

II. WELLHEAD PROTECTION AREA DELINEATION

The goal of this element of the WHP plan is to define the WHPA. The Federal Safe Drinking Water Act defines a wellhead protection area as “...*the surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move towards and reach such water well or well field*”. The remaining 6 elements of the WHP plan are all based on the results of this key element.

In 2002, City of Harbor Springs completed a hydrogeological study to identify groundwater areas that move towards and reach the City’s water supply wells. The study included reviewing existing background information on the regional geologic formations, reviewing the results of a 24-hour pump test that F&V conducted on the City’s Peffer Well, and surveying groundwater elevations in several residential wells in the vicinity of the well field to determine groundwater gradients and directions of flow. Computer groundwater flow modeling and particle tracking was used to delineate the groundwater area surrounding the municipal well fields through which contaminants could reasonably move towards and reach the wells. The pump test analysis conducted on the Peffer Well determined that the water supply is obtained from a leaky confined aquifer.

The MDEQ Guidelines for establishing a wellhead protection area are based on a groundwater time of travel of 10 years. This means that the area delineated for the Wellhead Protection Program needs to encompass groundwater areas which contribute to the City’s well fields at a distance of 10 years groundwater travel time. A 10-year time of travel is used to provide a reasonable length of time for addressing environmental problems within the wellhead protection area, while limiting the size to an area which can be reasonably managed by the City’s existing water operations, land planning and zoning ordinances.

The 10 year WHPA delineation for City of Harbor Springs is illustrated in Figure 1. The previously completed Delineation Report includes the methodology used to develop the WHPA including maps, figures, and geological cross-sections used for the modeling.