## Appendix A.1 Project Background

This worksheet accompanies the article:

Richardson, M., and Gajewski, B. (2003) "Archaeological Sampling Strategies," *Journal of Statistics Education* [Online], 11(1). http://www.amstat.org/publications/jse/v11n1/richardson.html

**Background:** (Lizee and Plunkett (1994))

Two questions often asked of archaeologists are, "How do you find a site?" or "How do you know where to dig?" When archaeologists are working in areas that have not been previously explored, they must decide how best to determine if the area contains any artifacts. Usually, time and resources do not allow for the total excavation of a site, so archaeologists must develop a cost-effective strategy to allow for the maximum coverage of a site. Archaeologists use a variety of methods to locate and/or test sites.

## **Problem:**

Suppose that the Map of an Archaeological Site represents an area that contains  $1008 \times 8$  meter test-pits (excavation units). In the map shown below, an X represents a test-pit that *contains* artifacts or "finds." Twenty finds were randomly assigned to the test-pits on this map. Assume that the site is an area of approximately 6,400 square meters to be impacted by construction of a housing development. The area consists of a mature second growth forest of maple, ash, and oak trees. Since it is both time and labor intensive to excavate the entire site, a sampling strategy must be developed. Working within budgetary and time constraints, archaeologists can only excavate part of the site to determine the presence of buried artifacts.

There will only be enough time and resources allotted to dig in approximately 20 of the test-pits at the site. However, if a large enough number of the 20 selected test-pits contain artifacts, then more resources may be allocated to dig in more pits at the site.

Map of an Archaeological Site

						X		
	X						X	X
			X					
			X					
		X			X	X		
X	X	X	X			X		
				X				
		X	X				X	
						X		X