

Magnetic Survey Keeps Cost Down!

by Mustafa Saribudak (ega@pdq.net)

Environmental Geophysics Associates, www.environgeophysics.com

9211 Colony Pond Drive, Spring, TX 77379 Telephone (281) 370-7066, Fax (281) 370-7099

At a contaminated furniture factory site in North Carolina, a reconnaissance magnetic survey was conducted toward the end of a Phase 2 investigation. The findings of the magnetic survey forced the responsible parties to redesign the remainder of their Phase 2 study, and changed the direction of the Phase 3 action plan.

A prior site assessment indicated that the soil and groundwater were contaminated by two leaking underground storage tanks (USTs). Three monitoring wells and four soil borings were located at the site (Figure 1). Soil borings, drilled to a depth of 3 feet, revealed that the soil was contaminated with heavy metals: barium, cadmium, and lead. Depth to groundwater is about 20 feet and direction of groundwater flow is to the northwest.

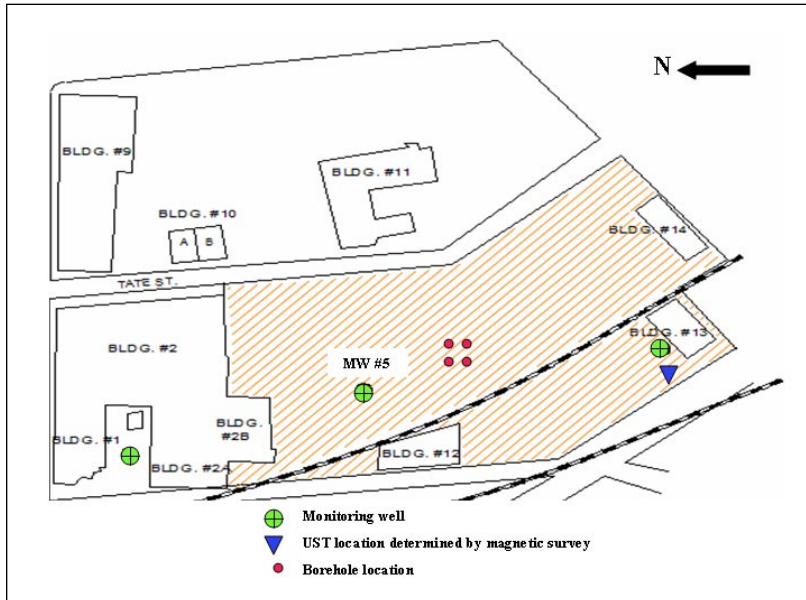


Figure 1. Site map.

A magnetic map obtained from the site indicated a striking anomaly over an area where the four soil borings are located. This anomaly is so high in amplitude that its source can only be explained by the presence of ferrous materials buried in the near-surface, most likely representing the source of the contamination observed in well #5.

After a consultation with the site owner, it became clear that the magnetic anomaly matches the location of a buried metal dump and salvage facility which was in operation in the 1950s. This problem had not been detected in any previous study. These results forced the site owner and cleanup team to develop a corrective action plan to address the presence of heavy metals, in addition to the organic contamination at the site.

Another unique magnetic anomaly observed in the southern part of the site is designated by a solid triangle. This source appeared to be a previously unidentified UST, which was subsequently recovered at a depth of 5 feet.

Magnetic surveys can yield valuable information if they are initially integrated into the Phase 2 portion of the site assessment. They are relatively simple to perform, inexpensive, and their results apply to a wide range of engineering and environmental problems.

As one of my mentors, also a friend said once: "I take my magnetometer to every project site." So do I my friend, so do I!