



FORMER WOLFF ALPORT CHEMICAL COMPANY
Site Visit Report

Site Name: Wolff Alport Chemical Company Site
1127-29 Irving Avenue Brooklyn, New York
DEC Region 2

Date of Visit(s): May 5 and 6, 2007

Participants: DEC: John E. Abunaw and Barbara Youngberg

Purpose of Visit: To conduct a scoping-level radiological survey of areas outside the buildings formerly used by Wolff Alport Chemical Company, including the sidewalks in front of the buildings, the yard in back of the buildings and the sewers that are fed from the buildings. This is a follow-up to the preliminary radiological surveys that were performed in February 1988 and February 2001, which found residual contamination and recommended further investigation at the site to assess the extent of the contamination. DEC is responsible for the radiological surveys outside the building and the nearby sewers.

Instruments Used

- | | |
|---|-------------------------|
| 1. Portable Scaler/Rate Meter w/ NaI 2x2 Detector | (DEC # 19) |
| Meter Model Number: Ludlum 2221 | Serial Number: 183981 |
| Probe Model: Ludlum 44-10 (Gamma Scintillator) | Serial Number: PR195161 |
| Calibration Date: 12-19-06 | Due Date: 12-19-07 |
| 2. Ludlum Stretch Scope (Teledetector) | |
| Model Number: Ludlum 77-3 | Serial Number: 48480 |
| Calibration Date: 03-30-07 | Due Date: 03-30-08 |

The Q/C procedures for each instrument were performed in the office, prior to and after the surveys in the field. Both instruments functioned properly during the survey and after the survey. Both instruments were in calibration.

Surveys and Sampling Performed:

Surveys of Sidewalks - May 5, 2007

On May 5, 2007, radiological walkover surveys were conducted on the sidewalks along both Irving and Cooper Avenues. The areas surveyed are shown in the figure on page 9.

John Abunaw arrived at the former Wolff-Alport site at 9:30 a.m., where he met the staff from the New York City Department of Health and Mental Hygiene (NYC DOHMH), who were already at the site. Mr. Eric Simpson from USEPA joined the team later.

Background count rates were taken at the intersection of Decatur and Irving Avenue. This is two blocks from the former Wolff-Alport Chemical Company site. The Department's usual level used to screen for elevated radioactivity was 2.5X background. Two one-minute background count rates were taken and the average count rate was 7,659 cpm; therefore, the screening count rate utilized for the survey that day was 19,000 cpm.

Walkover surveys were performed on the sidewalk in front of buildings 1125, 1127, and 1129 Irving Avenue and on the side of building 1125 along Cooper Avenue. Each survey covered the entire area between the building and the curb. A NaI 2 X 2 attached to a scaler was used for the survey. The detector was held about three inches from the surface of the sidewalk during the surveys.

1125 Irving Avenue – Sidewalk on the Cooper Avenue Side

The sidewalk along the side of 1125 Irving, along Cooper Avenue, was surveyed. Approximately 12 feet out from the building, and about 10 feet from the intersection of Cooper and Irving Avenues, an area of elevated count rates was delineated as 7.6 feet long (along Cooper Avenue) and 4.6 feet wide. The count rates ranged from approximately 36,000 to 56,000 cpm. These measurements are more than 2.5X background. NYC DOHMH staff confirmed elevated radiation levels with their exposure rate meters

1125 Irving Avenue - Sidewalk on Irving Avenue

On the Irving Avenue side of building 1125, the side walk in front of the building was surveyed. The grocery store that operated in this building is closed. There was a fire, and the building is now boarded up. Elevated measurements were found on the steps leading into the building and on the sidewalk in front of the steps. This area was delineated to be about 6 feet long (parallel to the curb) by 5.5 feet wide. The count rates ranged from 65,350 to 135,200 cpm. Count rates increased as the street was approached, with the highest readings obtained at the curb.

1127 Irving Avenue - Sidewalk on Irving Avenue

The sidewalk in front of the auto body shop (1127 Irving Avenue) was surveyed. Elevated count rates were found in front of the door to the shop. At the entrance, the count rates were approximately 72,000 cpm and as one moved toward the street, the count rates increased. The highest count rate was about 205,000 cpm, near the street. This was confirmed by Mr. Simpson when he used EPA's Na I 2X2 instrument to survey the area.

1129 Irving Avenue - Sidewalk on Irving Avenue

The sidewalk in front of the ice making shop (1129 Irving Avenue) was surveyed. At the entrance to the building, the count rates were approximately 130,000 cpm. Again, as one moved toward the street, the count rates increased significantly. The highest count rates were up to 448,000 cpm. This was also confirmed by the NYC DOHMH staff and Mr. Simpson from USEPA.

Survey of Yard Behind Buildings on Irving Avenue - May 6, 2007

On May 6, 2007, radiological walkover surveys were conducted in the yard behind the buildings on Irving Avenue. John Abunaw and Barbara Youngberg arrived at the site at 10:00 a.m.

Background count rates were taken at the intersection of Decatur and Irving Avenue. This is two blocks from the former Wolff-Alport Chemical Company site. Two one-minute background count rates were taken and the average count rate was 7,058 cpm. The screening count rate utilized for the day was 18,000 cpm (2.5 X background).

A NaI 2 X 2 attached to a scaler was used for the survey. The detector was held about three inches from the surface of the ground during the surveys. Selected locations behind 1125 through 1133 Irving Avenue were surveyed, within the areas marked on the figure on page 9 (these were not 100% walkover surveys).

The surveyors entered the backyard between 348 Moffat Street and 1133 Irving Avenue, through a gate in the fence. Waste and discarded items had been dumped here, so the survey was limited to the path through the debris. This path was a few feet higher in elevation than the land to the west, and appeared to be the bed of a rail spur coming off of a Long Island Railroad line, which runs northeast of the site. Walking along the spur in the area behind 1133 Irving, count rates ranged from 15,000 to 20,000 cpm. A sample was collected at a point where the count rate was about 20,000 cpm, which was above the screening level (see figure on page 9). Beyond that point, count rates were 12,000 to 13,000 cpm. The survey continued for about 100 feet, along the path, with no significant increases in the count rates. Surveying was suspended at that point, and resumed further north the rail spur bed, behind 1129 Irving Avenue (see figure on page 9).

As the back door of 1129 Irving Avenue was approached, count rates steadily increased, from about 24,000 cpm just off the rail spur bed, to 390,000 cpm, two feet from the building. A surface soil sample was collected at that location (see figure on page 9). The area to the south of the doorway was surveyed. Count rates within 10 feet of the building were in the range of 200,000 to 350,000 cpm, with the higher count rates closer to the building and the door.

Behind 1133 Irving Avenue, count rates decreased with distance from 1129 Irving, to 127,000 cpm about ten feet south of the wall between the two buildings. Further south, behind 1133 Irving, count rates increased as the surveyors approached a bricked-up opening that appeared to have once been an overhead doorway. In front of the former doorway, count rates were in the range of 174,000 to 198,000 cpm, and in one spot, 250,000 cpm. A few feet beyond the doorway, the count rate decreased to 126,000 cpm. Farther from the doorway, and twenty feet from the southern edge of 1133 Irving, the count rate was 60,000 cpm.

Sewer Surveys - May 6, 2007

Three sewer manholes were opened and measurements were taken with the Teledetector, at selected distances below street level. The probe was held with two inches of the wall. The readings are presented in Table 1.

Manhole 1 was a few yards southeast of the intersection of Irving Avenue and Cooper Avenue, in front of 1125 Irving (see figure on page 9). The inside surface was crusted with a granular material, all the way down to the bottom. Sewage was flowing about 9 feet below the street level. This was the only manhole in which measurements exceeded 0.2 mR/hr. The maximum measurement was 4 mR/hr, seven feet below street level in area less than six inches by six inches, on the southwest side of the manhole.

Manhole 2 was on Moffat Street, in front of 338 Moffat (see figure on page 9). This manhole was dry, and the inside was clean brick, with no granular deposits. All readings were 0.2 mR/hr or less.

Manhole 3 was on Irving Avenue, north of the intersection with Cooper Avenue (see figure on page 9). Sewage was flowing at 11 feet below street level. There was some granular material clinging to the sides, but it was not thick or extensive. All readings were 0.1 mR/hr or less.

Table 1 - Survey of Sewer Access Structures					
Manhole #1		Manhole #2		Manhole #3	
Irving Ave, S of Cooper Ave		Irving Ave, N of Cooper Ave		Moffat St.	
Feet Below Street Level	mR/hour	Feet Below Street Level	mR/hour	Feet Below Street Level	mR/hour
0.5	≤0.2	2	≤ 0.1	0	0.05 - 0.15
2 - 2.5	0.25	3	≤ 0.1	1	0.05 - 0.1
4	0.3	6	0.05 - 0.2	3	0.05 - 0.1
7	4	9	0.05	6	0.1
9	0.4 - 0.7			11	0.1

Analytical Results

The two soil samples were analyzed by gamma spectroscopy on the Department's Canberra Reverse Electrode High-Purity Germanium Detector, using Genie 2000 MCA software. These were screening-level analyses, performed to identify the radionuclides present and obtain an estimate of the concentrations. The results are presented in Table 2.

Table 2 – Analytical Results				
	Sample No. 5060701		Sample No. 5060702	
	Behind 1129 Irving		Off Moffat Street	
	pCi/g	+/-	pCi/g	+/-
K-40	N.D.		8.4	0.51
Cs-137	N.D.		0.08	0.18
U series				
Th-234	N.D.		1.4	0.2
Pb-214	40	1.3	2.3	0.14
Bi-214	39	1.1	2.2	0.09
Th series				
Ac-228	299	5.5	3.9	0.13
Ra-224	420	21	2.6	0.51
Pb-212	283	11	4.1	0.18
Bi-212	259	8	N.D.	
Tl-208	98	2.6	1.27	0.062
N.D. = not detected				

Discussion of Results

Sidewalks

The surveys of both the sidewalks on Cooper and Irving Avenues found the presence of residual contamination. This finding supports the earlier survey reports that found residual contamination present.

Yard Behind 1125 - 1133 Irving Avenue

The soil directly behind 1129 Irving Avenue is clearly contaminated with radioactive materials. The one sample collected from the location of the highest count rate (390,000 cpm) contains thorium and its decay products in concentrations of approximately 285 pCi/g, and radium-226 and its decay products, in concentrations of about 40 pCi/g (the radium-226 concentration is inferred from the Pb-214 and Bi-214 gamma spec results). This is consistent with historical descriptions of the waste produced by the Wolff Alport Chemical Company. The waste is widespread behind the building, and appears to be more concentrated closer to the building, and in particular, around the two doorways surveyed.

The slightly elevated count rates along the former rail spur do not appear to be due to waste from Wolff Alport. Based on the analytical results, uranium and thorium series radionuclides, are present in equilibrium. The concentrations are slightly higher than found in some soils, but are commonly found in sand and gravel, which was probably used in constructing the rail spur.

Of the sewer manholes surveyed, only the one at the intersection of Cooper and Irving Avenues exhibited elevated radiation levels. This may be due to residual contaminants from Wolff Alport. This is suspected because of the proximity to the site, and the granular deposits that were found only in that manhole. The probe in this instrument is a side-window GM tube, which measures both gamma and beta radiation. With the probe held close to the contaminated area, the beta radiation was a large part of the dose rate measured. This radiation would not travel far in air, and less than a foot away, the measured dose rate decreased markedly. Therefore, the 4 mR/hr dose rate measured should be considered only an indication of possible contamination, not a measure of the radiation level that workers in the sewer are exposed to.

Conclusions

Radiation levels are elevated on the sidewalks along Irving Avenue and Cooper Avenue, near these buildings. Further characterization is needed to identify the radionuclides and the location of the contaminants. It is possible that some of the elevated count rates are due to radioactive material in drain pipes leading from the building to the sewer.

Residual radioactive materials, most likely from past operations at the Wolff Alport Chemical Company, were found in the yard east of the buildings formerly occupied by the

company. This area warrants a complete characterization survey and sampling, to define the extent of contamination, both in depth and area.

Elevated radiation levels were measured in the manhole in front of 1125 Irving Avenue. Further characterization is needed to identify the radionuclides and the extent of the contaminants.

Prepared By:

/s/

07/19/08

John Abunaw
Environmental Radiation Specialist

Date

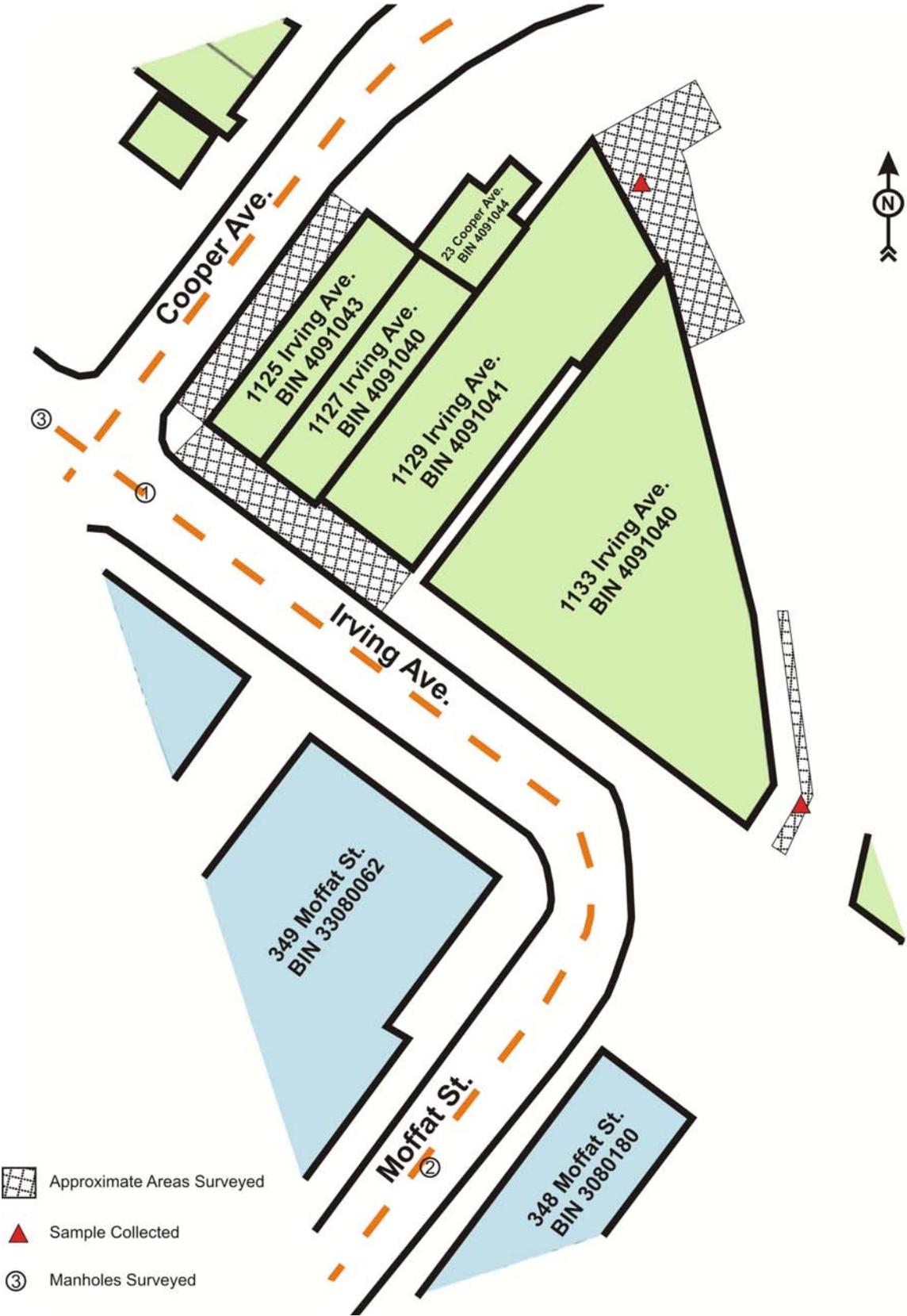
Reviewed By:

/s/

07/19/07

Barbara Youngberg
Chief, Radiological Sites Section

Date



-  Approximate Areas Surveyed
-  Sample Collected
-  Manholes Surveyed

