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Bechtel

Interoffice Memorandum

To G. Drexel/ M. Poligone

File No. 7315/124

Subject Determination of Additional Contaminated Areas at AAS

Date March 17, 1994

From M. Keller/J. Wood

Of FUSRAP

Copies to J. Allison
G. Palau
K. Thompson
A. John

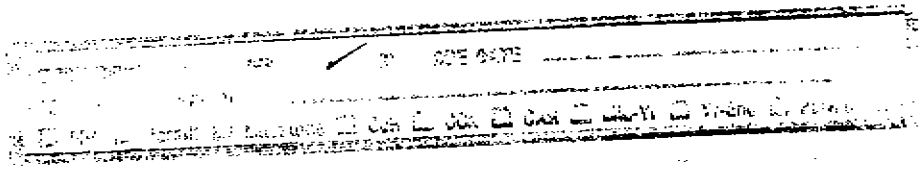
At Oak Ridge Ext. 6-5173

PURPOSE

The purpose of this memorandum is to provide results from characterization activities at the Former Associated Aircraft Site (AAS) in Fairfield, Ohio. Additional areas of contamination requiring remediation were identified during these activities. Areas that are currently known to exhibit elevated readings, and were not in the original scope of work are shown in Figure 3. To summarize, the areas added are located in the following areas;

- North of Zone V in the bathroom area (north of the locker room) and the office (located north of the caged area)
- Zone VI, section 5, five areas within this zone have been identified based on survey of approximately 10 % of the area
- East of Zones II and IV in the storage cabinet area (this area was referred to as section 2 in the ORNL figure).

No areas of exterior contamination, in addition to those identified in the ORNL report, have been discovered to date. Results are not yet available for samples collected the week of February 27, 1995, south of Zone II, where the buried pipe exits the building.The additional results contained in this memo are provided to further delineate areas of contamination previously identified in the Oak Ridge National Laboratory (ORNL) characterization and designation report (CCN 103598, published March 1993). Areas determined to be in excess of FUSRAP guidelines were designated for remedial action (RA) based on this report, and are outlined in the current remedial action Work Instruction (WI 94-045) for AAS. The results presented in this memorandum were obtained during execution of the scope of work governed by this WI and during subsequent ET characterization



activities. This information is intended to provide guidance to the engineering and construction teams in a timely manner, in order to ensure the successful completion of remedial action activities.

BACKGROUND

In December 1994 and February 1995, 111 samples were collected from 15 locations from inside the former AAS building , and 34 samples were collected from 12 locations outside the building. These locations were selected to further delineate boundaries (both vertical and horizontal) of contamination identified in the ORNL report. During the remedial action of AAS, an incremental (phased) approach has been followed, where initially a minimum number of samples were collected based on available data, then followed by additional samples as directed by analytical results. This approach allows the most accurate information, in regard to contamination boundary delineation, in the most time efficient manner. This incremented approach has also been used to investigate the extent of contamination discovered during the remedial action that were previously unknown based on the ORNL report. For example, when a contaminated pipe was determined to exit the building at the southern wall of Zone II, it became necessary to determine to what extent outside soils were potentially contaminated. Therefore, locations for soil sampling were selected based on where the pipe was known to exit, in addition to the single sampling location from the ORNL study, resulting in a more thorough characterization of the area.

EXTERIOR AREAS

Figure 1 shows exterior sampling locations adjacent to the front offices at AAS. Figure 2 shows sampling locations from inside the building as well as sample locations from outside the building near the pipe exit. Uranium-238 concentrations from discrete sampling locations in these areas are presented in Tables 1 and 2 respectively. It should be noted that samples collected during the February 1995 sampling effort have not yet been analyzed. These samples are designated with "TBA". Upon receipt of these sample results from the laboratory, the attached data tables will be completed. Further, final status of the pipe (i.e. where the end is located) has yet to be determined. This determination will dictate if trenching and additional sampling will be required.

INTERIOR AREAS (SUB-SLAB SOIL)

Based on the results obtained from the first phase of additional sampling, uranium-238 concentrations above criteria were found at locations 1, 4 and 6. The radioactive contamination detected at locations 4 and 6 were delineated in a second phase of sampling by

placement of boreholes 10, 17 and 16 for location 6, and by placement of boreholes 12 and 13 for location 4. Vertical and areal extent of contamination has thereby been established for these locations. The elevated uranium concentration found at location 1 was from expansion joint material and from soil directly beneath the expansion joint. This material has been scheduled for removal as part of the original scope of work. None of the other additional sampling locations had uranium-238 concentrations above the site specific cleanup criteria of 17.5 Pci/g. Elevated results from area 4 are considered a data anomaly, based on confirmatory results from samples at locations 12 and 13.

FLOORS

Several areas in addition to those identified as contaminated in the ORNL designation report, were surveyed for direct and transferrable contamination in Zone V inside the building. These surveys were conducted the week of December 12, 1994 (see Attachment 1). Based on these surveys, four additional areas were found to be contaminated above the DOE criteria. They include; the bathroom and office north of the locker room in Zone V, section 2 of the building, and on the expansion joint and floor of Zone V. Areas surveyed can be located on Figure 2.

Survey results obtained in the bathroom ranged from background to 86,000 disintegrations per minute (dpm) per 100 cm^2. Areas above guidelines were found on the floor, horizontal surfaces, drains, and the lower twelve inches of the wall.

Survey results obtained in the office ranged from background to 29,000 dpm/100 cm^2. Areas above guidelines were found at several locations on the floor.

Survey results obtained in section 2, east of Zone II ranged from background to 9,200 dpm/100 cm^2 Areas above guidlines included old yellow paint on the floor. Only about 70% of the floor area and the expansion joint could be surveyed. Of the total surveyed, approximately half of the areas were above guidelines.

Survey results obtained from section 5 ranged from background to 7000 dpm/100 cm^2. Areas above guidelines were found at ten locations from 40 feet of expansion joint surveyed. There were also two isolated and elevated areas on the floor. It should be noted that in Zone VI, machinery placement prohibited a thorough survey of the entire floor. Therefore, less than 10 % of the floor in this Zone has been surveyed.

CONCLUSION

As noted, not all samples collected have been analyzed, and based on the selected incremental delineation approach, further sampling may become necessary. Based on the results currently available, the identified areas, shown in Figure 3, are the only ones known to be additions to the original scope of remedial action activities at AAS. This could also change due to disposition of the pipe status exiting the building in Zone II. At the time this memo was written, it was discovered that the pipe made an unexpected turn before traveling parallel to the building. The total length of the pipe is currently being determined. Upon this determination, trenching and subsequent characterization of the soils along the pipe trench could be required. In regard to the survey data currently available, it is recommended that additional surveys take place in Zone VI, as only 10 % of this Zone was surveyed. This is due to machinery placement currently preventing access to the entire floor. These additional surveys should be performed at the earliest convenient time, and in conjunction with other remedial action tasks where practical.

Table 1: Associate Aircraft Characterization Results for Exterior Locations

Borehole	Sample ID	Depth (Feet)	Field Radioactivity (cpm)	Uranium–238 (pCi/g)
	124–EXTSL–002 A	0 – 0.5	8,700 +++	< 1.6
	124–EXTSL–003 A	0 – 0.5	10,100 +++	< 1.9
	124–EXTSL–004 A	0 – 0.5	10,000 +++	< 2.9
	124–EXTSL–005 AB	0 – 1	11,000 ++	< 1.5
	124–EXTSL–006 AA	0 – 0.5	8,000 ++	< 1.7
	124–EXTSL–007 BB	0.5 – 1	7,000 ++	< 1.5
	124–EXTSL–008 AB	0 – 1	10,000 ++	< 1.6
	124–EXTSL–009 AB	0 – 1	14,000 ++	1.4
	124–EXTSL–009 CD	1 – 2		< 1.6
	124–EXTSL–009 EF	2 – 3		< 1.7
14	124–EXTSL–014 AB	0 – 1	50 +	< 1.6
	124–EXTSL–014 CD	1 – 2	52 +	< 1.8
	124–EXTSL–014 EF	2 – 3	50 +	< 2.2
15	124–EXTSL–015 AB	0 – 1	62 +	< 1.7
	124–EXTSL–015 CD	1 – 2	43 +	< 1.6
	124–EXTSL–015 EF	2 – 3	52 +	< 1.2
	124–EXTSL–015 GH	3 – 4	56 +	< 1.6
16	124–EXTSL–016 AB	0 – 1	58 +	0.84
	124–EXTSL–016 CD	1 – 2	41 +	.60
	124–EXTSL–016 EF	2 – 3	55 +	<1.3
	124–EXTSL–016 GH	3 – 4	50 +	<1.2
19	124–EXTSL–019 AD	0 – 2	52 +	<1.5
	124–EXTSL–019 EH	2 – 4	54 +	<1.1
	124–EXTSL–019 IJ	4 – 5	48 +	<1.7
	124–EXTSL–019 KN	5 – 7	48 +	<1.1
	124–EXTSL–019 OR	7 – 9	52 +	<1.2
	124–EXTSL–019 SV	9 – 11	42 +	<1.1
20	124–EXTSL–020 AD	0 – 2	54 +	.29
	124–EXTSL–020 EH	2 – 4	54 +	<.99
	124–EXTSL–020 IL	4 – 6	54 +	<1.0
	124–EXTSL–020 MN	6 – 7	54 +	<1.7
	124–EXTSL–020 OP	7 – 8	54 +	<1.7
	124–EXTSL–020 QR	8 – 9	54 +	<1.2
	124–EXTSL–020 ST	9 – 10	54 +	<1.6

\+ field radiation detection instrument = HP210 or HP260
++ field radiation detection instrument = SPA–3
+++ field radiation detection instrument = FIDLER

Table 2: Associate Aircraft Characterization Results for Interior Locations

Borehole	Sample ID	Depth (Feet)	Field + Radioactivity (cpm)	Uranium–238 * (pCi/g)
	124–EXPJT–001 A	0 – 0.5	4100	20,090
	124–EXPJT–001 B	0.5 – 1	1100	3,335
1	124–INTSL–001 A	0 – 0.5	not recorded	360
	124–INTSL–001 B	0.5 – 1	not recorded	33.5
	124–INTSL–001 C	1 – 1.5	not recorded	9.9
	124–INTSL–001 D	1.5 – 2	not recorded	9.9
2	124–INTSL–002 AB	0 – 1	50	14.1 (7.8)
	124–INTSL–002 CD	1 – 2	50	< 2.8
	124–INTSL–002 EF	2 – 3	60	< 3.3
	124–INTSL–002 GH	3 – 4	60	< 3.8
	124–INTSL–002 IJ	4 – 5	50	< 2.5
	124–INTSL–002 KL	5 – 6	50	<2.6
3	124–INTSL–003 AB	0 – 1	45	< 2.5
	124–INTSL–003 CD	1 – 2	45	< 4.7
4	124–INTSL–004 AB	0 – 1	44	916.6 (1385)
	124–INTSL–004 CD	1 – 2	44	< 6.9
	124–INTSL–004 EF	2 – 3	50	< 2.7
	124–INTSL–004 GH	3 – 4	50	< 2.2
	124–INTSL–004 IJ	4 – 5	60	< 1.9
	124–INTSL–004 KL	5 – 6	55	< 1.5
5	124–INTSL–005 AB	0 – 1	45	< 1.2
	124–INTSL–005 CD	1 – 2	45	< 1.2
	124–INTSL–005 EF	2 – 3	45	< 2.6
	124–INTSL–005 GH	3 – 4	70	< 2.8
6	124–INTSL–006 AB	0 – 1	40	< 2.3
	124–INTSL–006 CD	1 – 2	40	< 2.4
	124–INTSL–006 EF	2 – 3	No sample	No sample
	124–INTSL–006 GH	3 – 4	1400	134 (72.5)
	124–INTSL–006 IJ	4 – 5	60	5.8 (5.4)
	124–INTSL–006 KL	5 – 6	50	< 5.0
	124–INTSL–006 MN	6 – 7	50	< 1.9
	124–INTSL–006 OP	7 – 8	50	< 2.5
7	124–INTSL–007 AB	0 – 1	45	< 2.2
	124–INTSL–007 CD	1 – 2	50	< 2.9
	124–INTSL–007 EF	2 – 3	50	< 1.8
	124–INTSL–007 GH	3 – 4	50	< 1.7
	124–INTSL–007 IJ	4 – 5	35	< 2.8
	124–INTSL–007 KL	5 – 6	35	< 3.1
	124–INTSL–007 MN	6 – 7	40	< 2.9
	124–INTSL–007 OP	7 – 8	40	< 6.1
	124–INTSL–007 QR	8 – 9	40	< 3.4
	124–INTSL–007 ST	9 – 10	40	< 3.3

Borehole	Sample ID	Depth (Feet)	Field + Radioactivity (cpm)	Uranium-238 * (pCi/g)
8	124-INTSL-008 AB	0 – 1	50	< 2.9
	124-INTSL-008 CD	1 – 2	50	< 1.7
	124-INTSL-008 EF	2 – 3	50	< 3.0
	124-INTSL-008 GH	3 – 4	50	< 1.5
	124-INTSL-008 IJ	4 – 5	40	< 2.3
	124-INTSL-008 KL	5 – 6	40	< 0.9
	124-INTSL-008 MN	6 – 7	50	< 1.6
	124-INTSL-008 OP	7 – 8	50	< 2.1
	124-INTSL-008 QR	8 – 9	50	2.5
	124-INTSL-008 ST	9 – 10	50	< 1.7
9	124-INTSL-009 AB	0 – 1	45	< 1.7
	124-INTSL-009 CD	1 – 2	45	< 1.3
	124-INTSL-009 EF	2 – 3	50	< 1.5
	124-INTSL-009 GH	3 – 4	50	< 1.3
	124-INTSL-009 IJ	4 – 5	50	< 2.6
	124-INTSL-009 KL	5 – 6	45	< 3.8
	124-INTSL-009 MN	6 – 7	45	< 2.9
	124-INTSL-009 OP	7 – 8	45	< 1.9
	124-INTSL-009 QR	8 – 9	45	< 2.7
	124-INTSL-009 ST	9 – 10	50	< 4.4
	124-INTSL-009 UV	10 – 11	50	< 1.7
	124-INTSL-009 WX	11 – 12	45	< 2.2
10	124-INTSL-010 AB	0 – 1	42	.44
	124-INTSL-010 CD	1 – 2	42	<1.4
	124-INTSL-010 EF	2 – 3	No sample	No sample
	124-INTSL-010 GH	3 – 4	44	<2.0
	124-INTSL-010 IJ	4 – 5	55	.63
	124-INTSL-010 KL	5 – 6	52	1.8
	124-INTSL-010 MN	6 – 7	52	0.4
	124-INTSL-010 OP	7 – 8	70	.47
	124-INTSL-010 QR	8 – 9	70	<1.5
	124-INTSL-010 SV	9 – 11	54	<1.4
11	124-INTSL-011 AB	0 – 1	50	<1.8
	124-INTSL-011 CD	1 – 2	50	<1.3
	124-INTSL-011 EF	2 – 3	40	.43
	124-INTSL-011 GH	3 – 4	40	<2.1
	124-INTSL-011 IJ	4 – 5	40	<1.6
	124-INTSL-011 KL	5 – 6	50	<1.7
	124-INTSL-011 MN	6 – 7	50	.75
	124-INTSL-011 OP	7 – 8	50	<1.5
	124-INTSL-011 QR	8 – 9	50	.57
	124-INTSL-011 ST	9 – 10	50	.84
	124-INTSL-011 UX	10 – 12	60	<1.4
12	124-INTSL-012 AB	0 – 1	62	< 1.7
	124-INTSL-012 CD	1 – 2	54	< 1.2

Borehole	Sample ID	Depth (Feet)	Field + Radioactivity (cpm)	Uranium-238 * (pCi/g)
13	124-INTSL-013 AB	0 - 1	60	< 0.8
	124-INTSL-013 CD	1 - 2	70	< 1.2
	124-DRAIN ***	NA	44	< 1.8
17	124-INTSL-017 GJ	3 - 5	44 +	ARCHIVED
	124-INTSL-017 KL	5 - 6	44 +	ARCHIVED
	124-INTSL-017 MN	6 - 7	44 +	ARCHIVED
	124-INTSL-017 OR	7 - 9	60 +	ARCHIVED
	124-INTSL-017 ST	9 - 10	46 +	ARCHIVED
	124-INTSL-017 UV	10 - 11	46 +	ARCHIVED
	124-INTSL-017 WZ	11 - 13	46 +	ARCHIVED
18	124-INTSL-018 AB	0 - 1	50 +	ARCHIVED
	124-INTSL-018 CD	1 - 2	40 +	ARCHIVED
	124-INTSL-018 EF	2 - 3	40 +	ARCHIVED
	124-INTSL-018 GI	3 - 4.5	No sample	No sample
	124-INTSL-018 JK	4.5 - 5.5	50 +	ARCHIVED
	124-INTSL-018 LM	5.5 - 6.5	40 +	ARCHIVED
	124-INTSL-018 NQ	6.5 - 8.5	40 +	ARCHIVED
	124-INTSL-018 RT	8.5 - 10	No sample	No sample
	124-INTSL-018 UX	10 - 12	50 +	ARCHIVED
	124-INTSL-018 YZ	12 - 13	50 +	ARCHIVED
	124-INTSL-018 AABB	13 - 14	50 +	ARCHIVED

* results by gamma spec (results by alpha spec)

*** eastern floor drain in section 3

\+ field radiation detection instrument = HP210 or HP260

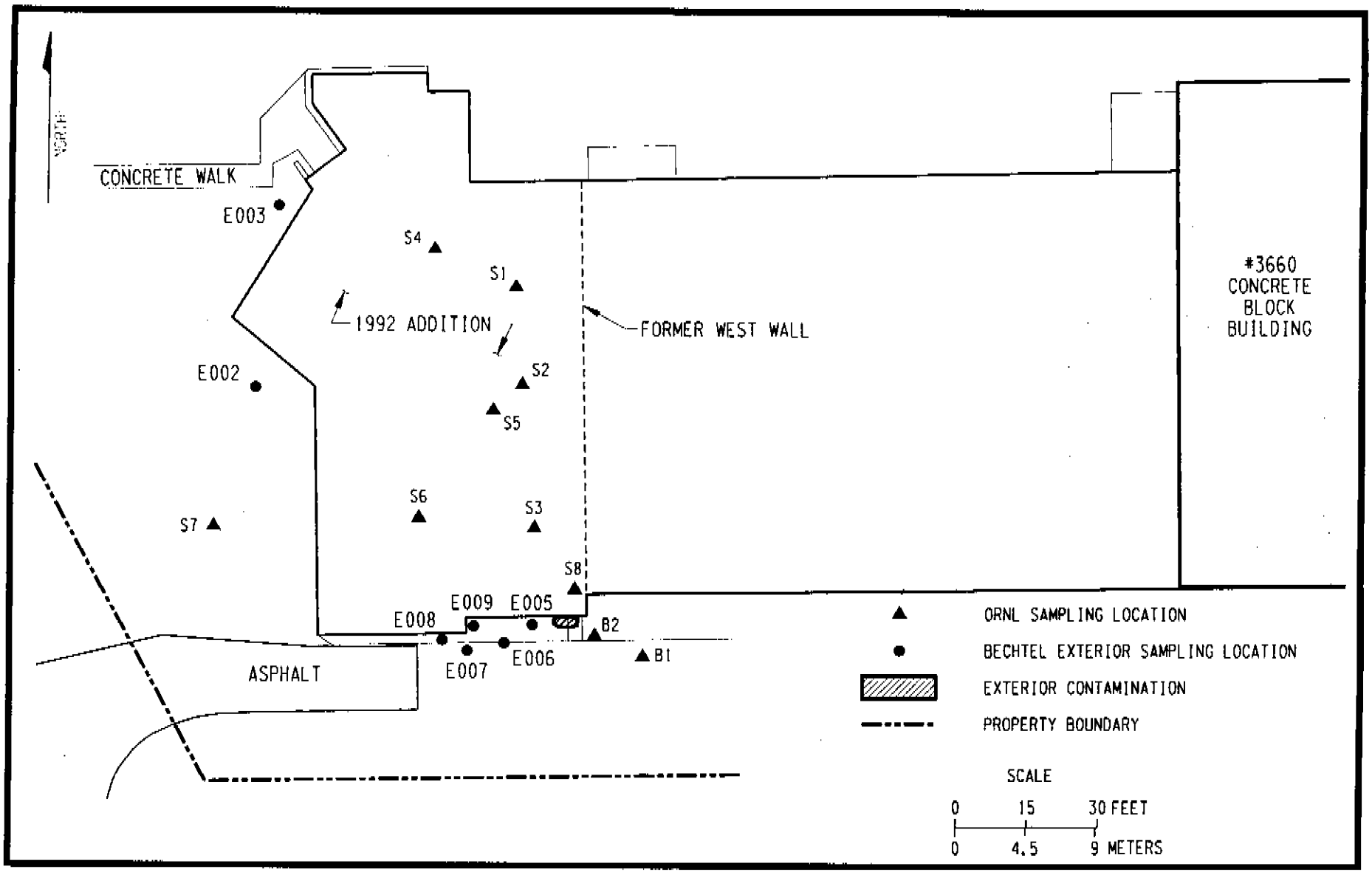


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Figure 1
Characterization Sampling Locations
at the Former Associate Aircraft Site

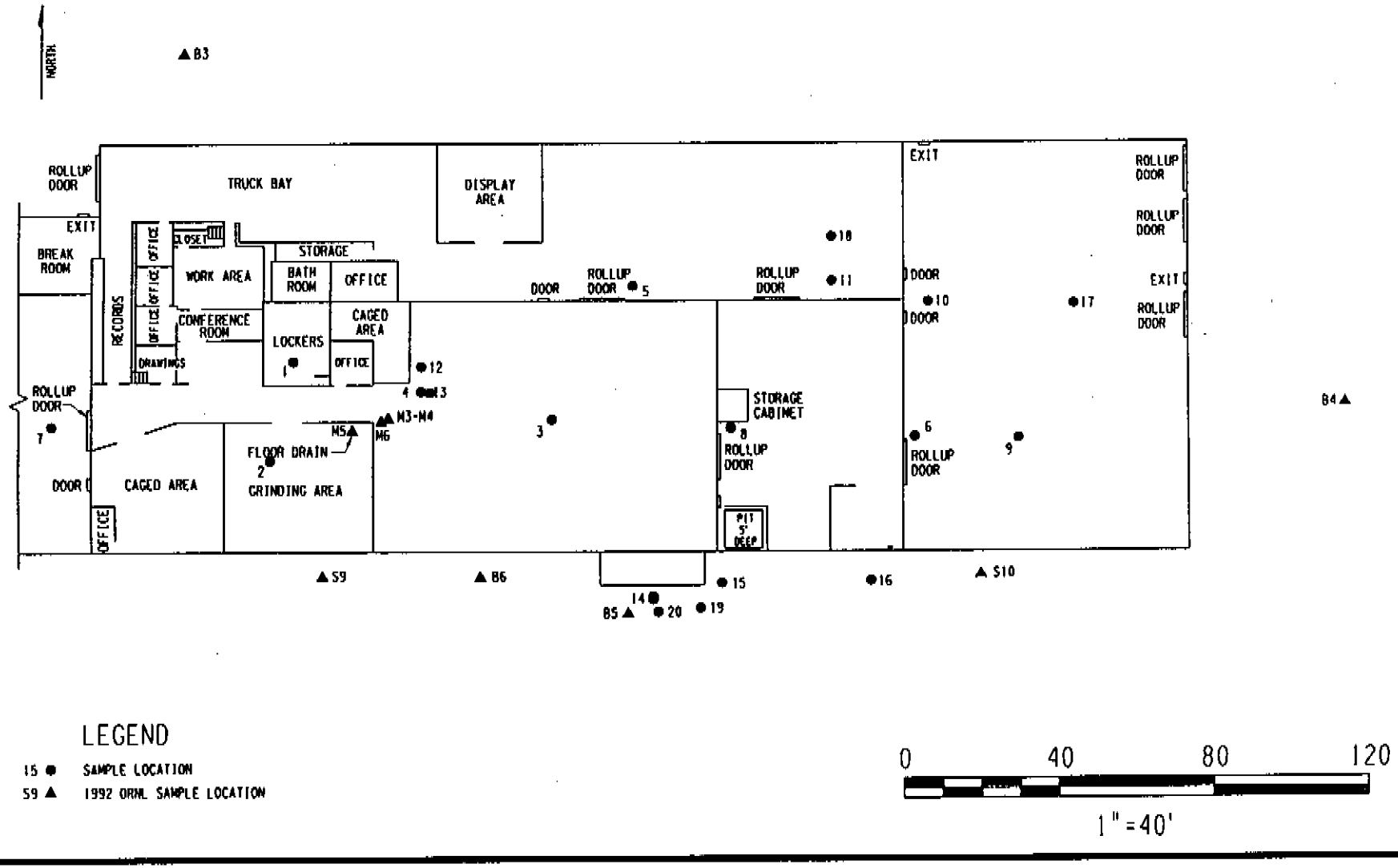

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Figure 2
Characterization Sampling Locations
at the Former Associate Aircraft Site

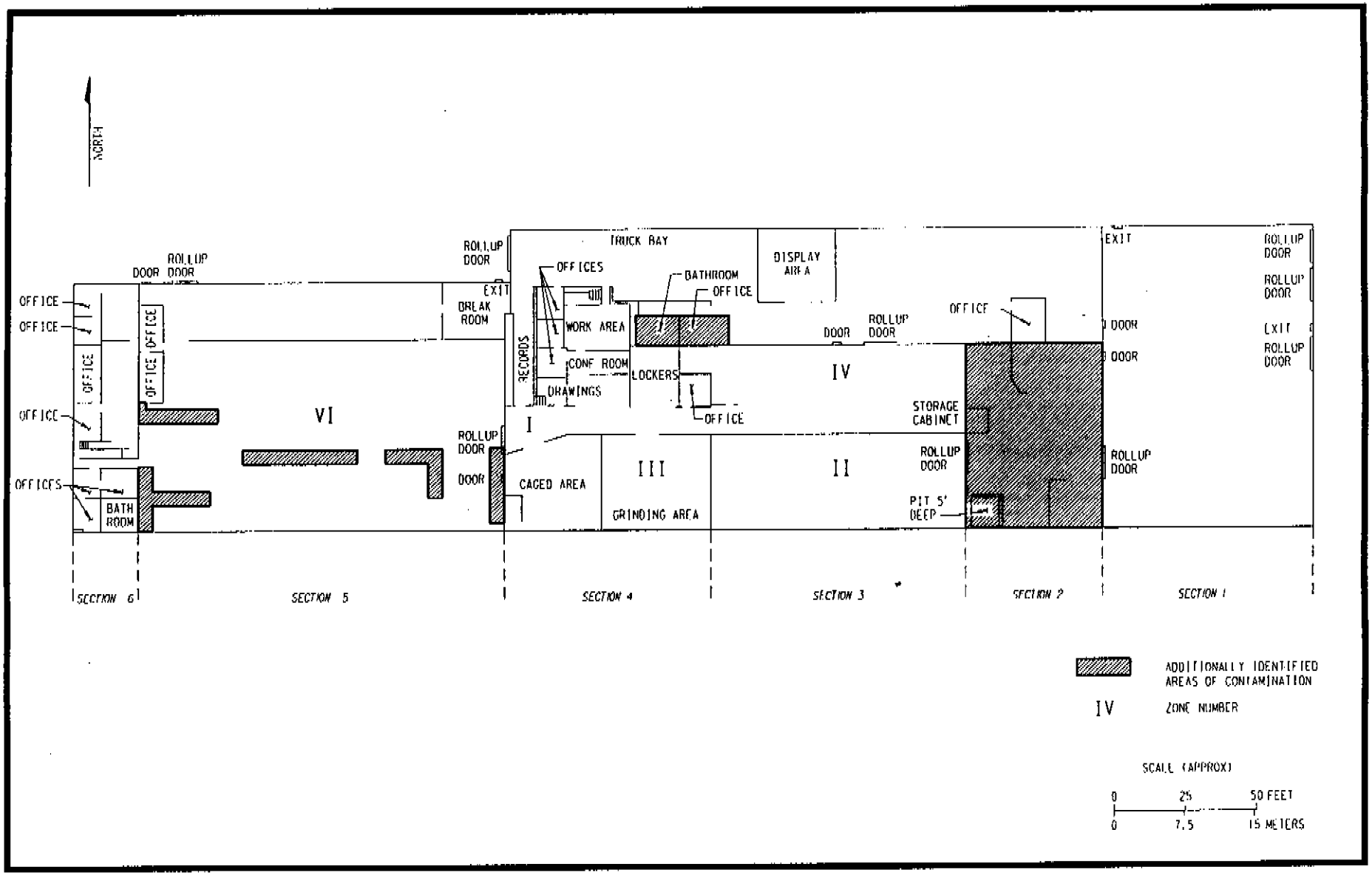

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Figure 3
Additionally Indentified Areas of Contamination
at the Former Associated Aircraft Site