

0204

LANL ER PROJECT SITE-SPECIFIC HEALTH AND SAFETY PLAN (SSHASP)

Project Title: Best Management Practices/ Stabilization (BMP/S) at Material Disposal Area (MDA) AB, Areas 2, 2A and 2B - PRS's 49-001 (b, c, d and g)

TA: 49

This plan addresses the health and safety (HS) criteria to be followed during investigation, remediation or decommissioning activities associated with the Environmental Restoration (ER) Project at the Los Alamos National Laboratory (LANL)

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SSHASP ACKNOWLEDGMENT FORM

Project Title: **BMP/s AT MDA-AB**

Date: **8-31-98**

TA(s): **49**

SSHASP No.: **204**

I acknowledge that I have read or have been briefed on the contents of this SSHASP in accordance with requirements of Sections 1.2 and 10.1.3 of the HASP.

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LIST OF ACRONYMS and ABBREVIATIONS

ACGIH.....	American Conference of Governmental Industrial Hygienists
ALARA	As Low As Reasonably Achievable
AL.....	Action Level
ANSI.....	American National Standard Institute
APR.....	Air-Purifying Respirator
AR.....	Administrative Requirement
ATM.....	Atmosphere
BMPS	Best Management Practices/Stabilization
CFR.....	Code of Federal Regulations
CP	Competent Person
CPOC.....	Chemicals of Potential Concern
CPR.....	Cardiopulmonary Resuscitation
CRZ.....	Contamination Reduction Zone
DAC.....	Derived Air Concentration
dBA	Decibels (A-Weighted Scale)
DOE	U.S. Department of Energy
DOT.....	U.S. Department of Transportation
EPA.....	U.S. Environmental Protection Agency
ER.....	Environmental Restoration
ESH.....	Environmental, Safety and Health
ESH-1.....	Health Physics Operations Group
ESH-2.....	Occupational Medicine Group
ESH-5.....	Industrial Hygiene and Safety Group

LIST OF ACRONYMS and ABBREVIATIONS (Cont'd)

ESH-12.....	Policy and Program Analysis Group
eV.....	Electron Volts
EZ.....	Exclusion Zone
°F.....	Degrees Fahrenheit
GET.....	General Employee Training
HASP.....	Health and Safety Plan
HAZWOPER.....	Hazardous Waste Operations
HEPA.....	High Efficiency Particulate Air
HPT.....	Health Protection Technician
HS.....	Health and Safety
IARC.....	International Agency for Research on Cancer
IDLH.....	Immediately Dangerous to Life or Health
IP.....	Ionization Potential
LAMC.....	Los Alamos Medical Center
LANL.....	Los Alamos National Laboratory
LEL.....	Lower Explosive Limit
LP.....	Laboratory Procedure
MDA.....	Material Disposal Area
mg/kg.....	Milligrams Per Kilogram
mg/m ³	Milligrams Per Cubic Meter
mm.....	Millimeters
MSDS.....	Material Safety Data Sheet
MUC.....	Maximum Use Concentration
MUTCD.....	Manual on Uniform Traffic Control Devices for Streets and Highways
NIOSH.....	National Institute for Occupational Safety and Health
NRR.....	Noise Reduction Rating
OSHA.....	Occupational Safety and Health Administration
PEL.....	Permissible Exposure Limit
PF.....	Protection Factor
PPE.....	Personal Protective Equipment
PRS.....	Potential Release Site
RCT.....	Radiological Control Technician
ROPS.....	Roll Over Protective Structure
RSP.....	Radiological Screening Personnel
RWP.....	Radiological Work Permit
SLM.....	Sound Level Meter
SOP.....	Standard Operating Procedure
SSHASP.....	Site-Specific Health and Safety Plan
SSO.....	Site Safety Officer
SUP.....	Supervisor
SWP.....	Special Work Permit
SZ.....	Support Zone
TA.....	Technical Area
TLD.....	Thermoluminescent Dosimeter
TLV.....	Threshold Limit Value
TWA.....	8-Hour Time-Weighted Average

1.0 INTRODUCTION

This Site-Specific Health and Safety Plan (SSHASP) has been developed for the activities associated with the Best Management Practices/Stabilization (BMP/S) at Material Disposal Area (MDA) AB, Areas 2, 2A and 2B - PRS's 49-001 (b, c, d and g). The provisions specified in this SSHASP shall comply with applicable federal and state occupational health and safety (HS) requirements, including those of the U.S. Department of Energy (DOE). The DOE requires LANL to comply with the federal Occupational Safety and Health Administration (OSHA) requirements, although operations at LANL are not subject to the jurisdiction of OSHA. On March 24, 1995, the ER Project developed a Project Health and Safety Plan, herein referred to as HASP, which establishes HS information and requirements applicable to ER field operations project wide. In addition to the HASP, this SSHASP establishes site-specific HS information and requirements applicable to the scope of work described in Section 2.

ER participants are responsible for conducting work in accordance with applicable regulations. The term "ER participants" refers to anyone performing ER work, including LANL, subcontractors to LANL and their lower-tier contractors, consultants, and agents. In some cases in this document, LANL has chosen to invoke OSHA and LANL requirements which ordinarily may not apply to ER field operations (e.g., OSHA's general industry standards in Part 1910 of Title 29 of the Code of Federal Regulations [29 CFR 1910]). These choices were made on a case-by-case basis to maintain consistency with LANL's ALARA policy and to clarify LANL's expectations with regard to interpretable requirements of the multiple agencies governing ER work. Where there is concern that implementation of work orders or HS requirements would conflict with contract terms, or could unreasonably compromise the safety or health of an individual or the environment, such concerns should be brought to the attention of the Contract Administrator and the Field Unit HS Representative immediately. Failure to comply with terms of HS plans may constitute cause to stop activity or for issuance of a stop work order as specified in Section 3.4.2 of the HASP without cost or penalty to LANL.

This SSHASP shall be reviewed and approved in accordance with Section 1.2 of the HASP. Once this SSHASP has been approved, revisions will be tracked using a SSHASP modification form (Appendix B of the HASP) per Section 1.3 of the HASP. Modifications to this SSHASP may require a change to the terms or scope of a subcontract. Completion of a SSHASP modification form is not the means for modifying the scope or terms of the project contract. To modify a contract, the Subcontractor shall notify the Contract Administrator and Field Unit HS Representative under the change clause and shall not proceed with the change until a change order has been mutually agreed between the parties, or unless the Contract Administrator gives unilateral direction.

2.0 BACKGROUND INFORMATION

Between 1959 and 1961, MDA AB was used for underground experiments related to the safety of nuclear weapons. Based on available records, LANL conducted 35 underground experiments at TA-49 that involved the detonation of experimental devices in 3 ft to 6-ft diameter shafts at depths from 31 to 108 ft. Materials used in the experiments consisted of High Explosives (HE), Uranium-235 (U235), Uranium-238 (U238), Plutonium (P), Beryllium (Be), and Lead (Pb). Since these experiments ceased in August of 1961, TA-49 has been periodically used for a variety of other uses that have not resulted in significant additional contamination. Portions of TA-49 are currently being used for microwave research, LANL hazardous devices team activities and other low impact uses.

Project Title:	BMP/S at Material Disposal Area (MDA) AB, Areas 2, 2A and 2B PRS's 49-001 (b, c, d and g)
TA:	49
Objective:	To stabilize the chemicals of potential concern (COPC) located below the asphalt pad.
Classification of Work	HAZWOPER

**TABLE 2-1
SITE DESCRIPTION**

This table identifies the characteristics and the chemicals of potential concern (COPC) for TA-49, MDA AB, Areas 2, 2A and 2B - PRS's 49-001 (b, c, d and g).

DESCRIPTOR	CHARACTERISTICS
Adjacent Facilities/Structures/Utilities/Topography	
Roads/ Highways	TA-49 is located near the southern boundary of the laboratory. The main road off of State Route 4 into TA-49 makes a loop around MDA AB and also serves as the site's firebreak. Some BMP/S activities (i.e., site set up, fence removal) may impede traffic to and from the site. Since this road is the main access to the site, such activities shall be conducted in a fashion that least impacts traffic flow on this road.
Buildings	There are four structures to the east of MDA AB. These structures are not currently occupied and therefore, should not be impacted by the BMP/S activities.
Below Ground Utilities:	All below ground utilities (i.e., electric, cable, gas, phone, water, sewer, etc.) will be identified prior to start of work in the LANL excavation permit.
Above Ground Electric:	There are no above ground electric lines that will impact this work.
Topography	MDA AB is located on Frijoles Mesa in the southwest corner of LANL. The mesa is relatively flat and is bordered by two steep-walled canyons, Ancho and Water, that flow to the southeast.
Pathways of Uncontrolled Release Dispersion	
Land	If contaminants were inadvertently released to the ground, the most likely direction of dispersion would be to the southeast and north.
Air	Site operations will cease at the discretion of the SSO if high winds pose a dust dispersion threat of site contaminants. Prevailing daytime surface winds at LANL are out of the south, southeast.
Water	There are no flowing waterways in the vicinity of MDA AB. However, heavy precipitation or runoff could disperse contaminants to the southeast and north.
Emergency Accessibility	
Land/Air	The site is accessible by land and air.
Water	The site is not accessible by water.
Previous Substances Used, Disposed, Detected or Suspected at MDA AB	
High Explosives Uranium Plutonium Americium Tritium Metals (See Appendix B for Specific Types)	Several sources have provided information concerning the potential contaminants at MDA-AB. Historical documents state that the shafts at MDA-AB contain 40 Kg of plutonium, 260 Kg of Uranium, 11 Kg of Beryllium, and an estimated 90,000 Kg of lead. Results of 1987 study of soil and vegetation immediately adjacent to MDA AB showed 53 pCi/g of americium-241 all other readings away from the asphalt pad were at or slightly above regional background levels. In two 1991 studies, 135 to 1200 pCi/g gross alpha, 38 pCi/g americium-241, 24 pCi/g plutonium-238, and 43 pCi/g plutonium-239 were found at the gopher burrows (See site map, Appendix A). In 1993, 291 pCi/g of plutonium-239, 5.1 pCi/g of plutonium-238, and 59 pCi/g of americium-241 were detected at a depth of 3 to 3.5 feet below the asphalt pad. The data from the 1998 sampling effort at MDA-AB is presented in Appendix B of this SSHASP. High Explosives (HE) data is not available.

**TABLE 2-2
SCOPE OF WORK**

This table describes the tasks involved with the BMP/S at MDA AB, Areas 2, 2A and 2B - PRS's 49-001 (b, c, d and g).

Task ID	Task Description	Duration
<p>Task 1 Site Set Up</p>	<p>Establishing lay down areas for waste containers, equipment, supplies, and support facilities. To accomplish this task, the subcontractor will utilize heavy equipment such as tracked excavators, front-end loaders, dump trucks, backhoes, and/or other similar heavy equipment to clear, grub and level areas to store project related items. For spill control and run off purposes, some lay down areas may require additional construction (i.e., bermed edges, poly covers and posting) as specified in the waste management plan. In general, this task should not involve intrusive activities within the exclusion zone.</p>	
<p>Task 2 Fence Removal</p>	<p>Portions of the fence around MDA AB may be removed to allow for equipment access. To accomplish this task, the subcontractor will remove the chain link fence in manageable lengths and place it in an appropriate lay down area based on the results of sampling/screening (Task 5). The poles holding up the chain link fencing will be removed, as necessary, by heavy equipment such as tracked excavators, front-end loaders, backhoes, and/or other similar heavy equipment. Appropriate exposure monitoring (Task 6), dust suppression (Task 7), decontamination (Task 8), and waste management (Task 9) shall also be conducted during this task. Site access shall be controlled with the use of flagging, tape, rope or other suitable material.</p>	
<p>Task 3 Asphalt Pad Removal</p>	<p>The asphalt pad shall be removed using heavy equipment such as tracked excavators, front-end loaders, dump trucks, backhoes, and/or other similar heavy equipment to remove the asphalt pad in manageable sections. Rad hot spots may be separated from the rest of the asphalt and placed in appropriate waste containers. Appropriate sampling/screening (Task 5), exposure monitoring (Task 6), dust suppression (Task 7), decontamination (Task 8), and waste management (Task 9) shall also be conducted during this task.</p>	<p align="center">August 1998 through October 1998</p>
<p>Task 4 Soil Raking</p>	<p>Following ESH-1/ESH-12 approval, the top 6 inches of soil below the asphalt pad will be raked with the teeth of the heavy equipment bucket to aid in soil drying. Hot spots (high level of contamination) may be removed and drummed for disposal. In addition, a test trench shall be excavated between the asphalt pad and the surface water diversion trench to look at water flow at the soil/tuff interface. Appropriate sampling/screening (Task 5), exposure monitoring (Task 6), dust suppression (Task 7), decontamination (Task 8), and waste management (Task 9) shall also be conducted during this task.</p>	
<p>Task 5 Sampling/ Screening</p>	<p>Soils, asphalt, concrete, telephone poles, equipment, or any other potentially contaminated items will be sampled/screened for radiation, HE or other contaminants as required for release and/or waste characterization. This may involve surface screening with hand held detectors, smear analysis, or collection of soil samples for HE spot test kit analysis or off-site analysis. As required, this task shall be performed in conjunction with tasks 2-12.</p>	
<p>Task 6 Exposure Monitoring</p>	<p>Use of real-time and integrated monitoring equipment, as necessary, to screen for employee exposures to chemical, radiological, and physical hazards. As required, this task shall be performed in conjunction with tasks 2-12.</p>	
<p>Task 7 Dust Sup.</p>	<p>Use of water spraying to reduce the level of airborne dusts if action levels in Section 6 of this SSHASP are exceeded. This may involve the use of a water truck with adequate capacity to sufficiently wet down the work area from a safe distance upwind. Adequate nozzle for misting will be required.</p>	

**TABLE 2-2 (Cont'd)
SCOPE OF WORK**

This table describes the tasks involved with the BMP/S at MDA AB, Areas 2, 2A and 2B - PRS's 49-001 (b, c, d and g).

Task ID	Task Description	Duration
<p>Task 8 Equip./ Personnel Decon</p>	<p>Equipment decontamination may involve damp brush removal and/or pressurized water cleaning. Decontamination fluids shall be collected and managed in accordance with the waste management plan. Personnel decontamination may involve the use of non-phosphate soap (Alconox), or other suitable soap, and water solution and scrub brushes. At a minimum, boots and gloves shall be decontaminated prior to exiting controlled areas. An appropriate decon area will be set up for doffing of disposable PPE and hand and face wash, as specified in Section 8 of this SSHASP.</p>	<p align="center">August 1998 through October 1998</p>
<p>Task 9 On-Site Waste Mgt.</p>	<p>All on-site waste management activities shall be performed in accordance with the waste management plan. All waste containers shall be properly labeled and stored. Responsibilities for the waste at point of generation, storage, transportation, and final disposal shall be discussed and documented at the time of generation.</p>	
<p>Task 10 Site Restoration</p>	<p>The lay down areas described in task 1 shall be restored to previous conditions. The fence removed in task 2 will be repaired to its previous condition. Excavations will be back filled to the appropriate grade and slope. MDA-AB will be covered, graded, sloped, and compacted as required. The existing trenches around MDA-AB will be deepened/widened as needed to provide adequate drainage. To accomplish these tasks, the subcontractor will utilize heavy equipment such as tracked excavators, front-end loaders, dump trucks, backhoes, and/or other similar heavy equipment. Appropriate sampling/ screening (Task 5), exposure monitoring (Task 6), dust suppression (Task 7), decontamination (Task 8), and waste management (Task 9) shall also be conducted during this task.</p>	
<p>Task 11 Equipment Maintenance</p>	<p>This task may involve the use of fuels, compressed/flammable gases, hydraulic fluids, etc., as needed to maintain and/or repair equipment. In general, the subcontractor will be asked to perform all maintenance/repair tasks off-site when ever possible. However, when such tasks must be performed on-site, all required special work permits will be obtained prior to starting the activity. In addition, MSDSs for all chemicals brought on-site will be provided to the SSO, for review, prior to their use. Outside storage of flammable materials shall be in accordance with 29 CFR 1926.152 (c). Flammable liquids in excess of 25 gallons, in a building or structure, shall be stored in an approved metal storage cabinet.</p>	
<p>Task 12 Incident Response</p>	<p>Response to an incident (i.e., rendering first-aid/CPR, hazardous substance release, fire, and spill containment) will be performed in accordance with Sections 7, 9 and 10 of the HASP, this SSHASP, the Spill Prevention, Control, & Countermeasures Plan (SPCC) and the Surface Water Pollution Prevention Plan.</p>	

3.0 ORGANIZATION, RESPONSIBILITIES and AUTHORITY

Definition of HS roles, responsibilities, authorities, and lines of communication for key personnel identified below are defined in Section 3 of the HASP.

TABLE 3 KEY PERSONNEL HAVING HS RESPONSIBILITY			
Title	Name	Organization	Phone/Pager
Facility Contacts			
Facility Coordinator	Leo Maes	LANL	667-9462
Facility Manager	Ron Brodd	LANL	665-2272
Field Project Management			
Focus Area Leader	Allyn Pratt	LANL	667-4308
Field Team			
Field Team Leader (FTL)	John DeJoia	MK/PMC	662-1359
Site Safety Officer (SSO)	Ken McFadden	MK/PMC	662-1302
Radiological Control Technician (RCT)	John Hayes	MK/PMC	662-7300
Support Personnel			
Focus Area Health and Safety Rep.(ESH-5)	Trung Nguyen	LANL	667-7905/104-6650
ESH-1 Representative	Clarita Trujillo	LANL	667-3999
Alternate Personnel			
FTL	Ken McFadden	MK/PMC	662-1302
SSO/RSP	Clint Daymon	MK/PMC	662-1326
SSO/HPT	Ray Wright	MK/PMC	662-1325
SSO	Hoss Patillo	MK/PMC	662-1336

4.0 HAZARD ANALYSIS

Provided in this section are the task-specific hazard analysis information and requirements in accordance with Section 4 of the HASP.

4.1 PROJECT PERSONNEL

The personnel identified below by role are expected to perform the task(s) indicated.

TABLE 4-1 PROJECT PERSONNEL BY TASK												
This table identifies the personnel by role, which are expected to perform the task(s) indicated. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.												
PERSONNEL ROLE	TASK(s)											
	1	2	3	4	5	6	7	8	9	10	11	12
FTL	X	X	X	X			X	X		X	X	X
SSO	X	X	X	X	X	X	X	X		X	X	X
RCT/HPT/ASP	X	X	X	X	X	X	X	X	X	X	X	X
Subcontractor Supervisor	X	X	X	X			X	X		X	X	X
Laborer(s)	X	X	X	X			X	X		X	X	X
Heavy Equipment Operator(s)	X	X	X	X			X	X		X	X	X
Samplers					X							X
Waste Mgt. Coordinator		X	X	X				X	X			X

4.2 HAZARDOUS SUBSTANCES OF OCCUPATIONAL HEALTH CONCERN

Not all chemical products used to accomplish a task or contaminants at a particular site may pose an occupational health threat. The hazardous substances of occupational health concern are identified in this section by task and by class of substance, in accordance with Section 4.1 of the HASP. Results of a health hazard assessment of each chemical product and site contaminant identified in Table 2-1 and associated rationales are provided in Appendix B. Substances that have a hazard assessment resulting in either "possibly could occur", "probably will occur", or "likely to occur" and which are expected to result in injury or illness having a hazard severity of "minor", "major", or "catastrophic" are considered to pose an occupational health threat to personnel who may be exposed to these substances, and are included in Table 4-2. The key to the hazard assessment ratings is provided in Appendix C of the ER HASP. For each class of substances included in Table 4-2, the most hazardous substance is identified in Table 4-3 together with corresponding administrative and engineering controls.

TABLE 4-2 HAZARDOUS SUBSTANCES OF OCCUPATIONAL HEALTH CONCERN														
This table identifies those hazardous chemical products and groups of site contaminants that are considered to pose an occupational health threat to personnel who may be exposed to these products and contaminants while performing the indicated tasks. The hazardous substances identified in this table were included based on the results of the health hazard assessment found in Appendix B. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions. (MO = Moderate, MI = Minor, N = Negligible)														
Hazardous Chemical Products to be Used During Field Operations														
The chemical products listed below that are likely to be used for the tasks indicated, on site or at satellite locations where field support operations occur. MSDSs for each product shall be kept readily available to users of these products, and shall be shared with other employer's employees on site who may be affected by the hazardous products in accordance with 29 CFR 1926.65(b)(1)(iv) and (v) and 1926.65(i) and Section 4.2.2.3 of the HASP. It is LANL's policy that whenever feasible a less toxic product should be substituted for a more toxic product, especially for products having a carcinogen constituent.														
Product/Contaminant	TASK(s)													
	1	2	3	4	5	6	7	8	9	10	11	12		
HAZARDOUS SUBSTANCE														
Compressed Gas														
Acetylene (cutting)	N	N	N	N	N	N	N	N	N	N	N	MI	N	
Oxygen (cutting)	N	N	N	N	N	N	N	N	N	N	N	MI	N	
Fuels/Lubricants														
Diesel	N	N	N	N	N	N	N	N	N	N	N	MI	N	
Gasoline	N	N	N	N	N	N	N	N	N	N	N	MI	N	
Oil/Hydraulic Fluid	N	N	N	N	N	N	N	N	N	N	N	N	N	
SITE CONTAMINANTS														
HE	N	N	N	N	N	N	N	N	N	N	N	N	N	
Radionuclides (U235, U238, Pu239, Am241)	N	MI	MO	MO	MO	MO	MO	MO	MI	MI	MI	MI	MO	
Tritium	N	N	MO	MO	MO	MO	MI	MI	MI	N	N	MO		
Metals (See Appendix B for specific types)	N	N	N	N	N	N	N	N	N	N	N	N	N	

4.3 HAZARD ASSESSMENT AND ADMINISTRATIVE AND ENGINEERING CONTROLS

Hazards included in this section are those that could pose an occupational health threat to workers performing the associated task(s). The hazard assessments and rationales are indicated below with the corresponding administrative and engineering controls for protection from and mitigation of the hazards.

TABLE 4-3 HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&E) CONTROLS			
This table identifies those hazardous substances (chemical products, groups of site contaminants), and safety, biological and physical hazards that are considered to pose an occupational health threat to personnel who may be exposed to these products, contaminants and hazards while performing the indicated tasks. The hazardous substances identified in this table were included based on the results of the health hazard assessment found in Appendix B. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.			
Hazard	Task(s)	Hazard Assessment/Rationale	Administrative & Engineering (A&E) Controls (Prevention/Mitigation Measures)
HAZARDOUS SUBSTANCES			
Chemical Products			
Compressed Gases Exposure to Acetylene Oxygen Gases Fire/Explosion/ Burn hazards From Flammable Gases	11	Negligible to Minor/ Exposures to compressed gases is possible although unlikely Fire could result, but is very unlikely to occur, possibly resulting in reversible injuries or even death	Compliance with 29 CFR 1926 Subpart F. Emergency equipment specified in Section 9 shall be maintained on site ready for use and readily accessible. Compliance with 29 CFR 1926 Subpart J, Special Work Permit, and LANL AR 8-4 during all cutting and welding operations. In addition, the type of material that is cut/welded and the duration of cutting/welding shall be taken into account to determine the hazard potential from exposure to cutting/welding fumes.
Fuels	11	Negligible to Minor/ Exposures to fuels is possible Flammable liquid hazards always present	Compliance with 29 CFR 1926.152. Emergency equipment specified in Section 9 shall be maintained on site ready for use and readily accessible.
Site Contaminants			
Airborne Dusts (Rad)	2,3,4,5,6,7,8, 10 and 12	Negligible to Moderate/ Exposures to airborne dusts containing radiological contamination is possible	Dust suppression will be performed to keep visible dust down to a minimum using a water spraying/misting. An RSP and/or HPT will perform periodic radiological frisking of equipment and materials as directed by ESH-1. Radiological releases will be performed as required by ESH-1. Conduct air sampling as specified in RWP to monitor for airborne contamination.
SAFETY HAZARDS			
Slips, Trips and Falls			
Slips, trips, falls from uneven terrain	ALL	Minor/ Hazard severity is minor and although unlikely to occur, possibly could occur	Use good housekeeping on-site and minimize threat of slick surfaces. If necessary, tripping hazards will be marked to make them more visible.
Falls from heights 6 feet or higher	11	Minor to Moderate/ Hazard severity could be moderate and although unlikely to occur, possibly could occur	Compliance with 29 CFR 1926 Subpart M, and as necessary, use of PPE specified in Section 7 for fall protection if there is a need to work on top of equipment or near the steep-walled canyons surrounding TA-49.

TABLE 4-3 (Cont'd)
HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&E) CONTROLS

Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.

SAFETY HAZARDS (Cont'd)

Tools

Hand tools	11	Negligible to Minor/ Injury possible but unlikely to be life threatening	All tools shall be inspected for proper working condition prior to use. All defective tools will be removed from the site or tagged "Do Not Use". All electrical tools shall have the grounding plug intact unless the tool is double insulated.
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Excavation/Trenching

Cave-ins/ Personnel Engulfment	3	Negligible to Serious/ For excavations <4 ft. deep - threat of reversible injury possible but unlikely in the event of collapse of excavation walls For excavations > 4 ft. deep - threat of irreversible injury or death is possible in the unlikely event of personnel entrapment or collapse of excavation walls	See below
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- PERMIT REQUIRED for excavating/trenching > 1 foot; A&E controls shall be implemented in accordance with the contractor's Trenching and Excavation program and with the applicable LANL excavation permit (per LANL AR 1-12) and as specified below; contact Field Unit HS Representative to initiate permit process.
- Compliance with 29 CFR 1926 Subpart P.
- No personnel will be allowed to enter trenches or excavations if depths exceed 4 ft unless appropriate engineering controls have been implemented in accordance with 29 CFR 1926.651 and the competent person has cleared entry.
- If entry into the excavation deeper than 5 feet is required, the excavation will be sloped or benched appropriate to the soil type. The entry will be considered as a non-permit confined space entry at the discretion of the SSO.
- Personnel will be kept 5' from the edges of excavations that are $\geq 6'$ in depth by a rope barrier or other means.
- Inspections by a competent person shall be made prior to start of work, as needed throughout shift and after every rain storm or other hazard increasing occurrence (29 CFR 1926.651)
- Appropriate engineering controls shall be implemented in accordance with 29 CFR 1926.651 whenever the stability of a structure adjoining an excavation may be endangered.
- Excavated materials (spoils) shall be kept at least 2 ft. away from edges of excavations.
- Trench/excavation ≥ 4 ft. deep shall have a stairway, ladder, ramp, or other safe means of egress located so as to require no more than 25 ft. of lateral travel by personnel working in trench/excavation (e.g., 1 ladder for >25' and <50' long trench) (29 CFR 1926.651).
- Any excavation that is 4 feet or more in depth that must be open for any period of time shall be barricaded in accordance with 29 CFR 1926.202.
- In the event personnel are required to enter for emergency purposes, appropriate engineering controls shall be implemented.

TABLE 4-3 (Cont'd)			
HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&E) CONTROLS			
Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.			
Underground Utilities			
Electrocution, fire, and explosion hazards	1,2,3,4	Minor to Serious/ Hazard severity could be catastrophic and although unlikely to occur, possibly could occur	See below
<ul style="list-style-type: none"> • PERMIT REQUIRED for excavating/trenching > 1 foot; A&E controls shall be implemented in accordance with the contractor's Trenching and Excavation program and with the applicable LANL excavation permit (per LANL AR 1-12) and as specified below; contact Field Unit HS Representative to initiate permit process. • Estimated locations of utilities (i.e., sewer, telephone, gas, electric, water lines, etc.) shall be determined prior to excavating. Notify utility owners of intended work and request they demarcate on ground surface location(s) of underground utilities; have a field team member accompany utility owner rep. to identify intended excavation location(s) and to find out specifics of utility location(s). • If utility owner cannot establish exact location of utility installation(s), excavating may proceed with caution and provided detection equipment or other acceptable means to locate utility installation(s) are used. • As excavating operations approach estimated location of underground utility, exact location of the installation shall be determined by safe and acceptable means (i.e., using hand-held excavating equipment). • While excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard site personnel. 			
Motorized Vehicles/Heavy Equipment Operation			
General Controls: All motorized vehicles, and heavy equipment will be operated in accordance in compliance with Subparts O and M of 29 CFR 1926, DOE Construction Guidelines (ID-10447), and LANL procedures. Only qualified operators shall operate equipment. The operator will inspect equipment before each use, and written documentation of the inspection will be provided to the SSO for record keeping. All deficiencies will be noted and repairs made as necessary. Any piece of equipment or vehicle that cannot be operated safely will be taken out of service until repairs are made. All persons riding in vehicles shall wear seat belts. Where appropriate, seat belts will be worn by operators in heavy equipment. Refueling of equipment shall be performed when the piece of equipment is turned off and cooled down. In addition, refueling shall occur at a safe distance from other operations and the fuel tank and equipment shall be bonded during refueling operations.			
Loading/ Off loading Equipment/ Materials	ALL	Minor to Serious/ Hazard severity could be catastrophic and although unlikely to occur, possibly could occur	Equipment brought to the site on lowboys shall be loaded and off loaded in accordance with manufacturer's recommendations. Materials shall be off loaded at the site with the appropriate piece of equipment and lifting devices. If slings are used, they shall be tagged with a lifting capacity rating. Slings will be inspected before each use per 29 CFR 1926.250 and 251. Damaged slings will be taken out of service.
Limited visibility/ mobility	ALL	Minor to Serious/ Hazard severity could be catastrophic and although unlikely to occur, possibly could occur	Equipment operators will have spotters and agreed-upon hand signals for communication. If work is done in low-light conditions, sufficient illumination shall be provided at the discretion of the SSO. The operator will inspect equipment prior to use, each day.
Pinch points in rotating parts	ALL	Moderate/ Hazard severity could be irreversible and although unlikely to occur, possibly could occur	Heavy equipment shall be inspected for engineering controls in compliance with applicable sections of Subpart O of 29 CFR 1926. Appropriate guarding will be in place prior to use.
Vehicle operation/ vehicular traffic control	ALL	Minor to Serious/ Hazard severity could be catastrophic and although unlikely to occur, possibly could occur	Field team personnel exposed to vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflective or high-visibility material (IAW 29 CFR 1926 Subpart P).

TABLE 4-3 (Cont'd)			
HAZARD ASSESSMENT and ADMINISTRATIVE and ENGINEERING (A&E) CONTROLS			
Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.			
Hazard	Task(s)	Hazard Assessment/ Rationale	Administrative & Engineering (A&E) Controls (Prevention/Mitigation Measures)
SAFETY HAZARDS (Cont'd)			
Equipment Decontamination			
Pressure washer operation - lacerations	8	Moderate/ Hazard severity could be irreversible and although unlikely to occur, possibly could occur	Operator shall use PPE as specified in Section 7 of this SSHASP. Washer spray shall never be pointed at anybody.
BIOLOGICAL HAZARDS			
Refer to Table 1 of the HASP for information concerning various general hazards, hazard assessment/rationales and controls associated with occupational exposure to toxic and/or hazardous biological agents (i.e., insects, snakes, ticks, and spiders)			
PHYSICAL HEALTH HAZARDS			
Temperature Extremes			
Heat Stress	ALL	Minor to Serious/ This project will be conducted in the summer months, so heat stress may be a concern. However, a life threatening condition is unlikely since the type and amount of physical labor on this project is minimal	Inform personnel of signs and symptoms of heat stress (Table 1 of HASP). SSO shall implement exposure monitoring according to Table 6-1 requirements. If needed, appropriate work regime will be implemented to allow for work breaks so personnel may cool down, and take in fluids as necessary. Refer to HASP Table 1 and the MK/PMC HASP.
Noise			
Excessive Noise	1-8, 10,11	Minor to Serious/ Possibly or probably could occur resulting in irreversible injury	Whenever voice(s) must be raised to communicate between two or more persons located ≤ 3 feet of each other, the noise level is likely exceeding the PEL; designate areas requiring hearing protection; conduct noise monitoring per Section 6 of this SSHASP and 29 CFR 1910.95. Also refer to Section 4.2.2.7 of HASP for additional requirements.
Refer to Table 1 of the HASP for additional physical health hazards that apply to this job (i.e., lightning strikes, altitude sickness, and sunburn)			

5.0 SITE CONTROLS

In accordance with Section 5 of the HASP, the required site control measures are specified below for each task or group of tasks having different requirements. Any exceptions or deviations from requirements of the HASP are noted below.

TABLE 5 SITE CONTROL MEASURES													
This table identifies the control measures to be implemented during the tasks specified. The task(s) are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.													
CONTROL MEASURES	TASK(S)												
	1	2	3	4	5	6	7	8	9	10	11	12	
Exclusion Zone		X	X	X	X	X	X	X	X	X	X	X	
Not applicable	X												
RCA		X	X	X	X	X	X	X	X	X	X	X	
The EZ shall be localized at MDA AB and shall be demarcated by cones, barrier tape, rope, fence, or other suitable materials. Posting(s): Per LANL LIR402-712-01, Subpart G of 29 CFR 1926, and Other Chemical-Specific Standard (Table 2 of the HASP).													
Note: Tasks 10, 11, and 12 will be considered HAZWOPER until a clean barrier is placed on top of the contamination.													
Contamination Reduction Zone		X	X	X	X	X	X	X	X			X	
Not applicable	X									X	X		
The CRZ shall be localized at MDA AB and shall be demarcated by cones, barrier tape, rope, fence, or other suitable materials. Posting(s): Per LANL LIR402-712-01, Subpart G of 29 CFR 1926, and Other Chemical-Specific Standard (Table 2 of the HASP).													
Support Zone (SZ)		X	X	X	X	X	X	X	X				
Not applicable	X									X	X	X	
The SZ shall be localized in a clean area near MDA AB and will not be demarcated.													
Decon Pad/Facility			X	X	X					X	X		
Not applicable	X	X				X	X	X	X			X	
RCA										X			
The decontamination facility shall be located near the CRZ and shall be demarcated by cones, barrier tape, rope, fence, or other suitable materials. Posting(s): Per LANL LIR402-712-01, Subpart G of 29 CFR 1926, and Other Chemical-Specific Standard (Table 2 of the HASP).													
Lay Down Areas	X								X				
Several lay down areas may be established near MDA AB. Those areas established for equipment and material storage will not be demarcated. Those established for waste storage will be demarcated by cones, barrier tape, rope, fence, or other suitable materials and posted in accordance with the waste management plan.													
Hand/Face Wash		X	X	X	X	X	X	X	X	X		X	
Not applicable	X										X		
Located on site in SZ and will not be demarcated. Shall be established per 29 CFR 1926.65													
Toilet Facility	A porta-john will be on site.												
Clothing Change Facility	If workers need a place to change, an area will be established to provide for privacy. If no privacy is necessary, PPE will be donned in the CRZ.												
Wind Direction Indicator(s)	Shall be located on site where readily visible to field team members.												

6.0 EXPOSURE MONITORING AND CORRESPONDING ACTIONS

In accordance with Section 6 of the HASP, personnel exposure monitoring requirements, action levels, and the corresponding actions to be taken are specified in the tables in this section (Tables 6-1, 6-2, and 6-3) for each task or group of tasks having different requirements.

6.1 DIRECT-READING INSTRUMENTS

Requirements for exposure monitoring using direct-reading instruments and the corresponding action levels and response actions are specified in Table 6-1 for each task or group of tasks having different requirements, action levels or responses. These requirements, levels, and actions are set in accordance with Section 6 of the HASP. Any exceptions or deviations from requirements of the HASP are noted where applicable.

TABLE 6-1 DIRECT-READING INSTRUMENT REQUIREMENTS					
The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.					
Haz.Cond./Subst.	Task	Instrument/Procedure	Local & Freq. of Monitoring	Action Level(s)/Rationale	Response Action(s)
HEALTH PHYSICS					
Airborne dust containing Gross α , β and γ contam.	All	ESP-1 with HP-260 probe or equivalent Ludlum 139 with air proportional probe or equivalent Eberline RO-2/ LANL RadCon Manual and training and associated ESH-1 procedures and ER addendum's	Personnel: Prior to exiting the EZ/CRZ Equipment/Samples: Prior to decon.	Background (BKG)	RSP performs surveys. Intermittent ESH-1 coverage. α swipes counted using field α screening instrument; direct frisk for β/γ . Workplace (RBA) will be released daily by smears counted on a Berthold or equivalent.
				>BKG but $\alpha < 500$ cpm/ probe area $\beta/\gamma < 5000$ cpm/ probe area Tritium $< 10,000$ dpm/100 cm ² contamination < 20 uCi/m ³ soil gas levels. BZ levels at BKG. Any smearable contamination on equipment and any detectable contamination on personnel above MDA/ Standard level set by ESH-1	Notify ESH-1 of elevated readings. RSP performs surveys. Increased ESH-1 coverage. α swipes counted using Ludlum 2000 tray counter or equivalent; direct frisk for β/γ .
				$\alpha > 500$ cpm/ probe area $\beta/\gamma > 5000$ cpm/ probe area Dose rate > 5 mR/hr	Work may only proceed according to approved RWP and with full-time on-site ESH-1 technician or equivalent.
The RWP issued for this project will identify the radiological action level(s) that if reached or exceeded would require us to stop work. All equipment brought into the EZ shall have a pre-job survey performed. All equipment/items exiting the EZ must be surveyed out.					

**TABLE 6-1 (Cont'd)
DIRECT-READING INSTRUMENT REQUIREMENTS**

Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.

Haz. Cond. /Subs.	Task	Instrument/ Procedure	Local & Freq. of Monitoring	Action Level(s)/Rationale	Response Action(s)
PHYSICAL HEALTH HAZARDS(Cont'd)					
Heat Stress	ALL	Thermometer/ ER Project H&S Activities Manual	Refer to Table 1 of the HASP.		
Noise	ALL	Noise level meter/ ER Project H&S Activities Manual	Monitor hearing zone of affected workers when voice must be raised to talk between two persons located ≥ 3 feet apart;.	85 dBA/ OSHA 29 CFR 1910.95	\geq Action Level: Implement appropriate engineering control(s) per Table 4-3; if unable to lower noise levels below AL, demarcate/post zones of excessive noise and limit access to employees having sufficient hearing protection training, medical surveillance, and hearing protection per this SSHASP

6.2 PERSONAL DOSIMETRY

Requirements for personal dosimetry and the corresponding action levels and response actions are specified in Table 6-2 for each task or group of tasks having different requirements, action levels or responses. These requirements, levels, and actions are set in accordance with Section 6 of the HASP and with the chemical-specific standards listed in Table 2 of the HASP. Any exceptions or deviations from requirements of the HASP are noted where applicable.

TABLE 6-2 PERSONAL DOSIMETRY REQUIREMENTS				
The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.				
Hazardous Condition	Task(s)	Instrument/Procedure	Action Level(s)/ Rationale	Response Action(s)
HEALTH PHYSICS				
External sources of Plutonium Uranium	All Tasks performed within the boundary of MDA AB	Monthly TLD badge. Baseline and Termination Urinalysis and In Vivo	Potential to exceed 100 m REM/year dose limit/10 CFR 835	Follow response actions specified on the RWP.
PHYSICAL HEALTH HAZARDS				
Noise	1-8,10,11	Personal noise dosimeter(s)/ER Project H&S Activities Manual	Refer to Table 6-1	

6.3 AREA SAMPLING

Requirements for area sampling and the corresponding action levels and response actions are specified in Table 6-3 for each task or group of tasks having different requirements, action levels or responses. These requirements, levels, and actions are set in accordance with the contractor's IH Monitoring Program, and Section 6 of the HASP. Environmental sampling requirements, if any, to evaluate spread of contamination to off-site locations should be provided in a site-specific document separate from this SSHASP.

TABLE 6-3 AREA SAMPLING REQUIREMENTS	
Area monitoring for airborne particulates shall be collected down wind of the operations and analyzed for radiological contaminants in accordance with applicable ESH-1 procedures.	

7.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

In accordance with Section 7 of the HASP, PPE requirements are specified below for each task or group of tasks having different requirements. Only personnel who are trained and qualified to use the equipment in accordance with Section 7 and 10 of the HASP and Section 10 of the SSHASP are allowed to use the equipment specified. Any exceptions or deviations from requirements of these sections are noted below.

TABLE 7 PERSONAL PROTECTIVE EQUIPMENT (PPE)													
This table identifies the PPE to be used for each task or group of tasks having different requirements. The task(s) are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.													
PPE REQUIREMENTS	TASK(s)												
	1	2	3	4	5	6	7	8	9	10	11	12	
HEAD	(per 29 CFR 1910.135, ANSI Z89.1-1986, or Z89.2 for electrical shock protection)												
Hard Hat	X	X	X	X	X	X	X	X	X	X	X	X	
EYES	(per 29 CFR 1926.103, ANSI Z87.1-1989)												
Safety Glasses (with side shields)	X	X	X	X	X	X	X	X	X	X	X	X	
Face Shield								X					
Face shield required if decon involves a pressure washer or any other method that involves splashing.													
BODY	At a minimum, long pants and shirts with at least 4" sleeves will be required.												
Cotton Coveralls		X	X	X	X	X	X		X		X	X	
Poly coated Tyvek or Rain Suit								X					
Poly coated tyvek or rain suit if decon involves a pressure washer or any other method that involves splashing.													
Orange Vests	Shall be worn by all ground personnel working near heavy equipment or vehicle traffic.												
HANDS	(per 29 CFR 1910.137 and 138, ASTM D 120-87)												
Inner (powder-free disposable Nitrile gloves or equivalent)		X	X	X	X	X	X	X	X		X	X	
Outer (Cotton or leather)		X	X	X	X	X	X		X	X	X	X	
Outer (.018" guage Latex 12" length or equivalent)								X			X		
Latex outer gloves and taped sleeves if decon involves a pressure washer or any other method that involves splashing. Cuffs will be taped to sleeves.													

TABLE 7 (Cont'd)														
PERSONAL PROTECTIVE EQUIPMENT (PPE)														
Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.														
PPE	TASK(s)													
REQUIREMENTS	1	2	3	4	5	6	7	8	9	10	11	12		
FEET	(per 29 CFR 1910.136, ANSI Z41-1991)													
Safety Toe Work Boots	X	X	X	X	X	X	X	X	X	X	X	X		
Chemical Resistant Work Boots or Covers over steel toe work boots			X	X	X	X	X	X						
Chemical resistant work boots or covers over steel toe work boots required when wet/muddy conditions exist.														
EARS	X	X	X	X	X	X	X	X		X	X			
Plugs NRR 31 dBA														
Hearing protection per 29 CFR 1910.95, ANSI Z87.1-1989, 29 CFR 1926.101) Hearing protection will be worn in accordance with Table 4-3 of this SSHASP. Hearing protection devices will be inspected by the SSO prior to use. Hearing protection will be required when working near any piece of heavy equipment until a negative determination is made.														
RESPIRATORY	(per 29 CFR 1926.103)													
Full Face APR With HEPA cartridges	The Radiological Work Permit (RWP) for this project may require the use of respiratory protection for tasks 3-6.													
WELDING/CUTTING	Leather or Flame-Proof gloves, long sleeve shirt and welding goggles type 7,8, or 9 as specified in 29 CFR 1926.102 (a)(5) with a minimum lense shade of 3 as specified in 29 CFR 1926.102 (b)(1) shall be worn during all welding/cutting operations.													
FALL PROTECTION	Full body harness/life line (per 29 CFR 1926 Subpart E) shall be worn when ever an individual is exposed to a fall hazard of 6' or greater.													
Note: The RWP for this project may specify additional PPE.														

8.0 DECONTAMINATION

In accordance with Section 8 of the HASP, personnel and/or equipment decontamination requirements are specified below for each task or group of tasks having different requirements. Any exceptions or deviations from Section 8 of the HASP are noted below.

TABLE 8														
PERSONNEL AND EQUIPMENT DECONTAMINATION														
This table identifies the personnel and equipment decontamination to be used for each task or group of tasks having different requirements. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. . Refer to Table 2-2 of this SSHASP for task(s) descriptions.														
DECON	TASK(s)													
REQUIREMENTS	1	2	3	4	5	6	7	8	9	10	11	12		
Personnel and Environmental Monitoring Equipment (EME)														
Option 1 - Standard Approach Level D or Option 2 - Standard Approach Level C will be required.														
Wash Soap	Alconox or equivalent										X			
Aqueous Rinse	Water										X			
Reusable PPE	Cotton coveralls and decon PPE										X			
Disposable PPE	Gloves										X			

TABLE 8 (Cont'd)													
PERSONNEL AND EQUIPMENT DECONTAMINATION													
Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.													
DECON REQUIREMENTS	TASK(s)												
	1	2	3	4	5	6	7	8	9	10	11	12	
Sampling Equipment													
Wash Soap								X					
Aqueous Rinse								X					
DI Rinse								X					
Heavy Equipment													
Gross Decon								X					
Pressure Washer								X					
Modifications: Task 8 was specifically defined as Personnel/Equipment decontamination. In general, decontamination will be required for any activity occurring within the EZ. The level of PPE required for the task performed will determine the decontamination option used. Gross decon will occur within the EZ. Final decon will occur in the CRZ. Coveralls, boots, and decon PPE will be reused. Waste minimization practices will be implemented when ever possible.													

9.0 EMERGENCY/INCIDENT ACTION PLAN

Incident/emergency action requirements, equipment, and supplies are specified in Table 9. Response to an incident or emergency shall occur according to Section 9 of the HASP and any additional TA-49 requirements.

In the event of an incident or emergency, the FTL or SSO will function as the site emergency/incident coordinator, as necessary, and will arrange for immediate notification of LANL Emergency Response (EM&R) personnel to take control of the site and/or arrange for immediate notification of appropriate authorities. Other key on-site incident/emergency response personnel are identified below. Only personnel who are trained and certified in accordance with Sections 7, 9, and 10 of the HASP and SSHASP are allowed to respond and use the equipment specified. Incident/emergency contacts and telephone numbers and a map indicating the route to the nearest hospital and medical clinic are included in Appendix D. Both these items shall be posted on-site where readily accessible to field team personnel. A site-specific muster area shall be determined by the SSO each day prior to the start of field operations and shall be communicated to individuals on-site during the HS Tailgate Meeting and as other individuals arrive at the site.

Accident and Injury Reporting will be in accordance with Section 9 of the HASP and Section 15 of the ER Project Manual for Site Health & Safety Activities.

TABLE 9
INCIDENT/EMERGENCY ACTION REQUIREMENTS
This table identifies the first-aid/CPR providers, incident responders, and the equipment available on-site to respond to on-site incidents/emergencies for each task or group of tasks. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.
Incident Responders: LANL EM&R First-Aid/CPR Provider(s): Ken McFadden/Ray Wright Emergency Equipment On-Site: Fire extinguisher(s); First Aid Kit; Bloodborne Pathogens Kit; Eye Wash Station; Communication devices (i.e., cell phones, radios, air horn, etc.,) as available.
The first aid equipment shall be kept in a weatherproof container and the contents shall be checked weekly and resupplied by the SSO or designee. Contents shall meet the minimum requirements for Industrial First Aid Kits per ANSI Z308.1 - 1978.

TABLE 9 (Cont'd)	
INCIDENT/EMERGENCY ACTION REQUIREMENTS	
Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.	
The eyewash shall be located within 10 seconds travel time and not more than 100 feet of travel distance of any source of chemical splash that may be corrosive or moderately to severely irritating to the eyes. They shall have the capacity to be able to provide continuous flushing for the duration of time necessary to sufficiently flush the most hazardous substance for which the device is being specified. The eyewash shall be inspected monthly by the SSO or designee and shall be flushed in accordance with the manufacturers recommendations.	
At least one 10 lb (minimum) ABC fire extinguisher shall be conspicuously located and readily accessible for each spark/flame producing operation (i.e. cutting/welding operation, heavy equipment, etc.). A 20lb ABC fire extinguisher shall be located at refueling areas. All extinguishers shall be periodically inspected and maintained in operating condition.	
Equipment leaks shall be picked up ASAP using a shovel and disposed of as directed by the on site waste coordinator. Equipment should be parked on poly sheeting overnight to capture leaking material. Equipment shall be repaired as feasible to reduce leaks.	
Emergency escape routes will be discussed with the workers during the daily tailgate safety meetings. The route map to emergency services and the emergency phone list in Appendix D of this SSHASP shall be posted on site for easy reference. An air horn or a vehicle horn shall be used as the site emergency notification device. Two blasts of the horn will tell the crew to meet at the muster area. After the crew has assembled at the muster area, a head count (using daily tailgate forms, access control logs or TA-49 access log). After the crew has been accounted for, they shall either evacuate the area and report to the TA-49 access control building or wait at the site for further direction from TA-49 personnel or EM&R. Only the heavy equipment will be shutdown prior to evacuation.	

10.0 TRAINING

Training requirements are specified below by job title for each task or group of tasks having different requirements. Personnel shall be trained in accordance with Section 10 of the HASP and as specified below. Any exceptions or deviations from requirements of the HASP are noted below. Personnel performing the roles indicated below shall have completed and have current documentation of the training specified. The SSO, or the FTL, shall verify that personnel have met the training requirements prior to authorizing individuals to enter controlled zones of the work site.

TABLE 10										
TRAINING REQUIREMENTS										
This table identifies the training requirements for this project. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.										
FTL = Field Team Leader; SSO = Site Safety Officer; RCT = Radiological Control Technician/HPT = Health Protection Technician/RSP = Radiological Screening Personnel; SUP = Subcontractor Supervisor; LAB = laborer; HEO = Heavy Equipment Operator; SAM = Sampler; WMC = Waste Management Coordinator R = Read training; C = Classroom training; F = Field training; AN = As needed per the HASP or applicable regulatory requirement depending upon the intended duties of the personnel role; ER = Employer required										
Training Requirement	Personnel Role									
	FTL	SSO	RCT/ HPT/ RSP	SUP	LAB	HEO	SAM	WMC		
HASP	R/C	R/C	R/C	R/C	R/C	R/C	R/C	R/C		
SSHASP	R/C	R/C	R/C	R/C	R/C	R/C	R/C	R/C		
Pre- Job Start HS Briefing	F	F	F	F	F	F	F	F		
Daily HS Tailgate Mtgs.	F	F	F	F	F	F	F	F		
GET	C	C	C	C	C	C	C	C		

**TABLE 10 (Cont'd)
TRAINING REQUIREMENTS**

Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.

FTL = Field Team Leader; SSO = Site Safety Officer; RCT = Radiological Control Technician/HPT = Health Protection Technician/RSP = Radiological Screening Personnel; SUP = Subcontractor Supervisor; LAB = laborer; HEO = Heavy Equipment Operator; SAM = Sampler; WMC = Waste Management Coordinator R = Read training; C = Classroom training; F = Field training; AN = As needed per the HASP or applicable regulatory requirement depending upon the intended duties of the personnel role; ER = Employer required

Training Requirement	Personnel Role									
	FTL	SSO	RCT/ HPT/ RSP	SUP	LAB	HEO	SAM	WMC		
TA-49 Site Specific Training	C	C	C	C	C	C	C	C		
HAZCOM [29 CFR 1926.59(e)]	F/C	F/C	F/C	F/C	F/C	F/C	F/C	F/C		
LANL "Employee Safety Commitment"	R	R	R	R	R	R	R	R		
40 hr. HAZWOPER	C	C	C	C	C	C	C	C		
24 hr. Fieldwork	C	C	C	C	C	C	C	C		
8 hr. Annual Refresher	AN	AN	AN	AN	AN	AN	AN	AN		
8 hr. HAZWOPER Sup.	C	C		C						
RCT/HPT/RSP (RSAA and LANL Radiation Protection Program Training)			F/C							
Rad Worker II	C	C	C	C	C	C	C	C		
SSO		F/C								
1st Aid	Classroom training for those listed as First-aid/CPR Providers in Section 9 of this									
CPR	SSHASP (only).									
PPE	F	F	F	F	F	F	F	F		
Fire Extinguisher Use	F/C	F/C	AN	F/C	F/C	F/C	AN	AN		
Hearing Conservation	F/C	F/C	AN	AN	AN	AN	AN	AN		
Sanitation	R	R	AN	AN	AN	AN	AN	AN		
Materials Handling, Storage, Use, Disposal	R	R	AN	R	R	R	AN	AN		
Signs, Signals, Barricades	R	R	AN	R	R	R	AN	AN		
Traffic Flagging and Safety	R	R	AN	R	R	R	AN	AN		
Tools - Hand and Power	AN	R	AN	R	R	R	AN	AN		
Electrical Safety Awareness / Safe Conduct of Electrical Work	R	R	AN	R	R	R	AN	AN		
Lockout/Tagout	R	R	AN	R	R	R	AN	AN		
Motor Vehicles, Mechanized Equipment, and/or Material Handling Equipment	R	R	R	R	R	R	R	R		
Rigging Safety	AN	R	AN	R	R	R	AN	AN		
Welding and Cutting	AN	R	AN	R	R	R	AN	AN		
Bloodborne Pathogens	Classroom training for those listed as First-aid/CPR Providers in Section 9 of this SSHASP (only).									

11.0 MEDICAL SURVEILLANCE

The medical surveillance requirements of this section have been established in accordance with the contractors medical surveillance program, and Section 11 of the HASP.

TABLE 11 MEDICAL SURVEILLANCE REQUIREMENTS			
Provided in this section are the medical surveillance requirements, (if the exposure level is exceeded), for each task identified in Table 2-2. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.			
Hazard	Task(s)	Exposure Level Triggering Medical Surveillance Requirement	Requirement
Hazardous Waste Operations	2 - 9 and 12	Potential for exposure to hazardous substances or health hazards \geq PELs or published exposure limits during HAZWOPER work	29 CFR 1926.65(f)
Bloodborne Pathogens (Or Potentially Infectious Materials)	12	Any occupational exposure	29 CFR 1910.1030(f)
Respiratory Protection	3,4	If the RWP requires respirator Use	29 CFR 1926.134
Hearing Protection	1 - 8, 10,11	\geq 85 dBA	29 CFR 1910.95(g)

12.0 QUALITY CONTROL & QUALITY ASSURANCE (QC/QA)

**TABLE 12
INSPECTION REQUIREMENTS**

In accordance with Section 12 of the HASP, the FTL shall see that the following inspections are conducted and documented, and that appropriate actions are taken and documented to rectify identified deficiencies, if any. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.

Inspection	Inspector	Task(s)
Job Site, Material and Equipment [per 29 CFR 1926.20(b)(2)]	SUP/SSO	All
General Sanitation (i.e., potable and non-potable water, toilets, washing facilities, eating and drinking areas, vermin control, and/or change rooms; in accordance with 29 CFR 1926.51)	SUP/SSO	All
Materials handling, storage, use & disposal (per 29 CFR 1926.250 & 252)	SUP/SSO	All
Signs, Signals and Barricades (per 29 CFR 1926.200)	SUP/SSO	All
Motor vehicles and mechanized equip. (per 29 CFR 1926 Subpart O)	SSO/QP/CP	All
Material handling equipment equipped with rollover protective structures (ROPS) (per 29 CFR 1926 Subpart W)	QP/CP/User	when used
PPE (per Section 7 and 29 CFR 1926.95)	User	when used
Fall Protection [per 29 CFR 1926.20(b)(2) and ANSI A10.14]	QP/CP/User/SUP	when used
Incident/emergency response equipment	SSO	12
Fire extinguishing equipment [per 29 CFR 1926.150(a) and (c)]	SUP/SSO	when used
Tools - hand and power (per 29 CFR 1926 Subpart I)	User/SSO/SUP	when used
Welding and cutting equipment (per 29 CFR 1926 Subpart J)	QP/CP/User	when used
Hearing Protection	SUP/SSO	when used
Rigging (per 29 CFR 1926.251)	QP/CP/User/SUP	when used
Eyewash station	SSO	when used
Electrical equipment [per 29 CFR 1926.403(b) and/or 416(f)(8)]	QP or CP as required	when used

P = Qualified Person; CP = Competent Person [per 29 CFR 1926.32(f) or (m)]

13.0 RECORD KEEPING

In addition to record keeping requirements of Section 13 of the HASP, the HS records specified below shall be completed in accordance with Section 13 of the HASP and kept on site as indicated below.

**TABLE 13
RECORD KEEPING REQUIREMENTS**

Record/Form	Requirement Reference	Keep On site
HASP	HASP Section 1	X
This SSHASP	HASP Section 1	X
Completed Modification Forms	HASP Section 1	X
SSOs Daily Logbook	HASP Section 13.1	X
Documentation of Training Requirements	HASP Section 10	
Documentation of Medical Surveillance	HASP Section 11	
Exposure Monitoring Records	Section 6 of the HASP and applicable exposure monitoring methods in the ER Project Manual for Site HS Activities	X
HS Inspection Records	HASP Section 12.1	X

APPENDIX A
MAP(S) OF SITE LOCATIONS
AND
ADJACENT FACILITIES

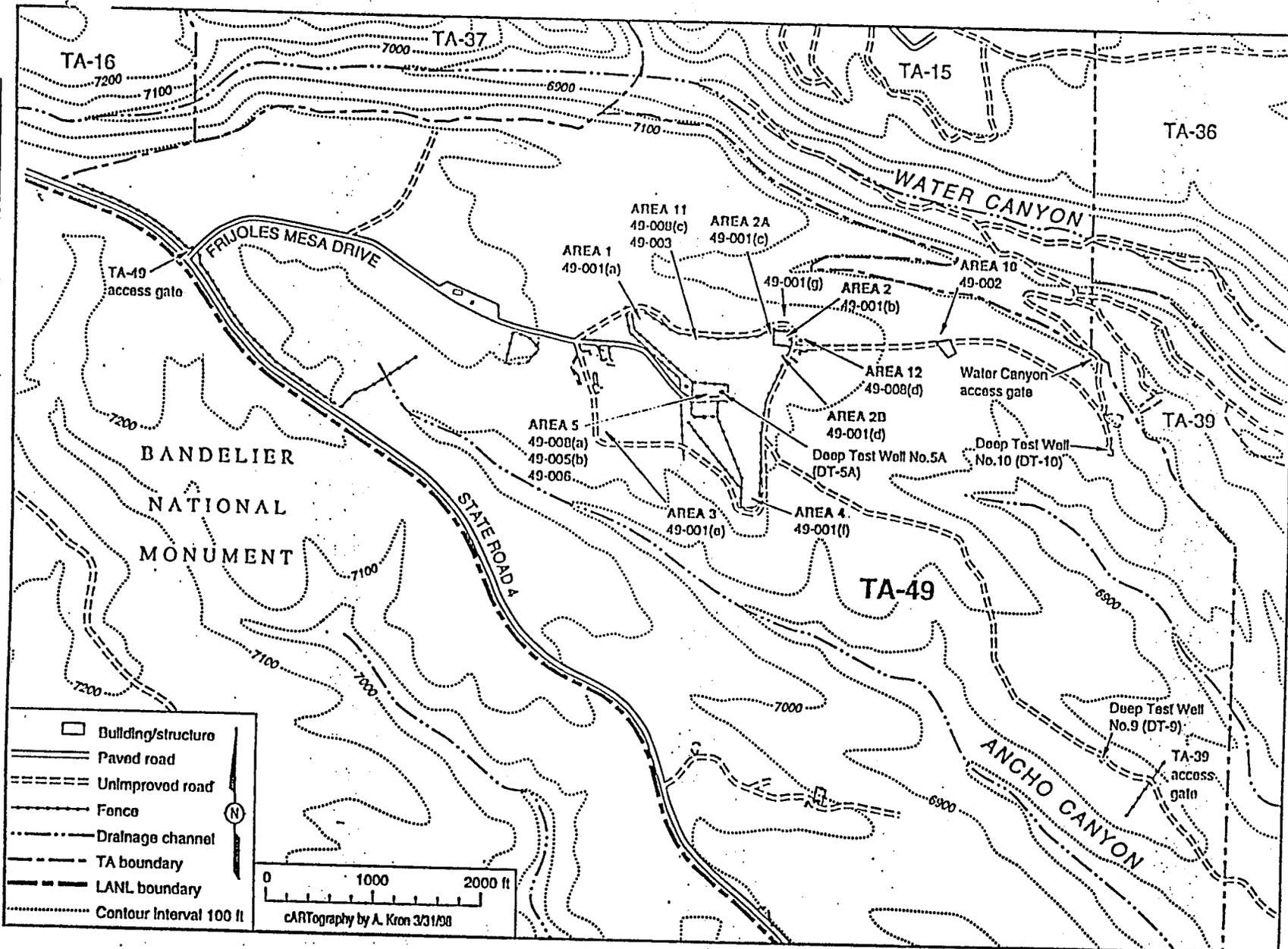


Figure 2-1. Map of MDA AB at TA-49.

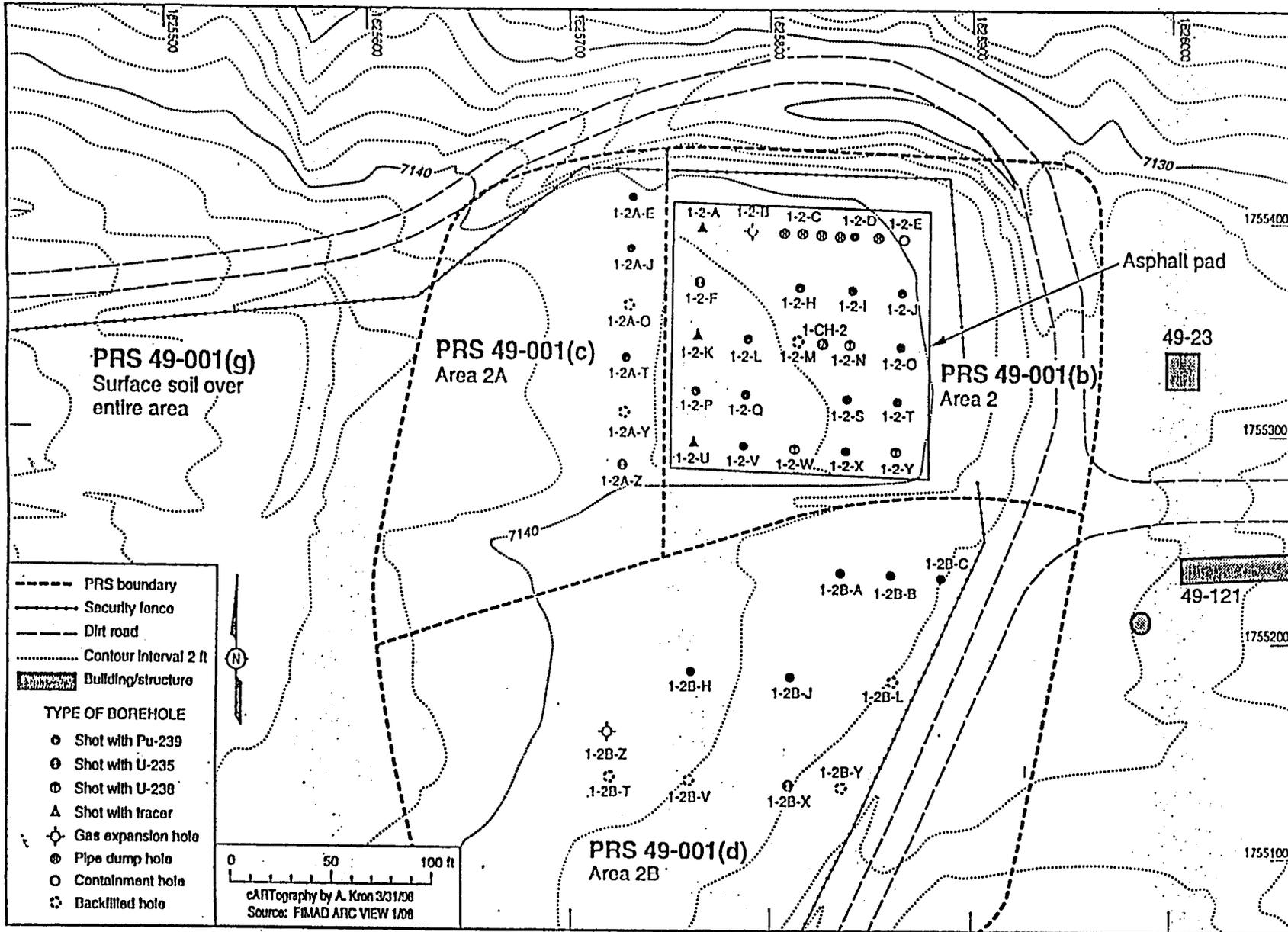


Figure 3-1. Potential Release Sites (PRSs) at Areas 2, 2A, and 2B.

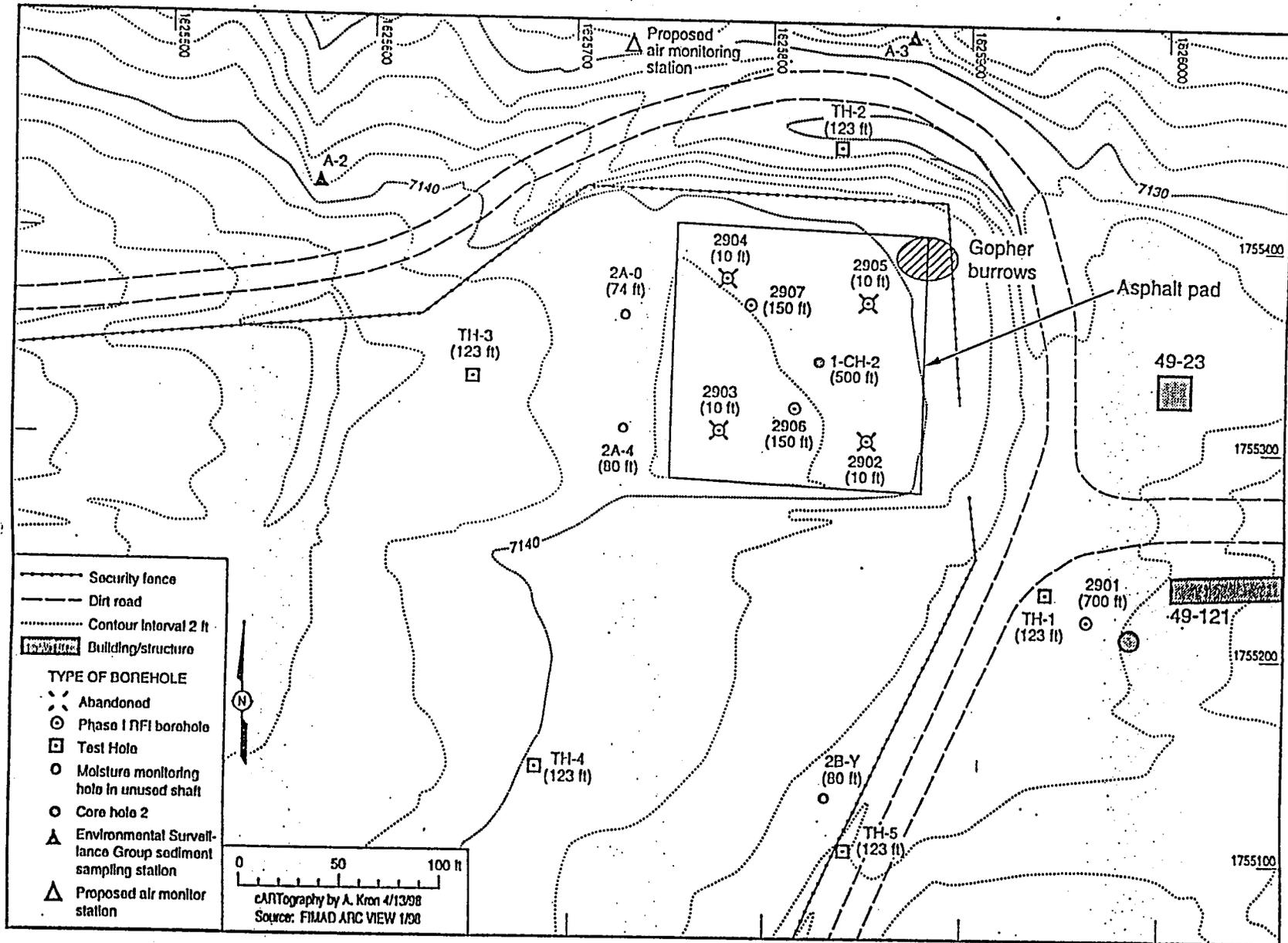


Figure 3-2. Existing sampling hole locations at Area 2.

APPENDIX B

HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT

HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT

This table includes a health hazard assessment, and associated rationales, of each chemical product and site contaminant listed in Table 2-1. This hazard assessment was completed in accordance with Section 4.1 of the HASP. The tasks are as follows: Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Raking; Task 4 Soil Removal; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response. Refer to Table 2-2 of this SSHASP for task(s) descriptions.

Substance	Maximum Data		Hazard Assessment Rating/Rationale
	Value	Location	
CHEMICAL SUBSTANCES, PRODUCTS USED ON SITE			
Compressed Gasses Acetylene, Oxygen,	NA	MDA AB	NEGLIGIBLE to MINOR For Tasks 1-10, and 12, exposure to these substances is not anticipated. For Task 11, exposure to these substances is unlikely however, a fire or sudden pressure release involving these substances could resulting in significant injuries resulting in irreversible harm.
Fuels and Lubricants Diesel, Gasoline			NEGLIGIBLE Only small quantities of these substances will be brought on-site and will be used in accordance with the site's Spill Prevention, Control, and Countermeasures (SPCC) Plan. No exposure to these substances is anticipated.
Oil, Hydraulic Fluid			
SITE CONTAMINANTS			
HE	No data available	MDA AB	NEGLIGIBLE It is not anticipated that HE residuals would be encountered in high enough concentrations (5%) to make it reactive.

HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT (Cont'd)

Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.

Substance	Maximum Data		Hazard Assessment Rating/Rationale																				
	Value	Location																					
Radioisotopes U238 U239 Pu239 Am241	Data from the 1998 RFI field sampling effort at MDA AB showed the following rad screening results for soils below the asphalt pad: For soils between 0 and 12 inches: <table border="0"> <tr> <td><u>Highest (Pci/g)</u></td> <td><u>Average (Pci/g)</u></td> </tr> <tr> <td>Gross α - 540</td> <td>Gross α - 221</td> </tr> <tr> <td>Gross β - 350</td> <td>Gross β - 166</td> </tr> <tr> <td>Gross γ - 140</td> <td>Gross γ - 89</td> </tr> </table> For soils between 12 and 24 inches: <table border="0"> <tr> <td><u>Highest (Pci/g)</u></td> <td><u>Average (Pci/g)</u></td> </tr> <tr> <td>Gross α - 1420</td> <td>Gross α - 388</td> </tr> <tr> <td>Gross β - 250</td> <td>Gross β - 168</td> </tr> <tr> <td>Gross γ - 150</td> <td>Gross γ - 100</td> </tr> </table> For soils greater than 24 inches: <table border="0"> <tr> <td><u>Highest (Pci/g)</u></td> </tr> <tr> <td>Gross α - 477,930</td> </tr> <tr> <td>Gross β - 20,810</td> </tr> <tr> <td>Gross γ - 60,110</td> </tr> </table> The results for the soil greater than 24 inches below the asphalt pad were isolated to Shaft N only (See Appendix A for the location of Shaft N).		<u>Highest (Pci/g)</u>	<u>Average (Pci/g)</u>	Gross α - 540	Gross α - 221	Gross β - 350	Gross β - 166	Gross γ - 140	Gross γ - 89	<u>Highest (Pci/g)</u>	<u>Average (Pci/g)</u>	Gross α - 1420	Gross α - 388	Gross β - 250	Gross β - 168	Gross γ - 150	Gross γ - 100	<u>Highest (Pci/g)</u>	Gross α - 477,930	Gross β - 20,810	Gross γ - 60,110	<p align="center">NEGLIGIBLE to MODERATE</p> For Task 1, exposure to these contaminant is not expected since this activity will occur outside of the MDA-AB foot print. For Tasks 2,9,10, and 11, exposure to these contaminants is unlikely to occur. For Tasks 3-8, and 12, exposure to these contaminants is possible. This project will involve the removal of the asphalt pad and spreading of the top 1 foot of soil below the pad. In this scenario, at least 1 foot of soil will shield the workers from the higher levels of radiological contamination. It is also known that the soil below the asphalt pad is wet to saturated. This would reduce the possibility of airborne releases. However, in the unexpected event of operator error, where the soils deeper than 2 feet are disturbed, the area will be evacuated until the site is reevaluated for personnel exposures.
<u>Highest (Pci/g)</u>	<u>Average (Pci/g)</u>																						
Gross α - 540	Gross α - 221																						
Gross β - 350	Gross β - 166																						
Gross γ - 140	Gross γ - 89																						
<u>Highest (Pci/g)</u>	<u>Average (Pci/g)</u>																						
Gross α - 1420	Gross α - 388																						
Gross β - 250	Gross β - 168																						
Gross γ - 150	Gross γ - 100																						
<u>Highest (Pci/g)</u>																							
Gross α - 477,930																							
Gross β - 20,810																							
Gross γ - 60,110																							
Tritium	The TA-21 RSA screening data for the soil and gravel directly below the asphalt pad at MDA-AB showed the highest tritium level to be 4,340 Pci/ml.		<p align="center">NEGLIGIBLE to MODERATE</p> For Task 1, 2, 10, and-12, exposure to this contaminant is not expected. For Tasks 7-9, exposure to this contaminant is unlikely to occur. For Tasks 3-6, and 12, exposure to this contaminant is possible.																				

HAZARDOUS SUBSTANCE - HAZARD ASSESSMENT (Cont'd)

Task 1 Site Set Up; Task 2 Fence Removal; Task 3 Asphalt Pad Removal; Task 4 Soil Raking; Task 5 Sampling/Screening; Task 6 Exposure Monitoring; Task 7 Dust Suppression; Task 8 Equipment/Personnel Decontamination; Task 9 On-site Waste Management; Task 10 Site Restoration; Task 11 Equipment Maintenance; Task 12 Incident Response.

Substance	Maximum Data		Hazard Assessment Rating/Rationale
	Value (mg/kg)	Location	
Metals	The following metal data came from a 1998 re-sampling activity of archived cores from MDA-AB. No indication was given as to the depths from which the samples were collected. The data below represents the highest concentration for each of the metal constituents.		
Aluminum (Al)	12,000	MDA-AB	<p>NEGLIGIBLE</p> <p>Exposure to these contaminants above their action levels is unlikely to occur since the concentration of total airborne dust would have to exceed is 10 mg/m3 as shown in the Marlow equation on the following page. A safety factor of 10 was used in the equation to depict a worse case scenario. In addition, during the 1998 field sampling effort, the soil beneath the asphalt pad was found to be wet to saturated. This condition will help reduce the amount of airborne particulates.</p>
Antimony (Sb)	0.5		
Arsenic (As)	3.9		
Barium (Ba)	209		
Beryllium (Be)	1		
Cadmium (Cd)	0.101		
Chromium (Cr)	8.2		
Cobalt (Co)	7.5		
Copper (Cu)	7.3		
Lead (Pb)	13.2		
Manganese (Mn)	492		
Mercury (Hg)	0.027		
Nickle (Ni)	7.2		
Selenium (Se)	0.402		
Silver (Ag)	0.42		
Thallium (Tl)	0.402		

MARLOW EQUATION

FOR THE METAL CONTAMINATION FOUND AT MDA-AB

Name of Site here	factor for this site =			10
	<u>MDA-AB</u>			
Chemical	Exposure Limit (mg/m3)	Maximum Soil Concentration (mg/kg)	Exposure Limit Based on Single Compound (mg/m3)	Dust Quotient for Each Compound (level/limit)
Aluminum	5	12,000	4.2E+01	2.40E+03
Antimony	0.5	0.5	1.0E+05	1.00E+00
Arsenic	0.01	3.9	2.6E+02	3.90E+02
Barium	0.5	209	2.4E+02	4.18E+02
Beryllium	0.002	1	2.0E+02	5.00E+02
Cadmium	0.005	0.101	5.0E+03	2.02E+01
Chromium	0.5	8.2	6.1E+03	1.64E+01
Cobalt	0.02	7.5	2.7E+02	3.75E+02
Copper	1	7.3	1.4E+04	7.30E+00
Lead	0.05	13.2	3.8E+02	2.64E+02
Manganese	1	492	2.0E+02	4.92E+02
Mercury	0.05	0.027	1.9E+05	5.40E-01
Nickel	1	7.2	1.4E+04	7.20E+00
Selenium	0.2	0.402	5.0E+04	2.01E+00
Silver	0.01	0.42	2.4E+03	4.20E+01
Thallium	0.1	0.402	2.5E+04	4.02E+00
			Sum	4.94E+03
1 at PEL for Mixture =				20.24

EQUATIONS USED IN THIS CALCULATION

Dust action level = $(1E+6) (Exposure\ Limit\ mg/m3)$
 (For one dust) $\frac{\hspace{10em}}{(Concentration\ mg/kg) (Safety\ Factor)}$

Dust action level = $(1E+6) / (Safety\ Factor)$
 (For mixed dusts) $\frac{\hspace{10em}}{Sum\ of\ [(Concentration\ mg/kg) / (Exposure\ Limit)]}$

APPENDIX C

ON-SITE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL REFERENCES

- The following reference materials will be maintained on-site as well as MSDS for all chemical products brought on-site. These materials will be made available, upon request, to those individuals that may be occupationally exposed to the potential contaminants of concern and/or chemical products during the course of their work.
- Most recent revision of the ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices.
- Most recent revision of the NIOSH Pocket Guide to Chemical Hazards.

APPENDIX D
EMERGENCY CONTACTS
AND
ROUTE(S) TO MEDICAL SERVICES

EMERGENCY CONTACTS AND PHONE NUMBERS

MEDICAL EMERGENCY/FIRE:

Los Alamos Medical Center Hospital	662-4201
LANL Occupational Medicine Clinic (ESH-2).....	667-0660
Los Alamos Fire Department: (LANL phone)	911
Los Alamos Fire Department: (Cellular phone)	667-7080

HAZARDOUS RELEASE/SPILL:

LANL EM&R (FE-20)	667-6211
Security OS/Pro Force	667-6534
Los Alamos Police	662-8224
Focus Area Health and Safety Rep: (Trung Nguyen)	667-7905/104-6650
ESH-1Rep: (Clarita Trujillo).....	667-3999
ESH-1 Group Office.....	667-7137
TA-49 Facility Coordinator: (Leo Maes)	667-9462
TA-49 Facility Manager: (Ron Brodd).....	665-2272
TA-49 Access Control: (Brad Lounsbury).....	665-5162
LANL, Focus Area Leader: (Allyn Pratt)	667-4308
FTL: (John DeJoia)	662-7300
LANL Pager Access.....	665-9800

MANAGEMENT CONTACTS:

<u>Employer MK/PMC Contacts</u> (Clark Judy)	662-7300
<u>Employer (sub-contractor) Contact: (TBD)</u>	(Will be posted on-site)

EMERGENCY REPORTING INFORMATION:

When calling for emergency services, have the following information available to report:
(Stay on the line until the emergency service operator tells you to hang up) .

- Site name/location/phone #
- Caller ID
- Nature of emergency
- Number of personnel involved
- Name and condition of affected employees
- Actions taken and assistance required

WATER CANYON ACCESS INFORMATION:

Prior to going north of the TA-49 Access road (into water canyon), Call TA-15 Access Control at **665-6742** to determine their shot schedule. Inform Access Control of your location and the activity you plan to perform. Access must be granted by TA-15 since water canyon is within the hazard radius of active firing sites. If you are unable to reach TA-15 Access Control, try calling Richard Catanach at **667-9263**.

TA-49 Hospital Transportation Route

