

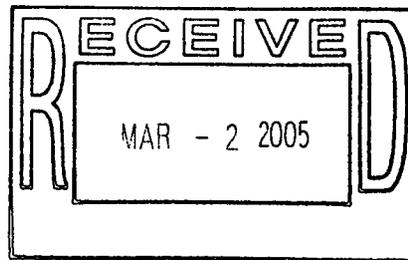
Rocky Flats Environmental Technology Site

Building 776/777

2nd Floor

Final Survey Report

**Survey Units:
776032**



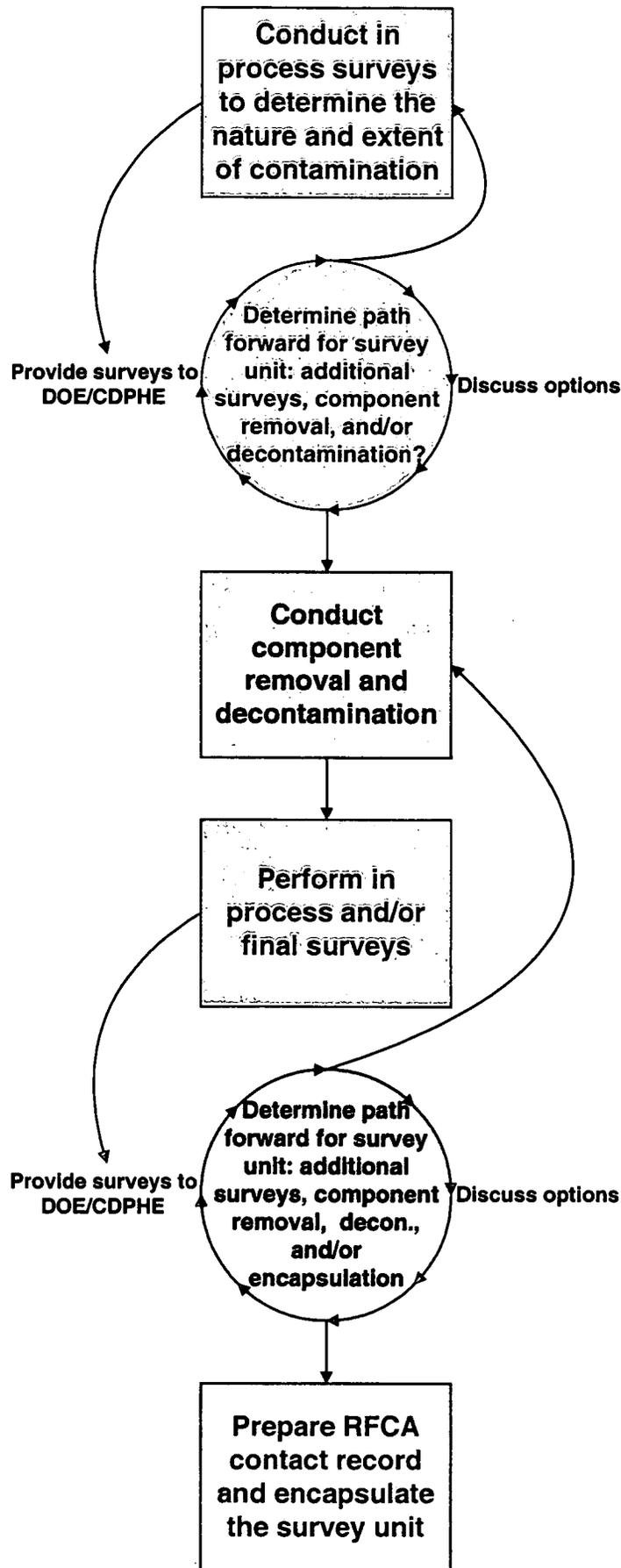
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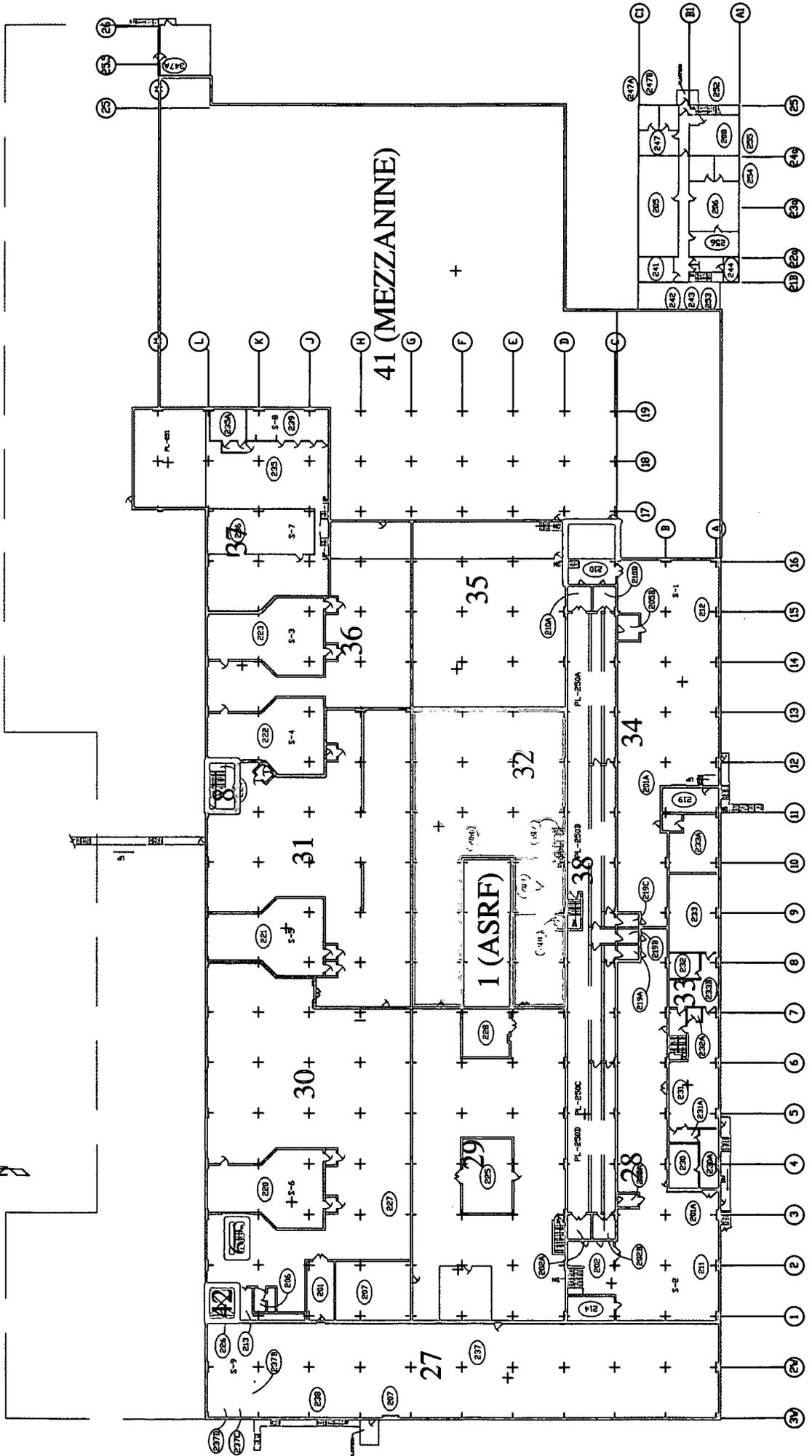
November 2004

1/26

B776-A-000293



B776/777 INITIAL SURVEY UNITS
2nd FLOOR



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Survey Instructions
Building 776 2nd Floor
Survey Unit 776032

Purpose:

This instruction provides guidance for collecting gross gamma and removable contamination data to quantify the amount of residual contamination in Survey Unit 776032 prior to demolition. NaI measurements are performed in accordance with "INS-535-Ludlum2350-1 with Sodium Iodide Detector".

Equipment and materials:

1. A Ludlum 44-17 attached to a Ludlum 2350-1 set to collect five-minute counts that will be displayed on its LCD window.
2. A Bicon G-5 attached to a Ludlum 2350-1 set to collect five-minute counts that will be displayed on its LCD window.
3. One Electra with attached DP-6, calibrated and daily response checked.
4. Two probe holders, one for the G-5 and one for the 44-17 with tin shielding.
5. Calibrated and daily response checked SAC-4.
6. Measuring tape or laser range finder.

Note: The NE Electra with DP-6 probe and the Eberline SAC-4 shall be used in accordance with RSP- 7.01 and 7.02

Procedure:

1. Inspect instrument for obvious damage and ensure battery voltage is equal to or greater than 4.6 volts. If battery voltage is less than 4.6 volts change the batteries.
2. Complete daily performance checks for Sodium Iodide detectors to ensure the instrument is functioning properly by using Americium-241 source TS-912. Record results on Sodium Iodide Data Sheet.
3. For floor and concrete wall background measurements, perform a 300-second background count with a Bicon G-5 for floors or Ludlum 44-17 for walls at background location in room 201-A near column B-13. Record background counts next to "Bkg Floor" or "Bkg Concrete Wall" in background column of attached "Sodium Iodide Data Collection" sheets as needed.
4. For block wall background measurements, perform a 300-second background count with a Ludlum 44-17 at the background location in room 219. Record background counts next to "Bkg Block Wall" in background column of attached Sodium Iodide data collection sheets as needed.
5. For ceiling and metal floor background measurements, perform a 300-second background count with a Ludlum 44-17 or Bicon G-5 at background location in room 201-A near column B-13. Hold the probe waist high, pointed toward ceiling using a sheet metal plate in front of the detector (take background measurement in this configuration). Record background counts next to "Bkg Metal Floor" for the G-5 and " Bkg Metal Ceiling" for the 44-17 on the attached Sodium Iodide data collection sheets as needed.
6. Mark the sample locations on the surfaces to be measured. Take all measurements on contact with the marked surface using tin side shields on the Bicon G-5 and tin side and back shields on the Ludlum 44-17. All Sodium Iodide readings shall have 300 second count times.
7. Collect sodium Iodide, total surface activity and removable surface activity measurements at all locations marked on the attached map.
8. Record the NaI and NE Electra measurements on the attached sheet. Note any items or conditions that may have affected the measurement in the "remarks" section.
9. Count swipes for 60 seconds with a SAC-4, record result on attached sheet for removable contamination.

Survey Instructions
 Building 776 2nd Floor
 Survey Unit 776032

Table 776032-1: Survey Requirements

Surface	Type of Survey	Probe	Placement	Count Time
Floor	Total Alpha Activity	Bicron G-5	On contact	300 seconds
All Surfaces	Total Alpha Activity	Electra with DP-6	On contact	60 seconds
Block walls	Total Alpha Activity	Bicron G-5 or Ludlum 44-17	On contact	300 seconds
All Surfaces	Removable Alpha	SAC-4	Swipe in placed in tray	60 seconds
Ceiling	Total Alpha Activity	Ludlum 44-17	On Contact	300 seconds
Block Walls	Background measurement	Bicron G-5 or Ludlum 44-17	On contact with wall in room 219	300 seconds
Metal Floors	Background measurement	Bicron G-5 or Ludlum 44-17	Probe waist high, pointed toward ceiling with sheet metal plate on end in room 201-A near column B-13	300 seconds
Floors and cement walls	Background measurement	Bicron G-5 or Ludlum 44-17	On contact with floor in room 201-A near column B-13	300 seconds
Metal ceilings	Background measurement	Ludlum 44-17	Probe waist high, pointed toward ceiling with sheet metal plate on end in room 201 near column B-13	300 seconds

Final Survey for Survey Unit 776032

FINAL SURVEY REPORT

Survey Unit 776032

Introduction and Scope

A pre-demolition radiological survey (PDS) is performed prior to building demolition to define the radiological conditions of a facility. A PDS survey for survey unit 776032 has been completed in accordance with guidelines outlined in the "Radiological Pre-Demolition Survey Plan Building 776/777". Based on the results it is recommended that no further remediation is needed, and that the survey unit may be encapsulated in preparation for demolition. Isolation controls shall be put in place to prevent recontamination of the area. This report has been prepared in accordance with sections 3 and 8 of the "Radiological Pre-Demolition Survey Plan Building 776/777".

Survey unit 776032 includes the south portion of room 208, south of G column line and between column lines 7 and 13 of Building 776. This area also includes Room 217 and the stairs within.

PDS Methods and Techniques

The PDS survey results determine the Average Surface Contamination Value (ASCV_u) and source term for the survey unit. These parameters are used determine whether the building may be demolished within the limits outlined in the "Radiological Pre-Demolition Survey Plan Building 776/777".

To comply with the "Radiological Pre-Demolition Survey Plan Building 776/777", a minimum of 30 survey points were selected per survey unit. A random start, systematic grid method was used to identify the survey point locations. Three types of surveys are performed at each survey point as follows:

- Painted surfaces are evaluated for potential contamination under coatings using sodium iodide (NaI) gamma detectors attached to a single channel analyzer windowed for the 59 keV gamma-ray (Am^{241}).
- Direct alpha surface contamination measurements are performed using a NE Electra survey instrument with attached DP-6 probe. This data may be compared to the NaI survey data to show the fraction of contamination that is directly on the surface verses imbedded in the material matrix.
- Removable surface alpha contamination surveys were performed by swiping the survey point with a 47mm filter paper then counting the filter paper on a SAC-4 alpha counter. This data may be used to gauge the effectiveness of encapsulation following the PDS.

To conservatively determine the final Average Surface Contamination Value (ASCV_u) for the survey unit, the source term associated with inaccessible areas of the survey unit (as described below) is added to the source term calculated by the PDS survey.

FINAL SURVEY REPORT

Survey Unit 776032

ALARA Post Remediation Surveys

Accessible Areas

In addition to the PDS used to determine the Average Surface Contamination Value (ASCV_u) and source term for the survey unit, surveys were taken to determine the effectiveness of remediation efforts. Remediation is performed to demonstrate a reasonable best effort is made to maintain releases to the environment and doses to the workers ALARA.

Remediation may include decontamination, or removal of parts of the structure such as block wall removal.

Stairs

The stair steps that come from the 1st floor to survey unit 776032 were included in this survey unit. Contact readings on the top surface of each tread revealed significant amounts of fixed contamination (Up to 162,876,670dpm/100 cm²). Since access is required to the 2nd floor, the stairs will remain in place until just prior to building demolition. The stairs will have to be removed and packaged as SCO II wastes. The stairs may be size reduced after the building ventilation is deactivated, so the inventory for the stairs will be included in the calculation of the ASCV_u. A conservative estimate for the stair inventory assumes that a 5 cm wide strip that is 60 cm long is contaminated to the highest level recorded on each step. The inventory for the stairs is conservatively estimated to be 1121 μ Cl.

Floors

The floors of survey unit 776032 consisted of paint covered concrete. In-process measurements collected on the floor of 776032 show that the majority of the floor had elevated activity. The majority of the floor surface of the unit was remediated by shaving before being re-surveyed. Remediation of the elevated floor areas resulted in a decontamination factor (DF) of 7.5, or a source term reduction of 86.7%.

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Survey Unit 776032

**Table 1:
Floor Remediation Results**

	Pre- Remediation (In-process)	Post- Remediation (Follow-up)
Maximum (dpm/100cm²)	14,051,535	375,537
Minimum (dpm/100cm²)	12,645	12,645
Average (dpm/100cm²)	519,182	68,887
Average (μCi/m²)	23.4	3.1
Source Term (μCi)	12,932.8	1,716.0

Walls

Walls 32- 17,32-18, 32-19 and 32-20 were found to have no barrier between them and the interior of plenum 250, survey unit 76038. It is not practical to attempt to isolate these walls from the rest of the plenum during decontamination efforts in the plenum and they have more in common with the walls of 776038 than 776032. These walls will be included in survey unit 776038.

Follow-up surveys performed after the asbestos tent was removed found areas with elevated readings on the base of walls 10 and 12. Each wall was shaved and NaI readings did not change significantly. A hole was made in the base of wall 32-12 at the location with the highest NaI reading. The NaI reading increased, indicating that the gamma rays are coming from inside Plenum 250. The contamination that is emitting these gamma rays will be accounted for in reports for survey unit 776038

Walls 6B and 6C that were blocked by an asbestos tent during the in-process survey were surveyed after the tent was removed. No significant contamination was detected, but the estimated inventories of these walls were added to Table 3 below in the "Post Remediation, (μ Ci/ wall) "column. No summary of decontamination effectiveness is presented in this report because no significant decontamination was performed.

FINAL SURVEY REPORT

Survey Unit 776032

Table 2
B776/777 Survey Unit 776032 – Wall Summary

Wall	Section	Structural	Initial Characterization:		
			Type I	Type II	Type III
776032-1	A	Structural			
776032-2A	A				
776032-2B	B				
776032-3A	A	Structural			
776032-3B	B	Structural			
776032-3C	C	Structural			
776032-3D	D	Structural			
776032-3E	E	Structural			
776032-3F	F	Structural			
776032-4A	A				
776032-4B	B				
776032-4C	C				
776032-5A	A				
776032-5B	B				
776032-6A	A				
776032-6B	B				
776032-6C	C				
776032-6-D	D				
776032-7-A	A				
776032-8A	A				
776032-9A	A				
776032-10A	A				
776032-11A	A				
776032-12A	A				
776032-13A	A				
776032-14A	A				
776032-15A	A				
776032-16A	A				
776032-17A	A			*	
776032-18A	A			*	
776032-19A	A			*	
776032-20A	A	Structural		*	
776032-21A	A				
776032-22A	A				
776032-23A	A				
776032-24A	A	Structural			
	* These walls will be included in Survey unit 776038				
	Type 1:	<100,000 dpm/100 cm ²			
	Type 2:	>100,000 dpm/100cm ² to <1,000,000 dpm/100cm ²			
	Type 3:	>1,000,000 dpm/100cm ²			

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FINAL SURVEY REPORT

Survey Unit 776032

Table 3
B776/777 Survey Unit 776032- Wall Source Term

Wall Designation	Wall Type	Area (ft ²)	Area (m ²)	Pre-remediation Average dpm/100cm ²	Pre-remediation uCi/wall	Post-remediation Average dpm/100cm ²	Post Remediation (uCi/wall)
776032-1A	I	258.2	24.0	18,980	20.5	18,980	20.5
776032-2A	I	279.8	26.0	35,358	41.4	35,358	41.4
776032-2B	I	172.2	16.0	20,267	14.6	20,267	14.6
776032-3A	I	269.0	25.0	20,428	23.0	20,428	23.0
776032-3B	I	269.0	25.0	31,668	35.7	31,668	35.7
776032-3C	I	53.8	5.0	45,301	10.2	45,301	10.2
776032-3D	I	215.2	20.0	34,734	31.3	34,734	31.3
776032-3E	I	161.4	15.0	46,464	31.4	46,464	31.4
776032-3F	I	236.7	22.0	55,646	55.1	55,646	55.1
776032-4A	I	193.7	18.0	28,548	23.1	28,548	23.1
776032-4B	I	193.7	18.0	40,190	32.6	40,190	32.6
776032-4C	I	258.2	24.0	44,148	47.7	44,148	47.7
776032-5A	I	290.5	27.0	37,655	45.8	37,655	45.8
776032-5B	I	107.6	10.0	49,258	22.2	49,258	22.2
776032-6A	I	290.5	27.0	29,932	36.4	29,932	36.4
776032-6B	I	290.5	27.0	Inaccessible	Inaccessible	50,181	61
776032-6C	I	107.6	10.0	Inaccessible	Inaccessible	71,512	32
776032-6-D	I	290.5	27.0	38,820	47.2	38,820	47.2
776032-7-A	I	32.3	3.0	23,089	3.1	23,089	3.1
776032-8A	I	226.0	21.0	31,282	29.6	31,282	29.6
776032-9A	I	64.6	6.0	49,477	13.4	49,477	13.4
776032-10A	I	43.0	4.0	53,254	9.6	53,254	9.6
776032-11A	I	64.6	6.0	31,618	8.5	31,618	8.5
776032-12A	I	43.0	4.0	84,147	15.2	84,147	15.2
776032-13A	I	312.0	29.0	2,963	3.9	2,963	3.9
776032-14A	I	107.6	10.0	2,963	1.3	2,963	1.3
776032-15A	I	258.2	24.0	39,947	43.2	39,947	43.2
776032-16A	I	107.6	10.0	44,665	20.1	44,665	20.1
776032-17A	I	48.4	4.5	167,105	33.9	776-038	*
776032-18A	I	64.6	6.0	128,889	34.8	776-038	*
776032-19A	I	48.4	4.5	248,241	50.3	776-038	*
776032-20A	I	86.1	8.0	146,472	52.8	776-038	*
776032-21A	I	21.5	2.0	53,946	4.9	53,946	4.9
776032-22A	I	188.3	17.5	55,299	43.6	55,299	43.6
776032-23A	I	43.0	4.0	26,683	4.8	26,683	4.8
776032-24A	I	312.0	29.0	56,859	74.3	56,859	74.3
Totals		6267.7	582.5		1025.7		947.1
Averages		39,091 Dpm/100cm²			1.8		1.6

*Walls are now part of Survey Unit 776038

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Survey Unit 776032

Cellings

No ceiling survey points were determined to require remediation during the in-process characterization of survey unit 776032.

Columns

Investigation of elevated readings on wall surveys in survey units 776030 revealed that the columns had elevated contamination levels on them as a result of the 1969 fire. The columns had sufficiently high levels to warrant an investigation of columns in survey unit 776032. The investigation consisted of taking a minimum of four biased readings along the length of each column and additional readings to determine the extent of the contamination. The contamination was found to exist in small areas. Average contamination levels ranged between the detection limit of the instruments and 1,772,754 dpm/100cm². The highest level discovered was between large bolts that secure two structural steel members together at the top of column G-10. The area is less than 200 square centimeters and can not be accessed with anything larger than the Ludlum 44-17 probe.

The inventory for the columns was estimated by assuming a 1.5 inch wide strip of contamination extended the length of each side of each column. This conservatively assumes that 0.9 m² of each column is contaminated to average level obtained from the biased readings. The inventory for the inaccessible areas of the columns was estimated to be **194 µCi**.

Inaccessible Areas

Floors

Seams

One contaminated seam was identified on the floor of survey unit 776032 located in survey grids 32-8, and 32-17. The 20' long north-south seam) was found to be contaminated at levels between 1,217,544 and 7,532,246 dpm/100 cm², averaging 4,374,895 dpm/100 cm². Most of the contaminated material was removed and readings in the seam were significantly reduced to levels between 21,443 and 40,794 dpm/100 cm² averaging 31,119 dpm/100 cm². Each side of the seam is approximately 20 feet (6.1 m) long by 4 inches (0.1m) wide. The amount of activity remaining the seam is estimated as:

$$(2 * 0.61 \text{ m}^2) * (31,119 \text{ dpm}/100 \text{ cm}) * (10,000 \text{ cm}^2 / \text{m}^2) * \mu\text{Ci} / 2.22\text{E}6 \text{ dpm} = 1.7 \mu\text{Ci}$$

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The amount of source term *removed* from the seam is conservatively estimated as:

$$(2 * 0.61 \text{ m}^2) * (4,374,895-31,119/100 \text{ cm}) * (10,000 \text{ cm}^2 / \text{m}^2) * \mu\text{Cl} / 2.22\text{E}6 \text{ dpm} = 234.8 \mu\text{Cl}$$

Cracks

One contaminated crack was identified on the floor of survey unit 776032 located in survey grids 32-2, and 32-3. The 2' long east-west crack was found to be contaminated at levels between 98,800 and 17,039,863 dpm/100 cm², averaging 8,569,332 dpm/100 cm². Most of the contaminated material was removed and readings in the crack were significantly reduced to levels between 21,443 and 645,382 dpm/100 cm² averaging 333,413 dpm/100 cm². Each side of the crack is approximately 2 feet (.61 m) long by 4 inches (0.1m) wide. The amount of activity remaining the crack is estimated as:

$$(2 * 0.061 \text{ m}^2) * (333,413 / 100 \text{ cm}) * (10,000 \text{ cm}^2 / \text{m}^2) * \mu\text{Cl} / 2.22\text{E}6 \text{ dpm} = 1.8 \mu\text{Cl}$$

The amount of source term *removed* from the seam is estimated as:

$$(2 * 0.061 \text{ m}^2) * (8,569,332-333,413 / 100 \text{ cm}) * (10,000 \text{ cm}^2 / \text{m}^2) * \mu\text{Cl} / 2.22\text{E}6 \text{ dpm} = 44.5 \mu\text{Cl}$$

There are several contaminated cracks that occur where the base of columns meets the floor. The areas near the base of columns F-12, F-13, G-13 and G-10 had contamination levels that ranged between 3,868,648 and 34,646,584 dpm/100 cm², averaging 19,257,616 dpm/100 cm². These areas were decontaminated using chip hammers. The areas at the base of columns G-10 and G-13 had concrete removed until the ceiling panel of the first floor was exposed.

The contamination levels in these areas after decontamination were between 46,704 and 715,572 dpm/100 cm², averaging 381,138 dpm/100 cm². There were four area that were approximately 1000 cm² each and one area that was approximately one square meter.

The amount of activity remaining these areas is estimated as:

$$1.4 \text{ m}^2 * (381,138 \text{ dpm} / 100 \text{ cm}) * (10,000 \text{ cm}^2 / \text{m}^2) * \mu\text{Cl} / 2.22\text{E}6 \text{ dpm} = 24 \mu\text{Cl}$$

The amount of source term *removed* from these areas is estimated as:

$$1.4 \text{ m}^2 * (19,257,616-381,138/100 \text{ cm}) * (10,000 \text{ cm}^2 / \text{m}^2) * \mu\text{Cl} / 2.22\text{E}6 \text{ dpm} = 1190.4 \mu\text{Cl}$$

Walls

Readings taken with an alpha instrument inside a hole made in wall 12 indicate that the elevated NaI readings obtained on walls that have been decontaminated come from inside plenum 250 which is survey unit 776038. Contamination in the inaccessible areas of walls in 776032 does not contribute significantly to the inventory of the survey unit.

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Survey Unit 776032

Ceiling

There were no elevated readings on the ceiling. No inaccessible areas requiring further investigation were found on the ceilings. Contamination in the inaccessible areas does not contribute significantly to the inventory of the survey unit.

PDS Survey Results Summary

The values for the accessible areas and inaccessible areas were summed and divided by the total area for the survey unit to calculate the "Average Surface Contamination Value" (ASCV_u) and source term for the survey unit. The results are summarized in Table 4 below:

**Table 4:
PDS Final Results**

Area/ item	Final Results
776032 Source Term Columns (μCi)	194
776032 Source Term Stairs (μCi)	1121
776032 Source Term Inaccessible Areas (μCi)	27.5
776032 Source Term Accessible Areas (μCi)	2871.8
776032 Total Source Term (μCi)	4214.3
Survey Unit Area (m^2)	2012
ASCV _u ($\mu\text{Ci}/\text{m}^2$)	2.1
ASCV _u ($\text{dpm}/100\text{cm}^2$)	46,500

FINAL SURVEY REPORT
Survey Unit 776032

Table 4 Notes:

- a) Inaccessible areas source term from pages 6 and 7 of this report.
- b) Accessible area source term is the sum of source terms attributed to floors, walls and ceiling as determined by the final PDS survey.
- c) Total Source Term equals the sums of the source terms of Inaccessible Areas + Accessible Areas.

$$\text{Total Source Term} = (194+27.5+1121+2871.8) \mu\text{Ci} = 4214.3\mu\text{Ci}$$

- d) Average Surface Contamination for the Survey Unit (ASCV_u) in dpm/100cm² equals:

$$\text{ASCV}_u = (4214.3\mu\text{Ci})(22,200 \text{ dpm}/100\text{cm}^2 / 1 \mu\text{Ci} / \text{m}^2) / (2012 \text{ m}^2) = 46,500 \text{ dpm}/100\text{cm}^2$$

LS

In-Process and Follow-up Data for 776032

Location #	Column letter	Column Number	North	East	Elevation	Gross Counts	In-Process Dpm/100cm2	Post Remediation Dpm/100cm2
32-1	F	7	16	9	Floor	52391	8,929,329	211,374
32-1A	F	7	11	9	Floor	3804	466,288	90,729
32-2	F	7	18	14	Floor	81798	14,051,535	90,729
32-2A	F	7	14	16	Floor	3074	339,135	103,191
32-3	F	8	19	8	Floor	12681	2,012,513	112,459
32-3A	F	8	19	1	Floor	2016	154,849	30,432
32-4	F	8	19	11	Floor	8637	1,308,116	119,929
32-4A	F	8	11	17	Floor	1449	56,087	56,087
32-4B	F	8	19	19	Floor	397	13,595	13,595
32-5	F	9	14	6	Floor	332	13,595	13,595
32-6	F	9	14	16	Floor	227	12,645	12,645
32-6A	F	9	15	11	Floor	854	12,645	12,645
32-7	F	10	19	5	Floor	1573	104,162	20,749
32-8	F	10	11	19	Floor	7413	1,121,392	14,238
32-8A	F	10	15	14	Floor	1000	12,645	12,645
32-9	F	11	13	1	Floor	2405	249,082	14,238
32-9A	F	11	14	16	Floor	1197	38,669	38,669
32-10	F	11	15	16	Floor	1287	54,345	54,345
32-11	F	12	19	9	Floor	2411	250,127	51,457
32-11A	F	12	13	1	Floor	2124	200,137	21,717
32-11B	F	12	15	16	Floor	1401	74,202	74,202
32-12	F	12	19	14	Floor	6324	931,706	38,455
32-12A	F	12	11	13	Floor	3010	354,463	51,181
32-12B	F	12	15	17	Floor	2164	207,104	83,272
32-13	F	12	9	13	Floor	3670	469,424	39,285
32-13A	F	12	3	12	Floor	1471	86,395	86,395
32-14	F	12	1	5	Floor	2122	199,788	27,665
32-14A	F	12	7	4	Floor	1459	84,305	84,305
32-15	F	11	9	16	Floor	1564	102,594	14,524
32-16	F	11	9	1	Floor	2954	344,709	17,014
32-16A	F	11	6	7	Floor	1272	51,732	51,732
32-17	F	10	9	19	Floor	9048	1,406,181	14,238
32-17A	F	10	8	11	Floor	1047	12,645	12,645
32-18	F	10	16	7	Floor	1482	88,311	88,311
32-19	F	9	1	19	Floor	1189	13,595	13,595
32-19A	F	9	5	13	Floor	325	13,595	13,595
32-20	F	9	3	4	Floor	899	13,595	13,595
32-20A	F	9	4	2	Floor	285	13,595	13,595
32-21	F	8	8	11	Floor	2640	263,539	67,780
32-21A	F	8	3	19	Floor	904	13,595	13,595
32-21B	F	8	9	19	Floor	252	13,595	13,595
32-22	F	8	9	8	Floor	4625	609,293	94,339

In-Process and Follow-up Data for 776032

Location #	Column letter	Column Number	North	East	Elevation	Gross Counts	In-Process Dpm/100cm2	Post Remediation Dpm/100cm2
32-22A	F	8	1	1	Floor	2042	159,378	54,224
32-23	F	7	9	19	Floor	3619	434,065	69,025
32-23A	F	7	1	16	Floor	2725	278,345	134,868
32-24	F	7	8	9	Floor	4176	531,085	164,747
32-24A	F	7	1	7	Floor	1304	30,830	30,830
32-25	E	10	12	6	Floor	1431	79,428	79,428
32-26	E	10	15	14	Floor	1428	78,905	78,905
32-27	E	11	14	7	Floor	1144	29,437	29,437
32-28	E	11	14	12	Floor	1089	19,857	19,857
32-29	E	12	19	4	Floor	2592	281,654	18,394
32-29A	E	12	3	4	Floor	1255	48,771	48,771
32-30	E	12	19	12	Floor	1478	87,614	87,614
32-31	E	12	3	18	Floor	1342	63,925	63,925
32-32	E	12	3	6	Floor	1187	36,927	36,927
32-33	E	11	8	17	Floor	1043	12,645	12,645
32-34	E	11	8	7	Floor	1116	24,560	24,560
32-35	E	10	4	14	Floor	1254	48,597	48,597
32-36	E	10	6	5	Floor	1101	21,947	21,947
32-37	D	7	11	3	Floor	9125	1,419,245	96,498
32-37A	D	7	12	9	Floor	3777	487,713	89,008
32-38	D	7	15	11	Floor	5377	766,406	106,426
32-38A	D	7	16	19	Floor	1798	143,004	105,381
32-39	D	8	19	5	Floor	1781	140,043	88,658
32-39A	D	8	11	5	Floor	1232	44,417	44,417
32-40	D	8	11	17	Floor	3496	438,768	228,653
32-40A	D	8	15	14	Floor	1676	121,754	102,118
32-41	D	9	11	1	Floor	2073	191,253	131,741
32-42	D	9	14	4	Floor	1404	74,725	74,725
32-43	D	10	15	6	Floor	1251	48,075	48,075
32-44	D	10	18	15	Floor	1541	98,588	98,588
32-45	D	11	16	1	Floor	1117	24,734	24,734
32-46	D	11	19	19	Floor	1681	122,973	18,394
32-47	D	12	16	3	Floor	1025	12,645	12,645
32-48	D	12	13	14	Floor	1165	33,095	33,095
32-49	D	12	6	13	Floor	1217	42,152	42,152
32-50	D	12	1	5	Floor	1379	70,370	70,370
32-50A	D	12	5	6	Floor	1265	50,513	50,513
32-51	D	11	1	14	Floor	1622	112,697	75,596
32-52	D	11	6	5	Floor	1484	88,659	88,659
32-53	D	10	8	13	Floor	1254	48,597	48,597
32-54	D	10	8	7	Floor	1368	68,454	68,454
32-55	D	9	1	19	Floor	1713	128,199	182,021

In- Process and Follow-up Data for 776032

Location #	Column letter	Column Number	North	East	Elevation	Gross Counts	In-Process Dpm/100cm2	Post Remediation Dpm/100cm2
32-56	D	9	8	1	Floor	3268	399,054	62,936
32-56A	D	9	1	1	Floor	1573	103,813	50,728
32-57	D	8	9	17	Floor	3730	479,526	216,161
32-57A	D	8	1	11	Floor	1753	135,166	106,755
32-58	D	8	1	1	Floor	3457	431,974	72,684
32-59	D	7	5	16	Floor	3061	362,998	37,667
32-59A	D	7	8	13	Floor	1549	99,633	99,633
32-59B	D	7	2	16	Floor	16586	2,718,826	375,537
32-60	D	7	9	3	Floor	7795	1,187,581	130,700
32-60A	D	7	5	8	Floor	2874	330,426	44,671
32-60B	D	7	3	2	Floor	8207	1,259,345	370,142

Data and Sodium Iodide Instrument Information

Survey Area:	2nd Floor	Survey Unit:	776032	Survey Date(s):	12/09/04
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Instrument Specifications

Instrument #	1	2
Meter Model:	Ludlum 2350-1	Ludlum 2350-1
Meter Serial #:	201199	N/A
Detector Model:	Ludlum 44-17	Ludlum 44-17
Detector #:	199764	N/A
Detector Size (cm ²):	17.8	17.8
Calibration Due Date:	6/9/05	N/A
Count Time (min)	5	5
Contact Efficiency	8.80%	N/A

Ratio Used

Pu to Am - 241	8.1
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Comments

In cases where the critical level is greater than the calculated dpm/100cm², the critical level will be used for statistical analysis.

Count Times for backgrounds and samples are equal.

Attenuation Factors: Based on observation of Walls and Ceilings. Epoxy on Floor determined by chip sampling.

Background (Gross)

Instrument #	1	2
Gamma (Ceilings)	342	N/A
Gamma (Floors)	N/A	N/A
Gamma (Block Walls)	753	N/A
Gamma (Solid Walls)	N/A	N/A

Background (cpm)

Instrument #	1	2
Gamma (Ceilings)	68.4	N/A
Gamma (Floors)	N/A	N/A
Gamma (Block Walls)	150.6	N/A
Gamma (Metal Walls)	N/A	N/A

Efficiencies (cpm/dpm)

Instrument #	1	2
Thin/No Paint	0.087	N/A
Epoxy	0.071	N/A
Other	0.084	N/A

Coatings

	Thickness (Inches)
Thin/No Paint	0.007
Epoxy	0.250
Other	0.06

Total Activity Estimates Using Sodium Iodide Instruments

Survey Area:	2nd Floor	Survey Unit:	776032	Survey Date(s):	12/09/04
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Sample Location #	RCT ID #	Instrument #	Gross Counts	Critical Level (dpm/100cm2)	Total Alpha (dpm/100cm2)
1	N/A	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A	N/A
3	1	1	512	4,476	17,688
4	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A
7	N/A	N/A	N/A	N/A	N/A
8	N/A	N/A	N/A	N/A	N/A
9	1	1	359	4,476	4,476
10	1	1	406	4,476	6,659
11	1	1	338	4,476	4,476
12	1	1	336	4,476	4,476
13	1	1	N/A	4,476	N/A
14	1	1	562	4,476	22,890
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	1	1	1016	6,642	27,364
23	1	1	1030	6,642	28,820
24	1	1	1161	6,642	42,450
25	1	1	198	4,476	4,476
26	N/A	N/A	N/A	N/A	N/A
27	1	1	1195	6,642	45,988
28	1	1	1115	6,642	37,664
29	1	1	692	4,476	36,416
30	1	1	1157	6,642	42,034

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Data and Sodium Iodide Instrument Information

Survey Area:	2nd Floor	Survey Unit:	776032	Survey Date(s):	12/10/04
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Instrument Specifications

Instrument #	1	2
Meter Model:	Ludlum 2350-1	Ludlum 2350-1
Meter Serial #:	192614	201184
Detector Model:	Bicron G-5	Ludlum 44-17
Detector #:	B716T	212344
Detector Size (cm ²):	125	17.8
Calibration Due Date:	12/10/04	5/9/05
Count Time (min)	5	5
Contact Efficiency	6.40%	8.70%

Ratio Used

Pu to Am - 241	8.1
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Comments

In cases where the critical level is greater than the calculated dpm/100cm², the critical level will be used for statistical analysis.

Count Times for backgrounds and samples are equal.

Attenuation Factors: Based on observation of Walls and Ceilings. Epoxy on Floor determined by chip sampling.

Background (Gross)

Instrument #	1	2
Gamma (Ceilings)	N/A	228
Gamma (Floors)	7774	N/A
Gamma (Block Walls)	N/A	559
Gamma (Solid Walls)	N/A	N/A

Background (cpm)

Instrument #	1	2
Gamma (Ceilings)	N/A	45.6
Gamma (Floors)	1554.8	N/A
Gamma (Block Walls)	N/A	111.8
Gamma (Metal Walls)	N/A	N/A

Efficiencies (cpm/dpm)

Instrument #	1	2
Thin/No Paint	0.064	0.086
Epoxy	0.052	0.070
Other	0.061	0.083

Coatings

Coatings	Thickness (inches)
Thin/No Paint	0.007
Epoxy	0.250
Other	0.06

Total Activity Estimates Using Sodium Iodide Instruments

Survey Area:	2nd Floor	Survey Unit:	776032	Survey Date(s):	12/10/04
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Sample Location #	RCT ID #	Instrument #	Gross Counts	Critical Level (dpm/100cm ²)	Total Alpha (dpm/100cm ²)
1	2	2	173	3,697	3,697
2	2	2	195	3,697	3,697
3	N/A	N/A	N/A	N/A	N/A
4	2	2	247	3,697	3,697
5	1	1	11906	4,179	84,177
6	1	1	5958	4,179	4,179
7	1	1	7679	4,179	4,179
8	1	1	13486	4,179	116,365
9	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	2	2	1344	3,697	117,448
14	N/A	N/A	N/A	N/A	N/A
15	2	1	10912	4,179	63,927
16	1	1	8113	4,179	6,906
17	1	1	9701	4,179	39,257
18	1	1	7023	4,179	4,179
19	1	1	9316	4,179	31,414
20	1	1	11821	4,179	82,445
21	1	1	8245	4,179	9,595
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A
25	N/A	N/A	N/A	N/A	N/A
26	2	2	1030	5,789	49,568
27	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A
29	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A

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Total Surface Activity

Survey Area:		2nd Floor	Survey Unit:			776032		
Meter Model:		NE Electra w/ DP6 Probe.				Dates Counted:	12/10/04	
Instrument #:		2338	2405	n/a	n/a	n/a	A priori MDA:	94
Cal. Due Date:		12/29/04	3/20/05	n/a	n/a	n/a	Avg. Local Bkgd	5.9
Efficiency (c/d):		0.217	0.227	n/a	n/a	n/a	Avg. Efficiency	0.222
Sample Location #	RCT ID #	Inst. #	Instrument (cpm)	Local Bkgd (cpm)	(dpm/100 cm ²)			
1	1	2338	8	8.0	0			
2	1	2338	10	8.0	9			
3	N/A	not	accessible	N/A				
4	1	2338	10	5.0	23			
5	1	2338	32	3.0	131			
6	1	2338	16	3.0	59			
7	1	2338	18	6.0	54			
8	1	2338	17	5.0	54			
9	2	2405	9	8.0	5			
10	2	2405	4	8.0	-18			
11	2	2405	6	5.0	5			
12	2	2405	2	6.0	-18			
13	1	2338	18	3.0	68			
14	2	2405	11	7.0	18			
15	1	2338	64	3.0	275			
16	1	2338	39	3.0	162			
17	1	2338	11	4.0	32			
18	1	2338	11	7.0	18			
19	1	2338	9	5.0	18			
20	1	2338	19	6.0	59			
21	1	2338	15	10.0	23			
22	2	2405	6	9.0	-14			
23	1	2338	11	5.0	27			
24	1	2338	11	5.0	27			
25	1	2338	6	4.0	9			
26	1	2338	8	12.0	-18			
27	2	2405	15	2.0	59			
28	2	2405	4	3.0	5			
29	2	2405	9	13.0	-18			
30	1	2338	12	6.0	27			
				MIN	-18.0			
				MAX	274.8			
				MEAN	37.1			
				SD	61.7			

Removable Activity

Survey Area:		2nd Floor		Survey Unit:		776032	
Dates Counted:	12/9/04						
A priori MDA:	16						
Efficiency (c/d)	0.333						
Smear Location	Smear Results						
Number	RCT ID #	Serial Number	Gross (cpm)	Bkg.	(dpm/100 cm ²)		
1	1	838	15	0.0	45		
2	1	839	1	0.2	2		
3	Not	Accessible					
4	1	838	0	0.0	0		
5	1	839	0	0.2	-1		
6	1	838	0	0.0	0		
7	1	839	0	0.2	-1		
8	1	838	1	0.0	3		
9	1	811	0	0.3	-1		
10	1	953	2	0.0	6		
11	1	811	1	0.3	2		
12	1	953	3	0.0	9		
13	1	839	15	0.2	44		
14	1	953	0	0.0	0		
15	1	838	1	0.0	3		
16	1	839	0	0.2	-1		
17	1	838	0	0.0	0		
18	1	839	0	0.2	-1		
19	1	838	1	0.0	3		
20	1	839	10	0.2	29		
21	1	838	0	0.0	0		
22	1	953	0	0.0	0		
23	1	839	0	0.2	-1		
24	1	838	0	0.0	0		
25	1	839	0	0.2	-1		
26	1	838	1	0.0	3		
27	1	811	3	0.3	8		
28	1	953	0	0.0	0		
29	1	811	1	0.3	2		
30	1	939	0	0.2	-1		
				MIN	-0.9		
				MAX	45.0		
				MEAN	5.4		
				SD	12.4		

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RADIOLOGICAL CLOSEOUT SURVEY FOR THE 776 CLUSTER

Survey Area: 2nd Floor

Survey Unit: 776032

Classification: NA

Building: 776

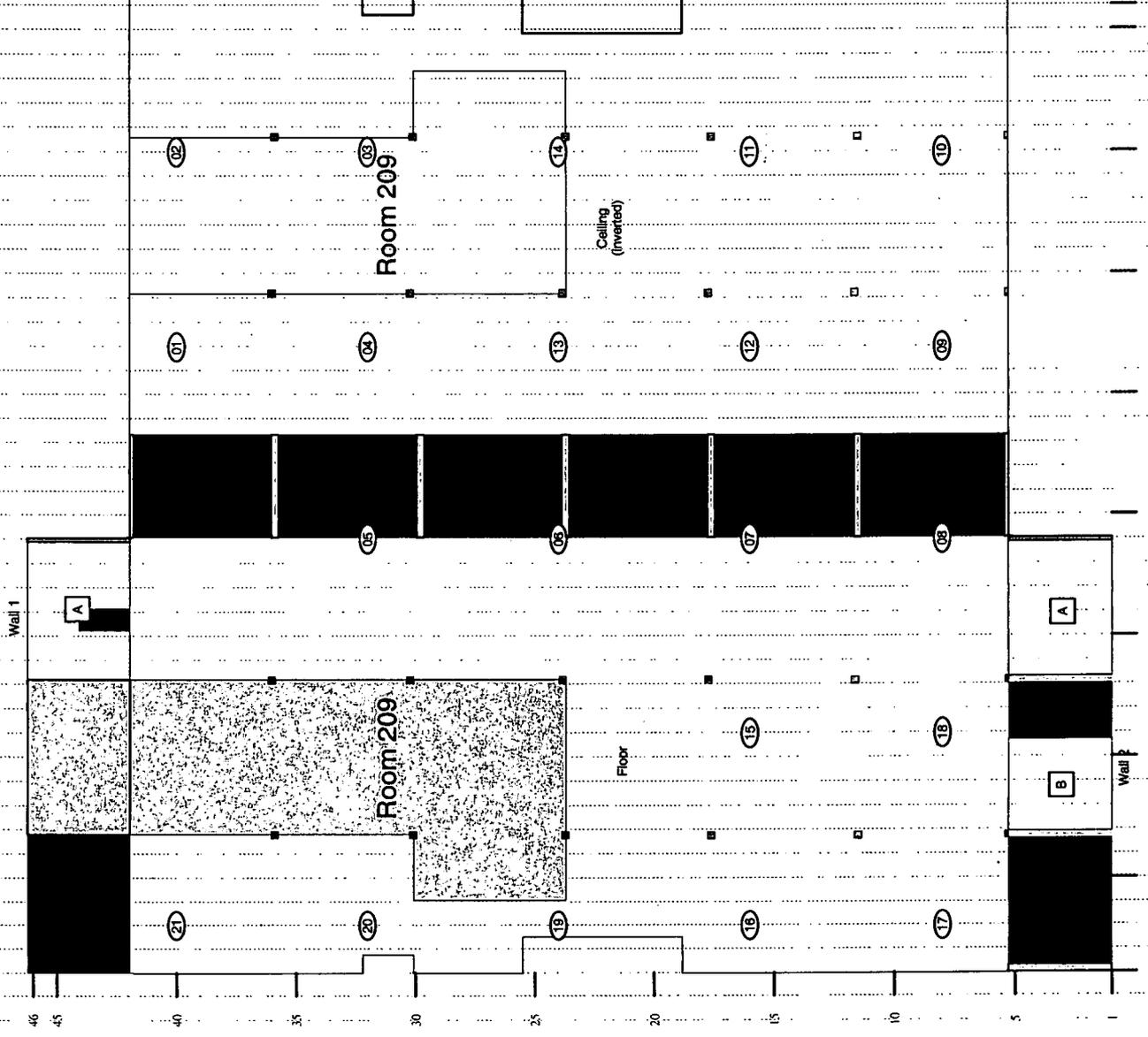
Survey Unit Description: Second floor - Rooms 208,209,217,218

Total Floor Area: 553 sq. m

Total Area: 2014 sq. m

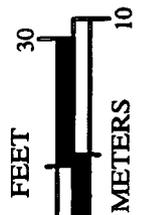
Random Start Grid Size: 8 x 8 sq. m

SURVEY UNIT 776032 - MAP 1 OF 2



SURVEY MAP LEGEND

- ⊙ Sample & TSC Location
- ⬠ Area in Another Location
- ⬢ Open/Inaccessibility Area
- ⬢ Area TSC & Sample Location



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RADIOLOGICAL CLOSEOUT SURVEY FOR THE 776 CLUSTER

Survey Area: 2nd Floor

Survey Unit: 776032

Classification: NA

Building: 776

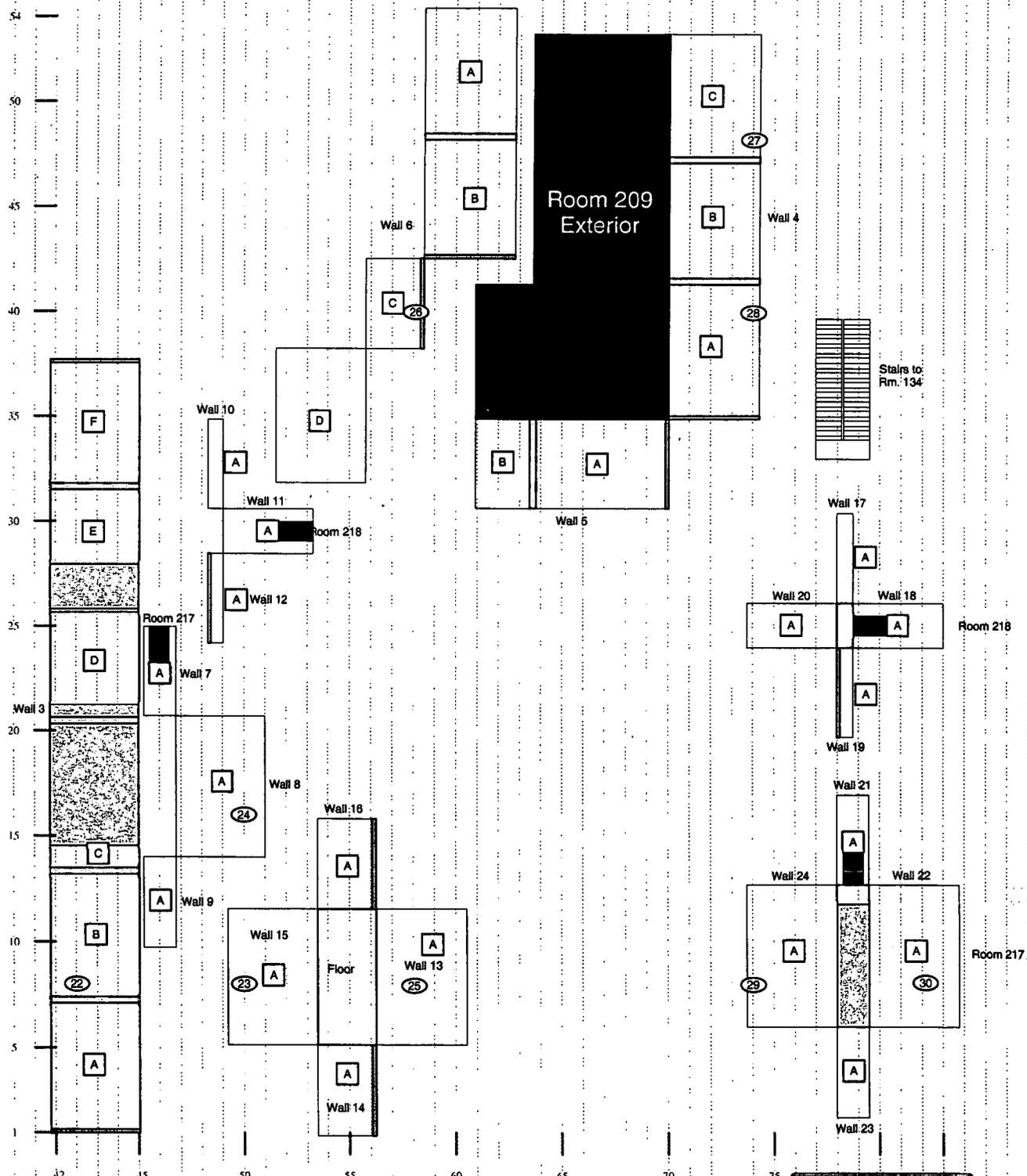
Survey Unit Description: Second floor - Rooms 208,209,217,218

Total Floor Area: 553 sq. m

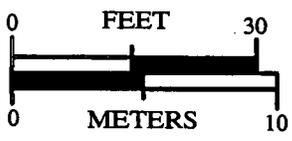
Total Area: 2014 sq. m

Random Start Grid Size: 8 x 8 sq. m

SURVEY UNIT 776032 - MAP 2 OF 2



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SURVEY MAP LEGEND

- Survey & TSC Location
- Survey, TSC & Sample Location
- Open/Inaccessible Area
- Area In Another Location