



## Executive Summary

The Wellhead Protection Program in Washington State is designed to prevent contamination of groundwater used for drinking water. To achieve this objective, the state requires public water systems to develop their own site-specific Wellhead Protection Plan. The Department of Health (DOH) has published guidelines for completing a Wellhead Protection Plan (DOH 2010). The City of Tumwater's Wellhead Protection Plan (presented herein) follows the guidelines published by DOH.

Wellhead Protection Areas (WHPAs) were delineated for each of the City's four wellfields (Palermo, Port, Bush and Southwest Wellfields) using a groundwater flow model to simulate capture zones. Golder Associates Inc. (Golder) delineated capture zones for three scenarios:

- Based on the pumping conditions and water levels measured in 1995 (period when comprehensive water level data was available).
- Assuming that pumping rates are equivalent to the City's water rights (7.7 mgd).
- Using the full combined installed capacity of the pumping wells (13.3 mgd; for the Southwest Wellfield, the maximum instantaneous withdrawal rate was taken from the pending water right application for this simulation).

The full installed capacity is the most conservative approach and the WHPAs produced using this scenario were used as the basis for the Contaminant Source Inventory (CSI) and Management Strategies sections of this report.

The CSI showed that there are contaminant sources within the City's WHPAs that warrant continued management and monitoring. Several sites have been flagged for additional review, either on the basis of lack of information, or perceived higher risk (Section 4). It is recommended that sites within the 6-month time-of-travel boundary and sites that handle high-risk materials be addressed first (Tables 4-1 through 4-8). The City should contact the owners of these sites and possibly conduct site visits. Other recommendations include:

- Communication with relevant property owners and community outreach.
- Additional review of contaminated sites.
- Evaluate the effectiveness of Best Management Practices (BMPs) at stormwater facilities located within the WHPAs.
- Work with property owners and the Department of Ecology to decommission heating oil tanks and inactive wells within the WHPA.
- Communicate with and educate owners of septic systems that are classified as non-conforming by Thurston County.
- Update the Contaminant Source Inventory every two years, per WAC 236-290.



The City's overall groundwater management strategies were reviewed as part of the Wellhead Protection Plan. The overall management strategies remain effective but several areas of improvement were identified. Specifically, the existing ordinances should be updated and improved based on the findings and recommendations of the WHPP, potential impacts to groundwater from stormwater runoff should be further assessed, and additional assessment of emerging contaminants is warranted. Recommended improvements to the groundwater monitoring network are also provided.

The City's water supply contingency plans and spill and incident response plans were also reviewed. The City's water supply contingency plans appear to be generally effective management tools and only minor improvements are recommended. The City's spill and incident response plans should be reviewed and updated at least every two years and some coordination with Washington State Patrol, the designated Incident Command Agency for hazardous materials, is necessary.