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RESULTS OF CHARACTERIZATION TRENCHING IN THE OPERABLE UNIT 2 (OU 2) SOLID WASTE LANDFILL

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RESULTS OF CHARACTERIZATION TRENCHING IN THE OPERABLE UNIT 2 (OU 2)

Solid Waste Landfill

NOVEMBER 24, 1992

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SUMMARY OF TRENCHING RESULTS:
OU 2 SOLID WASTE LANDFILL (SWL)

A total of three trenches were excavated in the Solid Waste Landfill (SWL) using a track-mounted backhoe equipped with a 36-inch wide bucket. The trenches reached a maximum depth of 12 feet below surface grade. Soil samples were field screened for volatile organics and beta/gamma radiation. The soils and excavated material were visually inspected and characterized. The results and distribution of material were recorded in field logs kept by the project geologist.

Waste material was found to be dispersed within the upper 10 feet of soil. Each trench contained a unique accumulation of wastes, except for bagged trash which was distributed throughout the SWL. The types of materials identified include bagged and loose asbestos materials, ceramic tiles, glass acid bottles, possible magnesium fluoride, rubber hoses and tubing, medical waste, fire hoses, steel cables, full and empty paint cans, suspect yellow cake material, asphalt roofing material, respirator cartridges, and copper tubing. Approximately 75 percent of the waste material was classified by the project geologist as burnable, with the remaining 75 percent, not including the soil, as non-burnable. The actual percent of non-burnable material, including the soil, for the entire landfill is estimated at ninety percent.

In general, the beta/gamma activities and volatile organic concentrations for the excavated materials were at or near background levels. However, a beta/gamma activity of 900 cpm was found for the soil sample collected from the center of Trench No. 3 at a depth of 6 feet. Suspect yellow material, exhibiting a beta/gamma activity of approximately 50*k* cpm, was found in close proximity to this sample. Above background levels of volatile organics were detected in soils containing plastic bags, rubber and asphalt roofing materials. A reading of approximately 200 ppm occurred when full paint cans were encountered in Trench No. 3.

Leachate (wastewater) was encountered in all three trenches. A total of four samples were collected and analyzed. The analytical results are currently in the validation process.

1.0 *FIELD ACTIVITIES*

All field activities were performed in accordance with the OU 2 RI/FS Work Plan Addendum, dated February 13, 1992. A total of three trenches were completed, using a track-mounted backhoe, within the Solid Waste Landfill (SWL) to a maximum depth of 12 feet below surface grade. Soil samples were collected from each end and the mid-point of each trench, at 3-foot intervals from the surface to the total depth of each trench. The soil samples were field-screened for volatile organic vapors and radiological activities using a photoionization detection device (PID) and a beta/gamma pancake frisker, respectively. A geologist was present during trench excavation activities to classify soil types, record PID and beta/gamma readings, and document the nature and distribution of the fill materials. Groundwater, when present, was collected and analyzed to determine the presence and concentration of leachable contaminants.

1.1 TRENCH EXCAVATION

Each trench was oriented north-south in areas corresponding to RI/FS boring locations where there had been poor sample recovery. The length of each trench was approximately 50 feet.

1.1.1 TRENCH NO. 1

Trench excavation activities were completed on July 9, 1992 for this trench. Trench No. 1 was oriented approximately 15 feet west of Boring 1719, with the north and south ends approximately 25 feet north and south of Boring 1719, respectively. The northern and southern ends of the trench were excavated to an approximate depth of 12 feet. The central portion of the trench was excavated to an approximate depth of 2.5 feet. Trench excavation activities were terminated at this location due to large volumes of bagged asbestos materials and schedule restrictions.

1.1.2 TRENCH NO. 2

Trench excavation activities were completed on July 16, 1992 for this trench. Trench No. 2 was oriented approximately 15 feet west of Boring 1721, with the north and south ends approximately 25 feet north and south of Boring 1721, respectively. The southern portion of this trench was excavated to an approximate depth of 12 feet below surface grade. The central and northern portions of this trench were excavated to approximately 6 feet below grade. Excavation in the central portion of the trench was terminated to mitigate potential health and safety concerns associated with biomedical waste. The trench was immediately backfilled to mitigate potential airborne releases.

Lastly, excavation at the north end of the trench was terminated due to large volumes of leachate and the potential of enhancing contaminant migration with increased trench depths.

1.1.3 TRENCH NO. 3

Trench excavation activities were completed on July 14, 1992 for Trench No. 3, which was oriented approximately 15 feet west of Boring 1722, with the north and south ends of the trench approximately 25 feet north and south of Boring 1722, respectively. The southern portion of this trench was excavated to an approximate depth of 12 feet below surface grade. Trench excavation was terminated 6 feet below grade at the central portion, due to health and safety concerns associated with radiological activities in excess of action levels provided in the Health and Safety Plan. Trench excavation was terminated at approximately 3 feet below surface grade due to health and safety concerns associated with volatile organic vapors in ambient air

exceeding Health and Safety Plan action levels. The trench was backfilled immediately in both instances, to mitigate the potential airborne release of contaminants.

1.2 SOIL SAMPLING AND FIELD SCREENING

Soil samples were collected from each end and the center of each trench at 3-foot intervals from the surface to the total depth. The samples were obtained from the backhoe bucket and retained in 4-ounce glass jars. Each sample was field-screened using a beta/gamma pancake frisker device and then sealed with an aluminum foil lid. The sample was then submitted to direct sunlight for a period of at least 15 minutes for equilibrium of the volatile organic compounds prior to field-screen analyses using a PID (HNu Model HW-101). The samples were then stored for subsequent visual inspection and classification by the geologist. The results of the field screening analyses were documented in field logbooks and on the RI/FS Visual Classification of Soils records.

1.3 SOIL/MEDIA CLASSIFICATION AND DOCUMENTATION

A geologist was present to visually inspect and classify soils and waste media encountered during trench excavation activities. The geologist documented the type and relative thicknesses of soil strata, and type and extent of waste media contained within the soil units. In addition, the geologist was responsible for visual characterizations for the soil samples collected during trench excavation activities. Visual classification of soil samples included a description of the soil's relative consistency, color and sediment content (e.g., sand, silty clay, clay, etc.).

The relative consistency of the soil was determined using a Pocket Penetrometer®, which estimates the unconfined compressive strength in units of tons per square foot. The tip of the Pocket Penetrometer® device was inserted into the soil sample to a depth of approximately .25 inches (marked by a scribed line on the tip's shaft). The force required to insert the tip to the prescribed depth (unconfined compressive strength) was indicated on a spring-loaded graduated shaft. The measured unconfined compressive strength was then compared to tabulated values to determine the relative consistency.

The soil color was determined using a Munsel Soil Color Chart, which contains a variety of distinct hues, values and chromas. Each distinct hue, value and chromo combination correlates to a descriptive designator. For example, a hue of 10YR, value of 4, and a chromo of 6 (10 YR 4/6) corresponds to a dark yellowish-brown color designation.

1.4 GROUNDWATER SAMPLE COLLECTION

Groundwater, when present, was sampled and analyzed for HSL (Extended List) and General Water Quality parameters. Groundwater samples were collected by lowering a clean gallon jar, suspended by polypropylene rope, from a manlift platform to the groundwater pool at the base of the trench. The water was then decanted from the gallon

jar to the appropriate sample containers. In addition, a minimum of 3 gallons of water were taken to the FEMP laboratory for filtering prior to filling sample containers for HSL Inorganics, Full Radiological, and Gross Alpha/Beta analyses. The containerized groundwater samples were then placed in coolers with ice, for preservation at 4 degrees Celsius, and transported to ASI with appropriate Chain-of-Custody documentation. ASI then processed, packaged, and shipped the groundwater samples to the IT Oak Ridge, Tennessee laboratory facility for analysis.

A total of four groundwater samples were collected from the trench excavations within the SWL. One sample was collected from the north end of Trench No. 1 on July 7, 1992; one sample was collected from the south end of Trench No. 3 on July 13, 1992; one sample was collected from the south end of Trench No. 2 on July 15, 1992; and one sample was collected from the north end of Trench No. 2 on July 16, 1992.

2.0 *RESULTS*

This section provides the results of the trench excavation activities conducted for the SWL. In general, a variety of solid and liquid wastes were deposited within the SWL. Approximately 25 percent of these wastes could be considered as "burnables", which can be removed and disposed of by incineration. The remainder of the wastes can be considered as "possible burnables", or wastes that may be incinerated, but will probably require air emission filtering or treatment; and "nonburnables", which cannot be decomposed by incineration.

A total of four distinct lithologic units were encountered during trench excavation activities. The units, in order of increasing depth are as follows:

- *UNIT 1*
  1.5 to 3.5 feet of medium stiff to very stiff, dark brown sandy clay, which thins towards the east and southeast.

- *UNIT 2*
  7 feet of very soft to very stiff, olive gray sandy clays and silty clays. Unweathered surfaces exhibited a dark grayish brown color.

- *UNIT 3*
  1 foot of soft to stiff, very dark gray clays, and silty clays. This unit is similar in appearance to flyash materials.

- *UNIT 4*
  .5 to 2.5 feet of very soft to medium stiff, mottled brown and gray sandy clays and silty clays, which thickens towards the east and southeast.

Figure 2.1 illustrates the geologic environment of the SWL trench excavation areas.

In general, the waste materials were dispersed within Units 1 and 2, at depths ranging from less than .5 to 10 feet. Unit 3 did not exhibit any evidence of waste materials; and Unit 4, at the south end of Trench No. 3, contained minor quantities of copper tubing.

2.1 TRENCH NO. 1

2.1.1 WASTE CHARACTERIZATION

Trench No. 1 contained a variety of solid wastes dispersed throughout Soil Units 1 and 2 to maximum depths of 10 to 11 feet as illustrated by Figure 2.2. Soil Unit 1 contained respirator cartridges, bagged and loose asbestos materials, medicine vials, and ceramic tiles at the southern and central portions of the trench; and a lens of white, loose clay-like material (possibly magnesium fluoride) at the northern end of the trench (Figure 2.1). Soil Unit 2 contained bagged trash and asphalt roofing materials at the southern end of the trench (at depths of 6 to 9.5 feet); and bagged/burnt trash and glass acid bottles (at depths of 5.5 to 10.5 feet).

The wastes contained within Trench No. 1 can be classified as follows:

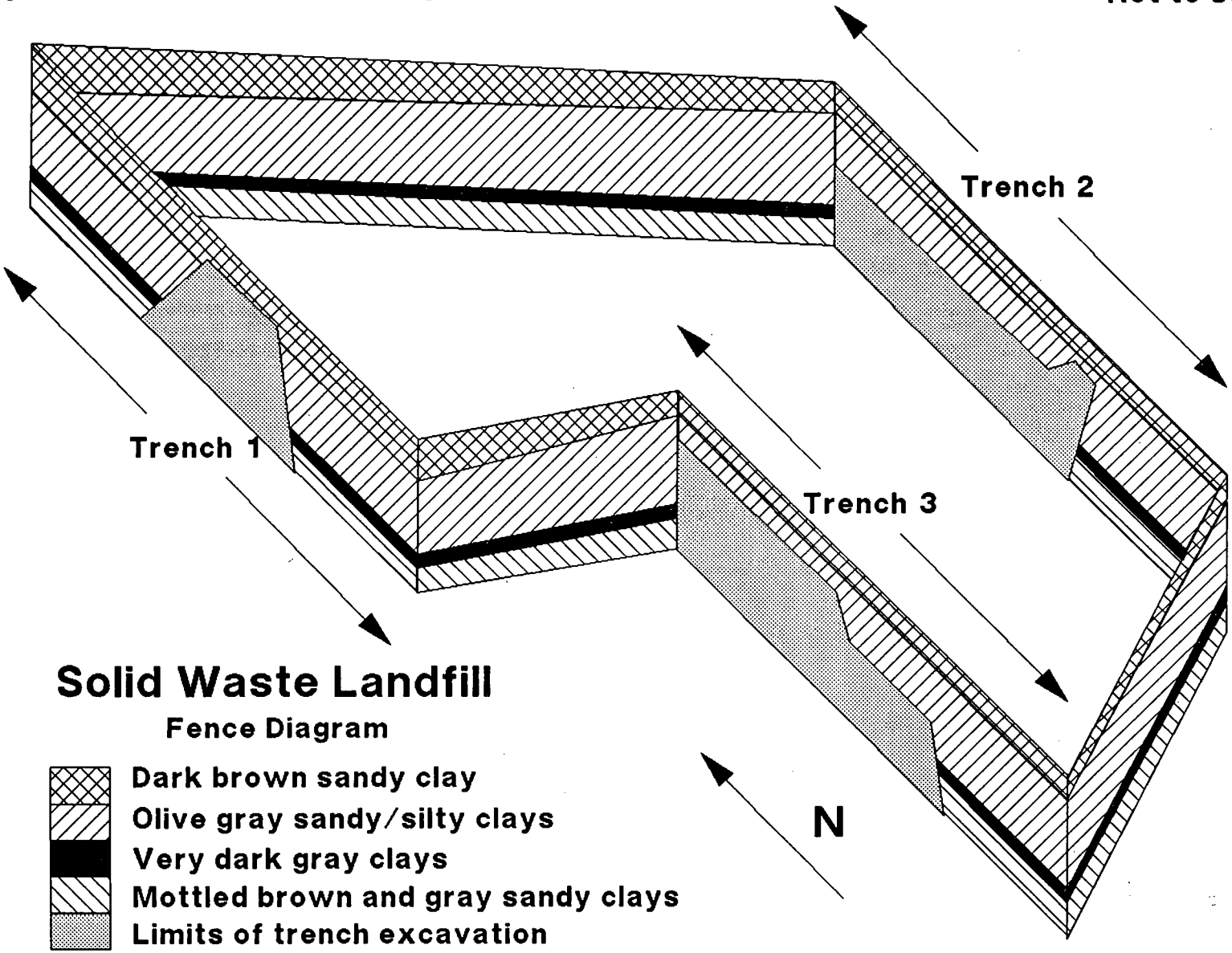
WASTE DESCRIPTION	TYPE OF WASTE
BAGGED TRASH	BURNABLE
RESPIRATOR CARTRIDGES	POSSIBLE BURNABLE
ASPHALT ROOFING MATLS.	POSSIBLE BURNABLE
MEDICINE VIALS	NON-BURNABLE
BAGGED ASBESTOS	NON-BURNABLE
CERAMIC TILES	NON-BURNABLE
MAGNESIUM FLUORIDE	NON-BURNABLE
GLASS ACID BOTTLES	NON-BURNABLE

2.1.2 SOILS

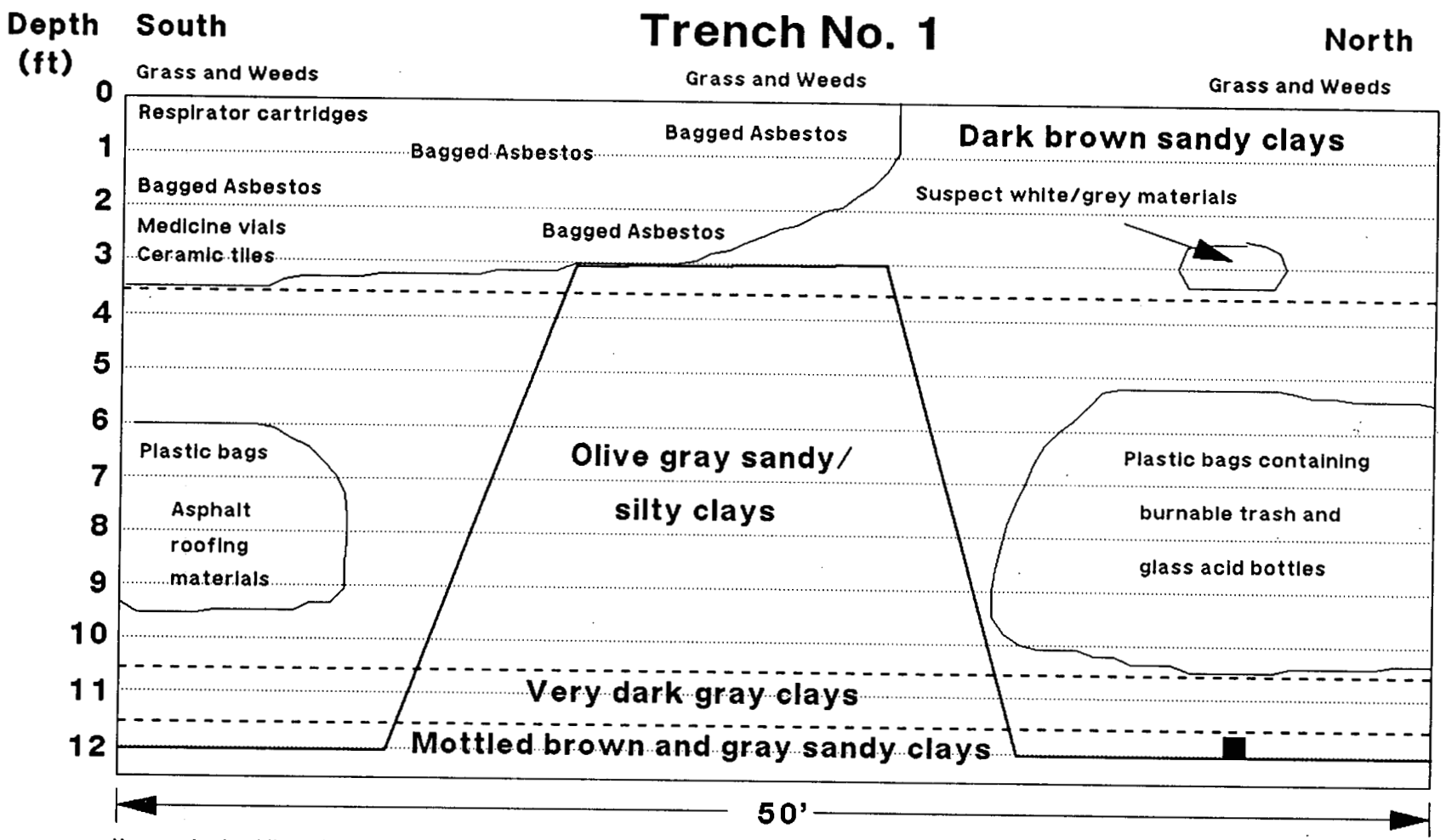
Soil Units 1 through 4 were observed during trench excavation activities as illustrated by Figure 2.2.

Figure 2.1 Generalized Geologic Environment of FEMP SWL.

Not to scale



SOLID WASTE LANDFILL
Trench No. 1



Heavy dashed lines indicate inferred stratigraphic contacts.
Heavy solid lines indicate inferred limit of trench excavation.
Solid square indicates approximate groundwater sample location.

Figure 2.2. Geologic Profile for Trench No. 1.

The results of field screening analyses and visual characterizations for soil samples collected from Trench Number 1 are provided by Figure 2.3. In general, the soil samples exhibited beta/gamma activities of 70 to 130 cpm (background = 70 cpm) and volatile organic vapor concentrations of 1.9 to 15.9 ppm (background = .5 to 1.3 ppm). The upper 6 to 9 feet of soil was found to have relative consistencies of medium stiff to very stiff; while the soils from 9 to 12 feet in depth had relative consistencies of soft to very soft.

2.1.3 GROUNDWATER

Groundwater (perched water) seepage was observed at a depth of approximately 9 feet below surface grade at the northern end of Trench No. 1. Water samples were collected and analyzed for HSL extended list and general water quality parameters. The results of the groundwater analyses for Trench No. 1 are provided in Table 2.1.

2.2 TRENCH NO. 2

2.2.1 WASTE CHARACTERIZATION

Trench No. 2 contained a variety of solid wastes dispersed throughout Soil Units 1 and 2 to maximum depths of 6 feet as illustrated by Figure 2.4. Soil Unit 1 contained rubber hoses and bagged trash at the southern portion of the trench; and roofing materials and burnt wood at the northern end of the trench.

Soil Unit 2 contained bagged trash and medical wastes at the center of the trench (at depths of 3 to 6 feet); and roofing materials and burnt wood at the northern end of the trench (at depths of 1.5 to 6 feet).

The medical waste encountered in the center of Trench No. 2 consisted of a variety of wastes contained within plastic trash bags or dispersed within the soil materials. The medical waste included syringes, vials, surgical gloves, tubing, and blood containers. Subsequent to trench backfilling, senior-level FEMP Industrial Hygiene personnel were contacted to define the source of the medical wastes. According to the IH personnel, some medical wastes generated by the FEMP Medical Facility were autoclaved and subsequently disposed of with common FEMP-generated trash at the Solid Waste Landfill.

SOLID WASTE LANDFILL
Trench No. 1

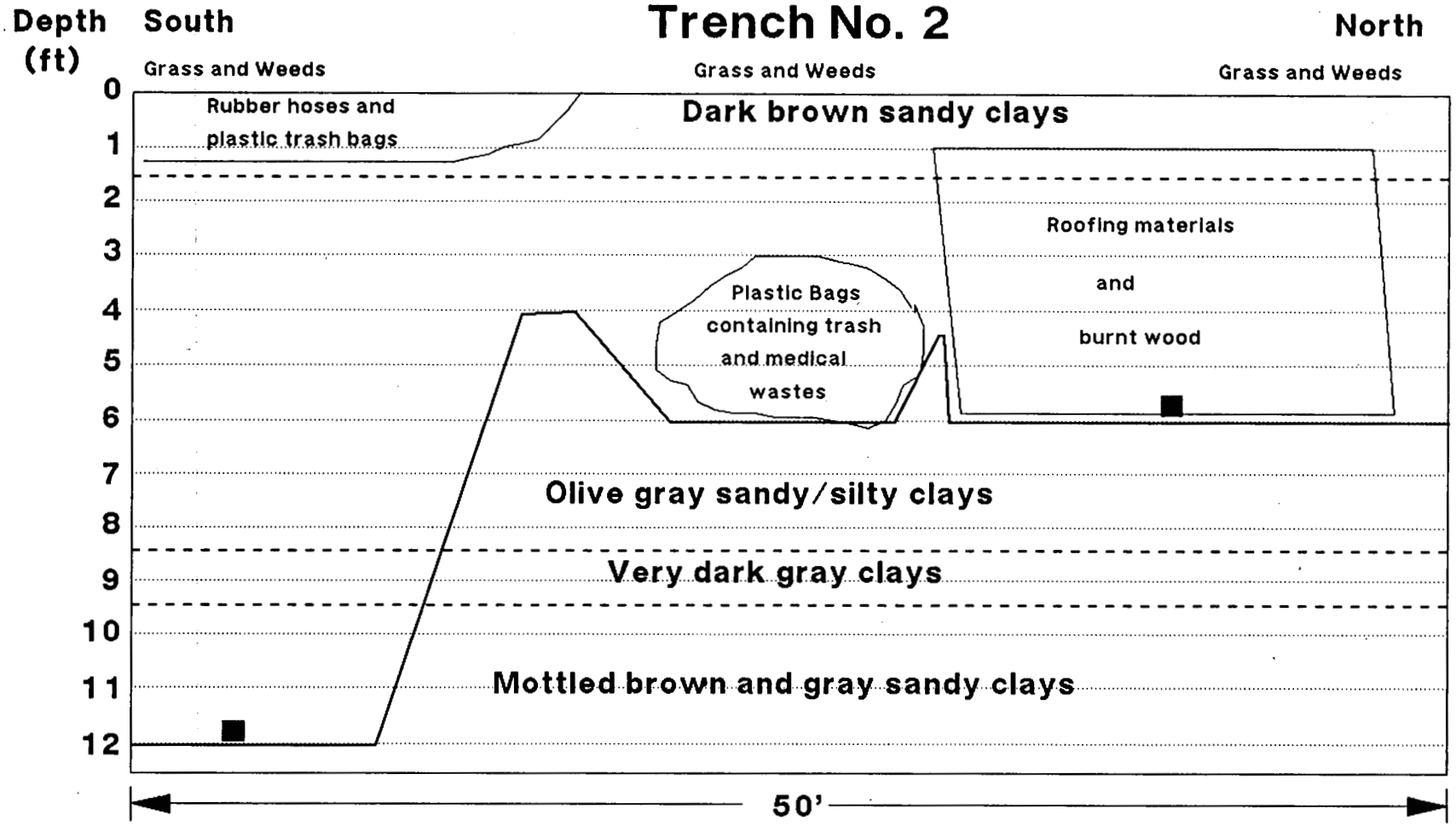
Depth (ft)	South				North
0	PID = 3.1 ppm b/g = 70 cpm	Med. stiff, dark brown, gravel-bearing sandy clay (10YR 4/3)	PID = 15.9 ppm b/g = 70 cpm	Very stiff, dark brown, gravel-bearing sandy clay (10YR 4/3)	PID = 7.0 ppm b/g = 70 cpm
1					
2					
3	PID = 1.9 ppm b/g = 70 cpm	Med. stiff, dark grayish brown, silty clay (10YR 4/3)		Med. stiff, dark grayish brown, sandy clay (10YR 3/2)	PID = 1.2 ppm b/g = 70 cpm
4					
5					
6	PID = 5.0 ppm b/g = 130 cpm	Very stiff, olive grey, gravel-bearing silty clay (5Y 5/2)		Med. stiff, dark grayish brown, silty/sandy clay (10YR 4/2)	PID = 30.0 ppm b/g = 70 cpm
7					
8					
9	PID = 12.6 ppm b/g = 70 cpm	Soft olive grey, gravel-bearing silty/sandy clay (5Y 4/2)		Very soft olive brown, silty/sandy clay (5Y 5/2)	PID = 1.2 ppm b/g = 70 cpm
10					
11					
12	PID = 1.9 ppm b/g = 70 cpm	Soft, mottled dark yellowish brown and grey silty/sandy clay		Very soft, dark grayish brown, silty/sandy clay (2.5Y 3/2)	PID = 2.8 ppm b/g = 90 cpm

50'

Figure 2.3 Soil Characterization Results for Trench No. 1.

insert Table 2.1

SOLID WASTE LANDFILL
Trench No. 2



Heavy dashed lines indicate inferred stratigraphic contacts.
Heavy solid lines indicate inferred limit of trench excavation.
Solid square indicates approximate groundwater sample location.

Figure 2.4 Geologic Profile for Trench No. 2.

The wastes contained within Trench No. 2 can be classified as follows:

WASTE DESCRIPTION	TYPE OF WASTE
BAGGED TRASH	BURNABLE
ASPHALT ROOFING MATLS.	POSSIBLE BURNABLE
MEDICAL WASTES	POSSIBLE BURNABLE

2.2.2 SOILS

Soil Units 1 through 4 were observed during trench excavation activities as illustrated by Figure 2.4.

The results of field screening analyses and visual characterizations for soil samples collected from Trench No. 2 are provided by Figure 2.5. In general, the soil samples exhibited beta/gamma activities of 50 to 70 cpm (background = 50 to 70 cpm) and volatile organic vapor concentrations of 1.9 to 8 ppm (background = 1.9 to 2 ppm). The upper 6 to 9 feet of soil was found to have relative consistencies of soft to stiff; while the soils from 9 to 12 feet in depth had relative consistencies of soft.

2.2.3 GROUNDWATER

Groundwater (perched water) seepage was observed at a depth of approximately 2.5 feet below surface grade at the northern end of Trench No. 2 and 5 feet below surface grade at the southern end of the trench. Water samples were collected and analyzed for HSL extended list and general water quality parameters. The results of the groundwater analyses for Trench No. 2 are provided in Table 2.2.

2.3 TRENCH NO. 3

2.3.1 WASTE CHARACTERIZATION

Trench No. 3 contained a variety of solid wastes dispersed throughout Soil Units 1 and 2 to maximum depths of 6.5 feet as illustrated by Figure 2.6. Soil Unit 1 contained rubber hoses/belts and fire hoses at the southern portion of the trench. Soil Unit 2 contained bagged trash, wood, steel cables, steel cans and suspect yellow material at the southern and central portions of the trench (at depths of 3 to 6.5 feet); and full paint cans at the northern end of the trench (at depths of 1.5 to 3 feet). Soil Unit 4 contained copper tubing at the southern end of the trench (at depths of 10 to 11.5 feet).

SOLID WASTE LANDFILL
Trench No. 2

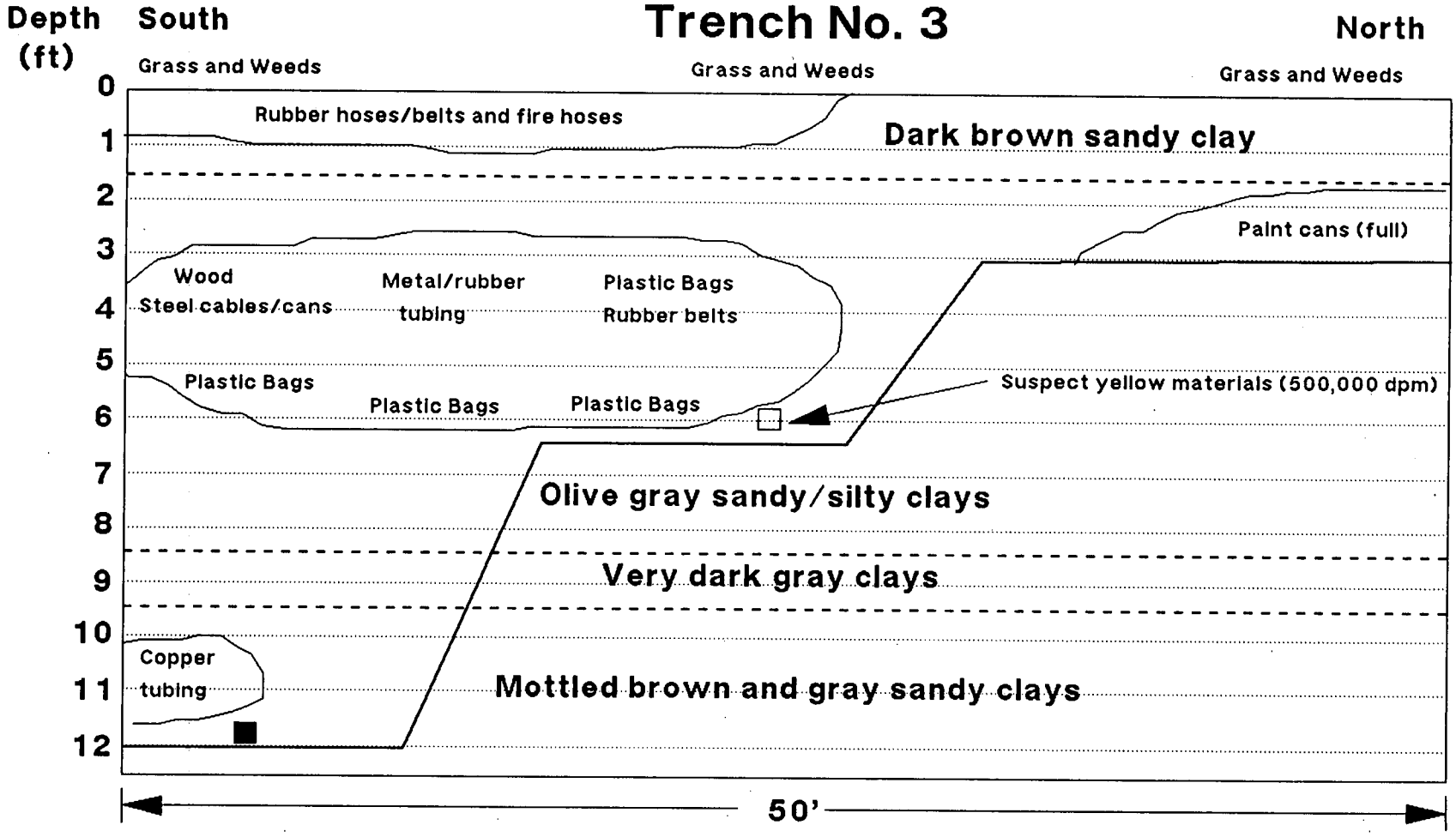
Depth (ft)	South				North
0	PID = 2.8 ppm b/g = 70 cpm	Soft, dark brown, gravel-bearing sandy clay (10YR 3/3)		Stiff, dark brown, gravel-bearing sandy clay (10YR 3/3)	PID = 2.0 ppm b/g = 50 cpm
1					
2					
3	PID = 4.4 ppm b/g = 70 cpm	Soft, olive gray, sandy/silty clay (5Y 4/2)	PID = 2.3 ppm b/g = 50 cpm	Med. stiff, olive gray, silty/sandy clay (5Y 5/2)	PID = 2.0 ppm b/g = 50 cpm
4					
5					
6	PID = 2.2 ppm b/g = 70 cpm	Soft, olive grey, sandy/silty clay (5Y 5/2)	PID = 8.0 ppm b/g = 50 cpm	Med. stiff, olive gray, silty sandy clay (5Y 5/2)	PID = 2.0 ppm b/g = 50 cpm
7					
8					
9	PID = 2.0 ppm b/g = 70 cpm	Soft, very dark grey, silty clay (10YR 3/1)			
10					
11					
12	PID = 1.9 ppm b/g = 70 cpm	Soft, mottled dark yellowish brown and grey silty/sandy clay			

50'

Figure 2.5 Soil Characterization Results for Trench No. 2.

insert Table 2.2

SOLID WASTE LANDFILL
Trench No. 3



Heavy dashed lines indicate inferred stratigraphic contacts.
Heavy solid lines indicate inferred limit of trench excavation.
Solid square indicates approximate groundwater sample location.

Figure 2.6. Geologic Profile for Trench No. 3.

A variety of cans containing paint materials and possible paint thinners were encountered in the north end of Trench No. 3. The condition of the cans did not allow for identification or determination of the physical characteristics of the contents. During excavation of the cans, volatile organic vapor concentrations of greater than 20 parts per million above background were detected.

During the excavation in the center of Trench No. 3, a localized area of possible contaminated yellow material, approximately 1 to 2 inches in diameter, was detected in soil materials within the backhoe bucket. The material exhibited radiological activities of 150,000 disintegrations per minute and 200 micro-Rems, as measured with a beta-gamma frisker, and Micro-R meter, respectively. This possible contaminated yellow materials were found in association with plastic bags containing metal tubing, cloth rags, and broken brown-glass bottles. This may indicate that the material was an excess sample of process related material, deposited at the Solid Waste Landfill subsequent to analysis.

The wastes contained within Trench No. 3 can be classified as follows:

WASTE DESCRIPTION	TYPE OF WASTE
BAGGED TRASH	BURNABLE
WOOD	BURNABLE
FIRE HOSES	POSSIBLE BURNABLE
RUBBER HOSES/BELTS	POSSIBLE BURNABLE
STEEL CABLES/CANS	NON-BURNABLE
PAINT CANS	NON-BURNABLE
COPPER TUBING	NON-BURNABLE

2.3.2 SOILS

Soil Units 1 through 4 were observed during trench excavation activities as illustrated by Figure 2.6.

The results of field screening analyses and visual characterizations for soil samples collected from Trench No. 3 are provided by Figure 2.7. In general, the soil samples exhibited beta/gamma activities of 70 to 80 cpm (background = 70 to 80 cpm) and volatile organic vapor concentrations of 1.8 to 30 ppm (background = 1.8 to 3.3 ppm). An elevated beta/gamma reading of 900 cpm, attributed to the presence of suspect yellow material in the soil, was observed at the center of Trench No. 3

at a depth of 6 feet below surface grade. An elevated volatile organic vapor reading of 200 ppm, attributed to paint materials released during trench excavation activities, was observed at the northern end of the trench at a depth of 3 feet below surface grade.

The upper 6 to 9 feet of soil was found to have relative consistencies of very soft to stiff; while the soils from 9 to 12 feet in depth had relative consistencies of medium stiff to stiff.

2.3.3 GROUNDWATER

Groundwater (perched water) seepage was observed at a depth of approximately 3.5 feet below surface grade at the southern end of Trench No. 3. Water samples were collected and analyzed for HSL extended list and general water quality parameters. The results of the groundwater analyses for Trench No. 3 are provided in Table 2.3.

3.0 *DISCUSSION AND CONCLUSIONS*

The trench excavation activities were conducted to provide data for: 1) the type and horizontal/vertical delineation of wastes deposited within the SWL, 2) SWL geologic and hydrogeologic characterizations, 3) horizontal and vertical delineation of qualitative concentrations of radiological and volatile organic constituents in the waste materials and the associated soils, using field instruments, and 4) characterization of the quantitative concentrations of radiological and non-radiological constituents in the leachates (perched groundwater) associated with the SWL. The following sub-sections provide the conclusions, based on results of trench excavation activities, associated with these data objectives.

3.1 TYPE AND HORIZONTAL/VERTICAL EXTENT OF SWL WASTES

The wastes deposited in the SWL consist mainly of "non-burnable" materials, which accounted for approximately 75 percent of the wastes observed during trench excavation activities. These wastes include bagged and loose asbestos materials, ceramic tiles, medicine vials, glass acid bottles, magnesium fluoride, rubber hoses and tubing, medical wastes, fire hoses, steel cables and cans, yellow-cake, asphalt roofing materials, respirator cartridges and copper tubing. The remainder of the wastes observed at the SWL (approximately 25 percent) can be considered as "burnables". These wastes include bagged trash and wood materials.

The SWL waste materials were found to be dispersed within the upper 10 feet of soil. Each trench contained an unique assemblage of wastes, except for bagged trash, which was observed throughout the SWL. The horizontal extent of these wastes on a localized scale (i.e., in areas of close proximity to each trench) or on a regional scale (within the SWL boundaries) cannot be accurately assessed based on the data provided by trench excavation activities.

SOLID WASTE LANDFILL

Trench No. 3

Depth (ft)	South				North
0	PID = 22.0 ppm b/g = 80 cpm	Stiff, dark brown, gravel-bearing sandy clay (10YR 4/3)	PID = 22.0 ppm b/g = 80 cpm	Stiff, dark brown, gravel-bearing sandy clay (10YR 3/3)	PID = 1.8 ppm b/g = 70 cpm
1					
2					
3	PID = 22.0 ppm b/g = 80 cpm	Stiff, olive gray, sandy/silty clay (5Y 4/2)	PID = 30.0 ppm b/g = 80 cpm	Med. stiff, olive gray, silty/sandy clay (5Y 5/2)	PID = 200.0 ppm b/g = 70 cpm
4					
5					
6	PID = 29.0 ppm b/g = 80 cpm	Very soft, olive grey, sandy/silty clay (5Y 4/2)	PID = N/A b/g = 900 cpm	Med. stiff, olive gray, silty sandy clay (5Y 5/2)	
7					
8					
9	PID = 13.2 ppm b/g = 80 cpm	Stiff, very dark grey, silty clay (7.5YR 3/0)			
10					
11					
12	PID = 6.2 ppm b/g = 80 cpm	Medium stiff, mottled brown and grey silty/sandy clay			

50'

Figure 2.7. Soil Characterization Results for Trench No. 3.

insert Table 2.3

3.2 SWL GEOLOGY AND HYDROGEOLOGY

A total of four distinct lithologic units were encountered during trench excavation activities. The units, in order of increasing depth are as follows:

- *UNIT 1*
  1.5 to 3.5 feet of medium stiff to very stiff, dark brown sandy clay, which thins towards the east and southeast.

- *UNIT 2*
  7 feet of very soft to very stiff, olive gray sandy clays and silty clays. Unweathered surfaces exhibited a dark grayish brown color.

- *UNIT 3*
  1 foot of soft to stiff, very dark gray clays, and silty clays. This unit is similar in appearance to flyash materials.

- *UNIT 4*
  .5 to 2.5 feet of very soft to medium stiff, mottled brown and gray sandy clays and silty clays, which thickens towards the east and southeast.

The following perched water zones were encountered during trench excavation activities:

- The northern end of Trench No. 1 at a depth of approximately 9 feet below surface grade.

- The northern end of Trench No. 2 at a depth of approximately 2.5 feet below surface grade.

- The southern end of Trench No. 2 at a depth of approximately 5 feet below surface grade.

- The southern end of Trench No. 3 at a depth of approximately 3.5 feet below surface grade.

In general, the perched water zones were found in areas where waste materials were deposited in such a fashion to allow for significant void spaces or porosity. The relative amounts of water seepage from these perched zones varied between trench locations. In general, water seepage from the northern end of Trench No. 1, and the southern ends of Trench No. 2 and Trench No. 3 produced shallow pools in the trench base within a few hours. Water seepage from the northern end of Trench No. 2 was of a sufficient rate to completely fill the trench to a depth of approximately 3 feet below surface grade within a period of 10 to 15 minutes.

3.3 HORIZONTAL/VERTICAL EXTENT OF SOIL CONTAMINANTS

In general, beta/gamma activities and volatile organic vapor concentrations in soils were at or near background contaminant levels. However, a beta/gamma activity of 900 cpm was found for the soil sample collected from the center of Trench No. 3 at a depth of 6 feet below surface grade. Suspect yellow material, exhibiting a beta/gamma activity of approximately 50,000 cpm, were found in close proximity to this sample.

Volatile organic vapor readings of approximately 10 to 30 parts per million were detected in soils containing plastic bags, rubber and asphalt roofing materials. In addition, a sample collected from the north end of Trench No. 3 exhibited volatile organic vapor concentrations of 200 ppm. This sample was collected from soil in close proximity to 1-quart steel paint cans that were disturbed during trench excavation activities.

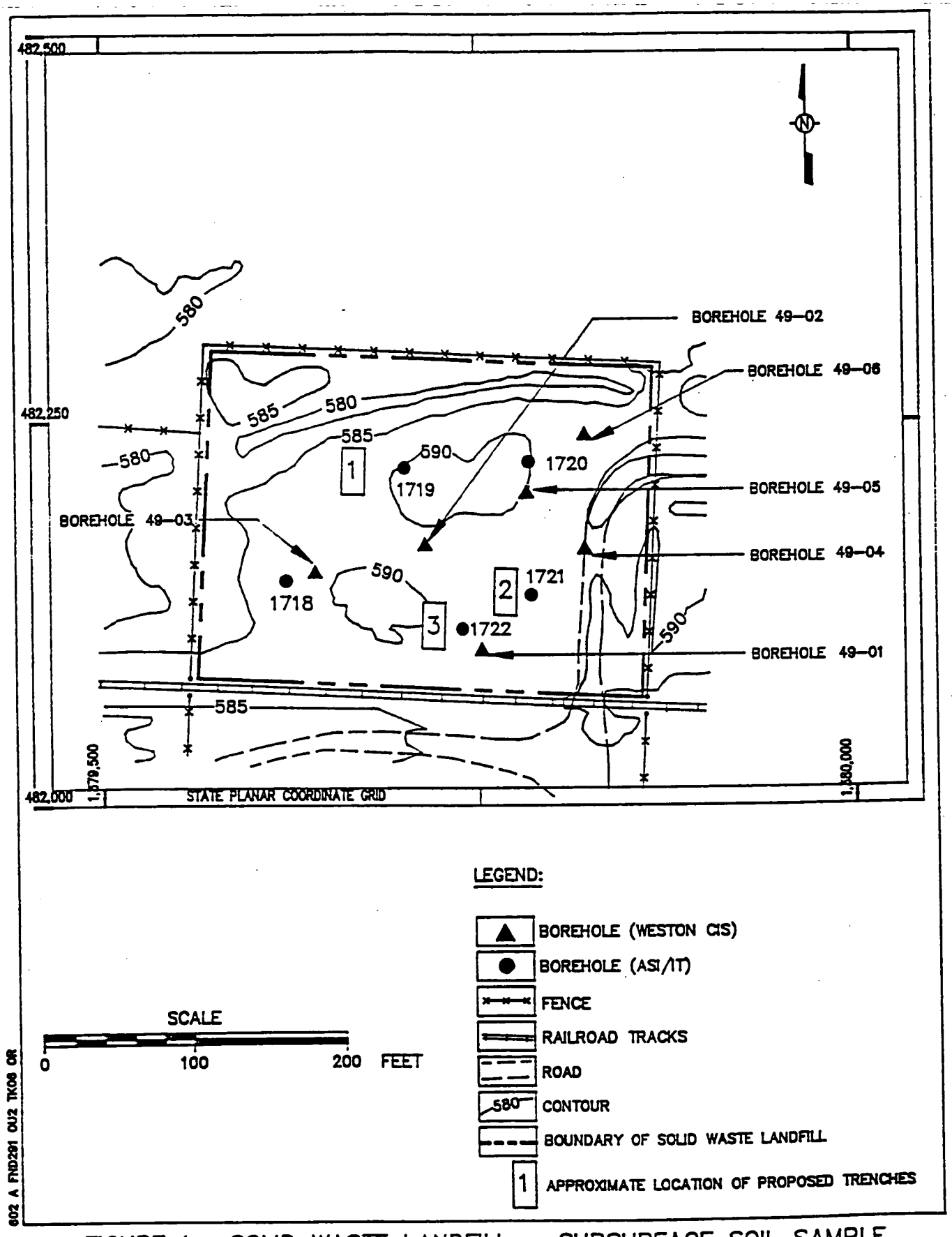


FIGURE 1. SOLID WASTE LANDFILL – SUBSURFACE SOIL SAMPLE LOCATIONS AND PROPOSED TRENCH LOCATIONS

EXCERPT FROM THE DRAFT OU 2 RI REPORT

4.2.1 REVIEW OF HISTORICAL DATA

The Solid Waste Landfill was used for the disposal of burnable, possible burnable, and nonburnable wastes from FEMP nonprocess areas and on-site construction/demolition activities. Materials reportedly accepted include nonburnable and nonradioactive solid wastes generated on the property, nonradioactive construction-related rubble, and double-bagged and bulk quantities of nonradioactive asbestos (DOE 1988a; Weston 1987b). Some construction rubble placed in the landfill and the soil used to cover exposed wastes may have been contaminated with radionuclides (DOE 1988a). The following wastes were encountered during the 1992 trenching investigation (DOE 1992e):

- burnable: bagged trash and wood
- possible burnable: respirator cartridges, asphalt roofing materials, medical wastes, firehoses, and rubber hoses/belts
- nonburnable: medicine vials, bagged asbestos, ceramic tiles, magnesium fluoride, glass acid bottles, steel cables/cans, paint cans, and copper tubing