

General

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TABLE
Comparison of April 2010 and July 2009 Closure Cost Estimates

Attachment No.	Unit	June 2009 Estimate	April 2010 Estimate	% Difference
G1	TA-3-29	\$ 425,424	\$ 215,584	49%
G2	TA-16-388	\$ 106,104	\$ 36,634	65%
G3	TA-16-399	\$ 142,470	\$ 61,660	57%
G4	TA-50-69	\$ 329,151	\$ 223,490	32%
G5	TA-50-Building 69 OSU	\$ 336,714	\$ 195,954	42%
G6	TA-54-G-Pad 1	\$ 2,316,271	\$ 2,044,366	12%
G7	TA-54-G-Pad 3	\$ 1,267,021	\$ 1,449,950	-14%
G8	TA-54-G-Pad 5	\$ 2,425,481	\$ 2,330,260	4%
G9	TA-54-G-Pad 6	\$ 2,279,824	\$ 2,213,339	3%
G10	TA-54-G-Pad 9	\$ 3,535,000	\$ 2,824,977	20%
G11	TA-54-G-Pad 10	\$ 1,658,459	\$ 2,042,001	-23%
G12	TA-54-G-Pad 11	\$ 2,015,384	\$ 1,865,054	7%
G13	TA-54-G-8	\$ 1,148,828	\$ 1,255,216	-9%
G14	TA-54-G-33	\$ 1,456,693	\$ 1,468,541	-1%
G15	TA-54-Area L	\$ 2,554,497	\$ 2,312,927	9%
G16	TA-54-B38W	\$ 270,784	\$ 146,921	46%
G17	TA-54-West-OSU	\$ 518,794	\$ 556,150	-7%
G18	TA-55-4-B40	\$ 336,616	\$ 215,670	36%
G19	TA-55-4K13	\$ 564,777	\$ 215,815	62%
G20	TA-55-4-B05	\$ 204,689	\$ 116,682	43%
G21	TA-55-\$-B45	\$ 381,721	\$ 164,857	57%
G22	TA-55-4-Vault	\$ 321,540	\$ 207,149	36%
G23	TA-55-Building 4	\$ 349,208	\$ 134,643	61%
G24	TA-55-4 IMWSTU	\$ 265,313	\$ 137,784	48%
G25	TA-55-B185	\$ 584,043	\$ 229,125	61%
G26	TA-55-OSU	\$ 657,511	\$ 351,399	47%
Total		\$ 26,452,317	\$ 23,016,148	13%



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G9	TA-54-G-Pad 6	\$ 2,279,824	\$ 2,213,339	3%
G10	TA-54-G-Pad 9	\$ 3,535,000	\$ 2,824,977	20%
G11	TA-54-G-Pad 10	\$ 1,658,459	\$ 2,042,001	-23%
G12	TA-54-G-Pad 11	\$ 2,015,384	\$ 1,865,054	7%
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G25	TA-55-B185	\$ 584,043	\$ 229,125	61%
G26	TA-55-OSU	\$ 657,511	\$ 351,399	47%
Total		\$ 26,452,317	\$ 23,016,148	13%

**SUMMARY OF CLOSURE COST ESTIMATE REVISIONS
APRIL 2010**

Assumptions/Cost Estimate Basis	April 2010 Changes	July 2009 Permit	Cost Changes
Disposal	<p>Disposal Costs (ECHOS 2006 escalated to 2010)¹</p> <p>Volume of structures to be removed – Structures only (i.e., lower volume)</p>	<p>Disposal Costs (ECHOS 1996 and telephone conversation with RS Means)</p> <p>Volume of structures to be removed - Entire storage volume (i.e., higher volume)</p>	<p>Liquid hazardous waste disposal – higher in the April 2010 Cost Estimate</p> <p>Non-liquid hazardous waste disposal – higher in the April 2010 Cost Estimate</p> <p>Disposal cost for structures - lower in the April 2010 Cost Estimate</p>
Labor	Labor rates (ECHOS 2006 escalated to 2010)	Labor rates (Telephone conversation with RS Means)	Overall – Labor costs lower in the April 2010 Cost Estimate
Sampling and Analysis	Laboratory Analyses (ECHOS 2006 escalated to 2010)	Laboratory Analyses (Telephone conversation with RS Means)	Overall – Analytical costs higher in the April 2010 Cost Estimate

1 Source of cost data shown in parentheses

The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 3, Building 29 (TA-3-29) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-3-29 P1), pre-closure activities (Worksheet TA-3-29 P2), decontamination of the unit structures (Worksheet TA-3-29 P3), and analysis and sample management procedures (Worksheet TA-3-29 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.1; Technical Area 3, Building 29, Rooms 9010, 9020 and 9030 Closure Plan (Closure Plan).

Unit Name: LANL TA-3-29

The Unit consists of all of Room 9010 and portions of Rooms 9020 and 9030. There is a chain link fence that runs along the side of Room 9020.

Contamination: Building 29 contains hazardous waste in both liquid and solid form. The wastes stored include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-3-29 P2	2-A	103,646.17
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-3-29 P3	3-A	29,561.47
4	Disposal of Hazardous Material		3-B	7,511.47
5	Decontamination		3-C	37,146.72
6	Decontamination Verification Samples		3-D	2,243.41
7	Analyses	TA-3-29 P4	4-A	22,542.95
8	Data Validation		4-B	1,889.14
9	Sample Logbook		4-C	4,803.13
10	Sample Documentation		4-C	989.74
11	Subtotal of Closure Costs			212,806.79
12	Certification of Closure	TA-3-29 P4	4-C	2,776.92
13	Total Cost of Closure (Add cost of certification report to closure costs)			215,583.72

I. GENERAL UNIT DESCRIPTION

TA-3-29 Room 9010

According to the Part A Permit Application, 18,500 gallons of hazardous waste is permitted to be stored on the entire TA-3-29 Unit. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, three metal cabinets will be removed from the unit following the structural assessment. No structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the maximum permitted volume. It was also assumed that the level of Personal Protective Equipment is

1-A	Permitted Unit Volume Capacity (cubic feet)	2,473.09	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 3, Building 29 Unit is 18,500 gallons (2,473.09 cubic feet) for all 3 container storage units.
	Known Releases?	N/A	
1-B	Length of TA-3-29 Room 9010 (feet)	107	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-3-29 Room 9010 (feet)	22	
	Height of TA-3-29 (feet) (based on the decontamination height)	8	Structures and Related Equipment Required for Demolition and Debris Disposal: Two room enclosures within Room 9010 and the chain link fence that runs along Room 9020 will be removed and disposed of.
	Area of TA-3-29 Room 9010 (square feet)	2,330	Rooms 9010, 9020 and 9030 will be decontaminated.
	Volume of TA-3-29 Room 9010 (cubic feet)	18,643	<u>The height of the Room 9010 is 8 feet for decontamination purposes.</u>
1-B	Length of TA-3-29 Room 9020 (feet)	25	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-3-29 Room 9020 (feet)	19	
	Height of TA-3-29 (feet) (based on the decontamination height)	8	Structures and Related Equipment Required for Demolition and Debris Disposal: Two room enclosures within Room 9010 and the chain link fence that runs along Room 9020 will be removed and disposed of.
	Area of TA-3-29 Room 9020 (square feet)	475	Rooms 9010, 9020 and 9030 will be decontaminated.
	Volume of TA-3-29 Room 9020 (cubic feet)	3,800	<u>The height of the Room 9020 is 8 feet for decontamination purposes.</u>
1-B	Length of TA-3-29 Room 9030 (feet)	30	Identified Structures on the Unit: There are no identified structures within Room 9030. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-3-29 Room 9030 (feet)	8	
	Height of TA-3-29 (feet) (based on the decontamination height)	6	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures within Room 9030. No removal or disposal costs will be associated within the cost estimate.
	Area of TA-3-29 Room 9030 (square feet)	240	Rooms 9010, 9020 and 9030 will be decontaminated.
	Volume of TA-3-29 Room 9030 (cubic feet)	1,440	<u>The height of the Room 9030 is 6 feet for decontamination purposes.</u>
1-B	Total Area of TA-3-29 to be decontaminated (Rooms 9010, 9020 & 9030) (square feet), including wall areas	6,265	Rooms 9010, 9020 and 9030 will be decontaminated.
1-B	Total volume of structures/equipment to be removed at TA-3-29 (cubic feet)	1,194	Two room enclosures within Room 9010 and a chain-link fence will be removed. Assumed to be 5% of the total volume for the Unit.
1-C	Materials identified within TA-3-29		Solid and liquid hazardous wastes.
1-D	Maximum volume of waste to be removed from TA-3-29 (gallons)	18,500.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

The following worksheet provides a cost estimate for: the removal and disposal of hazardous waste stored within Rooms 9010, 9020 and 9030; conducting a record review an

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	35	Hours	51.73	1,784.70	3	5,354.09
4-Person Labor Crew	35	Hours	30.64	1,057.04	3	3,171.12
	35	Hours	30.64	1,057.04	3	3,171.12
	35	Hours	30.64	1,057.04	3	3,171.12
	35	Hours	30.64	1,057.04	3	3,171.12
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	171.50	857.50	3	2,572.50
Disposal of Non-liquid Hazardous Wastes	46	Cubic yards	169.833	7,778.03	---	7,778.03
Disposal of liquid Hazardous Wastes	168	Drums	216.939	36,485.23	---	36,485.23
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 4 estimated work days	5	People /Night	100.00	2,000.00	3	6,000.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for Removal of Waste from Unit				6,012.86	15	87,554.34
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	411.40	3	1,234.19
Field Engineer	12	Hours	32.99	411.40	3	1,234.19
<i>Structural Assessment</i>						
Field Engineer	17	Hours	32.99	548.53	3	1,645.59
Field Engineer	17	Hours	32.99	548.53	3	1,645.59
<i>Reporting</i>						
Field Engineer	19	Hours	32.99	617.09	3	1,851.28
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				2,536.94	15	16,091.83
Total for Step 2-A				8,549.80	30	103,646.17
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				296.34	6	2,472.59
Total for Step 2				8,846.14	36	106,118.76

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	51.73	835.92	3	2,507.77
	4-Person Labor Crew	16	Hours	30.64	495.10	3	1,485.30
		16	Hours	30.64	495.10	3	1,485.30
		16	Hours	30.64	495.10	3	1,485.30
		16	Hours	30.64	495.10	3	1,485.30
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	\$757.50	3	2,272.50
Total for Removal of Equipment					2,816.32	15	29,561.47

Assumed 1500 square feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the 2 room enclosures within Building 29, Room 9010, and the chain link fence that runs along the side of Room 9020.

Disposal of Hazardous Wastes							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for "Total Volume of Structures/Equipment Removed"	44.23	Cubic yards	169.83	7,511.47	---	7,511.47
Total for Removal of Equipment					7,511.47	---	7,511.47

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	29	Hours	51.73	1,475.83	3	4,427.48
	4-Person Labor Crew	29	Hours	30.64	874.10	3	2,622.31
		29	Hours	30.64	874.10	3	2,622.31
		29	Hours	30.64	874.10	3	2,622.31
		29	Hours	30.64	874.10	3	2,622.31
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes 3 estimated work days	5	People/Day	98.00	490.00	3	1,470.00	
Total for Decontamination					12,382.24	30	37,146.72

Assume 200 square feet of area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	26	9	32.99	285.92	3	857.77
	Field Engineer - Equipment Wipes		9	32.99	285.92	3	857.77
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples	34	---	---	---	---	---
	Total Number of Types of Samples	2	---	---	---	---	---
Total for Decontamination Verification					87.98	9	2,243.41
Total for Step 3					12,470.22	39	76,463.07

Assumed 26 wipe samples and 8 QA/QC samples will be collected.

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (26) was included within the cost estimate as there were 26 wipe samples identified within the Closure Plan. Analysis of wipe samples were estimated by the suggested analyses provided within Tables G-1.6. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet. The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis							Assumed 26 wipe samples and 8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	---	---	588.54	---	---	---	
Organics Soil - Unit	---	---	159.51	---	---	---	
Cyanide Soil - Unit	---	---	68.43	---	---	---	
Metals Liquid - Unit	---	---	227.21	---	---	---	
Organics Liquid - Unit	---	---	159.51	---	---	---	
Cyanide Liquid - Unit	---	---	38.44	---	---	---	
Metals Equipment Wipes	26	---	588.54	15,302.08	---	15,302.08	
Organics Equipment Wipes	26	---	159.51	4,147.15	---	4,147.15	
Cyanide Equipment Wipes	0	---	68.43	-	---	-	
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68	
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05	
Cyanide Field QA/QC	0	---	38.44	-	---	-	
Total for Analysis of the Decontamination Verification Samples				22,542.95	---	22,542.95	

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	17	Hours	37.04	629.71	3	1,889.14
Total for Data Validation			629.71	629.71	3	1,889.14

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)		
Logbook Documentation - Field Engineer	49	Hours	32.99	1,601.04	3	4,803.13	
Sample Documentation - Field Engineer	10	Hours	32.99	329.91	3	989.74	
Certification Report - Field Engineer	19	Hours	32.99	617.09	3	1,851.28	
Certification Report - Field Engineer	9	Hours	32.99	308.55	3	925.64	
Total for Sample Management				2,856.60	12	8,569.79	

Total for Step 4			26,029.26		15	33,001.89
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 16 388 Flash Pad (TA-16-388) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-16-388 P1), pre-closure activities (Worksheet TA-16-388 P2), decontamination of the unit structures (Worksheet TA-16-388 P3), and analysis and sample management procedures (Worksheet TA165-388 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.2; Technical Area 16, 388nFlash Pad Closure Plan (Closure Plan).

Unit Name: LANL TA-16-388

The unit consists of a flash pad which includes a metal cover and mechanisms, and three propane burners.

Contamination: High explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-16-388 P2	2-A	15,852.93
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-16-388 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	1,187.69
7	Analyses	TA-16-388 P4	4-A	11,991.16
8	Data Validation		4-B	1,055.70
9	Sample Logbook		4-C	923.76
10	Sample Documentation		4-C	461.88
11	Subtotal of Closure Costs			33,945.70
12	Certification of Closure	TA-16-388 P4	4-C	2,688.46
13	Total Cost of Closure (Add cost of certification report to closure costs)			36,634.16

1. GENERAL UNIT DESCRIPTION

TA-16-388 consists of a 1 foot-thick concrete flash pad measuring 22 feet by 22 feet. The waste that is treated at the permitted unit consists of detonable quantities of high explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit. After hazardous wastes are treated at the permitted unit, treatment residues and any non-combustible debris, as applicable, are removed, characterized, and disposed of in accordance with Permit Section 6.3.3.3. Therefore, removal of hazardous waste from the permitted unit prior to initiation of closure activities is not applicable to the closure procedures for this particular permitted unit. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the burn tray, the three propane burners, the metal retractable cover will be removed and disposed of. According to the closure plan, no equipment or structures will be require decontamination. It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	13.37	According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit.
	Known Releases?	N/A	
1-B	Length of TA-16-388 (pan & cover) (feet)	22	Identified Structures on the Unit: Metal burn pan, three propane burners, metal burn cover and its mechanisms. It is assumed that the metal cover has the same dimensions as the burn pan. Therefore a total of 968 square feet at TA-16-388 will require removal and disposal. The entire Unit will be removed and disposed of.
	Width of TA-16-388 pan & cover (feet)	22	
	Height of TA-16-388 (feet) (pan and cover)	1	
	Area of TA-16-388 (pan and cover) (square feet)	968	
	Volume of TA-16-388 (pan and cover) (cubic feet)	968	
1-C	Materials identified within TA-16-388		Metal burn pan, 3 propane burners, metal cover and associated mechanisms.
1-D	Maximum area of waste to be removed from TA-16-388 (square feet)	-	No wastes will be removed from the unit at closure per the Closure Plan.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	There was no mention of the specific type of PPE required for the decontamination of the Unit. Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

		<u>Removal of Hazardous Waste</u>						
		Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
2-A	Site Project Manager	-	Hours	51.73	-	3	-	
	4-Person Labor Crew	-	Hours	30.64	-	3	-	
		-	Hours	30.64	-	3	-	
		-	Hours	30.64	-	3	-	
		-	Hours	30.64	-	3	-	
	Number of estimated work days (including 2 days for mobilization and demobilization)	-	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	-	People	(24.50)	-	3	-	
	Disposal of Non-liquid Hazardous Material	-	Cubic yards	169.833	-	---	-	
	Airfare	-	People	1,000.00	-	3	-	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	-	People /Night	100.00	-	3	-	
	Vehicle Rental includes the 2 estimated work days	-	Vehicles/Day	70.00	-	3	-	
	Total for Removal of Waste from Unit					-		-
			<u>Records Review, Structural Assessment, and Reporting</u>					
			Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
			<i>Records Review</i>					
	Field Engineer	12	Hours	32.99	398.29	3	1,194.87	
	Field Engineer	12	Hours	32.99	398.29	3	1,194.87	
		<i>Structural Assessment</i>						
	Field Engineer	16	Hours	32.99	531.05	3	1,593.16	
	Field Engineer	16	Hours	32.99	531.05	3	1,593.16	
		<i>Reporting</i>						
	Field Engineer	18	Hours	32.99	597.44	3	1,792.31	
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
	Per Diem (for the two Field Engineers)	2	People	74.09	148.19	3	444.56	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for the Records Review, Inspection, and Reporting					5,284.31		15,852.93	
Total for Step 2-A					5,284.31		15,852.93	
		<u>Development of the Sampling and Analysis Plan</u>						
		Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
2-B	Quality Control	8	Hours	37.04	296.34	3	889.01	
	Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
	Total for Step 2-B					824.20		2,472.59
Total for Step 2					6,108.51	-	18,325.52	

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	51.73	\$834.36	3	2,503.09
	4-Person Labor Crew	16	Hours	30.64	\$494.18	3	1,482.53
		16	Hours	30.64	\$494.18	3	1,482.53
		16	Hours	30.64	\$494.18	3	1,482.53
		16	Hours	30.64	\$494.18	3	1,482.53
		16	Hours	30.64	\$494.18	3	1,482.53
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	\$5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	\$1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	\$280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	\$735.00	3	2,205.00	
Total for Removal of Equipment					2,811.07	15	29,478.20

Assumed 1500 square feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	35.85	Cubic yards	169.83	6,088.84	---	6,088.84
	Total for Removal of Equipment					6,088.84	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	0	Hours	51.73	-	3	-
	4-Person Labor Crew	0	Hours	30.64	-	3	-
		0	Hours	30.64	-	3	-
		0	Hours	30.64	-	3	-
		0	Hours	30.64	-	3	-
		0	Hours	30.64	-	3	-
	Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---
	Airfare	0	People	1,000.00	-	3	-
	Hotel/Lodging - Bare Task includes the 2 estimated work days	0	People /Night	100.00	-	3	-
	Vehicle Rental includes the 2 estimated work days	0	Vehicles/Day	70.00	-	3	-
Per Diem (for Project Engineer and 4-Person Labor Crew)	0	People	(24.50)	-	3	-	
Total for Decontamination					-	-	-

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	6	1.5	32.99	49.49	3	148.46
	Field Engineer - Soil Sample from the Unit		1.5	32.99	49.49	3	148.46
	Field Engineer - Liquid from the Sump	1	0.5	32.99	16.50	3	49.49
	Field Engineer - Liquid from the Sump		0.5	32.99	16.50	3	49.49
	Field Engineer - Chip Samples	4	1.3	32.99	43.99	3	131.97
	Field Engineer - Chip Samples		1.3	32.99	43.99	3	131.97
	Field Engineer - Field QA/QC Samples	8	2.7	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		2.7	32.99	87.98	3	263.93
	Total Number of Samples	19	---	---	---	---	---
	Total Number of Types of Samples	4	---	---	---	---	---
Total for Decontamination Verification					395.90	3	1,187.69

Assumed 4 chip samples, 6 soil samples, 1 water sample and 8 QA/QC samples will be collected.

Total for Step 3					9,295.80	15	36,754.73
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4 - Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	6	---	588.54	3,531.25	---	3,531.25
Organics Soil - Unit	6	---	159.51	957.03	---	957.03
Cyanide Soil - Unit	6	---	68.43	410.56	---	410.56
Metals Liquid - Unit	1	---	227.21	227.21	---	227.21
Organics Liquid - Unit	1	---	159.51	159.51	---	159.51
Cyanide Liquid - Unit	1	---	38.44	38.44	---	38.44
Metals Chip Samples	4	---	588.54	2,354.17	---	2,354.17
Organics Chip Samples	4	---	159.51	638.02	---	638.02
Cyanide Chip Samples	4	---	68.43	273.71	---	273.71
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				11,991.16	---	11,991.16

Assumed 4 chip samples, 6 soil samples, 1 water sample and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	10	Hours	37.04	351.90	3	1,055.70
Total for Data Validation				351.90	3	1,055.70

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	9	Hours	32.99	307.92	3	923.76
Sample Documentation - Field Engineer	5	Hours	32.99	153.96	3	461.88
Certification Report - Field Engineer	18	Hours	32.99	597.44	3	1,792.31
Certification Report - Field Engineer	9	Hours	32.99	298.72	3	896.15
Total for Sample Management				1,358.03	12	4,074.10

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			13,701.09	15	17,120.95
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 16 399 Outdoor Treatment Unit (TA-16-399) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-16-399 P1), pre-closure activities (Worksheet TA-16-399 P2), decontamination of the unit structures (Worksheet TA-16-399 P3), and analysis and sample management procedures (Worksheet TA-16-399 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.3; Technical Area 16, 399 Outdoor Treatment Closure Plan (Closure Plan).

Unit Name: LANL TA-16-399

The unit consists of a burn tray and pad used for the treatment of high explosive wastes.

Contamination: High explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-16-399 P2	2-A	15,811.40
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-16-399 P3	3-A	29,419.64
4	Disposal of Hazardous Material		3-B	805.14
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	874.27
7	Analyses	TA-16-399 P4	4-A	7,908.79
8	Data Validation		4-B	777.88
9	Sample Logbook		4-C	610.34
10	Sample Documentation		4-C	305.17
11	Subtotal of Closure Costs			58,985.21
12	Certification of Closure	TA-16-399 P4	4-C	2,674.43
13	Total Cost of Closure (Add cost of certification report to closure costs)			61,659.64

1. GENERAL UNIT DESCRIPTION
 TA-16-399 consists of burn pan measuring 16 feet by 4 feet. The waste that is treated at the permitted unit consists of detonable quantities of high explosives (HE) (bulk wet and dry HE), combustible and non-combustible solids that are contaminated with HE, and oils from equipment that are contaminated with HE.

According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit. After hazardous wastes are treated at the permitted unit, treatment residues and any non-combustible debris, as applicable, are removed, characterized, and disposed of in accordance with Permit Section 6.3.3.3. Therefore, removal of hazardous waste from the permitted unit prior to initiation of closure activities is not applicable to the closure procedures for this particular permitted unit. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the burn tray, concrete pad, metal cover, cover tracks and ignition assembly will be removed and disposed of. According to the closure plan, no equipment or structures will require decontamination. It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	13.37	According to the Part A Permit Application, 100 gallons per burn of hazardous material is permitted at the TA-16 Unit.
	Known Releases?	N/A	
1-B	Length of TA-16-399 (pan & cover) (feet)	16	Identified Structures on the Unit: Metal burn pan, concrete pad, metal burn cover, cover tracks and electronic ignition assembly. It is assumed that the metal cover has the same dimensions as the burn pan. Therefore a total of 128 square feet at TA-16-399 will require removal and disposal. The entire Unit will be removed and disposed of.
	Width of TA-16-399 pan & cover (feet)	4	
	Height of TA-16-399 (feet) (pan and cover)	1	
	Area of TA-16-399 (pan and cover) (square feet)	128	
	Volume of TA-16-399 (pan and cover) (cubic feet)	128	
	Volume of materials to be removed (cubic feet)	128	
1-C	Materials identified within TA-16-399		Metal burn pan, concrete pad, metal cover, cover tracks and electronic ignition assembly.
1-D	Maximum area of waste to be removed from TA-16-399 (square feet)	-	No wastes will be removed from the unit at closure per the Closure Plan.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	There was no mention of the specific type of PPE required for the decontamination of the Unit. Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

		<u>Removal of Hazardous Waste</u>						
		Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
2-A	Site Project Manager	-	Hours	51.73	-	3	-	
	4-Person Labor Crew	-	Hours	30.64	-	3	-	
		-	Hours	30.64	-	3	-	
		-	Hours	30.64	-	3	-	
		-	Hours	30.64	-	3	-	
	Number of estimated work days (including 2 days for mobilization and demobilization)	-	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	-	People	(24.50)	-	3	-	
	Disposal of Non-liquid Hazardous Material	-	Cubic yards	169.833	-	---	-	
	Airfare	-	People	1,000.00	-	3	-	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	-	People /Night	100.00	-	3	-	
	Vehicle Rental includes the 2 estimated work days	-	Vehicles/Day	70.00	-	3	-	
	Total for Removal of Waste from Unit					-		-
			<u>Records Review, Structural Assessment, and Reporting</u>					
			Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
			<i>Records Review</i>					
	Field Engineer	12	Hours	32.99	396.21	3	1,188.64	
	Field Engineer	12	Hours	32.99	396.21	3	1,188.64	
		<i>Structural Assessment</i>						
	Field Engineer	16	Hours	32.99	528.28	3	1,584.85	
	Field Engineer	16	Hours	32.99	528.28	3	1,584.85	
		<i>Reporting</i>						
	Field Engineer	18	Hours	32.99	594.32	3	1,782.95	
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
	Per Diem (for the two Field Engineers)	2	People	73.58	147.16	3	441.47	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for the Records Review, Inspection, and Reporting					5,270.47		15,811.40	
Total for Step 2-A					5,270.47		15,811.40	
		<u>Development of the Sampling and Analysis Plan</u>						
		Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
2-B	Quality Control	8	Hours	37.04	296.34	3	889.01	
	Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
	Total for Step 2-B					824.20		2,472.59
Total for Step 2					6,094.66	-	18,283.99	

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	16	Hours	51.73	\$828.57	3	2,485.70	
	16	Hours	30.64	\$490.74	3	1,472.23	
4-Person Labor Crew	16	Hours	30.64	\$490.74	3	1,472.23	
	16	Hours	30.64	\$490.74	3	1,472.23	
	16	Hours	30.64	\$490.74	3	1,472.23	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Airfare	5	People	1,000.00	\$5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	\$1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	\$280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	\$735.00	3	2,205.00	
Total for Removal of Equipment				2,791.55	15	29,419.64	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	4.74	Cubic yards	169.83	805.14	---	805.14	
Total for Removal of Equipment				805.14	---	805.14	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	0	Hours	51.73	-	3	-	
	0	Hours	30.64	-	3	-	
4-Person Labor Crew	0	Hours	30.64	-	3	-	
	0	Hours	30.64	-	3	-	
	0	Hours	30.64	-	3	-	
Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---	Assume 200 square feet area decontaminated within one hour. Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
Airfare	0	People	1,000.00	-	3	-	
Hotel/Lodging - Bare Task includes the 2 estimated work days	0	People /Night	100.00	-	3	-	
Vehicle Rental includes the 2 estimated work days	0	Vehicles/Day	70.00	-	3	-	
Per Diem (for Project Engineer and 4-Person Labor Crew)	0	People	(24.50)	-	3	-	
Total for Decontamination				-	-	-	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	5	1.3	32.99	41.24	3	123.72	Assumed 5 soil samples, 1 water sample and 8 QA/QC samples will be collected.
Field Engineer - Soil Sample from the Unit		1.3	32.99	41.24	3	123.72	
Field Engineer - Liquid from the Sump	1	0.5	32.99	16.50	3	49.49	
Field Engineer - Liquid from the Sump		0.5	32.99	16.50	3	49.49	
Field Engineer - Chip Samples	0	0	32.99	-	3	-	
Field Engineer - Chip Samples		0	32.99	-	3	-	
Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93	
Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93	
Total Number of Samples	14	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				291.42		874.27	

Total for Step 3				3,888.11		31,099.05
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	5	---	588.54	2,942.71	---	2,942.71
Organics Soil - Unit	5	---	159.51	797.53	---	797.53
Cyanide Soil - Unit	5	---	68.43	342.13	---	342.13
Metals Liquid - Unit	1	---	227.21	227.21	---	227.21
Organics Liquid - Unit	1	---	159.51	159.51	---	159.51
Cyanide Liquid - Unit	1	---	38.44	38.44	---	38.44
Metals Equipment Wipes	0	---	588.54	-	---	-
Organics Equipment Wipes	0	---	159.51	-	---	-
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				7,908.79	---	7,908.79

Assumed 5 soil samples, 1 water sample and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	7	Hours	37.04	259.29	3	777.88
Total for Data Validation				259.29	3	777.88

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	6	Hours	32.99	203.45	3	610.34
Sample Documentation - Field Engineer	3	Hours	32.99	101.72	3	305.17
Certification Report - Field Engineer	18	Hours	32.99	594.32	3	1,782.95
Certification Report - Field Engineer	9	Hours	32.99	297.16	3	891.48
Total for Sample Management				1,196.65	12	3,589.94

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				9,364.73	15	12,276.61
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 50, Building 69 (TA-50-69) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-50-69 P1), pre-closure activities (Worksheet TA-50-69 P2), decontamination of the unit structures (Worksheet TA-50-69 P3), and analysis and sample management procedures (Worksheet TA-50-69 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.4; Technical Area 50, Building 69 Closure Plan (Closure Plan).

Unit Name: LANL TA-50-69

The Unit consists of adjacent Rooms 102 and 103.

Contamination: Hazardous waste in both liquid and solid form.

Origin of Contamination: Room 102 serves as the main process room as well as a hazardous materials storage area. Room 103 serves as an unloading area as well as the prime location for the Unit surface water drainage system.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-50-69 P2	2-A	83,369.58
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-50-69 P3	3-A	32,524.11
4	Disposal of Hazardous Material		3-B	46,392.83
5	Decontamination		3-C	33,525.64
6	Decontamination Verification Samples		3-D	1,517.60
7	Analyses	TA-50-69 P4	4-A	15,648.37
8	Data Validation		4-B	1,277.95
9	Sample Logbook		4-C	3,368.15
10	Sample Documentation		4-C	626.83
11	Subtotal of Closure Costs			220,723.65
12	Certification of Closure	TA-50-69 P4	4-C	2,766.33
13	Total Cost of Closure (Add cost of certification report to closure costs)			223,489.97

I. GENERAL UNIT DESCRIPTION

TA-50-69 consists of adjacent Rooms 102 and 103. Room 102, the main process room, measures approximately 45 feet wide and 52 feet long and contains a large glovebox which occupies a substantial portion of the room. Room 103, the unloading area, measures approximately 18 feet wide and 19 feet long and is located adjacent to, and southeast of Room 102.

The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the two gloveboxes and the one lift rack located within Room 102 which were used for hazardous waste management within the permitted unit will be removed and disposed.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	2,105.47	According to the Part A Permit Application, the design capacity of approximately of material is permitted on the entire Technical Area 50 Unit is 31,500 gallons (4,210.89 cubic feet) for 2 container storage units. It is assumed tht TA-50-69 is one of the 2 units with permitted design capacity of 15,750 gallons (2,105.47 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-50-69 Room 102 (ft)	52	Room 102 of the TA-50-69 Unit contains a large glovebox which occupies a great portion of the Unit. Room 102 served as a storage area for hazardous wastes. Room 103 of the TA-50-69 Unit serves as the unloading area and has an operational drain located in the middle of the room. The square footage of the Unit is calculated by considering both Rooms 102 and 103's dimensions. No specific dimensions were provided for the removal of the gloveboxes and lift rack. Therefore, it is assumed that the square footage of the equipment structures is 25 percent of the total area of the Unit.
	Width of TA-50-69 Room 102 (ft)	45	
	Height of TA-50-69 Room 102 (based on the height of the decontamination) (ft)	11	
	Area of TA-50-69 Room 102 (ft2)	2,340	
	Volume of TA-50-69 Room 102 (cubic feet)	25,740	
	Length of TA-50-69 Room 103 (ft)	19	
	Width of TA-50-69 Room 103 (ft)	18	
	Height of TA-50-69 Room 103 (based on the height of the decontamination) (ft)	11	
	Area of TA-50-69 Room 103 (ft2)	342	
	Volume of TA-50-69 Room 103 (cubic feet)	3,762	
	Area of TA-50-69 (ft2)	2,682	
	Volume of TA-50-69 (based on the height of decontamination) (cubic feet)	29,502	
	Estimated volume of the hazardous equipment and structures requiring to be removed from the Unit (assuming 25 percent of the total area of the Unit) (cubic feet).	7,376	
1-C	Materials identified within TA-50-69		Two gloveboxes and one lift rack is located within Room 102 and are proposed to be removed prior to the decontamination process. Several other equipment structures are mentioned throughout the Closure Plan that will not be removed but will remain in place and would only require decontamination. The number of those equipment structures is not provided within the Closure Plan. The floors for both Rooms 102 and 103 are of concrete with an epoxy-coat. There is a drain located in both Rooms.
1-D	Maximum volume of waste to be removed from TA-50-69 (gallons)	15,750	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	D	There was no specific information providing evidence for a more conservative approach to the PPE. As a result, it is assumed that Level D will be used for the extent of the decontamination activities.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	18	Hours	51.73	936.60	3	2,809.81
4-Person Labor Crew	18	Hours	30.64	554.73	3	1,664.19
	18	Hours	30.64	554.73	3	1,664.19
	18	Hours	30.64	554.73	3	1,664.19
	18	Hours	30.64	554.73	3	1,664.19
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	86.40	431.98	3	1,295.94
Disposal of Liquid Hazardous Material	143	Drums	216.94	31,061.75	---	31,061.75
Disposal of Non-liquid Hazardous Material	39	Cubic yards	169.83	6,621.83	---	6,621.83
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				47,551.09		67,286.11
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	409.83	3	1,229.48
Field Engineer	12	Hours	32.99	409.83	3	1,229.48
<i>Structural Assessment</i>						
Field Engineer	17	Hours	32.99	546.43	3	1,639.30
Field Engineer	17	Hours	32.99	546.43	3	1,639.30
<i>Reporting</i>						
Field Engineer	19	Hours	32.99	614.74	3	1,844.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	76.95	153.90	3	461.69
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				5,361.16		16,083.47
Total for Step 2-A				52,912.25	-	83,369.58
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				53,736.45	-	85,842.17

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	23	Hours	51.73	1209.22	3	3627.67
		23	Hours	30.64	716.20	3	2148.66
	4-Person Labor Crew	23	Hours	30.64	716.20	3	2148.66
		23	Hours	30.64	716.20	3	2148.66
		23	Hours	30.64	716.20	3	2148.66
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
	Airfare	5	People	1,000.00	5000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	97.47	487.35	3	1,462.06
Total for Removal of Equipment					10,841.37		32,524.11

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of the four metal cabinets.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of the total volume of the hazardous structures and equipment to be removed - converted volume (cubic feet to cubic yards)	273.17	Cubic yards	169.83	46,392.83	---	46,392.83
Total for Removal of Equipment					46,392.83	---	46,392.83

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	21	Hours	51.73	1,105.17	3	3,315.50
		21	Hours	30.64	654.57	3	1,963.71
	4-Person Labor Crew	21	Hours	30.64	654.57	3	1,963.71
		21	Hours	30.64	654.57	3	1,963.71
		21	Hours	30.64	654.57	3	1,963.71
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	106.35	531.77	3	1,595.32
Total for Decontamination					11,175.21		33,525.64

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	15	5	32.99	164.96	3	494.87
	Field Engineer - Equipment Wipes		5	32.99	164.96	3	494.87
	Field Engineer - Field QA/QC Samples	8	2.7	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		2.7	32.99	87.98	3	263.93
	Total Number of Samples	23	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					505.87		1,517.60

Total for Step 3					68,915.28		113,960.18
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4. Analysis and Sample Management Procedures

Analysis							8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	---	---	588.54	---	---	---	
Organics Soil - Unit	---	---	159.51	---	---	---	
Cyanide Soil - Unit	---	---	68.43	---	---	---	
Metals Liquid - Unit	---	---	227.21	---	---	---	
Organics Liquid - Unit	---	---	159.51	---	---	---	
Cyanide Liquid - Unit	---	---	38.44	---	---	---	
Metals Equipment Wipes	15	---	588.54	8,828.12	---	8,828.12	
Organics Equipment Wipes	15	---	159.51	2,392.59	---	2,392.59	
Cyanide Equipment Wipes	15	---	68.43	1,026.40	---	1,026.40	
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68	
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05	
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54	
Total for Analysis of the Decontamination Verification Samples				15,648.37	---	15,648.37	

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	12	Hours	37.04	425.98	3	1,277.95
Total for Data Validation				425.98	3	1,277.95

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	34	Hours	32.99	1,122.72	3	3,368.15	
Sample Documentation - Field Engineer	6	Hours	32.99	208.94	3	626.83	
Certification Report - Field Engineer	19	Hours	32.99	614.74	3	1,844.22	
Certification Report - Field Engineer	9	Hours	32.99	307.37	3	922.11	
Total for Sample Management				2,253.77	13	6,761.31	

Total for Step 4				18,328.12	15	23,687.63
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 50, Building 69 Outdoor Storage Unit (TA-50-Bldg 69 OSU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-50-Bldg 69 OSU P1), pre-closure activities (Worksheet TA-50-Bldg 69 OSU P2), decontamination of the unit structures (Worksheet TA-50-Bldg 69 OSU P3), and analysis and sample management procedures (Worksheet TA-50-Bldg 69 OSU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.5; Technical Area 50, Building 69 Outdoor Storage Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-50-Building 69 OSU

The Unit consists of a four-inch thick rectangular-shaped, asphalt pad measuring 90 feet by 24 feet. Storage of hazardous waste has occurred on the pad and in two transportainers that are situated on the asphalt pad. Each transportainer measures 40 feet long and 8 feet wide and 8.5 feet high.

Contamination: Building 69 contains hazardous and mixed wastes in both liquid and solid form. The wastes stored include corrosive liquids, sludge, debris and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-50 Building 69	2-A	85,133.81
2	Sampling and Analysis Plan	OSU P2	2-B	2,475.34
3	Removal of Equipment and Structures	TA-50 Building 69 OSU P3	3-A	29,648.91
4	Disposal of Hazardous Material		3-B	17,008.50
5	Decontamination		3-C	34,406.36
6	Decontamination Verification Samples		3-D	1,633.07
7	Analyses	TA-50 Building 69 OSU P4	4-A	16,866.11
8	Data Validation		4-B	1,449.11
9	Sample Logbook		4-C	3,934.54
10	Sample Documentation		4-C	684.57
11	Subtotal of Closure Costs			193,240.33
12	Certification of Closure	TA-50 Building 69 OSU P4	4-C	2,713.71
13	Total Cost of Closure (Add cost of certification report to closure costs)			195,954.05

I. GENERAL UNIT DESCRIPTION

TA-50 Building 69 outdoor storage area (Unit) consists of a rectangular-shaped asphalt pad with two transportainers which store hazardous waste; The pad measures approximately 90 feet long by 24 feet wide. Two transportainers are situated on the asphalt pad. Each transportainer is anchored by concrete blocks at either end of the asphalt pad. Each transportainer measures 40 feet long by 8 feet wide and 8.5 feet high.

According to the Part A Permit Application, 31,500 gallons of hazardous waste is permitted to be stored in TA-50 Building 69 at 2 units and will be disposed of at an off-site facility during the Removal of Waste. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, all materials and equipment that comprise the asphalt pad, and all materials associated with the pad (asphalt berm and a minimum of six inches of base course and soil underlying the pad) will be disposed and considered as hazardous waste.

According to Section 5.3.2; Decontamination of Structures of the Closure Plan the two transportainers will require decontamination and decontamination verification. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the maximum permitted capacity.

It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	2,105.47	According to the Part A Permit Application, the permitted capacity of Technical Area 50 is 31,500 gallons (4,210.93 cubic feet) in 2 container storage units. It is assumed the outdoor storage unit is one of the TA-50 units with a permitted capacity of 15,750 gallons (2,105.47 cubic feet) applies to wastes stored on the pad and wastes stored in transportainers.
	Known Releases?	N/A	
1-B	Length of TA-50 Building 69 Transportainer (feet) Width of TA-50 Building 69 Transportainer (feet) Height of TA-50 Building 69 transportainer (feet) (based on decontamination of the transportainers) Area of TA-50 Building 69 transportainers (2)(square feet) Volume of TA-50 Building 69 Transportainers(2) (based on the decontamination height) (cubic feet) Length of TA-50 Building 69 - asphalt pad (feet) Width of TA-50 Building 69 - asphalt pad (feet) Thickness of TA-50 Building 69 - asphalt pad (feet) Area of TA-50 Building 69 - asphalt pad (square feet) Volume of TA-50 Building 69 -asphalt (cubic feet) Length of TA-50 Building 69 - soil underlying the asphalt pad (feet) Width of TA-50 Building 69 - soil underlying the asphalt pad (feet) Thickness of TA-50 Building 69 - soil underlying the asphalt pad (feet) Area of TA-50 Building 69 - soil underlying the asphalt pad (square feet) Volume of TA-50 Building 69 -soil underlying the asphalt pad (cubic feet) Estimated total area of the hazardous waste storage area (2 transportainers and the pad) (square feet) Total volume of the hazardous material storage areas (cubic feet) Estimated total volume of materials to be removed (cubic feet) - volume of the transportainer assumed to be 5 percent of the total volume.	40 8 9 640 10,880 90 24 0.50 2,160 1,080 90 24 0,50 2,160 1,080 4,960 13,040 2,704	Identified Structures on the Unit: The Unit is an asphalt pad which provides the base to TA-50 Building 69 Outside Storage Area. Hazardous wastes are stored on the asphalt pad and within the two transportainers. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored on the asphalt pad and within the two transportainers, the asphalt pad, and all the materials associated with the pad which includes minimum of 6 inches of the base course and soil underlying the pad. It is assumed that approximately 2,160 square feet of asphalt and an additional 6" of soil underlying the pad which would measure to an identical area and volume as the asphalt pad (a total of 4,960 square feet) will be not be decontaminated and will be disposed of as hazardous waste. Surfaces, Structures, and Related Equipment recommended to be decontaminated included the two transportainers. A total of 640 square feet will require decontamination. <u>The height of the transportainer is assumed to be 8.5 feet for decontamination purposes.</u>
1-C	Materials identified within TA-50 Building 69 Outdoor Container Storage Unit		Materials identified in the Unit include hazardous wastes, two transportainers, the asphalt pad, and all materials associated with the pad.
1-D	Maximum volume of waste to be removed from TA-50 Building 69 (gallons)	15,750	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, pressure and steam washing methods were proposed for the transportainers. As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	18	Hours	51.73	936.60	3	2,809.81
4-Person Labor Crew	18	Hours	30.64	554.73	3	1,664.19
	18	Hours	30.64	554.73	3	1,664.19
	18	Hours	30.64	554.73	3	1,664.19
	18	Hours	30.64	554.73	3	1,664.19
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	86.40	431.98	3	1,295.94
Disposal of Liquid Hazardous Material	143	Drums	216.94	31,061.75	---	31,061.75
Disposal of Non-liquid Hazardous Material	39	Cubic yards	169.833	6,621.83	---	6,621.83
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Total for Removal of Waste from Unit				3,155.53	15	69,206.10
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	402.03	3	1,206.10
Field Engineer	12	Hours	32.99	402.03	3	1,206.10
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	536.04	3	1,608.13
Field Engineer	16	Hours	32.99	536.04	3	1,608.13
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	603.05	3	1,809.14
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	75.02	150.04	3	450.11
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				2,479.20	15	15,927.70
Total for Step 2-A				5,634.72	30	85,133.81
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.16	297.25	3	891.76
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				297.25	6	2,475.34
Total for Step 2				5,931.98	36	87,609.15

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	51.73	846.34	3	2,539.01
	4-Person Labor Crew	16	Hours	30.64	501.27	3	1,503.80
		16	Hours	30.64	501.27	3	1,503.80
		16	Hours	30.64	501.27	3	1,503.80
		16	Hours	30.64	501.27	3	1,503.80
		16	Hours	30.64	501.27	3	1,503.80
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	73.50	751.56	3	2,254.69	
Total for Removal of Equipment					2,851.41	15	29,648.91

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	100.15	Cubic yards	169.833	17,008.50	---	17,008.50
Total for Removal of Equipment					17,008.50	---	17,008.50

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	26	Hours	51.73	1,340.85	3	4,022.55
	4-Person Labor Crew	26	Hours	30.64	794.16	3	2,382.48
		26	Hours	30.64	794.16	3	2,382.48
		26	Hours	30.64	794.16	3	2,382.48
		26	Hours	30.64	794.16	3	2,382.48
		26	Hours	30.64	794.16	3	2,382.48
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	134.26	671.30	3	2,013.90	
Total for Decontamination					11,468.79	30	34,406.36

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	7	1.8	32.99	57.73	3	173.20
	Field Engineer - Soil Sample from the Unit		1.8	32.99	57.73	3	173.20
	Field Engineer - Sediment Sample of the Berm	1	0.5	32.99	16.50	3	49.49
	Field Engineer - Sediment Sample of the Berm		0.5	32.99	16.50	3	49.49
	Field Engineer - Equipment Wipes	10	3.3	32.99	109.97	3	329.91
	Field Engineer - Equipment Wipes		3.3	32.99	109.97	3	329.91
	Field Engineer - Field QA/QC Samples	8	2.7	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		2.7	32.99	87.98	3	263.93
	Total Number of Samples	26	---	---	---	---	---
	Total Number of Types of Samples	4	---	---	---	---	---
Total for Decontamination Verification					87.98	21	1,633.07

Assumed 10 equipment wipe samples, 7 soil samples and 1 sediment sample to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					11,556.76	51	82,696.85
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and sediment samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (10) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	8	---	588.54	4,708.33	---	4,708.33
Organics Soil - Unit	8	---	159.51	1,276.05	---	1,276.05
Cyanide Soil - Unit	0	---	68.43	-	---	-
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	10	---	588.54	5,885.42	---	5,885.42
Organics Equipment Wipes	10	---	159.51	1,595.06	---	1,595.06
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				16,866.11	---	16,866.11

Assumed 10 equipment wipes, 7 soil samples, 1 sediment sample and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	13	Hours	37.16	483.04	3	1,449.11
Total for Data Validation				483.04	3	1,449.11

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	40	Hours	32.99	1,311.51	3	3,934.54
Sample Documentation - Field Engineer	7	Hours	32.99	228.19	3	684.57
Certification Report - Field Engineer	18	Hours	32.99	603.05	3	1,809.14
Certification Report - Field Engineer	9	Hours	32.99	301.52	3	904.57
Total for Sample Management				2,444.27	12	7,332.82

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			19,793.42	15	25,648.05
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 1 (TA-54-G-Pad 1) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 1 P1), pre-closure activities (Worksheet TA-54-G-Pad 1 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 1 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 1 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.6; Technical Area 54, Area G, Pad 1 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 1

The Unit is situated on a Pad which has two structures constructed on its surface; Domes 226 and Volume Reduction System (DVRS) Building 412.

Contamination: Dome 226 contains hazardous waste containers which are stored on pallets to prevent contact with accumulated liquids. Building 412 stores both liquid and non-liquid mixed waste and has stored the following types of waste: solidified inorganic solids, leached process residues, salts and cement paste, ash, dewatered aqueous sludge, chemical treatment sludge, soils, combustible debris, and heterogeneous debris.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 1 P2	2-A	1,253,976.36
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-Pad 1 P3	3-A	41,915.39
4	Disposal of Hazardous Material		3-B	602,461.99
5	Decontamination		3-C	34,851.20
6	Decontamination Verification Samples		3-D	5,509.54
7	Analyses	TA-54-G-Pad 1 P4	4-A	81,391.45
8	Data Validation		4-B	5,778.56
9	Sample Logbook		4-C	7,573.51
10	Sample Documentation		4-C	2,622.81
11	Subtotal of Closure Costs			2,038,553.40
12	Certification of Closure	TA-54-G-Pad 1 P4	4-C	5,812.37
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,044,365.77

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 1 consists of two structures which stored hazardous waste; Dome 226 and Building 412. Pad 1 measures approximately 76,000 square feet and is comprised of an asphalt material. Dome 226 is comprised of an aluminum framework and consists of approximately 33 percent of the Unit. Building 412 is situated on approximately 13,200 square feet (comprises approximately 17 percent of the Unit) and houses two confinement structures, equipment (gloveboxes, enclosure components, cabinets, shearing and bailing equipment, electronic devices, etc.).

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored in Dome 226 and Building 412 and will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Surfaces, Structures, and Related Equipment of the Closure Plan, all materials and equipment that comprise Dome 226, Building 412, the asphalt pad, and all materials associated with the pad (the concrete ringwall, sump, and a minimum of six inches of soil underlying the pad) will be disposed and considered as potentially hazardous.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the gloveboxes, enclosure components, and cabinets in Building 412, bailing equipment.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume.
It was also assumed that the level of Personal Protective Equipment is Level C/D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 1 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous material storage in Dome 226 and Building 412.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 1 - Dome 226 (feet)	286	<p>Identified Structures on the Unit: The Unit is a pad which provides the base to Dome 226 and Building 412. The area of the Unit is approximately 76,000 square feet. The hazardous materials were stored within Dome 226 and Building 412. The dimensions of the two structures, as opposed to the entire Unit, will be considered for the purposes of completing the cost estimate. Dome 226 has dimensions of 286 feet long, 89 feet wide, and has a surface area of approximately 22,300 square feet. Building 412 is a one story building that is approximately 220 feet long by 60 feet wide and encompasses approximately 13,200 square feet.</p> <p>Structures and Related Equipment Required for Demolition and Debris Disposal include the hazardous waste material stored on the Unit; specifically, in Dome 226 and Building 412, materials and equipment that comprise Dome 226 and Building 412, the asphalt pad, and all the materials associated with the pad which includes the sump identified within Building 412. It is assumed that approximately 76,000 square feet of asphalt, 25,454 square feet of material from Dome 226, 13,200 square feet of material from Building 412, and an additional 6" of soil underlying the pad which would be removed.</p> <p>Surfaces, Structures, and Related Equipment recommended to be left in the Unit but decontaminated.</p> <p><u>The height of the dome and building are assumed to be 11 feet for decontamination purposes.</u></p>
	Width of TA-54-G-Pad 1 - Dome 226 (feet)	89	
	Height of TA-54-G-Pad 1 - Dome 226 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 1 - Dome 226 (square feet)	22,300	
	Volume of TA-54-G-Pad 1 - Dome 226 (based on the decontamination height) (cubic feet)	245,300	
	Length of TA-54-G-Pad 1 - Building 412 (feet)	220	
	Width of TA-54-G-Pad 1 - Building 412 (feet)	60	
	Height of TA-54-G-Pad 1 - Building 412 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 1 - Building 412 (square feet)	13,200	
	Volume of TA-54-G-Pad 1 - Building 412 (cubic feet)	145,200	
	Length of TA-54-G-Pad 1 - asphalt pad (feet)	358	
	Width of TA-54-G-Pad 1 - asphalt pad (feet)	213	
	Thickness of TA-54-G-Pad 1 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 1 - asphalt pad (square feet)	76,254	
	Volume of TA-54-G-Pad 1 - asphalt (cubic feet)	38,127	
	Length of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet)	358	
	Width of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet)	213	
	Thickness of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 1 - soil underlying the asphalt pad (square feet)	76,254	
	Volume of TA-54-G-Pad 1 - soil underlying the asphalt pad (cubic feet)	38,127	
	Estimated total area of the structures and equipment to be removed from the Unit (Building 412, Dome 226, and the pad) (square feet)	188,008	
	Total volume of the structures and equipment to be removed from the Unit (cubic feet) - 5 percent of the volume for the dome and the building assumed for removal	95,779	
	Estimated total area of the decontaminated structures - assuming 2 percent of the area of the structures and equipment to be removed from the Unit (square feet)	3760.16	
1-C	Materials identified within TA-54-G-Pad 1		Materials identified in the Unit include hazardous material, materials and equipment that comprise Dome 226, Building 412, the asphalt pad, and all materials associated with the pad. Other equipment structures that require only decontamination and not removal include gloveboxes, electronic devices, portable air monitors, bailing equipment, spill cleanup equipment containers from within Dome 226, enclosure components, and cabinets in Building 412.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 1 (gallons)	458,018.75	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C/D	Based on the discussion provided within the decontamination procedure, pressure and steam washing methods were proposed for the non-water sensitive equipment. However, should an equipment structure be water-sensitive, a simple wipe down process will be utilized. As a result, the level of PPE recommended for the closure activities is Level C/D.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A	<u>Removal of Hazardous Waste</u>							
	<u>Labor Category</u>	<u>Amount</u>	<u>Units</u>	<u>Unit Cost (\$)</u>	<u>Bare Task Cost (\$)</u>	<u>Overhead Additions</u>	<u>Loaded (\$)</u>	
	Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13	
	4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
	Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	3,759.68	18,798.41	3	56,395.24	
	Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,293.02	---	903,293.02	
	Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.83	192,566.62	---	192,566.62	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00	
	Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00	
	Total for Removal of Waste from Unit					1,139,517.83	15	1,226,834.22
	<u>Records Review, Structural Assessment, and Reporting</u>							
	<u>Labor Category</u>	<u>Amount</u>	<u>Units</u>	<u>Unit Cost (\$)</u>	<u>Bare Task Cost (\$)</u>	<u>Overhead Additions</u>	<u>Loaded (\$)</u>	
	<i>Records Review</i>							
	Field Engineer	26	Hours	32.99	861.09	3	2,583.28	
	Field Engineer	26	Hours	32.99	861.09	3	2,583.28	
	<i>Structural Assessment</i>							
	Field Engineer	35	Hours	32.99	1,148.12	3	3,444.37	
	Field Engineer	35	Hours	32.99	1,148.12	3	3,444.37	
	<i>Reporting</i>							
	Field Engineer	39	Hours	32.99	1,291.64	3	3,874.92	
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---	
	Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	188.65	377.31	3	1,131.93		
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00		
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00		
Total for the Records Review, Inspection, and Reporting					5,310.07	15	27,142.14	
Total for Step 2-A					1,144,827.90	30	1,253,976.36	
2-B	<u>Development of the Sampling and Analysis Plan</u>							
	<u>Labor Category</u>	<u>Amount</u>	<u>Units</u>	<u>Unit Cost (\$)</u>	<u>Bare Task Cost (\$)</u>	<u>Overhead Additions</u>	<u>Loaded (\$)</u>	
	Quality Control	8	Hours	37.04	296.34	3	889.01	
	Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
	Total for Step 2-B					824.20	6	2,472.59
Total for Step 2					1,145,652.10	36	1,256,448.95	

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	29	Hours	51.73	1,488.31	3	4,464.93
	4-Person Labor Crew	29	Hours	30.64	881.50	3	2,644.49
		29	Hours	30.64	881.50	3	2,644.49
		29	Hours	30.64	881.50	3	2,644.49
		29	Hours	30.64	881.50	3	2,644.49
	Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,500.00	3	7,500.00
	Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	757.50	3	2,272.50
Total for Removal of Equipment					13,971.80	15	41,915.39

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Building 412, Dome 226, and the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	3,547.37	Cubic yards	169.833	602,461.99	---	602,461.99
	Total for Removal of Equipment					602,461.99	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	24	Hours	51.73	1,216.71	3	3,650.14
	4-Person Labor Crew	24	Hours	30.64	720.64	3	2,161.91
		24	Hours	30.64	720.64	3	2,161.91
		24	Hours	30.64	720.64	3	2,161.91
		24	Hours	30.64	720.64	3	2,161.91
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	119.56	597.81	3	1,793.43
Total for Decontamination					11,617.07	30	34,851.20

Assume 200 square feet of area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	84	21	32.99	692.82	3	2,078.45
	Field Engineer - Soil Sample from the Unit		21	32.99	692.82	3	2,078.45
	Field Engineer - Liquid from the Sump	1	1	32.99	16.50	3	49.49
	Field Engineer - Liquid from the Sump		1	32.99	16.50	3	49.49
	Field Engineer - Equipment Wipes	11	4	32.99	120.97	3	362.90
	Field Engineer - Equipment Wipes		4	32.99	120.97	3	362.90
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples	104	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					1,836.51	21	5,509.54

Assumed 1 liquid sample, 11 equipment wipe samples, 84 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					629,887.36	51	684,738.12
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4- Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	84	---	588.54	49,437.49	---	49,437.49
Organics Soil - Unit	84	---	159.51	13,398.48	---	13,398.48
Cyanide Soil - Unit	84	---	68.43	5,747.85	---	5,747.85
Metals Liquid - Unit	1	---	227.21	227.21	---	227.21
Organics Liquid - Unit	1	---	159.51	159.51	---	159.51
Cyanide Liquid - Unit	1	---	38.44	38.44	---	38.44
Metals Equipment Wipes	11	---	588.54	6,473.96	---	6,473.96
Organics Equipment Wipes	11	---	159.51	1,754.56	---	1,754.56
Cyanide Equipment Wipes	11	---	68.43	752.69	---	752.69
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				81,391.45	---	81,391.45

Assumed 11 equipment wipes, 84 soil samples, 1 liquid samples, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	52	Hours	37.04	1,926.19	3	5,778.56
Total for Data Validation				1,926.19	3	5,778.56

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	77	Hours	32.99	2,524.50	3	7,573.51
Sample Documentation - Field Engineer	27	Hours	32.99	874.27	3	2,622.81
Certification Report - Field Engineer	39	Hours	32.99	1,291.64	3	3,874.92
Certification Report - Field Engineer	20	Hours	32.99	645.82	3	1,937.46
Total for Sample Management				5,336.23	12	16,008.69

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				88,653.87	15	103,178.70
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 3 (TA-54-G-Pad 3) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 3 P1), pre-closure activities (Worksheet TA-54-G-Pad 3 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 3 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 3 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.7; Technical Area 54, Area G, Pad 3 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 3

The Unit is situated on a Pad which has a Dome constructed on its surface; Dome 48 is an aluminum framework of trusses covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric that is anchored to the pad with standard drift pins.

Contamination: Dome 48 contains liquid and solid hazardous waste containers which are stored on pallets to prevent contact with accumulated liquids. Building 48 stores both liquid and non-liquid hazardous waste.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 3 P2	2-A	1,196,790.42
2	Sampling and Analysis Plan		2-B	2,475.34
3	Removal of Equipment and Structures	TA-54-G-Pad 3 P3	3-A	34,455.35
4	Disposal of Hazardous Material		3-B	155,916.51
5	Decontamination		3-C	20,949.52
6	Decontamination Verification Samples		3-D	2,243.41
7	Analyses	TA-54-G-Pad 3 P4	4-A	28,711.95
8	Data Validation		4-B	2,173.67
9	Sample Logbook		4-C	2,170.10
10	Sample Documentation		4-C	989.74
11	Subtotal of Closure Costs			1,446,876.03
12	Certification of Closure	TA-54-G-Pad 3 P4	4-C	3,074.39
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,449,950.42

I. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 3 consists of a single structure which stores hazardous waste; Dome 48. Pad 3 measures approximately 17,000 square feet and is comprised of an asphalt material. Dome 48 is comprised of an aluminum framework and covers approximately 84 percent of Pad 3.

According to the Part A Permit Application, 3,664,150 gallons of hazardous waste is permitted to be stored in TA-54 Area G at 8 units and will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1: Removal of Surfaces, Structures, and Related Equipment of the Closure Plan, all materials and equipment that comprise Dome 48, the asphalt pad, and all materials associated with the pad (the curbing ramps, and a minimum of six inches of base course and soil underlying the pad) will be disposed and considered as hazardous.

According to Section 5.3.2: Decontamination of Equipment of the Closure Plan the equipment cabinets; bailing equipment; portable air monitors; all electronic devices and tools, and spill cleanup equipment containers from with Dome 48 will require decontamination and decontamination verification. No decontamination wash water or verification water will be collected for use of decontamination.

It was assumed that the minimum amount of hazardous waste to removed from the Unit is equivalent to the maximum permitted capacity.

It was also assumed that the level of Personal Protective Equipment is Level C/D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons for 8 container storage units. It is assumed that TA-54-G-Pad 3 is one of the 8 units with a permitted capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous materials storage in Dome 48.
	Known Releases?	N/A	
1-B	Length of TA-54-G-Pad 3 - Dome 48 (feet) Width of TA-54-G-Pad 3 - Dome 48 (feet) Height of TA-54-G-Pad 3 - Dome 48 (feet) (based on decontamination of the Unit structure) Area of TA-54-G-Pad 3 - Dome 48 (square feet) Volume of TA-54-G-Pad 3- Dome 48 (based on the decontamination height) (cubic feet) Length of TA-54-G-Pad 3 - asphalt pad (feet) Width of TA-54-G-Pad 3 - asphalt pad (feet) Thickness of TA-54-G-Pad 3 - asphalt pad (feet) Area of TA-54-G-Pad 3 - asphalt pad (square feet) Volume of TA-54-G-Pad 3 -soil underlying the asphalt pad (cubic feet) Length of TA-54-G-Pad 3 - soil underlying the asphalt pad (feet) Width of TA-54-G-Pad 3 - soil underlying the asphalt pad (feet) Thickness of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet) Area of TA-54-G-Pad 3 - soil underlying the asphalt pad (square feet) Volume of TA-54-G-Pad 3 -soil underlying the asphalt pad (cubic feet) Estimated total area of the hazardous waste storage area (Dome 48 and the pad) (square feet) Total volume of the equipment/structures to be removed (cubic feet). Five percent of the volume of the dome assumed for removal Estimated total area of the structures/equipment to be decontaminated - assuming 2 percent of the area that stored hazardous material(square feet)	285 50 11 14,250 156,750 339 50 0.50 16,950 8,475 339 50 0.50 16,950 8,475 48,150 24,788 963.00	Identified Structures on the Unit: The Unit is an asphalt pad which provides the base to Dome 48. The hazardous wastes are stored within Dome 48 only. Structures and Related Equipment Required for Demolition and Debris Disposal include the hazardous waste stored at Area G Pad 3; specifically, in Dome 48, materials and equipment that comprise Dome 48, the asphalt pad, and all the materials associated with the pad which includes the curbing ramps, minimum of 6 inches of the base course and soil underlying the pad. It is assumed that approximately 16,950 square feet of asphalt, 14,250 square feet of material from Dome 48, and an additional 6" of soil underlying the pad which would measure to an identical area and volume as the asphalt pad (a total of 48,150 square feet) will be not be decontaminated and will be disposed of as hazardous waste. Surfaces, Structures, and Related Equipment recommended to be left in the Unit but decontaminated included the equipment cabinets in Dome 48; bailing equipment, portable air monitors, all electronic devices and tools, and spill cleanup equipment containers found within Dome 48. Due to the fact that The height of the dome is assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-54-G-Pad 3		Materials identified in the Unit include hazardous wastes, materials and equipment that comprise Dome 48, the asphalt pad, and all materials associated with the pad. Other equipment structures that require only decontamination and not removal include equipment cabinets, electronic devices, portable air monitors, bailing equipment, spill cleanup equipment containers from within Dome48.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 3 (gallons)	458,018.75	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C/D	Based on the discussion provided within the decontamination procedure, pressure and steam washing methods were proposed for the non-water sensitive equipment. However, should an equipment structure be water-sensitive, a simple wipe down process will be utilized. As a result, the level of PPE recommended for the closure activities is Level C/D.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13
4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,293.02	---	903,293.02
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.833	192,566.63	---	192,566.63
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				13,459.78	15	1,177,166.84
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	14	Hours	32.99	455.47	3	1,366.40
Field Engineer	14	Hours	32.99	455.47	3	1,366.40
<i>Structural Assessment</i>						
Field Engineer	18	Hours	32.99	607.29	3	1,821.86
Field Engineer	18	Hours	32.99	607.29	3	1,821.86
<i>Reporting</i>						
Field Engineer	21	Hours	32.99	683.20	3	2,049.59
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	186.25	372.49	3	1,117.48
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				2,808.70	15	19,623.58
Total for Step 2-A				16,268.48	30	1,196,790.42
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.16	297.25	3	891.76
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				297.25	6	2,475.34
Total for Step 2				16,565.74	36	1,199,265.77

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	19	Hours	51.73	998.65	3	2,995.96	
		19	Hours	30.64	591.48	3	1,774.45	
	4-Person Labor Crew		19	Hours	30.64	591.48	3	1,774.45
			19	Hours	30.64	591.48	3	1,774.45
			19	Hours	30.64	591.48	3	1,774.45
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	99.50	1,200.53	3	3,601.59	
Total for Removal of Equipment					3,364.59	15	34,455.35	

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Dome 48, and the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Equipment/Structures to be Removed"	918.06	Cubic yards	169.833	155,916.51	---	155,916.51
Total for Removal of Equipment					155,916.51	---	155,916.51

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Labor							
	Site Project Manager	2	Hours	51.73	99.63	3	298.90	
		2	Hours	30.64	59.01	3	177.03	
	4-Person Labor Crew		2	Hours	30.64	59.01	3	177.03
			2	Hours	30.64	59.01	3	177.03
			2	Hours	30.64	59.01	3	177.03
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50		
Total for Decontamination					6,983.17	30	20,949.52	

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	20	5	32.99	164.96	3	494.87
	Field Engineer - Soil Sample from the Unit		5	32.99	164.96	3	494.87
	Field Engineer - Liquid from the Sump	0	0	32.99	-	3	-
	Field Engineer - Liquid from the Sump		0	32.99	-	3	-
	Field Engineer - Equipment Wipes	11	4	32.99	120.97	3	362.90
	Field Engineer - Equipment Wipes		4	32.99	120.97	3	362.90
	Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples	39	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					87.98	21	2,243.41

Assumed 11 equipment wipe samples, 20 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					7,071.15	51	213,564.79
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and liquid samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (11) was included within the cost estimate as there were 11 types of equipment structures provided within the Closure Plan. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	20	---	588.54	11,770.83	---	11,770.83
Organics Soil - Unit	20	---	159.51	3,190.11	---	3,190.11
Cyanide Soil - Unit	20	---	68.43	1,368.54	---	1,368.54
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	11	---	588.54	6,473.96	---	6,473.96
Organics Equipment Wipes	11	---	159.51	1,754.56	---	1,754.56
Cyanide Equipment Wipes	11	---	68.43	752.69	---	752.69
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				28,711.95	---	28,711.95

Assumed 11 equipment wipes, 20 soil samples, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	20	Hours	37.16	724.56	2,173.67	
Total for Data Validation			724.56		2,173.67	

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	22	Hours	32.99	723.37	2,170.10	
Sample Documentation - Field Engineer	10	Hours	32.99	329.91	989.74	
Certification Report - Field Engineer	21	Hours	32.99	683.20	2,049.59	
Certification Report - Field Engineer	10	Hours	32.99	341.60	1,024.80	
Total for Sample Management			2,078.08		6,234.23	

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			31,514.59		15	37,119.86
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**TA-54-G-Pad 5
Summary**

The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 5 (TA-54-G-Pad 5) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 5 P1), pre-closure activities (Worksheet TA-54-G-Pad 5 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 5 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 5 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.8; Technical Area 54, Area G, Pad 5 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 5

Contamination: Hazardous waste in both liquid and solid form is stored in Domes 224 and 49; eight Storage sheds: Sheds 144, 145, 147, 177, 1027, 1028, 1040, and 1041).

Origin of Contamination: Stored hazardous materials

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 5 P2	2-A	1,257,866.61
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-Pad 5 P3	3-A	42,641.98
4	Disposal of Hazardous Material		3-B	833,172.55
5	Decontamination		3-C	29,433.35
6	Decontamination Verification Samples		3-D	9,386.02
7	Analyses	TA-54-G-Pad 5 P4	4-A	124,408.63
8	Data Validation		4-B	8,945.65
9	Sample Logbook		4-C	10,835.96
10	Sample Documentation		4-C	4,561.05
11	Subtotal of Closure Costs			2,323,724.40
12	Certification of Closure	TA-54-G-Pad 5 P4	4-C	6,535.53
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,330,259.93

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 5 consists of Domes 49 and 224 which are used for the storage of hazardous waste. The dimensions of Domes 49 and 224 measure approximately 440 feet long by 60 feet wide and 110 feet long and 60 feet wide respectively. Domes 49 contains an asphalt curb measuring 6 inches high and 8 inches wide which surrounds the entire perimeter of the dome. Dome 224 contains a deep concrete ring wall which surrounds the interior of the dome and leads to a concrete sump. Storage sheds 144, 145, 146, and 177 measure 6 feet long by 5 feet wide and 9 feet high. A sump is constructed within each sump to prevent run-off. Storage sheds 1027, 1028, 1029, and 1041 measure approximately 23 feet long, 9 feet wide and 8.5 feet high. Each storage shed has a sump.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored on the Unit. The hazardous material stored will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the dome structures, the asphalt pad, and all materials associated with the pad (the curb sump, and a minimum of six inches of soil underlying the pad) will be disposed and considered as potentially hazardous.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the storage sheds, portable air monitors, all electronic devices and tools, and spill cleanup equipment containers from within the Unit.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level 1.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted capacity for the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 5 is one of the 8 units with a permitted capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous materials storage.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 5 - Dome 49 (feet)	440	
	Width of TA-54-G-Pad 5 - Dome 49 (feet)	60	
	Height of TA-54-G-Pad 5 - Dome 49 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 5 - Dome 49 (square feet)	26,400	
	Volume of TA-54-G-Pad 5 - Dome 49 (based on the decontamination height)	290,400	
	Length of TA-54-G-Pad 5 - Dome 224 (feet)	110	
	Width of TA-54-G-Pad 5 - Dome 224 (feet)	60	
	Height of TA-54-G-Pad 5 - Dome 224 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 5 - Dome 224 (square feet)	6,600	
	Volume of TA-54-G-Pad 5 - Dome 224 (cubic feet)	72,600	
	Length of TA-54-G-Pad 5 - total storage sheds (feet)	116	
	Width of TA-54-G-Pad 5 - total storage sheds (feet)	56	
	Height of TA-54-G-Pad 5 - total storage sheds (feet) (based on decontamination height)	11	
	Area of TA-54-G-Pad 5 - total storage sheds (feet)	6,496	
	Volume of TA-54-G-Pad 5 - total storage sheds (feet)	71,456	
	Length of TA-54-G-Pad 5 - asphalt pad (feet)	550	
	Width of TA-54-G-Pad 5 - asphalt pad (feet)	120	
	Thickness of TA-54-G-Pad 5 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 5 - asphalt pad (square feet)	66,000	
	Volume of TA-54-G-Pad 5 - asphalt (cubic feet)	33,000	
1-B	Length of TA-54-G-Pad 5 - soil underlying the asphalt pad (feet)	550	Identified Structures on the Unit: The Unit contains 2 domes, measuring 440 feet long by 60 feet wide and 110 feet long and 60 feet wide. An asphalt curb (measuring 6 inches high and 8 inches wide surrounds the perimeter of the Dome 49. Dome 224 contains a deep concrete ring wall which surrounds the interior of the dome and leads to a concrete sump. Eight storage sheds are also contained within the Unit. Each storage shed contains a sump. No dimensions for the sumps were provided within the Closure Plan. As a result, no dimensions specifically pertaining to the sumps contained within the Unit are included within the cost estimate. No dimension of the asphalt pad was provided within the Closure Plan either. As a result, the pad measures the total area and volume of the two domes (66,000 square feet and 33,000 cubic feet respectively).

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13
4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	3,759.68	18,798.41	3	56,395.24
Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,293.02	---	903,293.02
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.83	192,566.62	---	192,566.62
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,680.00	3	5,040.00
Total for Removal of Waste from Unit				1,139,797.83	15	1,227,674.22
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	29	Hours	32.99	968.23	3	2,904.68
Field Engineer	29	Hours	32.99	968.23	3	2,904.68
<i>Structural Assessment</i>						
Field Engineer	39	Hours	32.99	1,290.97	3	3,872.91
Field Engineer	39	Hours	32.99	1,290.97	3	3,872.91
<i>Reporting</i>						
Field Engineer	44	Hours	32.99	1,452.34	3	4,357.02
Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	215.17	430.35	3	1,291.05
Hotel/Lodging - Bare Task includes the 3 estimated work days	2	People /Night	100.00	978.27	3	2,934.80
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	684.79	3	2,054.36
Total for the Records Review, Inspection, and Reporting				10,064.13	15	30,192.39
Total for Step 2-A				1,149,861.96	30	1,257,866.61
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20	6	2,472.59
Total for Step 2				2,290,483.99	36	1,260,339.21

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	34	Hours	51.73	1,741.29	3	5,223.88
	4-Person Labor Crew	34	Hours	30.64	1,031.33	3	3,094.00
		34	Hours	30.64	1,031.33	3	3,094.00
		34	Hours	30.64	1,031.33	3	3,094.00
		34	Hours	30.64	1,031.33	3	3,094.00
		34	Hours	30.64	1,031.33	3	3,094.00
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	2,103.81	3	6,311.43
	Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	589.07	3	1,767.20
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	130.90	654.49	3	1,963.47	
Total for Removal of Equipment					14,213.99	15	42,641.98

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	4,905.82	Cubic yards	169.83	833,172.55	---	833,172.55
	Total for Removal of Equipment					833,172.55	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	17	Hours	51.73	895.78	3	2,687.34
	4-Person Labor Crew	17	Hours	30.64	530.55	3	1,591.66
		17	Hours	30.64	530.55	3	1,591.66
		17	Hours	30.64	530.55	3	1,591.66
		17	Hours	30.64	530.55	3	1,591.66
		17	Hours	30.64	530.55	3	1,591.66
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	-
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	1,082.27	3	3,246.82
Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	303.04	3	909.11	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	81.56	407.81	3	1,223.44	
Total for Decontamination					9,811.12	30	29,433.35

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	95	24	32.99	783.54	3	2,350.63	
	Field Engineer - Soil Sample from the Unit		24	32.99	783.54	3	2,350.63	
	Field Engineer - Liquid from the Sump	10	5	32.99	164.96	3	494.87	
	Field Engineer - Liquid from the Sump		5	32.99	164.96	3	494.87	
	Field Engineer - Equipment Wipes	48	16	32.99	527.86	3	1,583.58	
	Field Engineer - Equipment Wipes		16	32.99	527.86	3	1,583.58	
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93	
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93	
	Total Number of Samples		161	---	---	---	---	---
	Total Number of Types of Samples		3	---	---	---	---	---
Total for Decontamination Verification					3,128.67	21	9,386.02	

Also assumed 8 QA/QC samples will be collected.

Total for Step 3					860,326.34	51	914,633.91
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	95	---	588.54	55,911.45	---	55,911.45
Organics Soil - Unit	95	---	159.51	15,153.04	---	15,153.04
Cyanide Soil - Unit	95	---	68.43	6,500.55	---	6,500.55
Metals Liquid - Unit	10	---	227.21	2,272.10	---	2,272.10
Organics Liquid - Unit	10	---	159.51	1,595.06	---	1,595.06
Cyanide Liquid - Unit	10	---	38.44	384.42	---	384.42
Metals Equipment Wipes	48	---	588.54	28,250.00	---	28,250.00
Organics Equipment Wipes	48	---	159.51	7,656.27	---	7,656.27
Cyanide Equipment Wipes	48	---	68.43	3,284.49	---	3,284.49
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				124,408.63	---	124,408.63

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	81	Hours	37.04	2,981.88	3	8,945.65
Total for Data Validation				2,981.88	3	8,945.65

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	109	Hours	32.99	3,611.99	3	10,835.96
Sample Documentation - Field Engineer	46	Hours	32.99	1,520.35	3	4,561.05
Certification Report - Field Engineer	44	Hours	32.99	1,452.34	3	4,357.02
Certification Report - Field Engineer	22	Hours	32.99	726.17	3	2,178.51
Total for Sample Management				7,310.84	12	21,932.53

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			134,701.35	15	155,286.81
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 6 (TA-54-G-Pad 6) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 6 P1), pre-closure activities (Worksheet TA-54-G-Pad 6 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 6 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 6 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.9; Technical Area 54, Area G, Pad 6 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 6

Contamination: Hazardous waste in both liquid and solid form is stored in Domes 153 and 283 on the pad and within the one transportainer and five storage sheds on the south and est ends of the Unit.
Origin of Contamination: Stored hazardous materials

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 6 P2	2-A	1,206,669.98
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-Pad 6 P3	3-A	45,815.29
4	Disposal of Hazardous Material		3-B	811,048.92
5	Decontamination		3-C	33,986.38
6	Decontamination Verification Samples		3-D	5,971.42
7	Analyses	TA-54-G-Pad 6 P4	4-A	83,840.88
8	Data Validation		4-B	5,945.25
9	Sample Logbook		4-C	8,205.28
10	Sample Documentation		4-C	2,853.75
11	Subtotal of Closure Costs			2,206,809.73
12	Certification of Closure	TA-54-G-Pad 6 P4	4-C	6,529.08
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,213,338.81

1. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 6 consists of Domes 153 and 326 which are constructed on an asphalt pad measuring approximately 633 feet long by 99 feet wide. Domes 153 and 283 stored both liquid and solid forms of hazardous material. Dome 153 measures 326 feet long by 60 feet wide (19,600 square feet). Dome 283 measures 260 feet long by 60 feet wide (15,600 square feet). An asphalt curb that is approximately 8 inches thick surrounds the interior floor perimeter of both domes.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored in the two identified dome structures. The hazardous material stored in the dome structures will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the dome structures, the asphalt pad, and all materials associated with the pad (the curb sump, and a minimum of six inches of soil underlying the pad) will be disposed and considered as potentially hazardous.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the transportainer, modular units, equipment cabinets, portable air monitoring, electronic devices and tools, spill cleanup equipment, and other equipment will be removed from the site. It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level 1.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 6 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous material storage in Domes 136 and 326.
	Known Releases?	N/A	
1-B	Length of TA-54-G-Pad 6 - Dome 136 (feet)	326	Identified Structures on the Unit: The Unit is a pad provides the base to Domes 153 and 283. The area of the Unit is approximately 62,700 square feet. Both liquid and non-liquid hazardous waste materials were stored in Domes 153 and 283. The dimensions of the two domes, as opposed to the entire Unit, will be considered for the purposes of completing the cost estimate surrounding the hazardous material storage area. Each dome is approximately 19,600 and 15,600 square feet respectively (total area of 35,200 square feet). Structures and Related Equipment Required for Demolition and Debris Disposal: The hazardous waste material was specifically stored on the two domes. The structures required for removal include the two domes, the asphalt pad, and all the materials associated with the pad which includes
	Width of TA-54-G-Pad 6 - Dome 136 (feet)	60	
	Height of TA-54-G-Pad 6 - Dome 136 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 6 - Dome 136 (square feet)	19,600	
	Volume of TA-54-G-Pad 6 - Dome 136 (based on the decontamination height) (cubic feet)	215,600	
	Length of TA-54-G-Pad 6 - Dome 283 (feet)	260	
	Width of TA-54-G-Pad 6 - Dome 283 (feet)	60	
	Height of TA-54-G-Pad 6 - Dome 283 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 6 - Dome 283 (square feet)	15,600	
	Volume of TA-54-G-Pad 6 - Dome 283 (based on the decontamination height) (cubic feet)	171,600	
	Length of TA-54-G-Pad 6 - asphalt pad (feet)	633	
	Width of TA-54-G-Pad 6 - asphalt pad (feet)	99	
	Thickness of TA-54-G-Pad 6 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 6 - asphalt pad (square feet)	62,700	
Volume of TA-54-G-Pad 6 - asphalt (cubic feet)	31,350		
Length of TA-54-G-Pad 6 - soil underlying the asphalt pad (feet)	633		

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A	<u>Removal of Hazardous Waste</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13	
	4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
	Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84	
	Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,293.02	---	903,293.02	
	Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.83	192,566.62	---	192,566.62	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	4,826.76	3	14,480.29	
	Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,351.49	3	4,054.48	
	Total for Removal of Waste from Unit					1,122,740.29		1,176,501.59
	<u>Records Review, Structural Assessment, and Reporting</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	<i>Records Review</i>							
	Field Engineer	29	Hours	32.99	967.27	3	2,901.81	
	Field Engineer	29	Hours	32.99	967.27	3	2,901.81	
	<i>Structural Assessment</i>							
	Field Engineer	39	Hours	32.99	1,289.70	3	3,869.09	
	Field Engineer	39	Hours	32.99	1,289.70	3	3,869.09	
	<i>Reporting</i>							
	Field Engineer	44	Hours	32.99	1,450.91	3	4,352.72	
	Number of estimated work days (including 2 days for mobilization and demobilization)	5	Days	---	---	---	---	
	Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	214.94	429.88	3	1,289.63		
Hotel/Lodging - Bare Task includes the 3 estimated work days	2	People /Night	100.00	977.30	3	2,931.90		
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	684.11	3	2,052.33		
Total for the Records Review, Inspection, and Reporting					10,056.13		30,168.38	
Total for Step 2-A					1,132,796.41		1,206,669.98	
2-B	<u>Development of the Sampling and Analysis Plan</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Quality Control	8	Hours	37.04	296.34	3	889.01	
	Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
	Total for Step 2-B					824.20	6	2,472.59
Total for Step 2					1,133,620.61		1,209,142.57	

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	33	Hours	51.73	1,717.03	3	5,151.10
		33	Hours	30.64	1,016.97	3	3,050.90
	4-Person Labor Crew	33	Hours	30.64	1,016.97	3	3,050.90
		33	Hours	30.64	1,016.97	3	3,050.90
		33	Hours	30.64	1,016.97	3	3,050.90
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	3,000.00	3	9,000.00
	Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	840.00	3	2,520.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	129.37	646.87	3	1,940.61
Total for Removal of Equipment					15,271.76		45,815.29

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Domes 153 and 283, and the asphalt pad and associated material.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	4,775.56	Cubic yards	169.83	811,048.92	---	811,048.92
Total for Removal of Equipment					811,048.92		811,048.92

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	25	Hours	51.73	1,305.51	3	3,916.52
		25	Hours	30.64	773.23	3	2,319.68
	4-Person Labor Crew	25	Hours	30.64	773.23	3	2,319.68
		25	Hours	30.64	773.23	3	2,319.68
		25	Hours	30.64	773.23	3	2,319.68
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	130.08	650.38	3	1,951.13
Total for Decontamination					11,328.79		33,986.38

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	68	17	32.99	560.85	3	1,682.56
	Field Engineer - Soil Sample from the Unit		17	32.99	560.85	3	1,682.56
	Field Engineer - Liquid from the Sump	1	1	32.99	16.50	3	49.49
	Field Engineer - Liquid from the Sump		1	32.99	16.50	3	49.49
	Field Engineer - Equipment Wipes		10	32.99	329.91	3	989.74
	Field Engineer - Equipment Wipes	30	10	32.99	329.91	3	989.74
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Total Number of Samples	107	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					1,990.47		5,971.42

Assumed 1 liquid sample collected from the curb, 30 equipment wipe samples, and 68 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					839,639.95		896,822.01
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	68	---	588.54	40,020.83	---	40,020.83
Organics Soil - Unit	68	---	159.51	10,846.39	---	10,846.39
Cyanide Soil - Unit	68	---	68.43	4,653.02	---	4,653.02
Metals Liquid - Unit	1	---	227.21	227.21	---	227.21
Organics Liquid - Unit	1	---	159.51	159.51	---	159.51
Cyanide Liquid - Unit	1	---	38.44	38.44	---	38.44
Metals Equipment Wipes	30	---	588.54	17,656.25	---	17,656.25
Organics Equipment Wipes	30	---	159.51	4,785.17	---	4,785.17
Cyanide Equipment Wipes	30	---	68.43	2,052.80	---	2,052.80
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				83,840.88	---	83,840.88

1 liquid sample collected from the curb, 30 equipment wipe samples, 68 soil samples to be collected from the Unit, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	54	Hours	37.04	1,981.75	3	5,945.25
Total for Data Validation				1,981.75	3	5,945.25

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	83	Hours	32.99	2,735.09	3	8,205.28
Sample Documentation - Field Engineer	29	Hours	32.99	951.25	3	2,853.75
Certification Report - Field Engineer	44	Hours	32.99	1,450.91	3	4,352.72
Certification Report - Field Engineer	22	Hours	32.99	725.45	3	2,176.36
Total for Sample Management				5,862.70	12	17,588.11

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				91,685.33		107,374.23
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 9 (TA-54-G-Pad 9) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 9 P1), pre-closure activities (Worksheet TA-54-G-Pad 9 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 9 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 9 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.10; Technical Area 54, Area G, Pad 9 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 9

The Unit is situated on a Pad with four domes, Domes 229, 230, 231, and 232. The Unit also contains a transportainer, and two storage sheds where hazardous waste is stored.

Contamination: The Unit has stored solidified inorganic solids, leached process residues, salts and cement paste, ash, dewatered aqueous sludge, chemical treatment sludge, soils, combustible debris, and heterogeneous debris.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 9 P2	2-A	1,199,677.68
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-Pad 9 P3	3-A	57,811.66
4	Disposal of Hazardous Material		3-B	1,325,749.01
5	Decontamination		3-C	42,014.43
6	Decontamination Verification Samples		3-D	10,029.35
7	Analyses	TA-54-G-Pad 9 P4	4-A	153,478.06
8	Data Validation		4-B	10,612.55
9	Sample Logbook		4-C	12,937.49
10	Sample Documentation		4-C	4,882.71
11	Subtotal of Closure Costs			2,819,665.53
12	Certification of Closure	TA-54-G-Pad 9 P4	4-C	5,311.18
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,824,976.71

1. GENERAL UNIT DESCRIPTION
 TA-54-G-Pad 9 consists of four domes, Domes 229, 230, 231, and 232; a transportainer, and two storage sheds. Pad 9 measures approximately 158,000 square feet and is comprised of an asphalt material base. Each dome is situated on approximately 20,400 square feet (246 feet long by 89 feet wide). At the base of each dome, a concrete ring wall surrounds the interior floor perimeter to provide run-on and run-off protection. Dome 231 contains a Perma-Con modular panel containment structure which measures 68 feet long by 28 feet wide. Domes 230 and 231 have been used for the storage of both liquid and non-liquid hazardous waste and Domes 229 and 232 have been used for the storage of only non-liquid hazardous waste.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored in the four identified dome structures. The hazardous material stored in the four dome structures will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the four dome structures, the asphalt pad, and all materials associated with the pad (the concrete ringwall, sump, and a minimum of six inches of soil).

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the transportainer, the two storage sheds, the PermaCon, the portable air monitors, all electronic devices and tools, and the equipment used for the removal of hazardous material.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level 1.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 9 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous material storage in Domes 229, 230, 231, and 232.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 9 - Dome 229 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 229 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 229 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 229 (based on the decontamination height) (cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - Dome 230 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 230 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 230 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 230 (based on the decontamination height) (cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - Dome 231 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 231 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 231 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 231 (based on the decontamination height) (cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - Dome 232 (feet)	246	
	Width of TA-54-G-Pad 9 - Dome 232 (feet)	89	
	decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 9 - Dome 232 (square feet)	20,400	
	Volume of TA-54-G-Pad 9 - Dome 232 (based on the decontamination height) (cubic feet)	224,400	
	Length of TA-54-G-Pad 9 - asphalt pad (feet)	570	
	Width of TA-54-G-Pad 9 - asphalt pad (feet)	275	
	Thickness of TA-54-G-Pad 9 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 9 - asphalt pad (square feet)	158,000	
	Volume of TA-54-G-Pad 9 -asphalt (cubic feet)	79,000	
	Length of TA-54-G-Pad 1 - soil underlying the asphalt pad (feet)	570	Identified Structures on the Unit: The Unit is a pad provides the base to Domes 229, 230, 231, and 232. The area of the Unit is approximately 158,000 square feet. Both liquid and non-liquid hazardous waste materials were stored in Domes 230 and 231 where non-liquid hazardous waste were stored within Domes 229 and 232. The dimensions of the four domes, as opposed to the entire Unit, will be considered for the purposes of completing the cost estimate surrounding the hazardous

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Material						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13
4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,293.02	---	903,293.02
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.83	192,566.62	---	192,566.62
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				1,122,962.03		1,177,166.82
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	24	Hours	32.99	786.84	3	2,360.53
Field Engineer	24	Hours	32.99	786.84	3	2,360.53
<i>Structural Assessment</i>						
Field Engineer	32	Hours	32.99	1,049.12	3	3,147.37
Field Engineer	32	Hours		-		-
<i>Reporting</i>						
Field Engineer	36	Hours	32.99	1,180.26	3	3,540.79
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	170.28	340.55	3	1,021.65
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				7,503.62		22,510.86
Total for Step 2-A				1,130,465.65	-	1,199,677.68
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				1,131,289.85	-	1,202,150.27

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	44	Hours	51.73	2,281.42	3	6,844.27
	4-Person Labor Crew	44	Hours	30.64	1,351.24	3	4,053.73
		44	Hours	30.64	1,351.24	3	4,053.73
		44	Hours	30.64	1,351.24	3	4,053.73
		44	Hours	30.64	1,351.24	3	4,053.73
	Number of estimated work days (including 2 days for mobilization and demobilization)	6	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 9 estimated work days	5	People /Night	100.00	4,500.00	3	13,500.00
	Vehicle Rental includes the 9 estimated work days	2	Vehicles/Day	70.00	1,260.00	3	3,780.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	164.83	824.16	3	2,472.48
Total for Removal of Equipment					19,270.55		57,811.66

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Domes 229, 230, 231, and 232, and the asphalt pad and associated material.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	7,806.17	Cubic yards	169.833	1,325,749.01	---	1,325,749.01
Total for Removal of Equipment					1,325,749.01		1,325,749.01

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	32	Hours	51.73	1,657.94	3	4,973.81
	4-Person Labor Crew	32	Hours	30.64	981.96	3	2,945.89
		32	Hours	30.64	981.96	3	2,945.89
		32	Hours	30.64	981.96	3	2,945.89
		32	Hours	30.64	981.96	3	2,945.89
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 4 estimated work days	5	People /Night	100.00	2,000.00	3	6,000.00
	Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	171.80	859.02	3	2,577.06
Total for Decontamination					14,004.81		42,014.43

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	170	43	32.99	1,402.13	3	4,206.39	
	Field Engineer - Soil Sample from the Unit		43	32.99	1,402.13	3	4,206.39	
	Field Engineer - Liquid from the Sump	7	4	32.99	115.47	3	346.41	
	Field Engineer - Liquid from the Sump		4	32.99	115.47	3	346.41	
	Field Engineer - Equipment Wipes	6	2	32.99	65.98	3	197.95	
	Field Engineer - Equipment Wipes		2	32.99	65.98	3	197.95	
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93	
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93	
	Total Number of Samples		191	---	---	---	---	---
	Total Number of Types of Samples		3	---	---	---	---	---
Total for Decontamination Verification					3,343.12		10,029.35	

Assumed 8 QA/QC samples will be collected.

Total for Step 3					1,362,367.49	0	1,435,604.45
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	170	---	588.54	100,052.07	---	100,052.07
Organics Soil - Unit	170	---	159.51	27,115.97	---	27,115.97
Cyanide Soil - Unit	170	---	68.43	11,632.56	---	11,632.56
Metals Liquid - Unit	7	---	227.21	1,590.47	---	1,590.47
Organics Liquid - Unit	7	---	159.51	1,116.54	---	1,116.54
Cyanide Liquid - Unit	7	---	38.44	269.09	---	269.09
Metals Equipment Wipes	6	---	588.54	3,531.25	---	3,531.25
Organics Equipment Wipes	6	---	159.51	957.03	---	957.03
Cyanide Equipment Wipes	6	---	68.43	410.56	---	410.56
Metals Field QA/QC	16	---	227.21	3,635.35	---	3,635.35
Organics Field QA/QC	16	---	159.51	2,552.09	---	2,552.09
Cyanide Field QA/QC	16	---	38.44	615.07	---	615.07
Total for Analysis of the Decontamination Verification Samples				153,478.06	---	153,478.06

Assumed 6 equipment wipes, 170 soil samples, 7 liquid samples, and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	96	Hours	37.04	3,537.52	3	10,612.55
Total for Data Validation				3,537.52	3	10,612.55

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	131	Hours	32.99	4,312.50	3	12,937.49
Sample Documentation - Field Engineer	49	Hours	32.99	1,627.57	3	4,882.71
Certification Report - Field Engineer	36	Hours	32.99	1,180.26	3	3,540.79
Certification Report - Field Engineer	18	Hours	32.99	590.13	3	1,770.39
Total for Sample Management				7,710.46	12	23,131.39

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			164,726.03	15	187,221.99
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 10 (TA-54-G-Pad 10) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 10 P1), pre-closure activities (Worksheet TA-54-G-Pad 10 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 10 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 10 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.11; Technical Area 54, Area G, Pad 10 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 10

The Unit consists of an irregular-shaped asphalt pad located at the eastern end of Area G. The pad is 4-6 inches thick and overlies approximately six inches of base course material situated on top of six inches of fill material. The asphalt pad is equipped with curbing on the northern side and a portion of the eastern side. Waste characterization trailers are situated on Pad 10.

Contamination: Pad 10 contains mixed and hazardous waste in drums, transportainers and metal boxes.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 10 P2	2-A	1,245,822.76
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-Pad 10 P3	3-A	41,338.22
4	Disposal of Hazardous Material		3-B	550,386.08
5	Decontamination		3-C	34,269.78
6	Decontamination Verification Samples		3-D	9,171.58
7	Analyses	TA-54-G-Pad 10 P4	4-A	130,906.58
8	Data Validation		4-B	9,334.59
9	Sample Logbook		4-C	10,573.71
10	Sample Documentation		4-C	4,321.86
11	Subtotal of Closure Costs			2,038,597.74
12	Certification of Closure	TA-54-G-Pad 10 P4	4-C	3,403.00
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,042,000.74

1. GENERAL UNIT DESCRIPTION
 TA-54-G-Pad 11 consists of an irregularly-shaped asphalt pad which covers approximately 89,600 square feet. The pad is equipped with curbing on the northern side and on portions of the eastern side. Transuranic waste characterization trailers are situated on the Unit and hazardous waste containers are stored near the trailers for staging associated with waste characterization. According to Section 2.0 of the Closure Plan, large portions of the Unit are used for the storage of empty feed stock drums for transuranic waste characterization activities. Storage of oversized mixed waste in transporters and metal boxes also occurs at the Unit.

According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 11 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet). The permitted unit has been used for the storage of mixed waste in solid form with small quantities of liquid form waste since 2004. The hazardous waste stored at the permitted unit has been: solidified inorganic solids; leached process residues; salts and cement paste; ash; d. It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the permitted volume. The volume of material to be disposed of is equal to the total volume of the

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 10 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous waste storage.
	Known Releases?	N/A	
	Length of TA-54-G-Pad 10 - asphalt pad (feet)	350	
	Width of TA-54-G-Pad 10 - asphalt pad (feet)	250	
	Thickness of TA-54-G-Pad 10 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 10 - asphalt pad (square feet)	87,500	
	Volume of TA-54-G-Pad 10 -asphalt (cubic feet)	43,750	
	Length of TA-54-G-Pad 10 - soil underlying the asphalt pad (feet)	350	
	Width of TA-54-G-Pad 10 - soil underlying the asphalt pad (feet)	250	
	Thickness of TA-54-G-Pad 10 - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 10 - soil underlying the asphalt pad (square feet)	87,500	
	Volume of TA-54-G-Pad 10 -soil underlying the asphalt pad (cubic feet)	43,750	
	Estimated total area of the hazardous waste storage areas (asphalt pad and soil underneath) (square feet)	175,000	
	Total volume of the structures/equipment to be disposed of (cubic feet)	87,500	
	Estimated total area of equipment and material to be decontaminated (square feet). Estimated to be 2% of the total square footage of Unit (87,500 square feet)	1,750	
1-C	Wastes identified within TA-54-G-Pad 10		The permitted unit has been used for the storage of mixed waste in solid form with small quantities of liquid form waste since 2004. The hazardous waste stored at the permitted unit has been: solidified inorganic solids; leached process residues; salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (e.g., plastics, rubber, laboratory trash, building debris); and heterogeneous debris.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 10 (gallons)	458,019	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	According to the closure plan, decontamination procedures will include steam cleaning and pressure washing. In addition, since mixed waste was managed at the unit, the level of PPE recommended for the closure activities is Modified Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A	<u>Removal of Hazardous Waste</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13	
	4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
		77	Hours	30.64	2,366.18	3	7,098.55	
	Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	3,759.68	18,798.41	3	56,395.24	
	Disposal of Liquid Hazardous Waste	4,164	Drums	216.94	903,293.02	---	903,293.02	
	Disposal of Non-liquid Hazardous Waste	1,134	Cubic yards	169.833	192,566.63	---	192,566.63	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00	
	Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00	
	Total for Removal of Waste from Unit					13,459.78	15	1,226,834.24
	<u>Records Review, Structural Assessment, and Reporting</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	<i>Records Review</i>							
	Field Engineer	15	Hours	32.99	504.15	3	1,512.44	
	Field Engineer	15	Hours	32.99	504.15	3	1,512.44	
	<i>Structural Assessment</i>							
	Field Engineer	20	Hours	32.99	672.20	3	2,016.59	
	Field Engineer	20	Hours	32.99	672.20	3	2,016.59	
	<i>Reporting</i>							
	Field Engineer	23	Hours	32.99	756.22	3	2,268.67	
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---	
	Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	100.30	200.59	3	601.78		
Hotel/Lodging - Bare Task includes the 3 estimated work days	2	People /Night	100.00	600.00	3	1,800.00		
Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00		
Total for the Records Review, Inspection, and Reporting					3,108.91	15	18,988.52	
Total for Step 2-A					16,568.70	30	1,245,822.76	
2-B	<u>Development of the Sampling and Analysis Plan</u>							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
	Quality Control	8	Hours	37.04	296.34	3	889.01	
	Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
	Total for Step 2-B					296.34	6	2,472.59
Total for Step 2					16,865.03	36	1,248,295.35	

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	28	Hours	51.73	1,431.21	3	4,293.62	Assumed 1500 cubic feet of equipment and material removed and disposed within one hour. Removal and disposal of equipment and materials associated with the asphalt pad, materials associated with the pad (i.e., curbing and ramps) and a minimum of 6 inches of the base course and soil underlying the asphalt pad of the Unit.
4-Person Labor Crew	28	Hours	30.64	847.68	3	2,543.03	
	28	Hours	30.64	847.68	3	2,543.03	
	28	Hours	30.64	847.68	3	2,543.03	
	28	Hours	30.64	847.68	3	2,543.03	
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,500.00	3	7,500.00	
Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	757.50	3	2,272.50	
Total for Removal of Equipment				4,821.91	15	41,338.23	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Structures/Equipment to be Disposed Of"	3,240.74	Cubic yards	169.833	550,386.08	---	550,386.08	
Total for Removal of Equipment				550,386.08	---	550,386.08	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	20	Hours	51.73	1,008.74	3	3,026.22	Assume 200 square feet area decontaminated within one hour. Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
4-Person Labor Crew	20	Hours	30.64	597.46	3	1,792.37	
	20	Hours	30.64	597.46	3	1,792.37	
	20	Hours	30.64	597.46	3	1,792.37	
	20	Hours	30.64	597.46	3	1,792.37	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
Vehicle Rental includes the 3 estimated work days	5	Vehicles/Day	70.00	1,050.00	3	3,150.00	
Per Diem (for Project Engineer and 4-Person Labor Crew) for an estimated 3 work days.	5	People	94.94	474.69	3	1,424.06	
Total for Decontamination				11,423.26	30	34,269.78	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	116	29	32.99	956.75	3	2,870.24	Assumed 116 soil samples and 36 wipe samples to be collected from the Unit. Also assumed 16 QA/QC samples will be collected.
Field Engineer - Soil Sample from the Unit		29	32.99	956.75	3	2,870.24	
Field Engineer - Liquid from the Sump	0	0	32.99	-	3	-	
Field Engineer - Liquid from the Sump	0	0	32.99	-	3	-	
Field Engineer - Equipment Wipes	36	12	32.99	395.90	3	1,187.69	
Field Engineer - Equipment Wipes		12	32.99	395.90	3	1,187.69	
Field Engineer - Field QA/QC Samples	16	5	32.99	175.95	3	527.86	
Field Engineer - Field QA/QC Samples		5	32.99	175.95	3	527.86	
Total Number of Samples	168	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				175.95	21	9,171.58	
Total for Step 3				11,599.21	51	635,165.66	

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and QC samples collected from the Unit. Analysis of the samples were estimated by the suggested analyses provided within Table G-11.3. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	116	---	588.54	68,270.83	---	68,270.83
Organics Soil - Unit	116	---	159.51	18,502.66	---	18,502.66
Cyanide Soil - Unit	116	---	68.43	7,937.51	---	7,937.51
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	36	---	588.54	21,187.50	---	21,187.50
Organics Equipment Wipes	36	---	159.51	5,742.21	---	5,742.21
Cyanide Equipment Wipes	36	---	68.43	2,463.36	---	2,463.36
Metals Field QA/QC	16	---	227.21	3,635.35	---	3,635.35
Organics Field QA/QC	16	---	159.51	2,552.09	---	2,552.09
Cyanide Field QA/QC	16	---	38.44	615.07	---	615.07
Total for Analysis of the Decontamination Verification Samples				130,906.58	---	130,906.58

Assumed 116 soil samples, 36 wipe samples and a total of 16 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	84	Hours	37.04	3,111.53	9,334.59	
Total for Data Validation			3,111.53	3	9,334.59	

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	107	Hours	32.99	3,524.57	10,573.71	
Sample Documentation - Field Engineer	44	Hours	32.99	1,440.62	4,321.86	
Certification Report - Field Engineer	23	Hours	32.99	756.22	2,268.67	
Certification Report - Field Engineer	11	Hours	32.99	378.11	1,134.33	
Total for Sample Management			6,099.52	12	18,298.57	

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			140,117.63	15	158,539.74
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Pad 11 (TA-54-G-Pad 11) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-Pad 11 P1), pre-closure activities (Worksheet TA-54-G-Pad 11 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 11 P3), and analysis and sample management procedures (Worksheet TA-54-G-Pad 11 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.12; Technical Area 54, Area G, Pad 11 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-Pad 11

The Unit consists of an asphalt pad located in the western portion of Area G. The pad is equipped with curbing on the southern and eastern sides of the pad. Dome 375 is situated upon the pad and is used to store hazardous waste.

Contamination: Dome 375 contains hazardous waste in both liquid and solid form. Waste stored at Dome 375 contains metals, volatile and semi-volatile constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-Pad 11 P2	2-A	1,195,332.81
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-Pad 11 P3	3-A	40,953.82
4	Disposal of Hazardous Material		3-B	515,702.32
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	5,905.44
7	Analyses	TA-54-G-Pad 11 P4	4-A	86,816.98
8	Data Validation		4-B	6,334.19
9	Sample Logbook		4-C	5,377.58
10	Sample Documentation		4-C	2,688.79
11	Subtotal of Closure Costs			1,861,584.51
12	Certification of Closure	TA-54-G-Pad 11 P4	4-C	3,469.69
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,865,054.20

I. GENERAL UNIT DESCRIPTION

TA-54-G-Pad 11 consists of an asphalt pad which underlies Dome 375. Pad 11 measures approximately 76,000 square feet and is comprised of an asphalt material. Dome 375 is comprised of an aluminum framework covered with tension-fitted ultraviolet resistant, fire-retardant coated, polyester fabric. Dome 375 measures 300 feet long by 100 feet wide and covers a surface area of approximately 30,000 square feet.

According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 11 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.20 cubic feet) of hazardous waste has been stored in Dome 375. Based on the Closure Plan, Dome 375 will be removed and characterized. It is assumed that all of the wastes, structures and equipment associated with Pad 11 will be removed and disposed. No decontamination will be required.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume.
It was also assumed that the level of Personal Protective Equipment is Level C/D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.22	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed that TA-54-G-Pad 11 is one of the 8 units with permitted capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous storage in Dome 375.
	Known Releases?	N/A	
1-B	Length of TA-54-G-Pad 11 - Dome 375 (feet)	300	<p>Identified Structures on the Unit: The Unit is an asphalt pad which provides the base to Dome 375. The area of the asphalt pad is approximately 65,486 square feet. The hazardous materials were stored within Dome 375. Dome 375 has dimensions of 300 feet long, 100 feet wide, and has a surface area of approximately 30,000 square feet.</p> <p>Structures and Related Equipment Required for Demolition and Debris Disposal include the hazardous waste material stored on the Unit; in Dome 375 and the asphalt pad, and all the materials associated with the pad which includes the curbing, ramps, and an additional 6" of soil underlying the pad. The tensioned-fabric membranes on the Dome 375 structure, the aluminum beams, trusses and ancillary equipment supporting the dome will be removed and characterized. Based on the results of characterization, the dome materials may be reused, recycled or disposed of. For the purposes of this cost estimate, it is assumed that all of the dome structures will be removed and disposed of. A total of 160,972 square feet will be disposed of. In addition, the Closure Plan does not specify the volume of solid versus liquid wastes that are stored at the Unit. Therefore, it is assumed the closure plan does not identify any Surfaces, Structures, and Related Equipment that have been removed.</p>
	Width of TA-54-G-Pad 11 - Dome 375 (feet)	100	
	Height of TA-54-G-Pad 11 - Dome 375 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-Pad 11 - Dome 375 (square feet)	30,000	
	Volume of TA-54-G-Pad 11 - Dome 375 (based on the decontamination height) (cubic feet)	330,000	
	Length of TA-54-G-Pad 11 - asphalt pad (feet)	478	
	Width of TA-54-G-Pad 11 - asphalt pad (feet)	137	
	Thickness of TA-54-G-Pad 11 - asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 11 - asphalt pad (square feet)	65,486	
	Volume of TA-54-G-Pad 11 - asphalt (cubic feet)	32,743	
	Length of TA-54-G-Pad 11 - soil underlying the asphalt pad (feet)	478	
	Width of TA-54-G-Pad 11 - soil underlying the asphalt pad (feet)	137	
	Thickness of TA-54-G-Pad 11 - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54-G-Pad 11 - soil underlying the asphalt pad (square feet)	65,486	
Volume of TA-54-G-Pad 11 - soil underlying the asphalt pad (cubic feet)	32,743		
Estimated total area of the hazardous waste storage areas (Dome 375, and the pad) (square feet)	95,486		
Total volume of structures/equipment to be removed (cubic feet)	81,986		
Estimated total area of the decontaminated structures (square feet)	0		
1-C	Wastes identified within TA-54-G-Pad 11		Materials identified in the Unit include hazardous wastes, materials and equipment that comprise Dome 375, the asphalt pad, and all materials associated with the pad.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 11 (gallons)	458,019	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C/D	All equipment and structures at Pad 11 will be removed. As a result, the level of PPE recommended for the closure activities is Level C/D.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13
4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Liquid Hazardous Waste	4,164	Drums	216.94	903,293.02	---	903,293.02
Disposal of Non-liquid Hazardous Waste	1,134	Cubic yards	169.83	192,566.63	---	192,566.63
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				13,459.78	15	1,177,166.84
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	16	Hours	32.99	514.03	3	1,542.08
Field Engineer	16	Hours	32.99	514.03	3	1,542.08
<i>Structural Assessment</i>						
Field Engineer	21	Hours	32.99	685.37	3	2,056.11
Field Engineer	21	Hours	32.99	685.37	3	2,056.11
<i>Reporting</i>						
Field Engineer	23	Hours	32.99	771.04	3	2,313.13
Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	102.74	205.49	3	616.46
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				3,169.84	15	18,165.98
Total for Step 2-A				16,629.62	30	1,195,332.81
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				296.34	6	2,472.59
Total for Step 2				16,925.96	36	1,197,805.40

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	27	Hours	51.73	1,393.17	3	4,179.52
	4-Person Labor Crew	27	Hours	30.64	825.15	3	2,475.45
		27	Hours	30.64	825.15	3	2,475.45
		27	Hours	30.64	825.15	3	2,475.45
		27	Hours	30.64	825.15	3	2,475.45
		27	Hours	30.64	825.15	3	2,475.45
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 5 estimated work days	5	People /Night	100.00	2,500.00	3	7,500.00
	Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	151.50	757.50	3	2,272.50	
Total for Removal of Equipment					4,693.77	15	40,953.83

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Dome 375, and the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Structures/equipment to be removed"	3,036.52	Cubic yards	169.833	515,702.32	---	515,702.32
	Total for Removal of Equipment					515,702.32	---

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Labor							
	Site Project Manager	0	Hours	51.73	-	3	-	
	4-Person Labor Crew	0	Hours	30.64	-	-	3	-
		0	Hours	30.64	-	-	3	-
		0	Hours	30.64	-	-	3	-
		0	Hours	30.64	-	-	3	-
		0	Hours	30.64	-	-	3	-
	Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---	
	Airfare	0	People	1,000.00	-	3	-	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	0	People /Night	100.00	-	3	-	
Vehicle Rental includes the 2 estimated work days	0	Vehicles/Day	70.00	-	3	-		
Per Diem (for Project Engineer and 4-Person Labor Crew)	0	People	73.50	-	3	-		
Total for Decontamination					-	30	-	

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	98	25	32.99	808.29	3	2,424.86	
	Field Engineer - Soil Sample from the Unit		25	32.99	808.29	3	2,424.86	
	Field Engineer - Liquid from the Sump	0	0	32.99	-	3	-	
	Field Engineer - Liquid from the Sump		0	32.99	-	3	-	
	Field Engineer - Equipment Wipes	0	0	32.99	-	3	-	
	Field Engineer - Equipment Wipes		0	32.99	-	3	-	
	Field QA/QC Samples	16	5	32.99	175.95	3	527.86	
	Field QA/QC Samples		5	32.99	175.95	3	527.86	
	Total Number of Samples		114	---	---	---	---	---
	Total Number of Types of Samples		2	---	---	---	---	---
	Total for Decontamination Verification					175.95	21	5,905.44

Assumed 98 soil samples to be collected from the Unit.
Also assumed 16 QA/QC samples will be collected.

Total for Step 3					175.95	51	562,561.57
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and liquid samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (11) was included within the cost estimate as there were 11 types of equipment structures provided within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. As a result, it was assumed that one liquid samples would be collected from the sump. Analysis of the assumed liquid and equipment wipe samples were estimated by the suggested analyses provided within Table G-12.3. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included. The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazard

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	98	---	588.54	57,677.08	---	57,677.08
Organics Soil - Unit	98	---	159.51	15,631.56	---	15,631.56
Cyanide Soil - Unit	98	---	68.43	6,705.83	---	6,705.83
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	0	---	588.54	-	---	-
Organics Equipment Wipes	0	---	159.51	-	---	-
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	16	---	227.21	3,635.35	---	3,635.35
Organics Field QA/QC	16	---	159.51	2,552.09	---	2,552.09
Cyanide Field QA/QC	16	---	38.44	615.07	---	615.07
Total for Analysis of the Decontamination Verification Samples				86,816.98	---	86,816.98

Assumed 98 soil samples, and a total of 16 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	57	Hours	37.04	2,111.40	3	6,334.19
Total for Data Validation				2,111.40	3	6,334.19

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	54	Hours	32.99	1,792.53	3	5,377.58
Sample Documentation - Field Engineer	27	Hours	32.99	896.26	3	2,688.79
Certification Report - Field Engineer	23	Hours	32.99	771.04	3	2,313.13
Certification Report - Field Engineer	12	Hours	32.99	385.52	3	1,156.56
Total for Sample Management				3,845.35	12	11,536.06

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			92,773.73		15	104,687.23
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Storage Shed 8 (TA-54-8) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-8 P1), pre-closure activities (Worksheet TA-54-8 P2), decontamination of the unit structures (Worksheet TA-54-8 P3), and analysis and sample management procedures (Worksheet TA-54-8 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.13; Technical Area 54, Storage Shed 8 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-8

Contamination: Mixed waste in solid and liquid form; identification of specific hazardous constituents (trichloroethylene and lead).

Origin of Contamination: The Unit served as a waste storage area which consisted of hazardous and mixed waste in both solid and liquid form. Sludge, debris, oils, and chemical wastes with metals and volatile and semi-volatile organic compounds were the types of wastes stored on the Unit.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-8 P2	2-A	1,193,330.53
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-8 P3	3-A	---
4	Disposal of Hazardous Material		3-B	---
5	Decontamination		3-C	40,969.74
6	Decontamination Verification Samples		3-D	1,039.23
7	Analyses	TA-54-8 P4	4-A	9,541.73
8	Data Validation		4-B	889.01
9	Sample Logbook		4-C	3,792.02
10	Sample Documentation		4-C	387.65
11	Subtotal of Closure Costs			1,252,422.49
12	Certification of Closure	TA-54-8 P4	4-C	2,793.22
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,255,215.71

1. GENERAL UNIT DESCRIPTION

TA-54-8 does not contain any structures other than a sump and a concrete barrier. Both solid and liquid non-hazardous waste have been stored on the Unit. The Unit measures approximately 640 square feet.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous waste is permitted to be stored on the Unit. The hazardous waste stored will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. No equipment or structures have been identified for removal from the Unit.

No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level D.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.25	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed tht TA-54-8 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous waste storage.
	Known Releases?	N/A	
1-B	Length of TA-54-8 (feet)	40	Identified Structures on the Unit: The Unit does not contain any structures with the exception of a concrete barrier and a sump. The entire Unit measures 640 square feet. No structures and related equipment are required for demolition and debris disposal. The entire Unit will require decontamination. The height of the walls are assumed to be 11 feet for decontamination purposes.
	Width of TA-54-8 (feet)	16	
	Height of TA-54-8 (based on decontamination height) (feet)	11	
	Area of TA-54-8 (ft2)	640	
	Volume of TA-54-8 (ft3)	7,040	
	Length of the TA-54-8 concrete barrier (feet)	110	
	Width of the TA-54-8 concrete barrier (feet)	60	
	Height of TA-54-8 concrete barrier (based on decontamination of the Unit structure) (feet)	11	
Area of TA-54-8 concrete barrier (ft2)	6,600		
Volume of TA-54-8 concrete barrier (ft3)	72,600		

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.13
4-Person Labor Crew	77	Hours	30.64	2,366.19	3	7,098.56
	77	Hours	30.64	2,366.19	3	7,098.56
	77	Hours	30.64	2,366.19	3	7,098.56
	77	Hours	30.64	2,366.19	3	7,098.56
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.62	3	6,727.85
Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,293.51	---	903,293.51
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.833	192,566.72	---	192,566.72
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	5,000.00	3	15,000.00
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,400.00	3	4,200.00
Total for Removal of Waste from Unit				1,122,962.63		1,177,167.44
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	32.99	413.81	3	1,241.43
Field Engineer	13	Hours	32.99	413.81	3	1,241.43
<i>Structural Assessment</i>						
Field Engineer	17	Hours	32.99	551.75	3	1,655.24
Field Engineer	17	Hours	32.99	551.75	3	1,655.24
<i>Reporting</i>						
Field Engineer	19	Hours	32.99	620.71	3	1,862.14
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	77.93	155.87	3	467.61
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				5,387.70		16,163.09
Total for Step 2-A				1,128,350.33	-	1,193,330.53
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				1,129,174.53	-	1,195,803.12

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	---	Hours	51.73	---	3	---
	4-Person Labor Crew	---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	3	---
	Hotel/Lodging - Bare Task includes the 8 estimated work days	---	People /Night	100.00	---	3	---
	Vehicle Rental includes the 8 estimated work days	---	Vehicles/Day	70.00	---	3	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	---	---	3	---
Total for Removal of Equipment					---	15	---

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Total Volume of Hazardous Structures and Equipment to be Removed - converted volume (cubic feet to cubic yards)	---	Cubic yards	169.833	---	---	---
Total for Removal of Equipment					---	---	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	30	Hours	51.73	1,576.74	3	4,730.22
	4-Person Labor Crew	30	Hours	30.64	933.87	3	2,801.62
		30	Hours	30.64	933.87	3	2,801.62
		30	Hours	30.64	933.87	3	2,801.62
		30	Hours	30.64	933.87	3	2,801.62
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 4 estimated work days	5	People /Night	100.00	2,000.00	3	6,000.00
	Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	533.40	3	1,600.20
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	162.19	810.95	3	2,432.85
Total for Decontamination					13,656.58	30	40,969.74

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	3	1	32.99	24.74	3	74.23
	Field Engineer - Soil Sample from the Unit	1	1	32.99	24.74	3	74.23
	Field Engineer - Liquid from the Sump	1	1	32.99	16.50	3	49.49
	Field Engineer - Liquid from the Sump	1	1	32.99	16.50	3	49.49
	Field Engineer - Equipment Wipes	4	1	32.99	43.99	3	131.97
	Field Engineer - Equipment Wipes	1	1	32.99	43.99	3	131.97
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	1	3	32.99	87.98	3	263.93
	Total Number of Samples	16	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					87.98	21	1,039.23

Also assumed 8 QA/QC samples will be collected.

Total for Step 3					13,744.56	51	42,008.97
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	3	---	588.54	1,765.62	---	1,765.62
Organics Soil - Unit	3	---	159.51	478.52	---	478.52
Cyanide Soil - Unit	3	---	68.43	205.28	---	205.28
Metals Liquid - Unit	1	---	227.21	227.21	---	227.21
Organics Liquid - Unit	1	---	159.51	159.51	---	159.51
Cyanide Liquid - Unit	1	---	38.44	38.44	---	38.44
Metals Equipment Wipes	4	---	588.54	2,354.17	---	2,354.17
Organics Equipment Wipes	4	---	159.51	638.02	---	638.02
Cyanide Equipment Wipes	4	---	68.43	273.71	---	273.71
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				9,541.73	---	9,541.73

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	8	Hours	37.04	296.34	3	889.01
Total for Data Validation				296.34	3	889.01

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	38	Hours	32.99	1,264.01	3	3,792.02
Sample Documentation - Field Engineer	4	Hours	32.99	129.22	3	387.65
Certification Report - Field Engineer	19	Hours	32.99	620.71	3	1,862.14
Certification Report - Field Engineer	9	Hours	32.99	310.36	3	931.07
Total for Sample Management				2,324.29	13	6,972.88

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			12,162.36	15	17,403.62
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area G, Building 33 (TA-54-G-33) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-G-33 P1), pre-closure activities (Worksheet TA-54-G-33 P2), decontamination of the unit structures (Worksheet TA-54-G-33 P3), and analysis and sample management procedures (Worksheet TA-54-G-33 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.14; Technical Area 54, Area G, Building 33 Closure Plan (Closure Plan).

Unit Name: LANL TA-54-G-33

The Unit consists of a storage dome, Dome 33, which is attached to the concrete-block building. The Dome and the building (Unit), sit on a concrete pad.

Contamination: Hazardous and toxic metals and organic compounds are identified within the Unit. The High Bay contained primarily radioactive, but also mixed wastes.

Origin of Contamination: Served as a waste storage and preparatory area for the packaging and shipment of transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP).

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-G-33 P2	2-A	1,193,335.83
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-G-33 P3	3-A	32,348.98
4	Disposal of Hazardous Material		3-B	156,161.82
5	Decontamination		3-C	29,350.73
6	Decontamination Verification Samples		3-D	3,233.15
7	Analyses	TA-54-G-33 P4	4-A	39,427.64
8	Data Validation		4-B	3,055.97
9	Sample Logbook		4-C	4,720.65
10	Sample Documentation		4-C	1,484.61
11	Subtotal of Closure Costs			1,465,591.95
12	Certification of Closure	TA-54-G-33 P4	4-C	2,948.68
13	Total Cost of Closure (Add cost of certification report to closure costs)			1,468,540.63

1. GENERAL UNIT DESCRIPTION
 TA-54-G-33 consists of a storage dome, Dome 33, and an attached concrete block building. Both structures are situated on an 8" thick concrete pad surrounded by an asphalt apron. The Unit store dTA-54-G-Pad 6 consists of Domes 153 and 326 which are constructed on an asphalt pad measuring approximately 633 feet long by 99 feet wide. Domes 153 and 283 stored both liquid and solid forms of hazardous material. Dome 153 measures 326 feet long by 60 feet wide (19,600 square feet). Dome 283 measures 260 feet long by 60 feet wide (15,600 square feet). An asphalt curb that is approximately 8 inches thick surrounds the interior floor perimeter of both domes.

According to the Part A Permit Application, 61,228.22 cubic feet of hazardous material is permitted to be stored on the Unit. The hazardous material stored on the Unit will be drummed and properly disposed at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, all materials and equipment that comprise the dome and building structures, the asphalt pad, and all materials associated with the pad (the sump, two holding tanks, and a minimum of six inches of soil underlying the pad) will be disposed.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan the drum venting and associated equipment, electrical infrastructure, equipment and spill kit cabinets, communication equipment, and other equipment will be removed from the Unit. It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level 1.

1-A	Permitted Unit Volume Capacity (cubic feet)	61,228.21	According to the Part A Permit Application, the permitted capacity of approximately of the entire Technical Area 54, Area G Unit is 3,664,150 gallons (489,825.61 cubic feet) for 8 container storage units. It is assumed tht TA-54-G-33 is one of the 8 units with permitted design capacity of 458,018.75 gallons (61,228.22 cubic feet) of hazardous material storage.
	Known Releases?	N/A	
1-R	Length of TA-54-G-33 - Dome 33 (feet)	157	Identified Structures on the Unit: The Unit is a pad provides the base to Dome 33 and the concrete building. The area of the Unit is assumed to be the dimensions of the Dome and attached concrete building as no area was provided for the entire Unit within the Closure Plan. As a result, it is assumed that the area of the entire Unit is equivalent to the total area of the building and Dome 33 (8,570 square feet as stated within the Closure Plan). It is also assumed that only liquid hazardous wastes were stored on the Unit. Structures and Related Equipment Required for Demolition and Debris Disposal: The structures required for removal include Dome 33 and the concrete building, the asphalt pad, the sump, and
	Width of TA-54-G-33 - Dome 33 (feet)	50	
	Height of TA-54-G-33 - Dome 33 (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-33 - Dome 33 (square feet)	7,850	
	Volume of TA-54-G-33 - Dome 33 (based on the decontamination height) (cubic feet)	86,350	
	Length of TA-54-G-33 - Concrete building (feet)	40	
	Width of TA-54-G-33 - Concrete building (feet)	34	
	Height of TA-54-G-33 - Concrete building (feet) (based on decontamination of the Unit structure)	11	
	Area of TA-54-G-33 - Concrete building (square feet)	1,360	
	Volume of TA-54-G-33 -Concrete building (cubic feet)	14,960	
	Length of TA-54-G-33 - steel sump (feet)	14	
	Width of TA-54-G-33 - steel sump (feet)	6.5	
	Height of TA-54-G-33 - steel sump (feet) (based on decontamination of the Unit structure)	5	
	Area of TA-54-G-33 - steel sump (square feet)	91	
	Volume of TA-54-G-33 -steel sump (cubic feet)	455	
Length of TA-54-G-33 - concrete pad (feet)	197		

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	77	Hours	51.73	3,995.04	3	11,985.12
4-Person Labor Crew	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
	77	Hours	30.64	2,366.18	3	7,098.55
Number of estimated work days (including 2 days for mobilization and demobilization)	10	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	448.52	2,242.61	3	6,727.84
Disposal of Non-liquid Hazardous Material	1,134	Cubic yards	169.83	192,566.59	---	192,566.59
Disposal of Liquid Hazardous Material	4,164	Drums	216.94	903,292.92	---	903,292.92
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 10 estimated work days	5	People /Night	100.00	4,826.76	3	14,480.29
Vehicle Rental includes the 10 estimated work days	2	Vehicles/Day	70.00	1,351.49	3	4,054.48
Total for Removal of Waste from Unit				1,122,740.17		1,176,501.47
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	32.99	436.84	3	1,310.52
Field Engineer	13	Hours	32.99	436.84	3	1,310.52
<i>Structural Assessment</i>						
Field Engineer	18	Hours	32.99	582.45	3	1,747.36
Field Engineer	18	Hours	32.99	582.45	3	1,747.36
<i>Reporting</i>						
Field Engineer	20	Hours	32.99	655.26	3	1,965.78
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	83.64	167.27	3	501.81
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	441.37	3	1,324.11
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	308.96	3	926.88
Total for the Records Review, Inspection, and Reporting				5,611.45		16,834.36
Total for Step 2-A				1,128,351.62		1,193,335.83
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				1,129,175.81	-	1,195,808.42

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	19	Hours	51.73	998.92	3	2,996.77	
		19	Hours	30.64	591.64	3	1,774.93	
	4-Person Labor Crew		19	Hours	30.64	591.64	3	1,774.93
			19	Hours	30.64	591.64	3	1,774.93
			19	Hours	30.64	591.64	3	1,774.93
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	99.50	497.50	3	1,492.50	
Total for Removal of Equipment					10,782.99		32,348.98	

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the Dome 33 and concrete building, and the asphalt pad and associated material.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	919.50	Cubic yards	169.83	156,161.82	---	156,161.82
Total for Removal of Equipment					156,161.82		156,161.82

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Site Project Manager	18	Hours	51.73	915.41	3	2,746.24	
		18	Hours	30.64	542.18	3	1,626.54	
	4-Person Labor Crew		18	Hours	30.64	542.18	3	1,626.54
			18	Hours	30.64	542.18	3	1,626.54
			18	Hours	30.64	542.18	3	1,626.54
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	83.89	419.44	3	1,258.31	
Total for Decontamination					9,783.58		29,350.73	

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples								
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-D	Field Engineer - Soil Sample from the Unit	36	9	32.99	296.92	3	890.76	
	Field Engineer - Soil Sample from the Unit		9	32.99	296.92	3	890.76	
	Field Engineer - Liquid from the Sump	6	3	32.99	98.97	3	296.92	
	Field Engineer - Liquid from the Sump		3	32.99	98.97	3	296.92	
	Field Engineer - Equipment Wipes	5	2	32.99	54.99	3	164.96	
	Field Engineer - Equipment Wipes		2	32.99	54.99	3	164.96	
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93	
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93	
	Total Number of Samples		55	---	---	---	---	---
	Total Number of Types of Samples		3	---	---	---	---	---
Total for Decontamination Verification					1,077.72		3,233.15	

Assumed 6 liquid sample collected from the holding tanks, sump, and the three drains located throughout the Unit, 5 equipment wipe samples, and 36 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					177,806.10		221,094.67
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4. Analysis and Sample Management Procedures

Analysis							Assumed 6 liquid sample collected from the holding tanks, sump, and the three drains located throughout the Unit, 5 equipment wipe samples, and 36 soil samples to be collected from the Unit. Also assumed 8 QA/QC samples will be collected.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	36	---	588.54	21,187.50	---	21,187.50	
Organics Soil - Unit	36	---	159.51	5,742.21	---	5,742.21	
Cyanide Soil - Unit	36	---	68.43	2,463.36	---	2,463.36	
Metals Liquid - Unit	6	---	227.21	1,363.26	---	1,363.26	
Organics Liquid - Unit	6	---	159.51	957.03	---	957.03	
Cyanide Liquid - Unit	6	---	38.44	230.65	---	230.65	
Metals Equipment Wipes	5	---	588.54	2,942.71	---	2,942.71	
Organics Equipment Wipes	5	---	159.51	797.53	---	797.53	
Cyanide Equipment Wipes	5	---	68.43	342.13	---	342.13	
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68	
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05	
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54	
Total for Analysis of the Decontamination Verification Samples				39,427.64	---	39,427.64	

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	28	Hours	37.04	1,018.66	3,055.97	
Total for Data Validation			1,018.66	3,055.97		

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	48	Hours	32.99	1,573.55	4,720.65	
Sample Documentation - Field Engineer	15	Hours	32.99	494.87	1,484.61	
Certification Report - Field Engineer	20	Hours	32.99	655.26	1,965.78	
Certification Report - Field Engineer	10	Hours	32.99	327.63	982.89	
Total for Sample Management			3,051.31	9,153.93		

Total for Step 4			43,497.61	15	51,637.54
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Area L (TA-54-L) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-L P1), pre-closure activities (Worksheet TA-54-L P2), decontamination of the unit structures (Worksheet TA-54-L P3), and analysis and sample management procedures (Worksheet TA-54-L P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.15; Technical Area 54, Area L Closure Plan (Closure Plan).

Unit Name: LANL TA-54-Area L

The permitted unit consists of an asphalt pad covered area within the fence line at Area L which covers approximately 110,500 square feet (ft²). The permitted unit has several structures associated with it that store hazardous and mixed waste in solid and liquid form: one dome (Dome 215); three portable waste storage buildings (Storage Sheds 68, 69, and 70); one storage shed (Shed 31); one building (Building 39 and containment pad); and five covered storage pads (Canopy 216, Pad 32, Pad 35, Pad 36, and Pad 58).

Contamination: The Unit has stored spent solvents; paints and related wastes; photographic and photocopier wastes; corrosive liquids; solid metals and metallic compounds; off-specification commercial chemical products; gas cylinders; solidified inorganic solids; leached process residues; chemical salts and cement paste; ash; dewatered aqueous sludge; chemical treatment sludge; soils; combustible debris (e.g., plastics, rubber, laboratory trash, building debris); and heterogeneous debris.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-L P2	2-A	1,192,724.09
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54-L P3	3-A	46,306.78
4	Disposal of Hazardous Material		3-B	851,612.38
5	Decontamination		3-C	29,164.65
6	Decontamination Verification Samples		3-D	11,316.01
7	Analyses	TA-54-L P4	4-A	145,482.52
8	Data Validation		4-B	10,779.23
9	Sample Logbook		4-C	12,533.86
10	Sample Documentation		4-C	5,394.08
11	Subtotal of Closure Costs			2,307,786.19
12	Certification of Closure	TA-54-L P4	4-C	5,140.65
13	Total Cost of Closure (Add cost of certification report to closure costs)			2,312,926.84

I. GENERAL UNIT DESCRIPTION

TA-54 Area L consists of an asphalt pad covered area measuring approximately 110,500 square feet (ft²). The permitted unit has several structures associated with it that store hazardous and mixed waste in solid and liquid form: one dome (Dome 215); three portable waste storage buildings (Storage Sheds 68, 69, and 70); one storage shed (Shed 31); one building (Building 39 and containment pad); and five covered storage pads (Canopy 216, Pad 32, Pad 35, Pad 36, and Pad 58). 1) Storage Dome 215 is 60 ft wide, 266 ft long and 26 ft high with an area of approximately 15,960 ft². The dome is an arch frame-supported, stressed-membrane structure of modular construction with an aluminum framework and an ultraviolet, stabilized, plasticized polyvinyl chloride fabric covering. 2) Canopy 216 is 33 ft wide by 120 ft long with an area of approximately 3,960 ft². The canopy consists of a rigid aluminum frame anchored to a sloped asphalt pad which supports a tensioned membrane. The three portable waste storage buildings (Storage Sheds 68, 69, and 70) are steel prefabricated sheds measuring 23 ft long, nine ft wide and 8.5 ft high each with an area of approximately 128 ft². The sheds are elevated by design to prevent run-on and are constructed with liquid-tight sumps, covered by metal grates, to ensure containment of any potential leaks or spills and to prevent runoff. Storage.

According to the Part A Permit Application, 54,605 cubic feet of hazardous waste is permitted to be stored in the identified structures. The hazardous wastes stored at the unit will be drummed and proper.

According to Section 5.3.2; Decontamination of Equipment of the Closure Plan, the storage sheds (68, 69, 70, and 31); the PermaCon®; the equipment cabinets; the portable air monitors; all the electron.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the maximum permitted volume. It was also assumed that the level of Personal Protective Equi

1-A	Permitted Unit Volume Capacity (cubic feet)	54,605.9	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54, Area L Unit is 408,480 gallons (54,605.83 cubic feet).
	Known Releases?	N/A	
	Length of TA-54 Area L - Dome 215 (feet)	266.0	
	Width of TA-54 Area L - Dome 215 (feet)	60.0	
	Height of TA-54 Area L - Dome 215 (feet)	11.0	
	Area of TA-54 Area L - Dome 215 (square feet)	15,960.0	
	Volume of TA-54 Area L - Dome 215 (cubic feet)	175,560.0	
	Length of TA-54 Area L - Canopy 216 (feet)	120.0	
	Width of TA-54 Area L - Canopy 216 (feet)	33.0	
	Height of TA-54 Area L - Canopy 216 (feet) (assumed to be 11 feet)	11.0	
	Area of TA-54 Area L - Canopy 216 (square feet)	3,960.0	
	Volume of TA-54 Area L - Canopy 216 (based on the decontamination height) (cubic feet)	43,560.0	
	Length of TA-54 Area L - Sheds 68,69,70 (feet)	23.0	
	Width of TA-54 Area L - Sheds 68,69,70 (feet)	9.0	
	Height of TA-54 Area L - Sheds 68, 69, 70 (feet)	8.5	
	Total Area of TA-54 Area L - Sheds 68, 69, and 70 (square feet)	621.0	
	Total Volume of TA-54 Area L - Sheds 68, 69 and 70 (cubic feet)	5,278.5	
	Length of TA-54 Area L - Shed 31 (feet)	14.0	
	Width of TA-54 Area L - Shed 31 (feet)	13.0	
	Height of TA-54 Area L - Shed 31 (feet)	8.0	
	Area of TA-54 Area L - Shed 31 (square feet)	182.0	
	Volume of TA-54 Area L - Shed 31 (cubic feet)	1,456.0	
	Length of TA-54 Area L - asphalt pad (feet)	-	
Width of TA-54 Area L - asphalt pad (feet)	-		
Thickness of TA-54 Area L - asphalt pad (feet)	0.5		
Area of TA-54 Area L - asphalt pad (square feet)	110,500.0		
Volume of TA-54 Area L - asphalt (cubic feet)	55,250.0		
Length of TA-54 Area L - soil underlying the asphalt pad (feet)	-		

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A	<u>Removal of Hazardous Waste</u>							
	<u>Labor Category</u>	<u>Amount</u>	<u>Units</u>	<u>Unit Cost (\$)</u>	<u>Bare Task Cost (\$)</u>	<u>Overhead Additions</u>	<u>Loaded (\$)</u>	
	Site Project Manager	71	Hours	51.73	3,652.46	3	10,957.39	
	4-Person Labor Crew	71	Hours	30.64	2,163.28	3	6,489.85	
		71	Hours	30.64	2,163.28	3	6,489.85	
		71	Hours	30.64	2,163.28	3	6,489.85	
		71	Hours	30.64	2,163.28	3	6,489.85	
	Number of estimated work days (including 2 days for mobilization and demobilization)	9	Days	---	---	---	---	
	Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	2,572.50	12,862.50	3	38,587.50	
	Disposal of Liquid Hazardous Waste	3,713	Drums	216.94	805,593.94	---	805,593.94	
	Disposal of Non-liquid Hazardous Waste	1,011	Cubic yards	169.83	171,738.85	---	171,738.85	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 53 estimated work days	5	People /Night	100.00	26,500.00	3	79,500.00	
	Vehicle Rental includes the 53 estimated work days	2	Vehicles/Day	70.00	7,420.00	3	22,260.00	
	Total for Removal of Waste from Unit					1,041,420.89		1,169,597.08
	<u>Records Review, Structural Assessment, and Reporting</u>							
	<u>Labor Category</u>	<u>Amount</u>	<u>Units</u>	<u>Unit Cost (\$)</u>	<u>Bare Task Cost (\$)</u>	<u>Overhead Additions</u>	<u>Loaded (\$)</u>	
	<i>Records Review</i>							
	Field Engineer	23	Hours	32.99	761.58	3	2,284.73	
	Field Engineer	23	Hours	32.99	761.58	3	2,284.73	
	<i>Structural Assessment</i>							
	Field Engineer	31	Hours	32.99	1,015.44	3	3,046.31	
	Field Engineer	31	Hours		-		-	
	<i>Reporting</i>							
Field Engineer	35	Hours	32.99	1,142.37	3	3,427.10		
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---		
Airfare	2	People	1,000.00	2,000.00	3	6,000.00		
Per Diem (for the two Field Engineers)	2	People	164.02	328.04	3	984.13		
Hotel/Lodging - Bare Task includes the 5 estimated work days	2	People /Night	100.00	1,000.00	3	3,000.00		
Vehicle Rental includes the 5 estimated work days	2	Vehicles/Day	70.00	700.00	3	2,100.00		
Total for the Records Review, Inspection, and Reporting					7,709.00		23,127.01	
Total for Step 2-A					1,049,129.89	-	1,192,724.09	
2-B	<u>Development of the Sampling and Analysis Plan</u>							
	<u>Labor Category</u>	<u>Amount</u>	<u>Units</u>	<u>Unit Cost (\$)</u>	<u>Bare Task Cost (\$)</u>	<u>Overhead Additions</u>	<u>Loaded (\$)</u>	
	Quality Control	8	Hours	37.04	296.34	3	889.01	
	Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
Total for Step 2-B					824.20		2,472.59	
Total for Step 2					1,049,954.09	-	1,195,196.68	

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	34	Hours	51.73	1,761.51	3	5,284.54
		34	Hours	30.64	1,043.31	3	3,129.93
	4-Person Labor Crew	34	Hours	30.64	1,043.31	3	3,129.93
		34	Hours	30.64	1,043.31	3	3,129.93
		34	Hours	30.64	1,043.31	3	3,129.93
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	3,000.00	3	9,000.00
	Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	840.00	3	2,520.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	132.17	660.84	3	1,982.53
Total for Removal of Equipment					15,435.59		46,306.78

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	5,014.40	Cubic yards	169.833	851,612.38	---	851,612.38
Total for Removal of Equipment					851,612.38		851,612.38

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	18	Hours	51.73	912.43	3	2,737.28
		18	Hours	30.64	540.41	3	1,621.24
	4-Person Labor Crew	16	Hours	30.64	490.22	3	1,470.67
		18	Hours	30.64	540.41	3	1,621.24
		18	Hours	30.64	540.41	3	1,621.24
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	83.53	417.67	3	1,253.00	
Total for Decontamination					9,721.55		29,164.65

Assume 200 square feet area decontaminated within one hour. Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	124	31	32.99	1,022.73	3	3,068.19
	Field Engineer - Soil Sample from the Unit		31	32.99	1,022.73	3	3,068.19
	Field Engineer - Liquid from the Sump	17	9	32.99	280.43	3	841.28
	Field Engineer - Liquid from the Sump		9	32.99	280.43	3	841.28
	Field Engineer - Equipment Wipes		12	32.99	406.89	3	1,220.68
	Field Engineer - Equipment Wipes	37	12	32.99	406.89	3	1,220.68
	Field Engineer - Field QA/QC Samples		5	32.99	175.95	3	527.86
	Field Engineer - Field QA/QC Samples	16	5	32.99	175.95	3	527.86
	Total Number of Samples	194	---	---	---	---	---
	Total Number of Types of Samples	4	---	---	---	---	---
Total for Decontamination Verification					3,772.00		11,316.01

Assumed 16 QA/QC samples will be collected.

Total for Step 3					880,541.52	0	938,399.82
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	124	---	588.54	72,979.16	---	72,979.16
Organics Soil - Unit	124	---	159.51	19,778.71	---	19,778.71
Cyanide Soil - Unit	124	---	68.43	8,484.92	---	8,484.92
Metals Liquid - Unit	17	---	227.21	3,862.56	---	3,862.56
Organics Liquid - Unit	17	---	159.51	2,711.60	---	2,711.60
Cyanide Liquid - Unit	17	---	38.44	653.51	---	653.51
Metals Equipment Wipes	37	---	588.54	21,776.04	---	21,776.04
Organics Equipment Wipes	37	---	159.51	5,901.71	---	5,901.71
Cyanide Equipment Wipes	37	---	68.43	2,531.79	---	2,531.79
Metals Field QA/QC	16	---	227.21	3,635.35	---	3,635.35
Organics Field QA/QC	16	---	159.51	2,552.09	---	2,552.09
Cyanide Field QA/QC	16	---	38.44	615.07	---	615.07
Total for Analysis of the Decontamination Verification Samples				145,482.52	---	145,482.52

Assumed 37 equipment wipes, 124 soil samples, 17 liquid samples, and a total of 16 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	97	Hours	37.04	3,593.08	3	10,779.23
Total for Data Validation				3,593.08	3	10,779.23

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	127	Hours	32.99	4,177.95	3	12,533.86
Sample Documentation - Field Engineer	55	Hours	32.99	1,798.03	3	5,394.08
Certification Report - Field Engineer	35	Hours	32.99	1,142.37	3	3,427.10
Certification Report - Field Engineer	17	Hours	32.99	571.18	3	1,713.55
Total for Sample Management				7,689.53	12	23,068.59

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			156,765.13	15	179,330.34
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54 West, Building 38 (TA-54W-38) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54W-38 P1), pre-closure activities (Worksheet TA-54W-38 P2), decontamination of the unit structures (Worksheet TA-54W-38 P3), and analysis and sample management procedures (Worksheet TA-54W-38 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.16; Technical Area 54 West, Building 38 Closure Plan (Closure Plan).

Unit Name: LANL TA-54W-38

There are two individual components of the Unit - High Bay (Room 101) and the Low Bay (Room 102) areas.

Contamination: Hazardous and toxic metals and organic compounds are identified within the Unit. The High Bay contained primarily radioactive, but also mixed wastes.

Origin of Contamination: The Unit supported hazardous waste operations when testing of radioassay equipment occurred; specifically, the High Bay served as transuranic (TRU) waste payload-container assembly area as well as a shipper-container loader area. Its function was to transport the waste packages to the Waste Isolation Pilot Plant (WIPP). The Low Bay served as a staging area for hazardous solid and liquid waste while nondestructive radioassay waste characterization activities were performed.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54W-38 P2	2-A	67,949.68
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-54W-38 P3	3-A	---
4	Disposal of Hazardous Material		3-B	---
5	Decontamination		3-C	40,862.68
6	Decontamination Verification Samples		3-D	2,144.43
7	Analyses	TA-54W-38 P4	4-A	22,605.32
8	Data Validation		4-B	1,778.02
9	Sample Logbook		4-C	5,338.00
10	Sample Documentation		4-C	940.25
11	Subtotal of Closure Costs			144,090.96
12	Certification of Closure	TA-54W-38 P4	4-C	2,830.41
13	Total Cost of Closure (Add cost of certification report to closure costs)			146,921.37

1. GENERAL UNIT DESCRIPTION
 TA-54W-38 contains Rooms 101 and 102 (High and Low Bay, respectively). The rooms stored liquid and solid hazardous wastes. The Unit was constructed in 1989 and operations for hazardous storage began in 1989.
 The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, no equipment removal is anticipated at this time.
 According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.
 It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is Level C modified.

1-A	Permitted Unit Volume Capacity (cubic feet)	779.36	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54-West Unit is 11,660 gallons (1558.72 cubic feet) for 2 container storage units. It is assumed that TA-54W-38 indoor storage unit is one of the 2 units with a permitted design capacity of 5,830 gallons (779.36 cubic feet) of hazardous waste storage.
	Known Releases?	Yes	
1-B	Length of TA-54W-38 High Bay (ft)	80	The High Bay area is equipped with a five-ton capacity bridge crane and a truckaxle weighing scale. The floor is comprised of concrete and is epoxy-covered. A grated drain runs down the center of the High Bay to collect surface water. The floor of the Low Bay area is comprised of concrete and is epoxy-covered. The square footage provided for the entire Unit is calculated to include the access-way as well as the High and Low Bay Areas. No equipment will be required to be removed from the Unit.
	Width of TA-54W-38 High Bay (ft)	40	
	Height of TA-54W-38 High Bay (based on the height of the decontamination) (ft)	11	
	Area of TA-54W-38 High Bay (ft ²)	3,200	
	Volume of TA-54W-38 High Bay (cubic feet)	35,200	
	Length of TA-54W-38 Low Bay (ft)	40	
	Width of TA-54W-38 Low Bay (ft)	34	
	Height of TA-54W-38 Low Bay (based on the height of the decontamination) (ft)	11	
	Area of TA-54W-38 Low Bay (ft ²)	1,360	
	Volume of TA-54W-38 Low Bay (cubic feet)	14,960	
	Length of TA-54W-38 Access-way (ft)	7.87	
	Width of TA-54W-38 Access-way (ft)	12.47	
	Height of TA-54W-38 Access-way (based on the height of the decontamination) (ft)	11	
	Area of TA-54W-38 Access-way (ft ²)	98.12	
Volume of TA-54W-38 Access-way (cubic feet)	1,079.27		
	Total area of TA-54W-38 for decontamination, including walls and equipment(ft ²)	9,466.69	
	Volume of TA-54W-38 (based on the height of decontamination) (cubic feet)	51,239.27	
1-C	Materials identified within TA-54W-38		Four equipment structures were identified in Section 5.3.2; Decontamination of Structures and Related Equipment. The four major equipment structures were identified as the man lift, lid stands, drum wrapper, a portion of the bridge crane, and the floor scales. However, there was no specific mention of the actual number of lid stands, the area of the bridge crane that comes into contact with waste containers, neither the specific number of floor scales. The floor surface of the entire Unit is concrete with an epoxy-coat.
1-D	Maximum volume of waste to be removed from TA-54W-38 (gallons)	5,830.00	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	D	There was no specific information providing evidence for a more conservative approach to the PPE. As a result, it is assumed that Level D will be used for the extent of the decontamination activities.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

<u>Removal of Hazardous Material</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	17	Hours	51.73	868.00	3	2,604.01
4-Person Labor Crew	17	Hours	30.64	514.10	3	1,542.30
	17	Hours	30.64	514.10	3	1,542.30
	17	Hours	30.64	514.10	3	1,542.30
	17	Hours	30.64	514.10	3	1,542.30
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Liquid Hazardous Material	106	Drums	216.94	22,995.56	---	22,995.56
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				32,567.46		51,711.27
<u>Records Review, Structural Assessment, and Reporting</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	32.99	419.32	3	1,257.96
Field Engineer	13	Hours	32.99	419.32	3	1,257.96
<i>Structural Assessment</i>						
Field Engineer	17	Hours	32.99	559.09	3	1,677.28
Field Engineer	17	Hours	32.99	559.09	3	1,677.28
<i>Reporting</i>						
Field Engineer	19	Hours	32.99	628.98	3	1,886.94
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				5,412.80		16,238.41
Total for Step 2-A				37,980.26	-	67,949.68
<u>Development of the Sampling and Analysis Plan</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				38,804.46	-	70,422.27

5. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	---	Hours	51.73	---	3	---
	4-Person Labor Crew	---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	3	---
	Hotel/Lodging - Bare Task includes the 4 estimated work days	---	People /Night	100.00	---	3	---
	Vehicle Rental includes the 4 estimated work days	---	Vehicles/Day	70.00	---	3	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	125.50	---	3	---
Total for Removal of Equipment					---	---	---

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of the four metal cabinets.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the unit - converted volume (cubic feet to cubic yards)	---	Cubic yards	169.83	---	---	---
Total for Removal of Equipment					---	---	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	35	Hours	51.73	1,807.12	3	5,421.35
	4-Person Labor Crew	35	Hours	30.64	1,070.32	3	3,210.96
		35	Hours	30.64	1,070.32	3	3,210.96
		35	Hours	30.64	1,070.32	3	3,210.96
		35	Hours	30.64	1,070.32	3	3,210.96
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	122.50	612.50	3	1,837.50
Total for Decontamination					13,620.89	---	40,862.68

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Drain	1	0.5	32.99	16.50	3	49.49
	Field Engineer - Liquid from the Drain	---	0.5	32.99	16.50	3	49.49
	Field Engineer - Equipment Wipes	23	8	32.99	252.93	3	758.80
	Field Engineer - Equipment Wipes	---	8	32.99	252.93	3	758.80
	Field Engineer - Field QA/QC Samples	---	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	---	3	32.99	87.98	3	263.93
	Total Number of Samples	32	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					714.81	---	2,144.43

Assumed 23 equipment wipe samples, 1 liquid sample, and 8 QA/QC samples will be collected.

Total for Step 3					14,335.70	---	43,007.11
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	588.54	---	---	---
Organics Soil - Unit	---	---	159.51	---	---	---
Cyanide Soil - Unit	---	---	68.43	---	---	---
Metals Liquid - Unit	1	---	227.21	227.21	---	227.21
Organics Liquid - Unit	1	---	159.51	159.51	---	159.51
Cyanide Liquid - Unit	1	---	38.44	38.44	---	38.44
Metals Equipment Wipes	23	---	588.54	13,536.46	---	13,536.46
Organics Equipment Wipes	23	---	159.51	3,668.63	---	3,668.63
Cyanide Equipment Wipes	23	---	68.43	1,573.82	---	1,573.82
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				22,605.32	---	22,605.32

Assumed 23 equipment wipes, 1 liquid sample and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	16	Hours	37.04	592.67	3	1,778.02
Total for Data Validation				592.67	3	1,778.02

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	54	Hours	32.99	1,779.33	3	5,338.00
Sample Documentation - Field Engineer	10	Hours	32.99	313.42	3	940.25
Certification Report - Field Engineer	19	Hours	32.99	628.98	3	1,886.94
Certification Report - Field Engineer	10	Hours	32.99	314.49	3	943.47
Total for Sample Management				3,036.22	12	9,108.65

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				26,234.21	15	33,491.99
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 54, Building 38 West Outdoor Storage Unit (TA-54-38W OSU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-54-38W OSU P1), pre-closure activities (Worksheet TA-54-38W OSU P2), decontamination of the unit structures (Worksheet TA-54-38W OSU P3), and analysis and sample management procedures (Worksheet TA-54-38W OSU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.17; Technical Area 54, Building 38 West Outdoor Storage Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-54-38 West

The Unit is an asphalt pad and a concrete loading dock which are used for the storage of hazardous wastes. An awning covers the loading dock. There are two small sheds (1024 and 1025) located at the Unit, however these are used only for storing equipment.

Contamination: Wastes stored at the unit include hazardous and mixed waste in both solid and liquid form. The stored wastes include corrosive liquids, sludge, debris, and chemical wastes with metals, volatile and semi-volatile constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-54-38 West OSU	2-A	68,172.01
2	Sampling and Analysis Plan	P2	2-B	2,475.34
3	Removal of Equipment and Structures	TA-54-38 West OSU	3-A	35,661.02
4	Disposal of Hazardous Material		3-B	352,815.30
5	Decontamination		3-C	34,977.00
6	Decontamination Verification Samples		3-D	3,431.09
7	Analyses	TA-54-38 West OSU	4-A	45,732.42
8	Data Validation		4-B	3,622.79
9	Sample Logbook		4-C	4,996.73
10	Sample Documentation		4-C	1,583.58
11	Subtotal of Closure Costs			553,467.28
12	Certification of Closure	TA-54-38 West OSU P4	4-C	2,682.67
13	Total Cost of Closure (Add cost of certification report to closure costs)			556,149.95

1. GENERAL UNIT DESCRIPTION

TA-54-38 West Outdoor Storage Unit (OSU) consists of an asphalt pad and a loading dock which is covered by a metal awning. The loading dock measures approximately 38 feet 10 inches long by 16 feet wide and is constructed of six-inch cast-in place concrete. Two small storage sheds are situated at the unit, however, per Section 2.0 of the Closure Plan, these sheds are not used for the storage of hazardous wastes. The entire permitted unit covers approximately 37,900 square feet.

As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, no equipment has been identified to be removed from the Unit. The asphalt pad, all materials associated with the pad (asphalt berm and a minimum of six inches of base course and soil underlying the pad) will be disposed and considered as hazardous waste.

According to Section 5.3.2 of the Closure Plan the loading dock and metal awning will be left in place and will require decontamination and decontamination verification. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the maximum permitted capacity.

It was also assumed that the level of Personal Protective Equipment is Level C since decontamination activities will include steam cleaning and pressure washing.

1-A	Permitted Unit Volume Capacity (cubic feet)	779.36	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 54-West Unit is 11,660 gallons (1558.72 cubic feet) for 2 container storage units. It is assumed that TA-54W-38 outdoor storage unit is one of the 2 units with a permitted design capacity of 5,830 gallons (779.36 cubic feet) of hazardous material may be stored at the Unit.
	Known Releases?	N/A	
1-B	Length of TA-54-38 West OSU asphalt pad (feet)	-	Identified Structures on the Unit: The Unit is an asphalt pad and loading dock which are used for the storage of hazardous wastes. Although there are two small sheds (1024 and 1025) located at the Unit, the closure plan indicates that these sheds are not used for the storage of hazardous waste and will not be removed or decontaminated as part of closure activities. Therefore, the sheds are not included in the cost estimate. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored on the asphalt pad and all the materials associated with the pad which includes minimum of 6 inches of the base course and soil underlying the pad. The total square footage of the permitted unit is 37,900 square feet. The loading dock is assumed to cover approximately 610 square feet based on the measurements provided in the Closure Plan. Therefore the total area of the asphalt pad to be disposed of is assumed to be 37,290 square feet. Surfaces, Structures, and Related Equipment recommended to be decontaminated included the loading dock and the awning that covers the dock. It is assumed that the awning covers the entire load
	Width of TA-54 West OSU asphalt pad (feet)	-	
	Height of TA-54 West OSU transportainer (feet) (based on decontamination of the transportainers)	1	
	Area of TA-54-38 West OSU asphalt pad (square feet)	37,290	
	Volume of TA-54-38 West OSU (cubic feet)	37,290	
	Length of TA-54-38 West OSU - loading dock (feet)	39	
	Width of TA-54-38 West OSU - loading dock (feet)	16	
	Thickness of TA-54-38 West OSU - loading dock (feet)	0.25	
	Area of TA-54-38 West OSU - loading dock (square feet)	621	
	Volume of TA-54-38 West OSU -loading dock (cubic feet)	155	
	Length of TA-54 West OSU - soil underlying the asphalt pad (feet)	-	
	Width of TA-54 West OSU - soil underlying the asphalt pad (feet)	-	
	Thickness of TA-54 West OSU - soil underlying the asphalt pad (feet)	0.50	
	Area of TA-54 West OSU - soil underlying the asphalt pad (square feet)	37,290	
Volume of TA-54 West OSU -soil underlying the asphalt pad (cubic feet)	18,645		
Estimated total area of the hazardous waste storage area (square feet)	37,900		
Total volume of the hazardous materials/structures to be removed (cubic feet)	56,090		
Estimated total area of the decontaminated structures (square feet)	1242.67		
1-C	Materials identified within TA-54 West OSU Outdoor Container Storage Unit		Materials identified at the Unit include hazardous wastes, loading dock, awning over the loading dock, the asphalt pad, and all materials associated with the pad.
1-D	Maximum volume of waste to be removed from TA-54 West OSU (gallons)	5,830.00	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)		Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, pressure and steam washing methods were proposed for the . As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Material						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	17	Hours	51.73	868.00	3	2,604.01
4-Person Labor Crew	17	Hours	30.64	514.10	3	1,542.30
	17	Hours	30.64	514.10	3	1,542.30
	17	Hours	30.64	514.10	3	1,542.30
	17	Hours	30.64	514.10	3	1,542.30
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew) includes estimated 7 work days	5	People	78.27	391.37	3	1,174.10
Disposal of Liquid Hazardous Material	53	Drums	216.94	11,497.78	---	11,497.78
Disposal of Non-liquid Hazardous Material	14	Cubic yards	169.833	2,451.13	---	2,451.13
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 7 estimated work days	5	People /Night	100.00	3,500.00	3	10,500.00
Vehicle Rental includes the 7 estimated work days	2	Vehicles/Day	70.00	980.00	3	2,940.00
Total for Removal of Waste from Unit				2,924.40	15	52,336.22
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	397.43	3	1,192.30
Field Engineer	12	Hours	32.99	397.43	3	1,192.30
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	529.91	3	1,589.73
Field Engineer	16	Hours	32.99	529.91	3	1,589.73
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	596.15	3	1,788.45
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers) includes estimated 3 work days	2	People	73.88	147.76	3	443.28
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				2,450.84	15	15,835.79
Total for Step 2-A				5,375.24	30	68,172.01
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.16	297.25	3	891.76
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				297.25	6	2,475.34
Total for Step 2				5,672.49	36	70,647.36

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	23	Hours	51.73	1,214.56	3	3,643.68
	4-Person Labor Crew	23	Hours	30.64	719.36	3	2,158.08
		23	Hours	30.64	719.36	3	2,158.08
		23	Hours	30.64	719.36	3	2,158.08
		23	Hours	30.64	719.36	3	2,158.08
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	151.50	1,515.00	3	4,545.00
Total for Removal of Equipment					4,092.01	15	35,661.02

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of equipment and materials associated with the asphalt structure of the Unit.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Hazardous Material Storage Areas	2,077.42	Cubic yards	169.833	352,815.30	---	352,815.30
Total for Removal of Equipment					352,815.30	---	352,815.30

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	18	Hours	51.73	956.25	3	2,868.76
	4-Person Labor Crew	18	Hours	30.64	566.37	3	1,699.11
		18	Hours	30.64	566.37	3	1,699.11
		18	Hours	30.64	566.37	3	1,699.11
		18	Hours	30.64	566.37	3	1,699.11
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	186.72	2,157.27	3	6,471.81	
Total for Decontamination					11,659.00	30	34,977.00

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	52	13	32.99	428.89	3	1,286.66
	Field Engineer - Soil Sample from the Unit		13	32.99	428.89	3	1,286.66
	Field Engineer - Sediment Sample of the Berm	0	0	32.99	-	3	-
	Field Engineer - Sediment Sample of the Berm		0	32.99	-	3	-
	Field Engineer - Equipment Wipes	5	2	32.99	54.99	3	164.96
	Field Engineer - Equipment Wipes		2	32.99	54.99	3	164.96
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples	65	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					87.98	21	3,431.09

Assumed 5 equipment wipe samples and 52 soil samples to be collected from the Unit.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					11,746.98	51	426,884.41
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and sediment samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (5) and soil samples (52) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	52	---	588.54	30,604.16	---	30,604.16
Organics Soil - Unit	52	---	159.51	8,294.30	---	8,294.30
Cyanide Soil - Unit	0	---	68.43	-	---	-
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	5	---	588.54	2,942.71	---	2,942.71
Organics Equipment Wipes	5	---	159.51	797.53	---	797.53
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	0	---	38.44	-	---	-
Total for Analysis of the Decontamination Verification Samples				45,732.42	---	45,732.42

Assumed 5 equipment wipes and 52 soil samples and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	33	Hours	37.16	1,207.60	3	3,622.79
Total for Data Validation				1,207.60	3	3,622.79

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	50	Hours	32.99	1,665.58	3	4,996.73
Sample Documentation - Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Certification Report - Field Engineer	18	Hours	32.99	596.15	3	1,788.45
Certification Report - Field Engineer	9	Hours	32.99	298.07	3	894.22
Total for Sample Management				3,087.66	12	9,262.98

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				50,027.67	15	58,618.19
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55 Building 4 Room B40 (TA-55-4-B40) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-B40 P1), pre-closure activities (Worksheet TA-55-4-B40 P2), decontamination of the unit structures (Worksheet TA-55-4-B40 P3), and analysis and sample management procedures (Worksheet TA-55-4-B40 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.18; Technical Area 55 Building 4 Room B40 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-B40

Contamination: Hazardous and mixed waste in both solid and liquid form. Contains sludge, debris, oils, and chemical wastes with metals and volatile and semi-volatile organic constituents.

Origin of Contamination: The entire floor of the Unit served as a storage for hazardous wastes.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-B40 P2	2-A	116,339.55
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-4-B40 P3	3-A	28,364.76
4	Disposal of Hazardous Material		3-B	4,666.61
5	Decontamination		3-C	34,374.28
6	Decontamination Verification Samples		3-D	1,781.53
7	Analyses	TA-55-4-B40 P4	4-A	18,914.27
8	Data Validation		4-B	1,500.20
9	Sample Logbook		4-C	3,768.71
10	Sample Documentation		4-C	758.80
11	Subtotal of Closure Costs			212,941.31
12	Certification of Closure	TA-55-4-B40 P4	4-C	2,728.62
13	Total Cost of Closure (Add cost of certification report to closure costs)			215,669.92

1. GENERAL UNIT DESCRIPTION

TA-55-4-B40 does not contain any structures. The Unit does contain a vestibule and is in an L-shaped formation. The Unit measures approximately 3,294 square feet

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-B40 unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 55 Unit container storage area is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed tht TA-55-4-B40 is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-55-4-B40 (feet)	62	Identified Structures on the Unit: There are no identified structures within the Unit. Removal of the four metal cabinets, which assumed to be 2% of the Unit's area (65.9 square feet), will be conducted. Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal. The entire Unit will be decontaminated. The height of the dome and building are assumed to be 11 feet for decontamination purposes.
	Width of TA-55-4-B40 (feet)	55	
	Height of TA-55-4-B40 (feet) (based on the decontamination height)	11	
	Area of TA-55-4-B40 (square feet)	3,372	
	Volume of TA-55-4-B40 (cubic feet)	37,095	
	Volume of hazardous equipment/structure (assuming 2% of the total Unit's volume)(cubic feet)	741.9	
1-C	Materials identified within TA-55-4-B40		No materials were identified within the Unit other than the hazardous material stored.
1-D	Maximum volume of waste to be removed from TA-55-4-B40 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Non-liquid Hazardous Material	74	Cubic yards	169.83	12,507.91	---	12,507.91
Disposal of Liquid Hazardous Material	270	Drums	216.94	58,672.20	---	58,672.20
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				81,309.31		101,567.73
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	404.24	3	1,212.72
Field Engineer	12	Hours	32.99	404.24	3	1,212.72
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	538.99	3	1,616.96
Field Engineer	16	Hours	32.99	538.99	3	1,616.96
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	606.36	3	1,819.08
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	75.57	151.13	3	453.39
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	-	3	-
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				4,923.94		14,771.82
Total for Step 2-A				86,233.26		116,339.55
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				87,057.45	-	118,812.14

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	51.73	833	3	2498
	4-Person Labor Crew	16	Hours	30.64	493	3	1480
		16	Hours	30.64	493	3	1480
		16	Hours	30.64	493	3	1480
		16	Hours	30.64	493	3	1480
		16	Hours	30.64	493	3	1480
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.82	369	3	1,107.32	
Total for Removal of Equipment					9,454.92		28,364.76

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of the four metal cabinets.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	27.48	Cubic yards	169.83	4,666.61	---	4,666.61
Total for Removal of Equipment					4,666.61		4,666.61

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	23	Hours	51.73	1,176.58	3	3,529.74
	4-Person Labor Crew	23	Hours	30.64	696.87	3	2,090.60
		23	Hours	30.64	696.87	3	2,090.60
		23	Hours	30.64	696.87	3	2,090.60
		23	Hours	30.64	696.87	3	2,090.60
		23	Hours	30.64	696.87	3	2,090.60
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	114.81	574.05	3	1,722.15	
Total for Decontamination					11,458.09		34,374.28

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	19	6	32.99	208.94	3	626.83
	Field Engineer - Equipment Wipes	6	6	32.99	208.94	3	626.83
	Field Engineer - Field QA/QC Samples	3	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Total Number of Samples	27	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					593.84		1,781.53

Assumed 19 equipment wipe samples and 8 QA/QC samples will be collected.

Total for Step 3					26,173.47		69,187.18
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4 - Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	588.54	---	---	---
Organics Soil - Unit	---	---	159.51	---	---	---
Cyanide Soil - Unit	---	---	68.43	---	---	---
Metals Liquid - Unit	---	---	227.21	---	---	---
Organics Liquid - Unit	---	---	159.51	---	---	---
Cyanide Liquid - Unit	---	---	38.44	---	---	---
Metals Equipment Wipes	19	---	588.54	11,182.29	---	11,182.29
Organics Equipment Wipes	19	---	159.51	3,030.61	---	3,030.61
Cyanide Equipment Wipes	19	---	68.43	1,300.11	---	1,300.11
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				18,914.27	---	18,914.27

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	14	Hours	37.04	500.07	3	1,500.20
Total for Data Validation				500.07	3	1,500.20

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	38	Hours	32.99	1,256.24	3	3,768.71
Sample Documentation - Field Engineer	8	Hours	32.99	252.93	3	758.80
Certification Report - Field Engineer	18	Hours	32.99	606.36	3	1,819.08
Certification Report - Field Engineer	9	Hours	32.99	303.18	3	909.54
Total for Sample Management				2,418.71	13	7,256.13

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				21,833.04	15	27,670.60
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Room K13 (TA-55-4-K13) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-K13 P1), pre-closure activities (Worksheet TA-55-4-K13 P2), decontamination of the unit structures (Worksheet TA-54-4-K13 P3), and analysis and sample management procedures (Worksheet TA-55-4-K13 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.19; Technical Area 55, Building 4, Room K13 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-K13

The Unit consists of a rectangular shaped area that is open on three sides and measures 16 feet by 13 feet. There is a pillar on one of the open sides.

Contamination: Room K13 contains hazardous and mixed waste in both liquid and solid form. The wastes stored include corrosive, reactive and ignitable liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-K13 P2	2-A	163,546.61
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-4-K13 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	29,192.89
6	Decontamination Verification Samples		3-D	1,253.67
7	Analyses	TA-55-4-K13 P4	4-A	12,382.47
8	Data Validation		4-B	1,055.70
9	Sample Logbook		4-C	2,740.78
10	Sample Documentation		4-C	494.87
11	Subtotal of Closure Costs			213,139.58
12	Certification of Closure	TA-55-4-K13 P4	4-C	2,675.77
13	Total Cost of Closure (Add cost of certification report to closure costs)			215,815.35

1. GENERAL UNIT DESCRIPTION

TA-55-4-K13 contains three metal cabinets. The Unit contains one pillar on one of the open sides. The Unit measures approximately 208 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous waste permitted for the TA-55-4-K13 unit is assumed to be 29,750 gallons. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, three metal cabinets will be removed from the unit following the structural assessment. No structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-4-K13 is one of the 6 units with permitted capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste storage.
	Known Releases?	N/A	
1-B	Length of TA-55-4-K13 (feet)	16	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-55-4-K13 (feet)	13	
	Height of TA-55-4-K13 (feet) (based on the decontamination height)	11	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal.
	Area of TA-55-4-K13 (square feet)	208	The entire Unit will be decontaminated.
	Total area to be decontaminated - four walls and floor (square feet)	846	<u>The height of the dome and building are assumed to be 11 feet for decontamination purposes.</u>
1-C	Materials identified within TA-55-4-K13		No materials were identified within the Unit other than the hazardous wastes stored.
1-D	Maximum volume of hazardous waste to be removed from TA-55-4-K13 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

<u>Removal of Hazardous Wastes</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Liquid Hazardous Wastes	541	Drums	216.94	117,344.40	---	117,344.40
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				3,481.71	15	147,732.02
<u>Records Review, Structural Assessment, and Reporting</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	396.41	3	1,189.23
Field Engineer	12	Hours	32.99	396.41	3	1,189.23
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	528.55	3	1,585.64
Field Engineer	16	Hours	32.99	528.55	3	1,585.64
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	594.62	3	1,783.85
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				2,444.53	15	15,814.59
Total for Step 2-A				5,926.24	30	163,546.61
<u>Development of the Sampling and Analysis Plan</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				296.34	6	2,472.59
Total for Step 2				6,222.57	36	166,019.20

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	---	Hours	51.73	---	---	---	
		---	Hours	30.64	---	---	---	
	4-Person Labor Crew		---	Hours	30.64	---	---	---
			---	Hours	30.64	---	---	---
			---	Hours	30.64	---	---	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---	
	Airfare	---	People	1,000.00	---	---	---	
	Hotel/Lodging - Bare Task includes the estimated work days	---	People /Night	100.00	---	---	---	
	Vehicle Rental includes the estimated work days	---	Vehicles/Day	70.00	---	---	---	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	151.50	---	---	---	
Total for Removal of Equipment					---	0	---	

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.

No structures will be removed from the Unit. The entire unit will be decontaminated.

Disposal of Hazardous Wastes							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for "Total Volume of Equipment/Structures to be removed"	---	Cubic yards	169.83	---	---	---
	Total for Removal of Equipment					---	---

No structures will be removed from the Unit. The entire unit will be decontaminated.

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Labor							
	Site Project Manager	18	Hours	51.73	915.21	3	2,745.64	
		18	Hours	30.64	542.06	3	1,626.19	
	4-Person Labor Crew		18	Hours	30.64	542.06	3	1,626.19
			18	Hours	30.64	542.06	3	1,626.19
			18	Hours	30.64	542.06	3	1,626.19
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew) includes 2 estimated work days	5	People/Day	73.50	367.50	3	1,102.50		
Total for Decontamination					9,730.96	30	29,192.89	

Assume 200 square feet area decontaminated within one hour.

Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	11	4	32.99	120.97	3	362.90
	Field Engineer - Equipment Wipes		4	32.99	120.97	3	362.90
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples	19	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					87.98	9	1,253.67
Total for Step 3					9,818.94	39	30,446.56

Assumed 11 wipe samples and 8 QA/QC samples will be collected.

4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe, soil, and liquid samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (11) was included within the cost estimate as there were 11 wipe samples identified within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. Analysis of wipe samples were estimated by the suggested analyses provided within Table G-19.1. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	588.54	---	---	---
Organics Soil - Unit	---	---	159.51	---	---	---
Cyanide Soil - Unit	---	---	68.43	---	---	---
Metals Liquid - Unit	---	---	227.21	---	---	---
Organics Liquid - Unit	---	---	159.51	---	---	---
Cyanide Liquid - Unit	---	---	38.44	---	---	---
Metals Equipment Wipes	11	---	588.54	6,473.96	---	6,473.96
Organics Equipment Wipes	11	---	159.51	1,754.56	---	1,754.56
Cyanide Equipment Wipes	11	---	68.43	752.69	---	752.69
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				12,382.47	---	12,382.47

Assumed 11 wipe samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	10	Hours	37.04	351.90	3	1,055.70
Total for Data Validation				351.90	3	1,055.70

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	28	Hours	32.99	913.59	3	2,740.78
Sample Documentation - Field Engineer	5	Hours	32.99	164.96	3	494.87
Certification Report - Field Engineer	18	Hours	32.99	594.62	3	1,783.85
Certification Report - Field Engineer	9	Hours	32.99	297.31	3	891.92
Total for Sample Management				1,970.47	12	5,911.42

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4			14,704.85		15	19,349.59
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Room B05 (TA-55-B05) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-B05 P1), pre-closure activities (Worksheet TA-55-B05 P2), decontamination of the unit structures (Worksheet TA-54-G-Pad 1 P3), and analysis and sample management procedures (Worksheet TA-55-B05 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.20; Technical Area 55, Building 4, Room B05 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-B05

The Unit consists of a room that is opened on three sides as well as a portion of the fourth side.

Contamination: Room B05 contains hazardous and mixed waste in solid form. The wastes stored include sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-B05 P2	2-A	71,221.36
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-B05 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	29,601.62
6	Decontamination Verification Samples		3-D	791.79
7	Analyses	TA-55-B05 P4	4-A	6,667.15
8	Data Validation		4-B	666.76
9	Sample Logbook		4-C	2,319.68
10	Sample Documentation		4-C	263.93
11	Subtotal of Closure Costs			114,004.88
12	Certification of Closure	TA-55-B05 P4	4-C	2,676.64
13	Total Cost of Closure (Add cost of certification report to closure costs)			116,681.52

I. GENERAL UNIT DESCRIPTION
 TA-55-B05 does not contain any structures. The Unit does contain two pillars and a chain link fence along the open sides. The Unit measures approximately 260 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous material is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-B05 unit is assumed to be 29,750 gallons. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, no equipment or structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-B05 is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste storage.
	Known Releases?	N/A	
1-B	Length of TA-55-B05 (feet)	26	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-55-B05 (feet)	10	
	Height of TA-55-B05 (feet) (based on the decontamination height)	11	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal.
	Area of TA-55-B05 (square feet)	260	The entire Unit will be decontaminated.
	Total areas for decontamination - 4 walls and floor (square feet)	1,052	The height of the dome and building are assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-55-B05		No materials were identified within the Unit other than the hazardous material stored.
1-D	Maximum volume of waste to be removed from TA-54-G-Pad 1 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Material						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Non-liquid Hazardous Material	147	Cubic yards	169.833	25,015.82	---	25,015.82
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				35,145.03		55,403.44
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	396.54	3	1,189.62
Field Engineer	12	Hours	32.99	396.54	3	1,189.62
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	528.72	3	1,586.16
Field Engineer	16	Hours	32.99	528.72	3	1,586.16
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	594.81	3	1,784.42
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.66	147.32	3	441.96
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				5,272.64		15,817.92
Total for Step 2-A				40,417.67		71,221.36
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				41,241.86	-	73,693.95

3. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	---	Hours	51.73	---	---	---	Assumed 1500 cubic feet of equipment and material removed and disposed within one hour. No structures will be removed from the Unit. The entire unit will be decontaminated.
4-Person Labor Crew	---	Hours	30.64	---	---	---	
	---	Hours	30.64	---	---	---	
	---	Hours	30.64	---	---	---	
	---	Hours	30.64	---	---	---	
Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---	
Airfare	---	People	1,000.00	---	---	---	
Hotel/Lodging - Bare Task includes the 7 estimated work days	---	People /Night	100.00	---	---	---	
Vehicle Rental includes the 7 estimated work days	---	Vehicles/Day	70.00	---	---	---	
Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	151.50	---	---	---	
Total for Removal of Equipment				-	0		

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Structures and Equipment to be removed from the Unit - converted volume (cubic feet to cubic yards)	---	Cubic yards	169.83	---	---	---	
Total for Removal of Equipment				---	---	---	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	18	Hours	51.73	936.53	3	2,809.58	Assume 200 square feet area decontaminated within one hour. Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
4-Person Labor Crew	18	Hours	30.64	554.69	3	1,664.06	
	18	Hours	30.64	554.69	3	1,664.06	
	18	Hours	30.64	554.69	3	1,664.06	
	18	Hours	30.64	554.69	3	1,664.06	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	86.39	431.94	3	1,295.81	
Total for Decontamination				9,867.21		29,601.62	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	Assumed 4 equipment wipe samples and 8 QA/QC samples will be collected.
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Equipment Wipes	4	1	32.99	43.99	3	131.97	
Field Engineer - Equipment Wipes	1	1	32.99	43.99	3	131.97	
Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93	
Field Engineer - Field QA/QC Samples	3	3	32.99	87.98	3	263.93	
Total Number of Samples	12	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				263.93		791.79	

Total for Step 3				10,131.14		30,393.41
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4. Analysis and Sample Management Procedures

Analysis							Assumed 4 and 8 field QA/QC samples.
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Metals Soil - Unit	---	---	588.54	---	---	---	
Organics Soil - Unit	---	---	159.51	---	---	---	
Cyanide Soil - Unit	---	---	68.43	---	---	---	
Metals Liquid - Unit	---	---	227.21	---	---	---	
Organics Liquid - Unit	---	---	159.51	---	---	---	
Cyanide Liquid - Unit	---	---	38.44	---	---	---	
Metals Equipment Wipes	4	---	588.54	2,354.17	---	2,354.17	
Organics Equipment Wipes	4	---	159.51	638.02	---	638.02	
Cyanide Equipment Wipes	4	---	68.43	273.71	---	273.71	
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68	
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05	
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54	
Total for Analysis of the Decontamination Verification Samples				6,667.15	---	6,667.15	

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	6	Hours	37.04	222.25	3	666.76
Total for Data Validation				222.25	3	666.76

Sample Management Procedures							Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)		
Logbook Documentation - Field Engineer	23	Hours	32.99	773.23	3	2,319.68	
Sample Documentation - Field Engineer	3	Hours	32.99	87.98	3	263.95	
Certification Report - Field Engineer	18	Hours	32.99	594.81	3	1,784.42	
Certification Report - Field Engineer	9	Hours	32.99	297.40	3	892.21	
Total for Sample Management				1,753.42	13	5,260.25	

Total for Step 4			8,642.82	15	12,594.16
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Room B45 (TA-55-4-B45) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-B45 P1), pre-closure activities (Worksheet TA-55-4-B45 P2), decontamination of the unit structures (Worksheet TA-55-4-B45 P3), and analysis and sample management procedures (Worksheet TA-55-4-B45 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.21; Technical Area 55, Building 4, Room B45 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-B45

Contamination: The waste stored at the Unit consists of hazardous and mixed waste in solid form.

Origin of Contamination: The Unit stored sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-B45 P2	2-A	117,777.66
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-4-B45 P3	3-A	---
4	Disposal of Hazardous Material		3-B	---
5	Decontamination		3-C	30,988.29
6	Decontamination Verification Samples		3-D	791.79
7	Analyses	TA-55-4-B45 P4	4-A	6,667.15
8	Data Validation		4-B	666.76
9	Sample Logbook		4-C	2,542.94
10	Sample Documentation		4-C	263.93
11	Subtotal of Closure Costs			162,171.11
12	Certification of Closure	TA-55-4-B45 P4	4-C	2,685.63
13	Total Cost of Closure (Add cost of certification report to closure costs)			164,856.74

1. GENERAL UNIT DESCRIPTION
 TA-55-4-B45 does not contain any structures. The entire floor was used for storing hazardous waste. All waste is assumed to be solid form. The Unit measures approximately 765 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-B45 unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed tht TA-55-4-B45 is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-55-4-B45 (ft)	45.1	The Unit is rectangular-shaped. No equipment or structures will require removal.
	Width of TA-55-4 B45 (ft)	17.7	
	Height of TA-55-4-B45 (based on the height of the decontamination) (ft)	11	
	Area of TA-55-4-B45 (ft ²)	798.27	
	Total area for decontamination - 4 walls and floor (square feet)	2179.87	
1-C	Materials identified within TA-55-4-B45		No equipment was identified in the Closure Plan.
1-D	Maximum volume of waste to be removed from TA-55-4-B45 (gallons)	29,750.00	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Prevention of the migration of decontamination wash water, decontamination crews are requested to have a supplied air apparatus as well as be fully enclosed in protective clothing.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25	
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22	
	20	Hours	30.64	612.07	3	1,836.22	
	20	Hours	30.64	612.07	3	1,836.22	
	20	Hours	30.64	612.07	3	1,836.22	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	97.86	489.30	3	1,467.89	
Disposal Of Liquid Hazardous Waste	270	Drums	216.94	58,672.20	---	58,672.20	
Disposal of Non-Liquid Hazardous Material	74	Cubic yards	169.83	12,507.91	---	12,507.91	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for Removal of Waste from Unit				81,431.11		101,933.12	
2-A							
Records Review, Structural Assessment, and Reporting							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
<i>Records Review</i>							
Field Engineer	12	Hours	32.99	397.87	3	1,193.61	
Field Engineer	12	Hours	32.99	397.87	3	1,193.61	
<i>Structural Assessment</i>							
Field Engineer	16	Hours	32.99	530.49	3	1,591.48	
Field Engineer	16	Hours	32.99	530.49	3	1,591.48	
<i>Reporting</i>							
Field Engineer	18	Hours	32.99	596.81	3	1,790.42	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	73.99	147.98	3	443.93	
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for the Records Review, Inspection, and Reporting				5,281.51		15,844.54	
Total for Step 2-A				86,712.62		117,777.66	
2-B							
Development of the Sampling and Analysis Plan							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	8	Hours	37.04	296.34	3	889.01	
Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
Total for Step 2-B				824.20		2,472.59	
Total for Step 2				87,536.82	-	120,250.25	

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	---
3-A	Site Project Manager	---	Hours	51.73	---	3	---
	4-Person Labor Crew	---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
		---	Hours	30.64	---	3	---
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---
	Airfare	---	People	1,000.00	---	3	---
	Hotel/Lodging - Bare Task includes the 4 estimated work days	---	People /Night	100.00	---	3	---
	Vehicle Rental includes the 4 estimated work days	---	Vehicles/Day	70.00	---	3	---
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	125.50	---	3	---
Total for Removal of Equipment					-	---	---

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
No structures will be removed from the Unit. The entire unit will be decontaminated.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	---	Cubic yards	169.83	---	---	---
Total for Removal of Equipment					---	---	---

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	20	Hours	51.73	1,053.22	3	3,159.65
	4-Person Labor Crew	20	Hours	30.64	623.80	3	1,871.40
		20	Hours	30.64	623.80	3	1,871.40
		20	Hours	30.64	623.80	3	1,871.40
		20	Hours	30.64	623.80	3	1,871.40
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	100.20	501.02	3	1,503.05
Total for Decontamination					10,329.43	---	30,988.29

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	4	1	32.99	43.99	3	131.97
	Field Engineer - Equipment Wipes	4	1	32.99	43.99	3	131.97
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Total Number of Samples	12	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					263.93	---	791.79

Assumed 4 equipment wipe samples and 8 QA/QC samples will be collected.

Total for Step 3					10,593.36	---	31,780.08
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4. Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	588.54	---	---	---
Organics Soil - Unit	---	---	159.51	---	---	---
Cyanide Soil - Unit	---	---	68.43	---	---	---
Metals Liquid - Unit	---	---	227.21	---	---	---
Organics Liquid - Unit	---	---	159.51	---	---	---
Cyanide Liquid - Unit	---	---	38.44	---	---	---
Metals Equipment Wipes	4	---	588.54	2,354.17	---	2,354.17
Organics Equipment Wipes	4	---	159.51	638.02	---	638.02
Cyanide Equipment Wipes	4	---	68.43	273.71	---	273.71
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				6,667.15	---	6,667.15

Assumed 4 equipment wipes and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	6	Hours	37.04	222.25	3	666.76
Total for Data Validation				222.25	3	666.76

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	26	Hours	32.99	847.65	3	2,542.94
Sample Documentation - Field Engineer	3	Hours	32.99	87.98	3	263.93
Certification Report - Field Engineer	18	Hours	32.99	596.81	3	1,790.42
Certification Report - Field Engineer	9	Hours	32.99	298.40	3	895.21
Total for Sample Management				1,830.83	13	5,492.50

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				8,720.24	15	12,826.41
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**TA-55-4-Vault
Summary**

The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Vault (TA-55-4-Vault) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-Vault P1), pre-closure activities (Worksheet TA-55-4-Vault P2), decontamination of the unit structures (Worksheet TA-55-4-Vault P3), and analysis and sample management procedures (Worksheet TA-55-4-Vault P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.22; Technical Area 55, Building 4, Vault Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-Vault

Contamination: Hazardous waste in both liquid and solid form. The wastes stored in the Unit include corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.
Origin of Contamination: Hazardous wastes were contained in Rooms A and H of the Unit.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-Vault P2	2-A	117,740.41
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-4-Vault P3	3-A	29,343.48
4	Disposal of Hazardous Material		3-B	51.62
5	Decontamination		3-C	28,742.22
6	Decontamination Verification Samples		3-D	1,781.53
7	Analyses	TA-55-4-Vault P4	4-A	18,914.27
8	Data Validation		4-B	1,500.20
9	Sample Logbook		4-C	3,171.06
10	Sample Documentation		4-C	758.80
11	Subtotal of Closure Costs			204,476.17
12	Certification of Closure	TA-55-4-Vault P4	4-C	2,673.05
13	Total Cost of Closure (Add cost of certification report to closure costs)			207,149.22

1. GENERAL UNIT DESCRIPTION

TA-55-4-Vault does not contain any structures. The entire Unit was used for storing both liquid and non-liquid hazardous wastes. The Unit is irregularly shaped - as a result, the dimensions for the Unit were estimated to measure 45 square feet (9 feet long by 5 feet wide). Metal lockers are the only set equipment structures that will be removed from the Unit.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous material permitted on the TA-55-4-Vault unit is assumed to be 29,750 gallons. The hazardous waste stored on the Unit is classified as liquid and non-liquid. All hazardous material will be disposed of at an off-site facility during the Removal of Hazardous Material. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, four metal cabinets which were used for hazardous storage will be removed prior to decontamination.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

It was assumed that the minimum amount of hazardous material to be removed from the Unit is equivalent to the permitted volume. It was also assumed that the level of Personal Protective Equipment is L

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the permitted design capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-4-Vault is one of the 6 units with permitted design capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous material has been stored on the Unit.
	Known Releases?	Yes	
1-B	Length of TA-55-4 Vault (ft)	9	The Unit is irregularly shaped. Lockers will be removed.
	Width of TA-55-4 Vault (ft)	5	
	Height of TA-55-4 Vault (based on the height of the decontamination) (ft)	11	
	Area of TA-55-4 (ft ²)	45	
	Volume of TA-55-4 (based on the height of decontamination) (cubic feet)	495	
	Estimated volume of the structures and equipment to be removed (metal lockers) (ft ³)	9.9	
	Total area to be decontaminated - 4 walls and floor (ft ²)	353	
1-C	Materials identified within TA-3-29		Metal lockers were the only equipment structures identified within the Unit.
1-D	Maximum volume of waste to be removed from TA-55-4 Vault (gallons)	29,750.00	Assume the minimum volume of waste to be removed is equivalent to the permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Prevention of the migration of decontamination wash water, decontamination crews are requested to have a supplied air apparatus as well as be fully enclosed in protective clothing.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	97.86	489.30	3	1,467.89
Disposal of Non-Liquid Hazardous Material	74	Cubic yards	169.83	12,507.91	---	12,507.91
Disposal of Liquid Hazardous Material	270	Drums	216.94	58,672.20	---	58,672.20
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				81,431.11		101,933.12
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	396.01	3	1,188.02
Field Engineer	12	Hours	32.99	396.01	3	1,188.02
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	528.01	3	1,584.03
Field Engineer	16	Hours	32.99	528.01	3	1,584.03
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	594.01	3	1,782.03
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.53	147.06	3	441.17
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				5,269.10		15,807.29
Total for Step 2-A				86,700.21	-	117,740.41
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				824.20		2,472.59
Total for Step 2				87,524.40	-	120,213.00

5. DECONTAMINATION

Removal of Equipment Structures							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	18	Hours	51.73	\$ 930	3	2790	
	18	Hours	30.64	\$ 551	3	1653	
4-Person Labor Crew	18	Hours	30.64	\$ 551	3	1653	
	18	Hours	30.64	\$ 551	3	1653	
	18	Hours	30.64	\$ 551	3	1653	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Airfare	5	People	1,000.00	\$ 5,000	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	\$ 1,000	3	3,000.00	Removal and disposal of the metal lockers.
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	\$ 280	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	73.50	\$ 368	3	1,102.50	
Total for Removal of Equipment				3,133.66	27	29,343.48	

Disposal of Hazardous Material							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	0.30	Cubic yards	169.83	51.62	---	51.62	
Total for Removal of Equipment				51.62	---	51.62	

Decontamination							
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	17	Hours	51.73	864.21	3	2,592.62	
	17	Hours	30.64	511.85	3	1,535.56	
4-Person Labor Crew	17	Hours	30.64	511.85	3	1,535.56	
	17	Hours	30.64	511.85	3	1,535.56	
	17	Hours	30.64	511.85	3	1,535.56	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	3	---	Assume 200 square feet area decontaminated within one hour.
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	77.82	389.12	3	1,167.36	
Total for Decontamination				9,580.74		28,742.22	

Collection of Decontamination Verification Samples							
Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Liquid from the Sump	---	---	---	---	---	---	
Field Engineer - Equipment Wipes	19	6	32.99	208.94	3	626.83	
Field Engineer - Equipment Wipes	6	6	32.99	208.94	3	626.83	
Field Engineer - Field QA/QC Samples	3	3	32.99	87.98	3	263.93	
Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93	Assumed 4 equipment wipe samples and 8 QA/QC samples will be collected.
Total Number of Samples	27	---	---	---	---	---	
Total Number of Types of Samples	3	---	---	---	---	---	
Total for Decontamination Verification				593.84		1,781.53	

Total for Step 3				13,359.87		59,918.85	
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4- Analysis and Sample Management Procedures

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	588.54	---	---	---
Organics Soil - Unit	---	---	159.51	---	---	---
Cyanide Soil - Unit	---	---	68.43	---	---	---
Metals Liquid - Unit	---	---	227.21	---	---	---
Organics Liquid - Unit	---	---	159.51	---	---	---
Cyanide Liquid - Unit	---	---	38.44	---	---	---
Metals Equipment Wipes	19	---	588.54	11,182.29	---	11,182.29
Organics Equipment Wipes	19	---	159.51	3,030.61	---	3,030.61
Cyanide Equipment Wipes	19	---	68.43	1,300.11	---	1,300.11
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				18,914.27	---	18,914.27

Assumed 19 equipment wipes and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	14	Hours	37.04	500.07	3	1,500.20
Total for Data Validation				500.07	3	1,500.20

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	32	Hours	32.99	1,057.02	3	3,171.06
Sample Documentation - Field Engineer	8	Hours	32.99	252.93	3	758.80
Certification Report - Field Engineer	18	Hours	32.99	594.01	3	1,782.03
Certification Report - Field Engineer	9	Hours	32.99	297.01	3	891.02
Total for Sample Management				2,200.97	13	6,602.90

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				21,615.30	15	27,017.37
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The cost for closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4 (TA-55-4) Hazardous Waste Storage Tanks is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4 P1), pre-closure activities (Worksheet TA-55-4 P2), decontamination of the unit structures (Worksheet TA-55-4 P3), and analysis and sample management procedures (Worksheet TA-55-4 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.23; Technical Area 55, Building 4, Room 401 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-Building 4 Room 401 Indoor Storage Unit

The Unit consists of a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system.

Contamination: The unit is used to store mixed transuranic evaporator bottoms solutions generated primarily from research and development activities and processing and recovery operations at TA-55 and the Chemistry and Metallurgy Research Building at TA-3. The liquid waste consists generally of concentrated nitric acid saturated with salts and metals.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55 Building 4	2-A	44,453.12
2	Sampling and Analysis Plan	Room 401 P2	2-B	2,472.59
3	Removal of Equipment and Structures	TA-55 Building 4 Room 401 P3	3-A	29,479.74
4	Disposal of Hazardous Material		3-B	6,227.23
5	Decontamination		3-C	39,682.80
6	Decontamination Verification Samples		3-D	857.77
7	Analyses	TA-55 Building 4 Room 401 P4	4-A	4,078.76
8	Data Validation		4-B	722.32
9	Sample Logbook		4-C	3,699.64
10	Sample Documentation		4-C	296.92
11	Subtotal of Closure Costs			131,970.89
12	Certification of Closure	TA-55 Building 4 Room 401 P4	4-C	2,672.56
13	Total Cost of Closure (Add cost of certification report to closure costs)			134,643.45

1. GENERAL UNIT DESCRIPTION

The Unit consists of a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system. According to the Part A Permit Application, 137 gallons of hazardous waste is permitted to be stored in TA-55 Building 4, Room 401. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, the storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed.

According to Section 5.3.2; Decontamination of Structures of the Closure Plan, there is no equipment located at the permitted unit that is expected to be left in place or require decontamination. The walls and floor of Building 401 will be decontaminated.

It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the maximum permitted capacity.
It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	18.31	According to the Part A Application, the Unit is permitted to store a total of 137 gallons of waste.
	Known Releases?	N/A	
1-B	Length of TA-55 Building 4, Room 401 (feet)	-	Identified Structures on the Unit: Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste stored at the Unit and the six tanks and associated piping. Surfaces, Structures, and Related Equipment recommended to be decontaminated includes the walls and floor of Room 401. A total of 4,500 square feet will require decontamination. The height of the Room 401 is assumed to be 11 feet for decontamination purposes.
	Width of TA-55 Building 4 Room 401(feet)	-	
	Height of TA-55 Building 4 Room 401 (feet) (based on decontamination of Room 401)	11	
	Area of TA-55 Building 4 Room 401(square feet)	4,500	
	Volume of TA-55 Building 4, Room 401(based on the decontamination height) (cubic feet)	49,500	
	Total areas for decontamination, assuming rectangular dimensions of 45 feet by 100 feet - 4 walls and floor (square feet)	7,690	
	Estimated total volumeof equipment/structures to be removed (Room 401) (cubic feet)	990	
1-C	Materials identified within TA-55 Building 4, Room 401 Unit		Materials identified in the Unit include hazardous wastes, 6 storage tanks and associated piping.
1-D	Maximum volume of waste to be removed from TA-55 Building 4, Room 401 (gallons)	137	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, sweeping and then wash down were proposed for the Unit. Workers will require protection for exposure to radiation. As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

2-A		Removal of Hazardous Waste					
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Site Project Manager	16	Hours	51.73	828.63	3	2,485.90	
4-Person Labor Crew	16	Hours	30.64	490.78	3	1,472.35	
	16	Hours	30.64	490.78	3	1,472.35	
	16	Hours	30.64	490.78	3	1,472.35	
	16	Hours	30.64	490.78	3	1,472.35	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.61	368.06	3	1,104.18	
Disposal of Liquid Hazardous Material	1	Drums	216.94	270.19	---	270.19	
Disposal of Non-liquid Hazardous Material	0.34	Cubic yards	169.833	57.60	---	57.60	
Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for Removal of Waste from Unit				2,791.76	15	28,647.26	
2-A		Records Review, Structural Assessment, and Reporting					
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
<i>Records Review</i>							
Field Engineer	12	Hours	32.99	395.94	3	1,187.81	
Field Engineer	12	Hours	32.99	395.94	3	1,187.81	
<i>Structural Assessment</i>							
Field Engineer	16	Hours	32.99	527.91	3	1,583.74	
Field Engineer	16	Hours	32.99	527.91	3	1,583.74	
<i>Reporting</i>							
Field Engineer	18	Hours	32.99	593.90	3	1,781.71	
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---	
Airfare	2	People	1,000.00	2,000.00	3	6,000.00	
Per Diem (for the two Field Engineers)	2	People	73.51	147.02	3	441.06	
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00	
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00	
Total for the Records Review, Inspection, and Reporting				2,441.60	15	15,805.86	
Total for Step 2-A				5,233.36	30	44,453.12	
2-B		Development of the Sampling and Analysis Plan					
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	8	Hours	37.04	296.34	3	889.01	
Field Engineer	16	Hours	32.99	527.86	3	1,583.58	
Total for Step 2-B				296.34	6	2,472.59	
Total for Step 2				5,529.70	36	46,925.71	

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	51.73	834.51	3	2,503.54
	4-Person Labor Crew	16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	73.50	735.00	3	2,205.00	
Total for Removal of Equipment					2,811.58	15	29,479.74

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for "Total Volume of Equipment Structures to be Removed"	36.67	Cubic yards	169.833	6,227.23	---	6,227.23
Total for Removal of Equipment					6,227.23	---	6,227.23

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	31	Hours	51.73	1,623.30	3	4,869.89
	4-Person Labor Crew	31	Hours	30.64	961.45	3	2,884.34
		31	Hours	30.64	961.45	3	2,884.34
		31	Hours	30.64	961.45	3	2,884.34
		31	Hours	30.64	961.45	3	2,884.34
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	167.70	838.51	3	2,515.54	
Total for Decontamination					13,227.60	30	39,682.80

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	0	0	32.99	-	3	-
	Field Engineer - Soil Sample from the Unit	0	0	32.99	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	32.99	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	32.99	-	3	-
	Field Engineer - Equipment Wipes	5	2	32.99	54.99	3	164.96
	Field Engineer - Equipment Wipes	2	2	32.99	54.99	3	164.96
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Total Number of Samples	13	---	---	---	---	---
	Total Number of Types of Samples	2	---	---	---	---	---
Total for Decontamination Verification					87.98	21	857.77

Assumed 5 wipe samples to be collected from walls and floor of Room 401.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					13,315.58	51	76,247.54
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (5) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	0	---	588.54	-	---	-
Organics Soil - Unit	0	---	159.51	-	---	-
Cyanide Soil - Unit	0	---	68.43	-	---	-
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	5	---	588.54	2,942.71	---	2,942.71
Organics Equipment Wipes	0	---	159.51	-	---	-
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	5	---	227.21	1,136.05	---	1,136.05
Organics Field QA/QC	0	---	159.51	-	---	-
Cyanide Field QA/QC	0	---	38.44	-	---	-
Total for Analysis of the Decontamination Verification Samples				4,078.76	---	4,078.76

Assumed 5 wipes and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	7	Hours	37.04	240.77	3	722.32
Total for Data Validation				240.77	3	722.32

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	37	Hours	32.99	1,233.21	3	3,699.64
Sample Documentation - Field Engineer	3	Hours	32.99	98.97	3	296.92
Certification Report - Field Engineer	18	Hours	32.99	593.90	3	1,781.71
Certification Report - Field Engineer	9	Hours	32.99	296.95	3	890.85
Total for Sample Management				2,223.04	12	6,669.13

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				6,542.57	15	11,470.20
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The cost for closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4 (TA-55-4) Indoor Mixed Waste Stabilization Treatment Unit (IMWSTU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4 IMWSTU P1), pre-closure activities (Worksheet TA-55-4 IMWSTU P2), decontamination of the unit structures (Worksheet TA-55-4 P3), and analysis and sample management procedures (Worksheet TA-55-4 IMWSTU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.24; Technical Area 55, Building 4, Room 401 Indoor Mixed Waste Stabilization Treatment Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-55-Building 4 Room 401 Indoor Mixed Waste Stabilization Treatment Unit (TA-55-4 IMWSTU)

The permitted unit has been used for treatment of mixed waste and is located in Room 401 at TA-55-4. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is located in glovebox GB-454 along the west wall of Room 401. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox. Contamination: The unit is used to store mixed transuranic evaporator bottoms solutions generated primarily from research and development activities and processing and recovery operations at TA-55 and the Chemistry and Metallurgy Research Building at TA-3. The liquid waste consists generally of concentrated nitric acid saturated with salts and metals. The solid process wastes consist of process residue from the evaporator and filter cake. These waste streams exhibit the hazardous characteristics of toxicity (for metals) and corrosivity and are classified as mixed waste.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4 IMWSTU	2-A	44,485.29
2	Sampling and Analysis Plan	P2	2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-4 IMWSTU	3-A	29,479.74
4	Disposal of Hazardous Material		3-B	6,227.23
5	Decontamination		3-C	39,682.80
6	Decontamination Verification Samples		3-D	1,055.72
7	Analyses	TA-55-4 IMWSTU	4-A	6,526.01
8	Data Validation		4-B	889.01
9	Sample Logbook		4-C	3,897.59
10	Sample Documentation		4-C	395.90
11	Subtotal of Closure Costs			135,111.87
12	Certification of Closure	TA-55-4 IMWSTU P4	4-C	2,672.56
13	Total Cost of Closure (Add cost of certification report to closure costs)			137,784.43

1. GENERAL UNIT DESCRIPTION

The Unit consists of a storage tank system that has been used for storage of hazardous waste in liquid form. Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is comprised of a glovebox and six tanks which consist of two waste storage tank components (i.e., the Evaporator Glovebox Tank (one tank) and the Cementation Unit Pencil Tanks (five tanks)). This tank system shares a common piping and pumping system. According to the Part A Permit Application, 137 gallons of hazardous waste is permitted to be stored in TA-55 Building 4, Room 401. As stated in Section 5.3.1; Removal of Structures, and Related Equipment of the Closure Plan, the storage tanks, piping and the glovebox and all materials associated with the permitted unit in Room 401 (tanks, ancillary equipment, glovebox, etc.) will be removed.

According to Section 5.3.2; Decontamination of Structures of the Closure Plan, there is no equipment located at the permitted unit that is expected to be left in place or require decontamination. The walls and floor of Building 401 will be decontaminated.

It was assumed that the minimum amount of hazardous waste to be removed from the Unit is equivalent to the maximum permitted capacity.
It was also assumed that the level of Personal Protective Equipment is Level C.

1-A	Permitted Unit Volume Capacity (cubic feet)	20.05	According to the Part A Application, the Unit is permitted to treat a total of 150 gallons of waste.
	Known Releases?	N/A	
1-B	Length of TA-55 Building 4, Room 401 (feet)	-	Identified Structures on the Unit: Room 401 is recessed 2.5 inches and has a square footage of 4,500 square feet. The permitted unit is located in glovebox GB-454 along the west wall of Room 401. It consists of a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox. Wastes, Structures and Related Equipment Requiring Disposal include the hazardous waste treated at the Unit and the pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox and all other materials in Room 401 associated with the permitted unit will be removed Surfaces, Structures, and Related Equipment recommended to be decontaminated includes the walls and floor of Room 401. <u>The height of the Room 401 is assumed to be 11 feet for decontamination purposes.</u>
	Width of TA-55 Building 4 Room 401(feet)	-	
	Height of TA-55 Building 4 Room 401 (feet) (based on decontamination of Room 401)	11	
	Area of TA-55 Building 4 Room 401(square feet)	4,500	
	Volume of TA-55 Building 4, Room 401(based on the decontamination height) (cubic feet)	49,500	
	Estimated total area of the hazardous waste storage area (Room 401) (square feet)	4,500	
	Total volume of equipment/structures to be removed (based on 2% of the total volume of the Unit (cubic feet)	990	
Estimated total area of structures/equipment to be decontaminated - (Tank System) (square feet)	7,690		
1-C	Materials identified within TA-55 Building 4, Room 401 Unit		Materials identified in the Unit include hazardous wastes, a pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox.
1-D	Total volume of hazardous waste to be removed from TA-55-4 IMWSTU (gallons)	150	Assume the minimum volume of waste to be removed is equivalent to the maximum permitted capacity.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	C	Based on the discussion provided within the closure plan (Section 5.3.2 Decontamination of Structures) the decontamination procedure, sweeping and then wash down were proposed for the Unit. Workers will require protection for exposure to radiation. As a result, the level of PPE recommended for the closure activities is Level C.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Waste						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	16	Hours	51.73	828.72	3	2,486.17
4-Person Labor Crew	16	Hours	30.64	490.84	3	1,472.51
	16	Hours	30.64	490.84	3	1,472.51
	16	Hours	30.64	490.84	3	1,472.51
	16	Hours	30.64	490.84	3	1,472.51
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.62	368.11	3	1,104.34
Disposal of Liquid Hazardous Material	1	Drums	216.94	295.83	---	295.83
Disposal of Non-liquid Hazardous Material	0.37	Cubic yards	169.833	63.07	---	63.07
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				2,792.07	15	28,679.44
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	395.94	3	1,187.81
Field Engineer	12	Hours	32.99	395.94	3	1,187.81
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	527.91	3	1,583.74
Field Engineer	16	Hours	32.99	527.91	3	1,583.74
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	593.90	3	1,781.71
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.51	147.02	3	441.06
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				2,441.60	15	15,805.86
Total for Step 2-A				5,233.67	30	44,485.29
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				296.34	6	2,472.59
Total for Step 2				5,530.00	36	46,957.88

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	16	Hours	51.73	834.51	3	2,503.54
	4-Person Labor Crew	16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
		16	Hours	30.64	494.27	3	1,482.80
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
	Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Per Diem (for Project Engineer and 4-Person Labor Crew) includes the 2 estimated work days	5	People	73.50	735.00	3	2,205.00	
Total for Removal of Equipment					2,811.58	15	29,479.74

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.
Removal and disposal of the pH column, vacuum trap, two motor-driven mixers, four impellers, piping and the glovebox will be conducted.

Disposal of Hazardous Material							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Material - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	36.67	Cubic yards	169.833	6,227.23	---	6,227.23
Total for Removal of Equipment					6,227.23	---	6,227.23

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Labor						
	Site Project Manager	31	Hours	51.73	1,623.30	3	4,869.89
	4-Person Labor Crew	31	Hours	30.64	961.45	3	2,884.34
		31	Hours	30.64	961.45	3	2,884.34
		31	Hours	30.64	961.45	3	2,884.34
		31	Hours	30.64	961.45	3	2,884.34
	Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	3	---
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00
Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	167.70	838.51	3	2,515.54	
Total for Decontamination					13,227.60	30	39,682.80

Assume 200 square feet area decontaminated within one hour.
Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	0	0	32.99	-	3	-
	Field Engineer - Soil Sample from the Unit	0	0	32.99	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	32.99	-	3	-
	Field Engineer - Sediment Sample of the Berm	0	0	32.99	-	3	-
	Field Engineer - Equipment Wipes	8	3	32.99	87.98	3	263.93
	Field Engineer - Equipment Wipes	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Total Number of Samples	16	---	---	---	---	---
	Total Number of Types of Samples	2	---	---	---	---	---
Total for Decontamination Verification					87.98	21	1,055.72

The closure plan indicates that 8 wipe samples to be collected from walls and floor of Room 401.
Also assumed 8 QA/QC samples will be collected.

Total for Step 3					13,315.58	51	76,445.48
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, the number of wipe samples (8) was included within the cost estimate. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality Control Officer is assumed for the completion of the validation of the analytical data reports. Waste management is not included within the cost estimate as the hazardous nature of the debris and

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	0	---	588.54	-	---	-
Organics Soil - Unit	0	---	159.51	-	---	-
Cyanide Soil - Unit	0	---	68.43	-	---	-
Metals Liquid - Unit	0	---	227.21	-	---	-
Organics Liquid - Unit	0	---	159.51	-	---	-
Cyanide Liquid - Unit	0	---	38.44	-	---	-
Metals Equipment Wipes	8	---	588.54	4,708.33	---	4,708.33
Organics Equipment Wipes	0	---	159.51	-	---	-
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	0	---	159.51	-	---	-
Cyanide Field QA/QC	0	---	38.44	-	---	-
Total for Analysis of the Decontamination Verification Samples				6,526.01	---	6,526.01

Assumed 8 wipes and a total of 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Total for Data Validation				296.34	3	889.01

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	39	Hours	32.99	1,299.20	3	3,897.59
Sample Documentation - Field Engineer	4	Hours	32.99	131.97	3	395.90
Certification Report - Field Engineer	18	Hours	32.99	593.90	3	1,781.71
Certification Report - Field Engineer	9	Hours	32.99	296.95	3	890.85
Total for Sample Management				2,322.02	12	6,966.05

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				9,144.36	15	14,381.07
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Building 4, Building 185 (TA-55-4-B185) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-4-B185 P1), pre-closure activities (Worksheet TA-55-4-B185 P2), decontamination of the unit structures (Worksheet TA-55-4-B185 P3), and analysis and sample management procedures (Worksheet TA-55-4-B185 P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.25; Technical Area 55, Building 4, Building 185 Closure Plan (Closure Plan).

Unit Name: LANL TA-55-4-B185

The Unit consists of a rectangular shaped area within a steel framed building with a concrete floor. The unit measures 60 feet by 40 feet. There is a access doorway on one way and a metal roll up door and access doorway on the opposite wall.

Contamination: Building 185 contains hazardous and mixed waste in solid form. The wastes stored include sludge, debris, and chemical wastes with metals.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-4-B185 P2	2-A	166,274.95
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-4-B185 P3	3-A	-
4	Disposal of Hazardous Material		3-B	-
5	Decontamination		3-C	35,883.76
6	Decontamination Verification Samples		3-D	1,451.62
7	Analyses	TA-55-4-B185 P4	4-A	14,831.90
8	Data Validation		4-B	1,222.39
9	Sample Logbook		4-C	3,681.83
10	Sample Documentation		4-C	593.84
11	Subtotal of Closure Costs			226,412.86
12	Certification of Closure	TA-55-4-B185 P4	4-C	2,712.38
13	Total Cost of Closure (Add cost of certification report to closure costs)			229,125.24

I. GENERAL UNIT DESCRIPTION
 TA-55-4-B185 is a rectangular room within a steel framed building equipped with a concrete floor. The Unit measures approximately 2,400 square feet.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous waste permitted for the TA-55-4-B185 unit is assumed to be 29,750 gallons. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, no equipment or structures will be removed from the Unit; only decontamination will be conducted.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan the entire Unit will be decontaminated. No decontamination wash water or verification water will be collected for use of decontamination verification purposes.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-4-B185 is one of the 6 units with permitted capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste stored at the Unit.
	Known Releases?	N/A	
1-B	Length of TA-55-4-B185 (feet)	60	Identified Structures on the Unit: There are no identified structures within the Unit. No removal or disposal costs will be associated within the cost estimate.
	Width of TA-55-4-B185 (feet)	40	
	Height of TA-55-4-B185 (feet) (based on the decontamination height)	11	Structures and Related Equipment Required for Demolition and Debris Disposal: There are no identified structures/equipment structures requiring demolition and disposal.
	Area of TA-55-4-B185 (square feet)	2,400	The entire Unit will be decontaminated.
	Total area for decontamination - 4 walls + floor (square feet)	4,600	The height of the dome and building are assumed to be 11 feet for decontamination purposes.
1-C	Materials identified within TA-55-4-B185		No materials were identified within the Unit other than the hazardous wastes stored.
1-D	Maximum volume of waste to be removed from TA-55-4-B185 (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

Removal of Hazardous Wastes						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	73.50	367.50	3	1,102.50
Disposal of Liquid Hazardous Wastes	541	Drums	216.94	117,344.40	---	117,344.40
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	5	People /Night	100.00	1,000.00	3	3,000.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for Removal of Waste from Unit				3,481.71	15	147,732.02
Records Review, Structural Assessment, and Reporting						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	12	Hours	32.99	401.83	3	1,205.50
Field Engineer	12	Hours	32.99	401.83	3	1,205.50
<i>Structural Assessment</i>						
Field Engineer	16	Hours	32.99	535.78	3	1,607.34
Field Engineer	16	Hours	32.99	535.78	3	1,607.34
<i>Reporting</i>						
Field Engineer	18	Hours	32.99	602.75	3	1,808.25
Number of estimated work days (including 2 days for mobilization and demobilization)	4	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	171.50	343.00	3	1,029.00
Hotel/Lodging - Bare Task includes the 4 estimated work days	2	People /Night	100.00	800.00	3	2,400.00
Vehicle Rental includes the 4 estimated work days	2	Vehicles/Day	70.00	560.00	3	1,680.00
Total for the Records Review, Inspection, and Reporting				2,477.98	15	18,542.93
Total for Step 2-A				5,959.68	30	166,274.95
Development of the Sampling and Analysis Plan						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				296.34	6	2,472.59
Total for Step 2				6,256.02	36	168,747.54

3. DECONTAMINATION

Removal of Equipment Structures								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-A	Site Project Manager	---	Hours	51.73	---	---	---	
		---	Hours	30.64	---	---	---	
	4-Person Labor Crew		---	Hours	30.64	---	---	---
			---	Hours	30.64	---	---	---
		---	Hours	30.64	---	---	---	
	Number of estimated work days (including 2 days for mobilization and demobilization)	---	Days	---	---	---	---	
	Airfare	---	People	1,000.00	---	---	---	
	Hotel/Lodging - Bare Task includes the estimated work days	---	People /Night	100.00	---	---	---	
	Vehicle Rental includes the estimated work days	---	Vehicles/Day	70.00	---	---	---	
	Per Diem (for Project Engineer and 4-Person Labor Crew)	---	People	151.50	---	---	---	
Total for Removal of Equipment					0	0	0	

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.

Disposal of Hazardous Wastes							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for Total Volume of Hazardous Material Storage Areas	---	Cubic yards	169.83	---	---	---
	Total for Removal of Equipment					---	---

Decontamination								
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
3-C	Labor							
	Site Project Manager	25	Hours	51.73	1,303.60	3	3,910.81	
		25	Hours	30.64	772.10	3	2,316.30	
	4-Person Labor Crew		25	Hours	30.64	772.10	3	2,316.30
			25	Hours	30.64	772.10	3	2,316.30
		25	Hours	30.64	772.10	3	2,316.30	
	Number of estimated work days (including 2 days for mobilization and demobilization)	3	Days	---	---	3	---	
	Airfare	5	People	1,000.00	5,000.00	3	15,000.00	
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	1,500.00	3	4,500.00	
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	420.00	3	1,260.00	
Per Diem (for Project Engineer and 4-Person Labor Crew) includes 3 estimated work days	5	People	129.85	649.25	3	1,947.75		
Total for Decontamination					11,961.25	30	35,883.76	

Assume 200 square feet area decontaminated within one hour. Decontamination process is included twice as well as the removal of the specified equipment structures is included within the cost estimate.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Soil Sample from the Unit	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Liquid from the Sump	---	---	---	---	---	---
	Field Engineer - Equipment Wipes	14	5	32.99	153.96	3	461.88
	Field Engineer - Equipment Wipes		5	32.99	153.96	3	461.88
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples	22	---	---	---	---	---
	Total Number of Types of Samples	3	---	---	---	---	---
Total for Decontamination Verification					87.98	9	1,451.62

Assumed 14 wipe samples and 8 QA/QC samples will be collected.

Total for Step 3					12,049.23	39	37,335.37
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of wipe samples (14) was included within the cost estimate as there were 14 wipes samples identified within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. Analysis of wipe samples were estimated by the suggested analyses provided within Table G-25.1. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet.

The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	---	---	588.54	---	---	---
Organics Soil - Unit	---	---	159.51	---	---	---
Cyanide Soil - Unit	---	---	68.43	---	---	---
Metals Liquid - Unit	---	---	227.21	---	---	---
Organics Liquid - Unit	---	---	159.51	---	---	---
Cyanide Liquid - Unit	---	---	38.44	---	---	---
Metals Equipment Wipes	14	---	588.54	8,239.58	---	8,239.58
Organics Equipment Wipes	14	---	159.51	2,233.08	---	2,233.08
Cyanide Equipment Wipes	14	---	68.43	957.98	---	957.98
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				14,831.90	---	14,831.90

Assumed 14 wipe samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	11	Hours	37.04	407.46	3	1,222.39
Total for Data Validation				407.46	3	1,222.39

Sample Management Procedures						
Labor Category	Units	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Logbook Documentation - Field Engineer	37	Hours	32.99	1,227.28	3	3,681.83
Sample Documentation - Field Engineer	6	Hours	32.99	197.95	3	593.84
Certification Report - Field Engineer	18	Hours	32.99	602.75	3	1,808.25
Certification Report - Field Engineer	9	Hours	32.99	301.38	3	904.13
Total for Sample Management				2,329.35	12	6,988.05

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				17,568.71	15	23,042.33
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The cost closure for the Los Alamos National Laboratory (LANL) Technical Area 55, Area G Outdoor Storage Unit (TA-55-OSU) is provided in four (4) worksheets. Each worksheet depicts a specific entity of the closure activities which are considered for the overall estimated cost which is summarized in the Summary Worksheet below. The specific entities include general unit descriptions (Worksheet TA-55-OSU P1), pre-closure activities (Worksheet TA-55-OSU P2), decontamination of the unit structures (Worksheet TA-55-OSU P3), and analysis and sample management procedures (Worksheet TA-55-OSU P4). The Summary Worksheet provides information pertaining to a specific activity. All activities were identified in Appendix G.26; Technical Area 55, Area G Outdoor Storage Unit Closure Plan (Closure Plan).

Unit Name: LANL TA-55-OSU

The Unit consists of an asphalt pad with a variable thickness of four to six inches (in.). The permitted unit is trapezoid-shaped with dimensions of 102 feet (ft.), 86 ft., 156 ft., and 105 ft., respectively, on its four sides. The unit is sloped, elevated approximately two to four in. above ground level, and has a culvert beneath the pad running from the northwest side to the southeast side to minimize run-on of precipitation.

Contamination: The unit contains hazardous and mixed waste in both solid and liquid form. The stored wastes include characteristic and listed waste, corrosive liquids, sludge, debris, and chemical wastes with metals and volatile and semi-volatile organic constituents.

SUMMARY WORKSHEET				
	Activity	Worksheet Number	Step	Cost (\$)
1	Removal of Hazardous Waste and Pre-Closure	TA-55-OSU P2	2-A	174,906.89
2	Sampling and Analysis Plan		2-B	2,472.59
3	Removal of Equipment and Structures	TA-55-OSU P3	3-A	31,760.14
4	Disposal of Hazardous Material		3-B	103,032.27
5	Decontamination		3-C	-
6	Decontamination Verification Samples		3-D	19,261.30
7	Analyses	TA-55-OSU P4	4-A	15,290.89
8	Data Validation		4-B	1,333.51
9	Sample Logbook		4-C	263.93
10	Sample Documentation		4-C	131.97
11	Subtotal of Closure Costs			348,453.48
12	Certification of Closure	TA-55-OSU P4	4-C	2,945.87
13	Total Cost of Closure (Add cost of certification report to closure costs)			351,399.35

I. GENERAL UNIT DESCRIPTION
 TA-55-OSU is trapezoid-shaped asphalt pad with dimensions of 102 feet (ft.), 86 ft., 156 ft., and 105 ft., respectively, on its four sides. For the cost estimate the maximum length and width of the pad have been used to calculate square footage.

According to the Part A Permit Application, 178,500 gallons of hazardous waste is permitted to be stored on the entire TA-55 Unit. The hazardous waste permitted for the TA-55-OSU unit is assumed to be 29,750 gallons. All hazardous wastes will be disposed of at an off-site facility during the Removal of Hazardous Wastes. As stated in Section 5.3.1; Removal of Structures and Related Equipment of the Closure Plan, the entire asphalt pad (including all materials associated with it such as any underlying base course or fill) will be removed.

According to Section 5.3.2; Decontamination of Surfaces, Structures, and Related Equipment of the Closure Plan there is no equipment that is expected to be reused and therefore require decontamination.

1-A	Permitted Unit Volume Capacity (cubic feet)	3,977.00	According to the Part A Permit Application, the maximum permitted capacity of the entire Technical Area 55 Unit is 178,500 gallons (23,861.99 cubic feet) for 6 container storage units. It is assumed that TA-55-OSU is one of the 6 units with permitted capacity of 29,750 gallons (3,976.99 cubic feet) of hazardous waste storage.
	Known Releases?	N/A	
1-B	Length of TA-55-OSU (feet)	156	Identified Structures on the Unit: There are no identified equipment within the Unit. The closure plan indicates that all structures(i.e., asphalt pad and underlying base course material) will be removed from the unit. Structures and Related Equipment Required for Decontamination: There are no identified structures/equipment structures requiring decontamination.
	Width of TA-55-OSU (feet)	105	
	Height of TA-55-OSU (feet) (based on maximum thickness of asphalt pad)	0.5	
	Area of TA-55-OSU (square feet)	16,380	
	Volume of TA-55-OSU (cubic feet)	8,190	
1-C	Materials identified within TA-55-OSU		No materials were identified within the Unit other than the hazardous wastes stored.
1-D	Total volume of equipment/structures to be removed (asphalt pad and underlying course material) (cubic feet)	16,380.00	Assume that the area of base course is equal to the area of the asphalt pad.
1-D	Maximum volume of waste to be removed from TA-55-OSU (gallons)	29,750.00	Assume the volume of waste to be removed is equivalent to the maximum permitted capacity of the unit.
1-E	Level of PPE assumed for this activity (protection level D, C, or B)	Modified C	There was no mention of the specific type of PPE required for the decontamination of the Unit. A Modified Level C is assumed.

2. REMOVAL, RECORDS REVIEW AND STRUCTURAL ASSESSMENT, AND DEVELOPMENT OF THE SAMPLING AND ANALYSIS PLAN

<u>Removal of Hazardous Wastes</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Site Project Manager	20	Hours	51.73	1,033.42	3	3,100.25
4-Person Labor Crew	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
	20	Hours	30.64	612.07	3	1,836.22
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Per Diem (for Project Manager and 4-Person Labor Crew)	5	People	269.50	1,347.50	3	4,042.50
Disposal of Liquid Hazardous Wastes	541	Drums	216.94	117,344.40	---	117,344.40
Airfare	5	People	1,000.00	5,000.00	3	15,000.00
Hotel/Lodging - Bare Task includes the 6 estimated work days	5	People /Night	100.00	3,000.00	3	9,000.00
Vehicle Rental includes the 6 estimated work days	2	Vehicles/Day	70.00	840.00	3	2,520.00
Total for Removal of Waste from Unit				3,481.71	15	158,352.02
<u>Records Review, Structural Assessment, and Reporting</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
<i>Records Review</i>						
Field Engineer	13	Hours	32.99	436.43	3	1,309.28
Field Engineer	13	Hours	32.99	436.43	3	1,309.28
<i>Structural Assessment</i>						
Field Engineer	18	Hours	32.99	581.90	3	1,745.70
Field Engineer	18	Hours	32.99	581.90	3	1,745.70
<i>Reporting</i>						
Field Engineer	20	Hours	32.99	654.64	3	1,963.91
Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	---	---
Airfare	2	People	1,000.00	2,000.00	3	6,000.00
Per Diem (for the two Field Engineers)	2	People	73.50	147.00	3	441.00
Hotel/Lodging - Bare Task includes the 2 estimated work days	2	People /Night	100.00	400.00	3	1,200.00
Vehicle Rental includes the 2 estimated work days	2	Vehicles/Day	70.00	280.00	3	840.00
Total for the Records Review, Inspection, and Reporting				2,691.29	15	16,554.87
Total for Step 2-A				6,173.00	30	174,906.89
<u>Development of the Sampling and Analysis Plan</u>						
Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Quality Control	8	Hours	37.04	296.34	3	889.01
Field Engineer	16	Hours	32.99	527.86	3	1,583.58
Total for Step 2-B				296.34	6	2,472.59
Total for Step 2				6,469.33	36	177,379.48

3. DECONTAMINATION

Removal of Equipment Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-A	Site Project Manager	18	Hours	51.73	\$ 940.66	3	2821.99
		18	Hours	30.64	\$ 557.14	3	1671.41
	4-Person Labor Crew	18	Hours	30.64	\$ 557.14	3	1671.41
		18	Hours	30.64	\$ 557.14	3	1671.41
	Number of estimated work days (including 2 days for mobilization and demobilization)	2	Days	---	---	0	---
	Airfare	5	People	1,000.00	\$ 5,000.00	3	15,000.00
	Hotel/Lodging - Bare Task includes the 3 estimated work days	5	People /Night	100.00	\$ 1,500.00	3	4,500.00
	Vehicle Rental includes the 3 estimated work days	2	Vehicles/Day	70.00	\$ 420.00	3	1,260.00
	Per Diem (for Project Engineer and 4-Person Labor Crew)	5	People	99.50	\$ 497.50	3	1,492.50
	Total for Removal of Equipment					3,169.21	15

Assumed 1500 cubic feet of equipment and material removed and disposed within one hour.

Disposal of Equipment/Structures							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-B	Disposal of Equipment/Structures/Hazardous Wastes - converted volume (cubic feet to cubic yards) provided for 'Total Volume of Equipment/Structure to be Removed'	606.67	Cubic yards	169.83	103,032.27	---	103,032.27
	Total for Removal of Equipment				103,032.27	---	103,032.27

Decontamination							
	Labor Category	Amount	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-C	Site Project Manager	0	Hours	51.73	-	3	-
		0	Hours	30.64	-	3	-
	4-Person Labor Crew	0	Hours	30.64	-	3	-
		0	Hours	30.64	-	3	-
	Number of estimated work days (including 2 days for mobilization and demobilization)	0	Days	---	---	3	---
	Airfare	0	People	1,000.00	-	3	-
	Hotel/Lodging - Bare Task includes the 3 estimated work days	0	People /Night	100.00	-	3	-
	Vehicle Rental includes the 3 estimated work days	0	Vehicles/Day	70.00	-	3	-
	Per Diem (for Project Engineer and 4-Person Labor Crew) includes 3 estimated work days	0	People	(24.50)	-	3	-
	Total for Decontamination					-	30

Assume 200 square feet area decontaminated within one hour.
No decontamination activities were identified in the closure plan.

Collection of Decontamination Verification Samples							
	Type of Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
3-D	Field Engineer - Soil Sample from the Unit	13	---	195.14	2,536.82	3	7,610.46
	Field Engineer - Soil Sample from the Unit		---	195.14	2,536.82	3	7,610.46
	Field Engineer - Stormwater		---	195.14	585.42	3	1,756.26
	Field Engineer - Stormwater	3	---	195.14	585.42	3	1,756.26
	Field Engineer - Equipment Wipes		0	32.99	-	3	-
	Field Engineer - Equipment Wipes	0	0	32.99	-	3	-
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples	8	3	32.99	87.98	3	263.93
	Field Engineer - Field QA/QC Samples		3	32.99	87.98	3	263.93
	Total Number of Samples		24	---	---	---	---
Total Number of Types of Samples		3	---	---	---	---	---
Total for Decontamination Verification					87.98	21	19,261.30

Assumed 13 soil samples, 3 stormwater samples and 8 QA/QC samples will be collected.

Total for Step 3					87.98	51	154,053.70
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4. Analysis and Sample Management Procedures

The following worksheet includes cost estimates for the analysis of the wipe samples collected from the Unit. As discussed in Sections 2 and 3, there was no specific number of equipment structures provided within the Closure Plan and as a result, an assumed number of soil samples (13) and 3 stormwater samples was included within the cost estimate as these were the required number of samples identified within the Closure Plan. There was mention of the possibility of collecting liquid samples from the sumps and pipes of the Unit. Analysis of wipe samples were estimated by the suggested analyses provided within Table G-26.1. No overhead additions are assumed in the cost estimate for the analyses of the samples. The proposed number of hours designated for the completion of the Sample Management Procedures includes the amount of time for all activities listed within Sections 6.3.1, Sample Documentation; 6.3.2, Sample Handling, Preservation, and Storage; 6.3.3, Packaging and Transportation of Samples of the Closure Plan. Cost for Data Validation are also included within the following worksheet. The hours proposed for the completion of the Data Validation process are based on the number and types of samples collected from the Unit as well as the assumed number of QA/QC samples. A Quality

Analysis						
Analysis of the Samples	Number of Samples	Hours	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)
Metals Soil - Unit	13	---	588.54	7,651.04	---	7,651.04
Organics Soil - Unit	13	---	159.51	2,073.57	---	2,073.57
Cyanide Soil - Unit	13	---	68.43	889.55	---	889.55
Metals Liquid - Unit	3	---	227.21	681.63	---	681.63
Organics Liquid - Unit	3	---	159.51	478.52	---	478.52
Cyanide Liquid - Unit	3	---	38.44	115.33	---	115.33
Metals Equipment Wipes	0	---	588.54	-	---	-
Organics Equipment Wipes	0	---	159.51	-	---	-
Cyanide Equipment Wipes	0	---	68.43	-	---	-
Metals Field QA/QC	8	---	227.21	1,817.68	---	1,817.68
Organics Field QA/QC	8	---	159.51	1,276.05	---	1,276.05
Cyanide Field QA/QC	8	---	38.44	307.54	---	307.54
Total for Analysis of the Decontamination Verification Samples				15,290.89	---	15,290.89

Assumed 13 soil samples, 3 stormwater samples and 8 field QA/QC samples.

Data Validation						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Quality Control	12	Hours	37.04	444.50	3	1,333.51
Total for Data Validation				444.50	3	1,333.51

Sample Management Procedures						
Labor Category	Units	Unit Cost (\$)	Bare Task Cost (\$)	Overhead Additions	Loaded (\$)	
Logbook Documentation - Field Engineer	3	Hours	32.99	87.98	3	263.93
Sample Documentation - Field Engineer	1	Hours	32.99	43.99	3	131.97
Certification Report - Field Engineer	20	Hours	32.99	654.64	3	1,963.91
Certification Report - Field Engineer	10	Hours	32.99	327.32	3	981.96
Total for Sample Management				1,113.92	12	3,341.77

Includes sample documentation, chain-of-custody, sample label, custody seals, and shipment of wipe samples

Total for Step 4				16,849.32	15	19,966.17
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Preface

THE BOOK

The **ECHOS Environmental Cost Data - Unit Price Book** is “the cost source book” for environmental restoration activities beginning with initial site investigation and continuing through studies, design, remediation, and long-term monitoring and operation. Containing over 5,000 assembly cost items, this publication is updated and expanded annually to reflect the latest cost and technology information in the rapidly changing environmental field.

The **ECHOS Environmental Cost Data - Unit Price Book** provides you with the detailed line-items, component costs, forms, instructions, and guidelines needed to prepare or verify cost estimates for almost any type of environmental restoration project, ranging from simple underground storage tank removals to complex multimedia/multi-contaminant hazardous waste sites listed on the US EPA’s Superfund - National Priority List.

The assembly numbering follows the US Government Interagency Code of Accounts, an evolving standard for organizing environmental restoration costs. Cost information is provided for labor, equipment, and materials with guidelines for adjusting costs to reflect work performed at various OSHA-dictated safety levels. Location factors are supplied by zip code, allowing you to adjust your estimate to local conditions.

THE DATA

The **ECHOS** research staff is constantly gathering, monitoring, and developing construction and environmental restoration cost information throughout the US. In so doing, the **ECHOS** database reflects the most current trends in both procedures and unit costs for environmental restoration activities. This book is the result of over eleven years of research in environmental restoration cost, and the cost information in this book has been used successfully on more than 10,000 environmental restoration projects throughout the U.S.

This data is received by us from sources we believe to be reliable, but no warranty, guaranty or representation is made by **ECHOS** as to the correctness or sufficiency of any information, prices, or representation contained in the **ECHOS Environmental Cost Data - Unit Price**

Book, and **ECHOS** assumes no responsibility or liability in connection therewith.

Please note that the costs contained in **ECHOS** do not include contractor overhead or profit.

Material costs are determined through contact with product manufacturers, dealers, supply houses, distributors, and contractors. Labor costs are based on crews and productivity factors determined by **ECHOS** environmental engineering and construction experts. Equipment costs are based on either rental rates or purchase and annual cost of ownership.

REGULATORY ENVIRONMENT

There are numerous state and federal laws and regulations that govern the practice of environmental restoration activities. The two primary laws that set the standards for this book are the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and its amendments (commonly referred to as the SUPERFUND Law), and the Resource Conservation and Recovery Act (RCRA). The environmental restoration technologies and processes used in this book are primarily designed to be used on projects that are regulated by these laws, but the data can be used for other unregulated projects.

ABOUT ECHOS

ECHOS is a joint venture between Azimuth Group, Ltd., experts in environmental restoration cost estimating and technology application, and Reed Construction Data, the leading publisher of construction cost information in North America. Through this collaboration, exhaustive cost research, and seasoned technical experts, all of the practical tools necessary to assemble or analyze restoration costs have been established.

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33 02 Monitoring, Sampling, Testing, and Analysis

33 02 05	Sampling Surface Water/Groundwater/Liquid Waste	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 02 0509	Compliance Monitoring 40 CFR 261, Appendix IX Constituents	EA				0.00	0.00	1,407	1,407
01954 7113	Cyanide (EPA 335.1)	EA	0	N/A	1.000	0.00	0.00	33.50	33.50
01954 7203	Chlorinated Herbicides (615, 8151A)	EA	0	N/A	1.000	0.00	0.00	232.82	232.82
01954 7206	Organophosphorus Pesticides (614/8141A)	EA	0	N/A	1.000	0.00	0.00	168.49	168.49
01954 7208	Pesticides and PCBs (608, 8081,8082)	EA	0	N/A	1.000	0.00	0.00	168.31	168.31
01954 7215	Purgeable Organics (624, 8260B)	EA	0	N/A	1.000	0.00	0.00	139.00	139.00
01954 7217	Semivolatile Organics (625, 8270C)	EA	0	N/A	1.000	0.00	0.00	250.00	250.00
01954 7244	2,3,7,8-Tetrachloro-Dibzo-P-Dioxin (1613A)	EA	0	N/A	1.000	0.00	0.00	199.78	199.78
01954 7623	Sulfates (EPA 300.0)	EA	0	N/A	1.000	0.00	0.00	17.40	17.40
01954 7630	TAL Metals (6010/7000s)	EA	0	N/A	1.000	0.00	0.00	198.00	198.00
33 02 0510	Analysis of Wastewater for POTW Permit	EA				0.00	0.00	427.99	427.99
01954 7104	Biochemical Oxygen Demand (EPA 405.1)	EA	0	N/A	1.000	0.00	0.00	27.00	27.00
01954 7107	Chemical Oxygen Demand (COD) (EPA 410.4)	EA	0	N/A	1.000	0.00	0.00	19.30	19.30
01954 7113	Cyanide (EPA 335.1)	EA	0	N/A	1.000	0.00	0.00	33.50	33.50
01954 7225	pH (EPA 150.1)	EA	0	N/A	1.000	0.00	0.00	5.45	5.45
01954 7231	Dissolved Solids (EPA 160.1)	EA	0	N/A	1.000	0.00	0.00	11.80	11.80
01954 7232	Suspended Solids (EPA 160.2)	EA	0	N/A	1.000	0.00	0.00	10.40	10.40
01954 7241	Metals (EPA 200.7)	EA	0	N/A	5.000	0.00	0.00	64.11	320.54
33 02 0511	Analysis of Lysimeters for Soil-Pore Liquid Monitoring	EA				0.00	0.00	455.01	455.01
01954 7112	Conductivity (EPA 120.1)	EA	0	N/A	1.000	0.00	0.00	14.45	14.45
01954 7225	pH (EPA 150.1)	EA	0	N/A	1.000	0.00	0.00	5.45	5.45
01954 7237	Total Organic Carbons (EPA 415.1,9060)	EA	0	N/A	1.000	0.00	0.00	24.00	24.00
01954 7238	Total Organic Halogens (Tox) (EPA 9022)	EA	0	N/A	1.000	0.00	0.00	99.00	99.00
01954 7241	Metals (EPA 200.7)	EA	0	N/A	1.000	0.00	0.00	64.11	64.11
01954 7413	Pesticides/Herbicides (8081, 8151A)	EA	0	N/A	1.000	0.00	0.00	248.00	248.00
33 02 0512	Rinsate Analysis	EA				0.00	0.00	236.30	236.30
01954 7108	Chloride (EPA 300.0/325.3)	EA	0	N/A	1.000	0.00	0.00	16.35	16.35
01954 7226	Phenols (EPA 420.1)	EA	0	N/A	1.000	0.00	0.00	35.73	35.73
01954 7235	Sulfur: Sulfate, Sulfide, Sulfite (EPA 300.0/376.2/377.1)	EA	0	N/A	2.000	0.00	0.00	28.00	56.00
01954 7241	Metals (EPA 200.7)	EA	0	N/A	2.000	0.00	0.00	64.11	128.21
33 02 0520	Hip Waders	EA				0.00	0.00	101.55	101.55
01001 0025	Hip Waders	EA	0	N/A	1.000	0.00	0.00	101.55	101.55
33 02 0521	Hip Waders, Weekly Rental	WK				0.00	0.00	81.50	81.50
01951 5213	Hip Waders Rental	WK	0	N/A	1.000	0.00	0.00	81.50	81.50
33 02 0522	Boat with Motor, Daily Rental	DAY				0.00	0.00	142.00	142.00
01954 6124	Boat Rental (with Motor)	DAY	0	N/A	1.000	0.00	0.00	142.00	142.00

33 02 Monitoring, Sampling, Testing, and Analysis

33 02 06	Sampling Soil and Sediment	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 02 0603	Surface Soil Sampling Equipment	EA				0.00	0.00	377.00	377.00
01954 5131	High Carbon Steel, 1.5" x 6"	EA	0	N/A	1.000	0.00	0.00	111.00	111.00
01954 5143	Regular, 2" Diameter, Carbon/Stainless	EA	0	N/A	2.000	0.00	0.00	133.00	266.00
33 02 0605	Hand Auger Rental	DAY				0.00	0.00	13.98	13.98
01954 5133	Hand Auger Rental	DAY	0	N/A	1.000	0.00	0.00	13.98	13.98
33 02 0606	Power Auger Rental	DAY				0.00	0.00	18.54	18.54
01954 5134	Power Auger with Attachments, Rental	DAY	0	N/A	1.000	0.00	0.00	18.54	18.54
33 02 0612	Soil Analysis	EA				0.00	0.00	1,036	1,036
01954 7233	Total Solids (EPA 160.3)	EA	0	N/A	1.000	0.00	0.00	11.85	11.85
01954 7237	Total Organic Carbons (EPA 415.1,9060)	EA	0	N/A	1.000	0.00	0.00	24.00	24.00
01954 7241	Metals (EPA 200.7)	EA	0	N/A	8.000	0.00	0.00	64.11	512.86
01954 7413	Pesticides/Herbicides (8081, 8151A)	EA	0	N/A	1.000	0.00	0.00	248.00	248.00
01954 7527	Sulfur (Parr Bomb): ASTM D129	EA	0	N/A	1.000	0.00	0.00	121.00	121.00
01954 7607	Cyanide, Total, (9010B) Spectrophotometric	EA	0	N/A	1.000	0.00	0.00	59.63	59.63
01954 7613	Mercury (EPA 7470/7471)	EA	0	N/A	1.000	0.00	0.00	26.50	26.50
01954 7615	Nitrogen, Nitrate/Nitrite (EPA 300.0 / SM 4110B)	EA	0	N/A	1.000	0.00	0.00	25.50	25.50
01954 7617	pH, Electrometric (9045)	EA	0	N/A	1.000	0.00	0.00	6.75	6.75
33 02 0613	Soil Recovery Probe, Unslotted, 7/8" x 1'	EA				0.00	0.00	158.00	158.00
01954 5111	Unslotted, 7/8" x 1'	EA	0	N/A	1.000	0.00	0.00	158.00	158.00
33 02 0614	Soil Recovery Probe, Unslotted, 7/8" x 2' or 9/8" x 1'	EA				0.00	0.00	171.00	171.00
01954 5112	Unslotted, 7/8" x 2' or 9/8" x 1'	EA	0	N/A	1.000	0.00	0.00	171.00	171.00
33 02 0615	Soil Recovery Probe, Unslotted, 9/8" x 2'	EA				0.00	0.00	183.00	183.00
01954 5113	Unslotted, 9/8" x 2'	EA	0	N/A	1.000	0.00	0.00	183.00	183.00
33 02 0616	Soil Recovery Probe, Liners, 7/8" per LF, Butyrate Plast	LF				0.00	0.00	1.12	1.12
01954 5114	Liners, Butyrate Plastic, 7/8"	LF	0	N/A	1.000	0.00	0.00	1.12	1.12
33 02 0617	Soil Recovery Probe, Liners, 9/8" per LF, Butyrate Plast	LF				0.00	0.00	1.96	1.96
01954 5115	Liners, Butyrate Plastic, 9/8"	LF	0	N/A	1.000	0.00	0.00	1.96	1.96
33 02 0618	Soil Recovery Probe, Liners, Stainless Steel, 7/8"	EA				0.00	0.00	7.50	7.50
01954 5116	Liners, Stainless Steel, 7/8"	EA	0	N/A	1.000	0.00	0.00	7.50	7.50
33 02 0619	Soil Recovery Probe, Liners, Stainless Steel, 9/8"	EA				0.00	0.00	9.20	9.20
01954 5117	Liners, Stainless Steel, 9/8"	EA	0	N/A	1.000	0.00	0.00	9.20	9.20

33 02 Monitoring, Sampling, Testing, and Analysis

33 02 16	Water/Liquid Laboratory Chemical Analysis	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 02 1613	Oil And Grease (EPA 413.2), Water Analysis	EA				0.00	0.00	60.21	60.21
01954 7128	Oil and Grease (EPA 413.2)	EA	0	N/A	1.000	0.00	0.00	60.21	60.21
33 02 1614	Total Petroleum Hydrocarbons (EPA 418.1), Water Analysis	EA				0.00	0.00	54.50	54.50
01954 7625	Total Petroleum Hydrocarbons (TPH)	EA	0	N/A	1.000	0.00	0.00	54.50	54.50
33 02 1615	Phenols (Method 420.1), Water Analysis	EA				0.00	0.00	35.73	35.73
01954 7226	Phenols (EPA 420.1)	EA	0	N/A	1.000	0.00	0.00	35.73	35.73
33 02 1617	Pesticides/PCBs (EPA 608), Water Analysis	EA				0.00	0.00	168.31	168.31
01954 7208	Pesticides and PCBs (608, 8081,8082)	EA	0	N/A	1.000	0.00	0.00	168.31	168.31
33 02 1618	Volatile Organic Analysis (EPA 624), Water Analysis	EA				0.00	0.00	139.00	139.00
01954 7215	Purgeable Organics (624, 8260B)	EA	0	N/A	1.000	0.00	0.00	139.00	139.00
33 02 1619	Base Neutral & Acid Extractable Organics (EPA 625), Water Analysis	EA				0.00	0.00	250.00	250.00
01954 7217	Semivolatle Organics (625, 8270C)	EA	0	N/A	1.000	0.00	0.00	250.00	250.00
33 02 1620	TAL Metals (EPA 6010/7000s), Water, Water Analysis	EA				0.00	0.00	317.10	317.10
01954 7120	TAL Metals (6010/7000s)	EA	0	N/A	1.000	0.00	0.00	317.10	317.10
33 02 1621	Purgeable Halocarbons (EPA 601), Water Analysis	EA				0.00	0.00	108.70	108.70
01954 7214	Purgeable Halocarbons (601, 8021B Halocarbons)	EA	0	N/A	1.000	0.00	0.00	108.70	108.70
33 02 1622	Purgeable Aromatics (EPA 602), Water Analysis	EA				0.00	0.00	81.35	81.35
01954 7213	Purgeable Aromatics (8021B Aromatics)	EA	0	N/A	1.000	0.00	0.00	81.35	81.35
33 02 1623	Acrolein & Acrylonitrile (EPA 603)	EA				0.00	0.00	293.00	293.00
01954 7201	Acrolein/Acrylonitrile (603, 8031)	EA	0	N/A	1.000	0.00	0.00	293.00	293.00
33 02 1624	Phenols (EPA 604), Water Analysis	EA				0.00	0.00	156.00	156.00
01954 7209	Phenols (EPA 604)	EA	0	N/A	1.000	0.00	0.00	156.00	156.00
33 02 1625	Benzidines (EPA 605)	EA				0.00	0.00	365.00	365.00
01954 7202	Benzidines (EPA 605)	EA	0	N/A	1.000	0.00	0.00	365.00	365.00
33 02 1626	Phthalate Esters (EPA 606)	EA				0.00	0.00	172.00	172.00
01954 7211	Phthalate Esters (EPA 606)	EA	0	N/A	1.000	0.00	0.00	172.00	172.00
33 02 1627	Nitrosamines (EPA 607)	EA				0.00	0.00	187.00	187.00
01954 7207	Nitrosoamines (607)	EA	0	N/A	1.000	0.00	0.00	187.00	187.00

33 02 Monitoring, Sampling, Testing, and Analysis

33 02 17	Soil/Sediment Laboratory Chemical Analysis	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 02 1714	BTEX Purgeable Aromatics (SW 5035/SW 8021B Aromatics), Soil Analysis	EA				0.00	0.00	73.00	73.00
01954 7602	BTEX: Benzene, Toulene, Ethylbenzene, Xylene (8061A,8021B)	EA	0	N/A	1.000	0.00	0.00	73.00	73.00
33 02 1715	BTEX/Gasoline Hydrocarbons (Mod. 8021B)(PID/FID), w/prep, Soil Analysis	EA				0.00	0.00	69.00	69.00
01954 7636	BTEX/Gasoline Hydrocarbons EPA 8021B, (PID/FID)	EA	0	N/A	1.000	0.00	0.00	69.00	69.00
33 02 1716	Phenols (SW 3550B/SW 8041), Soil Analysis	EA				0.00	0.00	82.46	82.46
01954 7131	Phenols (EPA 8040)	EA	0	N/A	1.000	0.00	0.00	82.46	82.46
33 02 1717	Pesticides/PCBs (SW 3550B/SW 8081/8082), Soil Analysis	EA				0.00	0.00	168.31	168.31
01954 7208	Pesticides and PCBs (608, 8081,8082)	EA	0	N/A	1.000	0.00	0.00	168.31	168.31
33 02 1718	Chlordane (SW 3550B/SW 8081), Soil Analysis	EA				0.00	0.00	95.50	95.50
01954 7632	Chlordane (EPA 8081)	EA	0	N/A	1.000	0.00	0.00	95.50	95.50
33 02 1719	Chlorinated Phenoxy Acid Herbicides (SW 3550B/SW 8151A), Soil Analysis	EA				0.00	0.00	223.00	223.00
01954 7633	Chlorinated Phenoxy Acid Herbicides (EPA 8151A)	EA	0	N/A	1.000	0.00	0.00	223.00	223.00
33 02 1720	Volatile Organic Analysis (SW 5035/SW 8260B), Soil Analysis	EA				0.00	0.00	139.00	139.00
01954 7215	Purgeable Organics (624, 8260B)	EA	0	N/A	1.000	0.00	0.00	139.00	139.00
33 02 1721	Base/Neutral & Acid Extractable Organics(SW3550B/SW8270C), Soil Analysis	EA				0.00	0.00	250.00	250.00
01954 7217	Semivolatile Organics (625, 8270C)	EA	0	N/A	1.000	0.00	0.00	250.00	250.00
33 02 1722	Polynuclear Aromatic Hydrocarbons(PAH) (SW 8310),w/prep, Soil Analysis	EA				0.00	0.00	117.81	117.81
01954 7212	Polynuclear Aromatic Hydrocarbons (610, 8100,8310, HPLC)	EA	0	N/A	1.000	0.00	0.00	117.81	117.81
33 02 1723	Cyanide (EPA 9010B), Soil Analysis	EA				0.00	0.00	59.63	59.63
01954 7607	Cyanide, Total, (9010B) Spectrophotometric	EA	0	N/A	1.000	0.00	0.00	59.63	59.63
33 02 1724	Phenols (EPA 9065), Soil Analysis	EA				0.00	0.00	34.00	34.00
01954 7618	Phenols (9066) Total Recoverable	EA	0	N/A	1.000	0.00	0.00	34.00	34.00
33 02 1725	CEC (EPA 9081), Soil Analysis	EA				0.00	0.00	69.50	69.50
01954 7604	Cation Exchange Capacity (CEC) (9080, 9081)	EA	0	N/A	1.000	0.00	0.00	69.50	69.50
33 02 1726	Diesel Hydrocarbon, Mod 8015B, GC/FID, with prep, Soil Analysis	EA				0.00	0.00	129.00	129.00
01954 7637	Diesel Hydrocarbon (EPA 8015B) GC/FID	EA	0	N/A	1.000	0.00	0.00	129.00	129.00

33 19 Disposal (Commercial)

33 19 72	Landfill Disposal	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 19 7259	Landfill Packaged Lab Chemicals Requiring Stabilization, 30 - 40 Gallon Drum	EA				0.00	0.00	784.73	784.73
13278 1175	Packaged Lab Chemicals Requiring Stabilization, Drums 30 to 40 Gallons	EA	0	N/A	1.000	0.00	0.00	784.73	784.73
33 19 7260	Landfill Packaged Lab Chemicals Requiring Stabilization, > 45 Gallon Drum	EA				0.00	0.00	1,046	1,046
13278 1176	Packaged Lab Chemicals Requiring Stabilization, Drums Greater than 45 Gallons	EA	0	N/A	1.000	0.00	0.00	1,046	1,046
33 19 7261	Landfill Solid Palletized Waste	EA				0.00	0.00	440.00	440.00
13278 1241	Solid Palletized Wastes	EA	0	N/A	1.000	0.00	0.00	440.00	440.00
33 19 7262	Landfill Liquid or Sludge Palletized Waste	EA				0.00	0.00	480.00	480.00
13278 1242	Liquid or Sludge Palletized Wastes	EA	0	N/A	1.000	0.00	0.00	480.00	480.00
33 19 7263	Landfill Hazardous Solid Bulk Waste by Ton	TON				0.00	0.00	169.45	169.45
13278 1211	Hazardous Solid Bulk Waste, Based on 2,000 Lb/CY	TON	0	N/A	1.000	0.00	0.00	169.45	169.45
33 19 7264	Landfill Hazardous Solid Bulk Waste by CY	CY				0.00	0.00	148.00	148.00
13278 1212	Hazardous Solid Bulk Waste, Less than 2,000 Lb/CY	CY	0	N/A	1.000	0.00	0.00	148.00	148.00
33 19 7265	Landfill Hazardous Solid Bulk Waste Requiring Stabilization	TON				0.00	0.00	251.00	251.00
13278 1213	Hazardous Solid Bulk Waste Requiring Stabilization, Based on 2,000 Lb/CY	TON	0	N/A	1.000	0.00	0.00	251.00	251.00
33 19 7266	Landfill Hazardous Solid Bulk Waste, Odd-shaped Container, < 10 CF/Container	CF				0.00	0.00	10.45	10.45
13278 1214	Hazardous Solid Bulk Waste in Odd-shaped Containers and Boxes	CF	0	N/A	1.000	0.00	0.00	10.45	10.45
33 19 7267	Landfill Hazardous Solid Bulk Waste, Odd-shaped Container, >= 10 CF/Container	CF				0.00	0.00	10.90	10.90
13278 1215	Hazardous Solid Bulk Waste in Odd-shaped Containers and Boxes	CF	0	N/A	1.000	0.00	0.00	10.90	10.90
33 19 7268	Landfill Hazardous Solid Bulk Waste, Odd-shaped Container Requiring Stabilization	CF				0.00	0.00	101.44	101.44
13278 1216	Hazardous Solid Bulk Waste in Odd-shaped Containers and Boxes	CF	0	N/A	1.000	0.00	0.00	101.44	101.44
33 19 7269	Landfill Nonhazardous Solid Bulk Waste by Ton	TON				0.00	0.00	72.00	72.00
13278 1217	Non-Hazardous Solid Bulk Waste, Based on 2,000 Lb/CY	TON	0	N/A	1.000	0.00	0.00	72.00	72.00
33 19 7270	Landfill Nonhazardous Solid Bulk Waste by CY	CY				0.00	0.00	93.50	93.50
13278 1218	Non-Hazardous Solid Bulk Waste, Less than 2,000 Lb/CY	CY	0	N/A	1.000	0.00	0.00	93.50	93.50

33 19 Disposal (Commercial)

33 19 72	Landfill Disposal	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 19 7271	Landfill Jumbo Bags, Direct	EA				0.00	0.00	275.00	275.00
13278 1219	Jumbo Bags, Direct Landfill (1 CY/Bag)	EA	0	N/A	1.000	0.00	0.00	275.00	275.00
33 19 7272	Landfill Jumbo Bags Requiring Stabilization	EA				0.00	0.00	279.00	279.00
13278 1221	Jumbo Bags Requiring Stabilization (1 CY/Bag)	EA	0	N/A	1.000	0.00	0.00	279.00	279.00
33 19 7273	Landfill Hazardous Liquid Bulk Waste	GAL				0.00	0.00	1.81	1.81
13278 1222	Hazardous Liquid Bulk Waste	GAL	0	N/A	1.000	0.00	0.00	1.81	1.81
33 19 7274	Landfill Nonhazardous Liquid Bulk Waste	GAL				0.00	0.00	2.50	2.50
13278 1223	Non-Hazardous Liquid Bulk Waste	GAL	0	N/A	1.000	0.00	0.00	2.50	2.50
33 19 7275	Landfill Hazard Liquid Bulk Waste Requiring Stabilization	GAL				0.00	0.00	3.16	3.16
13278 1224	Hazardous Liquid Bulk Waste Requiring Stabilization	GAL	0	N/A	1.000	0.00	0.00	3.16	3.16
33 19 7276	Landfill Hazard Liquid Bulk Waste, Solar Evaporation, pH > 2.0	GAL				0.00	0.00	2.58	2.58
13278 1225	Hazardous Bulk Liquid Waste Treated by Solar Evaporation, pH	GAL	0	N/A	1.000	0.00	0.00	2.58	2.58
33 19 7277	Landfill Hazardous Nonfuel Liquid/Sludge	GAL				0.00	0.00	1.33	1.33
13278 1226	Hazardous Non-Fuel Liquid/Sludge	GAL	0	N/A	1.000	0.00	0.00	1.33	1.33
33 19 7278	Landfill Nonhazardous Nonfuel Liquid/Sludge	GAL				0.00	0.00	2.58	2.58
13278 1227	Non-Hazardous, Non-Fuel Liquid/Sludge	GAL	0	N/A	1.000	0.00	0.00	2.58	2.58
33 19 7279	Landfill Fuel Substitution Liquids	GAL				0.00	0.00	1.11	1.11
13278 1228	Fuel Substitution Liquids	GAL	0	N/A	1.000	0.00	0.00	1.11	1.11
33 19 7280	30 Gallon, 17C, Open	EA				0.00	0.00	86.50	86.50
02083 5215	30 Gallon, 17C, Open	EA	0	N/A	1.000	0.00	0.00	86.50	86.50
33 19 7281	30 Gallon, 17H, Open	EA				0.00	0.00	86.00	86.00
02083 5216	30 Gallon, 17H, Open	EA	0	N/A	1.000	0.00	0.00	86.00	86.00
33 19 7282	30 Gallon, 17E, Open	EA				0.00	0.00	69.00	69.00
02083 5217	30 Gallon, 17E, Open	EA	0	N/A	1.000	0.00	0.00	69.00	69.00
33 19 73	Commercial Disposal	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 19 7301	Haul & Dispose Debris, 16.5 CY Truck, 10 Mile, Landfill	CY				0.80	3.33	92.50	96.63
02234 1116	Haul, 16.5 CY (12.6 m3) Truck, 10 Miles (15 km), 40 MPH (60 km/Hour), 2.1 Cycles/Hour	CY	34.25	COETH	1.000	0.80	3.33	0.00	4.13
13278 1235	Non-Hazardous Bulk Solid Waste @ Sanitary Landfill	CY	0	N/A	1.000	0.00	0.00	92.50	92.50

33 19 Disposal (Commercial)

33 19 99	Other	Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
33 19 9902	1,800 Gallon, 13' x 13' x 17" Inflatable Containment Berm, Single Lined	EA				35.20	0.00	2,925	2,960
02083 6212	13' x 13' x 17", 1,800 Gallon Capacity, 80 CF of Air, Single Lined	EA	3	ULABD	1.000	35.20	0.00	2,925	2,960
33 19 9903	3,400 Gallon, 18' x 18' x 17" Inflatable Containment Berm, Single Lined	EA				70.41	0.00	4,025	4,095
02083 6213	18' x 18' x 17", 3,400 Gallon Capacity, 130 CF of Air, Single Lined	EA	1.5	ULABD	1.000	70.41	0.00	4,025	4,095
33 19 9904	6,100 Gallon, 24' x 24' x 17" Inflatable Containment Berm, Single Lined	EA				84.49	0.00	6,125	6,209
02083 6214	24' x 24' x 17", 6,100 Gallon Capacity, 170 CF of Air, Single Lined	EA	1.25	ULABD	1.000	84.49	0.00	6,125	6,209
33 19 9905	10,800 Gallon, 32' x 32' x 17" Inflatable Containment Berm, Single Lined	EA				105.61	0.00	6,500	6,606
02083 6215	32' x 32' x 17", 10,800 Gallon Capacity, 230 CF of Air, Single Lined	EA	1	ULABD	1.000	105.61	0.00	6,500	6,606
33 19 9906	21,600 Gallon, 32' x 32' x 34" Inflatable Containment Berm, Single Lined	EA				168.98	0.00	9,600	9,769
02083 6216	32' x 32' x 34", 21,600 Gallon Capacity, 920 CF of Air, Single Lined	EA	0.625	ULABD	1.000	168.98	0.00	9,600	9,769
33 19 9907	53,400 Gallon, 74' x 34' x 34" Inflatable Containment Berm, Single Lined	EA				281.63	0.00	16,900	17,182
02083 6217	74' x 34' x 34", 53,400 Gallon Capacity, 1,500 CF of Air, Single Lined	EA	0.375	ULABD	1.000	281.63	0.00	16,900	17,182
33 19 9908	7,600 Gallon, 45' x 15' x 17" Inflatable Containment Berm, Double Lined	EA				105.61	0.00	5,975	6,081
02083 6218	45' x 15' x 17", 7,600 Gallon Capacity, 220 CF of Air, Double Lined	EA	1	ULABD	1.000	105.61	0.00	5,975	6,081
33 19 9909	11,000 Gallon, 65' x 16' x 17" Inflatable Containment Berm, Double Lined	EA				105.61	0.00	7,225	7,331
02083 6219	65' x 16' x 17", 11,000 Gallon Capacity, 290 CF of Air, Double Lined	EA	1	ULABD	1.000	105.61	0.00	7,225	7,331
33 19 9910	11,600 Gallon, 50' x 22' x 17" Inflatable Containment Berm, Double Lined	EA				105.61	0.00	7,150	7,256
02083 6221	50' x 22' x 17", 11,600 Gallon Capacity, 260 CF of Air, Double Lined	EA	1	ULABD	1.000	105.61	0.00	7,150	7,256
33 19 9911	Air Blower to Inflate Portable Containment Berm	EA				0.00	0.00	190.00	190.00
02083 6222	Air Blower to Inflate Portable Containment Berms	EA	0	N/A	1.000	0.00	0.00	190.00	190.00
33 19 9921	DOT Steel Drum, 55 Gallon	EA				0.00	0.00	89.50	89.50
02083 5211	55 Gallon, 17C, Open	EA	0	N/A	1.000	0.00	0.00	89.50	89.50
33 19 9922	Polyethylene Closed Head Drum, 55 Gallon	EA				0.00	0.00	67.50	67.50
02083 5311	55 Gallon	EA	0	N/A	1.000	0.00	0.00	67.50	67.50

99 01 Prime Contractor Field Office Staff

99 01 01 Site Project Manager			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0101	Site Project Manager - Minimum Cost		MWK				1,424	0.00	0.00	1,424
01050 0106	Project Manager - Minimum Cost		WK	0.025	XYBBG	1.000	1,424	0.00	0.00	1,424
99 01 0102	Site Project Manager - Average Cost		MWK				1,596	0.00	0.00	1,596
01050 0107	Project Manager - Average Cost		WK	0.025	XYBBH	1.000	1,596	0.00	0.00	1,596
99 01 0103	Site Project Manager - Maximum Cost		MWK				1,803	0.00	0.00	1,803
01050 0108	Project Manager - Maximum Cost		WK	0.025	XYBBI	1.000	1,803	0.00	0.00	1,803
99 01 02 Superintendent			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0201	Superintendent - Minimum Cost		MWK				1,375	0.00	0.00	1,375
01050 0109	Field Superintendent - Minimum Cost		WK	0.025	XYBBJ	1.000	1,375	0.00	0.00	1,375
99 01 0202	Superintendent - Average Cost		MWK				1,500	0.00	0.00	1,500
01050 0110	Field Superintendent - Average Cost		WK	0.025	XYBBK	1.000	1,500	0.00	0.00	1,500
99 01 0203	Superintendent - Maximum Cost		MWK				1,725	0.00	0.00	1,725
01050 0111	Field Superintendent - Maximum Cost		WK	0.025	XYBBL	1.000	1,725	0.00	0.00	1,725
99 01 03 Clerk			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0301	Clerk - Average Cost		MWK				320.00	0.00	0.00	320.00
01050 0101	Field Office Clerk		WK	0.025	XYBBA	1.000	320.00	0.00	0.00	320.00
99 01 04 Field Engineer			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0401	Field Engineer - Minimum Cost		MWK				765.00	0.00	0.00	765.00
01050 0102	Field Engineer (Minimum Cost)		WK	0.025	XYBBC	1.000	765.00	0.00	0.00	765.00
99 01 0402	Field Engineer - Average Cost		MWK				995.00	0.00	0.00	995.00
01050 0103	Field Engineer (Average Cost)		WK	0.025	XYBBD	1.000	995.00	0.00	0.00	995.00
99 01 0403	Field Engineer - Maximum Cost		MWK				1,150	0.00	0.00	1,150
01050 0104	Field Engineer - Maximum Cost		WK	0.025	XYBBE	1.000	1,150	0.00	0.00	1,150
99 01 05 Timekeeper			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0501	Timekeeper - Average Cost		MWK				890.00	0.00	0.00	890.00
01050 0112	Timekeeper - Average Cost		WK	0.025	XYBBM	1.000	890.00	0.00	0.00	890.00
99 01 06 General Purpose Laborer			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0601	General-purpose Laborer		MWK				1,068	0.00	0.00	1,068
01050 0105	General Purpose Laborer		WK	0.025	XYBBF	1.000	1,068	0.00	0.00	1,068
99 01 07 Safety Engineer			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0701	Safety Engineer - Minimum Cost		MWK				1,545	0.00	0.00	1,545
01050 0121	Safety Engineer - Minimum Cost		WK	0.025	XYBBQ	1.000	1,545	0.00	0.00	1,545

99 01 Prime Contractor Field Office Staff

99 01 07 Safety Engineer			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0702 Safety Engineer - Average Cost			MWK				1,545	0.00	0.00	1,545
01050	0122	Safety Engineer - Average Cost	WK	0.025	XYBBR	1.000	1,545	0.00	0.00	1,545
99 01 0703 Safety Engineer - Maximum Cost			MWK				1,545	0.00	0.00	1,545
01050	0123	Safety Engineer - Maximum Cost	WK	0.025	XYBBS	1.000	1,545	0.00	0.00	1,545
99 01 08 Quality Control			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 01 0801 Quality Control - Minimum Cost			MWK				1,224	0.00	0.00	1,224
01050	0124	Quality Control - Minimum Cost	WK	0.025	XYBBT	1.000	1,224	0.00	0.00	1,224
99 01 0802 Quality Control - Average Cost			MWK				1,402	0.00	0.00	1,402
01050	0125	Quality Control - Average Cost	WK	0.025	XYBBU	1.000	1,402	0.00	0.00	1,402
99 01 0803 Quality Control - Maximum Cost			MWK				1,291	0.00	0.00	1,291
01050	0126	Quality Control - Maximum Cost	WK	0.025	XYBBV	1.000	1,291	0.00	0.00	1,291
99 04 01 Temporary Offices			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 04 0101 Temporary Office 20' x 8'			MO				0.00	0.00	207.88	207.88
01500	0209	Temporary Office Trailer 20' x 8' without Hookup	MO	0	N/A	1.000	0.00	0.00	168.39	168.39
01500	0213	Temporary Construction Office Air Conditioner	MO	0	N/A	1.000	0.00	0.00	39.48	39.48
99 04 0102 Temporary Office 32' x 8'			MO				0.00	0.00	248.52	248.52
01500	0210	Temporary Office Trailer 32' x 8' without Hookup	MO	0	N/A	1.000	0.00	0.00	209.04	209.04
01500	0213	Temporary Construction Office Air Conditioner	MO	0	N/A	1.000	0.00	0.00	39.48	39.48
99 04 0103 Temporary Office 50' x 10'			MO				0.00	0.00	364.65	364.65
01500	0211	Temporary Office Trailer 50' x 10' without Hookup	MO	0	N/A	1.000	0.00	0.00	325.17	325.17
01500	0213	Temporary Construction Office Air Conditioner	MO	0	N/A	1.000	0.00	0.00	39.48	39.48
99 04 0104 Temporary Office 50' x 12'			MO				0.00	0.00	418.07	418.07
01500	0212	Temporary Office Trailer 50' x 12' without Hookup	MO	0	N/A	1.000	0.00	0.00	378.59	378.59
01500	0213	Temporary Construction Office Air Conditioner	MO	0	N/A	1.000	0.00	0.00	39.48	39.48
99 04 02 Temporary Storage Facilities			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 04 0201 Temporary Storage Trailer 16' x 8'			MO				0.00	0.00	81.29	81.29
01500	0214	Temporary Construction Storage Van 16' x 8'	MO	0	N/A	1.000	0.00	0.00	81.29	81.29
99 04 0202 Temporary Storage Trailer 28' x 10'			MO				0.00	0.00	110.33	110.33
01500	0215	Temporary Construction Storage Van 28' x 10'	MO	0	N/A	1.000	0.00	0.00	110.33	110.33
99 04 03 Security Fencing			Unit	Hourly Output	Crew	Factor	Labor	Equip.	Matl.	Total
99 04 0301 Security Fencing 5' Chain-Link			LF				1.89	0.00	4.61	6.50
01500	0201	Construction Fence Chain Link 5'	LF	50	ULABC	1.000	1.89	0.00	4.61	6.50