Department of Energy
Field Office, Albuquerque
Los Alamos Area Office
Los Alamos, New Mexico 87544

NOV 03 1994

Mr. William K. Honker, Chief
RCRA Permits Branch
U. S. Environmental Protection Agency
Region 6
1445 Ross Ave., Suite 1200
Dallas, TX 75202-2733

Dear Mr. Honker:

Enclosed are revised pages for the RFI Work Plan of OU 1085. These revised pages are provided in response to your specific comment #9a of the NOD for the RFI Work Plan of OU 1085. Specifically, sampling plans for PRSs 14-001(f), 14-002 (a, b), 14-009, and 14-010 are provided.

If any questions arise, please call me at (505) 665-7203.

Sincerely,

Theodore J. Taylor
Program Manager
Environmental Restoration
Program

LAAMEP:2TT-028

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See page 2

3839

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NOV 1994 RECEIVED HAZARDOUS WASTE PROGRAM

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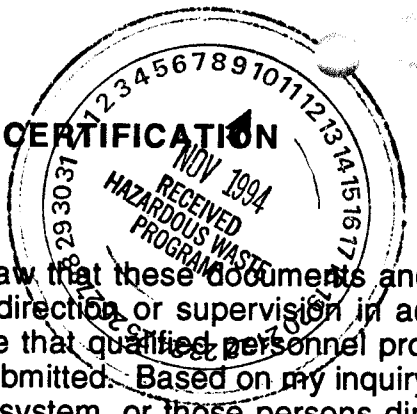

CERTIFICATION

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title:

Response to NOD for RFI Work Plan for OU 1085

Name: _____ Date: Nov 1, 1994

Dennis Erickson
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Name: _____ Date: 11/2/94

Joseph Vozella, Chief
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5.3 AGGREGATE 3. Western area at TA-14: SWMUs 14-001(f), 14-002(a,b,f), 14-009, AND 14-010; and AOCs C-14-002 and C-14-008

5.3.1 Background

The firing site aggregate at the western end of TA-14 contained structures that are typical of a firing site. These include a closed firing chamber (TA-14-2) and an open firing pedestal (TA-14-17). Aggregate 3 also currently includes a bullet test facility (TA-14-34) and an HE test facility (TA-14-39). The aggregate contains two AOCs, and six SWMUs (Table 5-3-1).

SWMU 14-001(f) is currently on standby status and will not be remediated until the site is decommissioned. Surface soil will be sampled in the surrounding drainages to determine if potential contaminants have migrated from the source area; sampling of the surface disposal area (14-009) and sump (14-010) will be conducted to determine if former activities have resulted in contamination on the site. If necessary, an interim action to prevent off-site migration from past contamination will be instigated to protect human health and the environment. Currently, waste materials are collected and stored in drums at an approved satellite accumulation area for removal.

5.3.2 Description and History

TA-14 is located 3 miles east of TA-9 and 0.5 miles west of TA-15 on Redondo Road (Figure 5-3-1). It is situated on the southern edge of Pajarito Mesa. Western TA-14 slopes to the south, then drops approximately 30 ft into Cañon de Valle.

Vegetation within TA-14 is primarily pine forest with dense stands of relatively young ponderosa pine to more open stands of mature ponderosa pine and mixed conifer forest with open, grassy meadows.

TA-14, known as Q-site, was constructed in 1944 by Explosives Division (X Division) for close observation of small explosive charges. During World War II, the west end of Q-site included both a closed chamber (TA-14-2) and an open firing pedestal (TA-14-17). Group X-1B used the firing pedestal for recovery shots in October 1944 (see Figure 5-3-1). The closed chamber failed structurally after several charges had been fired within it (Betts 1947, 21-0038). TA-14-2 was later used as a bullet impact firing chamber, in which low-order detonations were common (Courtwright 1973, 21-0067). This firing frequently involved radioactive materials (Courtwright 1973, 21-0023). TA-14-2 was decommissioned and removed in 1973, together with the high explosive sump and drainline servicing the structure.

The open firing pedestal (14-002(b)) was decommissioned and replaced by a bullet test facility (TA-14-34) in 1957. TA-14-34 continues to be used for a variety of experiments including HE and gun/bullet tests.

TA-14-39, an HE test facility, and TA-14-40, an instrumentation building, were constructed on the former site of TA-14-2 in the 1970s.

TABLE 5-3-1

AGGREGATE 3

PRSs in the Western Area at TA-14

PRS	STRUCTURE NUMBER	DESCRIPTION
14-001(f)	TA-14-34	Remediation deferred until D&D
14-002(a)	TA-14-2	Closed firing chamber (decommissioned)
14-002(b)	TA-14-17	Open firing pedestal (decommissioned)
14-002(f)	TA-14-12	Junction box (decommissioned)
14-009		Surface disposal area
14-010	TA-14-2	Sump (decommissioned)
C-14-002	TA-14-3	Control building (decommissioned)
C-14-008	TA-14-11	Magazine (decommissioned)

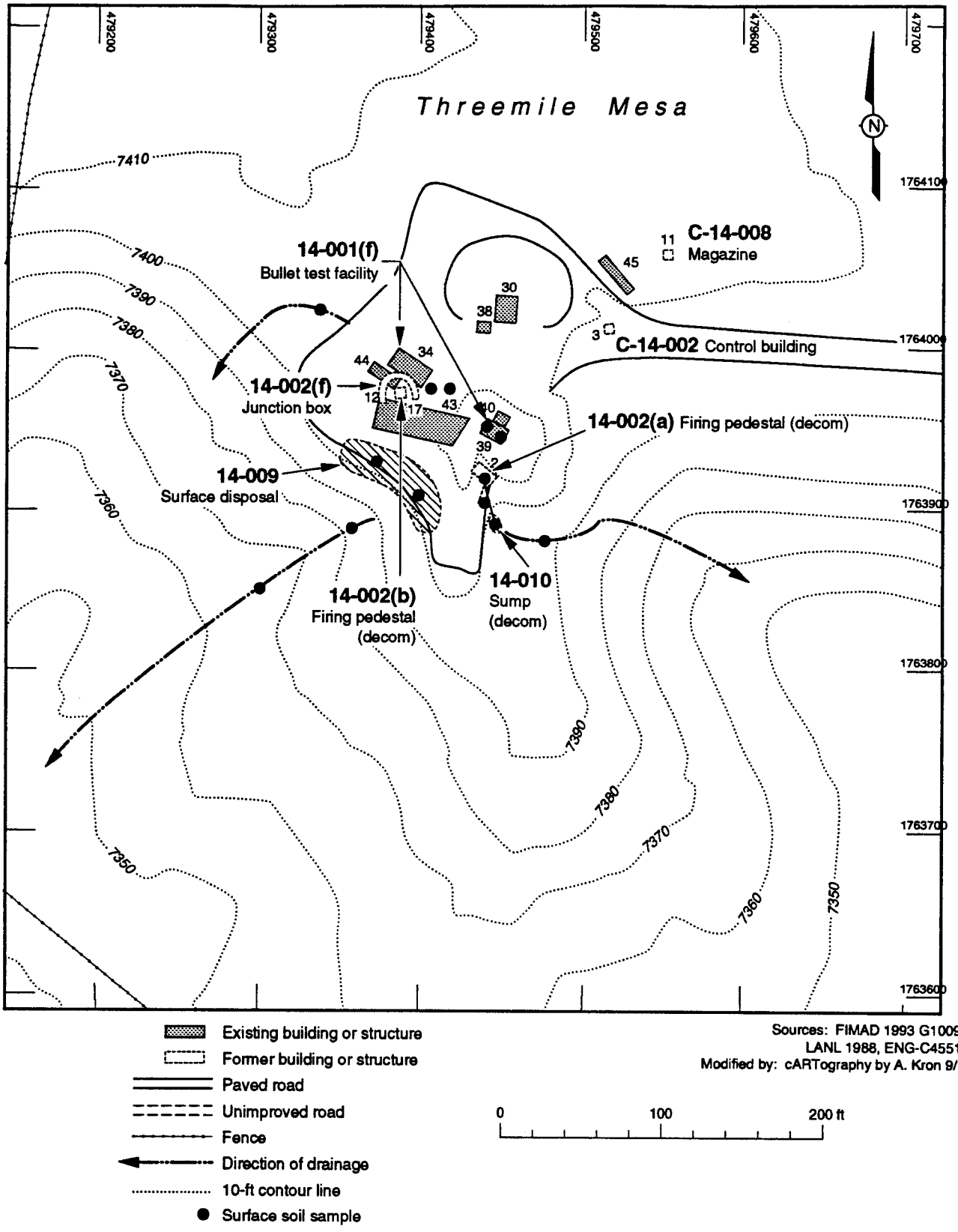


Figure 5-3-1. Sampling locations in Aggregate 3—TA-14: Western Area.

TA-14 remains an active site with tests scheduled at the bullet test facility (western TA-14). The following PRSs resulted from firing activities at the western end of TA-14.

SWMU 14-001(f) (TA-14-34) is a gun firing site but is referred to as a bullet test facility. TA-14-34 is a reinforced concrete building 13.3 by 13.6 by 8 ft tall (LANL 1993, 21-0077). The bullet test facility is located in the center of the western portion of Q-site on level ground that drains to the southwest. M-8 group operates the bullet firing facility. Many types of bullets, including copper-jacketed lead, plastic, steel, and depleted uranium, are used. The firing is done into a 10-ft-diameter steel tube so that the test material is usually contained in the tube or is vaporized. If these residuals are believed to be contaminated with uranium, they are placed in 55-gal. drums for disposal. Any HE-contaminated scrap or shrapnel is also placed in 55-gal. drums for pickup and treatment as HE-contaminated waste. Scrap that is neither HE- nor uranium-contaminated is sent to the sanitary landfill. Sandbags are used for protection from shrapnel. When removed, they are used for erosion control at the site.

SWMU 14-002(a) (TA-14-2) is a decommissioned and removed, closed HE firing chamber completed October 1, 1944, of heavily reinforced concrete construction 16 by 21.6 by 13 ft tall with steel plate lining (LANL 1993, 21-0077). TA-14-2 was not used during World War II; however, Courtwright (1973, 21-0028) suggests that it was later used extensively for HE tests, many of which involved uranium, low-order detonations, or both. In the early 1970s, the decision was made to remove closed chamber TA-14-2 because a new HE test facility was to be built in the same area. A survey of the bunker found that the building was contaminated with alpha radiation (from uranium) to the following levels: floors, 1000 - 4000 d/mα/60 cm^2; ceiling, 2000 to 12 000 d/mα/60 cm^2. The plating on the steel wall that was contaminated with uranium was removed and the contaminated sand at the side of the building was taken to the radioactive disposal pit at TA-54. Apparently, the building was burned on-site in 1973. The remaining noncombustible building materials were placed in Cañon de Valle north of TA-16-387 in material disposal area (MDA) P. Pieces contaminated with HE went to Area J, whereas radioactive pieces went to Area G (Courtwright 1973, 21-0067). The HE sump, TA-14-010, associated with the building was removed at this time. Asphalt in the surrounding area contaminated with uranium was apparently also removed and taken to Area G (Gibbons 1973, 21-0067). Zia plant records show that a water line to the outside building wall was installed in June 1960 (Russo 1973, 21-0067). A decision to abandon the water line was on hold until the Los Alamos Scientific Laboratory (LASL) had completed the design and planning criteria for the new building. It is possible that the new water line was utilized when the new chamber was constructed.

SWMU 14-002(b) (TA-14-17) is a former HE-firing pedestal, completed January 5, 1945, of reinforced concrete construction 4-ft long by 4-ft wide by 2-ft thick with a steel plate top and surrounded on three sides by an 8-ft high earthen barricade. TA-14-17 was located in the west-central portion of the western TA-14 firing site. The former site of the firing pedestal is level, with drainage to the southwest. The horseshoe geometry of the steel open chamber measured 10 ft in diameter by 30-ft-long with a 40-in.-thick wall. The open horseshoe-shaped chamber faced south away from surrounding structures and magazines. The targets were planar cross sections of weapons that contained HEs. Bullets were fired into the HEs, starting with small caliber bullets and progressing up to 150 caliber. These tests detonated, burned, or shattered the target. Natural or depleted uranium was sometimes in the weapons' cross section. Also small shape-charge tests were performed. Light armor weapons (LAWs) were demilitarized and the warheads fired into reactive armor targets containing explosives. Linear shape-charge tests were done on a routine basis. Line cutter-shape charges were fired into weapon cross section targets containing lithium hydride. These firing activities probably produced low-order detonations.

Sandbags were used to protect the x-ray film and equipment from the blast and shrapnel. When the bags were torn, the sand and shot debris were shoveled into a wheelbarrow and dumped at the edge of the canyon in the Southwest and Southeast drainage (SWMUs 14-009 and 14-010). Uranium bullets were fired, which would often start fires in the surrounding area.

The area is contaminated with uranium, lead, and copper, as well as explosives. The copper came from the small guiding metal jackets on the bullets. Some antimony was alloyed into the bullet lead to increase hardness. There is barium nitrate in the area because of the use of inerts as well as Baratol. After a series of shots, the area was swept and HEs, shrapnel, and debris picked up. The surface soil was not removed (Harris 1993, 21-0057). The open chamber/firing pedestal was removed in March, 1952 (LANL 1993, 21-0077).

SWMU 14-002(f) (TA-14-12) is a former junction box shelter built approximately January 1945, of wooden frame construction 6 ft long by 6 ft wide by 6 ft tall, with earthen fill on three sides (Figure 5-3-1). It was removed in March 1952 (LANL 1993, 21-0077). The site may be contaminated because of its close proximity to other areas.

SWMU 14-009 (TA-14) is a surface disposal area on the southwest slope of the western firing area. This waste pile consists of ruptured sandbags. When explosives were tested, sandbags were placed around a firing site to contain the detonation. When the pressure of the blasts ruptured the sandbags, the sand was used for erosion control around the firing site. The sand has been placed over a slope with an area of approximately 45 ft by 50 ft to an approximate depth of 1 ft. Sandbags used at firing sites could be contaminated with uranium, lead, beryllium, and HE

compounds. Uranium has been noted in soils in some areas at TA-14. Whether the source of the uranium was the surface disposal of sandbags, storage, and/or firing activities is not known. The waste pile was surveyed for radioactivity as part of the DOE Environmental Survey in 1987. The survey indicated detectable radioactivity above background at the site (LANL 1990, 0145).

SWMU 14-010 (TA-14-2) is a decommissioned explosive waste sump next to TA-14-2. A drainline extended from the sump under the road and daylighted in the Southeast drainage 24 ft. South-southeast of the sump (Courtwright 21-0023). A concrete sump was located south of and adjacent to TA-14-2 and may have contained HEs and toxic chemicals (Ortiz 1973, 21-0067). The contents of the sump adjacent to the structure were removed and disposed of by the WX-2 Group (Russo 1973, 21-0067). The sump and drain line around the base of the floor slab for TA-14-2 were dug out by hand and removed (Owen 1973, 21-0067).

C-14-002 (TA-14-3) is a former control building, built in October 1944, of wooden construction 8 ft wide by 14 ft long by 8 ft high with an addition of 6 ft wide by 6 ft long by 8 ft high. It was removed in March 1952 (LANL 1993, 21-0077). Because of the location, the area may have residual contamination.

C-14-008 (TA-14-11), a former magazine, is located about 75 ft northeast of the current magazine, TA-14-30, in the west complex (Figure 5-3-1). It was built of wooden construction, 5 ft long by 5 ft wide by 5 ft high, with an earthen berm on three sides and the top. This structure was constructed in January 1945 and was removed in March 1952 (LANL 1993, 21-0077). The location of this magazine has been determined from LANL photographs (11547, 280). The former site of the building has been cleared and scraped; dirt has been heaped in a long, low pile along the north edge of the pavement. This dirt may have been deposited from clearing the paved area and from the former berm surrounding the magazine; it is now covered with a stand of chamisa and weeds. No sign of TA-14-11 remains. The site is contoured so that it drains toward the north ditch that borders the entrance road to the site.

5.3.3 Conceptual Exposure Model

5.3.3.1 Nature and Extent of Contamination

The PRSs in this aggregate include both active and decommissioned structures. All are suspected of being contaminated with HE residues and degradation products, radionuclides, and metals. One of the former structures [SWMU 14-002(a)] had an associated floor drain and another was a sump (SWMU 14-010), suggesting the possibility of subsurface contamination. A 1987 DOE environmental survey indicated the presence of detectable radioactivity at the ruptured sandbags (SWMU 14-009). On June 25, 1993, field spot-test kits were used to survey for

explosives in the vicinity of the bullet test facility [SWMU 14-001(f)]. Some questionable positive results were obtained, which were described by the investigators as possible false positives (Harris 1993, 21-0082). No quantitative information is available regarding possible residual contamination at any remaining structures.

5.3.3.2 Potential Pathways and Exposure Routes

The conceptual exposure model is presented in Figure 5-3-2. A summary of exposure mechanisms and human receptors is presented in Table 5-3-2.

The terrain in the vicinity of these SWMUs is relatively flat but slopes to the south toward the canyon. There are visible drainages. Surface water run-off is considered to be a major pathway of concern. If the surface water infiltrated the SWMU, it could also have transported contaminants into the sediments and soil in the drainages. Contaminated sandbags that were damaged in firing experiments were spread for erosion control at the site (SWMU 14-009). Wind dispersion of surface contaminants may also have occurred.

Radiological decay has occurred; but, due to the long half-lives of the uranium isotopes, decay is not a significant removal mechanism for this isotope. Lanthanum-140 sources with associated strontium-90 contamination may also have been used in experiments. The lanthanum has completely decayed away, but a significant fraction of any strontium-90 may still be present because of its approximate 29-year half-life (see Subsection 5.2).

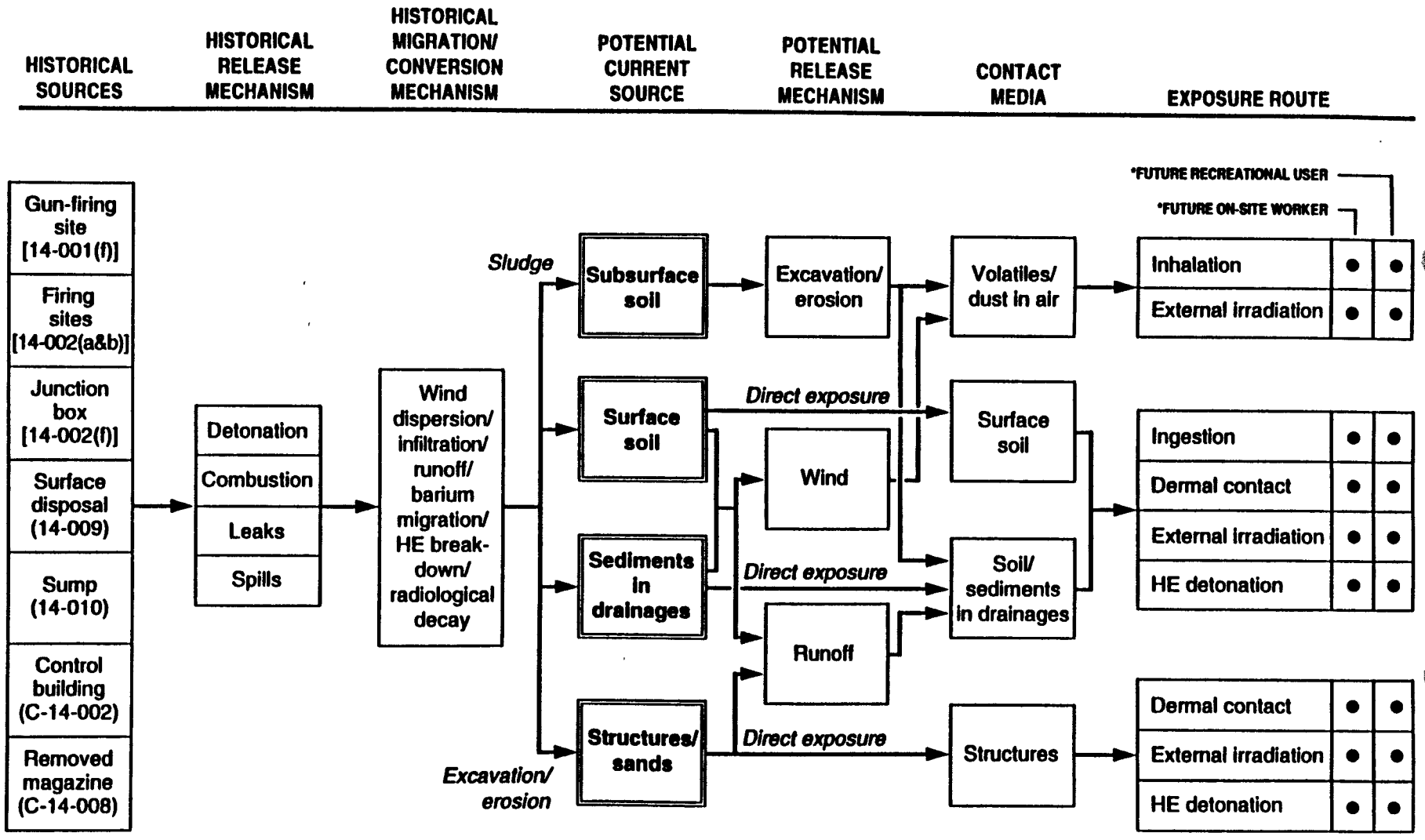
A more detailed description of the migration pathways, conversion mechanisms, potential receptors, exposure pathways, and exposure assumptions relevant to the entire OU is presented in Chapter 4.

5.3.4 Remediation Decisions and Investigation Objectives

5.3.4.1 Problem Statement (DQO Step 1)

The PRSs associated with the western area aggregate include integral components of an recently deactivated firing site. If work is continued at this site, it can be expected to affect the active PRSs and drainages included in this aggregate. Any current risks to on-site workers are the responsibility of the active operational groups and will not be addressed in the RFI. Active-site SWMUs will not be remediated until the site is decommissioned. The main investigation centers around possible contaminant migration down the south drainages from the firing site

Although the closest point for public exposure is at the intersection of Water Canyon and State Road 4 near White Rock (Figure 1-3), interim actions to stop or reduce off-site migration, such as



* No current receptors have been identified

Figure 5-3-2. Conceptual exposure model for Aggregate 3– TA-14: Western Area at TA-14.

TABLE 5-3-2

Aggregate 3: Western Area at TA-14 Exposure Mechanisms and Receptors

PRS	POTENTIAL AREA OF CONTAMINATION	RELEASE MECHANISM	CURRENT POTENTIAL RECEPTORS	FUTURE POTENTIAL RECEPTORS
14-001(f), 14-002(a), 14-002(b), 14-002(f), 14-009, C-14-002, C-14-008	Surface soil and sediments in drainages	•Wind dispersion •Surface water runoff and infiltration •External irradiation	On-site workers	Recreational users, on-site workers
14-009	Sand from sandbags	•Surface water runoff •External irradiation	On-site workers	Recreational users, on-site workers
14-002(a) (floor drain), 14-010	Subsurface soil	Excavation or erosion resulting in surface release mechanisms	On-site workers	Recreational users, on-site workers
14-001(f)	Structures	•Excavation or erosion exposing structures •Surface water runoff and infiltration •External irradiation	On-site workers	Recreational users, on-site workers

the removal of contaminated sediments and/or the placement of barriers, will be based on samples collected in the sediment catchments in the southern drainages.

5.3.4.2 Decision Process (DQO Step 2)

To determine if off-site migration presents a potential health problem, we will compare potential contaminant levels in sediments in the drainages, in the disposal area (14-009), and the HE sump (14-010) with SALs (see Chapter 4 and IWP Subsections 4.2.2 and Appendix J (LANL 1993, 1017). If the SALs are exceeded, then a baseline risk assessment will be carried out and potential contaminant levels in sediments in the tributary will be used to calculate whether or not acceptable risk levels are exceeded for a site-specific scenario. Public exposure is not an issue here; however, if levels correspond to unacceptable risk levels for a recreational-use scenario, then an interim action to stop migration will be evaluated.

Evaluation of a safety hazard will also be based on the presence of unexploded HEs in the drainages. If fragments of unexploded HEs are found in the tributary or if the concentration of HEs in the sediment catchments of the tributary are determined to be above acceptable safety levels, then an interim action will be evaluated. The acceptable safety levels for amount and particle size have not been determined. It is the responsibility of Dynamic Experimentation Division (DX Division) to set acceptable safety limits for HE fragments.

5.3.5 Data Needs and Data Quality Objectives

5.3.5.1 Decision Inputs and Investigation Boundary (DQO Steps 3 and 4)

The potential public health risk is from off-site migration of potential contaminants. As stated previously, the major route for potential off-site migration is the drainage to Cañon de Valle. Sediment catchments in this tributary provide an estimate of the maximum concentrations of PCOCs downstream of the firing site. Sampling in the disposal area and former bullet test facility sump will assess contaminants resulting from those specific SWMUs that may not have migrated away.

If deferred action for this aggregate is proposed, the decision will be based on PCOC concentrations (including pieces of HEs that present a safety problem) in the sediment catchments. If necessary, these data will be used in the baseline risk assessment.

A secondary goal of the Phase I survey will be to provide data that will help LANL plan any Phase II survey, if it is needed. Data collected on PCOC concentrations in the north and south drainages will help design the Phase II migration rate survey.

The data required for these assessments are measurements of potential contaminant concentrations and HE particle size distributions and concentrations in the sediment catchment drainages.

5.3.5.2 Decision Logic (DQO Step 5)

If the maximum concentrations of any potential contaminant in the sediment catchments in the drainage to Cañon de Valle are above the SALs—likewise if a number of COCs are near SALs—or if a safety hazard exists, then Phase II sampling may be required to determine the maximum extent of migration. After Phase II sampling is complete, an interim action may be taken to mitigate contaminant migration.

5.3.5.3 Design Criteria (DQO Step 6)

Reconnaissance sampling will be used for the sediments catchments in the drainage to Cañon de Valle. The catchments are expected to have collected PCOCs and should provide an upper boundary to PCOC concentrations.

We assume that if potential contaminants have reached the drainage to Cañon de Valle, they will be detectable in at least one of the two drainages that flow to the canyon. The primary PCOCs for this study are HEs. All drainage samples will be analyzed for HEs (both by laboratory analytic measurement on the sieved soil sample and by a safety screen on the complete field sample) and other PCOCs.

Sediment catchments in the western and eastern drainages will be sampled for HEs to evaluate the pattern of contaminant migration. These data will help design a Phase II survey, if it is needed. All samples will be screened to see if they meet health and safety requirements. Appropriate transport and laboratory safety procedures, based on the field screening data will be implemented.

After the former location of the sump and drainline outfall has been determined, the outfall area, and the area where the effluent from the outfall would be expected to emerge from under the fill will be sampled to determine the presence of HEs, U, and metals. Surface sampling of the disposal area will assess the concentration of HEs, metals, and uranium resulting from the use of the bullet test facility.

5.3.6 Phase I Sampling and Analysis Plan

Phase I sampling will focus on determination of the presence and extent of PCOCs above SALs. A Phase II sampling plan, if necessary, will further define the nature, extent, and rate of migration

of any release identified in Phase I. Refer to Appendixes C, Introduction to High Explosives; Appendix D, Maps; and Appendix E, Field and Laboratory Investigation Methods; For additional OU 1085 field sampling information, including SOPs used in this sampling plan.

Field Screening. All samples will be field-screened for gross alpha, beta, and gamma to detect the presence of radionuclides. The HE spot test will be used to detect the presence of HEs.

Appropriate health and safety precautions will be undertaken according to the Laboratory's ER Program SOPs (LANL 1993, 0875).

5.3.6.1 Engineering Surveys

Engineering surveys will locate, stake, and document PRS boundaries, the areas for radiation screening, HE screening, surface and subsurface sampling, and all major surface engineering and geomorphological features. All sample locations will be registered on a base map, scale 1:1200. If any sample points must be relocated during the course of sampling, the new position will be surveyed and the revised locations will be indicated on the map. The engineering survey will be performed by a licensed professional surveyor under the supervision of the field team leader.

5.3.6.2 Sampling

5.3.6.2.1 Sampling Rationale

Aggregate 3 comprises seven decommissioned and one inactive PRSs within a recently inactivated site. Therefore, sampling of SWMUs 14-001(f), 14-002(b), 14-002(a), 14-002(f), the decommissioned HE sump and surface disposal area, SWMUs 14-010 and 14-009, and of the drainage channels will be performed to detect any PCOCs in the decommissioned sites as well as those migrating off-site by way of the eastern and western drainage channels.

5.3.6.2.2 Sampling Techniques

Surface soil samples will be gathered with the spade and scoop or with ring sampler technique to a depth of 6 in. The specific technique will be determined by the field team leader. Subsurface sampling of the HE sump will be accomplished with a remote drilling rig or hand auger, depending on HE safety concerns.

See Figure 5-3-1 for planned sample locations and Table 5-3-3 for a listing of planned sampling. Locations were chosen after a field visit to the site that reflects the topography of the drainage.

5.3.6.2.3 Western Area at TA-14 Aggregate Sampling

5.3.6.2.3.1

PRS 14-001(f), 14-002(a,b) and 14-002(f):

PRS 14-001(f) (the bullet test facility) consists of a viewing/control chamber (building 14-34), impact receiving area consisting of a large metal cylindrical pipe (structure 14-39), associated photographic shooting area (building 14-40), and a gun mount area located between building 14-34 and structure 14-39. There are metal plates located over stained sand on the floor of the 14-39. The sand within this structure will be screened for radiation and HE. Two samples will be taken in this area. One sample will be biased based on the results of the screening analysis for HE and radionuclides. The second sample will be biased based on visual staining. Both samples will be analyzed for radionuclides, HEs, metals, and semivolatiles. If levels above SALs are found, the material in the sump underneath the structure will be analyzed.

Two samples will be taken from the area southeast of building 14-34 (the gun mount area) and east of the former location of 14-002(b), the decommissioned firing pedestal and 14-002(f), the junction box. These samples will be analyzed for radionuclides, HEs, and metals and will be biased based on radiation and HE screening.

One sample will be taken from a stained area near PRS 14-002(a). This former location of the decommissioned firing chamber/bullet impact target was later used as the location of a 30 mm gun mount. It will be analyzed for radionuclides, HEs, metals, and semivolatiles. Ruptured and intact sandbags are present southeast of building 14-39 and along the mesa top above the natural drainage for this area. A sample from these sandbags will be obtained and analyzed for HEs, radionuclides, and metals.

5.3.6.2.3.2

PRS 14-009/Southwest/Northwest Drainage:

PRS 14-009 (the surface disposal area) is located south of building 14-43. The eastern part of the surface disposal area is open. The western portion of the surface disposal area is covered by blasting net. The area in the surface disposal area will be screened for radiation and HEs. Based on the screening results, two biased samples will be taken, and analyzed for HEs, metals, radionuclides, and semivolatiles.

Table 5-3-3 Summary of OU 1085 Site Surveys, Sampling and Analysis Aggregate 3

						Field Survey					Field Screening			Laboratory Analyses				
PRS	PRS Type	Phase 1 Approach	Sample Media	Samples	Duplicates	Land Survey	Geophysics	High Explosives	Polynuclear Aromatic Hydrocarbons	Radiation	Gross Beta/Gamma	High Explosives	Organic Vapor	Gamma Spectroscopy	High Explosives	Isotopic Uranium	Metals	Semivolatiles
Northwest Drainage	Offsite Migration	Screening Assessment	Soil	1		X		X		X	X	X		X	X	X	X	
Southwest Drainage Channel	Offsite Migration	Screening Assessment	Soil	2		X		X		X	X	X		X	X	X	X	X
14-001(f), 14-002(a,b), 14-002(f)	Bullet Test Facility/Firing Pedestals	Screening Assessment	Soil in impact area, catchments	4		X		X		X	X	X		X	X	X	X	
14-002(a)	Firing Pedestal	Screening Assessment	Soil, Sand	2		X		X		X	X	X		X	X	X	X	X
14-002(a)	Firing Pedestal	Screening Assessment	Sand in Sump	2		X	X	X		X	X	X		X	X	X	X	
14-009	Surface Disposal Area	Screening Assessment	Soil	2		X		X		X	X	X		X	X	X	X	
14-010, Southeast Drainage	Sump	Screening Assessment	Soil in drainage channel	2		X		X		X	X	X		X	X	X	X	X

Two additional surface samples will be taken at sediment catchment areas showing positive screening results along the drainage paths S-SW of 14-009. These samples will be analyzed for HEs, radionuclides, and metals.

The predominant slope of the mesa top is to the south. The sampling plan outlined for PRS 14-009 in the surface disposal area will identify any off-site migration via the southwest drainage. In addition, a screening analysis for radiation and HEs will be conducted at the northwest drainage to assess whether PCOCs may have migrated in this direction. If there are positive results, further sampling will be conducted and analyzed for radionuclides, HEs, and metals.

5.3.6.2.3.3

PRS 14-010/Southeast Drainage:

A geophysical survey using electromagnetic survey and GPS (Global Positioning Satellite) sensor systems will be conducted to confirm that the sump and drainline has been removed from beneath the asphalt. If located, a sample of the contents of the sump, the area immediately beneath the sump, and/or the drainline will be taken and analyzed for HEs, radionuclides, and metals.

The southeast drainage from PRS 14-010 and structure 14-39 and 14-2 (decommissioned) will be screened for radiation and HEs to identify potential sampling locations. Based on the screening results, two samples will be taken along this drainage and analyzed for radionuclides, HEs, semivolatiles, and metals. Refer to Table 5-9 for a complete list of PCOCs. Residual contamination from the bullet test sump (SWMU 14-010) will be determined by sampling at the surface (0–6") at the location of the drainline outfall. The location of the samples will be determined from historical aerial photos and engineering drawings or structure location plans. The drainage channel downgradient from the location where the effluent emerges from under the fill will also be sampled at the surface to determine if contamination from the sump could have migrated down the canyon. This sample will be biased towards sediment catchments where contamination levels are likely to be highest. Spade and scoop or ring samples will be used for surface samples; hand augers will be used for subsurface samples.

5.3.6.4 Fixed Base Laboratory Analyses

Fixed base laboratory analyses for radionuclides, HEs, and metals will be based upon the following methods: LANL or DOE methods for alpha, beta, and gamma spectrometry, SW-846 method 6010 for metals, SW-846 method 8270 for semivolatiles, and SW-846 method 8330 for HEs and HE degradation products. The principle radionuclide of concern is depleted uranium; the

principal semivolatile organic compounds (SVOCs) of concern are HEs and HE by-products and detonation products. The metals of concern are beryllium, lead, and uranium.

5.3.6.5 Sample Quality Assurance

Field quality assurance samples will be collected according to the guidance provided in the latest revision of the IWP (LANL 1993, 1017).