

**EXCAVATION PLAN
FOR AREA 1, PHASE IV**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



SEPTEMBER 2003

**U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE**

**20730-PL-0001
REVISION B
DRAFT**

000001

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LIST OF ACRONYMS AND ABBREVIATIONS

D&D Decontamination and Decommission
DOE U.S. Department of Energy
FCP Fernald Closure Project
FRL Final Remediation Level
NPDES National Pollutant Discharge Elimination System
OSDF On-Site Disposal Facility
WAC Waste Acceptance Criteria

EXCAVATION PLAN FOR AREA 1, PHASE IV

1.0 INTRODUCTION

1.1 Background

The On-Site Disposal Facility (OSDF) is being constructed to contain impacted materials obtained from remediation of the operable units at the Fernald Closure Project (FCP) and is located on the eastern portion of the site. When completed, the OSDF will consist of eight cells being constructed and filled generally from north to south. The major components of each cell include a liner and final cover system, leachate management system, surface-water management system, and support facilities and the utilities. Prior to the placement of waste within an individual cell the subgrade must be prepared and the liner system and portions of the leachate management system must be completed. Prior to constructing the liner and portions of the leachate management system, the subgrade must be readied. This includes removal of topsoil, other unsuitable soils, and at- and below-grade structures. In addition, the area must be certified to meet the established final remediation level (FRL) goals based on the Operable Unit 5 Record of Decision (DOE 1996).

A portion of the footprint for OSDF Cell 8 that will be constructed in the future has not been certified. This excavation plan addresses the activities that must be completed to facilitate the construction of the OSDF Cell 8 footprint. Prior to subgrade preparation of the OSDF Cell 8 footprint, the area will be sampled for certification and will be certified with the agency approval of the area-specific certification report.

1.2 Purpose

This excavation plan describes the remediation of soil, and at- and below-grade structures within an uncertified portion of the OSDF Cell 8 footprint. This area is included in Area 1, Phase IV. The majority of the OSDF Cell 8 footprint as already been certified as part of Area 1, Phase II (see Figure 1). Note: As of the date of this publication, Cell 8 has not been designed and the footprint required to construct the cell liner and cap has been approximated for purposes of this document.

1.3 Exclusions

The removal of above-grade structures at the Fuel Loading/Unloading Facility (82B) located within the Area 1, Phase IV is excluded from this document. The removal of these structures will be performed as a Decontamination and Decommission (D&D) activity [see Miscellaneous Small Structures Phase II Implementation Plan for Above-Grade D&D (DOE 2003)]. In addition, the purging for fuel from the

1 associated underground diesel and gasoline fuel lines is excluded from this document and will be
2 conducted as a facility isolation operation.

3
4 The predesign characterization of the Area 1, Phase IV is also excluded from this document (see Project
5 Specific Plan for Predesign Investigation in Area 5 (DOE 2002). This area was reclassified from part of
6 Area 5 to Area 1, Phase IV based on verbal requests from both the U.S. Environmental Protection Agency
7 and Ohio Environmental Protection Agency.

8
9 The removal of structures within the OSDF Cell 8 footprint that are in already certified areas (Area 1,
10 Phase II) will not be governed by this document and will be removed as part of the OSDF Cell 8 subgrade
11 preparation effort.

12
13 2.0 REMEDIAL APPROACH

14 2.1 Description

15 The Area 1, Phase IV is located east of the Administration Area and east of the southeast corner of the
16 Former Production Area (see Figure 1). The area functions as a radiologically clean area (not
17 radiologically controlled) and has served primary as a support area for site operations. Provided in
18 Appendix B, Table B-1 provides a summary of analytical data from borings sampled within the Area 1,
19 Phase IV boundary and Figure B-1 shows the boring locations.

20
21 The area has primarily been used to park inbound and outbound tractor trailers used to ship waste
22 materials off-site for disposal at the Nevada Test Site. This includes several concrete pads and gravel
23 parking lots to facilitate trailer parking. In addition, several auxiliary gravel parking lots to facilitate
24 worker parking have been constructed within the area.

25
26 The area also includes the Fuel Loading/Unloading Facility (82B). This contains two above-ground fuel
27 tanks (one for diesel and one for gasoline that service two sets of pumps). One set of pumps is located on
28 the western side of Facility 82B. The other set of pumps is located within the Former Production Area
29 near the Elevated Potable Water Tank (20D) and service site vehicles within the radiologically controlled
30 areas. These tanks and the two adjacent pumps will be removed by D&D prior to the beginning of
31 excavation. As these tanks contained fuel, efforts will be made to prevent characteristic hazardous waste
32 or materials that are deleterious to the geomembrane liners in the OSDF from being placed in the OSDF.

33

1 A number of underground utilities are located within the Area 1, Phase IV. This includes portions of
2 electrical duct banks, direct buried electrical cables, communication cables, potable water lines, a fuel gas
3 (natural gas) line, an effluent line, a sanitary force main line and the original OSDF Leachate Conveyance
4 System gravity pipe. In addition, there are underground diesel and gasoline lines running west from
5 Facility 82B to the controlled area pumping station. This area also has a number of overhead electrical
6 power lines including three lines from a Cinergy Gas and Electric transmission tower to the site's Main
7 Electrical Station (16A).

8 9 2.2 Stormwater Management

10 Stormwater from Area 1, Phase IV drains indirectly to Paddys Run through surrounding ditches and the
11 OSDF Sediment Basin #2 (see Figure 2). Likewise during excavation, storm water will drain indirectly to
12 Paddys Run through surrounding ditches and the OSDF Sediment Basin #2; however, check dams will be
13 installed at strategic locations to reduce the amount of sediment loading in the discharge. Specifically,
14 check dams will be installed at the inlets of two culverts that are to remain in place after excavation, and
15 at the outlet of a third culvert that will be removed during the remediation process.

16
17 Three culverts drain storm water from the work area. Two of these culverts are located on the west side
18 of the work area and drain under "F" Street to the OSDF Sediment Basin #2 Main Drainage Channel.
19 These two culverts are to remain in service after remediation of the area and will not be removed until
20 "F" Street is remediated, which is not covered by this document. The removal of these culverts will be
21 addressed in the Implementation Plan for Area 7, Phase III. Check dams will be installed at the inlets to
22 these two culverts. The other culvert that drains storm water from the work area is located near the Fuel
23 Loading/Unloading Facility and drains northward into a stone lined ditch that discharges into the OSDF
24 Sediment Basin #2 Main Drainage Channel. This culvert will be removed during remediation of the work
25 area. A check dam will be installed at the outlet of this culvert.

26
27 Water collected in the OSDF Sediment Basin #2 Main Drainage Channel drains into the OSDF Sediment
28 Basin #2 prior to being released to Paddys Run. Discharge from this basin spills into a riser pipe, flows
29 through a large storm pipe located under the southeast parking lot, drains into the Storm Sewer Outfall
30 Ditch, and is released into Paddys Run at Permitted National Pollutant Discharge Elimination System
31 (NPDES) Stormwater Outfall (STRM 4003) under Ohio NPDES Permit 11O00004*FD.

1 **2.3 Remedial Excavation**

2 Prior to excavation, the utilities within the work area will be isolated, and check dams and construction
3 safety fences will be installed as per the drawings (see Appendix A).

4
5 Excavation equipment will be used to break at-grade concrete pads and asphalt pavement within the work
6 area. Broken concrete, asphalt, and surface gravel will be removed from the work area for disposal in the
7 OSDF. Real-time monitoring will be performed on soil immediately under removed pads, pavement, and
8 surface gravel to ensure that no material above the waste acceptance criteria (WAC) material for the
9 OSDF exists on the underlying surface of the soil prior to continued excavation. Disturbance to the soil
10 under pads, pavement, and gravel will be minimized until the underlying surface can be monitored.

11 Underground utilities and below-grade structures within the work area will be removed. This includes the
12 last remaining portion of the abandoned-in-place Leachate Conveyance System Gravity Flow Pipe which
13 is located almost entirely within the area to be certified but includes almost 60 feet of pipe that runs just
14 outside and southwest of the work area. In addition, an approximately 30-foot portion of the underground
15 diesel and gasoline fuel lines will also be removed that are located within the Area 1, Phase II
16 Certification Area. One potable water line and yard hydrant located within the excavation area will be
17 protected during excavation and left in place. This line and hydrant are actually outside the Cell 8 liner
18 footprint and will be used to support construction of Cell 8 as needed. This line will be removed when it
19 becomes isolated due to soil remediation in other areas that would take the line out of service.

20
21 Initially, characterization of the concrete will be determined by the associated predesign data. Secondary
22 evaluation will be based upon Waste Acceptance Organization personnel observations that the debris is
23 visually clean. If predesign data has not been obtained for the subject area, the material will be
24 temporarily staged and disposition will be determined by real-time monitoring results of the underlying
25 soil surface and visual observation. After the removal of surface concrete, asphalt, and gravel, a 6-inch
26 surface scrape will be performed over the work area to ensure removal of contaminated material
27 otherwise not discovered during predesign characterization. All excavated material, soil and debris
28 meeting the OSDF WAC will be disposed in the OSDF. Any above-WAC material including ignitable
29 materials or materials that are deleterious to the liners of the OSDF will not be placed in the OSDF.
30 These materials will be segregated for treatment or disposed of accordingly.

1 **2.4 Interim Restoration**

2 A precertification Project Specific Plan will be submitted as a separate document to the regulatory
3 agencies for review and approval. Precertification activities will commence after the design grade has
4 been reached and all other remediation in the area is complete. The precertification area will be
5 delineated and controlled to prevent cross-contamination of environmental media. Real-time monitoring
6 of the excavated grade will be performed to precertify the area as attaining the uranium, thorium, and
7 radium FRL goals. The remediated area will be seeded in accordance with Technical Specification
8 Section 02930.

9
10 After certification of the area is obtained, the construction of the OSDF Cell 8 liner and Valve House #8
11 can begin as scheduled.

12
13 **References**

14 U.S. Department of Energy, 1996, "Record of Decision for Remedial Actions at Operable Unit 5," Final,
15 Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

16
17 U.S. Department of Energy, 2002, "Project Specific Plan for Predesign Investigation of Area 5,"
18 Revision 0, Fernald Environmental Management Project, DOE, Fernald Area Office, Cincinnati, Ohio.

19
20 U.S. Department of Energy, 2003, "Miscellaneous Small Structures Phase II Implementation Plan for
21 Above-Grade Decontamination and Dismantlement," Revision 0 PCN 1, Fernald Closure Project, DOE,
22 Fernald Area Office, Cincinnati, Ohio.

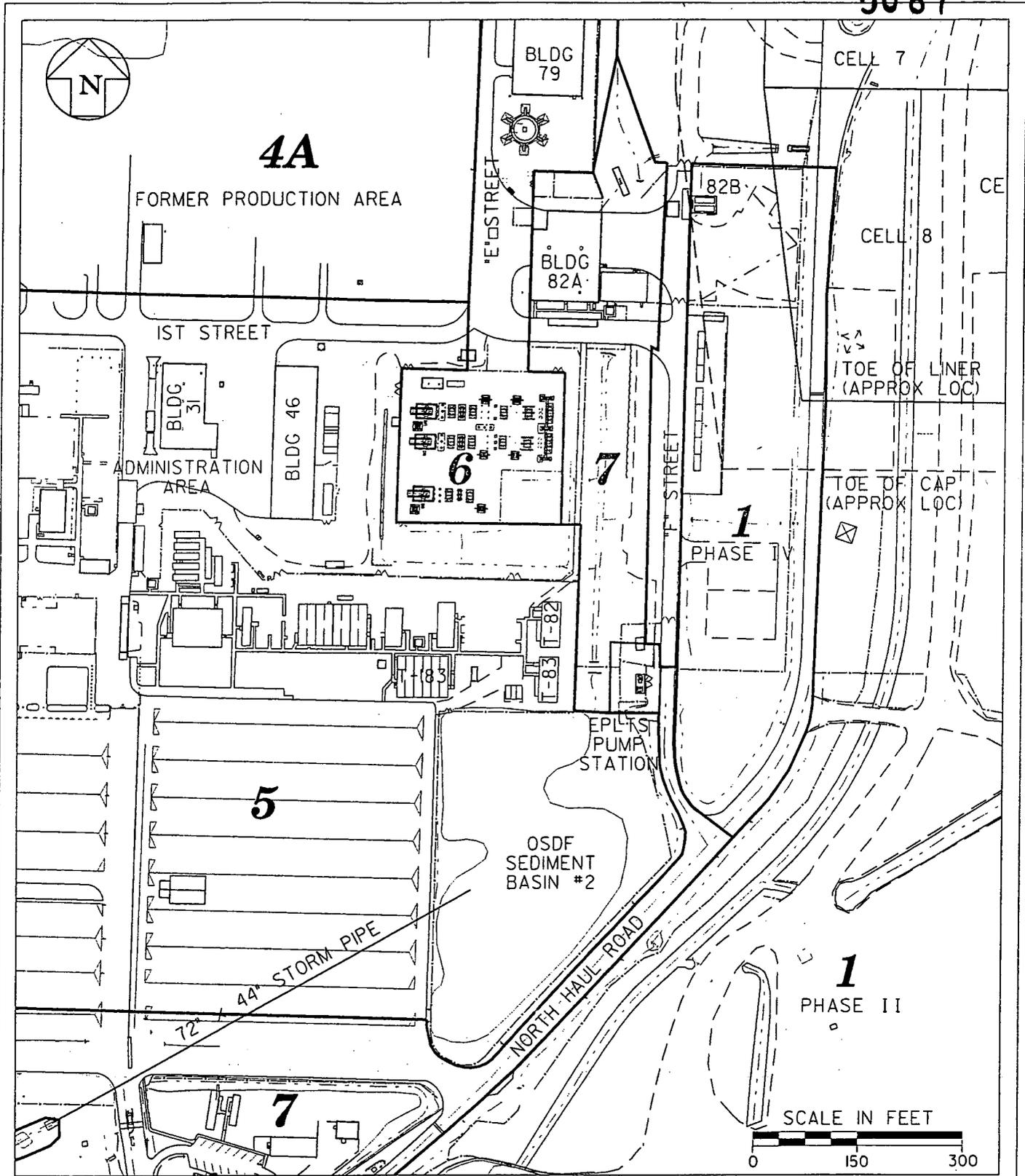
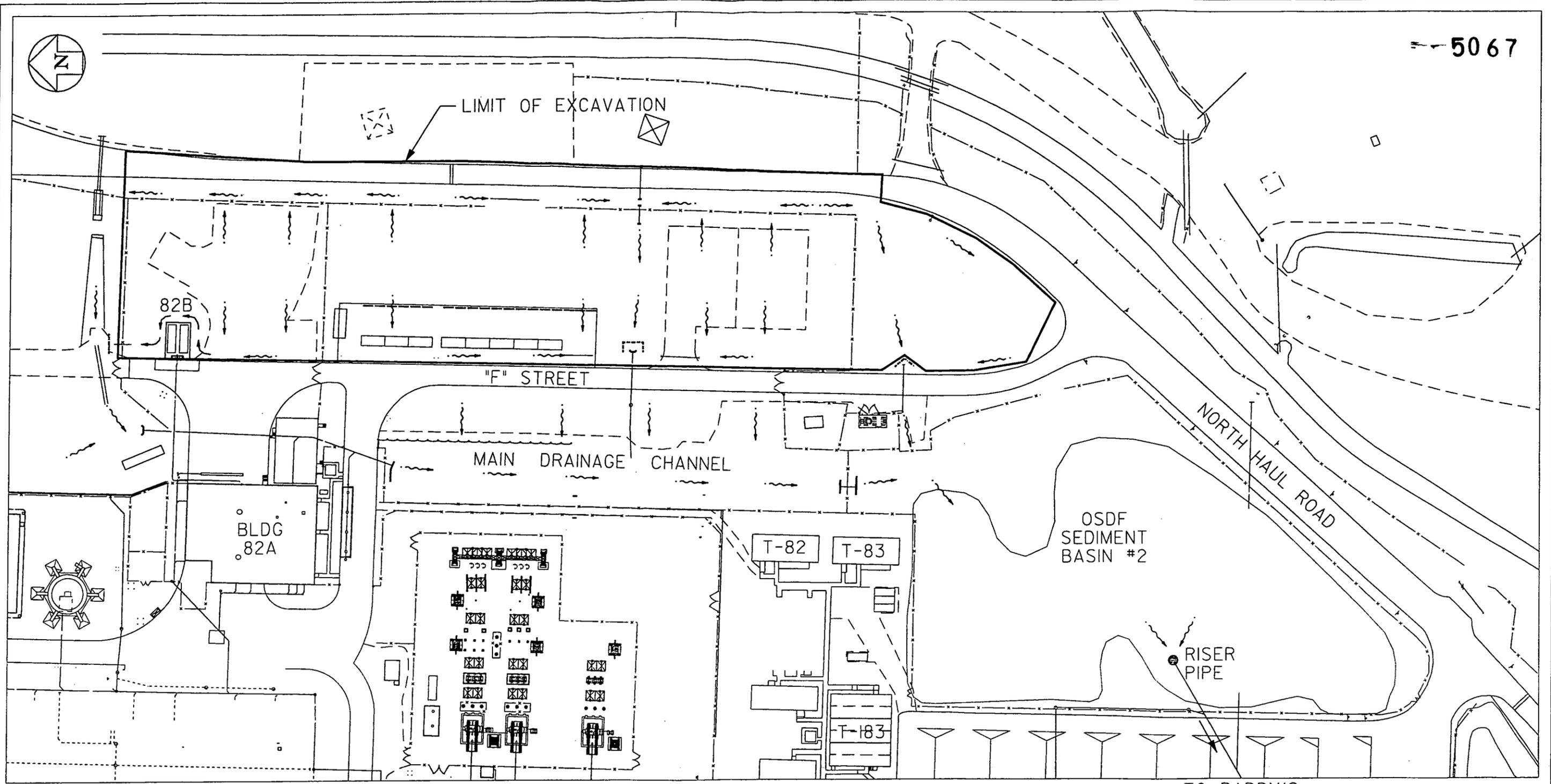


FIGURE I
AREA I PHASE IV
FOOTPRINT

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--- INDICATES CHECK DAM

~~~ INDICATES SURFACE DRAINAGE DIRECTION



TO PADDY'S RUN BY SWRB  
OUTFALL

000009

FIGURE 2  
AREA I PHASE IV  
FOOTPRINT DRAINAGE

**APPENDIX A**  
**LIST OF DRAWINGS**

**APPENDIX A  
LIST OF DRAWINGS**

1  
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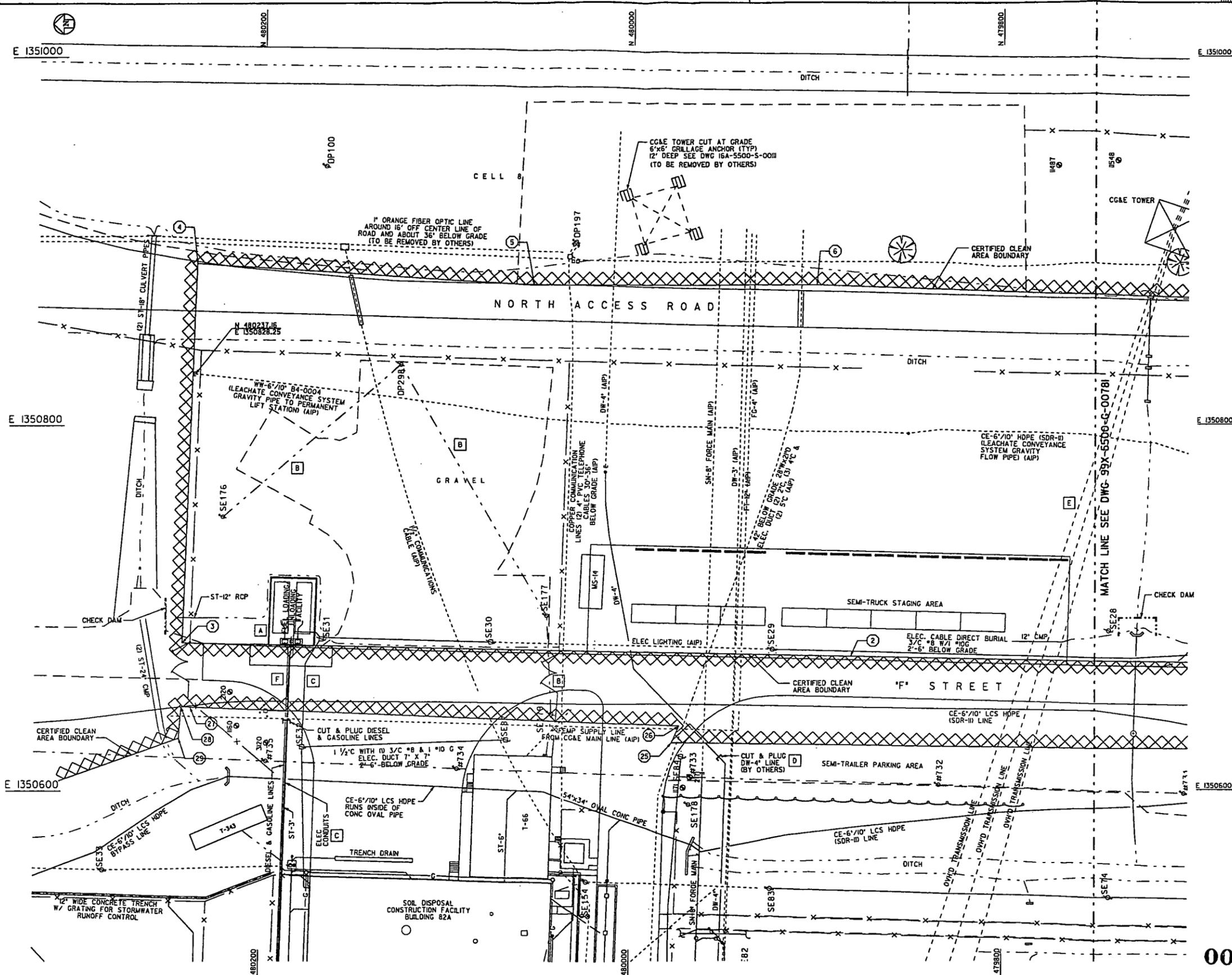
Design Drawings

Drawing 99X-5500-G-00780 Area 1, Phase IV Cell 8 Partial Excavation Plan, Sheet 1 of 2  
Drawing 99X-5500-G-00781 Area 1, Phase IV Cell 8 Partial Excavation Plan, Sheet 2 of 2

Reference Drawings

Drawing 99X-5500-X-00639 Legend and General Notes  
Drawing 99X-5500-G-00769 Utility and Structure Removal Below Design Grade  
Drawing 22F-5500-P-00663 Grid 4 Underground Utilities – Bldg. 79, 82 and E. Water Tower  
Drawing 22A-5500-P-00664 Grid 5 Underground Utilities – East of Main Substation

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**GENERAL NOTES**

1. SEE DRAWING 99X-5500-X-00639 FOR LEGEND AND ADDITIONAL GENERAL NOTES.
2. AFTER CONCRETE, ASPHALT, AND GRAVEL REMOVAL, COORDINATE WITH REAL TIME TO SCAN UNDERLYING SURFACE PRIOR TO SOIL EXCAVATION.
- IF ABOVE-WAC MATERIAL IS DISCOVERED UNDER PADS/PAVEMENT, REMOVE IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
3. SURVEY AND RECORD THE ENDS OF UTILITIES REMAINING AFTER EXCAVATION.
4. THE CONSTRUCTION MANAGER WILL ARRANGE FOR PRECERTIFICATION MONITORING AND SAMPLING OF THE EXCAVATED AREA.
5. PROTECT MONITORING WELLS THAT REMAIN AT TIME OF EXCAVATION.

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**SCOPE OF REMEDIATION WORK**

1. THE LIMIT OF WORK AREA IS THE AREA INCLUSIVE OF CERTIFIED CLEAN AREA CONTROL POINTS 1 THROUGH 7 AND EXCAVATION CONTROL POINTS 1 THROUGH 10.
2. REMOVE CONCRETE PADS AND ASPHALT PAVEMENT WITHIN THE LIMIT OF WORK AREA AND HAUL TO OSDF.
3. REMOVE GRAVEL WITHIN THE LIMIT OF WORK AREA AND HAUL TO OSDF.
4. EXCAVATE THE TOP 6 INCHES OF SOIL ACROSS THE LIMIT OF WORK AREA AND HAUL TO OSDF. THIS INCLUDES SOIL UNDERNEATH CONCRETE PADS, ASPHALT PAVEMENT, AND GRAVEL/STONE.
5. REMOVE UNDERGROUND UTILITIES WITHIN THE LIMIT OF WORK IN ACCORDANCE WITH DRAWING 99X-5500-G-00769. CAP REMAINING UTILITIES AT THE LIMIT OF WORK.

**KEYED NOTES**

- A** PRIOR TO EXCAVATION VERIFY ABOVE-GRADE DIESEL AND GASOLINE TANKS, AND ABOVE-GRADE PUMPS HAVE BEEN REMOVED BY OTHERS; AND UNDERGROUND DIESEL AND GASOLINE LINES HAVE BEEN PURGED BY OTHERS.
- B** PRIOR TO EXCAVATION VERIFY OVERHEAD POWER LINES BETWEEN POLES SET19, SET29, AND SET76 HAVE BEEN ELECTRICALLY ISOLATED BY OTHERS.
- C** PRIOR TO EXCAVATION VERIFY UNDERGROUND POWER LINES BETWEEN POLES SE31, SE32, AND ELECTRICAL CONDUIT ADJACENT TO THE UNDERGROUND DIESEL AND GASOLINE LINES HAVE BEEN ELECTRICALLY ISOLATED BY OTHERS.
- D** PRIOR TO EXCAVATION VERIFY 4 INCH POTABLE WATER LINE (DW-4") HAS BEEN CUT AND PLUGGED BY OTHERS.
- E** PROTECT OVERHEAD ELECTRICAL LINES FROM CG&E TRANSMISSION TOWER TO MAIN ELECTRICAL SUBSTATION.
- F** REMOVE A PORTION OF BOTH THE DIESEL AND GASOLINE LINES ACROSS THE CERTIFIED AREA FROM THE FUEL LOADING/UNLOADING FACILITY TO THE CUT POINT. PLUG THE EXPOSED ENDS OF THE REMAINING PORTIONS OF BOTH LINES. BACKFILL TRENCH WITH ODOT ITEM 304 AGGREGATE.

| CERTIFIED CLEAN AREA CONTROL POINTS |           |            |
|-------------------------------------|-----------|------------|
| PT NO.                              | NORTHING  | EASTING    |
| 2                                   | 479881.35 | 1350673.19 |
| 3                                   | 480242.82 | 1350680.84 |
| 4                                   | 480236.56 | 1350888.21 |
| 5                                   | 480053.74 | 1350876.26 |
| 6                                   | 479900.70 | 1350876.26 |
| 25                                  | 479977.41 | 1350626.03 |
| 26                                  | 479973.25 | 1350635.21 |
| 27                                  | 480238.42 | 1350645.74 |
| 28                                  | 480243.09 | 1350645.98 |
| 29                                  | 480244.31 | 1350628.86 |

FOR INFORMATION ONLY

PRELIMINARY  
NOT FOR CONSTRUCTION

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SCALE IN FEET

| NO. | REVISIONS | DATE | OWN. | BY | APPD. | NO. | REVISIONS                | DATE | OWN. | BY | APPD. | REF. DWG. NO. |
|-----|-----------|------|------|----|-------|-----|--------------------------|------|------|----|-------|---------------|
|     | B         |      |      |    |       |     | ISSUED FOR AGENCY REVIEW |      |      |    |       |               |
|     | A         |      |      |    |       |     | ISSUED FOR AGENCY REVIEW |      |      |    |       |               |

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MANUALLY.

**CONFIGURATION MANAGEMENT**

|          |      |    |
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| DESIGNED | DATE | BY |
| CHECKED  | DATE | BY |
| APPROVED | DATE | BY |

**APPROVALS**

|              |              |
|--------------|--------------|
| CIVIL & STR. | SAFETY ENG.  |
| ELECTRICAL   | MAINTENANCE  |
| ENGINEER     | FIRE PROJECT |
| INSTRUMENT   | WASTE MNGT   |
| MECHANICAL   | SECURITY     |
|              | PROJECTS     |

**Fernald Closure Project**

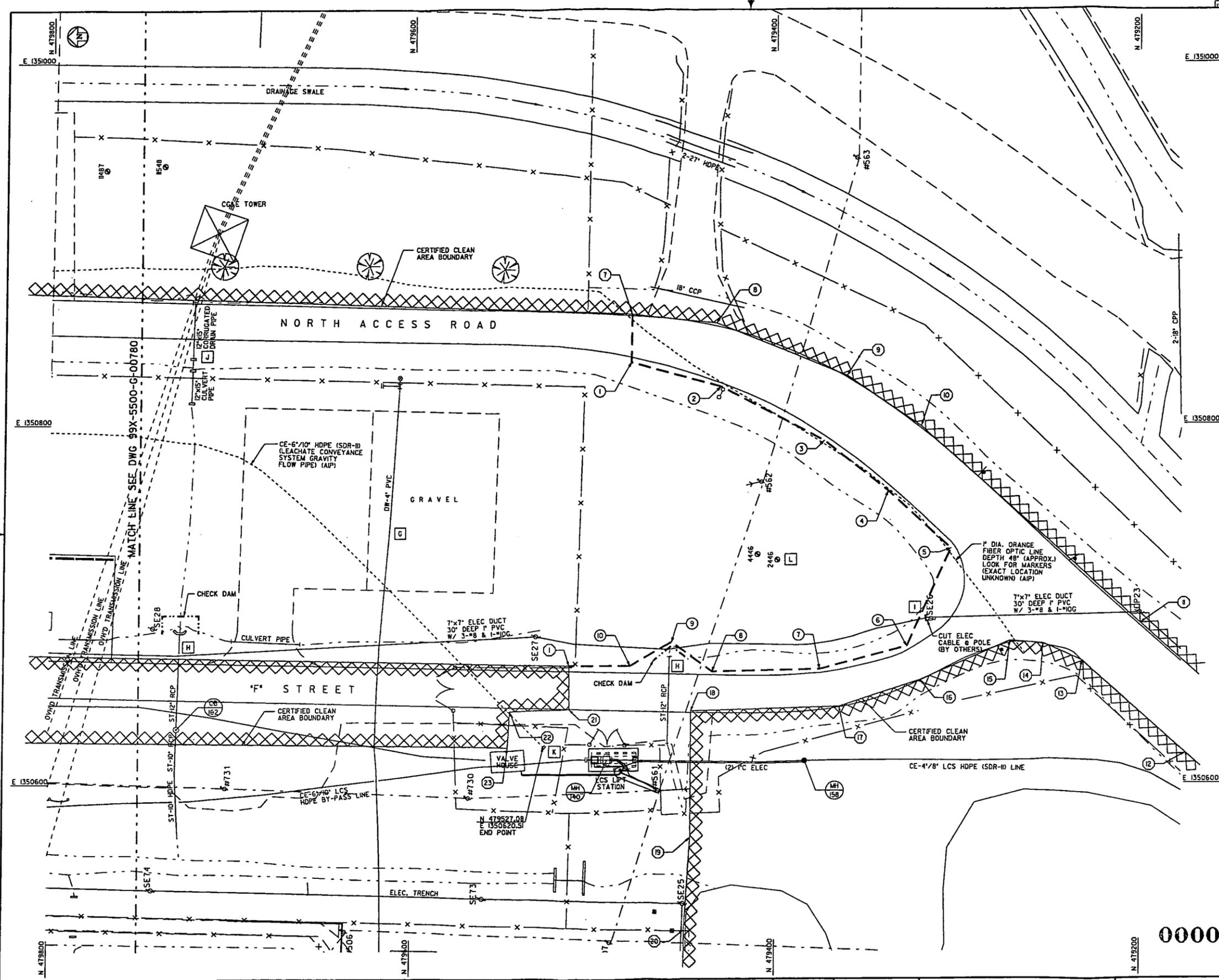
**FLUOR FERNALD, INC.**

**U.S. DEPARTMENT OF ENERGY**

**AREA 1 PHASE IV  
CELL 8 PARTIAL EXCAVATION PLAN  
SHEET 1 OF 2**

|                   |                  |
|-------------------|------------------|
| PROJECT 12170     | 99X-5500-G-00780 |
| DATE 5/20/03      | B                |
| DRAWN RM LINDGREN |                  |

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**GENERAL NOTES**

- SEE DRAWING 99X-5500-G-00780 FOR GENERAL NOTES AND SCOPE OF REMEDIATION WORK.
- SEE DRAWING 99X-5500-X-00639 FOR LEGEND AND ADDITIONAL GENERAL NOTES.

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**KEYED NOTES**

- G** PROTECT BELOW GRADE 4 INCH POTABLE WATER LINE (DW-4"), TO REMAIN IN SERVICE
- H** PROTECT 12 INCH STORM SEWER LINES (ST-12" RCP), TO REMAIN IN SERVICE
- I** PRIOR TO EXCAVATION, VERIFY UNDERGROUND ELECTRIC CABLE WEST OF POLE SE28 HAS BEEN ELECTRICALLY ISOLATED BY OTHERS.
- J** ESTABLISH DRAINAGE DITCH AFTER REMOVING CULVERT AND CORRUGATED DRAIN PIPES
- K** REMOVE THE ABANDONED IN PLACE LEACHATE CONVEYANCE SYSTEM GRAVITY FLOW PIPE ACROSS THE CERTIFIED AREA TO THE END POINT. BACKFILL ACROSS F STREET WITH ODOT ITEM 304 AGGREGATE.
- L** PROTECT MONITORING WELLS AND SURROUNDING CONCRETE PADS (TO BE REMOVED BY OTHERS).

**EXCAVATION CONTROL POINTS**

| PT NO. | NORTHING  | EASTING    |
|--------|-----------|------------|
| 1      | 479479.40 | 1350834.62 |
| 2      | 479430.13 | 1350821.06 |
| 3      | 479373.63 | 1350790.77 |
| 4      | 479338.14 | 1350762.74 |
| 5      | 479303.79 | 1350730.65 |
| 6      | 479327.75 | 1350675.95 |
| 7      | 479375.66 | 1350663.30 |
| 8      | 479434.20 | 1350662.17 |
| 9      | 479456.35 | 1350678.67 |
| 10     | 479479.25 | 1350665.45 |

**CERTIFIED CLEAN AREA CONTROL POINTS**

| PT NO. | NORTHING  | EASTING    |
|--------|-----------|------------|
| 1      | 479512.95 | 1350665.45 |
| 7      | 479479.25 | 1350861.16 |
| 8      | 479432.68 | 1350856.30 |
| 9      | 479360.97 | 1350826.87 |
| 10     | 479320.16 | 1350798.81 |
| 11     | 479199.46 | 1350688.80 |
| 12     | 479174.80 | 1350616.59 |
| 13     | 479231.74 | 1350667.97 |
| 14     | 479253.50 | 1350677.58 |
| 15     | 479271.74 | 1350678.99 |
| 16     | 479320.34 | 1350657.31 |
| 17     | 479364.89 | 1350642.54 |
| 18     | 479445.60 | 1350640.30 |
| 19     | 479445.60 | 1350570.30 |
| 20     | 479448.61 | 1350519.55 |
| 21     | 479512.76 | 1350641.22 |
| 22     | 479545.61 | 1350640.30 |
| 23     | 479546.78 | 1350620.15 |

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|     |           |      |      |    |       |     |           |      |      |    |       |                 |
|     |           |      |      |    |       |     |           |      |      |    |       |                 |

NOTE:  
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**CONFIGURATION MANAGEMENT DRAWING**

CONCURRENCE ENGINEER DATE

| APPROVALS    |              |
|--------------|--------------|
| CIVIL & STR. | SAFETY ENG.  |
| ELECTRICAL   | MAINTENANCE  |
| ENGINEER     | ISRF PROJECT |
| INSTRUMENT   | WASTE MGMT   |
| MECHANICAL   | SECURITY     |
| CHECKED      | PROJECTS     |
| APPROVED     |              |

**Fernald Closure Project**

**FLUOR FERNALD, INC.**

**U.S. DEPARTMENT OF ENERGY**

AREA 1 PHASE IV  
CELL 8 PARTIAL EXCAVATION PLAN  
SHEET 2 OF 2

PROJECT: 2030  
DATE: 5/20/03  
DRAWN: RM LINDGREN

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| SYMBOLS LEGEND |                                                                  | SYMBOLS LEGEND |          | CONSTRUCTION DRAWING ABBREVIATIONS |                                                          | FOUNDATION DRAWING ABBREVIATIONS |                            |
|----------------|------------------------------------------------------------------|----------------|----------|------------------------------------|----------------------------------------------------------|----------------------------------|----------------------------|
| EXISTING       | PROPOSED                                                         | EXISTING       | PROPOSED |                                    |                                                          |                                  |                            |
|                | MANHOLE                                                          | N/A            |          | ACM                                | ASBESTOS CONTAINING MATERIAL                             | APPROX                           | APPROXIMATELY              |
|                | CATCH BASIN                                                      |                |          | AP                                 | ABANDONED IN PLACE                                       | B/                               | BOTTOM OF                  |
|                | ABOVE-GRADE WATERLINE                                            | N/A            |          | AW                                 | ACID WASTE WATER LINE                                    | C.I.                             | CAST IRON                  |
|                | ELECTRIC POLE                                                    | N/A            |          | BR                                 | BRINE LINES                                              | CL                               | CENTERLINE                 |
|                | LIGHT POLE                                                       | N/A            |          | BSL                                | BIORENTRIFICATION SURGE LAGOON                           | CONC.                            | CONCRETE                   |
|                | ELECTRIC MANHOLE                                                 | N/A            |          | CB                                 | CATCH BASIN                                              | Δ                                | INTERSECTION ANGLE (DELTA) |
|                | ELECTRIC MANHOLE WITH TELEPHONE MANHOLE                          | N/A            |          | CE                                 | CONTAMINATED EFFLUENT LINE                               | DIA                              | DIAMETER                   |
|                | GRAVEL ROADWAY                                                   |                |          | CFM                                | CUBIC FEET PER MINUTE                                    | E                                | EASTING                    |
|                | PAVED ROADWAY                                                    | N/A            |          | COC                                | CONSTITUENTS OF CONCERN                                  | E/W                              | EAST WEST                  |
|                | BUILDING SLAB/CONCRETE PAD/TRAILER                               |                |          | CN                                 | STEAM CONDENSATE LINE                                    | EL                               | ELEVATION                  |
|                | CHAIN LINK FENCE                                                 |                |          | CO                                 | CLEAN OUT                                                | EXIST                            | EXISTING                   |
|                | TRAFFIC GATE                                                     |                |          | DF                                 | DEIONIZED FEED LINE                                      | FN                               | FINISHED                   |
|                | CONSTRUCTION SAFETY FENCE                                        |                |          | DW                                 | LOW PRESSURE FIRE / POTABLE WATER LINE                   | FTG                              | FOOTING                    |
|                | ROPE CONSTRUCTION FENCE                                          |                |          | EC                                 | EDGE OF CONCRETE                                         | H.P.                             | HIGH POINT                 |
| N/A            | SILT FENCE                                                       |                |          | EMH                                | ELECTRICAL MANHOLE                                       | INV                              | INVERT                     |
| N/A            | STRAW BALE                                                       |                |          | EP                                 | EDGE OF PAVEMENT                                         | JT                               | JOINT                      |
| N/A            | LIMIT OF EXCAVATION OR WORK                                      |                |          | EPLTS                              | ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM          | L                                | LENGTH                     |
| N/A            | PROTECTED AREA                                                   |                |          | EL                                 | ELECTRICAL LINE                                          | L.P.                             | LOW POINT                  |
|                | BENCHMARK                                                        | N/A            |          | ELEV                               | ELEVATION                                                | N                                | NORTHING                   |
|                | LIMIT OF ABOVE-WAC MATERIAL                                      | N/A            |          | FCP                                | FERNALD CLOSURE PROJECT                                  | N/S                              | NORTH SOUTH                |
|                | LIMIT OF HWMU MATERIAL                                           | N/A            |          | FG                                 | FUEL GAS LINE                                            | PED                              | PEDESTAL                   |
|                | PIPE PLUG                                                        |                |          | FRL                                | FINAL REMEDIATION LEVEL                                  | PS                               | PIPE SUPPORT               |
|                | AIR GAP FOR STORM SEWER                                          |                |          | FT                                 | FILTRATE OR EFFLUENT LINE                                | R                                | RADIUS                     |
|                | UNDERGROUND UTILITIES                                            |                |          | FTF                                | FIRE TRAINING FACILITY                                   | R                                | RISER FOR STAIRS           |
| N/A            | HAUL ROAD                                                        |                |          | FQI                                | HIGH PRESSURE FIRE LINE                                  | S                                | SLOPE                      |
| N/A            | WALKWAY                                                          |                |          | GWA                                | UNSATURATED SANDS AND GRAVELS OF THE GREAT MIAMI AQUIFER | S                                | CURVE DATA                 |
|                | CONTOUR - MINOR                                                  |                |          | GW                                 | GROUND WATER LINE                                        | SYM                              | SYMMETRICAL                |
|                | CONTOUR - MAJOR                                                  |                |          | HWMU                               | HAZARDOUS WASTE MANAGEMENT UNIT                          | T                                | TANGENT                    |
|                | CERTIFIED AREA BOUNDARY                                          |                |          | IE                                 | INVERT ELEVATION                                         | T                                | TREAD FOR STAIRS           |
|                | DEWATERING CHANNEL OR LINE                                       |                |          | KV                                 | KILOVOLT                                                 | T/                               | TOP OF                     |
|                | AREA ISOLATION TRENCH                                            | SEE PLANS      |          | LF                                 | LINEAR FEET                                              | TYP                              | TYPICAL                    |
|                | MODELED URANIUM CONTAMINATION EXTENDING OUTSIDE EXCAVATION AREAS | N/A            |          | LS                                 | LIVE STEAM                                               | UNO                              | UNLESS NOTED OTHERWISE     |
|                |                                                                  |                |          | LSP                                | LINE SLUDGE POND                                         | WWF                              | WELDED WIRE FABRIC         |
|                |                                                                  |                |          | MDC                                | MAIN DRAINAGE CORRIDORS                                  |                                  |                            |
|                |                                                                  |                |          | MH                                 | MANHOLE                                                  |                                  |                            |
|                |                                                                  |                |          | NAR                                | NITRIC ACID RECOVERY                                     |                                  |                            |
|                |                                                                  |                |          | OC                                 | ON CENTER                                                |                                  |                            |
|                |                                                                  |                |          | OD                                 | OUTSIDE DIAMETER                                         |                                  |                            |
|                |                                                                  |                |          | OMTA                               | OSDF MATERIAL TRANSFER AREA                              |                                  |                            |
|                |                                                                  |                |          | OSDF                               | ON-SITE DISPOSAL FACILITY                                |                                  |                            |
|                |                                                                  |                |          | PA                                 | PLANT AIR LINE                                           |                                  |                            |
|                |                                                                  |                |          | PCE                                | TETRACHLOROETHENE                                        |                                  |                            |
|                |                                                                  |                |          | PIV                                | POST INDICATOR VALVE                                     |                                  |                            |
|                |                                                                  |                |          | RAD                                | RADIUS                                                   |                                  |                            |
|                |                                                                  |                |          | RCRA                               | RESOURCE CONSERVATION AND RECOVERY ACT                   |                                  |                            |
|                |                                                                  |                |          | RW                                 | RAW WATER LINE                                           |                                  |                            |
|                |                                                                  |                |          | SA                                 | INSTRUMENT AIR SUPPLY LINE                               |                                  |                            |
|                |                                                                  |                |          | SD                                 | SUB-SURFACE DRAINAGE LINE                                |                                  |                            |
|                |                                                                  |                |          | SL                                 | SUMP LIQUOR LINE                                         |                                  |                            |
|                |                                                                  |                |          | SMH                                | SANITARY MANHOLE                                         |                                  |                            |
|                |                                                                  |                |          | SMTA                               | SPECIAL MATERIAL TRANSFER AREA                           |                                  |                            |
|                |                                                                  |                |          | SN                                 | SANITARY SEWER LINE                                      |                                  |                            |
|                |                                                                  |                |          | SP                                 | STOCKPILE / SOIL PILE                                    |                                  |                            |
|                |                                                                  |                |          | ST                                 | STORM SEWER LINE                                         |                                  |                            |
|                |                                                                  |                |          | SWL                                | SOLID WASTE LANDFILL                                     |                                  |                            |
|                |                                                                  |                |          | SWRB                               | STORMWATER RETENTION BASIN                               |                                  |                            |
|                |                                                                  |                |          | TC-99                              | TECHNETIUM-99                                            |                                  |                            |
|                |                                                                  |                |          | TOG                                | TOP OF GRATING                                           |                                  |                            |
|                |                                                                  |                |          | TOP                                | TOP OF PIPE                                              |                                  |                            |
|                |                                                                  |                |          | TYP                                | TYPICAL                                                  |                                  |                            |
|                |                                                                  |                |          | TW                                 | TREATED WATER LINE                                       |                                  |                            |
|                |                                                                  |                |          | UST                                | UNDERGROUND STORAGE TANK                                 |                                  |                            |
|                |                                                                  |                |          | VOC                                | VOLATILE ORGANIC COMPOUND(S)                             |                                  |                            |
|                |                                                                  |                |          | WAC                                | WASTE ACCEPTANCE CRITERIA                                |                                  |                            |
|                |                                                                  |                |          | WR                                 | WATER RETURN-COOLING LINE                                |                                  |                            |
|                |                                                                  |                |          | WS                                 | WATER SUPPLY-COOLING LINE                                |                                  |                            |
|                |                                                                  |                |          | WWF                                | WELDED WIRE FABRIC                                       |                                  |                            |

GENERAL NOTES

- EXISTING TOPOGRAPHY SHOWN ON DRAWINGS PROVIDED BY FLUOR FERNALD. THESE SOURCES INCLUDE EXISTING SITE DATA SOURCE (ON-PLANT FILES) FCP CADD GRID/UTILITY DRAWINGS.
- HORIZONTAL CONTROL SHOWN ON THE DRAWINGS IS BASED UPON NORTH AMERICAN DATUM 1983 (NAD 83).
- VERTICAL CONTROL SHOWN ON THE DRAWINGS IS BASED UPON NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD 29).
- SILT FENCES SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO UPGRADIENT LAND DISTURBANCES IN ACCORDANCE WITH THE SPECIFICATION REQUIREMENTS.
- DESIGN CONTOURS AND GRADES SHOWN REPRESENT THE MINIMUM LIMITS OF EXCAVATION REQUIRED TO CAPTURE CONTAMINATION AND FOUNDATIONS WHILE MAINTAINING SAFE SLOPE REQUIREMENTS. FIELD CHANGES SHALL BE REPORTED TO CONSTRUCTION MANAGER AND APPROVED BY ENGINEER.
- GEOLOGICAL AND CROSS SECTION INFORMATION TAKEN FROM (FEMP) OJ-2 RL 1995, OJ-2 FS 1995, GEOTECHNICAL REPORTS, AND FEMP 3D CADD MODEL. ACTUAL GEOLOGICAL CONDITIONS AND DEPTHS SHOWN ON CROSS SECTIONS MAY VARY AND SHALL BE DETERMINED IN THE FIELD DURING EXCAVATION.
- LOCATION AND DEPTH OF EXISTING UTILITIES AND FOUNDATION STRUCTURES ARE APPROXIMATE. IF UNIDENTIFIED UTILITIES ARE DISCOVERED, PROCEED AS DIRECTED BY THE CONSTRUCTION MANAGER.
- DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
- FIGURED DIMENSIONS AND/OR ELEVATIONS MARKED THUS (+/-) SHALL BE VERIFIED IN THE FIELD BEFORE START OF REMEDIATION.
- MAINTAIN AND PROTECT UTILITIES OUTSIDE THE LIMIT OF EXCAVATION AND/OR LIMIT OF WORK.
- PROVIDE TEMPORARY SHORING, BRACING, OR OTHER METHODS AS NECESSARY TO SAFELY SUPPORT EXCAVATION. PROTECTION SHALL BE IN ACCORDANCE WITH OSHA 29 CFR 1926, SUBPART P-EXCAVATIONS, LATEST EDITION.
- OUTSIDE THE BOUNDARIES OF A COMPLETED UTILITY ISOLATION TRENCHED AREA, A PENETRATION PERMIT MUST BE OBTAINED BY THE CONSTRUCTION MANAGER FOR EXCAVATION OR PENETRATION INTO THE SOIL DEEPER THAN 6 INCHES.
- TECHNICAL SPECIFICATIONS GOVERNING THIS PROJECT ARE THE LATEST REVISIONS OF 38/48/5 TECHNICAL SPECIFICATIONS (DOCUMENT NO. 2000-TS-0001 AND 20010-TS-0001) AND ON-SITE DISPOSAL FACILITY (OSDF) PHASE IV TECHNICAL SPECIFICATIONS (DOCUMENT NO. 2004-TS-0000).
- UNDERGROUND UTILITY GRIDS AND UTILITY DESIGNATION ABBREVIATIONS ARE IN ACCORDANCE WITH THE FEMP MASTER GRID OF UNDERGROUND UTILITY PLANS DRAWING 22X-5500-P-00653.

5067

UNDERGROUND UTILITY MATERIAL ABBREVIATIONS

|      |                                                                             |
|------|-----------------------------------------------------------------------------|
| A    | PIPE SPECIFICATION DESIGNATION FOR STEEL FUEL, OIL AND SOLVENT LINES        |
| CI   | CAST IRON                                                                   |
| CMP  | CORRUGATED METAL PIPE                                                       |
| DI   | DUCTILE IRON                                                                |
| HDPE | HIGH DENSITY POLYETHYLENE                                                   |
| LI   | PIPE SPECIFICATION DESIGNATION FOR MISC. CAST IRON WATER LINES              |
| NI   | PIPE SPECIFICATION DESIGNATION FOR CLAY, CONCRETE OR METAL STORM SEWER PIPE |
| MI   | PIPE SPECIFICATION DESIGNATION FOR VITRIFIED SANITARY SEWER PIPE            |
| PVC  | POLYVINYL CHLORIDE                                                          |
| RCP  | REINFORCED CONCRETE PIPE                                                    |
| S    | PIPE SPECIFICATION DESIGNATION FOR STEEL STEAM/BOILER FEED LINES            |
| VCP  | VITRIFIED CLAY PIPE                                                         |
| V    | PIPE SPECIFICATION DESIGNATION FOR STEEL FUEL GAS PIPE                      |
| W    | PIPE SPECIFICATION DESIGNATION FOR STEEL AIR, WATER, AND STEAM LINES        |

| REV. NO. | ISSUE OR REVISION PURPOSE - DESCRIPTION | DATE   | REV. BY | APP. |
|----------|-----------------------------------------|--------|---------|------|
| 0        | ISSUED CERTIFIED FOR CONSTRUCTION       | 6/9/03 | RML     | GEP  |

UNITED STATES DEPARTMENT OF ENERGY FERNALD CLOSURE PROJECT

THIS DRAWING PREPARED BY  
**FLUOR FERNALD, INC.**

PROJECT NAME  
SOIL REMEDIATION

DRAWING TITLE  
LEGEND AND GENERAL NOTES

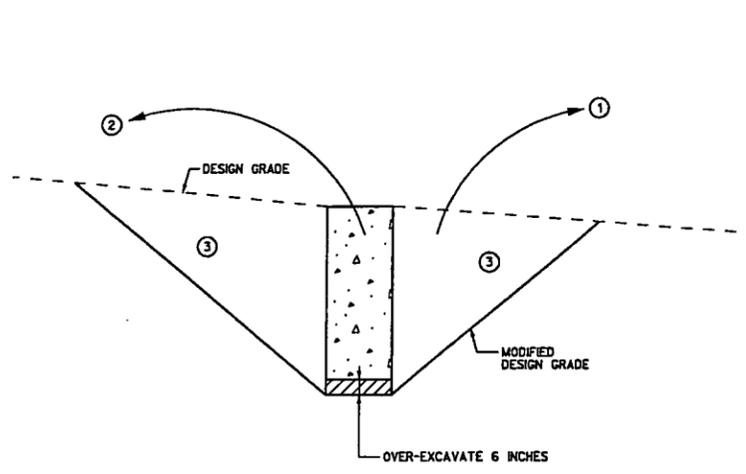
APPROVALS

| COGNIZANT ENG. | A. SHELL   | SAFETY ENG.   | E. JOHNSON |
|----------------|------------|---------------|------------|
| CIVIL & STR.   |            | MAINTENANCE   |            |
| ELECTRICAL     |            | FIRE PROTECT. |            |
| ENGINEER       | B. BARNELL | WASTE MANAGE. |            |
| INSTRUMENT     |            | SECURITY      |            |
| MECHANICAL     |            | CONSTRUCTION  |            |
| CHECKED        | C. HARRIS  | UTILITIES     |            |
| APPROVED       | D. JAMES   |               |            |

000014

| DRAWN BY | PROJECT NO. | DRAWING INDEX CODE NO. | SHEET NO. | TOT. NO. |
|----------|-------------|------------------------|-----------|----------|
| ALB      | 2000        | 99X-5500-X-00639       | X-3       | 0        |

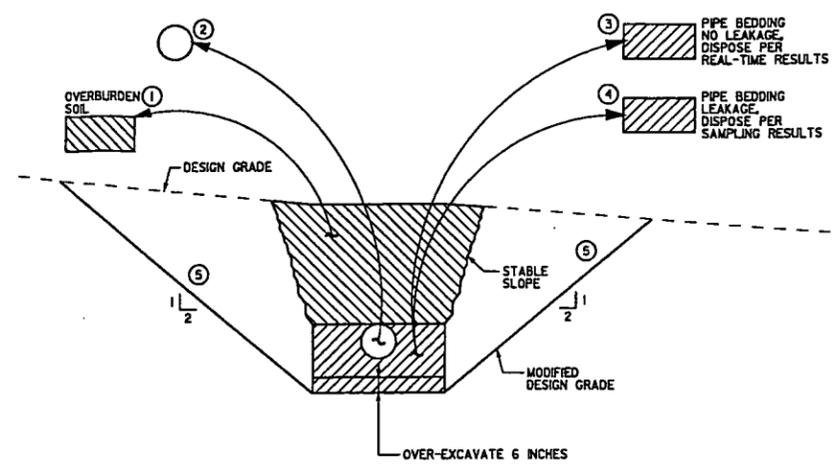
39XG00769 OSD/F3 lnd8392 Tuesday September 23 2003 03:43:23 PM EDT



- ① EXCAVATE SOIL FROM AROUND THE STRUCTURE (SEE NOTE D AND DISPOSE OF IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02205.
- ② EXCAVATE THE STRUCTURE PLUS 6 INCHES OF SOIL BELOW THE STRUCTURE AND PERFORM A VISUAL INSPECTION. STRUCTURES FREE OF VISIBLE PROCESS RESIDUE SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATION SECTION 02205. STRUCTURES THAT ARE DEFORMED, CLOSED OR OTHERWISE HINDER VISUAL INSPECTION, OR CANNOT BE CLEANED OF VISIBLE PROCESS RESIDUE, SHALL BE DISPOSITIONED AS ABOVE-WAC DEBRIS IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
- ③ EXCAVATE 2H:1V SIDE SLOPES TO STABILIZE THE EXCAVATION AND TO PROVIDE A MODIFIED DESIGN GRADE. DISPOSE OF EXCAVATED MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02205.

NOTES:  
 I. THE TERM 'STRUCTURE' IS USED AS A GENERIC REFERENCE TO PILES, PIERS, OR FOOTERS.

**EXCAVATION OF STRUCTURES BELOW THE DESIGN GRADE**  
 NTS



- ① EXCAVATE OVERBURDEN SOIL FROM ABOVE THE PIPE (SEE NOTE D AND DISPOSE OF IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02205. SEE LATEST REVISION OF UNDERGROUND UTILITY GRID DRAWINGS FOR LOCATIONS AND ELEVATIONS OF UTILITIES.
- ② EXCAVATE THE PIPE AND PERFORM A VISUAL INSPECTION OF THE PIPE. PIPE FREE OF VISIBLE PROCESS RESIDUE SHALL BE DISPOSED OF IN ACCORDANCE WITH SPECIFICATION SECTION 02205. DISPOSE OF PROCESS PIPE THAT IS DEFORMED, CLOSED OR OTHERWISE HINDERS VISUAL INSPECTION, OR CANNOT BE CLEANED OF VISIBLE PROCESS RESIDUE, AS ABOVE-WAC DEBRIS IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
- ③ IF PIPE BEDDING SHOWS NO VISIBLE SIGNS OF PIPE LEAKAGE:
  - 1. PERFORM REAL-TIME MONITORING OF THE PIPE BEDDING IN THE TRENCH USING EMS OR ADJACENT TO THE TRENCH USING THE HPGE TRI-POD ON CIRCULAR SOIL PADS.
  - 2. EXCAVATE PIPE BEDDING, AND OVER-EXCAVATE 6 INCHES BELOW THE PIPE BEDDING.
  - 3. MANAGE MATERIAL BASED ON THE RESULTS OF REAL-TIME MONITORING, IN ACCORDANCE WITH SPECIFICATION SECTION 02205.
- ④ IF PIPE BEDDING SHOWS VISIBLE SIGNS OF PIPE LEAKAGE:
  - 1. PERFORM PHYSICAL SAMPLING OF THE PIPE BEDDING.
  - 2. EXCAVATE PIPE BEDDING, AND OVER-EXCAVATE 6 INCHES BELOW THE PIPE BEDDING, OR AS NECESSARY TO REMOVE VISIBLE SIGNS OF PIPE LEAKAGE.
  - 3. MANAGE MATERIAL BASED ON SAMPLING RESULTS, IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 02205.
- ⑤ EXCAVATE 2H:1V SIDE SLOPES TO STABILIZE EXCAVATED UTILITY TRENCHES AND TO PROVIDE A MODIFIED DESIGN GRADE. DISPOSE OF EXCAVATED MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02205.

NOTES:  
 I. THE TERM 'PIPE' IS USED AS A GENERIC REFERENCE TO UNDERGROUND UTILITIES.

**EXCAVATION OF UTILITIES BELOW THE DESIGN GRADE**  
 NTS

000015

|          |                                         |         |                   |
|----------|-----------------------------------------|---------|-------------------|
| 1        | REVISED PER DCN: 20810-005              | 9/23/03 | RML               |
| 0        | ISSUED CERTIFIED FOR CONSTRUCTION       | 7/8/03  | KLR GEP           |
| REV. NO. | ISSUE OR REVISION PURPOSE - DESCRIPTION | DATE    | REV. BY           |
|          |                                         |         | INITIALS AND DATE |

**UNITED STATES  
 DEPARTMENT OF ENERGY**  
 FERNALD CLOSURE PROJECT

THIS GRANTING PREPARED BY  
**FLUOR FERNALD, INC.**

PROJECT NAME  
 SOIL REMEDIATION

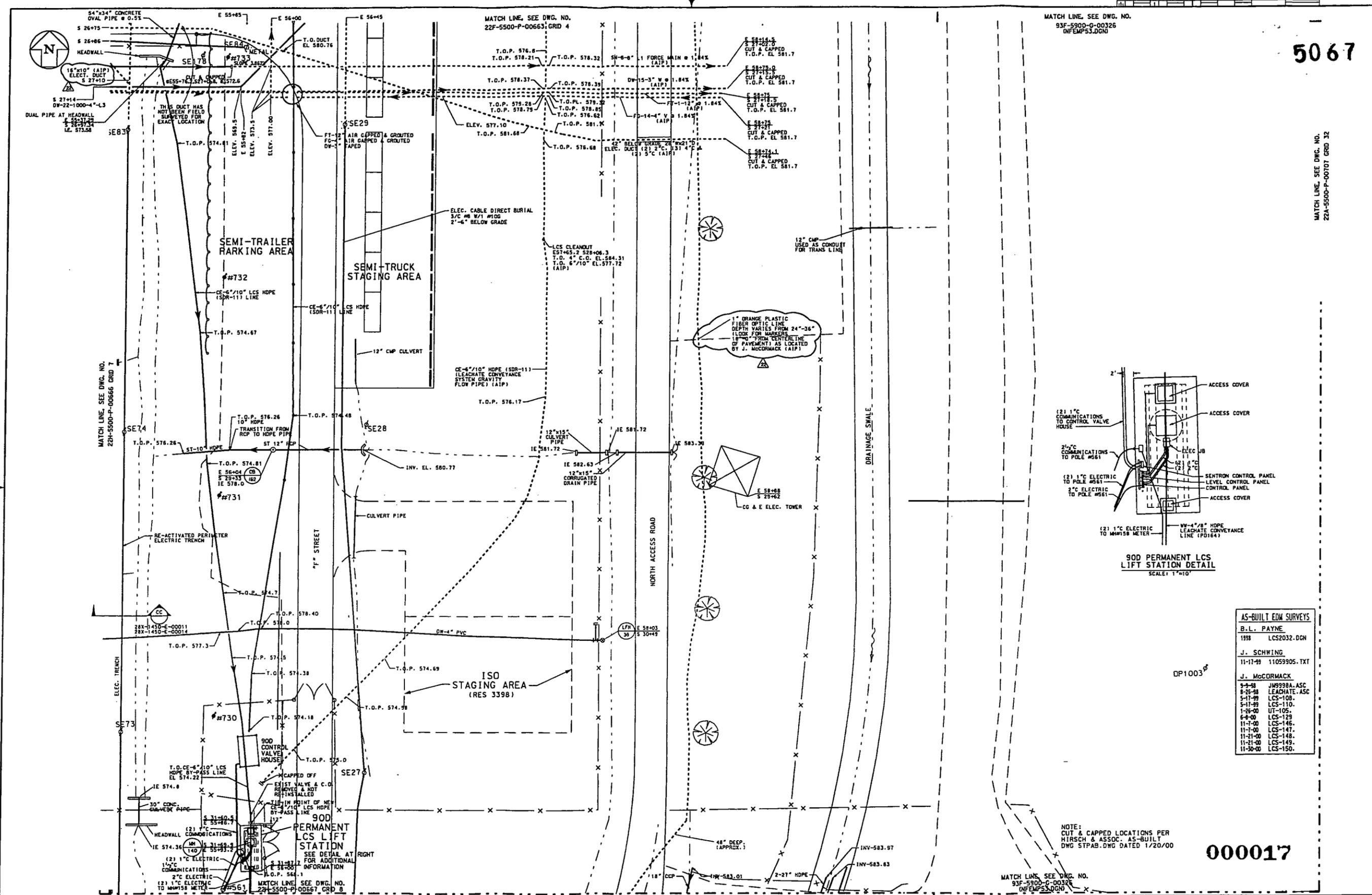
DRAWING TITLE  
 UTILITY AND STRUCTURE REMOVAL  
 BELOW DESIGN GRADE

APPROVALS

|                 |               |                        |               |            |      |
|-----------------|---------------|------------------------|---------------|------------|------|
| COGNIZANT ENG.  | A. DICKER     | 12/03                  | SAFETY ENG.   | C. JOHNSON | 7/03 |
| CIVIL & STR.    |               |                        | MAINTENANCE   |            |      |
| ELECTRICAL      |               |                        | FIRE PROTECT. |            |      |
| ENGINEER        | B. BASSILL    | 7/03                   | WASTE MANAGE  |            |      |
| INSTRUMENT      |               |                        | SECURITY      |            |      |
| MECHANICAL      |               |                        | QA            | B. FROST   | 7/03 |
|                 |               |                        | CONSTRUCTION  | C. LAMBY   | 7/03 |
| CHECKED         | C. HEMEN      | 12/03                  |               |            |      |
| APPROVED        | CL. PALL      | 12/03                  |               |            |      |
| DRAWN BY        | PROJECT NO.   | DRAWING INDEX CODE NO. | SHEET NO.     | REV. NO.   |      |
| KLR             | 2080          | 99X-5500-G-00769       | D-3           | 1          |      |
| REV PROJECT NO. | FILENAME      | PROJECT NO.            |               |            |      |
|                 | 99XG00769.DGN |                        |               |            |      |



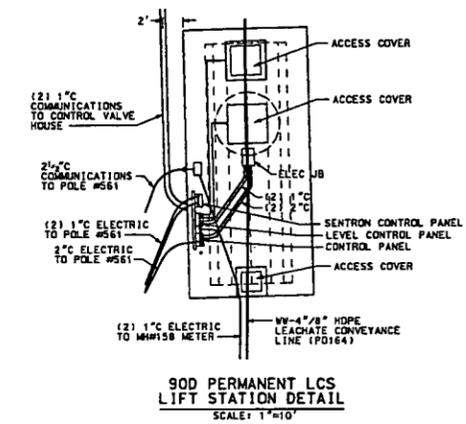
22ap0664 OSD/F3 lind8392 Tuesday September 23 2003 12:59:29 PM EDT



5067

MATCH LINE. SEE DWG. NO. 93F-5900-0-00326 (NFEMP53.DGN)

MATCH LINE. SEE DWG. NO. 22A-5500-P-00707 GRID 32



90D PERMANENT LCS LIFT STATION DETAIL  
SCALE: 1"=10'

AS-BUILT EDW SURVEYS

|              |          |              |
|--------------|----------|--------------|
| B.L. PAYNE   | 1998     | LCS2032.DGN  |
| J. SCHWING   | 11-17-99 | 11059905.TXT |
| J. McCORMACK | 9-9-98   | JM9998A.ASC  |
|              | 8-25-98  | LEACHATE.ASC |
|              | 5-11-99  | LCS-105      |
|              | 5-17-99  | LCS-110      |
|              | 1-26-00  | UT-105       |
|              | 6-4-00   | LCS-129      |
|              | 11-1-00  | LCS-146      |
|              | 11-7-00  | LCS-147      |
|              | 11-21-00 | LCS-148      |
|              | 11-21-00 | LCS-149      |
|              | 11-30-00 | LCS-150      |

000017

NOTE:  
1. THIS DRAWING ISSUED PERIODICALLY FOR THE MOST RECENT VERSION OF THIS DRAWING. ACCESS THE FILENAME BELOW THE TITLE BLOCK.  
2. COORDINATES SHOWN ON THIS DRAWING ARE TAKEN FROM EXISTING FEMP DRAWINGS AND ARE NOT VERIFIED TO BE "AS-BUILT". IT IS HIGHLY RECOMMENDED THAT A FIELD SURVEY BE PERFORMED PRIOR TO SITE DESIGN WORK.  
3. THE BEST UTILITIES CORRIDOR TRENCH IS THE RESULT OF AN AS-BUILT SURVEY BY B.L. PAYNE & ASSOC. THIS INCLUDES THE LCS LINE (DGN# 22A-5500-P-00666) FOR ALL PAYNE SURVEYS SEE FILE/FEMP/UT/LCS2032.DGN.

| NO. | REVISIONS                                                                                                                                                              | DATE/DWN. BY | APPD. NO. | REVISIONS | DATE/DWN. BY | APPD. NO. | REF. DWG. NO.    |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|-----------|--------------|-----------|------------------|
| 23  | A.I.P. UND'GD. FIBER OPTIC LINE, GENERAL UPDATE                                                                                                                        | 1/8/02       | RML       | GEP       |              |           |                  |
| 22  | RE-ACTIVATED PERIMETER ELECTRIC IN TRENCH PER R. DUCKWORTH 3/18/01 MEMO, ADDED LIFT STATION DETAIL, INCORP. REDLINE AS-BUILT FROM J. McCORMACK 5/01/01, GENERAL UPDATE | 5/01/01      | RML       | GEP       |              |           | 22X-5500-P-00659 |

NOTE:  
WEMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

| UNLESS OTHERWISE SPECIFIED                                                                                                                                                                                                            | APPROVALS     |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--|------------|--|------|--|-------|--|-------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|------------|-------------|----------|------|------------|---------------|------------|--------------|---------|--------|----------|-----------|--|---------|--|----------|
| <table border="1"> <tr> <td>DESIGNED BY</td> <td></td> </tr> <tr> <td>CHECKED BY</td> <td></td> </tr> <tr> <td>DATE</td> <td></td> </tr> <tr> <td>SCALE</td> <td></td> </tr> <tr> <td>DATE RELEASE DATE</td> <td></td> </tr> </table> | DESIGNED BY   |  | CHECKED BY |  | DATE |  | SCALE |  | DATE RELEASE DATE |  | <table border="1"> <tr> <td>CIVIL &amp; STR.</td> <td>SAFETY ENG.</td> </tr> <tr> <td>ELECTRICAL</td> <td>MAINTENANCE</td> </tr> <tr> <td>ENGINEER</td> <td>D.A.</td> </tr> <tr> <td>INSTRUMENT</td> <td>FIRE PROTECT.</td> </tr> <tr> <td>MECHANICAL</td> <td>WASTE MNGMT.</td> </tr> <tr> <td>CHECKED</td> <td>D.S.E.</td> </tr> <tr> <td>APPROVED</td> <td>G.E. PALK</td> </tr> <tr> <td></td> <td>2-20-00</td> </tr> <tr> <td></td> <td>SECURITY</td> </tr> </table> | CIVIL & STR. | SAFETY ENG. | ELECTRICAL | MAINTENANCE | ENGINEER | D.A. | INSTRUMENT | FIRE PROTECT. | MECHANICAL | WASTE MNGMT. | CHECKED | D.S.E. | APPROVED | G.E. PALK |  | 2-20-00 |  | SECURITY |
| DESIGNED BY                                                                                                                                                                                                                           |               |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| CHECKED BY                                                                                                                                                                                                                            |               |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| DATE                                                                                                                                                                                                                                  |               |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| SCALE                                                                                                                                                                                                                                 |               |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| DATE RELEASE DATE                                                                                                                                                                                                                     |               |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| CIVIL & STR.                                                                                                                                                                                                                          | SAFETY ENG.   |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| ELECTRICAL                                                                                                                                                                                                                            | MAINTENANCE   |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| ENGINEER                                                                                                                                                                                                                              | D.A.          |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| INSTRUMENT                                                                                                                                                                                                                            | FIRE PROTECT. |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| MECHANICAL                                                                                                                                                                                                                            | WASTE MNGMT.  |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| CHECKED                                                                                                                                                                                                                               | D.S.E.        |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
| APPROVED                                                                                                                                                                                                                              | G.E. PALK     |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
|                                                                                                                                                                                                                                       | 2-20-00       |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |
|                                                                                                                                                                                                                                       | SECURITY      |  |            |  |      |  |       |  |                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |            |             |          |      |            |               |            |              |         |        |          |           |  |         |  |          |

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT CO. OF OHIO  
FERNALD, OHIO

ENVIRONMENTAL MANAGEMENT PROJECT  
U.S. DEPARTMENT OF ENERGY

EAST OF MAIN SUB-STATION YARD AREA  
GRID 5  
UNDERGROUND UTILITIES  
SCALE 1"=20'

DATE: 2-20-00  
DRAWN: DEL. TURPIN

22A-5500-P-00664 23

FILE NAME: \UNDER\22AP0664.DGN

**APPENDIX B**  
**DATA PACKAGE**

TABLE B-1  
ALL HISTORICAL DATA COLLECTED FROM AIP1V

| Boring ID       | Northing  | Eastings   | Sample ID           | Top  | Bottom | Elevation | Date       | Parameter        | Result | Qual | Unit      |
|-----------------|-----------|------------|---------------------|------|--------|-----------|------------|------------------|--------|------|-----------|
| 11686           | 480124.05 | 1350695.4  | 200158148           |      |        |           | 04/28/1995 | Uranium, Total   | 0.1    | UNV  | ppm       |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Arsenic          | 6.53   | J    | mg/kg dry |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Lead             | 20.4   | J    | mg/kg dry |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Moisture Content | 17     | NV   | PERCENT   |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03W    | 4.4  | 4.9    | 583.153   | 12/22/1999 | Moisture Content | 16.9   | NV   | PERCENT   |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Radium-226       | 1.173  | -    | pCi/g dry |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Radium-228       | 0.877  | -    | pCi/g dry |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Thorium-228      | 0.877  | -    | pCi/g dry |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Thorium-232      | 0.877  | -    | pCi/g dry |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.9  | 5.4    | 583.153   | 12/22/1999 | Uranium, Total   | 2.292  | U    | ug/g dry  |
| A1P2-S2LL-01-03 | 479823.08 | 1350800    | A1P2-S2LL-01-03B-RM | 4.4  | 4.9    | 583.153   | 12/22/1999 | Uranium, Total   | 2.7    | NV   | ug/g dry  |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Arsenic          | 2.51   | U    | mg/kg dry |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Lead             | 12.3   | J    | mg/kg dry |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Moisture Content | 13.1   | NV   | PERCENT   |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04W    | 9.42 | 9.92   | 583.776   | 12/22/1999 | Moisture Content | 13.4   | NV   | PERCENT   |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Radium-226       | 0.902  | -    | pCi/g dry |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Radium-228       | 0.713  | -    | pCi/g dry |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Thorium-228      | 0.713  | -    | pCi/g dry |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Thorium-232      | 0.713  | -    | pCi/g dry |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04B-RM | 9.92 | 10.33  | 583.776   | 12/22/1999 | Uranium, Total   | 2.491  | U    | ug/g dry  |
| A1P2-S2LL-01-04 | 480019.1  | 1350801.16 | A1P2-S2LL-01-04W    | 9.42 | 9.92   | 583.776   | 12/22/1999 | Uranium, Total   | 0.851  | NV   | ug/g dry  |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Aracloer-1254    | 14.2   | UNV  | ug/kg     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Aracloer-1260    | 14.2   | UNV  | ug/kg     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Arsenic          | 7.39   | NV   | mg/kg     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Beryllium        | 0.732  | NV   | mg/kg     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-AB         | 0    | 0.5    | 580.542   | 07/20/2002 | Gross Alpha      | 11     | UNV  | pCi/g     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-AB         | 0    | 0.5    | 580.542   | 07/20/2002 | Gross Beta       | 19     | UNV  | pCi/g     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Radium-226       | 1.04   | NV   | pCi/g     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Radium-228       | 1.19   | NV   | pCi/g     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Thorium-228      | 1.14   | NV   | pCi/g     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Thorium-232      | 1.19   | NV   | pCi/g     |
| A5A-77          | 480209.7  | 1350705.06 | A5A-77-1-RMP        | 0    | 0.5    | 580.542   | 07/20/2002 | Uranium, Total   | 9.94   | NV   | ug/g      |
| A5A-78          | 480152.6  | 1350849.69 | A5A-78-1-R          | 0    | 0.5    | 583.343   | 07/20/2002 | Radium-226       | 0.85   | NV   | pCi/g     |
| A5A-78          | 480152.6  | 1350849.69 | A5A-78-1-R          | 0    | 0.5    | 583.343   | 07/20/2002 | Radium-228       | 0.891  | NV   | pCi/g     |
| A5A-78          | 480152.6  | 1350849.69 | A5A-78-1-R          | 0    | 0.5    | 583.343   | 07/20/2002 | Thorium-228      | 0.901  | NV   | pCi/g     |
| A5A-78          | 480152.6  | 1350849.69 | A5A-78-1-R          | 0    | 0.5    | 583.343   | 07/20/2002 | Thorium-232      | 0.891  | NV   | pCi/g     |
| A5A-78          | 480152.6  | 1350849.69 | A5A-78-1-R          | 0    | 0.5    | 583.343   | 07/20/2002 | Uranium, Total   | 18.2   | NV   | ug/g      |
| A5A-79          | 480066.16 | 1350705.18 | A5A-79-3-R          | 1    | 1.5    | 582.873   | 07/21/2002 | Radium-226       | 0.887  | NV   | pCi/g     |
| A5A-79          | 480066.16 | 1350705.18 | A5A-79-3-R          | 1    | 1.5    | 582.873   | 07/21/2002 | Radium-228       | 1.08   | NV   | pCi/g     |
| A5A-79          | 480066.16 | 1350705.18 | A5A-79-3-R          | 1    | 1.5    | 582.873   | 07/21/2002 | Thorium-228      | 1.07   | NV   | pCi/g     |
| A5A-79          | 480066.16 | 1350705.18 | A5A-79-3-R          | 1    | 1.5    | 582.873   | 07/21/2002 | Thorium-232      | 1.08   | NV   | pCi/g     |
| A5A-79          | 480066.16 | 1350705.18 | A5A-79-3-R          | 1    | 1.5    | 582.873   | 07/21/2002 | Uranium, Total   | 39.4   | NV   | ug/g      |
| A5A-80          | 480097.47 | 1350817.29 | A5A-80-1-R          | 0    | 0.5    | 583.484   | 07/20/2002 | Radium-226       | 0.794  | NV   | pCi/g     |
| A5A-80          | 480097.47 | 1350817.29 | A5A-80-1-R          | 0    | 0.5    | 583.484   | 07/20/2002 | Radium-228       | 0.622  | NV   | pCi/g     |
| A5A-80          | 480097.47 | 1350817.29 | A5A-80-1-R          | 0    | 0.5    | 583.484   | 07/20/2002 | Thorium-228      | 0.613  | NV   | pCi/g     |

TABLE B-1  
ALL HISTORICAL DATA COLLECTED FROM AIPV

| Boring ID | Northing  | Eastng     | Sample ID    | Top | Bottom | Elevation | Date       | Parameter      | Result | Qual | Unit  |
|-----------|-----------|------------|--------------|-----|--------|-----------|------------|----------------|--------|------|-------|
| A5A-80    | 480097.47 | 1350817.29 | A5A-80-1-R   | 0   | 0.5    | 583.484   | 07/20/2002 | Thorium-232    | 0.622  | NV   | pCi/g |
| A5A-80    | 480097.47 | 1350817.29 | A5A-80-1-R   | 0   | 0.5    | 583.484   | 07/20/2002 | Uranium, Total | 6.99   | NV   | ug/g  |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Atroclor-1254  | 14.4   | UNV  | ug/kg |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Atroclor-1260  | 3.1    | NV   | ug/kg |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Arsenic        | 6.55   | NV   | mg/kg |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Beryllium      | 0.749  | NV   | mg/kg |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Radium-226     | 1.25   | NV   | pCi/g |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Radium-228     | 1.03   | NV   | pCi/g |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Thorium-232    | 1.03   | NV   | pCi/g |
| A5A-81    | 479931.11 | 1350683.16 | A5A-81-2-RMP | 0.5 | 1      | 582.319   | 07/31/2002 | Uranium, Total | 26.1   | NV   | ug/g  |
| A5A-82    | 479947.61 | 1350791.27 | A5A-82-2-R   | 0.5 | 1      | 584.522   | 08/05/2002 | Radium-226     | 0.993  | NV   | pCi/g |
| A5A-82    | 479947.61 | 1350791.27 | A5A-82-2-R   | 0.5 | 1      | 584.522   | 08/05/2002 | Radium-228     | 0.82   | NV   | pCi/g |
| A5A-82    | 479947.61 | 1350791.27 | A5A-82-2-R   | 0.5 | 1      | 584.522   | 08/05/2002 | Thorium-228    | 0.83   | NV   | pCi/g |
| A5A-82    | 479947.61 | 1350791.27 | A5A-82-2-R   | 0.5 | 1      | 584.522   | 08/05/2002 | Thorium-232    | 0.82   | NV   | pCi/g |
| A5A-82    | 479947.61 | 1350791.27 | A5A-82-2-R   | 0.5 | 1      | 584.522   | 08/05/2002 | Uranium, Total | 8.54   | NV   | ug/g  |
| A5A-83    | 479805.48 | 1350744.35 | A5A-83-1-R   | 0   | 0.5    | 582.891   | 07/20/2002 | Radium-226     | 0.837  | NV   | pCi/g |
| A5A-83    | 479805.48 | 1350744.35 | A5A-83-1-R   | 0   | 0.5    | 582.891   | 07/20/2002 | Radium-228     | 0.963  | NV   | pCi/g |
| A5A-83    | 479805.48 | 1350744.35 | A5A-83-1-R   | 0   | 0.5    | 582.891   | 07/20/2002 | Thorium-228    | 0.966  | NV   | pCi/g |
| A5A-83    | 479805.48 | 1350744.35 | A5A-83-1-R   | 0   | 0.5    | 582.891   | 07/20/2002 | Thorium-232    | 0.963  | NV   | pCi/g |
| A5A-83    | 479805.48 | 1350744.35 | A5A-83-1-R   | 0   | 0.5    | 582.891   | 07/20/2002 | Uranium, Total | 24.2   | NV   | ug/g  |
| A5A-84    | 479780.62 | 1350844.64 | A5A-84-1-R   | 0   | 0.5    | 583.432   | 07/20/2002 | Radium-226     | 0.792  | NV   | pCi/g |
| A5A-84    | 479780.62 | 1350844.64 | A5A-84-1-R   | 0   | 0.5    | 583.432   | 07/20/2002 | Radium-228     | 0.587  | NV   | pCi/g |
| A5A-84    | 479780.62 | 1350844.64 | A5A-84-1-R   | 0   | 0.5    | 583.432   | 07/20/2002 | Thorium-228    | 0.597  | NV   | pCi/g |
| A5A-84    | 479780.62 | 1350844.64 | A5A-84-1-R   | 0   | 0.5    | 583.432   | 07/20/2002 | Thorium-232    | 0.587  | NV   | pCi/g |
| A5A-84    | 479780.62 | 1350844.64 | A5A-84-1-R   | 0   | 0.5    | 583.432   | 07/20/2002 | Uranium, Total | 11.9   | NV   | ug/g  |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Atroclor-1254  | 15.5   | UNV  | ug/kg |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Atroclor-1260  | 1.4    | NV   | ug/kg |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Arsenic        | 5.98   | NV   | mg/kg |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Beryllium      | 0.566  | NV   | mg/kg |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Radium-226     | 1.02   | NV   | pCi/g |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Radium-228     | 0.996  | NV   | pCi/g |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Thorium-228    | 1.01   | NV   | pCi/g |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Thorium-232    | 0.996  | NV   | pCi/g |
| A5A-85    | 479716.95 | 1350674.38 | A5A-85-3-RMP | 1   | 1.5    | 581.856   | 07/31/2002 | Uranium, Total | 12.1   | NV   | ug/g  |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-AB  | 0   | 0.5    | 583.245   | 07/20/2002 | Gross Alpha    | 10     | UNV  | pCi/g |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-AB  | 0   | 0.5    | 583.245   | 07/20/2002 | Gross Beta     | 18     | UNV  | pCi/g |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-R   | 0   | 0.5    | 583.245   | 07/20/2002 | Radium-226     | 0.772  | NV   | pCi/g |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-R   | 0   | 0.5    | 583.245   | 07/20/2002 | Radium-228     | 0.866  | NV   | pCi/g |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-R   | 0   | 0.5    | 583.245   | 07/20/2002 | Thorium-228    | 0.871  | NV   | pCi/g |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-R   | 0   | 0.5    | 583.245   | 07/20/2002 | Thorium-232    | 0.866  | NV   | pCi/g |
| A5A-86    | 479644.82 | 1350844.46 | A5A-86-1-R   | 0   | 0.5    | 583.245   | 07/20/2002 | Uranium, Total | 11.9   | NV   | ug/g  |
| A5A-87    | 479552.36 | 1350680.48 | A5A-87-1-R   | 0   | 0.5    | 581.446   | 07/20/2002 | Radium-226     | 1.01   | NV   | pCi/g |
| A5A-87    | 479552.36 | 1350680.48 | A5A-87-1-R   | 0   | 0.5    | 581.446   | 07/20/2002 | Radium-228     | 0.883  | NV   | pCi/g |
| A5A-87    | 479552.36 | 1350680.48 | A5A-87-1-R   | 0   | 0.5    | 581.446   | 07/20/2002 | Thorium-228    | 0.884  | NV   | pCi/g |

TABLE B-1  
ALL HISTORICAL DATA COLLECTED FROM A1PIV

| Boring ID  | Northing   | Eastings   | Sample ID    | Top | Bottom | Elevation | Date       | Parameter         | Result | Qual | Unit  |
|------------|------------|------------|--------------|-----|--------|-----------|------------|-------------------|--------|------|-------|
| A5A-87     | 479552.36  | 1350680.48 | A5A-87-1-R   | 0   | 0.5    | 581.446   | 07/20/2002 | Thorium-232       | 0.883  | NV   | pCi/g |
| A5A-87     | 479552.36  | 1350680.48 | A5A-87-1-R   | 0   | 0.5    | 581.446   | 07/20/2002 | Uranium, Total    | 8.13   | NV   | ug/g  |
| A5A-88     | 479523.97  | 1350796.13 | A5A-88-1-R   | 0   | 0.5    | 582.268   | 07/20/2002 | Radium-226        | 1.09   | NV   | pCi/g |
| A5A-88     | 479523.97  | 1350796.13 | A5A-88-1-R   | 0   | 0.5    | 582.268   | 07/20/2002 | Radium-228        | 1.01   | NV   | pCi/g |
| A5A-88     | 479523.97  | 1350796.13 | A5A-88-1-R   | 0   | 0.5    | 582.268   | 07/20/2002 | Thorium-232       | 1.03   | NV   | pCi/g |
| A5A-88     | 479523.97  | 1350796.13 | A5A-88-1-R   | 0   | 0.5    | 582.268   | 07/20/2002 | Thorium-228       | 1.01   | NV   | pCi/g |
| A5A-88     | 479523.97  | 1350796.13 | A5A-88-1-R   | 0   | 0.5    | 582.268   | 07/20/2002 | Uranium, Total    | 11.1   | NV   | ug/g  |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Atroclor-1254     | 8.6    | NV   | ug/kg |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Atroclor-1260     | 9.1    | NV   | ug/kg |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Arsenic           | 6.86   | NV   | mg/kg |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Beryllium         | 0.693  | NV   | mg/kg |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Radium-226        | 1.02   | NV   | pCi/g |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Radium-228        | 0.961  | NV   | pCi/g |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Thorium-228       | 0.957  | NV   | pCi/g |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Thorium-232       | 0.961  | NV   | pCi/g |
| A5A-89     | 479457.91  | 1350682.57 | A5A-89-1-RMP | 0   | 0.5    | 579.968   | 07/18/2002 | Uranium, Total    | 13.5   | NV   | ug/g  |
| A5A-90     | 479466.46  | 1350830.36 | A5A-90-1-R   | 0   | 0.5    | 582.796   | 07/19/2002 | Radium-226        | 0.489  | NV   | pCi/g |
| A5A-90     | 479466.46  | 1350830.36 | A5A-90-1-R   | 0   | 0.5    | 582.796   | 07/19/2002 | Radium-228        | 0.477  | NV   | pCi/g |
| A5A-90     | 479466.46  | 1350830.36 | A5A-90-1-R   | 0   | 0.5    | 582.796   | 07/19/2002 | Thorium-228       | 0.441  | NV   | pCi/g |
| A5A-90     | 479466.46  | 1350830.36 | A5A-90-1-R   | 0   | 0.5    | 582.796   | 07/19/2002 | Thorium-232       | 0.477  | NV   | pCi/g |
| A5A-90     | 479466.46  | 1350830.36 | A5A-90-1-R   | 0   | 0.5    | 582.796   | 07/19/2002 | Uranium, Total    | 3.79   | NV   | ug/g  |
| A5A-91     | 479363.6   | 1350776.96 | A5A-91-1-R   | 0   | 0.5    | 582.231   | 07/17/2002 | Radium-226        | 0.875  | NV   | pCi/g |
| A5A-91     | 479363.6   | 1350776.96 | A5A-91-1-R   | 0   | 0.5    | 582.231   | 07/17/2002 | Radium-228        | 0.995  | NV   | pCi/g |
| A5A-91     | 479363.6   | 1350776.96 | A5A-91-1-R   | 0   | 0.5    | 582.231   | 07/17/2002 | Thorium-228       | 1.01   | NV   | pCi/g |
| A5A-91     | 479363.6   | 1350776.96 | A5A-91-1-R   | 0   | 0.5    | 582.231   | 07/17/2002 | Thorium-232       | 0.995  | NV   | pCi/g |
| A5A-91     | 479363.6   | 1350776.96 | A5A-91-1-R   | 0   | 0.5    | 582.231   | 07/17/2002 | Uranium, Total    | 9.99   | NV   | ug/g  |
| A5A-92     | 479303.38  | 1350700.76 | A5A-92-1-R   | 0   | 0.5    | 582.027   | 07/15/2002 | Radium-226        | 1      | NV   | pCi/g |
| A5A-92     | 479303.38  | 1350700.76 | A5A-92-1-R   | 0   | 0.5    | 582.027   | 07/15/2002 | Radium-228        | 1.03   | NV   | pCi/g |
| A5A-92     | 479303.38  | 1350700.76 | A5A-92-1-R   | 0   | 0.5    | 582.027   | 07/15/2002 | Thorium-228       | 1.05   | NV   | pCi/g |
| A5A-92     | 479303.38  | 1350700.76 | A5A-92-1-R   | 0   | 0.5    | 582.027   | 07/15/2002 | Thorium-232       | 1.03   | NV   | pCi/g |
| A5A-92     | 479303.38  | 1350700.76 | A5A-92-1-R   | 0   | 0.5    | 582.027   | 07/15/2002 | Uranium, Total    | 4.51   | NV   | ug/g  |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Cesium-137        | 0.5    | J    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Neptunium-237     | 0.6    | U    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Plutonium-238     | 0.6    | U    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Plutonium-239/240 | 0.6    | U    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Radium-226        | 1.1    | J    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Radium-228        | 1.1    | J    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Ruthenium-106     | 1      | UJ   | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Strontium-90      | 1.7    | J    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Technetium-99     | 1      | UJ   | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Thorium-228       | 1      | -    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Thorium-230       | 2.1    | -    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Thorium-232       | 0.9    | -    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Uranium, Total    | 24.3   | -    | mg/kg |
| ZONE 2-116 | 479779.403 | 1350780.99 | 005585       | 0   | 0.5    |           | 10/04/1988 | Uranium-234       | 7.7    | -    | pCi/g |

TABLE B-1  
ALL HISTORICAL DATA COLLECTED FROM AIIPIV

| Boring ID  | Northing   | Eastng      | Sample ID | Top | Bottom | Elevation | Date       | Parameter         | Result | Qual | Unit  |
|------------|------------|-------------|-----------|-----|--------|-----------|------------|-------------------|--------|------|-------|
| ZONE 2-116 | 479779.403 | 1350780.99  | 005585    | 0   | 0.5    |           | 10/04/1988 | Uranium-235/236   | 0.6    | U    | pCi/g |
| ZONE 2-116 | 479779.403 | 1350780.99  | 005585    | 0   | 0.5    |           | 10/04/1988 | Uranium-238       | 8.1    | -    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Cesium-137        | 0.6    | J    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Neptunium-237     | 0.6    | U    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Plutonium-238     | 0.6    | U    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Plutonium-239/240 | 0.6    | U    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Radium-226        | 0.9    | J    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Radium-228        | 1      | J    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Ruthenium-106     | 1      | UJ   | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Strontium-90      | 0.6    | J    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Technetium-99     | 1      | UJ   | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Uranium, Total    | 45.4   | -    | mg/kg |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Uranium-234       | 14.4   | -    | pCi/g |
| ZONE 2-147 | 480029.406 | 1350780.987 | 005588    | 0   | 0.5    |           | 10/04/1988 | Uranium-235/236   | 0.9    | -    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Uranium-238       | 15.1   | -    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Cesium-137        | 0.5    | J    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Neptunium-237     | 0.6    | U    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Plutonium-238     | 0.6    | U    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Plutonium-239/240 | 0.6    | U    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Radium-226        | 0.8    | J    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Radium-228        | 0.7    | J    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Ruthenium-106     | 1      | UJ   | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Strontium-90      | 0.5    | UJ   | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Technetium-99     | 1      | UJ   | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Thorium-228       | 0.8    | -    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Thorium-230       | 1.9    | -    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Thorium-232       | 0.9    | -    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Uranium, Total    | 30.0   | -    | mg/kg |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Uranium-234       | 9.1    | -    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Uranium-235/236   | 0.6    | U    | pCi/g |
| ZONE 2-90  | 479529.401 | 1350780.993 | 005582    | 0   | 0.5    |           | 10/04/1988 | Uranium-238       | 10     | -    | pCi/g |

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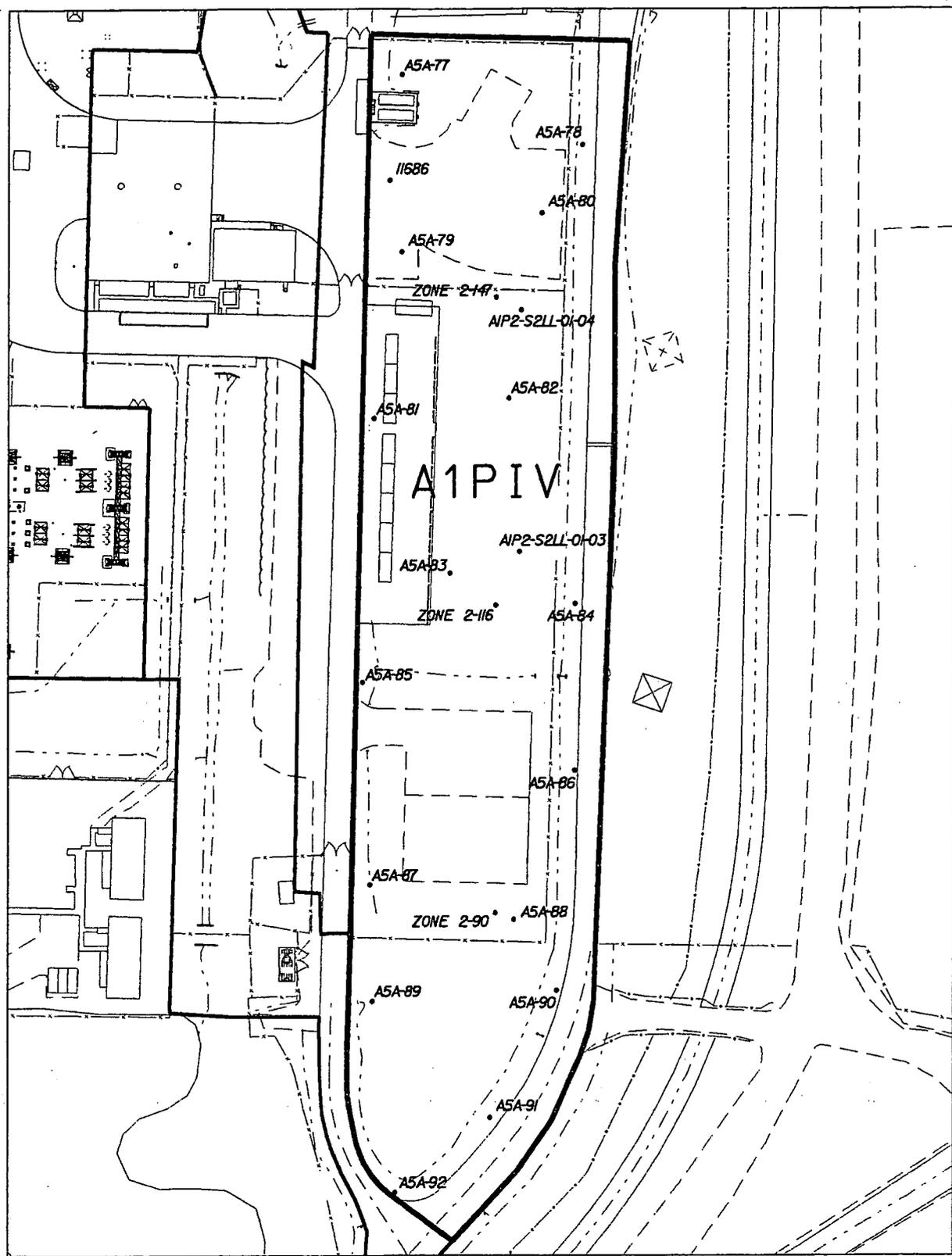
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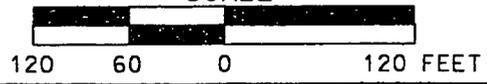
22-SEP-2003



LEGEND:

BORING LOCATIONS

SCALE



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FIGURE B-1. HISTORICAL BORING LOCATIONS IN A1PIV

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