE
RENEGOTIATION OF THE REVISED CONSENT AGREEMENT DELIVERY DATES.**

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Operable Unit 2: Other Waste Units

2.1 Remedial Investigation

a. Status of Work - Key Milestones

Submittal of the Operable Unit 2 RI Report has been delayed pending the completion of additional sampling and analysis activities for site characterization and the incorporation of this data into the RI Report.

During June, a manpower-loaded schedule for the completion of all Operable Unit 2 RI/FS activities was finalized and individual activity description libraries were prepared for each of the scheduled activities. These efforts were completed in order to support the in-progress Consent Agreement negotiations.

Activity

Comment

Issue draft RI Report to the U.S. EPA by February 11, 1991.

The U.S. EPA and the DOE have agreed to renegotiate the delivery date for this report.

Substantial progress was made toward implementing the Operable Unit 2 additional site characterization program. A description of completed field activities is presented in Section 7.0, Site Characterization, in this document.

b. Issues/Problems

The revised Work Plan Addendum for additional sampling of Operable Unit 2 waste units was submitted to the U.S. EPA in April. The revised plan included the additional boring located in the Sanitary Landfill, as requested by the Ohio EPA, as well as a recommendation to utilize a Simulated Rainwater Leaching Procedure (SRLP). To date, no formal response has been received from the U.S. EPA on the additions to the sampling plan. The sampling effort is currently underway and the resolution of U.S. EPA's approval of the revised Work Plan Addendum is needed so that analytical testing can proceed in accordance with a U.S. EPA-approved Revised Work Plan.

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Operable Unit 2: Other Waste Units

2.1 Remedial Investigation

c. Corrective Actions

The DOE will pursue approval of the plan during schedule negotiations with the U.S. EPA.

d. Planned Activities for July 1991

Continue work on sampling activities.

2.2 Feasibility Study

a. Status of Work - Key Milestones

Submittal of the Operable Unit 2 FS Report has been delayed pending the completion of additional sampling and analysis activities for site characterization and incorporation of this information into the report.

Internal review comments on the draft Treatability Work Plan were received at the end of June. Comments have been reviewed and the Work Plan is being modified to address the comments.

	<u>Activity</u>	<u>Comment</u>
	Issue draft RI Report to the U.S. EPA by February 11, 1991.	The U.S. EPA and the DOE have agreed to renegotiate the delivery date for this report.
b.	Issues/Problems	
	None to report.	
c.	Corrective Actions	
	None required.	

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Operable Unit 2: Other Waste Units

2.2 Feasibility Study

d. Planned Activities for July 1991

Incorporate internal review comments into the Treatability Work Plan. Submit the Treatability Work Plan to the U.S. EPA.

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**SCHEDULES FOR THE SUBMITTAL OF PRIMARY DOCUMENTS UNDER THE
TERMS OF THE CONSENT AGREEMENT ARE ON HOLD PENDING THE
RENEGOTIATION OF THE REVISED CONSENT AGREEMENT DELIVERY DATES.**

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Operable Unit 3: Production Area and Suspect Areas

3.1 Remedial Investigation

a. Status of Work - Key Milestones

Operable Unit 3 work in June focused on planning, scheduling, and budgeting for the revised scope of work. Cost and schedules packages were prepared to support the July Consent Agreement negotiations with the U.S. EPA and the Ohio EPA.

<u>Activity</u>	<u>Comment</u>
<p>Issue draft RI Report to the U.S. EPA on April 8, 1991.</p>	<p>The U.S. EPA and the DOE have agreed to renegotiate the delivery date for this report.</p>
<p>b. Issues/Problems</p> <p>None to report.</p>	
<p>c. Corrective Actions</p> <p>None required.</p>	
<p>d. Planned Activities for July 1991</p> <p>Initiate the development of work plans for the revised scope of work for Operable Unit 3.</p> <p>Initiate work on obtaining and evaluating process knowledge information, review of historical data, and the collection and evaluation of existing data.</p>	

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Operable Unit 3: Production Area and Suspect Areas

3.2 Feasibility Study

a. Status of Work - Key Milestones

Development of detailed scoping logic related to the revised Operable Unit 3 scope of work continued in June. The U.S. EPA approved the revised outline on June 20, 1991 for the Initial Screening of Alternatives (ISA) document.

Activity

Comment

Issue the final draft of the ISA Report to the U.S. EPA.

Open, awaiting U.S. EPA comments on the draft ISA outline. Deliverable date for ISA Report will be determined by the ongoing renegotiation meetings.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for July 1991

Complete development of detailed scoping logic related to the Operable Unit 3 scope of work. This scoping logic encompasses evaluation of ongoing RCRA, construction, inventory management, and other production area programs to determine how they can best be addressed by the scope of work for Operable Unit 3.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

**SCHEDULES FOR THE SUBMITTAL OF PRIMARY DOCUMENTS UNDER THE
TERMS OF THE CONSENT AGREEMENT ARE ON HOLD PENDING THE
RENEGOTIATION OF THE REVISED CONSENT AGREEMENT DELIVERY DATES.**

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

Operable Unit 4: Silos 1, 2, 3, and 4

4.1 Remedial Investigation

a. Status of Work - Key Milestones

The revised Treatability Study Work Plan will be transmitted to the DOE Site Office on July 23, 1991 for submittal to the U.S. EPA on July 26, 1991.

During June, a manpower-loaded schedule for the completion of all Operable Unit 4 RI/FS activities was finalized and individual activity description libraries were prepared for each of the scheduled activities. These efforts were completed in order to support the in-progress Consent Agreement negotiations.

The K-65 berm field activities were completed in June. Demobilization at the slant boring under the Decant Tank was initiated. Boring will be initiated on the east side of Silo 2 during the week of July 15, 1991. Content resampling will be initiated on July 16, 1991.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for July 1991

Continue field activities on the slant boring program.

Initiate silo contents resampling on July 16, 1991.

Submit the Operable Unit 4 Treatability Study Work Plan to the U.S. EPA and the Ohio EPA for approval.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Operable Unit 4: Silos 1, 2, 3, and 4

4.2 Feasibility Study

a. Status of Work - Key Milestones

Work on the FS Report continued to be on hold.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for July 1991

Activities are expected to remain on hold.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

**SCHEDULES FOR THE SUBMITTAL OF PRIMARY DOCUMENTS UNDER THE
TERMS OF THE CONSENT AGREEMENT ARE ON HOLD PENDING THE
RENEGOTIATION OF THE REVISED CONSENT AGREEMENT DELIVERY DATES.**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Operable Unit 5: All Environmental Media

5.1 Remedial Investigation

a. Status of Work - Key Milestones

The issuance of the RI Report remains on hold pending the completion of additional sampling and the resolution of the revised schedule. During June, a manpower-loaded schedule for the completion of all Operable Unit 5 RI/FS activities was finalized and individual activity description libraries were prepared for each of the scheduled activities. These efforts were completed in order to support the in-progress Consent Agreement negotiations.

A description of completed field activities is presented in Section 7.0, Site Characterization, in this document.

<u>Activity</u>	<u>Comment</u>
<p>Issue draft RI Report to the U.S. EPA.</p>	<p>The U.S. EPA and the DOE have agreed to renegotiate the delivery date.</p>
<p>b. Issues/Problems</p> <p>None to report.</p>	
<p>c. Corrective Actions</p> <p>None required.</p>	
<p>d. Planned Activities for July 1991</p> <p>Continue site characterization activities.</p>	

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Operable Unit 5: All Environmental Media

5.2 Feasibility Study

a. Status of Work - Key Milestones

On March 20, 1991, the DOE informed the U.S. EPA that the milestone for submittal of the FS Report will require renegotiation based upon the additional field characterization required for the Operable Unit 5 RI Report. The additional field work will negatively impact the preparation of both the primary and secondary FS Report documents.

<u>Activity</u>	<u>Comment</u>
Issue Detailed Analysis of Alternatives/Selection of Preferred Alternative to the U.S. EPA.	Open, on hold; additional characterization required.
Issue draft FS Report to the U.S. EPA.	Open, on hold; additional characterization required.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for July 1991

Initiate the revision of the Operable Unit 5 ISA Report based upon the scope of the operable unit established by Consent Agreement renegotiations.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

**SCHEDULES FOR THE SUBMITTAL OF PRIMARY DOCUMENTS UNDER THE
TERMS OF THE CONSENT AGREEMENT ARE ON HOLD PENDING THE
RENEGOTIATION OF THE REVISED CONSENT AGREEMENT DELIVERY DATES.**

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

RI/FS Community Relations

6.0 RI/FS Community Relations

a. Status of Work

Articles for the July edition of the Fernald Site Cleanup Report were submitted for review and comment. This publication replaces the Cleanup Update and focuses on the progress of each of the five operable units, including activities related to various removal actions.

The DOE made a presentation to the Fernald Residents for Environment, Safety, and Health (FRESH) at the June meeting.

A Community Roundtable on "Hazardous Waste at the Fernald Site" was held on June 17, 1991. Nine community residents participated.

The next RI/FS Community Meeting is scheduled for July 16, 1991. The meeting will be held at the Meadowbrook Inn located in Ross, Ohio. Preparations for the July meeting were being made throughout the month of June.

b. Problems

The Meadowbrook Inn is not listed as a meeting site in the current Community Relations Plan.

c. Corrective Action

A letter will be prepared to address this issue and forwarded to the U.S. EPA for review/approval.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

RI/FS Community Relations

6.0 RI/FS Community Relations

d. **Planned Activities for July 1991**

In preparation for the July 16 Community Meeting, announcements will be distributed and a dry run held.

Submit revised appendices to the RI/FS Community Relations Plan to the U.S. EPA.

Distribute the community newsletter, Fernald Site Cleanup Report.

A presentation will be made to FRESH on July 25, 1991.

A Community Roundtable Meeting will be held on July 29, 1991.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

7.0 Field Activities

Operable Unit 1 Field Sampling: Waste Pits

Boring in Waste Pit 1, Boring 1767, was initiated June 24, 1991 and completed during June. The boring was cased and a well installed to permit water-level measurements and groundwater sampling. Waste Pit Borings 1765 and 1766 are scheduled to be initiated on July 10, 1991.

Surveying the locations of all the borings on Pits 1-4 and the Burn Pit was completed.

The requirements for an on-site geotechnical laboratory are currently being coordinated due to the license requirements for handling the Waste Pit 2 samples.

Expanded analyses to include Appendices 8 and 9 (40CFR264) of the samples taken from Operable Unit 1 are being considered.

Operable Unit 2 Field Sampling: Other Waste Units

In May, sampling of the Lime Sludge Ponds, the Southfield, and one of four wells required at the Inactive Fly Ash Pile was completed. A small amount of groundwater was encountered at Boring 1711 at the Inactive Fly Ash Pile. A well was installed to permit water-level measurements and groundwater sampling. The other Inactive Fly Ash Pile borings were completed in June. No water was encountered at Borings 1708, 1709, and 1710. As a result, the borings were grouted closed after completion. Samples received at the IT Laboratory from Boring 1709 exceeded the holding temperature limit established in the RI/FS Quality Assurance Program Plan (QAPP). The temperature limit for sample shipments is 4° C, plus or minus 2° C. The samples were received by the IT Laboratory at 11° C. A new boring was installed (1791) to replace Boring 1709 so that samples could be taken and properly analyzed as required by the Work Plan. No groundwater was encountered at the new boring, and it was grouted closed.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

7.0 Field Activities

Operable Unit 2 Field Sampling: Other Waste Units (cont'd.)

Boring operations at the Active Fly Ash Pile were initiated in June with Borings 1724 and 1725. No groundwater was encountered and the borings were grouted closed. Two other borings are scheduled to begin July 10, 1991.

All borehole cuttings are being drummed and handled as treatability samples and stored at the FMPC. Chain-of-custody records and logs were established to track and secure the drummed cuttings.

A revision to the Work Plan to add the requirements to provide additional sampling in the Southfield for full HSL-related sampling and analyses was initiated. Modification of the Work Plan is scheduled for completion the week of July 8, 1991. Internal review will follow.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

7.0 Field Activities (cont'd.)

Operable Unit 4: Field Sampling Silos 1, 2, 3, and 4

Slant Boring

Augering and casing operations continued at Boring 2 (1616) to provide soil and water samples under the Decant Sump. The length of Boring 2 is planned to be no longer than 145 feet. Currently, Boring 2 is 120 feet in length and is approximately three feet past the bottom edge of the Decant Sump, approximately nine feet under the Decant Sump, and three feet above the underlying aquifer. Drilling operations are taking longer than expected due to encountering "hard-pan," which is a very firm layer of a hardened mixture of clay, sand, and gravel. Delays were also experienced due to equipment modifications that were required in order to install the casing in the boring. Boring 2 is now eight days behind schedule. Schedule recovery is expected once operations begin at Borings 4 and 5 (1618 and 1619) because casing of these borings is not required. Delays are still being experienced due to high radon levels in the K-65 area during the afternoon and evening hours due to temperature inversions.

Work on the Slant Boring task is being conducted on twelve-hour shifts, six days per week, in order to coordinate the effort with that of the modifications to the Radon Treatment System and the K-65 Silo Contents Sampling Task.

Completed modifications to the Work Plan on June 28, 1991 by DCR No. 51 Revision B, which was delivered for internal review and approval. A variance to the Work Plan was completed and issued, which added the requirement to perform water sampling at all boring locations that encounter groundwater. After discussions with the U.S. EPA and the Ohio EPA, a variance was issued to permit liquid sampling in the slant borings prior to removal of three well volumes.

Water samples from Borings 1 (1615) and 3 (1617) were taken in June. The water samples were split between the WMCO and IT laboratories. Thus far, the WMCO laboratory provided initial screening results for full radiological analyses for location #1.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

7.0 Field Activities (cont'd.)

Operable Unit 4: Field Sampling Silos 1, 2, 3, and 4 (cont'd.)

Vertical Borings

The temperature of the Boring 4 (top section 1623-A) sample received at the IT Laboratory exceeded the temperature limits established by the RI/FS QAPP. The temperature of the sample was 11° C. The RI/FS QAPP requires temperatures to be 4° C, plus or minus 2° C. Re-boring took place on June 17 (Boring 1790 - top 10 feet only), and the sample was shipped to the IT Laboratory on June 18, 1991. All field activities required on the Vertical Boring task have been successfully completed.

Silo Content Sampling

The Sampling and Analysis Plan (SAP) was revised and transmitted to the U.S. EPA and the Ohio EPA for approval. The Ohio EPA approved the SAP based upon resolution of their comments. The U.S. EPA transmitted review comments and disapproved the SAP based upon those comments. Sampling of the K-65 Silo Contents is scheduled to begin July 1991. Efforts are underway to resolve the U.S. EPA comments in order to allow the timely initiation of sampling activities.

Decant Sump Sampling

Analytical results for HSL constituents were received on samples collected from the tanker used to transport the decant sump contents. Radiological analyses continued.

Sludge samples were collected from the decant sump in late June 1991. The sludge samples will be shipped to the IT Laboratory in July for full radiological analyses only. Results obtained from the IT Laboratory from the Decant Sump water samples showed that no HSL chemicals were present, precluding the requirement for the sludge samples to undergo full HSL analyses.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

7.0 Field Activities (cont'd.)

Operable Unit 5 Field Sampling: All Environmental Media

Facilities Testing

All planned in-plant borings and well installations under this task have been completed. However, five wells require development and first and second round sampling. The five wells to be developed and sampled are listed below:

- 2055 - Full HSL
- 1247 - HSL Semi-volatiles, volatiles, and Full Radiological
- 1248 - HSL Semi-volatiles, volatiles, and Full Radiological
- 1251 - HSL Semi-volatiles, volatiles, and Full Radiological
- 1258 - HSL Semi-volatiles, volatiles, and Full Radiological

These remaining wells have a very slow recharge rate and therefore require extended time to develop and sample. A second sampling team was formed in order to complete this portion of the task. Five wells were developed and sampled during June: Piezometers 1606, 1608, 1612, 1675, and 1676. Two of these wells (1675 and 1676) were in Plant 6, which now completes the development and sampling of all wells within Plant 6.

The Facilities Testing Task scope includes hand augering at the Main Electrical Substation and the northeast area of the FMPC. The hand augering has not been performed due to the need to clarify the locations and identification of the target depth requirements for these borings. A revision to the Work Plan is being initiated that will identify the needed information and the new requirement to provide HSL metals analyses of the samples to be taken at the Main Electrical Substation.

CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT

Period Ending June 30, 1991

7.0 Field Activities (cont'd.)

Operable Unit 5 Field Sampling: All Environmental Media (cont'd.)

31-Well Program

A meeting was held with the manager of Century Farms on June 6 to discuss the location of Well 2395. At that time, it was agreed that the location of Well 2395 should be moved to the east side of the Century Farms' barn, northeast of the intersection of Highway 128 and New Haven Road. A survey was performed on the newly established location and a survey map showing the new location was generated.

Paddy's Run South

Groundwater sampling for the month of June was completed on schedule.

Due to insufficient rainfall, Paddy's Run surface water samples and measurements could not be taken for the month of June.

8-RCRA Wells

Due to the slow recharge rates among the wells installed, Wells 1645 and 1646 require development for first and second round water sampling. The other six wells require a second round of sampling.

Water Level Measurements

All water-level measurements at 410 well locations were completed for the month of June.

Maps for piezometer locations are being revised and updated to show all installations.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

7.0 Field Activities (cont'd.)

Operable Unit 5 Field Sampling: All Environmental Media (cont'd.)

Operable Unit 5 Sampling (Auger)

The Work Plan is currently being revised.

Operable Unit 5 Sampling (Cable Tool)

The Work Plan is currently being revised.

Coal Pile Runoff Basin Wells

Development and initial sampling of Wells 1675 and 1676 were completed. Both wells have a very slow recharge rate; therefore, the second round of sampling will be delayed accordingly.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

8.0 Engineered Waste Management Facility (EWMF) RI/FS Site Characterization and Suitability Investigation

a. Status of Work

A Sampling and Analysis Plan (SAP) comment resolution meeting was held at the FMPC on June 7, 1991 to address issues of concern and comment incorporation into the SAP. Based upon that meeting, an additional internal review/revision cycle for the SAP was added to the schedule. The draft SAP will be revised and submitted in late August for U.S. EPA and Ohio EPA review.

<u>Activity</u>	<u>Comment</u>
Issue draft SAP for Ohio EPA/ U.S. EPA review by August 26, 1991.	Open, delayed; additional internal review cycle added to schedule.
Receive Ohio EPA/U.S. EPA comments for incorporation into SAP.	TBD.
Issue final SAP to Ohio EPA/U.S. EPA by October 28, 1991.	Open.

b. Issues/Problems

None to report.

c. Corrective Actions

None required.

d. Planned Activities for July 1991

Revise SAP and incorporate internal review comments as they become available.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

PERIOD ENDING JUNE 30, 1991

ENCLOSURE A

**WASTEWATER FLOWS AND RADIONUCLIDE
CONCENTRATIONS UNDER CA SECTION XXIII.B**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Introduction

The accompanying Effluent Radiation Reports provide, in accordance with the requirements of Section XXIII.B of the Consent Agreement under CERCLA Section 120 and 106 (a), data on the daily wastewater flows, radionuclide concentrations, and loadings released to the Great Miami River and an estimate of runoff and radionuclide concentrations to Paddy's Run during June 1991.

Summary - June 1991

The total quantity of uranium discharged from the FMPC to the Great Miami River via Manhole 175 (Outfall 11000004001) was 14.91 kilograms. The average uranium concentration for the previous 12 months was 0.86 mg/l. This is 96.6 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

There was no discharge from the Stormwater Retention Basin (Outfall 11000004002) to Paddy's Run via the Storm Sewer Outfall Ditch in June 1991. Based on 0.17 inches of rainfall in June 1991, the total quantity of uranium discharged to Paddy's Run from uncontrolled areas of the FMPC is estimated to be 0.76 kilograms.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Wastewater Flows and Radionuclide Concentrations

FACILITY: Feed Materials Production Center, U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton
9002 M 9501 900212

LOCATION: 1I000004001; 001 Total Discharge
Manhole 175 (Effluent to Great Miami River)

MONTH: June 1991

<u>Day</u>	<u>Flow (MGD)</u>	<u>Total Alpha (pCi/l)</u>	<u>Total Beta (pCi/l)</u>	<u>Total U (mg/l)</u>	<u>Total U (kgs)</u>	<u>Calculated Total U-238 (pCi/l) (1)</u>
1	0.223	221	198	0.54	0.46	182
2	0.314	392	279	0.82	0.97	277
3	0.386	414	288	0.74	1.08	250
4	0.314	311	117	0.52	0.62	176
5	0.388	329	239	0.68	1.00	230
6	0.294	320	167	0.58	0.65	196
7	0.565	342	149	0.52	1.11	176
8	0.648	189	149	0.46	1.13	155
9	0.633	320	131	0.44	1.05	149
10	0.454	198	171	0.30	0.52	101
11	0.355	405	167	0.36	0.48	122
12	0.383	113	90	0.22	0.32	74
13	0.400	140	158	0.36	0.54	122
14	0.465	135	90	0.30	0.53	101
15	0.288	140	122	0.28	0.31	95
16	0.371	207	162	0.40	0.56	135
17	0.374	117	140	0.20	0.28	68
18	0.375	180	162	0.26	0.37	88
19	0.346	140	131	0.16	0.21	54
20	0.388	140	90	0.14	0.21	47
21	0.441	122	81	0.16	0.27	54
22	0.249	144	140	0.16	0.15	54
23	0.209	180	248	0.30	0.24	101
24	0.243	194	180	0.26	0.24	88
25	0.327	198	122	0.30	0.37	101
26	0.339	189	216	0.20	0.26	68
27	0.368	167	234	0.24	0.33	81
28	0.315	167	122	0.22	0.26	74
29	0.207	162	77	0.26	0.20	88
30	0.188	153	108	0.28	0.20	95
	----- 10.850				----- 14.91	

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Wastewater Flows and Radionuclide Concentrations (cont'd.)

FACILITY: Feed Materials Production Center

LOCATION: 001 Total Discharge

MONTH: June 1991

	<u>Flow (MGD)</u>	<u>Total Alpha (pCi/l)(2)</u>	<u>Total Beta (pCi/l)(2)</u>	<u>Total U (mg/l)(2)</u>	<u>Total U (kgs)</u>	<u>Calculated Total U-238 (pCi/l)(1)(2)</u>
Avg.	0.362	219	156	0.36	0.50	123
Max.	0.648	414	288	0.82	1.13	277
Min.	0.188	113	77	0.14	0.15	47

The average uranium concentration for the previous 12 months was 0.86 mg/l. This is 96.6 percent of the Derived Concentration Guide (DOE Order 5400.5) for ingested water.

- Comments: (1) The calculated total U-238 is based on a conversion factor of 337.84 pCi U-238/mg Total U applied to the measured value of total uranium.
- (2) Average values presented are flow-weighted.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

Wastewater Flows and Radionuclide Concentrations (cont'd.)

FACILITY: Feed Materials Production Center, U.S. Department of Energy
7400 Willey Road, P.O. Box 398704
Cincinnati, Ohio 45239 Hamilton
9002 M 9501 900212

LOCATION: 1I000004002, 002 Discharge (Overflow) to Storm Sewer Outfall Ditch
Stormwater Retention Basin Spillway (Effluent to Paddy's Run)

MONTH: June 1991

There was no discharge to Paddy's Run from the Stormwater Retention Basin.

Based on 0.17 inches of rainfall in June 1991, the uranium discharge to Paddy's Run from uncontrolled areas of the FMPC is estimated to be 0.76 kgs.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

PERIOD ENDING JUNE 30, 1991

ENCLOSURE B

**FFCA: INITIAL REMEDIAL MEASURES
AND OTHER OPEN ACTIONS**

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

INTRODUCTION

Enclosure B describes actions undertaken at the Fernald site during the period June 1 through June 30, 1991 that are not covered by the reporting requirements of the Consent Agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 and 106(a).

WORK ASSIGNMENTS AND PROGRESS

Descriptions of ongoing work progress are presented in the following sections of this report. The status of ongoing work in support of the Federal Facility Compliance Agreement (FFCA) is summarized in Table 1 of Enclosure B. Completed work previously reported upon has been eliminated for brevity's sake. In this portion of the report and in Table 1, descriptions of actions are presented in a format consistent with that of the FFCA.

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

1. Initial Remedial Measures

Section C

K-65 Silo Project - Status information on the K-65 Silo project normally reported in this section is being provided under Section 7, Site Characterization, Operable Unit 4 Field Sampling: Silos 1, 2, 3, and 4.

2. Remedial Investigation/Feasibility Study (RI/FS)

Status information on the Remedial Investigation/Feasibility Study (RI/FS) normally reported in this section is being provided separately in accordance with the requirements of Section X of the Consent Agreement under CERCLA Section 120 and 106(a).

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

3. Reports and Record Keeping

Section B

The RI/FS Monthly Technical Progress Report for May 1991 was transmitted to the U.S. EPA on June 20, 1991 as an integral part of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report in accordance with requirements of Section X of the Consent Agreement.

CLEAN AIR ACT (CAA)

Section E

The eighteenth Quarterly Particulate Emissions Report for the period January 4, 1991 through April 5, 1991 was submitted to the U.S. EPA on May 24, 1991.

RADIATION DISCHARGE INFORMATION

Section A

The eighteenth Quarterly Liquid Discharge Report for the period January through March 1991 was submitted to the U.S. EPA on May 24, 1991.

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT**

Period Ending June 30, 1991

**COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND
LIABILITY ACT (CERCLA)**

REPORTING REQUIREMENTS

Section B

The Federal Facility Compliance Agreement Monthly Progress Report for May 1991 was transmitted to the U.S. EPA on June 20, 1991 as Enclosure B of the Consolidated Consent Agreement/Federal Facility Compliance Agreement (CA/FFCA) Monthly Progress Report.

TABLE 1
**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
 FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

**STATUS OF ACTIONS AS OF
 JUNE 30, 1991**

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY91 STATUS
CERCLA			
1.	INITIAL REMEDIAL MEASURES		
1.C	Implement radon control plan approved by the U.S. EPA.	-----	No longer applicable. Progress on actions to address radon emissions from the K-65 Silos are being reported separately under Section IX-Removal Actions of the Consent Agreement/FFCA Monthly Progress Report.
2.	REMEDIAL INVESTIGATION/FEASIBILITY STUDY		No action required.
2.A	RI/FS work is to be conducted in accordance with the U.S. EPA guidelines.	N/A	
2.B	-- No Action Required --	-----	Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement under CERCLA Section 120 and 106(a).
2.E	Amend and submit revised RI/FS Work Plan to U.S. EPA if deficiencies are found.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement under CERCLA Section 120 and 106(a).
2.F	Implement tasks described in the approved RI/FS Work Plan.		Status information on the RI/FS is being reported in accordance with the requirements of Section X of the Consent Agreement under CERCLA Section 120 and 106(a).
3.	REPORTS AND RECORD KEEPING		
3.B	Submit monthly RI/FS progress reports.	monthly	The RI/FS Monthly Progress Report for May 1991 was transmitted to the U.S. EPA on June 20, 1991 (DOE-1684-91).
CLEAN AIR ACT			
B.4	Prepare annual progress report on installation and replacement of emission control devices.	yearly	The Third Annual Progress Report on installation and replacement of emission control devices was transmitted to the U.S. EPA on February 22, 1990 (DOE-617-90).
C.	Provide annual reports to U.S. EPA per 40 CFR 61.94(c).	yearly	The Annual NESHAP Compliance Report for CY 1989 was transmitted to the U.S. EPA on July 9, 1990 (DOE-1392-90).
D.1	Provide U.S. EPA with yearly stack-testing schedule.	yearly	The 1989 stack testing schedule was transmitted to U.S. EPA on June 16, 1989. A letter (DOE-1615-89) was transmitted to the U.S. EPA on September 15, 1989 indicating that due to the uncertainty concerning resumption of production at the FMPC, the 1989 FFCA Stack Testing Program was being deferred. Notification of future stack testing dates will be provided to the U.S. EPA if and when a decision on the restart of facilities at the FMPC is made.
D.2	Provide U.S. EPA with stack-test results for stacks tested that year.	45 days	Stack testing is currently on hold pending resumption of manufacturing operations. Notification of future stack testing dates will be provided to the U.S. EPA if and when a decision on the restart of production activities at the FMPC is made.

TABLE 1
**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
 FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

**STATUS OF ACTIONS AS OF
 JUNE 30, 1991**

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY91 STATUS
E.1	Maintain records of monthly particulate matter emissions.	-----	Continuing.
E.2	Provide quarterly reports to U.S. EPA on these emissions.	quarterly	The eighteenth Quarterly Particulate Emissions Report for the period January 4, 1991 through April 5, 1991 was submitted to the U.S. EPA May 24, 1991 (DOE-1389-91). The seventeenth Quarterly Particulate Emissions Report for the period October 5, 1990 through January 4, 1991 was transmitted to the U.S. EPA on March 8, 1991 (DOE-773-91).
RCRA			
A.1	Conduct a hazardous waste determination on all waste streams.	30 days	Pursuant to the amended Consent Decree, a RCRA waste evaluation will be conducted on all site materials by 10/92.
A.2	Commence a hazardous waste analysis program for materials in the landfill and going to the incinerator.	30 days	Complete. Operations of these units was discontinued and data on the waste which had gone to them was provided in a 30-day FFCA deliverable on August 17, 1986. However, further review of both the waste streams and the potential of the units to be hazardous waste management units are being evaluated as actions required by the amended Consent Decree. Final results are due October 30, 1992.
A.5	Update the facility closure plan to reflect the year the facility expects to begin closure.	30 days	The Facility closure date is dependent upon closure schedules for individual TSD units as presented most recently in Section 1 of the RCRA Part B Permit Application submitted to the U.S. EPA on September 22, 1989. Facility closure will be completed on the date the last TSD unit is closed.

TABLE 1

**STATUS OF ASSIGNMENTS FOR WORK REQUIRED ON
FEDERAL FACILITY COMPLIANCE AGREEMENT ACTIONS**

**STATUS OF ACTIONS AS OF
JUNE 30, 1991**

ACTION	DESCRIPTION	COMPLETION TIME AFTER FFCA SIGNED	FY91 STATUS
RADIATION DISCHARGE INFORMATION			
A.3	Report to U.S. EPA, Ohio EPA and Ohio Department of Health the results of the continuous liquid discharge samples.	quarterly	The eighteenth Quarterly Liquid Discharge Report for the period January through March 1991 was transmitted to the U.S. EPA on May 24, 1991 (DOE-1389-91). The seventeenth Quarterly Liquid Discharge Report for the period October through December 1990 was transmitted to the U.S. EPA on March 8, 1991 (DOE-773-91).
REPORTING REQUIREMENTS			
8.	Issue monthly progress report of actions taken to ensure compliance with FFCA requirements.	monthly	May's FFCA Monthly Progress Report was transmitted to the U.S. EPA on June 20, 1991 (DOE-1684-91).

**CONSOLIDATED CONSENT AGREEMENT/FEDERAL FACILITY
COMPLIANCE AGREEMENT MONTHLY PROGRESS REPORT
PERIOD ENDING JUNE 30, 1991**

**ENCLOSURE C
DRILLING AND BORING LOGS**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>60226.91</u>	PROJECT NAME: <u>FMPCL RI/FS</u>	
BORING NUMBER: <u>1709</u>	COORDINATES:	DATE: <u>6-4-91</u>
ELEVATION:	GWL: Depth <u>NA</u> Date/Time	DATE STARTED: <u>6-4-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED: <u>6-12-91</u>
DRILLING METHODS: <u>Auger</u>	PAGE <u>1</u> OF <u>5</u>	

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (C.U.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A - Same as above			
				N.R. - No recovery			
1	67059 1515 6-4-91	4 10 15	14	medium dense, dark brown (10yr, 5/3) clayey silt, trace sand, some organic, sl. moist 5" medium dense, yellowish brown, (10yr, 5/1) clayey silt, trace sand, trace gravel, dry	ML ML	NA NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm
2	67060 1520 6-4-91	4 15 17	0	N.R.	NA	NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm
3	67061 1525 6-4-91	3 16 18	12	U. stiff, yellowish brown to dark brown (10yr, 5/8 to 3/3) s. lty clay, some gravel, trace sand, low plasticity, dry. * one brick handle was recovered	EL	35	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm
4	67062 1535 6-4-91	4 25 17	4	Dense, black (2.5y, 2/1) silt, trace gravel, dry	ML	NA	H ₂₀ - 0 ppm B ₆ - 110 cpm a - 0 cpm
5	67063 0700 6-6-91	3 13 7	8	medium dense, black (2.5y, 2/1) silt, trace gravel, dry	ML	NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm
6	67064 0705 6-6-91	7 7 7	18	medium dense, very dark gray (10yr, 3/1) silt, some gravel, dry. 7.25" medium dense, black (2.5y, 2/1) silt, trace gravel, dry	ML ML	NA NA	H ₂₀ - 0 ppm B ₆ - 70-100 cpm a - 0 cpm
7	67065 67066 0710 6-6-91	4 4 6 6	18	S.A.A	ML	NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm
8	67067 1000 6-6-91	1 2 3	18	S.A.A all Trace sand add slightly moist.	ML	NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm
9	67068 1005 6-6-91	2 3 3	18	Loose, black (2.5y, 2/1) silt, some gravel Igalls, trace sand, sl. moist.	ML	NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm
10	67071 1010 6-6-91	2 3 3	18	S.A.A	ML	NA	H ₂₀ - 0 ppm B ₆ - 50-100 cpm a - 0 cpm

Soil Bad
Soil Bad
Soil Bad
Soil Bad

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Rob Vost
Asst. Bill Anderson

Field Blank Sample No 67069
 Trip Blank Sample No 67069

Background
 H₂₀ - 0 ppm
 B₆ - 50-100 cpm
 a - 0 cpm

All samples classified to munsell color chart standards

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.26.91</u>	PROJECT NAME: <u>SMPC RI/FS</u>	
BORING NUMBER: <u>1709</u>	COORDINATES:	DATE: <u>6-6-91</u>
ELEVATION:	GWL: Depth <u>NA</u> Date/Time	DATE STARTED: <u>6-4-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth	DATE COMPLETED: <u>6-12-91</u>
DRILLING METHODS: <u>Auger</u>		PAGE <u>2</u> OF <u>5</u>

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	67072 1015 6-6-91	4 3 5	18	S.A.A.	ML	N.A.	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
17	67073 1100 6-6-91	1 2 2	18	S.A.A. add very loose	ML	NA	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
18	67074 1105 6-6-91	2 3 4	18	S.A.A. Add loose	ML	NA	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
19	67075 1105 6-6-91	2 3 3	18	S.A.A.	ML	NA	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
20	67076 1110 6-8-91	3 3 3	18	S.A.A. Add: Trace gravel Trace sand	ML	NA	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
21	67077 1330 6-11-91	2 3 4	18	S.A.A.	ML	N.A.	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
22	67078 1340 6-11-91	2 2 4	18	S.A.A. Add. Some sand	ML	N.A.	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
23	67079 1345 6-11-91	3 3 3	18	S.A.A.	ML	N.A.	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
24	67080 1350 6-8-91	3 4 3	16	27.4 S.A.A. loose, very dark gray (2.5y. 3/) fill, some sand, trace gravel, moist.	ML ML	NA NA	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm
25	67081 1500 6-11-91	1 2 2	14	S.A.A. add very loose, moist to v. moist	ML	NA.	H _{nu} - 0 ppm B _s - 50-100cpm α - 0 cpm

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53
 Driller: Bob Yost
Asst. Bill Anderson

Background

H_{nu} - 0 ppm
 B_s - 50-100cpm
 α - 0 cpm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.26.91</u>	PROJECT NAME: <u>FMPCL RI/FS</u>	
BORING NUMBER: <u>1709</u>	COORDINATES:	DATE: <u>6-11-91</u>
ELEVATION:	GWL: Depth <u>NA</u> Date/Time	DATE STARTED: <u>6-1-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED: <u>6-12-91</u>
DRILLING METHODS: <u>Auger</u>	PAGE <u>3</u> OF <u>5</u>	

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DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (1.25)	RECOVERY (%)	DESCRIPTION	USCB SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31	67092 1505 6-11-91	5	18	moist, black (2.5y. 4) silt trace sand trace gravel, 20% moist Stiff, dark grayish brown, (2.5y. 1/16) silt, clayey s.H. 0. moist 6-11-91	ML	NA	M _u - 0ppm B ₈ - 100-150cpm a - 0cpm
32	67093 1510 6-11-91	8	18	S.A.A.	ML	1.5	M _u - 0ppm B ₈ - 80-120cpm a - 0cpm
33		12					
34		19		Sampling ends at 33.0' Boring plugged and abandoned. Samples taken according to OU-2 work plan			
35							
36							

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Bob Yost
Asst. Bill Anderson

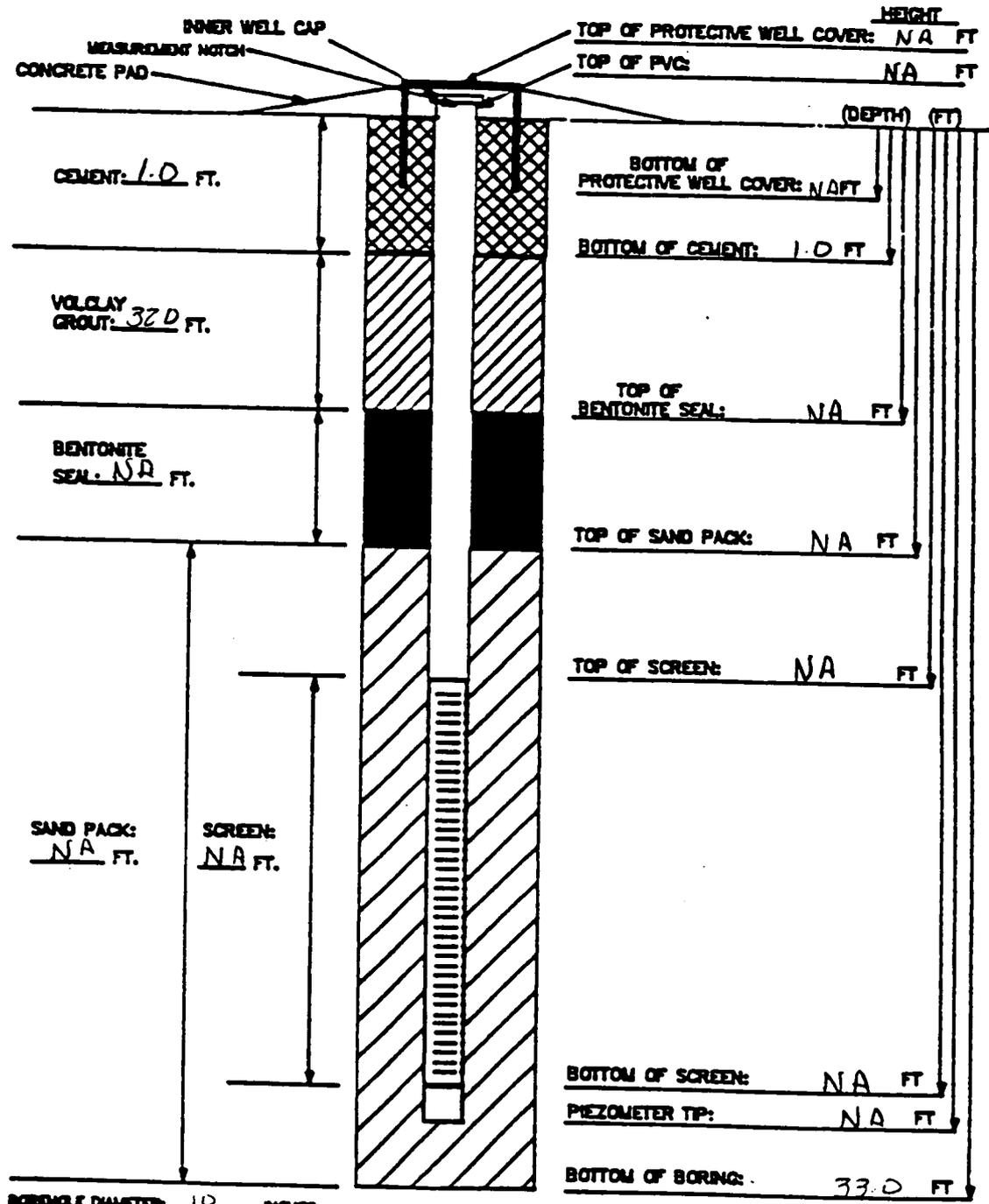
TCLP - 67089
SRLP - 67085 @ 1545
Tq. Corr. 67086
EVAL.
TCLP - 67087
DR
TCLP 67090

57

116-17-91

FERNALD RI/FS
INSTALLATION DIAGRAM
MONITORING WELL NO.
 Plugged boring
 1709

Plugging
~~INSTALLATION~~ DATE: 6-12-91
 J.L 6-17-91



MATERIALS USED:
 SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): 0
 BAGS OF VOLCLAY GROUT: 7
 AMOUNT OF CEMENT: 1 bag 7 1/2 cement
 AMOUNT OF WATER USED: 160 gals
 OTHER: NA

- NOTES: NA**
- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
 - 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
 - 3) LOWER END OF SCREEN IS CAPPED WITH AN I.D. CAP OR THREADED SLAMP.
 - 4) WATER DEPTH/DATE
 - 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
 - 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26 91

GEOLOGIST/ENGINEER: J. Lear

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS DU-2 FIELD ENG./GEO. J. Lear DATE 6-12-91
 PROJECT NO. 602.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1709
 PIEZOMETER NO. NA DATE OF ^{Plugging} INSTALLATION 6-12-91
 J.C. 6-12-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10" Hollow Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM <u>NA</u> TO <u>NA</u>	SIZE <u>NA</u> FROM <u>NA</u> TO <u>NA</u>
FLUID <u>NA</u> FROM <u>NA</u> TO <u>NA</u>	SIZE <u>NA</u> FROM <u>NA</u> TO <u>NA</u>

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE ()		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS: ^{Cement} GROUT/SLURRY BENTONITE SAND GRAVEL	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	33.0
	TOP	NA	BOTTOM	NA
	TOP	NA	BOTTOM	NA
PERFORATED SECTION	TOP	NA	BOTTOM	NA
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	33.0			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-26-91</u>	PROJECT NAME: <u>FMPU RI/FS DU-2</u>	
BORING NUMBER: <u>1726</u>	COORDINATES:	DATE: <u>6-29-91</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>6-29-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED: <u>7-2-91</u>
DRILLING METHODS: <u>53 mobile Auger</u>		PAGE <u>1</u> OF <u>4</u>

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67143 1530 6-29-91	4	18	medium dense, black (2.5y. 21) S.H. some sand, trace gravel, dry.	ML	NA	H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
2	67144 1535 6-29-91	10	18	S.A.A.	ML	NA	H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
3	67145 1540 6-29-91	7	18	S.A.A.	ML	NA	H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
4	67146 1545 6-29-91	11	18	S.A.A.	ML	NA	H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
5	67147 0845 7-1-91	13	18	S.A.A add some gravel			H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
6	67148 0850 7-1-91	7	18	S.A.A.			H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
7	67149 0855 7-1-91	5	18	S.A.A. Trace sand Trace gravel			H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
8	67150 0900 7-1-91	6	18	S.A.A.			H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
9	67151 0905 7-1-91	25	18	S.A.A.			H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm
10	67152 0910 7-1-91	10	18	S.A.A.	ML	NA	H ₂₀ - 0 ppm B ₂ - 60-110cpm α - 0cpm

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Yast
Bill Anderson

Background

H₂₀ 0 ppm
 B₂ 60-110cpm
 α 0cpm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602-26-91	PROJECT NAME: FMP/ RI/FS DU-2	
BORING NUMBER: 1726	COORDINATES:	DATE: 6-29-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 6-29-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 7-2-91
DRILLING METHODS: Mobile 53 Auger		PAGE 2 OF 4

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (L.W.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (ISF)	REMARKS
16	67153 0130 7-1-91	5 5 5	18	S.A.A.	ML	NA	H _{nu} - 0 ppm BB - 60-110cpm α - 0cpm
17	67154 0935 7-1-91	2 3 3	18	S.A.A. add moist	ML	NA	H _{nu} - 0 ppm BB - 60-110cpm α - 0 ppm
18	67155 0940 7-1-91	10 8 15	18	S.A.A. wet firm yellowish brown, (10yr. S/B) s.lty clay, Trace organics, low plasticity, moist.	ML CL	NA 1.5	H _{nu} - 0 ppm BB - 60-110cpm α - 0 ppm
20	67156 0945 7-1-91	24 20 25	18	S.A.A. add some sand	CL	2.0	H _{nu} - 0 ppm BB - 60-110cpm α - 0 ppm
22	67157 0950 7-1-91			Drilling & Sampling ceases at 21.0' all samples taken according to DU-2 work Plan			H _{nu} BB α
23	67158 0955 7-1-91			67157 Comp. TCLP			H _{nu} BB α
24				67158 Ignite Corros. React. Tox			H _{nu} BB α
25				67159 SCLP			H _{nu} BB α
26				67160 Archive comp			H _{nu} BB α
27				67161 Treatability			H _{nu} BB α
28				67162 TCLP DC			H _{nu} BB α
29				67173 Field Blank			H _{nu} BB α

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Voss
P. H. Anderson

Background
 H_{nu} - 0 ppm
 BB - 60-110cpm
 α - 0cpm

3/4 1898

JUL 7-2-91

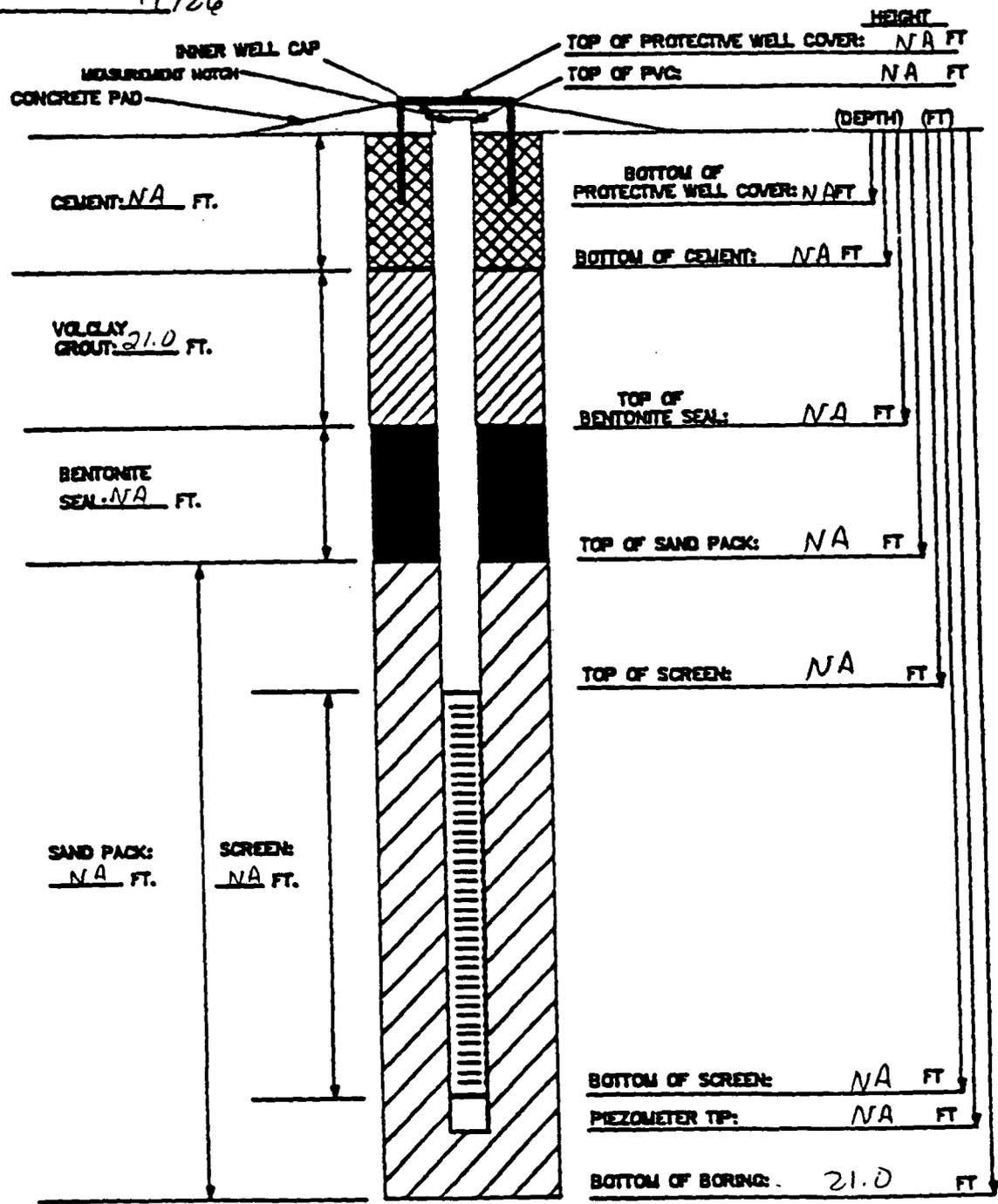
FERNALD RI/FS

INSTALLATION DIAGRAM

MONITORING WELL NO.

Plugged boring 1726

INSTALLATION DATE: 7-2-91



BORING DIAMETER: 10.0 INCHES

MATERIALS USED:
 SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): NA
 BAGS OF VOLCLAY GROUT: 4 20lb bags
 AMOUNT OF CEMENT: NA
 AMOUNT OF WATER USED: 30 gals
 OTHER: NA

- NOTES: NA
- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
 - 2) SCREEN IS 3-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
 - 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLAMP.
 - 4) WATER DEPTH/DATE:
 - 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
 - 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 603-26 91

GEOLOGIST/ENGINEER: J. Lear

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 7-2-91
 PROJECT NO. 602-26-91 CHECKED BY _____ DATE _____
 BORING NO. 1726
 PIEZOMETER NO. NA DATE OF INSTALLATION 7-2-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 in Hollow Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	<u>NA</u>			
GROUND SURFACE	<u>0.0</u>			
BOTTOM OF PROTECTIVE PIPE	<u>NA</u>			
BOREHOLE FILL MATERIALS:	GROUT / SLURRY	TOP <u>0.0</u> BOTTOM <u>21.0</u>	TCP	BOTTOM
	BENTONITE	TOP <u>NA</u> BOTTOM <u>NA</u>	TOP	BOTTOM
	SAND	TOP <u>NA</u> BOTTOM <u>NA</u>	TOP	BOTTOM
	GRAVEL	TOP <u>NA</u> BOTTOM <u>NA</u>	TOP	BOTTOM
PERFORATED SECTION	TOP <u>NA</u> BOTTOM <u>NA</u>	TOP	BOTTOM	
PIEZOMETER TIP	<u>NA</u>			
BOTTOM OF BOREHOLE	<u>21.0</u>			
GWL AFTER INSTALLATION	<u>NA</u>			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91	PROJECT NAME: FMPC RI/FS OU-2
BORING NUMBER: 1708	COORDINATES:
ELEVATION:	GWL: Depth Date/Time
ENGINEER/GEOLOGIST: J. Lear	DATE STARTED: 6-14-91
DRILLING METHODS: Auger Mobile 53	DATE COMPLETED: 6-17-91
	PAGE 1 OF 5

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A. - Some As. Above			
				N.R. - No Recovery			
1	67091 1500 6-14-91	25 27 19	18	v. hard, black (2.54, 21) asphalt, Trace gravel dry v. hard brown to yellowish brown, (10yr, 5/3 to 10yr, 4/6) silty clay, some gravel low plas. dry.	NA CL	>4.0 >4.0	H _{no} - 0 B ₈ - 50-100cpm α - 0
2	67092 1505 6-14-91	14 14	18	S.A.A. Dense, very dark gray (2.54, 31) silt, Trace sand & gravel, dry	CL ML	>4.0 NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
3	67093 1510 6-14-91	14 18	18	S.A.A. Dense, black, (2.54, 21) silt, trace sand trace gravel, sl. moist.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
4	67094 1515 6-14-91	6 5	18	S.A.A. add med dense med dense, very dark gray (2.54, 31) silt, some sand, some gravel, dry	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
5	67095 1550 6-14-91	2 2	10	Very loose, black, (2.54, 21) silt, trace sand and gravel, sl. moist	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
6	67096 1555 6-14-91	2 2	16	S.A.A.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
7	67097 0985 6-15-91	NA	18	S.A.A. add some sand, some gravel	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
8	67098 1000 6-15-91	NA	16	S.A.A.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
9	67099 0900 6-16-91	3 3	13	S.A.A.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
10	67100 0905 6-16-91	3 4	18	S.A.A. some sand, Trace gravel	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Auger Mobile 53
 Driller: Bob Yost
Asst. Bill Anderson

Background

H_{no} - 0 ppm
 B₈ - 50-100cpm
 α - 0 cpm

Samples classified according to munsell color chart.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-26-91</u>	PROJECT NAME: <u>FMPC RI/FS QU-2</u>
BORING NUMBER: <u>1708</u>	COORDINATES:
ELEVATION:	GWL: Depth Date/Time
ENGINEER/GEOLOGIST: <u>J. Lear</u>	DATE STARTED: <u>6-14-91</u>
DRILLING METHODS: <u>Auger Mobile 53</u>	DATE COMPLETED:
	PAGE <u>2</u> OF <u>5</u>

oil
B
oil
ISL

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (C.U.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (USF)	REMARKS
16	67101 4910 6-15-91	3 3 4	18	S.A.A.	ML	NA	H ₂₀ - 0 B ₁ - 50-100 0 - 0
17	6702 0915	5 2	18	S.A.A.	ML	NA	H ₂₀ - 0 P ₁ - 50-100 0 - 0
19	6-15-91 67103 1015	3 5 5	0	N.R.	NA	NA	H ₂₀ - 0 00 - 50-100 0 - 0
20	67109 1020	5 3	18	loose, black (2.54, 21) silt, trace sand trace gravel, sl. moist. wood chip. 2-2	ML	NA	H ₂₀ - 0 B ₁ - 50-100 0 - 0
21	6-15-91 67105	4 2		S.A.A.	ML	NA	H ₂₀ - 0
22	1025 6-16-91	2 3	18	loose, black (2.54, 21) sandy silt, trace gravel sl. moist. 22.0' loose, black (2.54, 21) silt, trace sand, trace gravel, moist	ML ML ML	NA NA NA	H ₂₀ - 0 B ₁ - 50-100 0 - 0
23	67106 1030	3 3	18	loose, black (2.54 or 21) silt, some gravel, trace sand, sl. moist.	ML	NA	H ₂₀ - 0 00 - 50-100
24	6-16-91 67107	3 5		23.0' loose, black to yellowish brown (2.54, 21) silty (5/4) sandy silt, trace gravel, sl. moist.	ML	NA	0 - 0
25	6-16-91 1330	4 5	18	loose black, (2.54, 21) silt, some poorly sorted sand, sl. moist.	ML	NA	H ₂₀ - 0 00 - 50-100 0 - 0
26	6-11-91 1335	3 3	18	S.A.A.	ML	NA	H ₂₀ - 0 B ₁ - 50-100 0 - 0
27	6-16-91 67109	2 2		S.A.A.	ML	NA	H ₂₀ - 0
28	1340 6-15-91	2 4	18	28.2' - loose, dark grayish brown (10y. v/c) poorly sorted sand, trace gravel sl. moist.	SP	NA	H ₂₀ - 0 B ₁ - 50-100 0 - 0
29	67110 1345	? 3	16	29.0' - S.A.A. medium dense medium dense, very dark gray, (2.54, 31) sandy silt, moist. 29.3' medium dense, (2.54, 4/c) olive brown, silt some sand some clay, slight plasticity, moist.	SP ML ML	NA NA NA	H ₂₀ - 0 B ₁ - 50-100 0 - 0
30	6-15-91	6			ML	NA	0 - 0

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Bob Yost
Asst. Bill Anderson

B.G.
H₂₀ - 0 ppm
B₁ - 50-100 ppm
0 - 0 ppm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.26.91</u>	PROJECT NAME: <u>FMRC RI/FS AU-2</u>	
BORING NUMBER: <u>1708</u>	COORDINATES:	DATE: <u>6-16-91</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>6-14-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: <u>Auger mobile 53</u>		PAGE <u>5</u> OF <u>5</u>

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
11	67111	7		medium dense, black (5y/2.5/1) s.H some light olive brown (c-5t, 5/6) sand (fine) moist.	ML	NA	H _{nu} - 0 B ₈ - 50-100
21	1415	11	18				
	6-16-91	13		medium dense, dark olive gray to black (5y. 8/2 to 5y/2.5/2) s.H trace sand, moist	ML	NA	α - 0
11	67112	8		Dense, dark olive gray, (5y/3/2) silt, some clay, moist	ML	NA	H _{nu} - 0 B ₈ - 50-100
32	1420	14	18				
33	6-16-91	20		low plasticity			α - 0
				Drilling and Sampling ceases at 33.0' boring plugged and abandoned according to OU-2 work plan			
				Sample #			
				67113 - field trip			
				67114 - Drum TCLP			
				67115 - COMP TCLP			
				67116 - SRLP			
				67117 - comp. Archive			
				67118 - Ignite Corro. Test, Bear.			
				67119 - Shelby-geotech			
				6-1-91 67120 - Treatability			

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Yost
Asst. Bill Anderson

Background
 H_{nu} - 0 ppm
 B₈ - 50-100 ppm
 α - 0 ppm

17/58

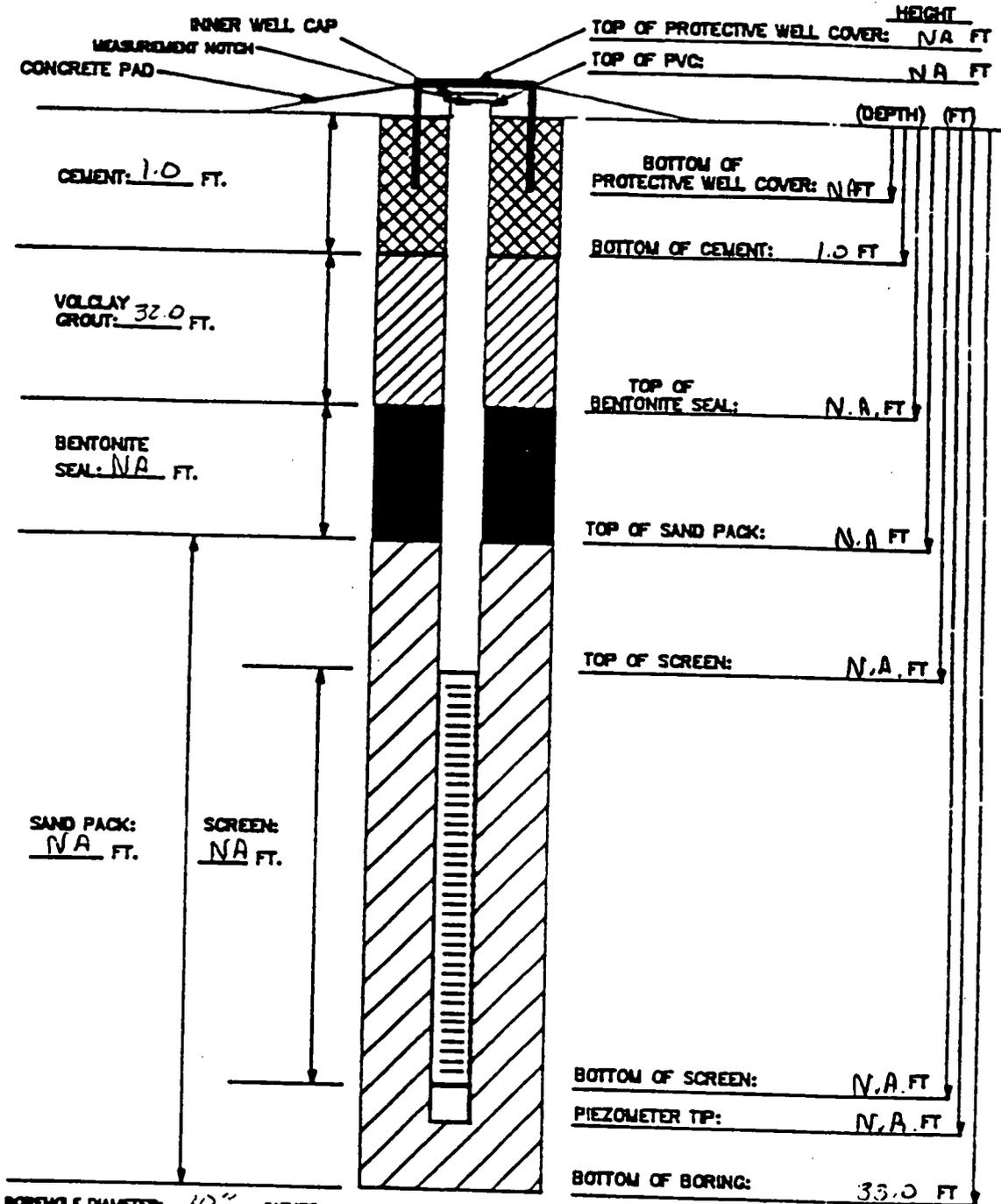
FERNALD RI/FS

INSTALLATION DIAGRAM

MONITORING WELL NO. Plugged boring 170A

PLUGGING
INSTALLATION DATE: 6-18-91
J.L. 6-17-91

J.L. 6-17-91



MATERIALS USED:

SAND TYPE AND QUANTITY: N/A
 BENTONITE PELLETS (5-GALLON BUCKETS): N/A
 BAGS OF VOLCLAY GROUT: 7 bags / 50 lb bags
 AMOUNT OF CEMENT: 1/2 bag / 90 lb bags
 AMOUNT OF WATER USED: 100 gal
 OTHER:

NOTES: N/A

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLAMP.
- 4) WATER DEPTH/DATE:
- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26 91

GEOLOGIST/ENGINEER: J. Lear

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PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 6-18-91
 PROJECT NO. 602-26-91 CHECKED BY 6- DATE _____
 BORING NO. 1708
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-17-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10" Hollow Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS: <i>Cement</i> GROUT/SLURRY	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	33.0
	TOP	NA	BOTTOM	NA
	TOP	NA	BOTTOM	NA
BENTONITE	TOP	NA	BOTTOM	NA
SAND	TOP	NA	BOTTOM	NA
GRAVEL	TOP	NA	BOTTOM	NA
PERFORATED SECTION	TOP	NA	BOTTOM	NA
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	33.0			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602-26-91	PROJECT NAME: FMPC RI/FS	
BORING NUMBER: 1725	COORDINATES:	DATE: 6-26-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 6-26-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 6-27-91
DRILLING METHODS: Auger Mobile 53		PAGE 1 OF 3

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (L.W.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67129 1330 6-26-91	7 11 14	18	Dense, black (2.5y, 2/1) silt some sand, some gravel, dry;	ML	NA	H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
2	67130 1340 6-26-91	12 12 21	18	S. A. A.	ML	NA	H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
3	67131 1345 6-26-91	25 25 30	18	v. Dense, v. Dark gray (10yr, 5/1) silt some sand and gravel, dry.	ML	NA	H _{nu} - 0 B _z - 60-100 cpm α - 0 cpm
4	67132 1350 6-26-91	20 18 16	18	Dense, black, (5yr, 2.5/1) silt some sand, some gravel, dry.	ML	NA	H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
5	67133 1415 6-26-91	20 11 11	18	m. Dense black (5yr, 2.5/1) silt, some sand, some gravel, moist.	ML	NA	H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
6	67134 1420 6-26-91	15 20 11	18	Dense black (2.5y, 2/1) silt, some sand, some gravel, sl. moist.	ML	NA	H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
7	67135 1425 6-26-91	8 8 11	14	Dense, yellowish brown, (10yr, 5/4) ^{sorted} sand, trace gravel, dry.	ML	NA	H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
8	67135 1425 6-26-91	8 8 11	14	v. st. PP, brown, (10yr, 5/3) silty clay, trace sand, low plasticity, moist.	CL		H _{nu} - 0 ppm B _z - 60-100 cpm α - 0 cpm
9				Drilling & Sampling ends at 10.5'. samples taken according to OU-2 work plan			H _{nu} - B _z - α -
10				Sample # 67136 - Igneous corros. Tex. Rec.			H _{nu} - B _z - α -
11				67137 - SELP			H _{nu} - B _z - α -
12				67138 - TCLP			H _{nu} - B _z - α -
13				67139 - field blank			H _{nu} - B _z - α -
14				67140 - Treatability			H _{nu} - B _z - α -
15				67140 - TCLP D.C.			H _{nu} - B _z - α -

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Yost
P. J. Anderson

Background
 H_{nu} - 0 ppm
 B_z - 60-100 cpm
 α - 0 cpm

All soils classified according to munsell color chart

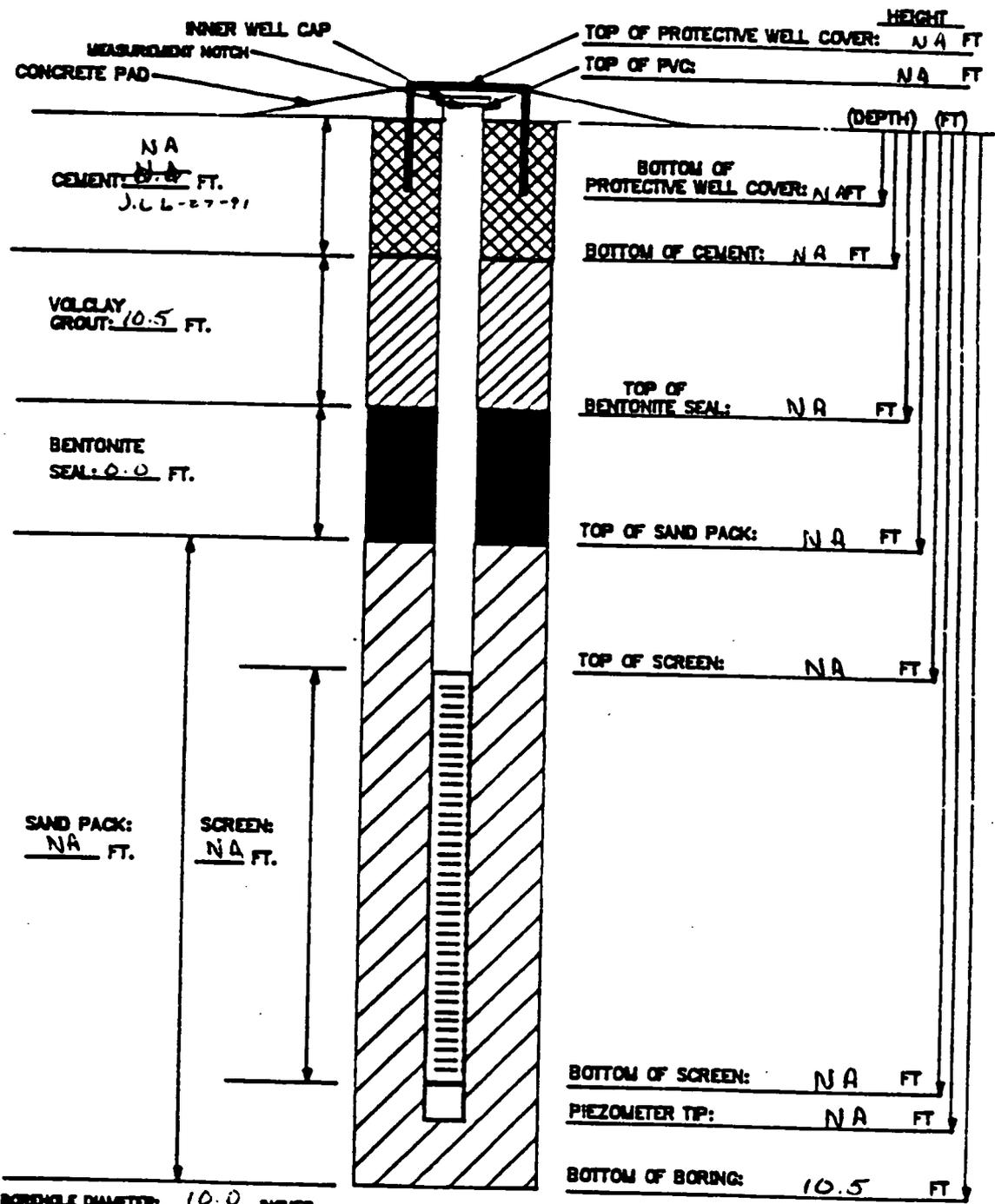
FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.
Plugged Boring 1725

6-27-91
INSTALLATION DATE: 6-27-91
Plugging

1898

J.L. 6-27-91



MATERIALS USED:

SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): NA
 BAGS OF VOLCLAY GROUT: 150 lb bag
 AMOUNT OF CEMENT: NA
 AMOUNT OF WATER USED: 15 gals
 OTHER: NA

NOTES: NA

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLIP.
- 4) WATER DEPTH/DATE:
- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26.91

GEOLOGIST/ENGINEER: J. Lear

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PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 6-27-91
 PROJECT NO. LD2.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1725 J.L. 6-27-91
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-27-91
 BOREHOLE DRILLING Plugging

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 in Hollow Stem Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NR</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS:	TOP	BOTTOM	TCP	BOTTOM
	GROUT/SLURRY	0.0	10.5	
	BENTONITE	NA	NA	TOP
	SAND	NA	NA	TOP
GRAVEL	NA	NA	TOP	BOTTOM
PERFORATED SECTION	TOP	BOTTOM	TOP	BOTTOM
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	10.5			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 71

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602-26-91	PROJECT NAME: FMPG RI/FS	
BORING NUMBER: 1791	COORDINATES:	DATE: 6-25-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 6-25-91
ENGINEER/GEOLOGIST: J. LEAR	Depth Date/Time	DATE COMPLETED: 6-26-91
DRILLING METHODS: Auger Mobile 53	PAGE 1 OF	

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1				Cross-reference Boring No. 1709 for classification of soils up to 27.0' All Remarks/Background for Spoons are within: 50-100cpm BB, 0cpm Alpha and 0ppm Hnu up to 27.0' Composite samples are taken from 0.0' - 30.0' 67123 - SRCP 67124 - TCLP 67125 - Ig. Tox. cor. Res. 67126 - Archive 67127 - Field Blank 67128 - TCLP D.C. 67142 - Treatability			
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Auger Mobile 53

Driller: Bob Vost
Bill Anderson Est Johnson

All samples classified according to Munsell color chart

Background
 Hnu - 0ppm
 BB - 50-100cpm
 Alpha - 0cpm

72

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>02.26.91</u>	PROJECT NAME: <u>FMPG RI/FS</u>	
BORING NUMBER: <u>1791</u>	COORDINATES:	DATE: <u>6-25-91</u>
ELEVATION:	GWL: Depth	Date/Time
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth	Date/Time
DRILLING METHODS: <u>Auger mobile 53</u>	DATE COMPLETED: <u>6-26-91</u>	
		PAGE <u>2</u> OF

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16				Cross Reference Boring Log # 1709 for soil classification up to 27.0'			
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27	67121 8			silt, dark grayish brown, 2.5y, 4/2 clayey silt, v. moist.	ML	1.5	H _{nu} - 0 ppm P ₈ - 150-200cpm α - 0 cpm
28	1400 16 6-25-91 19	18					
29	67122 13			S.A.A.	ML	1.5	H _{nu} - 0 ppm P ₈ - 50-100cpm α - 0 cpm
30	1410 12 6-25-91 17	18					

11
16
11
32

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Auger CME 53
 Driller: Bob Yost
D.L. Anderson

Background

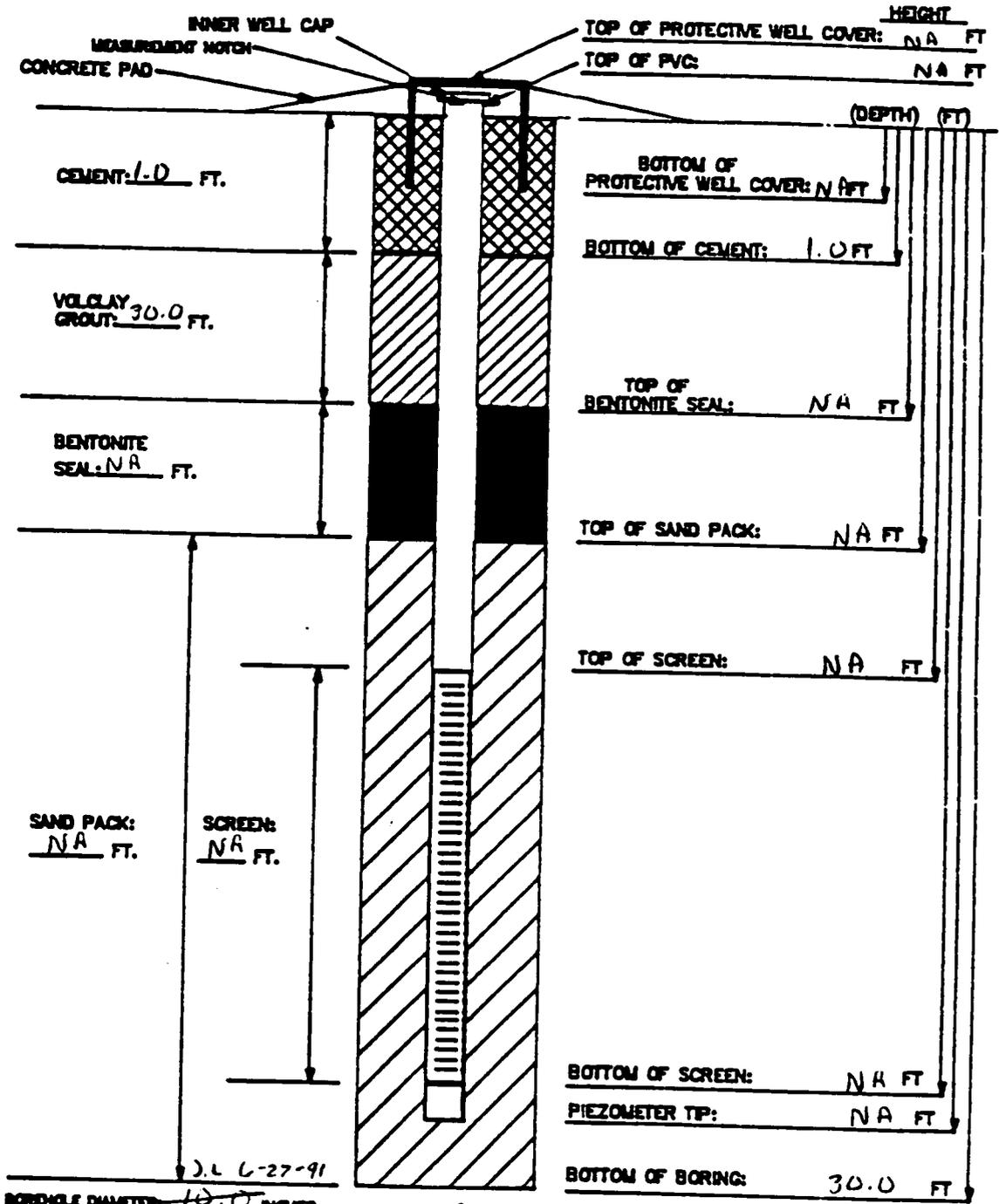
H_{nu} - 0 ppm
 P₈ - 50-100cpm
 α - 0 cpm

FERNALD RI/FS

INSTALLATION DIAGRAM
 MONITORING WELL NO. Plugged Boring 1791

PLUGGING
 INSTALLATION DATE: 6-26-91
 J.L.L-27-91

J.L.L. 6-27-91



BORING DIAMETER: 10.0 INCHES
 MATERIALS USED: 3.0
 SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): NA
 BAGS OF VOLCLAY GROUT: 1 with bag
 AMOUNT OF CEMENT: 1/2 90 lb bag
 AMOUNT OF WATER USED: 15 gal
 OTHER:

- NOTES: NA
- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
 - 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
 - 3) LOWER END OF SCREEN IS CAPPED WITH AN I.D.O CAP OR THREADED BUMP.
 - 4) WATER DEPTH/DATE:
 - 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
 - 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26 91 GEOLOGIST/ENGINEER: J. L. L. 74

**FERNALD
RI/FS**

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 6-26-91
 PROJECT NO. 602-26-91 CHECKED BY _____ DATE _____
 BORING NO. 1791
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-26-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 in Hollow Stem Auger</u>
DRILLING FLUID (S) USED:	CASING SIZE (S) USED:
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	<u>NA</u>			
GROUND SURFACE	<u>0.0</u>			
BOTTOM OF PROTECTIVE PIPE	<u>NA</u>			
BOREHOLE FILL MATERIALS: <small>CEMENT</small> GROUT/SLURRY BENTONITE SAND GRAVEL	TOP	<u>0.0</u>	BOTTOM	<u>1.0</u>
	TOP	<u>1.0</u>	BOTTOM	<u>30.0</u>
	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
PERFORATED SECTION	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
PIEZOMETER TIP	<u>NA</u>			
BOTTOM OF BOREHOLE	<u>30.0</u>			
GWL AFTER INSTALLATION	<u>NA</u>			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO **75**

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-26-91</u>	PROJECT NAME: <u>EMPC RI/FS OU-2</u>
BORING NUMBER: <u>1711</u>	COORDINATES: _____ DATE: <u>5-23-91</u>
ELEVATION: _____	GWL: Depth _____ Date/Time _____ DATE STARTED: <u>5-23-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth _____ Date/Time _____ DATE COMPLETED: <u>5-30-91</u>
DRILLING METHODS: <u>Auger Mobile 53</u>	PAGE <u>1</u> OF <u>4</u>

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON J-1 SAMPLER PER 6 IN.	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A - Same As Above			
				N.R. - No Recovery			
1	67007 0943 5-23-91	2 13 13	18	medium dense, (2.5y, 2/) black, Ash Some gravel frags, dry. - .25" very st. ff. dark grayish brown, (2.5y, 4/2) clayey silt trace gravel, dry.	ML ML	NA 2.5 NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
2	67010 0948 5-23-91	9 12 11	18	medium dense, black (2.5y, 2/) silty Ash sand Some fine gravel, dry.	SM ML	5-23-91 NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
3	67011 0953 5-23-91	10 13 9	18	S.A.A.	SM ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
4	67012 1053 5-29-91	6 8 9	18	S.A.A.	SM	N.A.	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
5	67013 1115 5-29-91	5 4 3	16	loose, black (2.5y, 2/) silt, some sand, trace gravel, dry	ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
6	67014 1120 5-29-91	4 5 5	18	loose, black (2.5y, 2/) silty sand trace fine gravel, dry.	SM	NA	H _{nu} - 0 PPM BB - 70-100 CPM
7	67015 1305 5-29-91	3 4 4	18	loose, black (2.5y, 2/) silt, some sand, trace gravel, dry.	ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
8	67016 1305 5-29-91	3 4 4	18	S.A.A.	ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
9	67017 1305 5-29-91	4 4 4	18	loose, black (2.5y, 2/) sandy silt, some fine gravel, sil. moist to dry.	ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
10	67018 1335 5-29-91	2 3 3	18	S.A.A.	ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
11	67019 1335 5-29-91	2 3 3	18	loose, black (2.5y, 2/) silty sand some fine gravel, moist to wet.	SM	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM
12	67019 1340 5-29-91	2 2 3	4	loose, light olive brown, (2.5y, 5/6) clayey silt, trace sand, wet.	ML	NA	H _{nu} - 0 PPM BB - 70-100 CPM a - 0 CPM

Full HSC

oil 15L

CLP TOX

reached 10 level 4ins

NOTES:

Drilling Contractor Penn Drilling Backgrounds

Drilling Equipment Auger Mobile 53

Driller: Bob Yost / Mark Rebold
Asst. Bill Anderson

H_{nu} - 0 PPM
BB - 70-100 CPM
a - 0 CPM

All samples classified using Munsell color chart.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.26.91</u>	PROJECT NAME: <u>FAPL RI/FS</u>	
BORING NUMBER: <u>1711</u>	COORDINATES:	DATE: <u>5-29-91</u>
ELEVATION:	GWL: Depth <u>NA</u> Date/Time	DATE STARTED: <u>5-23-91</u>
ENGINEER/GEOLOGIST: <u>J. Leger</u>	Depth Date/Time	DATE COMPLETED: <u>5-30-91</u>
DRILLING METHODS: <u>Auger Mobile 53</u>		PAGE <u>2</u> OF <u>4</u>

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
18	NA	NA	NA	Between 15' & 18' a void was discovered thus no material was recovered for sampling	NA	NA	NA
19	67030 1345 5-29-91	0 2 3	18	soft, dark grayish brown (2.5y. 5/2) clay Trace med gravel, med to high Plast., wet	CL	0.25	H _{nu} - 0 ppm B ₈ - 200-300 cpm α - 0 cpm
20				End of boring at 19.5' well set at 15.5'. Samples taken according to OU-2 work Plan Sample # 67021 - composite TCLP 67022 " Iq, Tox 67023 " Trip Blank 67024 " field blank 67025 - Drum cuts TCLP			

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Bob Vost
Asst. Bill Anderson

Background
H_{nu} - 0 ppm
B₈ - 70-100 cpm
α - 0 cpm

77

**FERNALD
RI/FS**

PROTECTIVE RISER CASING

3/4
4/5
2.6.6.11

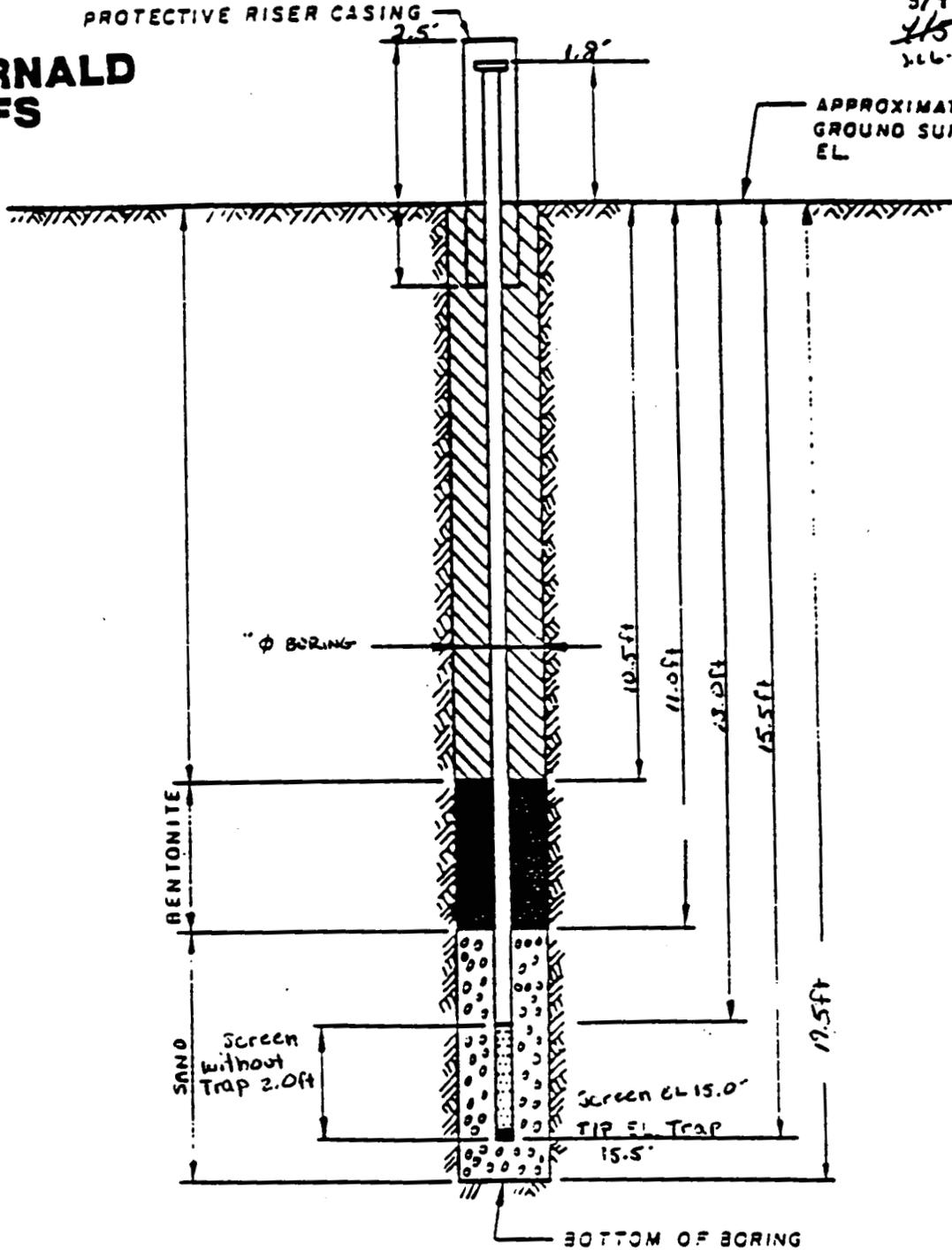
APPROXIMATE EXISTING
GROUND SURFACE
EL

DRAWING
NUMBER

CHECKED BY
APPROVED BY

J. L. G. C.
5-31-91

DRAWN
BY



NOTES:

1. RISER PIPE IS 4 IN 10 SCHEDULE PIPE, THREADED, FLUSH-JOINTED.
 2. SCREEN IS 4 IN 1.0 SS PIPE CONTINUOUS SLOT SCREEN (0.010 IN SLOT SIZE).
 3. LOWER END OF SCREEN IS CAPPED.
 4. ELEVATION OF WATER LEVEL
 5. WATER LEVEL READING ON
- 3 20lb bags of 10/20 sand
3 20lb bags of veiclay grout
1/2 5 gal buckets of bentonite pellets
15 7als H₂O used for grout & drilling

**INSTALLATION DETAILS
MONITORING WELL**

PREPARED FOR
Fernald RI/FS
* screen has an additional
3" at top of Non perforated
S.S. material

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 5-31-91
 PROJECT NO. 602.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1711
 PIEZOMETER NO. 1711 DATE OF INSTALLATION 5-30-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>Hollow Stem Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>4.0 in TD Stainless Steel</u>	RISER PIPE MATERIAL <u>4.0 in TD Stainless Steel</u>
DIAMETER OF PERFORATED SECTION <u>4.0 in TD</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>4 3/8 in</u> I.D. <u>4.0 in</u>
SLOTS <input checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>10 ft, 2 ft</u>
AVERAGE SIZE OF PERFORATIONS <u>0.210</u>	JOINING METHOD <u>flush joint threaded</u>
TOTAL PERFORATED AREA <u>2.0 ft</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft</u>	OTHER PROTECTION <u>Hinged, Locked well cover, well cap</u>
PROTECTIVE PIPE O.D. <u>10.75 in</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	(2.5)			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	2.5			
BOREHOLE FILL MATERIALS: CEMENT GROUT/SLURRY BENTONITE SAND <u>5-31-91</u> GRAVEL	TOP	0.0	BOTTOM	1.5 ft
	TOP	1.5 ft	BOTTOM	10.5 ft
	TOP	10.5 ft	BOTTOM	11.0 ft
	TOP	11.0 ft	BOTTOM	15.5 ft
	TOP	NA	BOTTOM	NA
PERFORATED SECTION	TOP	13.0 ft	BOTTOM	15.0 ft
PIEZOMETER TIP	15.5 ft			
BOTTOM OF BOREHOLE	15.5 ft			
GWL AFTER INSTALLATION				

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 79

REMARKS Samples were taken to 17.5 ft slurry grout was used to fill the section between 15.5-17.5 ft as per Geoburn standards

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91	PROJECT NAME: FMPG RI/FS	
BORING NUMBER: 1710	COORDINATES:	DATE: 5-31-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5-31-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 6-4-91
DRILLING METHODS: Auger, mobile 53	PAGE 1 OF 5	

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (L.W.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A. - Same As Above			
				N.R. - No Recovery			
1	67026 1330 5-31-91	4 10 12	18	medium dense, dark brown (10y, 3/5) clayey silt, some organic, some gravel, low plasticity, sil. moist medium dense, brown (10y 4/7) clayey silt Trace gravel, sil. moist	ML ML	NA NA	H ₂₅ - 0 ppm B ₇ - 50-100cpm α - 0cpm
2	67027 1340 5-31-91	9 10	18	medium dense, black (2.5y, 2/3) sandy silt, Trace gravel, dry	ML	NA	H ₂₅ - 0ppm B ₈ - 50-100cpm α - 0cpm
3	67028 1350 5-31-91	7 10	18	S.A.A.	ML	NA	B ₈ - 50-100cpm H ₂₅ - 0 ppm α - 0cpm
4	67029 1400 5-31-91	7 8	18	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₈ - 50-100cpm α - 0cpm
5	67030 1435 5-31-91	3 3	12	loose, black (2.5y, 2/3) silt, some sand trace gravel, dry.	ML	NA	H ₂₅ - 0 ppm B ₈ - 50-100cpm α - 0cpm
6	67031 1440 5-31-91	2 3	16	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₈ - 50-100cpm α - 0cpm
7	67032 1445 5-31-91	2 2	18	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₈ - 50-100cpm α - 0cpm
8	67033 1450 5-31-91	3 3	0	N.R.	NA	NA	H ₂₅ - 0ppm B ₈ - 50-100cpm α - 0cpm
9	67034 1530 5-31-91	1 2	18	loose, black, (2.5y, 2/3) silt, some sand Trace gravel, sil. moist.	ML	NA	H ₂₅ - 0 ppm B ₈ - 50-100cpm α - 0cpm
10	67035 1535 5-31-91	2 2	18	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₈ - 50-100cpm α - 0cpm

Full H&L

Silt
15L

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobil 53 Auger
 Driller: Bob Vost
Ast. Bill Anderson

Background

H₂₅ - 0ppm
 B₈ - 50-100cpm
 α - 0cpm

All soils classified according to munsel color chart.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.26.91.</u>	PROJECT NAME: <u>FMPC RI/FS DU-2</u>		
BORING NUMBER: <u>1710</u>	COORDINATES:	DATE: <u>6-1-91</u>	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: <u>5-31-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth	Date/Time	DATE COMPLETED: <u>6-4-91</u>
DRILLING METHODS: <u>Auger</u>	PAGE <u>2</u> OF <u>5</u>		

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 IN)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	67056 1540 SU-91	1 2	6	S.A.A	ML	NA	H _{no} - 0 ppm B _s - 50-100cpm a - 0cpm
17	67038 67039 0900	2 3	18	loose, black (2.5Y, 2/1) silt, trace sand, dry. -16.9" loose, black (2.5Y, 2/1) silt, some sand, trace gravel, dry.	ML	NA	H _{no} - 0 ppm B _s - 50-100cpm a - 0cpm
19	67037 67040 0905	4 4	18	S.A.A	ML	NA	H _{no} - 0 ppm B _s - 50-100cpm a - 0cpm
20	67046 0915	4 14	8	very dense, (2.5Y, 2/1) black, silt, trace sand, some gravel ignets, dry	ML	NA	H _{no} - 0 ppm B _s - 50-100cpm a - 0cpm
22	67042 0950	31 42	0	N.R	NA	NA	H _{no} - 0 ppm B _s - 50-100cpm a - 0cpm
23	67043 1000 6-1-91	75/5	6	very dense, black (2.5Y, 2/1) silt, some 25.0" yellowish red, (5YR, 5/6) stone ignets Trace sand, dry.	ML	NA	B _s - 200-240 a - 0-2 H _{no} - 0
24	67044 1320	40 19	3	Dense, black, (2.5Y, 2/1) silt, concrete rubble Cobbles, Trace sand, & gravels, dry	ML	NA	H _{no} - 0-4 ppm B _s - 100-150cpm a - 0cpm
26	67045 1345	32 30	8	Dense, black, (2.5Y, 2/1) silt, some organics Some concrete gravel, Trace sand, sl. moist.	ML	NA	H _{no} - 2 ppm B _s - 100-400cpm a - 0cpm
27	67046 1410	23 25	16	Dense, dark olive gray (5Y, 3/2) gravelly sand, trace silt, wet Dense, yellowish brown (10YR, 5/1) clayey silt Some gravel & cobbles, moist.	GW ML	NA	H _{no} - 0ppm B _s - 100-900cpm a - 0-2cpm
29	67047 1515	20 25	14	wf, dark olive gray (5Y, 3/2) clay, trace silt med plast., moist. very dense, yellowish brown, (10YR, 5/8) well sorted coarse sand, trace gravel, dry.	CL SP	0.6 NA	H _{no} - < 1.0 ppm B _s - 40-190cpm a - 0cpm

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Yost
Asst. Bill Anderson

Background
 H_{no} - 0 ppm
 B_s - 50-100cpm
 a - 0cpm

All soils classified according to Munsell color chart.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91	PROJECT NAME: FMPC RI/FS OU-2	
BORING NUMBER: 1710	COORDINATES:	DATE: 6-1-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5-31-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 6-4-91
DRILLING METHODS: Auger	PAGE 3 OF 5	

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31	67048 67049 1530 6-1-91	20 30 32	18	S.A.A	SP	NA	H _{nu} - 0ppm θ ₈ - 50-100cpm α - 0cpm
32				Boring Plugged and Abandoned Samples taken according to OU-2 Work Plan			
33							
34							
35							
36							
				TCLP COMP. - 67051 1545			
				SRLP COMP. - 67050 1545			
				Trip Blank - 67052 0830			
				Field Blank - 67053 0930			
				Full Rad - 67054 1400 5/31			
				Full Rad - 67055 1445 5/31			
				Iq. Corr. Test - 67056 1545 6/1			
				Field - End - 67057 27.0-88.5			
				Archive			
				J.L. - 6-4-91			

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mohik S3 Auger
 Driller: Bob Yost
Asst. Bill Anderson

Background
 H_{nu} - 0 Ppm
 θ₈ - 50-100cpm
 α - 0cpm

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS DU-2 FIELD ENG./GEO. J. Lear DATE 6-3-91
 PROJECT NO. 602.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1710
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-3-91, 6-9-91
Plugging
6-3-91, J.L.

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10in Hollow stem Auger</u>
DRILLING FLUID(S) USED: <u>NA</u>	CASING SIZE(S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft.)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	<u>NA</u>			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	<u>NA</u>			
BOREHOLE FILL MATERIALS: <i>Cement</i> GROUT/SLURRY BENTONITE SAND GRAVEL	TOP	BOTTOM		
	<u>1.0</u>	<u>31.5</u>	TOP	BOTTOM
	<u>NA</u>	<u>NA</u>	TOP	BOTTOM
	<u>NA</u>	<u>NA</u>	TOP	BOTTOM
PERFORATED SECTION	TOP	BOTTOM	TOP	BOTTOM
	<u>NA</u>	<u>NA</u>		
PIEZOMETER TIP	<u>NA</u>			
BOTTOM OF BOREHOLE	<u>31.5</u>			
GWL AFTER INSTALLATION	<u>NA</u>			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 83

REMARKS No water observed in Boring thus plugged and Abandoned
Bentonite was used throughout the Grouting process to impede lateral migration of Grout

FERNALD RI/FS

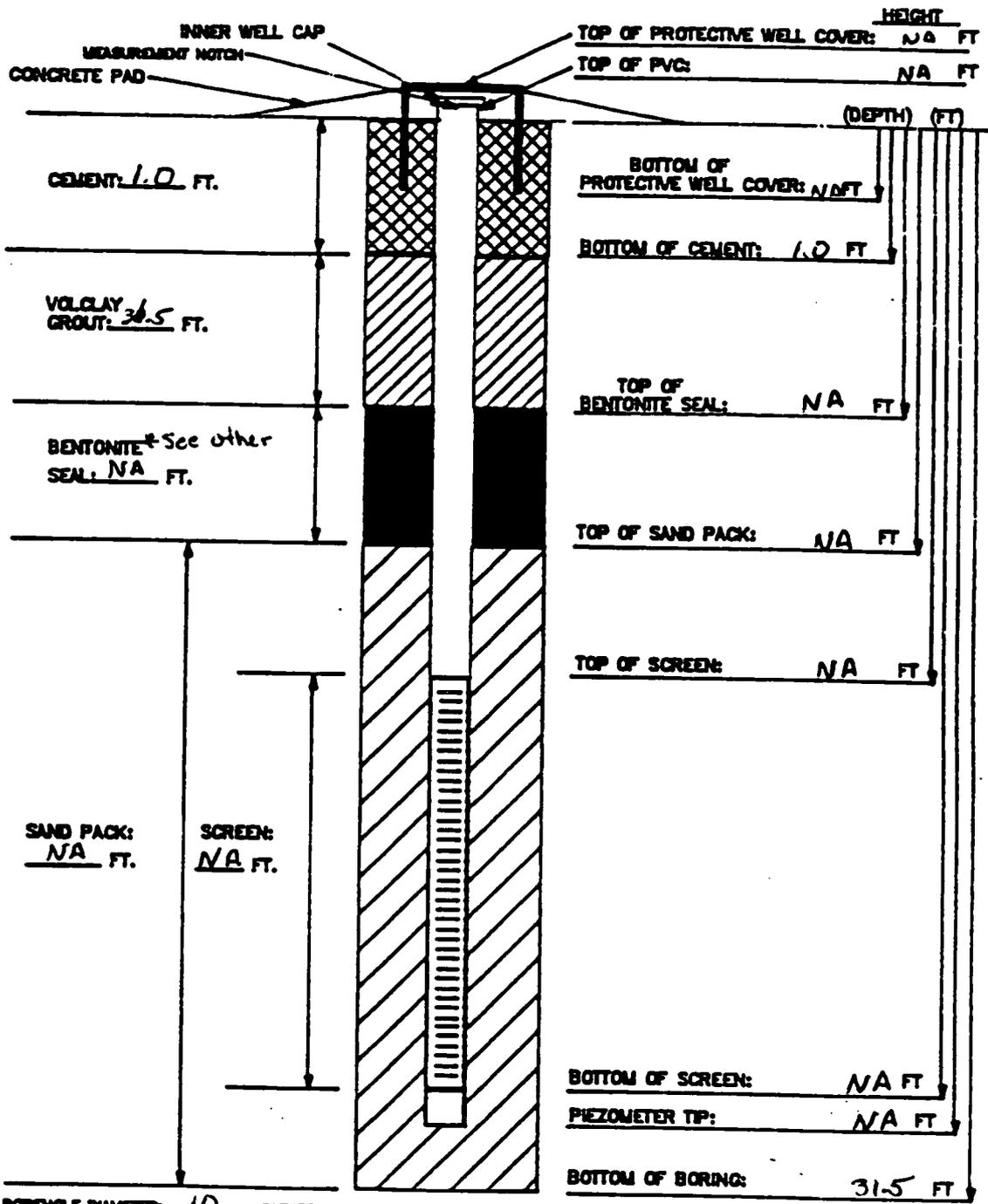
INSTALLATION DIAGRAM

MONITORING WELL NO.

Plugged Boring

1710

Plugging
INSTALLATION DATE: 6-3, 6-4-91



MATERIALS USED:

SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): 2
 BAGS OF VOLCLAY GROUT: 7
 AMOUNT OF CEMENT: 1 bag
 AMOUNT OF WATER USED: 10 gals
 OTHER: Bentonite was used to attempt to stop migration of grout laterally

NOTES: NA

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED BLUP.
- 4) WATER DEPTH/DATE: NA
- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES DENOTE DEPTH BELOW GROUND LEVEL.

TASK: 602.26.91

GEOLOGIST/ENGINEER: J. Lee

PIEZOMETER INSTALLATION SHEET

PROJECT NAME MPC RI/FS FIELD ENG./GEO. J. Lear DATE 7-2-91
 PROJECT NO. 602.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1726
 PIEZOMETER NO. NA DATE OF INSTALLATION 7-2-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 in Hollow Auger</u>
DRILLING FLUID(S) USED: <u>NA</u>	CASING SIZE(S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS:				
GROUT/SLURRY	TOP 0.0	BOTTOM 21.0	TCP	BOTTOM
BENTONITE	TOP NA	BOTTOM NA	TOP	BOTTOM
SAND	TOP NA	BOTTOM NA	TOP	BOTTOM
GRAVEL	TOP NA	BOTTOM NA	TOP	BOTTOM
PERFORATED SECTION	TOP NA	BOTTOM NA	TOP	BOTTOM
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	21.0			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 85

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91...	PROJECT NAME: FMPC RI/FS OU-2
BORING NUMBER: 1708	COORDINATES:
ELEVATION:	GWL: Depth Date/Time
ENGINEER/GEOLOGIST: J. Lear	DATE STARTED: 6-14-91
DRILLING METHODS: Auger Mobile 53	DATE COMPLETED: 6-17-91
	PAGE 1 OF 5

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A. - Some As. Above			
				N.R. - No Recovery			
1	67091 1500 6-14-91	25 27 19	18	v. hard, black (2.54, 21) asphalt, Trace gravel dry v. hard brown to yellowish brown, (10y, 5/3 to 10y, 4/6) silty clay, some gravel low plas. dry.	NA M CL	>4.0 NA >4.0	H _{no} - 0 B ₈ - 50-100cpm α - 0
2	67092 1505 6-14-91	14 14 14	18	1.25' S.A.A. Dense, very dark gray (2.54, 31) silt, Trace sand & gravel, dry	CL ML	>4.0 NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
3	67093 1510 6-14-91	14 14 18	18	S.A.A. 4.0' Dense, black, (2.54, 21) silt, trace sand trace gravel, sl. moist.	ML ML	NA NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
4	67094 1515 6-14-91	6 5	18	5.25' med dense, very dark gray (2.54, 31) silt, some sand, some gravel, dry	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
5	67095 1550 6-14-91	2 2	10	Very loose, black, (2.54, 21) silt, trace sand and gravel, sl. moist	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
6	67096 1555 6-14-91	2 2	16	S.A.A.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
7	67097 0985 6-15-91	NA	18	S.A.A. add some sand, some gravel	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
8	67098 1000 6-15-91	NA	16	S.A.A.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
9	67099 0920 6-16-91	3 3	13	S.A.A.	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
10	67000 0920 6-16-91	3 3	18	S.A.A. some sand, Trace gravel	ML	NA	H _{no} - 0 B ₈ - 50-100cpm α - 0
11	0925	4					

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Auger Mobile 53

Driller: Bob Yost
Asst. Bill Anderson

Samples classified according to munsell color chart.

Background
H_{no} - 0 ppm
B₈ - 50-100cpm
α - 0cpm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 6-22-26-91-	PROJECT NAME: FMPC RI/FS OU-2		
BORING NUMBER: 1708	COORDINATES:	DATE: 6-16-91	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 6-14-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED:
DRILLING METHODS: Auger Mobile 53			PAGE 2 OF 5

oil
oil
ISL

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	67101 0910 6-16-91	3 3 4	18	S.A.A.	ML	NA	H _{no} - 0 B ₁ - 50-100 0 - 0
17	6702 0915 6-16-91	5 2 3	18	S.A.A.	ML	NA	H _{no} - 0 P ₁ - 50-100 0 - 0
19	67103 1015 6-16-91	5 5 5	0	N.R.	NA	NA	H _{no} - 0 00 - 50-100 0 - 0
20	67104 1020 6-16-91	5 3 4	18	loose, black (2.5y, 21) silt, trace sand trace gravel, sl. moist. wood chip. 2-2	ML	NA	H _{no} - 0 B ₁ - 50-100 0 - 0
21	67105 1025 6-16-91	2 2 3	18	21.5' S.A.A. loose, black (2.5y, 21) sandy silt, trace gravel sl. moist.	ML	NA	H _{no} - 0 B ₁ - 50-100 0 - 0
22	67106 1030 6-16-91	3 3 3	18	loose, black (2.5y, 21) silt, trace sand, trace gravel, moist.	ML	NA	H _{no} - 0 00 - 50-100 0 - 0
23	67107 1330 6-16-91	5 5 4	18	loose, black (2.5y, 21) silt, some poorly sorted sand, sl. moist.	ML	NA	H _{no} - 0 00 - 50-100 0 - 0
24	67108 1345 6-16-91	3 3 2	18	S.A.A.	ML	NA	H _{no} - 0 B ₁ - 50-100 0 - 0
25	67109 1340 6-16-91	2 2 4	18	S.A.A.	ML	NA	H _{no} - 0 B ₁ - 50-100 0 - 0
26	67110 1345 6-16-91	? 3 6	16	28.2' - loose, dark grayish brown (10y, 4/2) poorly sorted sand, trace gravel sl. moist. 29.0' - S.A.A. medium dense medium dense, very dark gray (6.5y, 31) sandy silt, moist. 29.5' - medium dense, (2.5y, 4/2) olive brown, silt some sand some clay, slight plasticity, moist.	SP ML ML	NA NA NA	H _{no} - 0 B ₁ - 50-100 0 - 0

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Yost
Asst. Bill Anderson

B.G.

H_{no} - 0 fpm
 B₁ - 50-100 fpm
 0 - 0 fpm

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-26-91</u>	PROJECT NAME: <u>FMPC RI/FS AU-2</u>	
BORING NUMBER: <u>1708</u>	COORDINATES:	DATE: <u>6-16-91</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>6-14-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED:
DRILLING METHODS: <u>Auger mobile 53</u>	PAGE <u>3</u> OF <u>5</u>	

11
20
11
5L

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
	67111	8		medium dense, black (5y/2.5/1) silt some light olive brown (c-5t, 516) sand (fine) moist	ML	NA	H _{nu} - 0 B ₀ - 50-100 a - 0
31	1415 6-16-91	11 13	18				
	67112	8		Dense, dark olive gray, (5y/3/2) silt, some clay, moist low plasticity	ML	NA	H _{nu} - 0 B ₀ - 50-100 a - 0
32	1420 6-16-91	14 20	18				
33				Drilling and Sampling ceases at 33.0' boring plugged and abandoned according to OU-2 work plan			
				Sample #			
				67113 - field trip			
				67114 - Drum TCLP			
				67115 - COMP TCLP			
				67116 - SRLP			
				67117 - comp. Archive			
				67118 - Ignite Corro. Test, Bear.			
				67119 - Shelby-Geotech			
				67120 - Treatability			

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Mobile 53 Auger

Driller: Fish Yost
Asst. Bill Anderson

Background

H_{nu} - 0 ppm

B₀ - 50-100 cpm

a - 0 cpm

88

FERNALD RI/FS

INSTALLATION DIAGRAM

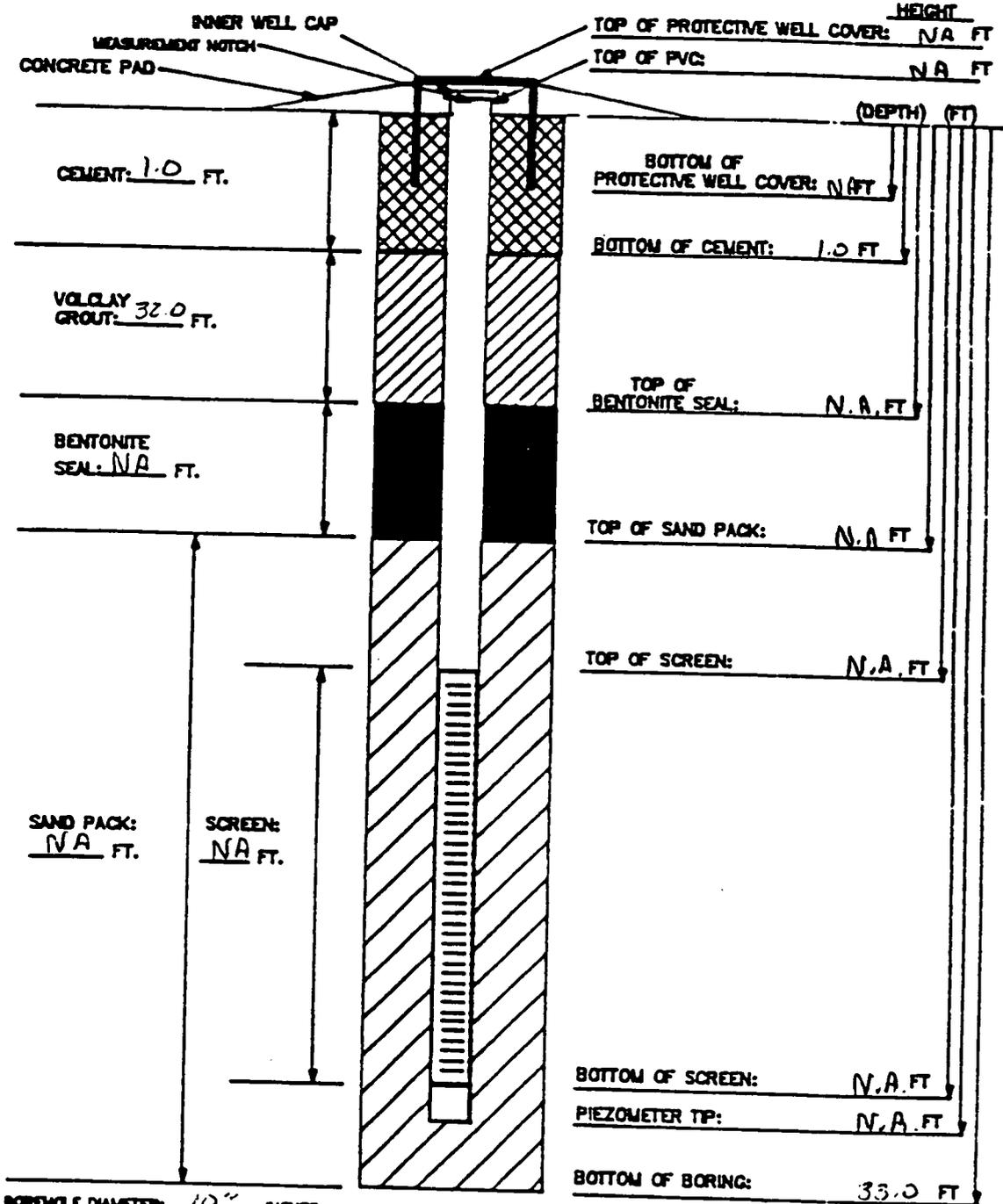
MONITORING WELL NO. 170A

Plugged boring

PLUGGING
INSTALLATION DATE: 6-18-91
J.L. 6-17-91

1898

J.L. 6-17-91



MATERIALS USED:

SAND TYPE AND QUANTITY: N/A
 BENTONITE PELLETS (5-GALLON BUCKETS): N/A
 BAGS OF VOLCLAY GROUT: 7 bags / 50 lb bags
 AMOUNT OF CEMENT: 1/2 bag / 90 lb bags
 AMOUNT OF WATER USED: 100 gal
 OTHER:

NOTES: N/A

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED SLAMP.
- 4) WATER DEPTH/DATE:
- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26 91

GEOLOGIST/ENGINEER: J. Lear

9/5 1898

**FERNALD
RI/FS**

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPCL RI/FS FIELD ENG./GEO. J. Lear DATE 6-18-91
 PROJECT NO. 602-26-91 CHECKED BY 6- DATE _____
 BORING NO. 1708
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-17-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10" Hollow Auger</u>
DRILLING FLUID(S) USED: <u>NA</u>	CASING SIZE(S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS: <i>Cement</i> GROUT/SLURRY BENTONITE SAND GRAVEL	TOP 0.0	BOTTOM 1.0		
	TOP 1.0	BOTTOM 33.0	TOP	BOTTOM
	TOP NA	BOTTOM NA	TOP	BOTTOM
	TOP NA	BOTTOM NA	TOP	BOTTOM
PERFORATED SECTION	TOP NA	BOTTOM NA	TOP	BOTTOM
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	33.0			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 90

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602-26-91	PROJECT NAME: FMPCL RI/FS		
BORING NUMBER: 1725	COORDINATES:		DATE: 6-26-91
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 6-26-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED: 6-27-91
DRILLING METHODS: Auger Mobile 53			PAGE / OF 3

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1	67129 1330 6-26-91	7 11 14	18	Dense, black (2.5/1) silt some sand, some gravel, dry;	ML	NA	H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
2	67130 1340 6-26-91	12 12 21	18	S. A. A.	ML	NA	H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
3	67131 1345 6-26-91	25 25 30	18	V. Dense, V. Dark gray (10yr, 3/1) silt some sand and gravel, dry.	ML	NA	H _{nu} - 0 B _z - 60-100cpm α - 0cpm
4	67132 1350 6-26-91	20 18 16	18	Dense, black, (5yr, 2.5/1) silt some sand, some gravel, dry.	ML	NA	H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
5	67133 1415 6-26-91	20 11 11	18	m. Dense black (5yr, 2.5/1) silt, some sand, some gravel, moist.	ML	NA	H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
6	67134 1420 6-26-91	15 20 11	18	Dense, black (2.5/1, 2/1) silt, some sand, some gravel, sl. moist.	ML	NA	H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
7	67135 1425 6-26-91	8 8 11	14	Dense, yellowish brown, (10yr, 5/4) ^{sorted} sand, trace gravel, dry.	NA	NA	H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
8				V. st. ff, brown, (10yr, 5/3) silty clay, trace sand, low plasticity, moist.	CL		H _{nu} - 0ppm B _z - 60-100cpm α - 0cpm
9				Drilling & Sampling Ends at 10.5'. Samples taken according to OU-2 work plan			H _{nu} - B _z - α -
10				Sample # 67136 - Ignite corros. Tur. Reac.			H _{nu} - B _z - α -
11				67137 - SELP			H _{nu} - B _z - α -
12				67138 - TCLP			H _{nu} - B _z - α -
13				67139 - Field Blank			H _{nu} - B _z - α -
14				67140 - Treatability			H _{nu} - B _z - α -
15				67140 - TCLP D.C.			H _{nu} - B _z - α -

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Yost
Pill Anderson

Background
 H_{nu} - 0ppm
 B_z - 60-100cpm
 α - 0cpm

All soils classified according to munsell color chart

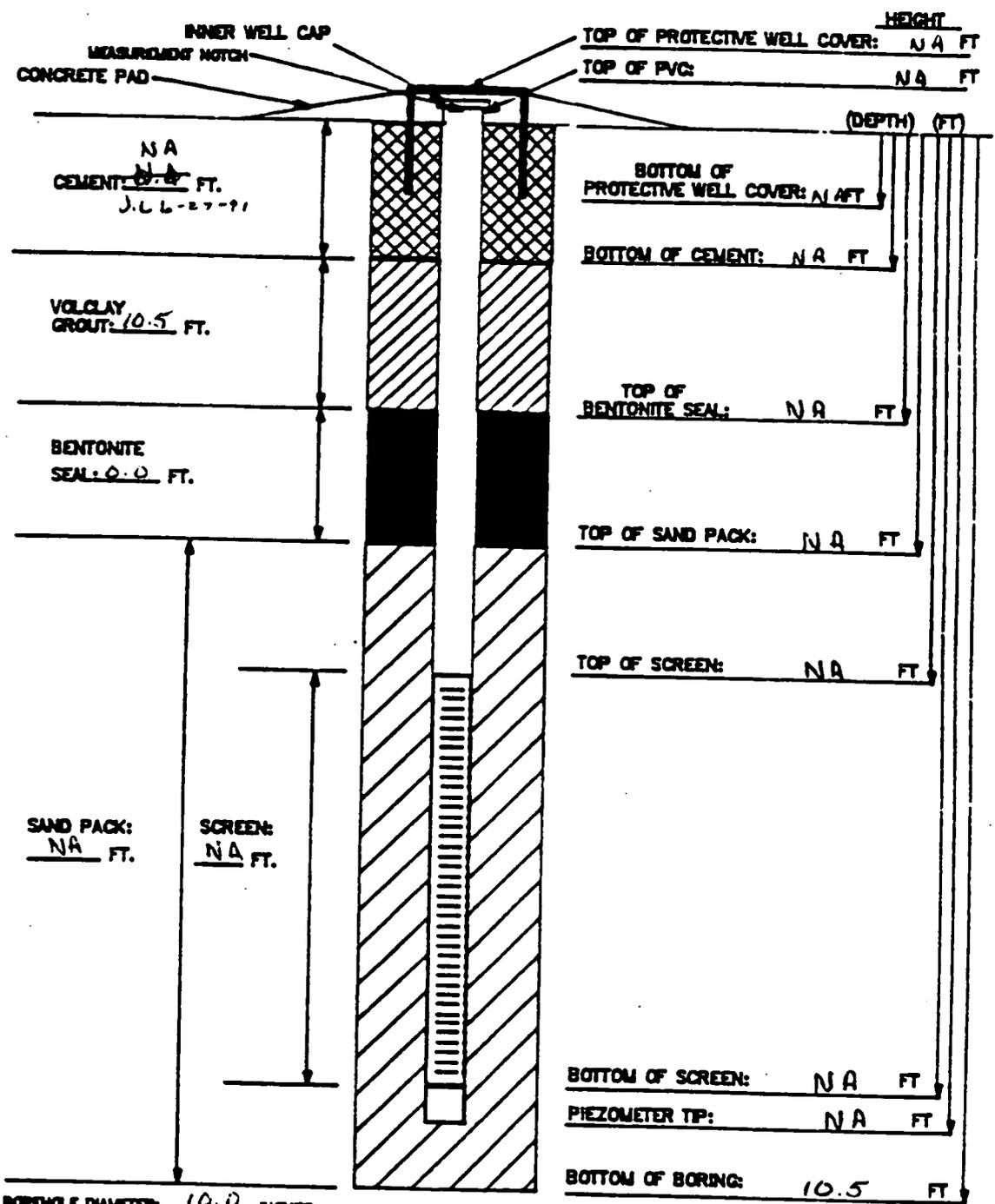
FERNALD RI/FS

INSTALLATION DIAGRAM
MONITORING WELL NO.
Plugged Boring 1725

6-27-91
INSTALLATION DATE: 6-27-91
Plugging

1898

16-12-0-11



MATERIALS USED:
 SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): NA
 BAGS OF VOLCLAY GROUT: 150 lbs bag
 AMOUNT OF CEMENT: NA
 AMOUNT OF WATER USED: 15 gals
 OTHER: NA

- NOTES: NA**
- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
 - 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
 - 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED PLUG.
 - 4) WATER DEPTH/DATE:
 - 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
 - 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26.91 GEOLOGIST/ENGINEER: J. Lear

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FNRC RI/FS FIELD ENG./GEO. J. Lear DATE 6-27-91
 PROJECT NO. LD2.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1725 J.L. 6-27-91
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-27-91
 BOREHOLE DRILLING Plugging

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 in Hollow Stem Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO <u>TC</u>	SIZE <u>NA</u> FROM _____ TO <u>TC</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO <u>TC</u>

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS:	TOP	BOTTOM	TOP	BOTTOM
	GROUT/SLURRY	0.0 10.5		
	BENTONITE	NA NA	TOP	BOTTOM
	SAND	NA NA	TOP	BOTTOM
GRAVEL	NA NA	TOP	BOTTOM	
PERFORATED SECTION	TOP	BOTTOM	TOP	BOTTOM
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	10.5			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 93

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602-26-91	PROJECT NAME: FMPC RI/FS	
BORING NUMBER: 1791	COORDINATES:	DATE: 6-25-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 6-25-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 6-26-91
DRILLING METHODS: Auger Mobile 53	PAGE 1 OF	

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
1				Cross-reference Boring No. 1709 for classification of soils up to 27.0'			
2							
3				All Remarks/Background for Spoons are within: 50-100cpm B8. 0cpm Alpha and 0ppm Hnu up to 27.0'			
4							
5							
6				Composite samples are taken from 0.0' - 30.0'			
7							
8							
9				67123 - SCLP			
10				67124 - TCLP			
11				67125 - Ig. Toxicol. Res.			
12				67126 - Archive			
13				67127 - Field Blank			
14				67128 - TCLP D.C.			
15				67142 - Treatability			

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Auger Mobile 53

Driller: Bob Vost
Bill Anderson Bob Johnson

All samples classified according to Munsell color chart

Background
Hnu - 0ppm
B8 - 50-100cpm
* - 0cpm **94**

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 02.26.91	PROJECT NAME: FMPC RI/FS		
BORING NUMBER: 1791	COORDINATES:	DATE: 6-25-91	
ELEVATION:	GWL: Depth	Date/Time	DATE STARTED: 6-25-91
ENGINEER/GEOLOGIST: J. Lear	Depth	Date/Time	DATE COMPLETED: 6-26-91
DRILLING METHODS: Auger mobile 53			PAGE 2 OF

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16				Cross Reference Boring Log # 1709 for Soil classification up to 27.0'			
17							
18							
19							
20							
21							
22							
23							
24							
25							
27	67121 8			silt, dark grayish brown, 2.5y, 4/2/clayey silt, v. moist.	ML	1.5	M _{nu} - 0 ppm P ₈ - 150-200cpm a - 0 cpm
28	1400 16 6-25-91 19	18					
29	67122 13 1410 12 6-25-91 17		18	S.A.A.	ML	1.5	M _{nu} - 0 ppm P ₈ - 50-100cpm a - 0 cpm

11
2d
11
3L

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Auger CME 53

Driller: Bob Vost
B.H. Anderson

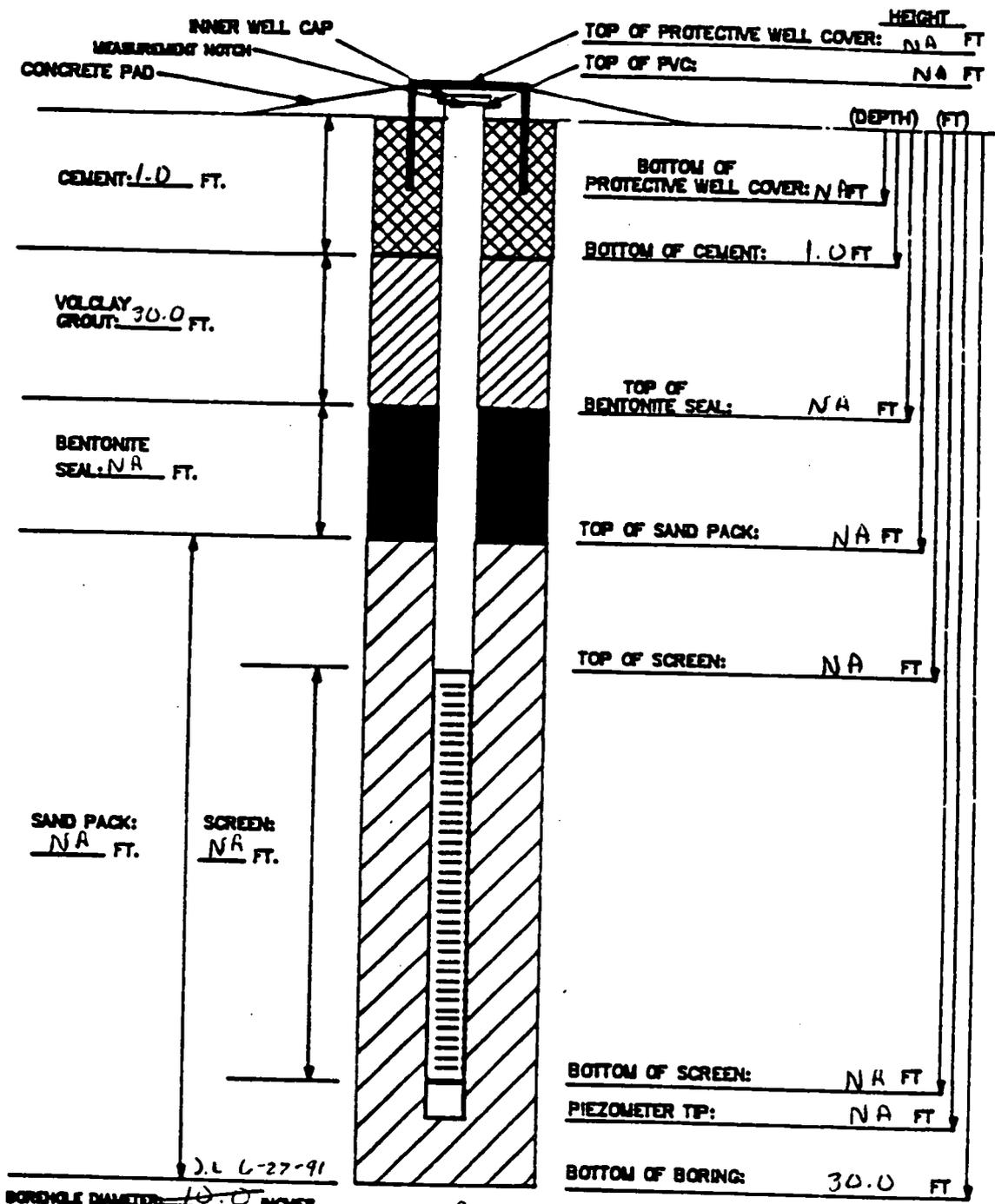
Background
 M_{nu} - 0 ppm
 P₈ - 50-100cpm
 a - 0 cpm

FERNALD RI/FS

INSTALLATION DIAGRAM
 MONITORING WELL NO. Plugged Boring 1791

PLUGGING
 INSTALLATION DATE: 6-26-91
 J.L.L. - 27-91

J.L.L. 6-27-91



MATERIALS USED:
 SAND TYPE AND QUANTITY: NA
 BENTONITE PELLETS (5-GALLON BUCKETS): NA
 BAGS OF VOLCLAY GROUT: 1 50lb bag
 AMOUNT OF CEMENT: 1/2 90lb bag
 AMOUNT OF WATER USED: 15 gals
 OTHER:

- NOTES: NA**
- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
 - 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
 - 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED PLUG.
 - 4) WATER DEPTH/DATE:

- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: J002.26 91 GEOLOGIST/ENGINEER: J.L.L.

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 6-26-91
 PROJECT NO. 602-26-91 CHECKED BY _____ DATE _____
 BORING NO. 1791
 PIEZOMETER NO. N/A DATE OF INSTALLATION 6-26-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 in. Hollow Stem Auger</u>
DRILLING FLUID (S) USED:	CASING SIZE (S) USED:
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>N/A</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	NA			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	NA			
BOREHOLE FILL MATERIALS: <small>CEMENT</small> GROUT/SLURRY BENTONITE SAND GRAVEL	TOP	0.0	BOTTOM	1.0
	TOP	1.0	BOTTOM	30.0
	TOP	NA	BOTTOM	NA
	TOP	NA	BOTTOM	NA
PERFORATED SECTION	TOP	NA	BOTTOM	NA
PIEZOMETER TIP	NA			
BOTTOM OF BOREHOLE	30.0			
GWL AFTER INSTALLATION	NA			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO 97

REMARKS _____

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-26-9L</u>	PROJECT NAME: <u>FMPC RI/FS OU-2</u>
BORING NUMBER: <u>1711</u>	COORDINATES:
ELEVATION:	GWL: Depth Date/Time
ENGINEER/GEOLOGIST: <u>J. Lear</u>	DATE STARTED: <u>5-23-91</u>
DRILLING METHODS: <u>Auger Mobile 53</u>	DATE COMPLETED: <u>5-30-91</u>
	PAGE <u>1</u> OF <u>4</u>

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON 2" SAMPLER PER 6" (18" RECOVERY)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
			S.A.A - Same As Above			
			N.R. - No Recovery			
1	67009 0943 5-23-91	2 13 13	medium dense, (2.5y, 21) black, Ash Some gravel frags, dry. very st. ff. dark grayish brown, (2.5y, 4/2) silty clayey silt trace gravel, dry.	ML ML	NA 2.5 NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
2	67010 0944 5-23-91	9 12 11	medium dense, black (2.5y, 21) silty ^{fine} sand Some fine gravel, dry.	SM ML	5-23-91 NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
3	67011 0953 5-23-91	10 13 9	S.A.A.	SM ML	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
4	67012 1053 5-29-91	6 9 9	S.A.A.	SM	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
5	67013 1115 5-29-91	5 4 3	loose, black (2.5y, 21) silt, some sand, trace gravel, dry.	ML	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
6	67014 1120 5-29-91	4 5 5	loose, black (2.5y, 21) silty sand trace fine gravel, dry.	SM	NA	H ₂₀ - 0 PPM BB - 70-100 CPM
7	67015 1250 5-29-91	3 4 4	loose, black (2.5y, 21) silt, some sand, trace gravel, dry.	ML	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
8	67016 1305 5-29-91	4 4 4	loose, black (2.5y, 21) sandy silt, some fine gravel, sil. moist to dry.	ML	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
9	67017 1305 5-29-91	4 4 4	S.A.A.	ML	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
10	67018 1335 5-29-91	2 3 3	loose, black (2.5y, 21) silty sand some fine gravel, moist to wet.	ML SM	NA NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM
11	67019 1340 5-29-91	2 2 3	loose, light olive brown, (2.5y, 5/2) clayey silt, trace sand, wet.	ML	NA	H ₂₀ - 0 PPM BB - 70-100 CPM α - 0 CPM

Full HSC
oil
15L
SLP
2 TOX
checked
ID level
gins

NOTES:

Drilling Contractor Penn Drilling

Drilling Equipment Auger Mobile 53

Driller: Bob Vost / Mark Rebold
Asst. Bill Anderson

Backgrounds
H₂₀ - 0 ppm
BB - 70-100 CPM
α - 0 CPM

All samples classified using Munsell color chart.

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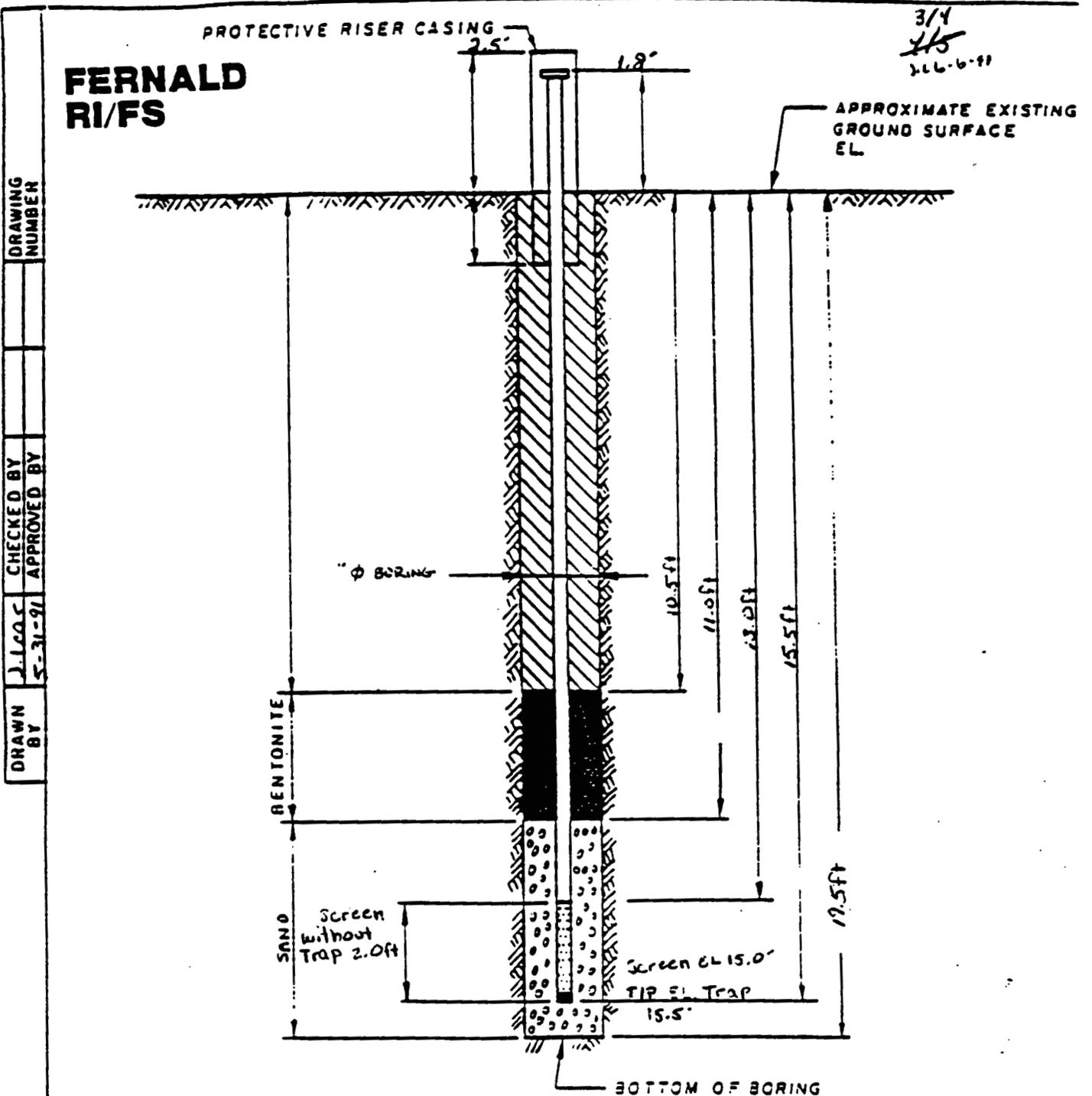
VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602.26.91</u>	PROJECT NAME: <u>FMPCL RI/FS</u>	
BORING NUMBER: <u>1711</u>	COORDINATES:	DATE: <u>5-29-91</u>
ELEVATION:	GWL: Depth <u>NA</u> Date/Time	DATE STARTED: <u>5-23-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED: <u>5-30-91</u>
DRILLING METHODS: <u>Auger Mobile 53</u>		PAGE <u>2</u> OF <u>4</u>

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
18	NA	NA	NA	Between 15' & 19' a void was discovered thus no material was recovered for sampling	NA	NA	NA
19	67020 1345 5-29-91	0 2 3	18	soft, dark grayish brown (2.5y. 5/2) clay Trace med gravel. med to high Plast., wet	CL	0.25	H _{nu} - 0 ppm B _b - 200-300 cpm α - 0 cpm
20				End of boring at 19.5' well set at 15.5'. Samples taken according to OU-2 work Plan Sample # 67021 - composite TCLP 67022 " I _g Tox 67023 " Trip Blank 67024 " field blank 67025 - Drum cuts TCLP			

NOTES:
 Drilling Contractor Penn Drilling
 Drilling Equipment Mobile 53 Auger
 Driller: Bob Vost
Asst. Bill Anderson

Background
 H_{nu} - 0 ppm
 B_b - 70-100 cpm
 α - 0 cpm



DRAWING NUMBER
 CHECKED BY
 APPROVED BY
 J.L.C.C.
 5-31-91
 DRAWN BY

NOTES:

1. RISER PIPE IS 4 IN 10 SCHEDULE PIPE, THREADED, FLUSH-JOINTED.
 2. SCREEN IS 4 IN 1.0 SS PIPE CONTINUOUS SLOT SCREEN (0.070 IN SLOT SIZE).
 3. LOWER END OF SCREEN IS CAPPED.
 4. ELEVATION OF WATER LEVEL
 5. WATER LEVEL READING ON
- 3 80lb bags of 10/20 sand
3 50lb bags of void clay grout
1/2 5 gal buckets of bentonite pellets
15 9als H₂O used for grout & drilling

INSTALLATION DETAILS MONITORING WELL

PREPARED FOR
 Fernald RI/FS
 * screen has an additional
 3" at top of Non perforated
 S.S. material

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS FIELD ENG./GEO. J. Lear DATE 5-31-91
 PROJECT NO. 602.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1711
 PIEZOMETER NO. 1711 DATE OF INSTALLATION 5-30-91

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>Hollow Stem Auger</u>
DRILLING FLUID (S) USED: <u>NA</u>	CASING SIZE (S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>4.0 in TD Stainless Steel</u>	RISER PIPE MATERIAL <u>4.0 in TD Stainless Steel</u>
DIAMETER OF PERFORATED SECTION <u>4.0 in TD</u>	RISER PIPE DIAMETERS:
PERFORATION TYPE:	O.D. <u>4 3/8 in</u> I.O. <u>4.0 in</u>
SLOTS <input checked="" type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>10 ft, 2 ft</u>
AVERAGE SIZE OF PERFORATIONS <u>2.0 in</u>	JOINING METHOD <u>flush joint threaded</u>
TOTAL PERFORATED AREA <u>2.0 ft</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>5.0 ft</u>	OTHER PROTECTION <u>Hinged, Locked well cover, well cap</u>
PROTECTIVE PIPE O.D. <u>10.75 in</u>	

ITEM	DISTANCE ABOVE/BELOW GROUND SURFACE (ft)		ELEVATION ()		
TOP OF RISER PIPE	(2.5)				
GROUND SURFACE	0.0				
BOTTOM OF PROTECTIVE PIPE	2.5				
BOREHOLE FILL MATERIALS: CEMENT GROUT/SLURRY BENTONITE SAND J.L.C. 5-31-91 GRAVEL	TOP	0.0	BOTTOM	1.5 ft	
	TOP	1.5 ft	BOTTOM	10.5 ft	TCP BOTTOM
	TOP	10.5 ft	BOTTOM	11.0 ft	TOP BOTTOM
	TOP	11.0 ft	BOTTOM	15.5 ft	TOP BOTTOM
	TOP	NA	BOTTOM	NA	TOP BOTTOM
PERFORATED SECTION	TOP	13.0 ft	BOTTOM	15.0 ft	TOP BOTTOM
PIEZOMETER TIP	15.5 ft				
BOTTOM OF BOREHOLE	15.5 ft				
GWL AFTER INSTALLATION					

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

REMARKS Samples were taken to 17.5 ft slurry grout was used to fill the section 101 between 15.5-17.5 ft as per Geotechnical standards

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26.91	PROJECT NAME: FMPG RI/FS	
BORING NUMBER: 1710	COORDINATES:	DATE: 5-31-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5-31-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 6-4-91
DRILLING METHODS: Auger, mobile 53	PAGE / OF 5	

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (L.W.)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
				S.A.A. - Same As. Above			
				N.R. - No Recovery			
1	670264 1330	10	17	medium dense, dark brown (10yr 3/8) clayey silt, some organics, some gravel, low plasticity, sl. moist	ML	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
	5-11-91	12		medium dense, brown (10yr 4/7) clayey silt, trace gravel, sl. moist	ML	NA	α - 0cpm
2	670279 1340	9	18	medium dense, black (2.5y, 2/) sandy silt, trace gravel, dry	ML	NA	H ₂₅ - 0ppm B ₂₅ - 50-100cpm α - 0cpm
3	5-31-91	10					
4	670287 1350	10	18	S.A.A.	ML	NA	B ₂₅ - 50-100cpm B ₂₅ - H ₂₅ - 0 ppm α - 0cpm
5	670291 1400	8	18	S.A.A.	ML	NA	H ₂₅ - 0 ppm
6	5-31-91	8		5' medium dense, very dark gray (2.5y, 3/4) sandy silt, trace gravel, dry	ML	NA	B ₂₅ - 50-100cpm α - 0cpm
7	670301 1435	3	12	loose, black (2.5y, 2/) silt, some sand trace gravel, dry.	ML	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
8	670311 1440	3	16	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
9	5-31-91	3					
10	670321 1445	2	18	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
11	5-31-91	2					
11	670331 1450	3	0	N.R.	NA	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
12	5-31-91	3					
13	670341 1530	1	18	loose, black, (2.5y, 2/) silt, some sand trace gravel, sl. moist.	ML	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
14	5-31-91	2					
14	670351 1535	2	18	S.A.A.	ML	NA	H ₂₅ - 0 ppm B ₂₅ - 50-100cpm α - 0cpm
15	5-31-91	2					

Full HSL

Full HSL

NOTES:

Drilling Contractor Penn Drilling Background

Drilling Equipment Mobil 53 Auger

Driller: Bob Vost

Asst. Bill Anderson

H₂₅ - 0 ppm

B₂₅ - 50-100cpm

α - 0cpm

All soils classified according to Munsel color chart.

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VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: <u>602-26-91</u>	PROJECT NAME: <u>FMPD RI/FS 00-2</u>	
BORING NUMBER: <u>1710</u>	COORDINATES:	DATE: <u>6-1-91</u>
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: <u>5-31-91</u>
ENGINEER/GEOLOGIST: <u>J. Lear</u>	Depth Date/Time	DATE COMPLETED: <u>6-4-91</u>
DRILLING METHODS: <u>Auger</u>	PAGE <u>2</u> OF <u>5</u>	

DEPTH (F.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (L in 1)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
16	67036 1540 5-11-91	1 2	6	S.A.A	ML	NA	H _{no} - 0 ppm B ₈ - 50-100 cpm α - 0 cpm
17	67038 67039 0900	2 3	18	lense, black (2.5Y, 2/) silt, trace sand, dry. -16.9" lense, black (2.5Y, 2/) silt, some sand, trace gravel, dry.	ML ML	NA NA	H _{no} - 0 ppm B ₈ - 50-100 cpm α - 0 cpm
19	6-1-91	3					
19	67037 67040 0905	4 4	18	S.A.A	ML	NA	H _{no} - 0 ppm B ₈ - 50-100 cpm α - 0 cpm
20	67046 0915	4 14	8	very dense, (2.5Y, 2/) black, silt, trace sand, some gravel ignets, dry	ML	NA	H _{no} - 0 ppm B ₈ - 50-100 cpm α - 0 cpm
21	6-1-91	5					
22	67042 0950	31 42	0	N.R	NA	NA	H _{no} - 0 ppm B ₈ - 50-100 cpm α - 0 cpm
22	6-1-91	27					
23	67043 1000 6-1-91	75/5	6	very dense, black (2.5Y, 2/) silt, some yellowish red, (5YR, 5/6) stone ignets Trace sand, dry.	ML	NA	B ₈ - 200-240 α - 0-2 H _{no} - 0
24				Impenetrable struck. Attempt to Auger thru			
25	67044 1320 6-1-91	40 19 32	3	Dense, black, (2.5Y, 2/) silt, concrete rubble cobbles, trace sand, gravel, dry	ML	NA	H _{no} - 0-4 ppm B ₈ - 100-150 cpm α - 0 cpm
26	67045 1345	32 30	8	Dense, black, (2.5Y, 2/) silt, some organics some concrete gravel, trace sand, sl. moist.	ML	NA	H _{no} - 2 ppm B ₈ - 100-400 cpm α - 0 cpm
27	6-1-91	18					
28	67046 1410 6-1-91	33 25 14	16	Dense, dark olive gray (5Y, 3/2) gravelly sand, trace silt, wet Dense, yellowish brown (10YR, 5/4) clayey silt Some gravel & cobbles, moist.	GW ML	NA NA	H _{no} - 0 ppm B ₈ - 100-900 cpm α - 0-2 cpm
29	67047 1515	20 25	14	soft, dark olive gray (5Y, 3/2) clay, trace silt med plast., moist. very dense, yellowish brown, (10YR, 5/8) well sorted coarse sand, trace gravel, dry.	CL SP	0.6 NA	H _{no} - < 1.0 ppm B ₈ - 40-180 cpm α - 0 cpm
29	6-1-91	28					

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mobile S3 Auger
 Driller: Bob Yost
Asst. Bill Anderson

Background
 H_{no} - 0 ppm
 B₈ - 50-100 cpm
 α - 0 cpm

All soils classified according to Munsell color chart.

VISUAL CLASSIFICATION OF SOILS

PROJECT NUMBER: 602.26-91	PROJECT NAME: FMPC RI/FS OU-2	
BORING NUMBER: 1710	COORDINATES:	DATE: 6-1-91
ELEVATION:	GWL: Depth Date/Time	DATE STARTED: 5-31-91
ENGINEER/GEOLOGIST: J. Lear	Depth Date/Time	DATE COMPLETED: 6-4-91
DRILLING METHODS: Auger	PAGE 3 OF 5	

DEPTH (FT.)	SAMPLE TYPE & NO.	BLOWS ON SAMPLER PER (6 in)	RECOVERY (%)	DESCRIPTION	USCS SYMBOL	MEASURED CONSISTENCY (TSF)	REMARKS
31	67048 67049 1530 6-1-91	20 30 32	18	S.A.A	SP	NA	H _{nu} - 0 ppm B ₁ - 50-100 cpm α - 0 cpm
32				Boring Plugged and Abandoned Samples taken according to OU-2 Work Plan			
33							
34							
35							
36							
				TCLP COMP. - 67051 1545			
				SRLP COMP. - 67050 1545			
				Trip Blank - 67052 0830			
				Field Blank - 67053 0930			
				Full Rad - 67054 1400 5/31			
				Full Rad - 67055 1445 5/31			
				Iq. Corr Tox - 67056 1545 6/1			
				Field Rad - 67057 27.0-28.5			
				Archive J.L. - 6-4-91			

NOTES:

Drilling Contractor Penn Drilling
 Drilling Equipment Mohik S3 Auger
 Driller: Bob Yost
Asst. Bill Anderson

Background
 H_{nu} - 0 Ppm
 B₁ - 50-100 cpm
 α - 0 cpm

PIEZOMETER INSTALLATION SHEET

PROJECT NAME FMPC RI/FS DU-2 FIELD ENG./GEO. J. Lear DATE 6-3-91
 PROJECT NO. 602.26.91 CHECKED BY _____ DATE _____
 BORING NO. 1710
 PIEZOMETER NO. NA DATE OF INSTALLATION 6-3-91, 6-9-91
Plugging
6-3-91, J.L.

BOREHOLE DRILLING

DRILLING METHOD <u>Auger</u>	TYPE OF BIT <u>10 1/2" Hollow Stem Auger</u>
DRILLING FLUID(S) USED: <u>NA</u>	CASING SIZE(S) USED: <u>NA</u>
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____
FLUID <u>NA</u> FROM _____ TO _____	SIZE <u>NA</u> FROM _____ TO _____

PIEZOMETER DESCRIPTION

TYPE <u>NA</u>	RISER PIPE MATERIAL <u>NA</u>
DIAMETER OF PERFORATED SECTION <u>NA</u>	RISER PIPE DIAMETERS: <u>NA</u>
PERFORATION TYPE: <u>NA</u>	O.D. <u>NA</u> I.D. <u>NA</u>
SLOTS <input type="checkbox"/> HOLES <input type="checkbox"/> SCREEN <input type="checkbox"/>	LENGTH OF PIPE SECTIONS <u>NA</u>
AVERAGE SIZE OF PERFORATIONS <u>NA</u>	JOINING METHOD <u>NA</u>
TOTAL PERFORATED AREA <u>NA</u>	

PROTECTION SYSTEM

RISER PROTECTIVE PIPE LENGTH <u>NA</u>	OTHER PROTECTION <u>NA</u>
PROTECTIVE PIPE O.D. <u>NA</u>	

ITEM	DISTANCE ABOVE / BELOW GROUND SURFACE (ft.)		ELEVATION ()	
	TOP	BOTTOM	TOP	BOTTOM
TOP OF RISER PIPE	<u>NA</u>			
GROUND SURFACE	0.0			
BOTTOM OF PROTECTIVE PIPE	<u>NA</u>			
BOREHOLE FILL MATERIALS: <i>Cement</i> GROUT / SLURRY BENTONITE SAND GRAVEL	TOP	<u>1.0</u>	BOTTOM	<u>31.5</u>
	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
PERFORATED SECTION	TOP	<u>NA</u>	BOTTOM	<u>NA</u>
PIEZOMETER TIP	<u>NA</u>			
BOTTOM OF BOREHOLE	<u>31.5</u>			
GWL AFTER INSTALLATION	<u>NA</u>			

WAS THE PIEZOMETER FLUSHED AFTER INSTALLATION? YES NO
 WAS A SENSITIVITY TEST PERFORMED ON THE PIEZOMETER? YES NO

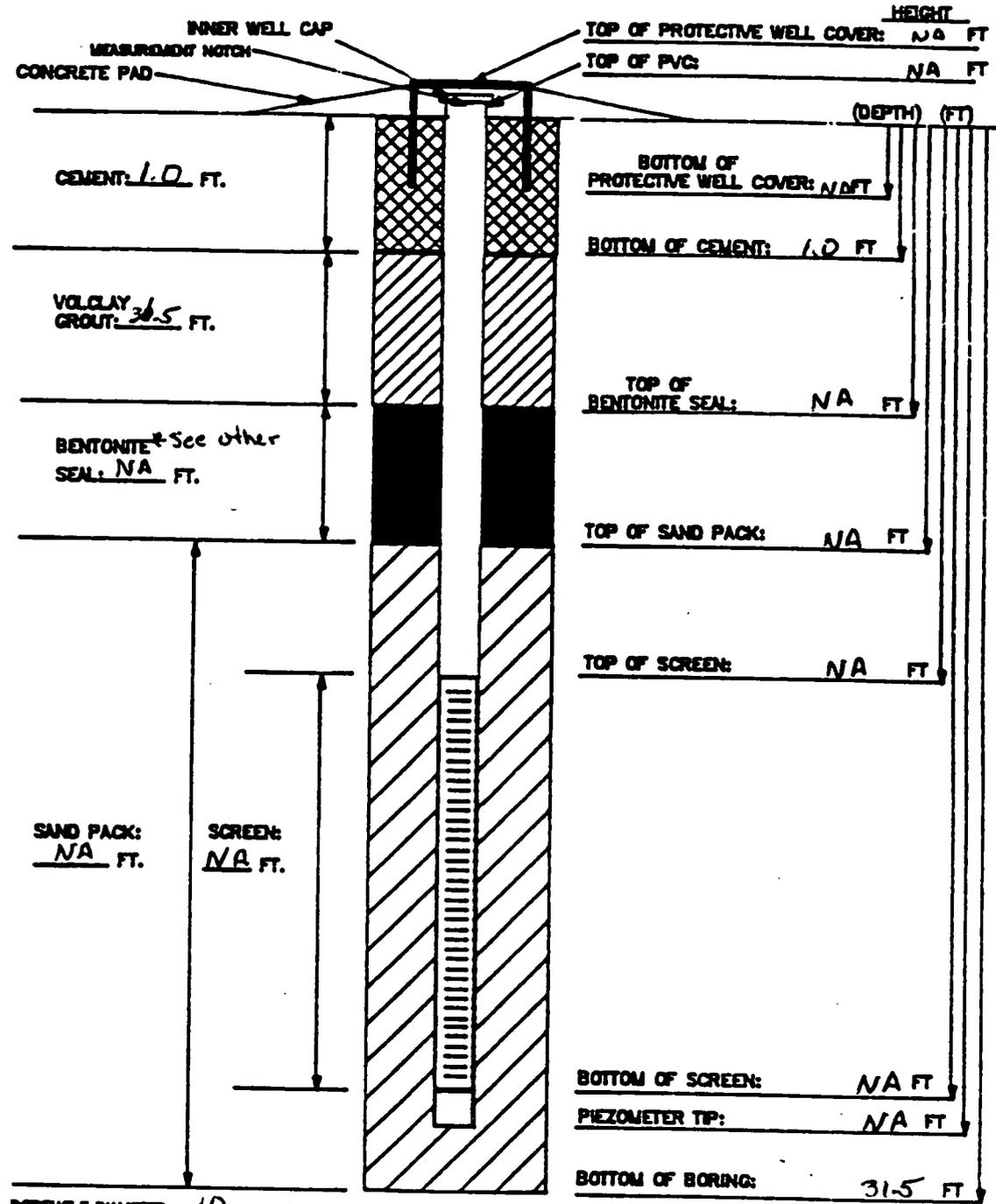
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REMARKS No water observed in Boring thus plugged and Abandoned
Bentonite was used throughout the Grouting process to impede lateral migration of Grout

FERNALD RI/FS

INSTALLATION DIAGRAM
 MONITORING WELL NO. 1710
 Muffled Boring

Plugging
 INSTALLATION DATE: 6-3-6-4-91



MATERIALS USED:

- SAND TYPE AND QUANTITY: NA
- BENTONITE PELLETS (5-GALLON BUCKETS): 2
- BAGS OF VOLCLAY GROUT: 7
- AMOUNT OF CEMENT: 1 bag
- AMOUNT OF WATER USED: 10 gals
- OTHER: Bentonite was used to attempt to stop migration of gravel laterally

NOTES: NA

- 1) RISER PIPE IS 2-INCH SCHEDULE 40 PVC PIPE, FLUSH-THREADED JOINTS.
- 2) SCREEN IS 2-INCH I.D. SCHEDULE 40 PVC PIPE WITH 0.020-INCH SLOTS.
- 3) LOWER END OF SCREEN IS CAPPED WITH AN END CAP OR THREADED BUMP.
- 4) WATER DEPTH/DATE NA
- 5) TOP OF PVC IS SECURED WITH EXPANDABLE RUBBER PLUG AND PADLOCK.
- 6) PARENTHESES INDICATE DEPTH BELOW GROUND LEVEL.

TASK: 602-26-91

GEOLOGIST/ENGINEER: J. War