

Using Aerial Photographs for Locating and Investigating Hazardous Waste Sites

Hazardous wastes have been deposited in pits, ponds, lagoons, landfills, and fields throughout the nation, particularly in and around industrialized urban areas. Many of these disposal sites are readily identifiable on the ground or from the air, others have been covered and abandoned or converted to other uses. The EPA's National Exposure Research Laboratory in Las Vegas has participated in an Agency-wide effort to identify hazardous waste sites and to investigate those with the highest potential for release of hazardous materials into the environment. One of the Laboratory's more important activities is the acquisition and analysis of aerial imagery to locate and describe potentially hazardous waste sites. Some projects have involved a large number of sites within sizeable geographical areas (e.g., Niagara County, New York; Salt Lake City, Utah; Memphis, Tennessee). Other projects have focused on individual sites or clusters of several sites.

Laboratory investigation priorities of waste sites are generally determined by EPA's Program Offices in Washington D.C. and Regional Offices throughout the country. Aerial photographs are used by these offices to supplement information obtained from other sources and to help target on-site investigations. The

Laboratory's field station in Reston, Virginia, the Environmental Photographic Interpretation Center, responds to requests for support from the Program and Regional Offices in all ten EPA regions.

Most metropolitan areas have disposal sites widely distributed throughout their geographic area. One approach being explored by the Laboratory is a systematic screening of a metropolitan area for the presence of potential waste disposal sites, followed by detailed investigations of the sites of greatest concern.

Figure 1 exemplifies how aerial photography is used to portray possible problem sites in a metropolitan area. The sites of interest are classified into categories such as liquid waste disposal sites, active landfills, junkyards, and unidentifiable scars. Descriptions are prepared for each site. Aerial photographic inventories of potential hazardous waste sites have been proven to be very cost-effective in comparison with any other method.

Historical (archival) photographs, which may date back to the 1930's, play an important role in the general survey of the city and in investigating specific sites. As shown in Figure 2, historical photographs can remove

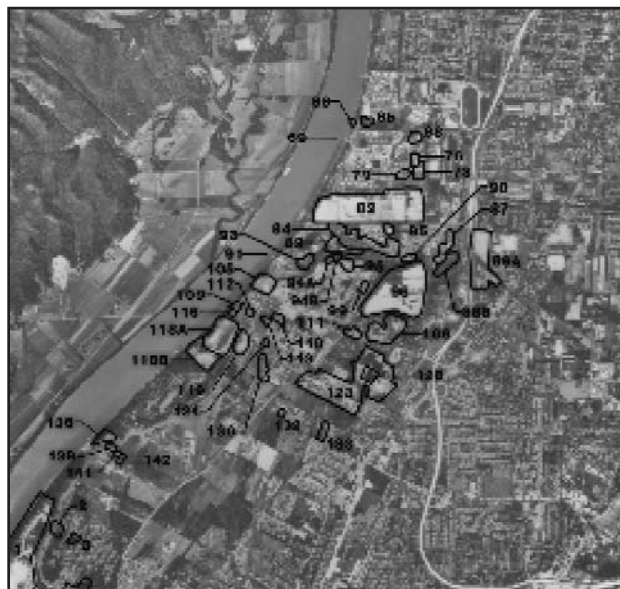


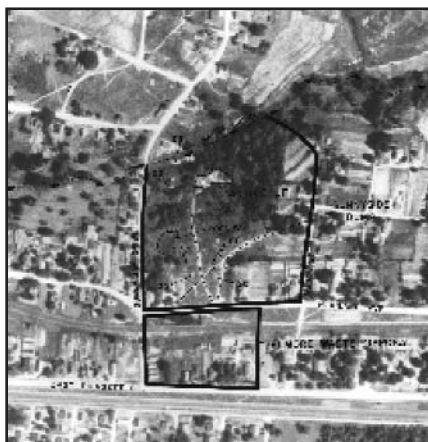
Figure 1. Initial aerial photo inventory of a metropolitan area to locate possible hazardous waste sites.

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the "disguise" of current land use and uncover environmental problems. Archival imagery is obtained from the National Archives, the data center of the U.S. Geological Survey, and other sources such as city, county, and state agencies. Usually imagery taken at three or more dates from the late 1930's to the present is examined. If necessary, current photography is obtained from overflights. Analysts use stereo pair photos which provide three-dimensional views for scrutiny of the areas of concern. Also, collateral information from available records and from previous studies is used whenever possible.

During the intensive investigation phase, up-to-date imagery is obtained. History of the land use around a site is carefully studied. Of special concern are the locations of nearby residences and direct contaminant environmental pathways to these residences. Frequently, detailed imagery analysis is coupled with ground investigations to provide a more complete picture of potential environmental problems.

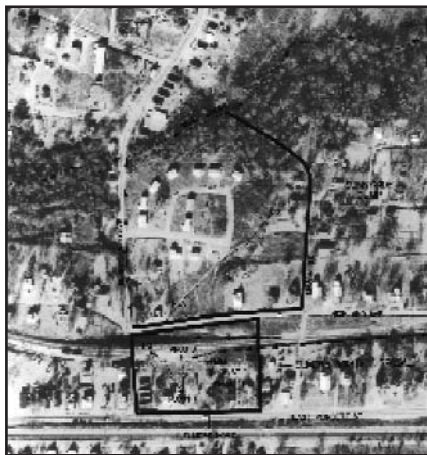
Aerial photographs provide an authoritative and relatively inexpensive tool for clarifying and documenting a large number of environmental problems associated with disposal of hazardous wastes.



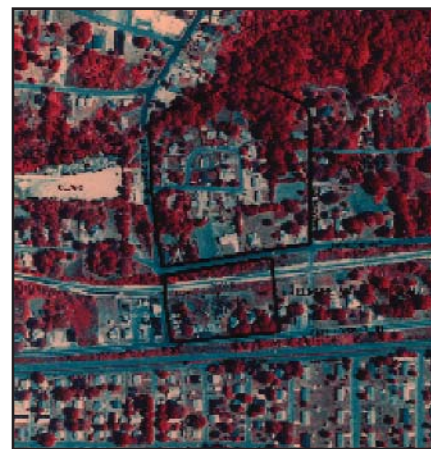
1944



1955



1965



1981

Figure 2. Overhead imagery used to trace the history of one site.

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