Public Information Session

April 20, 2004

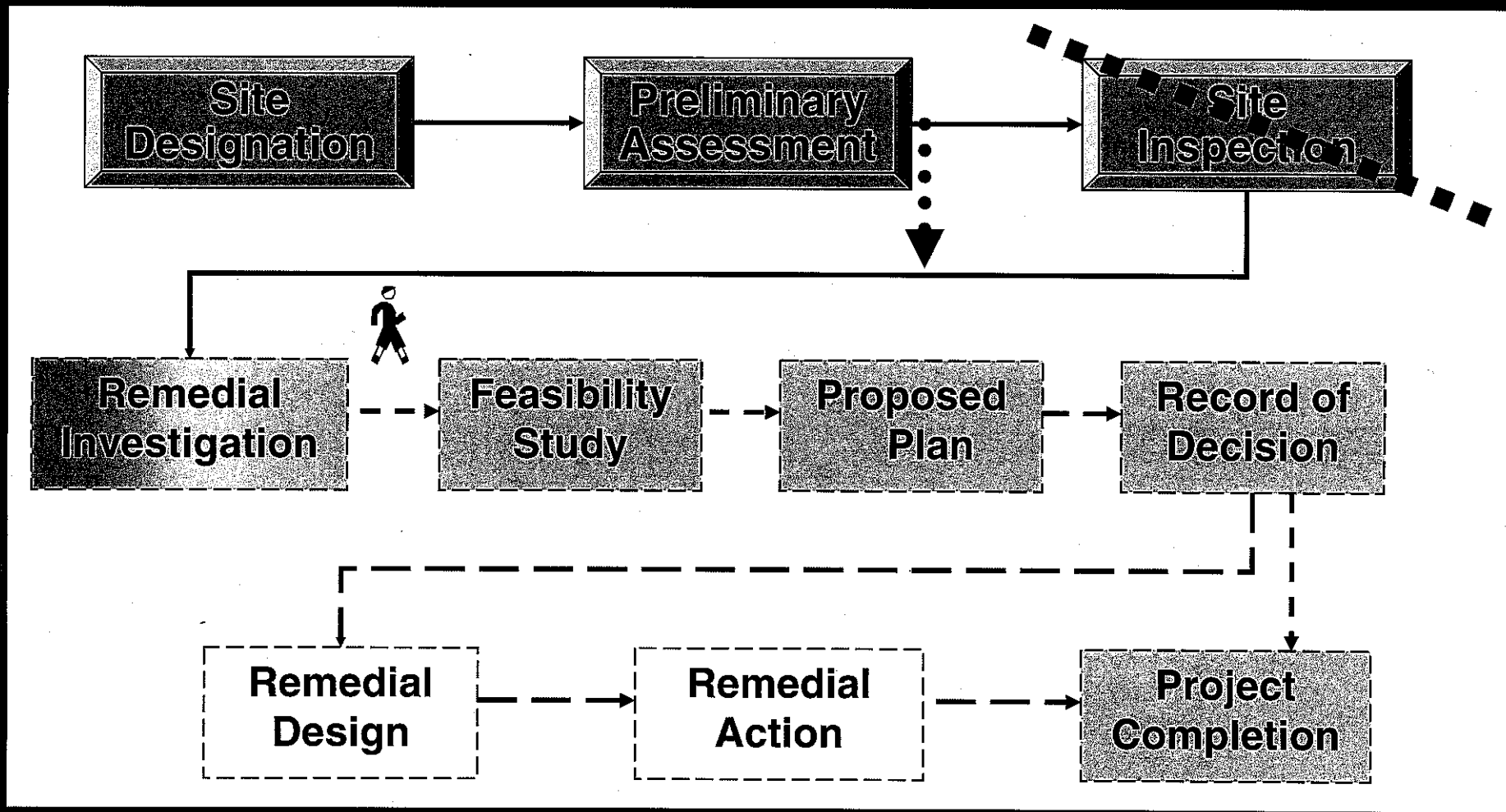
Shallow Land Disposal Area

Parks Township
Armstrong County, Pennsylvania

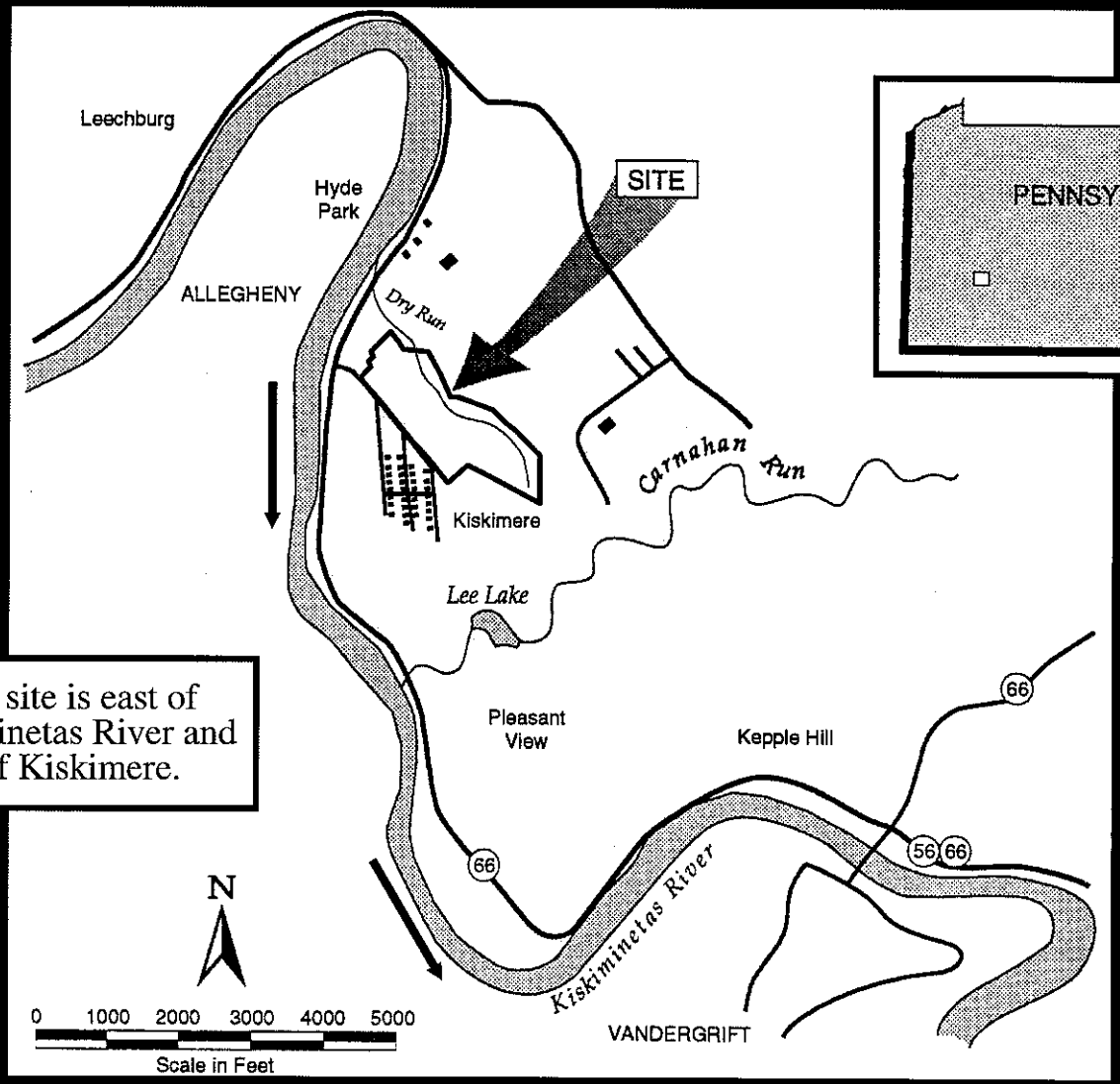
Prepared by:

U.S. Army Corps of Engineers

CERCLA Process

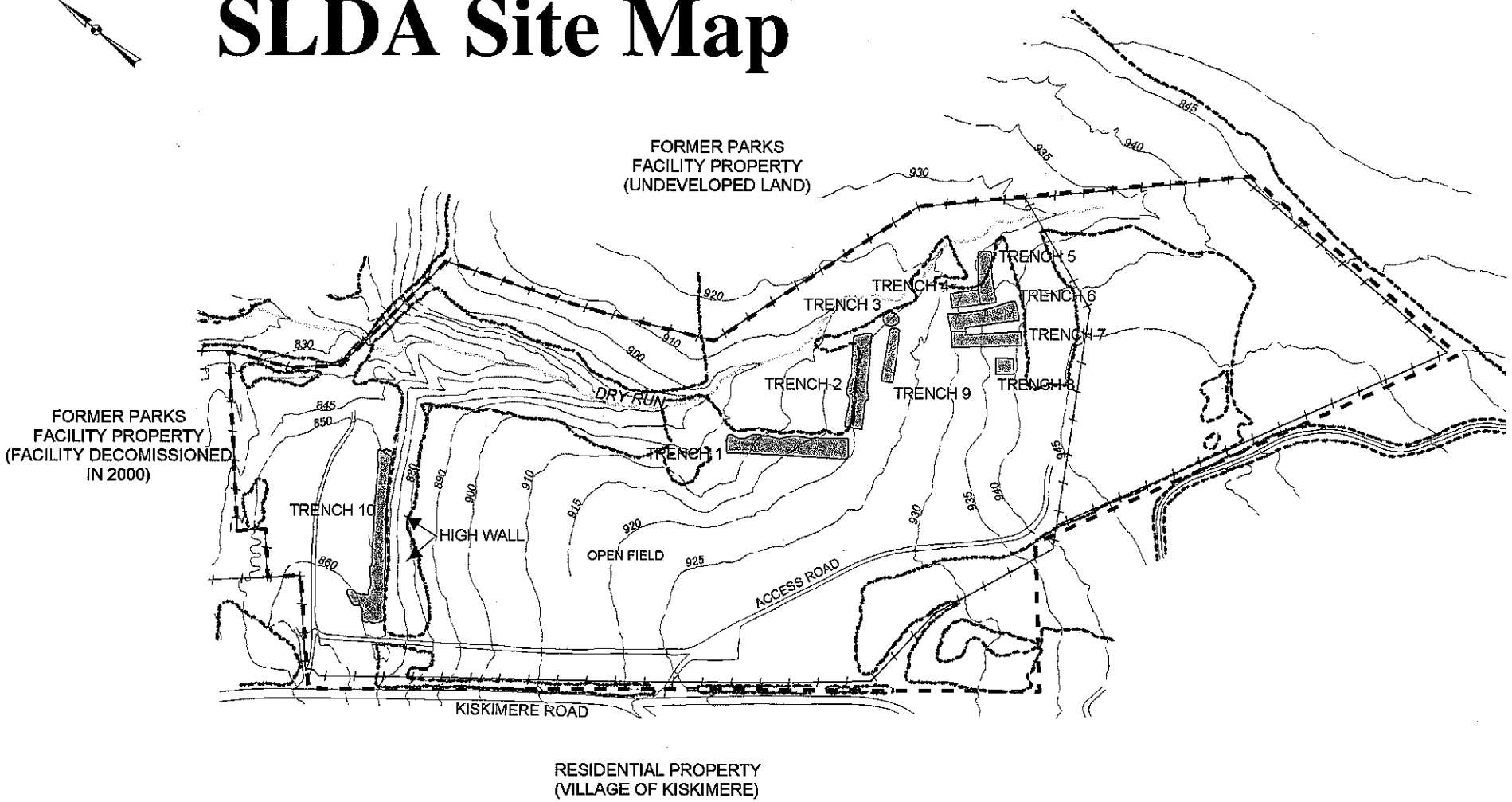


SLDA Vicinity Map



The SLDA site is east of the Kiskiminetas River and northeast of Kiskimere.

SLDA Site Map



Legend

- 920 — Topographic Contour (feet)
- Vegetation Line (Typ.)
- Chain Link Fence
- Site Boundary
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 150 300 Feet

Historical Photographic Analysis

- The United States Army Topographic Engineering Center (TEC) completed an historical photographic analysis in June 2003.
- The report summarized a review of available aerial photographs of SLDA between 1950 and present with special emphasis on potential disposal activities.
- Report findings were used to help guide remedial investigation sampling program.

Analysis of Photography
June 2, 1967

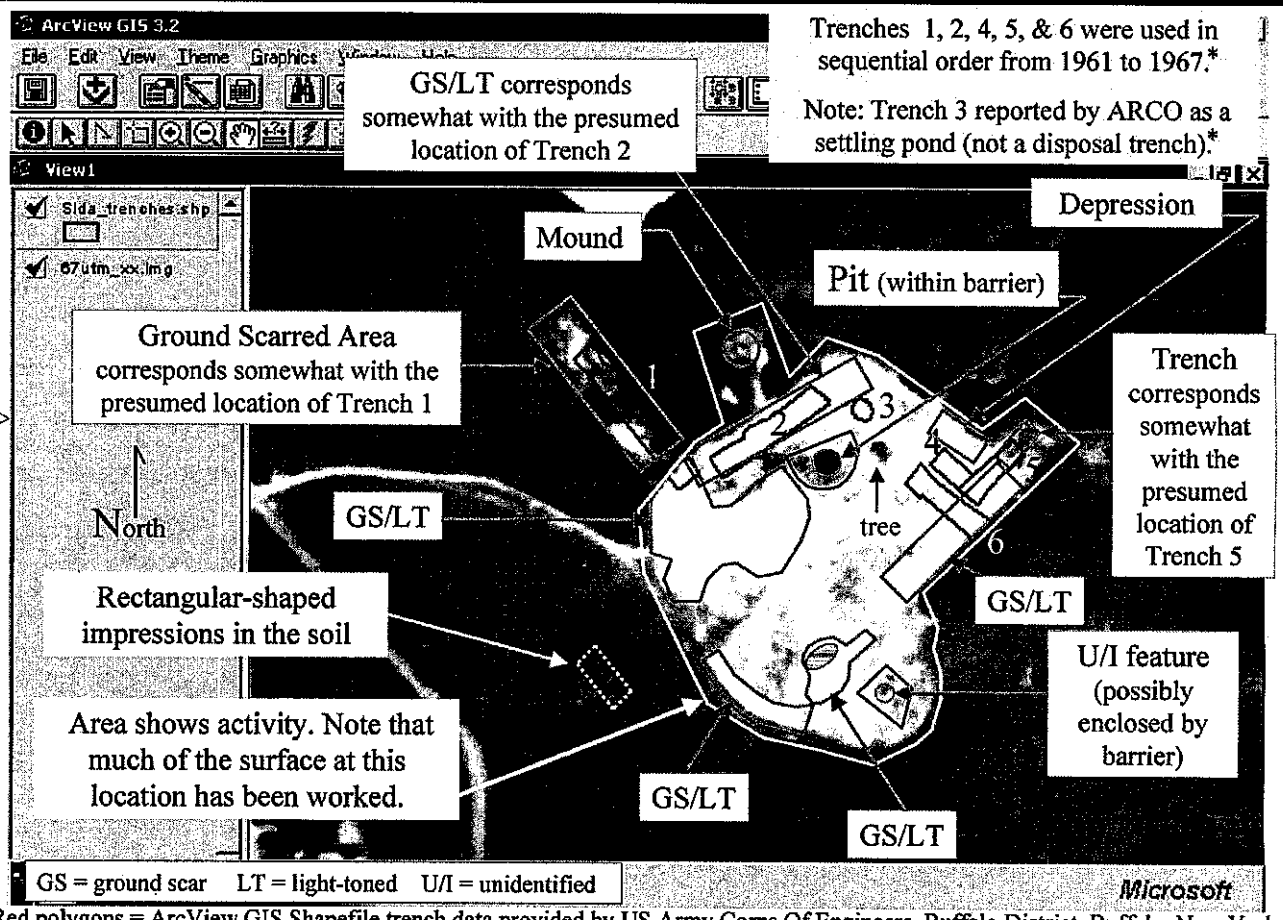
ArcView GIS Data

Upper trench area (red polygons - numbered 1 to 6) Displayed Over 1967 Aerial Photography

2 June 1967

SHALLOW LAND DISPOSAL AREA
Armstrong County, PA

= depression
= pit (not to scale)



Red polygons = ArcView GIS Shapefile trench data provided by US Army Corps Of Engineers, Buffalo District, Buffalo, New York.

* Source: Atlantic Richfield Company (ARCO), Shallow Land Disposal Area Trench Contents and Volume, March 2000.

Presentation of Preliminary RI Results

- Perimeter Air Monitoring Program - Ongoing
- Surface and Subsurface Soil Sampling - Completed
- Trench Investigations & Sampling - Completed
- Groundwater Investigations & Sampling - Ongoing
- Surface Water, Groundwater Seep, & Sediment Sampling – Ongoing

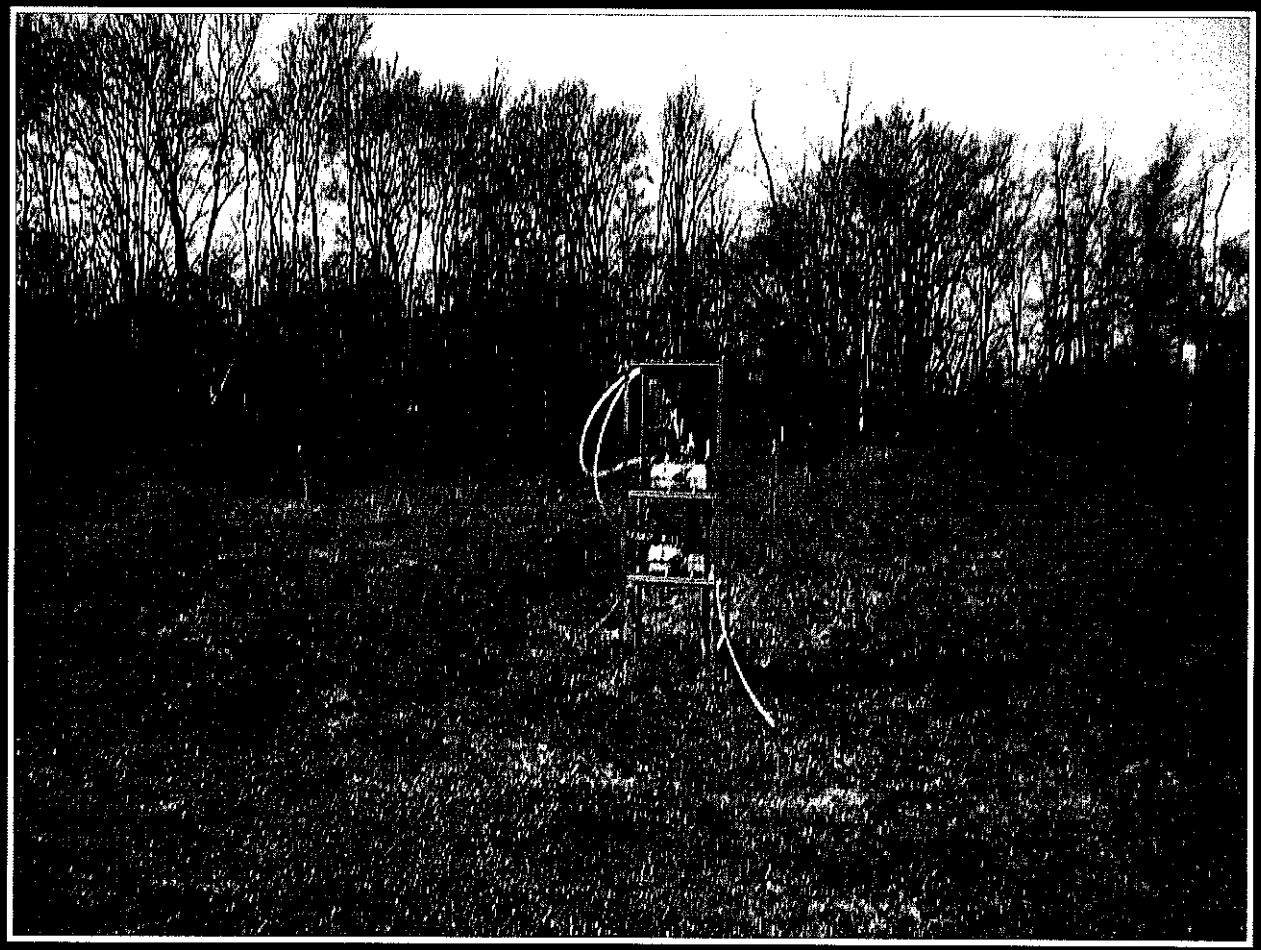
Four months of intrusive field work completed with no measured release of radioactive or chemical constituents.

Presentation of Preliminary RI Results

- Perimeter Air Monitoring Program

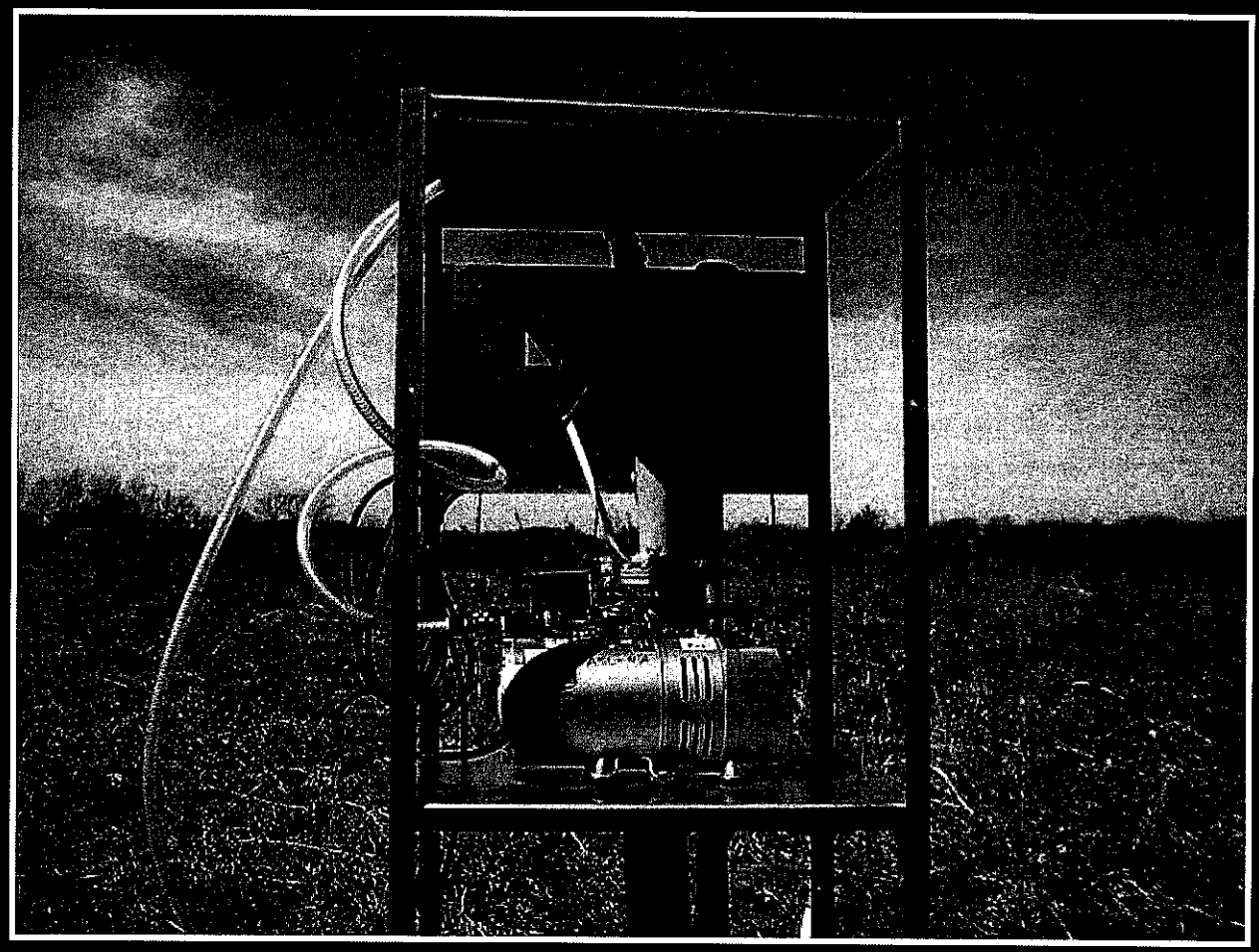
Presentation of Preliminary RI Results

- Perimeter Air Monitoring Program

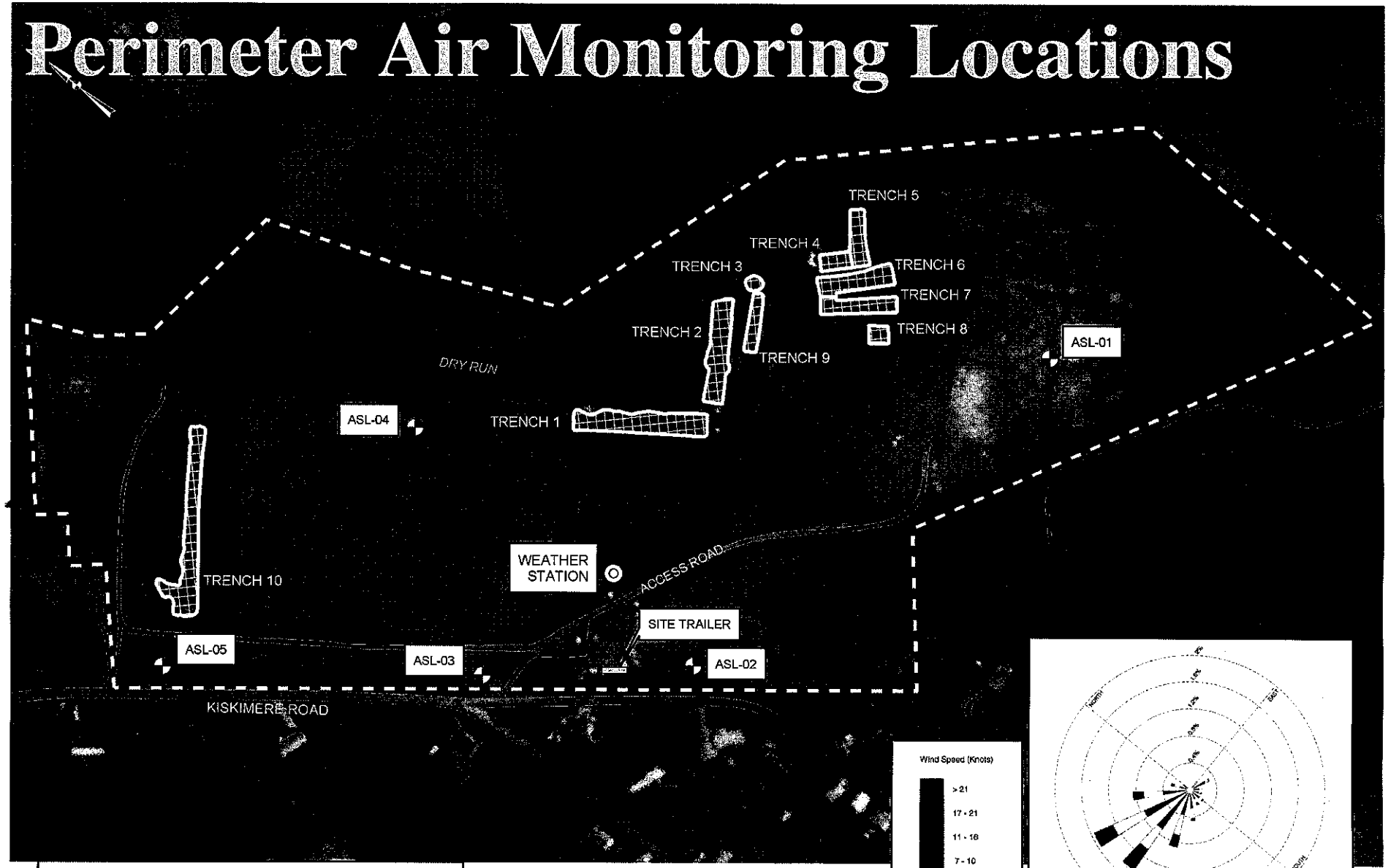


Presentation of Preliminary RI Results

- Perimeter Air Monitoring Program



Perimeter Air Monitoring Locations



Legend

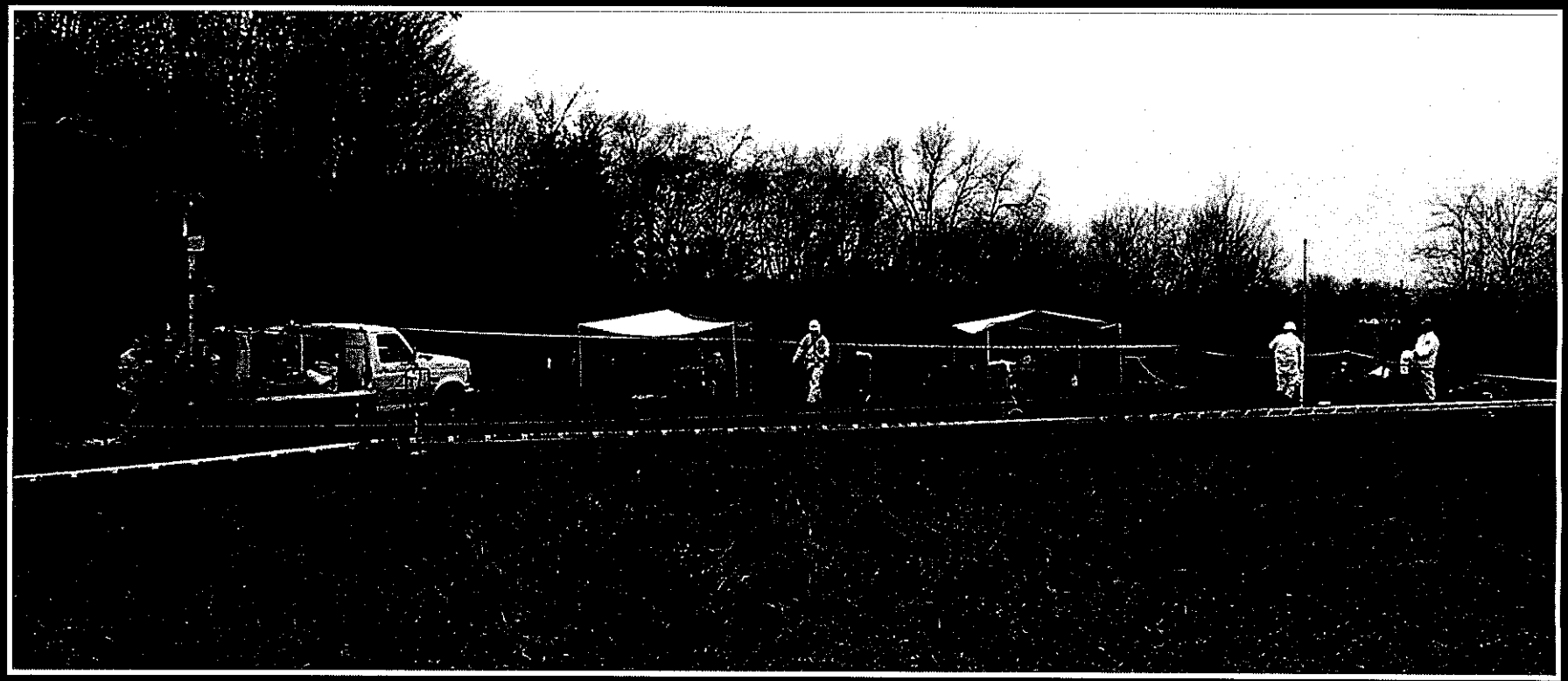
- Air Monitoring Location
- Site Boundary
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet

Perimeter Air Sampling Results

Radionuclide	Number of Samples	Number of Detections	Minimum Detected Value (uCi/ml)	Maximum Detected Value (uCi/ml)	Average Detected Value (uCi/ml)
Am-241	85	No Detections	No Detections	No Detections	No Detections
Ra-228	85	29	4.32×10^{-16}	3.87×10^{-15}	2.62×10^{-15}
Th-232	85	No Detections	No Detections	No Detections	No Detections
U-234	85	5	9.74×10^{-16}	6.76×10^{-15}	2.43×10^{-15}
U-235	85	1	5.83×10^{-15}	5.83×10^{-15}	5.83×10^{-15}
U-238	85	3	7.82×10^{-16}	3.16×10^{-15}	2.09×10^{-15}
Gross Alpha	85	49	4.66×10^{-16}	1.03×10^{-14}	2.89×10^{-15}
Gross Beta	85	85	1.1×10^{-14}	3.93×10^{-14}	2.08×10^{-14}

Work Zone Air Monitoring



Work Zone Air Monitoring

Presentation of Preliminary RI Results

- Surface and Subsurface Soil Sampling

Presentation of Preliminary RI Results

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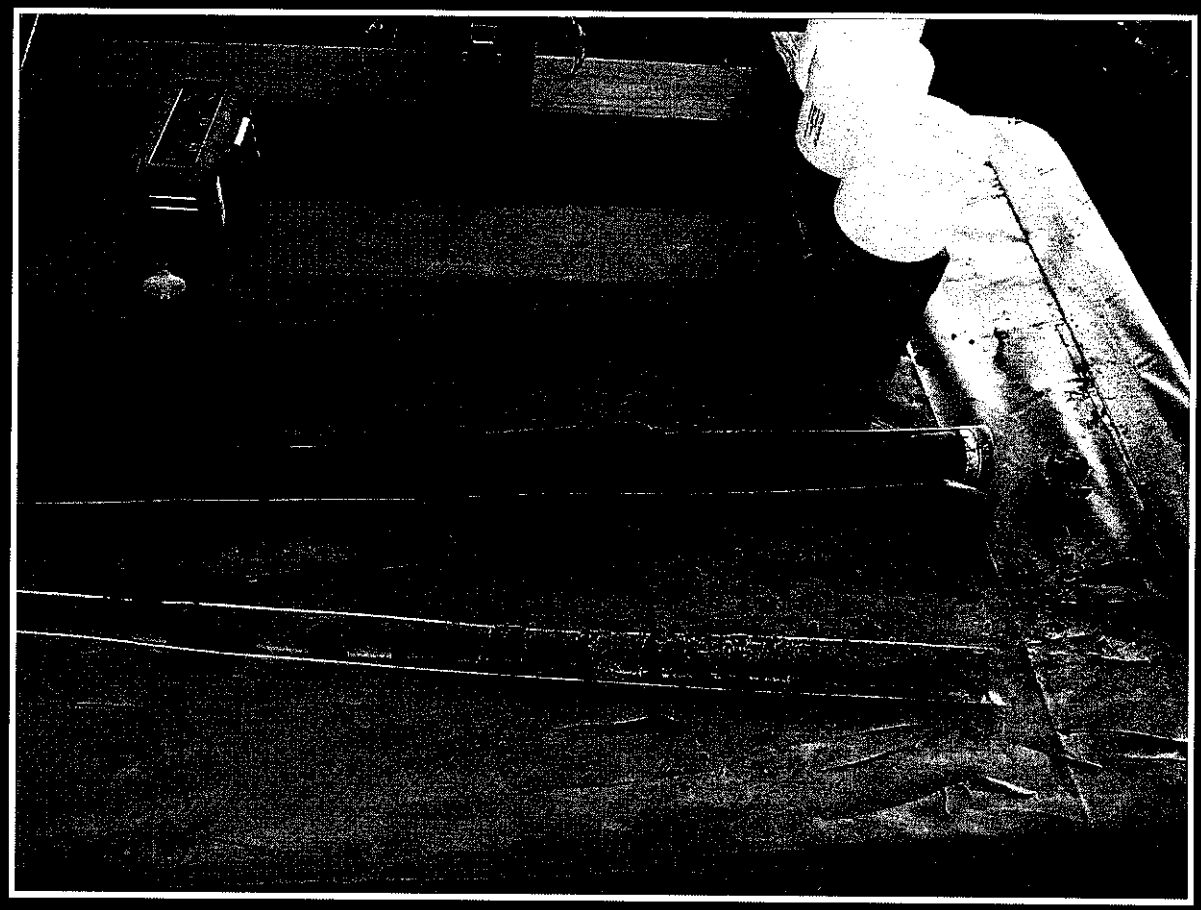
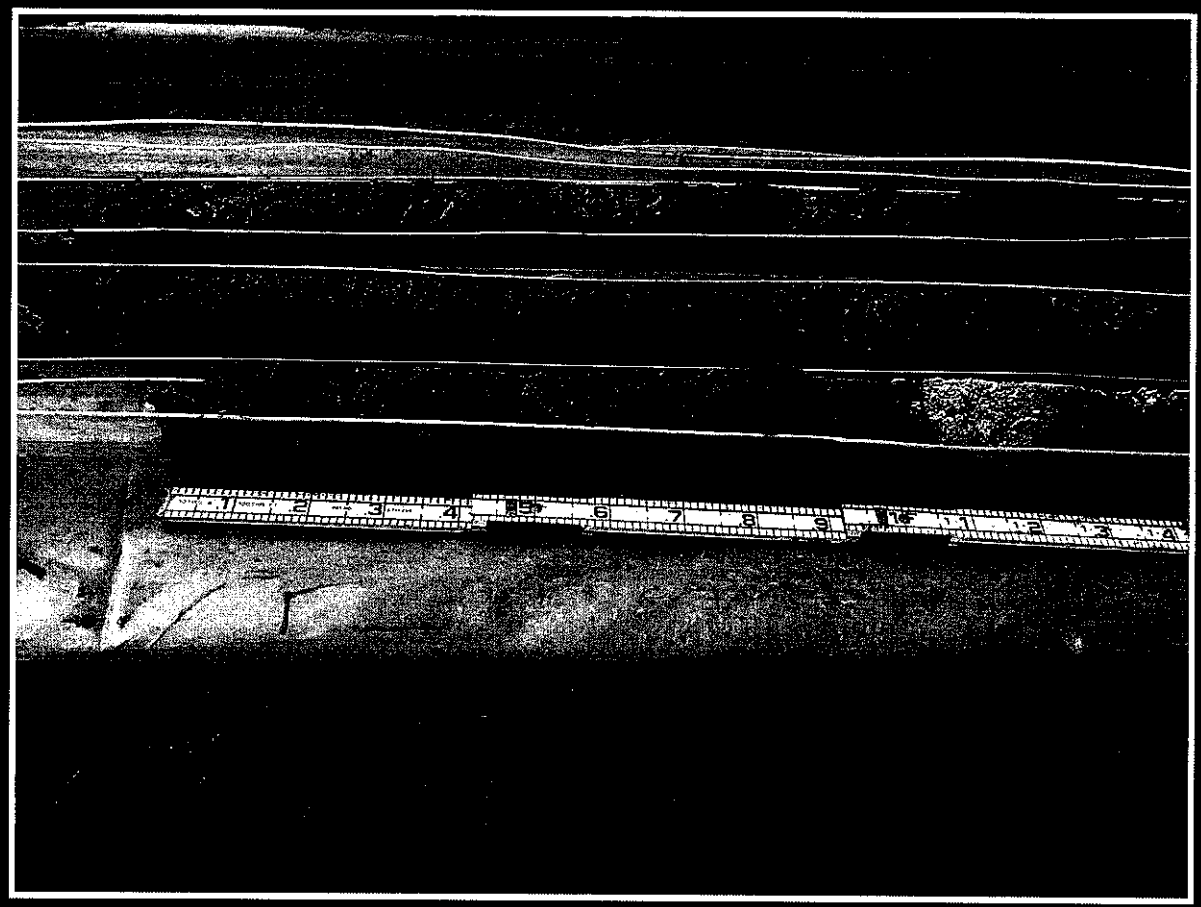
Presentation of Preliminary RI Results

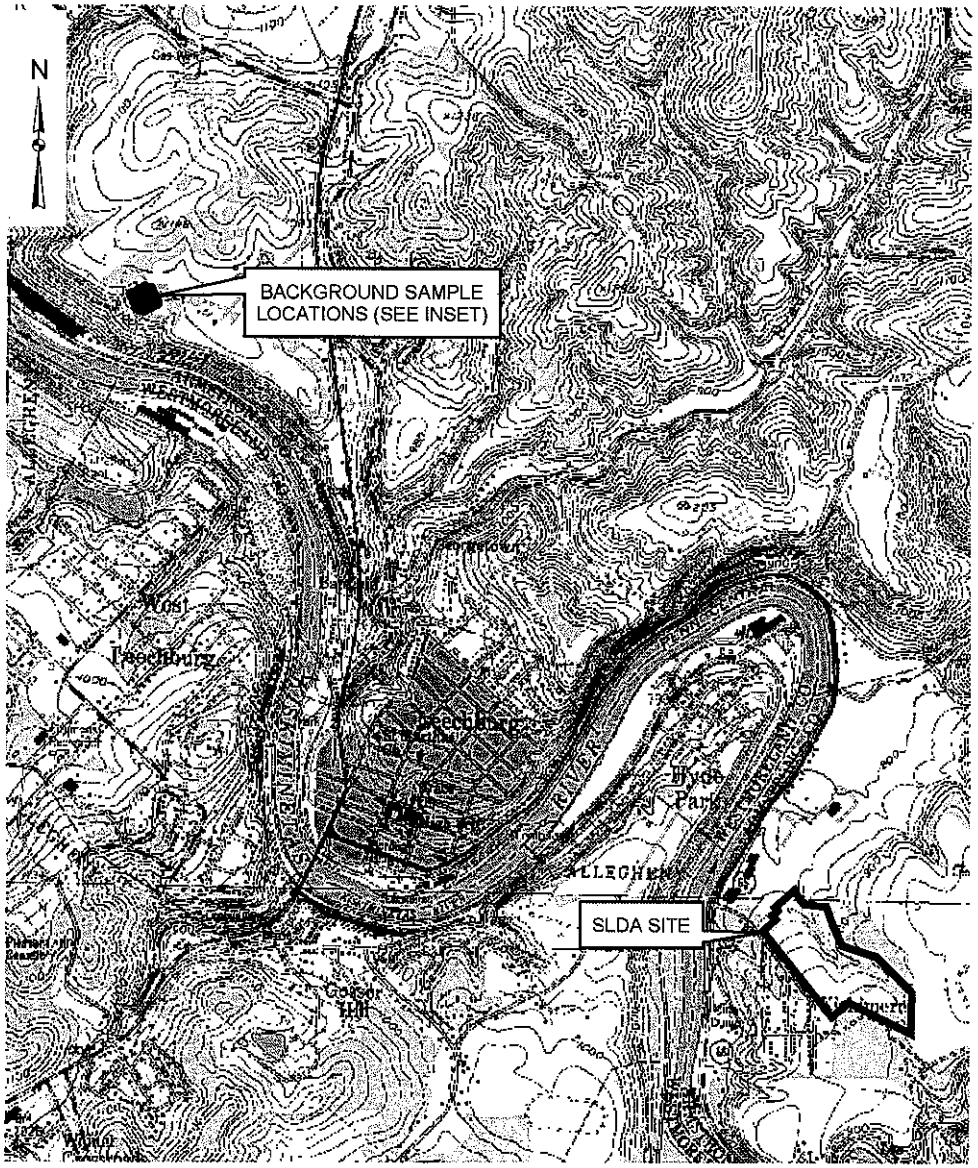
- Surface and Subsurface Soil Sampling

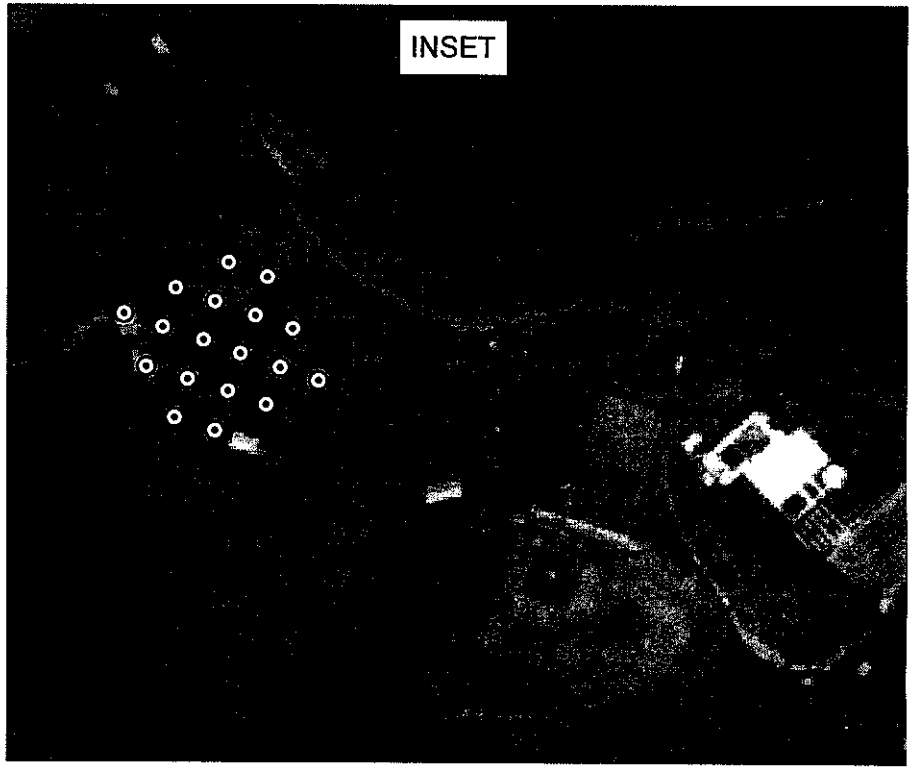


Presentation of Preliminary RI Results

- Surface and Subsurface Soil Sampling







Background Soil Sampling Location Map

Legend

- Background Soil Sample Location
- Site Boundary

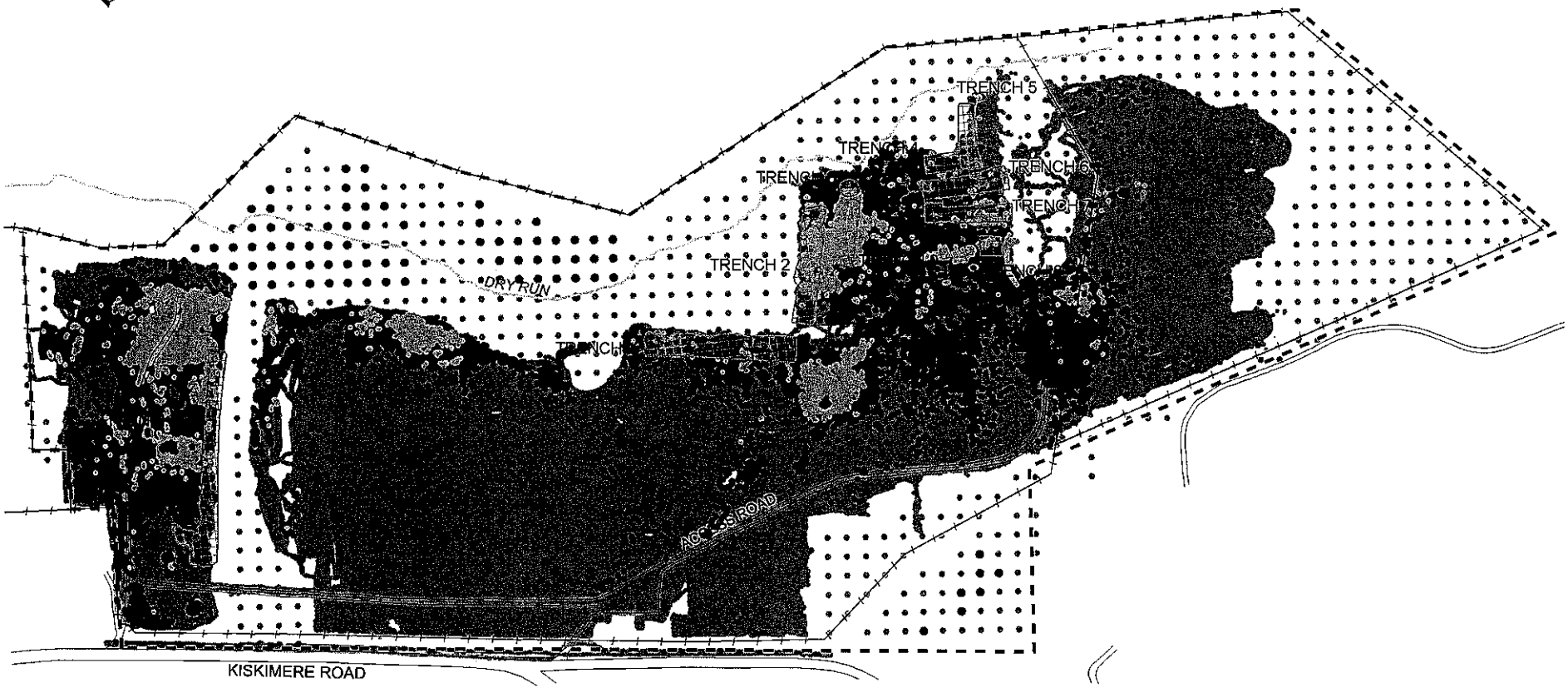
Background Surface Soil Sampling Results

Radionuclide	Number of Samples	Number of Detections	Minimum Concentration (pCi/g)	Maximum Concentration (pCi/g)	Average Concentration (pCi/g)
Am-241	18	No Detections	No Detections	No Detections	No Detections
Pu-239	18	No Detections	No Detections	No Detections	No Detections
Pu-241	18	No Detections	No Detections	No Detections	No Detections
Ra-228	18	18	0.916	1.42	1.07
Th-232	18	18	0.742	1.31	1.06
U-234	18	18	0.611	1.32	0.935
U-235	18	3	0.174	0.19	0.180
U-238	18	18	0.744	1.25	0.975

Background Subsurface Soil Sampling Results

Radionuclide	Number of Samples	Number of Detections	Minimum Concentration (pCi/g)	Maximum Concentration (pCi/g)	Average Concentration (pCi/g)
Am-241	18	No Detections	No Detections	No Detections	No Detections
Pu-239	18	No Detections	No Detections	No Detections	No Detections
Pu-241	18	No Detections	No Detections	No Detections	No Detections
Ra-228	18	18	1.20	1.66	1.43
Th-232	18	17	1.10	1.77	1.50
U-234	18	18	0.720	1.28	1.09
U-235	18	4	0.172	0.269	0.222
U-238	18	18	0.711	1.41	1.04

Gamma Walkover Results

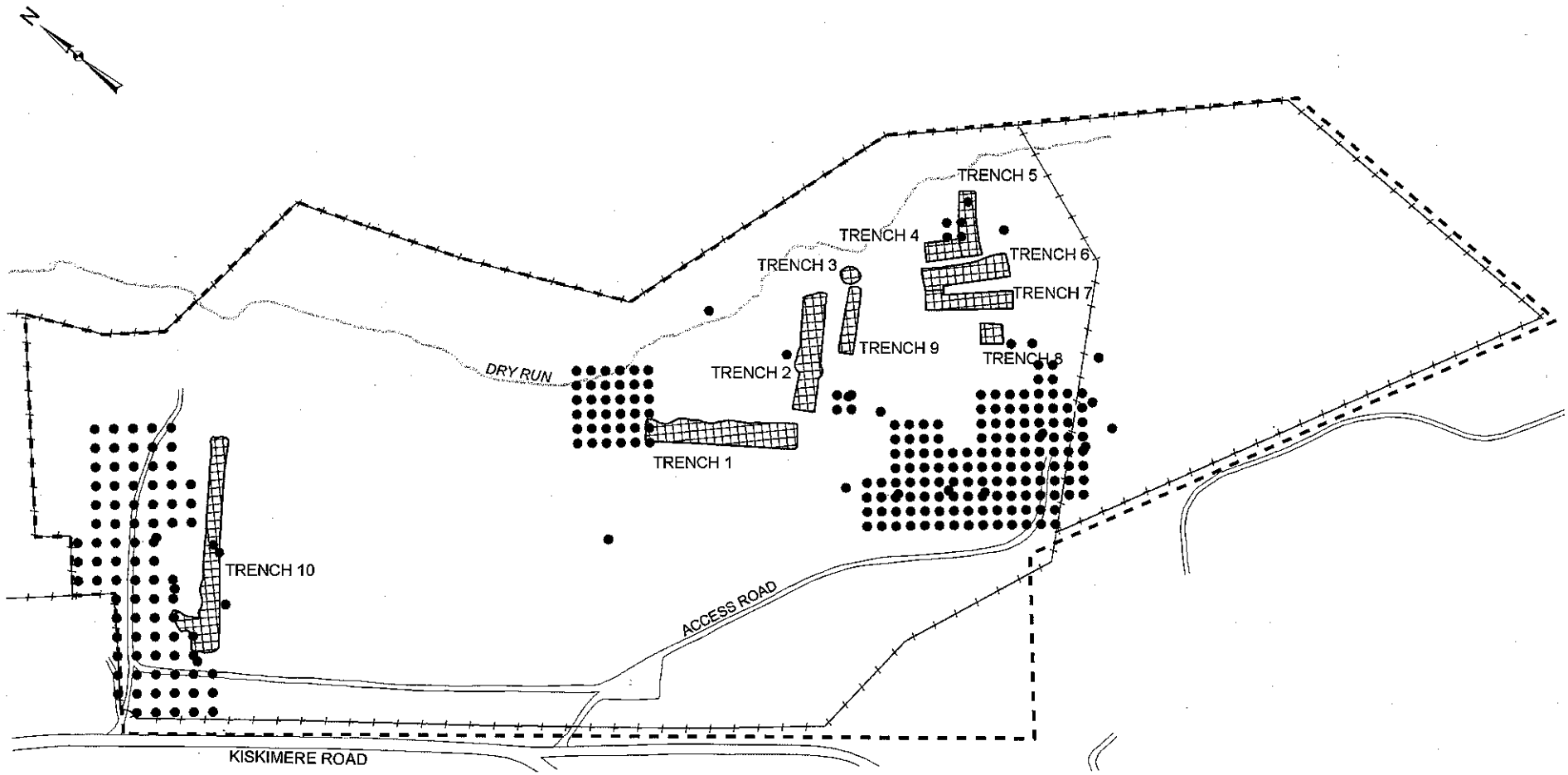


Legend

- Gamma Result <= UTL
- **Gamma Result > UTL and <= Twice the Mean**
  - 12,105 - 15,000 CPM
  - 15,000 - 18,000 CPM
  - 18,000 - 21,000 CPM
  - 21,000 - 24,000 CPM
  - 24,000 - 25,494 CPM
- Gamma Result > Twice the Mean

Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet

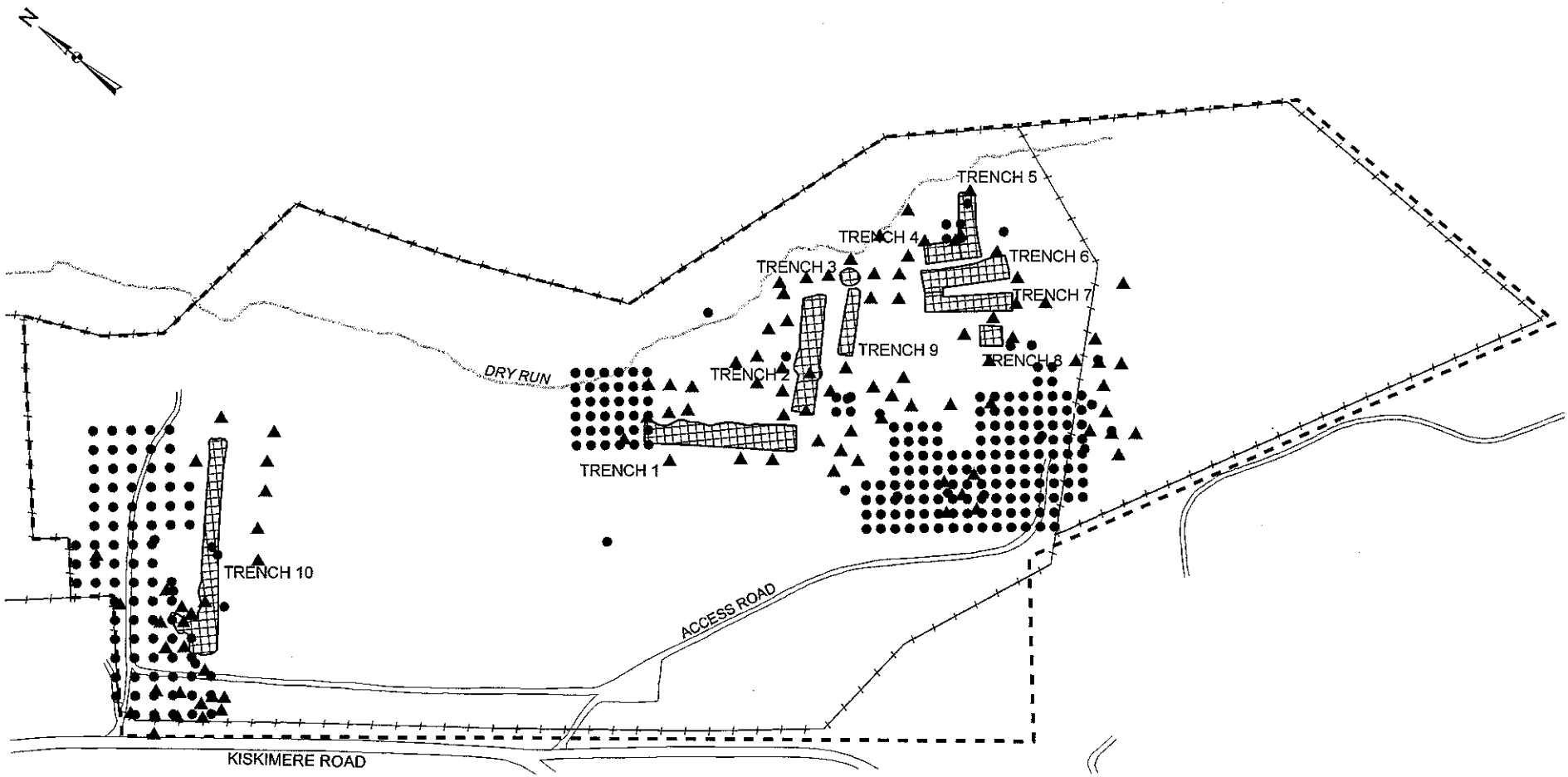


Historical Surface Soil Sample Locations

Legend

- Historical Surface Soil Sample Location
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet



RI and Historical Surface Soil Sample Locations

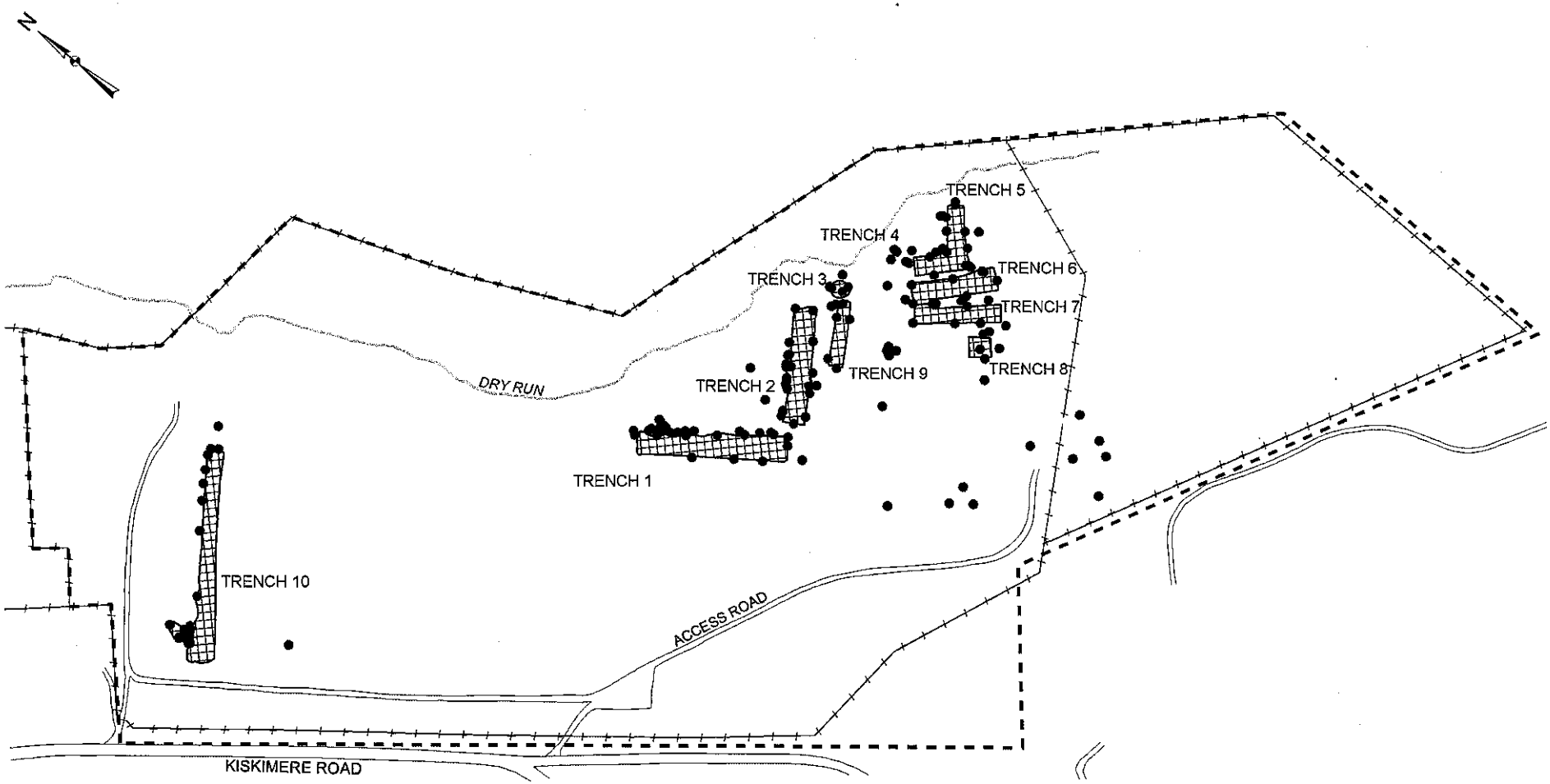
Legend

- ▲ Surface Soil Sample Location from Current RI (September - December 2003)
- ● Historical Surface Soil Sample Location
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet

Surface Soil Sampling Results

Radionuclide	Number of Samples	Number of Detections	Minimum Detected Value (pCi/g)	Maximum Detected Value (pCi/g)	Average Detected Value (pCi/g)
Am-241	102	16	0.464	309	30.6
Pu-239	102	19	0.145	325	24.21
Pu-241	102	5	24.40	628	168.8
Ra-228	102	102	0.797	2.23	1.24
Th-232	102	102	0.447	1.76	1.20
U-234	102	102	0.569	71.3	4.95
U-235	102	57	0.150	11.9	0.599
U-238	102	102	0.435	17.0	1.56

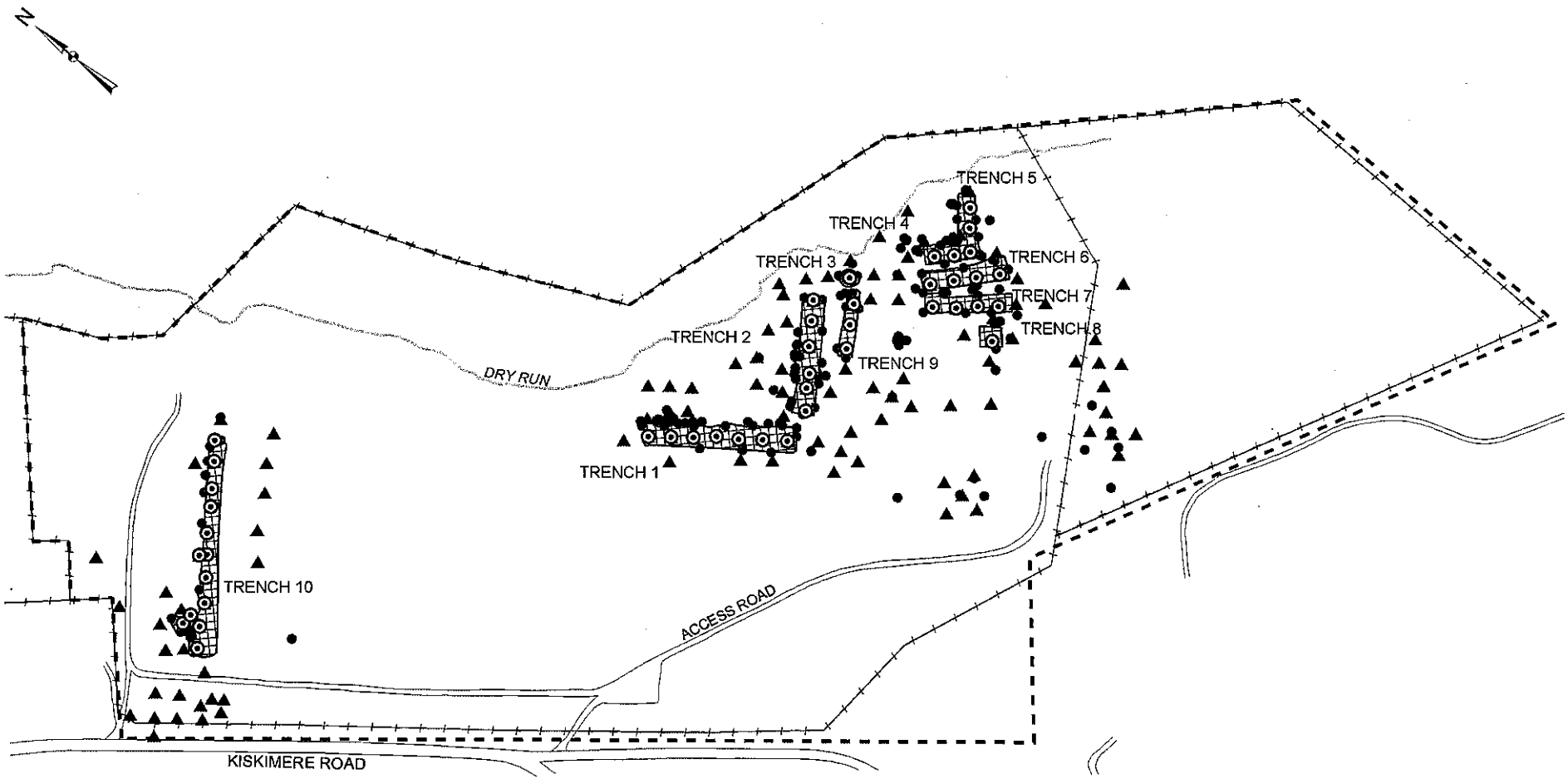


Historical Subsurface Soil Sample Locations

Legend

- Historical Subsurface Soil Sample Location
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet



RI and Historical Subsurface Soil Sample Locations

Legend

- Subsurface Soil Sample Location from Current RI (September - December 2003)
- Trench Boring Location from Current RI (September - December 2003)
- Historical Subsurface Soil Sample Location
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet

Subsurface Soil Sampling Results

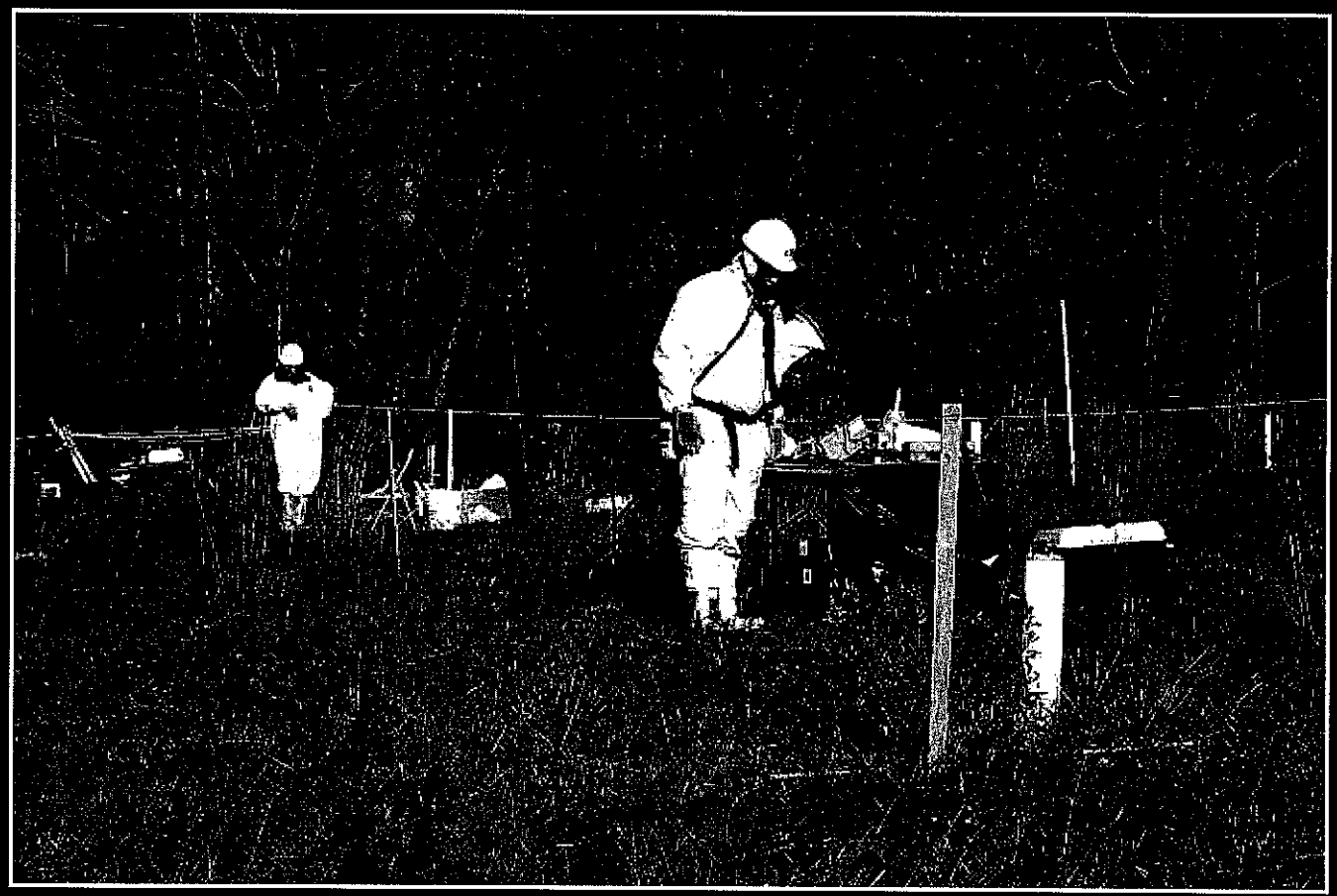
Radionuclide	Number of Samples	Number of Detections	Minimum Detected Value (pCi/g)	Maximum Detected Value (pCi/g)	Average Detected Value (pCi/g)
Am-241	234	7	0.117	8.91	4
Pu-239	234	11	0.118	6.40	1.88
Pu-241	234	4	13.9	27.4	21.42
Ra-228	234	234	0.368	2.19	1.35
Th-232	234	232	0.282	2.25	1.30
U-234	234	234	0.365	508	6.32
U-235	234	61	0.155	46.9	1.94
U-238	234	233	0.230	36.9	1.55

Presentation of Preliminary RI Results

- Trench Investigations & Sampling

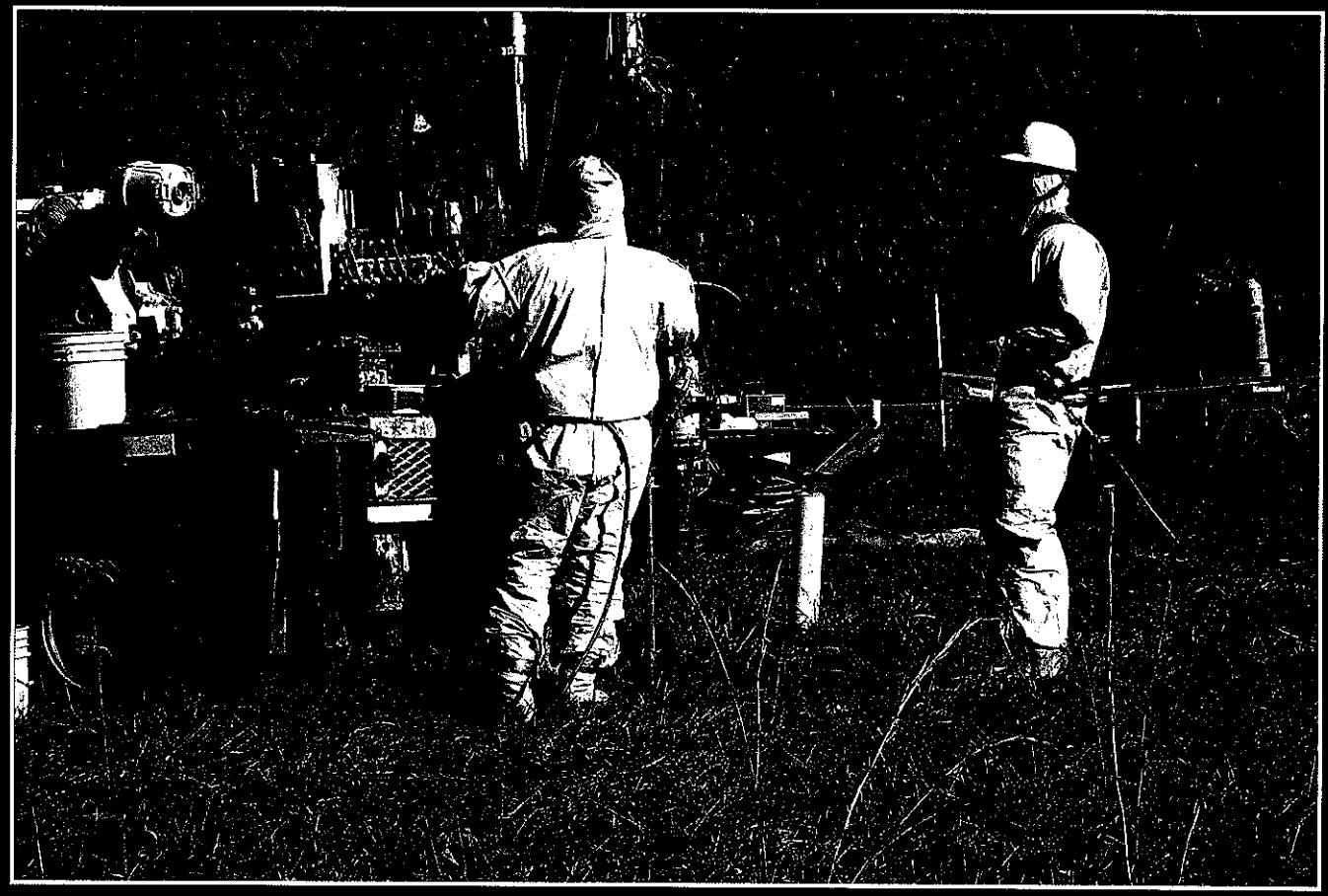
Presentation of Preliminary RI Results

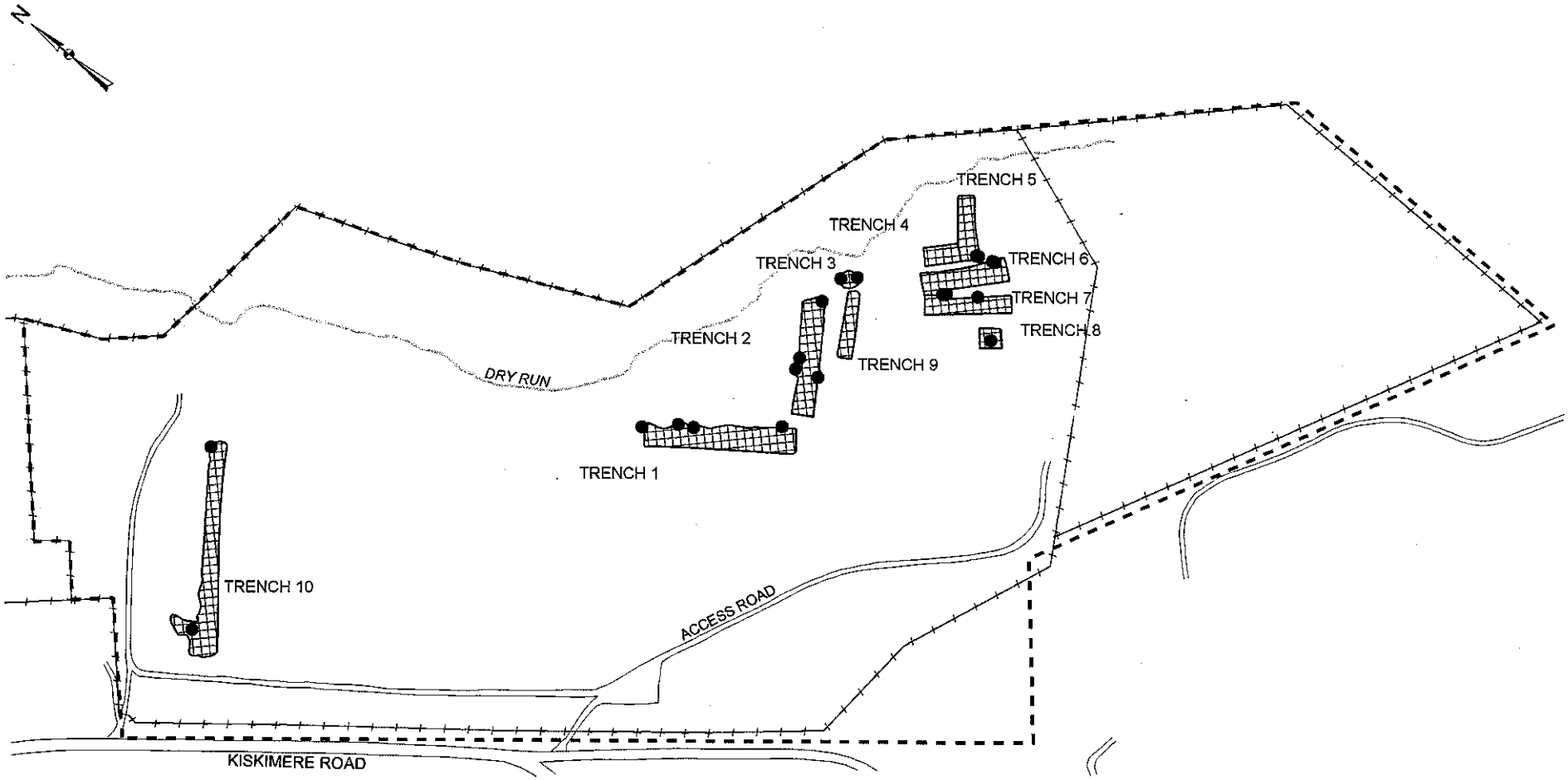
- Trench Investigations & Sampling



Presentation of Preliminary RI Results

- Trench Investigations & Sampling



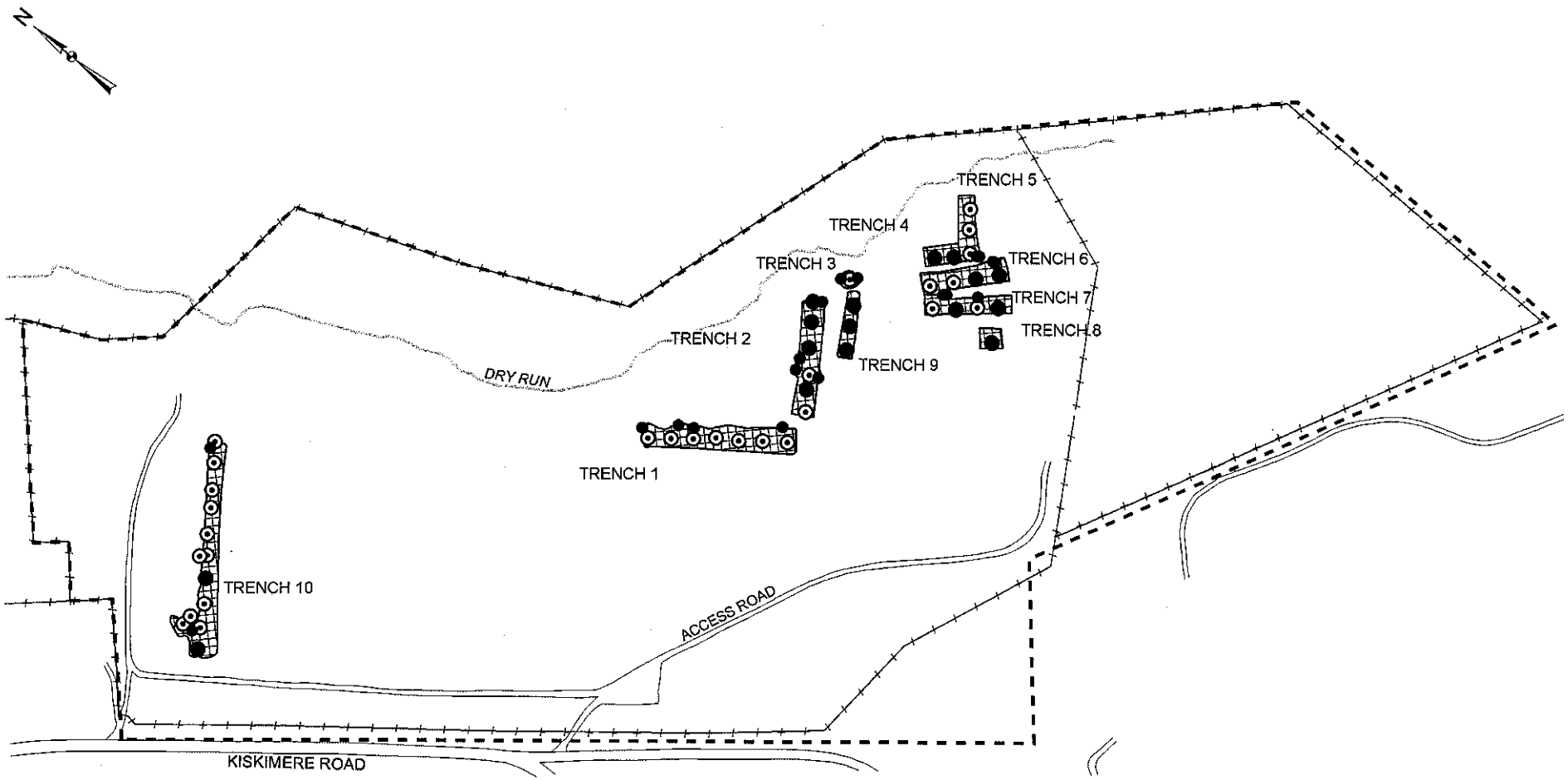


Historical Trench Waste Sample Locations

Legend

- Historical Subsurface Soil Location that Encountered Waste
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet



Legend

- Trench Boring Location from Current RI (September - December 2003) That Encountered Waste
- Trench Boring Location from Current RI (September - December 2003)
- Historical Subsurface Soil Location that Encountered Waste
- Approximate Limits of Disposal Trenches from Geophysical Survey

RI and Historical Trench Boring Locations

0 125 250 Feet

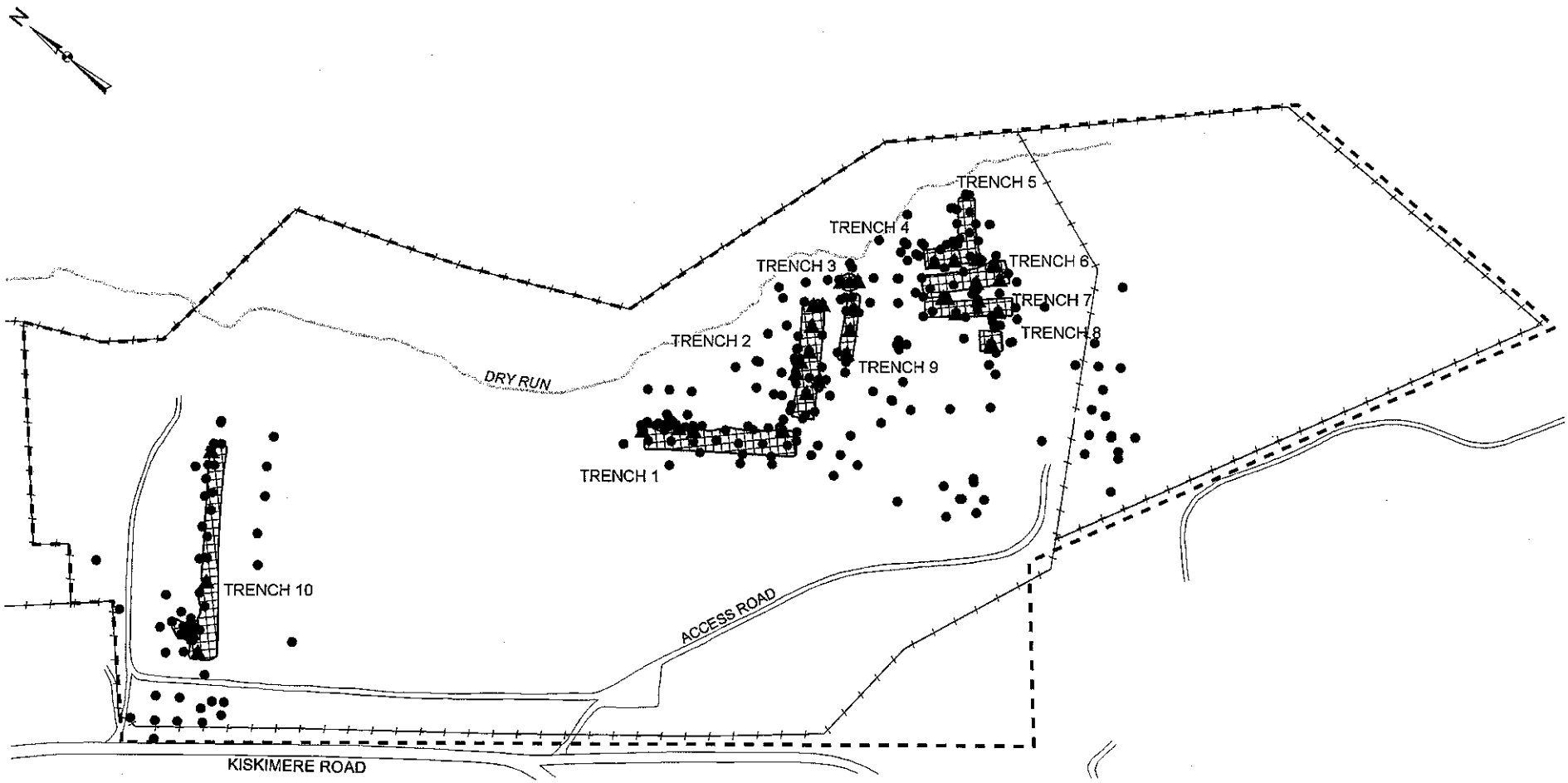
Trench Waste Sampling Results

Radionuclide	Number of Samples	Number of Detections	Minimum Detected Value (pCi/g)	Maximum Detected Value (pCi/g)	Average Detected Value (pCi/g)
Am-241	13	No Detections	No Detections	No Detections	No Detections
Pu-239	13	No Detections	No Detections	No Detections	No Detections
Pu-241	13	No Detections	No Detections	No Detections	No Detections
Ra-228	13	13	0.974	4.33	1.64
Th-232	13	12	0.667	2.60	1.56
U-234	13	13	11.8	2,180	530.6
U-235	13	13	0.699	72.2	23.88
U-238	13	13	1.55	582.0	101.9

Waste Samples Collected from Trenches

Samples for Analytical Testing from Trench Borings with Waste

Boring Location	Depth Fraction	Sample Fiddler Meter Reading (cts/min)	Background Fiddler Meter Reading (cts/min)	Observations in Soil Boring
TR02-25	4 to 6 feet	13,595	14,628	Waste like materials wood,nails,cinders, rubber tubing, thin mil plastic
TR02-24	8 to 10 feet	26,204	14,628	Brown paper and wood
TR02-23	8 to 12 feet	41,983	14,628	Glass, white damp filter type material, very fibrous insulation
TR02-21	11 to 12.5 feet	17,790	14,814	Wood and thick mil plastic
TR04-40	11 to 13 feet	13,358	10,414	Wood, plastic, paint chips, thin black fibers
TR04-39	8 to 9.3 feet	11,579	10,414	Soil type is different from upper soils, similar to TR04-40 11 to 13 feet
TR-06-38	16 to 17.6 feet	12,563	11,293	Black felt-like fibers
TR-06-37	15 to 16 feet	23,247	11,293	Filter paper
TR07-33	8 to 15.8 feet	20,577	14,568	Waste particle board
TR07-31	3.5 to 5.5 feet	19,729	11,504	Black fibrous material
TR09-28	5.5 to 7.8 feet	13,064	12,254	Black fibers
TR09-27	8 to 9.5 feet	15,418	14,628	Filter paper, latex rubber and wood pieces
TR09-26	8 to 10 feet	14,376	14,628	Wood fragments



Site-wide RI and Historical Boring Locations

Legend

- ▲ Subsurface Soil Location that Encountered Waste
- ● Subsurface Soil Sample Location
- Approximate Limits of Disposal Trenches from Geophysical Survey

0 125 250 Feet

Presentation of Preliminary RI Results

- Groundwater Investigations & Sampling

Presentation of Preliminary RI Results

- Groundwater Investigations & Sampling

Presentation of Preliminary RI Results

- Groundwater Investigations & Sampling

Presentation of Preliminary RI Results

- Surface Water, Groundwater Seep, & Sediment Sampling

Presentation of Preliminary RI Results

- Surface Water, Groundwater Seep, & Sediment Sampling

Field Work Summary

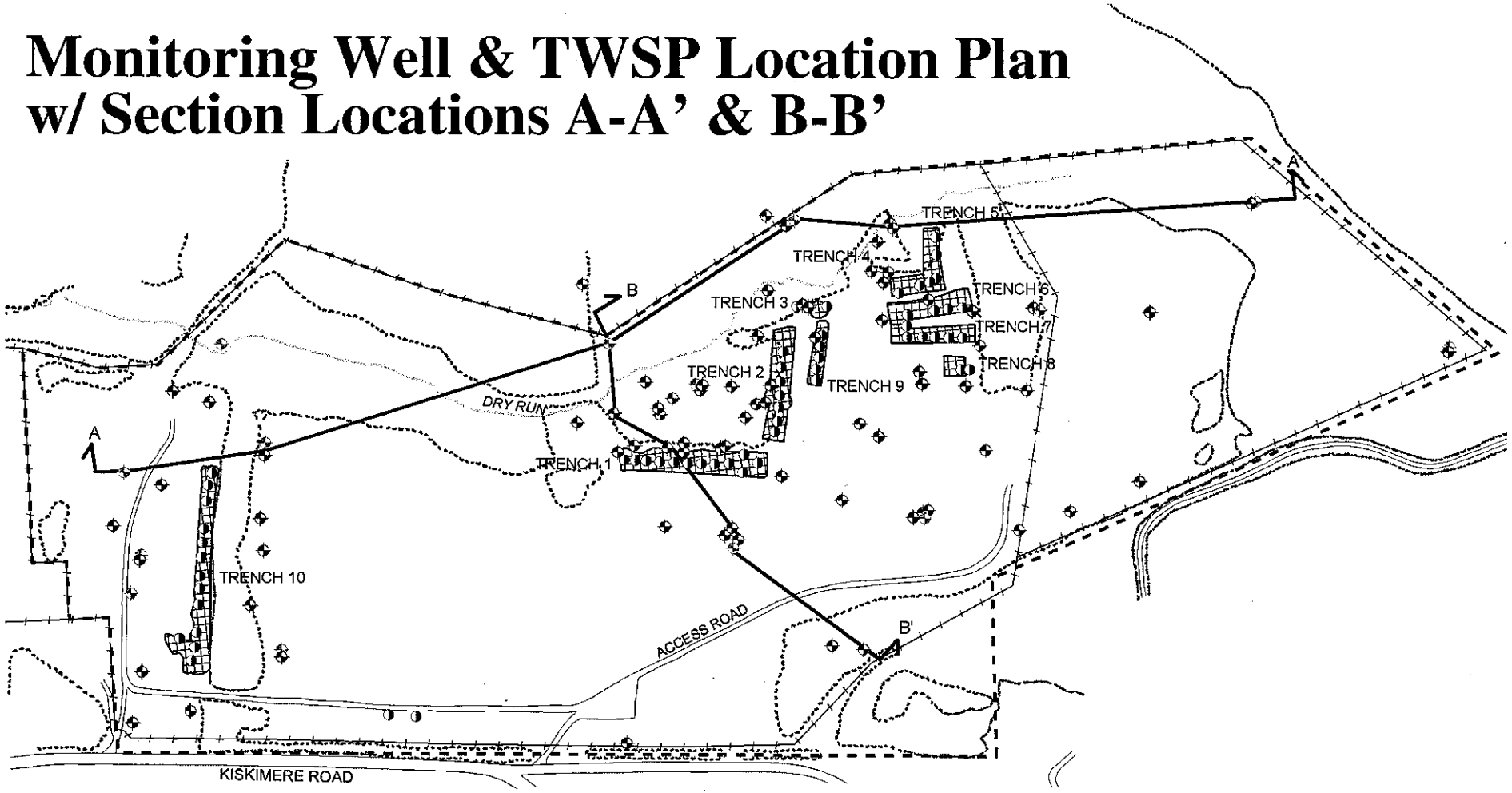
- 3,265 Linear Feet of Drilling Performed
- 44 Trench Borings Completed
- 168 Soil Borings Completed
- 19 Wells Installed
- 566 Samples Collected
- 4 Months of Onsite Intrusive Activities

No releases of radiological or chemical constituents, and no injuries or accidents.

Waste Samples Collected from Trenches

- 13 waste samples collected from 118 trench samples
- Wastes consisted of paper, wood, plastic, chemwipes, glass, and miscellaneous man-made materials
- Field observations consistent with BWXT records
- Waste materials found to be very localized and not in continuous layers
- All wastes encountered at a depth of greater than 4 feet below ground surface

Monitoring Well & TWSP Location Plan w/ Section Locations A-A' & B-B'

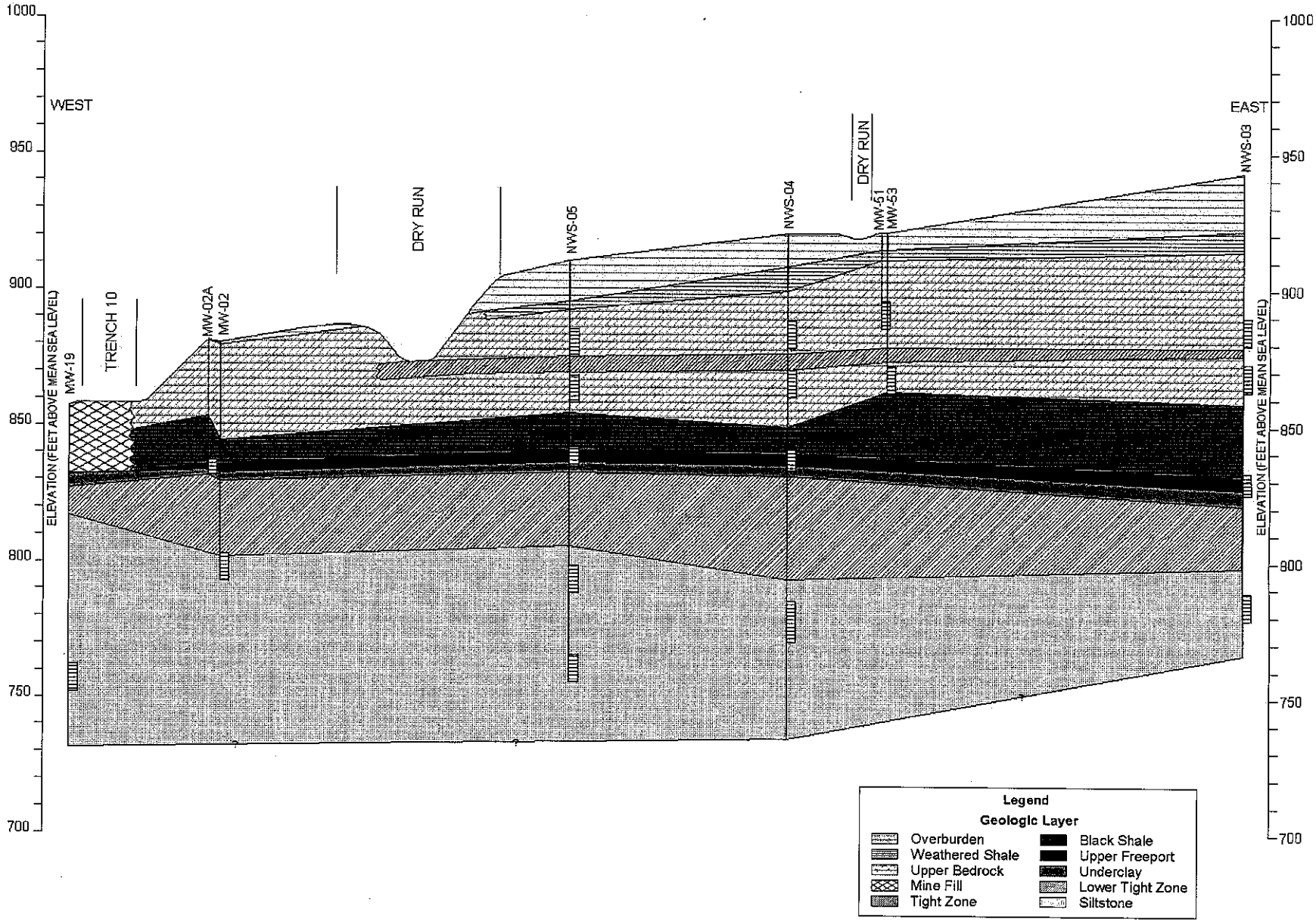


Legend

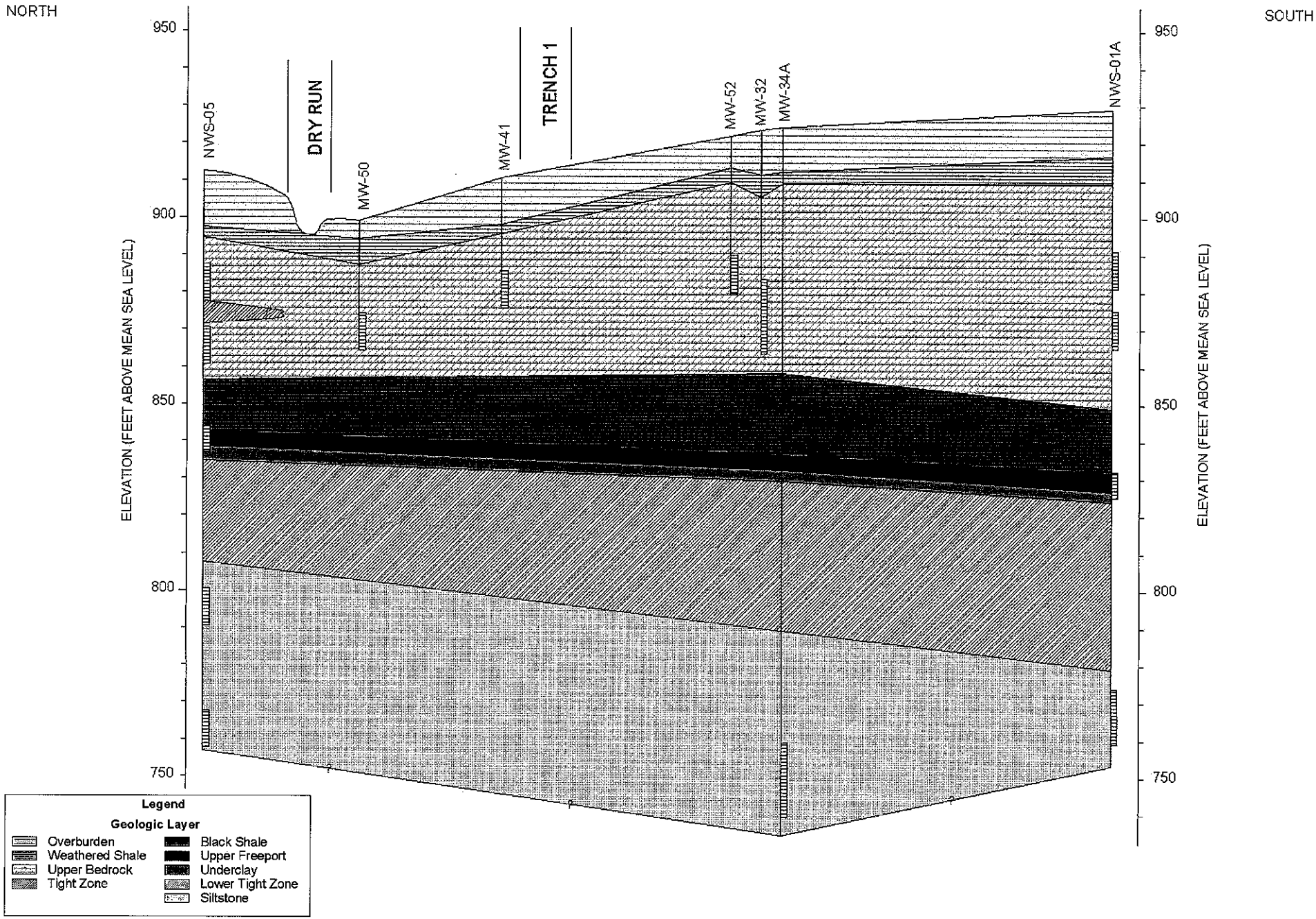
- Monitoring Well Location
- Temporary Waste Sample Point
- Overburden Zone
- First Shallow Bedrock Zone
- Second Shallow Bedrock Zone
- Upper Freeport Zone
- Deep Bedrock Zone
- Approximate Limits of Disposal Trenches from Geophysical Survey
- A A' Geologic Cross Section Line

0 125 250 Feet

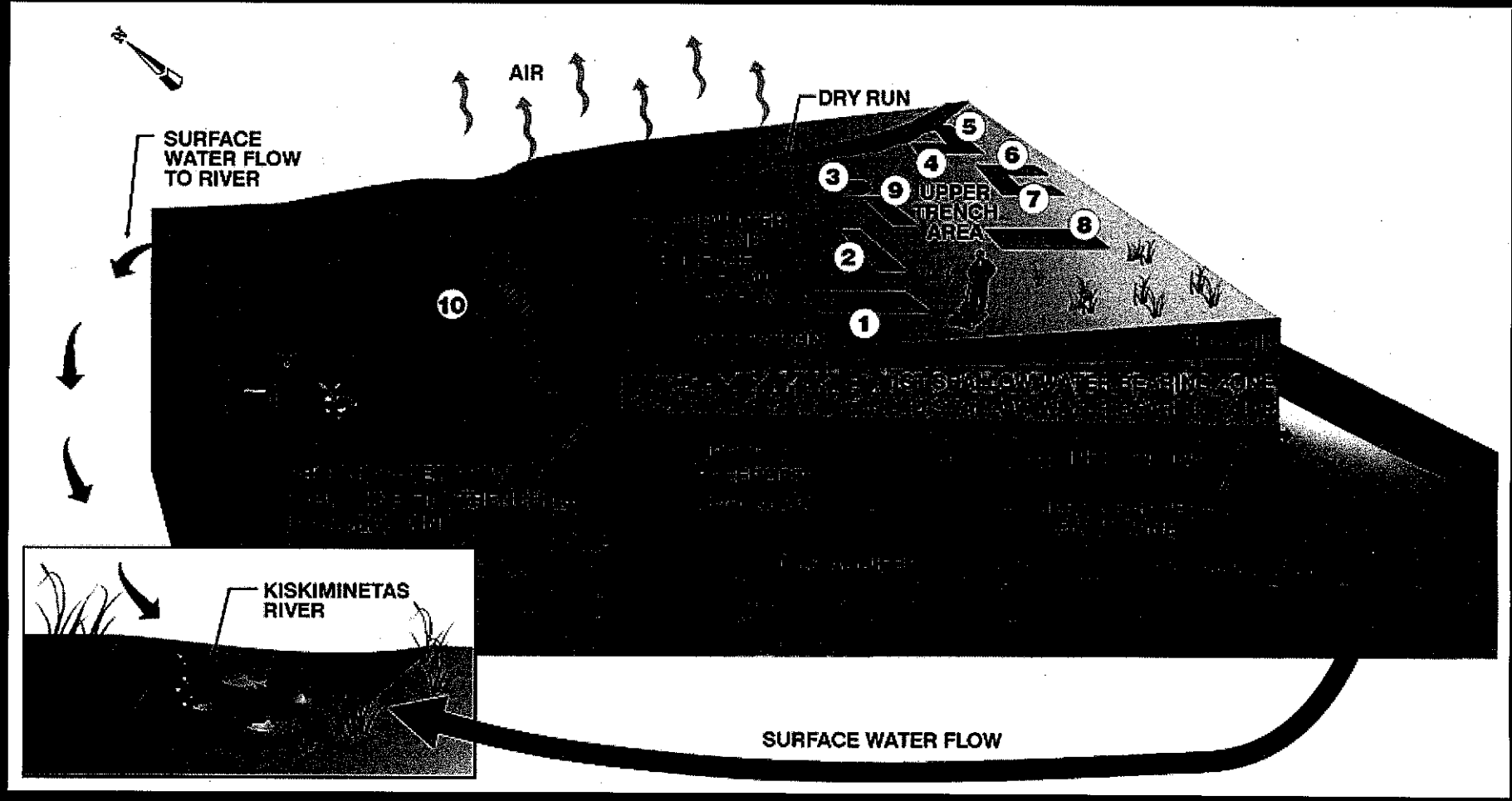
SLDA Geologic Cross-Section A-A'



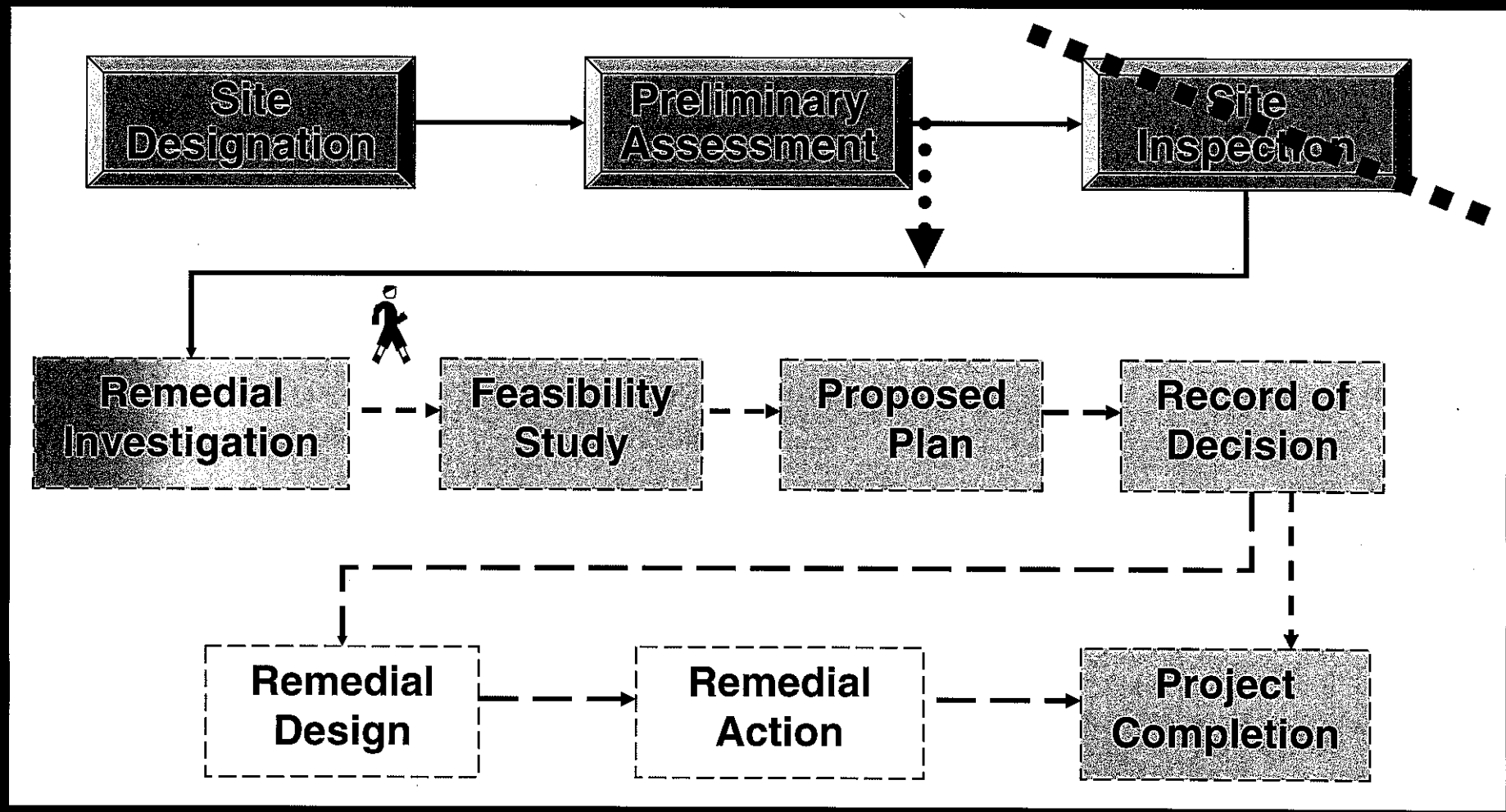
SLDA Geologic Cross-Section B-B'



Site Conceptual Model



CERCLA Process



Remedial Investigation (RI)

Tasks Remaining to Complete

- Complete Groundwater, Surface Water, and Sediment Sampling
- Perform Risk Assessment
- Write Remedial Investigation Report

Feasibility Study (FS)

Develop and screen alternatives:

- Identify remedial action objectives,
- Identify potential remedial technologies,
- Screen the technologies based on protectiveness of human health and the environment, effectiveness, implementability, and cost, and
- Assemble technologies and their associated requirements into potential alternatives.

Feasibility Study (FS) Cont'd.

Detailed analysis of Remedial Alternatives based on:

- Overall protection of human health and the environment,
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs),
- Long-term effectiveness and permanence,
- Reduction of toxicity, mobility, or volume,
- Short-term effectiveness,
- Implementability,
- Cost,
- State acceptance, and
- Community acceptance

Project Schedule*

Step	Start	Finish
Remedial Investigation (RI) [1]	Feb. 2002	Dec. 2004
Feasibility Study (FS) [1]	Oct. 2003	Jun. 2005
Proposed Plan (PP) [2]	Jun. 2004	Nov. 2005
Record of Decision (ROD) [1]	Oct. 2005	Jun. 2006
Remedial Design (RD)	Jan. 2006	Aug. 2006
Remedial Action (RA) [1]	Aug. 2006	Oct. 2008

* Schedule assumes unconstrained funding

1 - Informal Public Information Sessions will be held during this phase

2 - Formal Public Meeting will be held for public input during this phase

Questions?

- Website: http://www.lrp.usace.army.mil