WAMD 008

SUMMARY REPORT

AERIAL RADIOLOGICAL SURVEY

TONAWANDA, NEW YORK

DATE OF SURVEY: SEPTEMBER 1979

US DOE c/o **Bechtel Nevada**

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WAMD 008

November 30, 1979

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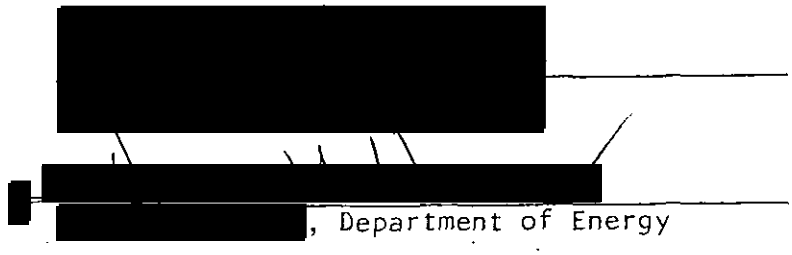

, Department of Energy

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WITH THE UNITED STATES DEPARTMENT OF ENERGY

The Aerial Measurements System, operated by EG&G, Inc. for the United States Department of Energy, was used to conduct an aerial radiological survey over Tonawanda, New York. During September 1979, a helicopter equipped with sensitive radiation detectors flew over the area shown in Figure 1. The survey area includes three sites where uranium ores and tailings from uranium ore processing are present. One of the sites (1 in Figure 1) was used during the period 1940-1948 for uranium ore processing. The other two sites (11 and 111 in Figure 1) contain residues from the ore processing facility. The purpose of the aerial survey was to identify any locations which might contain radioactive material from these formerly utilized sites.

The radiation distribution in the survey area is shown in Figures 2-5. The spectral data from the locations with exposure rates greater than 9 microroentgens per hour, i.e., a "C" level or higher, were analyzed to determine the radioactive isotopes responsible for the elevated exposure rates. In all nine such locations, bismuth-214, a daughter product of radium-226, was identified as the major contributor to the exposure rate.

The highest exposure rates in the survey area are found on the sites known to contain residues from the uranium ore processing facility (Figure 2). Runoff from the Seaway Industrial Park appears to have washed some of the

radium-bearing residues down into a low-lying area adjacent to the park boundary. The other locations with elevated exposure rates are physically separate from the three formerly utilized sites and are not connected to them by obvious paths for surface water transport.

The airborne detection system measures the average radiation level over an area of several acres. Localized sources, therefore, will yield individual ground based readings which exceed this average. This averaging effect also produces concentric contour lines surrounding localized sources of radiation. For example, the radiation pattern over the Ashland Oil property (Figure 2) might be caused by this effect rather than being due to an actual distribution of source material.

In summary, nine locations within the area shown in Figure 1 have been found to contain higher than background concentrations of radium-226 resulting in elevated exposure rates. Ground measurements are required at these locations to determine the highest absolute exposure rates and to identify the source of the radium-bearing material.

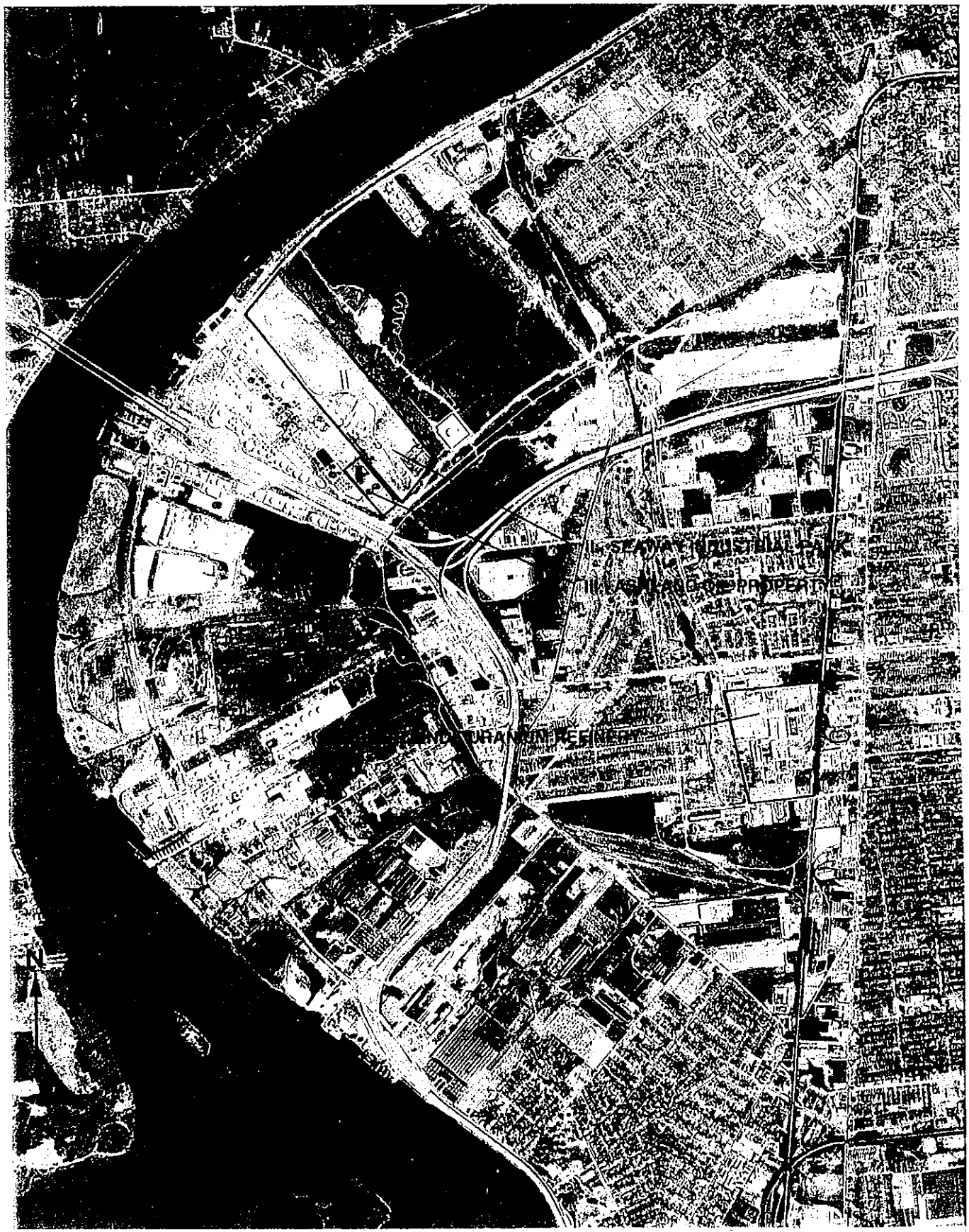

FIGURE 1. *SURVEY AREA - TONAWANDA, NEW YORK*

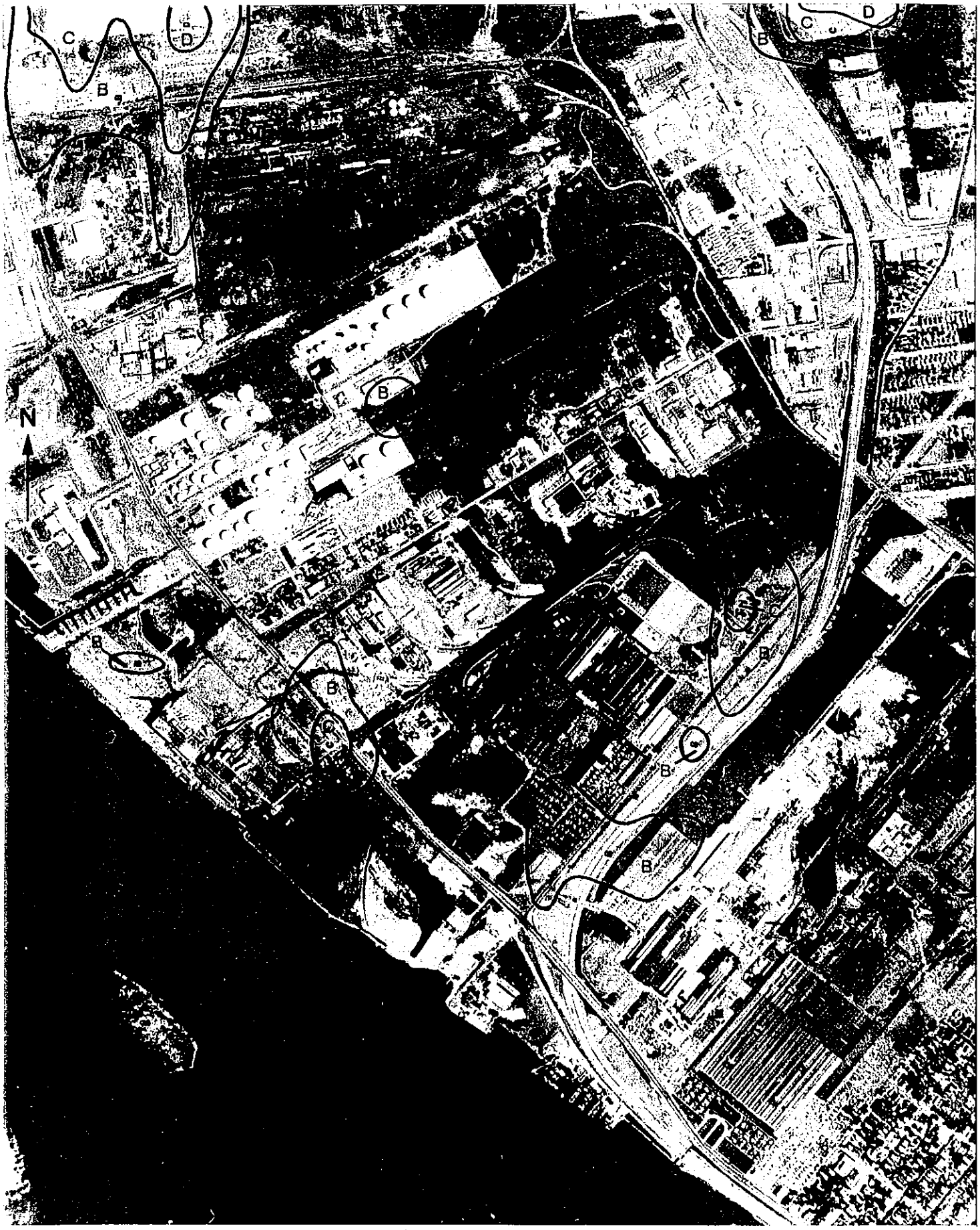

FIGURE 3. *SOUTHWEST QUADRANT OF SURVEY AREA*