

2006-1606: A PRODUCTIVE INNER CITY - ENVIRONMENTAL TECHNOLOGY COLLABORATION

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A Productive Inner City - Environmental Technology Collaboration

Abstract

Rochester New York's North East Neighborhood bears close resemblance to communities in many developing countries; it is characterized by high unemployment, an undereducated population, lack of capital, and little economic mobility. As such it requires cognizance of similar realities of engineering and design as might be required in developing countries. Civil Engineering Technology, Environmental Management Technology, and Environmental Science students from Rochester Institute of Technology have provided engineering and environmental services in this environment since 2002. Projects have included a low cost drip irrigation system design/build for a 3.5 acre community vegetable garden, and field scale trials of low-cost lead phytoremediation. This paper reports on an environmental assessment project completed in support of a community rebuilding effort. Two students completed 19 ASTM Phase I Environmental Assessments (EAs) during the summer of 2004 to determine suitability of city-owned abandoned properties for urban renewal redevelopment. The EAs were completed on behalf of a neighborhood association. The EAs included records searches for past ownership and land use, fuel and chemical storage, and spill reports, as well as GIS analysis and mapping. Interviews with local residents and site walk-overs added to the understanding of past land use. The students met with local community leaders to keep them abreast of progress. The project culminated in a student-lead community meeting where they presented findings, made recommendations, and delivered their reports. As with projects in the developing world, this project benefited the host community, and allowed the students to apply techniques in a non-traditional setting. More importantly, it demonstrated the importance of communication in keeping the project aligned with the needs and desires of the host community.

Problem Statement

Rochester New York's North East Neighborhood bears close resemblance to communities in many developing countries; it is characterized by high unemployment, an undereducated population, lack of capital, and little economic mobility. This study concentrated on the Upper Falls, South Marketview Heights, and North Marketview Heights neighborhoods of Rochester New York's, 10th Ward. The census tracts that make up these three neighborhoods represent the largest contiguous group of low-income tracts in the 15-County Genesee Finger Lakes Region¹.

According to the US Census Bureau, Rochester saw a drop in median household income between 1990 and 2000. The census also revealed that 44.8% of population of the 10th Ward lived below the poverty level in 2000. Rochester's employment dropped from 135,700 (1991) to 108700 (2001), according to the NYS Department of Labor. The median household income in the majority of these census tracts was below \$20,000 per year¹.

The 2000 census indicates that this area's residents are mainly African American (63 percent) and Hispanic (30.4 percent). Although statistics are not available for this sector, the Rochester City School District has a graduation rate of approximately 30 percent¹.

Rochester's population as recorded by the 2000 census is 30 percent less than it was in 1970. As

a result, housing prices are low. This induces many who leave the city to convert their properties to rentals rather than sell at a loss. Indeed, of the 7079 housing units in the 10th Ward, only 1430 were owner occupied as of 2000. In addition, the drop in population means very few new houses are constructed. Seventy three percent of the homes located within the 10th ward were built before 1960, and greater than one in seven was vacant in 2000¹. Figure 1 shows vacant residential and commercial properties in the Orchard Meadows Estates area of the 10th Ward.

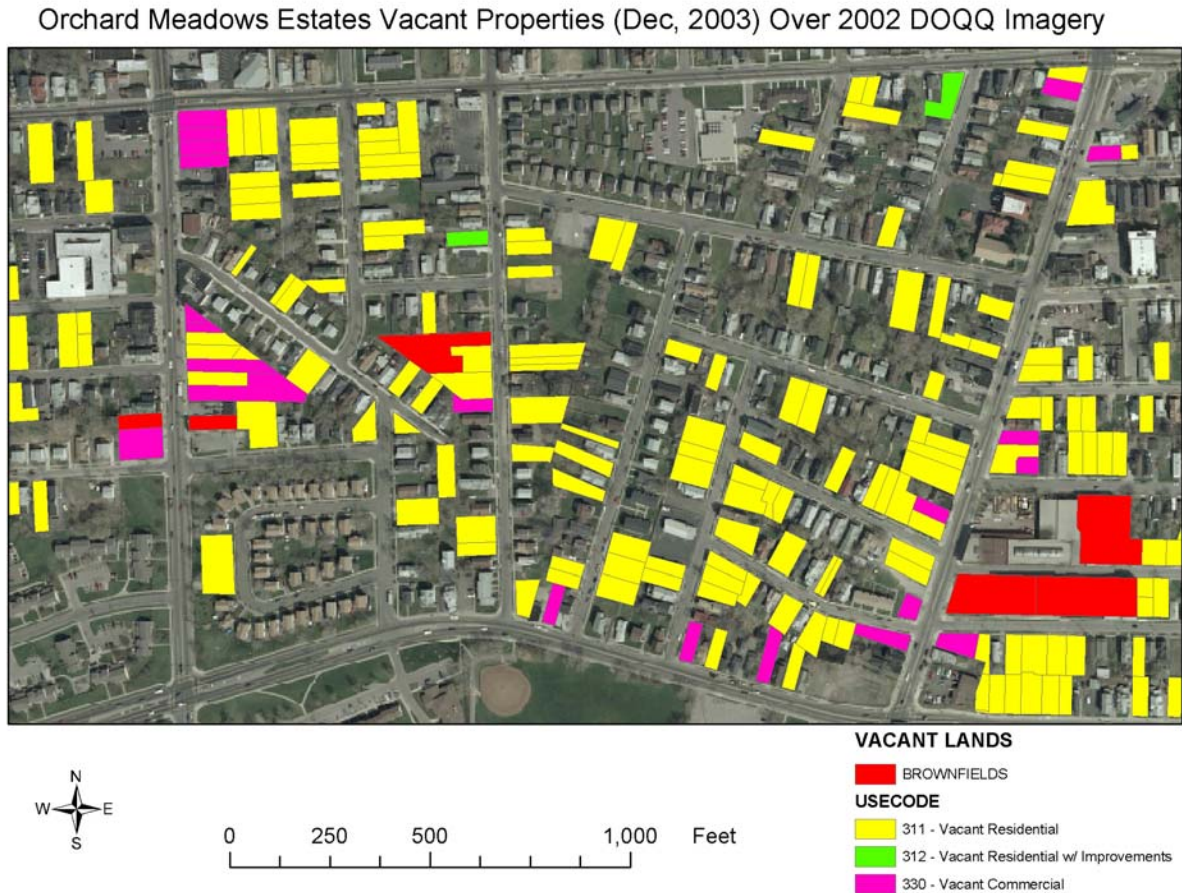


Figure 1. Vacant Properties in the Orchard Meadows Estates section of Sector 10

Solution

One asset possessed by the 10th Ward is a high level of community activism and organization. Among the community's active organizations are:

- The Marketview Heights Association, representing South Marketview Heights
- The Coalition of Northeast Associations (CONEA), representing Upper Falls
- The Northeast Block Club Alliance (NEBCA), representing North Marketview Heights

These three local organizations form part of the umbrella planning and coordination initiative, known as The NorthEast Neighborhood Alliance (NENA). NENA is, “a resident driven planning initiative committed to the revitalization of three neighborhoods in northeast Rochester, through citizen empowerment and ownership².”

One solution to these problems envisioned by NENA and community leaders was the development of new mixed income properties within the community. In consultation with RIT professors the community leaders came to the realization that they would need initially at least a market analysis and Phase I Environmental Assessments prior to moving ahead with a potential redevelopment plan.

The mechanism for completing these actions came as part of a grant from The Department of Housing And Urban Development under the Community Outreach Partnership Centers (COPC) Program. The RIT-NENA COPC proposed to address housing, economic development, neighborhood revitalization and capacity development, and neighborhood planning. The proposal for the grant envisioned:

“An interdisciplinary faculty team will conduct multi-year site assessment project of vacant land and properties in Sector10, and the development of a database of site information, including historical uses and ownership: on-site condition, including preliminary soil; analysis: and the development of recommendations for remediation of targeted sites.”³

Methods

The Phase I EA project was completed as part of the RIT-NENA Community Outreach Partnership Center and as such, was designed to be a student-centered, community-centered project. The 2004 season Phase I Environmental Assessments were complete by two RIT Environmental Science students (Environmental Management Technology students will conduct field work in the 2006 season) under the direction of an Environmental Science professor and an Environmental Management & Technology professor. Preliminary work included determination of the site selection process, site selection, and determination of the most appropriate Phase I protocol.

Site Selection Process

The site selection process was determined in meetings among RIT professors, RIT students, and NENA managers. Unlike most Environmental Assessment projects, our team had the luxury of choosing which sites we assessed. Our goal was to find uncontaminated contiguous sites that could be purchased and redeveloped. Originally, the site selection criteria included sites that:

- were contiguous so that significant development could take place
- contained unoccupied buildings or sites where the abandoned building had been removed so that no occupied building would require a site walk-over

As site selection progressed, possible sites were further restricted to include only:

- properties that had been taken by the City of Rochester due to tax delinquency, so that if an area was selected for redevelopment it would be available for purchase
- properties whose site history indicted primarily residential use to increase that chance that uncontaminated sites would be found.

Assessing only sites owned by the City of Rochester negated one source of liability usually associated with EAs. We did not want to assess a privately owned property only to have an owner claim that the site's value was diminished due to a positive finding of likely contamination. Sites assessed are shown outlined in the northwest corner of the Orchard Meadows Estates in Figure 2.

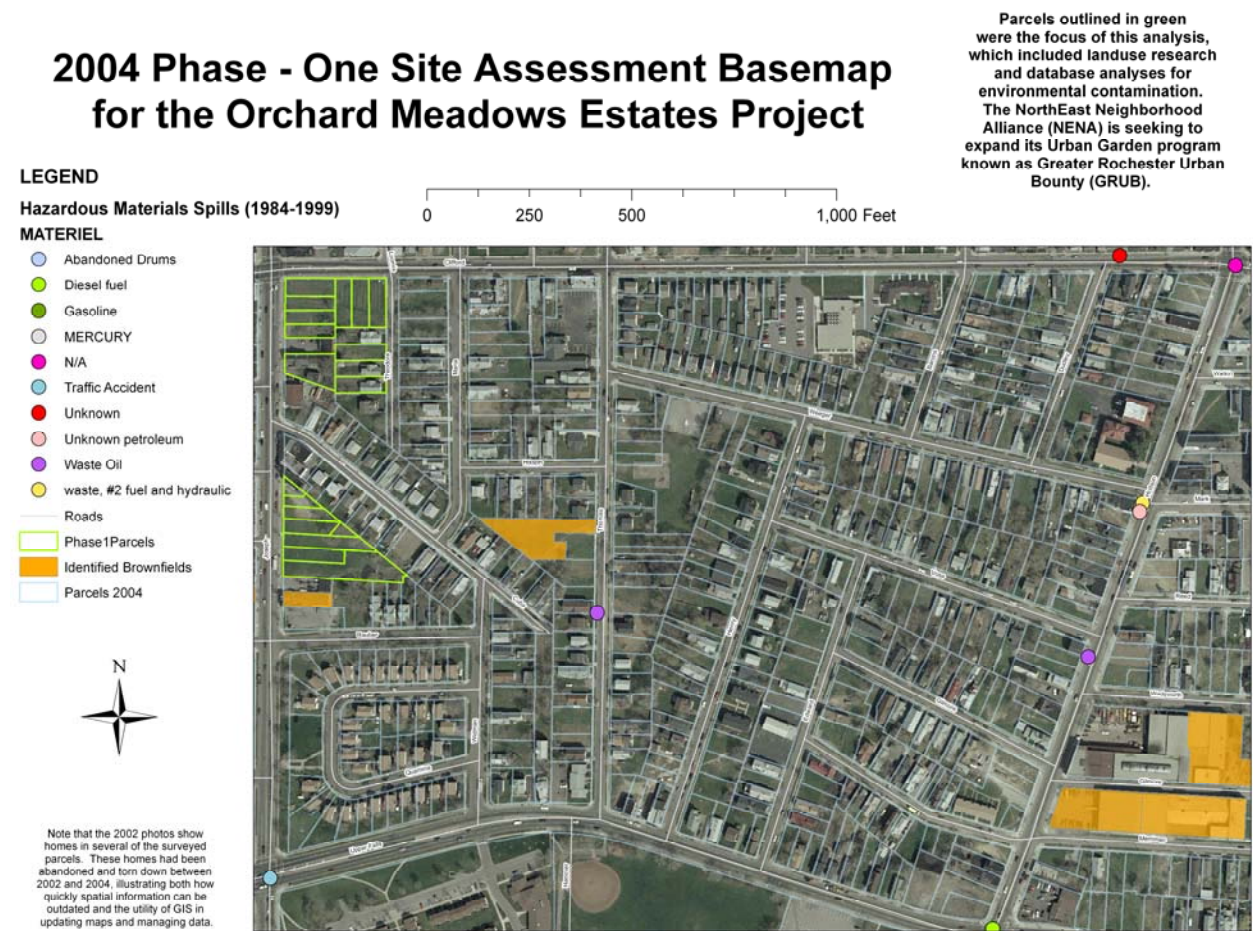


Figure 2. Phase I Site Assessment Locations, Orchard Meadows Estates

Phase I EA Methodology

EAs were conducted according to American Society for Testing & Materials standard E1527-00. The purpose of such an assessment is to determine, "...if the site is contaminated, is likely to be contaminated, or contains conditions that are likely to lead to contamination in the future"⁴

The EAs included records searches for past ownership and land use, fuel and chemical storage, and spill reports, as well as GIS analysis and analysis. Interviews with local residents and site walk-overs added to the understanding of past land use. The students met with local community leaders to keep them abreast of progress.

The record search included Federal listings;

- NPL (National Priorities List)
- CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System)
- CERCLIS NFRAP (Comprehensive Environmental Response, Compensation, and Liability Information System – No Further Remedial Action Planned)
- RCRA CORRACTS (RCRA generators with corrective actions)
- RCRA Non-CORRACTS TSD Facilities
- RCRA Generators
- ERNS (Emergency Response Notification System)

State of New York Listings;

- Equivalent NPL
- Equivalent CERCLIS
- Landfill or Solid Waste Disposal Sites
- Leaking UST (Underground Storage Tank)
- Registered UST

and City of Rochester Listings;

- 1900 Rochester Plat Map
- 1926 Rochester Plat Map
- Sanborne Maps for Rochester, 1911
- Polk Rochester City Directory, 1892-1982

and extensive use of the 2000 Census database for mapping using ESRI's ArcGIS8. The EAs also included site walk-arounds (viewing the site from all offsite directions), walk-overs, and on-site digital photography. When ever possible the student team also interviewed neighbors and community leaders concerning past site usage.

Results

The multidisciplinary team completed 19 ASTM standard Phase I Environmental Assessments during the summer of 2004. Completed EAs included written reports and a GIS database. The results yielded a map on which NENA and other neighborhood planners could identify

potentially contaminated sites and sites with a low probability of being contaminated. The GIS database allowed for mapping with clickable links to site photos and the text of the EA.

The students found that among the sites surveyed, five had past land use or events which indicate a potential for contamination. These sites included a former dry cleaner, a former print shop, a former TV and electronics repair shop, a former shoe dyeing and repair shop, and one site with a reported mercury spill. Interviews with local residents pointed the students towards an area of one site that was frequently used as an automobile oil changing location. This site had evidence of contamination including stained, oily soil and piles of empty 1-quart oil containers. The results did indicate an area of uncontaminated contiguous properties environmentally suitable for redevelopment as low income housing.

The project culminated in a student-lead community meeting. The students presented their methodology and findings to a group including area residents as well as representatives of CONEA, NEBCA, The Marketview Heights Association, and the City of Rochester. The students subsequently presented their findings to RIT upper management.

Summary/Conclusion

In completing the project the students learned a few lessons that would be useful for engineering projects in economically disadvantaged areas either in the US or in developing countries. They learned that residents may at first be suspicious of outsiders, but can supply useful information and insights if convinced that the project will be a benefit to the area or neighborhood. They learned the importance of conveying ideas without the use of jargon that may be confusing and off-putting to the local residents. They learned that having a trusted contact in the area, in our case the NENA representatives, can open doors and give access to information that otherwise would be difficult to achieve.

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Bibliography

- 1) US Census. 2000
- 2) NorthEast Neighborhood Association <<http://www.nena10.com>>, 2006
- 3) Howard, M. Ann, et al. The Rochester Institute of Technology-NorthEast Neighborhood Association Community Outreach Partnership Center Grant Proposal. Rochester, NY, 2003
- 4) E1527-00 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. American Society for Testing & Materials, 2000