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Date: MAR 29 1995
Refer to: EM/ER:95-119

Ms. Barbara Driscoll
NM/Federal Facilities Section
Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Dear Ms. Driscoll:

SUBJECT: RESPONSE TO THE NOTICE OF DEFICIENCY FOR THE OPERABLE UNIT (OU) 1129 WORK PLAN ADDENDUM

Enclosed is the Los Alamos National Laboratory's response to the Environmental Protection Agency's (EPA's) Notice of Deficiency (NOD) concerning Addendum I of the OU 1129 Resource Conservation and Recovery Act Facility Investigation (RFI) Work Plan. A certification form signed by the appropriate officials is also enclosed. The NOD was received at the Los Alamos Area Office on October 24, 1994. The enclosed response repeats each comment from the NOD for convenience in reviewing.

We will revise the addendum text based on our responses. The revised text will be placed in an appendix to the work plan according to the guidance outlined in memorandum EM/ER:94-J438, "Policy on Preparing Final Resource Conservation and Recovery Act Facility Investigation Work Plans," dated November 2, 1994.

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OU 1129

Please contact Allyn Pratt at (505) 667-4308 or Court Fesmire at (505) 665-4718, if you have any questions about this response to the NOD.

Sincerely,

Jorg Jansen, Project Manager
Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
Los Alamos Area Office

JJ/TT/plp

Enclosures: 1. "List of Deficiencies and Corresponding Responses, Operable Unit 1129 Workplan Addendum dated June 29, 1994" (8 pages)

2. Summary of Analytical results for Technical Area (TA) -48 Aggregate X (3 pages)
   - X-ray fluorescence (XRF)
   - Inductively-coupled plasma emission spectroscopy (ICPES)
   - Volatile organic compounds (VOCs)
   - Polychlorinated biphenyls (PCBs)
   - Semivolatile organic compounds (SVOCs)

3. "Samples Collected at TA-48" (1page)

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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 Notice Of Deficiency (NOD) Concerning Operable Unit (OU) 1129 Resource Conservation And Recovery Act Facility Investigation (RFI) Work Plan Addendum I

Name: _____ Date: 3/28/95

Tom Baca, Program Director
Environmental Management
Los Alamos National Laboratory

Name: _____ Date: 3/28/95

Joseph Vozella, Chief
Acting Assistant Area Manager of
Environmental Projects
Environment, Safety, and Health Branch
DOE-Los Alamos Area Office

or

Theodore J. Taylor
Program Manager
Environmental Restoration Program
DOE-Los Alamos Area Office

List of Deficiencies and Corresponding Responses
Operable Unit 1129
Workplan Addendum dated June 29, 1994

General Comments:

1. **LANL shall provide a schedule for fieldwork start, fieldwork completion, and RFI report dates for each SWMU.**

The table below shows the dates for starting field work, completing field work, and submitting the RFI report for each aggregate in the addendum.

	Phase I		
Aggregate AOC/SWMU	Start Field Work	End Field Work	RFI Report Date
Aggregate Q 4-003(a,b) 4-004	7/6/95	8/14/95	9/29/96
Aggregate R C-5-001 5-001(c) 5-005(b) 5-006(b,c,e,h)	7/6/95	8/14/95	9/29/96
Aggregate S 35-016(m,o,p)	10/26/94	10/27/94	5/13/96
Aggregate T 35-004(a,g,h) 35-009(e) 35-016 (a,c,d,k, l,q)	2/6/95	3/10/95	5/13/96
Aggregate U 35-004(b) 35-014(e_1,e_2,f) 35-016(e,f,g,h,i)	2/6/95	3/27/95	5/13/96
Aggregate V 35-004(m) 35-014(g_1,g_2,g_3) 35-015(a) 35-016(b,j,n) 35-018(a)	3/7/95	4/25/95	5/13/96
Aggregate W C-35-007 35-010(d,e)	4/6/95	5/5/95	5/13/96
Aggregate X 48-002(e) 48-007(a,d) 48-010	7/16/93	7/20/93	8/29/95
Aggregate Y 48-007(b,c,f)	7/26/93	8/10/93	8/29/95
Aggregate Z 55-011(a–e)	5/8/95	7/5/95	6/7/96

2. **In the Sampling and Analysis Tables for metals, LANL indicates analysis will be conducted by XRF or ICPES. LANL needs to demonstrate the equivalency of an XRF with SW 846 method 6010 prior to substituting XRF use for laboratory analysis.**

The purpose of the Phase I sampling and analysis plan (SAP) for Operable Unit (OU) 1129 is to identify contaminants of concern (COCs) that may be present at SWMUs. In particular, the analytical data must be of sufficient quality to support a recommendation of no further action. When evaluating the use of energy dispersive x-ray fluorescence (EDXRF) versus the SW-846 analytical method, the ability of either method to meet the data quality objectives for the Phase I SAP must be considered. At Technical Area (TA) -48, 127 samples were analyzed by XRF, 34 samples were analyzed by ICPES, and 21 samples (17%) were analyzed by both methods. (We are in the process of preparing the RFI report for this site.) Our decisions will be based on the results of both sets of analyses. From the viewpoint of a detailed technical comparison, the SW-846 method and the EDXRF method are not equivalent. However, from the viewpoint of providing analytical data of sufficient quality to meet data quality objectives, the SW-846 method and the EDXRF method are equivalent.

The EDXRF method was chosen for Phase I sampling analysis because it offers certain strategic advantages over the SW-846 method. The SW-846 method is performed at fixed-site laboratories; the EDXRF method can be implemented at either a fixed-site or a mobile laboratory. Because of the physical phenomenon on which the measurement is based, the EDXRF method has an additional advantage of not requiring sample digestion before analysis. The only sample preparation required is drying of the sample followed by milling and sieving. Therefore, trace metal analysis of soils using the EDXRF method is faster, less labor-intensive, and less expensive than the SW-846 method. Thus, based on cost and time savings, the use of EDXRF for Phase I sample analysis is an attractive alternative to the SW-846 method.

The target analyte list (TAL) for the SW-846 method as implemented by the LANL Environmental Restoration Project consists of 21 elements; the TAL for the EDXRF method currently consists of 18 elements. The following 6 elements currently are not determined by EDXRF but are determined by ICPES: beryllium, cobalt, magnesium, silver, sodium, and thallium. The EDXRF technique is not sensitive to elements with an atomic number of 11 or less, so it is not possible to detect beryllium or sodium by the XRF method. The method detection limit (MDL) for all EDXRF analytes is 10 mg/kg. The MDLs for the SW-846 method are element-dependent, ranging from 0.1 mg/kg to 1,000 mg/kg. The shorter TAL and the higher MDLs for certain elements, as compared with the SW-846 method, are not a concern in the implementation of EDXRF for Phase I sample analysis.

The LANL screening action levels (SALs) for silver and thallium are 400 mg/kg and 6.4 mg/kg, respectively. No evidence exists to indicate that either silver or thallium will be present in OU 1129 SWMUs at levels approaching the SALs. LANL has not established SALs for beryllium, cobalt, magnesium, or sodium. Instead, concentrations of these metals found in samples taken from SWMUs are compared with the background upper tolerance limits (UTLs) for these elements (the 95% confidence limit on the 99th percentile of the distribution). No evidence exists to indicate that beryllium, cobalt, magnesium, or sodium will be present in OU 1129 SWMUs at levels exceeding the background UTLs. However, if either silver (such as in SWMUs associated with photographic development) or beryllium (such as in SWMUs that were firing sites) might be present, ICPES analysis or other methods will be used that provide the appropriate MDL for those elements.

For those COCs with established SALs (except thallium, which was discussed above), the MDL for either method is sufficiently below the SAL to provide data of the required quality to make decisions about the next step in the RFI process. For those COCs with no established SALs, comparisons are made with background UTLs. Two COCs have background UTLs that are below or approaching the MDLs for either method: arsenic and beryllium. Beryllium was discussed above. Any sample containing elevated levels of arsenic (well above background) will be readily identified using either method.

3. **In several instances LANL has subdivided SWMUs by using subscripts such as SWMU 35-014(g_1, g_2, and g_3) while the SWMU listed in the HSWA portion of the permit is not subdivided (35-014[g]). LANL needs to apply for a Class 1 modification to the permit for any of these units which are subdivided.**

LANL personnel will apply for a Class I permit modification to subdivide SWMU No. 35-014(e) into SWMU Nos. 35-014(e_1), 35-014(e_2), and 35-014(e_3), and SWMU No. 35-014(g) into SWMU Nos. 35-014(g_1), 35-014(g_2), and 35-014(g_3).

4. **The following units do not need to be added to the HSWA portion of the RCRA permit:**

C-4-001	5-006(f)	C-35-003	35-004(o)	48-007(e)	55-002(c)
C-5-001	5-006(g)	C-35-004	35-014(c)	48-009	55-010
5-006(a)	C-35-001	35-004(i)	35-018(b)	C-52-001	55-012
5-006(d)	C-35-002	35-004(j)	48-002(c)	C-52-002	63-002

The SWMUs and areas of concern (AOCs) listed above will not be added to the permit.

Specific Comments:

1. **7.21 SWMU Aggregate Q, Phase I, p. 7-129—LANL needs to provide additional information concerning what type of work occurred in laboratory control building TA-4-3 in order for EPA to make a determination concerning which hazardous constituents may have been present.**

The former laboratory control building (TA-4-3) is associated with SWMU No. 04-003(b), which is a pipeline outfall from the building. The building was used as a control site for detonation of experimental explosives at firing pit No. TA-4-18 (SWMU No. 04-001). The building and the pipeline have been removed, and the site has been decontaminated and decommissioned (D&D). It is not known if hazardous chemicals other than high explosives (HE) were used in this building. The analyses planned for SWMU No. 4-003(b) include gross-alpha, -beta, and -gamma; gamma spectroscopy; alpha spectrometry; and metals. The field screening at the time of sampling will include screening for organic vapors; if organic vapors are detected, samples will be collected and analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). Trained personnel will conduct an environmental survey at the site of the former building to determine the need for an HE spot test kit. If suspect materials are found at the site, LANL personnel will test for HE using a spot test kit.

2. **7.21.2 Phase I Field Investigation Activities, p. 7-130**

   a. **LANL needs to elaborate on actual sampling being conducted at SWMU 4-004. How are samples being composited? EPA would prefer discrete sampling.**

   LANL personnel will not conduct composite sampling at SWMU No. 4-004. The sampling described on p. 7-130 will be discrete sampling. The text in the addendum will be revised to reflect this change.

   b. **Sample analysis for the photographic outfall, SWMU 4-003(a) should also include SVOCs and VOCs (at sampling intervals deeper than 6 inches).**

Samples collected at SWMU No. 4-003(a) will include SVOC and VOC analyses for samples collected at depths greater than 6 in. The text and tables in the addendum will be revised to include these additional analyses.

3. **7.22 SWMU Aggregate R, Phase I, p. 7-137—SWMU 5-006(h)—What is the function of an x-unit chamber?**

An x-unit chamber, also called a "firing unit," is a set of dry capacitors that are used to detonate an explosive device. The chamber is usually a metal box 18 in. long by 18 in. wide and about 12 in. deep that contains the capacitor discharge unit (CDU). The CDU is a bank of dry capacitors; the number of capacitors is determined by the number of detonators to be exploded. A large CDU would generate approximately 400 volts to explode 64 detonators. The x-unit chambers are usually not expended with the explosive devices, and the chambers are connected to the detonators by a cable that is 45 ft to 60 ft long.

4. **7.22.2 Phase I Field Investigation Activities, p. 7-138**

a. **SWMU 5-006(c) and 5-005(b)—LANL needs to explain what interval is being composited, and if more than one sample is being combined for the composite sample.**

LANL personnel will not conduct composite sampling at SWMU Nos. 5-006(c) and 5-005(b). The sampling described on p. 7-138 will be discrete sampling. The text in the addendum will be revised to reflect this change.

b. **If high explosives (HE) are a potential contaminant at these sites, would the HE spot test kit be useful for Composition "B", primacord detonators and Baratol? If useful then LANL should consider using the test kit during the radiological survey.**

SWMU No. 5-006(c) is associated with potential soil contamination beneath former building TA-5-5, and SWMU No. 5-005(b) is a pipeline outfall from the building. The building was reported to be contaminated with HE in 1959 and was burned in 1960. Although it is doubtful that HE still exists at the site, trained personnel will conduct an environmental survey at SWMU No. 5-006(c) to determine the need for an HE spot test kit. If suspect materials are found at the site, LANL personnel will test for HE using a spot test kit. The addendum will be revised to reflect this activity.

5. **7.24 SWMU Aggregate T, Phase I, p. 7-150—LANL needs to provide additional information concerning SWMU 35-009(e). What activities occur in building TA-35-25, and what does the drain line connect to inside the building?**

SWMU No. 35-009(e) is a pipeline outfall from the Sodium Building (TA-35-25). During the 1950s, the building was used in the preparation and processing of molten sodium for the experimental sodium-cooled reactors LAPRE-I and LAPRE-II. The outfall was connected to floor drains in the building as shown on LANL engineering drawings of the building. The precise location of the outfall has not been determined; however, an excavated section of 4-in. vitreous clay pipe set in a concrete support structure is present on the edge of the mesa about 150 ft south of the building. A recent engineering survey of the building showed that the floor drains are now plugged. The evidence suggests that the floor drains were probably plugged when the building was converted to a machine shop (circa 1972) and that the drain outlet pipe may have been removed. The potential wastes from the sodium processing are primarily plutonium, uranium, and associated reactor byproducts. The analyses planned for SWMU No. 35-009(e) include gross-alpha, -beta, and -gamma; gamma spectroscopy; alpha spectrometry; metals; VOCs; SVOCs; and polychlorinated biphenyls (PCBs).

6. **7.24.2 Phase I Field Investigation Activities, p. 7-152—SWMU 35-004(h)—Is LANL addressing the concrete catch basin for this SWMU? Have the basins been inspected for leakage? Is the drainage area for this SWMU covered with asphalt until SWMU 35-003(r) is reached? Will sampling be conducted at the point where SWMU 35-004(h) intersects with SWMU 35-003(r)?**

SWMU No. 35-004(h) is potential soil contamination associated with a former container storage area located at the northeast corner of building TA-35-7. In 1985 the site was excavated to a depth of about 8 ft as part of D&D of acid waste lines associated with the building (SWMU No. 35-003 [misc.]). The soil beneath the container storage area was displaced and possibly removed during this excavation activity. SWMU No. 35-016(l) is the surface storm-water outfall that is downgradient from SWMU No. 35-004(h). No concrete catch basins designed to contain runoff are located down the slope from SWMU No. 35-004(h); therefore, no such structures have been inspected for leakage. The drainage area below SWMU No. 35-004(h) is entirely covered with asphalt up to the storm-water outfall associated with SWMU No. 35-016(l). This storm-water outfall discharges into the small waste-receiving canyon that is associated with SWMU No. 35-003(r).

Sample T35-2214 for SWMU No. 35-016(l) will be collected below the storm-water outfall. This sample site could be considered as the intersection point between SWMU No. 35-003(r) and SWMU No. 35-004(h). In addition, borehole D35-2024 associated with Aggregate D, SWMU No. 35-003(misc.) was located just downgradient from the site of the former container storage area, at the northeast corner of building TA-35-7. The near-surface sample from this borehole (0 to 2 ft) was designed to satisfy the sampling and analysis plan for SWMU No. 35-004(h). Samples T35-2214 and D35-2024 will be analyzed for gross-alpha, -beta, and -gamma; metals; VOCs; and SVOCs.

7. **7.25.2 Phase I Field Investigation Activities, p. 7-158**

   a. **SWMU 35-004(b)—Sampling locations should be located where it appears material may have drained from the storage area if possible.**

   On September 8, 1994, a health and safety walkover and a preliminary engineering survey of the area were conducted. LANL personnel determined that the best location for the boreholes was at the edge of the asphalt on the east and northwest sides of the container storage areas. The addendum will be revised to state that the samples will be collected where material appears to have drained from the storage area. Figure 7-56 will be replaced with a map from the Facility for Information Management, Analysis, and Display (FIMAD) to more accurately display the location of the structures, the mesa edge, and the SWMUs.

   b. **SWMU 35-014(e)—What systematic method will be used to determine which samples are to be analyzed for VOCs and SVOCs. In addition, no grid points appear to intersect the projected location of 35-014(e_2) in Figure 7-56. LANL should ensure that the area of the SWMU is sampled.**

   One interval at every other grid point will be analyzed for VOCs and SVOCs; all intervals at every grid point will be analyzed for PCBs and gross-alpha, -beta, and -gamma. However, if "hits" are detected with the organic vapor analyzer or other similar field instruments at intervals not scheduled for VOC or SVOC analysis, samples will be collected and analyzed for VOCs and SVOCs.

On September 8, 1994, a health and safety walkover and preliminary engineering survey of the area was conducted. LANL personnel determined that the best approach was to drill three boreholes near the north side of a berm area that was apparently constructed to contain any small leaks from the outlet valve or from operations to drain a metal structure that surrounds the waste-oil impoundment (source for the SWMU). Three auger holes will be drilled near the mesa edge. If oil leakage has occurred, these auger holes should be acceptable to investigate the occurrence. Figure 7-56 will be replaced with a FIMAD map to more accurately display the location of the structures, the mesa edge, and the SWMUs.

8. **7.26.2 SWMU Aggregate V, Phase I, p. 7-168**

a. **SWMU 35-015(a)—LANL should identify stained areas for preferential sampling at SWMU 35-015(a) rather than using a grid system. If no staining is observed then defer back to the grid system. Information in text is conflicting the first paragraph indicates a 30-foot grid will be used and the next discussion of this SWMU indicates that a 20-foot grid will be used.**

The grid should be indicated on Figure 7-59, and it would be better to show a more detailed figure of this SWMU. The drainage paths which are being sampled are not indicated on the figure.

At SWMU No. 35-015(a) (the tank farm), samples will not be collected on a grid. Instead, locations of staining will be identified, and samples will be collected from those locations. Five samples will be relocated. Two of the former surface samples will be changed to hand-auger holes. Samples will be collected from the following intervals: 0 to 12 in. and 24 to 36 in. A former hand-auger hole will be relocated and changed to a surface sample. Figure 7-58, Figure 7-59, Table 7-29, and text in Section 7.26 will be revised to reflect these changes. Figure 7-59 will also be revised to indicated the drainage paths that are being sampled.

b. **SWMU 35-014(g_3)—This was the site of a major spill, and LANL should collect some samples at depth in addition to the surface sampling. LANL should collect at least four additional samples at the 3 foot depth, and analysis should be the same as the surface samples.**

How far into Ten Site Canyon does the zone of staining continue? The area of staining should be indicated on a figure with the drainage into Ten Site Canyon also indicated.

At SWMU No. 35-014(g_3), five of the former surface samples will be changed to hand-auger holes. Samples will be collected from the following intervals: 0 to 12 in. and 24 to 36 in.

Evaluation of ground photographs showed that a tanker truck parked west of the tank farm was the source of an oil spill that flowed east into the tank farm, west toward building TA-35-128, and south to a drainage east of TA-35-128. Ground photographs document soil staining at the southwest corner of former TA-35-278, where the spill accumulated in a collection basin that is now backfilled. Discrete, isolated zones of staining were observed on exposed tuff and in soil south of the former location of structures TA-35-278 and TA-35-279. No evidence of staining was apparent beneath the former location of these tanks. Discernible hydrocarbon odor emanating from some stained rocks and soil was detected during wind gusts. The region does not appear to be saturated. Staining occurs in patches, and the overall pattern converges toward the mesa edge and appears to occur predominately along one fracture zone, which may serve as the primary discharge point to Ten Site Canyon. Downstream from the fracture zone the drainage is covered with light-colored sediment (weathered tuff) and evidence of staining is not readily apparent on the surface; however, staining may exist beneath the fresher sediment cover. Staining further down from this point is not apparent.

Samples will be collected in areas of staining and in the flow path of the oil spill that was identified from the ground photographs. Figure 7-59 will be revised to indicate the areas of staining and the drainage to Ten Site Canyon. Figure 7-58, Figure 7-59, Table 7-29, and text in Section 7.26 will be revised to reflect changes in sampling strategy.

9. **7.27 SWMU Aggregate W, Phase I Field Investigation Activities, p. 7-175**

   a. **Are the two auger holes that are being drilled at SWMU 35-010(d) downgradient or upgradient from the sand filters? Have there been any overflows from the filters?**

      Figure 7-62 should indicate the location of the NPDES outfall and drainage.

      The two auger holes planned at SWMU No. 35-010(d) are located down the slope from the sand filters. Historical operational data on the sand filters indicate that they were inspected daily and that plugging did occur; however, the historical data indicate that the effluent was distributed routinely to other filters. The sand and fine pea gravel used as the filter material was removed routinely and replaced with new material. Recent engineering surveys of this SWMU have located waste piles of filter material that will be sampled in association with this SWMU and with AOC C-35-007. Figure 7-62 will be updated to show the location of the NPDES outfall and the Ten Site Canyon drainage that flows from west to east (south of the former sand filter beds).

   b. **Has LANL examined aerial photographs to help determine the location of AOC C-35-007?**

      Several detailed engineering surveys of AOC C-35-007 have been conducted to identify any potential contamination in the area. Examination of aerial photographs of each site is a routine part of the engineering surveys, and aerial photographs have been examined at AOC C-35-007. Aerial photographs dated November 28, 1986, and September 29, 1991, show the sand filters. The aerial photographs have not been useful in identifying the potential contamination associated with AOC C-35-007. However, the engineering surveys have identified piles of used sand filter material in the vicinity of the sand filter beds that will be sampled as part of the Phase I investigation of AOC C-35-007.

10. **7.28 SWMU Aggregate X, Phase I, p. 7-180—SWMU 48-002(e)—What is the period of time for use of this container storage area? If the period of use for this area is recent then sampling may not be required unless stains related to spills are apparent.**

    Sampling at Aggregate X, SWMU No. 48-002(e) was conducted in July 1993. This area was found to contain PCBs and SVOCs at elevated concentrations. Summary of the data for Aggregate X is included in Attachment 2.

11. **7.28.2 Phase I Field Investigation Activities, p. 7-181—SWMU 48-010—LANL should collect a sample from the material in the bottom of the pond and conduct analysis for metals. This sample might take the place of the proposed surface sample.**

    SWMU No. 48-010 was sampled in July 1993. Sample X48-2040-S1 is a surface sample that was collected along the southeast edge of the pond inside the high-water mark. Sample X48-2041-S1 is a surface sample that was collected along the southern edge of the outfall collection pond. Sample X48-2042-W1 is a water sample that was collected in the pond. During the sampling activities, two additional samples were collected in the pond: sample X48-2052-S1, a surface sample that was collected approximately 6 in. from the edge of the water, which was still in the active area of the pond containment and sample X48-2053-W1, which was collected in the pond. (The two additional samples where also analyzed for metals.)

Summary of the data for these samples is included in Attachment 2. Also included is a FIMAD illustration showing the location of the samples (Attachment 3).

If the additional samples collected in the pond are not sufficient to address EPA's concerns, then additional samples can be collected during the Phase II investigation at TA-48.

12. **7.29 SWMU Aggregate Y, Phase I, p. 7-185—What are the hazardous constituents, if any, in the non-contact cooling water? Were either of the outfalls 48-007(c) or (f) used prior to inclusion in the NPDES permit, and if these are newer outfalls is there documentation of what is in the cooling water?**

The cooling systems associated with these SWMUs are once-through cooling systems; the non-contact cooling water is potable and receives no treatment. SWMU No. 48-007(c), submitted to the EPA in April 1987 for inclusion under the NPDES permit, discharges up to 110 gph as noncontact cooling water from a vacuum pump cooling system in the basement at the north end of building TA-48-1. SWMU No. 48-007(f) was submitted to the EPA in November 1987 for inclusion under the NPDES permit. It discharges up to 100 gpd of noncontact cooling water as x-ray cooling load from an office and laboratory building (TA-48-46). Materials used at TA-48-46 and possible releases to Mortandad Canyon from this outfall are unknown. The DOE Comprehensive Environmental Assessment and Response Program report states the liquid waste outfalls were noted in a 1986 survey; therefore, we know that these outfalls were used before their inclusion in the permit. The report also states ". . . the origin of some of the cooling water for each discharge point is not known. Several years ago, dyes were used to try to clarify the situation, but the results were not conclusive. Therefore, because the origin of the water is not known, it may be possible for leaks to have occurred {before1986} that would have resulted in contamination of the once-through cooling water and hence the outfall area."

13. **7.30 SWMU Aggregate Z, Phase I, p. 7-190—These outfalls appear to be storm drains, and as such probably should not be sampled under this program. Sampling may be required for a storm water discharge permit.**

SWMU Nos. 55-01(a–e) are outfalls that are part of the NPDES storm-water permit for the site. Sampling at these outfalls will be conducted as specified in permit NMR 00A384 for LANL. Therefore, these SWMUs will be proposed for no further action in the next permit modification.

TA-48 Aggregate X
XRF Analytical Results

SWMU	OU1129 No.	BARCODE No.	As	Ba	Ba unc[a]	Cd	Cr	Cr unc	Cu	Cu unc	Hg	Mn	Mn unc	Ni	Ni unc	Pb	Pb unc	Sb	Se	Th	Th unc	Ti	Ti unc	U	Zn	Zn unc	Units
48-002(e)	X48-2037-A1	AAA3545	<10.	532.	53.	<10.	20.	2.	17.	2.	<10.	489.	49.	<10.		47.	5.	<10.	<10.	18.	2.	2634.	263.	<10.	125.	13.	ppm
48-002(e)	X48-2037-A2	AAA3546	<10.	619.	62.	<10.	12.	1.	<10.		<10.	584.	58.	<10.		16.	2.	<10.	<10.	15.	2.	3509.	351.	<10.	61.	6.	ppm
48-002(e)	X48-2037-A3	AAA3547	<10.	602.	60.	<10.	28.	3.	22.	2.	<10.	452.	45.	<10.		20.	2.	<10.	<10.	16.	2.	3067.	307.	<10.	83.	8.	ppm
48-007(a,d)	X48-2038-S1	AAA4430	<10.	323.	32.	<10.	<10.		16.	2.	<10.	450.	45.	<10.		23.	2.	<10.	<10.	13.	1.	905.	91.	<10.	42.	4.	ppm
48-007(a,d)	X48-2038-S1	AAA3548	<10.	338.	34.	<10.	<10.		10.	1.	<10.	471.	47.	<10.		27.	3.	<10.	<10.	22.	2.	1133.	113.	<10.	54.	5.	ppm
48-007(a,d)	X48-2039-W1	AAA3549	<10.	<10.		<10.	<10.		<10.		<10.	<10.		<10.		<10.		<10.	<10.	<10.		<10.		<10.	<10.	0.	ppm
48-007(a,d)	X48-2052-W1	AAA4442	<10.	241.	24.	<10.	<10.		16.	2.	<10.	346.	35.	<10.		21.	2.	<10.	<10.	15.	1.	948.	95.	<10.	50.	5.	ppm
48-007(a,d)	X48-2053-W1	AAA4441	<10.	16.	2.	<10.	<10.		13.	1.	<10.	<10.		<10.		<10.		<10.	<10.	<10.		<10.		<10.	<10.	0.	ppm
48-010	X48-2040-S1	AAA3550	<10.	198.	20.	<10.	<10.		<10.		<10.	310.	31.	<10.		14.	1.	<10.	<10.	<10.		849.	85.	<10.	33.	3.	ppm
48-010	X48-2041-S1	AAA3551	<10.	409.	41.	<10.	<10.		<10.		<10.	328.	33.	<10.		20.	2.	<10.	<10.	17.	2.	1701.	170.	<10.	28.	3.	ppm
48-010	X48-2042-W1	AAA3552	<10.	<10.		<10.	<10.		<10.		<10.	<10.		11.	1.	<10.		<10.	<10.	<10.		<10.		<10.	<10.	0.	ppm
48-010	X48-2057-S1	AAA3782	<10.	526.	53.	<10.	17.	2.	15.	2.	<10.	471.	47.	<10.		30.	3.	<10.	<10.	12.	1.	2602.	260.	<10.	720.	72.	ppm

SWMU	OU1129 No.	BARCODE No.	Ca	Ca unc	Fe	Fe unc	K	K unc	Units
48-002(e)	X48-2037-A1	AAA3545	0.65	0.06	1.87	0.19	2.42	0.24	%
48-002(e)	X48-2037-A2	AAA3546	0.68	0.07	1.88	0.19	2.16	0.22	%
48-002(e)	X48-2037-A3	AAA3547	0.77	0.08	2.45	0.24	1.91	0.19	%
48-007(a,d)	X48-2038-S1	AAA4430	0.53	0.05	1.21	0.12	3.28	0.33	%
48-007(a,d)	X48-2038-S1	AAA3548	0.55	0.05	1.41	0.14	3.02	0.3	%
48-007(a,d)	X48-2039-W1	AAA3549	0.01		<0.01		0.01		%
48-007(a,d)	X48-2052-W1	AAA4442	0.32	0.03	1.15	0.12	3.19	0.32	%
48-007(a,d)	X48-2053-W1	AAA4441	0.01		0.01		0.02		%
48-010	X48-2040-S1	AAA3550	0.23	0.02	0.88	0.09	3.2	0.32	%
48-010	X48-2041-S1	AAA3551	0.45	0.05	1.26	0.13	2.73	0.27	%
48-010	X48-2042-W1	AAA3552	0.01		<0.01		<0.01		%
48-010	X48-2057-S1	AAA3782	0.58	0.06	1.8	0.18	2.45	0.25	%

a. unc= uncertainty

TA-48 Aggregate X
ICPES Analytical Results

SWMU	OU1129 No.	BARCODE No.	Ag	Al	Al unc[a]	Ba	Ba unc	Be	Be unc	Ca	Ca unc	Cd	Co	Co unc	Cr	Cr unc	Cu	Cu unc	Fe	Fe unc	K	K unc	Units
48-002(e)	X48-2037-A3	AAA3547	<1.	29000.	2900.	200.	20.	1.5	0.2	2100.	210.	<0.4	5.	1.	13.	1.	4.6	0.5	15000.	1500.	1900.	190.	µg/g
48-010	X48-2042-W1	AAA4436	<0.01	0.28	0.03	0.078	0.008	<0.001		16.	2.	<0.003	<0.004		<0.004		<0.007		3.3	0.3	1.1	0.3	mg/L
48-010	X48-2042-W1	AAA3552	<0.01	0.16	0.02	0.087	0.008	<0.001		16.	2.	<0.003	<0.004		<0.004		<0.007		5.	0.5	1.	0.3	mg/L

SWMU	OU1129 No.	BARCODE No.	Li	Li unc	Mg	Mg unc	Mn	Mn unc	Mo	Na	Na unc	Ni	Ni unc	Sr	Sr unc	V	V unc	Zn	Zn unc	Units
48-002(e)	X48-2037-A3	AAA3547	28.	3.	2400.	240.	260.	26.	<0.9	200.	20.	11.	1.	21.	2.	23.	2.	50.	5.	µg/g
48-010	X48-2042-W1	AAA4436	0.021	0.002	3.5	0.4	0.51	0.05	<0.008	13.	1.	<0.01		0.067	0.007	<0.004		0.07	0.02	mg/L
48-010	X48-2042-W1	AAA3552	0.021	0.002	3.4	0.3	0.59	0.06	<0.008	13.	1.	<0.01		0.068	0.007	<0.004		0.03	0.01	mg/L

SWMU	OU1129 No.	BARCODE No.	As	As unc	Sb	Se	Se unc	Tl	Pb	Pb unc	Units
48-002(e)	X48-2037-A3	AAA3547	3.7	0.7	<0.3	0.5	0.2	<0.3	13.3	0.6	µg/g
48-010	X48-2042-W1	AAA4436	3.7	2.	<1.	<2.		<1.	2.	1.	µg/L
48-010	X48-2042-W1	AAA3552	4.1	2.	<1.	<2.		<1.	3.	1.	µg/L

TA-48 Aggregate X
VOC Analytical Results

SWMU	OU1129 No.	BARCODE No.	ANALYTE	RESULT	UNC	UNITS
48-002(e)	X48-2037-A1	AAA4431	ND[b]			
48-002(e)	X48-2037-A1	AAA3545	ND			
48-002(e)	X48-2037-A2	AAA3546	ND			
48-002(e)	X48-2037-A3	AAA4433	ND			
48-002(e)	X48-2037-A3	AAA3547	ND			
48-010	X48-2057-S1	AAA3782	ND			

a. unc= uncertainty
b. ND = not detected

TA-48 Aggregate X
PCB Analytical Resutls

SWMU	OU1129 No.	BARCODE No.	Mixed-Aroclor	Mixed unc[a]	Aroclor 1242	Aroclor 1254	1254 unc	Aroclor 1260	Units
48-002(e)	X48-2037-A1	AAA3545							
48-002(e)	X48-2037-A2	AAA3546							
48-002(e)	X48-2037-A2	AAA4434	260.	52.	<50.	260.	52.	<50.	µg/kg
48-002(e)	X48-2037-A3	AAA3547							
48-010	X48-2057-S1	AAA3782	150.	30.	<50.	150.	30.	<50.	µg/kg

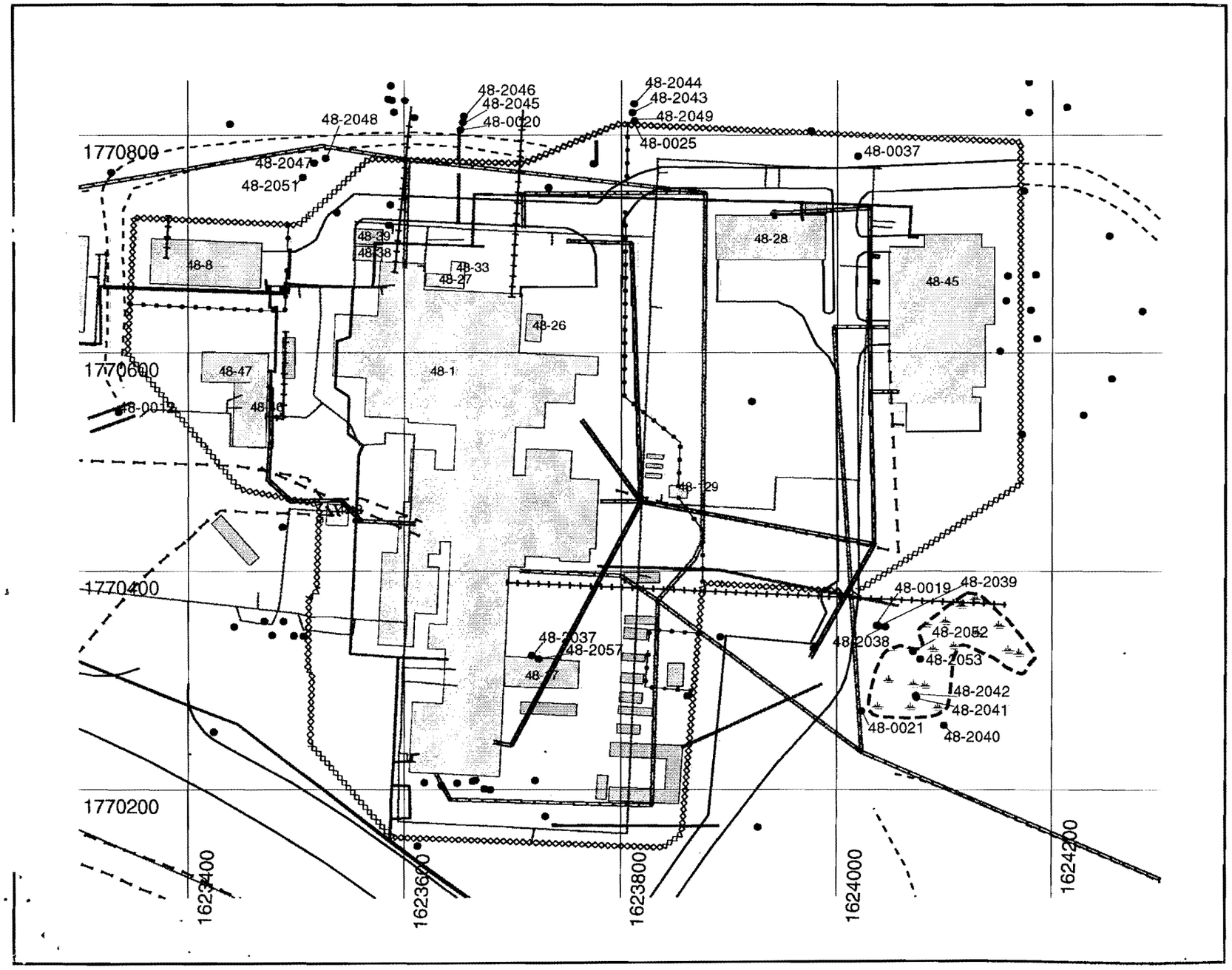
TA-48 Aggregate X
SVOC Analytical Results

SWMU	OU1129 No.	BARCODE No.	ANALYTE	RESULT	UNC	UNITS
48-002(e)	X48-2037-A1	AAA3545	Pyrene	1400.	420.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Benzo[a]pyrene	590.	177.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Benzo[b]fluoranthene	740.	222.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Chrysene	640.	192.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Fluoranthene	1700.	510.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Indeno[1,2,3-cd]pyrene	390.	117.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Phenanthrene	1100.	330.	µg/kg
48-002(e)	X48-2037-A1	AAA3545	Benzo[a]anthracene	640.	192.	µg/kg
48-002(e)	X48-2037-A2	AAA3546	ND[b]			
48-002(e)	X48-2037-A2	AAA4434	ND			
48-002(e)	X48-2037-A3	AAA4432	ND			
48-002(e)	X48-2037-A3	AAA3547	ND			
48-010	X48-2057-S1	AAA3782	Benzo[a]anthracene	580.	174.	µg/kg
48-010	X48-2057-S1	AAA3782	Benzo[a]pyrene	570.	171.	µg/kg
48-010	X48-2057-S1	AAA3782	Benzo[b]fluoranthene	770.	231.	µg/kg
48-010	X48-2057-S1	AAA3782	Chrysene	640.	192.	µg/kg
48-010	X48-2057-S1	AAA3782	Fluoranthene	1500.	450.	µg/kg
48-010	X48-2057-S1	AAA3782	Indeno[1,2,3-cd]pyrene	400.	120.	µg/kg
48-010	X48-2057-S1	AAA3782	Phenanthrene	680.	204.	µg/kg
48-010	X48-2057-S1	AAA3782	Pyrene	1200.	360.	µg/kg

a. unc= uncertainty
b. ND = not detected

Samples Collected at TA-48

Attachment 3



EXPLANATION

- cooling line
- natural gas line
- water line
- radioactive waste line
- storm line
- parking - paved
- parking - unpaved
- fence - industrial
- fence - security
- road - paved
- road - unpaved
- sewer line
- ta boundary
- industrial waste line
- labnet fiber optic cable
- permanent building
- temporary building
- all samples collected at TA-48 (with no caption)
- **samples collected at Aggregate X and Y (with sample number)** 48-2040

N

0 120 240 360 Feet

NOTICE : Information on this map is provisional

and has not been checked for accuracy

BY PRESILIANO PINO of LATA 95-03-13.13:16:39.Mon

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COORDINATES NM STATE PLANE NAD83

LATA MAP NUMBER 203

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95 ADDEND NOD RESPONSE

3/21/95