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POST-EXCAVATION AS-BUILT REPORT FOR AREA 7, PHASE I

FERNALD CLOSURE PROJECT
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LIST OF ACRONYMS AND ABBREVIATIONS

A2PII	Area 2, Phase II
A7PI	Area 7, Phase I
A7PII	Area 7, Phase II
A7PIII	Area 7, Phase III
amsl	above mean sea level
ASCOC	area-specific constituent of concern
AWWT	Advanced Waste Water Treatment (Facility)
COC	constituent of concern
D&D	Decontamination and Dismantlement
DOE	U.S. Department of Energy
DSDP	Demolition, Soil and Disposal Project
EMS	Excavator Mounted System
FCP	Fernald Closure Project
FRL	final remediation level
HPGe	high purity germanium (detector)
IMHR	Impacted Material Haul Road
mg/kg	milligrams per kilogram
NaI	sodium iodide
OSDF	On-Site Disposal Facility
OU	Operable Unit
pCi/g	picoCuries per gram
PSP	Project Specific Plan
RI/FS	Remedial Investigation/Feasibility Study
RSS	Radiation Scanning System
RTIMP	Real-Time Instrumentation Measurement Program
SEP	Sitewide Excavation Plan
SP-7	Soil Stockpile 7
WAC	waste acceptance criteria
WPRAP	Waste Pits Remedial Action Project

1.0 INTRODUCTION

This document has been prepared to summarize Demolition, Soil and Disposal Project's (DSDP) remedial excavations within Area 7, Phase I (A7PI). This report also provides details of soil characterization activities conducted to support this remedial excavation, and to establish soil constituent of concern (COC) concentrations at the final excavation grade. Finally, this report provides information related to future plans for A7PI, as well as additional phases for Remediation Area 7, including Area 7, Phase II (A7PII) and Area 7, Phase III (A7PIII).

1.1 A7PI Description

Area 7, Phase I includes a 5-acre area east of Silos 1 and 2, as shown on Figure 1-1. Specifically, this includes the areas excavated to support construction of the Operable Unit (OU) 4 Silos Project remediation facilities. The boundaries of this area include: the Lime Sludge Ponds excavation area and the Building 30/45 parking lot to the east, the Transfer Tank Area to the west, the OU4 Detention Basin to the south, and 2nd Street to the north.

Based on current or future land uses, this portion of the site was subdivided into six distinct areas for remedial excavation, as follows:

- Remediation Facility Footprint
- High Nitrate Tank (18M)
- K-65 Trench.
- Warehouse
- Railroad Embankment
- Impacted Material Haul Road (IMHR).

1.2 Purpose of Remedial Excavation

The A7PI soil remedial excavation was performed during the Summer and Fall of 2002 in order to prepare a remediated footprint for construction of the Silos Project Remediation Facility and support structures at the Fernald Closure Project (FCP). This activity involved general excavation and grading, as well as removal of at- and below-grade structures and utilities following decontamination and dismantlement (D&D) of the area. More information on this remedial excavation is provided in Section 2.0. The final goal for this remedial excavation was to remove all soil exceeding the established final remediation levels (FRLs). This was demonstrated through soil characterization activities, as discussed in Section 3.0.

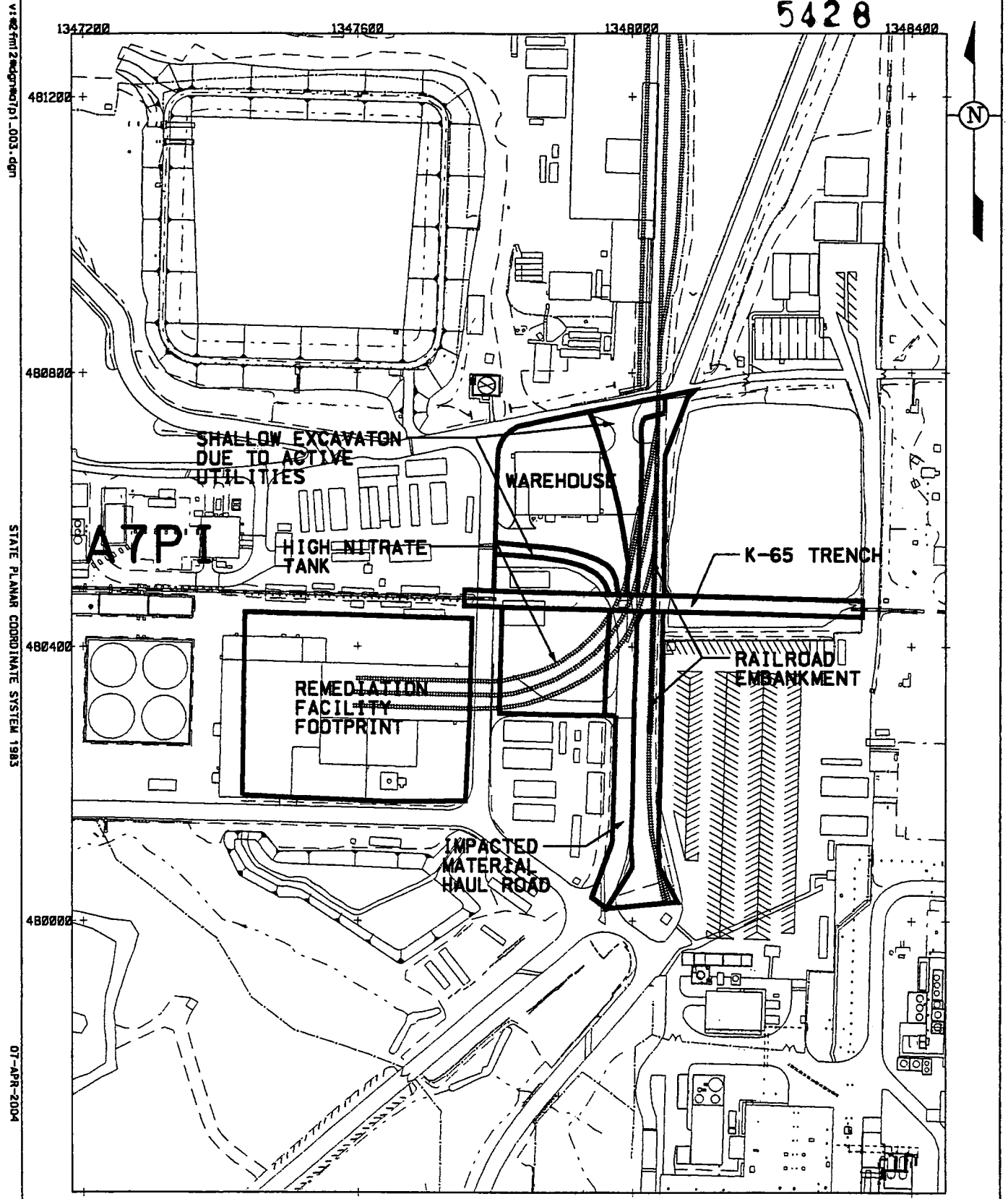


FIGURE 1-1. A7PI LOCATION MAP

2.0 A7PI REMEDIAL EXCAVATION SUMMARY

Phase I remedial excavation was performed in Area 7 during the Summer and Fall of 2002 in order to minimize the amount of material that would require off site shipment in 2006. Several characterization documents and variances were submitted in support of the remedial design and the execution of the Area 7 Excavation Plan, Phase I (DOE 2002a). A short chronology of these documents and the activities that they govern is presented below.

Past Document Submittals:

- Project Specific Plan (PSP) for WAC Attainment Sampling of Area 7 Soils (DOE 1998a) – Sampled 10/4/98
  - Variances to plan for Predesign of A7PI (FRL sampling) – *Sampled 3/12/02*
  - Variances to plan for A7PI Predesign of K-65 Trench (WAC/FRL) – Sampled 3/21/02
- Area 7 Excavation Plan, Phase I – Performed 5/21/02 through 11/14/02
- PSP for A7PI Precertification Physical Sampling and Real-Time Scan (DOE 2002b)
  - Real-Time Scans performed 9/17/02 through 11/14/02
  - Precertification Physical Samples performed 9/11/02 through 10/14/02.

Planned Document Submittals:

- Area 7 Predesign Sampling PSP – April 2004
- Certification Activities Phase II
- Certification Activities Phase III.

The following section discusses the excavation summary broken into six distinct areas:

- Remediation Facility Footprint
- High Nitrate Tank
- K-65 Trench
- Warehouse
- Railroad Embankment
- Impacted Material Haul Road.

Future Area 7 (Phases II and III) remedial excavation discussions can be found in Section 4.0.

2.1 Remediation Facility Footprint

Excavation within the area identified as the Remediation Facility footprint on As-Built Drawing 99X-5500-G-00784 consisted of general excavation of soil and surface aggregate to a depth of approximately 5 to 6 feet to elevation 570 feet above mean sea level (amsl). The preliminary design grade was based on existing OU5 Remedial Investigation/Feasibility Study (RI/FS) and predesign characterization data (DOE 1995a and 1995b) and included the majority of the excavation required for construction of the Remediation Facility.

Initially, a large portion of the gravel area was transported, inappropriately, to construct a laydown area within the northwest corner of Area 2, Phase II (A2PII). During removal of the gravel the underlying geosynthetic fabric was breached, allowing some of the surface soils to become mixed with the gravel as it was loaded. Due to the status of A2PII pending precertification, the gravel was re-excavated, plus an additional 6-inch minimum depth of soil, and hauled for disposal in the On-Site Disposal Facility (OSDF). Additional excavation was required within A2PII upon discovery of unknown buried concrete, piping pieces, and spent cylinders. Further discussion of this area will be found in the A2PII Implementation Plan (DOE 2003).

The Remediation Facility footprint's proposed limit of excavation was adjusted two times, once prior to beginning excavation and once during excavation. Prior to beginning excavation, the northern portion of this area had initially included a 1-foot surface scrape along the K-65 Trench, intended to protect existing active utilities. The 1-foot scrape was deemed unnecessary and not performed because the majority of the material to be excavated was gravel. This also ensured protection of the utilities, provided additional parking, and eliminated safety concerns related to the close proximity of Trailer 413. The 1-foot scrape of the Silos Access Road was also eliminated for protection of the active utilities and to maintain usage of the road. During excavation, the area including the storm sewer system which flows west to east along the northern edge of the planned excavation to elevation 570 feet amsl, was discontinued at elevation 572 feet amsl in order to maintain adequate cover to protect the storm sewer and due to request from Silos engineering personnel. Silos engineering personnel stated that excavation to elevation 570 feet amsl on the north side of the storm sewer risked exposure of unstable soils unsuitable for construction of the Remediation Facility foundation.

Additional excavation occurred below elevation 570 feet amsl in the Remediation Facility footprint, as required for constructing the Remediation Facility foundations, was performed by the Silos Construction

Group of the Silos Project, but loaded into DSDP trucks for disposal at the OSDF. No Design Change Notices or Variance/Field Change Notices were submitted because this additional excavation was planned for under the Silos Project scope of work and outside the DSDP scope. The debris and impacted soil within the remediation area was excavated and disposed at the OSDF. Side slopes along the perimeter were cut no steeper than 2H:1V. The remaining surface was both visually inspected for man-made materials and monitored using real-time scanning to determine no additional excavation was required, as discussed in Section 3.2.2. Backfilling in the area surrounding the building to match design grades was also performed by the Silos Project.

Existing stormwater structures, which drained south to the OU4 Detention Basin, were blocked to prevent drainage during excavation. The area was graded to force stormwater runoff to the northwest corner where surface water collected during this excavation was pumped to the K-65 Trench which was previously excavated. Upon verification that contamination had been removed, the stormwater structures were returned to their original configuration. Existing stormwater controls are currently being modified by the Silos Project.

2.2 High Nitrate Tank

Following the removal of the High Nitrate Tank and containment wall by D&D, the concrete pad and sump were broken into manageable pieces, using a hoe-ram, to meet the waste acceptance criteria (WAC) sizing requirements for placement into the OSDF. The concrete was kept wet during breaking to control dust. The concrete and gravel were excavated and disposed at the OSDF. The underlying sand was scanned with real time instruments to check for above-WAC conditions. No above-WAC material was found. The preliminary excavation design grade was based on existing RI/FS and predesign characterization data and involved general excavation of the sand and underlying fill to a depth of approximately 2 to 3 feet to elevation 573 feet amsl. Side slopes along the perimeter and within the area were cut no steeper than 2H:1V. The remaining surface was both visually inspected for man-made materials and monitored using real-time scanning to determine no additional excavation was required, as discussed in Section 3.2.2. Excavated debris and impacted soil was disposed in the OSDF.

The southwest corner of the High Nitrate Tank proposed limit (formerly the intersection of the southern and western limits of the High Nitrate Tank excavation) of excavation was relocated north (25 feet) and east (30 feet) to eliminate the corner where the active electric lines and transformer reside to allow Silos personnel to continue to use it. The difference between the original limit of excavation from the Area 7

Excavation Plan, Phase I and the Post-Excavation As-Built Report for A7PI can be viewed on Drawing 99X-5500-G-00784 by comparing the "proposed limit of excavation" to the as-built contours.

Stormwater in this excavation was collected along the northern edge of the area until the below-WAC portion of the K-65 Trench was excavated and allowed to drain north into the former K-65 Trench area.

Utilities within the area that were to remain active were excluded from the deep excavation area. Per the original plan, the western and eastern edges were identified as areas requiring 1-foot excavation of soil/gravel or asphalt and road base, as applicable, in order to protect the fire line and filtrate line utilities, which are remaining active. As discussed in Section 2.1, the 1-foot scrape of the Silos Access Road, along the western edge of the High Nitrate Tank footprint, was eliminated for protection of the active utilities and to maintain usage of the road. Excavation was limited to within 5 feet east of existing power pole #544 and associated guy wires, located on the western side of the excavation area, to enable it to remain in place. The 1-foot scrape along the eastern edge was excavated during removal of the IMHR in this area.

Pole WP114, formerly located along the southern edge of the K-65 Trench excavation area, just north of northeast corner of the High Nitrate Tank footprint, was relocated south within the former High Nitrate Tank footprint in order to reroute the Silos communications line. This was completed prior to excavation of this portion of the K-65 Trench.

2.3 K-65 Trench

The K-65 Trench was removed from approximately 20 feet west of the East Silos Access Road to the east to just west of the Former Production Area near the southeast corner of the Lime Sludge Ponds. Prior to excavation, D&D removed the piping within the trench and the metal decking on top of the trench. Based on sampling and characterization, the soil-like/sediment residues in the bottom of the trench were above-WAC due to elevated levels of technetium-99. In general, this residue, along with the concrete and 2 feet of soil alongside and underlying the concrete, was excavated for disposal at Soil Stockpile 7 (SP-7).

A concrete plug had been installed in the western portion of the K-65 Trench by the Silos Project near the Transfer Tank Building. The sediments in the bottom of the K-65 Trench were removed from the section of trench extending from the eastern limit of excavation (near the southeast corner of the Lime Sludge Ponds) to the concrete plug near the Transfer Tank Building. A backhoe with a smooth-edge bucket was

used to remove the bulk of the sediment from the trench where it was accessible. The backhoe transferred the sediments into an articulated truck for hauling and disposal at SP-7.

Geomembrane was placed on the ground wherever excavated material was transferred from one piece of equipment to another to minimize the spread of technetium-99 contamination to adjacent areas. The remaining sediment was hand excavated by shoveling into a 5-gallon bucket and transferring the contents into the bucket of a wheel loader. The wheel loader transferred the sediments into an articulated truck for hauling and disposal at SP-7. The remaining residues within the trench were washed from east to west using hoses. The excess water from washing the residual sediments from the K-65 Trench were collected by the super-sucker truck and transported and discharged at the Advanced Wastewater Treatment (AWWT) Facility. The remaining sediments were hand excavated by the same process as the bulk sediments and were transported and disposed at SP-7.

After the sediment was removed, two additional grout plugs were installed within those portions of the trench that were not excavated (the eastern portion located near the southeast corner of the Lime Sludge Ponds and the western portion located near the East Silos Access Road). The limit of removal to the west was placed due to the proximity to the Silos Project infrastructure. The limit of removal to the east was placed so as to maintain traffic flow along the Waste Pits Remedial Action Project (WPRAP) Access Road. The concrete foundation and walls were inspected for soundness before placing the grout plugs. The plugs are 12 to 18 inches thick and continuous from bottom to top of trench. The remaining portion of the trench between the western grout plug and the concrete plug near the Transfer Tank Building was then filled with stone. Water collected in this section of the trench will be removed through the existing sump system located near the Transfer Tank Building.

The trench concrete walls were broken with the excavator bucket, excavated, and disposed at SP-7. The concrete floor of the trench was broken with a hoe-ram. The concrete was kept wet during the trench breaking to control dust and was sized reduced to meet WAC for WPRAP. Approximately 2 feet of underlying soil (to a total depth of approximately 6 feet from the top of the trench) and along the sidewalls was excavated and disposed at SP-7. The sidewalls of the excavation were essentially vertical until results from samples collected from the trench bottom and sidewalls were obtained and real-time scanning was completed, as discussed in Section 3.1. A safety barricade of construction fence and rope was used to bound the excavation due to the fall hazard.

The segment of the K-65 Trench which crossed over a main utility corridor located beneath and adjacent to the IMHR was excavated with extreme caution. The foundations constructed for the steel frame and steel plate decking installed during the construction of the IMHR were left in place. The concrete walls of the trench were broken and removed with the excavator. The concrete floor of the trench was broken with the hoe-ram at locations that minimized potential damage to the underlying utilities. The large broken slabs were then slid away from the utility area using the excavator bucket to allow for further size reduction with the hoe-ram without jeopardizing the utility lines. The 2 feet of soil beneath the trench was then excavated by restricted and hand digging methods.

Once the above-WAC material was removed, as confirmed by characterization data (Section 3.1), excavation continued to a depth of 10.5 feet from the surface to approximate elevation 566 feet amsl. This excavation was performed in those portions of the trench between the East Silos Access Road to the east to the first utility crossing near the IMHR, and from the former railroad tracks to the east to the east end of the K-65 Trench removal at the eastern grout plug. The middle portions, consisting of the utility corridor crossing and the East Silos Access Road crossing, were not excavated at this time. These portions will be included in the scope of work for Phase II (Section 4.0). The material that met OSDF WAC was excavated in lifts and remained consistent with the excavation controls established in the Area 3A/4A Implementation Plan (DOE 2001). Excavation in 3 $\pm$ 1-foot lifts was performed with the associated lift scan until all impacted material had been removed. The depth of excavation was approximated based on sample results from up to 10 feet north and south of the K-65 Trench. Side slopes along the perimeter were cut no steeper than 2H:1V. The remaining surface was both visually inspected for man-made materials and monitored using real-time scanning. Except for OSDF above-WAC material, debris and impacted soils were disposed in the OSDF.

Stormwater was allowed to collect in the excavations to the west of East Silos Access Road and between the East Silos Access Road and the IMHR. Drainage and storm sewer improvements are currently being constructed within these areas by the Silos project. The excavation between the IMHR and the WPRAP Access Road merged with excavation of the Lime Sludge Ponds. Stormwater collected in this area is pumped to the existing standpipe located at the southeast corner of the Lime Sludge Ponds as necessary. The standpipe is connected to the FCP storm sewer system.

2.4 Warehouse

The open area west of the IMHR, east of the East Silos Access Road, south of 2nd Street, and north of the K-65 Trench was excavated to support the construction of the planned K-65 Stabilization Warehouse. This area was split into two separate general excavation areas that are separated by a 1-foot excavation due to shallow utilities. Excavation depths were selected based on characterization data. The northern portion of the footprint consisted of general excavation of soil and fill material to a depth of approximately 3 feet to elevation 574 feet amsl. The southern portion of the footprint consisted of general excavation of soil to a depth of approximately 3 feet to elevation 573 feet amsl. Side slopes along the perimeter and within the area were cut no steeper than 2H:1V. An additional 6 inches of soil was excavated from an approximate 20-foot by 20-foot area around a failed sample location, due to above-FRL sample results for arsenic, as described in Section 3.2.1 and identified on the drawing by contour 573 feet amsl located in the southern half of the northern portion of the footprint. The remaining surface was both visually inspected for man-made materials and monitored using real-time scanning. Excavated material was disposed in the OSDF.

Stormwater in this excavation was collected along the southern edge of the area until the below-WAC portion of the K-65 Trench was excavated and allowed to drain south into the former K-65 Trench area.

As originally proposed, the eastern edge and a section separating the two general excavations were identified as areas requiring a 1-foot excavation of soil/gravel or asphalt and road base, as applicable, in order to protect utilities that remain active. The lighting electric line and two overhead lights mounted on poles located along the west edge remained active. No excavation occurred in this area.

2.5 Railroad Embankment

The Track No. 12 railroad embankment, located from 2nd Street southward to the end of the line just north of the Silos Access Road, was proposed to be excavated to a depth of approximately 2 to 3 feet below the railroad ballast to elevation 574 feet amsl. However, the southern limit of excavation was relocated approximately 200 feet north due to overhead electric and power poles that are still required. The rail and the ballast was still removed to the original southern limit of excavation. Side slopes along the perimeter and within the area were cut no steeper than 2H:1V. The exposed surface was both visually inspected for man-made materials and monitored using real-time scanning as show on Figures 3-8 through 3-11 and the results indicate that no radiologically contaminated soil remained. Also, the only physical sample (A7-HR23) that showed greater than FRL results in the area was remediated as this sample was located

just north of the relocated southern soil excavation boundary. Completion of this specific excavation was confirmed with physical sample A7-PC7. Excavated material was disposed in the OSDF.

Stormwater in this excavation was allowed to drain to the Lime Sludge Ponds excavation and the K-65 Trench following its excavation.

Shortly after excavation and real-time scanning, the Silos Project placed gravel in this area to create a safe personnel access from Building 30/45 parking lot to the project area and additional parking. This gravel placement occurred prior to obtaining as-built survey data as noted on the drawing.

2.6 Impacted Material Haul Road

The asphalt surface and gravel base of the IMHR was proposed to be removed from the north edge of the Silos crossing north to the south edge of the 2nd Street crossing. The southern limit of removal was relocated north to coincide with the southern limit of excavation for the High Nitrate Tank footprint to allow Silos personnel to continue to use it for access and personnel parking. The asphalt surface and gravel base was removed within these revised limits. Excavation was limited to 1 foot in the areas along the shoulders of the road due to the close proximity of multiple utilities remaining in service.

The surface of this area received minimal grading in order to drain surface water to ultimately flow to the K-65 Trench.

3.0 SOIL CHARACTERIZATION ACTIVITIES AND RESULTS

Soil characterization activities, including physical soil sampling and real-time scanning, were performed in A7PI to support the remedial excavations discussed in Section 2.0. The purpose of these activities was to demonstrate WAC attainment for soil intended for disposition at the OSDF, and to demonstrate precertification attainment for soil at the final excavation grade, as discussed in the following sections.

3.1 WAC Attainment Sampling and Scanning

Predesign WAC attainment sampling was performed in A7PI and other parts of Area 7 under the PSP for WAC Attainment Sampling of Area 7 Soils. Real-time scans were also performed for the entire A7PI footprint. Figure 3-1 represents the surface of all soils that were destined for the OSDF. Discussion of this sampling and the analytical results is provided in the WAC Attainment Report for Area 7 Soils (Silos Area) (DOE 2000), as well as in the Area 7 Excavation Plan, Phase I. However, the excavation plan had incomplete data tables resulting from long analytical turn around times. Therefore, Appendix A is provided in this report, which contains the same tables but have been updated with the remainder of the results as well as an additional table for the Haul Road samples. Appendix A also contains the area-specific constituents of concern (ASCOCs) and their respective FRL and OSDF WAC levels in Table A-6. To summarize these reports, the entire footprint of A7PI was sampled for the ASCOCs and additional waste acceptance criteria constituents, which collectively are Aroclor 1254, Aroclor 1260, arsenic, beryllium, boron, cesium-137, lead, manganese, mercury, radium-226, radium-228, technetium-99, thorium-228, thorium-230, thorium-232, and total uranium. The only above-WAC soil identified within A7PI is the sediment within the K-65 Trench, which demonstrated exceedances of the technetium-99 WAC.

Excavation control WAC attainment sampling and real-time scanning, which is discussed in this report, was performed to:

- Verify removal of any identified WAC material, and
- Demonstrate if soil meets the OSDF WAC between excavation lifts.

Real-time systems were used, where possible, to demonstrate total uranium WAC attainment. Physical soil samples were used to demonstrate technetium-99 WAC attainment, and for total uranium WAC attainment in areas where real-time detectors could not be used (i.e., areas where the soil is saturated, or where other obstacles/conditions prevent their use).

As discussed in Section 2.0, the planned excavation to remove above-WAC material from the K-65 Trench extended to approximately 6 feet below surface from the top of the trench. Upon completing that above-WAC excavation, physical samples were collected from the base of the trench every 25 feet, and from the sidewalls of the trench every 50 feet. These samples were then analyzed at an approved off-site laboratory for technetium-99 to verify that the above-WAC soil was removed. As shown in Table 3-1, these results demonstrated that the above-WAC soil was removed, as all technetium-99 results were well below the WAC level of 29.1 picoCuries per gram (pCi/g). Additionally, the surface scan after above-WAC removal was also performed to demonstrate that the underlying soil met the total uranium WAC. These results are shown on Figure 3-1.

Since all of the above-WAC removal verification sampling and the surface scan using the Real-Time Excavator Mounted System (EMS) instrument demonstrated WAC attainment, the first excavation lift of soil that met the OSDF WAC (approximately 3 feet) was performed to achieve a depth of approximately 9 feet below grade. After this excavation was complete, a lift scan was performed on the east side of the trench at the newly excavated surface. However, immediately following excavation, the west side of the trench could not be scanned because saturated soil conditions prevented the real-time scanning equipment from being used. Therefore, physical samples had to be collected (again, field-located every 25 feet in the portion of the trench inaccessible to scanning) from this area to demonstrate WAC attainment under Variance/Field Change Notice 20500-PSP-0001-29. These analytical results from these samples are provided in Table 3-2. Subsequently, field conditions improved and the scan was performed with real-time instruments and all scan results are shown on Figure 3-2. During load out operations, impacted material was used to provide a level surface on the western portion of the trench so that the front-end loader could load impacted material into the articulating truck. Once complete, this impacted material was removed and a follow-up scan was performed at the same elevation as above. Figure 3-3 shows the results of this confirmation scan.

Once these data were evaluated and determined to demonstrate WAC attainment, the final excavation lift on the west side of the trench (approximately 1.5 feet) was performed to reach the designed final grade at 10.5 feet below pre-excavation surface. The east side of the trench was excavated in conjunction with the Lime Sludge Ponds and went through two additional smaller lifts and were scanned each time. The results of these additional lifts are shown in Figures 3-4 and 3-5. At this point, the K-65 Trench, along with the

other portions of A7PI, moved to characterization for precertification attainment, as discussed in Section 3.2.

3.2 Precertification Attainment

The purpose of remedial excavations in A7PI was to remove as much soil exceeding the established FRLs as possible prior to construction of the Silos Project Remediation Facilities and supporting structures. To demonstrate that this goal was attained, precertification activities were performed in the excavated areas. For A7PI, precertification was accomplished through two separate characterization activities:

- The collection of physical soil samples for arsenic analysis at the designed post-excavation surface
- Precertification real-time scanning at the final post-excavation surface.

Both of these activities were conducted under the PSP for A7PI Precertification Physical Sampling and Real-Time Scan.

3.2.1 Precertification Physical Sampling

The first step to meeting the goal of precertification attainment was to compare predesign data from A7PI against the established FRLs. This exercise identified several FRL exceedances that were within the boundaries of the A7PI Excavation Plan, specifically for arsenic (15 locations), beryllium (1 location) and radium-226 (4 locations). More information on these locations and FRL exceedances is available in the Area 7 Excavation Plan, Phase I.

While the planned soil excavation for A7PI was designed to remove all these FRL exceedances, nine locations known at the time (all arsenic exceedances) were not bound at depth by deeper samples below the FRL (i.e., the deepest interval collected at a particular location still showed concentrations above the FRL). As a result, precertification physical sampling was planned after excavation and collected at each of these nine locations, as shown on Figure 3-6, to verify that arsenic contamination did not extend deeper than the designed grade. Figure 3-7 shows the remaining boring locations that were identified in the A7PI Excavation Plan that were not excavated and still have above-FRL values.

Sample collection was accomplished after reaching a design grade in a manner consistent with Data Quality Objectives SL-048, Revision 5, and as described in the PSP. This included the collection of nine (9) samples from the post-excavation surface at previous sampling locations with demonstrated, unbound exceedances of the arsenic FRL. These samples fell within the Treatment Facility Footprint (3), the

Warehouse footprint (3), the K-65 Trench (1), the rail embankment (1), and the haul road (1). The purpose for this sampling effort was to determine if the designed excavation was sufficient to remove the above-FRL arsenic contamination. All nine samples were analyzed for arsenic at an approved off-site laboratory. All results were below the arsenic FRL [12.0 milligrams per kilogram (mg/kg)], with the exception of location A7-PC2 (arsenic = 12.8 mg/kg). As discussed in Section 2.4, an additional 6 inches of soil was excavated from a 20-foot by 20-foot area around location A7-PC2, and a sample was collected from the new post-excavation surface at the same location as A7-PC2 (this sample is identified as A7-PC2a). Results of this analysis showed arsenic concentrations below the FRL (arsenic result = 2.4 mg/kg), thus demonstrating removal of the above-FRL concentrations. These precertification analytical results are summarized in Table 3-3. After all precertification activities were completed and portions of the K-65 Trench were backfilled with clean material additional data was received from one point (A7-K12) along the trench that showed arsenic above FRL at the 10-foot interval. This point was not sampled during the precertification round as the trench had already been backfilled. However, point A7-K11, which was the closest sample to the west of A7-K12 was sampled during this precertification and demonstrated below-FRL conditions.

3.2.2 Real-Time Precertification Scanning

The real-time scan was conducted to demonstrate the soil at final grade met the criteria for precertification. The goals and process for conducting the precertification scan were identical to other precertification scanning efforts, as discussed below.

During Precertification Phase 1, mobile sodium iodide detectors, specifically both Radiation Scanning System detectors (RSS1 and RSS2), were used to scan as much of the final excavation grade as was accessible. Several small pockets within the excavation were not accessible to the real-time equipment due to standing water/saturated soil. The results of this scan were compared to the established potential hot spot levels when using mobile sodium iodide detectors during precertification attainment [three times (3x) the total uranium the FRL, 3x the thorium-232 FRL, and 7x the radium-226 FRL]. These potential hot spot levels are consistent with the revised Real-Time Instrumentation Measurement Program (RTIMP) Protocol (DOE 2002c). Results showed that none of these COCs exceeded these levels, as shown on Figures 3-8 through 3-10, and therefore, no potential hot spots were identified in A7PI. The total activity readings obtained during the A7PI Precertification Phase 1 scan are shown on Figure 3-11.

During Precertification Phase 2, the high purity germanium (HPGe) detectors were used to confirm the mobile sodium iodide (NaI) results. The purpose of the Phase 2 readings is to confirm the Phase 1 scan results and verify that no potential hot spots or areas of high total gamma activity are confirmed as hot spots. Because no Phase 1 readings exceeded the mobile NaI detectors' target levels, the Phase 2 confirmation HPGe readings were obtained at the location of the highest gross gamma activity reading obtained per batch. The Phase 2 HPGe readings showed total uranium, thorium-323 and radium-226 results below the target 2x FRL "hot spot" level, as shown on Figures 3-12 through 3-14.

All precertification data, including real-time scanning and physical sampling, demonstrate that this area to be in a "precertified" state. This means that remaining soil COC concentrations in A7PI are considered low enough for the certification process to begin. However for A7PI, the area is instead being turned over to the Silos Project for construction of their remediation facilities, warehouse and other supporting infrastructure. As a result, the certification process will not begin, and the area will not be treated or protected as a "Certified Area in Progress".

TABLE 3-1
POST ABOVE-WAC EXCAVATION
VERIFICATION SAMPLING IN THE K-65 TRENCH

Sample ID	Parameter	Result	Qual	WAC	Units
A7-EK65T-1B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-1N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-1S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-2B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-3B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-3N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-3S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-4B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-5B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-5N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-5S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-6B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-7B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-7N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-7S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-8B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-9B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-9N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-9S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-10B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-11B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-11N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-11S	Technetium-99	4.37	NV	29.1	pCi/g
A7-EK65T-12B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-13B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-13N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-13S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-14B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-15B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-15N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-15S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-16B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-17B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-17N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-17S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-18B	Technetium-99	5.93	NV	29.1	pCi/g
A7-EK65T-19B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-19N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-19S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-20B	Technetium-99	4.07	NV	29.1	pCi/g
A7-EK65T-21B	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-21N	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-21S	Technetium-99	2.9	UNV	29.1	pCi/g
A7-EK65T-22B	Technetium-99	2.9	UNV	29.1	pCi/g

TABLE 3-2
WAC SAMPLE RESULTS FOR THE
FINAL EXCAVATION LIFT IN THE K-65 TRENCH

Sample ID	Parameter	Result	Qual	WAC	Units
A7-EK65T-23	Uranium, Total	4.42	NV	82	mg/kg
A7-EK65T-24	Uranium, Total	4.53	NV	82	mg/kg
A7-EK65T-25	Uranium, Total	2.72	NV	82	mg/kg
A7-EK65T-26	Uranium, Total	2.46	NV	82	mg/kg
A7-EK65T-27	Uranium, Total	1.85	NV	82	mg/kg
A7-EK65T-28	Uranium, Total	1.95	NV	82	mg/kg
A7-EK65T-29	Uranium, Total	1.68	NV	82	mg/kg
A7-EK65T-30	Uranium, Total	2.39	NV	82	mg/kg
A7-EK65T-31	Uranium, Total	2.04	NV	82	mg/kg
A7-EK65T-32	Uranium, Total	1.51	NV	82	mg/kg
A7-EK65T-33	Uranium, Total	2.13	NV	82	mg/kg
A7-EK65T-34	Uranium, Total	2.24	NV	82	mg/kg
A7-EK65T-35	Uranium, Total	2.16	NV	82	mg/kg
A7-EK65T-36	Uranium, Total	2.18	NV	82	mg/kg
A7-EK65T-37	Uranium, Total	2.18	NV	82	mg/kg
A7-EK65T-38	Uranium, Total	2.1	NV	82	mg/kg
A7-EK65T-39	Uranium, Total	1.86	NV	82	mg/kg
A7-EK65T-40	Uranium, Total	2.13	NV	82	mg/kg

TABLE 3-3
PRECERTIFICATION SAMPLING RESULTS
FOR UNBOUND ARSENIC FRL EXCEEDANCES

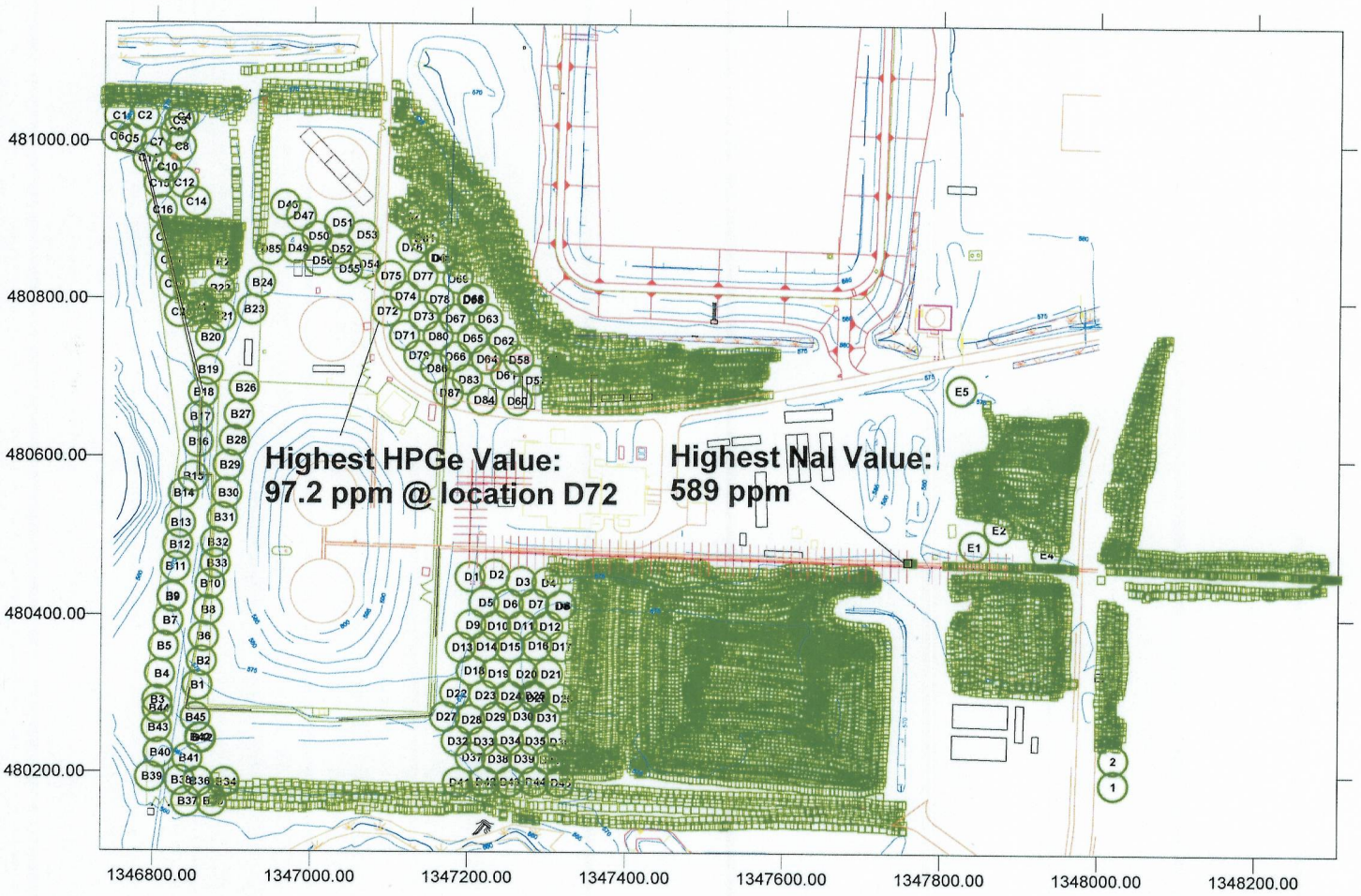
Location	Northing	Easting	Sample Date	Sample ID	Parameter	Result	Qual.	Units
A7-PC1	480486.2	1347920.2	10/14/2002	A7PC1-1-M	Arsenic	9.7	NV	mg/kg
A7-PC2	480575.3	1347880.8	09/11/2002	A7-PC2-1-M	Arsenic	12.8	NV	mg/kg
A7-PC2A*	480575.3	1347880.8	10/09/2002	A7-PC2-1A-M	Arsenic	2.4	NV	mg/kg
A7-PC3	480300	1347600.1	09/11/2002	A7-PC3-1-M	Arsenic	11.9	NV	mg/kg
A7-PC4	480389.99	1347500.1	09/11/2002	A7-PC4-1-M	Arsenic	8.6	NV	mg/kg
A7-PC5	480400	1347600.1	09/11/2002	A7-PC5-1-M	Arsenic	8.7	NV	mg/kg
A7-PC6	480744.31	1348072.41	10/14/2002	A7-PC6-1-M	Arsenic	9	NV	mg/kg
A7-PC7	480175.147	1348025.364	10/14/2002	A7PC7-1-M	Arsenic	8	NV	mg/kg
A7-PC8	480476.01	1347959.95	10/14/2002	A7-PC8-1-M	Arsenic	8.4	NV	mg/kg
A7-PC9	480446.55	1348193.96	10/14/2002	A7-PC9-1-M	Arsenic	6.3	NV	mg/kg

* Resample of Location A7-PC2. Sample collected after initial results showed concentrations above the FRL and subsequent excavation was performed (refer to Section 2.4)

Figure 3-1.
Area 7 Phase 1, Surface WAC Scan

N

Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 30687,31108,31144,3124,31265,40743
NaI Batch#: EMS-0086; RSS1- 201-213, 757-758; RSS2- 334,343,364
RTRK- 562-565
Measurement Dates: 10/12/98 - 10/04/02



NaI Total U (ppm)	EMS Total U (ppm)	HPGe @ 100cm Total U (ppm)
-260 to 246	-384 to 246	0 to 164
246 to 721	246 to 721	164 to 400
721 to 9999	721 to 9999	400 to 9999

RTIMP DWG Title: A7P1-SF-TU.srf
Project Name: A7P1 Exc Plan, WAC Attainment Area 7
Project #: 20501-PL-0001, 20500-PSP-0001
Prepared by: Brian McDaniel/11058
Date Prepared: 05/23/03
Support Data: A7P1_SF_NaI_Old.xls
A7P1_SF_NaI_V1.2.xls, A7P1_SF_EMS.xls
A7P1_SF_HPGe_100cm.xls

Figure 3-2.
Area 7 Phase 1, Lift 1 WAC Scan

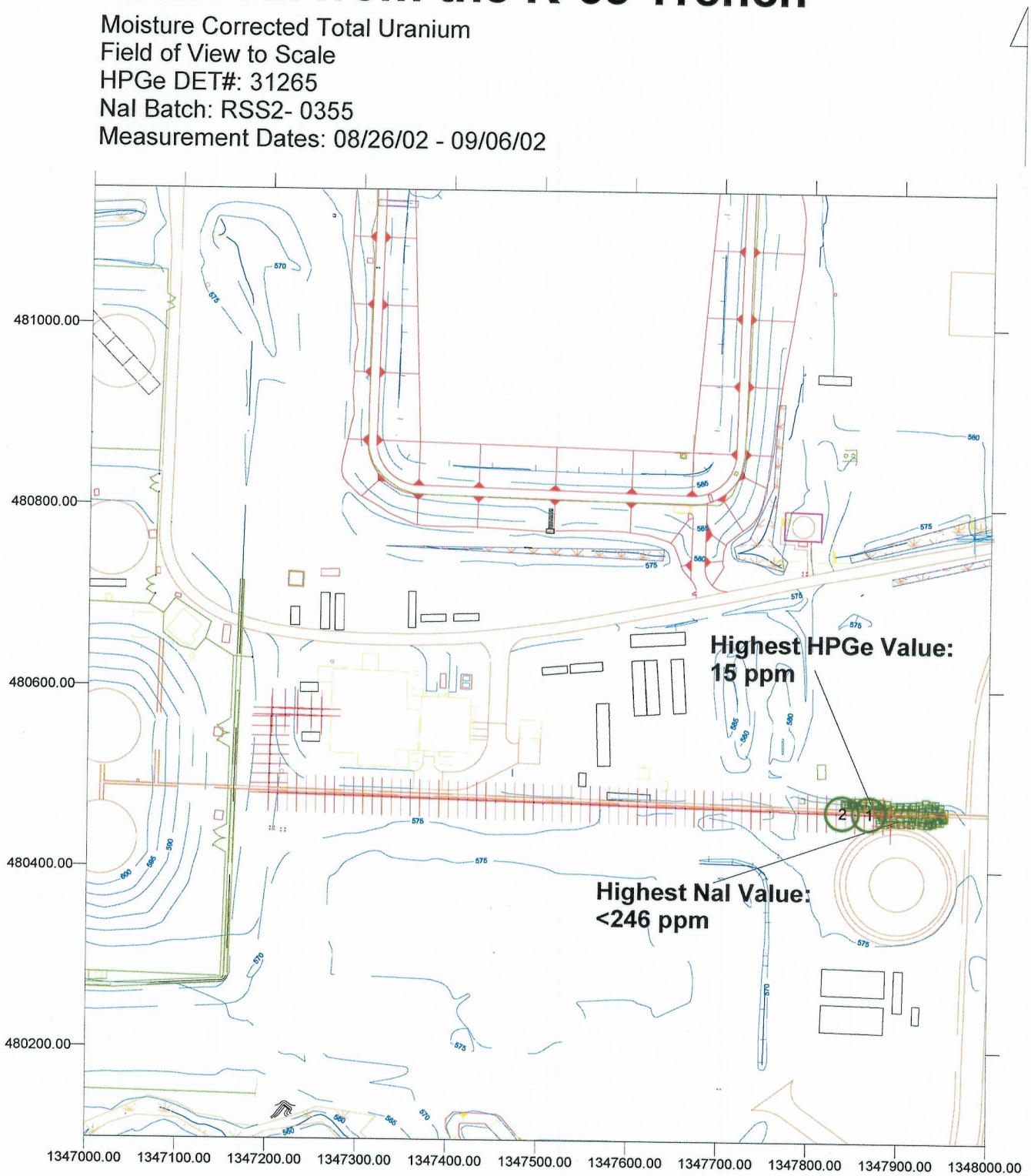
Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 31265
NaI Batch: RSS2- 0347,0348,0350,0352,0354,0361
Measurement Date: 08/09/02 - 10/03/02

NaI Total U (ppm)	HPGe @ 100cm Total U (ppm)
-224 to 246	0 to 164
246 to 721	164 to 400
721 to 9999	400 to 9999

RTIMP DWG Title: A7P1_L1_TU.srf
Project Name: A7 P1 PreCert
Project #: 20500-PSP-0003
Prepared By: B. McDaniel/11058
Date Prepared: 05/23/03
Support Data: A7P1_L1_NaI.xls;
A7P1_K65_L1_NaI.xls;
A7P1_L1_HPGe_100cm.xls

Figure 3-3. Area 7 Phase 1, Lift 1 WAC Scan, Confirmation of Impacted Material Removal from the K-65 Trench

Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 31265
NaI Batch: RSS2- 0355
Measurement Dates: 08/26/02 - 09/06/02

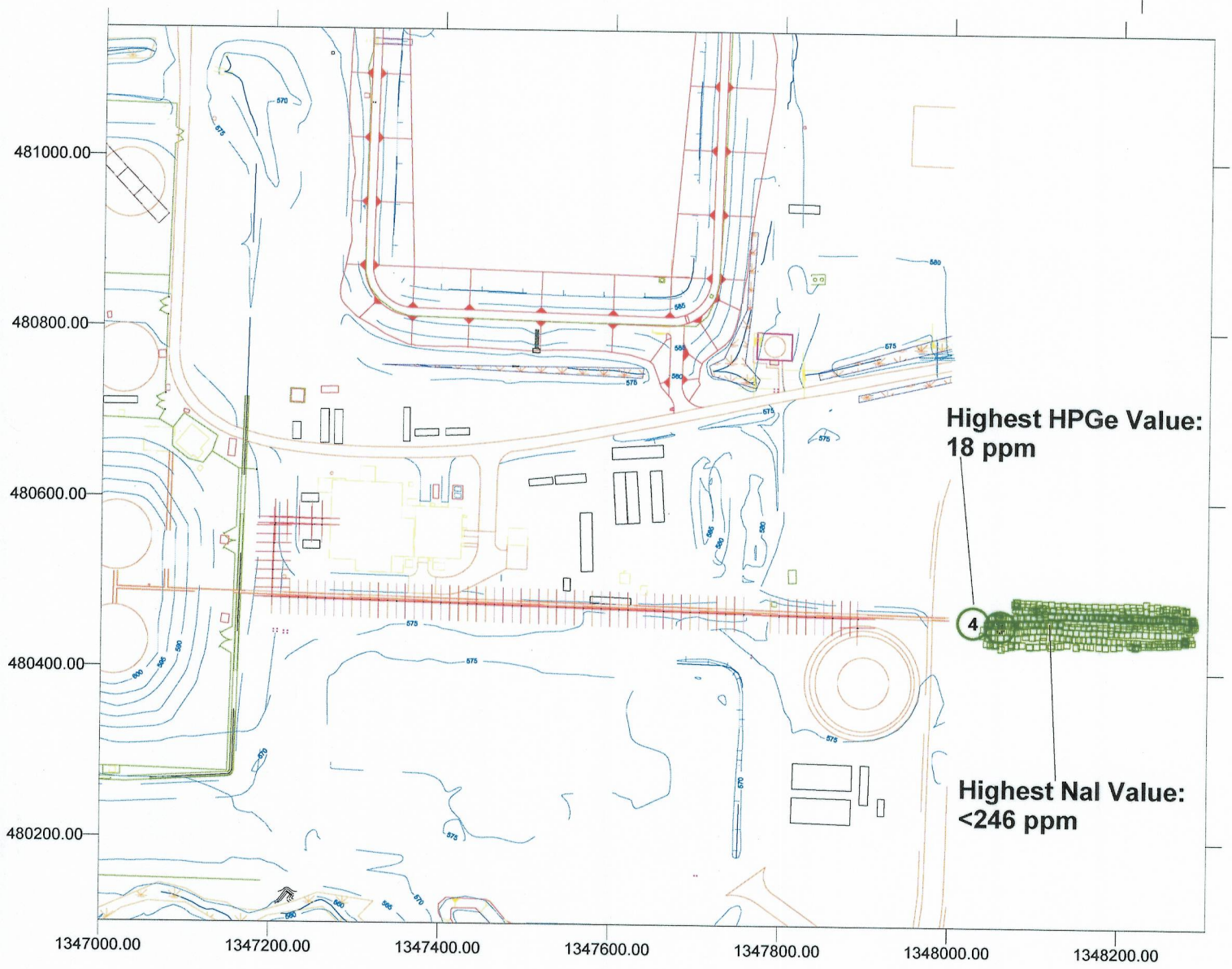


NaI Total U (ppm)	HPGe @ 100cm Total U (ppm)
-197 to 246	0.0 to 164.0
246 to 721	164.0 to 400.0
721 to 9999	400.0 to 9999.0

RTIMP DWG Title: A7P1_K65_L1_TU_CONF.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/23/03
Support Data: A7P1_K65_L1_NaI.xls

Figure 3-4. Area 7 Phase 1, East Side K-65 Trench, Lift 2 WAC Scan

Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 31265
NaI Batch: RSS2- 0364
Measurement Dates: 08/05/02 - 10/03/02

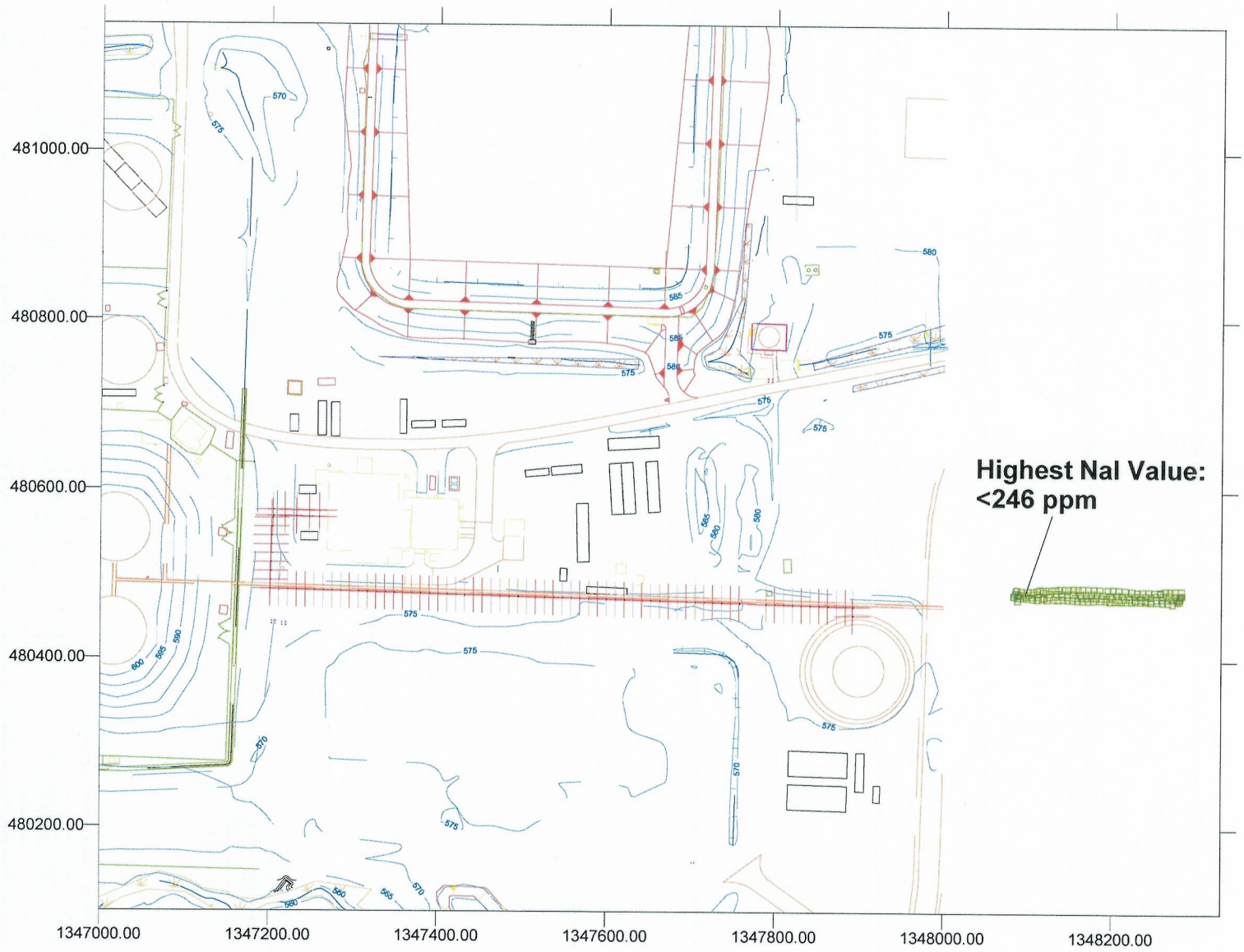


NaI Total U (ppm)	HPGe @ 100cm Total U (ppm)
-221 to 246	0 to 164
246 to 721	164 to 400
721 to 9999	400 to 9999

RTIMP DWG Title: A7P1_K65_L2_TU.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: B. McDaniel/11058
Date Prepared: 05/23/03
Support Data: A7P1_K65_L2_NaI.xls
A7P1_K65_L2_HPGe_100cm.xls

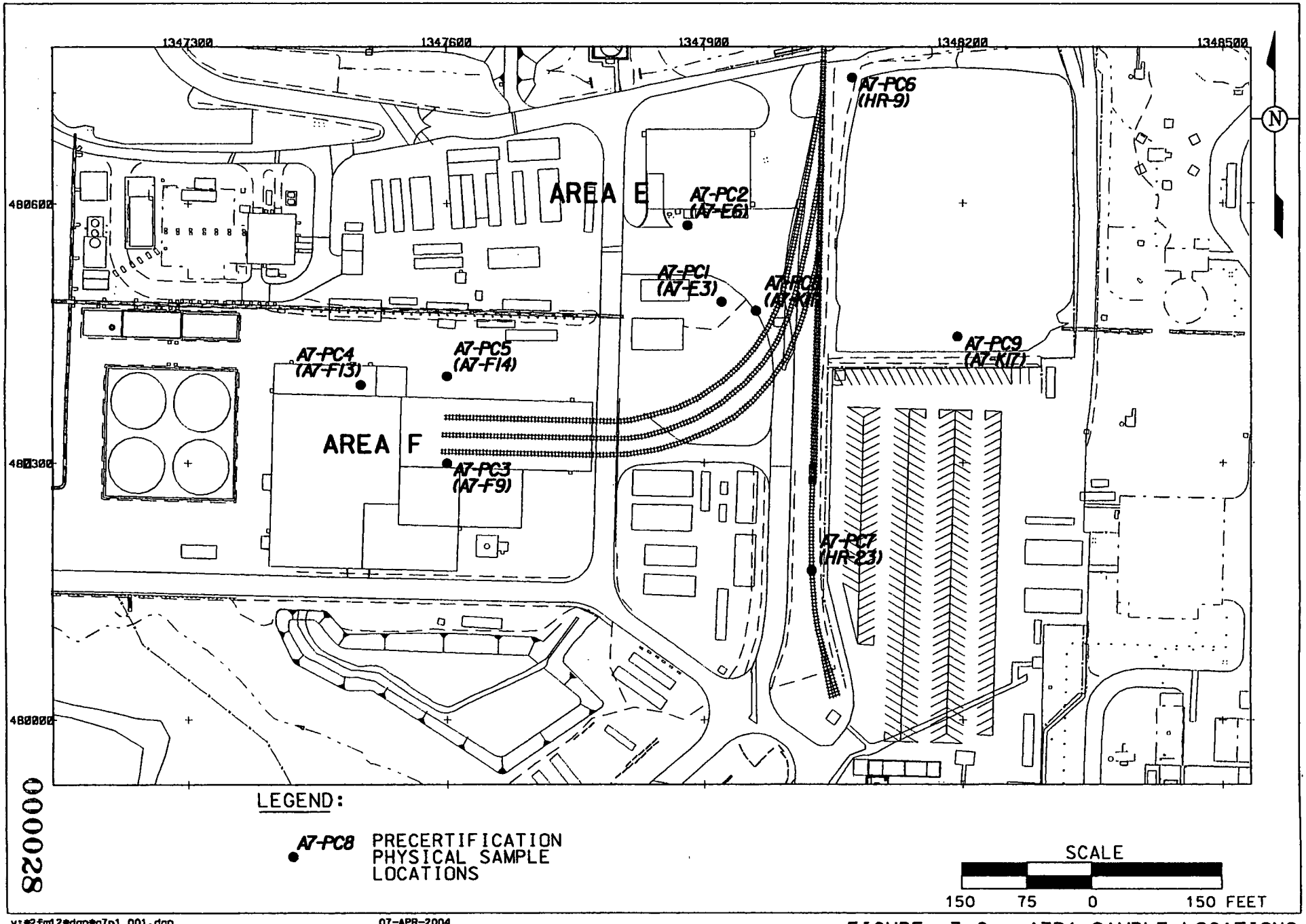
Figure 3-5. Area 7 Phase 1, East Side K-65 Trench, Lift 3 WAC Scan

Moisture Corrected Total Uranium
Field of View to Scale
NaI Batch: RSS2- 0365
Measurement Date: 09/06/02



NaI
Total U (ppm)
-145.00 to 246.00
246.00 to 721.00
721.00 to 9999.00

RTIMP DWG Title: A7P1_K65_L3_TU.srf
Project Name: A7P1 Exc Plan
Project #: 20501-PL-0001
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_K65_L3_NaI.xls



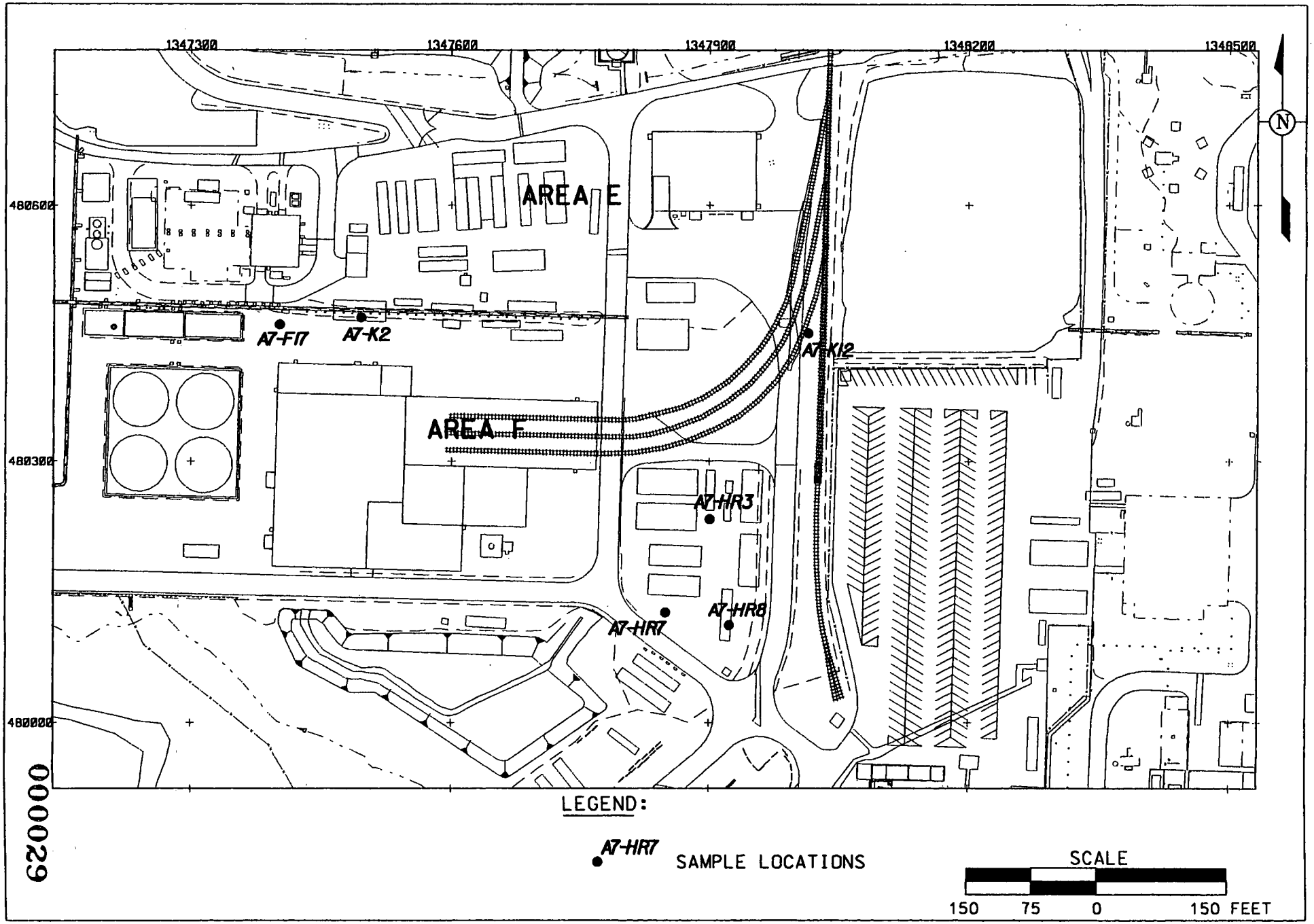
820028

v:\e2fm12\dgn\a7p1_001.dgn
STATE PLANAR COORDINATE SYSTEM 1983

07-APR-2004

FIGURE 3-6. A7P1 SAMPLE LOCATIONS

5428



v:\#2fm12\#dgn\#a7p1_002.dgn
STATE PLANAR COORDINATE SYSTEM 1983

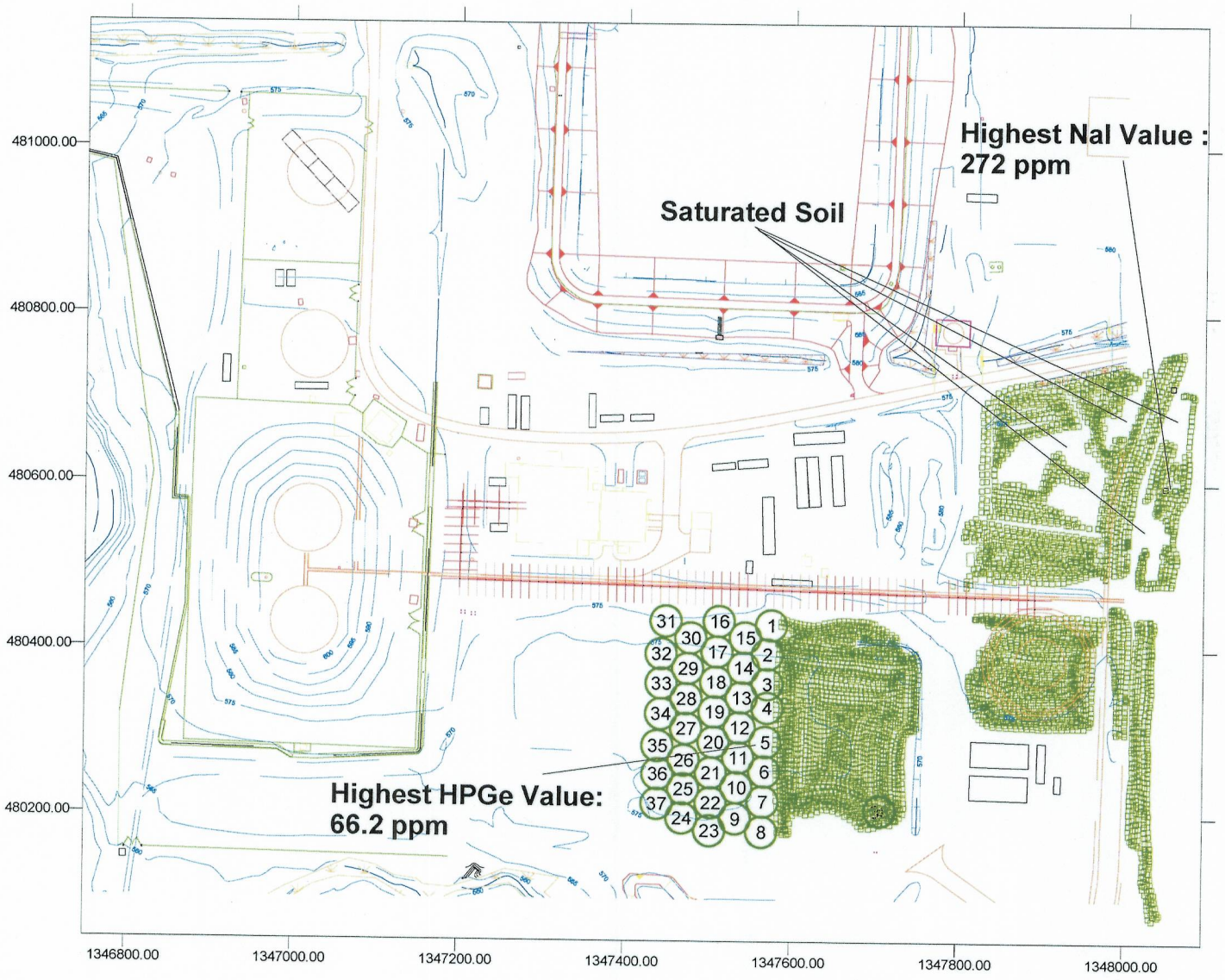
07-APR-2004

FIGURE 3-7. NON-EXCAVATED ABOVE-FRL SAMPLE LOCATIONS

Figure 3-8. Area 7 Phase I, Precertification Phase 1 Scan Total Uranium Readings

Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 31204,31265
NaI Batch: RSS2- 0378,0379; RSS1- 0760,0763,0766-0767,0781,0786
Measurement Dates: 09/17/02 - 11/14/02

N



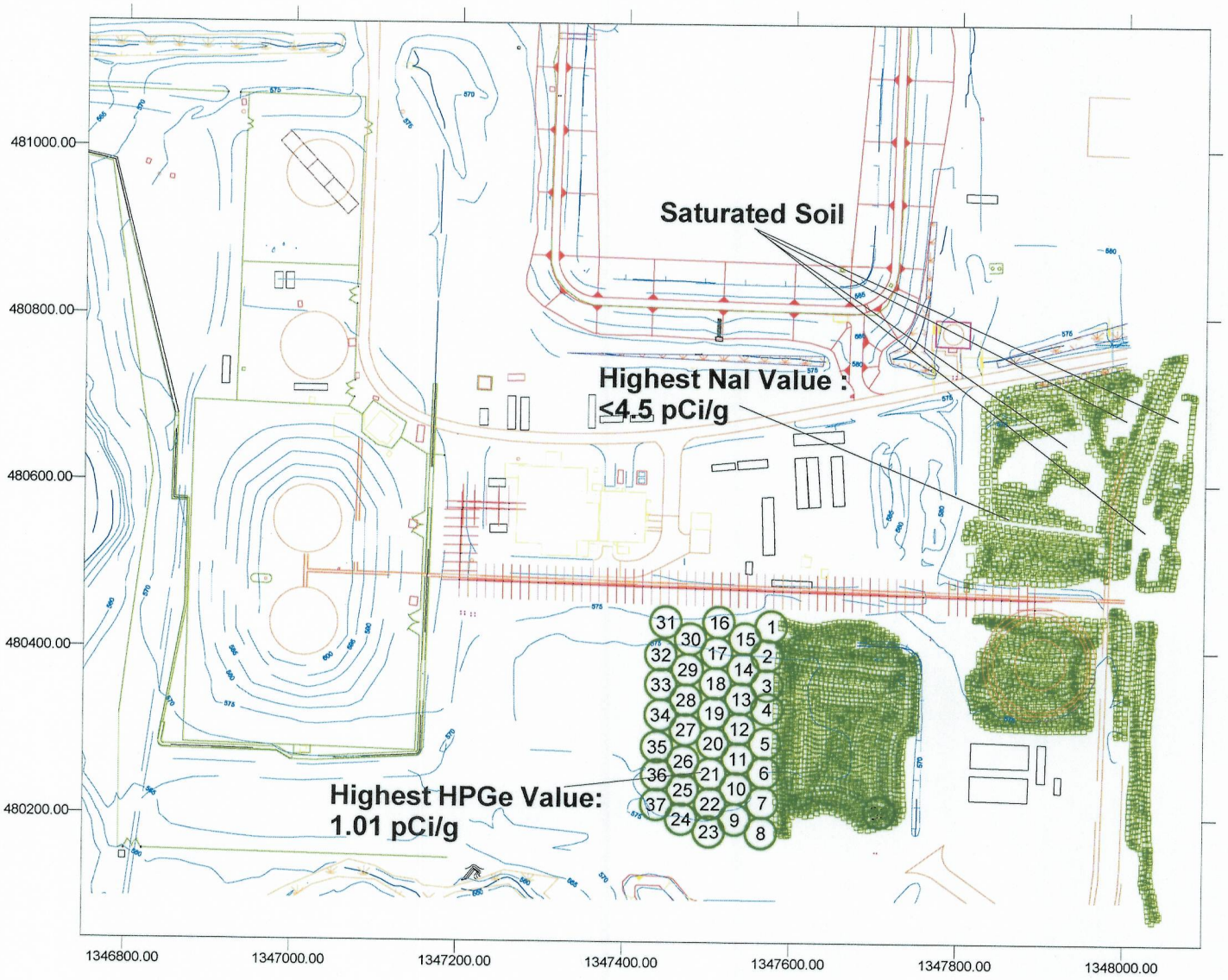
NaI Total U (ppm)
-312 to 246
246 to 721
721 to 9999

HPGe @ 100cm Total U (ppm)
0 to 164
164 to 400
400 to 9999

RTIMP DWG Title: A7P1_FG_TU.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_NaI.xls
A7P1_FG_HPGe_100cm.xls

Figure 3-9. Area 7 Phase I, Precertification Phase 1 Scan Thorium-232 Readings

Moisture Corrected Thorium-232
Field of View to Scale
HPGe DET#: 31204,31265
NaI Batch: RSS2- 0378,0379; RSS1- 0760,0763,0766-0767,0781,0786
Measurement Dates: 09/17/02 - 11/14/02



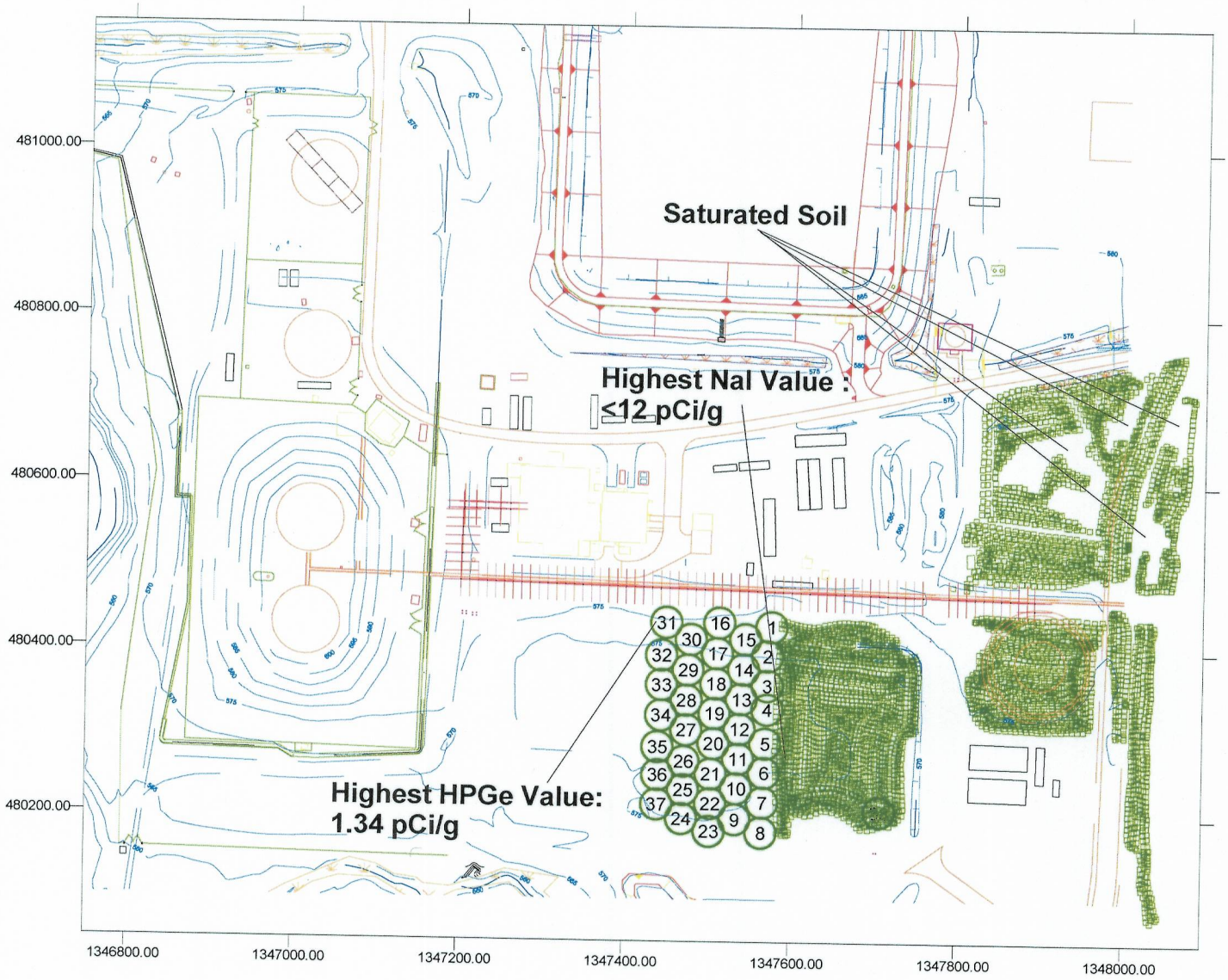
NaI Th-232 (pCi/g)	
-1.0 to 4.5	
4.5 to 9999.0	

HPGe @ 100cm Th-232 (pCi/g)	
0 to 3	
3 to 9999	

RTIMP DWG Title: A7P1_FG_TH.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_NaI.xls
A7P1_FG_HPGe_100cm.xls

Figure 3-10. Area 7 Phase I, Precertification Phase 1 Scan Radium-226 Readings

Moisture Corrected Radium-226
Field of View to Scale
HPGe DET#: 31204,31265
NaI Batch: RSS2- 0378,0379; RSS1- 0760,0763,0766-0767,0781,0786
Measurement Dates: 09/17/02 - 11/14/02

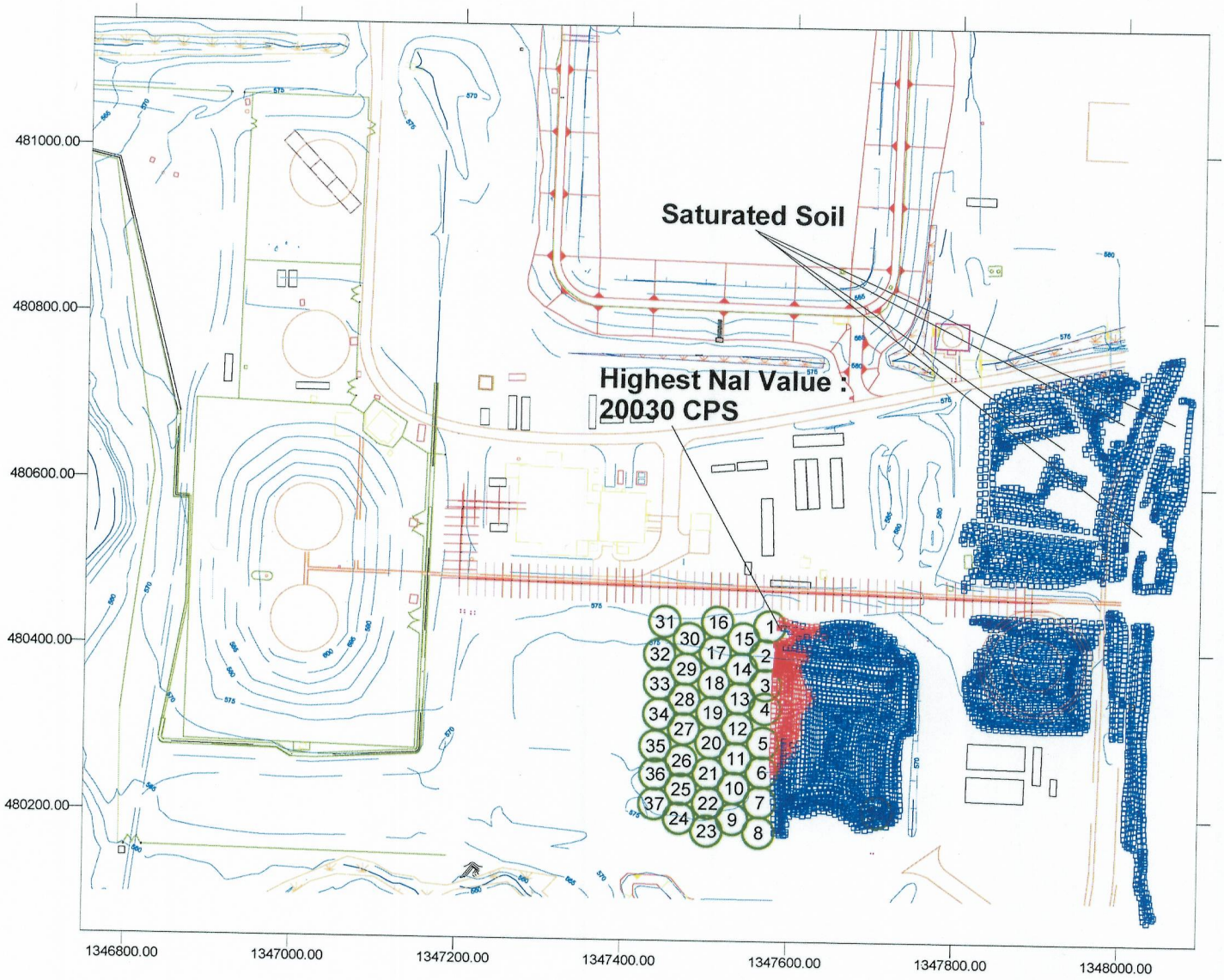


NaI Ra-226 (pCi/g)	HPGe @ 100cm Ra-226 (pCi/g)
-4 to 12	0 to 3
12 to 9999	3 to 9999

RTIMP DWG Title: A7P1_FG_RA.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_NaI.xls
A7P1_FG_HPGe_100cm.xls

Figure 3-11. Area 7 Phase I, Precertification Phase 1 Scan Total Gamma Activity Readings

Total Gross Counts per Second
Field of View to Scale
HPGe DET#: 31204,31265
NaI Batch: RSS2- 0378,0379; RSS1- 0760,0763,0766-0767,0781,0786
Measurement Dates: 09/17/02 - 11/14/02



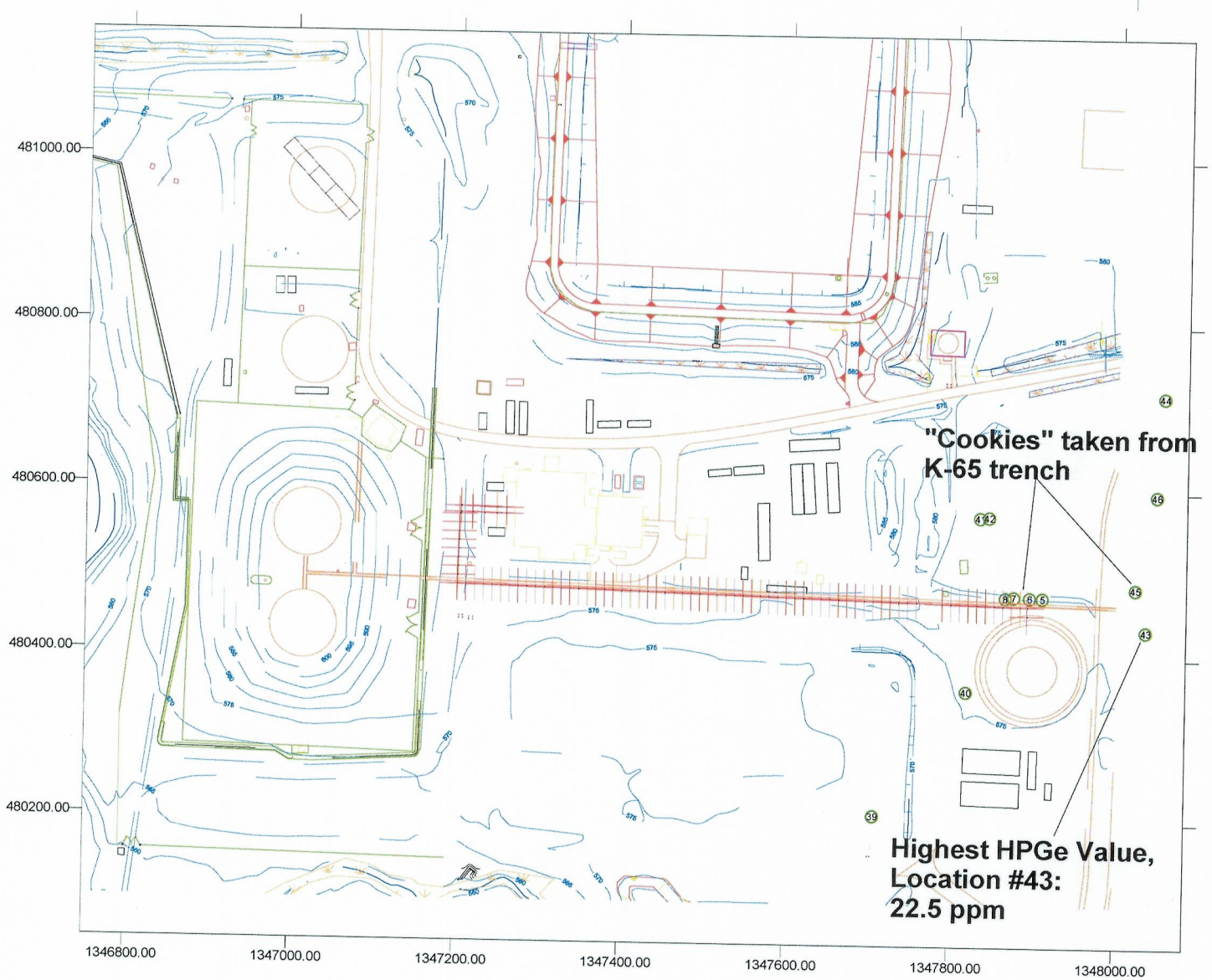
NaI TCPS
- 0 to 3000
- 3000 to 5000
- 5000 to 15000
- 15000 to 18000
- 18000 to 99999

HPGe shown for coverage only

RTIMP DWG Title: A7P1_FG_TC.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_NaI.xls
A7P1_FG_HPGe_100cm.xls

Figure 3-12. Area 7 Phase I, Precertification Phase 2 Total Uranium HPGe Results

Moisture Corrected Total Uranium
Field of View to Scale
HPGe DET#: 31265
Measurement Dates: 09/19/02 - 11/14/02

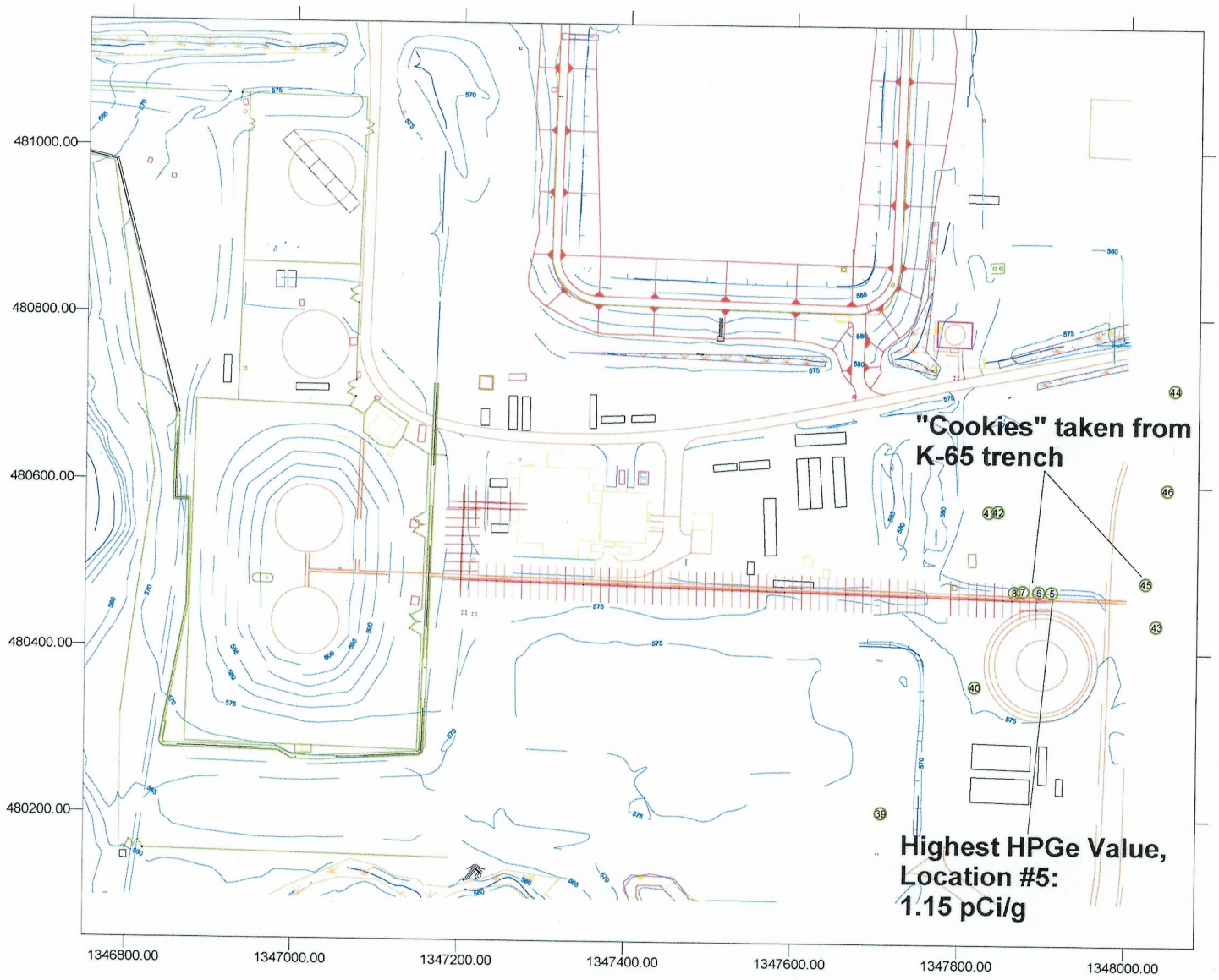


HPGe @ 31cm
Total U (ppm)
- 0 to 164
- 164 to 928
- 928 to 9999

RTIMP DWG Title: A7P1_FG_P2_TU.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_P2_HPGe_31cm.xls

Figure 3-13. Area 7 Phase I, Precertification Phase 2 Thorium-232 HPGe Results

Moisture Corrected Thorium-232
Field of View to Scale
HPGe DET#: 31265
Measurement Dates: 09/19/02 - 11/14/02

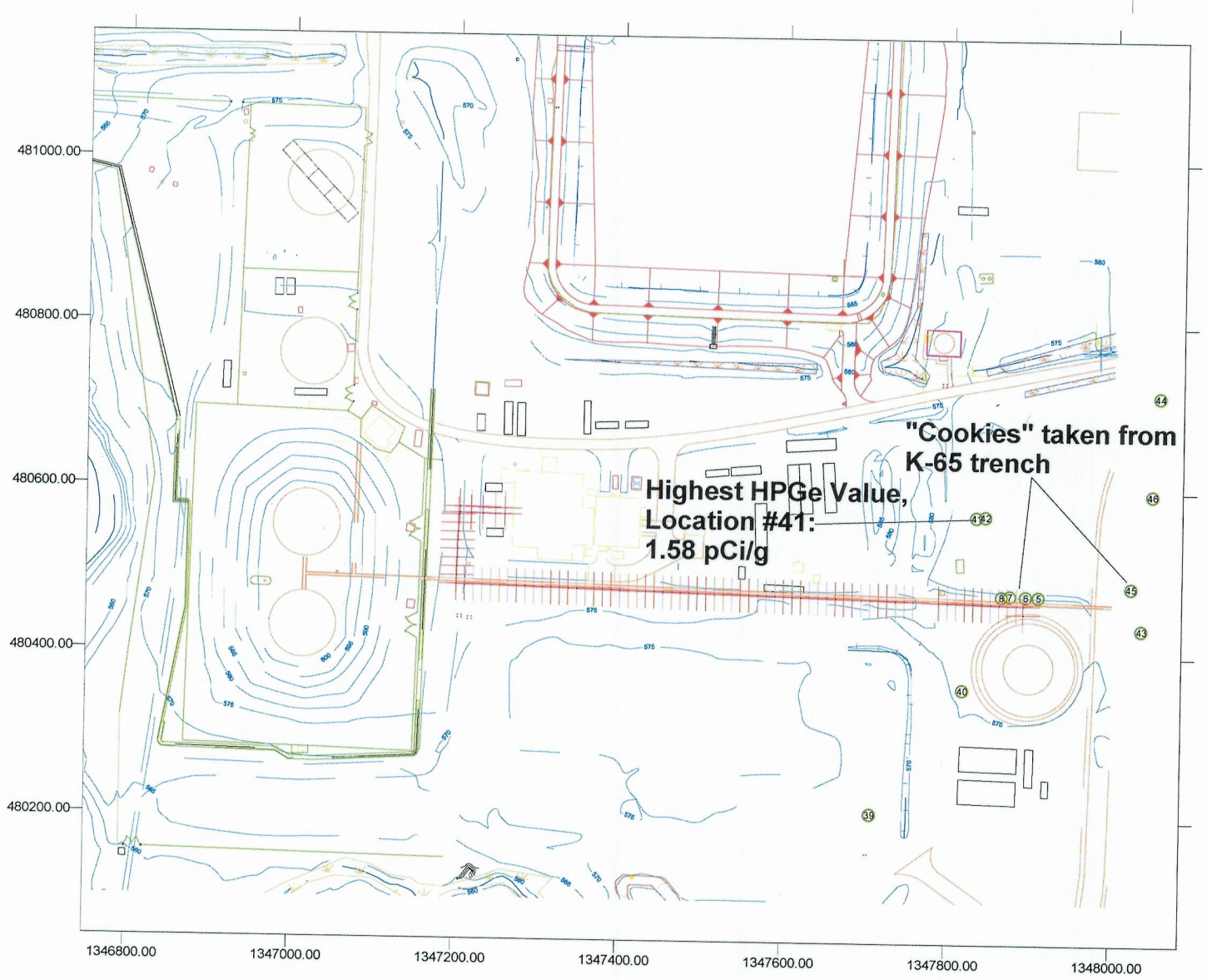


HPGe @ 31cm
Th-232 (pCi/g)
0 to 3
3 to 9999

RTIMP DWG Title: A7P1_FG_P2_TH.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_P2_HPGe_31cm.xls

Figure 3-14. Area 7 Phase I, Precertification Phase 2 Radium-226 HPGe Results

Moisture Corrected Radium-226
Field of View to Scale
HPGe DET#: 31265
Measurement Dates: 09/19/02 - 11/14/02



RTIMP DWG Title: A7P1_FG_P2_RA.srf
Project Name: A7P1 PreCert
Project #: 20500-PSP-0003
Prepared By: Brian McDaniel/11058
Date Prepared: 05/28/03
Support Data: A7P1_FG_P2_HPGe_31cm.xls

4.0 FUTURE REMEDIATION PLANS FOR AREA 7

4.1 Additional Phases of Area 7

There are two additional phases of Area 7, Phase II and Phase III, which will complete the remediation of the area following the schedule of the Silos remediation, subsequent D&D, and OSDF construction activities. Figure 4-1 shows an outline of Area 7. Figure 4-2 shows the remediated area of A7PI. This figure also shows the Lime Sludge Ponds as being remediated. Area 7, as a whole, will be split into phases according to remediation requirements and the closure schedule of the OSDF, whereby any areas that require remediation within Area 7 and are accessible before the OSDF is closed will be addressed in Phase II. Most of the impacted materials will be generated during Phase II. The remaining portion of Area 7 will be addressed in Phase III.

4.1.1 Area 7, Phase II

A7PII includes the activities necessary to remediate the following structures or areas:

- The footprints of Silos 1, 2, 3, and 4
- The area between the Silos footprints and Paddys Run
- The new Silo 3 handling area
- The old Vitrification Pilot Plant (now referred to as the Silos Maintenance Building)
- The basin that is due south of the Treatment Facility (old Area 7 Sector 4)
- The various Silos support trailer areas, associated parking lots, and perimeter road
- The Building 30/45 parking lot
- The trailer complexes and green space south of the laboratory building
- Storm Water Retention Basins
- WISE Construction Laydown area and associated trailers
- A portion of the IMHR
- The trailers associated with laboratory functions
- The portion of the K-65 Trench north of the Treatment Facility.

Figure 4-3 shows the areas in Phase II as described above.

4.1.1.1 Predesign/Design

A7PII will require significant predesign characterization prior to incorporating into a design package. The area excluding the footprints of Silos 1, 2, 3, and 4 can be characterized using the routine boring design that has been employed for sitewide characterization. The footprints of the silos present a more difficult situation requiring a modified approach to characterization. It is anticipated that characterization of the footprints as well as the berms around Silos 1 and 2 will be accomplished by a combination of routine soil

boring methods for non-radiological parameters and a proposed down-hole scanning system for the radiological parameters. This approach will be finalized and submitted to the agencies in a sampling PSP.

The design and excavation plan for A7PII will reflect the information gathered during predesign activities as well as discussions of infrastructure removals.

4.1.1.2 D&D Structures

All structures within the scope of the A7PII activities will be removed as part of the remediation process leaving behind a footprint that is ready for soil remediation and subsequent final certification. This includes the silo structures and their associated decant sump, which will be sent offsite for final disposition.

4.1.1.3 Certification

The certification strategy for A7PII will be consistent with that of the former production area. Once D&D and soil remediation activities are complete, the footprint will be scanned by real-time instrumentation for precertification and then divided into appropriately sized certification units, sampled, and analyzed consistent with the Sitewide Excavation Plan (SEP) guidelines (DOE 1998b).

4.1.1.4 Schedule

The excavation activities for A7PII are planned for the first and second quarters of Fiscal Year 2006 and the certification activities are planned for the second and third quarters of Fiscal Year 2006.

4.1.2 Area 7, Phase III

A7PIII includes the activities necessary to complete and/or verify the remediation of the remainder of Area 7. This includes the following structures or areas:

- Silos 1 and 2 Treatment Facility
- The Treatment Facility Warehouse
- The old north-south rail spur
- The new Radon Control Buildings
- The Transfer Tank Area
- The remainder of the K-65 Trench existing in Area 7 near the Radon Control System Building
- The Advanced Wastewater Treatment (AWWT) Facility.

The scope of Phase III covers the area that was excavated during A7PI activities as well as areas that will potentially be utilized until the end of 2005 or beyond. Figure 4-4 shows the areas in Phase III as described above.

4.1.2.1 Predesign/Design

The majority of this area (i.e., treatment facility and warehouse footprints and rail spurs) has undergone an extensive predesign characterization investigation as well as significant remediation. This was followed by real-time scanning activities consistent with precertification requirements. The results of the follow-on real-time scans showed below-FRL conditions existed prior to the new construction to support Silos treatment scope.

The only other major areas included in Phase III that still require predesign investigation are the Transfer Tank Area Building and the AWWT Facility. These areas will undergo the full predesign investigation and remedial design processes. Predesign activities for this area may be concurrent with those of A7PII.

4.1.2.2 D&D Structures

The majority of the structures that are present in A7PIII will be removed as part of the remediation process. All process piping and equipment that came in contact with waste from the Silos as well as miscellaneous debris will be sent off site for final disposal after the appropriate safe shutdown activities are performed. The structures themselves (concrete, etc.) and the resulting debris is assumed to be clean and can be free-released as these buildings are expected to remain free of contamination throughout their process life. These buildings include the Silos Treatment Facility, its associated warehouse, and rail spur. Likewise, the soil around and beneath these facilities will remain below the FRLs. Other structures, such as the RCS, Transfer Tank Area Building, and the remaining portion of the K-65 Trench, will be removed and their associated footprints remediated. The schedule of the AWWT Facility D&D is undecided at this time, therefore, it is a structure that may potentially remain in place past OSDF closure, as it supports OSDF leachate treatment as well as Aquifer Operations that must extend past site closure.

4.1.2.3 Certification

The areas where all structures and debris have been removed will be certified in the same manner as A7PII, which will also be consistent with the SEP guidelines. Alternately, for certification of the soils beneath the building footprints that may have debris in place for an extended duration, it is the intent of DOE to collect certification soil samples beneath the slabs/foundations by boring through the existing

structures prior to demolition. As described above, the soil beneath the treatment facility, warehouse, and rail spur leading to the treatment facility has been proven to be below the FRLs associated with Area 7. For the AWWT Facility, its footprint lies within a relatively non-impacted portion of the site. The soils removed to build this facility were taken to the OSDF but were not above the FRLs. Therefore, it is expected that the AWWT Facility can also be certified in-place.

4.1.2.4 Schedule

The excavation activities for A7PIII are planned to start on the second quarter of Fiscal Year 2006 and the certification activities are planned for the third quarter of Fiscal Year 2006.

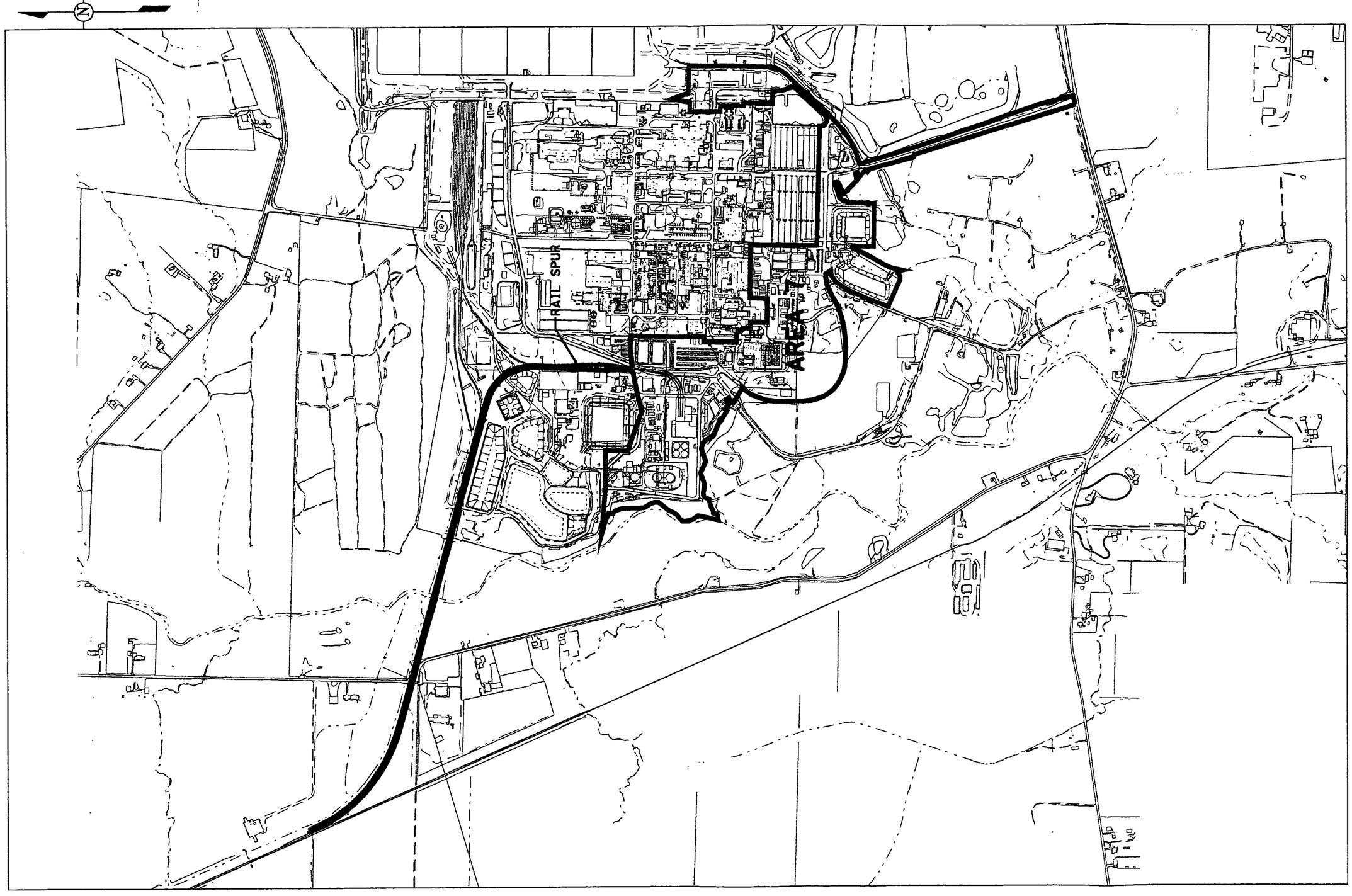


FIGURE 4-1. AREA 7

v:\2fm12\dgn\a7_base2.dgn STATE PLANAR COORDINATE SYSTEM 1983 07-APR-2004

AREA 7

AREA 7 INCLUDES
SOUTH ACCESS ROAD

LEGEND:

AREA 7 PHASE I

SCALE

350 175 0 350 FEET

v:\2fm12\dgn\a7p1.dgn STATE PLANAR COORDINATE SYSTEM 1983 07-APR-2004

FIGURE 4-2. AREA 7, PHASE I

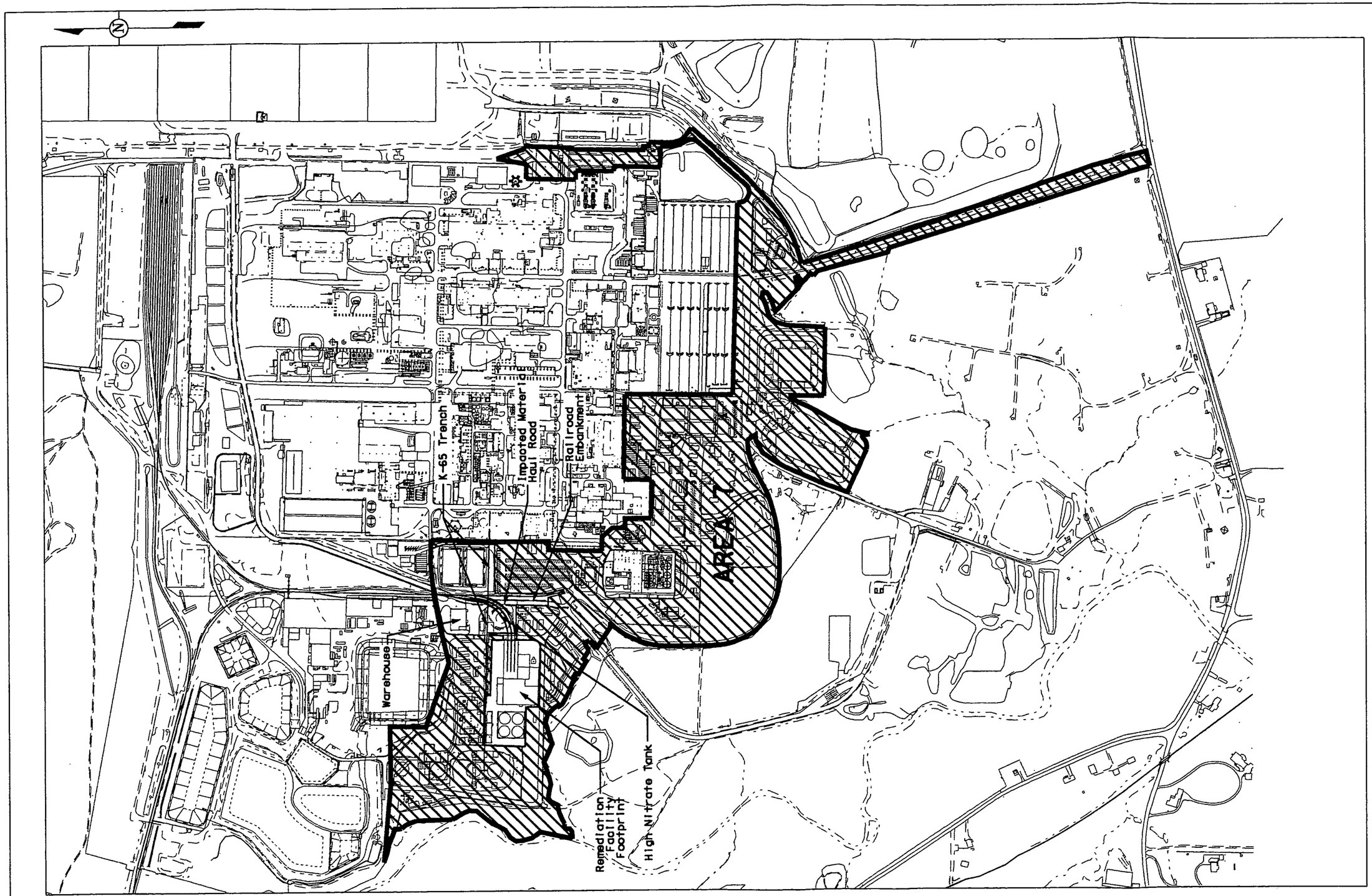
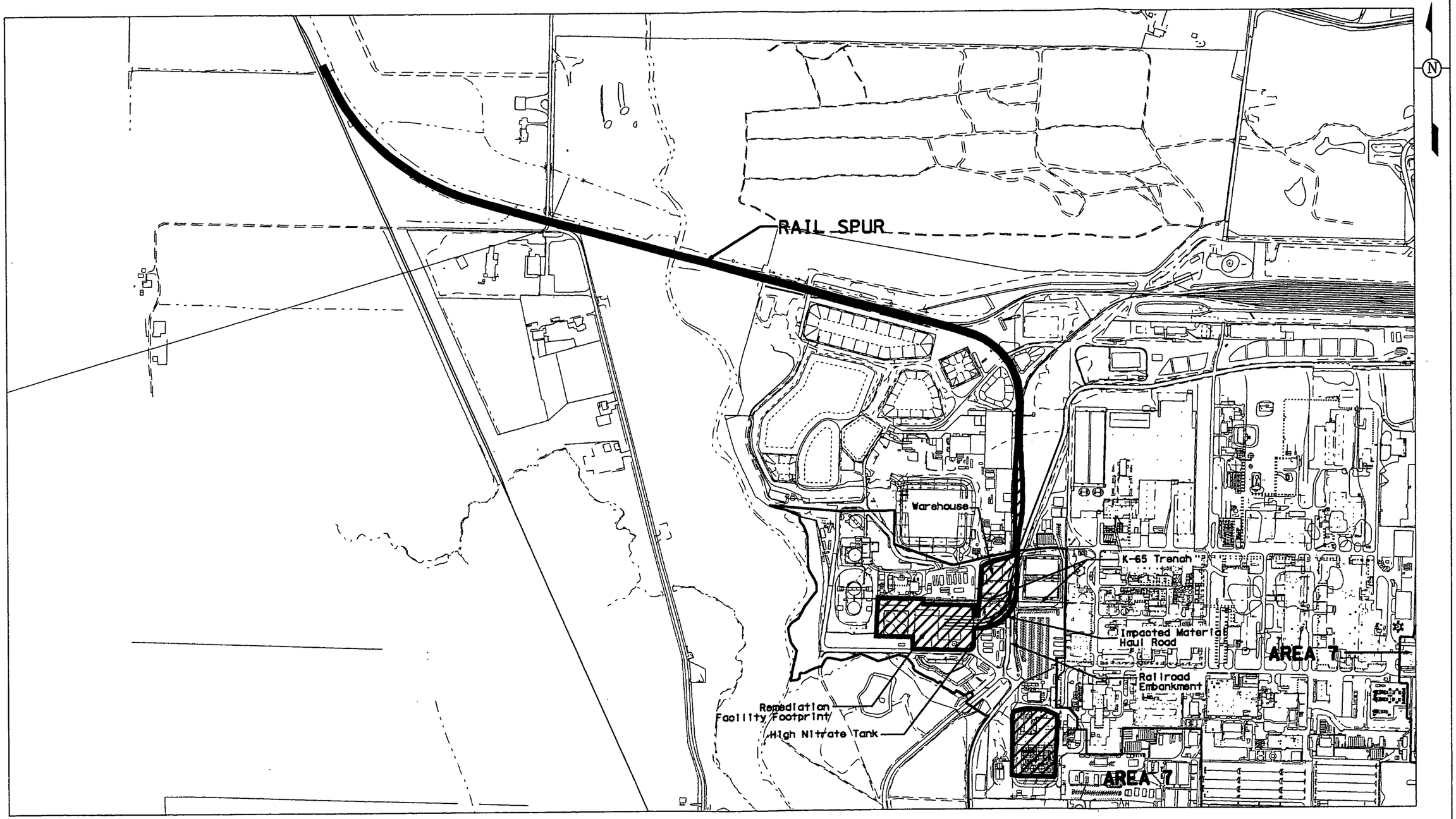


FIGURE 4-3. AREA 7. PHASE II

v:\e2fm12\dgn\a7p2.dgn STATE PLANAR COORDINATE SYSTEM 1983 07-APR-2004



LEGEND:

AREA 7 PHASE III

SCALE

600 300 0 600 FEET

v:\e2fm12\dgn\a7p3.dgn STATE PLANAR COORDINATE SYSTEM 1983 07-APR-2004

FIGURE 4-4. AREA 7, PHASE III

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APPENDIX A

UPDATED PREDESIGN TABLES AND AREA-SPECIFIC CONSTITUENT OF CONCERN FRL/WAC

TABLE A-1
K-65 TRENCH SILT RESULTS

ASCOC	A7-K65T-S-1	A7-K65T-S-2	A7-K65T-S-3	A7-K65T-S-4	A7-K65T-S-5	A7-K65T-S-6	A7-K65T-S-7	A7-K65T-S-8
ARSENIC (mg/kg)	53.2	14.6	15.6	11.1	17.4	8.12	10.2	8.61
BARIUM (mg/kg)	1720	302	236	178	772	81.6	147	302
CADMIUM (mg/kg)	3.34	1.41	1.27	1.32	3.02	1.04	1.19	1.37
CHROMIUM (mg/kg)	54.4	31.8	28.4	29.0	49.6	23.3	28.3	36.2
LEAD (mg/kg)	22.2	50.1	50.3	48.4	38.6	41.8	68.7	58.0
RADIUM 226 (pCi/g)	22	9.6	7.8	6.9	13	3.9	6.4	6.1
SELENIUM (mg/kg)	3.18	< 1.05	< 2.06	0.99	< 1.07	1.30	1.21	< 1.00
SILVER (mg/kg)	1.63	0.38	0.23	0.29	1.61	0.17	< 0.17	0.26
TECHNETIUM 99 (pCi/g)	470	590	340	220	120	320	570	460
THORIUM 228 (pCi/g)	18	5.5	4.1	3.1	4.6	1.7	2.4	4.5
THORIUM 230 (pCi/g)	18	39	35	32	24	20	33	53
THORIUM 232 (pCi/g)	1.4	3.8	2.5	2.3	1.8	1.3	1.5	2.5
URANIUM (ug/g)	553	125	87.9	99.5	281	58.9	73.5	87.1

ASCOC	A7-K65T-S-9	A7-K65T-S-10	A7-K65T-S-11	A7-K65T-S-12	A7-K65T-S-13	A7-K65T-S-14	A7-K65T-S-15
ARSENIC (mg/kg)	7.01	5.21	7.35	5.24	8.30	6.45	3.01
BARIUM (mg/kg)	101	110	397	88.0	101	51.8	39.8
CADMIUM (mg/kg)	0.78	0.59	3.25	1.02	2.16	1.13	0.46
CHROMIUM (mg/kg)	19.0	21.6	63.6	23.6	47.6	29.2	15.4
LEAD (mg/kg)	37.1	21.4	64.2	52.4	156	96.4	28.7
RADIUM 226 (pCi/g)	3.6	1.2	7.5	4.3	5.6	3.3	0.88
SELENIUM (mg/kg)	< 1.03	2.23	< 1.03	< 0.99	< 1.06	< 1.95	< 1.05
SILVER (mg/kg)	< 0.17	0.20	0.37	< 0.17	< 0.17	< 0.17	0.18
TECHNETIUM 99 (pCi/g)	43	31	95	22	33	3.1	< 1.6
THORIUM 228 (pCi/g)	1.9	0.52	2.3	1.4	1.6	0.90	0.62
THORIUM 230 (pCi/g)	26	2.2	25	14	26	9.7	2.9
THORIUM 232 (pCi/g)	2.2	0.40	1.0	1.2	1.5	0.66	0.58
URANIUM (ug/g)	30.8	16.7	73.3	42.4	88.9	32.8	17.8

TABLE A-2
AREA F RESULTS

ASCOC	A7-F1	A7-F1 (4')	A7-F2	A7-F3	A7-F5	A7-F6	A7-F6 (4')	A7-F7	A7-F8	A7-F9
AROCLOR 1254 (ug/kg)	< 38	< 40	< 38	< 40	< 38	< 39	< 39	< 41	< 39	< 40
AROCLOR 1260 (ug/kg)	< 38	< 40	< 38	< 40	< 38	< 39	< 39	< 41	< 39	< 40
ARSENIC (mg/kg)	10.9	11.3	8.38	4.54	6.29	8.92	8.24	7.80	3.84	17.6
BERYLLIUM (mg/kg)	< 0.022	< 0.021	< 0.02	0.05	< 0.021	0.029	0.25	0.33	< 0.022	1.16
BORON (mg/kg)	< 1.10	< 1.06	< 1.02	< 1.04	< 1.07	< 1.10	2.23	8.64	< 1.10	< 1.12
CESIUM 137 (pCi/g)	< 0.063	< 0.059	< 0.060	0.100	< 0.039	< 0.040	< 0.049	< 0.044	< 0.048	< 0.064
LEAD (mg/kg)	15.0	19.6	24.4	19.1	7.93	21.2	20.8	19.3	18.7	46.5
MANGANESE (mg/kg)	459	857	1630	325	382	235	756	392	298	1470
MERCURY (mg/kg)	0.025	0.023	0.014	0.021	0.014	0.010	0.027	0.016	< 0.007	0.014
RADIUM 226 (pCi/g)	1.04	1.33	1.28	1.44	0.763	1.46	1.32	1.09	1.54	1.73
RADIUM 228 (pCi/g)	0.896	1.08	1.06	1.08	0.508	1.15	0.921	0.943	1.14	1.29
TECHNETIUM 99 (pCi/g)	< 1.5	< 1.9	< 1.7	< 1.9	< 1.7	< 1.9	< 1.6	< 1.8	< 1.7	< 2.0
THORIUM 228 (pCi/g)	0.889	1.06	1.05	1.04	0.479	1.12	0.891	0.938	1.11	1.27
THORIUM 230 (pCi/g)	< 18.9	< 22.2	< 21.1	< 22.6	< 19.8	< 23.0	< 20.6	< 21.9	< 23.8	< 25.5
THORIUM 232 (pCi/g)	0.896	1.05	1.06	1.08	0.508	1.15	0.921	0.943	1.14	1.29
URANIUM (ug/g)	4.20	4.23	4.03	11.6	3.81	4.72	3.52	< 2.60	5.45	4.87

ASCOC	A7-F10	A7-F12	A7-F13	A7-F14	A7-F14 (4')	A7-F15	A7-F15 (4')	A7-F17	A7-F18	A7-F19	A7-F20
AROCLOR 1254 (ug/kg)	< 41	< 41	< 41	< 38	< 40	< 39	< 39	< 42	< 40	< 39	< 39
AROCLOR 1260 (ug/kg)	< 41	< 41	< 41	< 38	< 40	< 39	7	< 42	< 40	< 39	< 39
ARSENIC (mg/kg)	10.8	10.2	18.4	4.46	12.8	8.81	8.26	13.0	8.69	7.23	9.53
BERYLLIUM (mg/kg)	0.30	0.15	0.19	< 0.020	0.21	0.36	0.17	< 0.022	0.50	0.38	0.38
BORON (mg/kg)	3.29	< 1.15	< 1.11	< 1.01	< 1.16	2.76	1.73	< 1.12	< 1.14	< 1.13	4.43
CESIUM 137 (pCi/g)	< 0.033	< 0.063	< 0.040	< 0.033	< 0.041	< 0.059	< 0.053	< 0.046	< 0.058	< 0.037	< 0.045
LEAD (mg/kg)	19.3	23.3	24.2	6.51	17.4	17.8	14.0	27.1	24.6	24.9	20.9
MANGANESE (mg/kg)	540	465	696	209	321	531	306	1090	564	358	508
MERCURY (mg/kg)	0.020	0.024	0.061	< 0.006	0.032	0.019	0.024	0.037	0.035	0.022	0.025
RADIUM 226 (pCi/g)	1.02	1.52	1.43	0.818	1.24	1.11	1.07	1.42	1.51	1.32	1.04
RADIUM 228 (pCi/g)	0.802	1.16	1.18	0.461	1.01	0.891	0.794	1.10	1.14	1.10	0.889
TECHNETIUM 99 (pCi/g)	< 1.7	< 1.7	< 1.5	< 1.8	< 1.7	< 1.8	< 1.9	< 1.7	< 1.8	< 1.6	< 1.7
THORIUM 228 (pCi/g)	0.795	1.13	1.14	0.447	0.987	0.870	0.773	1.07	1.11	1.05	0.882
THORIUM 230 (pCi/g)	< 18.9	< 22.7	< 22.9	< 16.6	< 21.5	< 21.5	< 21.0	< 22.5	< 20.8	< 22.5	< 19.7
THORIUM 232 (pCi/g)	0.802	1.16	1.18	0.461	1.01	0.891	0.794	1.10	1.14	1.10	0.889
URANIUM (ug/g)	3.96	3.94	2.97	< 1.95	3.79	< 2.55	3.75	2.63	3.48	3.59	< 2.35

Note: Depths are at 3' unless otherwise noted

TABLE A-3
AREA E RESULTS

ASCOC	A7-E1	A7-E2	A7-E3	A7-E4	A7-E5	A7-E6	A7-E7	A7-E10	A7-E11
ARSENIC (mg/kg)	5.10	8.90	15.4	5.36	11.2	13.2	7.27	7.65	3.69
BERYLLIUM (mg/kg)	0.17	0.39	0.091	0.19	0.38	0.69	0.079	0.34	0.081
BORON (mg/kg)	< 1.11	< 1.15	< 1.19	< 1.12	< 1.01	< 1.17	< 1.01	< 1.06	< 1.11
CESIUM 137 (pCi/g)	< 0.040	< 0.057	< 0.062	< 0.023	< 0.050	< 0.058	< 0.037	< 0.050	< 0.052
LEAD (mg/kg)	19.2	19.8	22.4	19.2	31.0	31.1	17.2	20.2	21.5
MANGANESE (mg/kg)	354	273	277	265	684	990	647	813	250
MERCURY (mg/kg)	0.026	0.034	0.054	0.073	0.044	0.059	0.047	0.042	0.035
RADIUM 226 (pCi/g)	1.24	1.39	1.46	1.27	1.12	1.54	1.31	1.46	1.23
RADIUM 228 (pCi/g)	0.963	1.08	1.20	0.976	0.832	1.16	0.940	1.14	1.00
TECHNETIUM 99 (pCi/g)	7.1	20	2.3	4.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.8
THORIUM 228 (pCi/g)	0.918	1.08	1.18	0.937	0.821	1.16	0.903	1.12	1.03
THORIUM 230 (pCi/g)	< 20.9	< 21.8	< 22.8	< 21.2	< 20.1	< 23.5	< 20.3	< 22.8	< 21.1
THORIUM 232 (pCi/g)	0.963	1.08	1.20	0.976	0.832	1.16	0.940	1.14	1.00
URANIUM (ug/g)	3.48	3.07	5.22	2.54	7.05	4.50	6.79	4.19	< 2.54

ASCOC	A7-E13	A7-E14	A7-E16	A7-E16 (4.5')	A7-E18	A7-E20	A7-E21	A7-E22	A7-E22 (4.5')	A7-E23
ARSENIC (mg/kg)	8.07	4.62	7.46	8.76	10.1	10.6	5.80	2.86	2.83	6.20
BERYLLIUM (mg/kg)	0.25	0.099	0.17	< 0.020	0.35	< 0.021	0.29	0.13	0.24	0.13
BORON (mg/kg)	< 1.03	< 1.01	< 1.09	< 1.02	< 1.12	< 1.08	< 1.11	< 1.04	< 1.23	< 1.06
CESIUM 137 (pCi/g)	< 0.041	< 0.045	< 0.067	< 0.055	< 0.045	0.046	< 0.064	< 0.038	< 0.038	< 0.048
LEAD (mg/kg)	23.0	20.1	23.8	20.2	25.1	24.9	23.2	24.5	25.1	20.9
MANGANESE (mg/kg)	513	235	682	402	504	324	958	417	252	386
MERCURY (mg/kg)	0.037	0.036	0.046	0.054	0.044	0.044	0.048	0.042	0.058	0.041
RADIUM 226 (pCi/g)	1.55	1.15	1.69	1.20	1.55	1.48	1.37	1.22	1.47	1.25
RADIUM 228 (pCi/g)	1.07	0.936	1.02	0.843	1.10	1.06	1.07	1.06	1.16	0.874
TECHNETIUM 99 (pCi/g)	3.8	< 1.7	2.4	< 2.0	< 1.9	< 1.7	< 1.8	< 1.9	< 1.9	< 1.8
THORIUM 228 (pCi/g)	1.05	0.911	1.01	0.842	1.06	1.05	1.08	1.03	1.14	0.846
THORIUM 230 (pCi/g)	< 22.4	< 21.0	< 22.5	< 19.4	< 22.9	< 21.7	< 22.1	< 22.1	< 22.8	< 20.9
THORIUM 232 (pCi/g)	1.07	0.936	1.02	0.843	1.10	1.06	1.07	1.06	1.16	0.874
URANIUM (ug/g)	6.41	3.72	6.27	4.47	7.41	4.74	4.54	2.47	4.69	3.97

Note: Depths are at 3' unless otherwise noted

TABLE A-3
AREA E RESULTS

ASCOC	A7-E24	A7-E25	A7-E25 (4')	A7-E26	A7-E26 (3.5')	A7-E27	A7-E28	A7-E28 (3.5')
AROCLOR-1254 (ug/kg)	<40	<38	<40	<39	<40	<41	<39	<38
AROCLOR-1260 (ug/kg)	<40	<38	<40	<39	<40	<41	<39	<38
ARSENIC (mg/kg)	5.5	5.6	4	5	8.6	9	10.4	4.6
BERYLLIUM (mg/kg)	0.83	0.56	0.78	0.83	0.97	1.1	0.83	0.48
BORON (mg/kg)	2.4	3	2.7	6.1	2.6	2.2	4.4	1.8
CESIUM 137 (pCi/g)	<0.58	0.00	NR	<0.050	<0.061	0.00	<0.039	NR
LEAD (mg/kg)	14	13	13.4	14.9	17.9	18.3	13.2	11.8
MANGANESE (mg/kg)	607	536	325	670	919	419	373	470
MERCURY (mg/kg)	0.02	0.02	0.03	<0.02	0.03	0.03	0.05	<0.02
RADIUM 226 (pCi/g)	1.26	1.17	1.4	1.15	1.35	1.48	0.964	1.4
RADIUM 228 (pCi/g)	0.937	0.925	NR	0.933	1.14	1.18	0.740	NR
TECHNETIUM 99 (pCi/g)	<1.7	0.24	<1.6	<1.4	<1.7	<1.5	<1.5	1.6
THORIUM 228 (pCi/g)	0.916	0.895	1.0	0.915	1.14	1.15	0.731	1.1
THORIUM 230 (pCi/g)	<21.7	<20.6	1.5	<20.2	<21.8	<23.0	<17.6	1.3
THORIUM 232 (pCi/g)	0.937	0.925	1.0	0.933	1.14	1.18	0.740	1.0
URANIUM (ug/g)	3.25	<2.25	1.68	<2.36	3.39	4.01	5.34	1.87

Note: Depths are at 3' unless otherwise noted

TABLE A-4
AREA SURROUNDING K-65 TRENCH RESULTS

ASCOC	A7-K1 (5')	A7-K1 (10')	A7-K2 (5')	A7-K2 (10')	A7-K3 (5')	A7-K3 (10')	A7-K4 (5')	A7-K4 (10')
AROCLOR-1254 (ug/kg)	<41	<41	<42	<37	<40	<41	<38	<43
AROCLOR-1260 (ug/kg)	<41	<41	<42	<37	<40	<41	<38	<43
ARSENIC (mg/kg)	6.7	3.4	7.5	50.4	6.1	2.9	8.5	5.8
BERYLLIUM (mg/kg)	0.48	0.48	0.2	0.23	0.54	0.1	0.74	0.87
BORON (mg/kg)	5.4	6.5	5.6	6.2	4.2	3.8	22	27.8
CESIUM 137 (pCi/g)	<0.033	<0.045	<0.044	<0.039	<0.063	<0.028	<0.040	<0.047
LEAD (mg/kg)	8.9	8.9	6.2	6	11.3	3.6	12.1	11.3
MANGANESE (mg/kg)	261	317	366	758	347	209	731	394
MERCURY (mg/kg)	0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02
RADIUM 226 (pCi/g)	0.777	1.13	0.742	0.920	1.12	0.650	1.20	1.18
RADIUM 228 (pCi/g)	0.524	0.785	0.572	0.564	1.05	0.420	0.961	0.913
TECHNETIUM 99 (pCi/g)	<1.8	<1.8	7.0	<1.7	4.2	<1.6	<1.6	<1.6
THORIUM 228 (pCi/g)	0.495	0.777	0.559	0.547	1.03	0.418	0.937	0.921
THORIUM 230 (pCi/g)	<17.0	<22.9	<18.1	<21.7	<23.1	<16.5	<22.7	<25.5
THORIUM 232 (pCi/g)	0.524	0.785	0.572	0.564	1.05	0.420	0.961	0.913
URANIUM (ug/g)	<2.00	3.03	5.12	<2.70	3.59	3.07	4.81	4.55

ASCOC	A7-K5 (5')	A7-K5 (10')	A7-K6 (5')	A7-K6 (10')	A7-K8 (5')	A7-K8 (10')	A7-K9 (5')	A7-K9 (10')	A7-K10 (5')	A7-K10 (10')
AROCLOR-1254 (ug/kg)	<40	<41	<42	<41	<38	<42	<43	<41	<40	<41
AROCLOR-1260 (ug/kg)	<40	<41	<42	<41	<38	<42	<43	<41	<40	<41
ARSENIC (mg/kg)	7	4.7	12.6	3.4	2.5	6.9	20.4	6.8	7.8	5.3
BERYLLIUM (mg/kg)	0.64	0.43	1.2	0.24	0.31	0.54	1.1	0.19	0.75	0.27
BORON (mg/kg)	4.7	5.7	0.96	5.3	5.4	6.4	7.7	9.1	6.2	6
CESIUM 137 (pCi/g)	<0.060	<0.041	<0.047	<0.052	<0.039	<0.045	<0.043	<0.043	<0.048	<0.037
LEAD (mg/kg)	9.7	10.2	18.9	7	4.7	9.5	21.2	4.6	13.1	8
MANGANESE (mg/kg)	245	1040	641	392	229	350	1230	699	523	295
MERCURY (mg/kg)	0.03	0.02	0.06	0.02	<0.02	0.02	0.03	<0.02	0.03	<0.02
RADIUM 226 (pCi/g)	1.12	1.16	1.71	0.818	1.09	1.12	1.76	1.18	0.756	1.42
RADIUM 228 (pCi/g)	0.997	0.954	1.22	0.669	0.939	0.925	1.30	0.811	0.607	1.11
TECHNETIUM 99 (pCi/g)	1.8	0.51	<1.8	<1.6	<1.7	<1.8	<1.8	<1.7	<1.7	<1.9
THORIUM 228 (pCi/g)	0.969	0.944	1.18	0.681	0.900	0.899	1.25	0.801	0.596	1.09
THORIUM 230 (pCi/g)	<22.5	<21.7	<26.8	<18.6	<22.2	<25.3	<24.6	<19.8	<17.0	<23.3
THORIUM 232 (pCi/g)	0.997	0.954	1.22	0.669	0.939	0.925	1.30	0.811	0.607	1.11
URANIUM (ug/g)	5.64	4.08	<2.65	<2.63	3.68	2.97	4.00	<2.48	<6.74	4.87

* Data not available as of 6/10/02

TABLE A-4
AREA SURROUNDING K-65 TRENCH RESULTS

ASCOC	A7-K11 (5')	A7-K11 (10')	A7-K12 (5')	A7-K12 (10')	A7-K13 (5')	A7-K13 (10')	A7-K14 (5')	A7-K14 (10')	A7-K15 (5')	A7-K15 (10')
AROCLOR-1254 (ug/kg)	<42	<43	<40	<42	<41	<41	<41	<40	<42	<40
AROCLOR-1260 (ug/kg)	<42	<43	<40	<42	<41	<41	<41	<40	<42	<40
ARSENIC (mg/kg)	7.9	14	7.1	13.1	8.9	10.4	13.2	5.5	13.4	8.4
BERYLLIUM (mg/kg)	0.62	0.49	0.75	0.57	0.9	0.5	0.47	0.41	1.6	0.54
BORON (mg/kg)	1.7	2.7	3.1	5.3	2.8	7.2	1.2	5.6	1.3	6.3
CESIUM 137 (pCi/g)	<0.049	<0.063	<0.060	0.00	<0.059	<0.060	<0.044	<0.044	<0.066	<0.041
LEAD (mg/kg)	15.8	10.8	15	12.9	16.9	9.5	13.4	7.2	23	11.1
MANGANESE (mg/kg)	281	462	344	355	203	272	334	271	2780	634
MERCURY (mg/kg)	0.04	0.02	<0.02	<0.02	0.04	0.03	0.03	0.02	0.05	0.02
RADIUM 226 (pCi/g)	1.21	1.16	1.49	3.61	1.38	1.12	1.51	1.05	1.67	1.04
RADIUM 228 (pCi/g)	1.01	0.944	0.574	1.13	1.14	0.948	1.27	0.839	1.27	0.884
TECHNETIUM 99 (pCi/g)	<1.7	0.88	<1.6	2.9	<1.9	<1.8	<1.6	<1.8	<1.9	<1.8
THORIUM 228 (pCi/g)	0.982	0.944	0.578	1.12	1.13	0.940	1.25	0.824	1.25	0.851
THORIUM 230 (pCi/g)	<25.5	<22.0	<19.5	<28.0	<21.5	<23.2	<23.9	<24.3	<24.9	<21.2
THORIUM 232 (pCi/g)	1.01	0.944	0.574	1.13	1.14	0.948	1.27	0.839	1.27	0.884
URANIUM (ug/g)	3.53	3.34	<2.70	8.65	4.39	5.44	4.73	<2.93	6.47	3.12

ASCOC	A7-K16 (5')	A7-K16 (10')	A7-K17 (5')	A7-K17 (10')	A7-K18 (5')	A7-K18 (10')
AROCLOR-1254 (ug/kg)	<41	<42	<42	<40	<40	<40
AROCLOR-1260 (ug/kg)	<41	<42	<42	<40	<40	<40
ARSENIC (mg/kg)	53.6	4.4	6	14.1	9.3	5.2
BERYLLIUM (mg/kg)	0.94	0.56	0.79	0.26	0.57	0.36
BORON (mg/kg)	3.3	6.9	2.5	5.6	5.6	6.8
CESIUM 137 (pCi/g)	<0.040	<0.050	<0.059	<0.037	<0.051	<0.064
LEAD (mg/kg)	16.9	9.9	13.7	8.8	12.3	8.9
MANGANESE (mg/kg)	481	449	280	656	242	403
MERCURY (mg/kg)	0.04	0.02	0.03	<0.02	0.03	0.02
RADIUM 226 (pCi/g)	1.60	1.36	1.27	1.05	1.45	1.16
RADIUM 228 (pCi/g)	1.26	1.03	0.974	0.837	1.13	0.906
TECHNETIUM 99 (pCi/g)	<1.8	<1.9	<1.8	<1.9	<1.8	<2.0
THORIUM 228 (pCi/g)	1.22	1.04	0.946	0.821	1.10	0.903
THORIUM 230 (pCi/g)	<24.3	<27.0	<21.0	0.00	<26.8	<22.4
THORIUM 232 (pCi/g)	1.26	1.03	0.974	0.837	1.13	0.906
URANIUM (ug/g)	5.66	2.80	<3.02	3.77	4.58	<2.65

TABLE A-5
AREA ALONG HAUL ROAD AND GRAVEL LOT
SOUTH OF THE HIGH NITRATE TANK

ASCOC	A7-HR1 (0.5')	A7-HR2 (0.5')	A7-HR3 (0.5')	A7-HR4 (0.5')	A7-HR5 (0.5')	A7-HR6 (0.5')	A7-HR7 (0.5')	A7-HR8 (0.5')
AROCLOR-1254 (ug/kg)	<35	<40	<39	<39	<39	<38	<38	<40
AROCLOR-1260 (ug/kg)	<35	<40	<39	<39	<39	<38	<38	<40
ARSENIC (mg/kg)	11.6	7.3	12.2	8.9	7.5	9.1	20.1	14.1
BERYLLIUM (mg/kg)	0.89	0.65	0.61	0.75	0.59	0.66	0.79	0.65
BORON (mg/kg)	2.8	1.8	1.9	1.9	1.7	2.9	1.5	1.5
CESIUM 137 (pCi/g)	<0.063	<0.055	<0.039	<0.043	<0.052	<0.035	<0.040	<0.048
LEAD (mg/kg)	17.1	12	12.2	14.5	12.4	11.5	14.1	13.7
MANGANESE (mg/kg)	859	118	179	591	264	481	660	297
MERCURY (mg/kg)	0.02	0.02	0.03	0.03	0.03	0.03	0.03	<0.02
RADIUM 226 (pCi/g)	1.39	1.26	1.29	1.35	1.21	1.07	1.35	1.29
RADIUM 228 (pCi/g)	1.10	1.07	0.970	0.998	1.04	0.890	1.10	1.11
TECHNETIUM 99 (pCi/g)	<1.9	<1.5	<1.9	<1.7	<1.8	<1.6	<1.8	<1.8
THORIUM 228 (pCi/g)	1.11	1.05	0.934	0.958	1.02	0.867	1.07	1.13
THORIUM 230 (pCi/g)	<25.5	<22.1	<22.0	<20.8	<22.6	<21.8	<22.6	<20.8
THORIUM 232 (pCi/g)	1.10	1.07	0.970	0.998	1.04	0.890	1.10	1.11
URANIUM (ug/g)	<4.03	<2.62	3.02	4.00	3.73	4.95	<2.80	3.05

ASCOC	A7-HR9 (1')	A7-HR9 (1.5')	A7-HR10 (1')	A7-HR10 (1.5')	A7-HR11 (4')	A7-HR11 (4.5')	A7-HR12 (4')	A7-HR12 (4.5')	A7-HR13 (6')	A7-HR13 (6.5')
AROCLOR-1254 (ug/kg)	<39	<40	52	<39	<40	<41	<41	<40	<40	<40
AROCLOR-1260 (ug/kg)	<39	<40	<40	<39	<40	<41	<41	<40	<40	<40
ARSENIC (mg/kg)	8.6	13.3	2.4	9.9	6.3	4.8	10.2	3.2	5.6	6.8
BERYLLIUM (mg/kg)	0.68	1	0.1	0.75	0.58	0.47	0.78	0.65	0.5	0.55
BORON (mg/kg)	8.5	6.9	6.4	10.1	7.6	8.5	8.8	4.3	5.1	4.9
CESIUM 137 (pCi/g)	<0.055	<0.069	0.077	<0.043	<0.051	<0.050	<0.050	<0.050	<0.064	<0.050
LEAD (mg/kg)	20.1	17.8	3.2	14.1	11	7.9	15.9	12.3	10.1	10.9
MANGANESE (mg/kg)	645	1500	518	545	478	294	627	188	601	634
MERCURY (mg/kg)	0.02	0.04	<0.01	0.02	0.02	<0.02	0.02	0.03	0.02	0.02
RADIUM 226 (pCi/g)	1.29	1.64	0.498	1.21	1.64	1.15	1.07	1.09	1.24	1.29
RADIUM 228 (pCi/g)	0.920	1.34	0.414	0.815	1.19	0.947	0.940	0.875	0.869	0.815
TECHNETIUM 99 (pCi/g)	<1.8	<1.7	<1.8	<1.8	<1.7	<1.6	<1.8	<1.8	<1.8	<1.9
THORIUM 228 (pCi/g)	0.892	1.34	0.390	0.811	1.17	0.929	0.931	0.842	0.852	0.815
THORIUM 230 (pCi/g)	<24.7	<25.3	<16.7	<22.3	<26.3	<24.7	<23.4	<23.6	<22.1	<20.0
THORIUM 232 (pCi/g)	0.920	1.34	0.414	0.815	1.19	0.947	0.940	0.875	0.869	0.815
URANIUM (ug/g)	11.3	4.18	4.36	6.10	6.79	<3.11	4.31	<3.60	<2.49	4.35

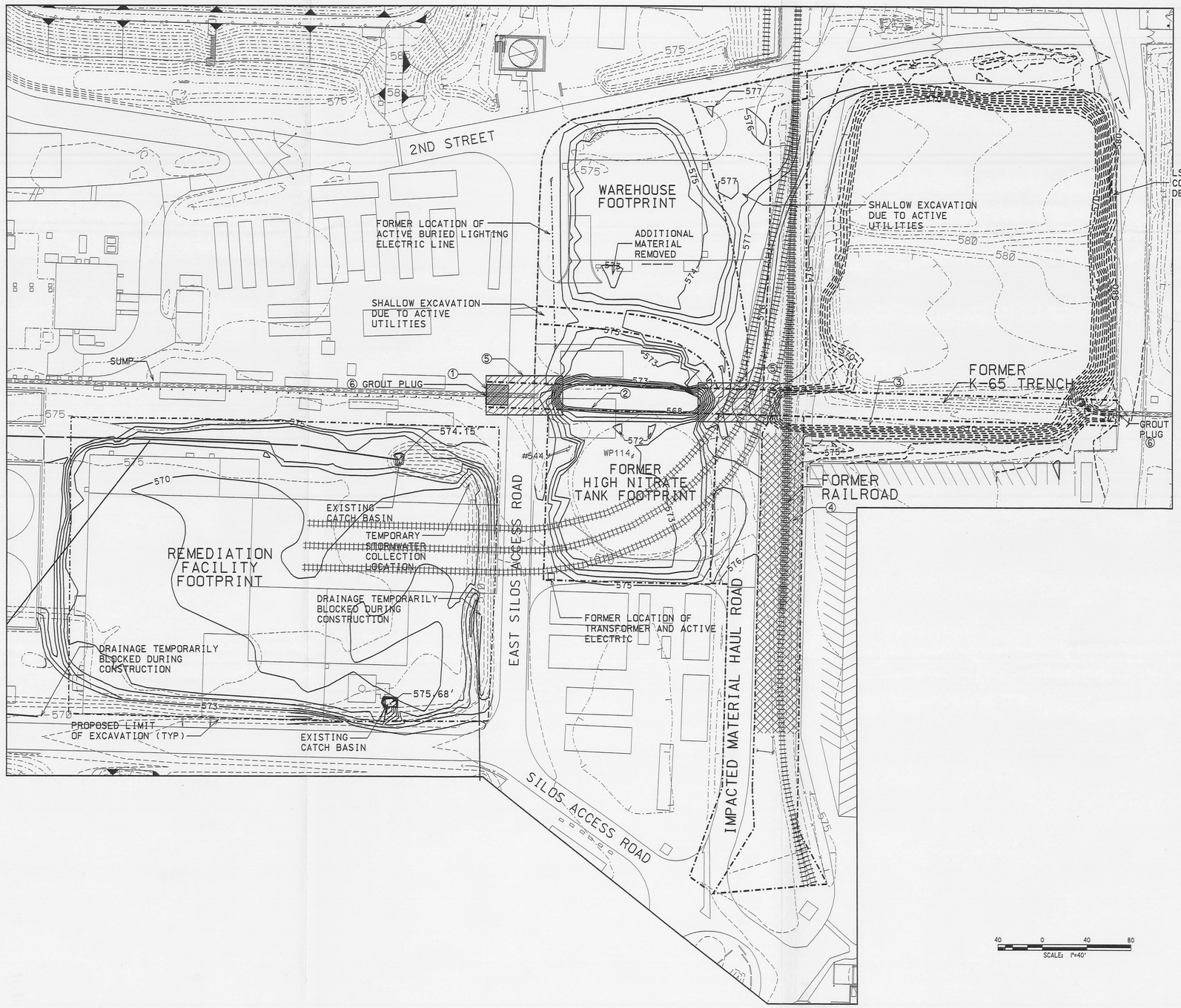
TABLE A-5
AREA ALONG HAUL ROAD AND GRAVEL LOT
SOUTH OF THE HIGH NITRATE TANK

ASCOC	A7-HR14 (4')	A7-HR14 (4.5')	A7-HR15 (5.5')	A7-HR15 (6')	A7-HR16 (0.5')	A7-HR17 (1.5')	A7-HR17 (2')	A7-HR18 (2.5')	A7-HR18 (3')
AROCLOR-1254 (ug/kg)	<40	<40	<38	<42	<40	<41	<40	<41	<40
AROCLOR-1260 (ug/kg)	<40	<40	<38	<42	<40	<41	<40	<41	<40
ARSENIC (mg/kg)	7.4	7.3	6.4	9.7	10.9	6.7	6.2	4.7	12
BERYLLIUM (mg/kg)	0.84	0.68	0.41	0.92	0.87	1.2	0.7	0.86	0.71
BORON (mg/kg)	3.3	6.5	6.2	1.7	6.7	27.3	5.7	16.1	5.3
CESIUM 137 (pCi/g)	<0.036	<0.038	<0.051	<0.055	<0.057	<0.052	0.094	<0.070	<0.053
LEAD (mg/kg)	14.3	10.9	7.1	16.5	14.3	13.9	17.2	10.6	16.6
MANGANESE (mg/kg)	647	529	412	529	600	643	207	670	506
MERCURY (mg/kg)	0.04	0.02	0.02	0.04	0.04	<0.02	0.03	<0.02	0.03
RADIUM 226 (pCi/g)	1.34	1.23	1.22	0.968	1.44	1.28	1.33	1.29	1.28
RADIUM 228 (pCi/g)	0.904	0.887	0.698	0.779	1.15	1.32	1.12	1.35	1.07
TECHNETIUM 99 (pCi/g)	<1.9	<1.9	<2.0	<1.8	<1.8	<1.7	<1.8	<1.7	<1.7
THORIUM 228 (pCi/g)	0.880	0.894	0.690	0.750	1.14	1.30	1.12	1.35	1.07
THORIUM 230 (pCi/g)	<24.3	<21.6	<19.5	<20.0	<23.9	<22.7	<22.1	<28.2	<23.3
THORIUM 232 (pCi/g)	0.904	0.887	0.698	0.779	1.15	1.32	1.12	1.35	1.07
URANIUM (ug/g)	5.30	2.54	<2.73	2.39	<2.85	5.11	5.87	<3.54	3.35

ASCOC	A7-HR19 (4')	A7-HR19 (4.5')	A7-HR20 (2.5')	A7-HR20 (3')	A7-HR20 (1.5')	A7-HR21 (2')	A7-HR22 (6')	A7-HR22 (6.5')	A7-HR23 (0.5')
AROCLOR-1254 (ug/kg)	<39	<40	<39	<39	<37	<38	<40	<40	<38
AROCLOR-1260 (ug/kg)	<39	<40	<39	<39	<37	<38	<40	<40	<38
ARSENIC (mg/kg)	8.1	3.9	4.9	4.5	7.7	8.8	7.5	3.2	15.4
BERYLLIUM (mg/kg)	0.71	0.63	0.47	0.59	0.58	0.56	0.45	0.55	0.53
BORON (mg/kg)	6.2	4.4	3.8	9.5	4.9	4.3	6	10.1	1.7
CESIUM 137 (pCi/g)	<0.068	<0.038	0.106	<0.065	<0.058	0.061	<0.060	<0.038	<0.053
LEAD (mg/kg)	13.4	16.4	15.8	6.9	12.3	11.5	10.9	9.3	17.6
MANGANESE (mg/kg)	616	190	458	643	556	431	872	405	311
MERCURY (mg/kg)	0.03	0.02	<0.02	<0.01	0.02	0.02	<0.01	0.02	0.04
RADIUM 226 (pCi/g)	1.30	1.21	1.73	1.25	1.39	1.34	1.10	1.09	1.52
RADIUM 228 (pCi/g)	1.06	0.958	1.26	0.991	0.917	0.945	0.786	0.929	1.13
TECHNETIUM 99 (pCi/g)	<1.9	<1.8	<1.6	<2.0	<1.8	<1.8	<1.6	<1.4	<1.7
THORIUM 228 (pCi/g)	1.05	0.918	1.23	0.987	0.916	0.950	0.774	0.915	1.12
THORIUM 230 (pCi/g)	<24.6	<20.9	<25.4	<21.4	<21.1	<23.2	<22.0	<22.7	<23.2
THORIUM 232 (pCi/g)	1.06	0.958	1.26	0.991	0.917	0.945	0.786	0.929	1.13
URANIUM (ug/g)	3.43	3.72	25.7	3.48	7.05	20.9	<3.18	3.98	4.21

TABLE A-6
AREA-SPECIFIC CONSTITUENTS OF CONCERN
FRL/WAC LEVELS

ASCOC	FRL	OSDF WAC
ARSENIC (mg/kg)	12	n/a
BERYLLIUM (mg/kg)	1.5	n/a
BORON (mg/kg)	7400	1040
CESIUM 137 (pCi/g)	1.4	n/a
LEAD (mg/kg)	400	n/a
MANGANESE (mg/kg)	4600	n/a
MERCURY (mg/kg)	7.5	56600
RADIUM 226 (pCi/g)	1.7	n/a
RADIUM 228 (pCi/g)	1.8	n/a
TECHNETIUM 99 (pCi/g)	30	29.1
THORIUM 228 (pCi/g)	1.7	n/a
THORIUM 230 (pCi/g)	280	n/a
THORIUM 232 (pCi/g)	1.5	n/a
URANIUM (ug/g)	82	1030



GENERAL NOTES

1. EXISTING TOPOGRAPHY SHOWN ON DRAWINGS PROVIDED BY FLUOR FERNALD. THESE SOURCES INCLUDE EXISTING SITE DATA SOURCE (IN-PLANT FILES) FEMP CADD GRID/UTILITY DRAWINGS.
2. HORIZONTAL CONTROL SHOWN ON THE DRAWING IS BASED UPON NORTH AMERICAN DATAUM 1983 (NAD 83).
3. VERTICAL CONTROL SHOWN ON THE DRAWING IS BASED UPON NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD 29).
4. WORK WAS PERFORMED IN ACCORDANCE WITH THE AREA 7 EXCAVATION PLAN, PHASE I, JUNE 2002.
5. AS-BUILT CONTOURS REPRESENT REMEDIAL EXCAVATION THAT OCCURRED DURING THE SUMMER OF 2002.
6. REFERENCE POST-EXCAVATION AS-BUILT REPORT FOR AREA 7, PHASE I, DOCUMENT 20501-RP-0001, LATEST REVISION, FOR DETAILED DESCRIPTION OF REMEDIAL EXCAVATION ACTIVITIES.

KEYED NOTES

① PORTION OF K-65 TRENCH WEST OF ROAD REMOVED TO DEPTH OF 6 FEET. APPROXIMATELY 6 FEET WIDE AT BOTTOM WITH 1:1 SIDESLOPES.

② FINAL EXCAVATION CONTAINED 2 FEET OF STANDING WATER FROM PERCHED WATER ZONE UPON OBTAINING AS-BUILT SURVEY DATA.

③ FINAL EXCAVATION CONTAINED 3 FEET OF STANDING WATER BASED ON TOPOGRAPHIC FLYOVER SURVEY.

④ FINAL EXCAVATION OF RAILROAD TO ELEVATION 574' BACKFILLED WITH GRAVEL FOR PERSONNEL ACCESS AND PARKING PRIOR TO PERFORMING AS-BUILT SURVEY.

⑤ EXCAVATION TO A DEPTH OF 10.5' FROM SURFACE WITHIN THESE LIMITS NOT PERFORMED DURING PHASE I. AREA WILL BE EXCAVATED DURING PHASE II.

⑥ APPROXIMATE LOCATION OF GROUT PLUG INSTALLATION, 12 TO 18 IN. THICK AND CONTINUOUS FROM BOTTOM TO TOP OF TRENCH.

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DATE	REV. BY	APPR. INITIALS AND DATE
0	ISSUED FINAL AS-BUILT	04/13/04	CRN	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
FLUOR FERNALD, INC.

PROJECT NAME
SOIL REMEDIATION

DRAWING TITLE
AREA 7, PHASE I
EXCAVATION AS-BUILT

APPROVALS

COGNIZANT ENG.			SAFETY ENG.		
CIVIL & STR.			MAINTENANCE		
ELECTRICAL			FIRE PROTECT.		
ENGINEER		4/13/04	WASTE MANAGE		
INSTRUMENT			SECURITY		
MECHANICAL			QA		
			CONSTRUCTION	T. Brian Hale	4/13/04
CHECKED	A. C. Sandler	4/13/04	CHARACTERIZATION		4/13/04
APPROVED					

DRAWN BY	PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
JLE	20501	99X-5500-G-00784		0
RES PROJECT NO.	FILENAME 99XG00784.DGN			

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