

Groundwater Modeling & Wellhead Protection for East Mesa

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A stylized, dark teal silhouette of a mountain range is positioned in the bottom right corner of the slide, partially overlapping the authors' names.

East Mesa Aquifer (Jornada Del Muerto Basin)



City of Las Cruces Water Plan

- ◆ Four existing wells
- ◆ 10 Future Wells to be phased in within 20 years
- ◆ 14,000 A-F/year

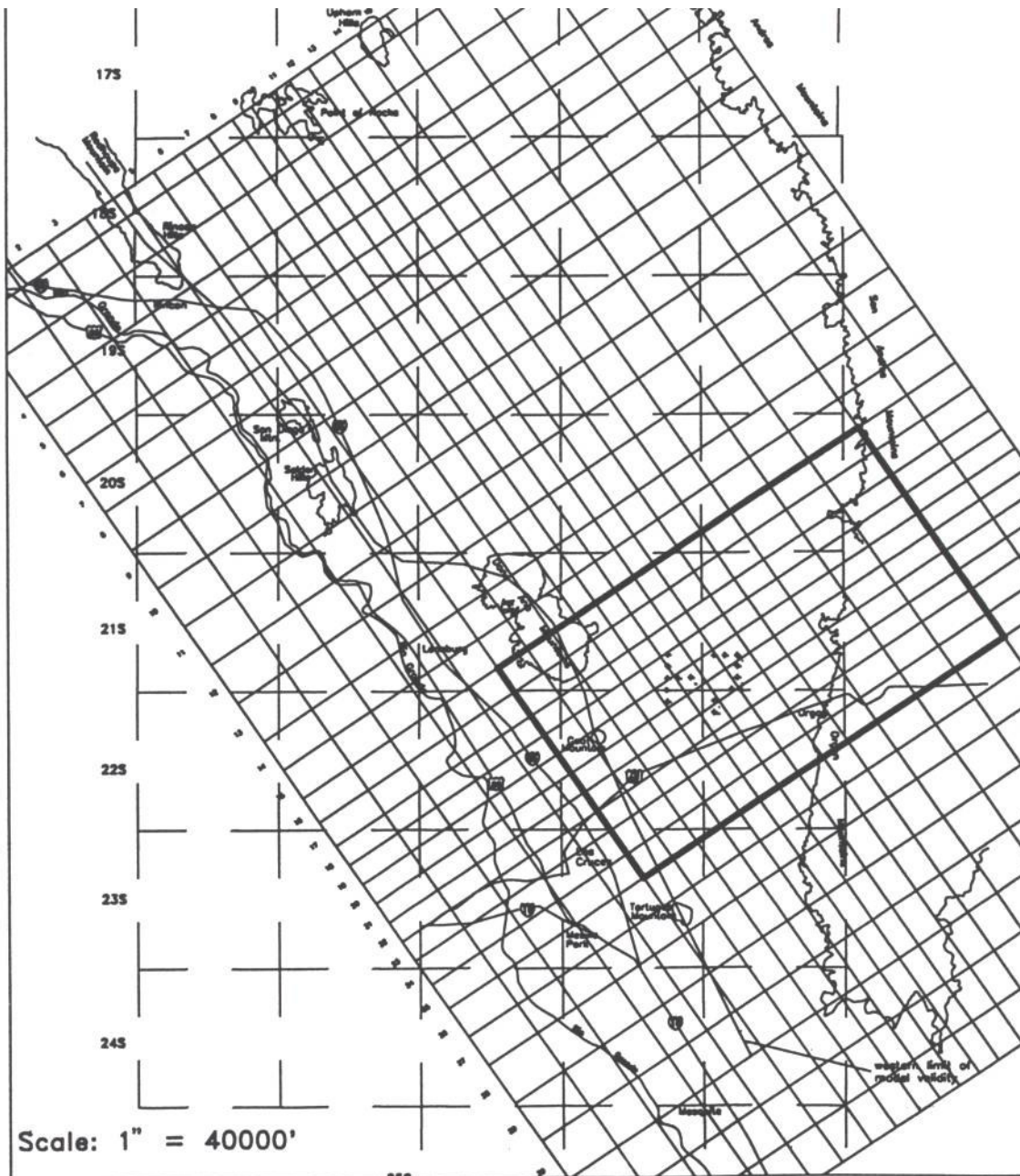
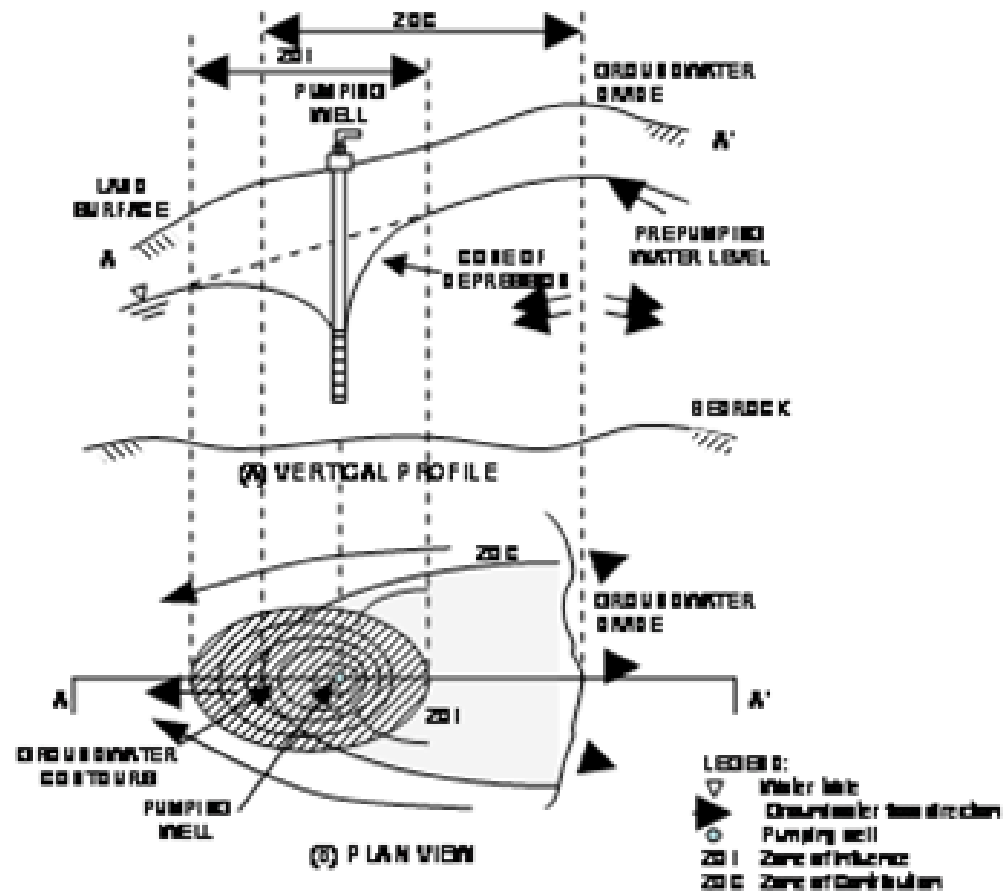


Figure 1. Regional Model Grid with Sub-Model Boundary


WHPA (ZOC)

- ◆ “The surface and subsurface area surrounding a water well or well field, through which contaminants are likely to move toward and reach such water well”

ZOI & ZOC



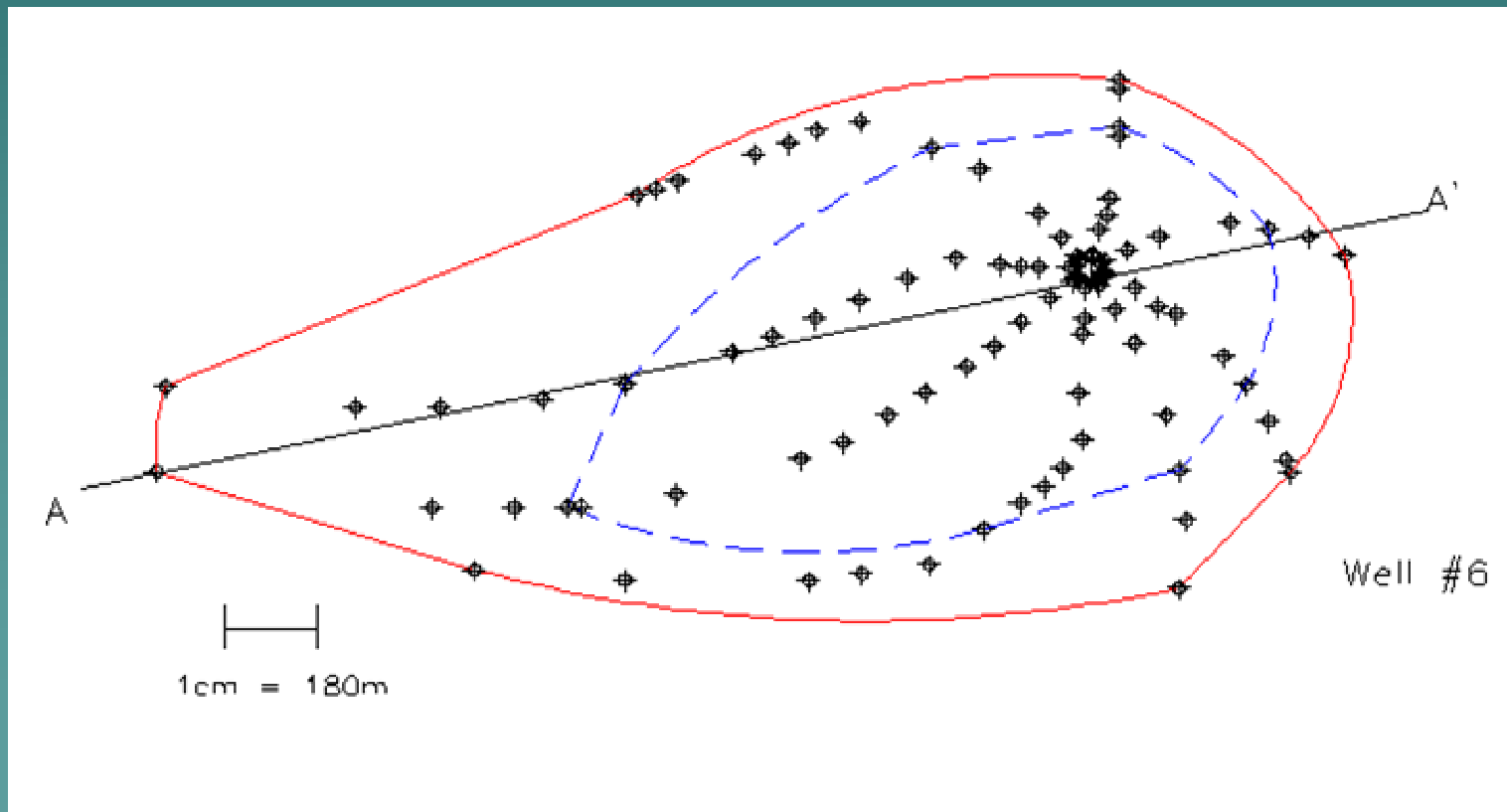
WHPA Delineation Methods

- ◆ Arbitrary Fixed Radius
 - ◆ Calculated Fixed Radius
 - ◆ Simplified Variable Shapes
 - ◆ Analytical Methods
 - ◆ Hydrologic Mapping
 - ◆ Numerical Flow/Transport Models
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- A stylized, dark teal silhouette of a mountain range is positioned in the bottom right corner of the slide, adding a decorative element to the background.

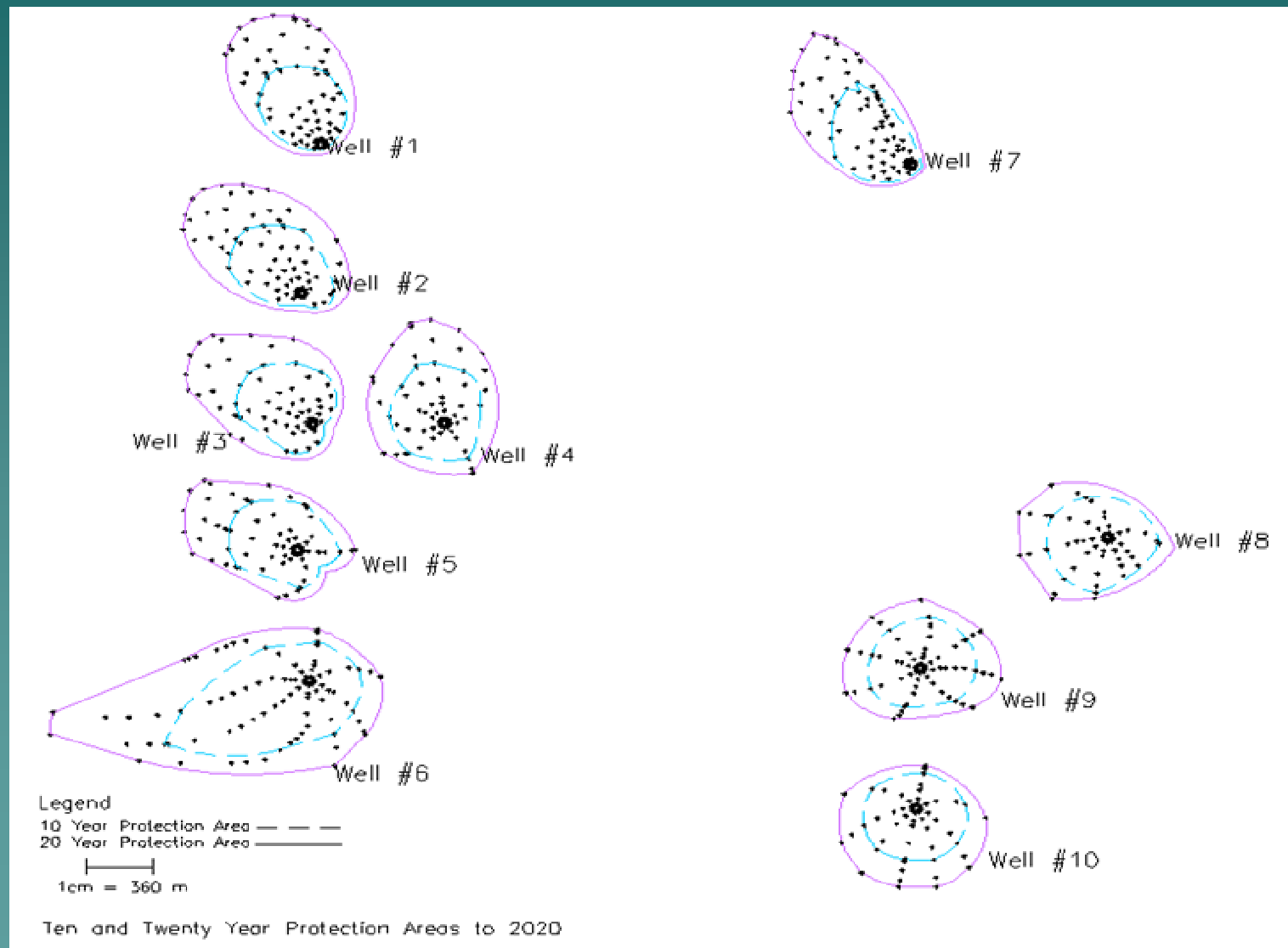
Groundwater Modeling & Wellhead Protection Plan

- ◆ USGS MODFLOW (GW Modeling)
- ◆ USGS MODFLOW + PATH3D

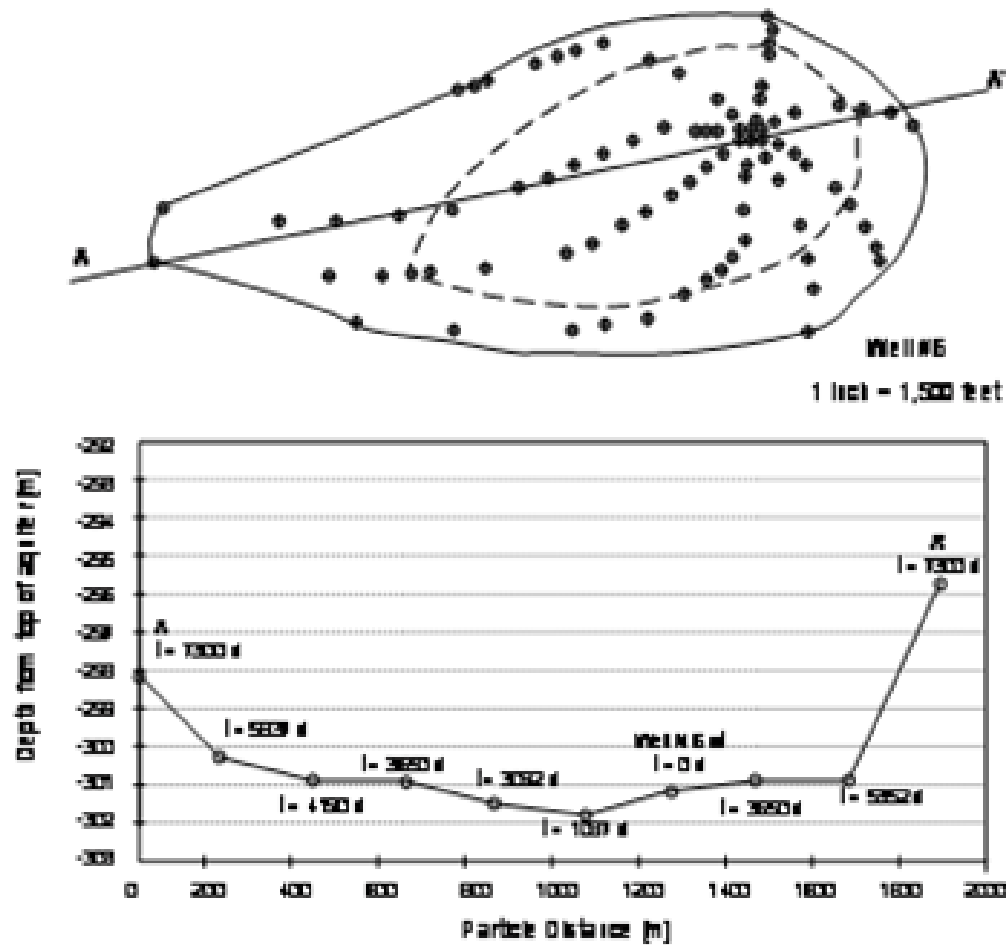
Zone of Contribution (WHPA)



Various WHPA for City Wells

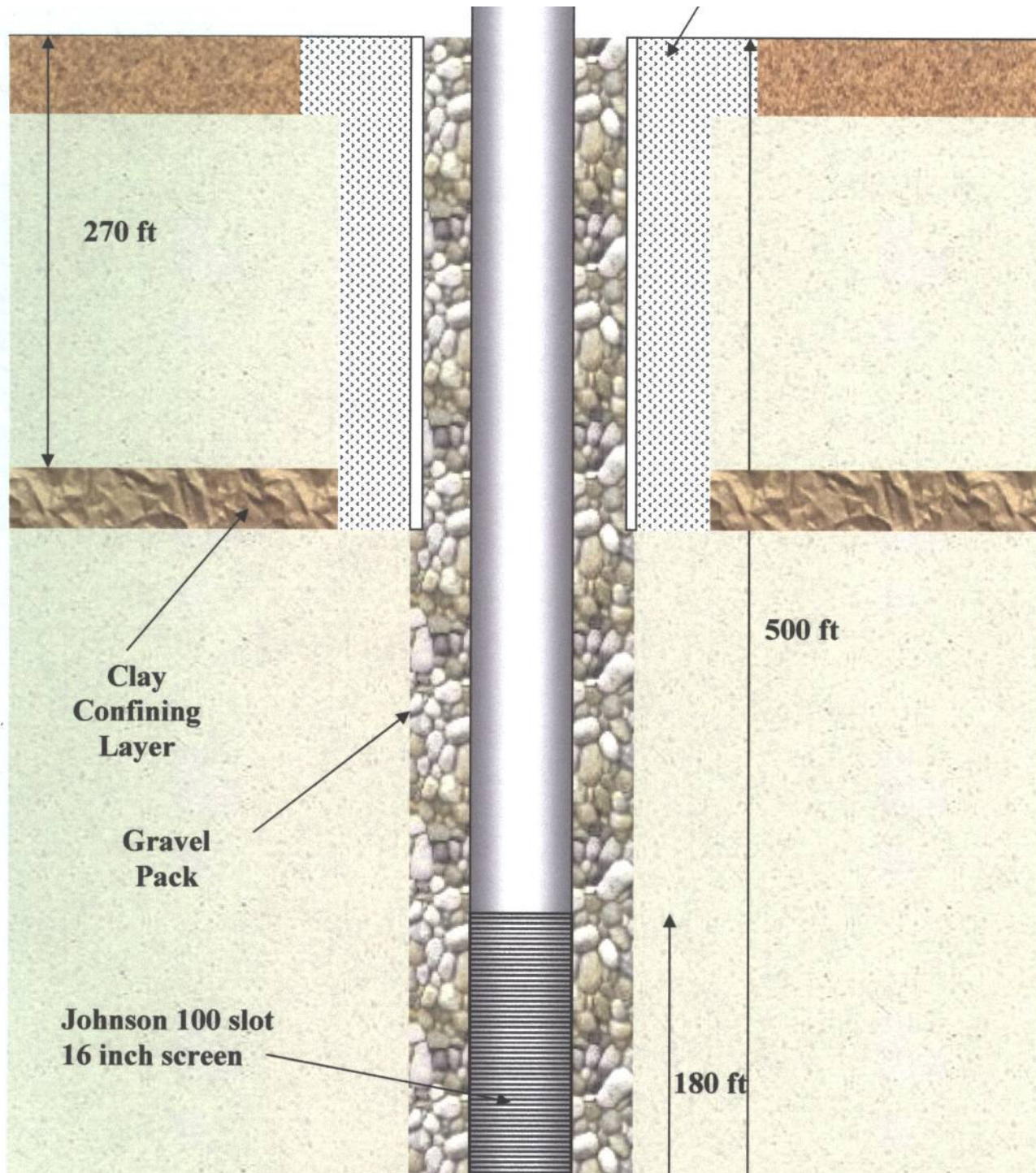


WHPA (Horizontal & Vertical Transport)




Factors Affecting WHPA

1. Years
2. Hydro-geological Characteristics of Aquifer
3. Well Design



The WHPA depends on

- ◆ Method of Delineation Used
 - ◆ Interpretation of results(type, Concentration of contaminant)
 - ◆ Method of Well Construction
 - ◆ Buffer Zones
 - ◆ Economics
 - ◆ Legal Issues
- 
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