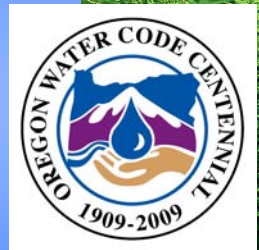


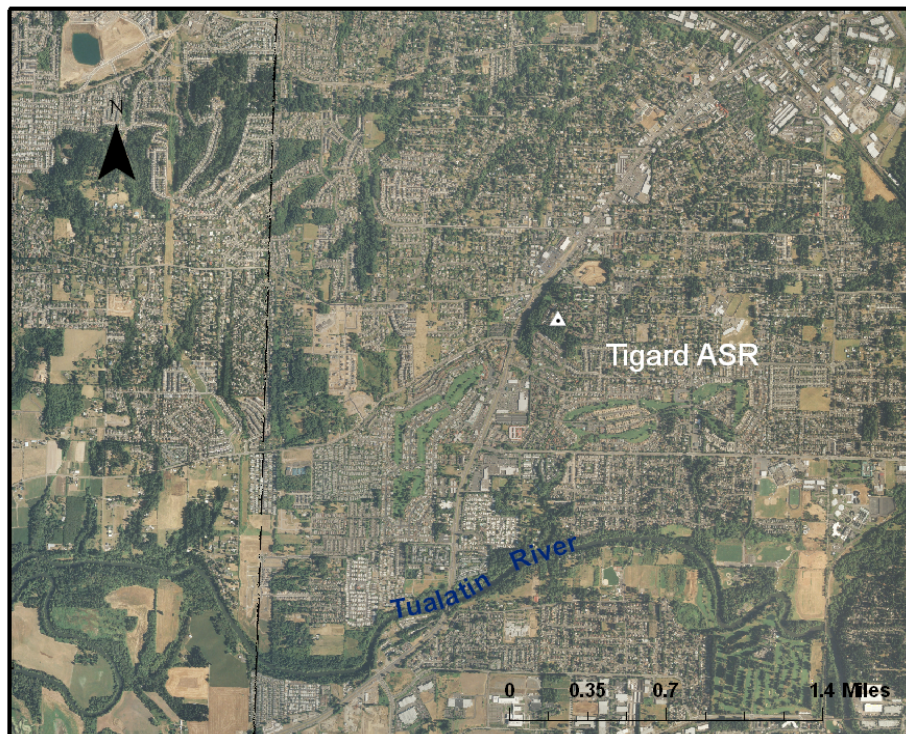
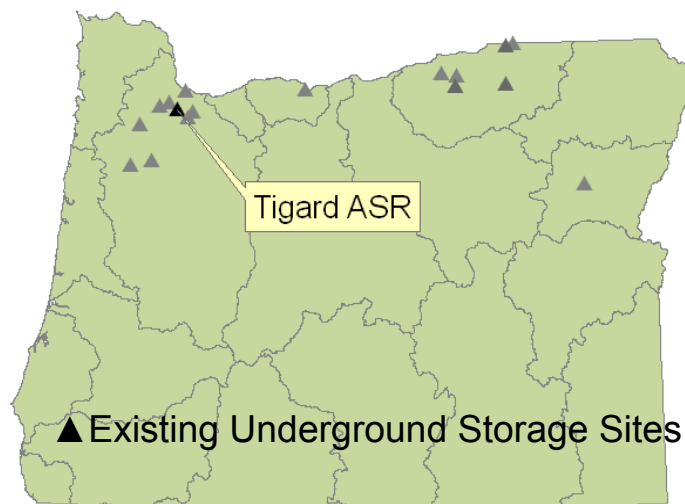


Oregon Underground Storage: Tigard ASR

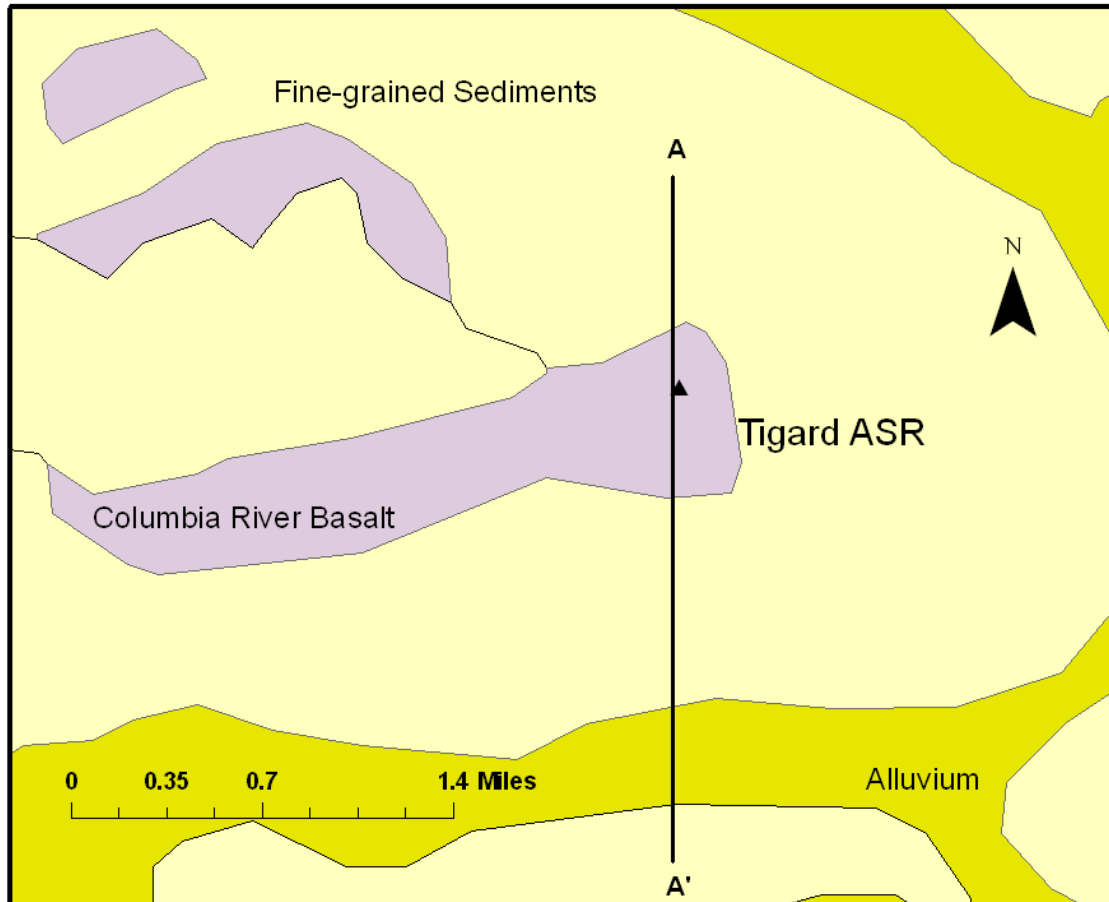


Project Background

- Tigard is located in the northern Willamette Valley.
- The City obtained a limited license to begin testing ASR in 2001.



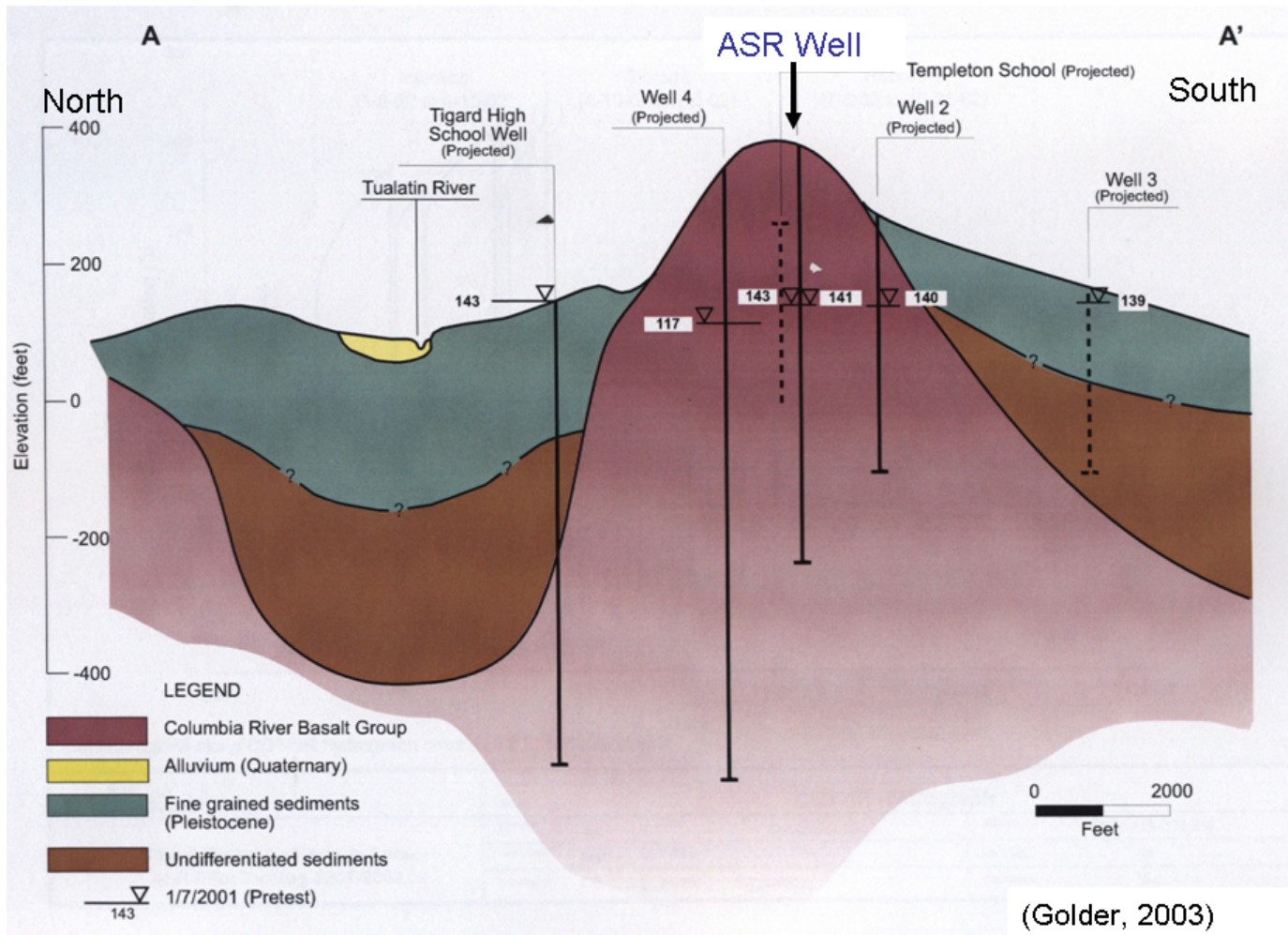
- **Source Water:** Tigard purchases source water at a lower cost during winter months than summer months from suppliers who access the Bull Run and Tualatin/Trask Rivers. This water is stored during low demand months and recovered in high demand months, which represents a net cost savings.



The location of the geologic cross section is indicated by A-A' line.

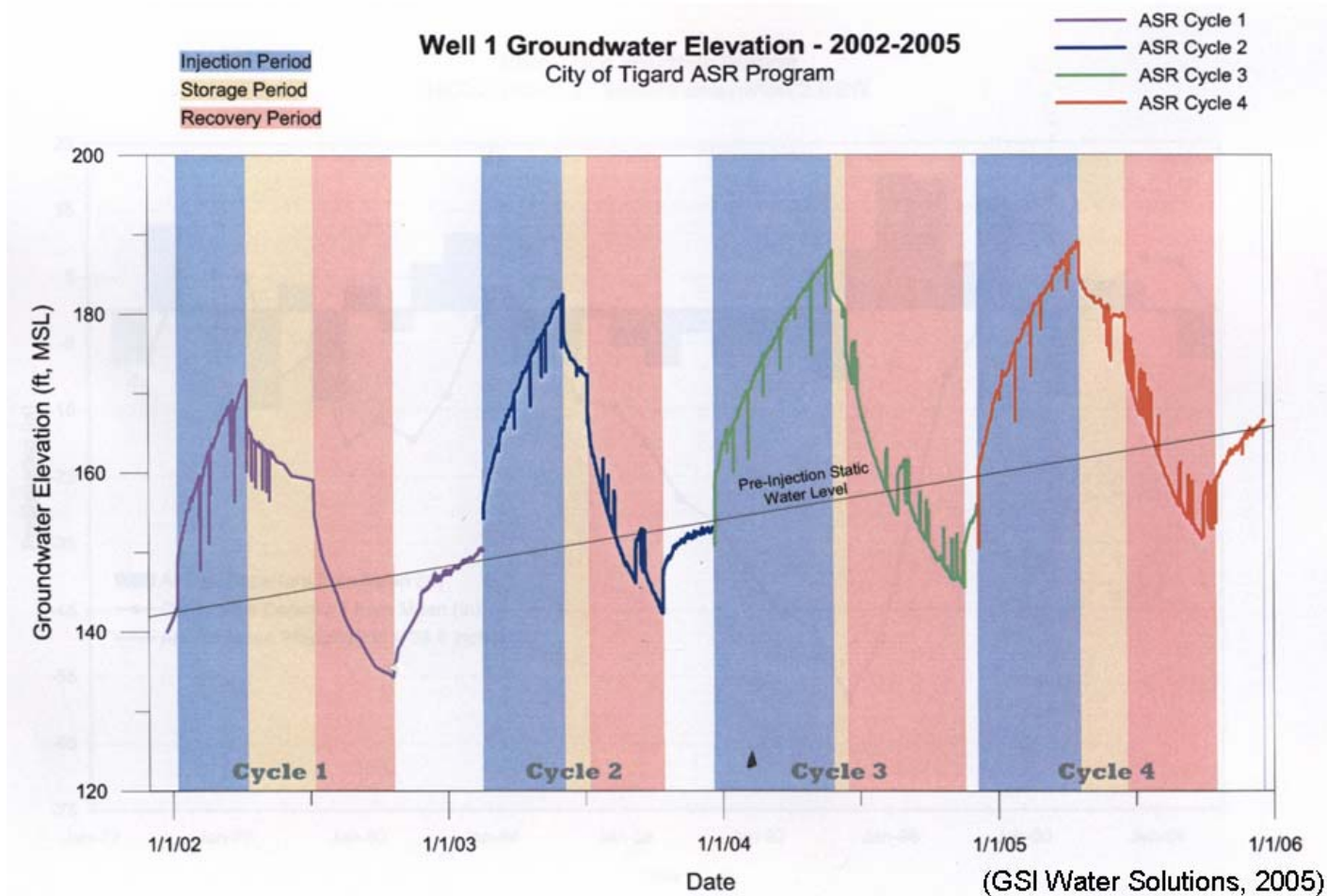
- **Aquifer:** Water is stored in Columbia River Basalt.

Tigard ASR Geologic Cross Section



A conceptual geologic cross-section illustrates the geology around Tigard's ASR well.

- **ASR:** Tigard stores from 97 to 170 million gallons per year, although it is authorized to store up to 400 million gallons per year. Water is recovered at the ASR well during high demand summer months. Operators counteract frequent clogging near the ASR well by periodic backflushing during injection cycles.



A hydrograph at Tigard’s ASR well demonstrates the residual groundwater level rise over time since ASR began in 2002.
(GSI Water Solutions, 2005)