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Statement of Work for S-Site Investigation Work Plan and Technical Area 16 Notice of Disapproval Responses

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Prepared by the Environmental Programs Directorate

Los Alamos National Laboratory (LANL), operated by Los Alamos National Security (LANS), LLC, for the U.S. Department of Energy under Contract No. DE-AC52-06NA25396, has prepared this document to support the investigation and cleanup, including corrective action, of contamination at LANL, as required by the Compliance Order on Consent, signed March 1, 2005. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

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1.0 INTRODUCTION

1.1 This Statement of Work (SOW) establishes the general scope of work for the Subcontractor responsible for providing the technical functions and expertise necessary for the effective and timely delivery of support services to Los Alamos National Laboratory's (LANS) Environmental Programs (EP) Directorate, Corrective Actions Program (CAP). The Subcontractor must have in place the necessary and functioning management and administrative infrastructure to complete all technical objectives and successfully interface with the Laboratory. The Subcontractor shall perform all work requirements in accordance with the contract documents and with the Laboratory, New Mexico State Environmental Department (NMED), and Department of Energy (DOE) policies and directives.

1.2 The Subcontractor shall comply with all applicable Laws, 10 CFR 830.122, DOE Orders, Laboratory performance requirements (LPRs), Laboratory implementing requirements (LIRs), EP Directorate Requirements, NMED Order on Consent, Price-Anderson Amendments Act, Conduct of Operations, the integrated work document process, and other relevant requirements such as notices, alerts, and urgent memorandums in the performance of the following SOW.

1.3 This SOW presents the requirements that will be accomplished by the Subcontractor in support of the LANS CAP during fiscal year (FY) 07 and beyond.

2.0 PROGRAM AND SITE BACKGROUND

2.1 Los Alamos National Security (LANS) LLC has established the EP directorate to reduce the risk to the public, workers, and the environment from current and historic activities conducted at LANS. This risk reduction is accomplished through natural and cultural resource protection, stewardship, pollution prevention, implementation of risk/cost effective measures for waste disposition, and environmental remediation. Further, EP is chartered to ensure the sustainability of LANS by continually improving our support of LANS mission assignments, our social responsibility in northern New Mexico, and environmental protection of the Pajarito Plateau.

2.2 Site-Specific Background Information—S-Site Watershed Aggregate Area

2.3 The following section is broken out into the same sub-aggregates anticipated for the S-Site aggregate area investigation work plan. These are: K-Site (sub-aggregate 1), P-Site/wastewater treatment plant (WWTP) (sub-aggregate 2), 300s Line (sub-aggregate 3), V-Site/GMX 2 (sub-aggregate 4). Descriptions of these sub-aggregates are provided below.

2.4 This SOW focuses on consolidated units and solid waste management units (SWMUs) that are currently identified as not administratively complete. Sampling plans will have to be written for these sites. It is anticipated that SWMUs identified as DOE administratively complete will also be addressed in the S-Site work plan (WP), although in most cases, sampling plans will not be required. These DOE administratively complete SWMUs are listed in Table 2.5.1-1.

Note: For more detailed information on the following sites, refer to the LANS Potential release site (PRS) database: http://erinternal.lanl.gov/PRS/PRSMain.asp. The following descriptions are synopses of the information found in the PRS database provided for convenience and reference,

but should not be used as the sole source of information for the development of deliverables. If conflicting information exists, the Subcontractor should seek resolve with the designated LANS subject matter expert.

2.4.1 K-Site

2.4.1.1 K-Site includes 13 consolidated units and SWMUs, three of which were consolidated from a total of 15 child SWMUs (reference Table 2.4.1-1).

Table 2.4.1-1
Consolidated Units and SWMUs Associated with the K-Site Sub-aggregate

TA	Consolidated Unit Name	Site Description	Child SWMUs (if any)	Child SWMU Description	Additional Information
TA-11	11-001(b)	Firing site (inactive)			Inactive munitions firing pit
	11-003(b)	Air gun			Mortar impact Area
	11-004(a)-99	Drop test tower and related structures	11-004(a)	Drop tower - firing site (active)	Drop tower
			11-004(b)	Drop tower - firing site (active)	Concrete pad
			11-004(c)	Drop tower - firing site (active)	Hoist
			11-004(d)	Drop tower - firing site (active)	Hoist
			11-004(e)	Drop tower - firing site (active)	Asphalt drop pad
			11-004(f)	Drop tower - firing site (active)	Asphalt drop pad
	11-005(a)	Septic system			Active septic system
	11-005(b)	Septic system			Active septic system
	11-005(c)	Outfall (inactive)			Inactive outfall
	11-006(a)-99	Former firing site	11-001(a)	Firing site (inactive)	HE Firing Pit
			11-002	Burn site	Active burn site
			11-006(a)	Sump	HE sump
			11-006(b)	Tank and/or associated equipment	Catch basins and outfalls
			11-006(c)	Tank and/or associated equipment	Catch basins and outfalls
			11-006(d)	Tank and/or associated equipment	Catch basins and outfalls
			C-11-001	Laboratory	Laboratory and/or dark room
	11-009	Material disposal area (MDA S)			HE degradation experiment area

Table 2.4.1-1 (continued)

TA	Consolidated Unit Name	Site Description	Child SWMUs (if any)	Child SWMU Description	Additional Information
TA-11	11-011(a)-00	Outfalls	11-011(a)	Industrial or sanitary wastewater treatment	Active outfall
			11-011(b)	Industrial or sanitary wastewater treatment	Active outfall
	11-011(d)	Industrial or sanitary wastewater treatment			Active outfall
	11-012(c)	Building			Potential surface soil contamination
	11-012(d)	Building			Potential surface soil contamination
	C-11-002	Laboratory			Laboratory and/or dark room

Note: Sites in bold red are deferred under the Order on Consent.

2.4.1.2 K-Site (Technical Area [TA] 11 Firing Sites) was built in the latter part of 1944 for studies of implosion symmetry using x-rays and the magnetic method. SWMU 11-004(a)-99 is part of active firing site operations and is deferred under the Compliance Order on Order (the Consent Order). Other SWMUs are also part of active operations or are physically covered by active firing sites and have been deferred under the Consent Order. These include SWMUs 11-001(a) (inactive firing site), 11-001(b) (firing site), 11-002 (active burn site), 11-003(b) (air gun), 11-009 (Material Disposal Area [MDA] S), 11-012(c,d) (footprints of former buildings) and C-11-001(laboratory). SWMUs to be investigated include outfalls, septic systems, sumps, tanks and/or associated equipment. Brief descriptions of all these SWMUs are included below. Descriptions of deferred SWMUs are included to provide a sense of contaminants that may have been spread by firing site operations.

2.4.1.3 SWMU 11-001(b) is an inactive munitions site. It is the firing pit between the former betatron building and the former cloud chamber building. From 1944 to 1945, tests of up to 200 lb high explosives (HE) were detonated in contact with uranium and aluminum in this firing pit. Test assemblies consisted of uncased HE. Between 1946 and 1956, photofission studies of uranium, uranium-235, uranium-238, and plutonium were conducted in a former shelter (structure 11-23) in the area between Buildings 11-2 and 11-3. The extent of possible contamination associated with the HE tests is a 700-ft radius area surrounding the drop tower (structure 11-25).

2.4.1.4 AOC 11-003(b) is a mortar impact area that is the target associated with the decommissioned air-gun facility (Building 11-24). This AOC is immediately adjacent to the active drop-tower complex at TA-11 (K-Site). Some devices contained HE and depleted uranium. One device was a 12-in. diameter,

hollow-steel sphere filled with steel or lead ball bearings suspended in a graphite matrix. The sphere fractured upon impact, potentially leaving behind 0.5-in. diameter lead balls.

2.4.1.5 Consolidated Unit 11-004(a)-99 consists of SWMUs 11-004(a,b,c,d,e) and former area of concern (AOC) 11-004(f). The SWMUs and AOC are components of the active TA-11 drop-tower complex, which was built in 1956 when TA-11 was modified to conduct explosives and weapons-safety studies. The consolidated unit consists of a 160-ft high drop tower [structure 11-25, SWMU 11-004(a)], which is surrounded by a 130-ft diameter concrete pad [structure 11-26, SWMU 11-004(b)]; two hoists [structures 11-27 and 11-28, SWMUs 11-004(c,d)]; and two asphalt drop pads [structures 11-41 and 11-42, SWMU 11-004(e) and AOC 11-004(f)]. The drop tower was used to conduct drop- and skid-sensitivity tests and continues to be an active test-firing facility.

2.4.1.6 SWMU 11-005(a) is an active septic system that has served the sinks and restrooms in Buildings 11-1 and 11-4 since 1944. A memorandum from 1950 indicated that a mercury spill occurred in Building 11-4, but the location, source, and extent of the spill are not known. The operable unit (OU) 1082 WP recommended subsurface sampling in the drain field and at the outfall to determine the presence or absence of contaminants at SWMU 11-005(a).

2.4.1.7 SWMU 11-005(b) is an active septic system constructed in 1963. The septic system has a drain line from the control building (Building 11-3) to a septic tank (structure 11-43), a drain line from the septic tank to an outfall, and a drain field west of the drain line. The OU 1082 WP recommended subsurface sampling in the drain field and at the outfall to determine the presence or absence of contaminants at SWMU 11-005(b).

2.4.1.8 SWMU 11-005(c) is an inactive outfall north of the former betatron building (Building 11-2, which now is a control building) from a capped drain line. Potential contaminants are organic solvents, uranium and plutonium isotopes, and inorganic chemicals from photofission experiments. The OU 1082 work plan proposed sampling at the outfall to determine the presence or absence of contamination.

2.4.1.9 Consolidated Unit 11-006(a)-99 consists of SWMUs 11-001(a), 11-002, 11-006(a,b,c,d) and AOC C-11-001.

2.4.1.9.1 SWMU 11-001(a) is a former HE firing pit located about 140 ft southeast of a control building (Building 11-2). Before demolition, a radiation survey was conducted at structure 11-14; no significant radioactive contamination was found.

2.4.1.9.2 SWMU 11-002 is a 30-ft diameter active burning area located east of the drop tower at the edge of its asphalt apron. From 1948 to 1992 it was used as an experimental burning area for components on or in assembled configurations with HE, propellants, and jet fuel.

2.4.1.9.3 SWMU 11-006(a) is an HE sump (structure 11-39). The sump was installed in 1961, and drains across the asphalt into one of three catch basins [SWMUs 11-006(b,c,d)].

2.4.1.9.4 SWMUs 11-006(b-d) are catch basins (structures 11-50, 11-51, and 11-52, respectively) and their associated outfalls. They receive washdown water and runoff from the asphalt apron. All outfalls were permitted under LANS's National Pollution Discharge Elimination System (NPDES) permit; only one remains active. The outfalls are channeled along asphalt-lined drainages into natural drainages that flow east from TA-11 into Water Canyon.

2.4.1.9.5 AOC C-11-001 is the former site of a 6-ft × 32-ft wood-frame building (Building 11-5). It may have housed the laboratory that was used to prepare samples for the 1946–1956 photofission experiments on uranium and plutonium. It also may have been used as a darkroom. The OU 1082 work plan proposed a sampling strategy to explore the potential for off-site contaminant migration through the outfalls. For the outfalls, the work plan proposed sampling sediment catchments in the Water Canyon tributary to determine if contaminant migration has occurred.

2.4.1.10 SWMU 11-009 is MDA S, a fenced, active experiment plot about 10 ft^2 × 2ft deep. The site is located in front of a storage magazine (structure 11-36). The area has been used since 1965 to study the effects of soil and weather on the decomposition of explosives.

2.4.1.11 Consolidated Unit 11-011(a)-00 consists of SWMUs 11-011(a,b). The SWMUs are active outfalls.

2.4.1.11.1 SWMU 11-011(a) is an NPDES-permitted outfall. Electrical equipment in Building 11-30A is cooled by water circulating through a cooling tower. Cooling tower blowdown is discharged untreated to the outfall, which also receives discharge from floor drains in Building 11-30A. Potential contaminants are organic chemicals.

2.4.1.11.2 SWMU 11-011(b) also serves the floor drains in Building 11-30. Potential contaminants are organic chemicals. The OU 1082 WP proposed sampling below the outfall discharge areas to determine the presence or absence of contamination.

2.4.1.12 SWMU 11-011(d) is an active outfall associated with a building that houses offices and a light machine shop (Building 11-24, the former air-gun building). Potential contaminants are organic cleaning agents, cutting oils, and inorganic chemicals used in the machine shop. The OU 1082 WP proposed

sampling at the outfall to determine the presence or absence of contaminants.

2.4.1.13 AOC 11-012(c) is an area of potential surface-soil contamination at the top of a knoll about 500 ft west of a control building (Building 11-4). AOC 11-012(c) is located at the site of a former 16 ft^2 wood storage structure (structure 11-9). A 1956 survey showed the structure was free of radioactive contamination; a 1959 inspection showed the building was free of radioactivity but showed HE contamination. Potential contaminants at the site are HE, HE impurities, and HE degradation products.

2.4.1.14 AOC 11-012(d) is an area of potential soil contamination associated with a former personnel shelter (structure 11-10). Structure 11-10 may have been used to store small quantities of HE scraps for disposal. A 1956 survey showed the structure was free of radioactive contamination; a 1959 inspection again showed the building was free of radioactivity but showed HE contamination. Potential contaminants at the site are HE, HE impurities, and HE degradation products.

2.4.1.15 AOC C-11-002 is potential surface soil contamination at the location of a former 7-ft × 9-ft, wood-frame structure (former Building 11-12). Building 11-12 may have housed the laboratory that was used to prepare samples for P Division photofission experiments on uranium and plutonium isotopes and it may have been used as a darkroom. Building 11-12 was monitored in 1956 and was free of radioactive contamination; it was removed to salvage in 1959. A potential contaminants are HE, photo processing chemicals, and uranium and plutonium isotopes.

2.4.1.16 In 1998, four samples were collected at Consolidated Unit 11-006(a)-99. Samples were collected from the drainages associated with the catch basins to evaluate any contaminant migration during storm events. Samples were submitted to an analytical laboratory for analysis for organic chemicals and inorganic chemicals. The results of the sampling indicate that inorganic chemicals were detected at concentrations exceeding BVs, with arsenic being the only chemical above SALs. HE was detected in one of the samples but well below SALs.

2.4.2 P-Site/WWTP

2.4.2.1 P-Site/WWTP sub-aggregate consists of 10 consolidated units and SWMUs, four of which were consolidated from a total of 14 child SWMUs (reference Table 2.4.2-1). One of these consolidated SWMUs (13-003(a)-99) is being investigated as part of the TA-16-340 (Fishladder) Complex cleanup.

Table 2.4.2-1
Consolidated Units and SWMUs Associated with the P-SITE/WWTP Sub-aggregate

TA	Consolidated Unit Name	Description	Child SWMUs (if any)	Child SWMU Description	Additional Information
TA-13	13-001-99	Firing site, landfill, and soil contamination	13-001	Firing site at P-Site (inactive)	Firing site/contaminated soil
			13-002	Landfill at P-Site	Landfill
			16-035	Soil contamination area at P-Site	Soil associated with bunker
			16-036	Soil contamination area at P-Site	Soil associated with bunkers
	13-003(a)-99	TA-13 septic system (inactive)	13-003(a)	Septic tank same as 16-005(i)	Part of FL investigations
			13-003(b)	Septic system	Part of FL investigations
	13-004	Disposal pit - existence not determined			Unlocated burning pits.
TA-16	16-004(a)-99	Wastewater treatment plant	16-004(a)	Wastewater treatment facility	Imhoff tank
			16-004(b)	Wastewater treatment facility	Trickling filter
			16-004(c)	Wastewater treatment facility	Final tank
			16-004(d)	Wastewater treatment facility	Sludge drying bed
			16-004(e)	Wastewater treatment facility	Screen
			16-004(f)	Wastewater treatment facility	Sludge drying bed
	16-024(a)	Magazine			Removed HE magazine
	16-024(u)	Magazine			Removed HE magazine
	16-025(d2)	Abandoned building, 16-480			Soil at decommissioned mockup chamber
	16-029(h)-99	Sump, drainlines, and outfall	16-003(p)	Sump at P-Site	Sump
			16-029(h)	Sump at P-Site	Drainline and outfall
	16-031(h)	Industrial or sanitary wastewater treatment at P-Site			Soil associated with an outfall
	C-16-060	Soil contamination area			Soil associated with storage building

2.4.2.2 Former TA-13, originally called P-Site, is located at the eastern end of the current TA-16 explosives manufacturing area. Former TA-13 was built in 1944 to support the HE project of the Manhattan Project and has been used since then for a variety of LANS activities. It was principally designed as a

site for counter x-ray diagnostics of HE lens configurations. Activities that supported the diagnostics included operating counter x-ray equipment, HE assembly, and research in the magnetic method program. In 1944-1945, HE shots were fired at a rapid pace, with firings every 10 minutes during the first 2 months of 1945. Assemblies contained HE lenses, uranium, and other metals. The counter x-ray program was suspended in 1945. Former TA-13 was converted to initiator testing in mid-1945. Initiator assemblies consisted of HE, beryllium, polonium, and other metals. A memorandum suggests that in 1948, the site was to be upgraded for renewed HE firing. Buildings in the western half of former TA-13 were demolished in the early 1950s to make way for the construction of Building 16-340, the Explosives Synthesis Building, and its associated structures. Former TA-13 was incorporated into TA-16 (S-Site) in 1957. More recent use of former TA-13 buildings was for experimental and high-speed machining tests for the S-Site weapons groups. Potential contaminants at the SWMUs are inorganic chemicals, HE, and radionuclides. Consolidated Unit 16-004(a)-99 consists of SWMUs 16-004(a,b,c,d,f). These SWMUs were components of the inactive TA-16 sanitary WWTP, which received wastewater only from the TA-16 sanitary sewer system. The WWTP was built in 1953 during the expansion of TA-16 and was disconnected when the LANS Sanitary Wastewater Systems Consolidation (SWSC) became operational in 1992. The WWTP was designed for gravity flow. The WWTP had an NPDES-permitted outfall. Potential contaminants at this consolidated unit are HE, solvents, inorganic chemicals, and radionuclides.

2.4.2.3 Consolidated Unit 13-001-99 consists of SWMUs 13-001, 13-002, 16-035, and 16-036. The SWMUs are associated with firing activities at former TA-13.

2.4.2.3.1 SWMU 13-001 is a firing site and soil contaminated from firing activities to an approximate radius of 300 ft. The area has some debris and shrapnel including firing cables, lead balls, and chunks of steel and copper.

2.4.2.3.2 SWMU 13-002 is a landfill south and east of the firing site [SWMU 13-001].
It extends about 500 ft south of the firing point and includes a large amount of debris and shrapnel scattered around the two battleship bunkers (structures 16-477 and 16-478).

2.4.2.3.3 SWMU 16-035 is potential soil contamination associated with control bunker, structure 13-2 (renumbered to 16-476).

2.4.2.3.4 SWMU 16-036 is potential soil contamination located beneath battleship bunkers, structures 16-477 and 16-478. The OU 1082 WP proposed soil sampling at the SWMUs in this consolidated unit to determine if potential contaminants are present. The work plan proposed an aggregate-wide sampling grid because of contaminant dispersal related to the firing site and landfill.

2.4.2.4 Consolidated Unit 13-003(a)-99 is being investigated as part of the TA-16-340 investigation.

2.4.2.5 SWMU 13-004 consists of one or more burning pits at former TA-13. The pits were not located on engineering diagrams or on 1948 aerial photographs. According to the OU 1082 WP, it is likely that the pits were located in the western half of former TA-13 and have been disturbed and covered by S-Site construction activities. The OU 1082 WP proposed sampling at SWMU 13-004 using a reconnaissance approach. If SWMU 13-004 cannot be located, the work plan stated that it is assumed that the site-wide drainage sampling will provide an adequate understanding of any risk associated with this site.

2.4.2.6 Consolidated Unit 16-004(a)-99 consists of SWMUs 16-004(a-f). These SWMUs were components of the inactive TA-16 sanitary WWTP.

2.4.2.6.1 SWMU 16-004(a) is a concrete Imhoff tank that measures 18-ft × 35-ft × 22-ft deep, with nine interconnected compartments that served as settling boxes. Effluent from the boxes flowed over a weir into a dosing siphon. The tank had an emergency overflow pipe that discharged onto a slope northeast of the tank.

2.4.2.6.2 SWMU 16-004(b) is a trickling filter that received effluent from the dosing siphon. The trickling filter's capacity was 100,000 gal. per day.

2.4.2.6.3 SWMU 16-004(c) is the final tank that received discharge water from the trickling filter.

2.4.2.6.4 SWMUs 16-004(d,f) are two sludge-drying beds. Sludge from the drying beds was monitored quarterly for radioactivity and tritium before it was removed and disposed of at MDA G.

2.4.2.6.5 SWMU 16-004(e) is a 5 ft^2 screen that filtered out large solids. The OU 1082 WP proposed sampling the SWMUs in this consolidated unit. Permanent seeding, mulching, and straw wattles were installed at this consolidated unit in 2000 to minimize erosion at the site, as part of the post-Cerro Grande fire recovery.

2.4.2.7 AOC 16-024(a) is the location of a decommissioned and removed HE magazine (Building 16-488). Former Building 16-488 was built in 1944 to store HE in support of x-ray diagnostics work on HE lenses. Addendum 2 of the OU 1082 WP proposed sampling in the footprint of AOC 16-024(a) to detect residual HE in the disturbed soils.

2.4.2.8 AOC 16-024(u) is the location of a decommissioned and removed magazine (structure 16-481). Structure 16-481 was built in 1944 to store HE in support of x-ray diagnostics work on HE lenses. Addendum 2 of the OU 1082 WP

proposed sampling in the footprint of AOC 16-024(u) to detect residual HE in the disturbed soils.

2.4.2.9 SWMU 16-025(d2) is potentially contaminated surface soil at the former location of a decommissioned mockup chamber (structure 16-480). In addition to radioactive components, equipment used at structure 16-480 is suspected to have contained mercury. Addendum 2 of the OU 1082 WP proposed sampling in the footprint of structure 16-480 to detect residual radionuclides and other potential contaminants on the disturbed surface of SWMU 16-025(d2).

2.4.2.10 Consolidated Unit 16-029(h)-99 consists of SWMU 16-029(h) and AOC 16-003(p). AOC 16-003(p) is an inactive HE sump, and SWMU 16-029(h) is the associated drain line and outfall from Building 16-478. The outfall flowed into Cañon de Valle. Building 16-478 is a battleship bunker. Because of its remote location, P-Site also was used to machine experimental explosives. After a 1959 HE machining accident at Building 16-260 (Consolidated Unit 16-021(c)-99), Building 16-478 was used for remote HE-machining tests, specifically high-speed machining tests on experimental HE compounds for characterization purposes. Two drain lines may be present. Potential contaminants at both SWMUs are HE and uranium chips. When addendum 2 of the OU 1082 WP was written, Building 16-478 was used rarely and was scheduled for decommissioning. The buildings at P-Site were decommissioned in 2005. A limited sampling program conducted from 1970 to 1986 indicated potential HE contamination at the outfall. Addendum 2 of the OU 1082 WP proposed investigating the SWMU and AOC in this consolidated unit to locate each drain line, determine its terminus, and sample the lines and termini. In addition, the work plan proposed sampling to determine the potential extent of contamination from historical releases.

2.4.2.11 SWMU 16-031(h) is soil associated with an outfall from a utility room in Building 16-478, a machine shop. The drain, which consists of a 4-in. VCP, daylights approximately 30 ft from the building. Interviews with past site workers indicate that the utility room is not contaminated with HE because it was located adjacent to the control room, which employees were careful not to contaminate. The rewrite of Chapter 6 of the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan for OU 1082 recommended NFA at SWMU 16-031(h) because no hazardous waste and/or constituents are present at the site now, nor has the site been used to manage, generate, treat, store, or dispose of hazardous waste and/or constituents.

2.4.2.12 AOC C-16-060 is potentially contaminated soil associated with a former storage structure (structure 16-479). Addendum 2 of the OU 1082 WP proposed sampling in the footprint of Building 16-479 to detect residual radionuclides on the disturbed surface.

2.4.3 300s Line

2.4.3.1 The 300s Line includes 4 consolidated units and SWMUs, 2 of which were consolidated from a total of 13 child SWMUs (reference table 2.4.3-1).

Table 2.4.3-1
Consolidate Units and SWMUs Associated with the 300s Line Sub-aggregate

TA	Consolidated Unit Name	Description	Child SWMUs (if any)	Child SWMU Description	Additional Information
TA-16	16-003(d)-99	Sumps and associated dry well	16-001(e)	Dry well	Soil-filled dry well
			16-003(d)	Sump	Mock HE sump
			16-003(e)	Sump	HE sump
			16-003(f)	Sump	HE sump
			16-003(g)	Sump	HE sump
	16-026(b)-99	300s-Line (west side) sumps and outfalls	16-026(b)	Outfall from building 16-307	Outfall
	16-026(b)-99	300s-Line (west side) sumps and outfalls	16-026(c)	Outfall from building, 16-305	HE Outfall
			16-026(d)	Outfall from building 16-303	HE Outfall
			16-026(e)	Outfall from building 16-301	HE Outfall
			16-029(a)	Sump from 300s-Line	HE sump
			16-029(b)	Sump from 300s-Line	HE sump
			16-029(c)	Sump from 300s-Line	HE sump
			16-029(d)	Sump from 300s-Line	HE sump
	16-026(f)	Outfall			Proposed for NFA
	16-026(z)	Outfall			Proposed for NFA

2.4.3.2 The 300s Line consists of process Buildings 16-300, -302, -304, and -306. The 300s Line was built in late 1951 for casting HE. Buildings were converted to other uses when cast explosives were replaced by plastic-bonded explosives. Consolidated Unit 16-003(d)-99 consists of SWMUs 16-001(e) and 16-003(d-g), which includes seven inactive HE sumps and the associated inactive dry well located along the 300 Line. The 300 Line sumps discharged to a single NPDES-permitted outfall, which was removed from the LANL NPDES permit effective July 31, 1996. Solvents historically were disposed of in the sumps but currently are containerized and disposed of off the site. Potential contaminants are HE and solvents. Consolidated Unit 16-026(b)-99 consists of SWMUs 16-026(b,c.d,e) and 16-029(a,b,c,d). The consolidated unit contains inactive HE sumps, drainlines, and outfalls associated with inactive rest houses on the west side of the 300 Line. The

rest houses are located south of the processing buildings, and each rest house has a pair of HE sumps.

2.4.3.3 Consolidated Unit 16-003(d)-99 consists of SWMUs 16-001(e) and 16-003 (d-g), which includes seven inactive HE sumps and the associated inactive dry well located along the 300 Line.

2.4.3.3.1 SWMU 16-001(e) is an active dry well located about 100 ft east of Building 16-306 at the head of a small tributary of Water Canyon. The dry well was built in the early 1980s but did not function properly because it drained to impermeable tuff. By the time the OU 1082 work plan was written, the dry well had been filled with soil and overgrown with vegetation. Potential contaminants at SWMU 16-001(e) are HE and solvents.

2.4.3.3.2 SWMU 16-003(d) consists of two inactive HE sumps that served Building 16-300. Building 16-300 is a mock (inert) explosives preparation facility where wash-down water was drained to the sumps. At the time the OU 1082 work plan was written, no HE operations took place in Building 16-300.

2.4.3.3.3 SWMU 16-003(e) consists of two inactive HE sumps that served Building 16-302. Building 16-302 was a casting facility where explosives were melted in steam-heated kettles and poured into molds. Small-to-moderate amounts of castable explosives and solvents historically were discharged to the environment. Building 16-302 currently is used as a non-HE operations facility.

2.4.3.3.4 SWMU 16-003(f) consists of two inactive HE sumps that served Building 16-304. No HE was being used when the OU 1082 work plan was written and the work plan stated that the probability of HE in the sumps was low. Building 16-304 is a plastics and plastic component development and production facility. In June 2000, the area occupied by SWMU 16-003(f) was seeded and mulched, and straw wattles were installed as a BMP to minimize any potential contaminant migration from the site.

2.4.3.3.5 SWMU 16-003(g) consists of two inactive HE sumps that served Building 16-306. Building 16-306 is a plastic component development and production facility. Solvents historically were discharged to the sumps but current practice is to containerize them and dispose of them off-site.

2.4.3.4 Consolidated Unit 16-026(b)-99 consists of SWMUs 16-026(b,cd,e) and 16-029(a,b,c,d). The consolidated unit contains inactive HE sumps, drainlines, and outfalls associated with inactive rest houses on the west side of the 300 Line. Effluent from each sump drained into the gutter along the road in front of the rest houses. According to the OU 1082 work plan, none of

the sump outfalls required U.S. Environmental Protection Agency (EPA) permits, and all the sumps have been plugged. None of the buildings currently is used to store explosives.

2.4.3.4.1 SWMUs 16-026(b) and 16-029(a) are the outfall and sumps, respectively, associated with an inactive rest house (structure 16-307). The rest house was used to store molds and other materials used in the plastics-development facilities. The building previously housed a solvent disassembly tank used for removing HE from test devices. According to the OU 1082 work plan, test devices were the principal cause of HE contamination in the outfall drainage channel.

2.4.3.4.2 SWMUs 16-026(c) and 16-029(b) are the outfall and sumps, respectively, that served an inactive rest house (structure 16-305). The rest house was used to store raw materials used in the plastics-fabrication process, finished plastic products, and for filament winding of developmental components. Potential contaminants were HE, inorganic chemicals, and organic chemicals associated with plastics manufacturing.

2.4.3.4.3 SWMUs 16-026(d) and 16-029(c) are the outfall and sumps, respectively, which served an inactive rest house (structure 16-303). The rest house stored raw materials used in the casting process and HE castings produced in the casting building. Potential contaminants were HE, inorganic chemicals, and organic chemicals.

2.4.3.4.4 SWMUs 16-026(e) and 16-029(d) are the outfall and sumps, respectively, which served an inactive rest house (structure 16-301). The rest house was used to store raw materials that were used to prepare mock HE.

2.4.3.5 SWMU 16-026(f) is soil associated with two outfalls from an HE-processing building (Building 16-308). Building 16-308 was built in 1953 and initially was used as a drying building for nitrocellulose explosives. After the 1960s, the building was used to store detonators and squibs (HE initiators). Supporting documents were submitted in September 2002 in support of NFA for SWMU 16-026(f).

2.4.3.6 SWMU 16-026(z) is soil associated with an outfall from a plastics component development facility (Building 16-306) that has operated since 1953. The outfall flows from a roof-drain downspout near the southeast side of Building 16-306. The outfall leads into a paved drainage ditch that carries rainwater to a culvert and eventually into Water Canyon. The rewritten Chapter 6 of the OU 1082 work plan recommended SWMU 16-026(z) for NFA.

2.4.3.7 Soil and sediment studies of HE in the S-Site drainage system were conducted from 1970 to 1985, and in the water from HE sumps and outfalls

in 1988. For samples related to the SWMUs in Consolidated Unit 16-026(b)-99 , samples taken from a rest house (structure 16-307) [SWMUs 16-026(b) and 16-029(a)] showed residual explosives at 13 %by weight in 1975. Concentrations had dissipated to 0.4% by 1984. One soil sample was taken from the outfall at structure 16-305 [SWMU] 16-026(c)] in 1970. Analytical results showed no TNT, RDX, or HMX, although some unknown HE decomposition products may have been present at low levels. Two samples were taken at the SWMU 16-026(d) outfall in 1970. Samples showed elevated levels of HMX and/or RDX and TNT.

2.4.3.7.1 Inorganic chemical concentrations were above background values (BVs) in water and soils associated with the sump drainages from the 300 Line. A 1989 DOE investigation of the 300 Line outfalls showed low levels of cesium-137 and uranium-235. Organic chemicals were present in several drainages below screening action levels (SALs) and were present above SALs in sump water.

2.4.3.7.2 The OU 1082 work plan proposed including the SWMUs in Consolidated Unit 16-003(d)-99 in a generic TA-16 sump sampling plan. Sampling was completed in 1995. About 16 samples were collected. Inorganics (As, Fe, Hg), HE (TNT) and semivolatile organic compounds (SVOCs) polycyclic aromatic hydrocarbons (PAHs) were found to exceed SALs in a number of samples from this SWMU.

2.4.3.7.3 The ER Project conducted RFIs at Consolidated Unit 16-026(b)-99 in 1995 to determine if releases had occurred from the drain outfalls and if the releases caused contamination. Only SWMUs 16-026(c,d d) were proposed for no further action (NFA).

2.4.4 V-Site/GMX 2

2.4.4.1 The V-Site/GMX2 aggregate includes 8 Consolidated Units and SWMUs, 2 of which were consolidated from a total of 15 child SWMUs (reference Table 2.4.4-1).

Table 2.4.4-1
Consolidated Units and SWMUs Associated with the V-Site GMX Sub-aggregate

TA	Consolidated Unit Name	Description	Child SWMU (if any)	Child SWMU Description	Additional Information
TA-16	16-013-99	V-Site courtyard	16-006(h)	Pump pit	Steam-heating distribution pump pit
			16-013	Container storage, V-Site	Storage area
			16-017(q)-99	Former storage magazine located at V-Site	Storage magazine

Table 2.4.4-1 (continued)

TA	Consolidated Unit Name	Description	Child SWMU (if any)	Child SWMU Description	Additional Information
TA-16	16-013-99	V-Site courtyard	16-017(r)-99	Former nuclear assembly site / storage building	Varnishing operations/storage
			16-017(s)-99	Former nuclear assembly site / storage building	Assembling operations/storage
			16-017(t)-99	Building 16-516, former laboratory / equipment storage building	Laboratory/storage
			16-029(g2)	Pump pit	Concrete pit
			C-16-068	Building 16-522	Potential soil contamination
			C-16-074	Storage	Drum Storage
	16-017(p)-99	Former structure–storage magazine			Storage magazine
	16-017(w)-99	Former structure–storage magazine			Storage magazine
	16-024(m)	Magazine			HE magazine
	16-024(n)	Magazine			HE magazine
	16-029(x)-99	V-Site: Buildings 16-100, 16-515 and associated structures	16-006(g)	Septic tank	Septic Tank
			16-017(v)-99	Former HE processing building	Soil associated with HE processing building
			16-025(x)	Abandoned building and appurtenances	Soil associated with electroplating laboratory
			16-029(w)	Sump	Sump, drainline and outfall associated with electroplating laboratory
			16-029(x)	Sump	Soil associated with sump/drainage system
			16-031(c)	Industrial or sanitary wastewater treatment, 16-515	Drainline
	16-034(m)	Soil contamination area			Soil associated with laboratory building/magazine
	16-034(n)				

2.4.4.2 V-Site was constructed in 1944 for testing components of implosion devices. In 1945, the entire V-Site area was incorporated into TA-16. The buildings and courtyard have been used for programmatic activities and storage since then. All but two buildings (the high bay assembly building [Building 16-516] and an equipment building [Building 16-517]) were destroyed in the May 2000 Cerro Grande fire. All SWMUs and consolidated units in this consolidated unit were exposed to surface fires. V-Site and all its associated structures are considered a historical site. The entire site is inactive and any additional work will be deferred until the site's future as a historical site is determined.

2.4.4.2.1 GMX-2 structures were located in the south-central and eastern part of World War II–era S-Site. Structures at GMX-2 primarily were used for experimental HE research and development. No production-scale HE operations were conducted in the GMX-2 area. The GMX-2 area operated from 1944 to the early 1950s.

2.4.4.3 Consolidated Unit 16-013-99 consists of SWMUs 16-006(h), 16-013, 16-017(q,r,s,t)-99, SWMU 16-029(g2), and AOCs C-16-074 and C-16-068. This consolidated unit encompasses the former location of the V-Site courtyard, which was the location of miscellaneous activities that supported HE testing and processing.

2.4.4.3.1 SWMU 16-006(h) is the former steam-heating distribution pump pit. Some pipes in the pit may have been insulated with asbestos.

2.4.4.3.2 SWMU 16-013 is a former storage area located in the V-Site courtyard, where containers of unusable material and other items were stored. Potential contaminants at SWMU 16-013 were uranium, inorganic chemicals, and organic chemicals.

2.4.4.3.3 SWMU 16-017(q)-99 is a former storage magazine associated with V-Site. SWMUs 16-017(r)-99 and 16-017(s)-99 are the former sites of the varnishing and assembly operations (former Buildings 16-519 and 16-520). Both buildings later were used for storage. SWMU 16-017(t)-99 (Building 16-516) initially housed a laboratory and later was used for equipment storage.

2.4.4.3.4 SWMU 16-029(g2) was a belowgrade concrete pit (structure 16-523) that was built in 1944 and taken out of service in 1945. AOC C-16-074 sits directly atop SWMU 16-029(g2). It is the location of a decommissioned drum storage area east of Building 16-517. Drums containing residual HE-contaminated hydraulic oil were stored on an asphalt pad. Potential contaminants were HE, uranium, inorganic chemicals, and organic chemicals.

2.4.4.3.5 AOC-16-068 is an area of potential soil contamination associated with former Building 16-522, which was built in 1944 and removed in 1945. The building has not been located on LANL engineering drawings or on aerial photographs; it is believed to be the unidentified building foundation west of former Building 16-519. Potential contaminants were HE, uranium, inorganic chemicals, and organic chemicals. Addendum 1 of the OU 1082 work plan stated that action on SWMU 16-006(h) would be deferred until D&D. The OU 1082 work plan proposed the following for deferral until D&D: 16-017(q,r,s,t)-99.

2.4.4.4 SWMU 16-017(p)-99 is a 20-ft × 60-ft × 8.5-ft former storage magazine (structure 16-61). Structure 16-61 underwent decontamination and decommissioning (D&D) in 1995.

2.4.4.5 SWMU 16-017(w)-99 was a 10.5-ft × 12.5-ft × 6-ft former storage magazine (structure 16-73). Structure 16-73 underwent D&D in 1995.

2.4.4.6 AOC 16-024(m) is the footprint of a former HE magazine (structure 16-66). Little is known about this specific magazine; however, magazine operations may have resulted in HE spills. Before it was burned in 1960, it was determined that the magazine was contaminated with HE. Historical evidence indicates that radioactive materials were not stored or used in this HE magazine.

2.4.4.7 AOC 16-024(n) is the location of a decommissioned HE magazine (structure 16-84) in the GMX-2 area at S-Site. Before it was burned in 1960, it was determined that structure 16-84 was contaminated with HE. Addendum 2 to the OU 1082 work plan proposed sampling at AOC 16-024(n) to detect residual HE and other constituents on the disturbed surface of this AOC.

2.4.4.8 Consolidated Unit 16-029(x)-99 consists of SWMUs 16-006(g), SWMU 16-017(v)-99, SWMUs 16-025(x), 16-029(w,x), and 16-031(c). The Consolidated Unit 16-029(x)-99 is associated with former Building 16-515, an HE-processing building at V-Site (originally TA-25), and SWMUs associated with a former electroplating laboratory (Building 16-100). The Building 16-100 sump drained to the sump system for Building 16-515, which was located at V-Site; hence, the Building 16-100 sump is considered with the V-Site SWMUs.

2.4.4.8.1 SWMU 16-017(v)-99 is potentially contaminated soil in the footprint of a former HE-processing building (Building 16-515) built in 1944 as part of TA-25. The building later was used as a warehouse. Potential contaminants are photoprocessing chemicals, inorganic chemicals associated with plating operations and other World War II–era V-Site operations, organic chemicals, HE, and uranium-238.

2.4.4.8.2 SWMU 16-006(g) is a decommissioned septic tank (structure 16-527) and its associated drainline and potentially contaminated subsurface soil. The septic tank and drainline underwent D&D in 1997 and 1998.

2.4.4.8.3 SWMU 16-025(x) is potentially contaminated soil in the former location of an electroplating laboratory (Building 16-100). In this building, HE charges were directly electroplated. Building 16-100 underwent D&D and was burned in 1960. Potential contaminants were HE, inorganic chemicals, and organic chemicals.

2.4.4.8.4 SWMU 16-029(w) is potentially contaminated soil associated with the former HE sump, drainline, and outfall in Building 16-100, a former electroplating laboratory. The sump and drainline were removed in 1960. Addendum 1 of the OU 1082 work plan proposed subsurface sampling at SWMU 16-029(w) to detect residual inorganic chemicals and cyanide.

2.4.4.8.5 SWMU 16-029(x) is potentially contaminated soil associated with the inactive HE sump and drainage system from former Buildings 16-515 and 16-100. Past employees reported that the boracitol casting, which was performed in former Building 16-515, caused dead trees in the outfall area of the drain system. A 1970 survey for hazardous material in the drain line found no toxic substances or radioactive contamination but did find HE contamination. Potential contaminants are photo processing chemicals, inorganic chemicals associated with plating operations and other World War II–era V-Site operations, organic chemicals, HE, and uranium-238.

2.4.4.8.6 SWMU 16-031(c) is listed in the 1990 SWMU report as a drain line that received both sanitary and industrial waste from a former HE-processing building (Building 16-515).

2.4.4.9 SWMU 16-034(m) is the footprint of a former laboratory building (Building 16-86). The SWMU is located in the historic GMX-2 area at S-Site. Building 16-86 was constructed in 1945; it had wooden floors, no plumbing fixtures or sumps, and contained temperature-controlled curing ovens. Building 16-86, used until 1959, was listed as being HE contaminated before its destruction by burning in 1960. Potential contaminants were inorganic chemicals, organic chemicals, and HE.

2.4.4.10 SWMU 16-034(n) is the footprint of a laboratory building (Building 16-83). Building 16-83 was constructed in 1945; it had wooden floors, no plumbing fixtures or sumps, and contained temperature-controlled curing ovens. The former building also may have been used as a magazine. Building 16-83, removed from service in 1959, was listed as being HE contaminated before its destruction by burning in 1960. Residual debris from burning was cleaned up in 1966. Potential contaminants were inorganic chemicals, organic chemicals, and HE. Addendum 1 of the OU 1082 work plan proposed sampling at SWMU 16-034(n) to detect surface HE contamination in the building footprint.

2.4.4.11 The ER Project conducted a voluntary corrective measure (VCM) at SWMUs 16-013 and 16-029(g2) and AOCs C-16-068 and C-16-074 in 1997 and 1998. At SWMU 16-013, samples were collected to determine if contamination existed in the former waste storage area. Two samples were submitted for laboratory analysis based on field-screening results and analyzed for radiation, HE, inorganic chemicals, and organic chemicals. No elevated contaminant concentrations were found, and the VCM

report recommended SWMU 16-013 for NFA. SWMU 16-029(g2) and AOC C-16-074 were also sampled in the VCM to determine the nature and extent of detected contamination and to bound the extent of contamination, if any. Five samples were sent to an off-site laboratory for analysis for inorganic chemicals, HE, organic chemicals, and uranium. Upon evaluation of laboratory analysis results, an additional deeper sample was collected to bound the extent of contamination and was sent to an off-site laboratory for analysis for a limited suite of inorganic chemicals. Elevated levels of acetone, barium, chromium, copper, and nickel were detected at the down gradient sample location. The VCM report recommended NFA for SWMU 16-029(g2) and AOC C-16-074. At AOC C-16-068 one sample was submitted for laboratory analysis based on screening results. Elevated levels of benzo(a)pyrene were detected in the sample, and the VCM report stated that it could not be attributed to the AOC because there was no indication that PAHs were used at the site. The VCM report proposed NFA for AOC C-16-068.

2.4.4.11.1 The ER Project conducted an RFI at AOC 16-024(m) in 1997 to determine if contaminants were present at elevated levels in soils. One sample that screened positive for HE was submitted to a fixed laboratory and analyzed for inorganic chemicals, organic chemicals, and HE. HE was not detected in the laboratory sample despite the positive field reading. The RFI report recommended NFA at AOC 16-024(m).

2.4.4.11.2 Concurrently with the D&D of the former structures in 1997 and 1998, an ER Project field team conducted a VCM at the site of SWMU 16-006(g) and SWMU 16-029(x). On the basis of screening results, three samples were submitted for laboratory analysis for HE, boron, inorganic chemicals, organic chemicals, and uranium. Upon receipt of analytical results, two additional bounding samples were collected in March 1999 from beneath the former septic tank location and from 5 ft down drainage from that location to define a decreasing trend in contaminant concentration of uranium, HE, and organic chemicals. Chemicals that were carried forward to the screening assessments include methylene chloride, HMX, RDX, tetrachloroethene, trichloroethene, and acetone. On the basis of the human health and ecological screening assessments, the VCM report recommended NFA at SWMU 16-006(g). Data collected for SWMU 16-029(x) during the V-Site D&D and VCM showed that the cleanup achieved the V-Site cleanup levels but did not achieve full nature and extent of contamination characterization, and did not pass the ecological screening assessment for all constituents; hence, this SWMU was not included in the VCM report.

2.4.4.11.3 The ER Project conducted a VCM at SWMU 16-025(x) in 1997–1998. On the basis of screening results, three samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, HE, and organic chemicals. Elevated concentrations of uranium, lead, and the PAHs anthracene, dibenzofuran, 2-methyl-naphthalene, fluorene, naphthalene, and phenanthrene were detected. None of the detected chemicals was present at a level that posed a human health risk, and the VCM report recommended SWMU 16-025(x) for NFA.

2.4.4.11.4 The ER Project conducted an RFI at SWMU 16-034(m) in 1997 to determine if contaminants were present in soil at levels of concern. Two samples, one of which had screened positive for HE, were submitted for laboratory analysis for organic chemicals, inorganic chemicals, and HE. Slightly elevated levels of copper, lead, silver, zinc, benzoic acid, and phenol were detected. No HE was detected in the laboratory sample despite the positive reading in the field. The RFI report recommended NFA at SWMU 16-034(m) because contamination is not present at levels that present a potential unacceptable risk to human health.

2.5 DOE Administratively Complete SWMUs

2.5.1 The SWMUs in Table 2.5.1-1 are DOE Administratively Complete.

Table 2.5.1-1
DOE Administratively Complete SWMUs

TA	SWMU Name	SWMU Description	Child SWMU Description	Regulatory Status	Aggregate Area (Reporting)
TA-16	C-16-049	Building	S-Site	Administratively Complete	S-Site
TA-16	C-16-050	Building	S-Site	Administratively Complete	S-Site
TA-16	C-16-062	Generation area	S-Site	Administratively Complete	S-Site
TA-16	C-16-063	Generation area	S-Site	Administratively Complete	S-Site

3.0 SCOPE

3.1 Following is a general, high-level, description of the scope of work. Details of these tasks are provided in Section 6.0—Task Specific Technical Requirements. The Subcontractor is responsible for the quality of the services performed and items provided under the subcontract. The Subcontractor shall establish, maintain, and implement a quality program that complies with the EP-ERSS Quality Management Plan, as it applies to the work performed under the subcontract.

3.2 S-Site Aggregate Area Investigation Work Plan.

3.3 Complete an Investigation Work Plan for the S-Site Watershed Aggregate. This includes three high-level subtasks:

3.3.1 Assemble historical data and conduct a data review. Assemble the RFI and other historical data collected to date for the sites at TA-16 and TA-11 listed in this SOW, plus any others added due to NMED requirements, and conduct a data review to assess suitability of data for use as screening data and data suitability for decision making;

3.3.2 Prepare and present (to LANS) an annotated outline of the investigation work plan (IWP) and historical investigation report (HIR), which is anticipated to be a separate document submitted concurrently with the WP, and

3.3.3 Prepare a WP in accordance with Section XI.B of the March 2005 NMED Consent Order. Prepare an HIR to present the background information based on the results of the data assembly and review specified in 1.1.1. Participate in LANS peer review of the WP, and provide final camera-ready documents to LANS that are suitable for delivery to DOE and NMED.

4.0 APPLICABLE TECHNICAL DOCUMENTS

4.1 A list of applicable technical documents is included. The subcontractor shall have in place procedures which address requirements as stated in all applicable EP-ERSS DIs, QPs and SOPs.

4.2 Relevant documents concerning work at these sites include, but are not limited to, the following:

4.2.1 New Mexico Environment Department Order, March 1, 2005 http://www.nmenv.state.nm.us/hwb/lanlperm.html.

4.2.2 Price-Anderson Amendment Act, 1988 http://tis-nt.eh.doe.gov/enforce/.

4.2.3 DOE Order 5480.19, Conduct of Operations.

4.2.4 Module VIII of the LANL Hazardous Waste Facility Permit: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to RCRA for Los Alamos National Laboratory (1996 Revision).

4.2.5 Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory, (LANL 1998, 59730.2).

4.2.6 Human Health Risk Based Screening Methodology, LA-UR-1563, (LANL 2002, 72639).

4.2.7 Standard Human Health Risk Assessment Scenarios, LA-UR-00-4084, (LANL 2000, 66801.1).

4.2.8 Derivation and Use of Radionuclide Screening Action Levels, LA-UR-01-990, (LANL 2001, 69683.1).

4.2.9 Radionuclide Screening Action Levels, RESRAD Version 6.21, (LANL 2002, 73705).

4.2.10 Screening Level Ecological Risk Assessment Methods, LA-UR-99-1405, (LANL 1999, 64783.1).

4.2.11 QP 5.10 Rev 1 Change Control for Spatial Features.

4.2.12 Desk Instruction 4.20, "Assembling Reference Sets for ENV-ERS/ECR Project Documents."

4.2.13 LANL IMP 300.2, Integrated Work Management for Work Activities.

4.2.14 LANL, 1993, RFI work plan for Operable Unit 1082: LAUR-93-1196. Los Alamos, NM, 656 p. (LANL, 1993, 20948).

4.2.15 LANL, 1994, RFI work plan for Operable Unit 1082, addendum 1: LAUR-94-1580. Los Alamos, NM, 468 (LANL, 1994, 39440).

4.2.16 LANL, 1995, RFI work plan for Operable Unit 1082, addendum 3: LAUR-95-1038. Los Alamos, NM, (LANL, 1995, 57225).

4.2.17 QPs, SOPs and DIs http://erinternal.lanl.gov/procedures.shtml.

4.2.18 Health and safety requirements http://erinternal.lanl.gov/resources/health safety.shtml.

4.2.19 Document-writing requirements http://erinternal.lanl.gov/resources/writing guide.shtml.

4.2.20 Other EP-ERSS Group requirements http://erinternal.lanl.gov/.

4.2.21 DOE Order 414.1C, "Quality Assurance".

4.2.22 DOE Standard 7501-99, "Lessons Learned".

4.2.23 LANL, 1997, VCM Plan for PRSs at TA-16: LA-UR-97-640. Los Alamos, NM.

4.2.24 LANL, 1997, RFI Report for PRSs at TA-16: LA-UR-97-3770. Los Alamos, NM.

4.2.25 LANL, 1999, VCM Report for PRSs 16-006(g), 16-029(g2), C-16-074, 16-005(d) and 16-034(p): LA:UR-99-3001. Los Alamos, NM.

5.0 GENERAL REQUIREMENTS

5.1 LANS LLC will retain the role of oversight and technical assistance through the EP Directorate and the Corrective Actions Project Office.

5.2 In executing the activities outlined in this SOW, it is incumbent upon the Subcontractor to achieve the lowest practicable costs, prompt delivery of services, and consistent quality.

5.3 Quality improvement principles should be employed in all aspects of the Subcontractor's operations to identify and improve cost, cycle time, and customer satisfaction. Subcontractor activities should reflect process consistency and formality and demonstrate statistical control.

5.4 The Subcontractor shall provide their Quality Assurance Plan, fully compliant with 10 CFR 830.122, DOE Order 414.1, Quality Assurance Requirements and the Environmental Programs-Environmental Remediation Support Services (EP-ERSS) Project Quality Management Plan (QMP), including the current revisions of all relevant implementing procedures to the Quality Assurance Team Leader (QPPL) for review and approval prior to start of work. The Subcontractor shall provide direct objective evidence that all Subcontractor personnel will be trained to the QAP and all applicable implementing procedures prior to the initiation of this work and that the Subcontractor shall assure that all personnel assigned to this work will maintain and document training in accordance with all applicable EP-ERSS procedures.

5.5 Performance Requirements: The Subcontractor shall perform the following activities:

5.5.1 Conduct all work in accordance with the latest revisions in effect for technical procedures, DOE Orders, documents, and amendments identified in Section 4.0.

5.5.2 In accordance with QP-7.1, "Procurement", perform all work under the corporate quality assurance plan (QAP) and applicable quality procedures. These procedures must meet the requirements of the EP-ERSS QMP and have been reviewed and approved by the EP-ERSS Quality Assurance Team Leader (QPTL). All work must also comply with applicable Laboratory policies, procedures and requirements such as Laboratory Implementation Requirements and Laboratory Implementation Guidance,

5.5.3 Adhere strictly to all applicable EP-ERSS, Laboratory, and DOE quality requirements. NOTE: If the subcontractor has submitted a QA Program Plan and it has been reviewed, revised, and accepted by the ERSS-DO Quality Team, and meets ERSS-DO, LANS, and DOE requirements, the subcontractor may choose to work to their own quality assurance program.

5.5.4 Follow the Implementation Plan for the EP-ERSS Surveillance and Maintenance Documented Safety Analysis if applicable to this project.

5.5.5 Ensure all EP-ERSS safety and quality requirements are integrated and flowed down to sub-tier subcontracts and assure all requirements are met.

5.5.6 Obtain prior written approval from the Laboratory subcontractor technical representative (STR) for any deviations from technical requirements.

5.5.7 Obtain prior written approval from the Quality Assurance Team Leader for any deviations from the quality requirements.

5.5.8 Allow access to relevant records and/or personnel by EP-ERSS, LANS-LLC, and/or DOE personnel to verify compliance with provisions of this contract.

5.5.9 Ensure that changes to maps are appropriately reflected in the EP-ERSS GIS system per QP 5.10 Rev 1 "Change Control for Spatial Features"

5.5.10 Protect DOE, Laboratory and EP information and data in accordance with QP-4.3, "Record Transmittal to the Record Processing Facility".

5.5.11 Submit all archival and historical documents or records regardless of physical form, as per Section 7.0, Deliverables, to the EP Records Processing Facility (RPF) in accordance with QP-4.4, "Records Transmittal to the Records Processing Facility". A copy of these documents must also be submitted to the STR at the time such documents are submitted to the RPF.

5.5.12 Provide an electronic version of all draft and final plans and reports in a timely manner using Microsoft Office software.

5.5.13 Ensure subcontractor personnel meet the minimum personnel qualification requirements, as deemed appropriate or necessary, maintain a training/tracking database, and provide a list of personnel qualifications and training documentation.

5.5.14 Report any failure to comply with the technical or quality requirements to the EP-ERSS QPPL for disposition review, in accordance with QP-3.4 or an approved equivalent program.

5.5.15 Coordinate all interactions with the NMED through the STR and EP-ERSS compliance support personnel.

5.5.16 Provide resources for membership on EP peer-review teams both as document team members and as reviewers.

5.5.17 Provide assistance on responses to requests for notice of disapproval (NOD) as requested by the STR.

5.5.18 Obtain any historical or new data that are required to perform this SOW from EP-ERSS.

5.6 Requirements for Documents: The subcontractor shall submit all documents in accordance with the following requirements.

5.6.1 Use the guidance provided in "Editing and Compositing Guidelines for Preparing Environmental Restoration Documents", current edition.

5.6.2 Deliver documents to the requester in electronic format. If CDs or other portable media are used, they must be compatible with IBM-PC machines.

5.6.3 Deliver text and table documents in Microsoft Word format, illustrations in Illustrator (.ai) or (.eps) format, photographs in Photoshop or Jpeg (.jpg) format, unless another format is specifically approved by the requestor, and that approval must be documented.

5.6.4 Use correct grammar.

5.6.5 Provide internal consistency within sections of the document.

5.6.6 Provide a deliverable document possessing a logical flow from section to section or from background information through results to the conclusions drawn.

5.6.7 Provide a readable document written and formatted in a manner that allows the requester or other reader to easily extract relevant or important information and follow the "evidence of the document" argument through to its conclusion.

5.6.8 Deliver a comprehensive document including all relevant information and data necessary to make it a stand-alone, complete document. Extensive references to existing documents are unacceptable unless approved by the requester, and that approval must be documented.

5.6.9 Provide a complete bibliographic citation, including ER ID numbers and page numbers, for each included reference. See the guidance provided in "Editing and Compositing Guidelines for Preparing Environmental Restoration Documents", current edition.

5.6.10 Provide a clean copy of any reference cited in the deliverable document for inclusion in the reference set. See Desk Instruction 4.20, "Assembling Reference Sets for EP-ERSS Project Documents"), which provides guidance on what types of documents are excluded from reference sets. The requester should provide the subcontractor with a table of contents of existing reference sets to avoid unnecessary duplication.

6.0 TASK SPECIFIC TECHNICAL REQUIREMENTS

6.1 The following activities shall be completed during the execution of this SOW.

6.1.1 S-Site Aggregate Area Investigation Work Plan.

6.1.2 Plan Data Analysis and Strategy Development. Evaluate all existing data to identify gaps in information and to determine the strategy for proceeding with additional sampling. This sampling strategy will typically be based on the RFI work plan sampling strategies. Data evaluation and strategy development include data quality assurance activities, data

assessment, and evaluation of potential remedial techniques. The individual tasks within this activity include

6.1.2.1 presentation of data in required tables and figures,

6.1.2.2 evaluation of QA/QC data, focused validation,

6.1.2.3 comparison of data to screening action levels (SALs) and background values,

6.1.2.4 determining the type of methods needed to proceed with additional field activities. All of these activities support defensible decisions associated with the site(s) identified within this aggregate, and will start at the onset of the plan portion of the work element package.

6.1.3 Decision Peer Review. Prepare for and complete the decision peer review. Peer reviewers will determine the validity of the decisions made by the project technical team based on an oral presentation of the existing data/report analysis. Because of the large number of aggregates in this WP, multiple sessions of decision peer review will likely be required.

6.1.4 Write Draft Plan; Preparing the draft WP and an HIR. Individual tasks and required document formats are specified in the March 2005 final NMED compliance order chapter XI.B. It is anticipated that the detailed format of this document will be negotiated with NMED. Based on the initial data analysis task the Subcontractor is to determine if the amount of existing data for the sites is such that a Historical Investigation Report (HIR) is the appropriate format to present those results. This decision will be based on whether the previously collected data has been reported accurately in previous reports, allowing references to those reports in the WP and avoiding duplication of information. Detailed editing and compositing of the draft plan are also included within this activity. This document will be of 'close to final quality', including a full-scale edit, final figures, final tables and full compositing.

6.1.5 Document Peer Review. Prepare for and complete the formal peer review. Peer reviewers will review the document and provide comments on the decisions, technical approach, and overall strategy of the plan.

6.1.6 Incorporate Peer Review Comments and Prepare DOE submittal draft. Incorporate and resolve all comments resulting from the peer review process. Includes submitting the draft document to the STR for submittal to the DOE, and LANS legal counsel, for review.

6.1.7 Incorporate DOE Comments & Prepare Final NMED Draft. Incorporate and resolve all review comments received from DOE, LANS and legal counsel. Once these review comments have been resolved and/or incorporated into the document, the interim final plan will be submitted to the Administrative Authority for review.

6.1.8 Assumptions for Sections 6.1.1 through 6.1.6. The Subcontractor shall use the following assumptions in performing the work required by Sections 6.1.1 through 6.1.6 above.

6.1.8.1 Multiple review cycles and coordination meetings will occur: the 30% decision and 70%, HEPS team, comprising a 'decision peer review', the 90% comprising the document peer review, the 95% being the DOE review, and the 100% comprising a final deliverable review to NMED. It is likely that the peer and DOE reviews will be combined if a high enough quality document can be produced. The Subcontractor shall prepare review materials and participate in all of these review cycles. Weekly coordination meetings will be held.

6.1.8.2 The Subcontractor shall incorporate the comments from the peer reviews and prepare a 100% camera-ready WP for delivery to LANS, including electronic media (CDs). This document will be complete with respect to content, final technical editing, and formatting.

6.1.8.3 The 100% deliverable shall be reviewed by LANS to ensure that earlier review comments are incorporated and that the document is in fact, 'camera ready'.

6.1.8.4 The peer review chair will resolve all conflicting peer review comments.

6.2 Water Canyon Watershed – Response to Notice of Denial/Regulatory Support

6.2.1 The subcontractor shall:

6.2.1.1 Complete the responses to NMED's notices of disapproval (NOD) on documents associated with the Water Canyon watershed area.

6.2.1.2 Assume, for estimating purposes, activities and deliverables to respond to one small NOD, similar to that for the "Investigation Work Plan for the TA-16-340 Complex" LA-UR-04-1466, available on request from the STR, and respond to one large NOD, similar to that for the TA-16-260 Phase III RFI.

7.0 DELIVERABLES

7.1 The Subcontractor shall provide the following deliverables:

7.1.1 General Deliverables

7.1.1.1 A project work schedule and work breakdown structure that outlines completion dates for significant milestones associated with the current activities within 15 calendar days after award of this subtask. Please use the same breakout as is used in the SOW above.

7.1.1.2 Monthly accrual reports according to the Budget Analysts schedule, that detail the costs accrued under this Task Order, including a detailed breakout of the personnel hourly costs charged against each activity, and a monthly summary of activities performed to the EP Budget Analyst and the STR (one copy each).

7.1.1.3 Subcontractor QAP, procedures and training documentation.

7.2 S-SITE IWP Deliverables

7.2.1 An annotated outline, in electronic and hard copy formats compatible with LANS capabilities, for the WP and HIR after the data analysis task is performed and the format of the WP can be finalized.

7.2.2 S-Site IWP—30% Review. This constitutes decision peer review(s).

7.2.3 S-site—70% (HEPS Team) Review. This draft is due to the STR four weeks before the peer review draft is due.

7.2.4 S-Site—90%/95% Review. Peer Review Draft. This constitutes a "close to final," fully edited document. This is due 6/30/2007.

7.2.5 S-Site—100% Review. NMED submittal Draft. This is due to LANS on 8/30/2007 This constitutes a final, edited version of the document in both electronic and hardcopy media organized and formatted in compliance with ERSS and Project Leader requirements for documents and deliverables. A reproducible final 'camera-ready' WP and HIR that is suitable for delivery to the NMED. This report shall be delivered no later than 4 weeks prior to the NMED delivery date for LANS. The current delivery date for LANS is 9/30/2007

7.3 Water Canyon watershed Area – Response to Notice of Denial/Regulatory Support Deliverables

7.3.1 Responses to NODs on Water Canyon watershed Area Documents as required by the Administrative Authority in written, report format. Due dates will be 30 days after receipt of each NOD.

8.0 GOVERNMENT-FURNISHED PROPERTY

8.1 None.

9.0 SUBCONTRACTOR FURNISHED EQUIPMENT

9.1 The Subcontractor shall provide all equipment not identified as being provided by LANS.

10.0 SPECIAL CONSIDERATIONS

10.1 The Subcontractor shall track and invoice costs by subtask using program codes to be provided by the STR. It will be the responsibility of the Subcontractor to use the correct program codes for all work, and to ask for any necessary clarification from the STR.

EP Document Signature Form Read/Write Access Person Making Entry is WIN/106229/Unknown (Created on 11/3/2006)

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Printable Page

Document Catalog Number EP2006-0989 **(Please prefix the name of all electronic versions of this document with this number.)**

* Required Field

***Document Title / Subject**	Statement of Work for S-Site Investigation Work Plan, TA-16-340 Complex Investigation Report, and TA-16 NOD Responses
PRSs	None
Associated Document Catalog Number(s)	None
***Author**	Shurter, Melanee 667 7369 mshurter@lanl.gov
***Organization**	Corrective Actions Project (EP-CAP), Pkg1728
Document Team	Dittmer, Carrie 665 5556 cdittmer@lanl.gov McCann, John 665 1091 jmccann@lanl.gov Rhyne, Susan M 664 0140 srhyne@lanl.gov
***Document Type**	Statement Of Work (SOW) **Former OU** N/A
Date Due	**Date Final Complete** 11/30/2006 **Date Sent to DOE**
Date Sent to NMED	**Date Sent to RPF (Paper & Electronic)**
Received Per RPF	**RPF ER ID Number**
CT No	**LA-UR Number** LA-UR-06~~07~~933
Performance Measure	**No**
AA Deliverable ☐	**Certification Required** ☐ **Force Peer Review** ☐
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Attachment Notes	
Status/Comments	

Reviewer Signatures: (By signing, the reviewer indicates that he/she **reviewed** and **approves** the document.)

Reviewer (Print reviewer's name under title)	**Signature**	**Date**
Author Melanee Shurter	Melanee M Shurter	11/30/06
Technical Reviewer		
Peer Review Chair		
QII/QPPL Jackie Kolakowski	see PR form - signed	
Group Leader		

Document Catalog Number EP2006-0989

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submitted to LANL Procurement
11/30/06

Document Services Request Form

Request date: 11/02/06

Project Leader: Melanee Shurter

Author: Don Hickmott/McCann/Shurter

Document title: Statement of Work: S-Site Investigation Work Plan, TA-16-340 Complex Investigation Report, and TA-16 NOD Responses

Document type: Statement of Work

Document audience: Public

Cost codes: MR3A.0532.UY00

Date to be submitted to peer review: ~~11/13/06~~ 11/6 Comments due: ~~11/27/06~~ 11/9

Note: Document must be provided to editor 1-2 weeks before peer review date.

11/13/06 Hi Saundra, Did we get the comments back from everyone? I only heard from Frank T in SUP. Thx! Melanee

Document due to requestor: ~~12/04/06~~ 11/17/06

Regulatory deliverable document: ☐ Yes ☑ No **S-7 Review:** ☑ **Yes** ☐ **No**

Legal review: ☐ **Yes** ☑ **No** DOE review: ☐ Yes ☑ No **GIS Review:** ☐ **Yes** ☑ **No** Data Review: ☐ Yes ☑ No

Document page count (text only): 30 # of pages Single or double-spaced

Figures/Maps/Appendixes: 0 # of figures 5 # of tables 0 # of appendices

Service(s) requested:

☐ Writer/Editor ☑ proofread ☐ full ☐ edit hard copy

☑ Compositor

☐ Illustrator

☑ Production

Distribution requirements: (Specify distribution requirements below)

Brief summary of request:

Coordinate peer review process and comments and record changes for final submittal to Contract Administrator and ERSS records management. Provide format consistency throughout. Document provided electronically through email.

Peer review to include Paula Bertino or Phoebe Suina, John, Don, Melanee an independent STR, and technical SME (such as Rich Mirenda) and SUP representative assigned through Frank Targuetta. In the essence of time constraints, Melanee Shurter will simultaneously address and resolve some aspects of the contract language and organization of the document as a peer reviewer for the document. DOE too? No JACKIE K

(Document Manager only)

Editor: SUSAN
Compositor: CARRIE
QA:
Doc sig form: EP2006-0989
Draft letter: Y / N

PR Request: Y / N
ADC review: Y / N
LA-UR#: LA-UR-06-7933
Controlled document: Y / N
OUO: Y / N

PR resolution forms: Y / N
USQ Review: Y / N
RDL#:

ERID# (RPF closeout):

Peer Review Comment Form

Part 1 (Author or Peer Review (PR) Coordinator Complete) Date: 11/20/06

Title: SOW: S-Site Investigative Work Plan, TA-15-340 Rev. #: ___ Doc. Catalog No: ER200 - _____

Reviewer's Name (Print): Jacqueline Kolakowski Organization: ERSS-DO Comments due by: _____ (Date)

Author: M. Shurter Phone: 7-7369 E-Mail: mshurter@lanl.gov

Return forms to PR Coordinator: _____ Phone: _____ E-Mail: _____

Part 2 (Reviewer Completes)

Date Received: 11/15/06 Date Review Completed: 11/21/06

Signature & Date: _____

Part 3 (If under time constraints, the Author completes.) ☐ Not all comments resolved; attach PR Comment Form to Document Signature Form.

Signature & Date: Melanie M Shurter author signed wrong area!

Comment #	Location[1]	Reviewer's Comment/Suggestion	A/R[2]	Author's Proposed Revision/Resolution	Final Resolution
1	Page 24 5.3	Add the following, NOTE: If the subcontractor has submitted a QA Program Plan and it has been reviewed, revised, and accepted by the ERSS-DO Quality Team, and meets, ERSS-DO, LANL and DOE requirements, the subcontractor may chose to work to their own quality assurance program.	A	Incorporated into SOW	

[1]page, section #, paragraph/line [2]A = accept / R = reject

Peer-Review Comment Form

Comment #	Location[1]	Reviewer's Comment/Suggestion	A/R[2]	Author's Proposed Revision/Resolution	Final Resolution
2.	24 5.5	Rewrite the statement to read, "Ensure all EP-ERSS safety and quality requirements are integrated and flowed down to sub-tier subcontracts and assure all requirements are met.	A	Incorporated	
3.	24 5.7	Change QPPL to "Quality Assurance Team Leader"	A	Incorporated	
4.	24 5.14	At the end of the sentence add the following, "...in accordance with QP 3.4 or an approved equivalent program."	A	Incorporated	

[1]page, paragraph, line [2]A = accept / R = reject