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Los Alamos Site Characterization Program
Special Projects Report

for

Los Alamos National Laboratory
Environmental Surveillance Group (HSE-8)
MS K490
Los Alamos, New Mexico 87545

Prepared By:
NUS Corporation
June 30, 1990

NUS
CORPORATION

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Los Alamos Site Characterization Program

Special Projects Report

1.0 INTRODUCTION

This Los Alamos Site Characterization Program (LASCP) Special Projects Report was written by NUS at the request of Los Alamos National Laboratory (LANL) in performance of subcontract #301215-SC-0001 through the International Technology (IT) Corporation contract #9-XS8-0062R-1. It documents project events and results from the decontamination and decommissioning of three technical areas (TAs) and the sampling of three TAs at LANL under the LASCP in 1985. This report presents background of the LASCP, descriptions and histories of the TAs where the LASCP special projects took place, and detailed summaries of the work performed during those projects.

2.0 BACKGROUND

2.1 Program Description

The LASCP was a LANL program established to gather environmental information and set environmental site investigation priorities at the Laboratory. The initial investigation which started in 1983 included archive, library, and engineering records searches, aerial photograph review, and employee interviews. During the initial phase of the program, funding was made available during 1985 for special radiological remedial action and soil sampling projects at several TAs which were, at one point, utilized as firing sites during early years of the Laboratory. In Fiscal Year (FY) 1985, the LASCP was incorporated into a new Department of Energy-Albuquerque Operations Office (DOE-AL) program implemented to fulfill the regulatory requirements of the Comprehensive Environmental Resource, Compensation, and Liability Act (CERCLA). This new program, the Comprehensive Environmental Assessment and Response Program (CEARP), encompassed all eight of the DOE-AL weapons development and production installations including LANL.

Some high-priority sites of the LASCP were addressed during the 1985 special projects activities. Under the LASCP, a site was categorized as high priority if contamination existed or was suspected and was easily accessible to the public. Work was performed at the following TAs: TA-4 (also called Alpha Site), TA-5 (Beta Site), TA-20 (Sandia Canyon Site), TA-27 (Gamma Site), and TA-33 (Hot Point). Figure 2-1 shows the locations of these TAs. Radiological decontamination and decommissioning (D&D) of these abandoned firing sites through the LASCP occurred from July 30 to September 30, 1985, and the sampling project took place from July 15 to October 29, 1985. Of the previously mentioned sites, TA-4, TA-5, and portions of TA-20 were D&D'd and soil sampling occurred at TA-5, TA-20, TA-27, and a portion of TA-33. Samples taken at these sites were analyzed for uranium only.

2.2 Site Descriptions

Los Alamos National Laboratory is located on the Pajarito Plateau in New Mexico. The plateau surface is formed of ashfall, ashfall pumice, and rhyolite tuff from the volcanic origins of the region. The topography consists of series of mesas and deep canyons oriented in an east-west direction which are cut by intermittent streams. Most of the mesas on which the Laboratory is located are formed of Bandelier Tuff. The streambeds of these intermittent streams contain porous alluvium ranging in depth from less than 3 feet to 100 feet. The elevations of the mesa tops range from approximately 7800 ft. above mean sea level (msl) on the flank of the Jemez Mountains to about 6200 ft. msl. Most of the mesas end above the Rio Grande valley.

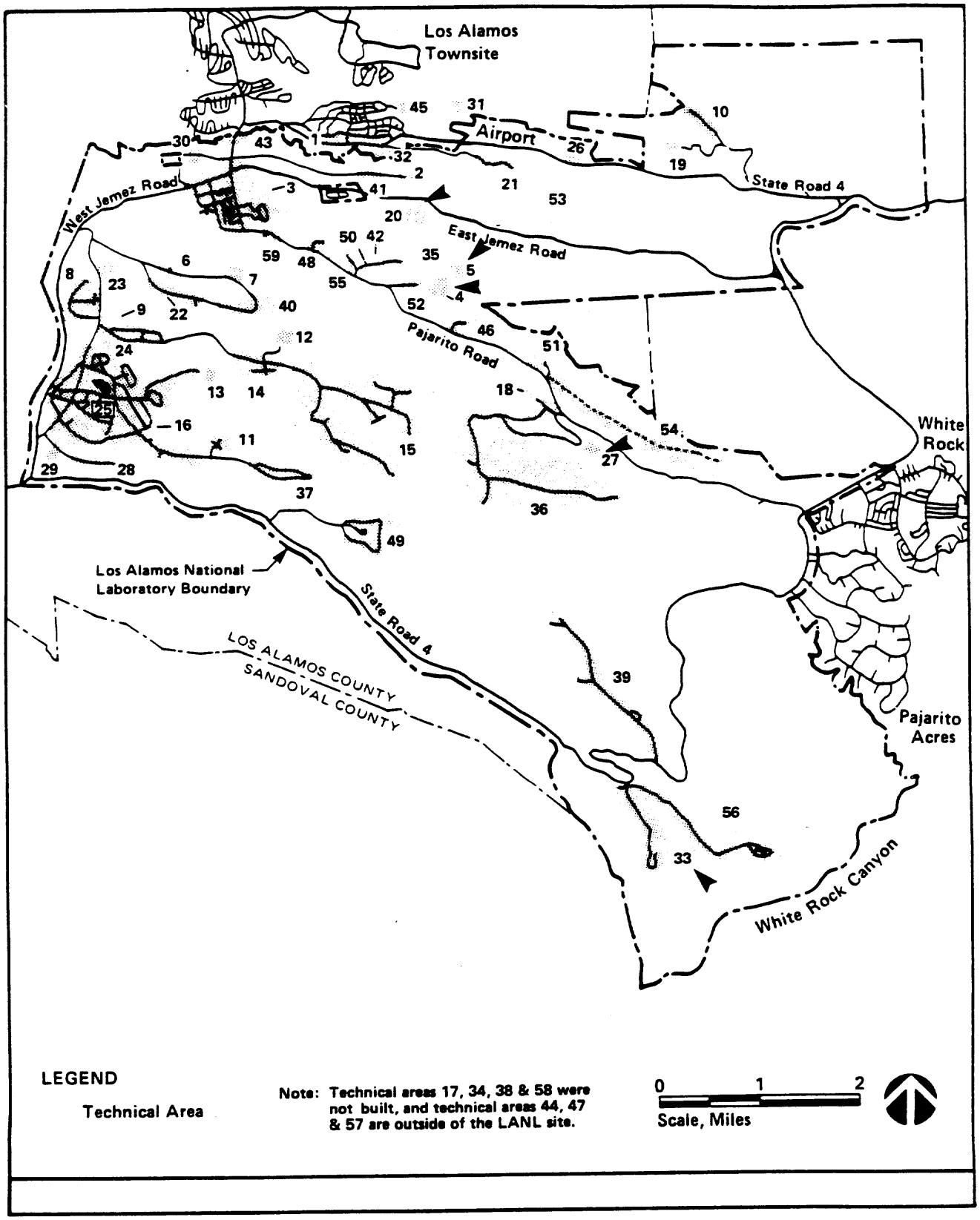


FIGURE 2-1 LOCATION OF ACTIVE AND INACTIVE TECHNICAL AREAS AT LANL

Of the five areas discussed in this report, three are located on mesa tops (TAs 4, 5, 33) and two in canyons (TAs 20, 27). Soils at the technical areas addressed during the LASCP belong mainly to the Hackroy or Totavi soil series. Soils of the mesa tops are mainly of the Hackroy series, which are characterized by shallow, well-drained soils. These soils are formed in material weathered from tuff and are generally sandy. Totavi soils consist of deep, well-drained gravelly soils formed in canyon bottoms (Nyhan, J.W. et al., 1978). Plant communities at these areas consist mainly of piñon-juniper and ponderosa pine overstories, while understory vegetation at the sites consists mainly of plants capable of surviving on soil disturbed from past activities.

Alpha and Beta Sites (Technical Areas 4 and 5) are located close to one another on a branch mesa of Mesita del Buey. This mesa is bounded on the south by Cañada del Buey and a small branch of Mortandad Canyon on the North. The soils at TA-4 and TA-5 belong to the shallow Hackroy series. These TAs are situated on a gently sloping mesa with elevations ranging from 7100 ft. on the western side of TA-4 to 6900 ft. toward the eastern side of TA-5. In general, these areas lie in the piñon-juniper community. The eastern portion of the mesa is on the ecotone between the piñon-juniper woodland and the ponderosa pine forest (Foxx, T.S., 1985a,b). Along the canyon rim, piñon-juniper is interspersed with ponderosa pine.

Sandia Canyon Site, TA-20, is located in the widest part of the canyon for which it was named. This site is situated in the easternmost section of the Laboratory and consists of alluvial soils of the Totavi series. The average elevation of this site is approximately 6500 ft. An ephemeral stream runs in this canyon. A majority of the canyon bottom has been disturbed by site activities, stream overflow during storm events, or fire. In less-disturbed areas of the canyon, large ponderosa pines are common (Foxx, T.S., 1985c).

Gamma Site, TA-27, is located in Pajarito Canyon at an elevation of approximately 6675 ft. An intermittent stream runs through the well-drained Totavi alluvium of this wide canyon. This area is in the piñon-juniper plant community. Part of this abandoned TA is currently covered by Pajarito Road.

Situated on two steep-sloped mesas bounded by Chaquehui, White Rock, and Ancho Canyons, Hot Point (TA-33) lies at elevations between 6400 and 6550 ft. The piñon-juniper community exists on soils of the Hackroy series.

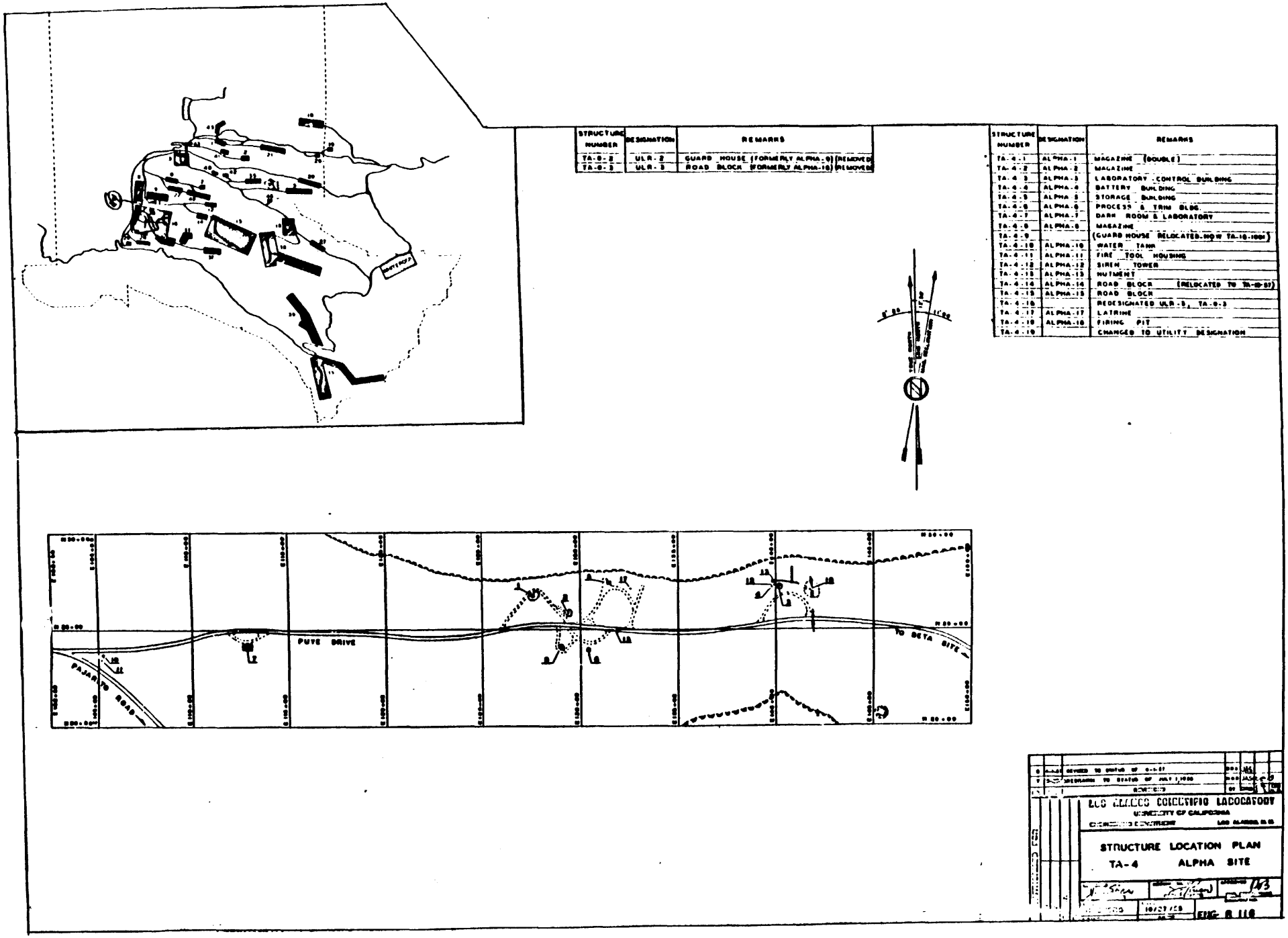
2.3 Historical Overview

During World War II, the Los Alamos Laboratory was created under the Manhattan Project as a nuclear weapon research and development (R&D) installation. Implosion and gun assembly programs were included in this R&D work. As part of these war efforts, weapons components testing was conducted at firing sites in protective canyons or on remote mesa tops. The abandoned technical areas addressed during the LASCP were implosion research firing sites and sites that were at some point used in the development of the initiator. Gun work performed at TA-20 was also used for initiator testing. In addition, a portion of gun program R&D was also performed at TA-33.

Alpha Site and Beta Site (TA-4 and TA-5) were utilized for implosion studies and were located at the end of Puye Drive. These sites are shown in Figures 2-2 and 2-3. Both sites were constructed in 1944 as firing areas for experiments using the "electric" method of detonation wave determination. Radioactive material and high explosives were used in conjunction with these tests. Shots ranged from small to medium size at TA-4 and medium and large at TA-5. Firing pit debris was cleared from the area through the use of a bulldozer. This debris was generally pushed to the north, to or over the canyon rim. TA-4 was abandoned in 1946. Some time after 1957, the western two-thirds of TA-4 was decommissioned to construct facilities for TA-52, the UHTREX facility, which currently occupies the area. Although TA-5 was abandoned in 1959, the area was sporadically used throughout the years for other non-nuclear experiments. For example, a magnetic study was conducted farther out on the mesa toward Mortandad Canyon. This area, used by the Condensed Matter and Thermal Physics Group (P-10), was decommissioned as part of the project. In addition, another experiment, which included an underground calibration facility, was constructed in the late 1960s/early 1970s.

Sandia Canyon Site (TA-20) was located in Sandia Canyon on both sides of East Jemez Road and was used for gun experiments and as an initiator proving ground from 1944 to 1945. Figure 2-4 shows the TA-20 structure locations. This area was then used for a variety of individual, unrelated tests until 1947 when the site was abandoned. TA-20 is reported to have up to three burial areas used for material disposal, which may contain waste from the gun program activities at the site. Part of this site is currently occupied by a target practice range for the Mason & Hanger Protective Force.

From 1944-1946, Gamma Site (TA-27) was part of Pajarito Canyon Site (TA-18) and was used as a remote field test area for high explosives assemblies. Figure 2-5 shows the TA-27 area. In 1946, a calibration test did not detonate completely, scattering high explosives throughout the area; subsequently that portion of the canyon was closed off. The area was reopened in the 1970s after high explosives collection sweeps were conducted. Disposal of gun barrels and ammunition in



STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-0-2	ULR-2	GUARD HOUSE (FORMERLY ALPHA-9) (REMOVED)
TA-0-3	ULR-3	ROAD BLOCK (FORMERLY ALPHA-16) (REMOVED)

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-4-1	ALPHA-1	MAGAZINE (DOUBLE)
TA-4-2	ALPHA-2	MAGAZINE
TA-4-3	ALPHA-3	LABORATORY CONTROL BUILDING
TA-4-4	ALPHA-4	BATTERY BUILDING
TA-4-5	ALPHA-5	STORAGE BUILDING
TA-4-6	ALPHA-6	PROCESS & TRIM BLDG.
TA-4-7	ALPHA-7	DARK ROOM & LABORATORY
TA-4-8	ALPHA-8	MAGAZINE
TA-4-9		(GUARD HOUSE RELOCATED-NOW TA-18-1001)
TA-4-10	ALPHA-10	WATER TANK
TA-4-11	ALPHA-11	FIRE TOOL HOUSING
TA-4-12	ALPHA-12	SIREN TOWER
TA-4-13	ALPHA-13	HUTMENT
TA-4-14	ALPHA-14	ROAD BLOCK (RELOCATED TO TA-0-01)
TA-4-15	ALPHA-15	ROAD BLOCK
TA-4-16		REDESIGNATED ULR-2, TA-0-2
TA-4-17	ALPHA-17	LATRINE
TA-4-18	ALPHA-18	FIRING PIT
TA-4-19		CHANGED TO UTILITY DESIGNATION

FIGURE 2-2 TA-4 STRUCTURE LOCATION PLAN

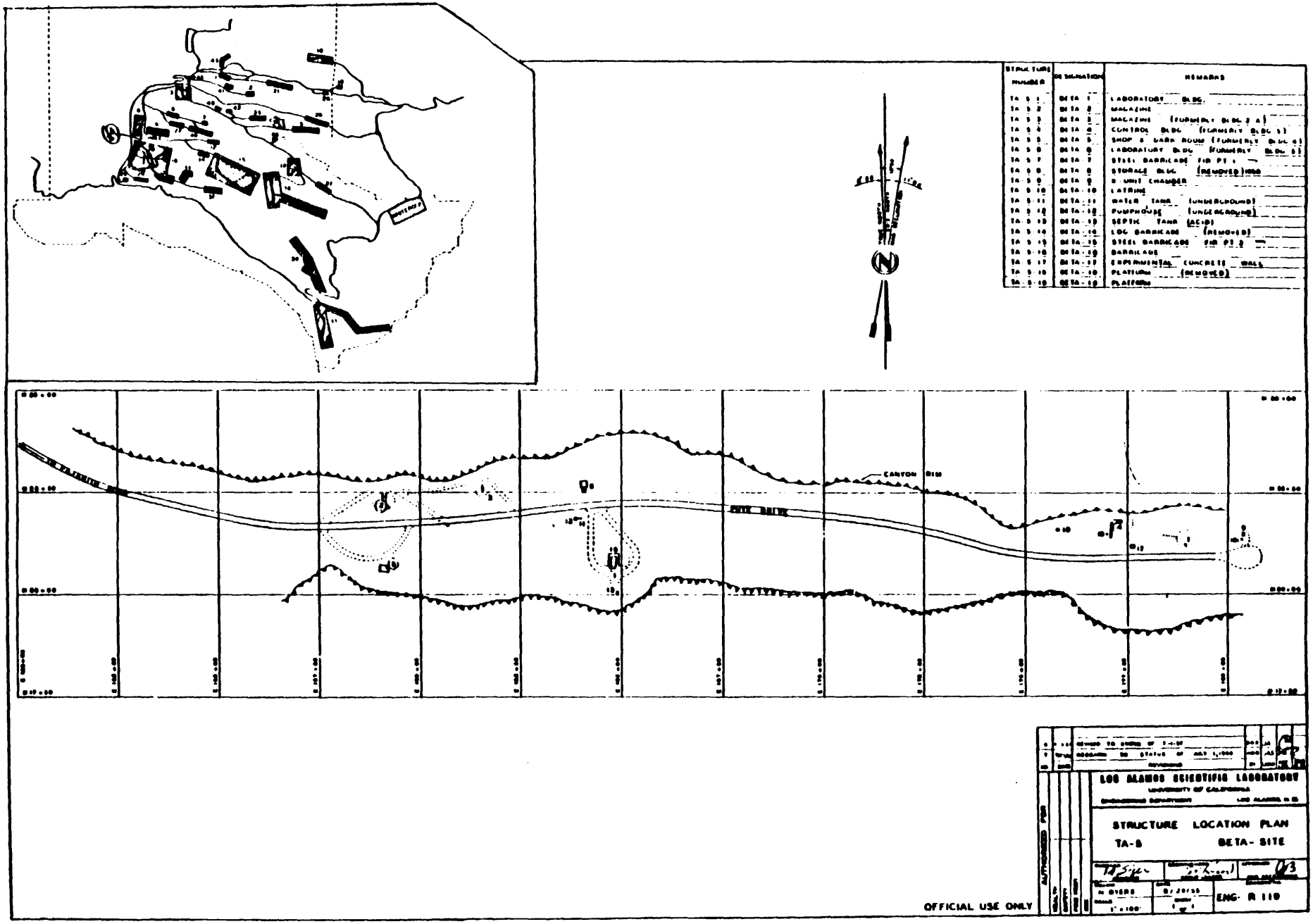


FIGURE 2-3 TA-5 STRUCTURE LOCATION PLAN

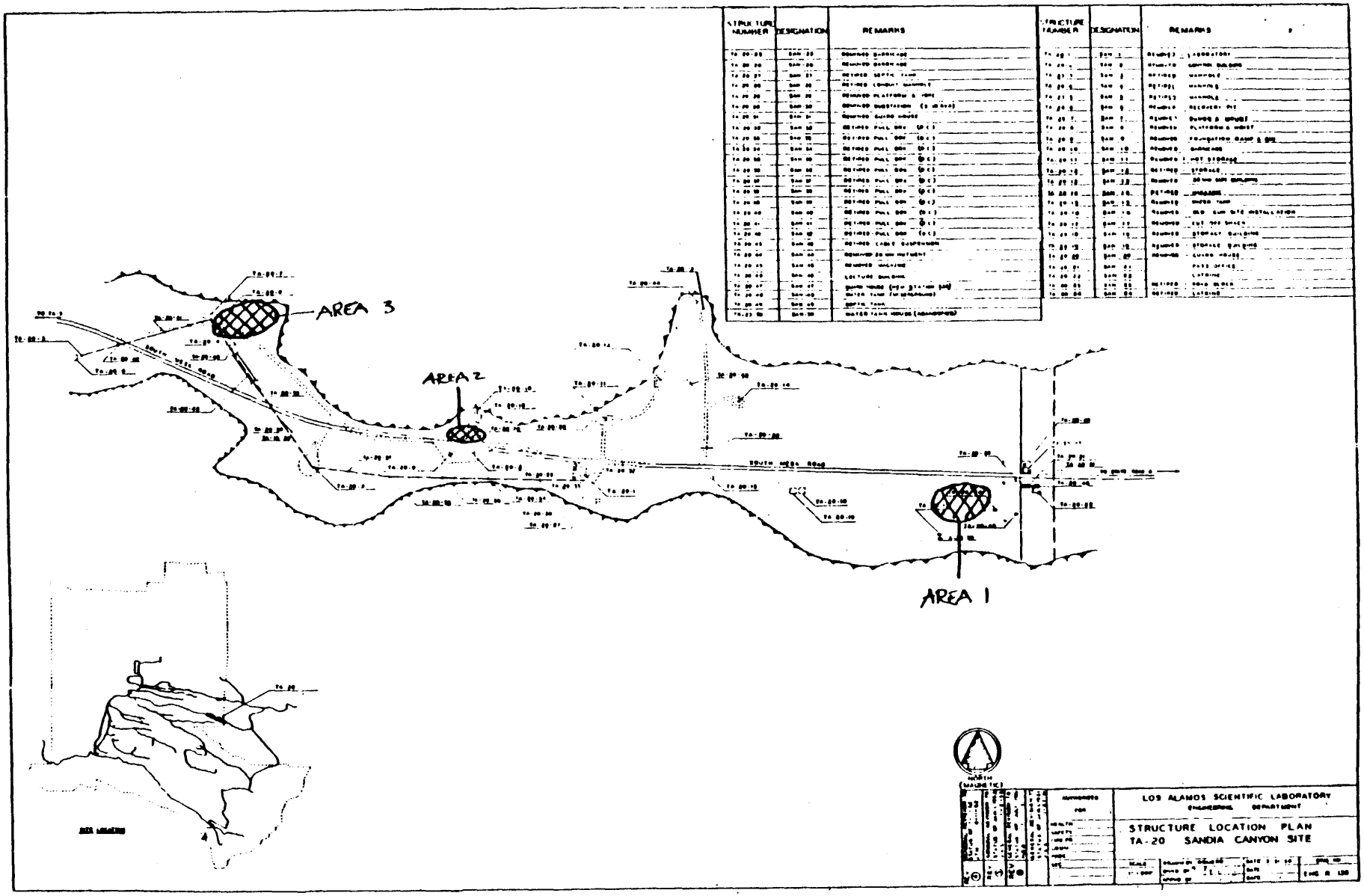


FIGURE 2-4 TA-20 STRUCTURE LOCATION PLAN

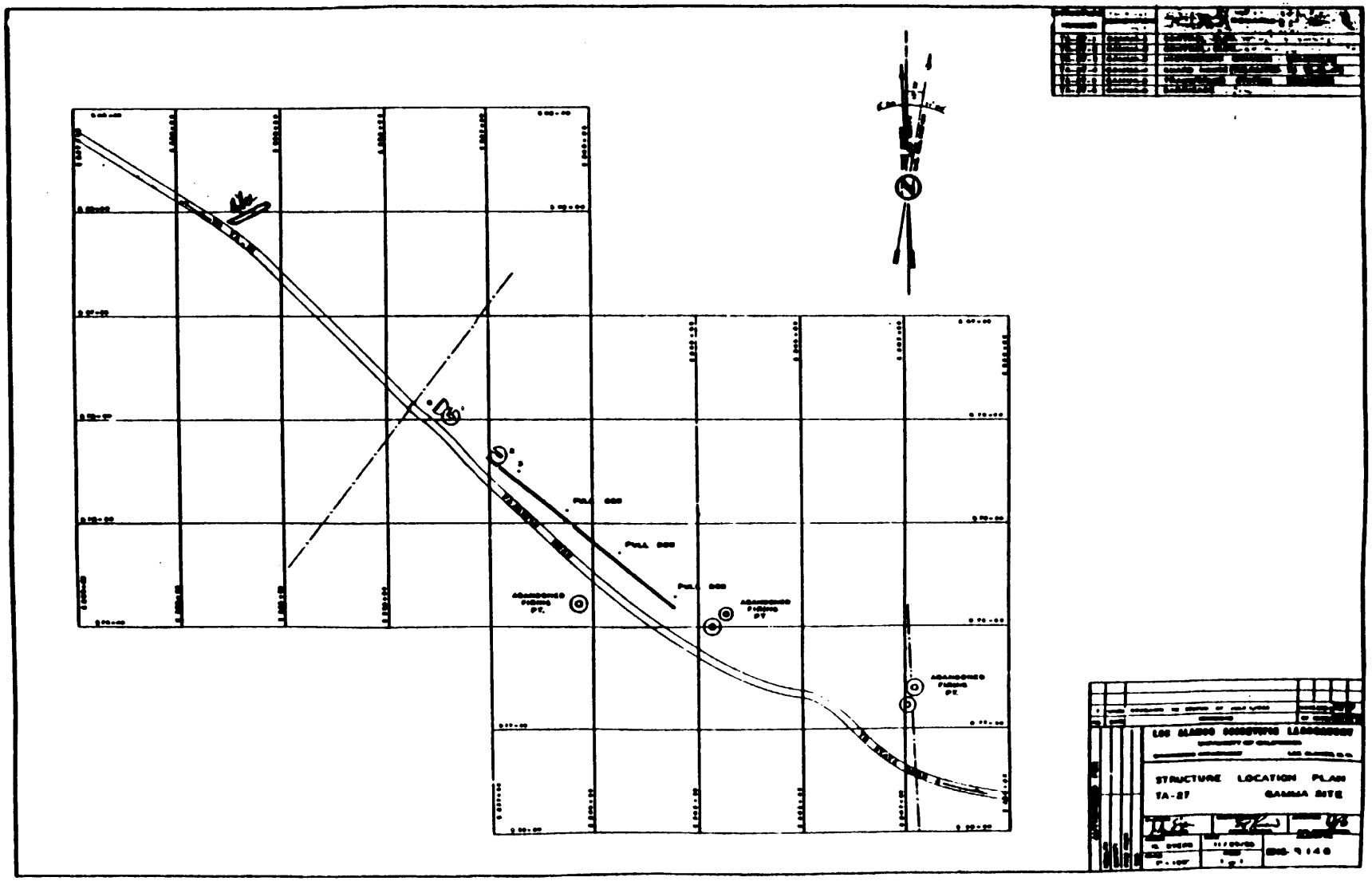


FIGURE 2-5 TA-27 STRUCTURE LOCATION PLAN

trenches may have occurred in this canyon as well. These guns were from other TA programs. Pajarito Road currently intersects this old firing site.

Hot Point (TA-33) was initially constructed in the late 1940s on Frijoles Mesa off State Route 4 to continue underground initiator testing begun at Trinity Site. The TA-33 structure location plan appears in Figure 2-6. Five underground chambers were constructed for this testing at TA-33 (only three of the five were used, however.) These chambers along with disposal trenches on the mesas make up two of the three material disposal areas at the TA. As the chamber work phased out, a variety of other experiments took place here such as gun-type weapons development. Of the five TAs addressed in this report, TA-33 and a portion of TA-4 (occupied by TA-52) are currently active as areas where technical work is performed. This TA now houses support facilities of the Hot Dry Rock Program at Fenton Hill and a tritium facility.

Additional historic information regarding site activities and potential environmental contaminants can be found in the 1986 LANL CEARP report.

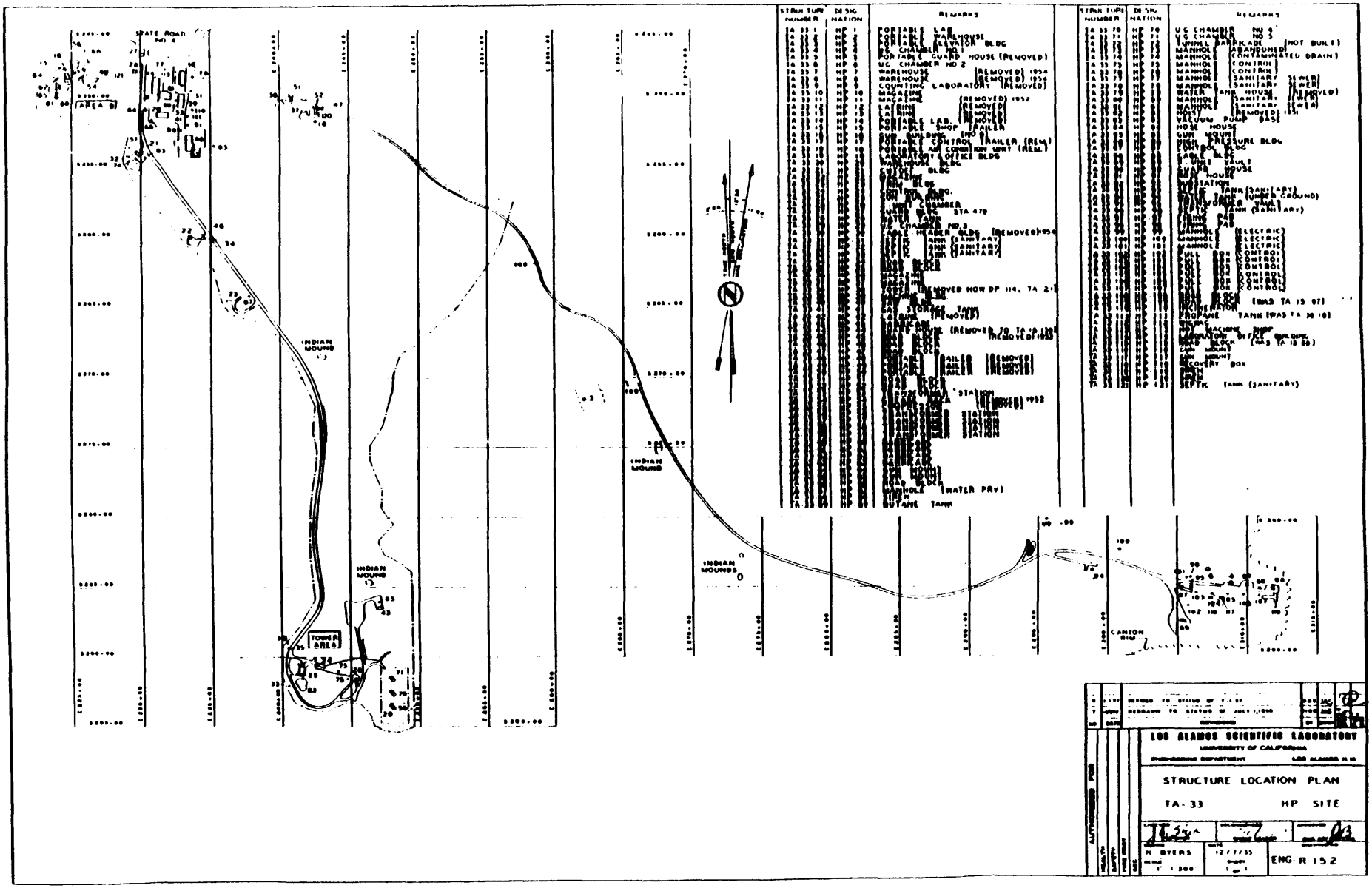


FIGURE 2-6 TA-33 STRUCTURE LOCATION PLAN

3.0 DECOMMISSIONING AND DECONTAMINATION PROJECT

3.1 Project Summary

During the LASCP, funding became available in FY 1985 for decommissioning and decontamination of LASCP high-priority sites TA-4, TA-5, and TA-20, as previously discussed. Prior to the clean-up project fieldwork, archived documentation, aerial photographs, and engineering records were reviewed by LANL Environmental Surveillance Group (HSE-8) personnel for pertinent information regarding the nature of the work conducted at each site with respect to potential environmental contaminants. Interviews with long-term employees were also conducted to obtain additional historical information about activities at the sites and the work carried on which may not have necessarily been documented during the rushed atmosphere of the Laboratory to accomplish its original mission. All of these sources provided information necessary to begin characterizing the sites.

Field reconnaissance surveys of TA-4, TA-5, and TA-20 were then conducted to ascertain actual locations of the areas of concern identified during the records searches and interviews. Where structures or their past locations could not be identified by HSE-8 personnel (i.e., buildings that had been razed and debris cleaned up years ago), drawings and structure coordinates were given to engineering surveyors to locate, identify, and plot their locations. Once existing structures were identified, building clearances were performed by group members of Radiation Protection (HSE-1), Safety (HSE-3), and Industrial Hygiene (HSE-5) for radiation, high explosives, asbestos, and other threats to workers. All buildings were cleared for demolition.

Environmental surveys were performed at TA-4, TA-5, and TA-20 for the protection of archaeological sites and lithics, rare and endangered botanical species, and wetlands. Additional information regarding these surveys is presented in Appendix A.

Actual D&D site work commenced July 31, 1985, and included radiological monitoring, general site clean-up (picking up debris off the ground), demolition of buildings, removal of structures, exhumation of tanks and underground utilities, and contouring those areas to grade. Health physics technicians and technical managers and advisors were on the site daily. Key personnel met weekly to discuss the project progress and when major procedural decisions were necessary.

On-site personnel consisted of members of Zia's (the support contractor) special Hazardous Waste Department (formerly the Zia Acid Waste Line Project), health physics technicians from HSE-1 and a

technical representative of HSE-8. The Hazardous Waste Department crew included heavy-equipment operators, iron workers, teamsters, laborers, and their foremen. Other personnel who routinely visited the site included a representative from the Construction Group (ENG-1), botanists, and archaeologists. Workers from the D&D crew were transported to and from the site each morning, noon, and end of the work day. Workers were required to shower at on site facilities and be monitored for contamination prior to leaving the Laboratory. They were also monitored prior to going on breaks. All D&D crew members were required to wear protective clothing (Anti-C's), gloves, steel-toed boots, hard hats, and thermoluminescent dosimeters (TLDs). Heavy-machinery operators were additionally equipped with eye protection. Dust masks were used during windy periods or when activities generated dust (i.e., pipe cutting). All persons entering the sites were also required to wear TLDs.

Decommissioning and decontamination was conducted for radioactive constituents only. No sampling for any chemical contamination was conducted. Samples taken for radiological scanning during the TA-5 clean-up were analyzed immediately on the job site with the exception of one sample which was analyzed at the HSE-1 health physics analytical laboratory. All sampling results, disposal records, and project notes were documented by LANL personnel. A daily project log was kept by Gilbert M. Montoya of HSE-1. This book, #A000490, has been retained by HSE-1. Photographs and slides were taken daily of site activities to aid in documenting the work performed. This photodocumentation was also retained by HSE-1.

Areas were monitored for radionuclide contamination using a Ludlum Model 14 pancake probe, a Ludlum Model 14C with a GM probe, a Ludlum Model 3 open-end GM probe, a Pac-7-air proportional probe, and a Harshaw Model 301 phoswich. If activity levels were detected or contamination was encountered during structure removal, the contaminated area was excavated. A majority of the waste was disposed of at the radioactive burial area of Material Disposal Area (MDA G) in TA-54 as much of the material was suspected to be contaminated. All materials leaving the sites were monitored, and their quantity and activity levels, if any, recorded. Clean-up action levels were established at greater than 25 picoCuries/gram (pCi/g) above background. Uncontaminated wastes such as large concrete structures and an underground tank were placed in dump trucks and transported to the Los Alamos County Landfill adjacent to the Los Alamos County Airport. Radioactively contaminated wastes or wastes suspected to be contaminated were loaded into plastic-lined dump trucks, covered with a tarp to prevent wind suspension and spillage of contaminated wastes, and transported to TA-54 for disposal. All trucks exiting the TA-54 area were monitored prior to leaving the disposal area. Contaminated material consisted mainly of soil, wood, pipe, and miscellaneous building debris.

While demolition and removal of larger structures occurred, laborers walked the areas and picked up debris, excavated contaminated surface soil, cut up pipe, and loaded the dump trucks. Surface debris consisted of wires, glass, shrapnel, paper, etc., and was placed in garbage bags and monitored for radioactivity prior to disposal. Depleted and/or normal uranium was detected as discrete spots of yellow oxidized uranium. The action level for removal was greater than 25 pCi/g. Uranium-contaminated surface soil was dug out of the ground using a shovel and placed in plastic bags. The soil was then given to the health physics technician for measurement, documentation, and disposal. Areas from which contamination was removed were also monitored to ensure they were free of radioactivity. If contamination was too extensive to be removed with a shovel, the area was flagged and a front-end loader, backhoe, or bobcat was utilized for excavation. This heavy machinery was also used to excavate soil, piles of debris, vegetation, underground utilities, and structures during the project. This equipment was monitored before leaving the sites.

Other projects associated with the LASCP were the Los Alamos Summer Student Program (LASSP) which was coordinated by the Construction and Maintenance Group (ENG-4) and contractor monitoring of the Department of Energy (DOE) project "Weapons Utility Restoration: Electrical Phase IX", an underground electrical line installation planned to intersect TA-4. Students from LASSP were utilized for a short period at TA-4 to clean up razed buildings during the initial part of the D&D project. While working at TA-4, students were under constant supervision by HSE-8 and HSE-3 personnel and were not allowed to work in areas of potential contamination. Immediately before the LASCP D&D work was to commence, LASCP staff discovered that a high-voltage electrical line would be installed by an outside contractor through TA-4. The line was designed to run through areas (firing pit, bunker, double magazine, and small laboratory building) which could potentially have been contaminated. The DOE project schedule was modified to place primary completion on the TA-4 D&D. Excavations by the contractor near the firing pit (TA-4-18) did uncover additional uncontaminated buried debris such as shot wire, rubber hoses, and metal cylinders. No other material was unearthed while the contractor worked in this TA.

Details of the daily activities, waste generation, contamination encountered, etc. are discussed in the following section.

3.2 Project Description

Project work resulted in the radiological D&D of TA-4, TA-5 (with the exception of one underground structure), and a portion of TA-20. Due to the nature of the work at these firing sites, radioactive

contamination was anticipated to be present at all the TAs. However, depleted uranium contamination was only detected at TA-5. It should be noted that canyon sides and canyon bottoms at TA-4 and 5 were not addressed during this project.

All site areas and waste generated were monitored prior to disposal. Waste which was free of radioactive contamination was disposed of at the Los Alamos County Landfill. Contaminated waste or waste suspected to be contaminated was disposed of at MDA-G in TA-54. Waste generated during the D&D project totaled 773 cubic meters (m^3) [980 cubic yards (yd^3)]. Of the 773 m^3, 64 m^3 were disposed of at the county landfill and 709 m^3 were disposed of at MDA G at TA-54. Radionuclide content of the uranium-contaminated waste was approximately 62 pCi/g. Tables 3-1 and 3-2 show the waste quantities generated by the D&D of the TAs and their dispositions.

3.2.1 TA-4

D&D work started at TA-4 on July 31 and continued until August 9, 1985. The bulk of the activity at this TA included demolition and excavation of structures and general site clean-up since no radioactive contamination above background was encountered at this area. However, as radioactive materials were reported to have been used at this TA, a majority of the waste was disposed of at MDA G (TA-54). The TA-4 area was monitored using a HM-3 Micro R meter, a PAC-7 air proportional probe, and a Harshaw model 301 phoswich prior to and during the work. Waste generated from TA-4 D&D activities totaled 53.4 m^3 (67.7 yd^3). Of the total, 8.4 m^3 which consisted of concrete from firing pit TA-4-18 was disposed of at the county landfill and 45 m^3 was disposed of at TA-54. The waste taken to TA-54 consisted of wood, tar paper, soil, gravel, shrapnel, steel, and other miscellaneous debris. Clean-up was undertaken in the eastern one-third of this site as a portion of the TA had been removed during the construction of TA-52.

During the course of the work, a container of liquid and a can labeled as black powder were found on separate occasions near two of the TA-4 structures. The Waste Management Group (HSE-7) and Safety Group (HSE-3) were immediately notified to identify and appropriately dispose of the containers. The unknown liquid was transported to TA-54 for sampling, packaging, and shipment. The black powder container was opened by explosives personnel at TA-4. Only remnants of powder remained within the container and it was taken to the TA-16 burn pads and burned to remove the high explosives.

The following TA-4 structures/areas were addressed during the LASCP D&D project:

TABLE 3-1

Los Alamos Site Characterization Program Waste Inventory

Total Waste Disposed of at the Los Alamos County Landfill

Technical Area	Volume Generated (m^3)
TA-4	8.4
TA-5	55.6
TA-20	0.0
TOTAL	64.0

TABLE 3-2

Los Alamos Site Characterization Program Waste Inventory

Total Waste Disposed of at TA-54

Technical Area	Volume Generated (m^3)	Radionuclide Content (pCi/g)
TA-4	45	<25
TA-5	631	61.90
TA-20	33	<25
TOTAL	709	

Structure Designation	Structure Description
TA-4-1	double magazine
TA-4-2	magazine
TA-4-3	laboratory control building
TA-4-4	battery building
TA-4-6	trim building
TA-4-8	magazine
TA-4-13	hutment
TA-4-18	firing pit
undesignated	wooden stairs
undesignated	concrete drain pipe/culvert
undesignated	coal pile

Other structures such as the darkroom and laboratory (TA-4-7), storage building (TA-4-5), guard house (TA-4-9), siren tower (TA-4-12), road block (TA-4-16), and latrine (TA-4-17) had previously been removed. Additionally, another road block (TA-4-14) was relocated to Bayo Canyon (TA-10). A "disposal pit" (TA-4-19) was also located in this TA, but was resignated Material Disposal Area C and property designation transferred to TA-50. The status of a water tank, a fire tool housing, and portions of a third road block (TA-4-10, -11, and -15, respectively) are not known.

The firing pit, TA-4-18, was the area that required the most extensive effort at TA-4. During the initial field survey, this pit appeared to be a bermed area which would need only to be leveled. While removing surface debris from the pit, electrical utility lines encased in steel pipe were uncovered. Upon further excavation, two large pieces of steel encased in concrete were uncovered. Each piece of concrete measured approximately 8 ft. by 4-1/2 ft. by 3-1/2 ft. and weighed about 15 tons. They were dislodged from their locations by a front-end loader. After the surface was monitored, a hydraulic crane was used to load the concrete into dump trucks for transport and disposal at the county landfill. Additional excavation of the area uncovered debris (wire, shrapnel, etc.) suspected to be buried here from past site activities. This and other surface debris was taken to TA-54 for disposal. Other materials such as metal cylinders, wire, etc. were also excavated during the installation of an underground electrical line (Section 3.1).

A 12-inch-diameter concrete storm drain, a 6-inch-diameter vitrified clay pipe, and surface debris were removed from the Laboratory control building (TA-4-3) area. The clay pipe daylighted north of the building location at the edge of Mortandad Canyon and was believed to have serviced the lab building. The lab building and drainage areas were monitored for surface soil contamination using portable instruments. No radioactive contamination was detected. Debris was disposed of at TA-54.

Double magazine TA-4-1 was demolished in mid-July before the clean-up program started. This structure was the only building intact at TA-4 prior to the start of work. Debris from the magazine was picked up by hand by the LASSP summer students (Section 3.1). The scrap wood and steel buried in the soil that had covered the magazine were removed from the area by a front-end loader. This area was then contoured to existing terrain. Building debris was disposed of at TA-54.

Removal of surface debris from magazines TA-4-2 and TA-4-8, battery building TA-4-4, trim building TA-4-6, and hutment TA-4-13 was completed using a front-end loader for larger quantities of wood, steel, concrete, pipe, and wire as well as laborers for smaller, dispersed materials. This material was taken to TA-54 for disposal. Soil samples were taken at TA-4-8. No contamination was detected in the sample or at any of these areas.

Miscellaneous structures and other debris were removed from the area as well and disposed of at TA-54. These structures included wooden stairs, a culvert, and a coal pile. The wooden stairs from the mesa to the canyon bottom were thought to have been used as an emergency/fire escape route on the steep canyon sides. A 12-inch corrugated metal storm pipe and a concrete culvert from the side road exiting the magazine area and a pile of coal probably used for fuel were also removed.

3.2.2 TA-5

The majority of the D&D work of the project occurred at TA-5 as portions of many site buildings and underground utilities were still intact in various states prior to the clean-up and uranium contamination was encountered during the removal of several structures. Site work extended from August 12 to September 23, 1985. Contamination at the site was initially detected at TA-5-4 on August 21. Direct Readings ranged from 3 to 40 mR/hr using a Ludlum Model 3 GM probe. As at TA-4, demolition and removal of structures and general site clean-up was performed. The areas were monitored using a Harshaw Model 301 phoswich, a Ludlum Model 3 open GM probe, and a Ludlum Model 14-C GM probe. Waste generated during the TA-5 clean-up totaled 686.6 m^3 (870.5 yd^3). Of the total waste generated at TA-5, 55.6 m^3 (70.5 yd^3) of uncontaminated concrete structures and an underground tank were sent to the county landfill and 631 m^3 (800 yd^3) of contaminated or suspect

waste was disposed of at TA-54. Waste taken to TA-54 consisted of wood, plexiglas, paraffin, soil, gravel, pipes, wires, shrapnel, steel, and other miscellaneous debris. All structures at TA-5 were addressed with the exception of the underground calibration facility, which was left in place.

The following structures/areas received attention at TA-5 during the D&D work:

Structure Designation	Structure Description
TA-5-1	laboratory building
TA-5-2	magazine
TA-5-3	magazine
TA-5-4	control building
TA-5-5	shop and darkroom
TA-5-6	laboratory building
TA-5-7	steel barricade-firing pit #1
TA-5-9	X-unit chamber
TA-5-11	water tank
TA-5-12	pumphouse
TA-5-14	log barricade
TA-5-15	steel barricade-firing pit #2
TA-5-17	experimental concrete wall
TA-5-19	platform
undesignated	contaminated vegetation
undesignated	gravel pile
undesignated	P Division experiment
undesignated	deteriorated paraffin cube
undesignated	cable run

Many of the buildings such as the laboratories, magazines, and the shop and darkroom had previously been razed or burnt to the ground. Mounds of soil with building debris were left from past abandonment activities. Some structures such as the storage building (TA-5-8), latrine (TA-5-10), acid septic tank (TA-5-13), barricade (TA-5-16), and platform (TA-5-18) had previously been removed. Although the septic tank was reported to have been exhumed, excavation in its former location was

undertaken. No evidence of the tank or its associated lines with the exception of disturbed soil was found.

Most of the D&D work at TA-5 revolved around one central area where uranium contamination was encountered. Uranium oxide which occurred in spots at the area was readily visible because of its bright yellow color formed as the uranium oxidized. The larger contaminated area, shown in Figure 3-1, encompassed the control building, TA-5-4; the X-unit chamber, TA-5-9; the steel barricade firing pits #1 and #2, TA-5-7 and TA-5-15; and a platform, TA-5-19 near TA-5-7. In addition to these areas, a gravel pile which may be the far firing point referred to on site drawings also contained radioactive contamination (Figure 3-1). Surface contamination uncovered during utility and structure excavation was shoveled into plastic bags, monitored, levels of radioactivity recorded, and loaded into a plastic-lined dump truck for transport and disposal at MDA-G in TA-54. Most of the contamination was detected near the surface within the top two feet of soil. Contamination found in the control building area was believed to have entered the environment through a french drain which serviced that building. Contamination in the X-unit chamber and the steel barricade firing pit #2, however, was more extensive with radioactivity traced vertically down to 15 ft. from the surface. Contamination found at such a depth was believed to have occurred through multiple shots in the same area that loosened the tuff and created fractures. Contamination migrated north from firing pit #2 to the X-unit chamber along these fractures and gravel seams underlain by clayey material via precipitation or other modes. Gravel was used in the past firing pit to dampen the shot. Tree roots within the fractures and seams also provided a route for migration as positive readings were obtained near the roots of three small trees growing in the contaminated area. These trees were cut down and their roots excavated and all tree parts were disposed of at TA-54. Levels of contamination at these areas were as follows:

Structure Designation	Structure Description	Activity (mR/hr)*
TA-5-4	control building	3-20
TA-5-9	X-unit chamber	30-40
TA-5-15	steel barricade firing pit #2	20-40
undesignated	gravel pile	15

* direct readings as detected using a Ludlum Model 3-open shield GM probe

A sample of the uranium was analyzed to determine the type of uranium found on site. The sample was gamma analyzed using a germanium lithium [Ge (Li)] detector and a 4096 channel pulse height analyzer. The sample was confirmed to be depleted uranium. Soil sampling was also performed in the

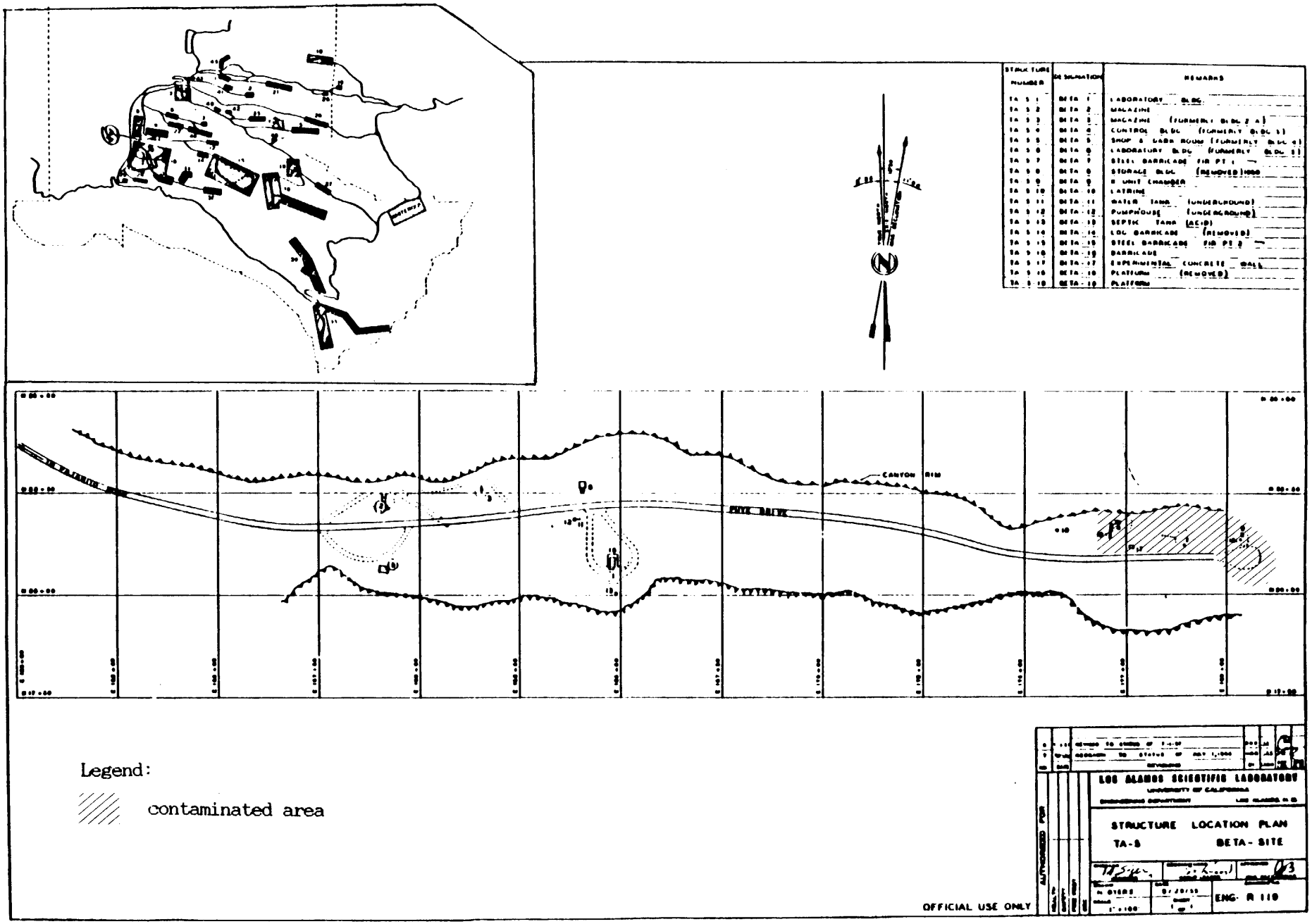


FIGURE 3-1 URANIUM CONTAMINATION AREA AT TA-5

main contamination area by HSE-1, HSE-8, and HSE-12. HSE-8 and HSE-12 used a Ludlum Model 2200 zinc sulfide (ZnS) alpha and beta counting system and a sodium iodide (NaI) BNC Portanim Model AP-1 NaI soil counting system. Six distinct soil samples were taken and composited from the pit excavated at the firing pit #2 to trace the depleted uranium and the area of migration between the X-Unit Chamber and the firing pit #2. Average results were approximately 4 nanoCuries/gram (nCi/g) alpha and 6 nCi/g beta. Samples taken in the area after clean-up did not give above-background results nor did the 36 samples taken by HSE-12 on a grid over the area.

To exhume the X-Unit Chamber, TA-5-15, a bobcat and front-end loader were utilized. This structure, the dimensions of which were 12 ft. long by 10 ft. wide by 5 ft. 9 inches high, weighed approximately 18 tons. A 90-ton crane was used to lift the X-Unit Chamber from its position and onto a flatbed truck for transport and disposal. It was when the chamber was removed and monitored that uranium contamination in that area was discovered in the gravel seams and tree roots. Soil, tuff, and vegetation were excavated until monitoring and soil sample results were negative. The steel barricade firing pit #2 consisted of a metal box with approximate dimensions of 4 ft. long by 3 ft. wide by 2 ft. high and contained uranium. When the box was taken from the ground, more spots of contamination were found. This contamination was followed vertically to about 15 ft. using the front-end loader. The resulting pit created from tracing the uranium measured approximately 20 ft. wide in the north-south direction and 21 ft. wide in the east-west direction and was 16 ft. deep. Composite soil samples were collected at varying depths in the pit and the pit bottom. When the area was decontaminated, it was backfilled with clean soil from TA-5-1, TA-5-2, and TA-5-3. This soil had been monitored for radioactivity prior to backfilling.

Steel barricade firing pit #1, steel plates around the pit, a control box, and a wooden platform were removed using the front-end loader after the soil had been cleared away using the bobcat. This structure was 8 ft. by 5-1/2 ft. by 3 ft. and weighed approximately 3 tons. A hydraulic crane was used to lift the structure and load it into a plastic-lined dump truck. No contamination was detected on the surface of the structure or in the soil directly beneath the firing pit. However, as soil in the area was contaminated in several spots, the structure and other material in the area were taken to TA-54 for disposal.

Sampling was performed by HSE-12 personnel in the area where uranium contamination was found at this TA for clean up verification purposes. Results were reported to be below detection limits.

Electrical lines connecting all three firing pits and the X-Unit Chamber to the control building were also removed. These underground lines were encased in galvanized conduit. These pipes and lines

were pulled out of the ground using a chain secured to the bucket of the front-end loader. They were also excavated using the bobcat. Approximately 3000 ft. of 1-1/2-inch galvanized pipe, electrical conduit, and scrap metal was removed from the TA-5-4 area and taken to TA-54.

Uncontaminated areas at TA-5 were located mainly on the western part of the area. Many of the buildings previously destroyed at TA-5 required clean-up of debris left from those efforts. These areas included laboratory buildings TA-5-1 and TA-5-6, magazines TA-5-2 and TA-5-3, and a dark room and shop TA-5-5. Materials such as wood, glass, wires, and metal and other miscellaneous building debris were picked up by laborers and a front-end loader. Radioactive contamination was not detected at these areas. After the areas were cleared of debris, they were contoured to existing terrain. Clean, excess soil from the magazine areas was utilized as fill at the TA-5-9 and TA-5-15 area.

Three uncontaminated structures--a water tank, TA-5-11; a pumphouse, TA-5-12; and the experimental concrete wall, TA-5-17-- required special equipment for removal and transport because of their weight and dimensions. The water tank measured approximately 14-1/2 ft. in length by 5 ft. in diameter and had a capacity of about 2000 gallons and the pumphouse measured 8 ft. by 5 ft. by 5 ft. The experimental concrete wall, whose purpose is unknown, measured 18 ft. by 8 ft. by 11 ft. and weighed approximately 58 tons. A 90-ton crane and a low boy flatbed trailer were brought to the site to remove and transport these structures. Prior to this, however, the bobcat was used in exposing the structures. In addition to the bobcat, a TD-25 bulldozer was used to dislodge the concrete wall which was embedded in the soil. Similarly, the tank was also dislodged with a backhoe. To decrease the weight of the water tank which was partially full of liquid, the contents were drained to the ground via the tank plug. This occurred only after the contents had been sampled for radioactivity and found not to be above background. Surfaces of these structures were monitored prior to removal and shipment off site and were found to be free of radionuclide contamination. Soil samples were also taken in the areas surrounding and under the structure. No contamination was found. Based on these results, the water tank, the pumphouse, and the experimental concrete wall were hauled to the county landfill for disposal.

The "P Division" solar/magnetic "experiment" consisted of a wooden A-frame and instrumentation hutment. The A-frame was about 25 ft. long with perforated plexiglas on one side, open on the other, and a reservoir for liquid in the bottom. A front-end loader was used to demolish these structures, pick up the debris, and load it into a flatbed truck for disposal at TA-54. The area was monitored for radioactivity with negative results. Archaeologists screened the path of vehicles and equipment and were present throughout this work as access to the area required passing through a listed archaeological site.

Other miscellaneous debris such as a deteriorating 2 ft. by 2 ft. by 2 ft. block of paraffin used at one time for neutron absorption, an old log barricade (TA-5-14), and a cable run to a far firing point were also removed from TA-5 and disposed of at TA-54. No radioactive contamination was detected in these areas.

3.2.3 TA-20

Sandia Canyon Site was addressed toward the end of the project from September 24 to September 30, 1985. Only a limited part of the site, therefore, received attention during the D&D project. Approximately 33 m^3 (43 yd^3) waste was generated at TA-20. All of this waste was disposed of at TA-54 as the area was suspected to be contaminated. The following structures/areas were addressed at TA-20:

Structure Designation	Structure Description
TA-20-27	septic tank
TA-20-33	pull box (D.C.)
TA-20-34	pull box (D.C.)
TA-20-35	pull box (D.C.)
TA-20-36	pull box (D.C.)
undesignated	large pieces of shrapnel
undesignated	blast mats

Other structures at the area were not addressed during the project.

No radioactive contamination was found at this site during the clean-up work using a phoswich and other monitoring equipment. Activities were concentrated on the south side of East Jemez Road where general surface debris was collected and electrical pull boxes and utility lines were excavated. A septic tank, TA-20-27, was reported to be located in this area as well but was supposed to have been "retired". Documentation of its removal, however, had not been found. The tank area was excavated to evidence the removal of the tank and its associated lines. Only disturbed soil in the area was encountered. A sample taken in this area was negative for radioactivity. It is not known where the tank and its lines were finally disposed of when it was exhumed years ago.

Other samples were taken in the pull boxes and exposed soil. The surfaces of these structures were monitored as well. No contamination was detected. Pull box sizes ranged from approximately 0.8 m^3 (1 yd^3) to 4 m^3 (5 yd^3). Four galvanized steel pipes containing electrical wires connected the pull boxes. Approximately 3850 ft. total of pipe was exposed by a front-end loader and cut into 10 ft. sections with a gas-powered metal saw prior to being loaded into the dump trucks. The area was contoured to the existing terrain prior to leaving the site.

4.0 SAMPLING PROJECT

4.1 Project Description

Phoswich surveys and soil sampling of high-priority sites TA-20, TA-27, and TA-33 under the LASCP were conducted from July 15 to October 24, 1985 when funding for special projects became available. This work was performed by LANL personnel from the Environmental Science Group (HSE-12) under the technical direction of the Environmental Surveillance Group (HSE-8).

Survey and sampling locations investigated within the TAs included areas of known or suspected contamination which resulted from past site activities. In addition, canyon stream channels which could potentially have transported contaminants off-site were also sampled. These areas included:

Structure Designation	Structure Description
TA-20-3	manhole
TA-20-6	recovery pit
TA-20-7	dumbo and mount
TA-20-11	hot storage
TA-20-13	20mm gun building
TA-20-16	old gun site installation
TA-20-17	cut-off shack
TA-20-37	pull box
	stream channel (TA-20)
TA-27	firing points #1-5
	stream channel (TA-27)
TA-33-26	X-unit chamber

A dumbo was a metal structure used for shot containment.

The following sections describe the methods by which the phoswich surveys and radiological sampling were performed and their respective results. Appendices C and D present the data from the investigations.

4.2 Field Methodology

This section briefly discusses the methods used in the field to conduct the phoswich surveys and the sampling conducted at TA-20, TA-27, and TA-33-26 and a bermed area near this structure. Raw data are presented in Appendix C.

4.2.1 Phoswich Surveys

Phoswich surveys were conducted at all three of the TAs mentioned above. These surveys were performed as a screening technique for soil sampling. At TA-20 and TA-33, surface locations were cleared of some vegetation. Grid lines were set in five-m (m) intervals in a north-south and east-west orientation. The overall size of the grids at TA-20 and TA-27 varied with the size of the area to be surveyed. Data point collection began at the northwest corner and continued to the northeast and so on to completion at the southeast corner of the grid. At TA-33, the grid locations were laid out in a radial pattern with "spokes" emanating from the firing pad of the X-Unit Chamber TA-33-26. Eight spokes radiated from this structure to the north, northeast, east, etc. Survey points along this grid were 10 m apart starting from the 20-m mark. Distances along each spoke varied due to different distances to the canyon rim or other physical features (i.e., the north spoke ended at 210 m, the south spoke at 90 m). Within the 20-m mark, readings were taken every 5 m starting at the 5-m mark. Measurements were also taken at the direct center and 1-m locations. Readings started on the north spoke at 5 m, then proceeded out along the grid. Three points in the bermed area were collected and the survey returned to the 5m mark on the northeast spoke. Data collection continued clockwise until all spokes were surveyed. The center and the 1-m marks were taken last.

During each survey, the instrument was calibrated at least twice a day to an americium-241 source in a sheltered area on site. Background readings were taken every one to two hours in the back of the field vehicle or on the ground near the vehicle. Calibration and background results were recorded with the raw data in a field logbook. Background readings varied at each site. As several different phoswiches were used during the course of the project, property numbers identifying each instrument were also recorded daily in the logbook. To survey, the phoswich legs were set on the ground along the grid, the location recorded by row and column, and the instrument allowed to count for a set period of time. For these surveys, raw data were taken for 100 seconds at every grid intersection with the window open to the full position. Phoswich readings could not be completed at TA-27 as two of the firing points are located in an active shot exclusion zone for TA-36. A total of 1606 data points were collected, 1274 from TA-20, 221 from TA-27, and 111 from TA-33-26.

4.2.2 Soil Sampling

Soil samples were taken along the same grid on which the phoswich survey was conducted. However, samples were collected at every 10 m unless otherwise stated. These samples were taken with a decontaminated plug on a 1-m grid. Samples were taken from each corner and center of the grid and composited. Sample depth was approximately 6 centimeters. A total of approximately 500 grams of soil was obtained from each sampling point and placed in two plastic sample containers which were labeled and clean. Upon return to the laboratory, soils were dried in an oven at 100° Celsius (°C) for 24 hours. The samples were put through a 500-millimeter (mm) sieve and aliquoted into 30-gram vials and submitted to the LANL Environmental Chemistry Group (HSE-9) for uranium analysis by neutron activation. Additionally, samples were to be analyzed for beryllium and high explosive content as well; however, results were never obtained. All pertinent information such as the date the sample was taken, who performed the sampling, the location along the grid, the laboratory identification number, and the sample weights were recorded in the project field logbook. A total of 563 samples were taken from three TAs of which 351, 105, and 107 were obtained from TA-20, TA-27, and TA-33-26, respectively.

4.3 Survey and Sampling Results

The phoswich surveys were intended to be used mainly as a screening tool for the soil sampling portion of the project, however, phoswich and soil data at some of the sites did not correlate with each other. Both soil and phoswich data collected in the field were plotted on maps with corresponding grids to those set up in the field at each site. Isopleths of uranium concentrations in soil above facility background (4 ppm ± 0.9) radioactivity measurements at or above 500 counts per 100 seconds (cts/100 sec) were constructed for each survey site. The 500 cts/100 sec measurement was chosen arbitarily for data presentation purposes as background levels for the phoswich surveys varied by site. Actual site background measurements were subtracted from the results prior to data interpretation. Background in soils were handled similarly. At two of the technical areas, TA-20 and TA-27, sediment within intermittent stream channels were also sampled for uranium. As sampling location maps were not provided for this portion of the investigation, results are presented in tabular form. A phoswich survey within the stream channel at TA-20 was conducted as well and data are also presented within the tables. Raw data are presented in Appendix D.

In general, soil and phoswich data correlated well at the following sites: TA-20-6, TA-20-7, and TA-33-26. Other site data were not comparable or was conflicting. This may be indicative of malfunctioning

equipment or other radioactive components within the soil matrix. Data comparison was not possible for Firing Points #4 and #5 as a phoswich survey was not conducted there.

In addition, it should be noted that phoswich results at TA-20-6, TA-20-7, TA-20-11, and TA-33-26 and soil results at TA-20-3, and Firing Points #2 and #3 at TA-27 showed high concentrations of radioactivity or uranium at grid boundaries. Grids were not extended at these sites, some due to physical limitations (canyon wall, etc.) at the site.

4.3.1 Phoswich Surveys

In general, TA-33-26 displayed the highest activity levels and most frequent occurrence of radioactive components detected during the phoswich surveys. TA-20 had appreciably less activity and frequency than TA-33-26 and TA-27 showed very little radioactivity above background levels. Results for surveys are illustrated in Figures 4-1 through 4-9. All values discussed below are results above background. The phoswich survey results for the individual technical areas are briefly summarized below.

4.3.1.1 TA-20 Phoswich Results

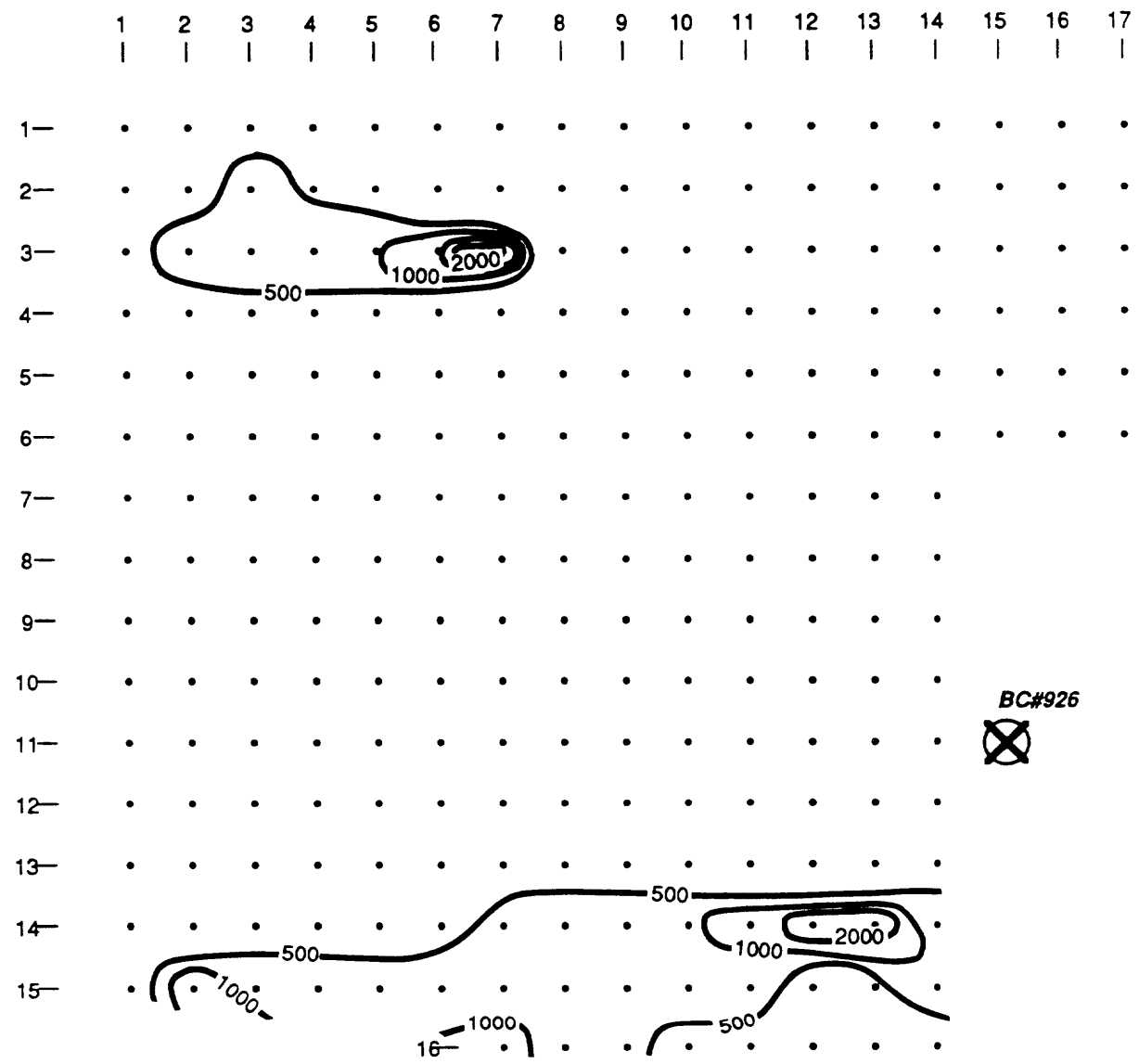
Phoswich readings at TA-20 ranged from below 500 cts/100 sec to as high as 9199 cts/100 sec at TA-20-11, the Hot Storage building. Three sites, TA-20-13, -17, and -37, resulted in either small areas of 500 cts/100 sec readings or below while the remaining five sites (TA-20-3, -6, -7, -11, and -16) had areas with counts as high as 2702 to 9109 cts/100 sec.

TA-20-3 Manhole

There are two general areas of 500 cts/100 sec or greater in the northwestern and southern portions of the TA-20-3 grid. The northwest area (about 10m by 28m in size) displayed the highest results with 3625 cts/100 sec. The larger area in the southern portion (13m by 60m in size) extends the full length of the grid with the highest reading being 3281 cts/100 sec in the southeastern corner as illustrated on Figure 4-1.

TA-20-6 Recovery Pit

The northern portion of this survey area gave the higher phoswich readings with the localized high spot (2702 cts/100 sec) in the far northeast corner of the grid. Several other areas at this site evidenced radioactivity as indicated by 500 and 1000 cts/100 sec isopleths as shown in Figure 4-2.



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 500 Isopleth

SCALE

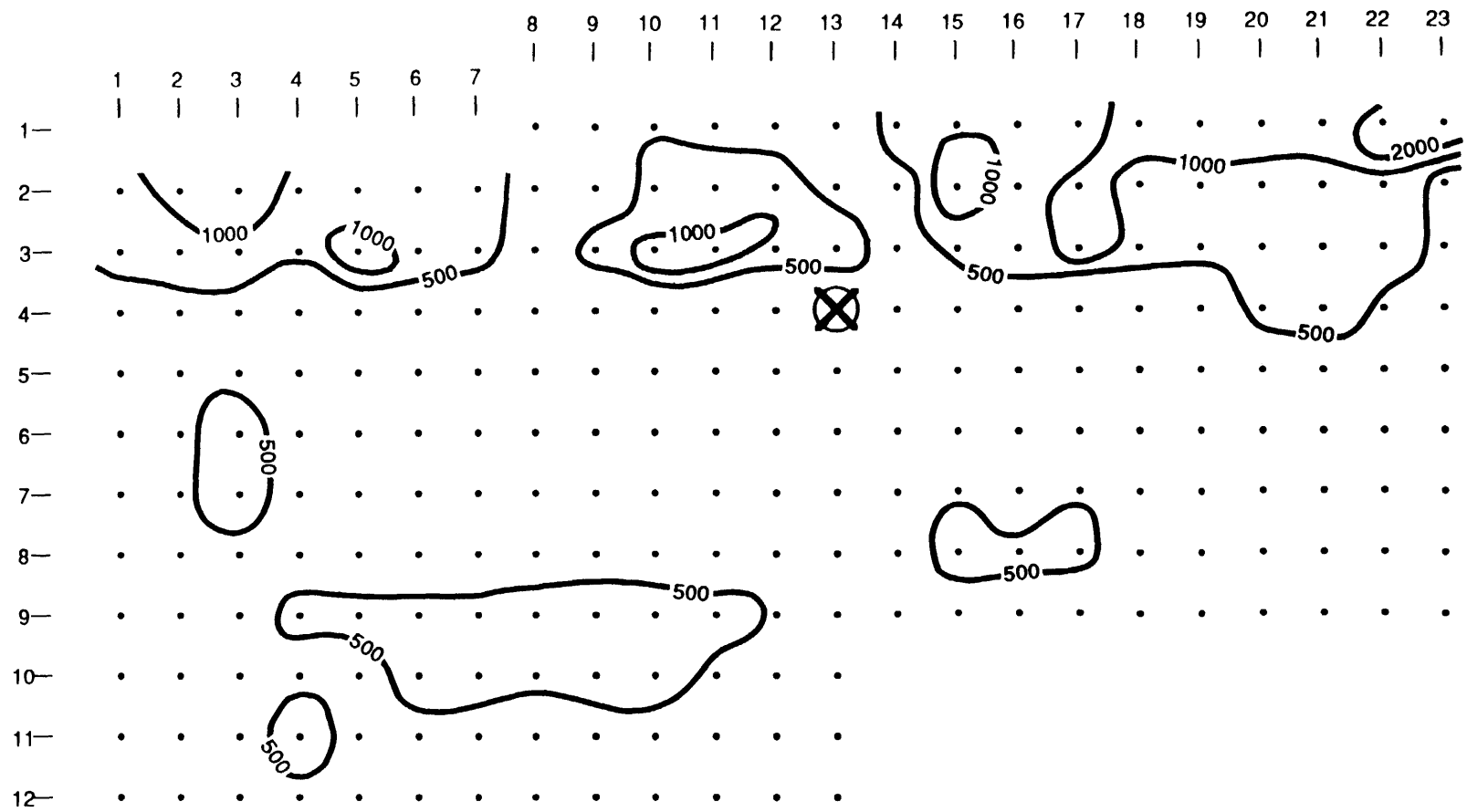
0 5 10m

NUS CORPORATION
A Halliburton Company

LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-1
TA-20-3 MANHOLE



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- —500— Isopleth

SCALE

0 5 10m

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CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA
ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-2
TA-20-6 RECOVERY PIT

TA-20-7 Dumbo and Mount

The highest radioactivity within this site grid was present in the northern portion with east to west bands of 1000 to 2000 cts/100 sec isopleths. Readings of greater than 3000 cts/100 sec were detected in the northeast corner of the grid as well. The highest count at the Dumbo and mount was 3620 cts/100 sec and is illustrated in Figure 4-3.

TA-20-11 Hot Storage

Elevated readings were detected in a small area on the western edge of the grid. The readings, which were the highest for the technical area, ranged from 3119 to 9109 cts/100 sec. Only two other small areas gave readings at 500 cts/100 sec or greater. Isopleths of this data are presented in Figure 4-4.

TA-20-13 20mm Gun Building

Only three small areas at this site were greater than 500 cts/100 sec. These areas were limited to the northern half of the grid, as shown in Figure 4-5. One of these areas is approximately 15 m in length and extends east and west from the building survey marker.

TA-20-16 Old Gun Site Installation

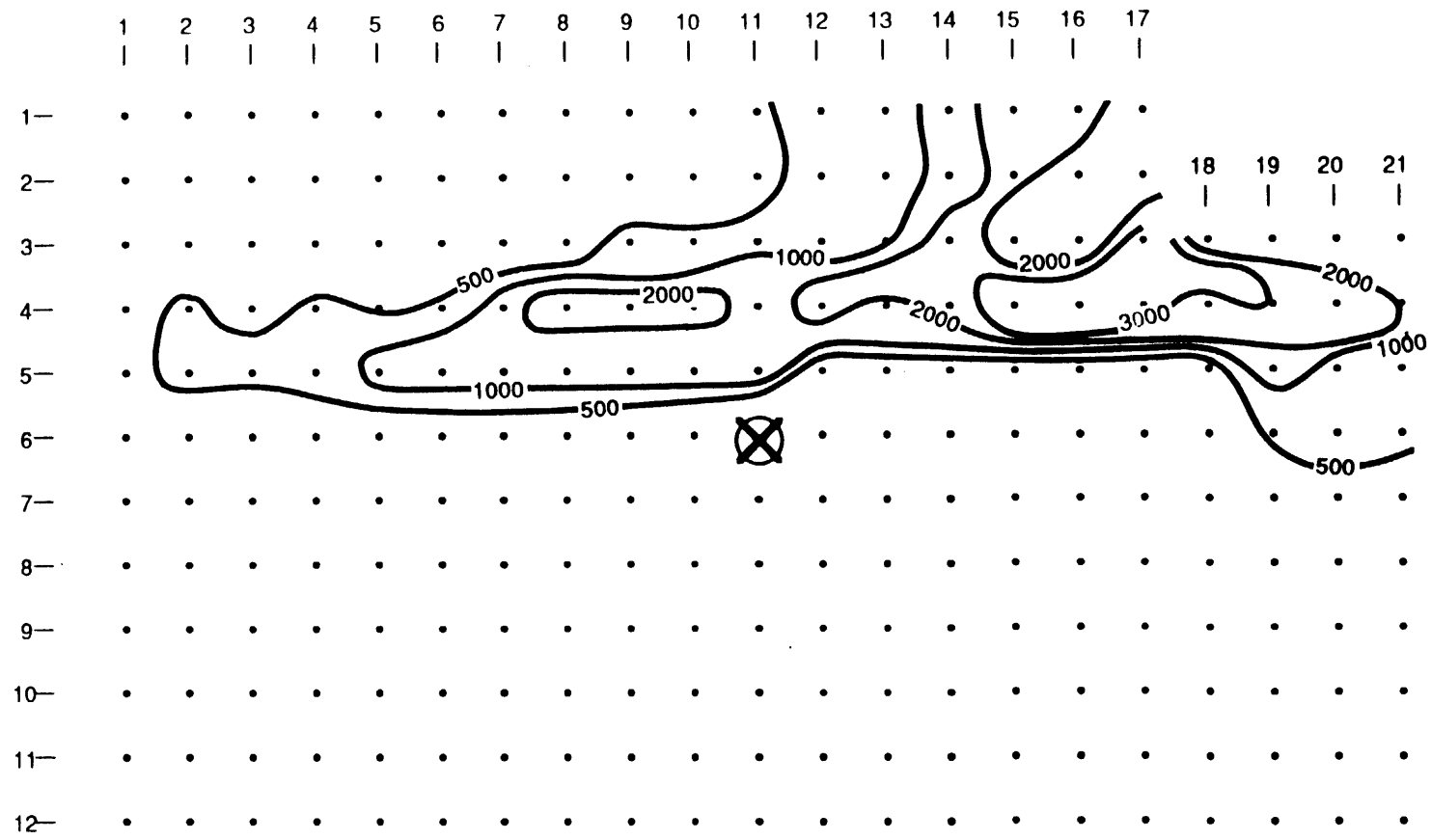
Data indicates the highest readings at this site occurred at the end of a canyon finger north-northeast of the survey marker in the northern portion of the grid. The highest results (4948 cts/100 sec) were found near the sluff of the canyon walls. No other readings 500 cts/100 sec were detected at this site. Figure 4-6 depicts results of this survey.

TA-20-17 Cut Off Shack

Two small localized areas near the north central and northeast portion of the grid were noted between the values of 500 to 1000 cts/100 sec, as shown on Figure 4-7. No other readings above 500 cts/100 sec were detected.

TA-20-37 Pullbox

No readings above 500 cts/100 sec were detected at this area.



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 500 Isopleth

SCALE

0 5 10m

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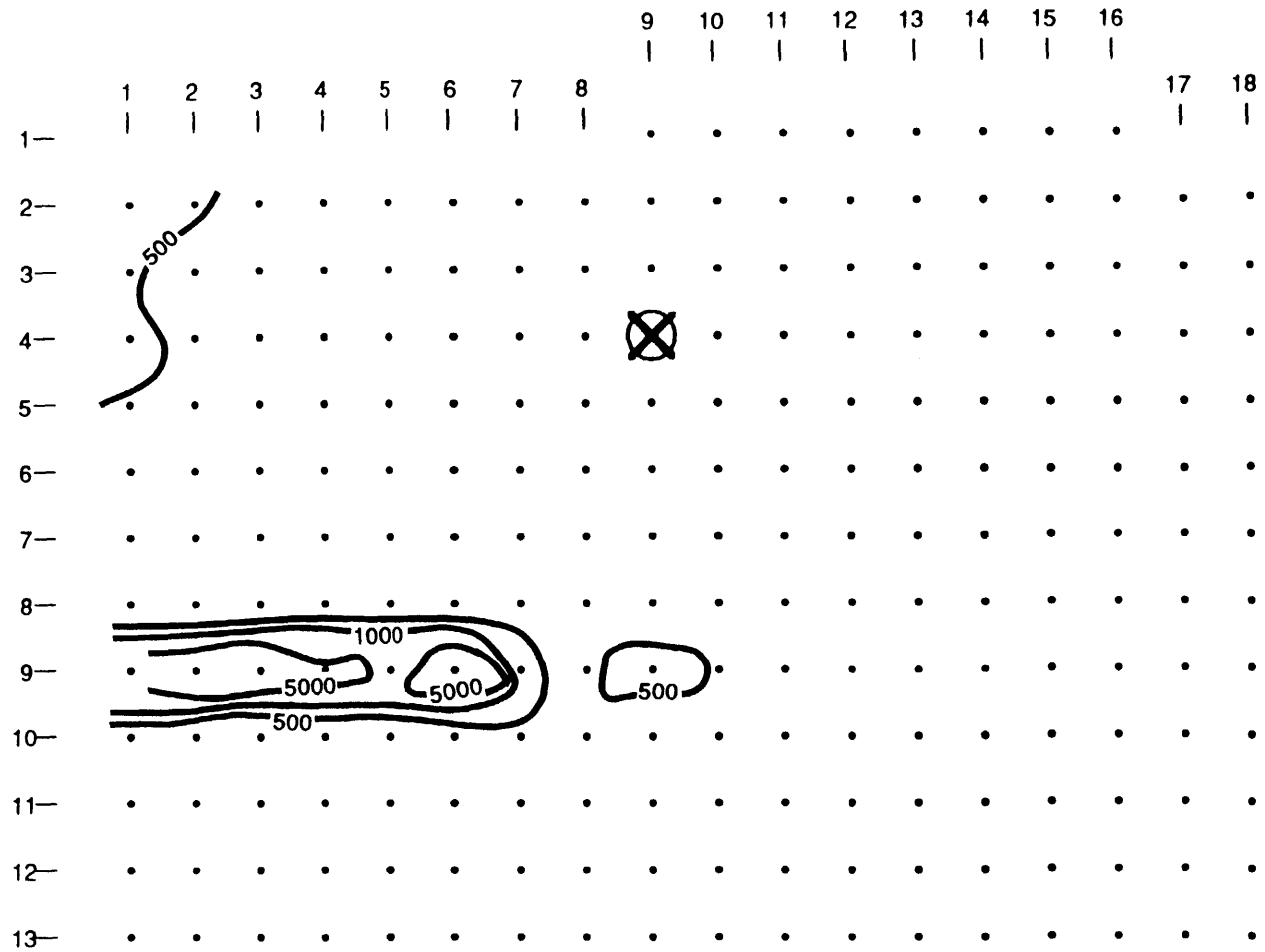
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA
ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-3
TA-20-7 DUMBO AND MOUNT



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- —500— Isopleth

SCALE

0 5 10m

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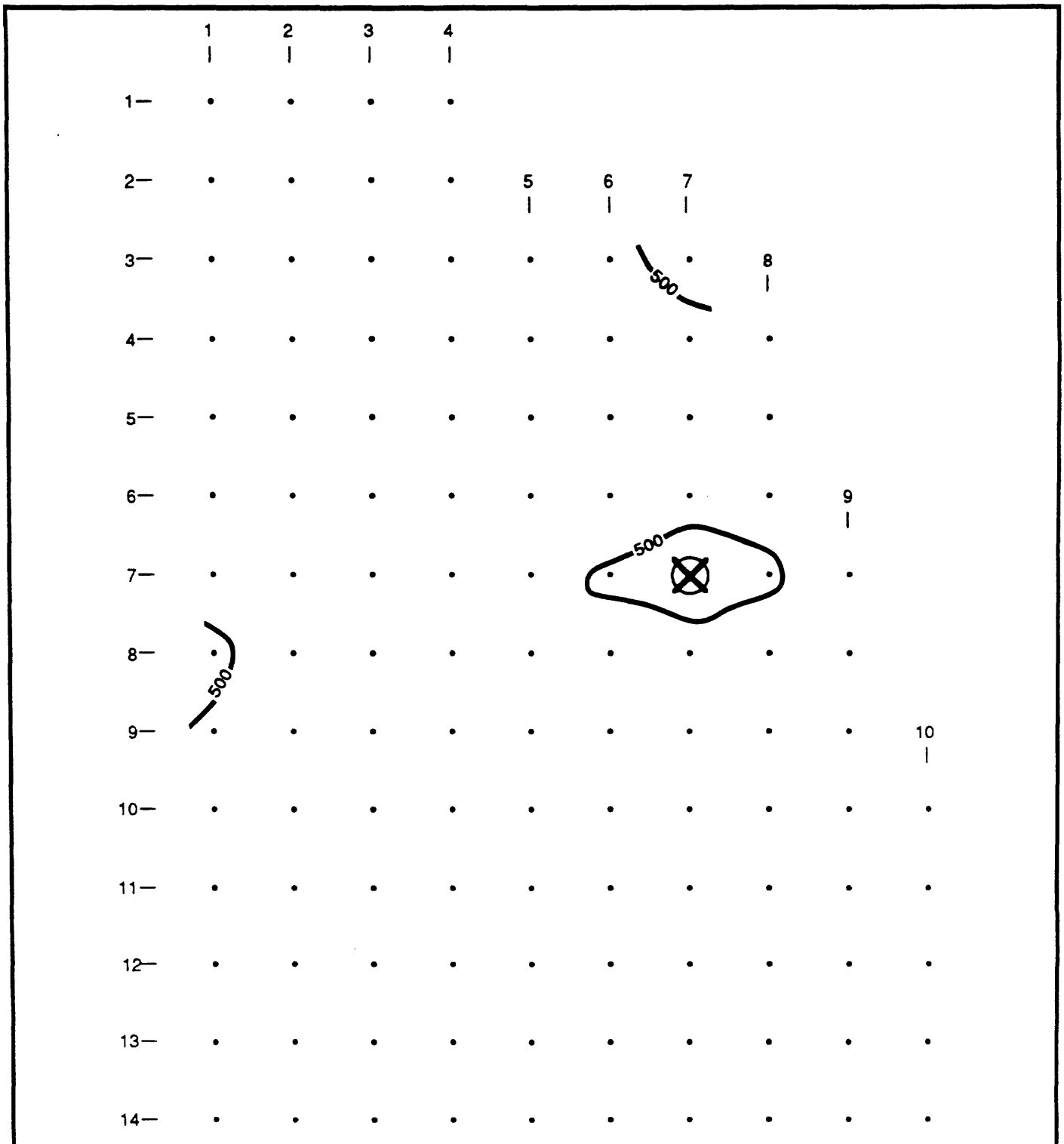
LOS ALAMOS SITE CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-4
TA-20-11 HOT STORAGE



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 500 Isopleth

SCALE

0 5 10m

NUS CORPORATION
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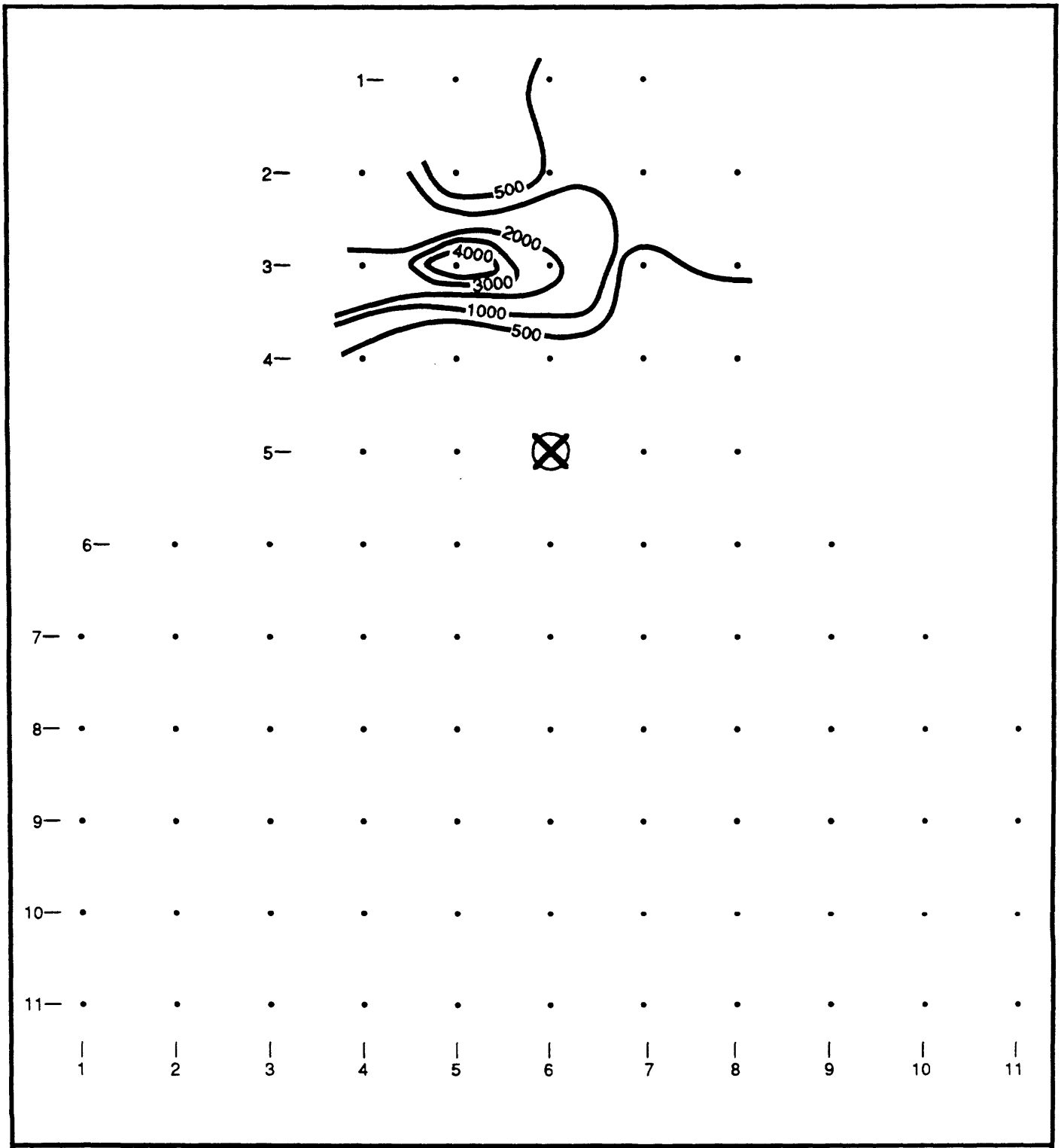
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA
ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-5
TA-20-13 20mm GUN BUILDING



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- —500— Isopleth

SCALE

0 5 10m

NUS CORPORATION
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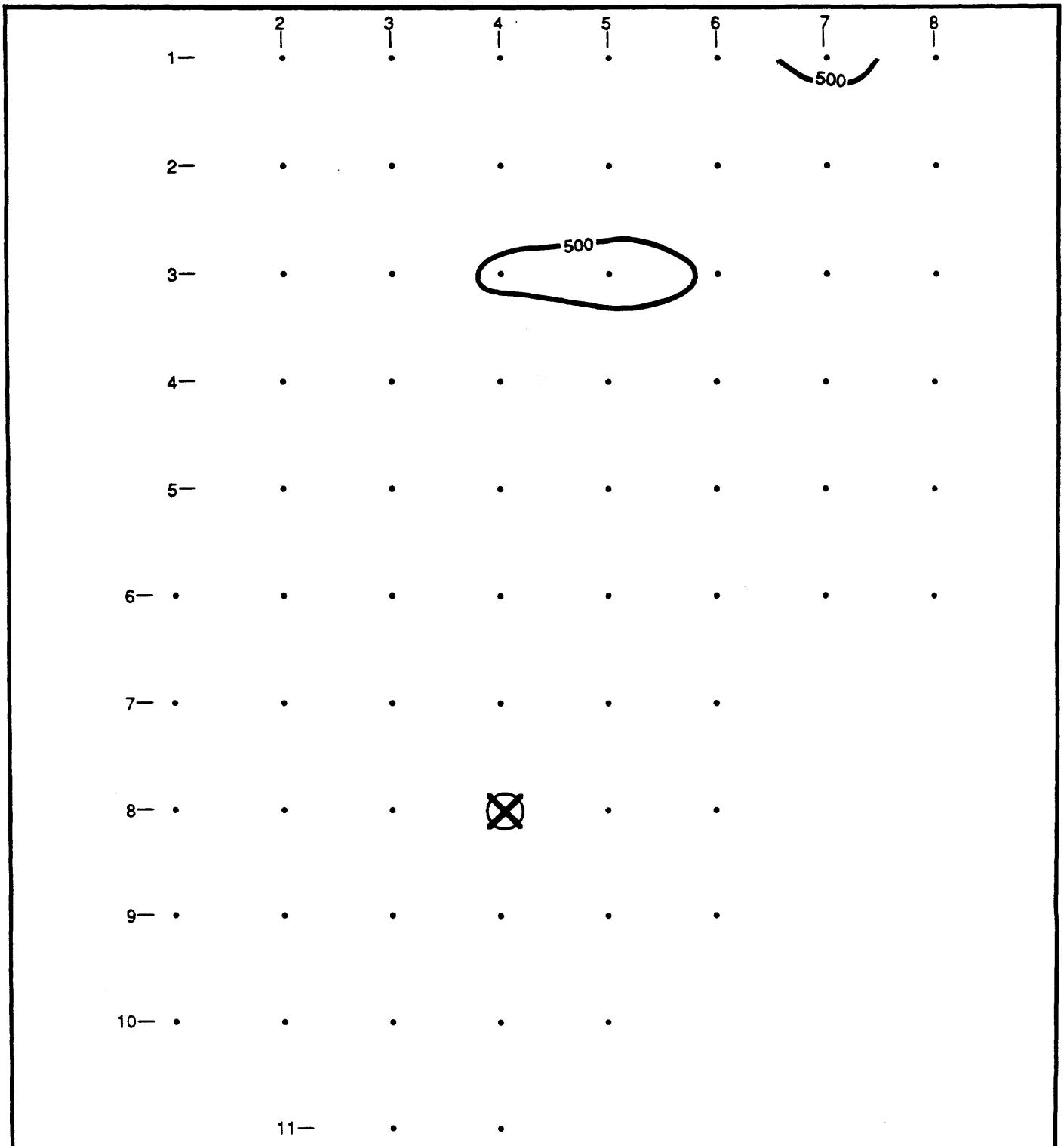
LOS ALAMOS SITE CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-6 TA-20-16
OLD GUN SITE INSTALLATION



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- -500- Isopleth

SCALE

0 5 10m

NUS CORPORATION
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LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA
ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-7
TA-20-17 CUT-OFF SHACK

Sandia Canyon Stream Channel

Of the ten points that were surveyed within the Sandia Canyon stream channel, only two locations produced data above 500 cts/100 sec. Other data ranged from 88 to 231 cts/100 sec and are presented in Table 4-1. The data collection points with the highest readings were 800 ms or less from the TA-20-6 grid (10-1 point) with respective values of 715 and 944 cts/100 sec.

4.3.1.2 TA-27 Phoswich Survey Results

Of the three sites at TA-27, the highest reading was 537 cts/100 sec at Firing Point #1. Firing Points #2 and #3 did not produce any readings above background. Firing Points #4 and #5 were not surveyed as the sites were located within the TA-36 firing site exclusion zone.

Firing Point #1

Only one reading was found to be above 500 cts/100 sec (537 cts/100 sec) at this firing point. This point was located seven m north of the Firing Point #1 survey marker. Lower readings of less than 100 cts/100 sec) were also observed to south and southwest of the location marker. Isopleths of the results are illustrated on Figure 4-8.

Firing Points #2 and #3

No reading were observed above site background at this site.

Firing Points #4 and #5

No data were obtained at this area because the firing points were located within the TA-36 firing site exclusion zone and, the site, therefore, could not be accessed to perform the survey.

4.3.1.3 TA-33-26 X-Unit Chamber Phoswich Survey Results

All readings obtained in the vicinity of the X-Unit Chamber, TA-33-26, indicated significant, elevated readings of greater than 500 cts/100 sec. Values within the grid itself ranged from 863 to 16,356 cts/100 sec. Separate readings in the bermed area to the north of TA-33-26 ranged from 676 to 1173 cts/100 sec. A distinct pattern developed on the radial grid originating from the X-Unit Chamber. Readings were near or below 2000 cts/100 sec interval outside of the 100 m distance from the X-Unit

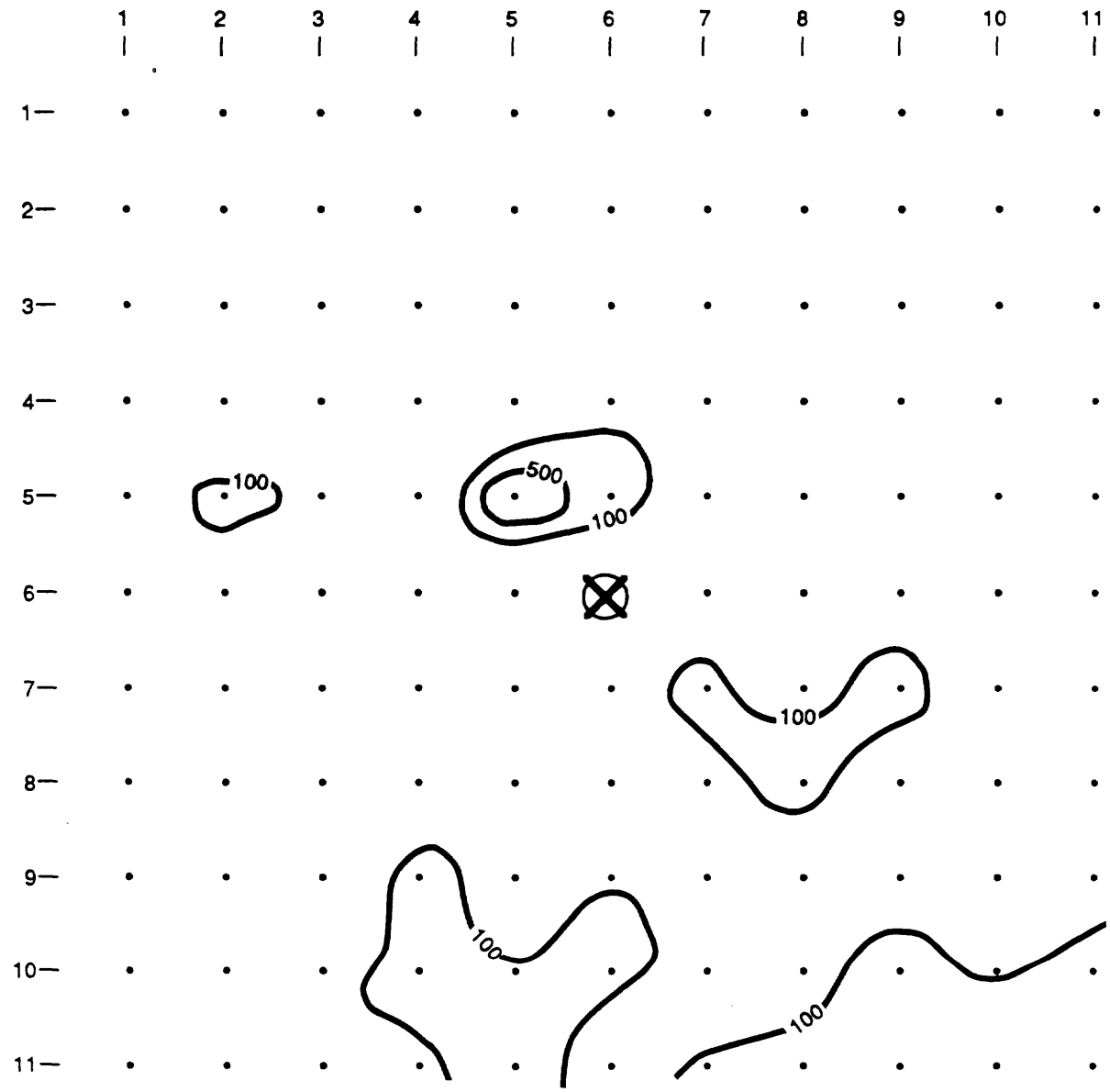
TABLE 4-1

TA-20 SANDIA CANYON STREAM CHANNEL SEDIMENTS*
CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
AND PHOSWICH SURVEY DATA ABOVE SITE BACKGROUND

Location Number	Distance from Point of Origin as Noted Below (in feet)	Sample Number	Concentration of Uranium in Soils above facility background (in ppm)	Phoswich Survey Data above facility background (in counts/100 sec)
SC-1	0	85.05841	0.26	715
SC-2	500	85.05842	0.43	944
SC-3	1,000	85.05843	0.52	231
SC-4	1,500	85.05844	0.53	88
SC-5	2,000	85.05845	0.54	126
SC-6	2,500	85.05846	0.07	133
SC-7	3,000	85.05847	B	190
SC-8	3,500	85.05848	B	150
SC-9	4,000	85.05849	0.25	163
SC-10	4,500	85.05850	0.66	120

Note: B = facility background 3.1 to 4.9 ppm

*Sample locations begin 300m west of grid point 10-1 on TA-20-6 grid plot. Soil sample and Phoswich Survey locations continued every 500 feet from origin (SC-1).



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 500 Isopleth

SCALE

0 5 10m

NUS CORPORATION
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LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA
ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-8
TA-27 FIRING POINT #1

Chamber on the western orientations. Similarly higher values were found within the 60 m distances on the eastern orientations. Levels of radioactivity decreased as the distance from the X-Unit Chamber increased. Relatively high readings were observed at the limits of the sample grid. These results are shown on the radial grid on Figure 4-9. An inset on the figure is provided in the upper left corner for data clarity as readings were obtained every five m within the first 20 m around the structure. Radial grid points then continued for every 10 m thereafter.

4.3.2 Soil Sampling

Soil sampling was performed for the LASCP as a method of site characterization. Soil samples, as previously mentioned, were collected on the same grids established for phoswich radiation surveys. Data was analyzed and interpreted with respect to facility background in soils and isopleths of uranium concentrations in soils developed and mapped. Background concentrations of uranium in soil at LANL are estimated to be approximately 4 ppm (plus or minus 0.9 ppm) on a facility-wide basis (Trocki, L. et al, 1978). Samples were also obtained from the stream channels both TA-20 and TA-27 and are presented in tabular form. All values discussed below are results above facility background. Results from those areas sampled are presented in Figures 4-10 through 4-18.

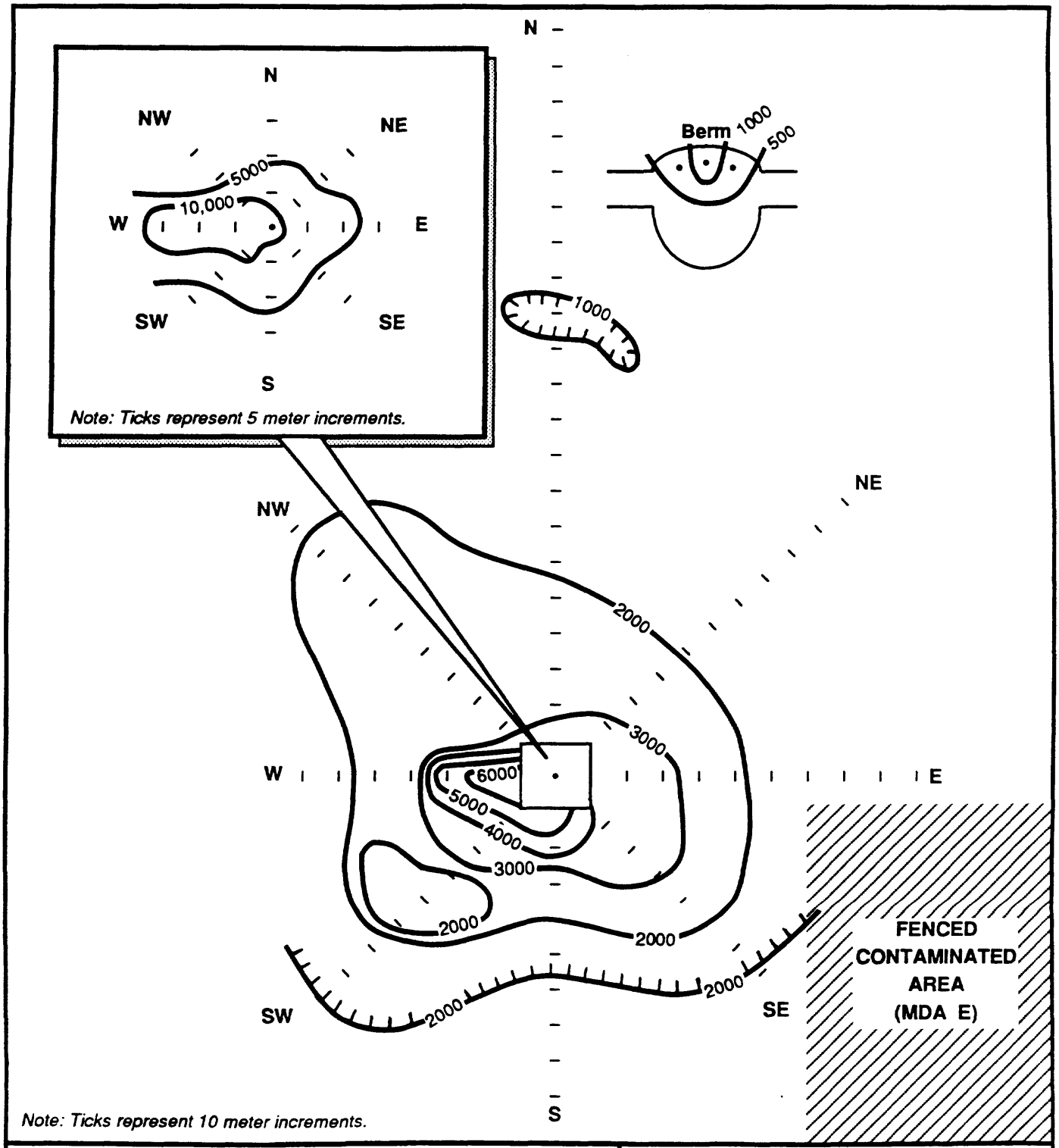
Generally, the highest concentration of uranium in soils at the three technical areas were as follows: 458.13 ppm at TA-33-26; 47.5 ppm at TA-20; and 41.1 ppm at TA-27. A majority of the uranium levels at the sites sampled were 2 to 3 ppm above facility background.

4.3.2.1 TA-20 Soil Sampling Results

All soil samples taken at TA-20 and analyzed for uranium generally resulted in levels 2 to 3 ppm above facility background with the exception of TA-20-3, TA-20-6, and TA-20-7. The highest levels of uranium in soils for these sites were 47.5, 10.2, and 4.7 ppm, respectively.

TA-20-3 Manhole

The highest concentrations of uranium in soil at this site are present in the northeast corner of the area surveyed. The highest values, 28.3 ppm and 47.5 ppm, are located in this area at the boundary of the grid. Isopleths of the site results are shown in Figure 4-10.



LEGEND:

- Survey Marker
- Grid Points
- Radial Grid Coordinate
- 500 Isopleth

SCALE

0 20 40m

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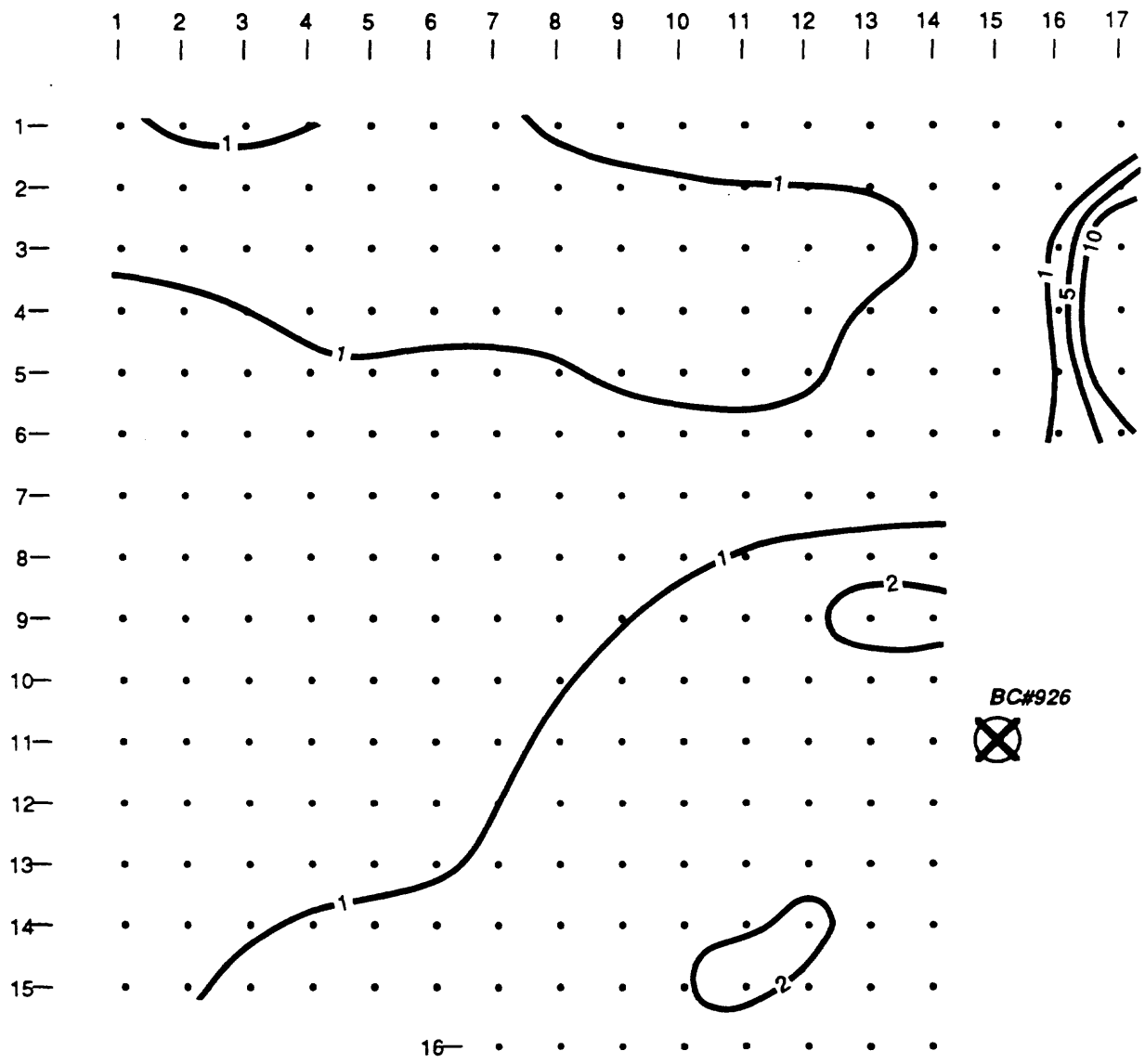
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

PHOSWICH SURVEY DATA ABOVE SITE BACKGROUND
(in counts per 100 second interval)

FIGURE 4-9
TA-33-26 X UNIT CHAMBER



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- —1— Isopleth

SCALE

0 5 10m

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LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-10
TA-20-3 MANHOLE

TA-20-6 Recovery Pit

The highest concentration (10.2 ppm) at the recovery pit was found about five m north of the structure survey marker with other higher concentrations near this area, as shown in Figure 4-11. The northeast corner and the western grid boundary displayed concentrations approximately 3 ppm.

TA-20-7 Dumbo and Mount

Results from this site indicate the highest concentration of uranium in soils was 4.7 ppm. The highest concentrations were found 15 m north and 30 m to the northeast of the survey marker for the Dumbo and Mount as seen in Figure 4-12. Other results from this sampling show concentrations 1 to 4 ppm in an east-west band in the north portion of the site.

TA-20-11 Hot Storage

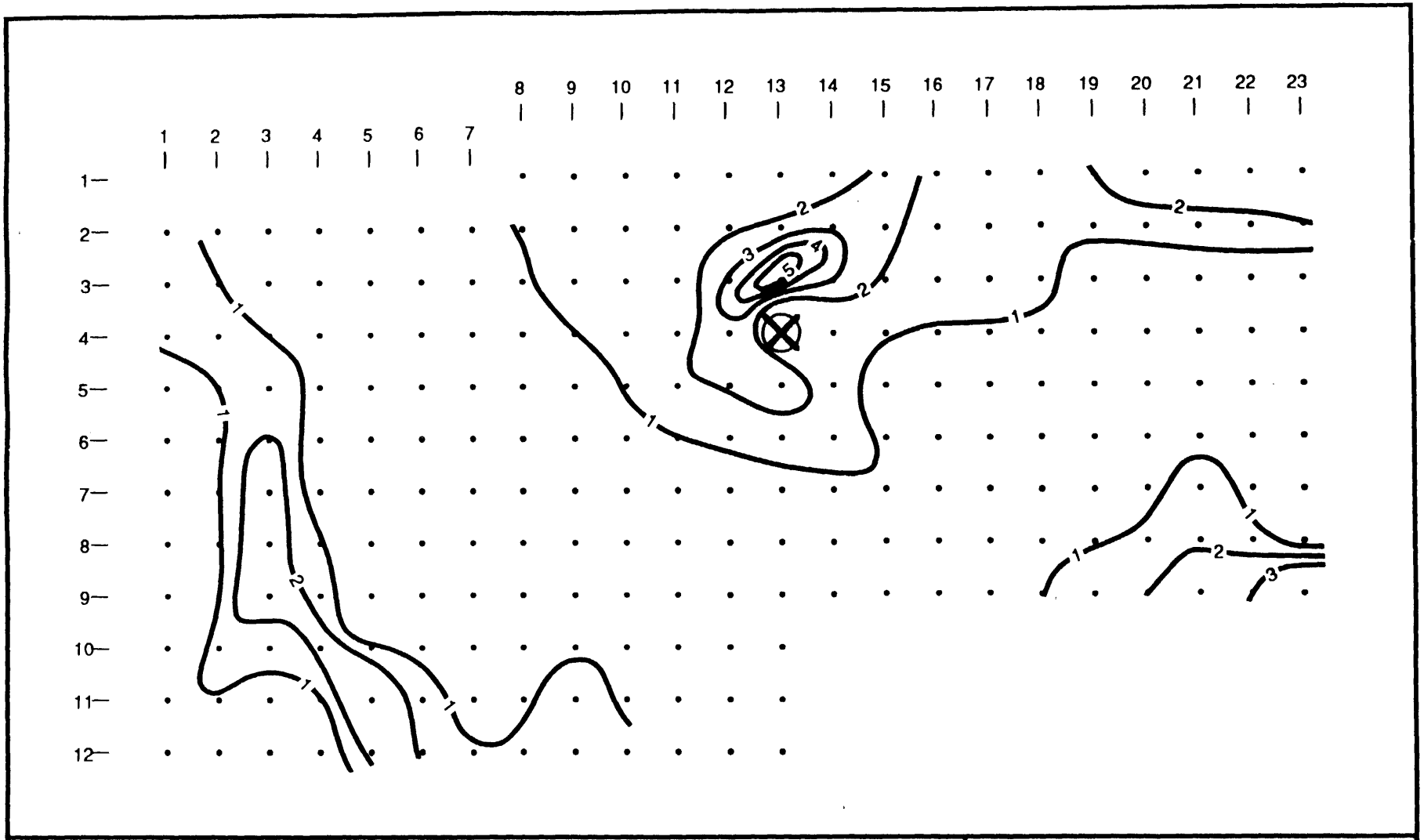
Slightly elevated concentrations of uranium above background are present around the surveyed location of the Hot Storage building. Other areas of contamination are located in the southeast and east central portions of the grid with a band of 1 to 2 ppm in soil trending from the northeast corner to the central west edge of the gridded area. Highest concentration in these areas was 2.3 ppm, as illustrated on Figure 4-13.

TA-20-13 20mm Gun Building

Concentrations of uranium in soils are relatively low at this site (3 ppm). Those locations displaying these results are in the central west and northeast corner of the sampling area as shown on Figure 4-14.

TA-20-16 Old Gun Site Installation

This site is also an area of low concentration of uranium in soils with concentrations up to 2.8 ppm at the northern section of the canyon and the west edge of the grid. Isopleths of the data are presented on Figure 4-15.



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- —1— Isopleth

SCALE

0 5 10m

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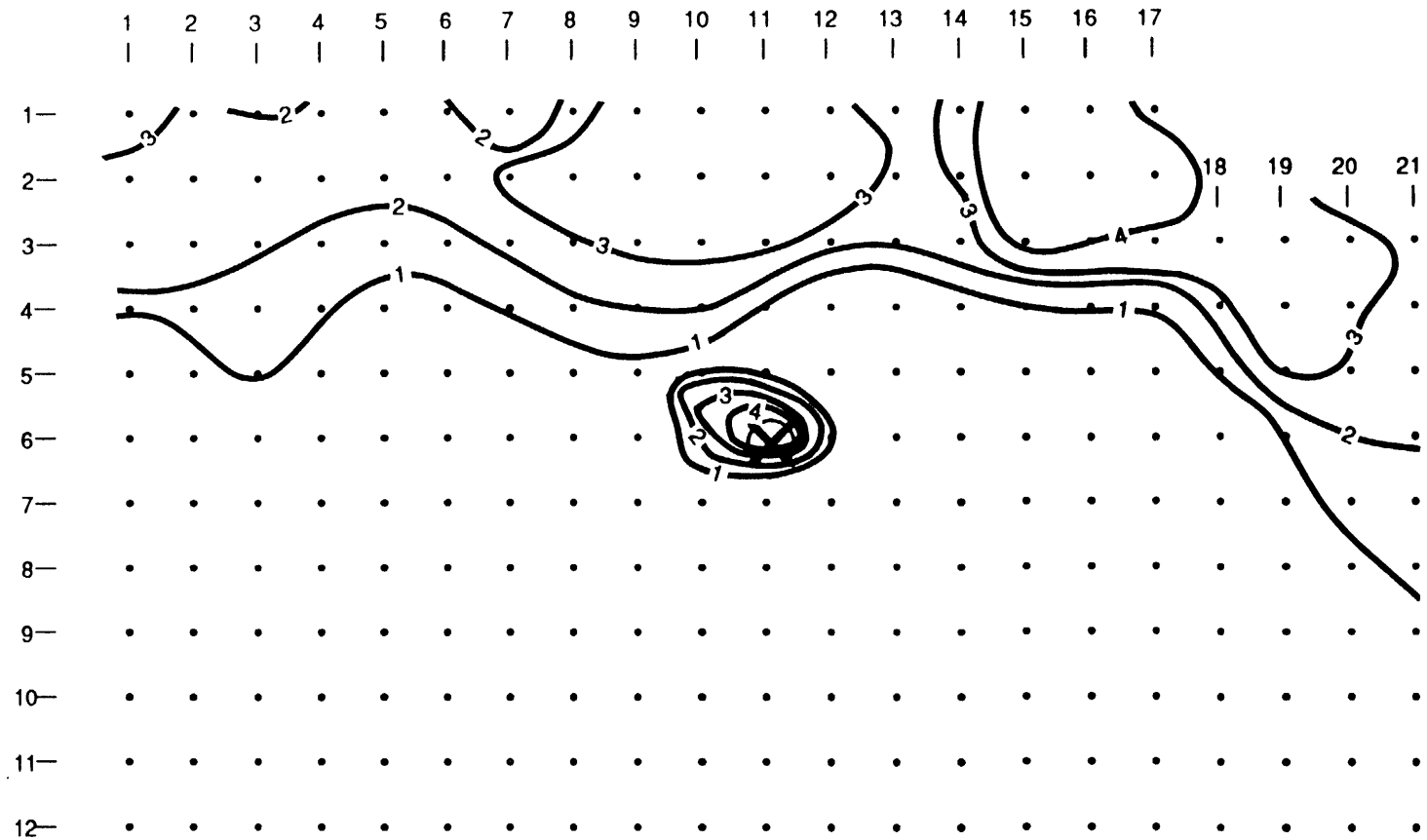
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-11
TA-20-6 RECOVERY PIT



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- Isopleth

SCALE

0 5 10m

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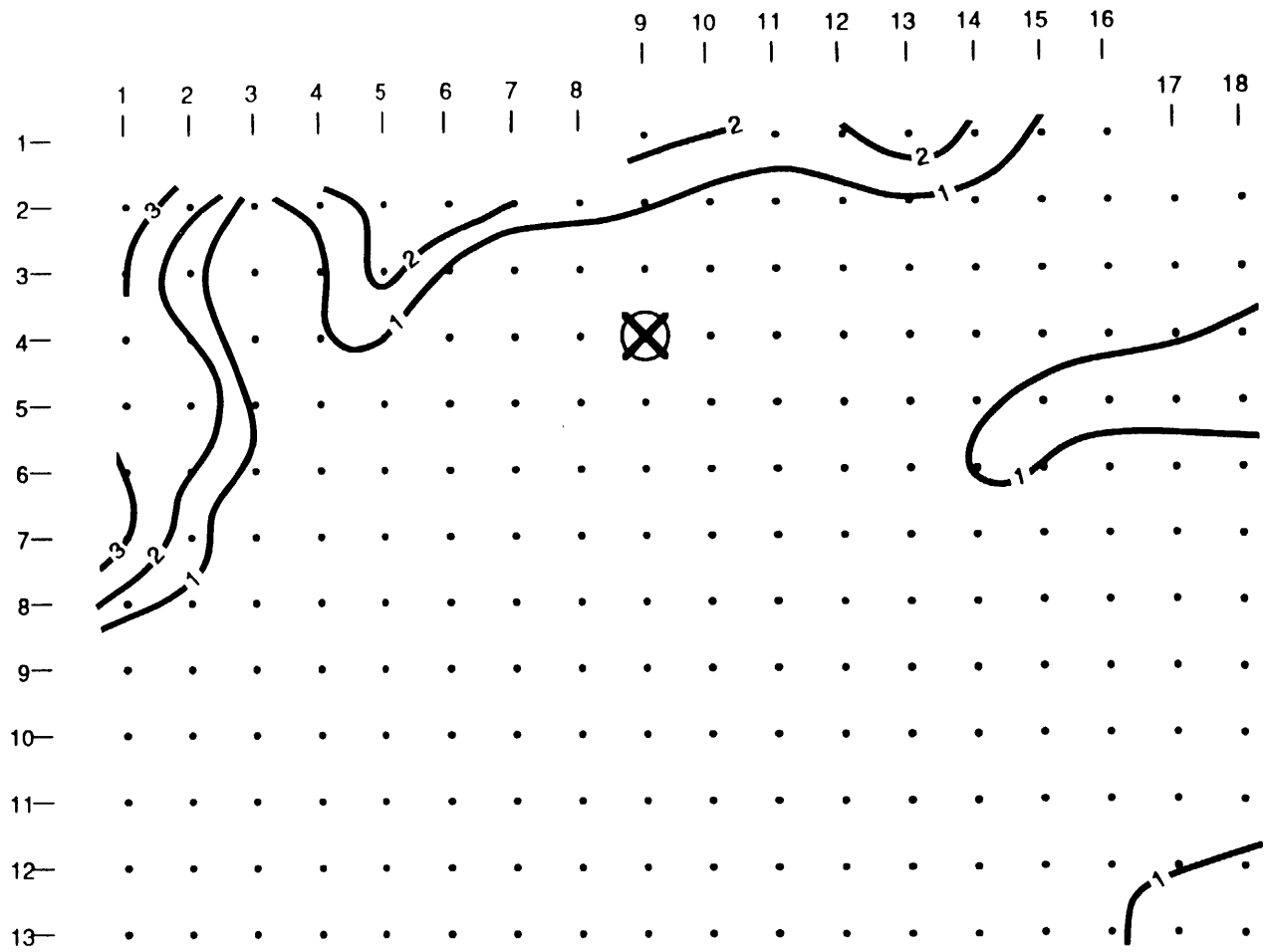
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-12
TA-20-7 DUMBO AND MOUNT



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- Isopleth

SCALE

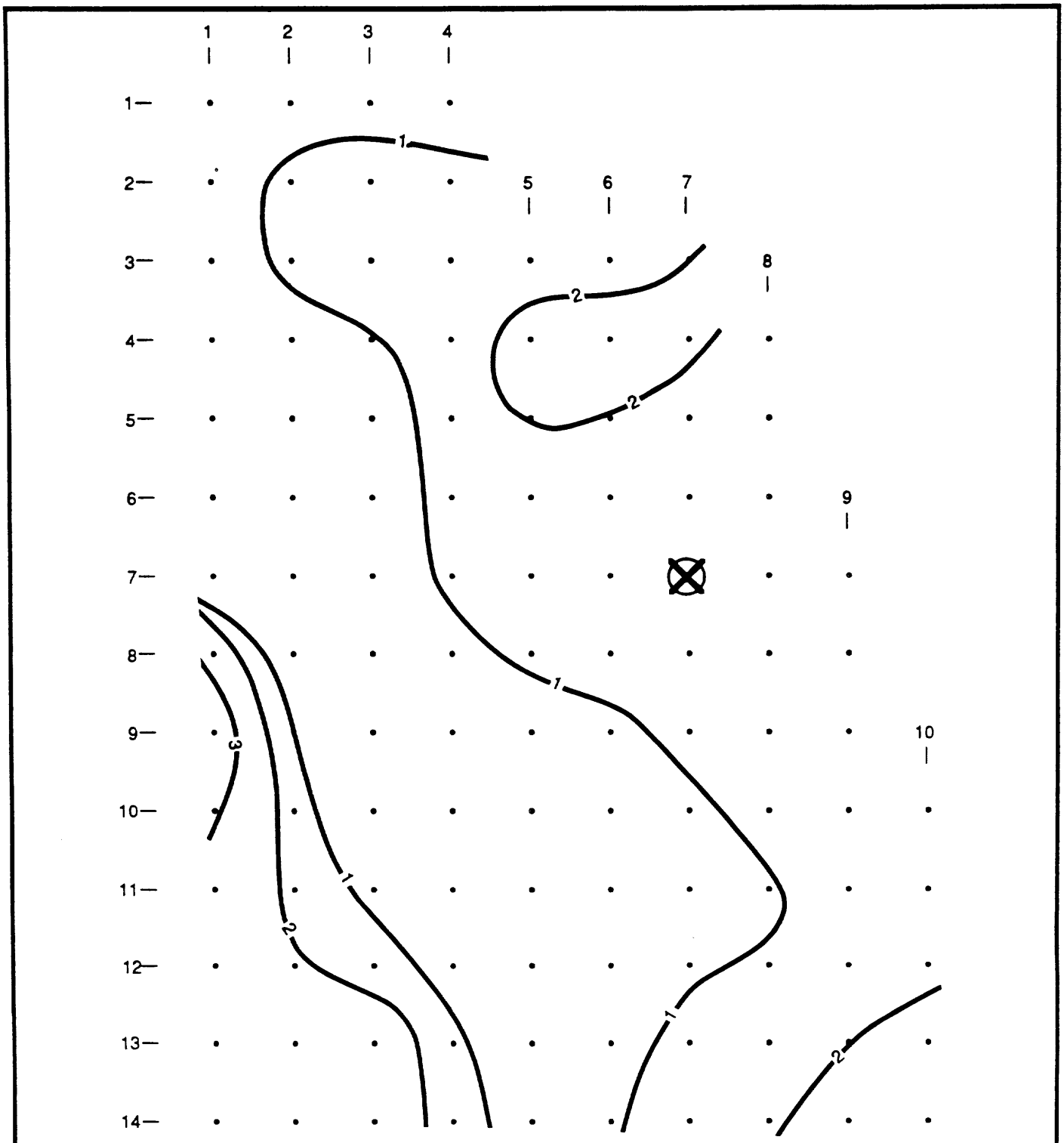
0 5 10m

NUS CORPORATION
A Halliburton Company

LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-13
TA-20-11 HOT STORAGE



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- —1— Isopleth

SCALE

0 5 10m

NUS CORPORATION
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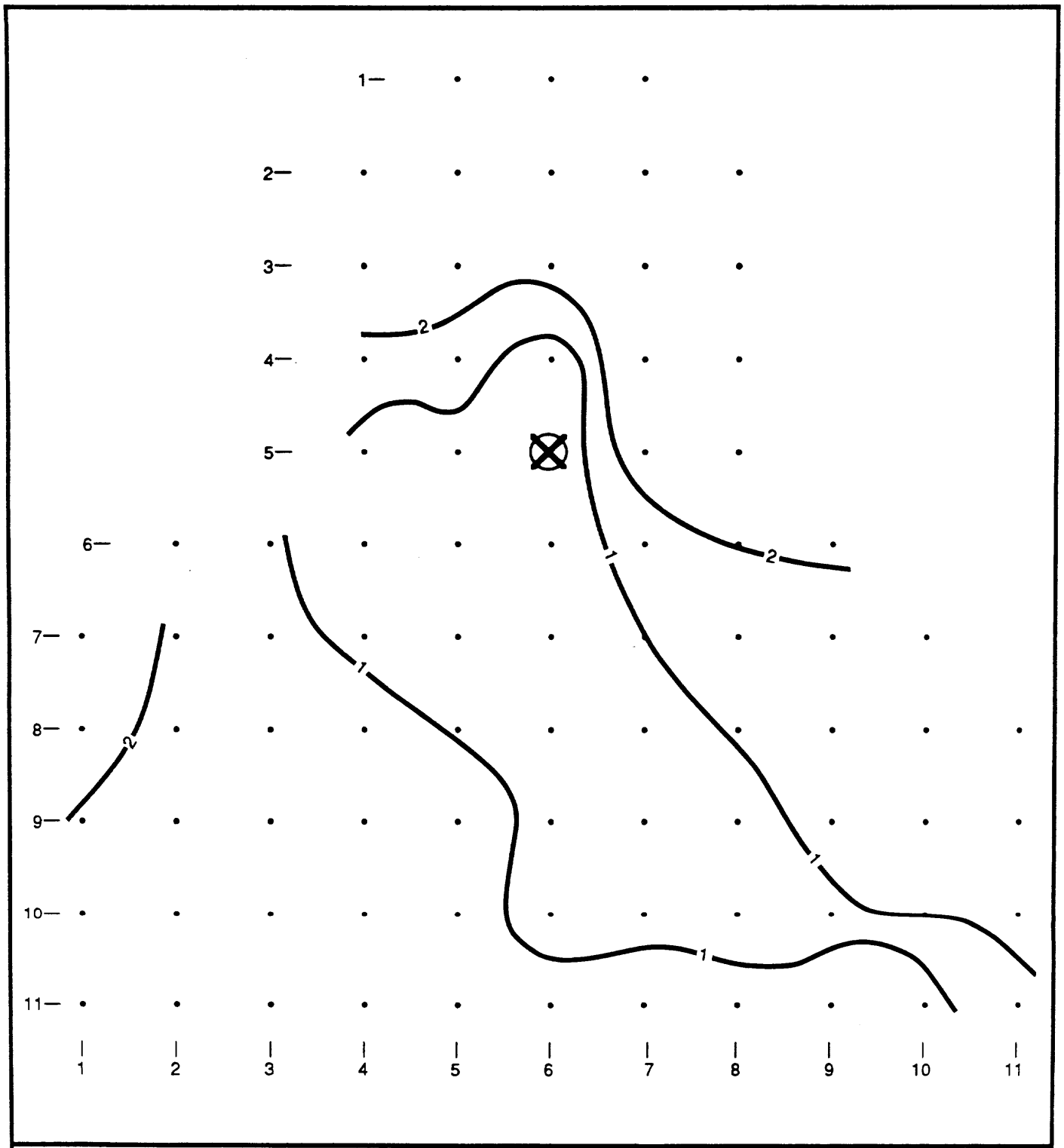
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-14
TA-20-13 20mm GUN BUILDING



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 1 Isopleth

SCALE

0 5 10m

NUS CORPORATION
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LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-15 TA-20-16
OLD GUN SITE INSTALLATION

TA-20-17 Cut Off Shack

Most of the soil samples at the Cut Off Shack were only slightly greater than background with concentrations ranging from 1.1 to 2.2 ppm. Figure 4-16 illustrates this.

TA-20-37 Pull Box

Uranium levels at this site ranged from background to 3.2 ppm in the southwest corner of the sampling area. No other data above facility background was obtained. These data are presented on Figure 4-17.

Sandia Canyon Stream Channel

Uranium concentrations in soils in the stream channel in Sandia Canyon were at or very near facility background. None of the results were greater than 1 ppm above the background level of 4.9. Results are presented in Table 4-1 as a map of the sampling points were not provided.

4.3.2.2 TA-27 Soil Sampling Results

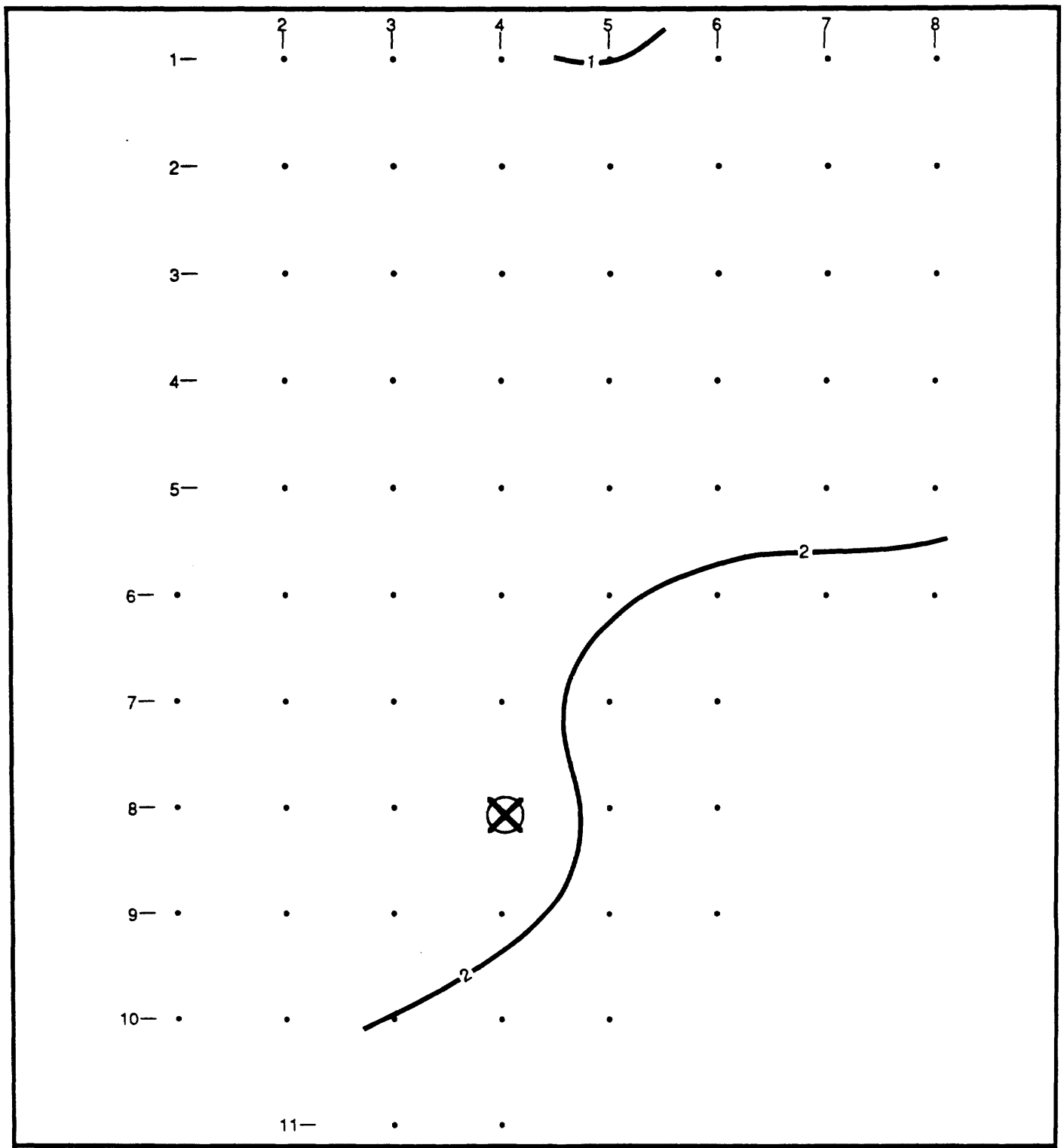
At TA-27, Firing Point #1 soil samples were at background levels or slightly above except at Firing Points #2 and #3. Uranium concentrations in soils for this technical area ranged up to 41.1 ppm.

Firing Point #1

No uranium concentrations above facility background were detected in the soils at Firing Point #1.

Firing Points #2 and #3

This site shows relatively high concentrations of uranium in soils. It appears that the contamination extends to the north and the south past the boundary of the grid and west and east of the location marker for Firing Points #2 and #3. As the grid does not continue further to the north or south, the extent of contamination is not known. Sampling results range from background to 41.1 ppm. Highest concentrations of 41.1 and 20.7 ppm were found in soils about 20 and 40 m south-southeast of the survey location marker, as shown on Figure 4-18. Of the 31 samples obtained for analysis, only five resulted in concentrations of less than 1 ppm above background.



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- Isopleth

SCALE

0 5 10m

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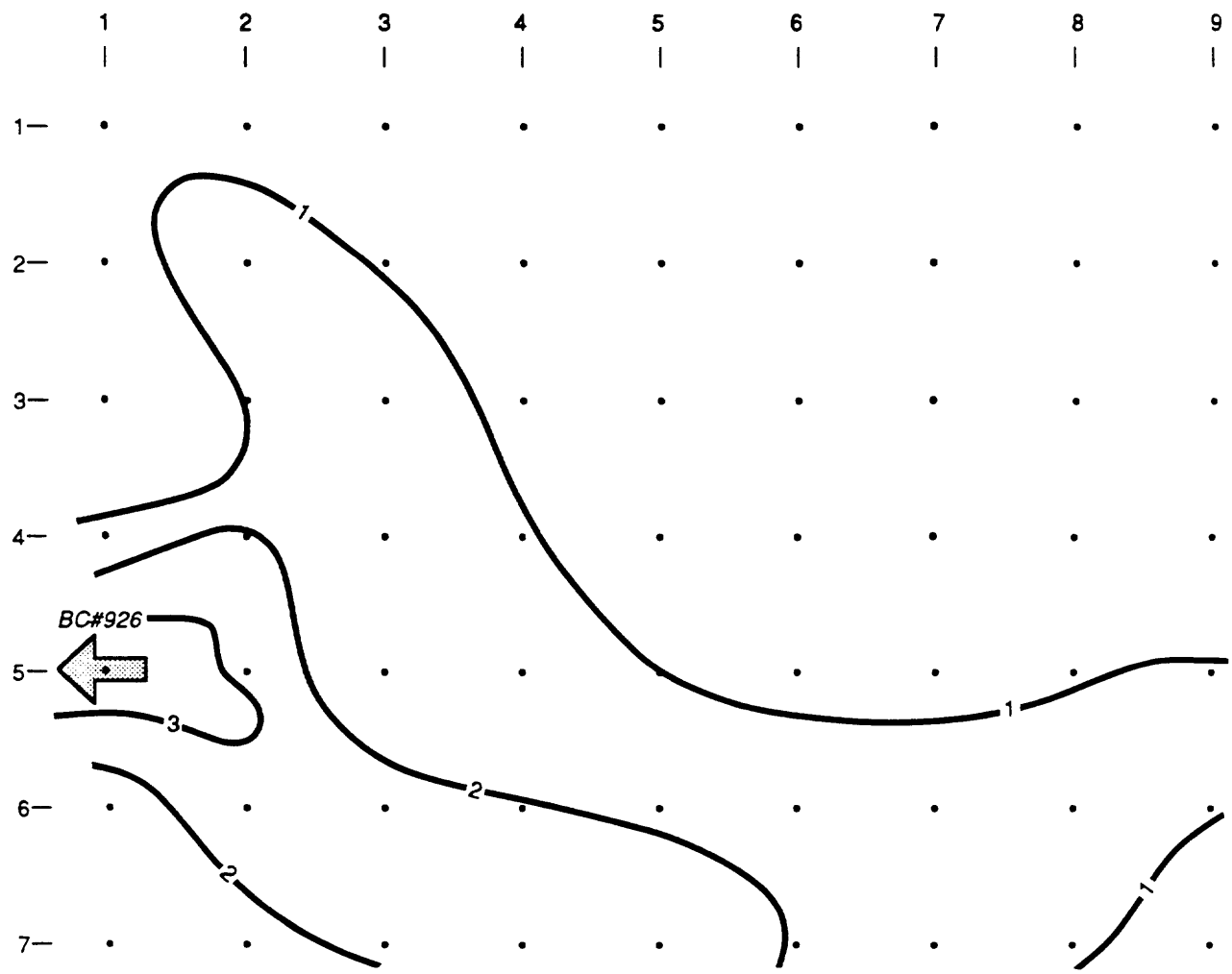
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-16
TA-20-17 CUT-OFF-SHACK



Note: BC#926 130 m west of 5,1.

LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- Isopleth

SCALE

0 5 10m

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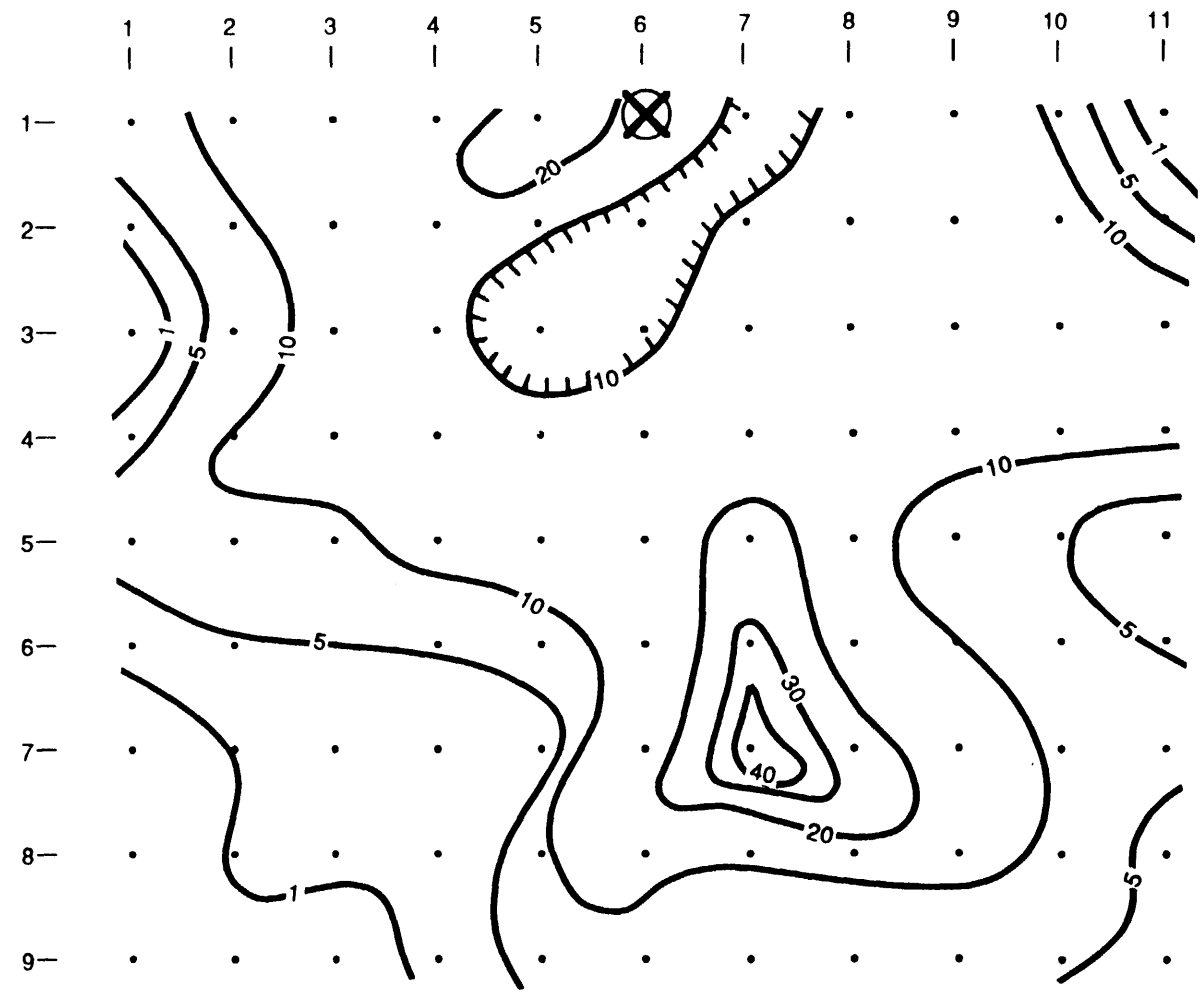
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-17
TA-20-37 PULL BOX



LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 1 Isopleth

SCALE

0 5 10m

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LOS ALAMOS SITE
CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

FIGURE 4-18
TA-27 FIRING POINTS #2 AND #3

Firing Points #4 and #5

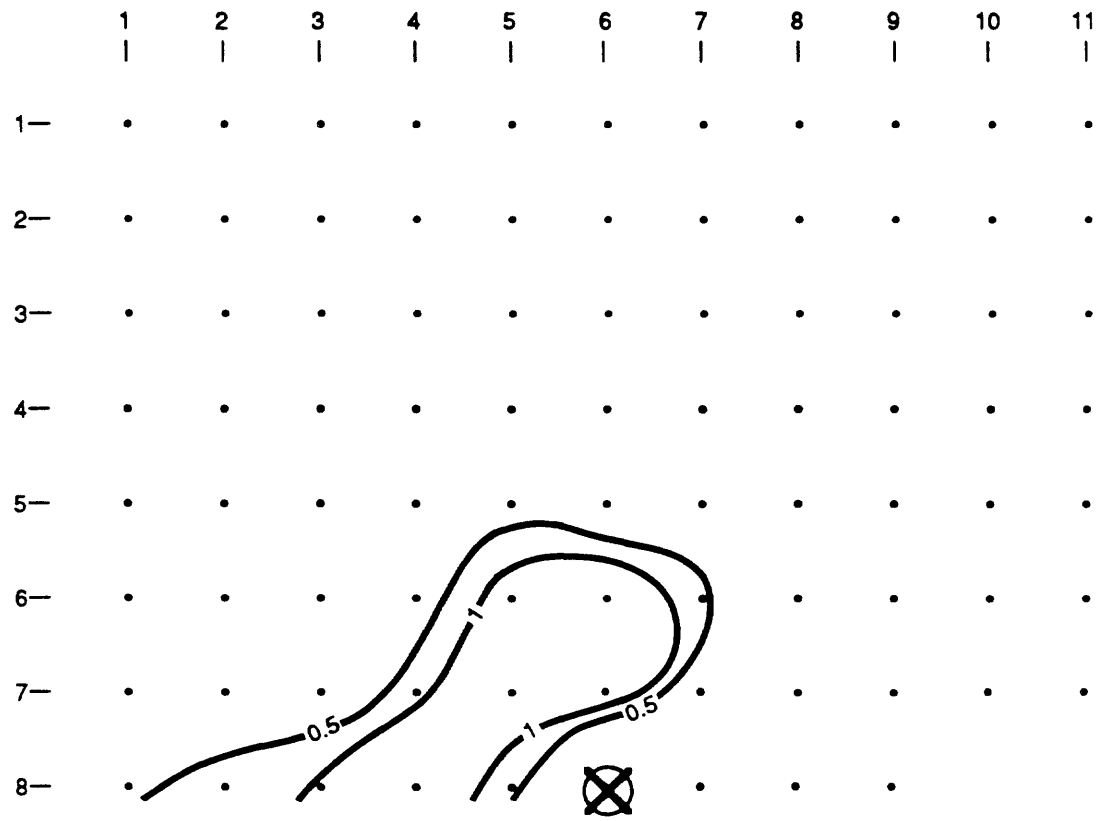
Only five of the twenty five samples obtained yielded uranium concentrations slightly above facility background. Two of these five were 1.7 ppm above background. These data points were shown located in an area approximately 7 m north of the Firing Points #4 and #5 survey marker and are shown on Figure 4-19.

Pajarito Canyon Stream Channel

Of the 11 soil samples taken of the Pajarito Canyon stream sediments, only three samples were above facility background. These three locations had uranium concentrations of 2.80, 0.56, and 1.13 ppm. All other samples were at or below background. Results from the sampling event are presented in Table 4-2.

4.3.2.3 TA-33-26 X-Unit Chamber Soil Sampling Results

The majority of the samples collected along the radial grid centered on the X-Unit Chamber location, TA-33-26, indicated high levels of uranium in soils. Of 107 samples collected, 99 had greater than 5ppm above facility background. Concentrations were higher to the west of the X-Unit Chamber, as indicated on Figure 4-20. Concentrations generally decreased with distance from the X-Unit Chamber. Results from TA-33-26 ranged from background to 458.13 ppm uranium. The majority of the contamination was located within 50 m of the structure with some extending to 80 m in the northwest sampling sector. Lower levels of contamination did exist beyond the 80-m mark in some of the other sectors. Samples obtained from the bermed area were not above background.



PAJARITO ROAD

LEGEND:

- Survey Marker
- Grid Points
- 5— Grid Coordinate
- 1 Isopleth

SCALE

0 5 10m

NUS CORPORATION
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LOS ALAMOS SITE CHARACTERIZATION PROGRAM

CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND
(in ppm)

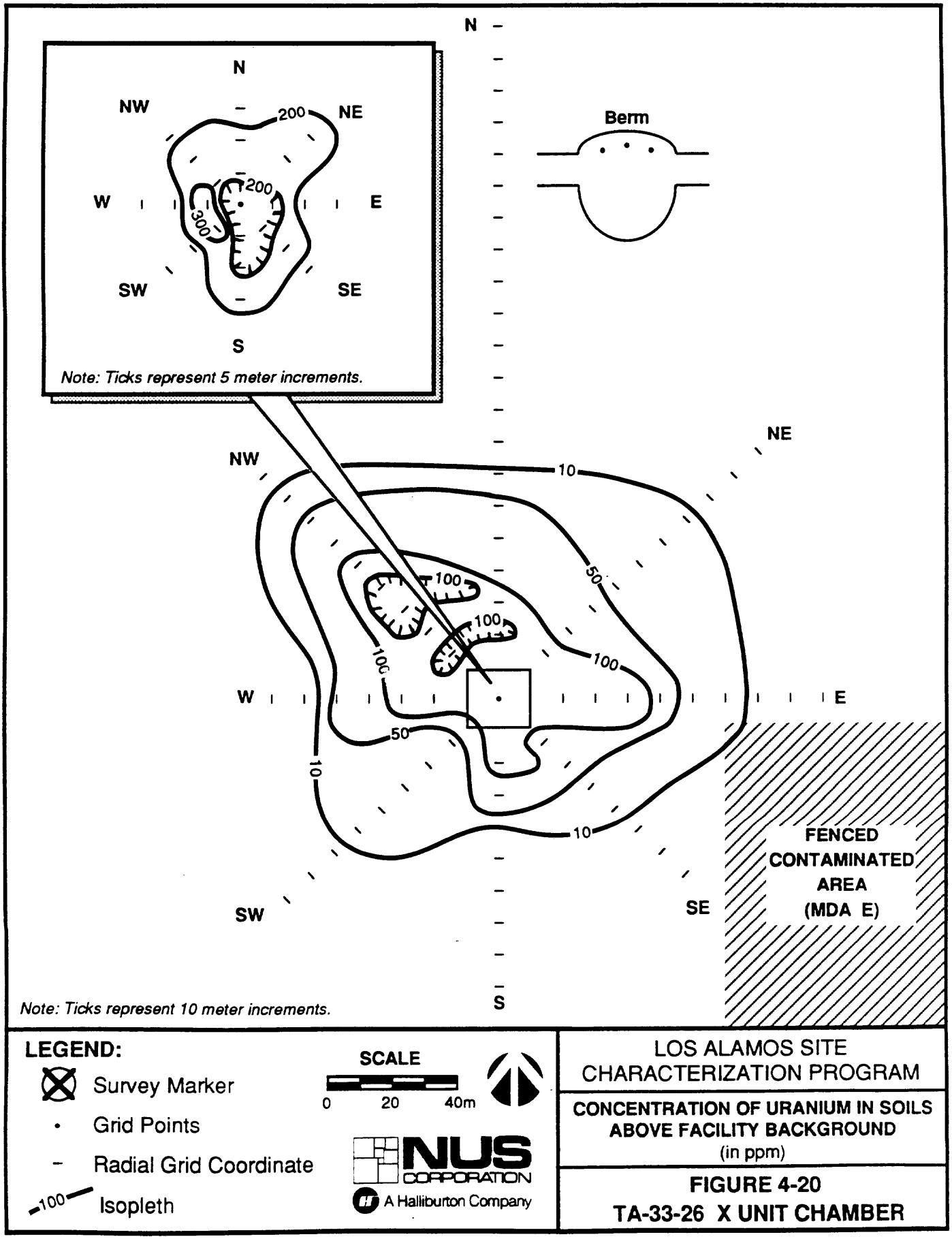
FIGURE 4-19
TA-27 FIRING POINTS #4 AND #5

TABLE 4-2

TA-27 PAJARITO CANYON STREAM CHANNEL SEDIMENTS
CONCENTRATION OF URANIUM IN SOILS ABOVE FACILITY BACKGROUND

Sample Number	Location Number	Distance from Pajarito Rd TA-18 Junction (in miles)	Concentration of Uranium in Soils above facility background (in ppm)
85.05945	PC-1	0.2	B
85.05946	PC-2	0.4	2.80
85.05947	PC-3	0.6	0.56
85.05948	PC-4	0.9	<B
85.05949	PC-5	1.1	B
85.05950	PC-6	1.3	<B
85.05951	PC-7	1.5	<B
85.05952	PC-8	1.7	1.13
85.05953	PC-9	1.9	B
85.05954	PC-10	2.1	<B
85.05955	PC-11	2.3	B

Note: B = facility background 3.1 to 4.9 ppm


N
NW
NE
W
E
SW
SE
S
200
200
300
Note: Ticks represent 5 meter increments.
Berm
NE
NW
10
50
100
100
100
100
W
E
50
10
10
FENCED
CONTAMINATED
AREA
(MDA E)
SW
SE
Note: Ticks represent 10 meter increments.
S
LEGEND:
Survey Marker
Grid Points
Radial Grid Coordinate
100
Isopleth
SCALE
0
20
40m
NUS
CORPORATION
A Halliburton Company
LOS ALAMOS SITE
CHARACTERIZATION PROGRAM
CONCENTRATION OF URANIUM IN SOILS
ABOVE FACILITY BACKGROUND
(in ppm)
FIGURE 4-20
TA-33-26 X UNIT CHAMBER

REFERENCES

Foxx, T.S., 1985a, "Plant Survey of TA-4", Los Alamos National Laboratory internal memorandum HSE8-85-829 (August 8, 1985).

Foxx, T.S., 1985b, "Plant Survey of TA-5", Los Alamos National Laboratory internal memorandum HSE8-85-1037 (September 6, 1985).

Foxx, T.S., 1985c, "Plant Survey of TA-20", Los Alamos National Laboratory internal memorandum HSE8-85-1040 (September 6, 1985).

Nyhan, J.W., L.W. Hacker, T.E. Calhoun, and D.L. Young, 1978, "Soil Survey of Los Alamos County, New Mexico," Los Alamos National Laboratory report LA-6779-MS.

APPENDIX A

ENVIRONMENTAL

DOCUMENTATION

APPENDIX A
ENVIRONMENTAL DOCUMENTATION

Environmental surveys were conducted at TA-4, TA-5,and TA-20 prior to the start of the decontamination and decommissioning (D&D) project to identify any significant cultural or natural resources. These surveys, performed in accordance with Archaeological Resources Protection Act, Endangered Species Act, and Wetlands and Floodplain Protection Executive Orders found that activities in the areas of project disturbance were not of significant impact. The archaeological/cultural, botanical, and wetlands assessments were performed by personnel from a contract archaeological consultant and LANL Environmental Surveillance Group (HSE-8). Documentation associated with these surveys is presented in this appendix.

Technical Areas (TAs) were surveyed for archaeological evidence frequently during the duration of the D&D project to identify, record, and protect cultural resources. Surveys were conducted by Cross Cultural Research Systems of Santa Fe, New Mexico. During these surveys, previously undiscovered prehistoric ruins and associated lithics such as obsidian chips and pottery shards, were identified at all three TAs surveyed. Significant findings are discussed below by TA.

Archaeological Surveys

Ruins of a prehistoric field house were identified during the TA-4 survey. This site consisted of adobe blocks and lithics. The ruin was marked and fenced for protection as the site was located near an underground electrical corridor scheduled to be developed simultaneously with the D&D project.

The TA-5 area contained many large ruins and lithic sites. Some of these areas had been disturbed by past Laboratory activities. Project operations were frequently monitored while in this area. In addition to monitoring project impacts at TA-5, a documented archaeological site was delisted with the State of New Mexico Office of Cultural Affairs Historic Preservation Division. The remains of TA-5-1, a research laboratory, had previously been identified as an archaeological mound (site # LA 12601) during a 1973 survey. This site was investigated by three archaeologists on separate occasions during the D&D project. Evidence supporting the previous survey could not be found and the site was recommended for delisting to the State Historic Preservation Officer (SHPO). When the site was

removed from the list by the SHPO, TA-5-1 was excavated and the area leveled and contoured to existing terrain.

Part of the north and all of the south portions of Sandia Canyon were inventoried for cultural resources. Lithics were found scattered throughout the areas previously undisturbed by Laboratory activities. In addition to these artifacts, a prehistoric hunting cave was discovered by LANL personnel. This find was investigated by personnel from the archaeological consultant, HSE-8, and the Physical Security Group (OS-1) as the site had recently been looted prior to discovery. Further action has coordinated by OS-1 and HSE-8 personnel.

Endangered Species Act/Wetlands Assessment

Floristic surveys and a wetlands assessment were also performed at TA-4, 5, and 20 on July 30, August 9, and August 16, 1985, respectively. These assessments, conducted by HSE-8 personnel, used a vegetation inventory method modeled after O'Brien and Van Hooser (Foxx, T.S, 1985a,b,c). No rare, unusual, or endangered plant species were discovered at any of the TAs surveyed. Two species uncommon to the area, big blue stem (Andropogon gerardii) and salvia (Salvia reflexa) were found at TA-4 and wolfberry (Lycium pallidum), an indicator species of prehistoric habitation, was covering a large archaeological site at TA-5. Results from the botanical surveys were also to be used for plant successional research being performed at that time. Existing wetlands indicator plant species were not present in Sandia Canyon. Soil type criteria for the wetlands assessment were not investigated.

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Lynn Fritz, HSE-8, MS K490

DATE: August 8, 1985

FROM: Teralene S. Foxx, HSE-8

MAIL STOP/TELEPHONE: K495/4933

SYMBOL: HSE8-85-929

SUBJECT: PLANT SURVEY OF TA-4

In accordance with the Endangered Species Act, the area encompassing an old firing site designated as TA-4 was surveyed for unusual, rare, and/or endangered species. The survey was also done to provide information on species composition of areas of disturbance. The accumulation of data is important to the understanding of successional processes on the Laboratory lands.

The survey was done on July 31, 1985, in the area designated as TA-4. TA-4 is located on the north side of Puye Drive from the end of the pavement for approximately 1/4 mile. Elevation at this point is at about 7100 feet. Areas of disturbance included firing pits, berms for road blocks, and former building locations. Both disturbed and nondisturbed areas were examined (Figure 1).

Using an efficient vegetation inventory method modeled after O'Brien and VanHooser (1983), the area between the road (Puye) and the canyon rim (Mortandad) was surveyed in 1/20-acre plots. Eleven different plots were examined. In each of these plots, a visual estimation of per cent cover, phenology of trees, shrubs, forbs and grasses, and size class of overstory trees were recorded. All forbs, grass, shrub, and tree species were noted within the plot area and information about soils, stand condition, species diversity, and density were noted.

The area which encompasses TA-4 can be described as a gently sloping mesa top with a pinon-juniper plant community. The upper plots were found to be on the ecotone between the pinon-juniper woodland and ponderosa pine forest. Plots 9, 10, and 11 (Figure 1) had a more north-facing aspect and were found to be somewhat wetter than plots 1 through 8. In the former plots, lichen and moss cover within the tree canopy was more extensive. In plots 1 through 8, the exposed soil was often covered by a black lichen. Throughout the area there was evidence of erosion and in some areas a considerable amount of sheet washing.

Building structure sites and berms (Plots 3, 5, and 6) had a flora characteristic of disturbed areas. These disturbed sites had no tree cover, except on the outer perimeters, and shrub cover was less than 5%. Species characteristic of the disturbed sites were annual sunflower (Helianthus annus), sweet clover (Melilotus albus), estafiata (Artemisia frigida), sowthistle (Sonchus spp.), mustard (Descurania pinnatifida), goatsbeard (Tragopogon dubius), wormwood (Artemisia carruthii), false terragon (Artemisia dracunculus), cheatgrass (Bromus tectorum), and squirreltail (Sitanion hystrix). Salvia (Salvia reflexa) was found on two of the berms and can be considered an uncommon species although it is not rare or endangered.

Within the undisturbed areas, located between berms and building structures (Plots 2, 5, 7, 8, 9, 10, and 11) native species were found as well as those indicator species of previous overgrazing of the area during the homestead years. Native species included bluegrama (Bouteloua gracilis), sideoats grama (Bouteloua curtipendula), little blue stem (Andropogon scoparius), and big bluestem (Andropogon gerardii). Species indicative of overgrazing include snakeweed (Gutierrezia sarothrae) and pinque (Hymenoxys richardsonii). Other forb and grass species found in the undisturbed plots include virigated penstem (Penstemon virgatus), Indian paintbrush (Castilleja integra), and yellow flax (Linum neomexicanum). The least common species in the area was the big bluestem. Shrubs in these plots included oak (Quercus spp.), squawberry (Rhus trilobata), and currant (Ribes cereum). Plots closer to the canyon rim included mountain mahogany (Cercoparpus montanus).

CONCLUSION

This survey did not reveal any unusual, rare, or endangered species. Several species were found that are not common to the area including big bluestem and salvia. This power line will not adversely affect the vegetation of the area, however, it will disturb additional areas by removing native vegetation creating environment for disturbance species to grow.

REFERENCES

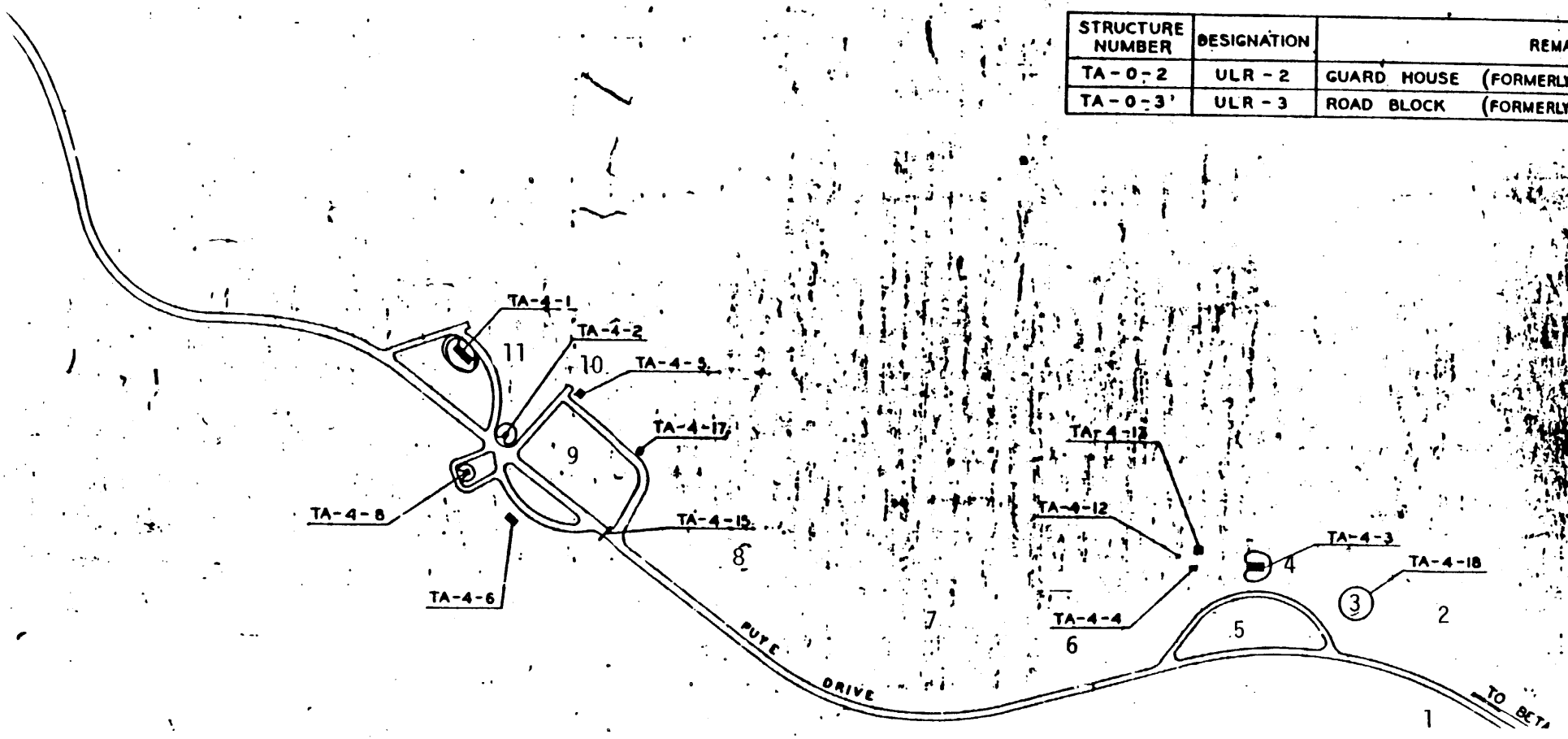
Nyhan, J. W., L. W. Hacker, T. E. Calhoun, and D. L. Young, "Soil Survey of Los Alamos County, New Mexico, Los Alamos National Laboratory report LA-6779-MS (1978).

O'Brien, Renee and Dwane D. VanHooser, "Understory Vegetation Inventory: An Efficient Procedure Research Paper INT-323," Intermountain Forest and Range Experiment Station, Ogden, Utah 84401 (1983).

Figure 1:Location of plant survey plots TA-4

[illegible]	ALPHA - 14	ROAD BLOCK
TA-4-15	ALPHA-15	ROAD BLOCK
TA-4-16		REDESIGNATED ULR-3, TA-
TA-4-17	ALPHA-17	LATRINE
TA-4-18	ALPHA-18	FIRING PIT
TA-4-19		CHANGED TO UTILITY DES

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-0-2	ULR-2	GUARD HOUSE (FORMERLY
TA-0-3	ULR-3	ROAD BLOCK (FORMERLY



Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Lynn Fritz, HSE-8, MS-490

DATE: September 6, 1985

FROM: Teralene S. Foxx, HSE-8

MAIL STOP/TELEPHONE: K490/7-4933

SYMBOL: HSE8-85-1037

SUBJECT: PLANT SURVEY TA-5

On August 9, 1985, an area encompassing an old firing site designated as TA-5 (Beta site) was surveyed for existing plant composition and cover per request. The purpose of the survey was to provide information on species composition of areas of disturbance as well as to determine the presence of any unusual, rare, or endangered plant species. The information gained from the surveys of sites of different age disuse or close-out are important to understanding plant successional processes on Laboratory lands and the long term integrity of sites (Tierney and Foxx 1982).

Using an efficient vegetation inventory method modeled after O'Brien and Van Hooser (1983) the area between the road (Puye Drive) and canyon rim (Mortandad) was surveyed in 1/20 acre plots. Twelve different plots were examined (Figure 1). In each of these plots, visual estimation of per cent cover, phenology of trees, shrubs, forms, and grasses, and size class of overstory trees were recorded. All forbs, grasses, shrub, and tree species were noted within the plot area and information about soils, stand condition, species diversity, and density were noted. Both disturbed and adjacent undisturbed areas were examined.

TA-5 was used primarily during the period of 1944-1946; portions were again disturbed in 1959 and 1962. The site in some places represents an approximately 38-year successional history and in other locations a 12-year successional invasion of species. The mesa in the vicinity of TA-5 is gently sloping and somewhat narrow and lies at about 6900 ft. elevation. Soils are gravelly, clay-loam thinning along the edges of the mesa exposing the underlying tuff. The mesa top supports a pinon-juniper woodland with an understory of blue grama, little bluestem, Indian paintbrush, snakeweed, etc. (Table 1). Along the canyon rim the woodland intergrades with ponderosa pine. Areas of disturbance, including firing pits, building locations, and berms, showed some invasion of native species. These include pinon, juniper, and ponderosa pine--most only a few feet tall. The greatest per cent cover was

represented by disturbed soil vegetation including cheatgrass, three-awn, bottlebrush squirreltail, mullein, and false terragon (Table 2). No unusual, rare, or endangered species were located in the vicinity of the site. One large archeological ruin was covered by wolfberry Lycium pallidum, an indicator plant of prehistoric habitation.

TSF:brm

Cy: Colleen Olinger, HSE-8, MS K490

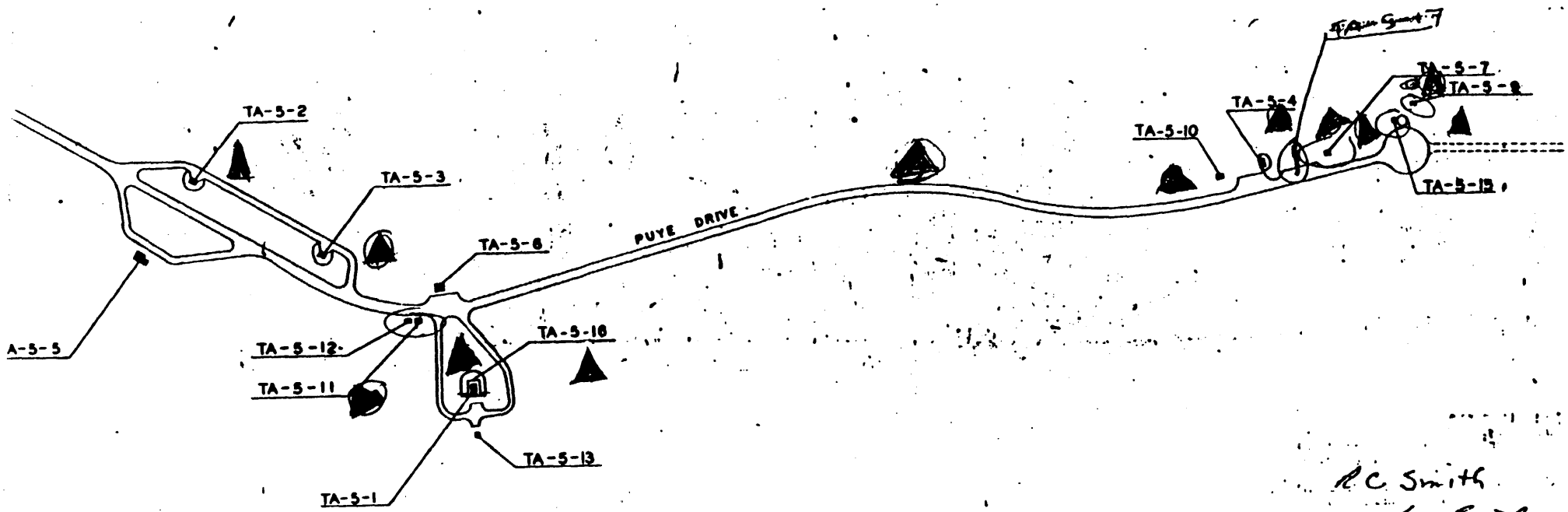


Figure 1: Plot locations for plant survey at TA-5

Table 1: Plants Common to Undisturbed Areas in Vicinity of Closed-Out Firing Sites

GRASSES

bluegrama (Bouteloua gracilis)
side-oats grama (Bouteloua curtipendula)
little bluestem (Andropogon scoparius)
mountain muhly (Muhlenbergia montana)
bluestem (Poa spp.)
sedge (Carex spp.)
big bluestem (Andropogon gerardii)

FORBS

pinque (Hymenoxys richardsonii)
New Mexico flax (Linum neomexicanum)
yucca (Yucca angustissima)
goldenweed (Chrysopsis foliosa)
prickly pear cactus (Opuntia spp.)
Indian paintbrush (Castilleja integra)
pussytoes (Antennaria parviflora)
perky sue (Hymenoxys argentea)
wormwood (Artemisia ludoviciana)
snakeweed (Gutierrezia sarothrae)
penstemon (Penstemon vigatus)
greenthread (Thelesperma trifidum

SHRUBS

oak (Quercus gambellii)
mountain mahogany (Cercocarpus montanus)
squawbush (Rhus trilobata)

Table 2: Plants Common to Disturbed Areas in Old Firing Ranges

GRASSES

three-awn (Aristida spp.)
cheat grass (Bromus tectorum)
bluegrass (Poa spp.)
bottlebrush squirreltail (Sitanion hystrix)
needle-and-thread grass (Stipa comata)
*false buffalo grass (Munroa squarrosa)

*confined to around ant piles

FORBS

mullein (Verbascum thapsus)
pinque (Hymenoxys richardsonii)
false terragon (Artemisia dracunculus)
snakeweed (Gutierrezia sarothrae)
goldenweed (Chrysopsis foliosa)
sweetclover (Melilotus albus)
prickly pear cactus (Opuntia spp.)
mustard (Descarania richardsonii)
greenthread (Thelesperma trifidium)
wormwood (Artemisia frigida)
wormwood (Artemisia carruthii)
goatsbeard (Tragopogon dubius)
New Mexico flax (Linum neomexicanum)
annual sunflower (Helianthus annuus)
prairie sunflower (Helianthus petiolaris)
summer cypress (Kochia scoparia)
spurge (Euphorbia dentata)
prickly lettuce (Sonchus spp.)
desert four-o'clock (Oxybaphus linearis)
Russian thistle (Salsola kali)
pigweed (Amaranthus retroflexus)
James stickseed (Cryptantha jameii)
mallow (Spheralcea spp.)
ground cherry (Physalis foetens)
guara (Guara coccenea)
evening primrose (Oenothera spp.)
lamb's quarters (Chenopodium fremontii)
ragweed (Franseria acanthicarpa)

SHRUBS

New Mexico locust (Robinia neomexicana)
chamisa (Chrysothamnus nauseosus)
**oak (Quercus spp.)
**squawbush (Rhus trilobata)
**currant (Ribes cernuum)

**found on more established sites

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: C. Olinger and L. Fritz, HSE-8, MS K490 DATE: September 6, 1985

FROM: Teralene S. Foxx, HSE-8 MAIL STOP/TELEPHONE: K490/7-4933

SYMBOL: HSE-8-85-1040

SUBJECT: PLANT SURVEY OF TA-20

An area in Sandia Canyon designated as TA-20 was surveyed on August 16 for existing plant composition and cover and to determine if laboratory activities might adversely affect a wetland or floodplain in compliance with the Wetland and Floodplains Protection Orders (Executive Order 11990 and 11988). Definitions for wetlands and floodplains are in Attachment I The information gained from these surveys is important to an understanding of plant successional processes on Laboratory lands and long-term integrity of sites (Tierney and Foxx 1982).

Using an efficient vegetation inventory method modeled after O'Brien and Van Hooser (1983), the areas north of the truck route below the Meson facility and south of the road where the canyon broadens were examined for unusual, rare, endangered species (Figure 1). Fifteen different plots were examined. In each of these plots, visual estimation of percentage cover, phenology of trees, shrubs, forbs, and grasses, and size class of overstory trees was recorded. All forbs, grasses, shrub, and trees species were noted within the plot area and information about soils, stand condition, species, diversity, and density was noted. Both disturbed and adjacent undisturbed sites were examined. Plots were placed in the canyon bottom, on the south and north canyon walls above TA-20 for comparison.

TA-20 is located in the bottom of Sandia Canyon at an elevation of approximately 6500 ft. The area in which the site is located cannot be classed as a wetland because of the lack of existing indicator species which need seasonal or saturated soil conditions. Portions of the site are near the overflow of an emphemeral stream. During large storm events portions of the firing site which were located in the canyon bottom may be affected. Those existing concrete structures at the base of the south canyon wall are filled with water, but probably only from rainfall, not flooding.

Soils are in the Totavi series consisting of deep, well-drained soils formed in alluvium (Nyhan 1978). The surface is brown gravel, loamy sand, or sandy loam.

The south-facing canyon wall had 10-25% cover consisting primarily of blue grama, wormwood, squawberry, currant, and only an occasional tree. Other species found within these plots included snakeweed, blazing star, Indian ricegrass, and bottlebrush squirreltail. Scorpionweed, mullein, clammyweed, and cheatgrass were included in areas disturbed by water drainage from the cliff. Along the south-facing cliff, approximately 5% of the rock surface was covered by cryptogams, both crustose and foliose lichens and moss.

The north-facing canyon wall had 50-70% tree cover including Gambel's oak and narrowleaf hoptree. Shrub cover was 10-25% and included mountain mahogany, mockorange, and currant. Fifty to 100% of the rock surface was covered by cryptogams. Much of the north-facing canyon wall in the vicinity of the firing site showed evidence of previous fire evidenced by numerous standing dead ponderosa pine snags and fire-scarred trees.

Much of the canyon bottom was disturbed, either by fire, arroyo overflow, or site activities. Disturbed soil plants included false terragon, prairie sunflower, mullein, croton, lamb's quarters, pony mint, chamisa, and currant. In the disturbed sites cheatgrass had a high percentage cover. In the more stable areas of the canyon, large ponderosa pine, greater than 13" in diameter, were common. Here understory was primarily bluegrama and mountain muhly.

CONCLUSION

No unusual, rare, or endangered species were found within the survey area and this project will not significantly affect plant life. Much of the canyon bottom was severely disturbed by fire, water from the arroyo, and site activities. The area is not within a wetland but in large storm events flooding may occur in the canyon bottom. Some existing structures were near the overflow areas, but not in them.

REFERENCES

Nyhan, J. W., L. W. Hacker, T. E. Calhoun, and D. L. Young, "Soil Survey of Los Alamos County, New Mexico," Los Alamos National Laboratory report LA-6779-MS (1978).

O'Brien, Renee and Dwane D. Van Hooser, "Understory Vegetation Inventory: An Efficient Procedure," Research Paper INT-323, Intermountain Forest and Range Experiment Station, Ogden, Utah 84401 (1983).

Tierney, Gail and T. S. Foxx, "Floristic Composition and Plant Succession on Near-Surface Radioactive Waste Disposal Facilities in the Los Alamos National Laboratory," Los Alamos National Laboratory report LA-9219-MS (1982).

TSF:brm

Attachment I

Definitions

wetland: areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

flood or flooding: temporary condition or partial or complete inundation of normally dry land areas from the overflow of inland and/or tidal waters, and/or the unusual and rapid accumulation of runoff of surface waters from any source.

floodplain: lowlands adjoining inland and coastal waters and relatively flat areas and floodprone areas of offshore island including, at a minimum, the area inundated by 1 percent or greater chance in any given year. The base floodplain is defined as the 500-year (0.2 percent) floodplain.

*Federal Register Vol. 44 No. 45 March 7, 1979

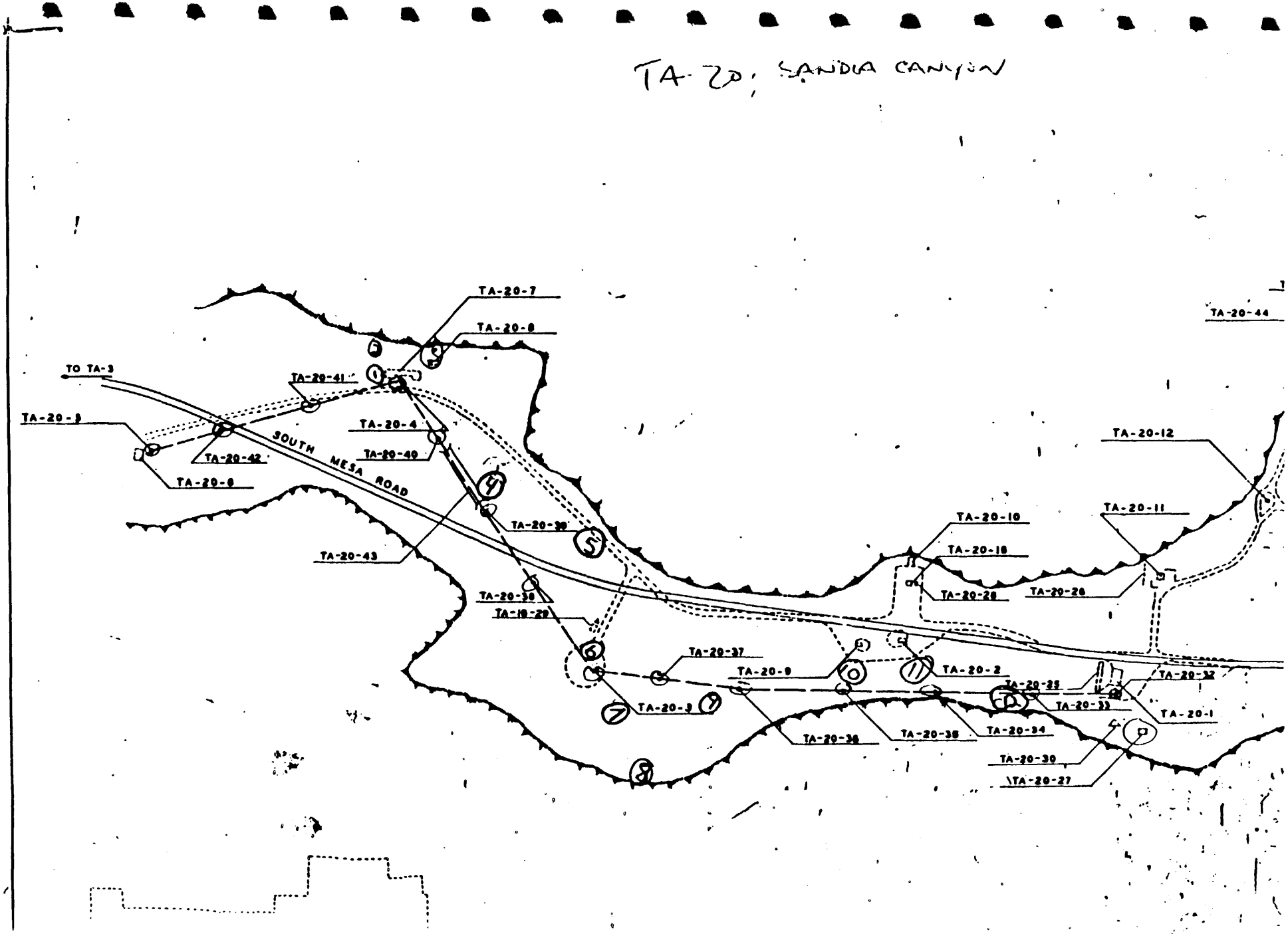


Figure 1: Survey area in Sandia Canyon

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Lynn Fritz, HSE-8, MS K490 DATE: August 20, 1985

FROM: David H. Snow, Contract Archaeologist MAIL STOP/TELEPHONE: K490

SYMBOL: HSE8-85-991

SUBJECT: **ARCHAEOLOGICAL CLEARANCE SURVEY HIGH VOLTAGE UNDERGROUND CABLE: TA-52 TO DIAMOND DRIVE**

David H. Snow and Ellen McGehee of Cross Cultural Research Systems have completed a cultural research inventory of a corridor ranging in width from approximately 50-20 ft as indicated on the accompanying map. One prehistoric archaeological site was located some 50 m east of the corridor point MH #28 near the EOP. This small site lies outside the projected cable trenching impact corridor, but is close enough that equipment activity (turn around space) and/or personnel may pose a problem with inadvertent adverse impact. Because of this I recommend the installation of a permanent fence around the site as flagged.

No other cultural resources of significance were noted and archaeological clearance for the cable corridor is recommended.

DHS:mlk

Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: David Snow, Cross Cultural Research Systems

DATE: September 12, 1985

FROM: Lynn Scholl Fritz, HSE-8

MAIL STOP/TELEPHONE: K490/7-0808

SYMBOL: HSE8-85-1103

SUBJECT: STRUCTURE TA-5-1

Below you will find information you requested on structure number TA-5-1, building designation Beta-1, Laboratory building. Although our records are not complete with respect to this structure's history, I feel this information will meet your needs.

-TA-5; Beta Site was a firing site in use by Manhattan Project personnel from 1944 until late 1946 or 1947 when it was abandoned.

-The building itself (TA-5-1) was a trim shack from TA-18, (specifically TA-18-10), transferred from TA-18 around 1946 or 1947. It had an earthen barricade placed around it to prevent damage from shrapnel.

-The approximate grid location on Military survey system for TA-5-1 was N20+00 E165+00

-It was used as office and lab space for M-Division and J-Division personnel while the site was in use.

-In a health survey on 9/30/59, the building was found to be contaminated with high explosives.

-The Laboratory building was abandoned in 1959 after which time it was subsequently destroyed. It is assumed that it was destroyed by burning due to the type of contamination. After which they usually did not clean up the debris but left it in a pile where the structure stood.

-A survey performed by Zia for HSE-8 in the fall of 1985 determined that the mound presently at Beta Site in the same location was indeed TA-5-1.

LSF:mc

CROSS-CULTURAL RESEARCH SYSTEMS

Sept. 11, 1985

Mr. Thomas Merlan
Director
Historic Preservation Division
Office of Cultural Affairs
Villa Rivera, Room 101
228 East Palace Avenue
Santa Fe, New Mexico 87503

Dear Tom:

Attached are xerox copies of official Los Alamos National Laboratory site maps (or segments thereof) in support of my recent observation that an archeological site recorded by Charlie Steen (former Lab Consulting Archeologist) is, in fact, the remains of an old WW II firing facility. A xerox of Charlie's "site" card is also attached for your reference. In addition, I have attached a memo from Lynn Fritz, HSE-8 written at my request, which describes the use of the abandoned and now ruined facility.

With regard to Charlie's description of the site, my research associate and I have systematically re-investigated LA 12601 three separate times in search of (a) prehistoric artifacts, and (b) adobe and/or shaped building stones expected if a prehistoric pueblo ruin had ever existed at this locale. No such evidence exists, and the adobe referred to by Steen is apparently the dirt pushed up over the abandoned structural remains at TA-5-1 after its abandonment and upon removal of the telephone pole referred to in Steen's description (photos of the site as it presently is visible, including the location of the former telephone pole, drainage cuts for the down-cut circular road around the facility, and the circular mound upon which a wooden building formerly existed, will be forwarded upon printing).

HSE-8 desires to level the existing mound as part of a clean-up of former TA-5 facilities. This would involve, at LA 12601, bull-dozing the mound and leveling the surface to grade. They would like to have this accomplished prior to the end of the fiscal year (Sept. 30), and it is my opinion that no significance attaches to the facility remains. This letter is to request your concurrence with that opinion.

Thank you very much for your consideration. Your response should be directed to Mr. Tom Gunderson, Group Leader, HSE-8, Mail Stop k490.

Sincerely,

David H. Snow

David H. Snow

CONSULTING ANTHROPOLOGISTS • 142 LINCOLN AVE. #784 • SANTA FE, NEW MEXICO 87501

MNM

Site number: LA 12601 44 Quadrant: N3 E9 Lab Job Number: 5110-0

Physical aspects of site. MOUND >1M HIGH, SOME SHAPED STONE BUT MOSTLY ADOBE SITE IS SEVERELY ERODED. NO. END OF SITE HAS BEEN SLICED BY BULLDOZER.

Situation and natural resources. 1.2 MILE E. OF PAJARITO ROAD ON PUYE DRIVE, 30 M. SO OF ROAD. ABANDONED POWER POLE 1275 IS ON THE SITE.

Area covered N-S 25 M.
E-W 10 M.

SOMEONE HAS DUG A TRENCH, ~~X~~ > 2 M. WIDE IN. EAST FACE OF MOUND - TRENCH CA. 6 M. LONG ALL THIS IS ERODING.

Pottery Pueblo B/W

Recommendations:

ARCHAELOGICAL SURVEY

LOS ALAMOS SCIENTIFIC LABORATORY

Date 2 OCT 1973.

Recorder: STEEN

To: David Snow, Cross Cultural Research Systems
From: Lynn Scholl Fritz, HSE-8
Re: Structure TA-5-1

Below you will find information you requested on structure number TA-5-1, building designation Beta-1, laboratory building. Although our records are not complete with respect to this structure's history, I feel they will meet your needs.

-TA-5;Beta Site was a firing site in use by Manhattan Project personnel from 1944 until late 1946 or 1947 when it was abandoned.
-The building itself (TA-5-1) was a trim shack from TA-18, (specifically TA-18-10), transferred from TA-18 around 1946 or 1947. It had an earthen barricade placed around it to prevent damage from shrapnel.
-The approximate grid location on Military survey system for TA-5-1 was N20+00 E165+00.
-It was used as office and lab space for M-Division and J-Division personnel while the site was in use.
-In a health survey on 9/30/59 the building was found to be contaminated with high explosives.
-The laboratory building was abandoned in 1959 after which time it was subsequently destroyed. It is assumed that it was destroyed by burning due to the type of contamination. After which they usually did not clean up the debris but left it in a pile where the structure stood.
-A survey performed by Zia for HSE-8 in the fall of 1985 determined that the mound presently at Beta Site in the same location was indeed TA-5-1.

R C Smith 10/4/56

3/7/58

OFFICIAL USE ONLY

VOID

SEE BLACK-LINE LINEN Rev #6 dated 7/16/54

NORTH (MAGNETIC)

REV.		
REV. 5	REQUIRED NO REV. TO STATUS OF JULY 1, 1953	DPH 6-15-53
REV. 4	GENERAL REVISION, TO STATUS OF JULY 1, 1952	A.S.G. 7-1-52
REV. 3	REQUIRED NO REV. TO STATUS OF JAN. 1, 1952	J.A.S. 1-2-52
REV. 2	GENERAL REVISION TO STATUS OF JULY 1, 1951	N.O.B. 7-12-51
REV. 1	GENERAL REVISION TO STATUS OF JAN. 1, 1951	J.A.S. 2-13-51

AUTHORIZED FOR: HEALTH, SAFETY, FIRE PR., COMM., SEC.

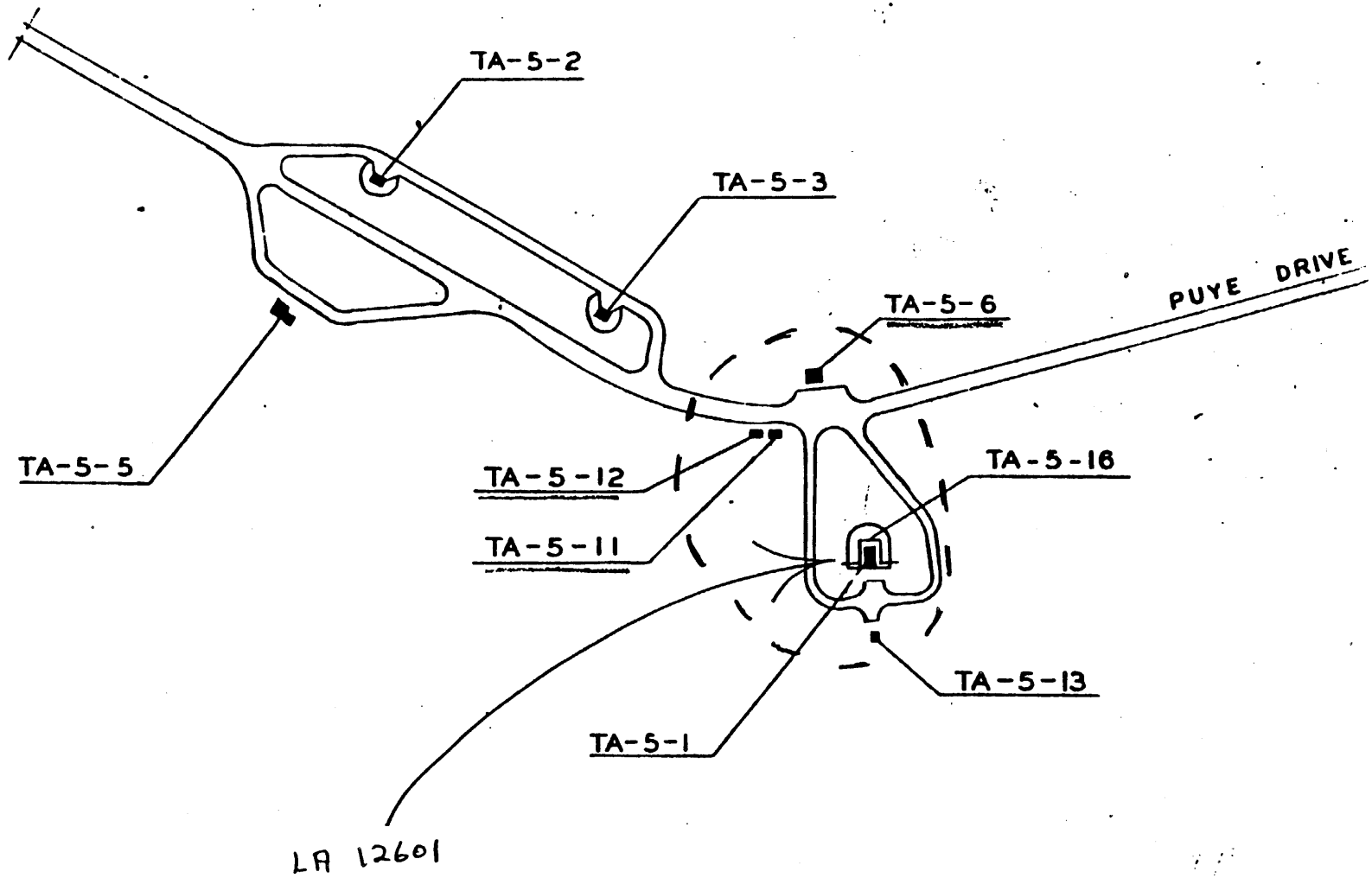
LOS ALAMOS SCIENTIFIC LABORATORY

ENGINEERING DEPARTMENT

STRUCTURE LOCATION PLAN

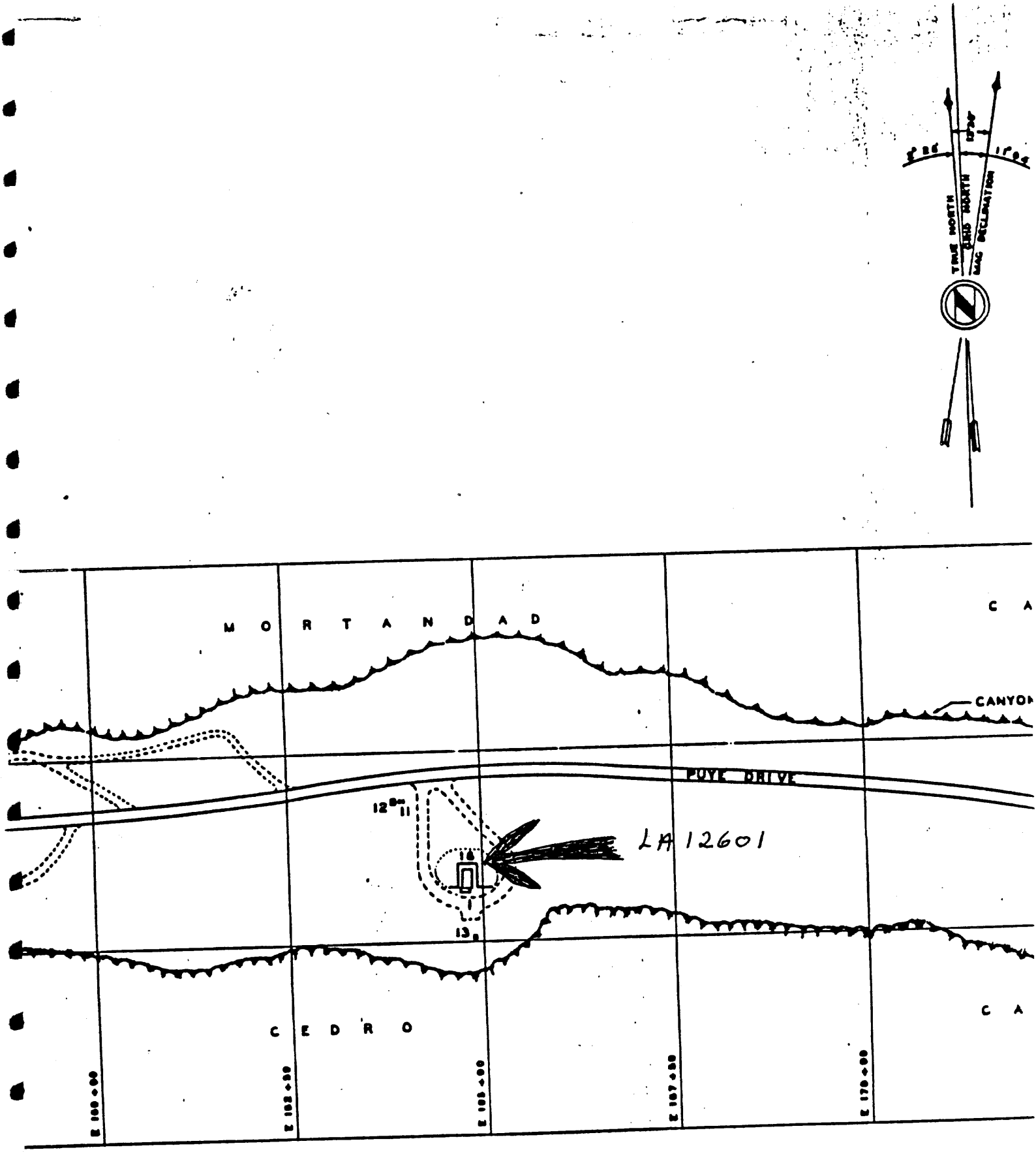
TA-5 BETA-SITE

SCALE	DRAWN BY: GRS	DATE: 3-31-50	DWG. NO.
1" = 100'	CHKD. BY: J. P. E. [illegible]	DATE: 3/31/50	ENG R 119
	APPVD. BY: [illegible]	DATE: 10-24-50	

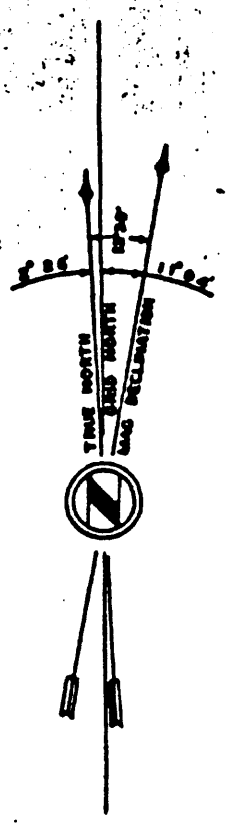

TA-5-2
TA-5-3
PUYE DRIVE
TA-5-6
TA-5-5
TA-5-12
TA-5-16
TA-5-11
TA-5-13
TA-5-1
LA 12601

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-5-1	BETA-1	LABORATORY BUILDING
TA-5-2	BETA-2	MAGAZINE
TA-5-3	BETA-3	MAGAZINE (FORMERLY BLDG. 2-A)
TA-5-4	BETA-4	CONTROL BUILDING, (FORMERLY BLDG. 3)
TA-5-5	BETA-5	SHOP & DARK ROOM, (FORMERLY BLDG. 4)
TA-5-6	BETA-6	LABORATORY BUILDING (FORMERLY BLDG. 5)
TA-5-7	BETA-7	STEEL BARRICADE, FIR. PT. 1
TA-5-8	BETA-8	STORAGE BUILDING (REMOVED)
TA-5-9	BETA-9	X-UNIT CHAMBER
TA-5-10	BETA-10	LATRINE
TA-5-11	BETA-11	WATER TANK (UNDERGROUND)
TA-5-12	BETA-12	U. G. PUMPHOUSE
TA-5-13	BETA-13	SEPTIC TANK
TA-5-14	BETA-14	LOG BARRICADE (REMOVED)
TA-5-15	BETA-15	STEEL BARRICADE, FIR. PT. 2
TA-5-16	BETA-16	BARRICADE
TA-5-17	BETA-17	EXPERIMENTAL CONCRETE WALL

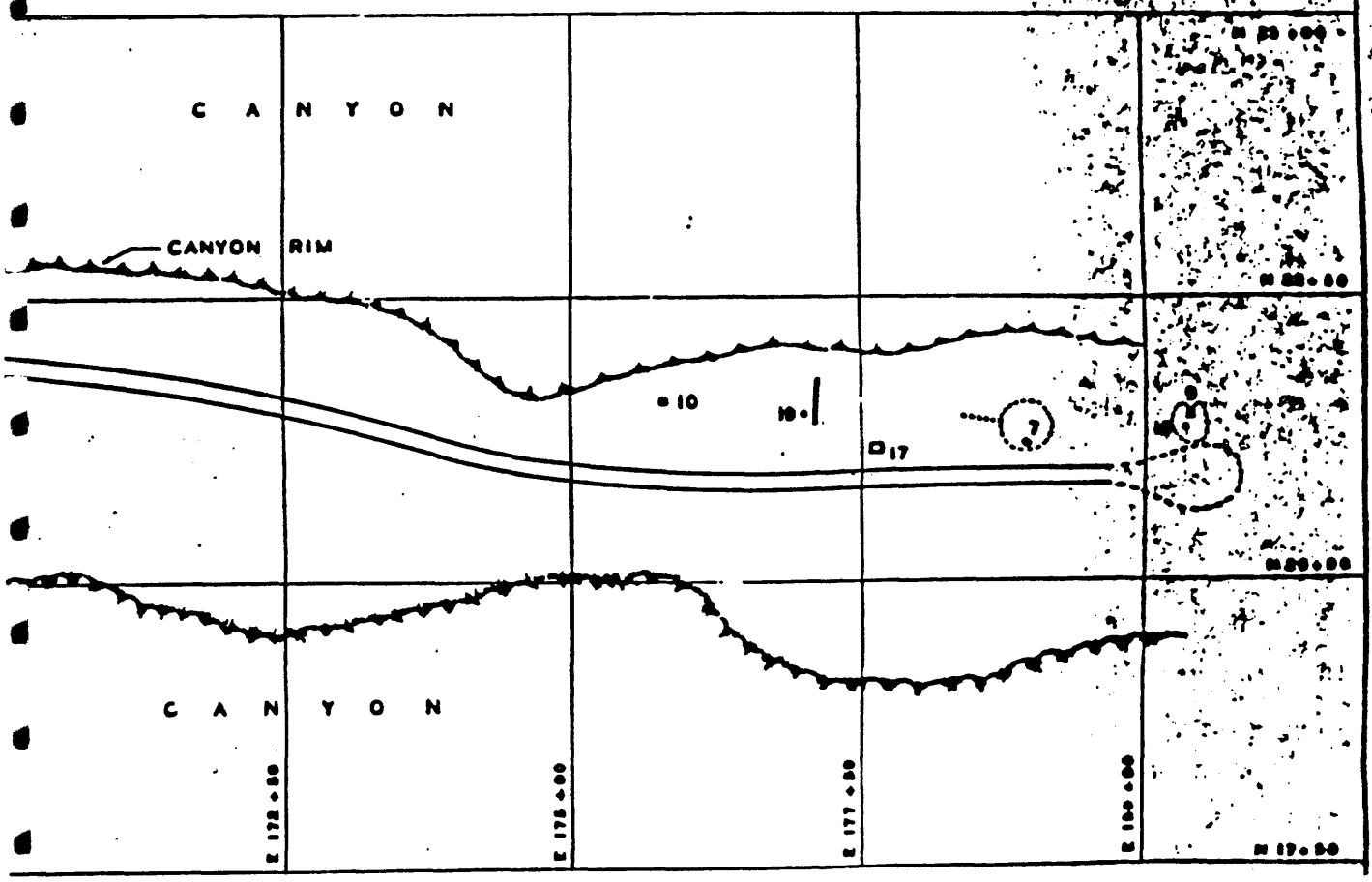
WHOLE OF AREA TO BE


TRUE NORTH
GRID NORTH
MAG DECLINATION
M O R T A N D A D
CANYON
POYE DRIVE
LA 12601
C E D R O
E 180+00
E 182+50
E 185+00
E 187+50
E 190+00

VOID - SE



STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-5-1	BETA-1	LABORATORY BLDG.
TA-5-2	BETA-2	MAGAZINE (REMOVED) 1960
TA-5-3	BETA-3	MAGAZINE (REMOVED) 1960
TA-5-4	BETA-4	CONTROL BLDG. (REMOVED) 1960
TA-5-5	BETA-5	SHOP & DARK ROOM (REMOVED) 1960
TA-5-6	BETA-6	LABORATORY BLDG. (REMOVED) 1960
TA-5-7	BETA-7	STEEL BARRICADE FIR. PT. 1
TA-5-8	BETA-8	STORAGE BLDG. (REMOVED) 1960
TA-5-9	BETA-9	X-UNIT CHAMBER
TA-5-10	BETA-10	LATR[illegible] (REMOVED) 1960
TA-5-11	BETA-11	WATER TANK (UNDERGROUND)
TA-5-12	BETA-12	PUMPHOUSE (UNDERGROUND)
TA-5-13	BETA-13	SEPTIC TANK (ACID)
TA-5-14	BETA-14	LOG BARRICADE (REMOVED)
TA-5-15	BETA-15	STEEL BARRICADE FIR. PT. 2
TA-5-16	BETA-16	BARRICADE
TA-5-17	BETA-17	EXPERIMENTAL CONCRETE WALL
TA-5-18	BETA-18	PLATFORM (REMOVED) ~ 1967
TA-5-19	BETA-19	PLATFORM



STATE OF NEW MEXICO

OFFICE OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

TONEY ANAYA
GOVERNOR

VILLA RIVERA, ROOM 101
228 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87503
(505) 827-8320

CLARA APODACA
CULTURAL AFFAIRS OFFICER

THOMAS W. MERLAN
DIRECTOR

September 18, 1985

Lynn S. Fritz
Environmental Surveillance Group
Los Alamos National Laboratory
Box 1663-NMK490
Los Alamos, New Mexico 87545

Dear Ms. Fritz:

This is in response to recent correspondence and memoranda with reference to LA 12601.

Based on the re-examination by David H. Snow, I concur that this feature is not an archaeological site, but a recent historic manifestation. I also concur that this manifestation does not meet any criterion of National Register eligibility, and is not likely to yield significant information other than that already recorded. No further consultation is required.

Thank you for your continuing cooperation.

Sincerely,

Thomas W. Merlan
State Historic Preservation Officer

TWM:jmg

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Lynn Fritz, HSE-8, MS K490

DATE: September 18, 1985

FROM: Ellen McGehee, Contract Archaeologist EMG

MAILSTOP/TELEPHONE: K490/7-7025

SYMBOL: HSE8-85-1122

SUBJECT: PARTIAL ARCHAEOLOGICAL CLEARANCE OF TA-20 CLEANUP ACTIVITIES

Ellen McGehee and John Kershner of Cross-Cultural Research Systems have completed a cultural research inventory of the canyon bottom south of South Mesa Road as shown on the accompanying map. This area was indicated as being a first priority site for cleanup of Manhattan Project activities within TA-20.

One rock shelter/cavate site was located near the bottom of the cliff face on the western edge of the survey area. It is felt, however, that the project's potential impact on this site will be minimal and it is further recommended that cleanup crews be advised to avoid the cliff face areas. Another archaeological site was noted southeast of the previously mentioned site. Cleanup activities, as outlined, will be far enough away from this area to ensure that potential impact will be minimal. Again, avoid this area.

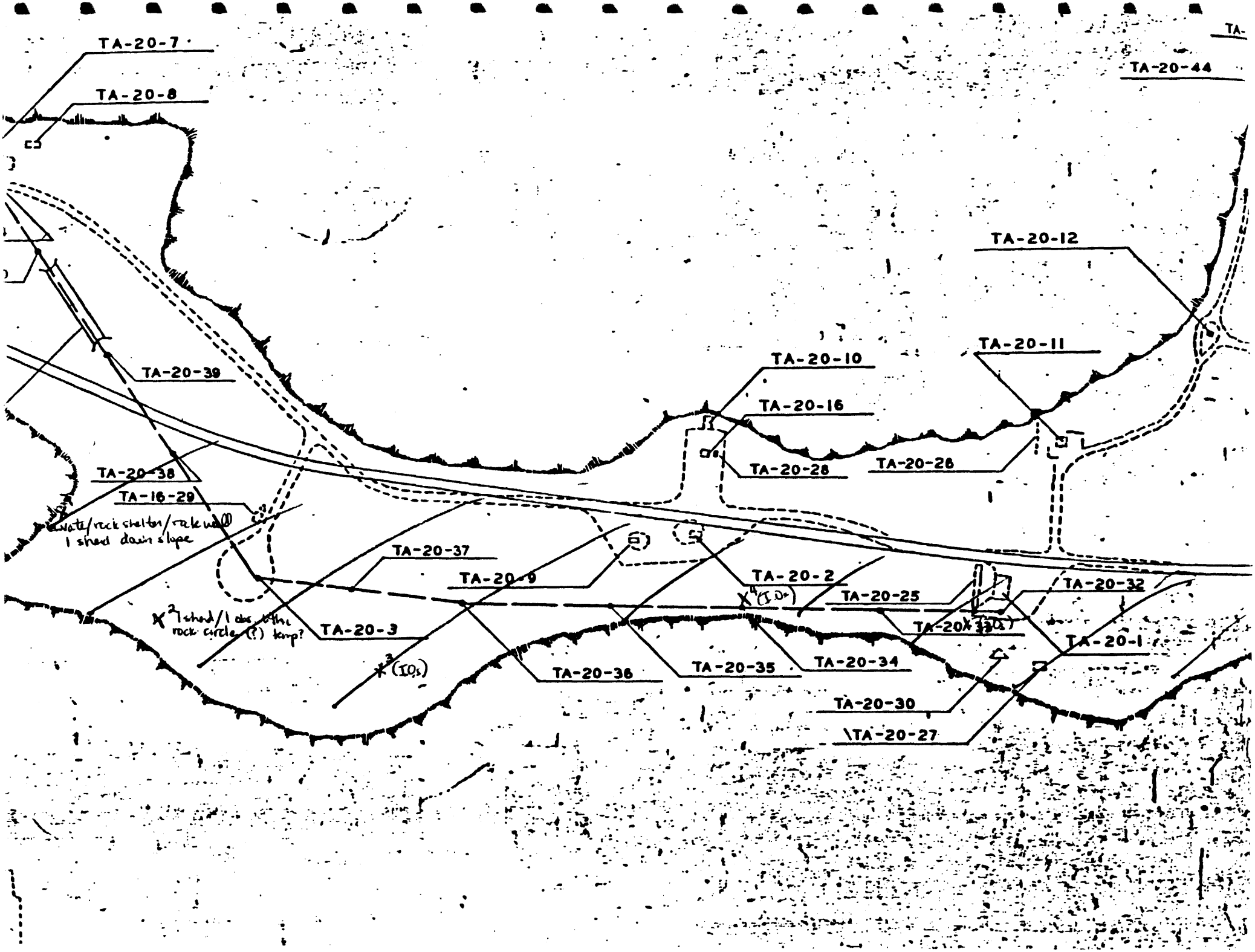
In addition to the archaeological sites mentioned, there are several areas where isolated artifacts were noted. Two of these areas are located near pull boxes TA-20-34 and TA-20-32. In these areas it is recommended that removal of the pull boxes and their associated pipes be done with extreme caution. As we are unable to monitor this phase of the cleanup activities, it is further recommended that any archaeological structures uncovered be immediately reported to Colleen Olinger, HSE-8. If isolated artifacts, such as pottery or lithics, are uncovered during these activities, it is requested that these archaeological materials be collected with their approximate locations recorded.

Please note that this is only a partial archaeological clearance of the TA-20 cleanup project and that full clearance will

follow as soon as possible. If the above conditions recommended in place of actual monitoring are unacceptable, it will be necessary to delay cleanup until we can be present to monitor.

EM/mlk

Cy: Colleen Olinger, HSE-8, MS K490
David Snow, HSE-8, MS K490


TA-20-7
TA-20-8
TA-20-44
TA-20-12
TA-20-11
TA-20-10
TA-20-16
TA-20-39
TA-20-28
TA-20-26
TA-20-38
TA-16-29
cache/rock shelter/rock wall
1 shed down slope
TA-20-37
TA-20-9
TA-20-2
TA-20-25
TA-20-32
2 1 shed/1 dec. by the rock circle (?) temp?
TA-20-3
TA-20-33
TA-20-1
3 (IOs)
TA-20-36
TA-20-35
TA-20-34
TA-20-30
TA-20-27

SANDIA CANYON TA-20 PRIORITIES AS OF 9/6/85
SITE CHARACTERIZATION AND ENHANCEMENT PROGRAM

TA-20-3	1	
TA-20-4	2	
TA-20-5	2	
TA-20-11	3	REMNANTS OF BUILDING STILL REMAIN
TA-20-12	3	??
TA-20-13	3	LEVEL THIS
TA-20-14	3	SAME AS TA-20-11
TA-20-27	1	HSE-3 + HSE-5 MUST BE PRESENT UPON EXHUMPTION FOR SAMPLING
TA-20-28	3	
TA-20-29	1	SAME AS TA-20-11 ??
TA-20-32	1	
TA-20-33	1	
TA-20-34	1	connecting conduit as well
TA-20-35	1	
TA-20-36	1	
TA-20-37	1	
TA-20-38	1	MAY BE REMOVED ALREADY
TA-20-39	2	
TA-20-40	2	
TA-20-41	2	
TA-20-42	2	? connecting conduit as well
TA-20-43	2	
TA-20-44	3	SAME AS TA-20-11
TA-20-45	3	LEVEL THIS

PLEASE PICK UP ASSORTED JUNK ON THE GROUND AS WELL

MAP ENG R138 given to Gilbert Montoya 9/9/85 with Priorities listed and explained as above.

X= possible sites/ artifact clusters 9/12/85

X2 - 1 Santa Fe b/w downslope and East of rock circle noted on map. Shard is located near white soils flag.

X3 - 2 small mounds, ~5m by 2m, ~1m in heigth
Mounds are possibly natural or Manhattan Project related.
Wooden M.P. boards were seen in vicinity.
Archaic looking lithics "crudely utilized" quartzite unifaces were also noted near the "mounds".

X4 - near pull box - see map
TA-20-34
1 Wiyo shard was found in erosional cut 3 lithics were found near pull box: Chalcedony quartzite and obsidian

X5 - 2 obsidian flakes on telephone pole barn

At the request of Lynn Fritz of LASL, a cultural resources survey was conducted in Sandia Canyon at TA-20 (T19N R6E S1/2 SE1/4 NW1/4 of section 24; UTM zone 13 northing 3969600 easting 0385800). The survey was conducted on foot by two archaeologists and included a larger portion north and a smaller parcel south of the highway or South Mesa Road. The entire area from the cliff face to the highway was surveyed on the larger portion although only the area below the first bench at the base of the cliff to the highway will be impacted.

Cultural remains included a decayed stack of cordwood adjacent to stake 121 SW corner on the north portion of the highway (see map). This appeared to be quite recent with no associated artifacts and does not represent a significant cultural resource. At the base of the cliff face on a small terrace 6 plainware sherds were encountered. A small heavily eroded cavate with a crude wall was located immediately above the terrace in the cliff face. This area is 30m north of the impact area and because of its location on a steep first bench/terrace

could not receive damage from heavy equipment. No cultural remains were encountered on the south side of the highway.

<u>Recommendations</u>- Because the stack of cordwood is recent and the ceramic scatter well beyond the impact (zone) A, clearance is recommended.

John Kershner - 9/27/85

1. stake 121
SW corner yellow flag
East side y: 10m square
cut posts piled and rolled
No observed artifacts in assoc.

2-6 plowed ceramics
small-prod. of erosion
from erodal cavate
w/ crude wall in cliff face
immediately above.

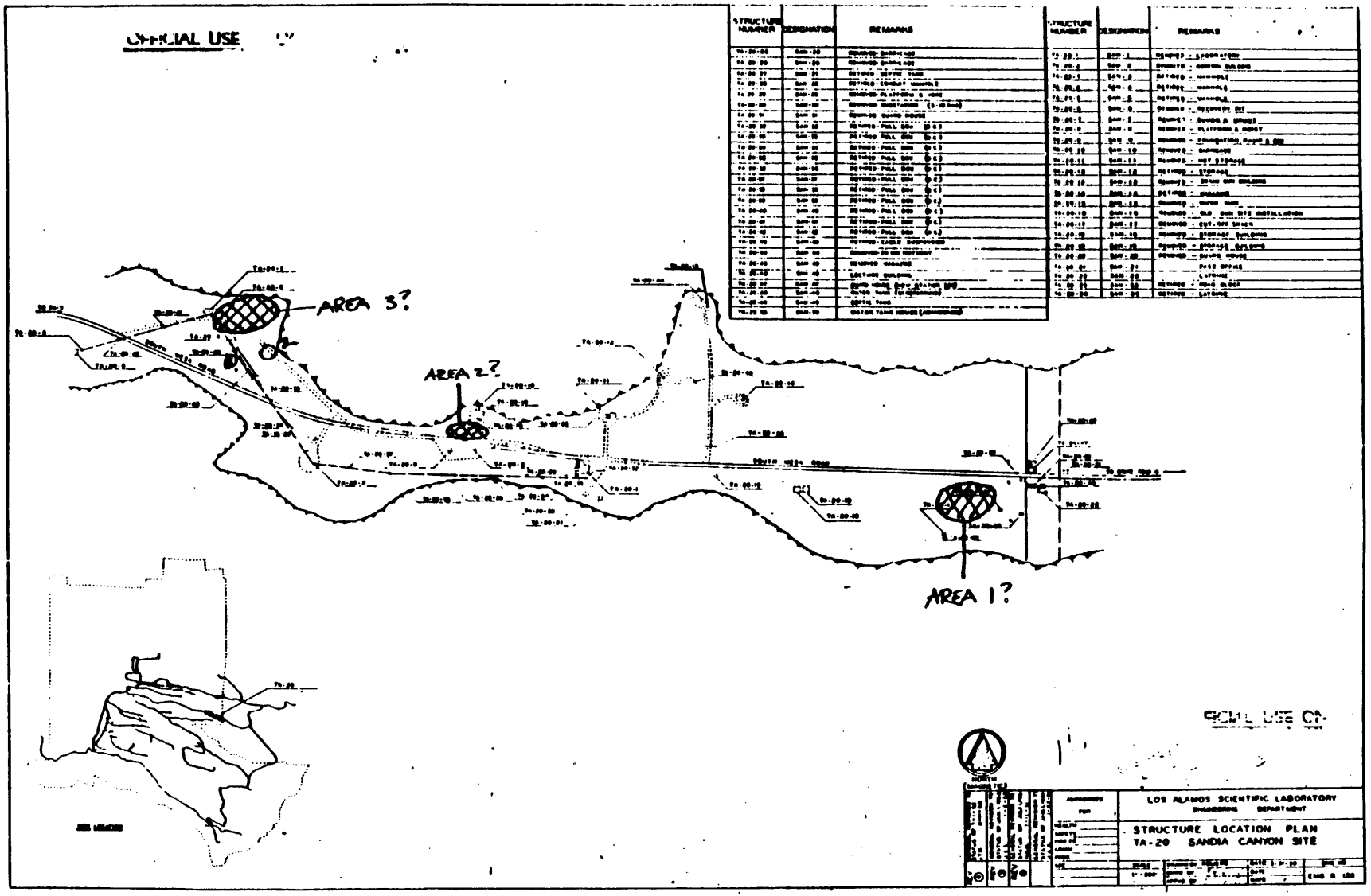


Figure 1-1 Location and site plan for TA-20:Sandia Canyon Site(along truck route to Los Alamos)

APPENDIX B

LASCP DECONTAMINATION

AND DECOMMISSIONING

DOCUMENTATION

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

memorandum

TO: Allen M. Valentine, Radiation Protection Group Leader, MS P229

DATE: October 30, 1985

THRU: Jim Cox, Decontamination Operations Section Leader

MAIL STOP/TELEPHONE: E520/7-7800

FROM: Gilbert M. Montoya, HSE-1

SYMBOL: HSE-1-GM-75

SUBJECT: SITE CHARACTERIZATION ENHANCEMENT PROGRAM

As part of the Site Characterization Enhancement Program (SCEP) at the Los Alamos National Laboratory, funding became available for removal of various structures, underground utilities, etc., which were no longer in use. Sites that were addressed from July 31, 1985, through September 30, 1985, were: TA-4: Alpha Site, TA-5: Beta Site and TA-20: Sandia Canyon Site.

TA-4: Alpha Site

This area was a firing site used from 1944 to 1946 (Figure 2-1). Early tests using uranium took place in this area and they were not well documented. The majority of uranium used was most likely depleted. Various building debris were pushed north to Mortandad Canyon or covered up on site. The technical areas that were addressed as part of the SCEP at Alpha Site, and a brief summary of the work performed will follow.

- TA-4-1: Magazine - Double
  Scrap wood and galvanized steel were removed. The site was leveled and contoured to the existing terrain. No contamination was detected.

- TA-4-2: Magazine
  TA-4-2 had been previously leveled, all that remained was surface debris. Zia laborers removed remaining building debris such as wood, electrical wire, galvanized pipe, etc. No contamination was detected.

- TA-4-3: Laboratory Control Building
  A front end loader was used for removing abandoned storm drain pipe, electrical conduit, wood, and a 6-inch clay pipe that ran from the Control Building to the edge of Mortandad Canyon. This area was monitored for soil and surface contamination using a portable instrument. No contamination was detected.

- TA-4-8: Magazine
  The concrete, steel, wood and other miscellaneous building debris were removed. Soil samples were analyzed and debris surveyed. The site was then contoured to the existing terrain. No contamination was detected.

- TA-4-18: Firing Pit
  Two large pieces of concrete with steel attached to the top were removed from TA-4-18. Each measured approximately 8' x 4-1/2' x 3-1/2'. They each weighed approximately 15 tons. The two pieces of concrete were

monitored and found to be free of surface contamination (Figure 1). The concrete was taken to the airport landfill. All steel, wood and electrical conduit were removed from the firing pit area. No soil or surface contamination was detected.

TA-5: Beta Site

This area was used as a firing site from 1944 to 1946 (Figure 2-2). Half-scale testing on the fat man device was conducted here. Uranium is the principal contaminant. The debris from this area was pushed into Mortandad Canyon as at TA-4 Alpha Site. This area as at Alpha Site, is somewhat accessible to the public. Technical Area 5 was officially abandoned on December 18, 1959, and all costs of the structures were removed from Laboratory records. The technical areas that were addressed and a brief summary of the work involved will follow.

- P Division Site - Solar Experiment

  Cleanup of the old solar experiment site included a wooden shed, plexyglass, nails, wire and other building debris. This area was leveled and contoured (Figure 2).

- TA-5-9: X Unit Chamber

  Building debris such as paraffin, wood, and steel were removed and sent to TA-54. Contaminated soil underneath the X unit chamber was removed and also sent to TA-54. Direct readings of the depleted (238_U) ranged anywhere from 20-40 mR/hr using a Ludlum Model 14-C with an open shield (Figure 3). To cleanup the soil contamination, a pit was dug. The dimensions were as follows: 15 feet deep at the deepest point, east to west approximately 21 feet wide, and north to south was approximately 20 feet wide. Composite soil samples were collected from all elevations and the exact bottom. The soil samples after cleanup were negative. The area was backfilled (Figures 4 and 5).

- TA-5-15: Steel Barricade, Firing Pit 2

  A Bobcat was used in exposing this structure. Due to the size 12' x 10' x 9' and weight approximately 18 tons, a crane was used in loading this structure (Figure 6). Once this structure was lifted out, (238_U) was detected in the soil surrounding the structure area. Direct readings were approximately 30-40 mR/hr using a portable instrument. Richard Romero (HSE-8) was called in to collect a composite soil sample. Six distinct soil samples were analyzed from this one composite. The results were as follows: α approximately 4 nCi/g, β approximately 6 nCi/g - these were averages. Roots from surrounding trees were also found to be positive. Soil cleanup took place throughout this area. HSE-12 personnel collected 36 soil samples. Results were negative.

- TA-5-7: Steel Barricade Firing Pit 1

  This structure was 8' x 5-1/2' x 3' and weighed approximately 3 tons (Figure 7). A crane was used in lifting this structure and loading it onto a plastic lined dump truck. Due to suspected contamination, the concrete structure was sent to TA-54. All metal pipes leading to and from the steel barricade firing pit were removed. The soil around this area contained several contaminated spots. The soil was taken to TA-54.

- TA-5-4: Control Building - Formerly Building 3
  Scrap metal, electrical conduit and approximately 3000 feet of 1-1/2 inch galvanized pipe were removed from the TA-5-4 area (Figure 8). This is the first area that soil contamination was detected. The contaminated soil was removed and sent to TA-54. Direct readings in this area were approximately 5-20 mR/hr. Once the contaminated soil was removed from this area, it was backfilled and contoured to existing terrain.

- TA-5-17 Experimental Concrete Wall
  This large structure measured 18' x 8' x 11' and weighed approximately 58 tons (Figure 9). A TD-25 bulldozer was used in loosening the concrete wall so that a crane with a 90-ton lift capacity could remove the structure. A semi truck out of Albuquerque was used in transporting the concrete wall to the airport land fill (Figure 10). No contamination was detected on the structure or the soil (Figure 11). The area was leveled and contoured.

- TA-5-2: Magazine and TA-5-3 Magazine
  These areas consisted of large mounds of soil. The soil was used as backfill at TA-5-9 and 15. All miscellaneous building debris were picked up and removed. The sites were contoured to the existing terrain. No contamination was detected.

- TA-5-1: Laboratory Building
  The large mound of soil was contoured to the existing terrain. Three large pieces of concrete footings were removed. They were monitored and found to be free of surface contamination. The footings were taken to the airport landfill. Once the area was leveled, a phoswich survey was conducted. No soil contamination was detected.

- TA-5-11 Underground Water Tank
  Due to the size of the tank, the John Deere backhoe was used in exposing the water tank. It measured approximately 14'5" in length and 5' in height. The tank capacity was approximately 2000 gallons (Figure 12). Water from the drain plug was collected and analyzed for alpha and beta activity. Results on the water sample were negative. The exterior of the water tank was monitored and no contamination was detected. The tank was taken to the airport landfill.

- TA-5-12 Underground Pumphouse
  The size of this structure was approximately 8' x 5' x 5' (Figure 13). A crane was used in the removal of structure TA-5-12. The surface of the concrete pumphouse was monitored and found to be free of any contamination. The soil was also analyzed for contamination and none was detected. The area was backfilled and leveled.

- TA-5-5 Dark Room and Shop
  The area had previously been removed and leveled. Surface debris were still present in the area. The Zia Laborers removed wood, copper wire, scrap metal, and other building debris. No contamination was detected.

TA-20 Sandia Canyon Site - South Side Jemez Road

The Sandia Canyon Site is located along the truck route to Los Alamos (Figure 1-1). The site was used for testing of initiators for implosion devices and was actively used from 1944 to 1945. Because of the startup and completion time (Tuesday, September 24, 1985, through Monday, September 30, 1985) only the south side of TA-20 was addressed due to the expiration of the FY85 funding.

o TA-20-33 Through 36 Pull Boxes

The pull boxes ranged in size from 5' x 3' x 3' to 5' x 5' x 5' (Figure 14). A total of four electrical pull boxes were removed. The galvanized pipe running from pull box to pull box was also removed. A total of approximately 3840 of pipe was sent to TA-54 (Figure 15). The Zia laborers walked the TA-20 area picking up all miscellaneous debris. No contamination was detected.

Total waste generated from the Site Characterization Enhancement Progam was 771 m^3. A total of 64.0 m^3 was taken to the airport landfill, and 707 m^3 was taken to TA-54.

Instruments used are as follows:
- Ludlum Model 14 - pancake probe
- Ludlum Model 14-C - GM probe
- Ludlum Model 3 - open end GM probe
- Pac-7 - air proportional probe
- Harshaw Model 301 Phoswich

Bob Martin, HSE-1, analyzed a piece of the yellow cake -- analysis showed that it was depleted uranium (^{238}U). The soil sample was gamma analyzed using the Ge (Li) detector and 4096 channel pulse height analyzer.

The soil counting system used by HSE-8 and HSE-12 personnel was a Ludlum Model 2200 ZnS alpha and beta counting system and a NaI BNC Portanim Model AP-1 NaI soil counting system.

GM:sb

Xy: L. Scholl-Fritz, HSE-8, MS K490
J. Ahlquist, HSE-8, MS K490
T. Gunderson, HSE-8, MS K490
A. Stoker, HSE-8, MS K490
T. Buhl, HSE-8, MS K490
R. Romero, HSE-8, MS K490
D. Hohner, ENG-1, MS M713
J. Elder, HSE-1, MS P229
G. Montoya, HSE-1, MS E520
TA-50 File
File

Technical Areas that were addressed through the Site Characterization Enhancement Program.

ALPHA SITE

Startup - Wed., July 31, 1985 ----- Completed - Mon., August 9, 1985

TA-4-18	Alpha 18	Firing Pit
TA-4-3	Alpha 3	Laboratory Control Building
TA-4-1	Alpha 1	Magazine - Double
TA-4-8	Alpha 8	Magazine
TA-4-2	Alpha 2	Magazine

BETA SITE

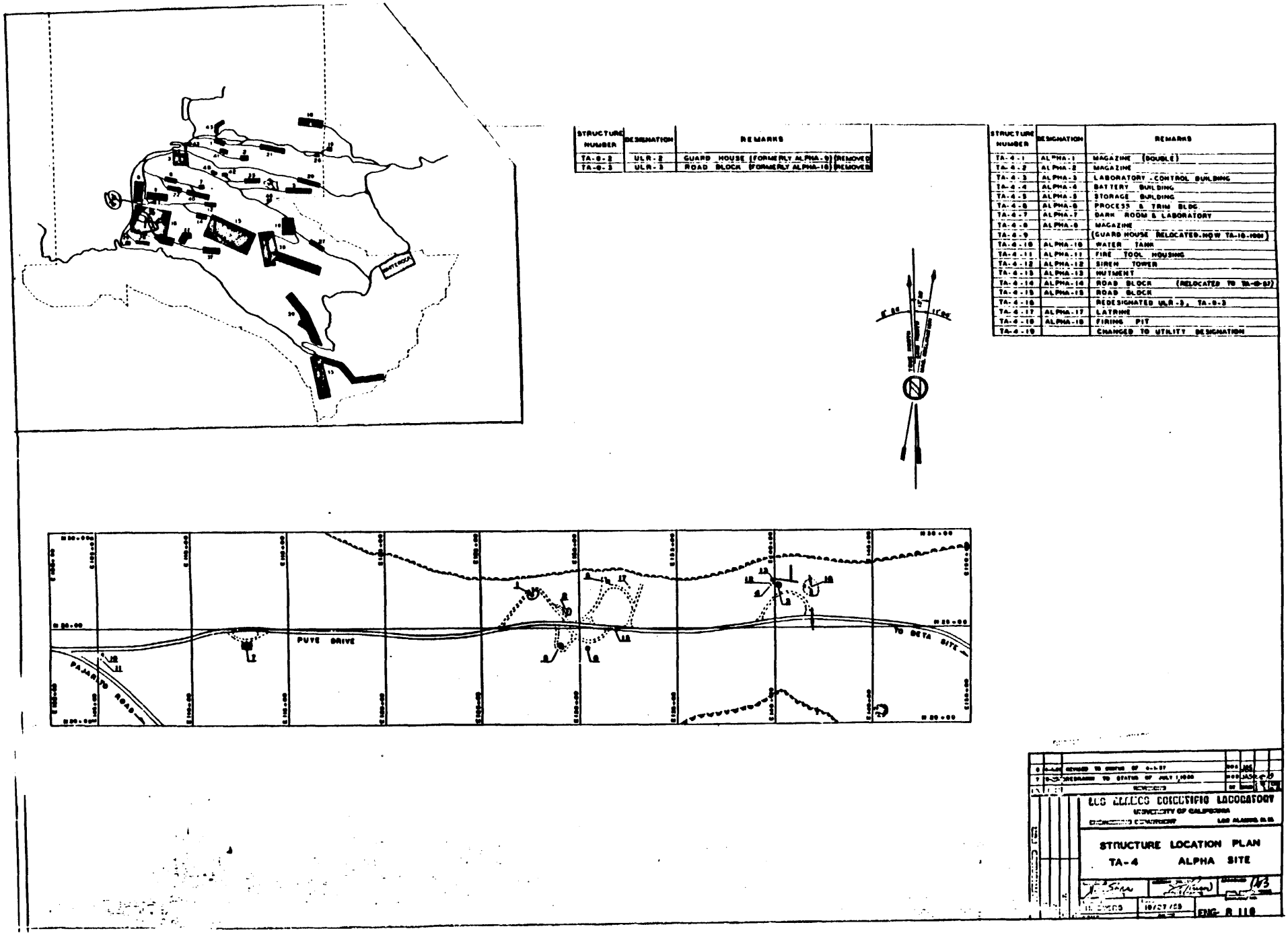
Startup - Mon., August 9, 1985 ----- Completed - Mon., September 23, 1985

	P Division Site	Solar Experiment Site
TA-5-9	Beta 9	X Unit Chamber
TA-5-15	Beta 15	Steel Barricade, Firing Pit 2
TA-5-17	Beta 17	Experimental Concrete Wall
TA-5-7	Beta 7	Steel Barricade Firing Pit 1
TA-5-11	Beta 11	Underground Water Tank
TA-5-12	Beta 12	Underground pumphouse
TA-5-4	Beta 4	Control Building Formerly Building 3
TA-5-5	Beta 5	Old Dark Room and Shop
TA-5-2	Beta 2	Magazine
TA-5-3	Beta 3	Magazine
TA-5-1	Beta 1	Laboratory Building

TA-20 SANDIA CANYON SITE - SOUTH SIDE JEMEZ ROAD

Startup - Tues., September 24, 1985 -- Completed - Mon., September 30, 1985

TA-20-27	Septic Tank
TA-20-33 through 36	Pull Boxes



STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-0-2	ULR-2	GUARD HOUSE (FORMERLY ALPHA-9) REMOVED
TA-0-3	ULR-3	ROAD BLOCK (FORMERLY ALPHA-16) REMOVED

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-4-1	ALPHA-1	MAGAZINE (DOUBLE)
TA-4-2	ALPHA-2	MAGAZINE
TA-4-3	ALPHA-3	LABORATORY - CONTROL BUILDING
TA-4-4	ALPHA-4	BATTERY BUILDING
TA-4-5	ALPHA-5	STORAGE BUILDING
TA-4-6	ALPHA-6	PROCESS & TRIM BLDG
TA-4-7	ALPHA-7	DARK ROOM & LABORATORY
TA-4-8	ALPHA-8	MAGAZINE
TA-4-9		(GUARD HOUSE RELOCATED, NOW TA-16-1000)
TA-4-10	ALPHA-10	WATER TANK
TA-4-11	ALPHA-11	FIRE TOOL HOUSING
TA-4-12	ALPHA-12	SIREN TOWER
TA-4-13	ALPHA-13	MUTMENT
TA-4-14	ALPHA-14	ROAD BLOCK (RELOCATED TO TA-0-3)
TA-4-15	ALPHA-15	ROAD BLOCK
TA-4-16		REDESIGNATED ULR-3, TA-0-3
TA-4-17	ALPHA-17	LATRINE
TA-4-18	ALPHA-18	FIRING PIT
TA-4-19		CHANGED TO UTILITY DESIGNATION

Figure 2-1 Location and site plan for TA-4:Alpha Site

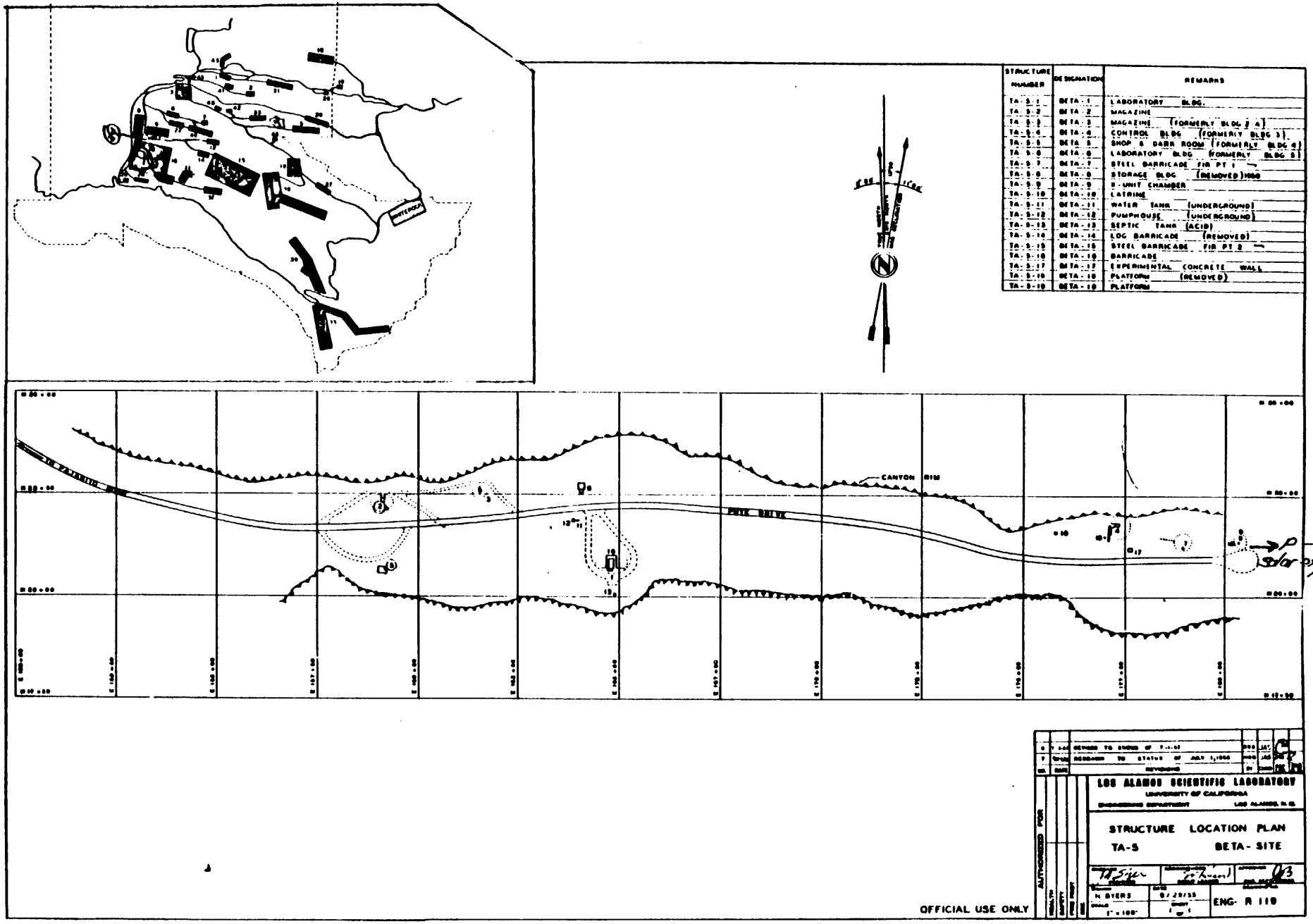


Figure 2-2 Location and site plan for TA-5:Beta Site

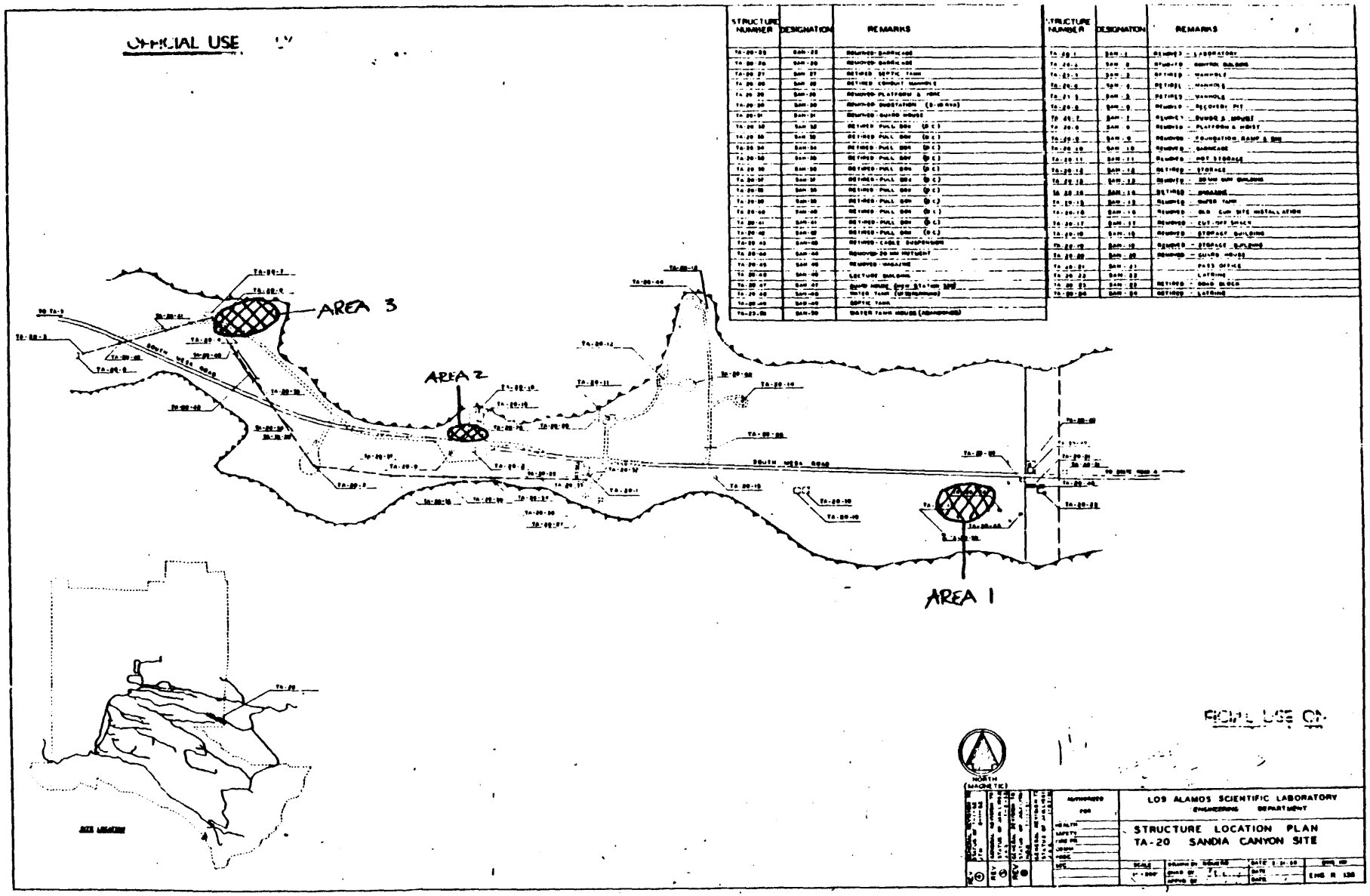


Figure 1-1 Location and site plan for TA-20:Sandia Canyon Site(along truck route to Los Alamos)

FIGURE 1
CONCRETE AND STEEL FROM TA-4-18
FIRING PIT

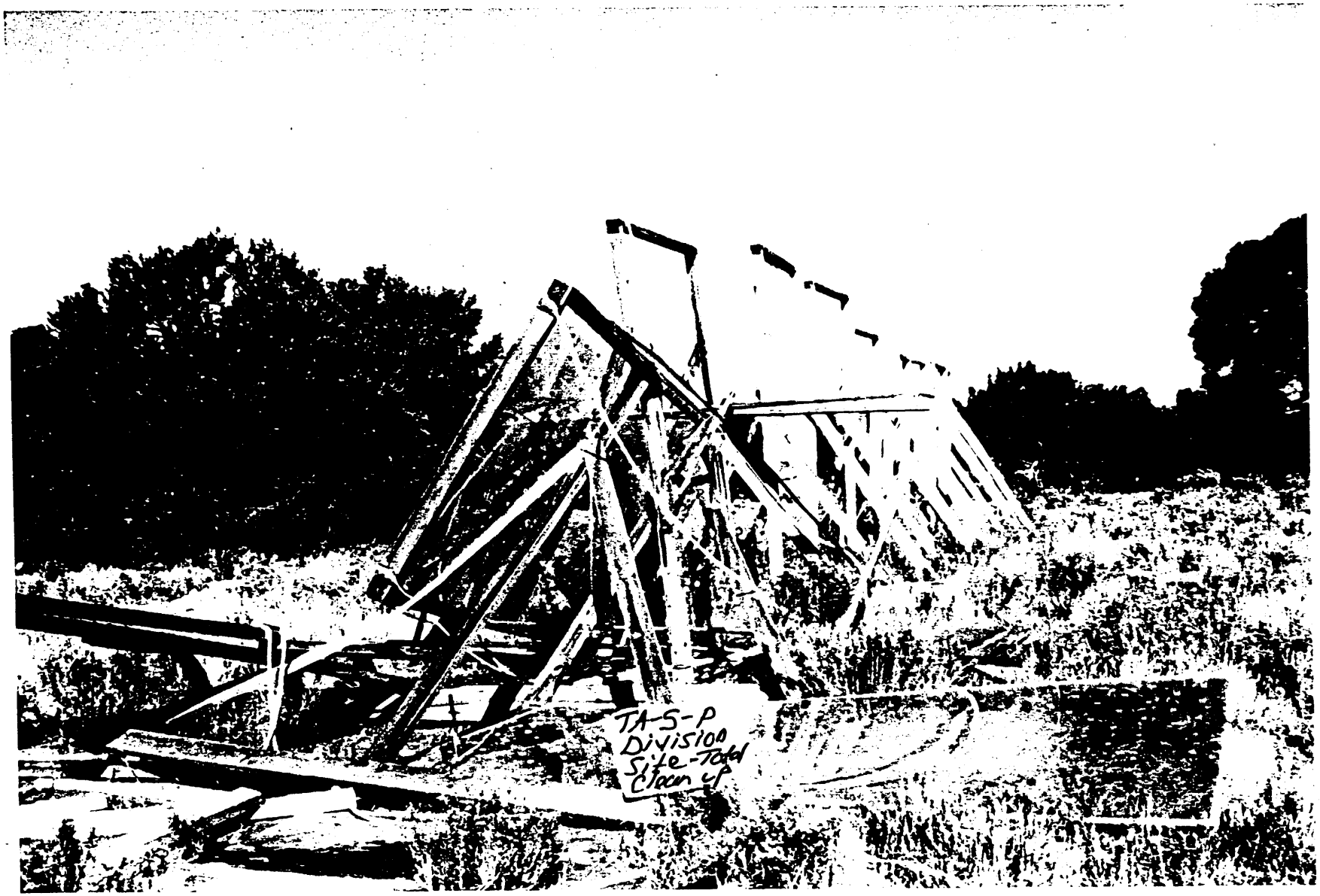


FIGURE 2
P DIVISION SITE
SOLAR EQUIPMENT

FIGURE 3
URANIUM (238_U) DIRECT
READING ~ 20-40 mR/hr

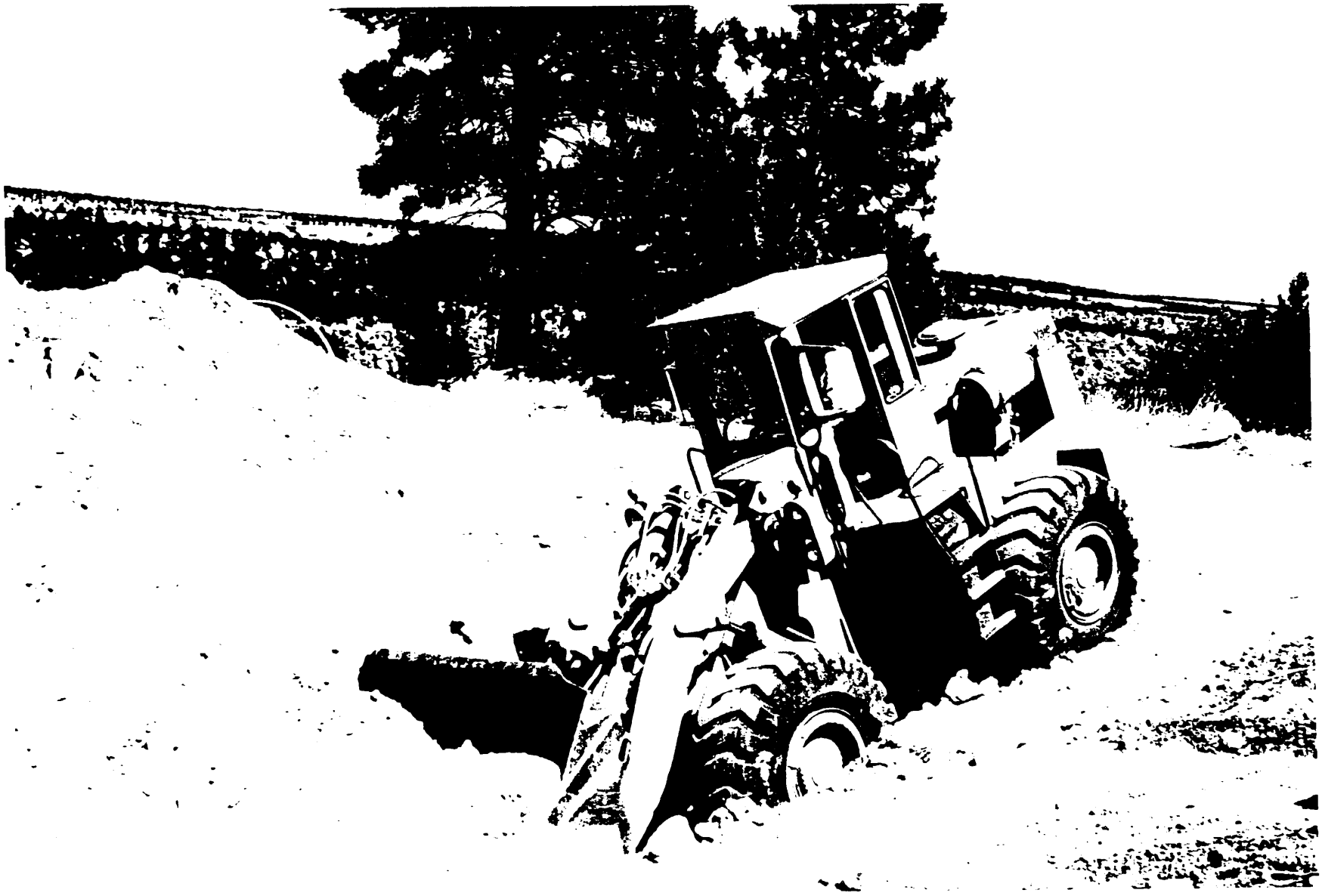


FIGURE 4
TA-5-9 X UNIT CHAMBER SOIL
CONTAMINATION CLEAN UP

FIGURE 5

TA-5-9 X UNIT CHAMBER

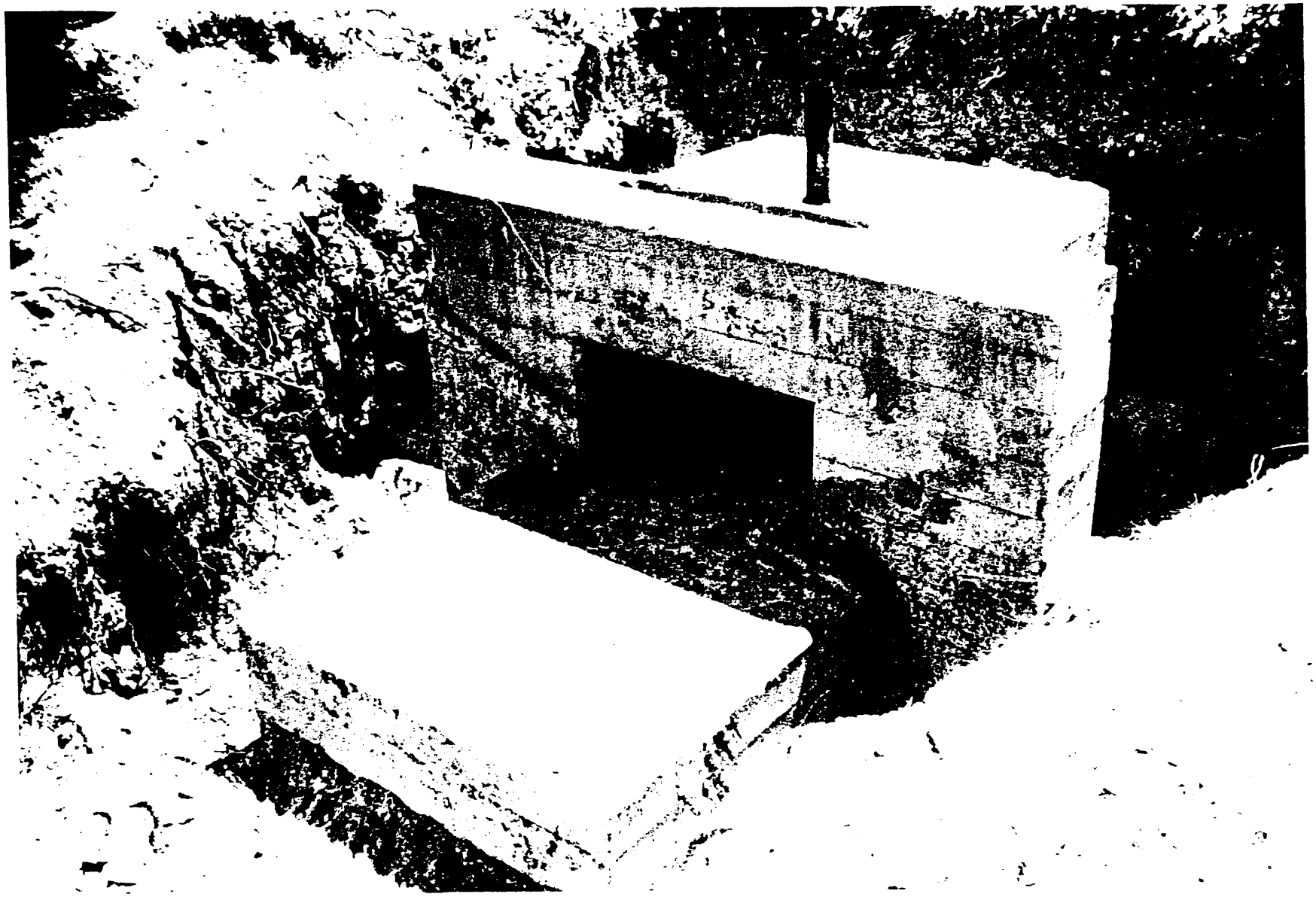


FIGURE 6

TA-5-15 BARRICADE, FIRING

PIT NO. 2

FIGURE 7

STEEL BARRICADE FIRING PIT

FIGURE 8

GALVANIZED PIPE BEING CUT INTO ~

10 FOOT SECTION

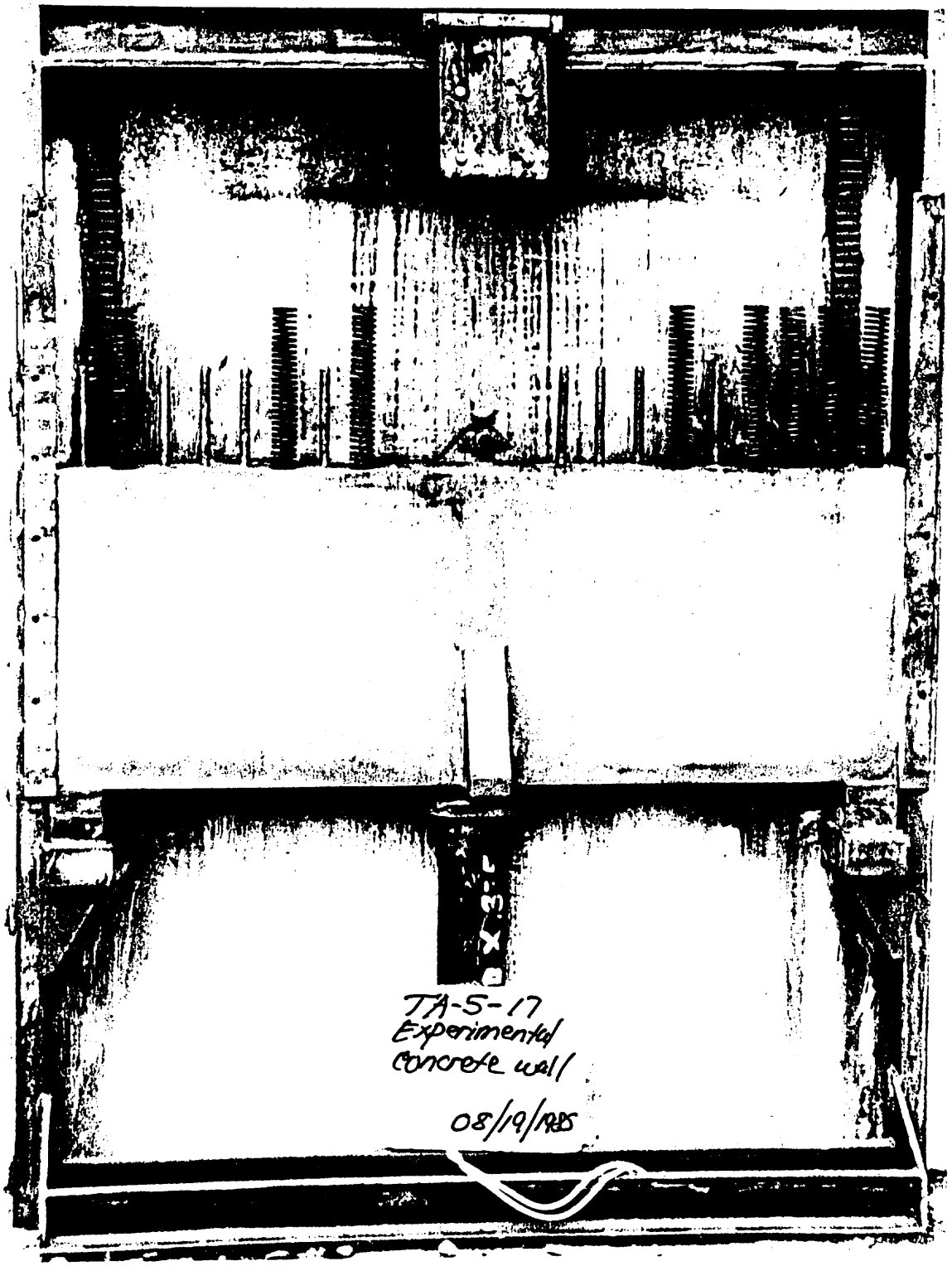


FIGURE 9
TA-5-17 EXPERIMENTAL CONCRETE WALL

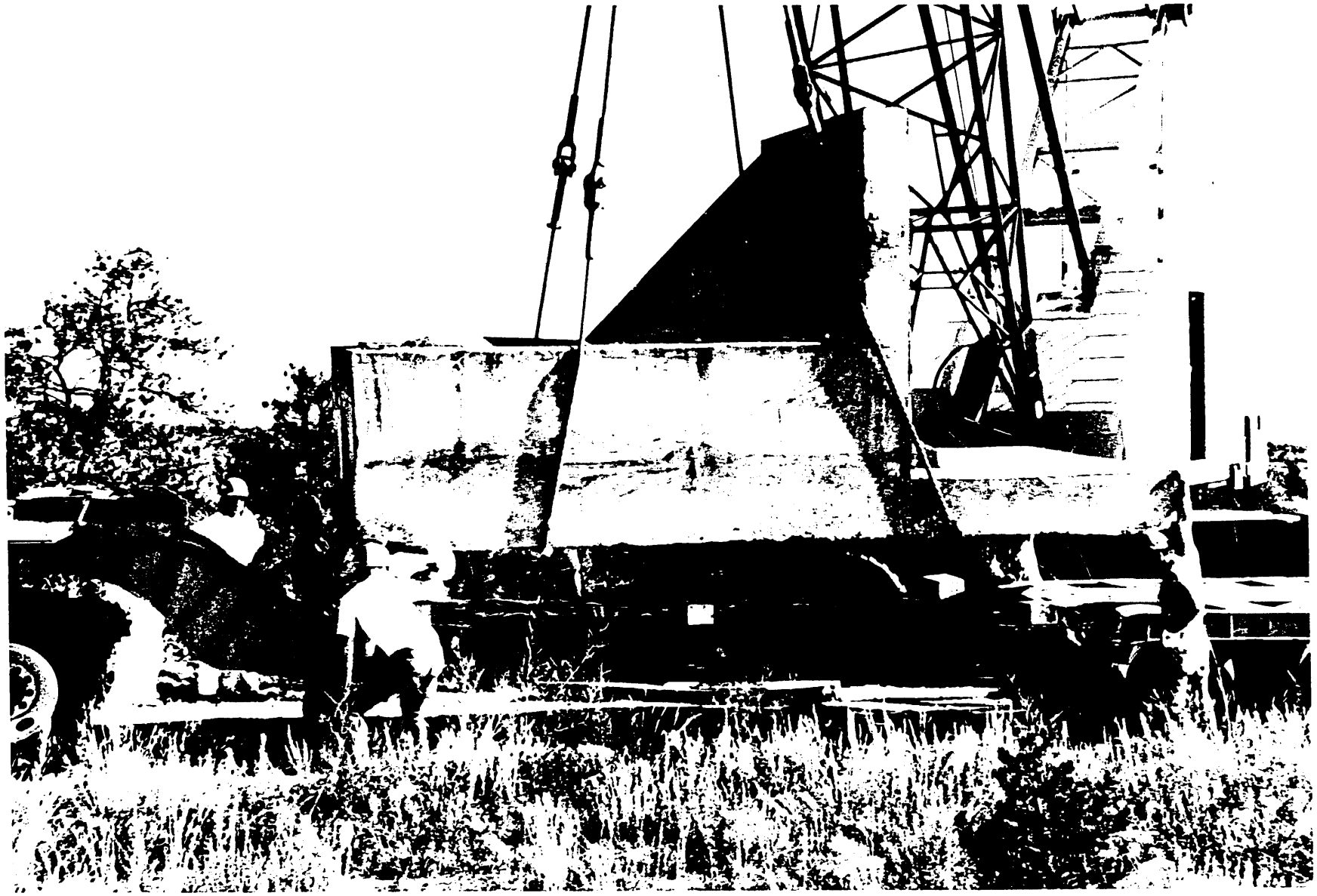


FIGURE 10

TA-5-17 THE EXPERIMENTAL WALL WEIGHED APPROX. 58 TONS

FIGURE 11
TA-5-17 NO CONTAMINATION DETECTED

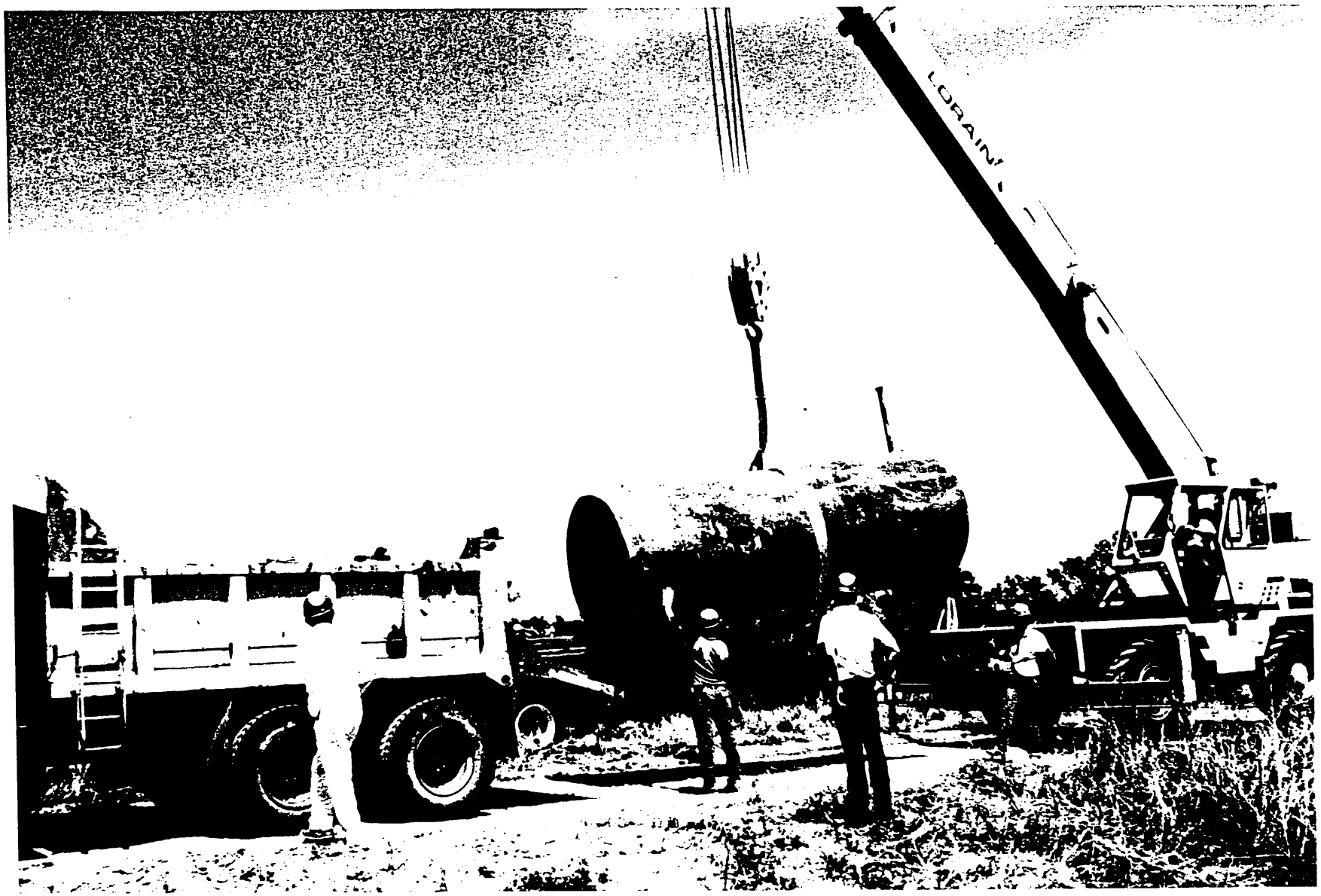


FIGURE 12

TA-5-11 UNDERGROUND WATER TANK

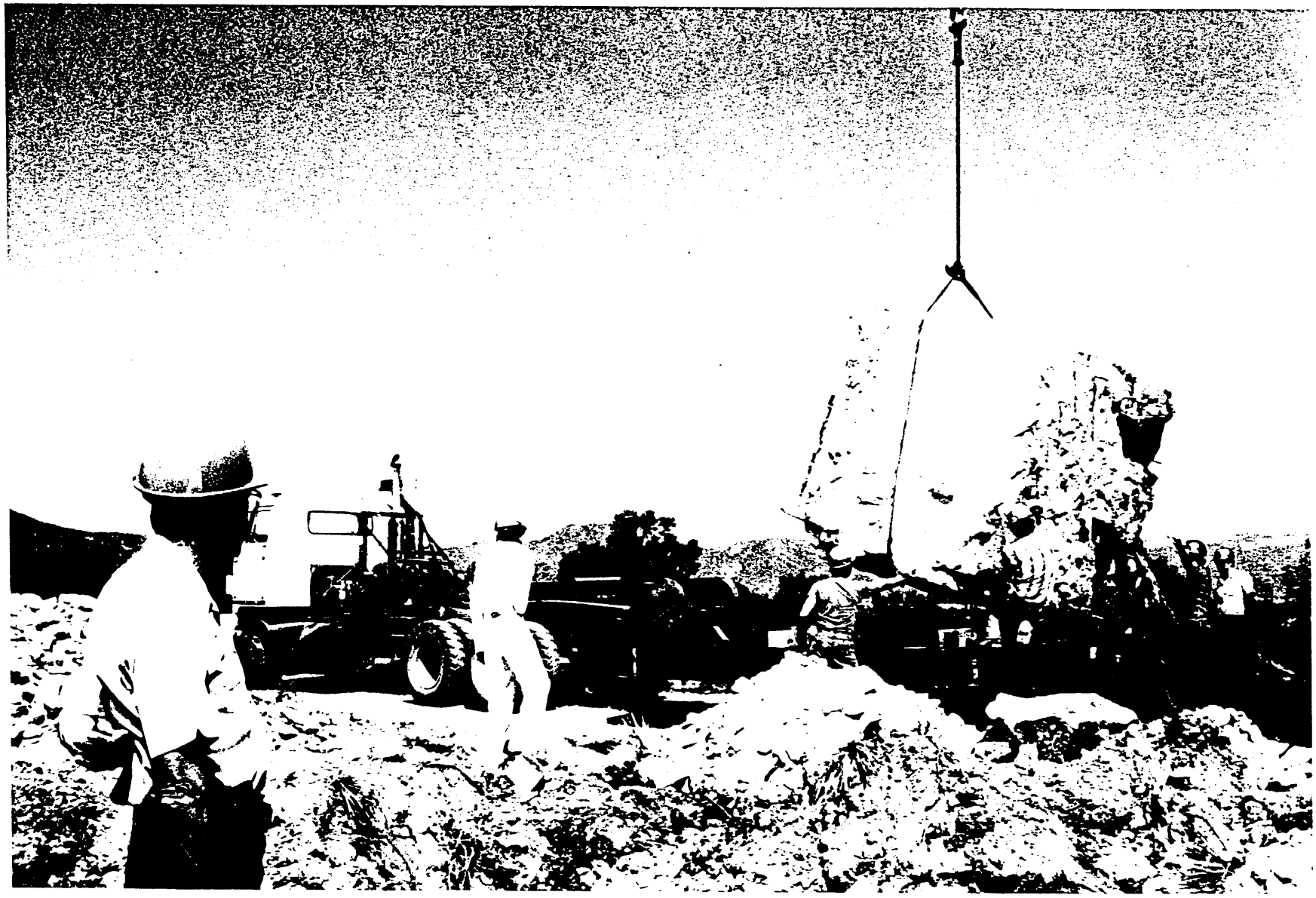


FIGURE 13

TA-5-12 UNDERGROUND PUMPHOUSE

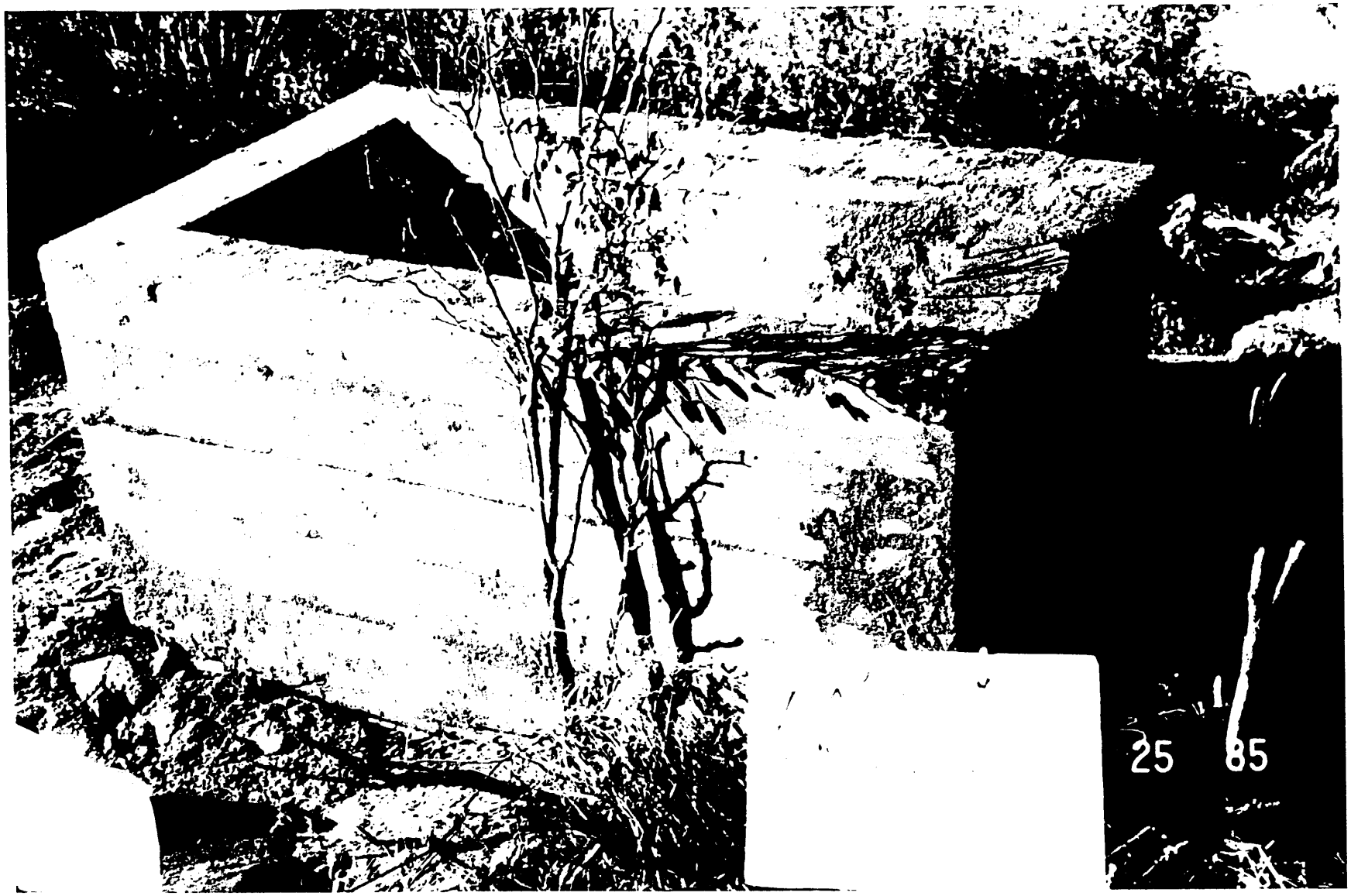


FIGURE 14
TA-20-33 ELECTRICAL PULL BOX

FIGURE 15
TA-20 GALVANIZED PIPE CUT INTO
APPROXIMATELY 10' SECTIONS

$M^3 \times$ avg cpm $\times$ 2.0 HS E-#7

(LIA. W.O. # 6-5701-71
LAB. Program Code W57H)

"SITE CHARACTERIZATION
&
ENHANCEMENT PROGRAM"

Aug 1985

7/8/85 -

- John Alquist + Fran: HSE-8, B Hahnin - Eng - P. Carlson - Sin, RL Val, G. Mr LC. Tovrois
  Poss Clean up Areas at TA-4, 5 + 20
  Plan to start Project by Aug 1.
  Poss. Dep U. at TA-4w, TA-20 ?

★ Tuesday July 23, 1985
H. Montoya met with Lyn Fritz H-8 concerning maps and pictures of areas TA-4, 5, 20, & 33

- 7/24/85 -
  - Project Overview, During Rlg, Avail Meeting
  - B. Clow loc Tsk, Sec + H2O.
  - Start Date Aug. 5 -
  - Field segregating of waste to County hard Fill at TA-54
    Equipment by Monitor
  - C. Blackwell will be advisor for HSE-1

7/25/85 - Bobo + I met w/ adv.
Determined waste to TA-54
No final surveys - OK as we go - we' (H-1,
OK area - MOP on

HSE-1 will, Document, Pics, Field Direct
Keep Daily log. - Progress Reports
Water Cost

HSE-8, Support and Loc. Items

Submit Records to HSE-8 for
Final.

★ Tuesday July 30, 1985

H-3
↳ Pat Childers has verbally okied TA-4-5 for H-E and asbestos.

A meeting was held with Zia personell Lynn Fritze (H-8), Jim Cox, G. Montoya, (HSE-1) Basco (Eng-1) & (Blackie - H-1 Consultant) concerning start up of job.

private contractors who will be laying underground Electrical lines, will not start for ~ 2 weeks. locked Environmental impact study.

Underground Electrical lines will run through center of firing pit - TA-4-18 - clean up will take place before contractors move in.

G. Montoya

★ Wed July 31, 1985

TA-4-18 - firing pit alpha 18
START UP

TA-4 area was monitored - using HM-3 - micro R meter.
General clean up of area in progress laborers are picking up scrap wiring, wood, steel etc.

front end loader being used to pick up piles of debris along side of road (wood from bunkers) debrie loaded into dump truck and taken to TA-54 as suspect - U-238

There were two trucks sent to TA-54
1) 5.0 M^3 Wood & Tar paper
2) 4.0 M^3 Wood & Tar paper

laborers are walking the areas of TA-4-18 firing pit and TA-4-3 laboratory control building - picking up any trash they come across.

This will be done throut the areas

pictures document todays work.

N
W E
S

TA-4-18

Firing pit.

Area before clean up
7/30/85

Actual firing pit - will be cleaned of metal pipes - misc. debris, and building debris, and leveled off - to it's natural state.

7/30/85

Here is a good example of building debris (wood & Tar paper) from bunkers along side of road.

general clean up of this type of material will take place.

This type of small material will all be taken TO TA-54 Area G

J. Montoya

Eri cont'd

Pictures document today's work

33 M^3 Total Volume Removed this week Misc. bldg. debris

G Montoya

★ Monday Aug. 5, 1985

TA-4-18 firing pit

Started removing debris from firing pit using frontend loader and bobcat.

Two large pieces of concrete with steel attached to the top of the concrete were removed from the pit area.

They both measured ~ 4.2 M 5' long 4½' height 3½' width ~ 15 tons each

The pieces of concrete will most likely be hauled away via crane. (due to weight and size)

Cactus and trees from TA-4-18 are being removed and boxed for replantings once area is cleaned and back filled.

There were no trucks sent to TA-54

Pictures document today's work.

No contamination detected on concrete surfaces or soil.

G. Montoya

★ Tuesday August 6, 1985

TA-4-18 firing pit

Firing pit area is now cleaned of all concrete, steel, wood, piping etc.

frontend loader backfilled firing pit - hand - scoped the area

H-8 J. Fritz okd the area. Two pieces of concrete from firing pit were monitored, free from contamination - NONE detected. →

Wed. July 31 (Cont)

Weekly Construction Meeting held - all areas discussed - Enhancement Project at TA-45 will begin as planned starting at TA-4 Jackson Construction is planning to flag Elev lines and get out of the way ASAP, finish TA-4 + then start TA-5 at East end of mesa working West. Bosco Eng. is searching dial file to try and locate more drawings of TA-45.

JC

★ Thursday August 1, 1985

TA-4 Roadside clean up continues - wood, steel, soil and misc. building debris.

There were four trucks sent TO TA-54

1) 4.0m³
2) 5.0m³
3) 5.0m³
4) 5.0m³

} wood, tar paper, steel, and soil

Surveyed last building at Beta site R-Side contained 2 plastic containers / liquid H-7 will be notified for removal.

Pictures document todays work.

L. Fritz visited I-A-4 area today.

J. Montoya

★ Friday August 2, 1985

TA-4

General clean up continues along roadside. Wood steps on south side of road were sent TO TA-54.

One truck was sent TO TA-54
Volume = 5.0M³ wood - steel - soil

laborers have walked TA-4 area - picking up misc. debris - firing pit ready for up/reveling. →

Tues. cont.d
These pieces of concrete ~ 10+ Tons each will be lifted via crane, and taken to county land fill

TA-4-3 Laboratory rented Building
Started work at this area today
Storm drain pipe removed along with abandoned electrical conduit.

There was one truck sent to TA-54 from TA-4-3 area
5.0 M^3 misc. Bldg. debris.

All pre photography of TA-4-3 taken today.

08/06/85

refer to page 3 for ~~before~~ picture of firing pit

TA-4-18 firing pit completed

This area was monitored for surface (soil) and subsurface contamination using a Ohaswich Pac 7 & Micro R Meter - No contamination detected. & Blackwell Monitor.

G. Montoya

TA-~~4~~-3 site of old labatory control building - pre picture

08/06/85

Will be cleared of electrical conduit - wiring - wood - metal and other building debris.

Work in progress at TA-4-3

08/06/85

Electrical conduit in the process of removal

Bobcat and frontend loader used for cleanup

Areas are monitored with pac-7, HM-3 Micro R meter and phoswich Instruments

G Montoya

Construction Meeting Attendance by Gritz + L. Lomax
HS12-8 - Seem to be happy w/ clean up so far
Should complete Alpha site by early next
week - No cost report yet on this project -

J

★ ~~Thursday August 8, 1985~~

TA-4-1

This area was leveled using the frontend loader. Scrap wood removed from this area.
TA-4-1 -completed.

Culverts from road side, removed

General cleanup at TA-1 area in progress picking up wire, wood, steel and other misc. building debris.

Laborers continued to remove cacts & trees which will be replanted once areas are completed.

Old pile of coal removed from TA-4-1 area

1 Truck sent TO TA-54
Volume = 4.0 m^3 -Misc building debris from
TA-4-1 TA-4-3

Pictures document today's work.

G. Montoya

★ ~~Friday August 9, 1985~~

~~TA-4-8 Magazine~~ (Completed)

Started complete cleanup today. Removed concrete and steel, wood, copper wire, and a steel culvert incased in concrete. This area was leveled, to blend in with existing conditions.
This area was monitored - NO subsurface or surface soil contamination
Building debris were also checked for surface contamination - NONE detected.

Gravel which was stockpiled on southside →

★ Wed. August 8, 1985

TA-4-18
Two pieces of concrete
~10+ Tons each
were monitored using
Pac-7 - Micro R meter
all surfaces monitored

The concrete was sent
to county landfill
"airport" via crane
and two dump trucks
Trucks were monitored
before concrete was
loaded. - No contamination

G. Montoya
C. Bierfield

TA-4-3
Labotory Control Building
Completed removing misc. building debris -
wood - steel - piping - concrete - clay
pipe that went from control building to
the edge of the canyon.
TA-4-3 has been completed

NOTE: During walk thru TA-4 area
Bosco Noticed work needed to be completed
at area TA-4-1 - leveling and general clean up
required. - including old culverts - telephone pole etc.

TA-4-8 - (Not on the work order) - also
needs to be addressed (Magazine) complete
cleanup
pictures document todays work

~~Fri cont'd~~
of roadway was moved to northside stock pile
TA-4 area - Alpha Site completed

One truck sent to TA-54
3.0 M^3 misc. building debris.

Pictures document todays work.

Work will start at TA-5 - P Division on 08/12/85
A total of 12 M^3 was removed from 08/05/85 to 08/09/85
8.4 M^3 To county landfill
J. Montoya

★ ~~Monday August 12, 1985~~

~~TA-5 P Division Site~~
Cleanup of old solar experiment site - P-Division
Including wood - plexiglass - nails - bolts - wire
and other Building debris.
All debris were loaded into green flatbed truck. -
bed of truck lined with plastic.

This area was extremley muddy due to heavy rains.

pre pictures were taken of P Division

Due to Indian ruins, Archaeologists are at job site.

One truck sent to TA-54
5.0 M^3 Misc. Bldg debris.

J. Montoya

★ ~~Tuesday August 13, 1985~~

~~TA-5 - P Division Site~~
Wooden Shack was removed today.

front end loader was used to break large pieces of wood so that they could be loaded into flat bed truck. No contamination detected on surface of →

Tues con'd
Wooden structure.

There was one truck sent TO TA-54
5.0 M^3 Volume
Wood - steel - etc

TA-5 P-Division area was leveled where wooden shack was removed. This area has now been completed.

8/85 Wood and misc debris being picked along roadside.

Pictures document today's work.

J Montoya

★ Wed August 14, 1985

TA-5-9 X unit chamber - completed clean up started today.
X Unit chamber was removed and sent to TA-54.
paraline, wood, steel and soil in the process of being removed from along roadside.

TA-5-15 Steel Barricade firing pit 2
This is a large piece of concrete that the bobcat is exposing so that the iron-workers can come in and remove concrete

There is alot of Building debris through out these two areas. 2 laborers are walking the area inorder to pick up all loose debris.

There were two trucks sent to TA-54
1) 5.0 M^3 paraline - wood steel and soil

2) 5.0 M^3 wood - steel concrete etc.

Archaeological areas in the process of being fenced off.

Iron workers were at job site to look →

8/14/85 cont'd.
over concrete to be removed with a crane
Pictures document todays work

G. Montoya

★ Thursday August 15, 1985

TA-5-15 Steel Barricade firing pit 2
This area was completly exposed today using Bobcat.
frontend loader was used to loosen concrete structure - so that crane can remove structure. - 90 Ton crane to be used.

TA-5-17 Experimental concrete wall
The Bobcat is in the process of removing soil from the base of the experimental wall.
The laborers are walking TA-5-15-17 areas picking up scrap wood, steel, wires and misc. building debris.

H-5 gave approval on special work permit
a walk through was conducted.
There was one truck sent to TA-54
4.0 M³ Volume - wood and steel pipes.
- Pictures documented todays work.

G. Montoya

NOTE: More scrap wood and misc. debris was discovered by L. Fritz and G. Montoya East of TA-5-9 area on south side of roadway - Will be addressed.

★ Friday August 16, 1985

TA-5-17 Experimental concrete wall
Completely exposed
The frontend loader was unable to dislodge the concrete from its base. A larger piece of equipment is needed to loosen the concrete so that crane can be used to remove it

→

Fri cont'd

The scrap steel on the south side of puye RD. across from TA-5-15 area was removed and loaded into the dump truck.

TA-5-7 Steel Barricade firing pit 1
This concrete and steel Barricade was completely exposed today using the bobcat. All metal pipes leading to and from this structure were removed. This structure is ready for removal via crane.

TA-5-11 Underground water tank
This tank is in the process of being exposed with the bobcat.

TA-5-12 pumphouse

In the process of being exposed.

laborers continue to pick up misc. debris from all TA-5 Beta tech areas.

There was one truck sent to TA-54 4.0 M^3 Steel - wood etc.

Pictures document today's work.

$\boxed{0.8\ M^3}$ of Building debris was sent to TA 54 this week 08/12/85 - 08/16/85

J. Montoya

★ Monday August 19, 1985

TA-5-11 Underground water tank
The bobcat was repaired this morning, It was used to expose TA-5-11.

TA-5-12 pumphouse

The bobcat continued to expose the pumphouse - crane will be used for removal →

TA-5-15

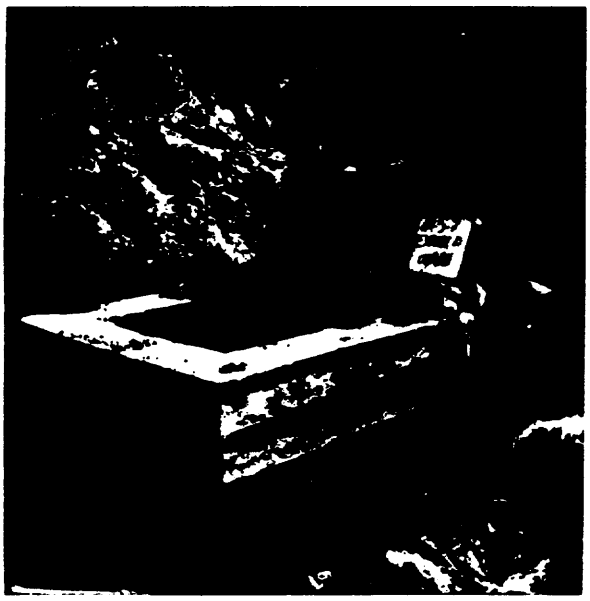
08/19/85

TA-5-15
Steel Barricade firing pit 2

This piece of concrete and steel was exposed.
The concrete is now ready for removal using 90T. crane

The Bobcat was used in exposing concrete

width = 6' & 10'
height = 5'9"
length = 12'



TA-5-7

08/19/85

TA-5-7
Steel Barricade firing pit 1

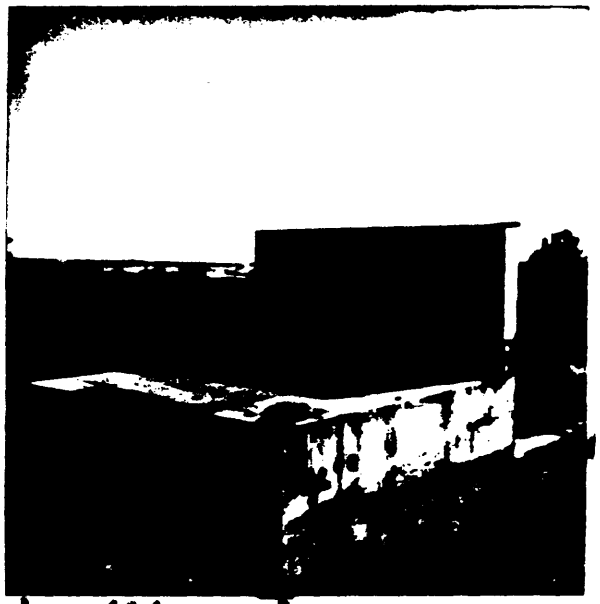
This piece of concrete and steel was also exposed so that the 90 Ton crane can be used to remove it.

G Montoya

length = 8'
width = 5'4"
height = 3'

TA-5-17 08/19/85

TA-5-17
Experimental concrete wall - Exposed - Ready for removal using 90T crane lowboy trailor will be used to haul away concrete and steel.
No surface contamination was detected.
- looking west ↑



11'

TA-5-17 08/19/85

TA-5-17
Experimental concrete wall - looking north east

No surface contamination was found on this side of wall.

G. Montoya

length 18'
height 4'-4" & 8'
width 11'

★ Tuesday August 20, 1985

TA-5-11 Underground water tanks

The water tank was completely exposed today. It is now ready for removal. It measures ~ 14.5' feet long and 5' feet in height. The tank is ~2000 gal.

TA-5-12 pumphouse

The pumphouse was partially exposed today. The John Deere was used in exposing TA-12

Water was coming out of TA-5-11 water tank - lot of pressure.
A water sample was collected, the results are as follows: α - Negative β - Negative

Laborers continued to pick up misc. Bldg. debris.

The structure south of TA-5-11 and 12, which contains a large underground concrete room, will be left in place by orders of John Ohlquist (HSE-8)

There was one truck sent TO TA-54 Volume = 5.0 m³ containing Misc. Bldg. debris, wood, steel pipe etc.

Pictures documented todays work in progress.

G. Montoya

★ Wed. August 21, 1985

TA 5-4 Control Building formerly Bldg. 3

We are in the process of removing scrap metal, electrical conduit and a large amount of pipe. ~ Seven lines running adjacent to each other from TA-5-4 area to TA-5-15 area East - West. These lines were exposed. they will be cut into ~10' sections and loaded into dump truck.

→

Wed Cont'd

There were small areas between TA-5-4 and TA-5-7 which contained small deposits of depleted uranium or "yellow cake" reading from 3-20 MR/hr - open sheild G.M. These spots are being loaded into dumptruck
Phos Bib Reading ~ 337 cts/50 sec.

TA-5-12 pumphouse
The pumphouse was completely exposed today. It is ready for removal using crane.

There were two trucks sent TO TA-54
1) 5.0 m^3 misc. Bldg. debris.
2) 6.0 m^3 soil and misc. Bldg. debris

Weekly Meeting held today at TA-50
Pictures were taken of today's work in progress

G Montoya

★ Thursday August 22, 1985

TA-5 area
Laborers continued General clean up of TA-5 Beta Site.
Laborers continued to cut pipes into ~10' sections so that the pipe can be safely loaded into dump truck.
We continued finding various hot spots of yellow cake at TA-5 area.
J. Ahlquist, L. Fritz, G Montoya, J. Cox, R. Romero, and P. Carlson met out at TA-5 ~2:30 to discuss situation. All pipe and concrete will first be sent to TA-54. We will then concentrate on contaminated areas.
Soil sample along with roots will be analyzed by HSE-9 to determine Iodide content.

→

TA-5-11 08/29/85

TA-5-11
Under ground water tank - used to store water - supplying surrounding tech. areas.

In the process of being exposed.

No contamination detected.

TA-12 08/19/85

TA-5-12
Pumphouse ~ 7' 10' deep

This structure will be completely exposed - The crane will be used for removal.
All conduit leading to and from will be removed and sent to TA-54 as suspect (< 25 pci/gram)

G. Montoya

Thur cont.d

There were four trucks of soil and misc. Bldg. debris sent TO TA-54
1) 5.0 M^3
2) 5.0 M^3
3) 5.0 M^3
4) 5.0 M^3
~ 1200' of galvanized pipe exposed and cut today. Pictures document todays work.

direct Readings at TA-5 Beta site today were ~2 mR/hr open sheild G.M.

G Montoya

★ Friday August 23, 1985

TA-5 area

We continue to remove contaminated soil from TA-5 area. Avg. α count = ~4 nCi/g β-avg count = ~6 nCi/g. This soil has been sent to TA-54 area.

Bobcat exposed ~ 3000 feet of galvanized pipe along TA-5 roadside. Laborers are in the process of cutting the pipe into 10 sections.

HSE-8 R. Romero collected a composite soil sample from TA-5-7-15 Beta site area. Avg. count levels were as follows: α ~ 4 nCi/g β ~ 6 nCi/g these were averages.

There were five trucks sent TO TA-54
1) Truck 5.0 M^3 contaminated soil TA-5-7-15
2) Truck 5.0 M^3 " "
3) Truck 5.0 M^3 " "
4) Truck 5.0 M^3 " "
5) Truck 5.0 M^3 galvanized pipe.

The Bobcat continues to expose pipe

Pictures document today's work.

G Montoya

★ Saturday August 24, 1985

TA-5-17 Expiremental concrete wall
TD-25 Dozer was brought in to loosen the concrete wall. Wooden blocks were put underneith TA-5-17 so that a crane can be run underneith the structure for removal.
Soil underneith the structure was monitored - No contamination was detected.
Phos. Bt6. Reading 106 cts/50 sec.

Three soil samples were collected, they read as follows
1) Bt6. 2) Bt6. 3) Bt6.

TA-5-12 Pumphouse
The TD-25 Dozer was used to loosen the pumphouse. This structure is now ready for removal using the 90 Ton crane.

No trucks were sent To TA-54.

Pictures documented - today's work

G. Montoya

★ Monday August 26, 1985

TA-5-15-7 Beta site
Small pieces of D-238 found on the ground - They were picked up and placed in plastic bags.
TA-5-7 Steel Barrigade firing pit.
This piece of concrete and steel was lifted out using a cherry picker. It was ~ (43 ft³) ~ 3 Tons 8'x5'x3' TA 5-7 completed
No soil contamination or surface contamination. - sent To TA-54

TA-5-11 Underground water tank
~3,000 gal. went to city dump.
5' dia. 14' long - completed
taken to landfill →

Man cont'd

TA-5-15 Steel Barricade firing pit 2 loaded and taken to TA-54 ~ 18.4 M^3 ~18 Tons.

The Bobcat was down due to broken hydrolic hose.

Pictures were taken of today's work.

TA-5 Beta site
General monitoring of soil - on a daily bases

J. Vigil Monitoring

small pieces of D-238 with natural uranium Reading 40 mr/hr - using IHC & Iodlyn open sheild - direct reading

TA-5 Beta Site

All small pieces of U238 are being loaded into dump truck and sent to TA-54.

J. Montoya

General cleanup of Beta site taking place

front end loader being used to cleanup soil contamination

H-1 monitor being utilized for daily monitoring

TA-5-7 area

TA-5-15

TA-5-15
soil and roots contaminated with U238
Reading ~5 mr/hr direct Reading with Ludlum 14C open shield

Soil contains:
~ 6nCi/g β-avg.
~ 4nCi/g α-avg.
have been sent to TA-54

G Montoya

Mon Cont'd

There were five trucks sent TO TA-54

1) Truck 5.0 M^3 soil
2) Truck 5.0 M^3 soil
3) Truck 5.0 M^3 soil
4) TA-5-7 concrete & steel structure 4.0 M^3
5) TA-5-15 firing barricade 8.4 M^3
6) 1 Truck sent TO County (airport) landfill
water tank
Pictures documented today's work
J Montoya

★ Tuesday August 27, 1985

TA-5 - Beta site

The frontend loader continues to remove contaminated soil from TA-5 area

Phos. Bk6. Reading 406 cts/50 sec
The avg. count of soil samples collected in a petri dish ~ 900 cts/50 sec above Background.

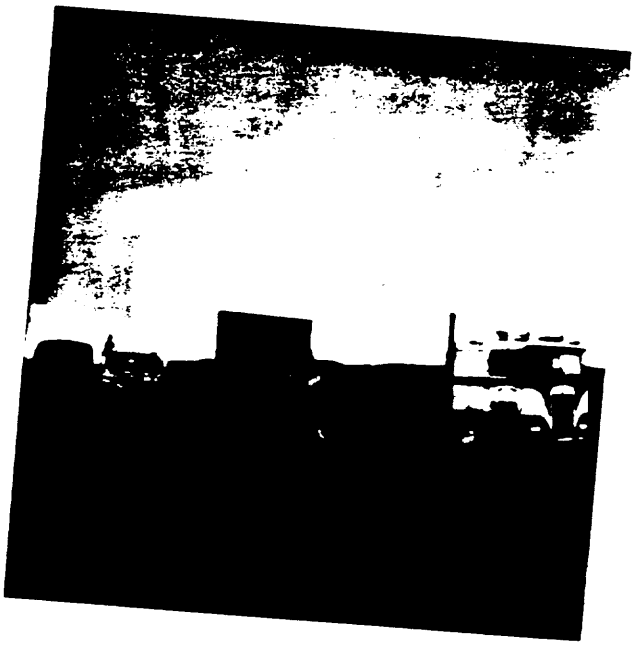
Bobcat continued digging at TA-5-15 area, removed pieces of yellow cake - larger pieces are being bagged in plastic, and sent TO TA-54

J. Vigil and C. Blackwell continue to monitor the area - The direct readings are ~ 20 mr/hr - using Ludlum 14-C

The laborers continue to cut galvanized pipe using gas saw - on south side of road - Beta site.

General cleanup of wire, wood, steel and misc. debris continues.

There were five trucks sent TO TA-54 →



Tues. cont'd

1) Truck 5.0 M^3 2) Truck 5.0 M^3

3) Truck 5.0 M^3 4) Truck 5.0 M^3

5) Truck 5.0 M^3

all Trucks contained contaminated soil

Pictures documented Today's work.

J Montoya

★ Wed. August 28, 1985

TA-5 Beta Site

low Boy Semi Brought in from Albuquerque ~ 80 ton capacity - will be used To haul away TA-5-17 -Concrete experimental wall weighing ~ 50-58 Tons.

TA-5-17 and TA-5-12 were sent To airport land fill - P&H crane was used To lift these structures out - was also used to unload these structures at airport land fill.

All surfaces of these structures (TA-17-12) were monitored for contamination - NONE detected

No soil contamination detected underneith these structures

Both structures were escorted to landfill.

TA-5-17 ~ 33.0 M^3

TA-5-12 ~ 6.6 M^3

Both areas were Backfilled and leveled Both TA-17-12 have now been completed.

The frontend loader continued To scrape Soil removing soil contamination from Beta site.

There were four Trucks sent TO TA-54 all contained soil - A-90

1) 5.0 M^3 2) 5.0 M^3

3) 5.0 M^3 4) 5.0 M^3

Wed. cont'd

Pictures documented today's work

phos. B46. Reading ~ 420 cts/50 sec.
source = 239000 DPM 330/10 sec.

Avg count of soil samples in a petri dish ~ 850 cts/50 sec.

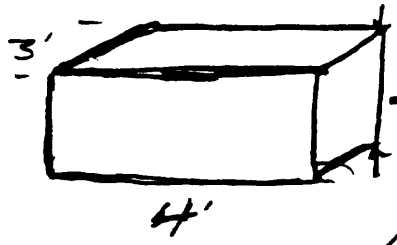
direct readings of yellow cake D 238 ~ 40 mr/hr open sheila
using Ludlum of 14-C

G. Montoya

★ Thursday August 29, 1985

TA-5 - Beta site
Cleaning up of contaminated soil in and around TA 5 area continues.
Continued picking up small pieces of UO_3 up to 20 mr/hr (open sheild)

A metal Box was uncovered



metal section loaded with pieces of Oxide inside

Pictures taken

1/4 thickness

There were seven trucks sent TO TA-54

1) 5.0 M^3
2) 5.0 M^3
3) 5.0 M^3
4) 5.0 M^3
5) 5.0 M^3
6) 5.0 M^3

} soil

7) 4.0 M^3 pipe and wire

G. Montoya

★ Friday August 30, 1985
TA-5 Beta Site
laborers picked up misc. Bldg. debris
There were no trucks sent TO TA-54
job closed down at ~ 2:30.

103 M³ TO TA-54 J. Montoya
51.6 To Airport landfill 154.6 M³ TOTAL

★ Monday September 2, 1985
labor day Holiday

★ Tuesday September 3, 1985

TA-5 Beta site
TA-5-11 water tank was ~ 12.0 M³

TA 5-12 pumphouse ~ 6.6 M³

TA-5-15 Steel Barricade firing pit 2
~ 8.4 M³
TA-5-17 Experimental concrete wall
~ 33.0 M³ - ~ 58 Tons

frontend loader continued to scrape up contaminated soil
Phos. Bkg. Reading ~ 42 cts/50 sec.
Source - 239,000 DPM 315/10 sec

Direct Reading of U. Oxide was ~ 20 mr/hr (open sheild)

~ 850 cts/50 sec. was average petri dish reading.

Boxco Eng-1 came across TA-5-5 - old dark room and shop - formerly Bldg - 4
this area will be cleaned up of misc. Bldg. debris.

There were four trucks of contaminated soil sent TO TA-54 -
1) 5.0 M³ 2) 5.0 M³
3) 5.0 M³ 4) 5.0 M³

→

Tues cont'd
Soil from TA-5-3 Double magazine areas - will be used for backfilling TA-5-15-17-7-9 area.
Pictures document today's work.

G. Montoya

★ Wed. September 4, 1985

TA-5 Beta Site
frontend loader continues to scrape up contominated soil from TA-5-15-7-9 area.
There were thirteen trucks sent to TA-54 today all Trucks contained 5 M³ of soil each. 65 M³ Total soil

Phos. Bt6. Reading 425 cts/50 sec
Average count of soil in a petri dish was anywhere from 500 cts → 800 cts/50 sec.

direct Readings using a ludlum 14-C (open sheild) were ~ 20 mr/hr.

Laborers continued to pick up misc debris along TA-5 area.

pictures documented today's work.

G. Montoya

★ Thursday September 5, 1985

TA-5 - Beta site
frontend loader continues to remove soil. We are ~9 feet deep at area where TA-5-9 x-unit chamber was removed.

Phos. Bt6. Reading ~430 Cts/50 sec.
Avg soil sample in petri dish is ~500 cts/50 sec. above Background.

Direct Reading using ludlum 14-C - (open sheild) was ~ 30 mr/hr.

→

Thur. cont'd

laborers continued picking up - wood - steel - wire - pipe and misc. Building debris.

There wer Eleven trucks sent to TA-54 all trucks contained 5.0 m^3 each of contaminated soil.

A steel plate was removed from TA-5-9 area - soil underneith was reading 30 mr/hr.

pictures documented today's work

J. Montoya

★ Friday September 6, 1985

TA-5 - Beta Site

frontend loader continued to remove contaminated soil from the TA-5 area

Direct Readings today using Sodium IH-C - (open sheild) were ~ 15-20 mR/hr

Phos. Bkg Reading ~496 cts/50 sec. per dish - soil sample - avg. count = to 600 cts/50 sec.

laborers removed galvanized pipe from the south side of road - last of TA-5-15 area.

there were seven trucks sent to TA-54

1) 5.0 m^3 soil 2) 5.0 m^3 soil 3) 5.0 m^3 soil
4) 5.0 m^3 soil 5) 5.0 m^3 soil 6) 5.0 m^3 soil
7) 5.0 m^3 misc. B/dg. debris

Pictures document today's work area where we are digging - pit is ~ 9 feet deep. - soil contamination still present.

[174] Total m^3 for this week

J. Montoya

★ ~~Monday September 9, 1985~~

TA-5 - Beta Site

laborers backfilled the area - (south of road) where galvanized pipe and wire were pulled and removed.

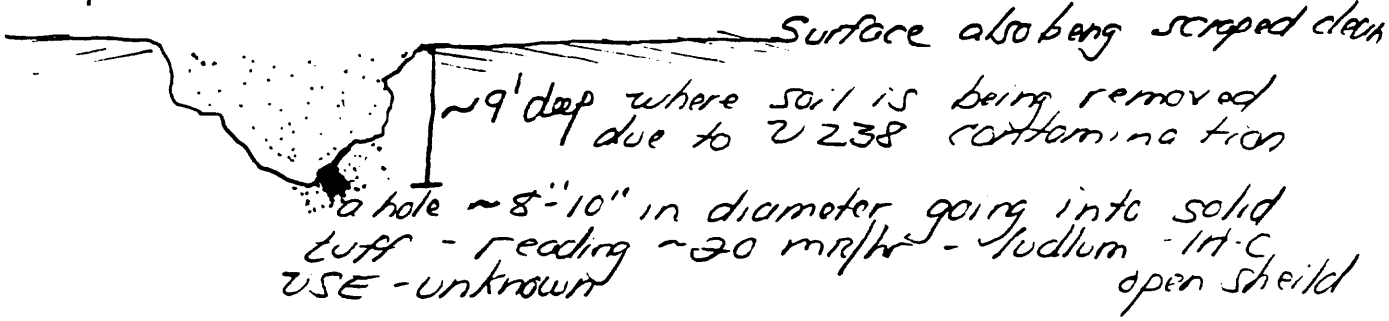
frontend loader continues to remove contaminated soil from TA-5 area.

frontend loader scraped the soil North of where TA-5-15 once was - we found buried wire and also more yellow cake.

direct Readings today were 20-40 mr/hr using a ludlum 14-C - open sheild.

Phos. Bk6.. Reading 400 cts/50 sec.

Soil samples in petri dish were averaging anywhere from 500 - 850 cts. above Background 50 sec.



There were six trucks sent to TA-54

1) 5.0 M³
2) 5.0 M³
3) 5.0 M³
4) 5.0 M³
5) 5.0 M³
6) 5.0 M³

Pictures documented today's work

all trucks being sent TO TA-54 are plastic lined

laborers continue to pick up misc. Bldg. debris at TA-5 area

G. Montoya

★ Tuesday September 10, 1985

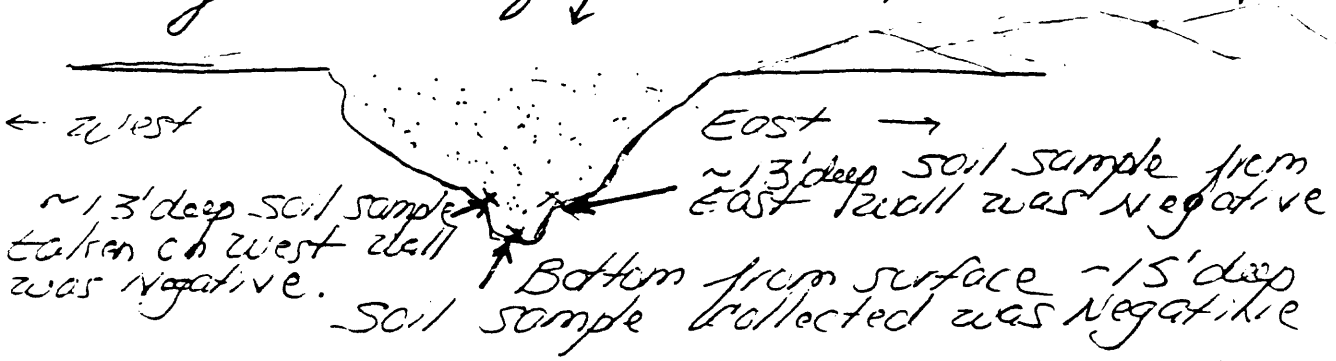
TA-5 - Beta Site

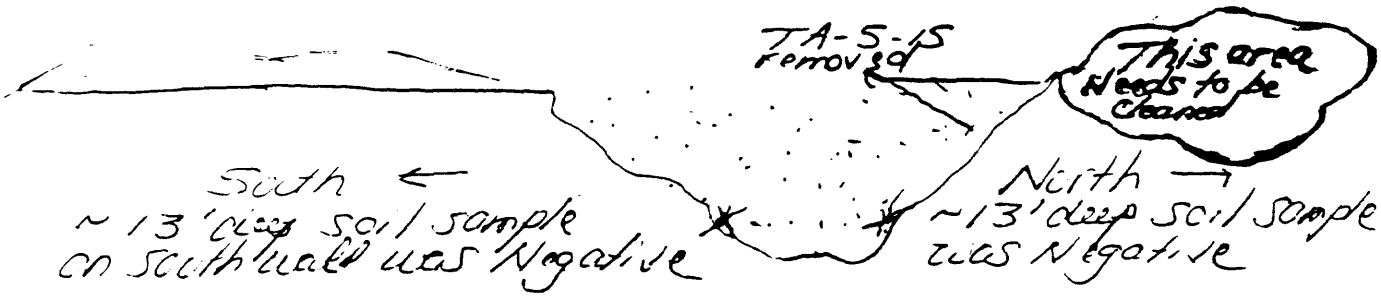
frontend loader continued to remove soil from TA-5-15 area

Phos. Bkg. Reading 490 cts/50 sec
The soil samples averaged ~ 600-800 cts /50 sec. in a petri dish

South of where TA-5-15 was. we completed soil contamination clean up.

Final dimensions of the pit where soil contamination was are as follows.
Note: pit was phoswiched by J Vigil - No contamination in imediate area
15 feet deep
East to West 21 feet wide
North to South 20 feet wide
Ready to be back filled - Soil samples were composite





Soil samples were counted using a phoswich.

Note: the North side of where TA-5-15 was, Soil contamination need to be removed

There were Eight trucks sent to TA-54

1) 5.0 m^3	2) 4.0 m^3	3) 5.0 m^3
4) 5.0 "	5) 5.0 "	6) 5.0 "
7) 5.0 "	8) 5.0 "	

→

Tues cont'd

laborers continue to walk TA-5 area picking up misc. debris.

pictures document today's work

G. Montoya

Wed September 11, 1985

Job closed down today - rained thruout the day.

G. Montoya

★ Thursday September 12, 1985

TA-5 Beta site

TA-5-7-9-15 area

The front end loader continues to scrape contaminated soil from the TA-5 area - The pit area was phoswiched by J. Vigil and composite soil samples from walls and bottom were counted phoswich by G Montoya - Cell Neg.

This area was ~15' deep and 21 feet wide Soil contamination was cleaned from this pit area. H-8 advised that pit area is Ready for grid by ~~H-8 personnel~~ if felt necessary.

plastic bags are used to dispose of small pieces of yellow cake.

G. Montoya

Thursday cont'd

TA-5 - Beta Site
front end loader
scraping surface
cleaning soil contaminat
- a laborer - the spotter
points out yellow cake
to the monitor

contaminated soil
is stock piled - ready
for dump trucks
to return from
TA-54

TA-5 Beta Site

This dump truck contains
a full load of
contaminated soil
~5m³ -
all trucks are plastic
lined on the bed
of the truck.

a tarp is used in
covering the truck,
to prevent soil
spilage along route
to TA-54

all trucks monitored
before leaving TA-54

J Montoya

Thursday cont'd

laborers continue to pick up misc. debris including wood and galvanized pipe.

all debris loaded into H-1 flatbed truck.

All debris are sent TO TA-54 as suspect (< 25 pci/gram)

TA-5 Beta site

TA-5-3

The front end loader moved soil around this area inorde to monitor the soil that will be used for backfilling at the TA-5-15-7-9 area.

The Phos 8k6 was reading 460 cts/50 sec.. There were three soil samples collected from this area, results are as follows.

1) Neg. 2) Neg. 3) Neg.

There were Eight trucks of soil sent TO TA-54

1) 5.0 m³ 2) 5.0 m³ 3) 4) 5.0 m³

5) 5.0 " 6) 5.0 m³ 7) 8) 5.0 m³

Direct Readings of soil contamination today were 15 – 20 mr/hr using a Sodium 14-C - open sheild.

Pictures documented today's work

G. Montoya

★ Friday September 13, 1985

TA-5- Beta site
frontend loader continues to remove contaminated soil from the TA-5 area.

Small pieces of yellow cake are being put into plastic bags.

Direct Readings today were 15-20 mr/hr using a IH-C Shallugh - open sheild.

laborers are picking up misc. debris along TA-5 roadside.

There were seven trucks sent to TA-54
1) 5.0 m^3 2) 5.0 m^3 3) 5.0 m^3
4) 4.0 m^3 5) " 6) 5.0 m^3
7) 5.0 m^3

pictures document today's work

TA-5-13 TA-5-1 labatory control Building and septic tank.
Backhoe - Babcat - Digging a trench - looking for septic tank. Near TA-5-16

G Montoya

★ Saturday September 14, 1985

TA-5 Beta Site
Hot soil still in the process of being removed from TA-5 area. Two dump trucks being used to haul away hot soil. Trucks are also taking clean soil to pit area from TA-5-3 magazine.

Note: TA-5-3 Magazine has been completed this area has been leveled, and contoured to existing terrain.
laborers are picking up debris from TA5 area. all debris are loaded into green flatbed truck.

→

Sat. cont'd

There were Eleven trucks of contaminated soil each containing 5.0 m^3 ea. of soil

pictures documented today's work.

direct reading were ~ 15-20 MR/hr using a ludlum 14-C open sheild.

$\boxed{198\ m^3}$ Total for this week

G. Montoya

★ ~~Monday September 16, 1985~~

TA-5 - Beta Site

frontend loader continued to remove contaminated soil from the TA-5 area.

We are just about done removing hot soil. The TA-5 area is being monitored for any other areas where soil contamination might be present.

Clean fill is being trucked in from TA-5-2 Magazine area, to where pit was dug while removing the hot soil.

There were Six trucks of contaminated soil sent to TA-54

1) 5.0 m^3 2) 5.0 m^3 3) 5.0 m^3

4) 5.0 " 5) 5.0 " 6) 5.0 "

Phos. Bk6. Reading 465 cts/50 sec.

One soil sample collected from the TA-5 are - Negative.

direct reading today were ~ 5-10 mr/hr using a ludlum 14-C - open sheild

laborers continued to pick up wood, wire, pipe trash etc.

Pictures documented today's work.

G Montoya

★ Tuesday, September 17, 1985

TA-5 Beta Site

TA-5-2 completed - magazine
The soil from S-2 was hauled to
The TA-5-7-9 area.

TA-15-7-9 area has now been completed.
Backfilling has been completed.

Phoswich was used in this area by
Vigil H-1 Monitor. No surface contamination
detected.
Soil was hauled from the TA-50 area
to fill pit area.

All surface debris was picked up from
area entering TA-5 from the east end.
Some metal and surface contamination
picked up and bagged. H-8 cleared
this area. Gravel pile - not to be addressed.

Backfilling at TA-5-4-17 area
still in progress.

Pictures document today's work.

Area Near TA-5-1 where we were trying
to locate septic tank has been backfilled.

There were no trucks sent to TA-54

J Montoya

★ Wed. September 18, 1985

TA-5-Beta Site

TA-5-1 Laboratory Building - completed
was leveled today - front end
loader contoured the area to the
existing terrain. Three concrete pilars
were removed from this area - They
were monitored and taken to the airport
landfill. 4.0 M³

→

Wed con't

TA-5-5 old dark room and shop - completed all misc. Building debris was picked up from this area.

TA-5-15-17 area was completed today

Backfilling and leveling was completed. The area was also contoured to existing terrain. Removal of soil contamination from this area was completed

The area was phoswiched by J. Vigil (H-1) various soil samples were collected by G. Montoya counted for 50 sec in a petri dish using a phoswich. Results were Negative on both phoswich and soil sample survey

Phos. Bkg. was ~ 420 cts/50 sec.

laborers continued walking TA-5 area picking up trash.

There was one truck sent to TA-54 volume - 5.0 M³ - containing misc. Bldg. debris from the TA-5 area

Pictures document today's work

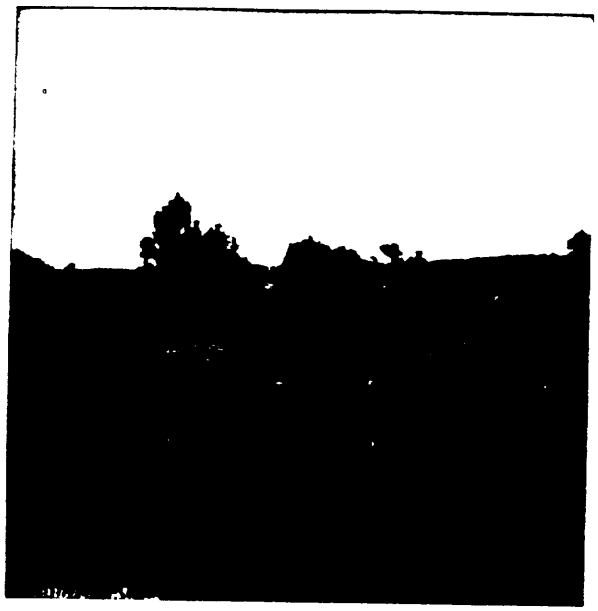
The pile of gravel at the east end of TA-5 where various pieces of metal were found to be contaminated up to 15 mr/hr - will be removed on 09/19/85 Gravel will be taken to TA-54

G. Montoya

★ Thursday September 19, 1985

Job was closed down today due to rainy weather.

G Montoya



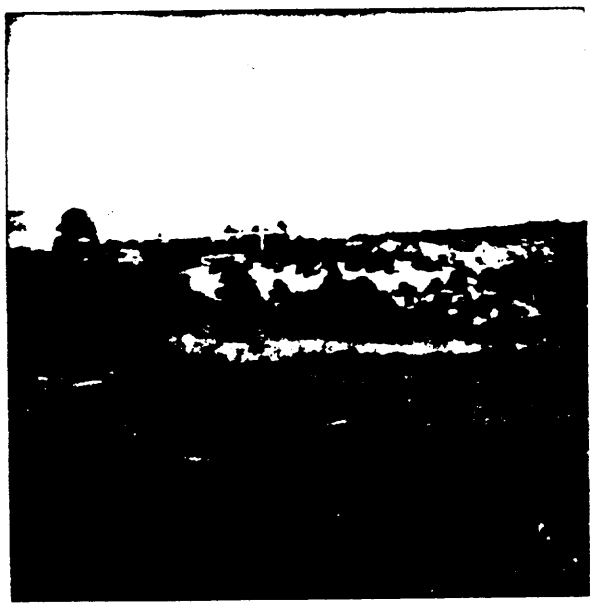
TA-5-1

Beta 1 Lab Building
Completed
This area was leveled and contoured to the existing terrain.

The soil from this area was monitored with a phoswich - No soil contamination detected

Excess soil from this area was taken to the TA-5-9-15 area and used as backfill from where soil contamination was removed.

J Montoya



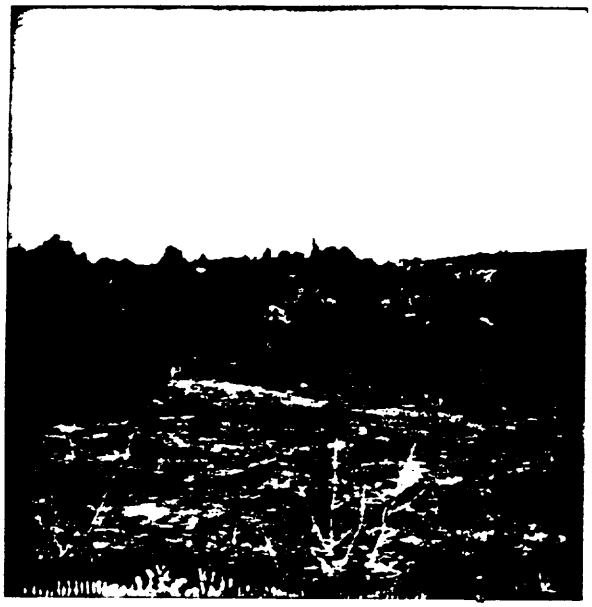
TA-5-2

Beta 2 Magazine
Completed
This area was also leveled and contoured to the existing terrain

The mound of soil from this area was used as backfill at the TA-5-9-15 area.
No contamination (both soil and debris) was detected at this site.

A phoswich along with a Ludlum Model 14-C were used as survey instruments.

J Montoya



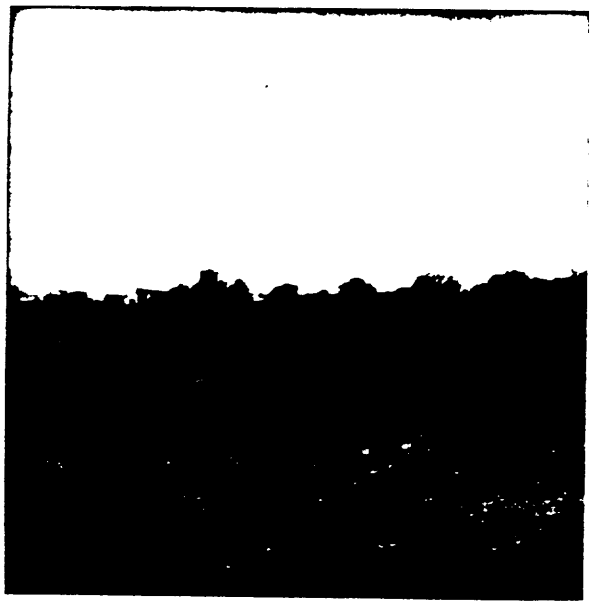
TA-5-3

~~Beta 3 Magazine~~
Completed

Beta 3 was leveled and all miscellaneous debris were picked up.

The mound of soil was monitored with a phoswish, and the soil was used as backfill at TA-5-9.15.

The area was contoured to the existing terrain.



TA-5-5

TA-5-5 - old dark room and shop

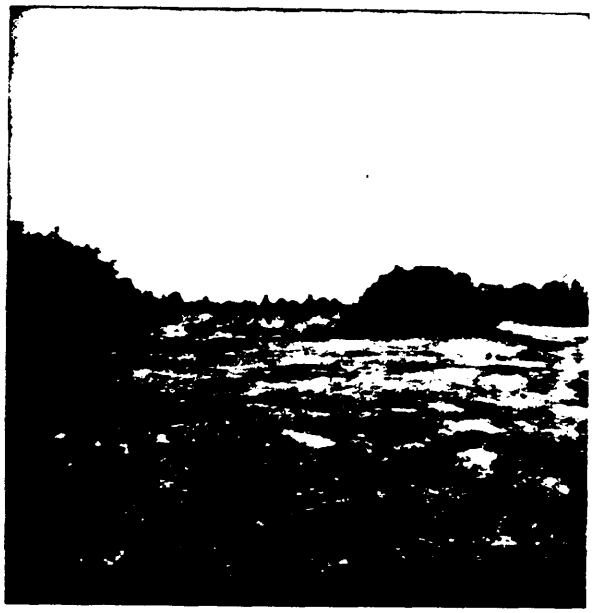
laborers picked up wood - piping - wire - and other debris from this this area

The area was monitored with a phoswish, and no contamination was detected.

J Montoya

TA-5-11

This is the area where the water tank was removed from

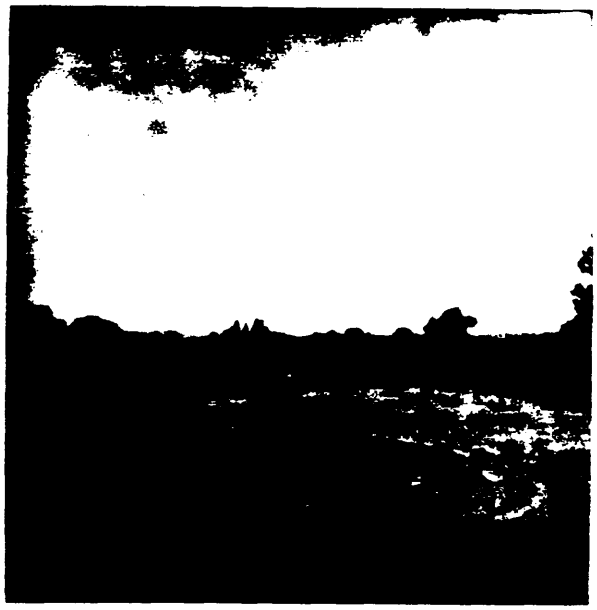


TA-5-12

The underground pump house was removed from this area

TA-5-7
after clean up

This is the TA-5-7 area after backfilling



TA-5-9-15
after clean up

soil contamination was removed from this area
refer to pages 31 and 32

★ ~~Friday September 20, 1985~~
Job was closed down today due to rain.
35 M³ total this week

G. Montoya

★ ~~Monday September 23, 1985~~

~~TA-5 Beta Site~~

The gravel pit at the east end of TA-5 was picked up and sent TO TA-54.

There was no contamination detected. The gravel was sent as suspect < 25 pci/gram.

Laborers did one final walk through of the TA-5 area picking up any debris.
(Work has been completed at TA-5)

There were six trucks sent TO TA-54
1) 5.0 M³ 2) 5.0 M³. 3) 5.0 M³
4) 5.0 M³ 5) 5.0 M³ 6) 5.0 M³

Pictures document today's work

G Montoya

★ ~~Tuesday September 24, 1985~~

(~~Start up of TA-20~~)
~~TA-20-27~~ Septic tank
The frontend loader and backhoe were digging, looking for TA-20-27 the septic tank.
(This structure was previously removed)

A soil sample was collected where this structure once sat - Soil was Negative.

Phos. Rb. Reading 605 cts/50 sec.

The galvanized lines inbetween the pull boxes is in the process of being removed

→

Tues cont'd

A gas saw is being used to cut the pipe into ~10' sections.

Laborers are walking the TA-20 area picking up misc. debris.

There was one truck sent TO TA-54 Volume = 5.0 m^3 - containing soil and misc debris. pipe wood Jeff.

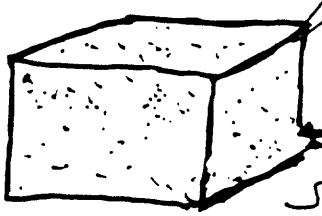
pictures document Todays work.

G Montoya

★ Wed. September 25, 1985

TA-20-33

The pull Box was exposed and removed today. It Measured length = 5 feet Width = 3 feet height = 3'



four galvanized pipes coming out through West side of concrete box

The Box was monitored - no contamination detected.
One truck sent TO TA-54 Volume = 5.0 m^3
As of Today, ~880 feet of galvanized pipe has been removed from TA-20

A gas saw is being used in cutting the pipe into ~10' sections.

Phos. Bkg. Reading 706 cts/50 sec

There was one soil sample collected by G. Montoya & J. Vigil and counted by H-8 R. Romero. 1) sample was negative.
pictures document todays work

G. Montoya

★ Thursday September 26, 1985

TA-20 Sandia Canyon
laborers continued to walk the area picking up wire, wood, steel and other debris.

The Bobcat Exposed more galvanized pipe. A gas saw was used in cutting the pipe into ~ 10' sections.

TA-20-34 Exposed
This pull Box measured 5 x 3 x 3
No Surface contamination detected -
No Soil contamination detected.

Phos. Bkg. Reading 726 cts/50 sec.

The frontend loader is being used to cover the trench where four lines (galvanized pipe) are running parallel. The lines are ~ 2 feet deep.

There were no trucks sent today.

Pictures were taken of today's work in progress.

G Montoya

★ Friday September 27, 1985

TA-20 Sandia Canyon

TA-20-35 pull Box
was exposed and removed today.
The pull Box measured 5 X 4½ X 3

There was no surface or soil contamination detected in this area.
laborers continued to walk the area picking up miscelaneous debris.

The Backhoe continued to expose the four electrical lines running from pull Box to pull Box.

→

~~Fri cont'd~~

There were two trucks sent TO TA-54
1) Volume = 5.0 M^3 Structure TA-20-34

2) 5.0 M^3 miscellaneous debris.

Pictures documented todays work.

$\boxed{15.0 M^3}$ total waste this week

G Montoya

★ ~~Saturday September 28, 1985~~

TA-20

TA-20-36 pull Box
This pull Box was exposed and removed today. It measured 5X5X5.

There was no surface or soil contamination detected.

The TA-20-36 area was backfilled leveled and compacted.

The laborers picked up wire, wood, steel and miscellaneous debris.

The backhoe completed removal of electrical lines.
The pipe was cut into ~10' sections using a gas saw. The ~2 foot trench was also backfilled.

Pictures documented today's work.

G Montoya

★ ~~Monday September 30, 1985~~

TA-20
final walkthru was conducted today.

All equiptment was taken from TA-20 to the TA-65 area.
There were three trucks of debris sent →

Mon. con't

TOTA-SH

1) 5.0 m^3 2) 5.0 m^3 3) 5.0 m^3

This debris was from Saturday's overtime work.

$\boxed{13\ m^3}$ total waste for this week

A. Montoya

APPENDIX C

PHOSWICH SURVEYS

DOCUMENTATION

PSE-2

PHOSWICH

SURVEY

DATA

LEO MARTINEZ

T-2050

TA20 REREAD

TA20-3 : 1-1, 1-5, 2-1, 2-2, 2-3, 2-4,
2-5, 2-6, 2-7, 2-8.
3-1, 3-2, 3-3, 3-4, 3-5
3-6, 3-7, 3-8

• → 6051

all others → 7470

11,17

PHOSWICH SURVEY

page ____ of ____

Survey Location (also attach map): TA20-16

Phoswich Serial No.: 005006 Window Setting: _____ Date: _____

Background Location: _____ <--- Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/____ sec		Time	cts/____ sec
* begin	9:04	509	* begin	9:02	75071
intermediate 1			intermediate bag #1		
intermediate 2			intermediate 2		
end			end		

* BACK RAN 9:00 134.

Grid Location	counts/____ sec	Grid Location	Counts/____ sec	Grid Location	Counts/____ sec
	1610				
TUSK SOIL	1615				
*	1621				
	3078				
TILUS	3418				
TI	3334				
	2210				
	2195				
	1993				

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20-6 (Rodeo)

Phoswich Serial No.: PN346298 Window Setting: FULL Date: 8-30-8[illegible]

Background Location: NEAR VAN ← ... Check Source { No. ___ Isotope ___ strength ___ date ___

	Time	cts/___ sec		Time	cts/___ sec
begin	8:32	10930	* begin intermediate bag #1	8:33	45 3[illegible]
* intermediate 1			intermediate 2		
intermediate 2			end		
end					

BACK VAN. 8:28 = 5369

Grid Location	counts/___ sec	Grid Location	Counts/___ sec	Grid Location	Counts/___ sec
45 m W of 1-1	13795				
SOIL NEAR Rocco Red	15886 15365				
Stream	13074				
Channel	14407				

REMARKS: (All CTS/100 SEC)

11-3, 10-[illegible], 9-4, 11-4, 10-5, 9,5, 9-6, 9-7, 10-6, [illegible]

11-11, 11-8, 9-9, 10-[illegible], 10-9, 10-11, 9-10, 8,9, 10-[illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20 - 11

Phoswich Serial No.: _____ Window Setting: _____ Date: 8/19/85

Background Location: near VAN <. ... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
begin	8:40	509	begin	8:45	62616
intermediate 1	—	—	intermediate 1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	9:40	504	end	9:45	71737

BACK VAN: 8:42 - 930
END 9:42 - 771

Grid Location	counts/100 sec	Grid Location	Counts/___ sec	Grid Location	Counts/___ sec
9-1 •	576				
9-2 •	740				
9-3 •	613				
9-4 •	663				
9-5 •	942				
9-6 •	649				
4-18 •	656				
5-14 •	504				
4-9 •	920				
5-2 X	1113				
2-1 X	1395				
2-2 X	1430				
END					

REMARKS: background:

X 8:53 = 1635
• 8:55 = 967
• 8:56 = 734

Check:
X 9:[illegible]5 = 1193
X 9:30 = 1286
• 9:32 = 552
• 9:34 = 647
• 9:36 = 685

• SANDY .com
X TALUS

• indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): SANDIA CANYON STREAM CHANNEL SURVEY

Phoswich Serial No.: 004005 Window Setting: _____ Date: 8-13-8

Background Location: NEAR VAN <. ... Check Source { No. ____ Isotope ____ strength ____ date.

	Time	cts/ 100 sec		Time	cts/ 100 sec
begin	9:43	1490	begin	9:45	90619
* intermediate 1	—	—	* intermediate 1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	11:39	826	end	11:41	82930

Sample #	Distance FROM START (meters)	CP/100 secs	TIME		
(B) 1	0	1123	9:55		
2	500	1352	10:15		
3	1000	639	10:30		
4	1500	496	10:34		
5	2000	534	10:48		
6	2500	541	10:57		
7	3000	598	11:09		
8	3500	558	11:17		
9	4000	571	11:27		
10	4500	528	11:36		
(END)					

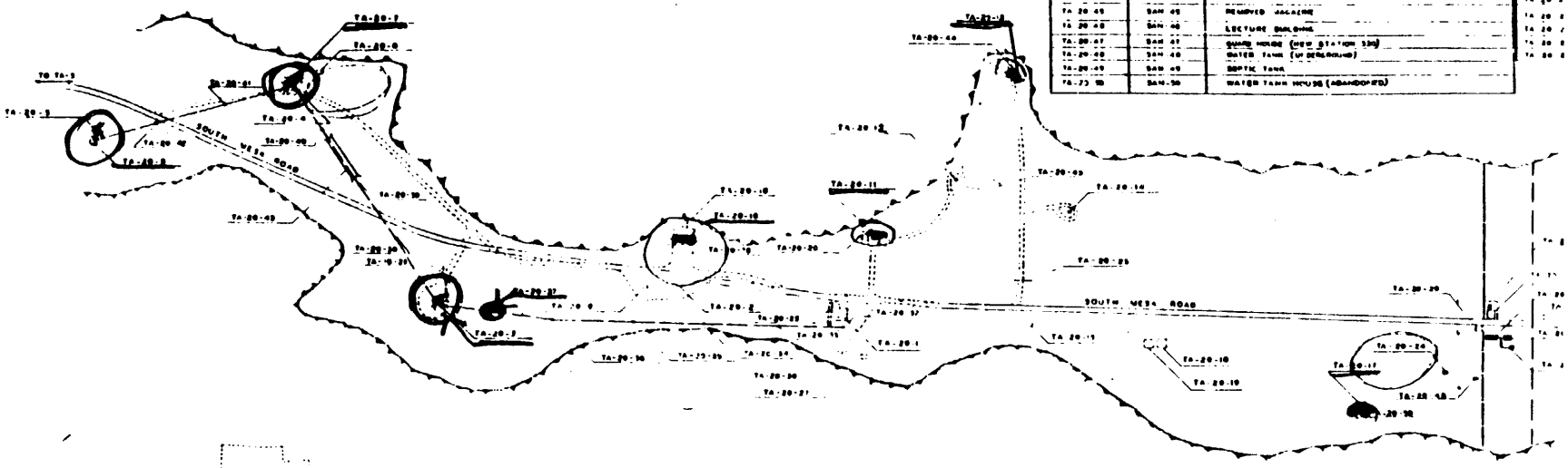
REMARKS: BACK VAN
(B) 9:45 = 586
(END) 11:43 = 230

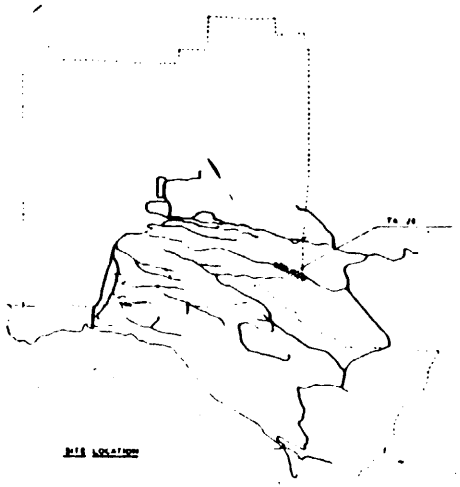
→ 300 m west of grid 1-1 sample #1 was TAKEN.

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

OFFICIAL USE

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-20-25	SAM-25	REMOVED BARRICADE
TA-20-26	SAM-26	REMOVED BARRICADE
TA-20-27	SAM-27	RETIRED SEPTIC TANK
TA-20-28	SAM-28	RETIRED [illegible] MANHOLE
TA-20-29	SAM-29	REMOVED PLATFORM & TOWER
TA-20-30	SAM-30	REMOVED SUBSTATION (3.10 KVA)
TA-20-31	SAM-31	REMOVED GUARD HOUSE
TA-20-32	SAM-32	RETIRED PULL BOX (D.C.)
TA-20-33	SAM-33	RETIRED PULL BOX (D.C.)
TA-20-34	SAM-34	RETIRED PULL BOX (D.C.)
TA-20-35	SAM-35	RETIRED PULL BOX (D.C.)
TA-20-36	SAM-36	RETIRED PULL BOX (D.C.)
TA-20-37	SAM-37	RETIRED PULL BOX (D.C.)
TA-20-38	SAM-38	RETIRED PULL BOX (D.C.)
TA-20-39	SAM-39	RETIRED PULL BOX (D.C.)
TA-20-40	SAM-40	RETIRED PULL BOX (D.C.)
TA-20-41	SAM-41	RETIRED PULL BOX (D.C.)
TA-20-42	SAM-42	RETIRED PULL BOX (D.C.)
TA-20-43	SAM-43	RETIRED CABLE SUSPENSION
TA-20-44	SAM-44	REMOVED 20 MM MOTMENT
TA-20-45	SAM-45	REMOVED MAGAZINE
TA-20-46	SAM-46	LECTURE BUILDING
TA-20-47	SAM-47	GUARD HOUSE (NEW STATION 330)
TA-20-48	SAM-48	WATER TANK (UNDERGROUND)
TA-20-49	SAM-49	SEPTIC TANK
TA-73-50	SAM-50	WATER TANK HOUSE (ABANDONED)





Grid locations

	done soil samples	done PHOSWICH
TA 20-6	"	"
TA 20-7	"	"
TA 20-3	"	"
TA 20-37	"	"
TA 20-16	"	"
TA 20-11	"	"
TA 20-13	"	"
TA 20-17	"	"

TA20-6

PHOSWICH SURVEY

Survey Location (also attach map): TA20-6

Phoswich Serial No.: PN346298 Window Setting: FULL WINDOW Date: 7/14/95

Background Location: BACK OF VAN <-- Check Source (No. 8472) Isotope Am241 strength 11[illegible] date –

	Time	cts/100 sec		Time	cts/100 sec
begin	1:35	2871	begin	1:40	1817515
intermediate 1	3:07	3229	intermediate 1	3:05	1828090
intermediate 2	—	—	intermediate 2	—	—
end	4:24	3382	end	4:21	1829244

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(B) TA20-6-1-8	8177	TA20-6-1-23	10172	TA20-6-2-15	9515
1-9	7920	2-1	9310	2-16	8057
1-10	7961	2-2	9019	2-17	8590
1-11	7803	2-3	9032	2-18	8231
1-12	7690	2-4	8433	2-19	8326
1-13	5784	2-5	8338	2-20	8075
1-14	8150	2-6	8293	2-21	7980
1-15	8414	2-7	8746	2-22	8444
1-16	8279	2-8	7534	(1) INT 2-23	7894
1-17	8337	2-9	7344	3-1	7987
1-18	8815	2-10	8075	3-2	8177
1-19	8654	2-11	8137	3-3	8247
1-20	8696	2-12	8110	3-4	8027
1-21	8540	2-13	7850	3-5	8509
1-22	9780	2-14	7951	3-6	8134

REMARKS:

CREW L. MARTINEZ
B. LAUCTES
E. KARLEN

BACKGRD TAKEN AT VAN

12-5 POISON IVY

* indicate by a notation on "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20-6

Phoswich Serial No.: _____ Window Setting: _____ Date: 7/15/85

Background Location: BACK OF VAN <.... Check Source: No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec
* Begin 7/16	9:43	2765
intermediate 1		
intermediate 2		
end		

(ON PAGE 3)

	Time	cts/100 sec
* begin 7/16	9:40	18302
~~intermediate~~ bkg #1		
intermediate 2		
end		

(ON PAGE 3)

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
TA20-6-3-7	8120	TA-20-6-3-22	8454	TA20-6-4-14	7197
3-8	7592	3-23	END 7878	4-15	7107
3-9	8057	4-1	B 7585	4-16	7257
3-10	8727	4-2	7389	4-17	7382
3-11	8572	4-3	7733	4-18	7311
3-12	8258	4-4	7539	4-19	7464
3-13	8134	4-5	7661	4-20	8252
3-14	7749	4-6	7472	4-21	8585
3-15	8090	4-7	7615	4-22	7741
3-16	8200	4-8	7506	4-23	7729
3-17	8507	4-9	7447	5-1	7973
3-18	8403	4-10	7648	5-2	7860
3-19	8383	4-11	7640	5-3	7895
3-20	8298	4-12	7544	5-4	7[illegible]
3-21	8723	4-13	7283	5-5	7[illegible]

REMARKS:

4/18 BKG. on side of VAN 100 sec, 9472

[illegible] 4-15

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA-[illegible]

Phoswich Serial No.: _____ Window Setting: _____ Date: 7/[illegible]

Background Location: BACK. EVAN < ... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
Begin	—	—	bgn intermediate bkg #1	10:00	1813582
* intermediate	10:43	2826	intermediate	2 11:00	1757670
intermediate	2 11:42	3006	~~[illegible]~~	3 1:25	1[illegible]
~~[illegible]~~	3 1:28	3139	4	2:22	1830244
4	2:25	3185			

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
TA20-6-5-6	7273	TA20-6-5-21	7040	TA20-6-6-13	7427
INT 1 5-7	7550	5-22	7107	6-14	7323
5-8	7311	5-23	7877	6-15	7322
5-9	7595	6-1	7934	6-16	7359
5-10	7891	6-2	7853	6-17	7142
5-11	7629	6-3	8365	6-18	7276
5-12	7350	6-4	7111	6-19	6569
5-13	7280	6-5	7143	6-20	6620
5-14	7123	6-6	INT 2 7417	6-21	6556
5-15	6956	6-7	INT 3 7632	6-22	6509
5-16	7267	6-8	7717	6-23	7506
5-17	7337	6-9	7418	7-1	7795
5-18	7302	6-10	7553	7-2	7719
5-19	7621	6-11	7791	7-3	8314
↓ 5-20	7246	↓ 6-12	7274	↓ 7-4	7565

REMARKS: [illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA 20-6

Phoswich Serial No.: _____ Window Setting: _____ Date: 7/16/85

Background Location: [illegible] <.... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
* begin			* begin		
intermediate 1			intermediate #1		
intermediate 2			intermediate 2		
→ end	4:00	3182	→ end	4:00	1822582

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
TA20-6-7-5	7079	TA20-6-7-20	6619	TA20-6-8-12	6595
7-6	7413	7-21	7309	8-13	7343
7-7	7502	7-22	7410	8-14	73[illegible]
INT 4 7-8	7525	7-23	6932	8-15	*6941
7-9	7270	8-1	7524	8-16	*6665
7-10	7096	8-2	6804	8-17	*6590
7-11	6814	8-3	7572	8-18	7024
7-12	7056	8-4	7265	8-19	6950
7-13	7821	8-5	6679	8-20	6807
7-14	7096	8-6	6921	8-21	6505
7-15	7906	8-7	6752	8-22	8168
7-16	7451	8-8	6826	8-23	7917
7-17	7847	8-9	6692	9-1	7545
7-18	6743	8-10	6904	9-2	6570
7-19	6764	8-11	7450	9-3	6563

END

REMARKS:

[illegible] 226 8397 ct
[illegible] 23 8181 "

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

Survey Location (also attach map): TA-6-6

Phoswich Serial No.: _____ Window Setting: _____ Date: 7/7/85

* Background Location: SOIL NEAR VAN <--- Check Source { No. ___ Isotope ___ strength ___ date ___

	Time	cts/100 sec		Time	cts/100 sec
begin	1128	9256	* begin	1226	1842615
* intermediate 1			intermediate 1		
intermediate 2			intermediate 2		
end			end	229	179[illegible] (RANDOM)

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/1 sec
TA20-6-9-4	6934	TA20-6-9-19	7466	TA20-6-10-11	[illegible]
9-5	6803	9-20	7213	10-12	[illegible]
9-6	7091	9-21	12922	10-13	9865
9-7	6866	9-22	11818	11-1	11430
9-8	6650	9-23	11193	11-2	11596
9-9	6783	10-1	13801	11-3	12521
9-10	7662	10-2	11533	11-4	11052
9-11	6952	10-3	12273	11-5	11498
9-12	6524	10-4	11287	11-6	11084
9-13	6725	10-5	9059	11-7	10264
9-14	6656	10-6	11810	11-8	12413
9-15	7096	10-7	12092	11-9	16240
9-16	7234	10-8	9768	11-10	[illegible]
9-17	6783	10-9	12514	11-11	10981
9-18	7654	10-10	14033	11-12	14757

REMARKS: [illegible] 100 NORTH OF [illegible] 100 sec: 6219, 7390, 7156, 7116, 6943, 7242, 7007, 6937, 8697, 310078, 11603, 11442, 24367, 17045, 15924, 11298

RANDOM [illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA 20-6

Phoswich Serial No.: _____ Window Setting: _____ Date: _____

Background Location: Soil near Van <. ... Check Source { No. ____ Isotope ____ strength ____ date.

	Time	cts/ 100 sec		Time	cts/ 100 sec
begin	8:32	15741	begin	8:38	1324658
* intermediate 1	—	—	* intermediate bag #1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	10:25	11922	end	10:43	1773504

* = stream [illegible] @12568 9165 (4)

Grid Location	counts/100 sec	Grid Location	Counts/ ___ sec	Grid Location	Counts/ ___ sec
TA20-6-1H3	15738				
12-1	16348				
12-2	16716				
12-3	15340				
12-4	15356				
12-5	16600				
12-6	17462				
12-7	17392				
12-8	14239				
12-9	13600				
12-10	13529				
12-11	13366				
12-12	11277				
12-13	12358				

REMARKS: 10:45-100 SEC. BACK. VAN. 6760

10:35 [illegible]

[illegible] 3085 11589 11565

10:40 100 sec

BKG 20736 NEAR VAN

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

page ___ of ___

Survey Location (also attach map): TA 2[illegible]-6 - Recheck [illegible]

Phoswich Serial No.: PV 346290 Window Setting: _____ Date: 7/19/[illegible]

Background Location: BACK OF VAN on Soil ... Check Source { No. [illegible]-1 Isotope Am 24 strength [illegible] date _____

	Time	cts/100 sec		Time	cts/100 sec
begin	9:15	18865	* begin	9:18	1802413
intermediate 1			intermediate 1		
intermediate 2			intermediate 2		
end	10:59	16419	end	10:57	1828603

10:05 BACK OF VAN 5019

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/ sec
RKG on Stream BANK	9:22 18165				
100 yd - [illegible]	16158				
	12008 10709				
RKG STREAM [illegible]	10801 12620				
[illegible]	12929 12534 (at 9:57)			Bank	7/19 [illegible]
12-2	(16716) 24043	SOIL SAMPLE	ALPHA BETA 28 406	5 min Standard alpha 19	[illegible]
12-3	(18340) 12893	SOIL SAMPLE	21 426	Beta 197	" " 491
9-12	(6524) 12377	Soil Sample	26 389	TA59 Soil alpha 37	
9-13	(6725) 17897	Soil Sample	24 380	B - 405	

REMARKS: Soil Samples analyzed on RICHARD [illegible]

M.C. → TA59 100 sec Before 4104 / cleaned with alcohol face [illegible]
" " " 4227 AFTER

BK of VAN 1688 1533

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA22-6 7/22/85

Phoswich Serial No.: PHOSWICH Recheck AFTER recalibrated. Window Setting: Date: 7/22/85

Background Location: Behind the van <. ... Check Source { No. ___ isotope Am 241 strength 5 mr date ___

	Time	cts/100 sec		Time	cts/100 sec
begin	1 55	7529	* begin	1:53	4,500 cts
* intermediate 1			intermediate bkg. #1		
intermediate 2			intermediate 2		
end			end		

Grid Location	counts/100 sec	Grid Location	Counts/___ sec	Grid Location	Counts/___ sec
12-2	6874				
12-3	7055				
7-12	5840				
9-13	5983				
NEAR VAN	7529				
ON VAN	2688				
[illegible]	25m W of grid 6418				
	" " " 6309				
	SR GAM Cal 6010				
	6135				
	10003				
4-11	7103				
3-11	7424				

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA 70-6

Phoswich Serial No.: [illegible] Window Setting: [illegible] Date: 7/[illegible]/[illegible]

Background Location: [illegible] NE-2 VAN < ... Check Source { No. ____ Isotope Am 241 strength 5 mr date.

	Time	cts/100 sec		Time	cts/100 sec
begin	9:12	7160	BACK VAN 2338 begin	9:15	[illegible]
* intermediate ①	10:32	7469	" " 2447 intermediate bkg. ①	10:34	[illegible]
intermediate 2	~	~	intermediate 2	~	~
end	11:10	7509	" " 2459 end	11:12	48960

B

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
9-21	6672	10-13	6495	12-2	7015
9-22	7118	11-1	6805	12-3	7186
9-23	6364	11-2	7180	12-4	7670
10-1	• 7346	11-3	7413	12-5	7348
10-2	• 5875	11-4 •	6981	12-6	7483
1[illegible]-3	• 6459	11-5	6757	12-7	7575
10-4	• 5996	11-6	7129	12-8	7319
10-5	• 5877	11-7	7030	12-9	6969
10-6	• 7096	11-8	7133	12-10	7294
10-7	• 6863	11-9	7065	12-11	7359
10-8	• 6234	11-10	6985	12-12	7272
10-9	• 7163	11-11	6722	End 12-13	7700
10-10	• 6347	11-12	6890		
10-11	• 5459	11-13	6594		
10-12	• 5878	① 12-1	7183		

REMARKS: RE-DO [illegible] due to recalibrated instrument
9:22 100 sec. Stream channel / go up from end.
5948
6161

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-7

PHOSWICH SURVEY

Survey Location (also attach map): TA 20-7

Phoswich Serial No.: PN346299 Window Setting: FULL WINDOW Date: 7/-4-8

Background Location: BACK OF VAN <--- Check Source { No. — Isotope HA 24 strength 55 mR date —

	Time	cts/100 sec
* begin	10:00	2764
intermediate 1	—	—
intermediate 2	—	—
end	11 34	2917

	Time	cts/100 sec
* begin	10	[illegible]
intermediate bkg #1	—	—
intermediate 2	—	—
end	1134	442354

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
B 1-1	9908	1-16	11741	2-14	10760
1-2	9264	1-17	11301	2-15	12241
1-3	8851	2-1	9010	2-16	11241
1-4	9010	2-2	9385	END 2-17	11501
1-5	9318	2-3	9176	B 3-1	9152
1-6	9470	2-4	9069	3-2	[illegible]
1-7	9313	2-5	9610	3-3	[illegible]
1-8	9519	2-6	9362	3-4	9054
1-9	9583	2-7	9553	3-5	8997
1-10	9627	2-8	9645	3-6	[illegible]
1-11	10067	2-9	10032	3-7	[illegible]
1-12	10197	2-10	9663	3-8	[illegible]
1-13	10168	2-11	9999	3-9	[illegible]
1-14	11435	2-12	10364	3-10	[illegible]
1-15	12073	2-13	10452	3-11	[illegible]

REMARKS: Bkgnd 30 m WEST OF PLOT @ 10:00 { ① 6787 ② 6870 50 m WEST OF PLOT ③ 7101

Bkgnd at VAN @ 10:00 8265

* indicate by a notation in "grid location" when intermediate background [redacted] source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): [illegible]

Phoswich Serial No.: [illegible] Window Setting: [illegible] Date: 7-[illegible]

Background Location: BACK VAN <--- Check Source (No. — Isotope [illegible] strength 55 date —

	Time	cts/[illegible] sec		Time	cts/1 sec
begin	2:00	[illegible]	begin	2:00	436477
* intermediate 1	3:05	2964	* intermediate 1	3:07	449759
intermediate 2	—	—	intermediate 2	—	—
end	4:09	3443	end	4:07	446366

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
3-12	9475	4-6	8513	4-21	10086
3-13	10520	INTERMEDIATE 1 4-7	9771	5-1	858
3-14	11946	4-8	10327	5-2	8656
3-15	11056	4-9	10197	5-3	8544
3-16	10927	4-10	10309	5-4	8853
3-17	12717	4-11	9658	5-5	8952
3-18	1164	4-12	10203	5-6	9014
3-19	11392	4-13	9858	5-7	9528
3-20	10484	4-14	10345	5-8	9620
3-21	10035	4-15	10943	5-9	9581
4-1	9345	4-16	11553	5-10	[illegible]
[illegible]	8510	4-17	11221	5-11	End 9483
[illegible]	7924	4-18	10802	5-12	B 7739
[illegible]	8603	4-19	10932	5-13	7598
4-5	8383	4-20	10663	5-14	7662

REMARKS: [illegible] grid

8311 @ 2:00

Bkgrnd behind van 10 m east of grid

7852 @ 3:05

Bkgrnd behind van 4:05 8606 10 m east of grid

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.) NOTE ON BACK →

PHOSWICH SURVEY

Survey Location (also attach map): TP 20-7

Phoswich Serial No.: PN 346298 Window Setting: FULL Date: 7/23/85

Background Location: BACK VAN <- ... Check Source { No. ___ Isotope AM241 strength 55 μ date?

	Time	cts/100 sec		Time	cts/100 sec
* begin	825	2205	* begin	821	434607
intermediate 1	1950	2614	intermediate #1	947	437546
intermediate 2			intermediate 2		
end	1118	2879	end	1116	425204

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/___ sec
5-15	7273	6-9	7207	7-3	7777
5-16	7537	6-10	7140	7-4	7565
5-17	6680	6-11	7000	7-5	7818
5-18	8389	6-12	7387	7-6	7382
5-19	9205	6-13	7500	7-7	7370
5-20	8825	6-14	7439	7-8	7558
5-21	8971	6-15	7192	7-9	7340
6-1	7205	6-16	7283	7-10	7253
6-2	7347	6-17	6975	7-11	7249
6-3	7474	6-18	7557	7-12	7104
6-4	7620	6-19	8645	7-13	6916
6-5	7749	6-20	8723	7-14	7418
6-6	7673	6-21	8531	7-15	7357
6-7	7536	7-1 (INT. 1)	7770	7-16	7185
6-8	7191	7-2	7829	7-17	[illegible]

REMARKS: BKgrnds:

Behind VAN: 7309 @ 8:19: 7-25-85.
7387 @ 9:45
7805 @ 11:14

Bkgrnds 30 m W of grid:
① 6246 @ 8:37
② 6625 @ 8 40

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): [illegible]

Phoswich Serial No.: PN 346298 Window Setting: FULL Date: 7/[illegible]

Background Location: BACK VAN <-- Check Source { No. — Isotope Am241 strength 5.5mr date —

	Time	cts/100 sec		Time	cts/ sec
Begin	1335	3591	begin	1340	447146
* intermediate 1	1445	3409	intermediate #1	1443	446087
intermediate 2	—	—	intermediate 2	—	—
end	3:40	3113	end	3:35	440911

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/ sec
7-19	7099	E-13	6928	9-7	7810
[illegible]-19	7494	E-14	7361	9-8	7705
[illegible]	7419	E-15	7579	9-9	7647
[illegible]	8108	E-16	7578	9-10	8150
E-1	7563	E-17	7710	9-11	7631
E-2	7862	E-18	7316	9-12	7536
E-3	6803	E-19	7659	9-13	7584
E-4	6940	E-20	7448	9-14	7520
E-5	6564	END E-21	7797	9-15	7874
E-6	6534	B 7-1	8032	9-16	8134
E-7	7004	9-2	[illegible]	9-17	7666
E-8	7194	[illegible]	7693	9-18	7671
E-9	7519	9-4	7624	9-19	7294
E-10	7519	9-5	7984	9-20	7700
E-11	6761	9-6	7791	9-21	7223
→ E-12	7141				

REMARKS:

BKgnd. Behind VAN 7/25/15 — 8376 @ 1340
" " " 8256 @ 1441

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA-0-7

Phoswich Serial No.: ON346298 Window Setting: E11 Date: 7-25-95

Background Location: _____ <-- Check Source { No. ✓ Isotope Am 241 strength 5.5 uCi date _____

	Time	cts/ 2 sec		Time	cts/ ____ sec
* begin			* begin intermediate bkg. #1		
intermediate 1			intermediate 2		
intermediate 2			end		
end					

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
10-1	7627	10-16	7842	11-10	778[illegible]
10-2	7619	10-17	7816	11-11	7[illegible]
10-3	7776	10-18	7467	11-12	7[illegible]
10-4	7939	10-19	7974	11-13	7069
10-5	8018	10-20	8073	11-14	7437
[illegible]	8244	INTERMEDIATE 2 10-21	7906	11-15	7709
10-7	7876	11-1	7943	11-16	7575
10-8	7667	11-2	7652	11-17	7879
10-9	7497	11-3	8008	11-18	7755
10-10	7615	11-4	8190	* 11-19	[illegible]
10-11	7851	11-5	8250	11-20	8125
10-12	7740	11-6	7931	11-21	7886
10-13	8188	11-7	7706	12-1	7622
10-14	7849	11-8	7440	END 12-2	7759
10-15	7910	11-9	7600	12-3 B	7294

REMARKS: Background behind vault 10 m [illegible] grid
@ 9:05 7618
7-25-95

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TH 20-7

Phoswich Serial No.: PN 34629 Window Setting: FULL Date: 7/29/85

Background Location: IN VAN <. ... Check Source { No. — Isotope Am 241 strength 5.5 μ

	Time	cts/100 sec		Time	cts/100 sec
begin	9:48	2514	begin	9:51	443274
* intermediate 1	—	—	* intermediate 1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	10:46	2501	end	10:44	444500

date -

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/___ sec
12-4	7171	12-19	7741		
12-5	6964	12-20	6620		
12-6	7055	12-21	6665		
12-7	6855	END			
12-8	6982				
12-9	6912				
12-10	6454				
12-11	6498				
12-12	6844				
12-13	7127				
12-14	6985				
12-15	6993				
12-16	6461				
12-17	6777				
12-18	6913				

REMARKS: Bkgrnd:

① 7/29/85 Bemina Van: 9:44 → 7726
7/29/85 " 10:40 → 7622

35 m WEST OF grid: 1
→ 9:56 ; 7/29/85 - 6949
9:54 ; 7/29/85 - 6910
10:00 ; 7/29/85 - 6956

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-3

PHOSWICH SURVEY

Survey Location (also attach map): TA20-3

Phoswich Serial No.: 004005 Window Setting: _____ Date: 8-9-85

Background Location: NEAR VAN <.... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ ___ sec		Time	cts/ ___ sec
* begin	—	—	* begin	—	—
intermediate 1	—	—	intermediate #1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	425	673	end	415	97206

Grid Location	counts/ 1 sec	Grid Location	Counts/ 1/10 sec	Grid Location	Counts/ 1/10 sec
1-1	1362	1-16	769	2-14	[illegible]
1-2	1243	1-17	765	2-15	687
1-3	1019	2-1	1525	2-16	92[illegible]
1-4	1270	2-2	1418	2-17	9[illegible]
1-5	1336	2-3	1803	(8-9-85)	[illegible]
1-6	1277	2-4	1673		
1-7	1207	2-5	1502		
1-8	1200	2-6	1378		
1-9	1052	2-7	1405		
1-10	1072	2-8	1312		
1-11	1007	2-9	1239		
1-12	953	2-10	1119		
1-13	777	2-11	1063		
1-14	792	2-12	1267		
1-15	876	2-13	885		

REMARKS: NOTE: Bkgrnd for TA20-37 and TA20-3 are the same for 8-9-85.

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

Survey Location (also attach map): TAZO - 3

Phoswich Serial No.: 004/005 Window Setting: _____ Date: 8-12-7

Background Location: near VAN <--- Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
begin	8:29	671	begin	9:27	78955
* intermediate 1	8:55	5124	* ~~intermediate~~ bkg. #1	8:57	147035
intermediate 2	10:43	477	intermediate 2	10:40	87630
end	10:52	1030	end	11:48	96737

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(C) 3-1	1474	3-16	862	4-14	1141
3-2	1736	3-17	922	4-15	747
3-3	2106	4-1	1215	4-16	815
3-4	1821	4-2	1117	4-17	1077
3-5	1879	4-3	1007	5-1	919
3-6	3089	4-4	1039	5-2	1023
3-7	4810	4-5	987	5-3	1019
INTERMEDIATE 1 3-8	1239	4-6	954	5-4	1020
3-9	1079	4-7	932	5-5	1061
3-10	996	4-8	1144	5-6	896
3-11	1099	4-9	1129	5-7	949
3-12	950	4-10	931	5-8	959
3-13	983	4-11	1044	5-9	1000
3-14	811	4-12	1073	5-10	1119
3-15	738	4-13	1116	5-11	1235

REMARKS: BACK VAN.
(B) - 8:31 = —
INT 1 - 8:59 = 5136
INT 2 - 10:42 = 234
END - 10:50 = 264

Bkgrnd: 35 m E of B.C.
9:03 = 2257
1:47 = 890
25 m E of Row 3
9:10 = 1357
1:44 = 862

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): [illegible]

Phoswich Serial No.: 004 [illegible] Window Setting: _____ Date: [illegible]

Background Location: _____ <--- Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ ____ sec
* begin		
intermediate 1		
intermediate 2		
end		

	Time	cts/ ____ sec
* begin		
intermediate #1		
intermediate 2		
end		

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
5-12	1010	6-10	1033	7-8	1041
5-13	858	6-11	1258	7-9	1047
5-14	942	6-12	1138	7-10	1073
5-15	814	6-13	903	7-11	1131
5-16	808	6-14	811	7-12	1075
5-17	930	6-15	721	7-13	1066
6-1	1000	6-16	784	7-14	1230
6-2	1095	6-17	871		
6-3	1151	7-1	1130	END	
6-4	1062	7-2	1018		
6-5	952	7-3	1250		
6-6	1091	7-4	1111		
6-7	1119	7-5	1120		
6-8	1312	7-6	994		
6-9	1289	7-7	1020		

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20-3

Phoswich Serial No.: 004005 Window Setting: — Date: 8-12-85

Background Location: near van <--- Check Source { No. ___ isotope ___ strength ___ date.

	Time	cts/100 sec
begin	1:04	571
* intermediate 1	2:45	561
intermediate 2	—	—
end	4:30	512

	Time	cts/100 sec
begin	1:12	90297
* intermediate bag #1	2:47	91018
intermediate 2	—	—
end	4:32	90217

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(B) 8-1	748	9-2	857	10-2	756
8-2	770	9-3	672	10-4	884
8-3	833	9-4	748	10-5	915
8-4	788	9-5	750	10-6	927
8-5	861	9-6	818	10-7	956
8-6	802	9-7	844	10-8	935
8-7	850	9-8	913	10-9	888
8-8	776	9-9	934	10-10	1022
8-9	935	9-10	875	10-11	854
8-10	946	9-11	954	10-12	798
8-11	1043	9-12	932	10-13	832
8-12	777	9-13	933	↑ 10-14	787
8-13	946	↑ 9-14	912	INT-1. ↓ 11-1	745
8-14	916	10-1	846	11-2	730
9-1	887	10-2	835	11-3	702

REMARKS: BACK VAN

(B) -1:10 = 197.

INT 1-2:49 = 155.

END-4:34 = 202

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA 20

Phoswich Serial No.: 004005 Window Setting: _____ Date: 8-12-85

Background Location: _____ <--- Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ ____ sec
* begin		
intermediate 1		
intermediate 2		
end		

	Time	cts/ ____ sec
* begin		
intermediate #1		
intermediate 2		
end		

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
11-4	741	12-5	911	13-6	992
11-5	727	12-6	859	13-7	1111
11-6	844	12-7	866	13-8	1114
11-7	858	12-8	925	13-9	1132
11-8	884	12-9	920	13-10	1048
11-9	970	12-10	1012	13-11	1076
11-10	976	12-11	931	13-12	1080
11-11	880	12-12	957	13-13	980
11-12	830	12-13	907	13-14	1045
11-13	888	12-14	922	14-1	833
11-14	763	13-1	875	14-2	1299
12-1	814	13-2	873	14-3	994
12-2	769	13-3	833	14-4	814
12-3	762	13-4	1001	14-5	942
12-4	701	13-5	1127	14-6	975

REMARKS:

END 4:27

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): 7A20-3

Phoswich Serial No.: 004005 Window Setting: _____ Date: 8-12-85

Background Location: NEAR VAN <.... Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
begin	8.20	2929	begin	8:22	75364
intermediate 1	—	—	intermediate bkg #1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	9.34	934	end	9:36	40971

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
14-7	1920	15-8	1556	16-14	1037
14-8	1717	15-9	2076	END	
14-9	3321	15-10	1889		
14-10	2166	15-11	1917		
14-11	2897	15-12	1635		
14-12	4466	15-13	1558		
14-13	3243	15-14	1774		
14-14	1811	16-6	2279		
15-1	1677	16-7	1800		
15-2	2379	16-8	1819		
15-3	2122	16-9	1351		
15-4	1683	16-10	1245		
15-5	1749	16-11	1148		
15-6	1600	16-12	1118		
15-7	1697	16-13	1140		

REMARKS: BACK VAN:
(B) 8:24 = 1038
END 9:38 = 783

Bkgrnds: 25 m E of Q3 1
8.45 = 1045

35 m E of BC.
449 = 1216

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-37

PHOSWICH SURVEY

Survey Location (also attach map): TA 28-37

Phoswich Serial No.: 004005 Window Setting: Date: 8-7 [illegible]

Background Location: NEAR VAN <.... Check Source { No. ___ Isotope ___ strength ___ date ___

	Time	cts/100 sec
* begin	3:24	763
intermediate 1	—	—
intermediate 2	—	—
end	4:14	594

	Time	cts/100 sec
* begin	3:26	99664
intermediate 1	—	—
intermediate 2	—	—
end	4:16	89181

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(B) 1-1	1195				
1-2	1097				
1-3	1013				
1-4	1004				
1-5	939				
1-6	980				
1-7	866				
1-8	873				
1-9	903				
2-1	1139				
2-2	1175				
(END) 2-3	1061				
STOP [illegible]					

REMARKS: BACK VAN: (B) 3:31 = 278. (END) 4:19 = 376.

Bikends away from Plot 25 m SW corner → 4:03 = 1467. (weather [illegible])

30 m W of Plot → 4:08 = 1112.

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TAZ 0-37

Phoswich Serial No.: 004005 Window Setting: _____ Date: 8-9-7

Background Location: NEAR VAN <... Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
* Begin	10.25	323	* begin	10:20	89277
intermediate 1	11:27	560	intermediate 1	11:23	82997
intermediate 2	1:40	728	intermediate 2	1:30	73087
end	4:25	673	end	4:15	97206

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(B) 2-4	1034	4-1	1045	5-7	10[illegible]
2-5	945	4-2	1003	5-8	1172
2-6	1040	4-3	1040	5-9	[illegible]
2-7	1153	4-4	926	6-1	980
2-8	1218	4-5	1033	6-2	1068
2-9	1155	4-6	1066	6-3	[illegible]
3-1	1074	4-7	1023	6-4	1230
3-2	979	4-8	1076	6-5	1099
3-3	1003	INT. 2 END 4-9	968	6-6	1087
3-4	1037	(5 AC.) 5-1	1148	6-7	1167
3-5	953	5-2	1030	6-8	1135
3-6	1025	5-3	990	6-9	987
3-7	1152	5-4	1089	7-1	[illegible]
3-8	1180	5-5	1086	7-2	[illegible]
3-9	1440	5-6	[illegible]	7-3	[illegible]

REMARKS: BACK VAN 10:22 = 248, @ 11:32 = 210, @ 1:35 = 224, @ 4:20 = 178

BACKGROUND 5 25 m N [illegible] 11:16 = 1093 ; 11:18 = 1077, @ 1:10 1379 ; 4:12 = 3[illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA 20 - 37

Phoswich Serial No.: _____ Window Setting: _____ Date: 8-9-85

Background Location: _____ Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ ____ sec		Time	cts/ ____ sec
begin			* begin		
* intermediate 1			intermediate #1		
intermediate 2			intermediate 2		
end			end		

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
	1202				
-5	1154				
-6	1096				
-7	1128				
-8	1081				
-9	1177				
END					

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-16

PHOSWICH SURVEY

Survey Location (also attach map): TA 20-16

Phoswich Serial No.: 205004 Window Setting: _____ Date: 7/[illegible]

Background Location: BK of VAN Check Source (No. ____ Isotope 241 Am, strength [illegible] date _

	Time	cts/100 sec
begin	132	249
intermediate 1	3:05	268
intermediate 2		
end	4:16	256

	Time	cts/100 sec
begin	130	110613
intermediate bkg #1	255	104528
intermediate 2		
end	11.17	104329

(B) 1:40 630
(A) 3:00 593
End 4:14 816

GRID NEAR 20. " " " " " "

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
1-5	2537/2049	4-6	1597	6-9	1856
1-6	2358	4-7	1730	7-1	1689
1-7	2575	4-8	1920	7-2	1339
2-4	3498	5-4	(1) 1137	7-3	1367
2-5	1825	5-5	1454	7-4	1436
2-6	2117	5-6	1443	7-5	1365
2-7	2373	5-7	1407	7-6	1825
2-8	2142	5-8	1761	7-7	1577
3-4	4488	6-2	1782	7-8	1368
3-5	6563	6-3	1583	7-9	1602
3-6	3891	6-4	1397	7-10	1910
3-7	1988	6-5	1503	8-1	1598
3-8	2235	6-6	1461	8-2	1750
4-4	2059	6-7	1027	8-3	1775
4-5	1347	6-8	1740	8-4	1645

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TH20-16

Phoswich Serial No.: C05004 Window Setting: _____ Date: [illegible]

Background Location: in VAN Check Source {No. ____ Isotope AM241 strength [illegible] date ____

	Time	cts/100 sec		Time	cts/100 sec
begin	209	244	begin	207	10169
intermediate 1			intermediate 1		
intermediate 2			intermediate 2		
end →	3:40	289	end	3:37	10323

B. 206 650 Sand [illegible] VAN
end 3:3[illegible] 762

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
8-5	1442	9-9	1487	11-2	15[illegible]
8-6	1313	9-10	1589	11-3	1657
8-7	846	9-11	1467	11-4	[illegible]
8-8	1281	10-1	1416	11-5	107[illegible]
8-9	1880	10-2	1593	11-6	113[illegible]
8-10	1873	10-3	1574	11-7	951
8-11	end 1701	10-4	1501	11-8	994
9-1	B 7/31/85 1557	10-5	949	11-9	1526
9-2	1658	10-6	855	11-10	1575
9-3	1723	10-7	807	11-11	1410
9-4	1353	10-8	756		
9-5	1150	10-9	1225		
9-6	1091	10-10	1325		
9-7	790	10-11	1290		
9-8	1061	11-1	1190		

REMARKS: [illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-11

PHOSWICH SURVEY

page 1 of

Survey Location (also attach map): TA 70-1 L-5

Phoswich Serial No.: 605004 Window Setting: Date: 8/11/85

Background Location: NEAR VAN <---- Check Source {No. ___ Isotope ___ strength ___ date.

	Time	cts/100 sec		Time	cts/100 sec
begin	9:55	570	begin	9:48	95858
intermediate 1	1106	644	intermediate 1	1100	91613
intermediate 2	1:18	771	intermediate 2	1110	89817
end	—	—	end	—	—

B: 9:54 BACK OF VAN 157
INT. 2: 1105 196
1:18 196

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
1-9	1475	2-8	1754	3-5	1453
1-10	1410	2-9	822	3-6	1478
1-11	1210	2-10	845	[illegible]	1168
1-12	980	2-11	841	[illegible]	951
1-13	1337	2-12	836	[illegible]	1018
1-14	1144	2-13	718	3-10	884
1-15	1000	2-14	849	3-[illegible]	971
1-16	935	2-15	877	[illegible]	979
2-1	2074	2-16	939	[illegible]	936
2-2	2058	2-17	729	[illegible]	678
2-3	1665	2-18	594	[illegible]	576
2-4	1739	intermediate 1 3-1	2050	3-16	652
2-5	2024	3-2	1821	3-17	579
2-6	1782	3-3	1348	intermediate 2 3-18	683
2-7	1749	3-4	1352	start 1:22 4-1	1840

REMARKS: cliff face background (2500 + 2770 @ 1055 on 8/4/85. (FRESH FACE).
- TALUS SOIL IN FRONT OF CLIFF: 2076

* indicate by a notation in "grid location" when intermediate background and source checks were made (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): T1-20-11

Phoswich Serial No.: 005004 Window Setting: _____ Date: 8/1/85

Background Location: NEAR VAN <--- Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/ ____ sec
begin	2:10	663	begin	1:03	93157
intermediate 1	12:52	568	intermediate 1	2:50	96958
intermediate 2	—	—	intermediate 2	—	—
end	4:30	714	end	4:28	106284

B = BACK OF VAN 2:08 = 211 | INT 1: 2:49 = 193 | END: 4:33 = 188

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
4-2	1690	4-17	773	5-14	805
4-3	1468	4-18	727 START — 2:00	5-15	923
4-4	1466	5-1 (B)	1692	5-16	766
4-5	1164	5-2	1528	5-17	773
4-6	848	5-3	1387	5-18 INT 1	789
4-7	983	5-4	1123	6-1	1658
4-8	997	5-5	874	6-2	1216
4-9	984	5-6	1362	6-3	924
4-10	733	5-7	1183	6-4	1016
4-11	981	5-8	937	6-5	1243
4-12	769	5-9	754	-- --	1200
4-13	613	5-10	770	6-7	1173
4-14	632	5-11	921	6-8	984
4-15	713	5-12	980	6-9	748
4-16	895	5-13	933	6-10	877

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20-11 (HOT STORAGE)

Phoswich Serial No.: 005004 Window Setting: Date: 8/1/85

Background Location: NEAR VAN Check Source (No. ___ Isotope ___ strength ___ date ___

	Time	cts/___ sec		Time	cts/100 sec
begin	822	442	begin	8:17	90172
intermediate 1			intermediate 1		
intermediate 2			intermediate 2		
end			end		

BACK VAN (B) 820 → 216

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
6-11	1005	7-8	928	8-5	1249
6-12	1033	7-9	917	8-6	1210
6-13	851	7-10	834	8-7	1117
6-14	897	7-11	839	8-8	1090
6-15	743	7-12	1014	(8-1-85) END 8-9	592
6-16	754	7-13	955	START 9:10 (B) 8-10	1026
6-17	832	7-14	947	8-11	996
6-18	983	7-15	869	8-12	890
7-1	1512	7-16	825	8-13	922
7-2	1032	7-17	833	8-14	951
7-3	1084	7-18	777	8-15	1020
7-4	1148	8-1	1169	8-16	1008
7-5	1171	8-2	969	8-17	1188
7-6	1097	8-3	1182	(B) 8-18	
7-7	999	8-4	1418	9-1	

REMARKS: BACKgnd 35 m West of plot. 8/1/85 → ① 1214 @ 4:05 ② 1222 @ 4:07 ③ 1227 @ 4:10

8-10 thru 9-1 were taken on 8/2/85 AND [illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20 - 11 (A.S.)

Phoswich Serial No.: 505004 Window Setting: _____ Date: 8/2/85

Background Location: [illegible] Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/[illegible] sec		Time	cts/[illegible] sec
begin	[illegible]	[illegible]	begin	[illegible]	[illegible]
* intermediate 1	1035	[illegible]	intermediate 1	[illegible]	[illegible]
intermediate 2	[illegible]	[illegible]	intermediate 2	[illegible]	[illegible]
end	11 40	[illegible]	end	[illegible]	[illegible]

Grid Location	counts/[illegible] sec	Grid Location	Counts/____ sec	Grid Location	Counts/____ sec
9-2	[illegible]	9-17	1090	10-14	
9-3	[illegible]	9-18	986	10-15	
9-4	6853	10-1	[illegible]	10-16	
9-5	[illegible]	10-2	[illegible]	10-17	[illegible]
9-6	[illegible]	10-3	[illegible]	10-18	[illegible]
9-7	1872	10-4	[illegible]	(3) 8-5-85 11-1	11 53
9-8	[illegible]	10-5	973	11-2	11 91
9-9	[illegible]	10-6	[illegible]	11-3	10 77
9-10	1710	10-7	[illegible]	11-4	10 78
9-11	[illegible]	10-8	[illegible]	11-5	10 64
9-12	1352	10-9	[illegible]	11-6	10 86
9-13	[illegible]	10-10	[illegible]	11-7	9 39
9-14	[illegible]	10-11	[illegible]	11-8	11 10
9-15	773	10-12	[illegible]	11-9	10 26
9-16	[illegible]	10-13	[illegible]	11-10	10 18

REMARKS: [illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TP 20-1

Phoswich Serial No.: 00500 Window Setting: _____ Date: 8/2/17

Background Location: NEAR VAN <--- Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
Begin	830	714	Begin	833	8992
* intermediate 1	1955	591	* intermediate 1	958	86989
intermediate 2	10:44	509	intermediate 2	1039	90282
end			end		

BACK VAN (B) 9:37 = 172
INT 2 10:00 = 225 . END 10 41 = 199.

Grid Location	counts/100sec	Grid Location	Counts/___sec	Grid Location	Counts/___sec
11-11	966	12-8	947	13-5	797
11-12	846	12-9	934	13-6	900
11-13	915	12-10	957	13-7	784
11-14	941	12-11	904	13-8	817
11-15	1018	12-12	854	13-9	874
11-16	925	12-13	944	13-10	858
11-17	851	12-14	901	13-11	819
11-18	938	12-15	879	13-12	899
12-1	874	12-16	1003	13-13	1061
12-2	793	12-17	925	13-14	972
12-3	954	12-18	849	13-15	935
12-4	963	13-1	936	13-16	912
12-5	900	13-2	939	13-17	979
12-6	876	13-3	835	13-18	809
12-7	863	13-4	786	END 10:37	

REMARKS: 35 m west of Plot
BKgnds: (1) 8 41: 1249
(2) 8 44: 1123
(3) 8 46: 960

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-13

PHOSWICH SURVEY

Survey Location (also attach map): TA20-13

Phoswich Serial No.: 005224 Window Setting: _____ Date: 8/5/82

Background Location: NEAR VAN <. ... Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
Begin	1052	389	* begin	1035	90282
* intermediate 1	11:44	482	intermediate #1	1147	90279
intermediate 2	1:30	504	intermediate 2	1:35	91627
end	—	—	end	—	—

NEAR VAN (D) 10 41 = 198 INT#1 1146 = 161 || INT#2 132 = 127.

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(B) 1-1	1543	4-1	1061	5-8	1634
1-2	1511	4-2	940	6-1	1665
1-3	1623	INT. 1 STOP 4-3	1138 1243	6-2	1141
1-4	1611	START 4-4	1141 1620	6-3	979
2-1	1226	4-5	1516	6-4	1042
2-2	1478	4-6	1891	6-5	1080
2-3	1524	4-7	1751	6-6	1535
2-4	1558	4-8	1849	6-7	1618
3-1	1139	5-1	1271	6-8	1668
3-2	1120	5-2	952	7-1	1573
3-3	1135	5-3	573	7-2	1395
3-4	1571	5-4	1293	7-3	970
3-5	1530	5-5	1633	7-4	1203
3-6	1554	5-6	1611	7-5	1474
3-7	1807	5-7	1694	7-6	2015

REMARKS: B [illegible] 1487 [illegible] 1566 [illegible] 409 = 3 [illegible] 1479 [illegible] 2105 25 15

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TF20-13

Phoswich Serial No.: 005 00L Window Setting: _____ Date: 8/5/95

Background Location: NEAR VAN <--- Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec
* begin	255	481
intermediate 1	—	—
intermediate 2	—	—
end	4:26	628

BACK VAN (E) 257 = 146.
END 429 = 19.

	Time	cts/100 sec
* begin	300	90261
intermediate bkg. #1	—	—
intermediate 2	—	—
end	4:31	91174

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
7-7	2392	9-4	1129	12-10	173-
7-8	2062	9-5	1122	11-1	1664
7-9	1773	9-6	1161	11-2	200-
8-1	2157	9-7	1488	11-3	1622
8-2	889	9-8	1504	11-4	764
8-3 STOP 250	1136	9-9	1643	11-5	1120
(B) 8-4	3:01 est 1282	10-1	1909	11-6	1188
8-5	1109	10-2	1898	11-7	868
8-6	1363	10-3	1538	11-8	1450
8-7	1776	10-4	862	11-9	1730
8-8	1426	10-5	1174	11-10	1681
8-9	1823	10-6	1057	12-1	1770
9-1	1677	10-7	1388	12-2	18[illegible]
9-2	1451	10-8	1606	12-3	158[illegible]
9-3	1242	10-9	1654	12-4	841
				END 8/5/95 @ 4:21	

REMARKS:

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA20 - 13

Phoswich Serial No.: 005004 Window Setting: _____ Date: 8/6/85

Background Location: Van Van <.... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
begin	245	656	* begin	240	93302
intermediate 1	—	—	intermediate bag #1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	352	493	end	350	88963

BKG VAN: ② 2 3r = 226 ▲
END 3r = 179.

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
② 12-5	1421	13-10	1838		
12-6	1448	14-1	1849		
12-7	1277	14-2	1972		
12-8	1885	14-3	1693		
12-9	1700	14-4	1419		
12-10	1853	14-5	1045		
13-1	1720	14-6	1310		
13-2	1970	14-7	1035		
13-3	1643	14-8	1524		
13-4	1565	14-9	1506		
13-5	1347	14-10	1888		
13-6	1324	END 8/6/85 —			
13-7	1168				
13-8	1685				
13-9	1662				

REMARKS: BKgnds 15 m NW corner 3.45 = 1095.
25 m 3.49 = 1454.

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TA20-17

PHOSWICH SURVEY

Survey Location (also attach map): TA [illegible] 17

Phoswich Serial No.: [illegible] Window Setting: _____ Date: 8-7-[illegible]

Background Location: NEAR VAN < ... Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
begin	910	1315	begin	915	~~1353~~
* intermediate 1	10:05	1156	* intermediate 1	1007	4456
intermediate 2	—		intermediate 2	—	—
end	1045	1109	end	10:47	8494

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/___ sec
(B) 1-2	1153	[illegible]	1175		
1-3	1244	[illegible]	2038		
1-4	1358	[illegible]	2031		
1-5	1134	[illegible]	1621		
1-6	1180	[illegible]	1449		
1-7	1766	[illegible]	114		
1-8	1200	4-2	1247		
[illegible]	1149	4-3	1148		
[illegible]	1039	4-4	1221		
[illegible]	1130	4-5	1264		
[illegible]	984	4-6	1143		
[illegible]	1191	4-7	1292		
[illegible]	1208	[illegible]	1224		
[illegible]	[illegible]	END			
[illegible]	1159				

REMARKS:

[illegible] = 1[illegible] (10m)

[illegible] = 326 20m

(B) 9:13 = 394

INT 1 10:10 = [illegible]

INT 2

END 10:43 = 331

Bkgrnds 10 m EAST of P[illegible]

9:20 = 1205

9:22 = 1595

* indicate by a notation in "grid location" when intermediate background and source checks were made (Do at least once per hour)

PHOSWICH SURVEY

Survey Location (also attach map): TA20-17

Phoswich Serial No.: 005004 Window Setting: _____ Date: 8/7/75

Background Location: NEAR VAN <--- Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/100 sec		Time	cts/100 sec
Begin	1:25	1256	* begin	1:30	10775
* intermediate 1	—	—	~~intermediate~~ bkg. #1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	3:02	1024	end	3:06	102531

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(B) 5-2	1131	7-1	1158	9-4	1012
5-3	1121	7-2	1247	9-5	1273
5-4	1124	7-3	1246	9-6	1494
5-5	1396	7-4	1438	10-1	1282
5-6	1309	7-5	1302	10-2	1298
5-7	1366	7-6	1242	10-3	1360
5-8	1312	8-1	1106	10-4	1332
6-1	1326	8-2	1056	10-5	1448
6-2	1141	8-3	1172	11-3	1329
6-3	1180	8-4	1004	11-4	1281
6-4	1276	8-5	1213	END	
6-5	1129	8-6	1291		
6-6	1353	9-1	1153		
6-7	1340	9-2	1350		
6-8	1334	9-3	1195		

REMARKS: (B) 1:27 = 315
BACK VAN (END) 3:04 = 321

Bkgrnd
10 m WEST ⇒ 1:25 = 1294
25 m " ⇒ 1:22 = 1061
10 m ⇒ 3:04 = 1165
25 m ⇒ 3:11 = 1265

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PAJARITO CANYON

firing points 1, 2 & 3

(4 & 5 no phoswich done)
courtright ordered us out!
Grid & Soils done! Refer to page 23 in
LA NOTE BOOK Y863.

PHOSWICH SURVEY

Survey Location (also attach map): FP. 1

Phoswich Serial No.: 004005 Window Setting: — Date: 8/20/85

Background Location: NEAR VAN <.... Check Source { No. ___ Isotope ___ strength ___ date ___

	Time	cts/100 sec		Time	cts/100 sec
* begin	8:37	531	* begin	8:[illegible]	77137
intermediate 1	10:14	595	intermediate bkg. #1	10:12	72693
intermediate 2	—	—	intermediate 2	—	—
end	11:47	551	end	11:43	94224

VAN BEGIN 8:25 = 201
END 10:14 = 141
11:48 = 157

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
(a) 1-1	572	2-5	566	3-9	597
1-2	1404*	2-6	561	3-10	522
1-3	546	2-7	570	3-11	582
1-4	508	2-8	1245*	4-1	46[illegible]
1-5	498	2-9	489	4-2	55[illegible]
1-6	494	2-10	507	4-3	484
1-7	1249*	2-11	455	4-4	52[illegible]
1-8	974*	3-1	494	4-5	492
1-9	444	3-2	528	4-6	658
1-10	520	3-3	538	4-7	56[illegible]
1-11	664	3-4	624	4-8	54[illegible]
2-1	527	3-5	565	4-9	6[illegible]3
2-2	516	3-6	503	4-10	[illegible]
2-3	533	3-7	568	4-11	58[illegible]3
2-4	1075*	3-8	551	INT 2 5-1	489

REMARKS

Blends: 25 m [illegible]

8:37 = 593	10:05 = 488	11:30 = 610	[illegible]
*8:35 = 1278	10:07 = 457	[illegible] = 458	[illegible]
*8:37 = 1096	10:09 = 458	[illegible] = 572	[illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): [illegible]

Phoswich Serial No.: 005004 Window Setting: — Date: 8/[illegible]

Background Location: _____ <.... Check Source { No. ____ Isotope ____ strength ____ date ____

	Time	cts/ ____ sec
begin		
* intermediate 1		
intermediate 2		
end		

	Time	cts/ ____ sec
begin		
* intermediate 1		
intermediate 2		
end		

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
5-2	766	6-6	591	7-10	527
5-3	594	6-7 *	near: 1061 @1052 1327 @1050	7-11	883 *
5-4	587	6-8	554	8-1	555
5-5	1132	6-9	574	8-2	513
5-6	698	6-10	643	8-3	506
5-7	571	6-11	543	8-4	589
5-8	3868 [illegible]	7-1	493	8-5	604
5-9	604	7-2	558	END	
5-10	545	7-3	526		
5-11	652	7-4	684		
6-1	459	7-5	524		
6-2	502	7-6	582		
6-3	533	7-7	714		
6-4	616	7-8	566		
6-5	529	7-9	875		

REMARKS: 5-8 Debris, gamma activity, high reading.

8-27-[illegible] [illegible] 7-1 [illegible] 07 = 621
6-7 [illegible] 09 = 634
5-8 [illegible] 1 = 563

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): FPI

Phoswich Serial No.: 005004 Window Setting: — Date: 8-26-[illegible]

Background Location: NEAR VAN <. ... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ ____ sec		Time	cts/ ____ sec
begin	1:16	548	* begin	1:18	80754
* intermediate 1			~~intermediate bkg. #1~~		
intermediate 2			intermediate 2		
end	2:52	438	end	2:54	87950

BACK VAN. 1:14 = 704
2:58 = 261

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
8-6	1502; 1698 *	9-10	585	11-3	551
8-7	594	↑ 9-11	531	11-4	599
8-8	619	↓ 10-1	516	11-5	621
8-9	595	10-2	528	11-6	581
8-10	565	10-3	575	11-7	614
8-11	561	10-4	633	11-8	660
9-1	508	10-5	608	11-9	565
9-2	575	10-6	631	11-10	743
9-3	540	10-7	514	↑ 11-11	605
9-4	632	10-8	570	END	
9-5	563	10-9	667		
9-6	605	10-10	605		
9-7	959 *	10-11	644		
9-8	595	11-1	520		
9-9	585	-2	562		

REMARKS: BKgrnds: 1:20 = 690, 1:22 = 2179, 1:24 = 446 | 2:45 = 460, 2:47 = 515, 2:50 = 425 | 8-27-85 re-check 9-7 [illegible] = 6[illegible] 9-6 [illegible] = 6[illegible]

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): FP-2,3

Phoswich Serial No.: 005004 Window Setting: _____ Date: 2-27-[illegible]

Background Location: near van <.... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/100 sec
* begin	9.23	426
intermediate 1	10:15	420
intermediate 2	—	—
end	11:40	445

BEFIC VAN 9:25 = 180
10:13 = 137

	Time	cts/100 sec
* begin	8:27	54588
intermediate #1	10:11	76594
intermediate 2	—	—
end	11:38	71002

11:42 = 195

Grid Location	counts/___ sec	Grid Location	Counts/___ sec	Grid Location	Counts/___ sec
1-1	486	2-5	478	3-9	511
1-2	484	2-6	510	3-10	508
1-3	① 1885; ② 2335. AFTER 517	2-7	583	3-11	504
1-4	522	2-8	552.	4-1	555
1-5	509	2-9	598	4-2	601
1-6	552	2-10	539	4-3	477
1-7	511	2-11	418	4-4	528
1-8	534	3-1	566	4-5	520
1-9	487	3-2	517	4-6	511
1-10	589	3-3	541	4-7	454
1-11	510	3-4	482	4-8	527
2-1	456	3-5	524	4-9	481
2-2	573	3-6	538	4-10	527
2-3	542	3-7	479	4-11	473
2-4	672	3-8	550	ENT 1	

REMARKS * ALL CTS/100 S
1-3 → F-- 3 CTS IN SAME SPOT.

BKgnds:
Eastern 20m → 8:29: 542
35m → 8:31: 571
40m → 33: 568
10:05: 558
10:07: 589
10:09: 569
11:31 = 596
11:33 = 574
11:35 = 569
[illegible] = 11:24: 595

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): EP-2,3

Phoswich Serial No.: 005014 Window Setting: _____ Date: 8-27-8

Background Location: _____ <--- Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ ____ sec
* begin		
intermediate 1		
intermediate 2		
end		

	Time	cts/ ____ sec
* begin		
intermediate 1		
intermediate 2		
end		

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
5-1	489	6-5	529	7-8	412
5-2	528	6-6	480	7-10	459
5-3	519	6-7	466	↑ 7-11	515
5-4	523	6-8	466	↓ 8-1	[illegible]
5-5	560	6-9	504	8-2	419
5-6	452	6-10	581	END 8-3	434
5-7	521	6-11	534		
5-8	497	7-1	494		
5-9	490	7-2	538		
5-10	441	7-3	440		
5-11	507	7-4	474		
6-1	545	7-5	456		
6-2	625	7-6	438		
6-3	558	7-7	422		
6-4	520	7-8	473		

REMARKS: All CTS/100 S

[illegible] (at the same location).

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): FP2, 3

Phoswich Serial No.: 005004 Window Setting: _____ Date: 8-2-

Background Location: near van <.... Check Source { No. ____ isotope ____ strength ____ date ____

	Time	cts/ 8 sec		Time	cts/ ____ sec
begin	1:13	555	* begin	1:17	14829
* intermediate 1	—	—	intermediate bkg. #1	—	—
intermediate 2	—	—	intermediate 2	—	—
end	2:33	452	end	2:33	75038

BACK VAN - 1:15 = 151
2:33 = 128

Grid Location	counts/ ____ sec	Grid Location	Counts/ ____ sec	Grid Location	Counts/ ____ sec
8-4	427	9-8	532		
8-5	410	9-9	494		
8-6	440	9-10	609		
8-7	471	9-11	519		
8-8	470	(B)			
8-9	491				
8-10	488				
8-11	479				
9-1	513				
9-2	528				
9-3	556				
9-4	586				
9-5	572				
9-6	509				
9-7	584				

REMARKS: (All counts / min corrected)

Bkgrds

1:9 =	543	2:27 =	605
1:21 =	609	2:29 =	583
1:23 =	609	2:30 =	618

END

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

TH

PHOSWICH SURVEY

Survey Location (also attach map): TA33-26 — Vm
DN346298

Phoswich Serial No.: 108C06 Window Setting: FULL Date: 10/23/85

Background Location: TA33-33 TANK near RD Check Source { No. ____ Isotope Am241 strength ____

	Time	cts/100 sec		Time	cts/100 sec
begin	1:45	4380 4222	begin	1:50	446000 446697
* intermediate 1			intermediate 1	3:45	440365 441128
intermediate 2			intermediate 2		
end *	4:25 GRD	4443 4302	end	4:20	441292 442061

date -

SOURCE CHECK BEFORE DOING TA33-26

	Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
1	OH3 Ref. 119.15	445202	N-5	13192	N-140	5590
2	9.18	445468	N-10	8454	N-150	5509
3	9.20	446493	N-15	7133	N-160	62[illegible]
4	9.22	447074	N-20	6344	N-170	5779
5	9.24	446596	N-30	9534	N-180	6077
6	[illegible]	447975	N-40	7534	N-190	5990
7	9.28	448298	N-50	6369	N-200	6248
8	9.30	446722	N-60	6205	N-210	5813
			N-70	5443	① NE-5	12038
			N-80	6032	NE-10	9322
			N-90	5545	NE-15	8193
			N-100	5665	NE-20	7499
			N-110	5701	NE-30	6189
			N-120	5469	NE-40	6456
			N-130	5200	NE-50	6221

REMARKS: Back of TRUCK BET. STEEL 1:55 - 100 sec. ① 864 ② 952 ③ 1170 ② 1151
End: 4:45 ① 1144 ② 1130

EX - 1170 Burn / 100 sec.
A 5060 B 5110 C 5213

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour.)

PHOSWICH SURVEY

Survey Location (also attach map): TA 33-26

Phoswich Serial No.: 108006 Window Setting: FULL Date: 10/24/85

Background Location: TA33-32 TANK farm Check Source (No. ___ isotope AM241 strength ___ date ___

	Time	cts/100 sec		Time	cts/100 sec
Begin 10/24/85	10:30	4593 4395	begin	10:35	442531 40[illegible]
* intermediate 1	12:10	4630 4462	intermediate 1	12:15	44397 44478
intermediate 2			intermediate 2		
end			end		

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
NE-60	6329	E-80	5430	S-15	8223
NE-70	6085	E-90	5652	S-20	9337
NE-80	6316	E-100	5618	S-30	7003
NE-90	6031	SE-5	Begin 10/24/85 10:50 10841	(No S40 PAVEMENT) S-50	6346
NE-100	6231	SE-10	8641	S-60	6934
NE-110	6332	SE-15	5794	S-70	6687
E-5	12645	SE-20	6535	S-80	6857
E-10	10664	SE-30	7823	S-90	6814
E-15	8628	SE-40	7589	SW-5	15188
E-20	6217	SE-50	6719	SW-10	12:27 9901
E-30	7736	SE-60	6604	SW-15	9135
E-40	10524	SE-70	6350	SW-20	8733
E-50	6644	SE-80	6552	SW-30	7850
E-60	5498	S-5	11091	SW-40	6336
E-70	5477	S-10	9845	SW-50	6130

REMARKS: BACK RUBBER VAN 100 sec. 10/24/85 - Begin 10:40 1. 1521 2. 1361 3. 1465 12:20 1. 1606 2. 1543 3. 1518

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour)

PHOSWICH SURVEY

Survey Location (also attach map): TA33-26 UM

Phoswich Serial No.: 108006 Window Setting: FULL Date: 10/[illegible]

Background Location: TA33-33 TANK Near Rd. Check Source { No. ___ Isotope AM 241 strength ___ date

	Time	cts/100 sec		Time	cts/100 sec
begin			begin intermediate bkg. #1		
* intermediate #1					
intermediate #2	1:22	4577 4702	4522 intermediate #2	1:30	450888 452105 451[illegible]
end *	2:20	4538 4566	end *	2:25	451336 450389

Grid Location	counts/100 sec	Grid Location	Counts/100 sec	Grid Location	Counts/100 sec
SW-60	6498	NW-15	7343		
SW-70	6626	NW-20	② * 1:45 6664		
SW-80	6448	NW-30	7104		
SW-90	6595	NW-40	6662		
W-5	20932	NW-50	6141		
W-10	9195	NW-60	6777		
W-15	14747	NW-70	6649		
W-20	11238	NW-80	7345		
W-30	9849	NW-90	7351		
W-40	6958	NW-100	6518		
W-50	6957	Center Hub	10954		
W-60	6509	N1 meter Center	12378		
W-70	6308	E1 meter "	8638		
NW-5	13097	S1 meter "	13960		
NW-10	8429	W1 " "	12971		

REMARKS: *BACK of VAN #2 1:38 10/4/85 *end 2:30

1.1508 2.1544 3.1477

1.1550 2.1510 3.1409

* indicate by a notation in "grid location" when intermediate background and source checks were made. (Do at least once per hour)

W57H

CHECK SOURCE

CONSISTENT

CHECK IN BACK OF VAN.

FORCE

RANGE OFFICER
BRAD PHILLIPS 7-6427
VICTOR HOLTGREWE

PHOSWICH REPAIR
7-4270 JACK MALCOMSON

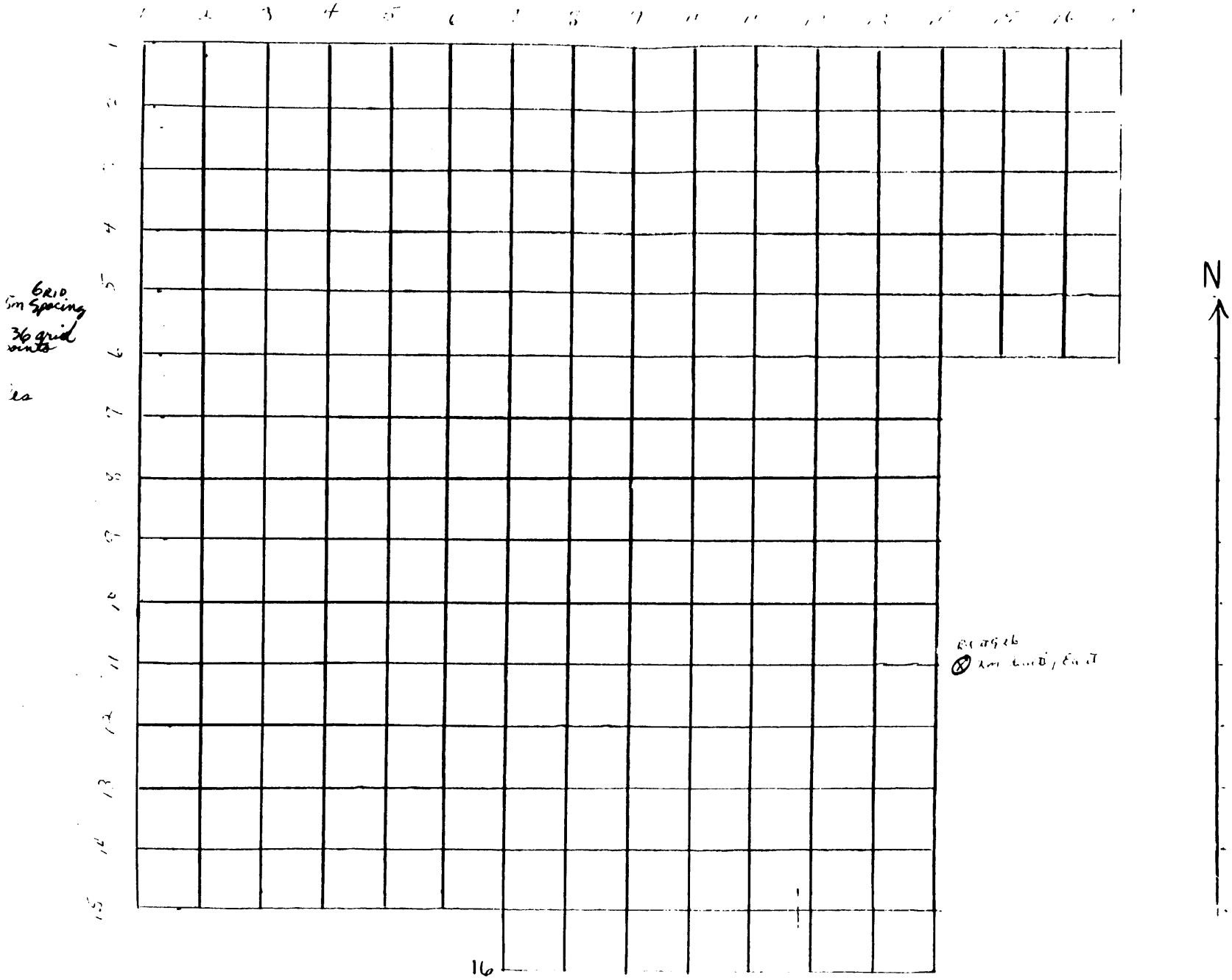
TA20-3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	+177	+58	-166	+85	+151	+92	+22	+15	-133	-113	-178	-232	-408	-393	-309	-416	-420
2	+340	+263	+618	+408	+417	+193	+220	+127	+54	-66	-122	+82	-300	-327	-497	-265	-190
3	-289	+551	+921	+636	+674	+1904	+3625	+54	706	-189	-86	-235	-202	-374	-447	-323	-243
4	30	-68	-178	-116	-198	-231	-254	-41	-56	-254	-141	-112	-69	-44	-438	-370	-101
5	-266	-162	-166	-165	-124	-289	-236	-196	-195	-66	-47	-175	-347	-243	-371	-377	-255
6	-195	-90	-34	-128	-233	-94	-66	+127	+104	-152	+73	-47	-282	-374	-464	-401	-314
7	-55	-167	+65	-74	-65	-191	-165	-164	-138	-112	-54	-110	-119	-119			
8	-437	-415	-352	-397	-324	-383	-338	-409	-250	-239	-142	-408	-239	-269			
9	-298	-328	-513	-431	-435	-367	-341	-272	251	-316	-231	-253	-252	-273			
10	-339	-350	-429	-362	-270	-258	-229	-250	-297	-163	-331	-387	-353	-398			
11	-440	-455	-483	-444	-458	-341	-327	-301	-215	-209	-305	-355	-297	-422			
12	-371	-417	-423	-484	-277	-326	-319	-260	-265	-173	-254	-228	-278	-263			
13	-310	-312	-352	-184	-58	-193	-74	-71	-53	-137	-109	-105	-205	-140			
14	-352	+44	-191	-371	-243	-210	+735	+532	+2136	+981	+1712	+3281	+2058	+636			
15	+492	+1194	+937	+498	+564	+415	+512	+371	+891	+704	+732	+450	+373	+589			
16						+1094	+615	+633	+116	+60	-37	-67	-45	-148			

N

TA-20 - 3 GRID

ROAD TO LOS ALAMOS



GRID
5m Spacing
36 grid points

TA20-6

	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16	1-17	1-18	1-19	1-20	1-21	1-22	1-23
							707	450	491	333	220	-1686	680	944	809	867	1345	1184	1226	1070	2310	2702
	1549	1562	963	968	823	1296	69	-136	608	687	640	380	481	1045	587	1150	761	856	665	510	974	424
	707	977	557	1039	664	680	132	887	1257	1162	788	664	279	620	730	1037	933	913	828	1253	984	408
	-81	263	69	191	2	145	86	-23	178	170	74	-787	-273	-363	-183	-88	-159	-6	782	1115	271	258
	390	415	-27	-47	-192	80	-159	128	421	159	-120	-190	-847	-374	-263	-335	-168	151	-224	-430	-363	407
	413	895	-369	-327	-53	162	247	-52	83	-179	-196	-33	-147	-147	-171	-328	-194	-901	-832	-914	-961	36
	444	844	-182	-291	-57	32	55	-200	-374	-664	-74	851	-374	436	-19	377	-727	-706	-851	-167	-60	-738
	-626	702	-205	-791	-549	-798	-644	-778	-846	-20	-875	-127	-127	870	574	519	-446	-520	-643	-965	698	447
	-900	-907	883	752	1098	815	549	712	677	901	473	-745	-874	-874	-234	-687	184	-4	-257	-792	-252	-1106
	-176	408	-55	-794	1045	812	973	1142	1096	-592	-173	444										
	-390	-57	950	-873	-641	-940	-837	-405	-486	-748	-580	-876										
	-455	-284	866	-122	13	105	-181	-561	-176	-111	-198	220										

x TA20-6 SURVEY MARKER

ROAD TO LOS ALAMOS

N

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
								8177	7720	7961	7803	7699	5784	8150	8414	8279	8337	8815	8654	8676	8540	9780	10132
1	8316	9019	9032	8433	8338	8293	8746	7584	7344	8075	8137	8110	7850	7951	8015	8057	8590	8231	8326	8075	7980	8444	7894
2	7987	8177	8247	8027	8609	8134	8120	7592	8057	8727	8572	8258	8134	7749	8090	8202	8507	8403	8383	8298	8723	8454	7878
3	7585	7389	7733	7539	7661	7472	7615	7506	7447	7648	7640	7544	[illegible]	7197	7109	7282	7382	7311	7464	8232	8585	7741	7728
4	7973	7660	7885	7446	7423	7278	7550	7311	7595	7891	7629	7350	7280	7123	6956	7267	7337	7302	7621	7246	7040	7107	7877
5	7934	7883	8365	7111	7143	7417	7632	7777	7418	7553	7291	7274	7437	7323	7323	7359	7142	7272	6569	6638	6556	6509	7506
6	7795	7919	8314	7368	7079	7413	7502	7525	7270	7096	6814	7056	7821	7096	7904	7451	7847	6743	6764	6619	7309	7410	6732
7	7504	6804	7572	7265	6679	6921	6752	6826	6692	6904	7450	6875	7343	7343	6941	6625	6570	7024	6950	6807	6505	8768	7917
8	7545	6570	6563	6904	6863	7091	6866	6650	6783	7662	6952	6524	6725	6666	7096	7434	6783	7654	7466	7413	6678	7118	6364
														14	15	16	17	18	19	20	21	22	23
9	7396	9975	6959	5996	5877	7096	6963	6829	7163	6377	5959	5878	6945										
10	6605	7180	7413	6981	6787	7129	7030	7183	7065	6985	6722	6990	6594										
11	7183	7015	7896	7470	7898	7488	7575	7319	6909	7254	7359	7272	7700										
	1	2	3	4	5	6	7	8	9	10	11	12	13										

GRID POINTS = 239

SOIL SAMPLES = 64

TA20-7

N

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	15	-824	-742	-583	-275	-123	-280	-714	-710	34	474	604	575	1842	2480	2148	1708			
2	83	-268	-417	-529	17	-231	-40	92	439	70	406	771	859	1171	2648	1648	1908			
3	41	-526	-376	-537	-596	-563	-220	458	679	599	812	-108	987	2353	1463	1334	3124	1571	1799	891	472
4	72	577	-9	678	450	580	838	2194	2264	2375	1725	2270	1925	2412	3010	2620	2288	2869	2999	2730	2153
5	55	723	611	960	1019	1151	1595	1687	1648	1417	1580	-194	-335	-271	-660	-396	-1253	456	1272	892	1038
6	188	-586	-459	-513	-184	-260	-397	-742	-726	-773	-983	-546	-423	-494	-741	-650	-958	-276	712	790	598
7	65	-104	-156	-368	-115	-851	-563	-375	-593	-580	-684	-829	-1017	-515	-576	-251	-643	-884	-449	-514	75
8	170	-71	-1130	-973	-1269	-1299	-929	-739	-474	-414	-1172	-792	-1005	-592	-354	-355	-223	-617	-274	-485	-136
9	19	219	-240	-369	58	-142	-123	-218	-284	217	-342	-397	-349	-413	-59	241	-267	-262	-639	-167	-650
10	66	-314	-137	6	85	311	-57	-246	-436	-318	-82	-193	255	-84	-23	-91	-117	-466	41	140	-27
11	10	-281	75	257	317	-2	-247	-493	-333	-449	64	-267	-864	-496	-224	-358	-54	22	264	192	-47
	311	-174	-639	-762	-969	-878	-1078	-931	-1021	-1479	-1435	-1089	-806	-998	-940	-1472	-1156	-1020	-192	-1313	-1268

✱ TA20-7 Survey Marker

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1	9205	9264	9351	9010	9318	9370	9543	9549	9583	9627	10067	10197	10198	11435	12073	11741	11301					1
2	9010	9385	9176	9069	9410	9362	9553	9685	10032	9663	9999	10364	10452	10704	12241	11234	11541					2
3	9152	9067	9277	9056	8997	9080	9373	10051	10272	10192	10405	9985	10520	11946	11056	10927	12177	11164	11392	10989	10035	3
4	9318	9510	9129	9603	8283	8613	9771	10327	10497	10308	9650	10203	9858	10346	10993	11553	11221	10102	10532	10603	10086	4
5	8588	8656	9544	9853	8952	9084	9528	9620	9581	9360	9983	7739	7598	7662	7273	7537	6680	8389	9205	8825	8971	5
6	7205	7397	7474	7620	7749	7673	7536	7191	7207	7140	7000	7387	7300	7459	7192	7283	6915	7557	8445	8723	8531	6
7	7770	7829	7777	7565	7818	7512	7370	7558	7340	7353	7249	7104	6946	7418	7357	7182	7290	7099	7484	7419	8008	7
8	7563	7862	6803	6910	6564	6639	7004	7194	7579	7579	6761	7141	6928	7341	7579	7578	7210	7516	7659	7497	7797	8
9	8038	8158	7693	7624	7998	7791	7810	7705	7649	8150	7631	7536	7584	7520	7874	8134	7666	7671	7874	7766	7283	9
10	7627	7649	7776	7939	8018	8244	7876	7667	7499	7615	7851	7740	8188	7849	7910	7842	7816	7467	7974	8073	7946	10
11	7943	7652	8008	8190	8250	7931	7706	7440	7600	7784	7997	7666	7669	7437	7709	7575	7879	7955	8197	8125	7886	11
12	7622	7759	7294	7171	6964	7055	6855	6988	6912	6484	6498	6844	7127	6985	6993	6461	6777	6913	7741	6620	6665	12
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

← L.A. ——— ROAD ——— W.R. →

PHOSWICH

grid Spacing 5m
244 grid Points

64
+ 1 survey MARKER (6-11)
65 Soil Samples

TA 20-11 NET READINGS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
									-5 93	-1 18	-3 18	-5 48	-1 91	-3 84	-5 28	-5 93		
	546 (24)	+5 30 (+59)	+1 37	+2 11	+4 96	+2 54	+2 21	+2 26	-7 86	-6 83	-6 87	-6 92	-8 70	-6 79	-6 51	-5 84	-7 99	-9 34
	522	+2 93	-1 80	-1 76	-7 5	-5 0	-3 60	-3 03	-2 36	-3 70	-2 83	-2 75	-3 18	-5 76	-6 78	-6 02	-6 75	-5 71
	586	+4 36	+2 14	+2 12	-9 0	-4 06	-2 71	-2 57	-2 70 (+103)	-5 21	-2 73	-4 85	-6 41	-6 22	-5 41	-3 59	-4 81	-5 27
	438	+2 74 (-258)	+1 33	-2 71	-2 57	+1 08	-9 1	-3 17	-5 06	-4 84	-3 33	-2 74	-3 21	-4 49 (-373)	-3 31	-4 88	-4 81	-4 65
	404	-3 8	-8 80	-2 38	-1 1	-5 4	-8 1	-2 70	-5 06	-3 77	-2 49	-2 87	-4 03	-3 57	-3 11	-5 00	-4 22	-2 71
	258	-2 22	-1 70	-6 6	-8 3	-1 57	-2 55	-3 26	-3 37	-4 20	-4 15	-2 40	-2 99	-3 07	-3 85	-4 29	-4 21	-4 77
	35	-2 85	-7 2	+1 64	-5	-4 4	-1 37	-1 64	-3 62	-2 28	-2 58	-3 67	-3 32	-3 03	-2 34	-4 38	-6 6	+435 99 (-161)
	38	+7 70 (-77)	+9 09 (-204)	+5 99 (-194)	+3 19 (+125)	+5 70 (-128)	+6 18	+4 52	+8 68	+4 56	+2 23	+1 04	-6 6	-2 10	-2 81	-1 81	-1 74	-2 68
	4	-2 50	-2 11	-2 75	-2 81	-3 2	-3 06	-3 31	-2 83	-3 85	-2 17	-2 78	-2 81	-1 94	-2 08	-2 13	-1 44	-2 48
	1	-6 3	-1 77	-1 76	-1 90	-1 68	-3 15	-1 44	-2 28	-2 36	-2 88	-4 08	-2 39	-3 13	-2 36	-3 29	-4 03	-3 16
	0	-4 61	-3 00	-2 91	-3 54	-3 78	-3 91	-3 07	-3 20	-2 97	-2 50	-4 00	-3 10	-3 53	-3 75	-2 51	-3 29	-4 05
		-3 5	-419	-468	-487	-384	-470	-487	-380	-396	-435	-335	-193	-282	-319	-342	-275	-405

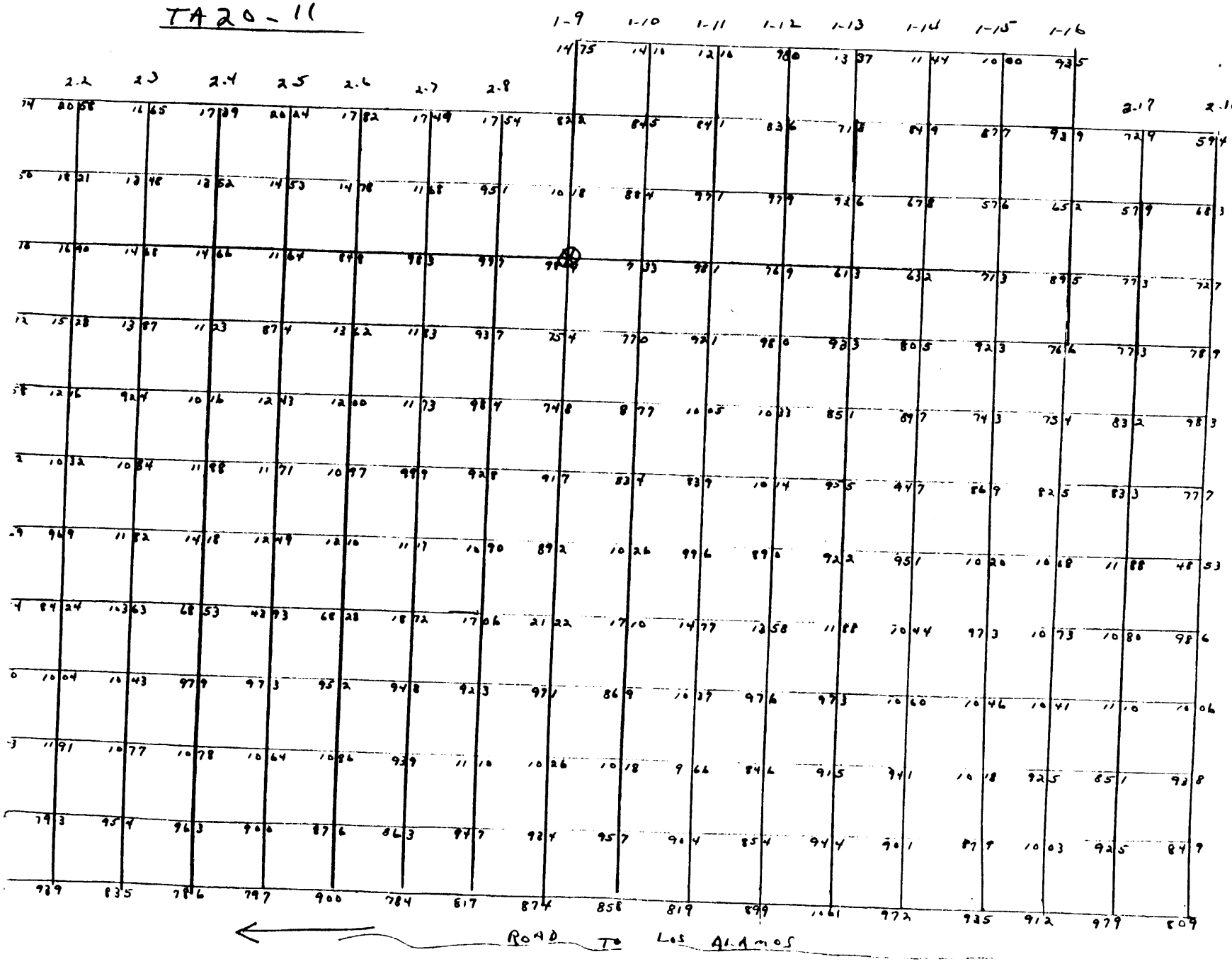
TA 20-11 HOT STORAGE

LAB # 85.05735 THRU 85.05793 TH

N

← ROAD TO LOS ALAMOS

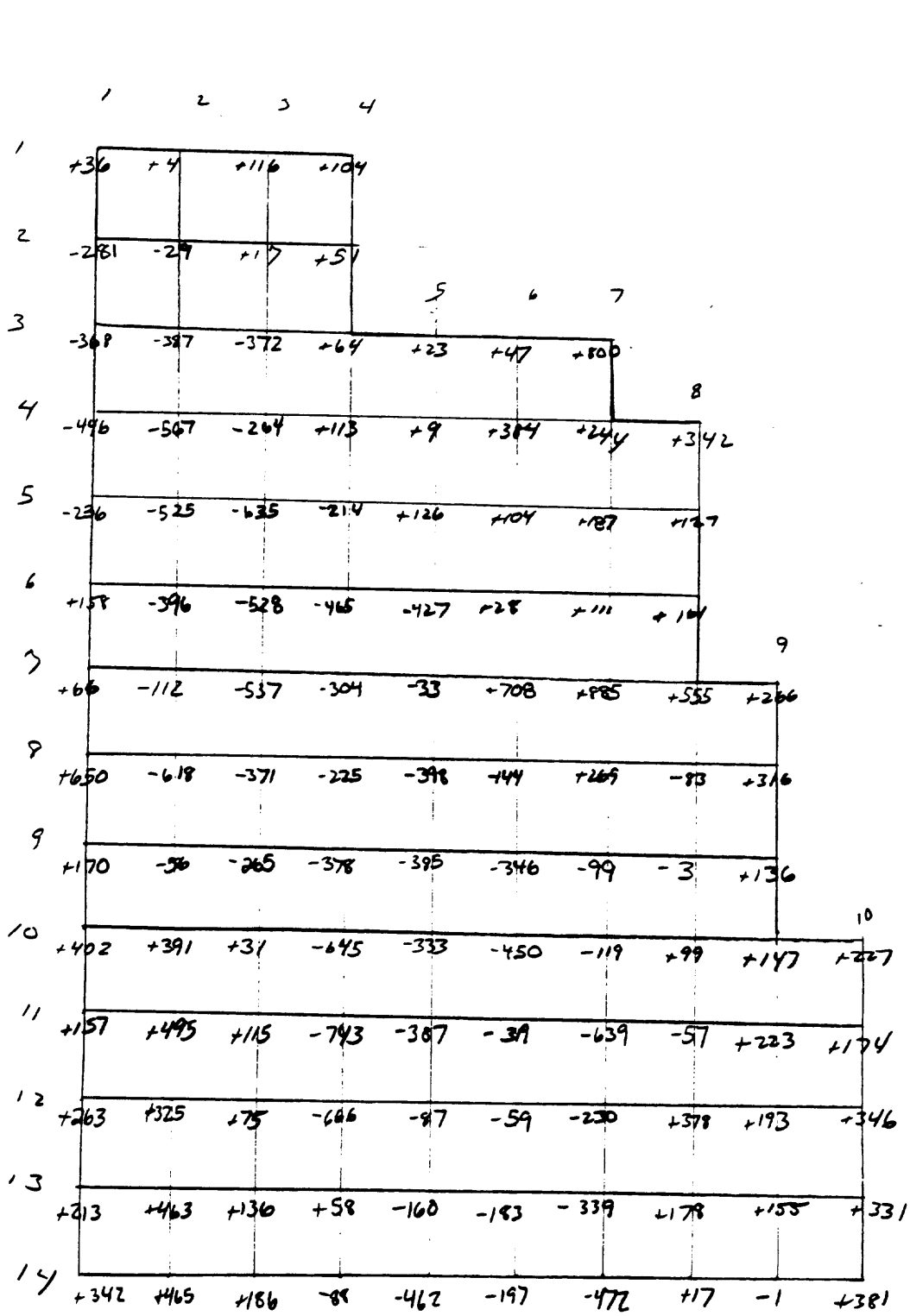
TA20-11



GRID POINTS = 224

SOIL SAMPLES = 59

TA20-13


N
1 2 3 4 5 6 7 8 9 10
1 +36 +4 +116 +104
2 -281 -29 +17 +51
3 -368 -387 -372 +64 +23 +47 +80
4 -496 -567 -264 +113 +9 +384 +244 +342
5 -236 -525 -635 -214 +126 +104 +187 +127
6 +158 -396 -528 -465 -427 +28 +111 +104
7 +66 -112 -537 -304 -33 +708 +885 +555 +266
8 +650 -618 -371 -225 -398 +44 +269 -83 +316
9 +170 -56 -265 -378 -395 -346 -99 -3 +136
10 +402 +391 +31 -645 -333 -450 -119 +99 +147 +227
11 +157 +495 +115 -743 -387 -39 -639 -57 +223 +174
12 +263 +325 +75 -666 -87 -59 -230 +378 +193 +346
13 +213 +463 +136 +58 -160 -183 -339 +178 +155 +331
14 +342 +465 +186 -88 -462 -197 -472 +17 -1 +381

TA 20 - 13

116 GRID POINTS
30 SOIL SAMPLES

N

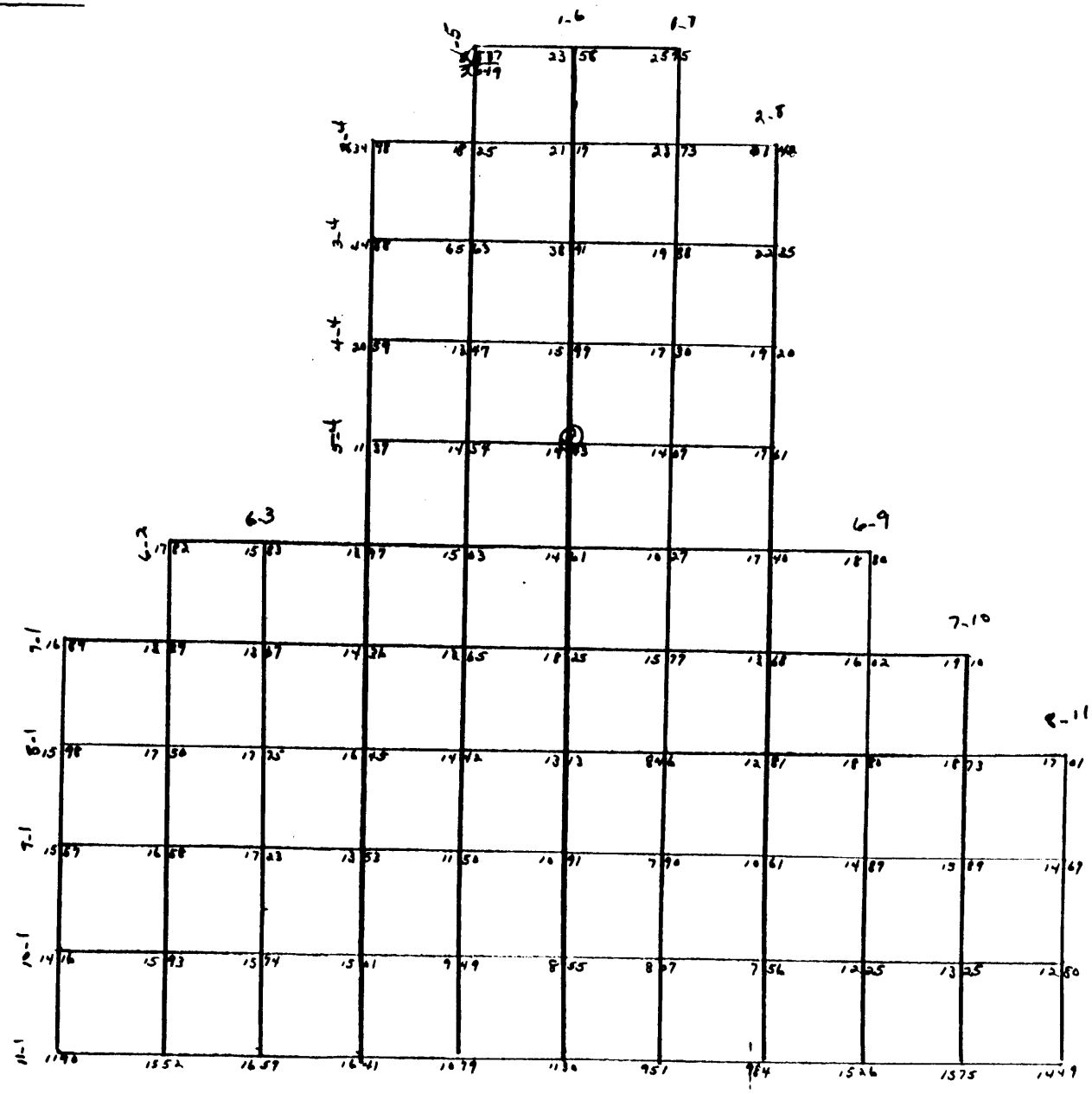
GRID POINTS = 116

SOIL SAMPLES = 30

	1-1	1-2	1-3	1-4	3-5	3-6	3-7	3-8	7-9	10-10
	15.43	15.11	16.23	16.11						
2-1	12.26	14.78	15.24	15.58						
3-1	11.39	11.20	11.35	15.71	15.30	15.54	18.07			
4-1	10.61	9.40	12.43	16.20	15.16	18.91	17.51	18.49		
5-1	12.71	9.82	8.72	12.93	16.83	16.11	16.94	16.34		
6-1	16.65	11.11	9.79	10.42	10.80	15.35	16.18	16.68		
7-1	15.73	13.95	9.70	12.03	14.74	22.15	28.92	20.62	17.73	
8-1	21.57	8.89	11.36	12.82	11.09	13.63	17.76	14.24	18.23	
9-1	16.77	14.51	12.42	11.89	11.22	11.61	14.08	15.04	16.43	
10-1	19.09	18.98	15.38	8.62	11.74	10.67	13.88	16.06	16.54	17.34
11-1	16.64	20.02	16.22	7.64	11.20	11.88	8.68	14.50	17.30	16.51
12-1	17.70	18.32	15.82	8.41	14.21	14.48	12.77	18.85	17.00	18.53
13-1	17.20	19.70	16.43	15.65	13.47	13.24	11.68	16.85	16.62	18.38

TA20-16

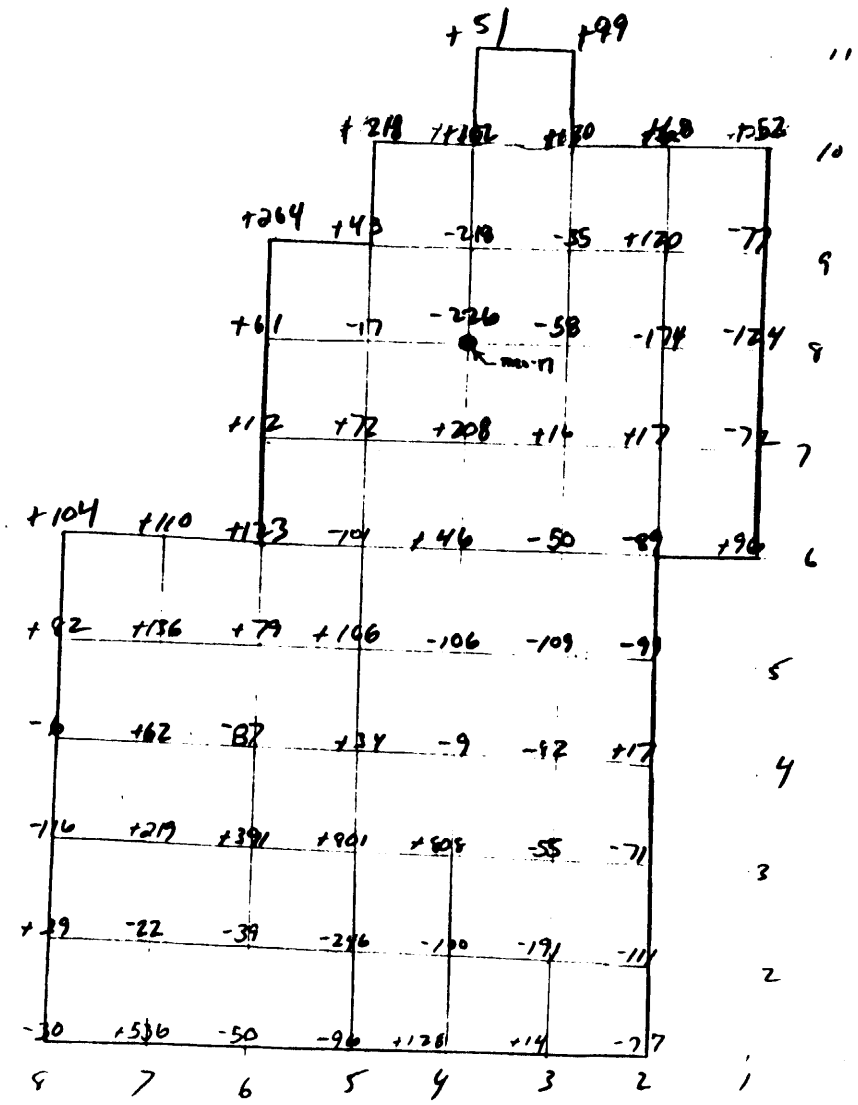
TA-20-16



GRID POINTS = 85

SOIL SAMPLES = 24

7A20 - 17


+51
+99
+264
+43
-218
-55
+120
-77
+611
-117
-226
-58
-174
-124
max-17
+112
+72
+208
+14
+17
-77
+104
+110
+123
-104
+46
-50
-89
+96
+82
+136
+79
+106
-106
-109
-91
-10
+62
-87
+34
-9
-97
+17
-116
+219
+391
+901
+605
-55
-71
+29
-22
-39
-296
-100
-191
-114
-30
+536
-50
-96
+126
+14
-77
8
7
6
5
4
3
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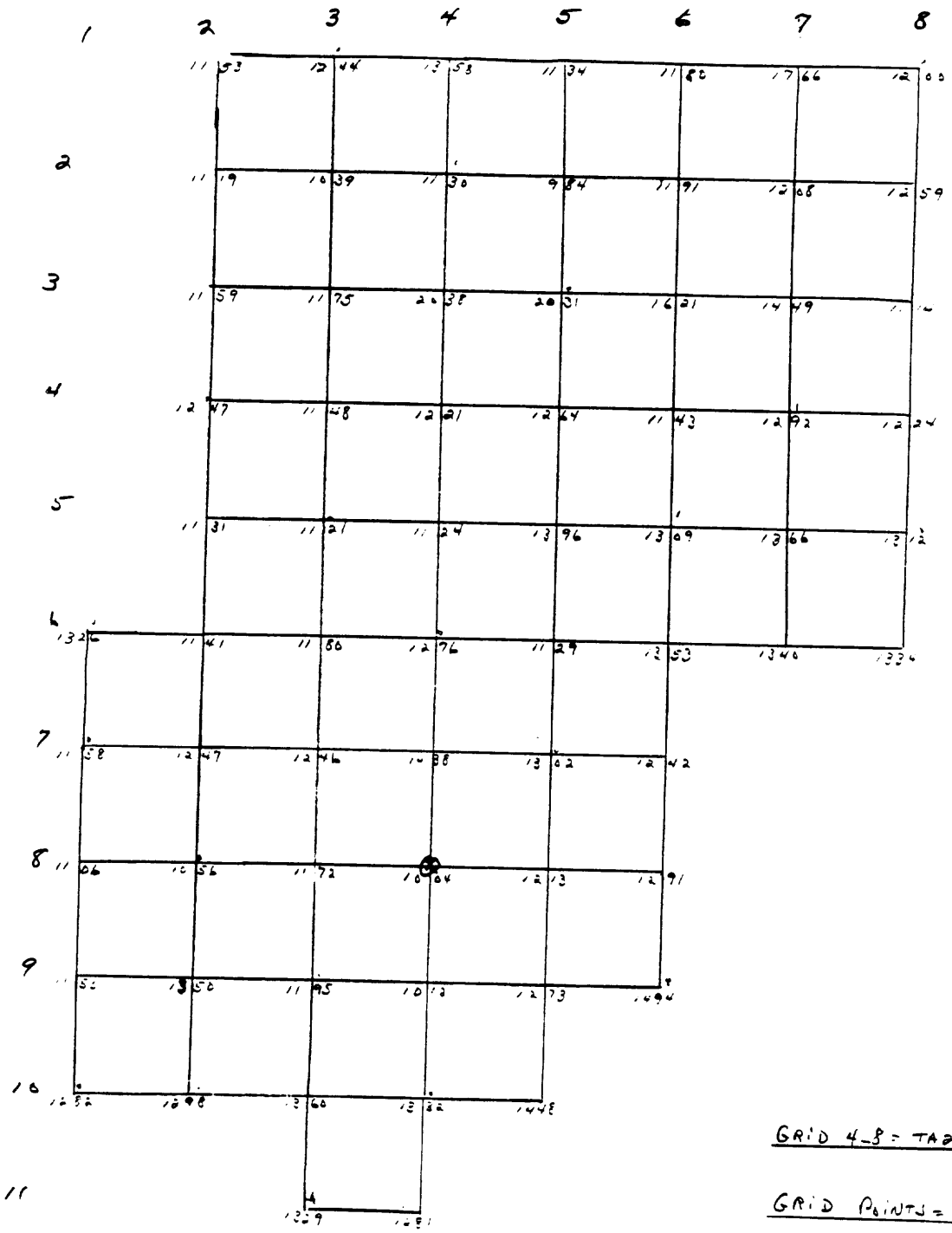
1
11
10
9
8
7
6
5
4
3
2
W.R.
Pasquito Road
LA
N



GRID 4-8 = TA20-17 SURVEY MARKER

GRID POINTS = 67

SOIL SAMPLES = 17

TA20-17 GRID

TA20-37

TA20-37

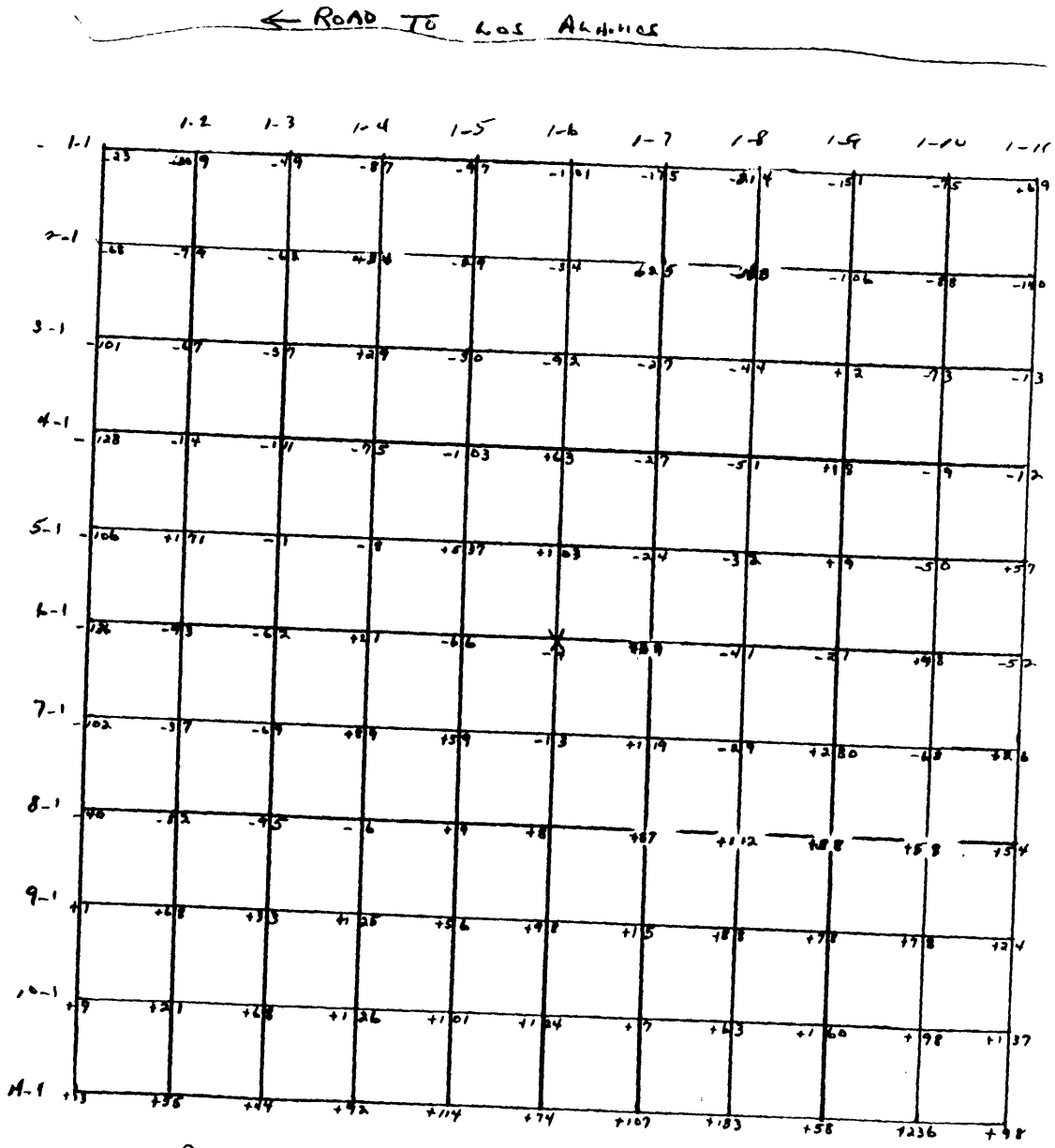
ROAD TO LOS ALAMOS

	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9
	11 95	10 97	10 13	10 04	9 39	9 80	8 66	8 73	9 03
2-1	11 39	11 75	10 61	10 34	9 15	10 40	11 53	12 18	11 55
3-1	10 74	9 79	10 03	10 37	9 53	10 25	11 52	11 80	[illegible]
4-1	10 45	10 03	10 40	9 26	10 03	10 66	10 23	10 76	9 68
5-1	11 48	10 30	9 90	10 89	10 86	10 74	10 98	11 72	9 70
6-1	9 80	10 68	10 27	12 30	10 99	10 87	11 67	11 25	9 87
7-1	10 85	11 20	12 70	12 02	11 54	10 98	11 28	10 81	11 77

BC 9 26 0-13 cm

GRID POINTS = 63

SOIL SAMPLES = 20



x = Pajarito Canyon Spring Point #1

GRID POINTS = 122 SOIL SAMPLES = 37

← Road to Los Alamos

	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11
	-94	-92	-63	-58	-71	-98	-69	-46	-93	+9	-70
2-1	-124	-7	-38	+92	-102	-70	+3	-30	+18	-41	-162
3-1	-14	-63	-39	-98	-56	-42	-105	-30	-69	-72	-76
4-1	-25	+21	-103	-52	-60	-69	-126	-53	-93	-53	-170
5-1	-91	-52	-61	-57	-20	-128	-59	-83	-90	-134	-73
6-1	-35	+45	-32	-60	-51	-100	-114	-114	-76	+1	-46
7-1	-86	-42	-140	-106	-134	-142	-158	-107	-166	-131	-65
8-1	-192	-161	-146	-153	-170	-140	-109	-110	-89	-90	-101
9-1	-67	-52	-24	+2	-8	-71	+4	-48	-86	+29	-61

N

PAJARITO CANYON

FIRING POINTS 21

99 GRID POINTS

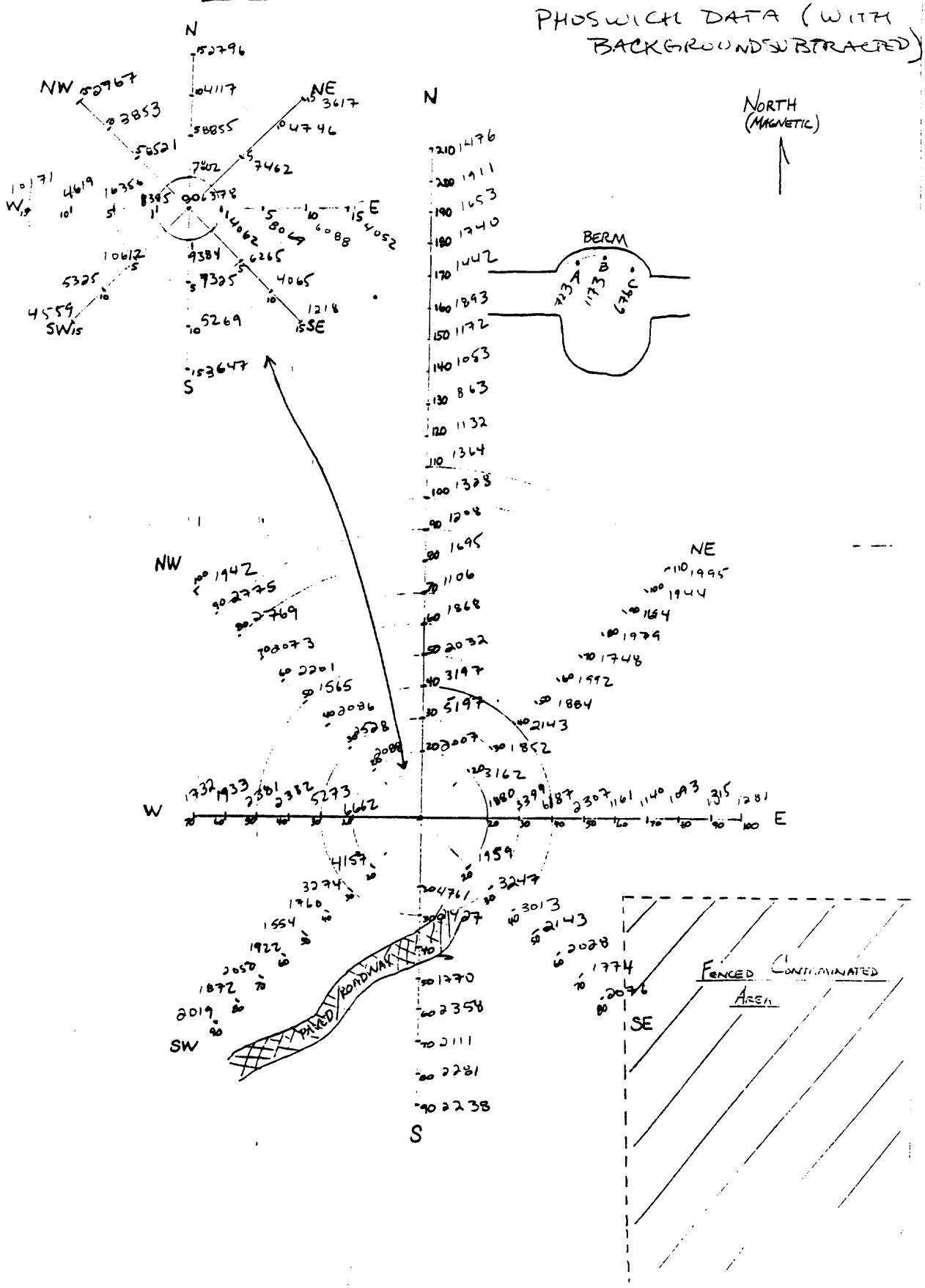
31 SOIL SAMPLES

CENTER RADII 0,0
NUMBERS IN METERS

TA 33-26 6210 MAP

HSE-12 SURVEY L. MARTINEZ
SITE CHARACTERIZATION 1985

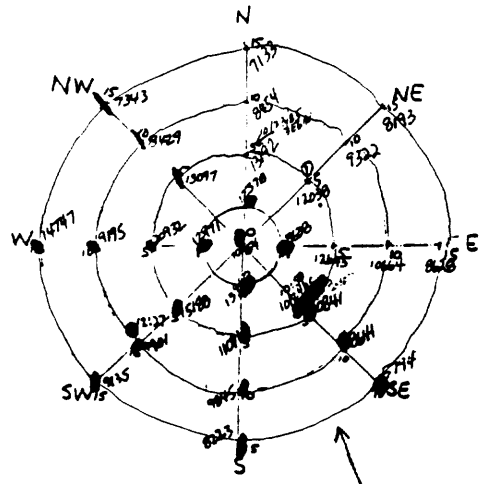
PHOSWICH DATA (WITH BACKGROUND SUBTRACTED)

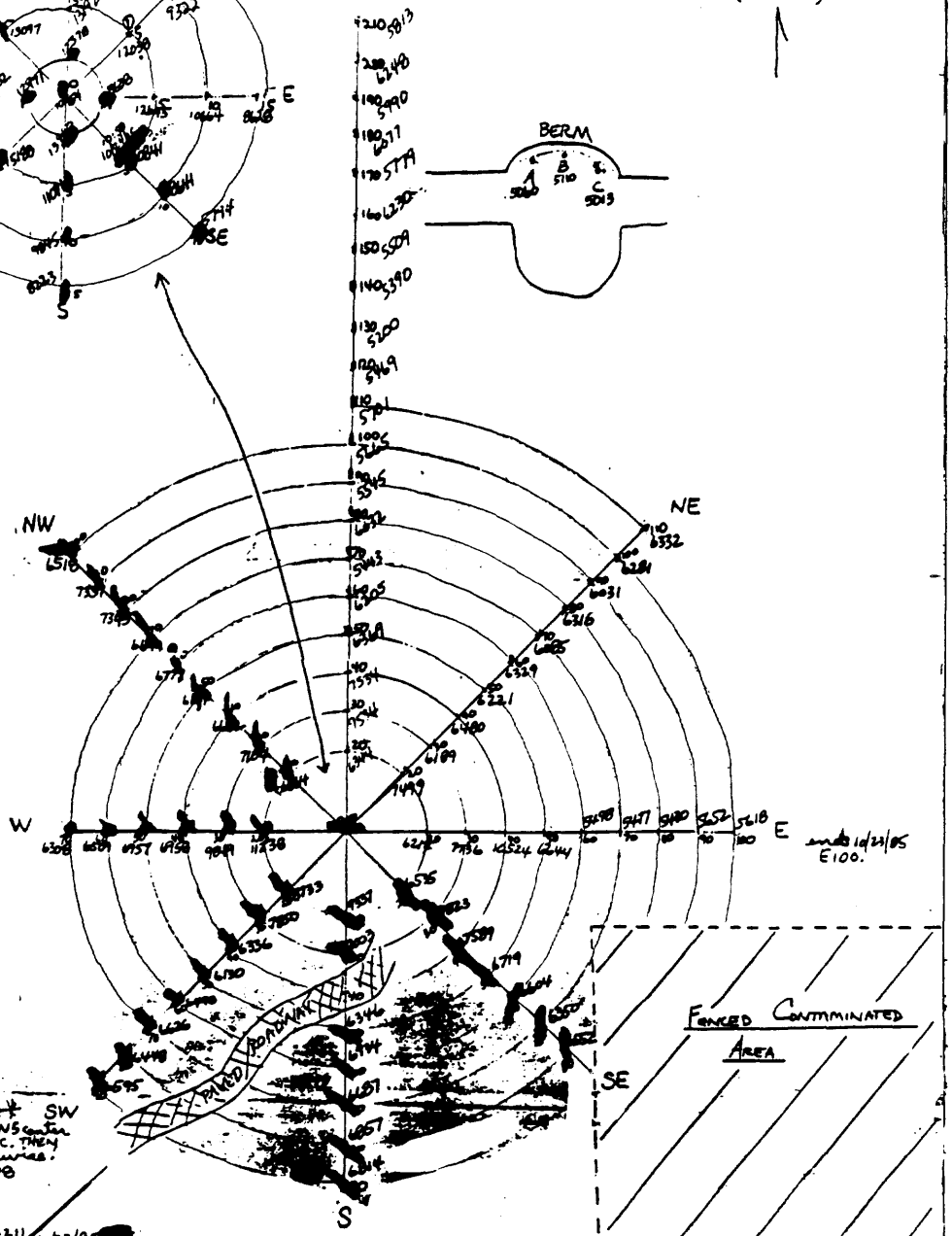


CENTER RADII 0,0
NUMBERS IN METERS

TA 33-26 GRID MAP

HSE-12 SURVEY K. MARTINEZ
SITE CHARACTERIZATION 1985
RAW DATA - PHOSWICH





10/24/85

DONE CENTER HUB
LAST N1 METER CENTER
END. E1 " "
S1 " "
W1 " "

CHECK SOURCE:
Am241 S.S.

ALL COUNTS FOR 100 SEC.

ALL READINGS START AT N5 center and go to N320, then A.B.C. THEN TO NE (center & end) clockwise.

PHOSWICH: PN346290
108006

WINDOW: FULL
10/23/85 9:15-9:10am
SOURCE CHECK TA59-Am241
1 445202
2 445468
3 446493
4 447074
5 446596
6 447975
7 448298
8 446722

10/23/85
BEGIN: 1:45
BKG. TA33-33 TANK NEAR RD. GROUND
4380, 4222, 4445, 4443, 4302
BACK OF TRUCK STEEL BED.
BEGIN 1:55
864, 952, 3:10 - 1170, 1181, 4:15 1144, 1130
SOURCE CHECK:
Begin 1:50 447000, 446697
3:15 440346, 441128
end 4:20 441292, 442061

10/24/85
BKG. TA 33-33 TANK NEAR RD. GROUND.
BEGIN: 10:30 4593, 4995, 2:10 4630, 4462, 2:22 4577, 4702, 4522, 2:20 4538, 4566.
BACK OF VAN (RUBBER)
BEGIN: 10:40 1521, 1361, 1465, 12:20 1606, 1643, 1570, 1:38 1500, 1544, 1477, 2:30 1550, 1510, 1409.
SOURCE CHECK:
BEGIN: 10:35 442537, 444469, 1:15 445397, 444783, 2:10 450800, 452105, 451631, 2:25 451336, 450388.

APPENDIX D

SOIL SAMPLING DOCUMENTATION

AND ANALYTICAL RESULTS

SAMPLE TAG HSE-8 HSE-9 LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 7/23/85 TIME COLLECTED: 8:00 am

ORIGIN/LOCATION: TA 20-3 GRID AT B.C. #926, 2m directly East, grid starts. SANDIA CANYON.

DESCRIPTION: SOIL 62 ea. samples

REMARKS: SOIL OVEN DRIED, 100°C 24hrs, sieved 500mm sieve, then aliquoted in 30gram vials

REQUESTED ANALYSIS: All for Depleted Uranium.
* Be, Gross Beta, Gross Gamma, HE

SAMPLED BY: Bernie A LAUCTES, MICHAEL T. SALADEN.
HSE-12 Bernie A. Laucts Michael Saladen

LOG REFERENCE: LA Y863 PAGE 9-10

TAG. NO 3 OF 13

SAMPLE LAB #: 85.05629TH thru 85.05690TH

85.05629TH *	85.05640TH	85.05651TH
85.05630TH	85.05641TH	85.05652TH
85.05631TH	85.05642TH	85.05653TH
85.05632TH	85.05643TH	85.05654TH *
85.05633TH	85.05644TH *	85.05655TH
85.05634TH *	85.05645TH	85.05656TH
85.05635TH	85.05646TH	85.05657TH
85.05636TH	85.05647TH	85.05658TH
85.05637TH	85.05648TH	85.05659TH *
85.05638TH	85.05649TH *	85.05660TH
85.05639TH *	85.05650TH	85.05661TH

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 07/18/85 TIME COLLECTED: 1:00 pm

ORIGIN/LOCATION: TA20-6 survey marker SANDIA CANYON

DESCRIPTION: Soil 64 ea. Samples

REMARKS: SOIL OVEN DRIED, 100°C 24 hrs, SIEVED 500 mm sieve, then aliquoted in 30 gram VIALS.

REQUESTED ANALYSIS: ALL for Depleated Uranium.
* Be, Gross Beta, Gross Gamma, HE

SAMPLED BY: J.L. MARTINEZ, BERNIE LAUCIES, ELTON M. KARL
HSE-12 Joe Leo Martinez Bernie A. Laucies

LOG REFERENCE: LA Y-863 PAGE 2 & 4

TAG. NO 1 OF 13

SAMPLE LAB #: 85.05500TH thru 85.05563TH

85.05500TH	85.05511TH
85.05501 TH	85.05512TH
85.05502TH	85.05513TH
85.05503TH	85.05514TH *
85.05504TH *	85.05515TH *
85.05505 TH	85.05516TH
85.05506 TH	85.05517TH
85.05507 TH	85.05518TH
85.05508 TH	85.05519TH *
85.05509 TH *	85.05520TH
85.05510 TH	85.05521TH

over →

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 07/22/85 TIME COLLECTED: 8:00 AM

ORIGIN/LOCATION: TA20-7 SURVEY MARKER, SANDIA CANYON

DESCRIPTION: Soil 65 ea samples

REMARKS: SOIL OVEN DRIED, 100°C 24hrs, SIEVED 500mm SIEVE, then ALIQUOTED IN 30gram VIALS.

REQUESTED ANALYSIS: All for Depleted Uranium.
* Be, Gross Beta, Gross Gamma

SAMPLED BY: BERNIE LAUCTES, MIKE SALADEN
HSE-12 Bernie A Lauctes Mike Saladen

LOG REFERENCE: LA Y863 PAGE 3&6&8

TAG. NO 2 OF 13

SAMPLE LAB #: 85.05564TH thru 85.05628TH

85.05564TH *	85.05575TH	85.05586TH
85.05565 TH	85.05576 TH	85.05587TH
85.05566 TH	85.05577TH	85.05588TH
85.05567 TH	85.05578 TH	85.05589TH *
85.05568 TH	85.05579 TH *	85.05590TH
85.05569 TH *	85.05580 TH	85.05591 TH
85.05570 TH	85.05581 TH	85.05592TH
85.05571 TH	85.05582 TH	85.05593TH
85.05572 TH	85.05583 TH	85.05594TH *
85.05573 TH	85.05584 TH *	85.05595TH
85.05574 TH *	85.05585 TH	85.05596TH

over-

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 7/30/85 TIME COLLECTED: 8:00 Am

ORIGIN/LOCATION: TA20-11 Survey Marker SANDIA CANYON

DESCRIPTION: 59 ea soil samples

REMARKS: Soil oven dried, 100°c 24hrs, sieved 500mm sieve, then aliquoted in 30 gram Vials

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma

SAMPLED BY: J.L. MARTINEZ, ELTON M. KARLEN
HSE-12 Joe Leo Martinez

LOG REFERENCE: LA Y863 PAGE 15-16

TAG NO 6 OF 13

SAMPLE LAB #: ~~85.05735TH thru 85.05793TH~~

85.05735TH	85.05746TH	85.05757TH
85.05736TH	85.05747TH	85.05758TH
85.05737TH	85.05748TH	85.05759TH *
85.05738TH	85.05749TH *	85.05760TH
85.05739TH *	85.05750TH	85.05761TH
85.05740TH	85.05751TH	85.05762TH
85.05741TH	85.05752TH	85.05763TH
85.05742TH	85.05753TH	85.05764TH *
85.05743TH	85.05754TH *	85.05765TH
85.05744TH *	85.05755TH	85.05766TH
85.05745TH	85.05756TH	85.05767TH

over

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 7/30/85 TIME COLLECTED: 1:00 pm

ORIGIN/LOCATION: TA20-13 Survey marker. SANDIA CANYON

DESCRIPTION: 30 ea soil samples

REMARKS: Soil oven dried, 100°c 24 hrs, sieved 500 m sieve then aliquoted in 30 gram vials.

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma

SAMPLED BY: MICHAEL T. SALADEN, BERNIE A. LAUCTES
HSE-12 Michael Saladen Bernie A. Lauctes

LOG REFERENCE: LA Y-863 PAGE 16-17

TAG. NO 7 OF 13

SAMPLE LAB #: 85.05794TH thru 85.05823TH

85.05794TH *	85.05805TH	85.05816TH
85.05795TH	85.05806TH	85.05817TH
85.05796TH	85.05807TH	85.05818TH
85.05797TH	85.05808TH	85.05819TH *
85.05798TH	85.05809TH *	85.05820TH
85.05799TH *	85.05810TH	85.05821TH
85.05800TH	85.05811TH	85.05822TH
85.05801TH	85.05812TH	85.05823TH
85.05802TH	85.05813TH	
85.05803TH	85.05814TH *	
85.05804TH *	85.05815TH	

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 7/26/85 TIME COLLECTED: 1:00pm

ORIGIN/LOCATION: TA20-16 Survey marker SANDIA CANYON

DESCRIPTION: 24 ea Soil Samples

REMARKS: Soil oven dried, 100°C 24 hrs, sieved 500 mm sieve, then aliquoted in 30 gram vials.

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma

SAMPLED BY: ELTON M KARLEN, JOE LEO MARTINEZ
HSE-12 Joe Leo Martinez

LOG REFERENCE: LA Y-863 PAGE 12,13,14

TAG. NO 5 OF 13

SAMPLE LAB #: 85.05711TH thru 85.05734TH

85.05711TH	85.05722TH	85.05733TH
85.05712TH	85.05723TH	85.05734TH *
85.05713TH	85.05724TH *	
85.05714TH *	85.05725TH	
85.05715TH	85.05726TH	
85.05716TH	85.05727TH	
85.05717TH	85.05728TH	
85.05718TH	85.05729TH *	
85.05719TH *	85.05730TH	
85.05720TH	85.05731TH	
85.05721TH	85.05732TH	

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 8/1/85 TIME COLLECTED: 8:00AM

ORIGIN/LOCATION: TA20-17 Survey Marker SANDIA CANYON

DESCRIPTION: 17 ea Soil Samples

REMARKS: Soil oven dried 100°C 24hrs, sieved 500 mm sieve Then aliquoted in 30gram vials.

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma

SAMPLED BY: LEO MARTINEZ
HSE-12 Leo Martinez

LOG REFERENCE: LA Y-863 PAGE 18-19

TAG. NO 8 OF 13

SAMPLE LAB #: 85.05824TH thru 85.05840TH

85.05824TH *	85.05835TH
85.05825TH	85.05836TH
85.05826TH	85.05837TH
85.05827TH	85.05838TH
85.05828TH	85.05839TH *
85.05829TH *	85.05840TH
85.05830TH	
85.05831TH	
85.05832TH	
85.05833TH	
85.05834TH *	

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 7/23/85 TIME COLLECTED: 100pm

ORIGIN/LOCATION: TA20-37 Grid 130 m EAST of BC #926
SANDIA CANYON

DESCRIPTION: 20 ea Soil Samples

REMARKS: Soil oven dried, 100C 24hrs, sieved 500m sieve, then aliquoted in 30gram vials

REQUESTED ANALYSIS: All for Depleted Uranium.
* Be, Gross Beta, Gross Gamma

SAMPLED BY: ELTON M. KARLEN, BERNIE A. LAUCTES
HSE-12 Bernie A. Lauctes

LOG REFERENCE: LA Y-863 PAGE 10-11

TAG NO 4 OF 13

SAMPLE LAB #: 85.05691 thru 85.05710 TH

85.05691TH	85.05702TH
85.05692TH	85.05703TH
85.05693TH	85.05704TH *
85.05694TH *	85.05705TH
85.05695TH	85.05706TH
85.05696TH	85.05707TH
85.05697TH	85.05708TH
85.05698TH	85.05709TH *
85.05699TH *	85.05710TH
85.05700TH	
85.05701TH	

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 8/13/85 TIME COLLECTED: AM 8:00

ORIGIN/LOCATION: TA20 SANDIA ~~Sa~~ CANYON STREAM CHANNEL

DESCRIPTION: 10 ea Soil Sample of stream survey began 300 m west of grid point (10-1 on plot TA20-6) Phosrich & Soil every 500 m to State Rd. 4.

REMARKS: soil oven dried 100°C 24hrs sieved, 500mm sieve, then aliquoted into 30gram Vials

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma.

SAMPLED BY: ELTON KARLEN, Bernie A. LAUCTES
HSE-12 Bernie A Lauctes

LOG REFERENCE: LA Y-863 PAGE 20-21

TAG. NO 9 OF 13

SAMPLE LAB #: 85.05841TH thru 85.05850TH

85.05841TH
85.05842TH
85.05843TH
85.05844TH *
85.05845TH
85.05846TH
85.05847TH
85.05848TH
85.05849TH *
85.05850TH

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 8/23/85 TIME COLLECTED: 1:00pm

ORIGIN/LOCATION: PAJARITO CANYON TA27 FIRING POINT 1

DESCRIPTION: 37 ea Soil Samples

REMARKS: Soil oven dried 150°C 24 hrs, sieved 500mm sieve, then aliquoted into 30 gram vials

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma

SAMPLED BY: BERNIE A. LAUCTES, ELTON M. KARLEN
HSE-12 Bernie A. Lauctes

LOG REFERENCE: LA Y863 PAGE 21-22-23.

TAG. NO 10 OF 13

SAMPLE LAB #: 85.05851TH thru 85.05887TH

85.05851TH	85.05862TH
85.05852TH	85.05863TH
85.05853TH	85.05864TH *
85.05854TH *	85.05865TH
85.05855TH	85.05866TH
85.05856TH	85.05867TH
85.05857TH	85.05868TH
85.05858TH	85.05869TH *
85.05859TH *	85.05870TH
85.05860TH	85.05871TH
85.05861TH	85.05872TH

over →

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 8/23/85 TIME COLLECTED: 8:00

ORIGIN/LOCATION: PAJARITO CANYON TA27 Firing Point 2 & 3.

DESCRIPTION: 31 ea soil samples

REMARKS: Soil over dried, 24 hrs, 100°c, then sieved 500 mm sieve, then aliquoted into 30gram vials.

REQUESTED ANALYSIS: All for Depleted Uranium.
* Be, Gross Beta, Gross Gamma

SAMPLED BY: BERNIE A. LAUCTES, ELTON M. KARLEN
HSE-12 Bernie A. Lauctes

LOG REFERENCE: LA Y-863 PAGE 23-24

TAG. NO 11 OF 13

SAMPLE LAB #: 85.05888TH thru 85.05918TH

85.05888TH	85.05899TH *
85.05889TH *	85.05900TH
85.05890TH	85.05901TH
85.05891TH	85.05902TH
85.05892TH	85.05903TH
85.05893TH	85.05904TH *
85.05894TH *	85.05905TH
85.05895TH	85.05906TH
85.05896TH	85.05907TH
85.05897TH	85.05908TH
85.05898TH	85.05909TH *

over →

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 8/23/85 TIME COLLECTED: 1:00

ORIGIN/LOCATION: PAJARITO CANYON TA27 FIRING POINT 445

DESCRIPTION: 26 ea. Soil Samples

REMARKS: Soil oven dried 100°C, 24 hrs, then sieved 500 mm sieve, then aliquoted into 30 gram Vials

REQUESTED ANALYSIS: All for Depleted Uranium
* Be, Gross Beta, Gross Gamma

SAMPLED BY: BERNIE A. LAUCTES, ELTON M. KARLEN
HSE-12 Bernie A. Lauctes

LOG REFERENCE: LA Y863 PAGE 23-25

TAG. NO 12 OF 13

SAMPLE LAB #: 85.05919 TH thru 85.05944 TH

85.05919 TH *	85.05930 TH
85.05920 TH	85.05931 TH
85.05921 TH	85.05932 TH
85.05922 TH	85.05933 TH
85.05923 TH	85.05934 TH *
85.05924 TH *	85.05935 TH
85.05925 TH	85.05936 TH
85.05926 TH	85.05937 TH
85.05927 TH	85.05938 TH
85.05928 TH	85.05939 TH *
85.05929 TH *	85.05940 TH

over →

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 8/29/85 TIME COLLECTED: 1:00

ORIGIN/LOCATION: PAJARITO CANYON TA27 STREAM CHANNEL/ LAGOONS.

DESCRIPTION: 11ea Soil Sample/STREAM SURVEY .2 miles from PAJARITO RD TA18 Junction to STATE RD 4 2.3 miles

REMARKS: Soil oven dried 24 hrs @ 100°C, then sieved 500 mm sieve, then aliquoted into 3 gram vials.

REQUESTED ANALYSIS: All for Depleted Uranium Be, Gross Beta, Gross Gamma

SAMPLED BY: LEO MARTINEZ, ELTON M KARLEN

HSE-12 Leo Martinez

LOG REFERENCE: LA Y-863 PAGE 27

TAG. NO 13 OF 13

SAMPLE LAB #: ~~85.05945 TH thru~~ 85.05955TH.

85.05945 TH

85.05946TH

85.05947 TH

85.05948TH

85.05949TH

85.05950 TH

85.05951 TH

85.05952TH

85.05953TH

85.05954TH

85.05955TH

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 10/1/85 TIME COLLECTED: 8:30 AM

ORIGIN/LOCATION: TA 33-26 CENTER OF BUNKER HUB 00 HSE-12 SURVEY.

DESCRIPTION: SOIL 107 ea. SAMPLES < 500 mm

REMARKS: SOIL oven dried, 100°C 24 hrs, sieved 500 mm Sieve, then aliquoted in 30 gram VIALS.

REQUESTED ANALYSIS: ALL FOR DEPLEATED URANIUM.
* Be, Gross Beta, Gross Gamma, HE.

SAMPLED BY: J.L. MARTINEZ HSE-12
Joe Leo Martinez

LOG REFERENCE: LA Y-863 PAGE 29 thru 33.

TAG. NO 14 OF 15

SAMPLE LAB #: 85.05956TH thru 85.09000 TH
85.05999TH 85.09062 TH

85.05956TH	85.05965TH	85.05974TH *
85.05957TH	85.05966TH	85.05975TH
85.05958TH	85.05967TH	85.05976TH
85.05959TH *	85.05968TH	85.05977TH
85.05960TH	85.05969TH *	85.05978TH
85.05961TH	85.05970TH	85.05979TH *
85.05962TH	85.05971TH	85.05980TH
85.05963TH	85.05972TH	85.05981TH
85.05964TH *	85.05973TH	85.05982TH

OVER

SAMPLE TAG HSE-8 HSE-9

LOS ALAMOS NATIONAL LABORATORY

DATE COLLECTED: 10/1/85 TIME COLLECTED: 8:30 AM

ORIGIN/LOCATION: TA 33-26 Center of Bunker Hub 00 HSE-12 Survey

DESCRIPTION: SOIL 107 ea. Samples <500mm

REMARKS: SOIL oven dried, 100°c 24 hr, sieved 500mm Sieve, then aliquoted in 30 gram vials.

REQUESTED ANALYSIS: ALL FOR DEPLEATED URANIUM. * Be, Gross Beta, Gross Gamma, HE.

SAMPLED BY: J.L. MARTINEZ HSE-12
Joe Lee Martinez

LOG REFERENCE: LA Y-863 PAGE 29 thru 33.

TAG. NO 15 OF 15

SAMPLE LAB #: 85.05956TH, 85.05999TH } thru 85.09000TH, 85.09062TH

85.09028TH	85.09037TH	85.09046TH
85.09029TH *	85.09038TH	85.09047TH
85.09030TH	85.09039TH *	85.09048TH
85.09031TH	85.09040TH	85.09049TH *
85.09032TH	85.09041TH	85.09050TH
85.09033TH	85.09042TH	85.09051TH
85.09034TH *	85.09043TH	85.09052TH
85.09035TH	85.09044TH *	85.09053TH
85.09036TH	85.09045TH	85.09054TH *

① IBM TA20-6 SITE CHARACTERIZATION STUDY 11-30-12 T.E.H. 7-2

SANDIA CANYON Soil SAMPLES

ELTON KARLEN
MICHAEL H. CALDEN
BERNIE A. [illegible]
LEO MARTINEZ

SAMPLE DATE	GRID LOC ROWS COLUMN	LAB NUMBER	>500 NET WT C.D.	NET WT <500
TA20-6 7/18/85	1-9	85.0550 0TH	276.03	151.2
	1-11	01	338.8	143.6
14.1	1-13	02	327.4	108.7
	1-15	03	289.0	128.3
	1-17	04	315.2	150.5
	1-19	05	281.9	132.0
	1-21	06	262.1	120.8
	1-23	07	238.9	103.6
	3-1	08	392.1	176.0
	3-3	09	300.9	140.6
	3-5	10	341.6	104.0
	3-7	11	400.0	156.6
	3-9	12	389.3	148.2
	3-11	13	415.5	239.0
	3-13	14	361.3	130.6
	3-15	15	331.6	114.5
	3-17	16	334.9	162.2
	3-19	17	380.5	167.4
	3-21	18	313.0	144.5
	3-23	19	375.5	134.2
	5-1	20	341.0	159.5
	5-3	21	292.9	122.1
	5-5	22	391.9	172.0
✓	5-7	85.0555 23TH	388.0	210.6

(2)

SAMPLE DATE	GRID LOC ROW, COLUMN	LAB NUMBER	NET WT O.D.	NET WT <500µ O.D.
071885	5-9	85.05524TH	311.9	182.3
	5-11	25	377.3	175.8
	5-13	26	404.8	139.1
	5-15	27	462.8	147.3
	5-17	28	350.6	130.3
	5-19	29	350.6	172.5
	5-21	30	364.3	124.3
	5-23	31	320.8	156.9
	7-1	32	315.5	184.2
	7-3	33	122.2	37.3
	7-5	34	368.2	111.2
	7-7	35	300.2	133.0
	7-9	36	296.6	115.0
	7-11	37	356.2	98.0
	7-13	38	297.1	178.8
	7-15	39	374.4	107.9
	7-17	40	362.2	146.2
	7-19	41	385.8	144.8
	7-21	42	432.0	197.7
	7-23	43	347.9	138.5
	9-1	44	335.4	87.1
	9-3	45	361.2	131.2
	9-5	46	416.8	100.4
	9-7	85.05547TH	402.7	82.4

(3)

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SAMPLE DATE	GRID LOC. Row, Column	LAB NUMBER	NET WT O.D	OD. NEWT. <500m
071885	9-9	85.05548TH	405.6	103.9
	9-11	49	449.1	63.2
	9-13	50	386.1	122.4
	9-15	51	453.7	65.3
	9-17	52	405.1	100.1
	9-19	53	393.4	89.8
	9-21	54	375.0	146.4
	9-23	55	349.6	153.7
	11-1	56	318.9	109.5
	11-3	57	280.2	49.2
	11-5	58	278.8	112.1
	11-7	59	342.5	152.6
	11-9	60	256.9	115.8
	11-11	61	387.3	179.8
	11-13	62	342.5	207.7
	4-13	85.05563TH	346.7	159.5
072285	1-1	64	249.1	88.5
	1-3	65	287.7	118.5
	1-5	66	300.2	89.8
	1-7	67	140.4	18.9
	1-9	68	329.9	157.5
	1-11	69	302.9	85.3
	1-13	70	430.8	117.7
	1-15	85.05571TH	285.0	97.4

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SAMPLE DATE	GRID LOC ROW, COLUMN	LAB NUMBER	NET WT. O.D	O.D NET WT <500m
072285	1-17	85.05572TH	208.5	86.8
	3-1	73	371.1	137.8
	3-3	74	320.7	132.5
	3-5	75	305.2	157.2
	3-7	76	312.6	159.2
	3-9	77	272.3	60.3
	3-11	78	154.6	45.5
	3-13	79	274.6	120.9
	3-15	80	186.1	68.4
	3-17	81	203.6	67.5
	3-19	82	266.8	72.1
	3-21	83	300.6	126.2
	5-1	84	329.4	242.1
	5-3	85	273.0	160.9
	5-5	86	250.6	171.5
	5-7	87	305.8	173.8
	5-9	88	283.6	136.4
	5-11	89	202.4	300.4
	5-13	90	294.4	154.4
	5-15	91	385.7	189.6
	5-17	92	624.9	134.7
	5-19	93	216.1	108.4
	5-21	94	298.2	156.8
	7-1	85.05595TH	289.8	226.4

5)

Sample DATE	GRID LOC. Row, Column	LAB NUMBER	NET WT OD	NT NT OD <50mm
072285	7-3	85.05596TH	256.5	188.0
	7-5	97	256.8	159.4
	7-7	98	289.4	140.8
	7-9	99	366.6	182.6
	7-11	85.05600TH	335.9	214.3
	7-13	01	418.5	140.5
	7-15	02	329.0	149.8
	7-17	03	282.9	94.1
	7-19	04	226.3	110.7
	7-21	05	210.1	94.2
	9-1	06	224.2	139.0
	9-3	07	381.1	189.7
	9-5	08	273.6	135.4
	9-7	09	301.6	114.7
	9-9	10	436.5	177.1
	9-11	11	291.4	132.6
	9-13	12	288.9	147.8
	9-15	13	218.6	130.5
	9-17	14	345.5	165.2
	9-19	15	369.4	124.7
	9-21	16	359.8	168.6
	11-1	17	282.9	156.4
	11-3	18	312.2	190.2
	11-5	85.05619TH	288.6	181.3

(6)

Sample Date	Grid Loc. Row, Column	Lab Number	Net Wt O.D	Nt Wt O.D <500m
072285	11-7	85.05620TH	388.2	156.7
	11-9	21	411.5	186.3
	11-11	22	453.0	221.7
	11-13	23	406.9	137.9
	11-15	24	418.1	180.0
	11-17	25	3-7.6	177.0
	11-19	26	282.3	129.2
	11-21	27	257.2	125.1
	6-11	28	296.2	117.5
TA2U-3 072385 (62 m)	1-1	29	195.2	125.0
	1-3	30	298.9	190.3
	1-5	31	330.4	202.1
	1-7	32	277.7	188.4
	1-9	33	346.5	115.1
	1-11	34	357.0	228.7
	1-13	35	384.2	150.4
	1-15	36	379.7	131.5
	1-17	37	426.7	138.9
	3-1	38	256.2	96.6
	3-3	39	210.0	132.2
	3-5	40	285.0	135.9
	3-7	41	301.9	180.1
	3-9	42	113.4	62.8
	3-11	85.05643TH	242.1	192.5

(7)

Sample Date	Grid Loc. Row, Column	Lab Number	Net Wt O.D.	Net Wt O.D. <500M
072385	3-13	85.05644TH	317.8	171.1
	3-15	45	338.3	108.6
	3-17	46	282.5	119.0
	5-1	47	393.5	184.3
	5-3	48	400.7	173.6
	5-5	49	354.6	174.9
	5-7	50	366.6	211.9
	5-9	51	277.4	114.6
	5-11	52	250.9	170.6
	5-13	53	371.6	165.6
	5-15	54	397.1	147.0
	5-17	55	237.9	108.4
	7-1	56	242.6	126.3
	7-3	57	349.6	184.3
	7-5	58	392.0	190.2
	7-7	59	363.2	172.9
	7-9	60	331.8	178.5
	7-11	61	312.8	175.0
	7-13	62	374.0	158.3
	9-1	63	382.3	215.1
	9-3	64	243.9	145.5
	9-5	65	345.9	184.4
	9-7	66	374.3	196.8
	9-9	85.05667TH	294.8	141.1

SAMPLE DATE	GRID LOC. ROW, COLUMN	LAB NUMBER	NET WT. U.D.	NET WT. UD <500m
072385	9-11	85.05668TH	290.7	171.0
	9-13	69	370.1	171.9
	11-1	70	250.7	128.5
	11-3	71	342.0	149.2
	11-5	72	304.1	152.6
	11-7	73	407.2	218.6
	11-9	74	295.6	161.3
	11-11	75	337.5	173.6
	11-13	76	268.4	110.2
	13-1	77	330.8	149.0
	13-3	78	371.7	228.0
	13-5	79	291.9	169.0
	13-7	80	292.0	152.8
	13-9	81	325.6	173.3
	13-11	82	355.6	168.0
	13-13	83	362.3	163.3
	15-1	84	304.5	140.0
	15-3	85	360.1	140.3
	15-5	86	317.6	192.4
	15-7	87	343.3	185.7
	15-9	88	367.4	182.7
	15-11	89	401.7	203.2
	15-13	90	277.1	154.4
TM20-37 (20mm) 072384	1-1	85.05691TH	321.5	231.9

(9)

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SAMPLE DATE	GRID LOC. ROW-COLUMN	LAB NUMBER	NET WT. U.D	NET WT. U.D <500u
072385	1-3	85.05692TH	271.5	173.8
	1-5	93	311.7	179.1
	1-7	94	280.8	145.0
	1-9	95	213.5	145.6
	3-1	96	270.7	212.5
	3-3	97	310.4	170.7
	3-5	98	263.5	163.4
	3-7	99	333.9	179.8
	3-9	85.05700TH	335.2	223.0
	5-1	01	309.3	164.7
	5-3	02	318.3	136.1
	5-5	03	237.5	154.0
	5-7	04	282.1	183.4
	5-9	05	258.7	161.2
	7-1	06	397.1	196.3
	7-3	07	317.6	156.6
	7-5	08	331.7	178.3
	7-7	09	298.7	154.7
	7-9	85.05710TH	328.9	194.7
TM20-16 072685 24.0	1-5	11	209.5	70.2
	1-7	12	303.2	111.8
	3-5	13	305.4	156.7
	3-7	14	276.9	114.0
	5-5	85.05715TH	249.2	111.7

(12)

SAMPLE DATE	GRID LOC. ROW-COLUMN	LAB NUMBER	NET WT. O.D	NET WT. O.D <500m
072685	5-6	85.05716TH	324.0	171.9
	5-7	17	315.6	86.5
	7-1	18	359.9	183.9
	7-3	19	218.3	145.1
	7-5	20	[illegible]	109.3
	7-7	21	351.0	161.0
	7-9	22	304.5	146.8
	9-1	23	264.8	139.5
	9-3	24	155.4	73.3
	9-5	25	238.6	165.1
	9-7	26	375.[illegible]	[illegible].7
	9-9	27	284.3	148.7
	9-11	28	345.1	178.9
	11-1	29	363.1	137.3
	11-3	30	226.8	101.5
	11-5	31	322.9	136.6
	11-7	32	256.0	136.7
	11-9	33	309.1	117.8
	11-11	85.05734TH	316.8	144.4
TAZ-11 073085	1-9	35	300.8	109.9
59[illegible]	1-11	36	281.2	127.2
	1-13	37	234.6	75.4
	1-15	38	306.7	147.6
	3-1	85.05739TH	239.1	110.0

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Sample Date	GRID Loc. Row, Column	LAB Number	NET WT. O.D.	NET WT. O.D. <500 m
073085	3-3	85.05740TH	298.7	166.2
	3-5	41	223.8	83.4
	3-7	42	374.9	206.6
	3-9	43	379.8	214.1
	3-11	44	335.3	144.7
	3-13	45	356.0	88.2
	3-15	46	501.0	116.3
	3-17	47	314.8	101.2
	5-1	48	310.7	148.1
	5-3	49	319.6	200.2
	5-5	50	280.3	116.1
	5-7	51	331.9	171.5
	5-9	52	228.0	119.1
	5-11	53	192.7	72.5
TA20-11 59 (20)	5-13	54	370.5	143.5
	5-15	55	308.5	137.9
	5-17	56	340.6	72.3
	7-1	57	251.9	108.8
	7-3	58	249.2	151.0
	7-5	59	300.2	186.9
	7-7	60	377.1	164.3
	7-9	61	275.0	142.9
	7-11	62	265.5	133.6
	7-13	85.05763TH	337.1	207.6

(2)

Sample DATE	GRID LOC. (ROW, COLUMN)	LAB NUMBER	NET WT. (G)	NET [illegible] (mg/[illegible])
073085	7-15	85.05764TH	320.6	100.6
	7-17	65	222.2	79.0
	9-1	66	343.7	180.0
	9-3	67	250.5	148.1
	9-5	68	328.9	143.3
	9-7	69	404.0	135.9
	9-9	70	263.7	150.1
	9-11	71	317.5	156.0
	9-13	72	318.3	164.2
	9-15	73	342.3	153.7
	9-17	74	299.7	134.4
	11-1	75	374.9	178.0
TAXE-11 5a (6)	11-3	76	338.4	182.1
	11-5	77	369.4	143.8
	11-7	78	406.4	146.6
	11-9	79	319.1	180.5
	11-11	80	315.0	203.6
	11-13	81	365.1	150.1
	11-15	82	347.9	163.4
	11-17	83	348.4	153.0
	13-1	84	381.5	123.1
	13-3	85	294.4	139.0
	13-5	86	235.9	76.2
	13-7	85.05787TH	355.0	135.4

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	DATE	GRID LOC. Row, Column	LAB NUMBER	MEAN OD	MEAN OD 450
TA20-11 59	073085	13-9	85.05788TH	378.5	190.8
		13-11	89	344.3	159.2
		13-13	90	336.4	159.0
		13-15	91	331.3	199.2
		13-17	92	347.1	170.4
		4-9	93	264.3	108.8
TA20-13 30	073085	1-1	94	396.1	186.4
		1-3	95	389.4	166.8
		3-1	96	186.5	122.0
		3-3	97	440.4	164.9
		3-5	98	261.5	139.6
		3-7	99	272.4	127.6
		5-1	85.05800	349.5	254.8
		5-3	01	421.5	86.0
		5-5	02	352.7	155.0
		5-7	03	351.0	185.0
		7-1	04	354.8	211.5
		7-3	05	431.3	131.3
		7-5	06	309.7	117.8
		7-7	07	360.3	94.5
		7-9	08	327.3	129.0
		9-1	09	287.7	157.5
		9-3	10	419.8	252.4
		9-5	85.05811TH	312.7	149.1

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Sample Date	Grid Loc.	Lab #	Net Int.	Net Int.
073085	9-7	85.058 12TH	320.9	129.8
	9-9	13	325.7	170.1
	11-1	14	245.8	149.1
	11-3	15	310.2	48.3
	11-5	16	301.5	218.6
	11-7	17	337.2	127.4
	11-9	18	358.9	136.4
	13-1	19	310.5	169.9
	13-3	20	311.9	154.0
	13-5	21	246.3	150.1
	13-7	22	342.8	196.2
	13-9	85.058 23TH	388.6	189.0
080185	1-3	24	388.1	232.5
	1-5	25	307.9	198.4
	1-7	26	369.2	199.6
	3-3	27	348.1	221.3
	3-5	28	332.3	187.0
	3-7	29	333.0	164.8
	5-3	30	396.2	231.0
	5-5	31	356.6	176.8
	5-7	32	369.5	206.9
	7-1	33	386.2	215.3
	7-3	34	365.3	234.9
	7-5	85.058 35TH	351.2	205.3

Tm-13 3.0

Tm20-17 17a

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	Sample DATE	Grid loc. row, column	LAB #	[illegible]	[illegible] 250nm
	080185	9-1	85.05836TH	385.7	207.4
TA10-17		9-3	37	261.0	142.8
17ea		9-5	38	360.0	213.8
		11-3	39	327.4	182.5
		8-4	85.05840TH	399.0	206.8
	081385	SC-1	85.05841TH	403.7	266.1
[illegible]		SC-2	42	293.0	212.5
[illegible] 500m.		SC-3	43	287.5	184.6
10ea		SC-4	44	342.6	295.3
S.V. SANDIA CANYON		SC-5	45	350.4	305.1
		SC-6	46	397.6	154.0
		SC-7	47	293.1	171.1
		SC-8	48	523.9	160.8
TA20		SC-9	49	388.0	257.3
450-a		SC-10	85.05850TH	464.7	228.6
P.C.FP1	082385	1-1	51	467.3	214.9
37ea		1-3	52	530.1	213.4
		1-5	53	390.0	106.4
		1-7	54	349.5	160.7
		1-9	55	379.3	160.9
		1-11	56	420.8	157.4
		3-1	57	351.5	143.4
		3-3	58	370.4	162.1
		3-5	85.05859TH	351.9	170.9

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	SAMPLE DATE	GRID LOC Row, Column	LAB #	NET WT OD	NET WT OD <500m
PC.FPI 37⊕	082385	3-7	85.05860TH	391.7	201.7
		3-9	61	360.1	169.9
		3-11	62	314.2	158.6
		5-1	63	367.3	148.5
		5-3	64	319.7	115.6
		5-5	65	409.1	168.9
		5-7	66	310.9	188.6
		5-9	67	337.9	164.5
		5-11	68	373.2	192.4
		7-1	69	339.9	158.8
		7-3	70	329.7	171.2
		7-5	71	310.6	160.7
		7-7	72	249.8	141.1
		7-9	73	293.7	191.4
		7-11	74	287.6	174.1
		9-1	75	383.7	157.5
		9-3	76	302.6	126.4
		9-5	77	259.5	137.6
		9-7	78	257.9	160.0
		9-9	79	446.6	223.9
		9-11	80	320.0	203.6
		11-1	81	373.8	158.4
		11-3	82	352.5	199.3
		11-5T	83	269.9	124.4

(17)

	SAMPLE DATE	GRID LOC Row Column	LAB #	NET WT 0 D	NET WT 0 D < 500 m
PC.FP1 37	082385	11-7	85.05884TH	381.5	237.8
		11-9	85	272.8	161.1
		11-11	86	218.2	212.2
		6-6	87	202.2	133.7
PC.FP2,3 31		1-1	88	408.7	135.8
		1-3	89	310.1	156.9
		1-5	90	430.3	153.6
		1-7	91	388.0	82.4
		1-9	92	329.0	87.7
		1-11	93	313.4	101.1
		3-1	94	441.6	156.5
		3-3	95	387.4	150.6
		3-5	96	405.5	167.4
		3-7	97	348.6	124.5
		3-9	98	385.7	187.6
		3-11	99	370.8	166.5
		5-1	85.05900TH	342.0	154.0
		5-3	01	406.3	193.3
		5-5	02	333.8	137.2
		5-7	03	359.0	211.9
		5-9	04	357.8	197.6
		5-11	05	303.8	161.2
		7-1	06	361.5	120.4
		7-3	07TH	419.4	162.8

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	SAMPLE DATE	GRID LOC Row Column	LAB #	NET WT O.D.	NET WT O.D. 4.5 oz
RC-FP3,3 (219)	082385	7-5	85.05908TH	355.2	151.1
		7-7	09	499.6	169.7
		7-9	10	407.8	121.8
		7-11	11	348.1	161.4
		9-1	12	343.9	174.7
		9-3	13	314.9	156.8
		9-5	14	324.1	145.2
		9-7	15	310.2	162.8
		9-9	16	359.5	167.6
		9-11	17	353.2	170.4
		1-6	18	359.4	118.4
PC-FP4,5 (266)		1-1	19	280.0	167.4
		1-3	20	400.2	143.4
		1-5	21	454.0	183.7
		1-7	22	432.0	136.1
		1-9	23	439.3	190.2
		1-11	24	356.9	224.5
		3-1	25	379.9	143.2
		3-3	26	361.5	184.2
		3-5	27	358.9	114.6
		3-7	28	322.6	165.9
		3-9	29	436.6	185.9
		3-11	30	481.6	187.4
		5-1	31	380.7	168.6

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	Sample Date	Grid Loc Row Column	Lab #	Net Wt OD	Net Wt w Lstone
PC FP 4.5 (Lg)	082385	5-3	85.05932TH	470.8	115.9
		5-5	33	323.5	157.6
		5-7	34	387.3	170.5
		5-9	35	379.6	184.2
		5-11	36	284.0	134.0
		7-1	37	242.3	77.2
		7-3	38	293.3	97.9
		7-5	39	290.6	80.9
		7-7	40	288.6	63.2
		7-9	41	226.0	57.0
		7-11	42	300.6	99.7
		8-6	43	260.6	52.6
		FP-5	44	234.0	96.2
Bajada Canyon Stream Channel	082985	PC-1	85 05945TH	289.1	221.8
		PC-2	46	132.6	73.6
		PC-3	47	261.7	126.4
		PC-4	48	506.5	38.0
		PC-5	49	493.0	199.6
		PC-6	50	461.0	102.7
		PC-7	51	556.9	175.1
		PC-8	52	270.1	124.2
		PC-9	53	351.9	118.9
		PC-10	54	420.0	118.9
		PC-11	85.05955TH	407.6	72.3

(29)

I

DATE	GRID LOC. Row Column	LAB #	NET WT O.D.	NET WT O.D. < 5cm
A33-29 100185 107	N-5	85.05956TH	551.9	238.1
	N-10	57	491.6	179.8
	N-15	58	332.4	91.2
	N-20	59	330.3	137.3
	N-30	60	373.0	97.6
	N-40	61	271.6	78.8
	N-50	62	284.8	97.7
	N-60	63	369.5	136.8
	N-70	64	414.0	145.7
	N-80	65	469.7	134.1
	N-90	66	306.7	111.4
	N-100	67	408.3	139.9
	N-110	68	320.1	128.8
	N-120	69	453.5	129.0
	N-130	70	289.4	107.9
	N-140	71	323.8	112.2
	N-150	72	442.7	121.8
	N-160	73	340.0	92.1
	N-170	74	288.4	117.4
	N-180	75	271.1	114.7
	N-190	76	311.2	149.0
	N-200	77	238.0	131.0
	N-210	78	279.0	145.1
	NE-5	85.05979TH	448.8	194.5

(21)

L.M

DATE	GRID LOC. Row, Column	LAB #	NET WT. gr.	NET WT. lb. 2500
100185	NE-10	85.05980TH	474.2	168.1
	NE-15	81	341.6	136.1
	NE-20	82	481.3	181.5
	NE-30	83	563.2	137.5
	NE-40	84	337.6	130.9
	NE-50	85	350.4	88.1
	NE-60	86	303.4	109.5
	NE-70	87	397.3	136.1
	NE-80	88	365.7	122.0
	NE-90	89	402.3	146.0
	NE-100	90	302.2	119.9
	NE-110	91	378.7	167.1
	E-5	92	567.3	250.1
	E-10	93	534.4	179.8
	E-15	94	597.7	208.8
	E-20	95	468.1	203.6
	E-30	96	272.9	162.6
	E-40	97	361.7	197.7
	E-50	98	409.5	213.0
	E-60	85.05999TH	415.7	94.7
	E-70	85.09000TH	369.7	110.7
	E-80	01	398.9	81.9
	E-90	02	438.0	97.9
	E-100	85.09003TH	475.1	99.4

(22)

Issue

DATE	GRID LOC. Row, Column	LAB #	NET WT. O.D.	NET WT. O.D. <500mm
100185	SE-5	85.09004TH	488.6	180.7
	SE-10	05	611.2	214.3
	SE-15	06	527.9	191.2
	SE-20	07	540.9	173.3
	SE-30	08	408.9	118.4
	SE-40	09	348.0	171.4
	SE-50	10	343.7	196.0
	SE-60	11	350.2	196.7
	SE-70	12	409.5	200.9
	SE-80	13	398.4	213.0
	S-5	14	510.2	207.2
	S-10	15	478.1	153.8
	S-15	16	430.9	139.4
	S-20	17	454.5	95.2
NO (S40) PAVEMENT	S-30	18	402.7	101.3
	S-50	19	429.6	125.7
	S-60	20	318.9	76.5
	S-70	21	457.6	95.3
	S-80	22	409.2	161.8
	S-90	23	306.8	121.4
	SW-5	24	537.1	224.5
	SW-10	25	442.5	125.1
	SW-15	26	337.0	88.0
	SW-20	85.09027TH	341.4	120.5

(23)

DATE	GRID LOC. Row, Column	LAB #	NET WT O.D.	NET WT O.D. <500µm
100185	SW-30	85.09028TH	384.5	99.2
	SW-40	29	290.6	102.3
	SW-50	30	313.5	133.9
	SW-60	31	312.2	105.7
	SW-70	32	387.6	169.5
	SW-80	33	333.6	170.5
	SW-90	34	406.8	136.5
	W-5	35	429.0	190.7
	W-10	36	415.1	152.5
	W-15	37	445.6	171.3
	W-20	38	326.6	111.6
	W-30	39	413.4	100.0
	W-40	40	348.0	121.6
	W-50	41	366.5	146.9
	W-60	42	401.1	160.7
	W-70	43	390.8	137.0
	NW-5	44	547.8	220.1
	NW-10	45	436.8	125.7
	NW-15	46	344.2	133.4
	NW-20	47	391.7	160.9
	NW-30	48	302.4	113.1
	NW-40	49	424.3	160.4
	NW-50	50	427.0	142.1
	NW-60	85.09051TH	218.7	78.3

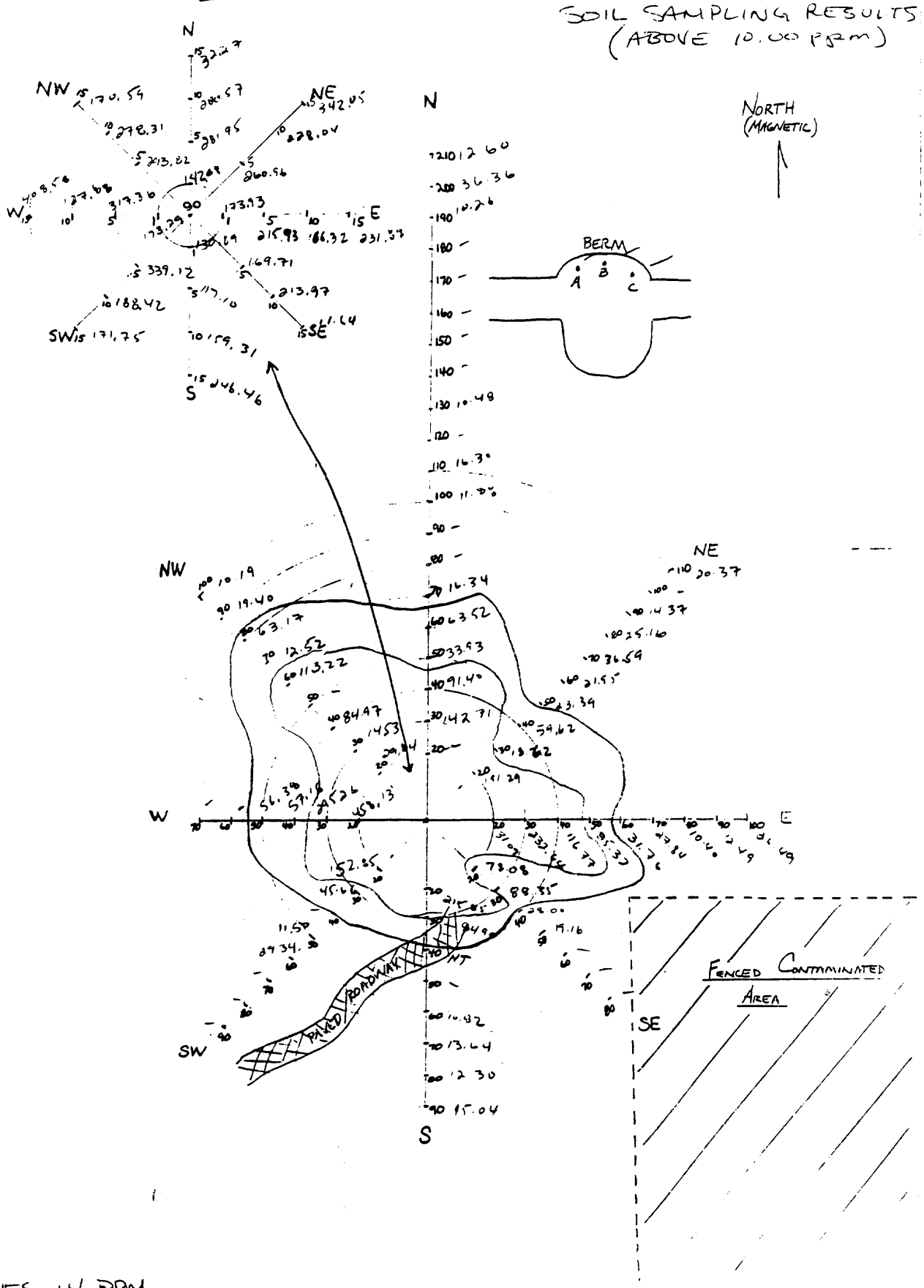
(24)

	DATE	GRID LOC. Row, Column	LAB #	NET O.D. WT.	NET O.D. WT. <500mm	
	100185	NW-70	85.09052TH	300.2	124.4	
		NW-80	53	265.5	123.0	
		NW-90	54	300.3	141.7	
		NW-100	55	274.7	140.4	
Enter cores		N-CTR1	56	896.0	375.9	2 ea add + 6 [illegible] on 1 VIAL
		S-CTR1	57	592.0	244.4	
		E-CTR1	58	836.7	259.6	2 ea +
		W-CTR1	85.09059TH	576.9	244.3	
EAST of N170 Berm	102485	E A-N170	60	546.9	206.2	
		E B-N170	61	447.0	181.8	
		E C-N170	85.09062TH	491.4	197.8	

CENTER RADII 0,0
NUMBERS IN METERS

TA 33-26 GRID MAP

HSE-12 SURVEY L. MARTINEZ
SITE CHARACTERIZATION 1985
SOIL SAMPLING RESULTS
(ABOVE 10.00 PPM)



VALUES IN PPM

HSE-9 ANALYTICAL RESULTS

17-MAR-1986

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05500	04273	6.49	0.70	PPM	3/17/86	
85.05501	04273	6.15	0.60	PPM	3/17/86	
85.05502	04273	1.68	0.20	PPM	3/17/86	
85.05503	04273	7.06	0.70	PPM	3/17/86	
85.05504	04273	5.86	0.60	PPM	3/17/86	
85.05505	04273	7.04	0.70	PPM	3/17/86	
85.05506	04273	7.07	0.70	PPM	3/17/86	
85.05507	04273	7.86	0.80	PPM	3/17/86	
85.05508	04273	6.86	0.70	PPM	3/17/86	
85.05509	04273	5.43	0.50	PPM	3/17/86	
85.05510	04273	5.68	0.60	PPM	3/17/86	
85.05511	04273	5.77	0.60	PPM	3/17/86	
85.05512	04273	6.22	0.60	PPM	3/17/86	
85.05513	04273	5.91	0.60	PPM	3/17/86	
85.05514	04273	10.16	1.00	PPM	3/17/86	
85.05515	04273	6.92	0.70	PPM	3/17/86	
85.05516	04273	6.21	0.60	PPM	3/17/86	
85.05517	04273	5.84	0.60	PPM	3/17/86	
85.05518	04273	5.67	0.60	PPM	3/17/86	
85.05519	04273	4.75	0.50	PPM	3/17/86	
85.05520	04273	5.79	0.60	PPM	3/17/86	
85.05521	04273	6.11	0.60	PPM	3/17/86	TA-20-b
85.05522	04273	5.41	0.50	PPM	3/17/86	
85.05523	04273	5.26	0.50	PPM	3/17/86	
85.05524	04273	5.52	0.50	PPM	3/17/86	
85.05525	04273	6.77	0.70	PPM	3/17/86	
85.05526	04273	7.42	0.70	PPM	3/17/86	
85.05527	04273	5.66	0.60	PPM	3/17/86	
85.05528	04273	5.38	0.50	PPM	3/17/86	
85.05529	04273	5.50	0.50	PPM	3/17/86	
85.05530	04273	5.44	0.50	PPM	3/17/86	
85.05531	04273	5.31	0.50	PPM	3/17/86	
85.05532	04273	5.31	0.50	PPM	3/17/86	
85.05533	04273	7.94	0.80	PPM	3/17/86	
85.05534	04273	4.70	0.50	PPM	3/17/86	
85.05535	04273	5.59	0.60	PPM	3/17/86	
85.05536	04273	5.46	0.60	PPM	3/17/86	
85.05537	04273	4.80	0.50	PPM	3/17/86	
85.05538	04273	5.41	0.50	PPM	3/17/86	
85.05539	04273	5.67	0.60	PPM	3/17/86	
85.05540	04273	4.97	0.50	PPM	3/17/86	
85.05541	04273	3.66	0.40	PPM	3/17/86	
85.05542	04273	6.18	0.60	PPM	3/17/86	
85.05543	04273	4.77	0.50	PPM	3/17/86	
85.05544	04273	5.39	0.50	PPM	3/17/86	
85.05545	04273	6.24	0.60	PPM	3/17/86	
85.05546	04273	4.62	0.50	PPM	3/17/86	
85.05547	04273	3.20	0.30	PPM	3/17/86	
85.05548	04273	4.71	0.50	PPM	3/17/86	
85.05549	04273	5.20	0.50	PPM	3/17/86	

HSE-9 ANALYTICAL RESULTS

U 17-Mar-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05550	04273	5.21	0.50	PPM	3/17/86	
85.05551	04273	5.56	0.60	PPM	3/17/86	
85.05552	04273	5.57	0.60	PPM	3/17/86	
85.05553	04273	6.32	0.60	PPM	3/17/86	
85.05554	04273	7.35	0.70	PPM	3/17/86	
85.05555	04273	8.13	0.80	PPM	3/17/86	
85.05556	04273	5.72	0.60	PPM	3/17/86	TA20-6
85.05557	04273	5.43	0.50	PPM	3/17/86	
85.05558	04273	7.14	0.70	PPM	3/17/86	
85.05559	04273	5.23	0.50	PPM	3/17/86	
85.05560	04273	6.16	0.60	PPM	3/17/86	
85.05561	04273	5.11	0.50	PPM	3/17/86	
85.05562	04273	5.58	0.60	PPM	3/17/86	
85.05563	04273	6.46	0.70	PPM	3/17/86	
85.05564	04273	8.13	0.80	PPM	3/17/86	
85.05565	04273	6.96	0.70	PPM	3/17/86	
85.05566	04273	7.21	0.70	PPM	3/17/86	
85.05567	04273	6.85	0.70	PPM	3/17/86	
85.05568	04273	8.50	0.90	PPM	3/17/86	
85.05569	04273	8.74	0.90	PPM	3/17/86	
85.05570	04273	7.87	0.80	PPM	3/17/86	
85.05571	04273	-9.48	0.90	PPM	3/17/86	
85.05572	04273	-8.92	0.90	PPM	3/17/86	
85.05573	04273	7.44	0.80	PPM	3/17/86	
85.05574	04273	7.24	0.70	PPM	3/17/86	
85.05575	04273	6.31	0.60	PPM	3/17/86	
85.05576	04273	7.11	0.70	PPM	3/17/86	
85.05577	04273	9.02	0.90	PPM	3/17/86	
85.05578	04273	8.22	0.80	PPM	3/17/86	TA-20-7
85.05579	04273	7.52	0.80	PPM	3/17/86	
85.05580	04273	-9.69	1.00	PPM	3/17/86	
85.05581	04273	-8.98	0.90	PPM	3/17/86	
85.05582	04273	-8.50	0.90	PPM	3/17/86	
85.05583	04273	7.88	0.80	PPM	3/17/86	
85.05584	04273	5.37	0.50	PPM	3/17/86	
85.05585	04273	6.08	0.60	PPM	3/17/86	
85.05586	04273	-5.03	0.50	PPM	3/17/86	
85.05587	04273	-5.15	0.50	PPM	3/17/86	
85.05588	04273	-5.89	0.60	PPM	3/17/86	
85.05589	04273	-4.90	0.50	PPM	3/17/86	
85.05590	04273	5.26	0.50	PPM	3/17/86	
85.05591	04273	4.94	0.50	PPM	3/17/86	
85.05592	04273	4.50	0.50	PPM	3/17/86	
85.05593	04273	8.62	0.90	PPM	3/17/86	
85.05594	04273	-7.73	0.80	PPM	3/17/86	
85.05595	04273	-4.93	0.50	PPM	3/17/86	
85.05596	04273	-4.77	0.50	PPM	3/17/86	
85.05597	04273	5.27	0.50	PPM	3/17/86	
85.05598	04273	4.73	0.50	PPM	3/17/86	
85.05599	0~~4273~~	4.72	0.50	PPM	3/17/86	

HSE-9 ANALYTICAL RESULTS

U 17-MAY-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

SECTION LEADER

QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00551	4.61	0.50	PPM	3/17/86	4.48 +/- 0.06 PPM
00.00551	4.51	0.50	PPM	3/17/86	
00.00551	4.63	0.50	PPM	3/17/86	
00.00608	1.15	0.10	PPM	3/17/86	1.11 +/- 0.05 PPM
00.00608	1.15	0.10	PPM	3/17/86	
00.00608	1.10	0.10	PPM	3/17/86	

HSE-9 ANALYTICAL RESULTS

U 20-Mar-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05600	04273	5.07	0.50	PPM	3/20/86	
85.05601	04273	4.43	0.40	PPM	3/20/86	
85.05602	04273	4.68	0.50	PPM	3/20/86	
85.05603	04273	5.60	0.60	PPM	3/20/86	
85.05604	04273	5.28	0.50	PPM	3/20/86	
85.05605	04273	6.83	0.70	PPM	3/20/86	
85.05606	04273	5.18	0.50	PPM	3/20/86	
85.05607	04273	4.52	0.50	PPM	3/20/86	
85.05608	04273	5.05	0.50	PPM	3/20/86	
85.05609	04273	5.42	0.50	PPM	3/20/86	
85.05610	04273	4.20	0.40	PPM	3/20/86	
85.05611	04273	5.25	0.50	PPM	3/20/86	TA-20-7
85.05612	04273	4.84	0.50	PPM	3/20/86	
85.05613	04273	4.81	0.50	PPM	3/20/86	
85.05614	04273	5.22	0.50	PPM	3/20/86	
85.05615	04273	5.11	0.50	PPM	3/20/86	
85.05616	04273	4.72	0.50	PPM	3/20/86	
85.05617	04273	5.03	0.50	PPM	3/20/86	
85.05618	04273	5.09	0.50	PPM	3/20/86	
85.05619	04273	5.13	0.50	PPM	3/20/86	
85.05620	04273	4.76	0.50	PPM	3/20/86	
85.05621	04273	4.87	0.50	PPM	3/20/86	
85.05622	04273	4.89	0.50	PPM	3/20/86	
85.05623	04273	5.06	0.50	PPM	3/20/86	
85.05624	04273	5.11	0.50	PPM	3/20/86	
85.05625	04273	4.57	0.50	PPM	3/20/86	
85.05626	04273	5.31	0.50	PPM	3/20/86	
85.05627	04273	6.29	0.60	PPM	3/20/86	
85.05628	04273	9.69	1.00	PPM	3/20/86	
85.05629	04273	6.20	0.60	PPM	3/20/86	
85.05630	04273	5.52	0.60	PPM	3/20/86	
85.05631	04273	6.30	0.60	PPM	3/20/86	
85.05632	04273	6.13	0.60	PPM	3/20/86	
85.05633	04273	5.69	0.60	PPM	3/20/86	
85.05634	04273	5.46	0.50	PPM	3/20/86	
85.05635	04273	4.61	0.50	PPM	3/20/86	
85.05636	04273	4.94	0.50	PPM	3/20/86	
85.05637	04273	4.59	0.50	PPM	3/20/86	
85.05638	04273	6.61	0.70	PPM	3/20/86	TA-20-3
85.05639	04273	6.68	0.70	PPM	3/20/86	
85.05640	04273	6.33	0.60	PPM	3/20/86	
85.05641	04273	6.13	0.60	PPM	3/20/86	
85.05642	04273	6.19	0.60	PPM	3/20/86	
85.05643	04273	6.50	0.70	PPM	3/20/86	
85.05644	04273	6.13	0.60	PPM	3/20/86	
85.05645	04273	5.42	0.50	PPM	3/20/86	
85.05646	04273	52.48	5.20	PPM	3/20/86	
85.05647	04273	5.71	0.60	PPM	3/20/86	
85.05648	04273	5.71	0.60	PPM	3/20/86	
85.05649	04273	5.85	0.60	PPM	3/20/86	

HSE-9 ANALYTICAL RESULTS

U 20-Mar-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05650	04273	5.62	0.60	PPM	3/20/86	
85.05651	04273	6.25	0.60	PPM	3/20/86	
85.05652	04273	6.85	0.70	PPM	3/20/86	
85.05653	04273	5.40	0.50	PPM	3/20/86	
85.05654	04273	5.51	0.60	PPM	3/20/86	
85.05655	04273	33.25	3.40	PPM	3/20/86	
85.05656	04273	5.62	0.60	PPM	3/20/86	
85.05657	04273	5.74	0.60	PPM	3/20/86	TA-20-3
85.05658	04273	5.78	0.60	PPM	3/20/86	
85.05659	04273	5.01	0.50	PPM	3/20/86	
85.05660	04273	5.84	0.60	PPM	3/20/86	
85.05661	04273	5.73	0.60	PPM	3/20/86	
85.05662	04273	5.53	0.60	PPM	3/20/86	
85.05663	04273	5.62	0.60	PPM	3/20/86	
85.05664	04273	5.59	0.60	PPM	3/20/86	
85.05665	04273	4.66	0.50	PPM	3/20/86	
85.05666	04273	5.67	0.60	PPM	3/20/86	
85.05667	04273	5.94	0.60	PPM	3/20/86	
85.05668	04273	6.37	0.60	PPM	3/20/86	
85.05669	04273	6.96	0.70	PPM	3/20/86	
85.05670	04273	4.89	0.50	PPM	3/20/86	
85.05671	04273	4.18	0.40	PPM	3/20/86	
85.05672	04273	4.80	0.50	PPM	3/20/86	
85.05673	04273	5.64	0.60	PPM	3/20/86	
85.05674	04273	6.56	0.70	PPM	3/20/86	
85.05675	04273	6.30	0.60	PPM	3/20/86	
85.05676	04273	6.38	0.60	PPM	3/20/86	
85.05677	04273	5.30	0.50	PPM	3/20/86	
85.05678	04273	5.31	0.50	PPM	3/20/86	
85.05679	04273	5.56	0.60	PPM	3/20/86	
85.05680	04273	6.17	0.60	PPM	3/20/86	
85.05681	04273	6.48	0.70	PPM	3/20/86	
85.05682	04273	6.61	0.70	PPM	3/20/86	
85.05683	04273	6.74	0.70	PPM	3/20/86	
85.05684	04273	5.58	0.60	PPM	3/20/86	
85.05685	04273	6.08	0.60	PPM	3/20/86	
85.05686	04273	6.79	0.70	PPM	3/20/86	
85.05687	04273	6.26	0.60	PPM	3/20/86	
85.05688	04273	6.52	0.60	PPM	3/20/86	
85.05689	04273	7.01	0.70	PPM	3/20/86	
85.05690	04273	6.33	0.60	PPM	3/20/86	
85.05691	04273	5.72	0.60	PPM	3/20/86	
85.05692	04273	5.28	0.50	PPM	3/20/86	
85.05693	04273	5.05	0.50	PPM	3/20/86	
85.05694	04273	4.88	0.50	PPM	3/20/86	
85.05695	04273	4.91	0.50	PPM	3/20/86	TA-20-37
85.05696	04273	5.44	0.50	PPM	3/20/86	
85.05697	04273	6.41	0.60	PPM	3/20/86	
85.05698	04273	5.13	0.50	PPM	3/20/86	
85.05699	04273	5.40	0.50	PPM	3/20/86	

HSE-9 ANALYTICAL RESULTS

U 20-Mar-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

SECTION LEADER

QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00608	1.14	0.10	PPM	3/20/86	1.11 +/- 0.06 PPM
00.00608	1.16	0.10	PPM	3/20/86	
00.00608	1.16	0.10	PPM	3/20/86	
00.00551	4.49	0.50	PPM	3/20/86	4.48 +/- 0.05 PPM
00.00551	4.51	0.50	PPM	3/20/86	
00.00551	4.56	0.50	PPM	3/20/86	

HSE-9 ANALYTICAL RESULTS

U 8-APR-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05700	04273	5.39	0.50	PPM	4/08/86	
85.05701	04273	8.18	0.80	PPM	4/08/86	
85.05702	04273	6.31	0.60	PPM	4/08/86	
85.05703	04273	5.98	0.60	PPM	4/08/86	
85.05704	04273	5.91	0.60	PPM	4/08/86	
85.05705	04273	6.04	0.60	PPM	4/08/86	TA-20-37
85.05706	04273	6.29	0.60	PPM	4/08/86	
85.05707	04273	7.10	0.70	PPM	4/08/86	
85.05708	04273	7.57	0.80	PPM	4/08/86	
85.05709	04273	6.41	0.60	PPM	4/08/86	
85.05710	04273	5.75	0.60	PPM	4/08/86	
85.05711	04273	7.38	0.70	PPM	4/08/86	
85.05712	04273	7.67	0.80	PPM	4/08/86	
85.05713	04273	7.40	0.70	PPM	4/08/86	
85.05714	04273	7.52	0.80	PPM	4/08/86	
85.05715	04273	5.87	0.60	PPM	4/08/86	
85.05716	04273	5.58	0.60	PPM	4/08/86	
85.05717	04273	7.14	0.70	PPM	4/08/86	
85.05718	04273	7.81	0.80	PPM	4/08/86	
85.05719	04273	6.06	0.60	PPM	4/08/86	
85.05720	04273	4.79	0.50	PPM	4/08/86	TA-20-16
85.05721	04273	6.01	0.60	PPM	4/08/86	
85.05722	04273	6.73	0.70	PPM	4/08/86	
85.05723	04273	6.90	0.70	PPM	4/08/86	
85.05724	04273	6.36	0.60	PPM	4/08/86	
85.05725	04273	6.19	0.60	PPM	4/08/86	
85.05726	04273	4.37	0.40	PPM	4/08/86	
85.05727	04273	6.20	0.60	PPM	4/08/86	
85.05728	04273	6.46	0.70	PPM	4/08/86	
85.05729	04273	6.50	0.70	PPM	4/08/86	
85.05730	04273	6.66	0.70	PPM	4/08/86	
85.05731	04273	6.08	0.60	PPM	4/08/86	
85.05732	04273	6.30	0.60	PPM	4/08/86	
85.05733	04273	6.61	0.70	PPM	4/08/86	
85.05734	04273	5.85	0.60	PPM	4/08/86	
85.05735	04273	7.05	0.70	PPM	4/08/86	
85.05736	04273	6.81	0.70	PPM	4/08/86	
85.05737	04273	7.34	0.70	PPM	4/08/86	
85.05738	04273	5.91	0.60	PPM	4/08/86	
85.05739	04273	7.96	0.80	PPM	4/08/86	
85.05740	04273	5.11	0.50	PPM	4/08/86	
85.05741	04273	7.30	0.70	PPM	4/08/86	
85.05742	04273	4.99	0.50	PPM	4/08/86	TA-20-11
85.05743	04273	4.56	0.50	PPM	4/08/86	
85.05744	04273	5.01	0.50	PPM	4/08/86	
85.05745	04273	4.42	0.40	PPM	4/08/86	
85.05746	04273	3.98	0.40	PPM	4/08/86	
85.05747	04273	4.33	0.40	PPM	4/08/86	
85.05748	04273	7.81	0.80	PPM	4/08/86	
85.05749	04273	5.92	0.60	PPM	4/08/86	

HSE-9 ANALYTICAL RESULTS

U 8-APR-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05750	04273	5.09	0.50	PPM	4/08/86	
85.05751	04273	5.47	0.60	PPM	4/08/86	
85.05752	04273	5.90	0.60	PPM	4/08/86	
85.05753	04273	5.08	0.50	PPM	4/08/86	
85.05754	04273	4.88	0.50	PPM	4/08/86	
85.05755	04273	6.07	0.60	PPM	4/08/86	
85.05756	04273	6.26	0.60	PPM	4/08/86	
85.05757	04273	7.96	0.80	PPM	4/08/86	
85.05758	04273	4.80	0.50	PPM	4/08/86	
85.05759	04273	5.24	0.50	PPM	4/08/86	
85.05760	04273	4.76	0.50	PPM	4/08/86	
85.05761	04273	4.82	0.50	PPM	4/08/86	
85.05762	04273	5.34	0.50	PPM	4/08/86	
85.05763	04273	5.59	0.60	PPM	4/08/86	
85.05764	04273	4.86	0.50	PPM	4/08/86	
85.05765	04273	4.95	0.50	PPM	4/08/86	
85.05766	04273	4.77	0.50	PPM	4/08/86	
85.05767	04273	5.08	0.50	PPM	4/08/86	
85.05768	04273	4.93	0.50	PPM	4/08/86	TA-20-11
85.05769	04273	4.72	0.50	PPM	4/08/86	
85.05770	04273	5.06	0.50	PPM	4/08/86	
85.05771	04273	5.00	0.50	PPM	4/08/86	
85.05772	04273	5.09	0.50	PPM	4/08/86	
85.05773	04273	5.34	0.50	PPM	4/08/86	
85.05774	04273	5.15	0.50	PPM	4/08/86	
85.05775	04273	5.00	0.50	PPM	4/08/86	
85.05776	04273	4.98	0.50	PPM	4/08/86	
85.05777	04273	4.92	0.50	PPM	4/08/86	
85.05778	04273	4.92	0.50	PPM	4/08/86	
85.05779	04273	5.10	0.50	PPM	4/08/86	
85.05780	04273	5.97	0.60	PPM	4/08/86	
85.05781	04273	5.25	0.50	PPM	4/08/86	
85.05782	04273	5.58	0.60	PPM	4/08/86	
85.05783	04273	5.03	0.50	PPM	4/08/86	
85.05784	04273	4.71	0.50	PPM	4/08/86	
85.05785	04273	5.11	0.50	PPM	4/08/86	
85.05786	04273	5.03	0.50	PPM	4/08/86	
85.05787	04273	4.93	0.50	PPM	4/08/86	
85.05788	04273	5.70	0.60	PPM	4/08/86	
85.05789	04273	5.06	0.50	PPM	4/08/86	
85.05790	04273	5.13	0.50	PPM	4/08/86	
85.05791	04273	5.60	0.60	PPM	4/08/86	
85.05792	04273	6.29	0.60	PPM	4/08/86	
85.05793	04273	5.63	0.60	PPM	4/08/86	
85.05794	04273	5.77	0.60	PPM	4/08/86	
85.05795	04273	5.89	0.60	PPM	4/08/86	
85.05796	04273	5.61	0.60	PPM	4/08/86	TA-20-13
85.05797	04273	6.46	0.70	PPM	4/08/86	
85.05798	04273	6.80	0.70	PPM	4/08/86	
85.05799	04273	7.04	0.70	PPM	4/08/86	

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HSE-9 ANALYTICAL RESULTS

U 8-Apr-1986 TH

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SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

SECTION LEADER

QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00551	4.45	0.50	PPM	4/08/86	4.48 +/- 0.05 PPM
00.00551	4.44	0.40	PPM	4/08/86	
00.00551	4.22	0.40	PPM	4/08/86	
00.00608	1.13	0.10	PPM	4/08/86	1.11 +/- 0.06 PPM
00.00608	1.11	0.10	PPM	4/08/86	
00.00608	1.14	0.10	PPM	4/08/86	

HSE-9 ANALYTICAL RESULTS

U 15-OCT-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05800	04273	4.63	0.50	PPM	4/15/86	
85.05801	04273	5.74	0.60	PPM	4/15/86	
85.05802	04273	7.02	0.70	PPM	4/15/86	
85.05803	04273	6.68	0.70	PPM	4/15/86	
85.05804	04273	4.74	0.50	PPM	4/15/86	
85.05805	04273	2.41	0.20	PPM	4/15/86	
85.05806	04273	6.77	0.70	PPM	4/15/86	
85.05807	04273	6.19	0.60	PPM	4/15/86	
85.05808	04273	6.54	0.60	PPM	4/15/86	
85.05809	04273	8.79	0.90	PPM	4/15/86	
85.05810	04273	3.85	0.40	PPM	4/15/86	TA-20-13
85.05811	04273	5.00	0.50	PPM	4/15/86	
85.05812	04273	6.36	0.60	PPM	4/15/86	
85.05813	04273	6.46	0.70	PPM	4/15/86	
85.05814	04273	7.59	0.80	PPM	4/15/86	
85.05815	04273	5.91	0.60	PPM	4/15/86	
85.05816	04273	4.46	0.50	PPM	4/15/86	
85.05817	04273	4.54	0.50	PPM	4/15/86	
85.05818	04273	6.56	0.70	PPM	4/15/86	
85.05819	04273	7.70	0.80	PPM	4/15/86	
85.05820	04273	7.16	0.70	PPM	4/15/86	
85.05821	04273	3.89	0.40	PPM	4/15/86	
85.05822	04273	6.24	0.60	PPM	4/15/86	
85.05823	04273	6.95	0.70	PPM	4/15/86	
85.05824	04273	6.21	0.60	PPM	4/15/86	
85.05825	04273	6.03	0.60	PPM	4/15/86	
85.05826	04273	6.53	0.70	PPM	4/15/86	
85.05827	04273	6.20	0.60	PPM	4/15/86	
85.05828	04273	6.84	0.70	PPM	4/15/86	
85.05829	04273	6.45	0.70	PPM	4/15/86	
85.05830	04273	6.12	0.60	PPM	4/15/86	
85.05831	04273	6.34	0.60	PPM	4/15/86	TA-20-17
85.05832	04273	6.88	0.70	PPM	4/15/86	
85.05833	04273	6.55	0.70	PPM	4/15/86	
85.05834	04273	6.34	0.70	PPM	4/15/86	
85.05835	04273	7.05	0.70	PPM	4/15/86	
85.05836	04273	6.38	0.60	PPM	4/15/86	
85.05837	04273	6.69	0.70	PPM	4/15/86	
85.05838	04273	7.19	0.70	PPM	4/15/86	
85.05839	04273	7.25	0.70	PPM	4/15/86	
85.05840	04273	6.36	0.70	PPM	4/15/86	
85.05841	04273	5.26	0.50	PPM	4/15/86	
85.05842	04273	5.43	0.50	PPM	4/15/86	
85.05843	04273	5.52	0.60	PPM	4/15/86	
85.05844	04273	5.53	0.60	PPM	4/15/86	Sandia Canyon
85.05845	04273	5.54	0.60	PPM	4/15/86	Stream channel
85.05846	04273	5.07	0.50	PPM	4/15/86	
85.05847	04273	4.91	0.50	PPM	4/15/86	
85.05848	04273	4.68	0.50	PPM	4/15/86	
85.05849	04273	5.25	0.50	PPM	4/15/86	

HSE-9 ANALYTICAL RESULTS

U 15-Apr-1984 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05850	04273	5.66	0.60	PPM	4/15/86	SANDIA CANYON STREAM CHANNEL
85.05851	04273	3.66	0.40	PPM	4/15/86	
85.05852	04273	3.93	0.40	PPM	4/15/86	
85.05853	04273	3.00	0.30	PPM	4/15/86	
85.05854	04273	3.15	0.30	PPM	4/15/86	
85.05855	04273	4.09	0.30	PPM	4/15/86	
85.05856	04273	4.15	0.40	PPM	4/15/86	
85.05857	04273	3.72	0.40	PPM	4/15/86	
85.05858	04273	3.84	0.40	PPM	4/15/86	
85.05859	04273	4.99	0.50	PPM	4/15/86	
85.05860	04273	4.65	0.50	PPM	4/15/86	
85.05861	04273	4.95	0.50	PPM	4/15/86	
85.05862	04273	4.90	0.50	PPM	4/15/86	
85.05863	04273	3.90	0.40	PPM	4/15/86	
85.05864	04273	4.27	0.40	PPM	4/15/86	
85.05865	04273	4.18	0.40	PPM	4/15/86	
85.05866	04273	4.20	0.40	PPM	4/15/86	
85.05867	04273	5.83	0.60	PPM	4/15/86	TA-27
85.05868	04273	4.64	0.50	PPM	4/15/86	FIRING POINT
85.05869	04273	3.78	0.40	PPM	4/15/86	#1
85.05870	04273	4.30	0.40	PPM	4/15/86	
85.05871	04273	4.55	0.50	PPM	4/15/86	
85.05872	04273	4.57	0.50	PPM	4/15/86	
85.05873	04273	4.56	0.50	PPM	4/15/86	
85.05874	04273	5.08	0.50	PPM	4/15/86	
85.05875	04273	3.97	0.40	PPM	4/15/86	
85.05876	04273	4.10	0.40	PPM	4/15/86	
85.05877	04273	4.94	0.50	PPM	4/15/86	
85.05878	04273	4.51	0.50	PPM	4/15/86	
85.05879	04273	4.75	0.50	PPM	4/15/86	
85.05880	04273	4.87	0.50	PPM	4/15/86	
85.05881	04273	4.16	0.40	PPM	4/15/86	
85.05882	04273	4.30	0.40	PPM	4/15/86	
85.05883	04273	4.53	0.50	PPM	4/15/86	
85.05884	04273	5.16	0.50	PPM	4/15/86	
85.05885	04273	4.81	0.50	PPM	4/15/86	
85.05886	04273	5.07	0.50	PPM	4/15/86	
85.05887	04273	4.53	0.50	PPM	4/15/86	
85.05888	04273	13.50	1.40	PPM	4/15/86	
85.05889	04273	17.82	1.80	PPM	4/15/86	
85.05890	04273	30.20	3.10	PPM	4/15/86	
85.05891	04273	14.60	1.50	PPM	4/15/86	
85.05892	04273	20.28	2.10	PPM	4/15/86	TA-27
85.05893	04273	4.91	0.50	PPM	4/15/86	
85.05894	04273	5.48	0.50	PPM	4/15/86	FIRING POINTS
85.05895	04273	17.82	1.80	PPM	4/15/86	#2+#3
85.05896	04273	12.14	1.20	PPM	4/15/86	
85.05897	04273	18.92	2.00	PPM	4/15/86	
85.05898	04273	16.30	1.60	PPM	4/15/86	
85.05899	04273	29.28	3.00	PPM	4/15/86	

HSE-9 [illegible] RESULTS

U 15-[illegible]-1994 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

ESG

SECTION LEADER

ESG 9/19/96

QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00551	4.50	0.40	PPM	4/15/86	4.48 +/- 0.06 PPM
00.00551	4.53	0.50	PPM	4/15/86	
00.00551	4.55	0.50	PPM	4/15/86	
00.00608	1.13	0.10	PPM	4/15/86	1.11 +/- 0.05 PPM
00.00608	1.15	0.10	PPM	4/15/86	
00.00608	1.13	0.10	PPM	4/15/86	

HSE-9 ANALYTICAL RESULTS

U 16-APR-1986 EVI

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05900	04273	13.12	1.30	PPM	4/16/86	
85.05901	04273	14.44	1.40	PPM	4/16/86	
85.05902	04273	19.47	2.00	PPM	4/16/86	
85.05903	04273	25.70	2.60	PPM	4/16/86	
85.05904	04273	10.53	1.10	PPM	4/16/86	
85.05905	04273	9.92	1.00	PPM	4/16/86	TA-27
85.05906	04273	5.42	0.50	PPM	4/16/86	FIRING POINTS
85.05907	04273	6.99	0.70	PPM	4/16/86	#2+#3
85.05908	04273	8.83	0.90	PPM	4/16/86	
85.05909	04273	46.09	4.60	PPM	4/16/86	
85.05910	04273	17.13	1.70	PPM	4/16/86	
85.05911	04273	12.57	1.30	PPM	4/16/86	
85.05912	04273	5.75	0.60	PPM	4/16/86	
85.05913	04273	5.55	0.60	PPM	4/16/86	
85.05914	04273	13.04	1.30	PPM	4/16/86	
85.05915	04273	10.73	1.10	PPM	4/16/86	
85.05916	04273	13.78	1.40	PPM	4/16/86	
85.05917	04273	7.00	0.70	PPM	4/16/86	
85.05918	04273	18.27	1.80	PPM	4/16/86	
85.05919	04273	3.89	0.40	PPM	4/16/86	
85.05920	04273	4.12	0.40	PPM	4/16/86	
85.05921	04273	4.22	0.40	PPM	4/16/86	
85.05922	04273	4.02	0.40	PPM	4/16/86	
85.05923	04273	3.97	0.40	PPM	4/16/86	
85.05924	04273	3.96	0.40	PPM	4/16/86	
85.05925	04273	4.30	0.40	PPM	4/16/86	
85.05926	04273	4.77	0.50	PPM	4/16/86	
85.05927	04273	4.75	0.50	PPM	4/16/86	
85.05928	04273	4.08	0.40	PPM	4/16/86	TA-27
85.05929	04273	4.14	0.40	PPM	4/16/86	FIRING POINTS
85.05930	04273	4.03	0.40	PPM	4/16/86	#4+#5
85.05931	04273	4.95	0.50	PPM	4/16/86	
85.05932	04273	4.89	0.50	PPM	4/16/86	
85.05933	04273	5.44	0.50	PPM	4/16/86	
85.05934	04273	4.97	0.50	PPM	4/16/86	
85.05935	04273	4.08	0.40	PPM	4/16/86	
85.05936	04273	4.18	0.40	PPM	4/16/86	
85.05937	04273	5.21	0.50	PPM	4/16/86	
85.05938	04273	5.16	0.50	PPM	4/16/86	
85.05939	04273	6.67	0.70	PPM	4/16/86	
85.05940	04273	4.51	0.50	PPM	4/16/86	
85.05941	04273	4.52	0.50	PPM	4/16/86	
85.05942	04273	3.83	0.50	PPM	4/16/86	
85.05943	04273	4.03	0.40	PPM	4/16/86	
85.05944	04273	6.72	0.70	PPM	4/16/86	
85.05945	04273	4.36	0.50	PPM	4/16/86	
85.05946	04273	7.80	0.80	PPM	4/16/86	
85.05947	04273	5.56	0.60	PPM	4/16/86	PAJARITO
85.05948	04273	2.28	0.30	PPM	4/16/86	CANYON
85.05949	04273	4.33	0.40	PPM	4/16/86	STREAM CHANNEL

HSE-9 ANALYTICAL RESULTS

U 16-APR-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.05950	04273	3.39	0.40	PPM	4/16/86	PAJARITO CANYON STREAM CHANNEL
85.05951	04273	2.83	0.30	PPM	4/16/86	
85.05952	04273	6.13	0.60	PPM	4/16/86	
85.05953	04273	4.21	0.40	PPM	4/16/86	
85.05954	04273	3.15	0.30	PPM	4/16/86	
85.05955	04273	4.86	0.50	PPM	4/16/86	
85.05956	04275	281.95	28.20	PPM	4/16/86	
85.05957	04275	280.57	28.10	PPM	4/16/86	
85.05958	04275	32.27	3.30	PPM	4/16/86	
85.05959	04275	8.94	0.90	PPM	4/16/86	
85.05960	04275	142.71	14.30	PPM	4/16/86	
85.05961	04275	91.40	9.10	PPM	4/16/86	
85.05962	04275	33.93	3.40	PPM	4/16/86	
85.05963	04275	63.52	6.40	PPM	4/16/86	
85.05964	04275	16.34	1.60	PPM	4/16/86	
85.05965	04275	8.70	0.90	PPM	4/16/86	
85.05966	04275	9.38	0.90	PPM	4/16/86	
85.05967	04275	11.88	1.20	PPM	4/16/86	
85.05968	04275	16.30	1.60	PPM	4/16/86	
85.05969	04275	8.89	0.90	PPM	4/16/86	
85.05970	04275	10.48	1.10	PPM	4/16/86	
85.05971	04275	3.82	0.40	PPM	4/16/86	
85.05972	04275	7.44	0.70	PPM	4/16/86	
85.05973	04275	7.98	0.80	PPM	4/16/86	
85.05974	04275	6.94	0.70	PPM	4/16/86	
85.05975	04275	6.94	0.70	PPM	4/16/86	
85.05976	04275	10.26	1.10	PPM	4/16/86	TA-33-26
85.05977	04275	36.36	3.60	PPM	4/16/86	
85.05978	04275	12.60	1.30	PPM	4/16/86	
85.05979	04275	260.96	26.10	PPM	4/16/86	
85.05980	04275	228.04	22.80	PPM	4/16/86	
85.05981	04275	342.05	34.20	PPM	4/16/86	
85.05982	04275	191.29	19.10	PPM	4/16/86	
85.05983	04275	18.62	1.90	PPM	4/16/86	
85.05984	04275	59.62	6.00	PPM	4/16/86	
85.05985	04275	23.39	2.30	PPM	4/16/86	
85.05986	04275	21.95	2.20	PPM	4/16/86	
85.05987	04275	36.59	3.70	PPM	4/16/86	
85.05988	04275	25.16	2.50	PPM	4/16/86	
85.05989	04275	14.37	1.50	PPM	4/16/86	
85.05990	04275	5.62	0.60	PPM	4/16/86	
85.05991	04275	20.37	2.10	PPM	4/16/86	
85.05992	04275	215.93	21.60	PPM	4/16/86	
85.05993	04275	186.32	18.60	PPM	4/16/86	
85.05994	04275	231.87	23.20	PPM	4/16/86	
85.05995	04275	31.09	3.10	PPM	4/16/86	
85.05996	04275	232.64	23.30	PPM	4/16/86	
85.05997	04275	116.77	11.70	PPM	4/16/86	
85.05998	04275	85.32	8.50	PPM	4/16/86	
85.05999	04275	31.76	3.20	PPM	4/16/86	

HSE-9 ANALYTICAL RESULTS

U 16-Apr-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

SECTION LEADER

QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00551	4.49	0.50	PPM	4/16/86	4.53 +/- 0.06 PPM
00.00551	4.51	0.50	PPM	4/16/86	
00.00551	4.60	0.50	PPM	4/16/86	
00.00608	1.12	0.20	PPM	4/16/86	1.11 +/- 0.05 PPM
00.00608	1.08	0.20	PPM	4/16/86	
00.00608	1.12	0.20	PPM	4/16/86	

HSE-9 ANALYTICAL RESULTS

U 14-MAY-1986 TH

SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.09000	04275	27.84	2.80	PPM	5/14/86	
85.09001	04275	10.80	1.10	PPM	5/14/86	
85.09002	04275	12.49	1.30	PPM	5/14/86	
85.09003	04275	26.49	2.70	PPM	5/14/86	
85.09004	04275	169.71	17.00	PPM	5/14/86	
85.09005	04275	213.97	21.40	PPM	5/14/86	
85.09006	04275	11.64	1.20	PPM	5/14/86	
85.09007	04275	78.08	7.80	PPM	5/14/86	TA-33-26
85.09008	04275	88.35	8.80	PPM	5/14/86	
85.09009	04275	28.00	2.80	PPM	5/14/86	
85.09010	04275	19.16	1.90	PPM	5/14/86	
85.09011	04275	9.06	0.90	PPM	5/14/86	
85.09012	04275	9.06	0.90	PPM	5/14/86	
85.09013	04275	8.79	0.90	PPM	5/14/86	
85.09014	04275	117.10	11.70	PPM	5/14/86	
85.09015	04275	159.31	15.90	PPM	5/14/86	
85.09016	04275	246.46	25.00	PPM	5/14/86	
85.09017	04275	215.85	21.60	PPM	5/14/86	
85.09018	04275	84.90	8.50	PPM	5/14/86	

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

SECTION LEADER

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QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00608	1.10	0.20	PPM	5/14/86	1.11 +/- 0.05 PPM
00.00608	1.10	0.20	PPM	5/14/86	
00.00608	1.13	0.20	PPM	5/14/86	
00.00551	4.49	0.50	PPM	5/14/86	4.58 +/- 0.04 PPM
00.00551	4.45	0.50	PPM	5/14/86	
00.00551	4.38	0.40	PPM	5/14/86	

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HSE-9 ANALYTICAL RESULTS

U 1-May-1986 TH

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SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT
85.09019	04275	9.26	0.90	PPM	5/01/86	
85.09020	04275	10.82	1.10	PPM	5/01/86	
85.09021	04275	13.64	1.40	PPM	5/01/86	
85.09022	04275	12.30	1.20	PPM	5/01/86	
85.09023	04275	15.04	1.50	PPM	5/01/86	
85.09024	04275	339.12	34.00	PPM	5/01/86	
85.09025	04275	188.42	18.80	PPM	5/01/86	
85.09026	04275	171.75	17.20	PPM	5/01/86	
85.09027	04275	152.85	15.30	PPM	5/01/86	
85.09028	04275	45.66	4.60	PPM	5/01/86	
85.09029	04275	4.97	0.50	PPM	5/01/86	
85.09030	04275	11.50	1.20	PPM	5/01/86	
85.09031	04275	29.34	2.90	PPM	5/01/86	
85.09032	04275	6.57	6.60	PPM	5/01/86	
85.09033	04275	5.56	0.60	PPM	5/01/86	
85.09034	04275	7.62	0.80	PPM	5/01/86	
85.09035	04275	317.36	31.80	PPM	5/01/86	
85.09036	04275	127.88	12.80	PPM	5/01/86	
85.09037	04275	408.58	41.00	PPM	5/01/86	
85.09038	04275	458.13	45.80	PPM	5/01/86	TA-33-26
85.09039	04275	295.26	29.50	PPM	5/01/86	
85.09040	04275	57.12	5.70	PPM	5/01/86	
85.09041	04275	56.38	5.70	PPM	5/01/86	
85.09042	04275	9.83	1.00	PPM	5/01/86	
85.09043	04275	6.25	0.60	PPM	5/01/86	
85.09044	04275	293.82	29.40	PPM	5/01/86	
85.09045	04275	278.31	27.80	PPM	5/01/86	
85.09046	04275	170.59	17.10	PPM	5/01/86	
85.09047	04275	29.84	3.00	PPM	5/01/86	
85.09048	04275	14.53	1.50	PPM	5/01/86	
85.09049	04275	84.97	8.50	PPM	5/01/86	
85.09050	04275	5.79	0.60	PPM	5/01/86	
85.09051	04275	113.22	11.30	PPM	5/01/86	
85.09052	04275	12.52	1.30	PPM	5/01/86	
85.09053	04275	63.12	6.30	PPM	5/01/86	
85.09054	04275	19.40	2.00	PPM	5/01/86	
85.09055	04275	10.19	1.00	PPM	5/01/86	
85.09056	04275	142.68	14.30	PPM	5/01/86	
85.09057	04275	173.93	17.40	PPM	5/01/86	
85.09058	04275	130.89	13.10	PPM	5/01/86	
85.09059	04275	173.29	17.30	PPM	5/01/86	
85.09060	04275	4.23	0.40	PPM	5/01/86	
85.09061	04275	2.91	0.30	PPM	5/01/86	
85.09062	04275	2.86	0.30	PPM	5/01/86	

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HSE-9 ANALYTICAL RESULTS

U 1-May-1986 TH

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SAMPLE NUMBER	REQ NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	COMMENT

THESE DATA MEET ESTABLISHED HSE9 GROUP QUALITY ASSURANCE STANDARDS

SECTION LEADER

QUALITY ASSURANCE OFFICER

QUALITY ASSURANCE FOR U IN SILICATES

SAMPLE NUM	RESULT	UNCERTAINTY	UNITS	COMPLETION DATE	CERTIFIED VALUE
00.00551	4.44	0.40	PPM	5/01/86	4.58 +/- 0.04 PPM
00.00551	4.47	0.50	PPM	5/01/86	
00.00551	4.47	0.50	PPM	5/01/86	
00.00608	1.11	0.20	PPM	5/01/86	1.11 +/- 0.05 PPM
00.00608	1.11	0.20	PPM	5/01/86	
00.00608	1.15	0.20	PPM	5/01/86	

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