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000067354

RF/RMRS-97-056

# Reconnaissance Level Characterization Report For The T891 Cluster Trailer Removal Project

Rocky Mountain Remediation Services, L.L.C.

AUGUST 1997

1/99

ADMIN RECORD

IA-A-000800

**RECONNAISSANCE LEVEL CHARACTERIZATION REPORT  
FOR THE T891 CLUSTER TRAILER REMOVAL PROJECT**

**August 1997**

**This Reconnaissance Level Characterization Report has been reviewed and approved  
by:**

  
\_\_\_\_\_  
Ty Vess, Project Manager

8-19-97  
\_\_\_\_\_  
Date

**This Reconnaissance Level Characterization Report was  
prepared by:**

  
\_\_\_\_\_  
Mary T. Aycock, Environmental Engineer

19 Aug 97  
\_\_\_\_\_  
Date

## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT

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## ACRONYMS

DOE	U. S. Department of Energy
DQO	Data Quality Objective
EPA	U. S. Environmental Protection Agency
IWCP	Integrated Work Control Program
OSHA	Occupational Safety and Health Administration
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office

## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT

### 1.0 INTRODUCTION

The Department of Energy (DOE) has established a goal of reducing the total built square footage at the Rocky Flats Environmental Technology Site (RFETS) by 2% in FY97. RFETS management has determined that the T891 Trailer Cluster, and Trailer 900E will be removed to help meet the 2% goal. This project will help RFETS management reduce operating costs and hazards.

The T891 Trailer Cluster is comprised of prefabricated trailers (A,L,M and N) located in the south east portion of RFETS (Figure 1-1). Trailers T891A, L, M, and N are portable office trailers measuring twelve (12) feet wide by sixty (60) feet in length. The trailers are constructed of materials similar to those used in mobile homes. All trailers are powered by the site's electrical power distribution system. Trailers T891A and T891 M have domestic water and sewer connections. No Individual Hazardous Substance Site, Areas of Concern, or Under Building Contamination have been identified with respect to the removal of the T891 Cluster facilities.

Trailer T891 A was brought to the site in 1990 as a field office for the construction of the 881 Hillside Interim Measure/Interim Remedial Action Project. This trailer has been used for office space and recently housed Radiological Engineering personnel. While some radioactive materials have been present in the trailer, no hazardous wastes or materials were ever handled or used at this facility.

Trailers T891L and T891 M have been used by the site's Surface Water Program and the previous Environmental Restoration Soil Sciences Program. These trailers have primarily been used to support field sampling activities and have also been used as field laboratories. T891N has been used to house construction project personnel, and to a lesser extent, to support field sampling activities by site subcontractors.

Trailer T900E is a semi-trailer that contains soil vapor extraction treatment equipment. This trailer, called the Soil Vapor Extraction Unit, was used to treat soils affected by volatile organic compounds emitted from Trench 3 at Operable Unit Number Two. Trailer T900E measures eight (8) feet in width and forty (40) feet in length.

Plan views of all the trailers in the T891 Trailer Cluster been included with the radiological survey data in Attachment 7.1.

### 1.1 PURPOSE

The purpose of this Reconnaissance Level Characterization Report is to present all of the available data and process information related to operations at the T891 Trailer Cluster, in an effort to characterize the subject facilities. Characterization includes identification of the type, quantity, condition, and location of both confirmed and potential sources of radioactive and hazardous materials within the Cluster, which was required as part of the *Reconnaissance Level Characterization Plan* (RMRS, 1997). The following facility information incorporates the T891 Trailer Cluster removal project files established during the reconnaissance characterization, including pertinent data from various sources. This report is to serve as a practical reference during removal operations.

This report will provide a baseline of information of the hazards within the T891 Cluster. The baseline will aid the DOE/Rocky Flats Field Office (RFFO) in determining the need for a

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Decommissioning Operations Plan as part of the decommissioning effort.

## 1.2 SCOPE

This report is prepared in support of the T891 Cluster characterization and removal for DOE at the RFETS located near Golden, Colorado. Figure 1-1 shows the location of the T891 Cluster facilities. The plan views and radiological survey data of each room are located in Attachment 7.1. The information presented in this report specifically defines the removal phase of the T891 Cluster.

The information presented in this report is specific to the T891 Cluster. The report contains information obtained during historical document reviews, personnel interviews and characterization information generated in support of this document.

## 1.3 METHODOLOGY

As part of this investigation, comprehensive physical inspections of all accessible areas of the T891 Cluster were conducted during July and August of 1997. The primary purpose of these inspections were:

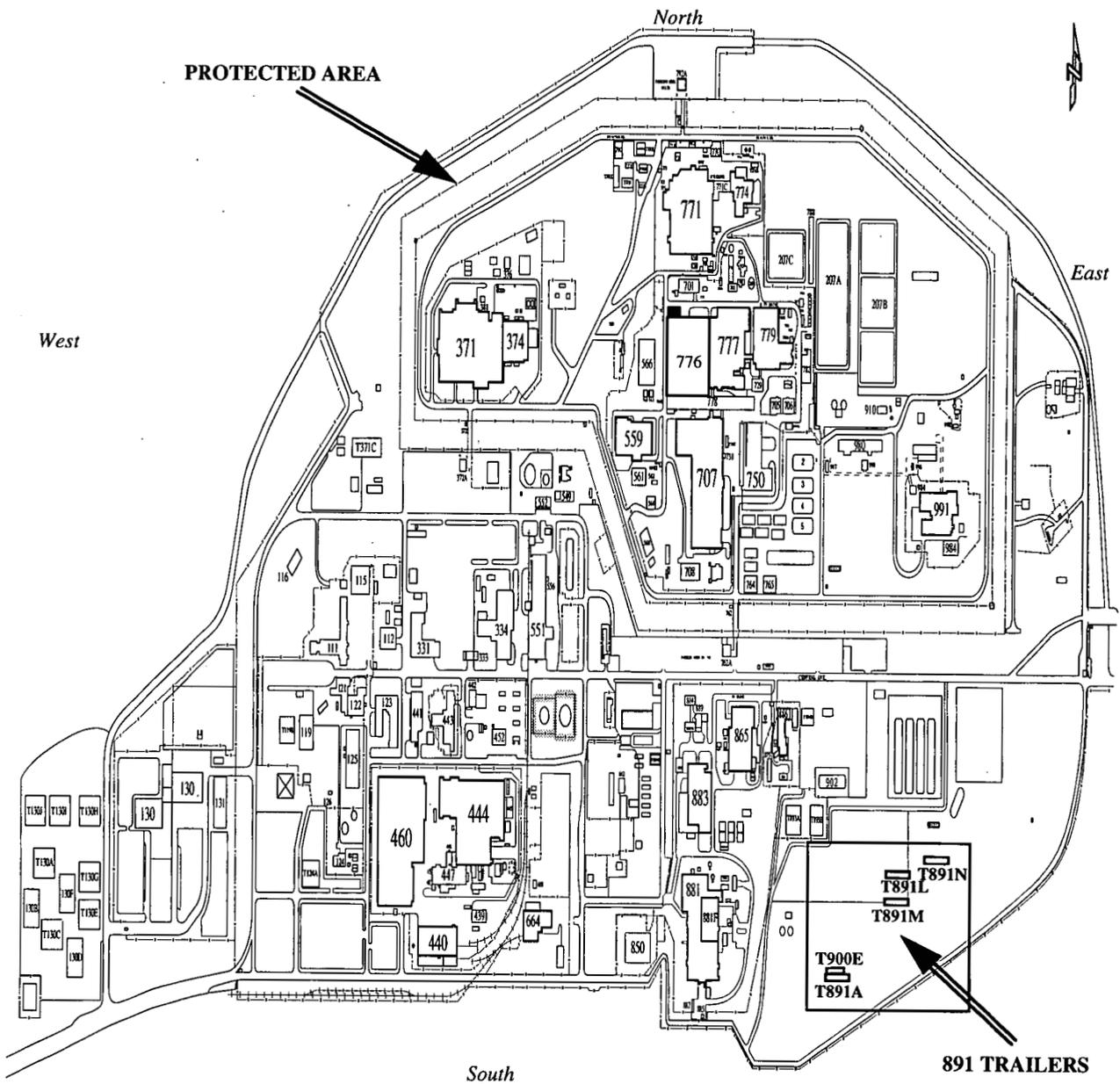
- to confirm the accuracy of file documentation of as-built or modified facility construction equipment installations and general facility conditions,
- obtain volume estimates for wastes that will be generated during removal activities,
- identify equipment, structures, process lines, and associated items that will require hazardous and/or radioactive surveys and analytical sampling to further characterize the Cluster,
- identify potential sources of lead and asbestos,
- identify potential chemical contamination, (chemical contamination would be identified by signs of staining or unusual smell),
- identify physical hazards (such as tripping hazards, loose/missing handrails, etc.).

## 1.4 SUMMARY

After the project walkdown (see Section 1.3) the Data Quality Objective (DQO) process was used to determine the need to identify the type of contaminants to be sampled. The results of the DQO process is documented in the Sampling and Analysis Plan for the T891 Cluster. As a part of the reconnaissance examination, a comprehensive survey of historical records was undertaken to determine the location and character of any radioactive and hazardous contaminants present in the area. A trailer by trailer compilation of relevant process knowledge and characterization information is presented in Section 3.0. The following is a summary of characterization information:

- No physical hazards were identified which would endanger the trailer occupants or construction workers.
- Some chemicals were identified as being stored in the trailers. Most of the stored chemicals were cleaning solutions. No chemical residues or chemical smell was identified in the trailers.

FIGURE 1-1 SITE MAP



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- Asbestos containing material is identified in Appendix B of Attachment 7.2.
- Paint was found to contain lead, zinc and chromium (see Attachment 7.2).
- No radioactive contamination was identified in any of the trailers. (See Table 3.3)

## 2.0 ANALYTICAL TESTING

Specific rationale for sampling and analysis was presented in the *Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers* (RMRS, 1997, Attachment 7.3).

### 2.1 WASTE MANAGEMENT

Materials from removal activities, including, masonry units, and lumber, will be generated as waste and characterized prior to disposition. Procedures are in place to insure that sampling and analysis of generated wastes will be in accordance with the U. S. Environmental Protection Agency (EPA) and State regulations. Hazardous and radioactive contaminant data is acquired, to a level consistent with regulatory and procedural requirements, for wastes that will be generated. The requirements for characterization of hazardous waste is specified in several RFETS waste management procedures, based on requirements established primarily by 40 CFR 261 and 6 CCR 1007-3, 261. Waste materials demonstrating hazardous or radioactive characteristics are managed in accordance with the Low-Level or Hazardous Waste Requirements Manual.

### 2.2 INDUSTRIAL HYGIENE

The potential for exposure to hazardous or radioactive substances will be evaluated, prior to conducting the operation, according to Occupational Safety and Health Act (OSHA) and National Institute of Occupational Safety and Health (NIOSH) requirements. A Demolition Plan will be written by the subcontractor. This requirement is driven by OSHA 1926.62 for lead and driven by other sections of OSHA for other constituents. Data will be acquired for contaminants associated with equipment, building materials, residuals within construction areas, or other potential sources of hazardous exposure to the workers. Preliminary screening and sampling is required in decommissioning areas for materials which the workers may be exposed. Trailers designated for offsite transport will be surveyed for radiological contamination. The documentation will be included in the project files for IWCP closeout. Instructions for completing reconnaissance level radiological surveys and results have been included as Attachment 7.1. Trailers will be decommissioned according to Engineering and Administrative Controls, Decontamination, or use of Personal Protective Equipment, as implemented under appropriate plans and procedures to meet OSHA requirements.

## 3.0 RECONNAISSANCE SURVEY RESULTS

### 3.1 ASBESTOS

In March 1997, the RMRS IH&S Team members inspected the T891 Cluster for asbestos as a part of the site-wide assessment. As part of this reconnaissance level survey, Trailers T891 A, T891L, T891M, T891N, and T900E were inspected for asbestos and lead during the week of July 14-18, 1997. T900E was determined to be "exempt" from asbestos and lead sampling (Attachment 7.1). The survey results are included in Attachment 7.2, which summarizes all asbestos information by two separate inspections/evaluations. Attachment 7.2, Appendix B, *Asbestos Bulk Sample Data Table* contains additional asbestos sampling obtained to complete asbestos characterization of the overall cluster. All work was conducted in accordance with the

Asbestos Hazard Emergency Response Act (AHERA).

### 3.2 LEAD

Bulk paint samples were collected in July 1997 from T891A, T891L, T891M and T891 N for lead analysis utilizing Atomic Absorption Spectroscopy (EPA method SW846-3050A/7420). Analysis results indicate that the samples collected from ceiling, door, siding, skirting, wall, and stair surfaces contained low concentrations of lead. Bulk lead sample analyses results are included in Attachment 7.2.

### 3.3 RADIOLOGICAL SURVEYS

Specific instructions for Radiological Surveys for the trailers are provided with the results of these surveys as Attachment 7.2. Results from all surveys were below detection limits. Survey data is summarized in Table 3.3. The Radiological survey results in Table 3.3 were compared to the "unrestricted release limits" in Table 3.4 and found to be below the listed values. A reading of removable alpha of <18 is less than the removable limit of 20 dpm/100 cm<sup>2</sup> listed, <205 for beta/gamma is less than 1000 dpm/100 cm<sup>2</sup>, <60 for total alpha is less than 100 for fixed + removable dpm/100 cm<sup>2</sup> and <455 total beta/gamma is less than 5000 dpm/100 cm<sup>2</sup> (Table 3.4).

### 4.0 DATA QUALITY ASSESSMENT

All sampling data were reviewed and considered valid and thereby usable, according to sampling, analytical, and record keeping procedures. DQOs for the characterization have been satisfied, in accordance with the requirements outlined in the *Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers* (RMRS, 1997).

### 5.0 DECISIONS MADE

Minimal wastes will be generated as a result of the removal of the T891 Trailer Cluster. Wastes to be generated by the project have been characterized as sanitary. The subcontractor will be responsible for the removal of all skirting material from the facility and determine if the material can be reused. Scrap metal removed from the Trailer Cluster (i.e., excavated conduit) will be recycled to the greatest extent possible.

### 6.0 REFERENCES

DOE 1992, *Historical Release Report*.

RMRS 1997, *Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers*, July.

RMRS 1997, *Project Execution Plan for the Removal of Trailers T891A, T891L, T891M, T891N and T900E*, Rev. 1, May.

**TABLE 3.3 RADIOLOGICAL SURVEY DATA**

Item	# of Alpha/Beta Swipes	# of Direct Alpha/Beta Measurements	REMOVABLE Alpha dpm/100 cm <sup>2</sup>	REMOVABLE Beta dpm/100 cm <sup>2</sup>	TOTAL Alpha dpm/100 cm <sup>2</sup>	TOTAL Beta/Gamma dpm/100 cm <sup>2</sup>	Below Unrestricted Limits Release
T891A	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T891L	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T891M	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T891N	10 biased on floor. 1 per component.  2 exterior.	10 biased on floor. 1 per component.  2 exterior.	<18	<205	<60	<455	yes
T900E	20 biased on floor. 5 for HEPA system. 1 per component.	20 biased on floor. 5 for HEPA system. 1 per component.	<18	<205	<60	<455	yes

Radiological survey data forms are available on request.

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**TABLE 3.4 SUMMARY OF CONTAMINATION VALUES FOR UNRESTRICTED RELEASE**

<b>RADIONUCLIDE (1)</b>	<b>Average Total (Fixed + Removable) Contamination dpm/100cm<sup>2</sup> (2), (3), (4)</b>	<b>Maximum Total (Fixed + Removable) dpm/100cm<sup>2</sup> (2),(4), (5)</b>	<b>Removable dpm/100cm<sup>2</sup> (2), (4), (6)</b>
Transuranics, Ra-226, Ra-228, Th-228, Pa-231, Ac-227, I-125, I-129	100	300	20
Th-Natural, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-131, I-133	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay products, alpha emitters	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above (7)	5,000	15,000	1,000

NOTES:

- (1) Where surface contamination by both alpha and beta-gamma emitting radionuclides exists, the limits established for alpha and beta-gamma emitting radionuclides should apply independently.
- (2) As used in this table, disintegrations per minute (dpm) is defined as the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.
- (3) Measurements of average contamination should not be averaged over an area of more than 1 meter<sup>2</sup>. For objects with a total surface area of less than 1 meter<sup>2</sup>, the average should be derived for each object.
- (4) The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mRad/hour and 1.0 mRad/hour, respectively at 1 cm.
- (5) The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.
- (6) The amount of removable material per 100 cm<sup>2</sup> of surface area should be determined by wiping an area of that size with a dry filter of soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm<sup>2</sup> is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. Except for transuranics and Ra-228, Ac-227, Th-228, Th-230, Pa-231, and alpha emitters, it is not necessary to use swiping techniques to measure removable contamination levels if direct scan surveys indicate the total residual surface contamination levels are within the limits for removable contamination.
- (7) This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

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## 7.0 ATTACHMENTS

- 7.1 Building T891 Trailer Cluster Decommissioning Project Characterization Radiological Instructions and Results
- 7.2 Asbestos and Lead Characterization Report for the T891 Trailer Cluster Including: T891A, T891L, T891 M, T891N and T900E, August 1997
- 7.3 Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers, July 1997

**ATTACHMENT 7.1**

**Building T891 Trailer Cluster Decommissioning Project  
Characterization Radiological Instructions and Results**

**Trailer 891A Removal Project  
Characterization Survey Radiological Instructions**

Location/Room: T891A

Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

**Notes**

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Date: \_\_\_\_\_

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG NUMBER:	
FOR: _____ P/WRE _____ PRL _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <i>Trailer 891A</i>	ROOM: <i>See Map</i>
DATE: <i>8-12-97</i>	TIME: <i>0900</i>
ITEM DESCRIPTION: <i>Field Office T-891A to be shipped off site</i>	
COMMENTS: <i>Surveyed in accordance with attached instruction &amp; drawing</i>	
PERFORMED BY (PRINT NAME): <i>M. M. 402</i>	
<i>[Signature]</i>	<i>18-11-97</i>
RCT SIGNATURE	EMP#      DATE

Copy

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>
MODEL:	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>
SERIAL #:	<u>824</u>	<u>1050</u>	_____	_____
CAL DATE:	<u>3-97</u>	<u>3-97</u>	_____	_____
CAL DUE DATE:	<u>9-97</u>	<u>9-97</u>	_____	_____
MFR:	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>
MODEL:	<u>B.C. 4</u>	<u>B.C. 4</u>	<u>B.C. 4</u>	<u>B.C. 4</u>
SERIAL #:	<u>838</u>	<u>770</u>	_____	_____
CAL DATE:	<u>6-97</u>	<u>7-97</u>	_____	_____
CAL DUE DATE:	<u>12-97</u>	<u>1-98</u>	_____	_____

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>N.E. TECH</u>	_____	_____	_____
MODEL:	<u>ELECTRA</u>	_____	_____	_____
SERIAL #:	<u>1265</u>	_____	_____	_____
CAL DATE:	<u>4-97</u>	_____	_____	_____
CAL DUE DATE:	<u>10-97</u>	_____	_____	_____
BACKGROUND:	<u>2.0</u> <u>3.295</u>	_____	_____	_____
EFFICIENCY:	<u>2.20.8</u> <u>33.1</u>	_____	_____	_____
MDA:	<u>4.55</u>	_____	_____	_____

REVIEWED BY: *[Signature]* #402

RO SUPERVISION PRINT NAME

*[Signature]*      *8 B97*

RO SUPERVISION SIGNATURE      DATE

MDA = CF X (2.71 + 4.65  $\sqrt$  BACKGROUND (CPM))

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# RADIOLOGICAL CONTAMINATION SURVEY FORM

DRAWING

LOG / SURVEY NUMBER \_\_\_\_\_  
 PAGE 2 OF 4  
 SURVEY RESULTS (DPM/100 CM SQ)

See Attached  
 Drawing

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (RISK / 60 SEC COUNT)	TOTAL BETA / GAMMA
		ALPHA	BETA / GAMMA		
1	See Drawing	<18	<205	<60	<455
2		<18	<205	<60	<455
3		<18	<205	<60	<455
4		<18	<205	<60	<455
5		<18	<205	<60	<455
6		<18	<205	<60	<455
7		<18	<205	<60	<455
8		<18	<205	<60	<455
9		<18	<205	<60	<455
10		<18	<205	<60	<455
11		<18	<205	<60	<455
12		<18	<205	<60	<455
13		<18	<205	<60	<455
14		<18	<205	<60	<455
15		<18	<205	<60	<455
16		<18	<205	<60	<455
17		<18	<205	<60	<455
18		<18	<205	<60	<455
19		<18	<205	<60	<455
20		<18	<205	<60	<455
21		<18	<205	<60	<455

17

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER

PAGE

3

OF

4

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA			
22	See Drawing	<18	<205	<60	<455	
23		<18	<205	<60	<455	
24		<18	<205	<60	<455	
25		<18	<205	<60	<455	
26		<18	<205	<60	<455	
27		<18	<205	<60	<455	
28		<18	<205	<60	<455	
29		<18	<205	<60	<455	
30		<18	<205	<60	<455	
31		<18	<205	<60	<455	
32		<18	<205	<60	<455	
33		<18	<205	<60	<455	
34		<18	<205	<60	<455	
35		<18	<205	<60	<455	
36		<18	<205	<60	<455	
37		<18	<205	<60	<455	
38		<18	<205	<60	<455	
39		<18	<205	<60	<455	
40		<18	<205	<60	<455	
41						
42						

See Drawing

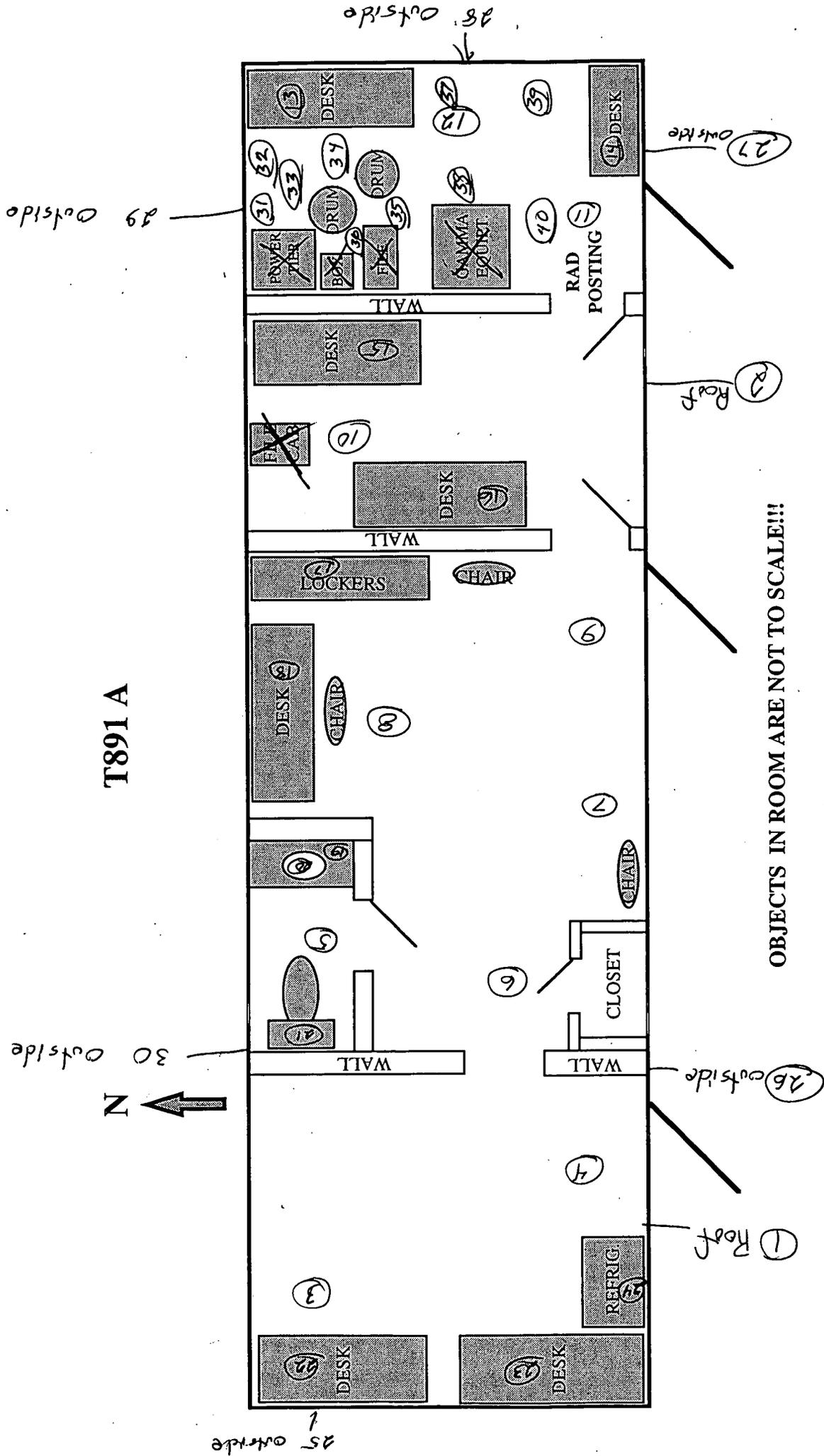
SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA			
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						

Area 3-11-97

18

T891 A



OBJECTS IN ROOM ARE NOT TO SCALE!!

**Trailer 891L Removal Project  
Characterization Survey Radiological Instructions**

**Location/Room: T891L**

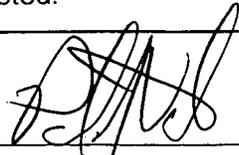
<b>Item/Area Description<sup>1</sup></b>	<b># of Alpha/Beta Swipes<sup>2</sup></b>	<b># of Direct Alpha/Beta Measurements<sup>2</sup></b>	<b>Scan Survey<sup>3</sup></b>	<b>Special Instructions</b>
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

**Notes**

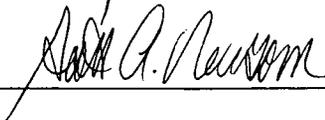
<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG NUMBER: _____	
FOR: _____ P/WRE _____ PRL _____ _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <u>T-891 L</u>	ROOM: <u>See Map</u>
DATE: <u>8-13-97</u>	TIME: <u>0900</u>
ITEM DESCRIPTION: <u>Field office T-891 L to be shipped offsite</u>	
COMMENTS: <u>Surveyed in accordance with instruction sheet &amp; map.</u>	
PERFORMED BY (PRINT NAME): <u>W. M. [Redacted]</u> <u>[Signature]</u> <u>[Redacted]</u> <u>18-13-97</u> RCT SIGNATURE EMP# DATE	

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>
MODEL:	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>
SERIAL #:	<u>824</u>	<u>1050</u>	_____	_____
CAL DATE:	<u>3-10-97</u>	<u>3-11-97</u>	_____	_____
CAL DUE DATE:	<u>9-10-97</u>	<u>9-11-97</u>	_____	_____
MFR:	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>
MODEL:	<u>B.C. 4</u>	<u>B.C. 4</u>	<u>B.C. 4</u>	<u>B.C. 4</u>
SERIAL #:	<u>Bc838</u>	<u>Bc770</u>	_____	_____
CAL DATE:	<u>6-24-97</u>	<u>7-7-97</u>	_____	_____
CAL DUE DATE:	<u>12-24-97</u>	<u>1-7-98</u>	_____	_____

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>N.E. TECH</u>	_____	_____	_____
MODEL:	<u>ELECTRA</u>	_____	_____	_____
SERIAL #:	<u>1265</u>	_____	_____	_____
CAL DATE:	<u>4-28-97</u>	_____	_____	_____
CAL DUE DATE:	<u>10-28-97</u>	_____	_____	_____
BACKGROUND:	<u>2.0</u>	_____	_____	_____
EFFICIENCY:	<u>34.0</u>	_____	_____	_____
MDA:	<u>22.8</u>	_____	_____	_____
	<u>33.1</u>	_____	_____	_____
	<u>60</u>	_____	_____	_____
	<u>3455</u>	_____	_____	_____

REVIEWED BY: Teresa Johnston  
RO SUPERVISION PRINT NAME

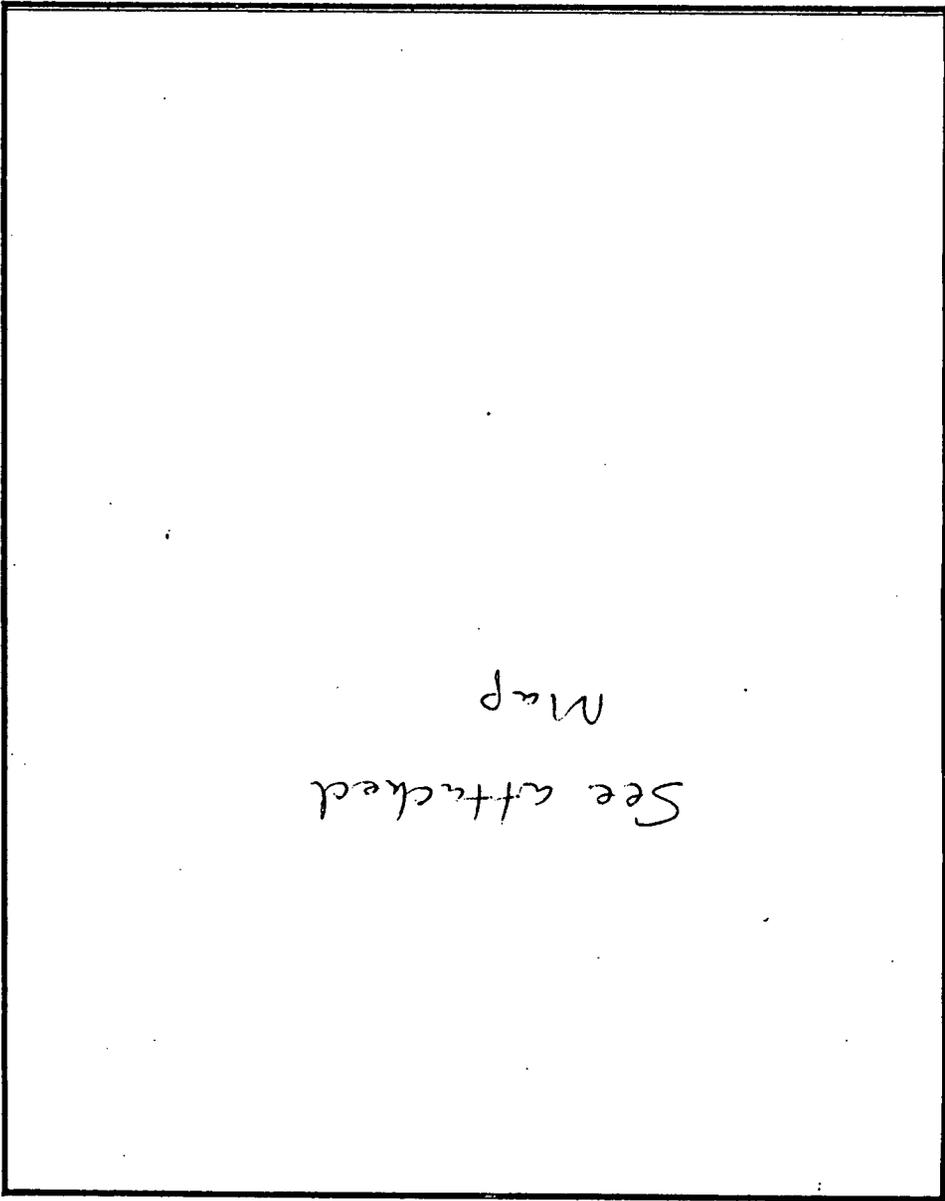
Teresa Johnston / 8-14-97  
RO SUPERVISION SIGNATURE DATE

$$MDA = CF \times [2.71 + 4.65 \sqrt{\text{BACKGROUND (CPM)}}]$$

2/

22

SWTP #S	LOCATION/DESCRIPTION			ALPHA	BETA/ GAMMA	GAMMA (FRISK /M)	SEC COUNT
	TOTAL	ALPHA	BETA/ GAMMA				
1	18	205	60	45	1		
2	18	205	60	45	2		
3	18	205	60	45	3		
4	18	205	60	45	4		
5	18	205	60	45	5		
6	18	205	60	45	6		
7	18	205	60	45	7		
8	18	205	60	45	8		
9	18	205	60	45	9		
10	18	205	60	45	10		
11	18	205	60	45	11		
12	18	205	60	45	12		
13	18	205	60	45	13		
14	18	205	60	45	14		
15	18	205	60	45	15		
16	18	205	60	45	16		
17	18	205	60	45	17		
18	18	205	60	45	18		
19	18	205	60	45	19		
20	18	205	60	45	20		
21	18	205	60	45	21		



See attached  
Map

SURVEY RESULTS (DPM/100 CM SQ)

DRAWING

RADIOLOGICAL CONTAMINATION SURVEY FORM

23

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

#S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL
		ALPHA	BETA/	GAMMA	
#S	LOCATION/DESCRIPTION	ALPHA	BETA/	GAMMA	(RISK / 60 SEC COUNT)
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

*Handwritten: 1.3, 1.3, 1.3*

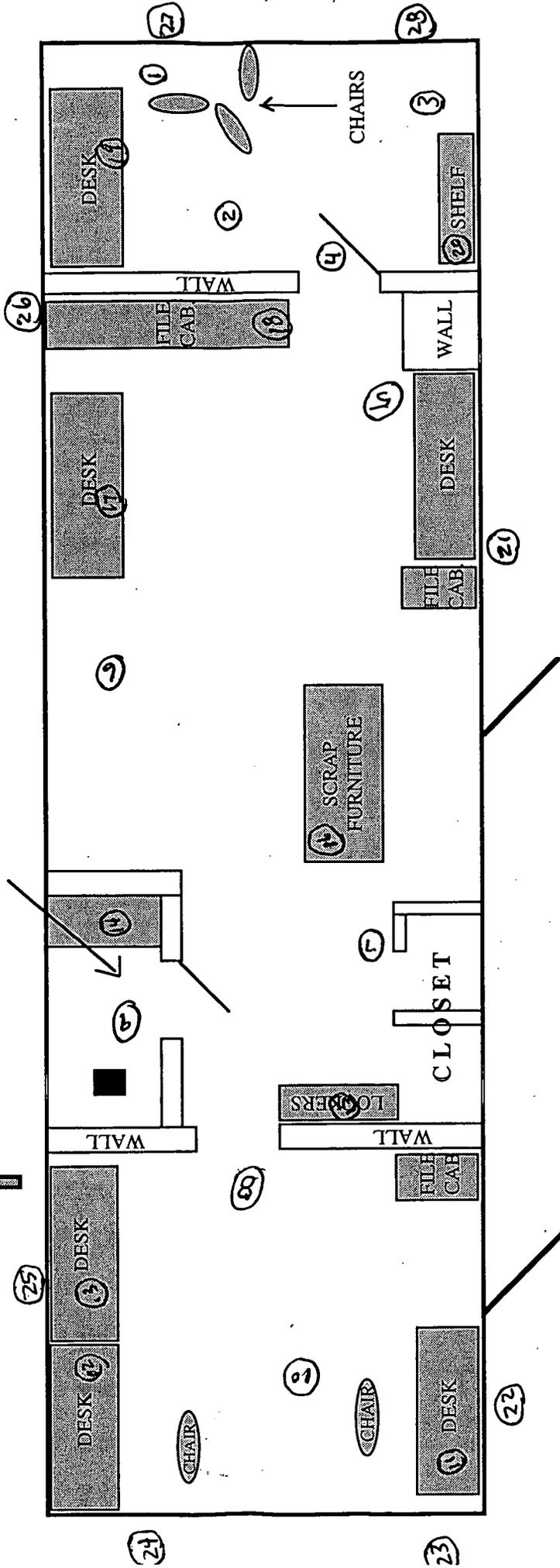
#S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL
		ALPHA	BETA/	GAMMA	
#S	LOCATION/DESCRIPTION	ALPHA	BETA/	GAMMA	(RISK / 60 SEC COUNT)
22		<18	<205	<60	<455
23		<18	<205	<60	<455
24		<18	<205	<60	<455
25		<18	<205	<60	<455
26		<18	<205	<60	<455
27		<18	<205	<60	<455
28		<18	<205	<60	<455
29		<18	<205	<60	<455
30		<18	<205	<60	<455
31		<18	<205	<60	<455
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

*Handwritten: 1.3, 1.3, 1.3*

# T891 L



BATHROOM CONTAINS NO SINK OR TOILET!



OBJECTS IN ROOM ARE NOT TO SCALE!!!

29 & 30 located on roof exterior

~~East 24 13~~  
~~West 13 45~~

8318.

**Trailer 891M Removal Project  
 Characterization Survey Radiological Instructions**

Location/Room: T891M

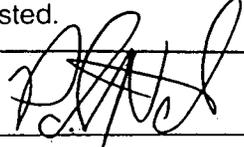
Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer with bias in lab area
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

**Notes**

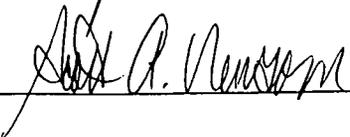
<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

# RADIOLOGICAL CONTAMINATION SURVEY FORM

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

LOG NUMBER: _____	FOR: _____ PAVRE _____ PRL _____	ROOM: See Map
	_____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: T-891 M	DATE: 8-13-97	TIME: 1230
ITEM DESCRIPTION: Field office T-891 M to be shipped offsite		
COMMENTS: Surveyed in accordance with attached instructions & drawing		
PERFORMED BY (PRINT NAME): <u>Munoz</u> / <u>8-13-97</u> DATE		
ROCT SIGNATURE: _____		

MFR: _____	EBER. _____	EBER. _____	EBER. _____
MODEL: S.A.C. 4	S.A.C. 4	S.A.C. 4	S.A.C. 4
SERIAL #: 824	1050		
CAL DATE: 3-10-97	3-11-97		
CAL DUE DATE: 9-10-97	9-11-97		
MFR: _____	EBER. _____	EBER. _____	EBER. _____
MODEL: B.C. 4	B.C. 4	B.C. 4	B.C. 4
SERIAL #: B-838	B-770		
CAL DATE: 6-24-97	7-7-97		
CAL DUE DATE: 12-24-97	1-7-98		

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR: _____	N.E. TECH _____
MODEL: ELECTRA _____	
SERIAL #: 1265 _____	
CAL DATE: 4-28-97 _____	
CAL DUE DATE: 10-28-97 _____	
BACKGROUND: 2.0	
EFFICIENCY: 22.8	
MDA: 4.65	

REVIEWED BY: Teresa Johnston / 8-14-97  
 RO SUPERVISION PRINT NAME: \_\_\_\_\_ DATE: \_\_\_\_\_  
 RO SUPERVISION SIGNATURE: Teresa Johnston

MDA = CF X (2.71 + 4.65)  BACKGROUND (CPM)

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

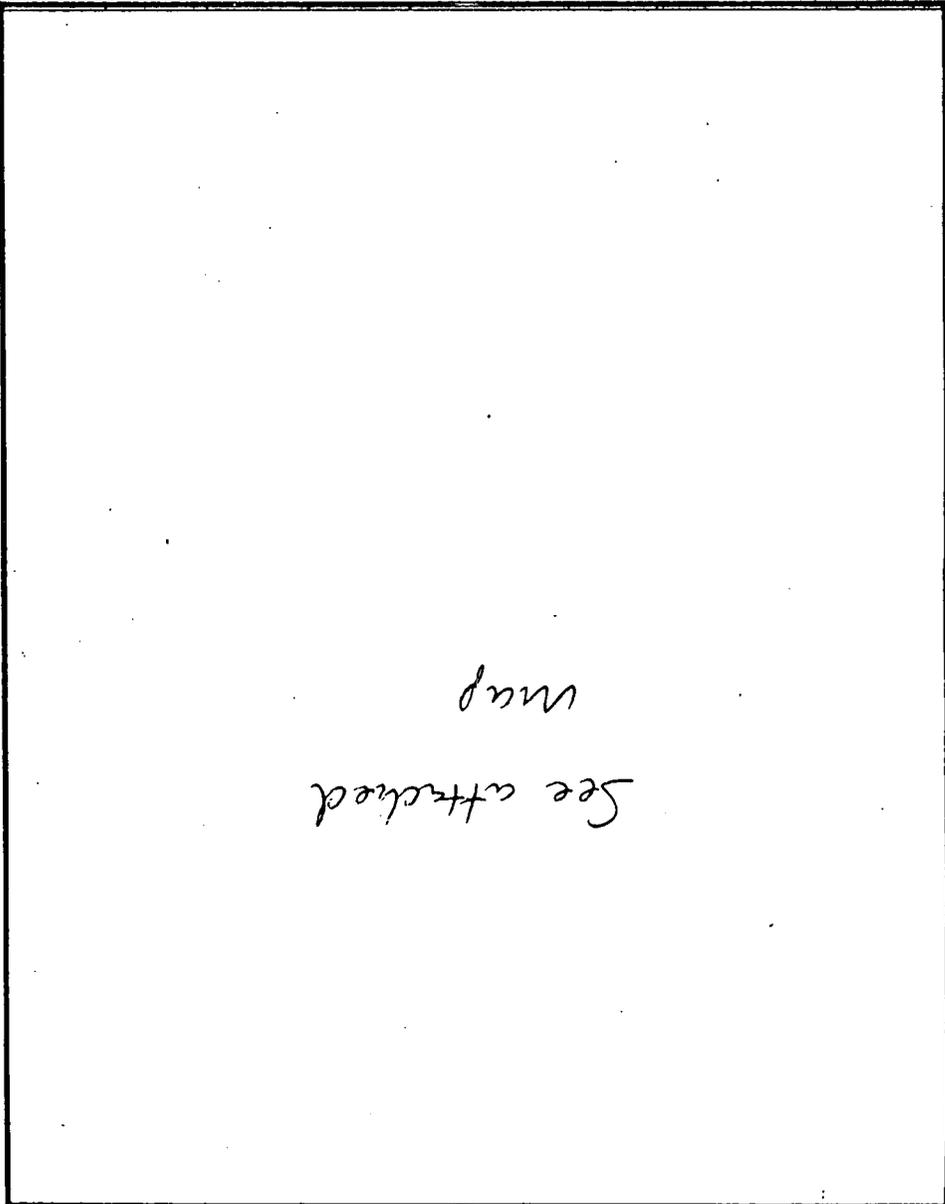
PAGE 2 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

DRAWING

T-891 M

SWTP #S	LOCATION/DESCRIPTION			ALPHA	BETA	GAMMA (FRISK / 60)	SEC COUNT
	REMOVABLE	ALPHA BET.	TOTAL				
1				18	60	205	245
2				18	60	205	245
3				18	60	205	245
4				18	60	205	245
5				18	60	205	245
6				18	60	205	245
7				18	60	205	245
8				18	60	205	245
9				18	60	205	245
10				18	60	205	245
11				18	60	205	245
12				18	60	205	245
13				18	60	205	245
14				18	60	205	245
15				18	60	205	245
16				18	60	205	245
17				18	60	205	245
18				18	60	205	245
19				18	60	205	245
20				18	60	205	245
21				18	60	205	245



27

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

*T-891-M*

SURVEY RESULTS (DPM/100 CM SQ)

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
22		218	2205	260	2455
23		218	2205	260	2455
24		218	2205	260	2455
25		218	2205	260	2455
26		218	2205	260	2455
27		218	2205	260	2455
28		218	2205	260	2455
29		218	2205	260	2455
30		218	2205	260	2455
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA		
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

*Cont. S.B. 2*

*Cont. G. 1.5*

28

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG NUMBER: _____	
FOR: _____ P/WRE _____ PRL _____ _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <u>T 900 E</u>	ROOM: <u>See Map</u>
DATE: <u>8-13-97</u>	TIME: <u>1000</u>
ITEM DESCRIPTION: <u>Field office T-900 E Semi-Trailer to be shipped off site</u>	
COMMENTS: <u>Surveyed in accordance with instruction sheet &amp; map.</u>	
PERFORMED BY (PRINT NAME): <u>Munoz</u> <u>Munoz</u> _____ <u>18-13-97</u> RCT SIGNATURE EMP# DATE	

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>
MODEL:	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>	<u>S.A.C. - 4</u>
SERIAL #:	<u>824</u>	<u>1050</u>	_____	_____
CAL DATE:	<u>3-10-97</u>	<u>3-11-97</u>	_____	_____
CAL DUE DATE:	<u>9-10-97</u>	<u>9-11-97</u>	_____	_____

MFR:	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>	<u>EBER.</u>
MODEL:	<u>B.C. 4</u>	<u>B.C. 4</u>	<u>B.C. 4</u>	<u>B.C. 4</u>
SERIAL #:	<u>B-838</u>	<u>B-270</u>	_____	_____
CAL DATE:	<u>6-24-97</u>	<u>7-2-97</u>	_____	_____
CAL DUE DATE:	<u>12-24-97</u>	<u>1-7-98</u>	_____	_____

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>N.E. TECH</u>	_____	_____	_____
MODEL:	<u>ELECTRA</u>	_____	_____	_____
SERIAL #:	<u>1265</u>	_____	_____	_____
CAL DATE:	<u>4-28-97</u>	_____	_____	_____
CAL DUE DATE:	<u>10-28-97</u>	_____	_____	_____
BACKGROUND:	<u>2.0</u>	_____	_____	_____
EFFICIENCY:	<u>33.1</u>	_____	_____	_____
MDA:	<u>485</u>	_____	_____	_____

REVIEWED BY: Terese Johnston  
RO SUPERVISION PRINT NAME

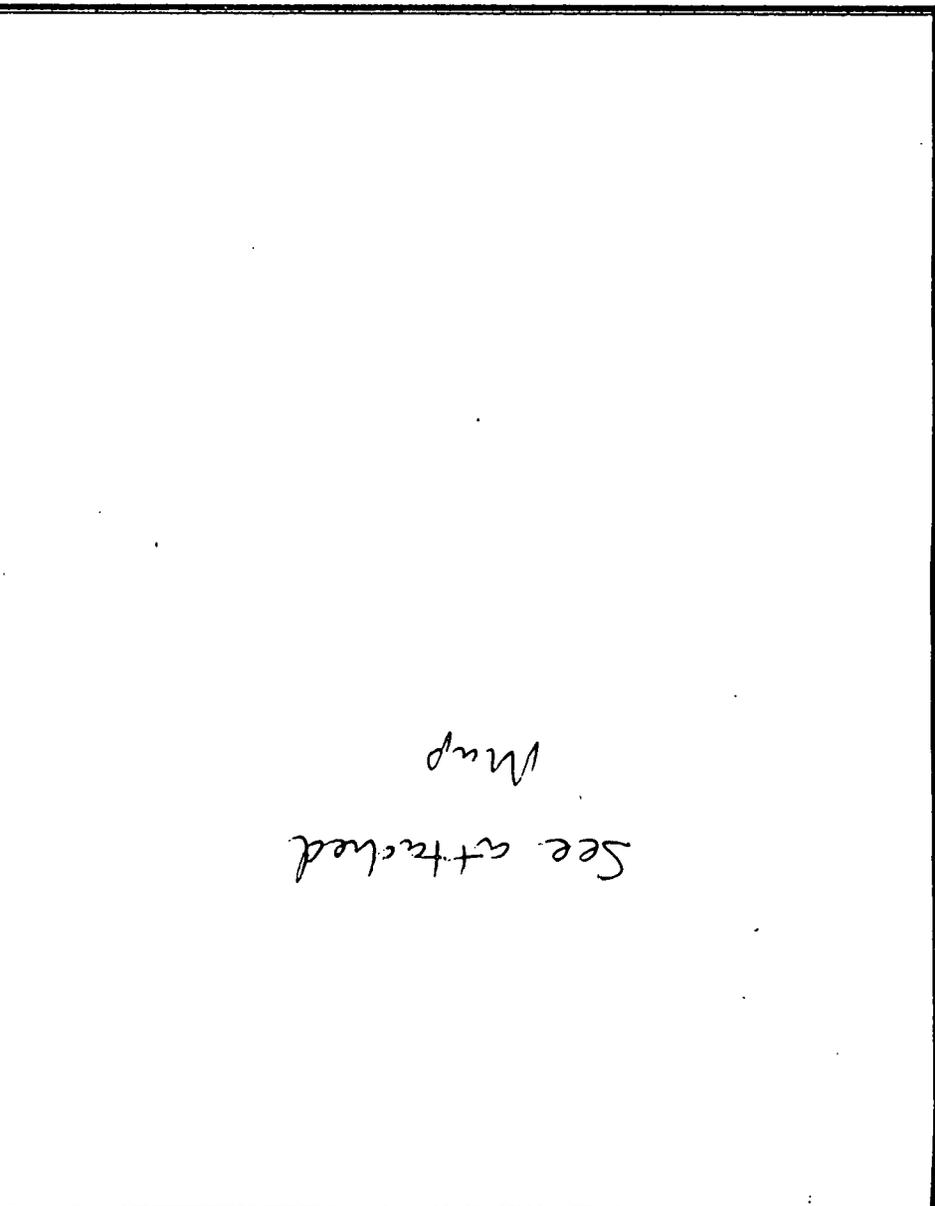
Terese Johnston / 8-14-97  
RO SUPERVISION SIGNATURE DATE

$$MDA = CF \times [2.71 + 4.65 \sqrt{\text{BACKGROUND (CPM)}}]$$

29

DE

S#	LOCATION/DESCRIPTION	REMOVABLE		ALPHA	GAMMA	ALPHA BET.	GAMMA	TOTAL
		DET./	SEC					
1		18	205	60	45			
2		18	205	60	45			
3		18	205	60	45			
4		18	205	60	45			
5		18	205	60	45			
6		18	205	60	45			
7		18	205	60	45			
8		18	205	60	45			
9		18	205	60	45			
10		18	205	60	45			
11		18	205	60	45			
12		18	205	60	45			
13		18	205	60	45			
14		18	205	60	45			
15		18	205	60	45			
16		18	205	60	45			
17		18	205	60	45			
18		18	205	60	45			
19		18	205	60	45			
20		18	205	60	45			
21		18	205	60	45			



See attached  
Map

SURVEY RESULTS (DPM/100 CM SQ)

DRAWING

RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER

PAGE

2 OF 3

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL	TOTAL
		ALPHA	BETA/ GAMMA	ALPHA (FRISK / 60 SEC COUNT)	BETA/ GAMMA
22		<18	<205	<60	<455
23		<18	<205	<60	<455
24		<18	<205	<60	<455
25		<18	<205	<60	<455
26		<18	<205	<60	<455
27		<18	<205	<60	<455
28		<18	<205	<60	<455
29		<18	<205	<60	<455
30		<18	<205	<60	<455
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE		TOTAL	TOTAL
		ALPHA	BETA/ GAMMA	ALPHA (FRISK / 60 SEC COUNT)	BETA/ GAMMA
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					

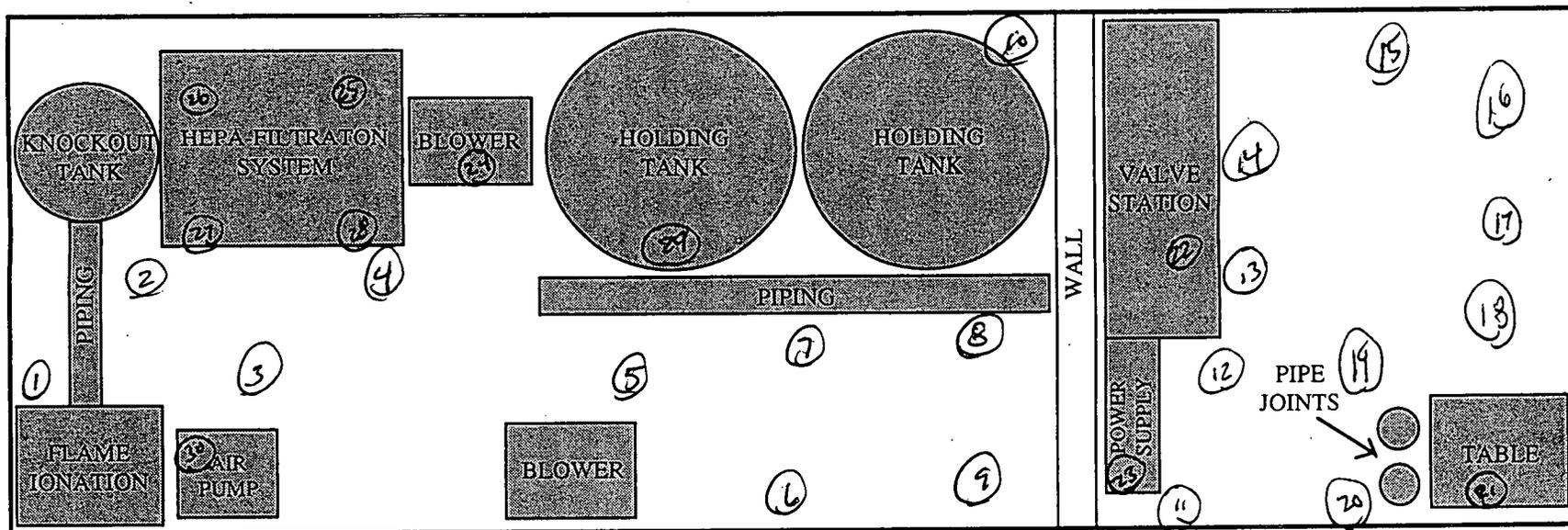
31

*Contaminated*

*Contaminated*



# T900 E - Semi-Trailer



OBJECTS IN SEMI ARE NOT TO SCALE!!!

**ATTACHMENT 7.2**

**Asbestos and Lead Characterization Report for the T891 Trailer Cluster Including:  
T891A, T891L, T891 M, T891N and T900E, August 1997**



Rocky Mountain  
Remediation Services, L.L.C.  
*...protecting the environment*

RF/RMRS-97-055

## **Asbestos and Lead Characterization Report**

**T891 Trailer Cluster Including:**

**T891A, T891L, T891M, T891N and T900E**

**Rocky Flats Environmental Technology Site**

**Prepared by:**

**Rocky Mountain Remediation Services**

**August 1997**

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2.0 ASBESTOS SURVEY ..... 1  
2.1 INSPECTION PROCEDURES ..... 1  
2.2 DESCRIPTION AND HAZARD ASSESSMENT OF ACM ..... 2  
2.3 DESCRIPTION OF NON-ACM BASED ON SAMPLE RESULTS ..... 2  
3.0 LEAD IN PAINT SURVEY ..... 3  
3.1 INSPECTION PROCEDURES ..... 3  
3.2 DESCRIPTION AND LOCATION OF LEAD IN PAINT ..... 3  
4.0 LEAD IN PAINT REGULATORY REVIEW ..... 4  
4.1 REGULATORY REVIEW - RELOCATION ..... 4  
4.2 LEAD IN PAINT DISCLOSURE TO BUYERS OF TRAILERS ..... 4

**APPENDICES**

Appendix A—Inspector Certifications ..... A-1  
Appendix B—Asbestos And Lead Bulk Sample Lab/Data Tables ..... B-1

**ATTACHMENTS**

- Attachment 1.0—RTG Exemption Letter
- Attachment 1.1—Safety and Hygiene Chain of Custody Record and Analysis Request
- Attachment 2.1—PLM Bulk Analysis, Percentage Composition by Volume Table
- Attachment 3.1—Sample Results/Quality Control Tables
- Attachment 3.2—Bulk Asbestos and Lead Sample Location Drawing

## ACRONYMS

ACBM	Asbestos containing building material
AHERA	Asbestos Hazardous Emergency Response Act
AAS	Atomic absorption spectroscopy
CCR	Colorado Code of Regulations
CFR	Code of Federal Regulations
EPA	U. S. Environmental Protection Agency
HUD	U. S. Housing and Urban Development
NIST	National Institute of Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PLM	Polarized light microscopy
PPM	Parts per million
QC	Quality Control
RESI	Reservoirs Environmental Services, Inc.
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services, L. L. C.
RTG	Resource Technology Group, Inc.
SEG, CO	Scientific Ecology Group, Colorado

## 1.0 INTRODUCTION

On March 14, 1997, Traller 891A was inspected for asbestos containing building materials (ACBM) by Rocky Mountain Remediation Services, L. L. C. (RMRS) Industrial Hygiene staff. This information is included in this report (see Attachment 1.0). During the week of July 14-18, 1997, Trailers T891A, T891L, T891M, T891N, and T900E were inspected for ACBM and lead in paint by Scientific Ecology Group, Colorado (SEG) staff. T900E is exempt from lead and asbestos sampling (see Attachment 1.0). This information is also included in this report (see Appendix B). The purpose of this inspection is to prepare for and facilitate the relocation of the trailers.

The asbestos inspection was conducted according to the guidelines set forth by the Asbestos Hazard Emergency Response Act (AHERA) and complies with the United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA) and State of Colorado regulations covering asbestos inspections.

The lead in paint inspection was conducted in accordance with the guidelines established by the US Department of Housing and Urban Development (HUD) published the Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing pursuant the Title X of the Housing and Community Development Act of 1992.

Appendix B contains the location, descriptions of ACBM and metals containing paint on building surfaces. Materials were analyzed and results in tabular form are contained in Appendix B. Each sampled building material is described as either asbestos or non-asbestos containing. Each sampled painted surface is described as either metals or non-metals containing paint.

## 2.0 ASBESTOS SURVEY

### 2.1 INSPECTION PROCEDURES

Bulk samples were acquired to determine the presence of ACBM. Suspect materials were chosen based on historical significance or on the judgement of the accredited inspector. Each sample was assigned an individual number made up of the trailer number, the date the sample was acquired, the initials of the sampling technician, and a three digit number in sequence. Quality Control samples are designated in the Bulk Sample Data Table as (QC).

A total of 25 samples were acquired from suspected materials. These materials included thermal systems insulation and miscellaneous materials. All samples were acquired in a random manner representative of the suspected material. Trailer T900E is exempt from lead and painting sampling (see Attachment 1.0)

All bulk samples were analyzed by Reservoirs Environmental Services, Inc. (RESI) of Denver, Colorado. RESI is accredited through the National Institute of Standards and Technology (NIST) and participates in the NIST National Voluntary Laboratory Accreditation Program (NVLAP) as required by the EPA. Bulk samples were analyzed by polarized light microscopy (PLM) in compliance with guidelines established by the EPA 40 CFR 763, Subpart F, ( see Attachment 2.1). Asbestos concentrations were visually estimated and reported in percent by layer of each sample.

## 2.2 DESCRIPTION AND HAZARD ASSESSMENT OF ACBM

### 2.2.1 Tan with White Streaks 12" Floor Tile

Approximately 350 sq. ft. of tan with white streaks 12" square floor tile with yellow mastic, located in Trailer T891A, dispersed throughout (see attachment 3.2 for location.)

The EPA/AHERA hazard assessment category for the tile is *Miscellaneous Material In Good Condition*. The appropriate response action for the material is to periodically evaluate for damage and to maintain in good condition. This material should not be disturbed during relocation.

## 2.3 DESCRIPTION OF MATERIALS TESTING NEGATIVE FOR ASBESTOS

### 2.3.1 Ceiling Drywall Panels

The drywall ceiling panels located in all four trailers were inspected for the purposes of this report, tested below detectable levels for asbestos. Homogeneous panels were discovered in the furnace enclosure in T891L, and can also be assumed to contain less than detectable levels of asbestos.

### 2.3.2 Tan/Beige Mottled 12" Floor Tile

The tan mottled 12" floor tile and associated yellow mastic in all four trailers were inspected for the purposes of this report, tested below detectable levels for asbestos.

### 2.3.3 Brown Mottled 12" Floor Tile

The 12" brown mottled floor tile and tan mastic in Trailer T891N tested below detectable levels for asbestos.

### 2.3.4 Light Brown Mottled 12" Floor Tile

The 12" brown mottled floor tile and clear mastic in Trailer T891L tested below detectable levels for asbestos.

### 2.3.5 Black Tar Paper

The black tar paper on the underside of Trailers T891A, T891M, and T891N tested below detectable levels for asbestos.

### 2.3.6 Black Tar Roofing Mastic

The black tar roofing mastic on the trailer to porch roof joint on T891A tested below detectable levels for asbestos. Based on this information, other black roofing mastics discovered on T891L, T891M, and T891N may be assumed to be non-asbestos, although none was discovered at the time of inspection.

### 2.3.7 Brown Paneling Adhesive

The brown paneling adhesive discovered in T891N tested below detectable levels for asbestos. Although no adhesive was discovered in other subjected trailers, should brown paneling adhesive be discovered, it may be assumed that this adhesive contains less than detectable levels of asbestos.

### 3.0 LEAD IN PAINT SURVEY

#### 3.1 INSPECTION PROCEDURES

Bulk paint samples were acquired from building surfaces to determine the presence of lead, zinc, chromium and arsenic. Suspect paints were chosen based on historical significance or on the judgement of the accredited inspector.

A total of 13 samples were acquired from suspected painted surfaces. These surfaces included the interior and exterior paints. Samples were chosen for their distinct color variations. All samples were acquired in a random manner representative of the individual color.

Based on historical data from other site structures, the bright red and yellow paint associated with fire and safety markings in addition to the grey paint on steps and porches was assumed to be metals containing. Trailer T900E is exempt from lead and painting sampling (see Attachment 1.0)

All paint samples were analyzed by Schuller Labs, a third party independent lab located in Denver, Colorado. Schuller is properly accredited for bulk paint analysis through the American Industrial Hygiene Association. Bulk paint samples were analyzed with atomic absorption spectroscopy (AAS) (EPA Method SW 846-3050/7420). Results for the purposes of determining occupational exposure are reported in parts per million (see Attachment 3.1).

#### 3.2 LEAD IN PAINT LOCATIONS AND DESCRIPTIONS

Appendix B Lead Paint Bulk Sample Data Table shows a summary of the results of bulk samples for lead/metals in the paint on subject trailers in the T891 Cluster. Although inconsistencies occurred due to differing ages of the structures, the overall assumption is that the majority of the paints inspected do include some type of metal. Of special interest is the white painted metal skirting (See Section 3.2.1), which consistently tested positive for detectable levels of lead. T891N has vinyl skirting, which tested negative for lead, chromium, and zinc.

All paints surveyed were in good condition with the exception of the white paint on the porches. T891A porches showed minimal deterioration, but T891L, T891M and T891N all showed signs of flaking and peeling. Extreme care should be exercised when relocating or disassembling/detaching these structures from the trailers. Attachment 3.2 shows these asbestos and lead sample locations.

##### 3.2.1 White Paint on Sheet Metal Skirting

The white paint on the sheet metal skirting on Trailers T891A, T891L and T891M tested positive for detectable levels of lead, chromium and zinc.

##### 3.2.2 Cream Paint on Sheet Metal Siding

The cream paint on the sheet metal siding on Trailers T891A, T891L, T891M and T891N tested positive for detectable levels of lead, chromium and zinc.

##### 3.2.3 White Paint on Porch Framing

The white paint on the T891A west porch framing tested positive for detectable levels of arsenic, chromium and zinc. This same paint tested negative for detectable levels of lead.

### 3.2.4 White Paint on Textured Ceiling Panels

The white paint on the ceiling panels in T891M and T891N tested positive for lead. T891L, T891M, and T891N ceiling panels tested positive for zinc. T891N also tested positive for detectable levels of chromium.

## 4.0 LEAD/METALS IN PAINT REGULATORY REVIEW AND RECOMMENDATIONS

### 4.1 REGULATORY REVIEW - RELOCATION

In June 1995, the U. S. Department of Housing and Urban Development (HUD) published the *Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing* pursuant to Title X of the Housing and Community Development Act of 1992. This document replaced the 1990 publication, *Lead Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing*. The new publication addresses lead hazards posed by paint, dust and soil in the residential environment. It provides specific guidelines for XRF and bulk paint sampling in housing including sampling locations, sample collection procedures and laboratory analysis procedures. In addition, it provides guidelines for hazard assessment of lead based paint, abatement of lead based paint, and clearance sampling. The guidelines define lead based paint as paint that contains 1.0 milligrams or more of lead per square centimeter of surface area. Although the guidelines act as a good reference for lead paint inspections, they do not apply to non-HUD homes and are not enforceable by law unless a Federal, State or RFETS directive requires adherence to all or parts of the publication.

OSHA's CFR 1926.62 applies to the disturbance or demolition of structures that contain detectable levels of lead in paint. Detection limits of 10 parts per million (PPM) are considered as the lowest limit normally achievable by standard laboratory analysis. At or below this limit OSHA believes exposure poses limited risk to workers.

However, if the employer suspects that lead may be present, the employee protection and safety precautions as outlined in CFR 1926.62 apply, especially to employee medical surveillance and monitoring.

### 4.2 LEAD IN PAINT DISCLOSURE TO BUYERS OF THE TRAILERS

On Wednesday, March 6, 1996, the EPA published 24 CFR Part 35 and 40 CFR Part 745 which outlined those requirements for disclosure. In the case of the T891 Trailers, several important issues are listed below:

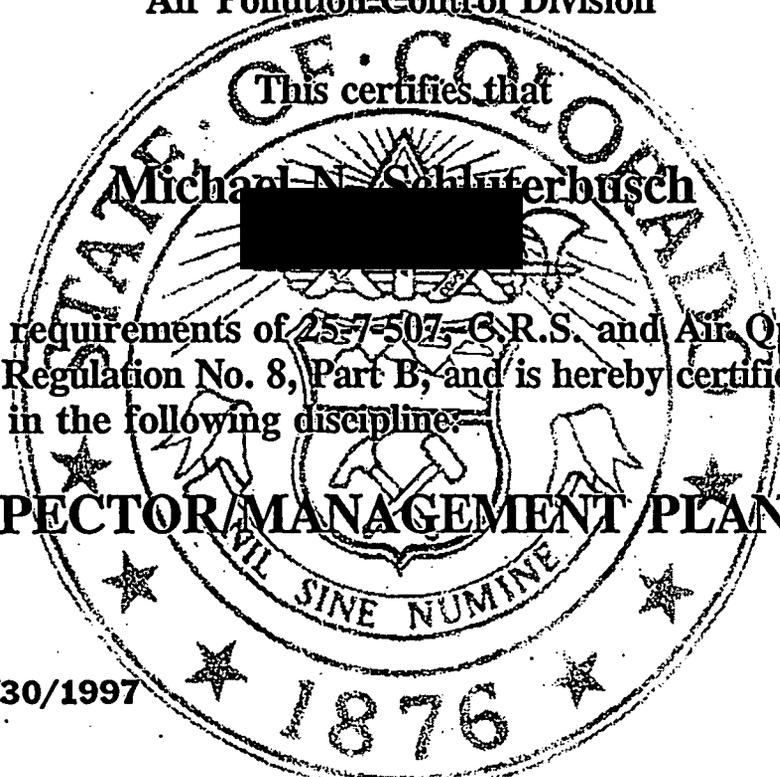
- A lead based paint hazard is defined as exposure from paint, dust or soil containing lead.
- Those trailers built after 1978 are exempt from disclosure. T891A and T891N require disclosure, T891M and T891L do not require disclosure by this regulatory guideline.
- All of the trailers are considered "0-bedroom units," and are also exempt from disclosure.
- RMRS/RFETS is responsible for disclosure of known lead hazards only.
- In the event a purchaser is found for any non-exempt trailers, said purchaser has ten days to identify those hazards at their own expense. The purchaser has no obligation to purchase until this risk assessment is completed.

**Appendix A**  
**Inspector Certifications**

# ASBESTOS CERTIFICATION

## STATE OF COLORADO

Colorado Department of Public Health  
and Environment  
Air Pollution Control Division



This certifies that

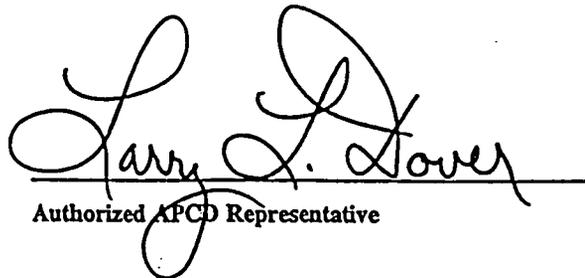
~~Michael N. Schluterbusch~~

has met the requirements of ~~257-507, C.R.S.~~ and Air Quality Control Commission Regulation No. 8, Part B, and is hereby certified by the state of Colorado in the following discipline:

**INSPECTOR/MANAGEMENT PLANNER**

Issued: 05/30/1997

Expires: 05/30/1998

  
Authorized APCD Representative

Record Number: 4949

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**Statement of Certification**

The asbestos and lead building inspection evaluation performed on Trailers **A, L, M and N** in the **T891 Cluster** was performed in accordance with applicable regulations, and employed only EPA AHERA accredited personnel.

Inspector: Michael N. Schluterbusch

EPA Accreditation: [REDACTED]

State of Colorado Certification [REDACTED]

I hereby attest and certify that I performed the asbestos and lead building inspection evaluation on Trailers **A, L, M and N** in the **T891 Cluster** at the Rocky Flats Environmental Technology Site.

Signature: \_\_\_\_\_



Date: \_\_\_\_\_

8/13/97

## Appendix B

### Bulk Asbestos and Lead Sample Lab/Data Tables

**Appendix B Asbestos Bulk Sample Data Table**

Sample Number	Sample Description and Location	Lab Result
T891A-97-04-14-64-01	12" tan with white streaks floor tile with yellow mastic; from east center office, 1' south of north wall, 3' west of east wall.	5% in tile
T891A-97-04-14-64-02	12" tan with white streaks floor tile with yellow mastic; from west area, 5' north of south wall, 2' east of west wall.	3% in tile
T891A-97-04-14-64-03	12" tan with white streaks floor tile with yellow mastic; from main center area, 3' north of south wall, 2' east of west wall.	5% in tile
T891A-97-04-14-64-04	12" tan mottle tile with yellow mastic; from far east office, 3' south of north wall, 3' west of east wall.	ND
T891A-97-04-14-64-05	12" tan mottle tile with yellow mastic; from main center area, 2' south of north wall, 2' west of east wall.	ND
T891A-97-04-14-64-06	12" tan mottle tile with yellow mastic; from far east office, 5' south of north wall, 2' east of west wall.	ND
T891A-97-04-14-64-07	12" tan tile with yellow mastic, from west area, 1' south of north wall, 1' west of east wall.	ND
T891A-97-04-14-64-08	White textured ceiling panel; from center main area, 5' south of north wall, 5' east of west wall.	ND
T891A-97-04-14-64-09	White textured ceiling panel; from west area, 5' south of north wall, 8' east of west wall.	ND
T891A-97-04-14-64-10	Cardboard and fiberglass/foil insulation; from east center office, 5' south of north wall, 3' east of west wall.	ND
T891A-97-04-14-64-12	Cardboard and fiberglass/foil insulation; from west area, 5' south of north wall, 8' east of west wall.	ND
T891A-97-04-14-64-13 (QC)	Cardboard and fiberglass/foil insulation; from west area, 5' south of north wall, 8' east of west wall.	ND
T891A-970717-MS-004	12" floor tile, light brown mottle with clear mastic; from east office, 5' north of the south wall, 4' west of the east wall.	ND
T981A-970717-MS-005	Tar paper on underside of trailer, north side, center.	ND
T891L-970717-MS-006	12" floor tile, beige mottle and tan mastic; from main area, 1' south of the north wall, 3' east of the restroom wall.	ND
T891L-970730-MS-007 (QC)	12" floor tile, beige mottle and tan mastic; from main area, 1' south of the north wall, 3' east of the restroom wall.	ND
T891M-970717-MS-004	12" floor tile, beige mottle with yellow mastic; from main area, 1' south of the north wall, 7' west of the east wall.	ND
T891M-970717-MS-005	Drywall ceiling panel with white texture; from main area, 4' north of the south wall, 11' west of the east wall.	ND
T891N-970717-MS-004	Thin white textured ceiling panel; from main area, 3' south of north wall, 3' west of east wall.	ND

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ASBESTOS AND LEAD  
CHARACTERIZATION REPORT  
FOR THE T891 TRAILERS

RF/RMRS-97-055  
Rev. 0, Page B-3 of B-5  
Date Effective: 08/12/97

Sample Number	Sample Description and Location	Lab Result
T891N-970717-MS-005	12" floor tile, brown mottle with tan mastic; from west office, 7' south of north wall, 7' east of the west wall.	ND
T891N-970717-MS-006	12" floor tile ; brown mottle and tan mastic; from main area, 4' north of the south wall, 12' east of west wall.	ND
T891N-970717-MS-007	Brown adhesive behind wood wall panelling; from east office, south wall center, 4' from the floor.	ND

Note: ND means None Detected.

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**Appendix B Lead Paint Bulk Sample Data Table**

Sample Number	Sample Description and Location	Lab Result (ppm)
T891A-970717-MS-001	White paint on sheet metal skirting; from exterior north side, 20' west of NW corner, 2' from the ground.	As: ND Cr: 160 Pb: 140 Zn: 120
T891A-970717-MS-002	Cream paint on sheet metal siding; from exterior north side, 18' west of NE corner, 3' from the ground.	As: ND Cr: 100 Pb: 140 Zn: 120
T891A-970717-MS-003	White paint on wood: from west porch framing, interior east wall, 8' south of trailer wall, 3' from the base.	As: 2510 Cr: 2790 Pb: ND Zn: 1510
T891L-970717-MS-001	White paint on metal skirting; from east exterior, at north side of hitch frame.	As: ND Cr: 160 Pb: 50 Zn: 80
T891L-970717-MS-002	Cream paint on metal siding; from east exterior, at north side of hitch frame.	As: ND Cr: 280 Pb: 200 Zn: 100
T891L-970717-MS-003	White paint on drywall ceiling; from main center area, 3' south of north wall, 2' west of east wall.	As: ND Cr: ND Pb: ND Zn: 280
T891L-970730-MS-008 (QC)	Cream paint on metal siding; from east exterior, at north side of hitch frame.	As: ND Cr: 240 Pb: 190 Zn: 80
T891M-970717-MS-001	White paint on metal skirting; from north exterior 22' east of NW corner, 2' from the ground.	As: ND Cr: 40 Pb: 120 Zn: 30
T891M-970717-MS-002	Cream paint on metal siding; from north exterior, 23' east of NW corner, 3' from the floor.	As: ND Cr: 30 Pb: 100 Zn: 10
T891M-970717-MS-003	White paint on drywall ceiling; from center of restroom ceiling.	As: ND Cr: 160 Pb: 50 Zn: 80

ASBESTOS AND LEAD  
CHARACTERIZATION REPORT  
FOR THE T891 TRAILERS

RF/RMRS-97-055  
Rev. 0, Page B-5 of B-5  
Date Effective: 08/12/97

Sample Number	Sample Description and Location	Lab Result (ppm)
T891N-970717-MS-001	White paint on vinyl skirting; from SW corner, south side, 2' from the ground.	As: ND Cr: ND Pb: ND Zn: ND
T891N-970717-MS-002	Cream paint on metal siding; from, south side, 21' west of SE corner, 3' from the ground.	As: ND Cr: 180 Pb: 420 Zn: 140
T891N-970717-MS-003	White paint on drywall ceiling; from main area, 4' south of the north wall, 4' west of the east wall.	As: ND Cr: 10 Pb: 30 Zn: 30

Note: ND means None Detected.

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**Attachment 1.0**  
**Resource Technologies Group, Inc. (RTG)**  
**Exemption Letter**



**RESOURCE  
TECHNOLOGIES  
GROUP, INC.**

3900 B. Wadsworth Blvd., Suite 155  
Lakewood, Colorado 80235-2205  
303-989-8511  
FAX 303-989-8188

April 24, 1997

Mr. Ty Vess  
Rocky Mountain Remediation Services, Inc.  
Rocky Flats Plant  
PO Box 464  
Golden, Colorado 80402-0464

Subject: Asbestos and Lead Use  
Mobile Soil Vapor Extraction Project

Dear Mr. Vess:

Per your request, we have reviewed our files concerning the potential use of asbestos or lead containing products on the Mobile Soil Vapor Extraction Pilot Unit. Resource Technologies Group, Inc. (RTG) originally designed and constructed this system under EG&G Rocky Flats, Inc Purchase Order number 233927JS1. The unit was delivered to the site in August, 1993. A review of the records indicates the following:

- (1) All equipment and materials used in the fabrication of the unit were of new manufacture. No used equipment potentially painted with lead-based paint was used.
- (2) There was no insulation or other materials used in the unit that could potentially contain asbestos.
- (3) All paintings and coatings were commercially available epoxy products, and were purchased new for this project. Therefore, in accordance with existing law, these products were not lead-based.

RTG hereby certifies, that to the best of our knowledge, that there were no lead or asbestos based products used in the manufacture of the Mobile Soil Vapor Extraction Pilot Unit.

Please feel free to contact me with any questions on this matter.

Sincerely,

RESOURCE TECHNOLOGIES GROUP, INC.

A handwritten signature in black ink, appearing to read 'Kevin W. Conroy', is written over a horizontal line.

Kevin W. Conroy, P.E.  
Engineering Manager

**Attachment 1.1**

**Safety and Hygiene Chain of Custody Record and Analysis Request**

EG&G Rocky Flats Plant, Inc.

Golden, CO 80402-0464

42846

G0040000

Safety and Hygiene Chain of Custody Record and Analysis Request

Name of Originator: <u>M.D. Schreckengast</u>		Title: <u>Industrial Hygienist</u>		Bldg/Ext: <u>116/0790</u>		Date: <u>4/14/97</u>		Page 1 of 1	
SAMPLE NUMBER Bldg/Y/M/D/P#/S#	ANALYZE FOR	VOLUME liters	SAMPLE TIME/yr	MEDIA	P A B	Personal Area Bulk	REMARKS	Lab Number	
<del>18916-21-04-14-04-01</del>	<u>asbestos</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>B</u>				
- 02									
- 03									
- 04									
- 05									
- 06									
- 07									
- 08									
- 09									
- 10									
- 11									
- 12									
- 13									
Relinquished by <u>M.D. Schreckengast</u>	Received by <u>J. Christman</u>	Time/Date <u>1445/4/25/97</u>	Relinquished by <u>J. Christman</u>	Received by <u>[Signature]</u>	Time/Date <u>1500/4/25/97</u>				
Relinquished by <u>[Signature]</u>	Received by <u>R.V.O.</u>	Time/Date <u>1545/4/25/97</u>	Relinquished by	Received by	Time/Date				
Relinquished by	Received by	Time/Date	Relinquished by	Received by	Time/Date				
Relinquished by	Received by	Time/Date	Relinquished by	Received by	Time/Date				
Report and Billing Instruction			Analysis Request			Seal# (Release #) <u>9TP1585</u>			
Verbal To: <u>M.D. Schreckengast</u>			<input type="checkbox"/> Industrial Hygiene Sample			Condition of Seal:			
Fax To: <u>Kaiser Hill 966-4641</u>			<input type="checkbox"/> Standard Service			<input type="checkbox"/> Broken <input type="checkbox"/> Unbroken			
Report To: <u>Kaiser Hill</u>			<input type="checkbox"/> Rush <input type="checkbox"/> Other			Signature: <u>R.V.O.</u>			
Bill To: <u>Kaiser Hill</u>			<input checked="" type="checkbox"/> Asbestos Samples			Comments: <u>no seal present</u>			
P.O.#/Release: <u>G0040000/1</u>			<input checked="" type="checkbox"/> Standard Service						
Lab: <u>Schuller Reservoir MS 4-25-96</u>			<input type="checkbox"/> 24 Rush <input type="checkbox"/> 2 Rush <input type="checkbox"/> Other						

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NOTED AND FOR THE RECORD 10/27/97

Name of Originator: M. Schulz		Title: Inspector		Bldg/Ext: T303/4215		Date: 7/17/97		Page: 1 of 1	
SAMPLE NUMBER Bldg/Y/M/D/P#/S#	ANALYZE FOR	VOLUME liters	SAMPLE TIME	MEDIA	P A B	Personal Area Bulk	REMARKS	Lab Number	
T891L-970717-MS-004	Asbestos				B	Archive For P.C.			
T891L-970717-MS-005	Asbestos				B				
T891L-970717-MS-006	Asbestos				B				
T891N-970717-MS-004	Asbestos				B				
T891N-970717-MS-005	Asbestos				B				
T891N-970717-MS-006	Asbestos				B				
T891N-970717-MS-007	Asbestos				B				
T891A-970717-MS-001	Asbestos				B				
T891A-970717-MS-002	Asbestos				B				
T891M-970717-MS-004	Asbestos				B				
T891M-970717-MS-005	Asbestos				B				
Relinquished by J. Sangaline		Time/Date 0915 7/17/97	Relinquished by J. Sangaline		Time/Date 1540 7/18/97	Received by J. Sangaline		Time/Date 1540 7/18/97	
Relinquished by		Time/Date	Relinquished by		Time/Date	Received by		Time/Date	
Relinquished by		Time/Date	Relinquished by		Time/Date	Received by		Time/Date	
Relinquished by		Time/Date	Relinquished by		Time/Date	Received by		Time/Date	
Report and Billing Instruction									
Verbal To: Tom's Sangaline		Industrial Hygiene Sample:		Analysis Request		Seal# (Release #) 97J2301		Condition of Seal: <input type="checkbox"/> Broken <input type="checkbox"/> Unbroken	
Fax To: 966-4641 - 966-6538		<input checked="" type="checkbox"/> Standard Service		Rush <input type="checkbox"/> Other <input type="checkbox"/>		Signature: _____		Comments: _____	
Report To: Karen Hill		<input type="checkbox"/> Standard Service		Asbestos Samples		Signature: _____		Comments: _____	
Bill To: Maisee Hill		<input type="checkbox"/> 24 Rush		Rush <input type="checkbox"/> Other <input type="checkbox"/>		Signature: _____		Comments: _____	
P.O.#/Release: GCOYR-001		Standard Service		Rush <input type="checkbox"/> Other <input type="checkbox"/>		Signature: _____		Comments: _____	
Lab: B. Servick		Standard Service		Rush <input type="checkbox"/> Other <input type="checkbox"/>		Signature: _____		Comments: _____	

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97071810 Num: 7/25/97

EG&G Rocky Flats Plant, Inc.  
 Golden, CO 80402-0484  
 Safety and Hygiene Chain of Custody Record and Analysis Request

Name of Originator: M Schirber, Title: Inspector		Bldg/Ext: 7130S / 4215		Date: 7/17/97		Page 1 of 1		
SAMPLE NUMBER Bldg/Ext/DP#/#	ANALYZE FOR	VOLUME liters	SAMPLE TIME	MEDIA	P A B	PERSONAL Area Bolt	REMARKS	Lab Number
1891A-220212-MS-001	Lead, cad, mlin				<input checked="" type="checkbox"/>		Please see below detection limit at 10 ppm or less	
1891A-220212-MS-002	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-003	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-004	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-005	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-006	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-007	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-008	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-009	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-010	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-011	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-012	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-013	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-014	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-015	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-016	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-017	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-018	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-019	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-020	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-021	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-022	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-023	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-024	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-025	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-026	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-027	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-028	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-029	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-030	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-031	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-032	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-033	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-034	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-035	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-036	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-037	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-038	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-039	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-040	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-041	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-042	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-043	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-044	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-045	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-046	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-047	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-048	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-049	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-050	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-051	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-052	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-053	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-054	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-055	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-056	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-057	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-058	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-059	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-060	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-061	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-062	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-063	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-064	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-065	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-066	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-067	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-068	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-069	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-070	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-071	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-072	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-073	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-074	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-075	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-076	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-077	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-078	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-079	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-080	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-081	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-082	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-083	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-084	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-085	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-086	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-087	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-088	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-089	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-090	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-091	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-092	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-093	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-094	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-095	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-096	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-097	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-098	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-099	Lead, cad, mlin				<input checked="" type="checkbox"/>			
1891A-220212-MS-100	Lead, cad, mlin				<input checked="" type="checkbox"/>			

Received by	Time/Date

Relinquished by	Time/Date

Report and Billing Instruction

Verbal To: Tonya Seeger / P. Schirber  
 Fax To: 966-4641 / 966-6538  
 Report To: Kaiser Hill  
 Bill To: Kaiser Hill  
 P.O.#/Release: GC-0400-001  
 Lab: Schuller

Standard Service  Rush  Other   
 Asbestos Samples    Other   
 Standard Service  Rush

Amalyse Request  
 Industrial Hygiene Sample   
 Rush  Other

Seal# (Return #) 9712197  
 Condition of Seal:  Broken  Unbroken  
 Signature: NO SEAL PRESENT.  
 Comments: Subs 1/18/97

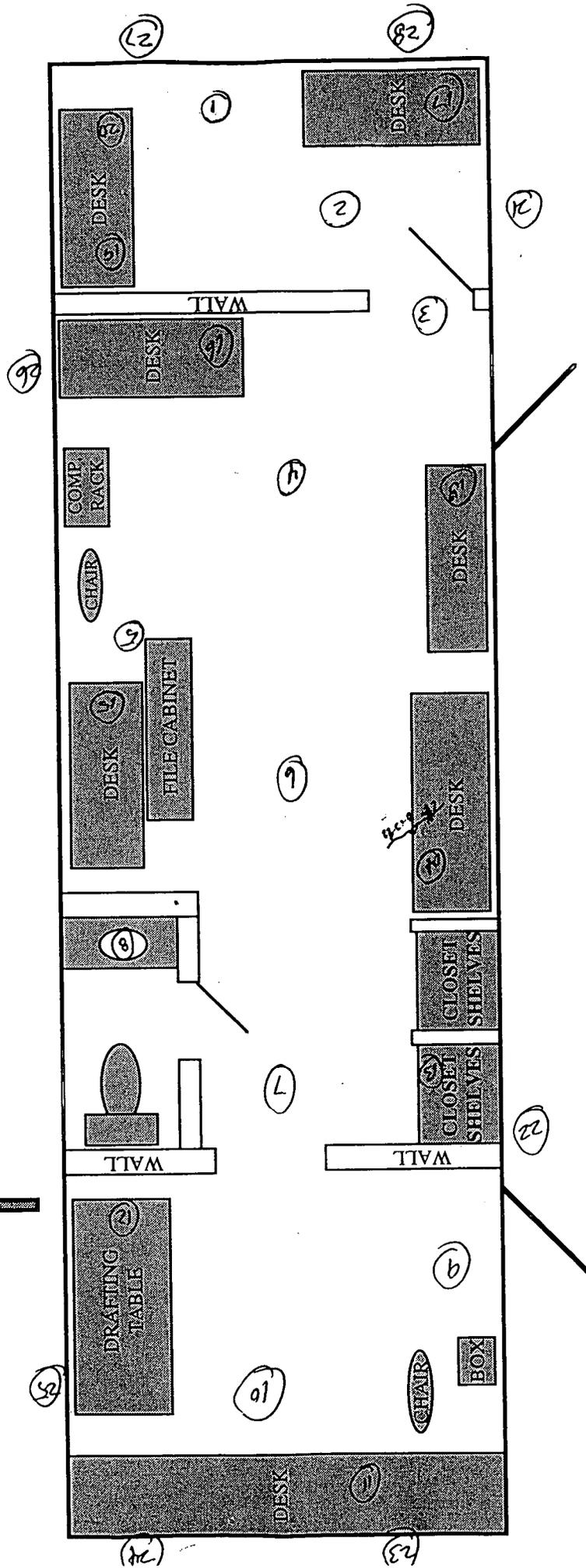
White - Return to Originator Yellow - Lab Copy Green - Sample Custodian Blue - Originator

RF-4750 (REV 9/87)

55



T891 M



OBJECTS IN ROOM ARE NOT TO SCALE!!!

29 30 Located on roof

East Door 24 on 13  
 West 13 on 45

**Trailer 891N Removal Project  
 Characterization Survey Radiological Instructions**

Location/Room: T891N

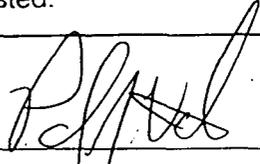
Item/Area Description <sup>1</sup>	# of Alpha/Beta Swipes <sup>2</sup>	# of Direct Alpha/Beta Measurements <sup>2</sup>	Scan Survey <sup>3</sup>	Special Instructions
Floor	10	10	N/A	Obtain measurements on floor surface throughout the trailer
Sink Drain	A minimum of one measurement inside each sink	A minimum of one measurement inside each sink	N/A	Obtain measurements on accessible surfaces of sinks
Desk, File Cabinets, etc.	A minimum of one measurement per component	A minimum of one measurement per component	N/A	Obtain measurements on accessible surfaces of components
Trailer Exterior	2 per side and roof	2 per side and roof	N/A	Obtain measurements on exterior surfaces

**Notes**

<sup>1</sup> See attached trailer layout

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of accessible surfaces, including fixed equipment, as listed.

Prepared By: 

Date: 8/4/97

Reviewed By: 

Date: 08/04/97

58

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG NUMBER:	
FOR: _____ P/WRE _____ PRL _____ _____ RWP <input checked="" type="checkbox"/> OTHER _____	
BUILDING/LOCATION: <u>Trailer T-891N</u>	ROOM: <u>See Map</u>
DATE: <u>8-12-97</u>	TIME: <u>1230</u>
ITEM DESCRIPTION: <u>Field Office T-891N to be shipped offsite</u>	
COMMENTS: <u>Surveyed in accordance with attached instruction &amp; drawing</u>	
PERFORMED BY (PRINT NAME): <u>M. W. 02</u>	
<u>[Signature]</u> RCT SIGNATURE	<u>[Redacted]</u> EMP#
	<u>1-8-11-97</u> DATE

Copy

## REMOVABLE CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	S.A.C. - 4	S.A.C. - 4	S.A.C. - 4	S.A.C. - 4
SERIAL #:	<u>824</u>	<u>1050</u>		
CAL DATE:	<u>3-97</u>	<u>3-97</u>		
CAL DUE DATE:	<u>9-97</u>	<u>9-97</u>		

MFR:	EBER.	EBER.	EBER.	EBER.
MODEL:	B.C. 4	B.C. 4	B.C. 4	B.C. 4
SERIAL #:	<u>Bc 838</u>	<u>Bc 770</u>		
CAL DATE:	<u>6-97</u>	<u>7-97</u>		
CAL DUE DATE:	<u>12-97</u>	<u>1-98</u>		

## TOTAL CONTAMINATION SURVEY INSTRUMENT DATA

MFR:	<u>N.E. TECH</u>			
MODEL:	<u>ELECTRA</u>			
SERIAL #:	<u>1265</u>			
CAL DATE:	<u>4-97</u>			
CAL DUE DATE:	<u>10-97</u>			
BACKGROUND:	<u>2.0</u>			
SFFICIENCY:	<u>22.8</u>			
MDA:	<u>33.1</u>			
	<u>60</u>			
	<u>453</u>			

REVIEWED BY:

[Signature]

RO SUPERVISION PRINT NAME

[Signature]

RO SUPERVISION SIGNATURE

8/13/97

DATE

$$MDA = CF \times [2.71 + 4.65 \sqrt{\text{BACKGROUND (CPM)}}]$$

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# RADIOLOGICAL CONTAMINATION SURVEY FORM

DRAWING

SURVEY RESULTS (DPM/100 CM SQ)

See attached  
Map.

SWTP #S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL ALPHA (FRISK / 60 SEC COUNT)	TOTAL BET. GAMMA	TOTAL BET. GAMMA
		ALPHA	BETA	GAMMA			
1		<18	<205	<60	<60	<45	
2		<18	<205	<60	<60	<45	
3		<18	<205	<60	<60	<45	
4		<18	<205	<60	<60	<45	
5		<18	<205	<60	<60	<45	
6		<18	<205	<60	<60	<45	
7		<18	<205	<60	<60	<45	
8		<18	<205	<60	<60	<45	
9		<18	<205	<60	<60	<45	
10		<18	<205	<60	<60	<45	
11		<18	<205	<60	<60	<45	
12		<18	<205	<60	<60	<45	
13		<18	<205	<60	<60	<45	
14		<18	<205	<60	<60	<45	
15		<18	<205	<60	<60	<45	
16		<18	<205	<60	<60	<45	
17		<18	<205	<60	<60	<45	
18		<18	<205	<60	<60	<45	
19		<18	<205	<60	<60	<45	
20		<18	<205	<60	<60	<45	
21		<18	<205	<60	<60	<45	

60

19

# RADIOLOGICAL CONTAMINATION SURVEY FORM

LOG / SURVEY NUMBER \_\_\_\_\_

PAGE 3 OF 3

SURVEY RESULTS (DPM/100 CM SQ)

SWIP #S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL ALPHA	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA	(RISK / 60 SEC COUNT)		
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						

GIA 9-12-59

SURVEY RESULTS (DPM/100 CM SQ)

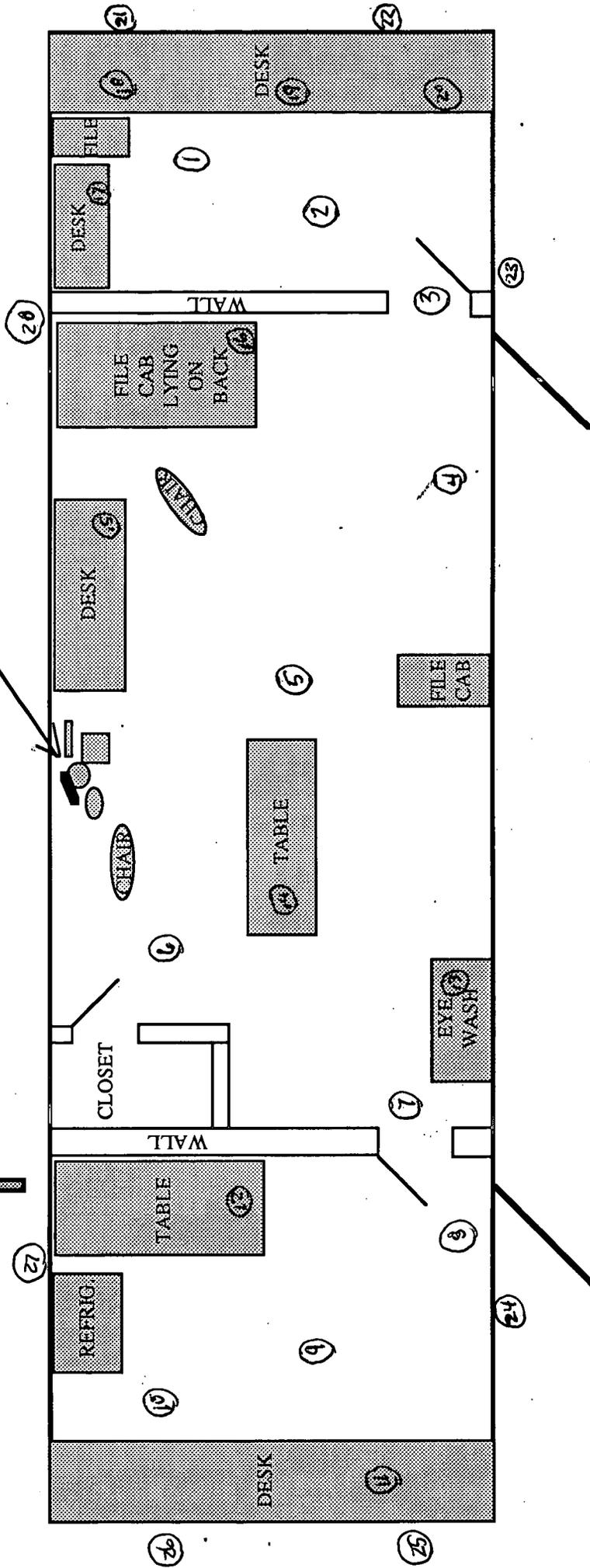
SWIP #S	LOCATION/DESCRIPTION	REMOVABLE			TOTAL ALPHA	TOTAL BETA/ GAMMA
		ALPHA	BETA/ GAMMA	(RISK / 60 SEC COUNT)		
22		<18	<60	<455		
23		<18	<60	<455		
24		<18	<60	<455		
25		<18	<60	<455		
26		<18	<60	<455		
27		<18	<60	<455		
28		<18	<60	<455		
29		<18	<60	<455		
30		<18	<60	<455		
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						

GIA 9-12-59

T891 N



MISCELLANEOUS GARBAGE



OBJECTS IN ROOM ARE NOT TO SCALE!!!

29 { 30 Located on roof

27

**COPY**

Matt 7640  
5085 Page

### T900E Characterization Survey Radiological Instructions

Location/Room: T900E Semi-Trailer

Item/Area Description <sup>1</sup>	Radiological Survey <sup>2</sup>		Scan Survey <sup>3</sup>	Special Instructions
	# of Alpha/Beta Swipes	# of Direct Alpha/Beta Measurements		
Floors	20	20	N/A	Obtain measurements on floor surfaces throughout the room
HEPA Filter System	A minimum of 5 measurements	A minimum of 5 measurements	N/A	Obtain measurements on accessible interior surfaces of the HEPA system
Misc. Tanks, Blower, Table, etc.	A minimum of 1 measurement per component	A minimum of 1 measurement per component	N/A	Obtain measurements on accessible surfaces of each component

#### Notes

<sup>1</sup> See attached map of building layout.

<sup>2</sup> Surveys to be performed in accordance with 4-K62-ROI-03.01, "Performance of Surface Contamination Surveys". Other radiological references are: 1-P73-HSP-18.10, "Radioactive Material Transfer and Unrestricted Release of Property and Waste", 4-S23-ROI-03.02, "Radiological Requirements for Unrestricted Release", and 4-N83-REP-1108, "Radioactive Material Management Area (RMMA) Determination".

<sup>3</sup> Perform an alpha/beta scan survey of the percentage of the accessible surfaces, including fixed equipment, as listed.

#### Review and Approval

Prepared By: _____	Date: 8/6/97
Reviewed By: _____	Date: 8/6/97

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**Attachment 2.1**

**PLM Bulk Analysis, Percentage Composition by Volume Table**



**RESERVOIRS ENVIRONMENTAL SERVICES, INC.**  
 NVLAP Accredited Laboratory #1896

04/28/97 TUE 13:48 FAX 503 883 9199 RES: ENV. SERV.

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 42846-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: 97P1585/GCO40000,  
 Date Samples Received: April 25, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)							Non-Fibrous Components (%)	
					Mineral	Visual Estimate (%)	C	G	S	H	W	T	O		
					BY LAYER		E	L	Y	A	O	A	T		
							L	S	T	R	L	C	E		
							L	S	H				R		
T891A-97-04-14-64-08	EM 286118	A	White paint	5		ND	0	0	0	0	0	0	0	100	
		B	Tan fibrous material	20		ND	97	0	0	0	0	0	0	3	
		C	White plaster	75		ND	0	7	0	0	0	0	0	93	
T891A-97-04-14-64-09	EM 286119	A	White paint	5		ND	0	0	0	0	0	0	0	100	
		B	Tan fibrous material	15		ND	97	0	0	0	0	0	0	3	
		C	White plaster	80		ND	0	7	0	0	0	0	0	93	
T891A-97-04-14-64-10	EM 286120	A	Silver foil w/tan fibrous material tan resin & white fibrous woven material	40		ND	60	10	0	0	0	0	0	30	
		B	Gold fibrous resinous material w/pink fibrous material	60		ND	0	80	0	0	0	0	0	20	
T891A-97-04-14-64-11	EM 286121	A	White paint	10		ND	0	0	0	0	0	0	0	100	
		B	Tan fibrous material	35		ND	97	0	0	0	0	0	0	3	
		C	White plaster	55		ND	0	7	0	0	0	0	0	93	
T891A-97-04-14-64-12	EM 286122	A	Gold fibrous resinous material	15		ND	0	80	0	0	0	0	0	20	
		B	Silver foil w/tan fibrous material tan resin & white fibrous woven material	85		ND	40	20	0	0	0	0	0	40	

ND = None Detected    CELL = Cellulose    ORG = Organic    WOLL = Wollastonite    GYP = Gypsum  
 TR = Trace    Mat = Material    Trem-Act = Tremolite-Actinolite    BRUC = Brucite    SYNTH = Synthetic

Data QA

66

EM003

**RESERVOIRS ENVIRONMENTAL SERVICES, INC.**  
 NVLAP Accredited Laboratory #1898

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 42846-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: 97P1586/GCO40000,  
 Date Samples Received: April 25, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)							Non-Fibrous Components (%)	
					BY LAYER		C	G	S	H	W	T	O		
					Mineral	Visual Estimate (%)	E	L	A	N	I	L	L	H	
							L	S	T	R	L	C	E	R	
T891A-97-04-14-64-13	EM 286123	A	Gold fibrous resinous material	15		ND	0	80	0	0	0	0	0	0	20
		B	Silver foil w/tan fibrous material tan resin & white fibrous woven material	85		ND	50	15	0	0	0	0	0	0	35

ND = None Detected    CELL = Cellulose    ORG = Organic    WOLL = Wollastonite    GYP = Gypsum  
 TR = Trace    Mat = Material    Trem-Act = Tremolite-Actinolite    BRUC = Brucite    SYNTH = Synthetic

Data QA

67

04/29/97 TUE 13:49 FAX 303 863 9186 RES. ENV. SERV. 04/004

# RESERVOIRS ENVIRONMENTAL SERVICES, INC.

NVLAP Accredited Laboratory #1896

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 44792-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: GC0400-00/97J2201  
 Date Samples Received: July 18, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)						Non-Fibrous Components (%)
					BY LAYER		C	G	S	H	W	T	
					Mineral	Visual Estimate (%)	E	L	A	N	I	L	
T891L-9707177-MS-004	EM 300430	A	Brown resin	2		ND	B	2	TR	0	0	0	90
		B	Tan tile	98		ND	TR	0	0	0	0	0	100
T891L-9707177-MS-005	EM 300431	A	Brown resin	2		ND	6	TR	TR	0	0	0	94
		B	Tan tile	98		ND	TR	0	0	0	0	0	100
T891L-9707177-MS-006	EM 300432	A	Brown & gray fibrous material w/ white paint	15		ND	98	0	0	0	0	0	2
		B	Brown wood w/brown resinous material	30		ND	70	0	0	0	0	0	30
		C	White fibrous plaster	55		ND	3	10	0	0	0	0	87
T891N-9707177-MS-004	EM 300433	A	White paint	3		ND	1	0	0	0	0	0	99
		B	Brown & tan fibrous material	12		ND	98	0	0	0	0	0	2
		C	White fibrous plaster	85		ND	3	12	0	0	0	0	85
T891N-9707177-MS-005	EM 300434	A	Brown resin	2		ND	5	0	0	0	0	0	95
		B	Tan tile	98		ND	0	0	0	0	0	0	100
T891N-9707177-MS-006	EM 300435	A	Tan tile	100		ND	1	0	0	0	0	0	99
T891n-9707177-MS-007	EM 300436	A	Light brown wood w/brown resin	100		ND	83	0	0	0	0	0	17
T891A-9707177-MS-001	EM 300437	A	Brown fibrous material w/black resinous material	100		ND	92	0	0	0	0	0	8

ND = None Detected      CELL = Cellulose      ORG = Organic      WOLL = Wollastonite      GYP = Gypsum      Analyst: GB  
 TR = Trace, < 1% Visual Estimate      Tram-Act = Tremolite-Actinolite      BRUC = Brucite      SYNTH = Synthetic

Data QA

68

07/24/97 THU 16:16 FAX 503 863 9188  
 RES. ENV. SERV.  
 21003

**RESERVOIRS ENVIRONMENTAL SERVICES, INC.**  
 NVLAP Accredited Laboratory #1896

07/24/97 THU 16:17 FAX 303 863 9198

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 44792-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: GC0400-00/97J2201  
 Date Samples Received: July 18, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 3-5 Day

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)					Non-Fibrous Components (%)	
					BY LAYER		C	G	S	H	W		T
					Mineral	Visual Estimate (%)	E	L	A	N	I		L
T891A-9707177-MS-002	EM 300438	A	Black fibrous tar w/black tar & white rock fragments	100	ND	40	2	0	0	0	0	58	
T891M-9707177-MS-004	EM 300439	A	Brown & gold resin	2	ND	10	0	0	0	0	0	90	
		B	White tile	98	ND	TR	0	0	0	0	0	100	
T891M-9707177-MS-005	EM 300440	A	White paint	3	ND	1	0	0	0	0	0	99	
		B	Brown & tan fibrous material	7	ND	98	0	0	0	0	0	2	
		C	White fibrous plaster	90	ND	3	10	0	0	0	0	87	

ND = None Detected    CELL = Cellulose    ORG = Organic    WOLL = Wollastonite    GYP = Gypsum  
 TR = Trace, < 1% Visual Estimate    Trem-Act = Tremolite-Actinolite    BRUC = Brucite    SYNTH = Synthetic

*[Signature]*  
Data QA

RES. ENV. SERV.

69

004

**RESERVOIRS ENVIRONMENTAL SERVICES, INC.**

NVLAP Accredited Laboratory #1896

**TABLE I. PLM BULK ANALYSIS, PERCENTAGE COMPOSITION BY VOLUME**

RES Job Number: RES 45059-1  
 Client: Kaiser-Hill Company, LLC  
 Client Project: GG0400/97J2204  
 Date Samples Received: July 30, 1997  
 Analysis Type: PLM Short Report, Bulk  
 Turnaround: 2 Hour

Note: The US EPA requires use of stratified analysis for NESHAP and AHERA compliance. Composite results only apply for specific exceptions.

Client Sample Number	Lab ID Number	Layer	Physical Description	Portion of Total Sample (%)	ASBESTOS CONTENT		Non-Asbestos Fibrous Components (%)							Non-Fibrous Components (%)	
					BY LAYER		C	G	S	H	W	T	O		
					Mineral	Visual Estimate (%)	E	L	A	N	I	L	L	H	
							L	S	T	R	L	C	E		
							S	H					R		
T891L-970730-MS-007	EM 302054	A	Brown resin	3		ND	TR	0	0	0	0	0	0	0	100
		B	Tan tile	97		ND	0	0	0	0	0	0	0	0	100

ND = None Detected    CELL = Cellulose    ORG = Organic    WOLL = Wollastonite    GYP = Gypsum    Analyst: PFK  
 TR = Trace, < 1% Visual Estimate    Trem-Act = Tremolite-Actinolite    BRUC = Brucite    SYNTH = Synthetic

Data QA

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**Attachment 3.1**  
**Sample Results/Quality Control Tables**

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**Cover Page**

Jul-25-97

Ms. Ginny Whiteford  
 Accu-Labs Research, Inc.  
 4663 Table Mountain Drive  
 Golden, CO 80403-1650

Laboratory Project No.: 97071810  
 Client: Kaiser Hill  
 PO# / Release #: GC-0400-00  
 Site Sample #:   
 Seal #: 97J2197  
 Requestor: M. Schkuterbusch  
 Subcontract #:

Dear Ms. Whiteford,

Schuller International, Inc., Mountain Technical Center (MTC) has performed the following analytical services as requested. The results are calculated based upon the information supplied on the submission form. All laboratory data has been filed and are available upon request. The industrial hygiene laboratory at MTC has been fully accredited in all aspects by the American Industrial Hygiene Association (AIHA) since 1976. If you have any questions, please call (303) 978-2584.

**Scope of Work:**

Analysis	# of Samples	Matrix	Method	Reporting Limit	OSHA Standard (TWA)
Arsenic	12	Bulk	OSHA ID-125	0.1 µg	
Chromium				0.1 µg	
Lead				0.1 µg	
Zinc				0.1 µg	

I certify that this data package is in compliance with the terms and conditions of the subcontract, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

\_\_\_\_\_  
 Scott A. Steiner  
 Industrial Hygiene Laboratory Manager

\_\_\_\_\_  
 Date

12



**JOHNS MANVILLE TECHNICAL CENTER (JMTG)**

Jul-25-97

Laboratory Project No.: 97071810  
 Client: Kaiser Hill  
 PO#/Release #: GC-0400-00  
 Site Sample #:   
 Seal #: 97J2187  
 Requestor: M. Schlatterbusch

TABLE I: Sample Results

Client Sample No.	Laboratory Sample No.	Analysis	Method	Matrix	Reporting Unit	Total	%	mg/kg (ppm)	Air Vol. / Time	Air Concentration
T891L-970717-MS-001	S13847	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Chromium			0.1 µg		0.016	160		
		Lead			0.1 µg		0.005	50		
		Zinc			0.1 µg		0.006	60		
T891L-970717-MS-002	S13848	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Chromium			0.1 µg		0.023	230		
		Lead			0.1 µg		0.020	200		
		Zinc			0.1 µg		0.010	100		
T891L-970717-MS-003	S13848	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Chromium			0.1 µg		ND	ND		
		Lead			0.1 µg		ND	ND		
		Zinc			0.1 µg		0.028	280		
T891M-970717-MS-001	S13650	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Chromium			0.1 µg		0.004	40		
		Lead			0.1 µg		0.012	120		
		Zinc			0.1 µg		0.003	30		
T891M-970717-MS-002	S13651	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Chromium			0.1 µg		0.003	30		
		Lead			0.1 µg		0.010	100		
		Zinc			0.1 µg		0.001	10		
T891M-970717-MS-003	S13652	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Chromium			0.1 µg		ND	ND		
		Lead			0.1 µg		0.001	10		
		Zinc			0.1 µg		0.020	200		

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JUL-29-97 TUE 8:37  
 JUL 29 11:43 AM '97  
 BLDG 881 ROOM 212  
 FAX NO. 303 988 3400  
 303 578 3000 LU 59052900  
 P. 04

**SCHULLER INTERNATIONAL, INC. / MOUNTAIN TECHNICAL CENTER (MTC)**

Jul-25-97

Laboratory Project No.: 97071810  
 Client: Kaiser Hill  
 PO#/Release #: GC-0400-00  
 Site Sample #: 97J2197  
 Seal #: M. Schluterbusch  
 Requestor:

**TABLE II: Quality Control**

QC No.	Analyte	Method	Matrix	Reporting Limit	Amount Spiked	Amount Recovered	Percent Recovery
Digestion Blank	Arsenic	OSHA ID-125	Bulk	0.1 µg	N/A	< 0.1 µg	
	Chromium			0.1 µg	N/A	< 0.1 µg	
	Lead			0.1 µg	N/A	< 0.1 µg	
	Zinc			0.1 µg	N/A	< 0.1 µg	
Blank Spike	Arsenic	OSHA ID-125	Bulk	0.1 µg	0.166 mg/L	0.155 mg/L	93.4%
	Chromium			0.1 µg	0.166 mg/L	0.147 mg/L	88.6%
	Lead			0.1 µg	0.166 mg/L	0.144 mg/L	86.7%
	Zinc			0.1 µg	0.166 mg/L	0.149 mg/L	89.8%
Q7-596	Zinc	OSHA ID-125	Bulk	0.1 µg	0.202%	0.203%	99.5%

Analyst: \_\_\_\_\_

IQC: \_\_\_\_\_

AIHA Accreditation No. 056

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JUL-29-97 TUE 8:37 BLDG 881 ROOM 212  
 JUL 23 09:43 AM '97  
 FAX NO. 303 966 3400  
 P. 03

Post-it* Fax Note 7071		Date 8/5	# of pages 4
To Mike Schluterbusch		From Scott Steiner	
Co./Dept.		Co.	
Phone #		Phone # 978-2584	
Fax # 966-6538		Fax #	

**Cover Page**

Jul-31-97

Ms. Ginny Whiteford  
 Accu-Labs Research, Inc.  
 4663 Table Mountain Drive  
 Golden, CO 80403-1650

Laboratory Project No.: 97073006  
 Client: Kaiser Hill  
 PO# / Release #: 98815234  
 Site Sample #: 9792197  
 Seal #: M. Schluterbusch  
 Requestor:  
 Subcontract #:

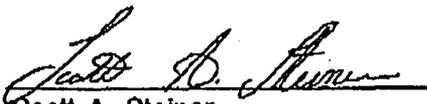
Dear Ms. Whiteford,

Schuller International, Inc., Mountain Technical Center (MTC) has performed the following analytical services as requested. The results are calculated based upon the information supplied on the submission form. All laboratory data has been filed and are available upon request. The industrial hygiene laboratory at MTC has been fully accredited in all aspects by the American Industrial Hygiene Association (AIHA) since 1976. If you have any questions, please call (303) 978-2584

**Scope of Work:**

Analysis	# of Samples	Matrix	Method	Reporting Limit	OSHA Standard (TWA)
Arsenic	1	Bulk	OSHA ID-125	0.1 µg	
Cadmium				0.1 µg	
Chromium				0.1 µg	
Lead				0.1 µg	
Zinc				0.1 µg	

I certify that this data package is in compliance with the terms and conditions of the subcontract, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

  
 Scott A. Steiner  
 Industrial Hygiene Laboratory Manager

7/31/97  
 Date

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**JOHNS MANVILLE TECHNICAL CENTER (JMTC)**

Jul-31-97

Laboratory Project No.: 97073006  
 Client: Kaiser Hill  
 PO#/Release #: EM24-34-75  
 Site Sample #:   
 Seal #: 9782197  
 Requestor: M. Schluterbusch

**TABLE II: Quality Control**

QC No.	Analyte	Method	Matrix	Reporting Limit	Amount Spiked	Amount Recovered	Percent Recovery
Digestion Blank	Arsenic	OSHA ID-125	Bulk	0.1 µg	N/A	< 0.1 µg	
	Cadmium			0.1 µg	N/A	< 0.1 µg	
	Chromium			0.1 µg	N/A	< 0.1 µg	
	Lead			0.1 µg	N/A	< 0.1 µg	
	Zinc			0.1 µg	N/A	< 0.1 µg	
Blank Spike	Arsenic	OSHA ID-125	Bulk	0.1 µg	0.166 mg/L	0.169 mg/L	101.8%
	Cadmium			0.1 µg	0.166 mg/L	0.177 mg/L	106.6%
	Chromium			0.1 µg	0.166 mg/L	0.174 mg/L	104.8%
	Lead			0.1 µg	0.166 mg/L	0.170 mg/L	102.4%
	Zinc			0.1 µg	0.166 mg/L	0.177 mg/L	106.6%

Analyst: \_\_\_\_\_  
 Anthony Carr

Quality Assurance: \_\_\_\_\_  
 Dennis Murray

AIHA Accreditation No. 058

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**JOHNS MANVILLE TECHNICAL CENTER (JMTC)**

Jul-31-97

Laboratory Project No.: 97073006  
 Client: Kaiser Hill  
 PO#/Release #: 98315234  
 Site Sample #:   
 Seal #: 9792197  
 Requestor: M. Schluterbusch

**TABLE I: Sample Results**

Client Sample No.	Laboratory Sample No.	Analysis	Method	Matrix	Reporting Limit	Total	%	mg/kg (ppm)	Air Vol. / Time	Air Concentration
T891L-970730-008	S14024	Arsenic	OSHA ID-125	Bulk	0.1 µg		ND	ND		
		Cadmium			0.1 µg		ND	ND		
		Chromium			0.1 µg		0.024	240		
		Lead			0.1 µg		0.019	190		
		Zinc			0.1 µg		0.008	80		

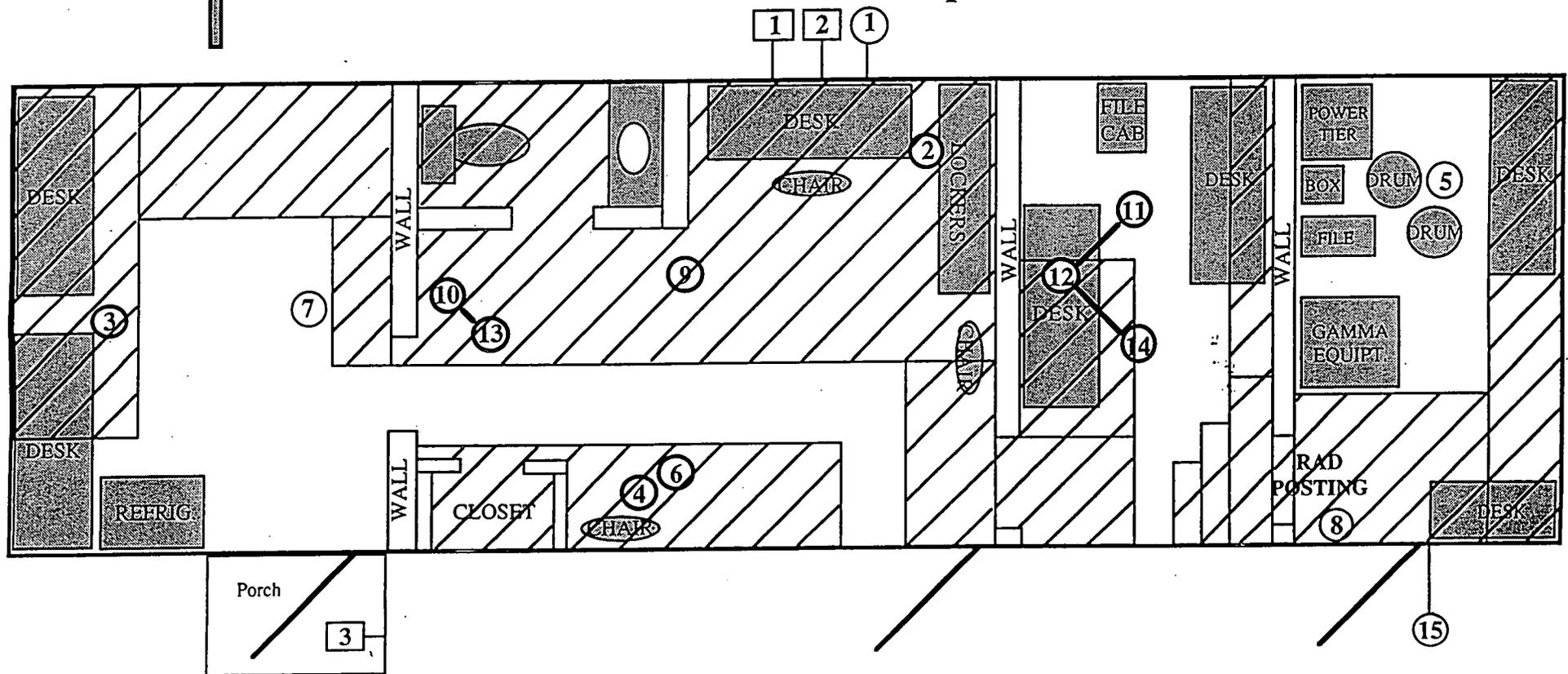
ND not detected

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**Attachment 3.2**  
**Asbestos and Lead Sample Locations for**  
**T891A, T891L, T891M and T891N**



# T891 A - Asbestos and Lead Sample Locations



## KEY

- = Asbestos Sample Locations (Asbestos Content)
- ▨ = Location of tan tile/white streaks
- ① T891A-970717-MS-004: Tan paper in underside of trailer (neg)
- ② T891A-970414-64-01: 12" Tan tile/white streaks (5%)
- ③ T891A-970414-64-02: 12" Tan tile/white streaks (3%)
- ④ T891A-970414-64-03: 12" Tan tile/white streaks (5%)
- ⑤ T891A-970414-64-04: 12" Tan/beige floor tile (neg)

- = Lead Sample Locations (Lead Content)
- ① T891A-970717-MS-001: White paint on metal skirting (120 ppm)
- ② T891A-970717-MS-002: Cream paint on metal siding (210 ppm)
- ③ T891A-970717-MS-003: White paint on wood porch (1510 ppm)

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*So*

## T891 A - Asbestos and Lead Sample Locations Continued

### KEY

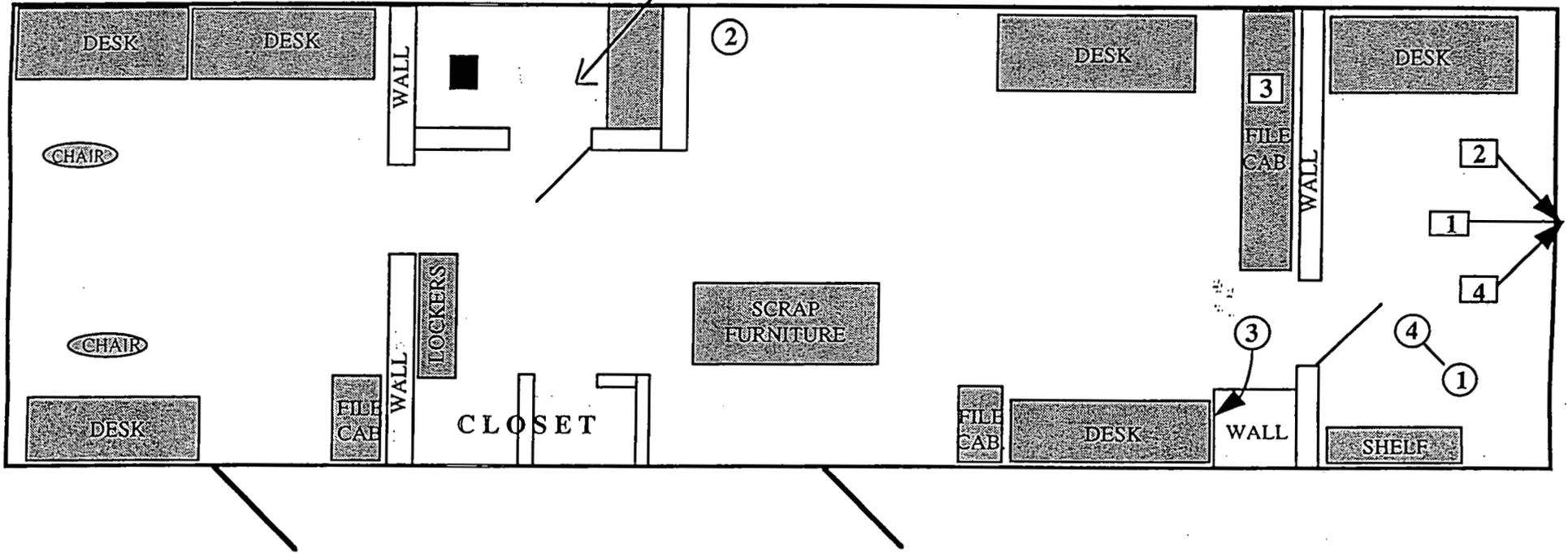
- 
- = Asbestos Sample Location (Asbestos Content)... Continued
- ⑥ T891A-970414-64-05: 12" Tan/beige floor tile (neg)
- ⑦ T891A-970414-64-06: 12" Tan/beige floor tile (neg)
- ⑧ T891A-970414-64-07: 12" Tan floor tile (neg)
- ⑨ T891A-970414-64-08: Ceiling drywall (neg)
- ⑩ T891A-970414-64-09: Ceiling drywall (neg)
- ⑪ T891A-970414-64-10: Ceiling drywall/insulation (neg)
- ⑫ T891A-970414-64-11: Ceiling drywall (neg)
- ⑬ T891A-970414-64-12: Ceiling drywall/insulation (neg)
- ⑭ T891A-970414-64-13: Ceiling drywall/insulation (neg)
- ⑮ T891A-970717-MS-005: Roof tar (neg)

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# T891 L - Asbestos and Lead Sample Locations

BATHROOM CONTAINS NO SINK OR TOILET!



## KEY

○ = Asbestos Sample Location (Asbestos Content)

① T891L-970717-MS-004: 12" floor tile light brown mottle (neg)

② T891L-970717-MS-005: 12" floor tile beige mottle (neg)

③ T891L-970717-MS-006: Textured drywall furnace enclosed: (neg)

④ T891L-970717-MS-007: 12" floor tile light brown mottle (neg)

□ = Lead Sample Location (Lead Content)

① T891L-970717-MS-001: White paint on metal skirting (80 ppm)

② T891L-970717-MS-002: Cream paint on metal siding (100 ppm)

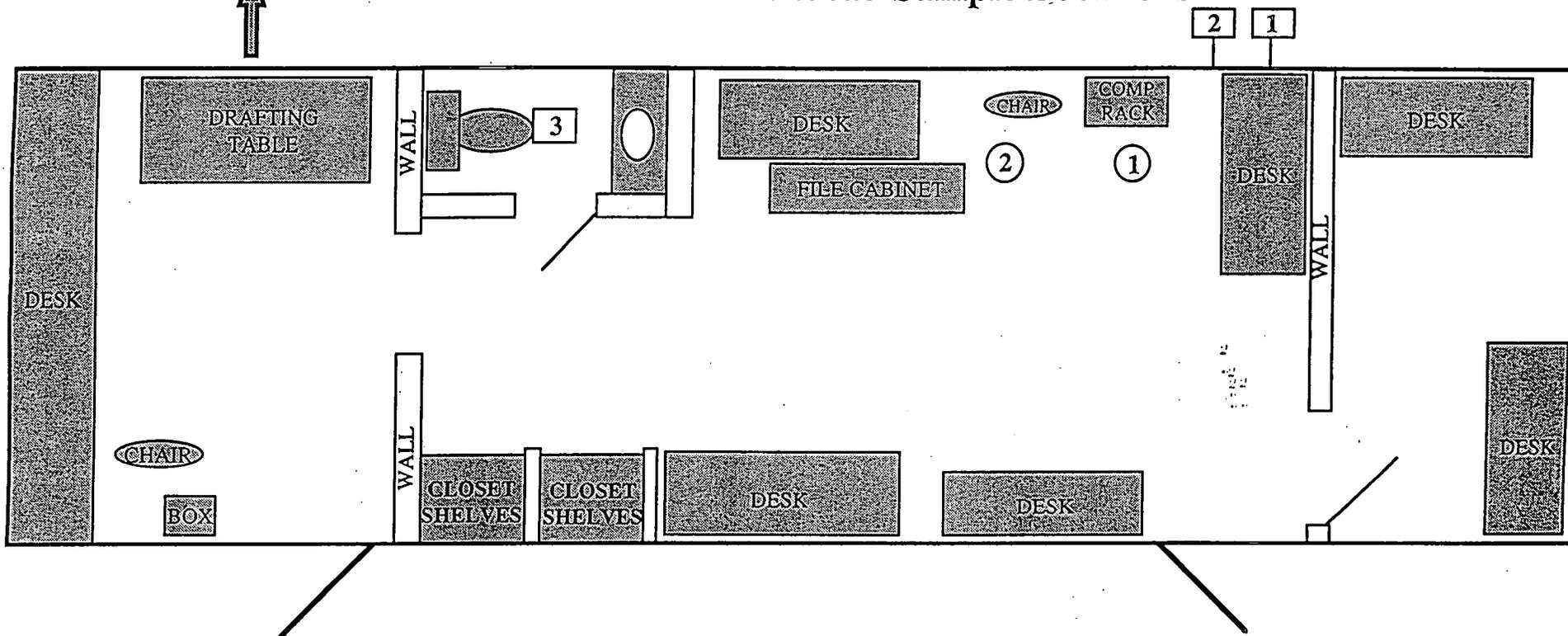
③ T891L-970717-MS-003: White paint on drywall ceiling (280 ppm)

④ T891L-970717-MS-008: Cream paint on metal siding (90 ppm)

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# T891 M - Asbestos and Lead Sample Locations



## KEY

○ = Asbestos Sample Locations (Asbestos Content)

① T891M-970717-MS-004: 12" floor tile beige mottle (neg)

② T891M-970717-MS-005: Drywall ceiling panel (neg)

□ = Lead Sample Location (Asbestos Content)

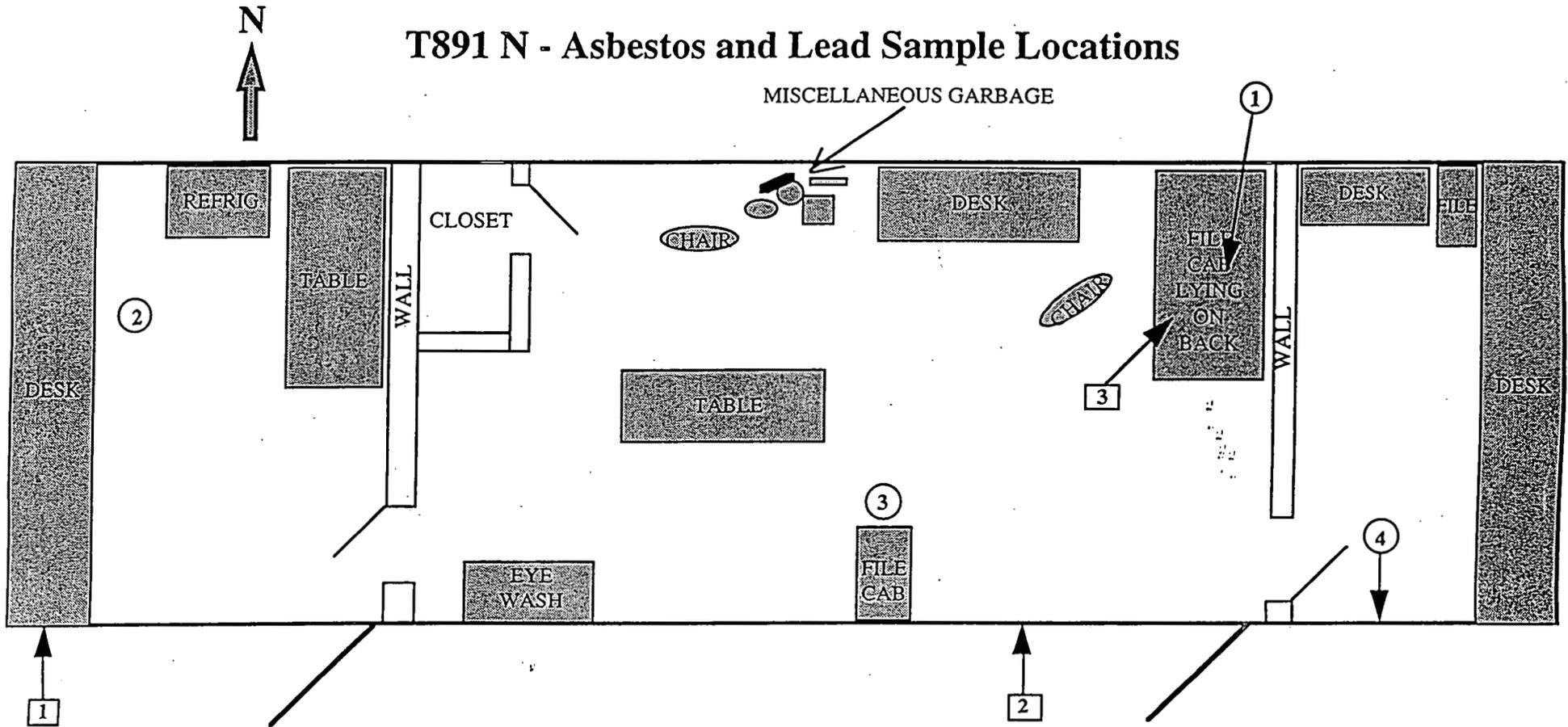
① T891M-970717-MS-001: White paint on metal skirting (30 ppm)

② T891M-970717-MS-002: Cream paint on metal siding (10 ppm)

③ T891M-970717-MS-003: White textured paint on drywall (200 ppm)

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# T891 N - Asbestos and Lead Sample Locations



## KEY

- = Asbestos Sample Locations (Asbestos Content)
- ① T891N-970717-MS-004: Thin white textured ceiling panel (neg)
- ② T891N-970717-MS-005: 12" floor tile brown mottle (neg)
- ③ T891N-970717-MS-006: 12" floor tile light brown mottle (neg)
- ④ T891N-970717-MS-007: Brown adhesive behind paneling (neg)

- = Lead Sample Locations (Lead Content)
- 1 T891N-970717-MS-001: White paint on vinyl skirting (neg)
- 2 T891N-970717-MS-002: White paint on metal siding (140 ppm)
- 3 T891N-970717-MS-003: White paint on ceiling panel (30 ppm)

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**ATTACHMENT 7.3**

**Asbestos and Lead Sampling and Analysis Plan for the T891 Trailers**

**July 1997**

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Rocky Mountain  
Remediation Services, L.L.C.  
*. . . protecting the environment*

RF/RMRS-97-035

# Asbestos and Lead Sampling and Analysis Plan For The T891 Trailers

JULY 1997

**ASBESTOS AND LEAD SAMPLING AND ANALYSIS PLAN**

**FOR THE T891 TRAILERS**

**REVISION 0**

**JUNE 1997**

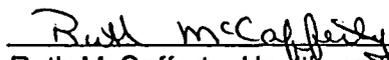
This Sampling and Analysis Plan has been reviewed and approved by:

  
\_\_\_\_\_  
John Law, Manager, Water Management and Treatment

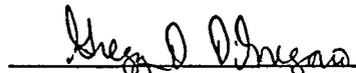
7/14/97  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Ty Vess, Project Manager

7-15-97  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Ruth McCafferty, Health and Safety Representative

7/14/97  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Greg DiGregorio, Quality Assurance

7/14/97  
\_\_\_\_\_  
Date

This Sampling and Analysis Plan was prepared by:

  
\_\_\_\_\_  
Michael N. Schluterbusch, Certified Building Inspector

7/16/97  
\_\_\_\_\_  
Date

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## ACRONYMS

ACM	Asbestos containing material
AHERA	Asbestos Hazardous Emergency Response Act
AS	Absorption spectroscopy
CCR	Colorado Code of Regulations
CFR	Code of Federal Regulations
CPS	Coupled plasma spectroscopy
DQO	Data quality objectives
PEP	Project Execution Plan
EPA	Environmental Protection Agency
F <sup>2</sup>	Square Feet
GF	Graphite furnace
HUD	Housing and Urban Development
IDL	Instrument detection limits
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PLM	Polarized light microscopy
PPE	Personal Protective Equipment
PPM	Parts per million
RCT	Radiation Control Technician
RFETS	Rocky Flats Environmental Technology Site
RTG	Resource Technology Group, Inc.

## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

The purpose of this project is to remove four office trailers and one semi-trailer from the Rocky Flats Environmental Technology Site (RFETS). The work is to be implemented and completed within the FY97 budget cycle.

Trailers T891A, L, M and N are portable office trailers, each measuring 10 feet wide by 60 feet in length. Construction materials and methods for these trailers are similar to that found in mobile homes. Trailer T900E is a semi trailer constructed of all new materials. A letter from the Resource Technology Group, Inc. (RTG) stated that no asbestos or lead containing materials were used, exempting this unit from further testing and analysis. For details regarding building descriptions and histories, refer to the Project Execution Plan (PEP).

### **1.2 SCOPE**

The scope of work includes the completion of all activities required to remove five trailers in the T891 Cluster. This includes planning and engineering, facility assessments, regulatory activities, characterization of building contaminants, and site preparation. The scope also includes the procurement activities to identify and put subcontract(s) in place to perform utilities disconnections and for transportation of the trailers.

### **1.3 PROTOCOL**

Contained herein is a preliminary protocol for asbestos and lead sampling for the T891 Trailer Cluster. Due to the analytical methodology, other metals such as arsenic, chromium, cadmium and zinc may be discovered and documented. This approach will ensure that the process will be in compliance with applicable Federal and State regulations.

The survey practices outlined are specifically designed to provide occupational hazard assessment information in support of activities to facilitate removal of Trailers T891A, T891L, T891M, T891N And T900E from the site. However, the information may be used to provide support for a comprehensive operations and maintenance program during normal building activities covered under the site Integrated Work Control Program such as routine or scheduled maintenance, repair or remodeling until such time as the trailers are evacuated and moved.

All decisions and processes are checked for veracity through the use of the site data quality objectives process guidelines (EPA QA/G-4).

## **2.0 METHODOLOGY**

The first step in sampling for asbestos and lead in a building is to research the building records such as blueprints and specifications for documentation of the use of these materials in construction or remodeling efforts. Dates of construction are considered in this process.

The second step in this process is to physically tour the building, entering every accessible area and room, looking for suspect (or affected) materials that may indicate through historical data or based on the inspector's experience, the presence of asbestos or lead. A suspect list is generated, along with estimated quantities.

## 2.1 INSPECTION RATIONALE

Settled dust sampling for lead and asbestos is used as an optional aid to assessment of industrial hygiene issues such as work practices and engineering controls and Personal Protective Equipment (PPE) that would be used in the decommissioning, removal or demolition of structures.

Bulk asbestos and/or paint chip sampling for lead is used as an aid to assessment of industrial hygiene issues such as work practices and engineering controls and PPE.

Asbestos and lead sampling is a destructive method that may release a small quantity of dust. Although material and paint chip samples are to be collected from inconspicuous areas, proper safety precautions must be taken to prevent the spread of suspect materials.

When inspecting for asbestos, non-suspect (or unaffected) materials are those traditionally made of wood, glass or metal. However, the inspector will suspect the adhesives applied to secure non-suspect materials to the substrate. Suspect, or affected materials are separated into three general categories: thermal systems insulation, surfacing materials, and miscellaneous materials.

When inspecting for lead, there are components where it has been identified through historical research of building records or by visual inspection techniques that lead paint and/or the aforementioned metals either in paint, chips, fragments, dust or material forms have been positively identified as existing. The following is a list of materials that may be coated with lead containing paint, or may have been constructed with lead.

- Wall and ceiling paint
- Paint on components (i.e, guard rails, tanks, machine guards)
- Gloveboxes and associated shielding equipment
- Piping
- Roof jacks
- Mounting plates and bracket bars
- Stationary shields
- Lead fill in walls
- Plaster additives

Non-suspect areas are those areas where there is a high level of certainty that lead and/or the aforementioned metals do not exist due to the absence of either in paint, chips, dust, fragments or material forms.

Before any removal, decommissioning or destruct activities are allowed, suspect and non suspect areas will be evaluated to determine sampling criteria needs. See Table 2-1 for evaluations on this project.

ASBESTOS AND LEAD  
SAMPLING PLAN FOR THE  
T891 TRAILERS

RF/RMRS-97-035  
Rev. 0, Page 7 of 14  
Date Effective: 07/15/97

**TABLE 2-1 LEAD AND ASBESTOS SURVEY RESULTS/SAMPLING REQUIREMENTS**

TRAILER	LEAD SAMPLES	ASBESTOS	NOTES
T891A	Exterior: (1 each) 1. Sheet metal 2. Skirting 3. Base trim 4. Roof trim	Exterior: (1 sample each) 1. Pipe insulation 2. Roof tar	PU&D# 00088246
	Interior: 1. Ceiling panels (1 sample)	Interior: 1. Floor tile (6 samples) 2. Ceiling panel (3 samples) 3. Ceiling insulation (3 samples)	From previously acquired samples.
T891L	Exterior: (1 sample) 1. Sheet metal 2. Skirting 3. Base trim	Exterior: 1. Roofing tar (1 sample)	Elder S# C18357; Built 1981; PU&D#085344- 00
	Interior: (1 sample) 1. Roof panels	Interior: (1 sample each) 1. Floor tile 2. Pipe insulation 3. Ceiling panel	
T891M	Exterior: (1 sample) 1. Sheet Metal 2. Skirting 3. Base trim	Interior: 1. Roof tar (1 sample)	Elder S#PT9365; PU&D#0095343-00; Built 1981
	Interior: (1 sample) 1. Ceiling panels	Interior: (1 sample each) 1. Floor tile 2. Pipe insulation 3. Ceiling panel	
T891N	Exterior: (1 sample) 1. Sheet metal 2. Skirting 3. Base trim	Exterior: 1. Roof tar (1 sample)	PU&D# 00079991-00
	Interior: (1 sample) 1. Ceiling panels	Interior: (1 sample each) 1. Floor tile 2. Pipe insulation 3. Ceiling panel	
T900E	Interior & Exterior: Exempt	Interior & Exterior: Exempt	RTG letter dated 4/24/97 exempts from sampling
<b>TOTALS</b>	18 Samples	27 Samples	

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## 2.2 DATA COMPILATION

Data compilation will separate the materials into homogeneous areas within these general categories, which will lead to the number of samples necessary for regulatory compliance and statistical reliability of the outcome. Any homogeneous area may be assumed to contain asbestos or lead, negating the need for samples. Each building in the T891 cluster is sampled as a single entity.

## 3.0 SURVEY PROCEDURES

### 3.1 SAMPLE QUANTITY

The number of samples for asbestos for each homogeneous area is outlined in EPA 40CFR 763.86. Sample quantity is decided first by a material's physical condition of friability, then by its general category. Friable materials are those that are capable of being crumbled or reduced to powder by hand pressure. Thermal systems insulation, such as that found on pipes or ducts, friable or non-friable, requires a minimum of three samples per homogeneous area, one sample from patches less than six linear or square feet, and one from cementitious or "mudded" fittings. Each mechanical system, such as hot and cold domestic water, may have several homogeneous areas. Each will be sampled accordingly. Only friable surfacing materials, such as fire-proofing or ceiling texture, will have a nine section grid applied to a blueprint of the area and samples will be acquired from the center of randomly selected grids. If the homogeneous area of friable surfacing material is less than 1,000 ft<sup>2</sup>, three samples are needed; if between 1,000 and 5,000 ft<sup>2</sup>, five samples are needed; if the area is over 5,000 ft<sup>2</sup>, seven samples are needed. Miscellaneous materials, such as floor and ceiling tiles are sampled according to the inspector's discretion, as outlined in EPA 40CFR 763.86(c&d). For the purpose of this survey and based on the inspector's experience and discretion, a minimum of one sample of each suspected material in this category will be acquired.

Lead in paint sample quantity is outlined in the 1995 HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Samples are determined by the colors present in the structure. Each color is sampled accordingly. Similar colors may also be sub-categorized into the type, such as oil-based, latex, gloss or semi-gloss for example. For each homogeneous area, one representative sample is acquired. Multiple layers of different colors are so noted if this can be determined visually. If not, the top layer is the determining color. The inspector also notes the substrate material.

### 3.2 SAMPLE LOCATION

Sample locations are selected randomly according to how each represents a homogeneous material. Since homogeneous areas are located throughout the building, the representation and number of samples is the driving factor rather than exact location of the sample in each room. Exact locations will be directly affected by the radiological concerns. In the absence of radiological surveys, a radiological control technician (RCT) will accompany the inspector. If a selected location is determined to exceed acceptable parameters, a second location will be selected. Should no radiologically acceptable location be found, a contaminated sample will be acquired and treated as a radiologically contaminated sample and cleared through Radiological Operations and Engineering.

## 4.0 SAMPLING

### 4.1 SETTLED DUST

Settled dust on horizontal surfaces will be sampled using a micro-vac technique that requires the use of a template that sequesters a 10 square inch pattern. The sampling tool is a low volume battery powered air sampling pump calibrated at 21 parts per million (ppm) with a 25 mm mce cassette attached. A two inch section of tygon tubing is attached to the upstream side of the cassette and facilitates pickup of all loose dust in the grid area. Each sample is documented as to location, the cassette is labeled with an identifying number, and sealed. The sample number is documented on the chain of custody form. The sample location may be photographed with a sample photo identification card in the focus area documenting the sample number and date, and orienting the viewer to the sample location with an arrow.

Each sample will be acquired with the intent of assuring the quality, representation, and safety of the process. The following steps will be performed for each sample acquired. Note that a RCT may be present as necessary to survey the area and location of the sample prior to proceeding.

### 4.2 ASBESTOS AND LEAD

Sampling for asbestos is performed using destructive techniques that requires acquiring a representative sample of the material down to the substrate. Each sample must contain a minimum of one cubic centimeter of material to facilitate analysis and archival processes.

Sampling for lead in paint requires that the paint chip sample be four square inches in size. Minimum weight is .2 grams. Sample size will be adjusted accordingly. The most common paint sampling method is to scrape paint directly off the substrate. The goal is to remove all layers of paint equally, but none of the substrate.

Sampling for lead and metals will be primarily performed utilizing a dust sampling technique and/or paint scraping techniques. Each sample will be acquired with the intent of assuring the quality, representation and safety of the process.

Bulk sampling procedures as outlined:

- The location of the sample is visually verified against written descriptions.
- A polyethylene drop cloth or plastic bag placed below the elevated sample areas.
- The immediate sample area is dampened with a mist of water and surfactant.
- A sampling tool, such as a hammer and chisel, razor knife, "wondermaker" or hole saw is selected and the sample is acquired, making sure to take a complete sample to the substrate. During this process, the immediate surface is misted as necessary.
- The acquired sample is placed in a sealable container, such as a plastic bag or vial.
- The container is sealed and a pre-numbered label is placed on the container. The sample number label is placed on chain of custody papers and the container is verified to be sealed.
- The sampling tool is thoroughly cleaned using mister and wipes as per AHERA.

- The sample area is patched as needed.
- The description and location is documented on a form, a sample label is placed on the form, and the location is documented on a blueprint.
- The sample container, drop cloth and immediate sample area is wet wiped and the drop cloth is carefully folded in to the center and placed in a sealable bag and the bag is sealed.
- In the case of routine maintenance areas, a pre-numbered label is placed at the sample location. With permission of the building manager, labels will be placed on all sample locations.
- The sample location is photographed with a sample photo identification card in the focus area documenting the sample number and date, and orienting the viewer to the location with an arrow. As there are no regulatory drivers in place for photographing lead in paint samples, this step is optional for this process.
- All used wipes, drop cloths, and PPE will be added to the appropriate waste stream.

## 5.0 LAB SUBMISSION ANALYSIS AND INSTRUMENTATION

All samples shall be submitted to a laboratory recognized by the EPA National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos. Appropriate sample submittal forms shall be used. The field sample number shall appear on the field sampling form, the laboratory submittal form, and the container label. The name of the laboratory, the date the samples were sent to the lab, and all personnel handling the sample from the time of collection to the time of arrival at the laboratory shall be recorded on a chain of custody form.

### 5.1 ASBESTOS

The analytical methodology for bulk asbestos samples is polarized light microscopy (PLM) capable of 400x magnification augmented with dispersion staining. This method is outlined in the EPA 600/R-93/116 methods for the determination of asbestos in building materials.

Bulk samples of suspect materials are examined for homogeneity, layers and preliminary fiber identification using a stereoscope at 40x magnification. Layers are separated and mounted on slides. Refractive index oils are applied to the slide according to a morphology match. A light microscope equipped with two polarizing filters is used to observe seven specific optical characteristics of a sample at 400x magnification. The presence or absence of the characteristics determines the type of asbestos, or if not asbestos, the type of fiber present in the sample. The microscopist then visually estimates the percentage of asbestos or non-asbestos fibers in that layer. Each layer is reported separately. A layer or sample is determined to be an asbestos containing material if it contains more than one percent asbestos by this estimate. The limit of detection for PLM is less than five microns.

CCR 8 (Section iii.B.6.ii) mandates that the building manager must be given the option of accepting results from PLM analysis of samples with asbestos percentages from trace (less than 1%) to 10%, or requesting point counting analysis. If point counting is chosen, these results take precedence over the plm results. Point counting is a methodology that uses identical instrumentation, with the addition of a grid system on the stage. The analyst is required to look at

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a minimum of 100 locations on eight different mounts, estimate the percentage of asbestos, and add these percentages for a statistical representation of the content.

## 5.2 LEAD

EPA SW-846 determines details and methods for the determination of metals in solids, including lead, cadmium, chromium, zinc and arsenic.

Solid samples are homogenized, weighed and digested in nitric acid. This digestate is brought to a known volume and analyzed for various metals using atomic absorption spectroscopy (AS), Graphite furnace (GF) or inductively coupled plasma spectroscopy (CPS). The instrument detection limits (IDL) for lead and metals are both 0.25 ug/ml with the actual sample detection limit dependent on the sample size and volume.

The result is then compared to the standard for lead-based (or other metals) paint divided by the number of sub-samples (the composite standard). If the result is above this number, one or more of the samples may be above the standard. Each sub-sample is reanalyzed. If the result is below this number, none of the sub-samples can contain lead above the standard. If both single-surface and composite samples are collected side-by-side, the individual samples can be submitted for analysis without returning to the building if the composite result is above the composite standard. If the laboratory does not analyze the entire composite sample, it must use a validated homogenizing technique to ensure that all sub-samples are completely mixed together.

## 6.0 DATA ANALYSIS

Two types of data are generated during an asbestos and/or lead in paint building inspection; the field data and the laboratory data. The field data consists of research on the building history, observation and identification of installed building materials, and measurements to determine quantities. The laboratory data consists of empirical observation through instrumentation, identification and quantification of sample information.

### 6.1 HISTORICAL RESEARCH

The historical research allows the inspector to compile information that is used to discover and verify the existence of asbestos or lead in building materials. Maintenance and asbestos abatement records, blueprints, as-builts, specifications and emergency response documents are examples of the data used. Once the inspector arrives at the site, the visual inspection begins, usually at the basement level and proceeding throughout the building and ending up on the roof. The inspector is looking for suspect materials and damage to same. This information will be used later to provide a physical assessment of the materials found.

### 6.2 LABORATORY

The laboratory data is reported, usually in tabular format, to the inspector. In the table, the inspector finds information on the fibrous and non-fibrous constituents in the sample, reported as percentages of the total material. If asbestos is discovered, the table will describe the geologic type (such as chrysotile) and which layer it was discovered in. Other common fibrous constituents are fiber glass, rock wool and nylon.

The historical research allows the inspector to compile information that is used to discover and verify the existence of various metals in the building and facility components. Maintenance, renovation, and abatement records, along with blueprints, as-builts and specifications are examples of documents reviewed for this purpose. Once the inspector arrives at the site, the physical inspection begins, usually at the lowest level of the structure and ending up on the roof. The inspector is looking for suspect materials and verifying the existence of materials discovered during the historical research.

In the case of lead in paint, the lab data is usually reported in tabular form to the inspector. In the table, the inspector will find information on the percentage or portion per sample that contains the suspect metal. Should the sample not contain any suspected metals. This information will be included in the report.

## 7.0 SUMMARY

The inspector compiles the field and lab data, cross-matches information, eliminates non-asbestos and/or lead containing materials from the suspect list, and generates a report on the findings. The report consists of an executive summary, location and description of both asbestos and non-asbestos, and/or lead (metals) containing building materials either sampled or assumed, estimated quantities of same, physical assessment of the friable asbestos containing materials, location of samples acquired, photographs of sample locations and damaged materials, and blueprints indicating sample locations and homogeneous areas that contain asbestos and/or lead.

## 8.0 QUALITY ASSURANCE

Quality assurance for the asbestos and lead characterization of the T891 Trailer Cluster begins by assessing the procedure through the data quality objectives (DQO) process document. The veracity of the methodology also requires that data acquired during the inspection process be checked.

THE EPA QA/G-4 process begins with a statement of the problem, which is outlined in Section 1.0. Step two, identify the decision, is covered in Section 2.0. Steps 3, 4, 5, and 6 are driven by aforementioned regulatory requirements or guidelines. The expert and diverse rationale used to develop these parameters are sufficient to preclude evaluation or selection of any alternatives. The methodologies inherent in these procedures have been accepted industry standards and tested in courts of law and need only to be applied on a site specific basis with the input from qualified individuals.

Both the field and laboratory data are verified for accuracy and consistency. Each sample location is verified for representative quality and the sampler verifies that the sample size or volume meets the analytical requirements, and that the sample includes depth to substrate. Sample numbers are continually cross-checked to avoid redundancy or omissions. Administrative and engineering controls are used in this process. Administrative controls include the mandate that all inspectors and lab analysts meet all applicable regulatory training certification and licensing requirements.

## 8.1 FIELD DATA

In the field, the inspector acquires quality control (or duplicate) samples at the rate of five percent. Sample locations are chosen randomly and a second sample is acquired at the same location. This sample is sent to the same lab for analysis. Should discrepancies occur, the issue is resolved by retracing the steps back to the sample acquisition point and following the process back to the lab. If the issue is still unresolved, the inspector will acquire an additional sample to be sent to a different lab. In addition to APO is required to validate laboratory data at the rate of 25%.

## 8.2 LAB DATA

In the lab, the analyst uses the same five percent criteria in performing quality control procedures for asbestos as outlined in the NVLAP program. Samples are randomly chosen and another analyst re-assesses the sample. Results are compared, and discrepancies are resolved. All mathematical calculations are verified through peer review.

For lead samples in the lab, the analyst is bound by protocol for quality assurance outlined in EPA SW-846 and requirements set out by the National Lead Laboratory Accreditation Program. All laboratory calculations are verified through peer review.

## 8.3 COMPARISON/MATCHING

A last step in quality assurance involves the comparison of field and lab data. The sample numbers and descriptions are checked against each other to verify that the lab saw the same material as the inspector. Problems may occur due to transposition of number sequences, and this is resolved by checking the field data sheets against the chain of custody and the lab report. Minor differences in the physical descriptions are allowed due to the fact that lighting in the building may be different than that in the lab. Major differences in descriptions are often traced back to the number transposition issue. In order to avoid this issue, inspectors will use pre-printed labels on the field data sheet, sample container, and chain of custody document.

## 8.4 PEER REVIEW

Finally, the report itself is passed through peer review. This process assures the final product will be free of technical, grammatical, and mechanical errors prior to being passed on to the client or being used as a basis for future operations in the building such as abatement, maintenance, renovation, or demolition.

## 9.0 REFERENCES

EPA 40 CFR 763, Asbestos-Containing Materials in Schools; Final Rule and Notice, October 30, 1986

OSHA 29 CFR 1926.1101, Asbestos Construction Standard, August 10, 1994

Emission Standards for Asbestos, Excerpted from Colorado Regulation No. 8, "The Control of Hazardous Air Pollutants", Part B, Emission Standards for Asbestos, November 30, 1996

EPA Method SW 846-3050A/7420, Atomic Absorption Spectrometry

OSHA 29 CFR 1926.32, Lead Exposure in Construction, Interim Final Rule, June 1989

HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, June, 1995.

EPA QA/G-4 The Data Quality Objectives Process, Quality Assurance Management Staff, Draft Final, March 3, 1994.

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