Topic:	Aquifer Protection
Resource Type:	Regulations
State:	Washington
Jurisdiction Type:	Municipal
Municipality:	City of Tumwater
Year *(adopted, written, etc.)*:	1998-2002
Community Type – applicable to:	Urban; Suburban
Title:	City of Tumwater Wellhead Protection Ordinance
Document Last Updated in Database:	March 21, 2016

Abstract

Tumwater, Washington, has three related aquifer protection ordinances. Tumwater's Wellhead Protection is designed "to develop and implement a wellhead protection program to identify risks of contamination potentially impacting city wells, and to reduce or eliminate those risks." The ordinance identifies four wellhead capture zones at six months, one year, five years, and ten years. Various activities are prohibited within these zones, with the six month zone being more prohibitive than the ten year zone.

Resource

Chapter 16.26

WELLHEAD PROTECTION

16.26.010 Purpose.
The purpose of this chapter is to meet the requirements of Section 1428 of the 1986 Amendments to the Federal Safe Drinking Water Act, as adopted and implemented by Chapters 43.20.050, 70.119A.060, and 70.119A.080 of the Revised Code of Washington and Chapter 246- 290 of the Washington Administrative Code, which require the City to develop and implement a wellhead protection program to identify risks of contamination potentially impacting city wells, and to reduce or eliminate those risks.
(O97-028, Added, 04/21/1998)

16.26.020 Definitions.
A. "AKART" is an acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART shall represent the most current methodology that can be reasonably required for preventing, controlling, or treatment discharge of pollutants. AKART may include, but not be limited to, pollution prevention plan development and implementation, engineering solutions, and practices deemed necessary to prevent release. In determining whether a technology is considered AKART, consideration is given to its technical and economical feasibility. The concept of AKART applies to both point and non-

point sources of pollution. The term "best management practices" typically applied to non-point source pollution controls is considered a subset of the AKART requirement.

B. “Animal unit” is defined as 1,000 pounds of live weight of any given livestock species or any combination of livestock species. Animal equivalents are calculated for each livestock and poultry sector according to estimated rates of manure production for each species. For additional information, refer to the U.S. Department of Agriculture Natural Resource Conservation Service Animal Waste Field Handbook.

C. “Aquifer" means a geologic formation, group of formations or part of a formation capable of yielding a significant amount of groundwater to wells or springs.

D. "Capture zone" means an area in which groundwater is calculated to travel to a pumping well. Capture zones are usually defined according to the time that it takes for water within a particular zone to travel to a well. Calculated capture zones usually only approximate actual capture zones as a result of assumptions required to conduct the calculation.

E. "Contaminant" means any chemical, physical, biological, or radiological substance that does not occur naturally in groundwater in the northern Thurston County groundwater management area (GWMA), or that occurs at concentrations greater than those naturally occurring in the vicinity of the facility.

F. "Development" means any manmade change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavating or drilling operations.

G. "Facility" means something that is built or installed to perform some particular function and includes structures, containment areas and storage areas associated with the facility. |

I. "Groundwater" means all waters that exist beneath the land surface or beneath the bed of any stream, lake or reservoir, or other body of surface water.

J. "Hazardous material" means anything defined as a hazardous substance in Section 173-340-200 of the Washington Administrative Code or as a hazardous material under the Uniform Fire Code as adopted by Tumwater Municipal Code Chapter 15.16.

K. “MPCs” means reasonable Methods of Prevention and Control. Examples of MPCs include, but are not limited to, pollution prevention plan development and implementation, routine maintenance, secondary containment, and measures to eliminate contaminant pathways to the source water.

L. “Pollution prevention plan” means a site-specific plan that addresses the avoidance of unplanned chemical release in the air, water, or land. It is based on deliberate waste management planning, site design, and operational practices.

M. "Release" means any intentional or unintentional entry of any hazardous material into the environment.

N. "Well or wellhead" means and includes any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of an excavation is for the location, diversion, artificial recharge, or withdrawal of ground water.

O. "Wellhead protection area (WHPA)" means the surface or subsurface area surrounding a municipal water well or wellfield through which contaminants are reasonably likely to move toward and reach such water well or wellfield within six months, one year, five years and ten years. WHPAs are areas that are defined for the purpose of water resource management. WHPAs generally include areas identified as capture zones and may include additional areas to account for uncertainties in the delineation of the capture zones.

(O2000-004, Amended, 07/18/2000; O99-001, Amended, 04/20/1999; O97-028, Added,

04/21/1998)

16.26.030 Methodology used.

A computer software program called QuickFlow™ was used in delineating wellhead protection areas (WHPAs), depicted on the documents available for inspection in the City's Development Services Department, for drinking water supply wells of the City of Tumwater (City of Tumwater Wellhead Protection Plan, 1997; letter report to the City of Tumwater, February 3, 1998). Groundwater level data from the United States Geological Survey (1994), water levels of lakes and streams, as well as aquifer data contained in technical reports were used to calibrate the model.

One-, five- and ten-year capture zones were modeled and delineated using the City's 1992 annual production plus 5% to account for growth, which is approximately equivalent to 1997 annual consumption. Average annualized pumping rates of wells were pro-rated according to actual well capacity in 1994. Modeling delineated four discrete ten-year capture zones: the Palermo Well Field; the Port Wells; the Bush Middle School Wells; and the Trails End Well.

Six-month capture zones were also delineated, using the same approach described above, but with different pumping rates. Projected annual demand for the year 2010 (City of Tumwater, Comprehensive Water System Plan) was used, and the loss of one of the major well fields was assumed. Pumping rates for remaining wells were calculated based on peak six-month production rates. Pumping rates of wells were pro-rated according to their 1997 capacity.

Water level data were collected between September, 1995 and March, 1996 to verify groundwater flow directions. The modeled capture zones for the Port of Olympia (Port) and Bush Middle School Wells were consistent with the new water level data. However, the modeled capture zones delineated for the Trails End and Palermo Wells required adjustment to be consistent with the new data. The modeled capture zones of the Trails End and Palermo Wells were rotated around the pumping centers and adjusted to orient them with groundwater flow directions indicated by the new data.

The capture zones were delineated using data that have some uncertainty and/or seasonal variability, and therefore they only approximate the actual capture zones. To account for potential differences between actual and modeled capture zones, wellhead protection areas larger than the modeled capture zones are described in documents available for inspection in the City's Development Services Department to provide an acceptable margin of protection. These safety margins were delineated by rotating the ten-year capture zones ten degrees in each direction. The points of rotation for the respective ten-year capture zones were selected as: the center of the Palermo Well Field; Well 11 for the Port Wells; the center of the Bush Middle School Wells; and the Trails End Well. The rotation did not include rotating the six month capture zones because the protective assumptions of those zones precluded the need for expansion to account for modeling uncertainty.

The resulting ten-year wellhead protection areas were divided into one-, five-, and ten-year zones by lines that are tangential to the most up-gradient reach of the respective capture zones, and perpendicular to the edge of the 10-year WHPA. The six-month WHPA is defined by the boundaries of the six month modeled capture zone. (O97-028, Added, 04/21/1998)

16.26.040 Municipal well protection standards for new and expanding uses.

New development, and expansion or enlargement of existing facilities or uses, of the type described below are prohibited within the designated wellhead protection areas as described in documents available for inspection in the City's Development Services Department, (which includes an overview map, a section map and a document identifying survey points on the wellhead protection area boundaries). Provided however: 1) Expansion or enlargement of any facilities associated with the below described land uses which in no way increases the risk of groundwater contamination shall not be prohibited by this section. (Example: Development or expansion of retail food service in conjunction with an existing gas station or construction or expansion of an office facility used in conjunction with an existing automobile wrecking yard); 2) Development that is required by other federal, state or local government regulations to protect groundwater shall not be prohibited by this section; and 3) Properly permitted and operating on-site septic systems shall not be prohibited.

Where the land uses prohibited in this section are listed as permitted, accessory or conditional uses in Title 18 - Zoning TMC, this section shall control and the uses shall be prohibited.

An existing use or proposed use is deemed to be within the applicable wellhead protection area if any portion of the facility (whether existing or proposed) touches or extends into the applicable wellhead protection area. The mere encroachment of the wellhead protection area on a land tract upon which such facility is located or proposed to be located shall not prohibit otherwise authorized development on the portion of the tract outside the wellhead protection area.

A. The following uses are prohibited within the designated six (6) month and one (1) year wellhead protection areas, as described in documents available for inspection in the City's Development Services Department:

1. Land spreading disposal facilities (as defined by WAC 173-304 - disposal above agronomic rates);
2. Agricultural operations including stockyards and feedlots involving the raising or keeping of farm animals;
3. Gas stations, petroleum products refinement, reprocessing, and storage (except underground storage of heating oil or agricultural fueling in quantities less than 1,100 gallons for consumptive use on the parcel where stored, and above-ground storage for emergency utility purposes), and liquid petroleum products pipelines (SIC Codes 517, 554, 598 and 461);
4. Automobile wrecking yards;
5. Wood waste landfills (as defined by WAC 173-304-100); and
6. Dry cleaners, excluding drop-off only facilities (SIC Code 721).

B. The following uses are prohibited within the designated six (6) month, and one (1), five (5) and ten (10) year wellhead protection areas as depicted on the wellhead protection map available for inspection in the City's Development Services Department:

1. Landfills (municipal sanitary solid waste and hazardous waste);
2. Hazardous waste transfer, storage and disposal facilities;
3. Wood and wood products preserving (SIC Code 2491); and
4. Chemical manufacturing (SIC Code 28).

(O97-028, Added, 04/21/1998; O2000-014, Amended, 07/18/2000; O2002-023, Amended, 12/03/2002)

16.26.050 New and expanding uses involving hazardous materials requiring utilization of all known, available and reasonable technologies

For new development, and expansion or enlargement of existing facilities or uses, of the type described in subsections A-C below which are within the designated six month, and one (1), five (5) and ten (10) year wellhead protection areas, (other than those described in TMC 16.26.040 above), and which use, store, handle or dispose of hazardous materials above the minimum quantities listed below at any time, the applicant shall submit documentation which demonstrates that all known available and reasonable technologies (AKART) will be used to prevent impact to the groundwater. The Development Services Director shall review this documentation to determine whether the proposal shall be approved, denied, or approved with conditions, to insure adequate protection of groundwater. In the case of expansion or enlargement of existing facilities, the requirement to demonstrate that AKART will be used applies only to the expanded or enlarged portion of the facility, and does not apply to the previously existing facility.

An existing use or proposed use is deemed to be within the applicable wellhead protection area if any portion of the facility (whether existing or proposed) touches or extends into the applicable wellhead protection area. The mere encroachment of the wellhead protection area on a land tract upon which such facility is located or proposed to be located shall not prohibit otherwise authorized development on the portion of the tract outside the wellhead protection area.

A. Types of chemical substances regulated in Table 8001.15-a,b,c,d of the Uniform Fire Code, and as subsequently amended. Minimum cumulative quantity: 160 pounds (or the equivalent of 20 gallons).

B. Facilities or uses using cleaning substances for janitorial use or retail sale in the same packaging and concentrations as products packaged for use by the general public. Chlorinated solvents and non-chlorinated solvents which are derived from petroleum or coal tar will not be considered a cleaning substance under this subsection, but rather a chemical substance under subsection A above. Minimum cumulative quantity: 800 pounds (or the equivalent of 100 gallons), not to exceed 55 gallons for any single package.

C. Businesses that use, store, handle or dispose of chemicals listed in WAC 173-303-9903 as "P" chemicals. Minimum quantity: none. Each application that includes a "P" chemical will be reviewed by the Development Services Director to determine if the applicant shall be required to submit documentation which demonstrates that AKART will be used to prevent impact to the groundwater.

(O2000-014, Amended, 07/18/2000; O97-028, Added, 04/21/1998)

16.26.055 Municipal well protection standards for existing uses.

The following shall apply to existing uses located within the designated wellhead protection areas as described in documents available for inspection in the City's Development Services Department, (which includes an overview map, a section map and a document identifying survey points on the wellhead protection area boundaries).

A. For any existing use identified by the pollution source inventory in an area within an approved wellhead protection plan, within the one (1), five (5), and ten (10) year time of travel zones which uses, stores, handles or disposes of hazardous materials above the

minimum quantity thresholds listed in 16.26.050.A-C, the owner, upon request of the City' s Wellhead Protection Program Manager, shall submit a pollution prevention plan that will ensure adequate protection of the source water supply. The program manager, in consultation with the water purveyor in which the use is located, shall review this plan to determine whether the plan shall be approved, or approved with conditions to ensure adequate protection of the source water supply.

Notwithstanding the minimum thresholds listed in 16.26.050.A-C, the City' s Wellhead Protection Program Manager, at his/her discretion, for good cause and with reasonable expectation of risk to ground water, may require pollution prevention plans and MPCs (Methods of Prevention and Control) on any use proposed within the one (1), five (5), and ten (10) year time of travel zones.

B. For any existing agricultural use located within the designated one (1), five (5), and ten (10) year time of travel zones, the owner, upon the request of the City's Wellhead Protection Program Manager, at his/her discretion, for good cause and with reasonable expectation of risk to ground water, and with consultation with the Thurston Conservation District, shall develop and implement a farm conservation plan in conformance with the U.S. Natural Resources Conservation Service Field Office Technical Guide and obtain approval of the Thurston Conservation District Board of Supervisors. For purposes of this section, only those activities in an approved farm plan related to ground water protection must be implemented. However, nothing in this section relieves an agricultural operation from meeting the requirements of other jurisdictions.

(O2000-014, Added, 07/18/2000)

16.26.057 Cessation of prohibited uses.

For an existing nonconforming use which would be prohibited as a new use in a wellhead protection area, as set forth in Section 16.26.040, such use shall be deemed abandoned if it has been discontinued for a period of six (6) months or more, and may not be resumed.

(O2002-023, Added, 12/03/2002)

16.26.060 Protection standards - When applicable.

The wellhead protection areas established for any municipal well shall only regulate development pursuant to TMC 16.26.040 and 16.26.050 after water production has been implemented. In addition thereto, at such time as any municipal well is abandoned for groundwater production, the otherwise applicable regulation shall no longer regulate development.

(O97-028, Added, 04/21/1998)

16.26.070 Amendment to wellhead protection map.

It is anticipated that subsequent to the effective date of this ordinance, new municipal wells will be installed, existing wells may be redeveloped, or new information may become available that may result in the need to amend the wellhead protection map from time to time.

A. When a determination has been made to proceed with the establishment of a new municipal water supply production well or to increase the pumping capacity of an existing production well, the Public Works Director shall notify the Planning and Facilities Director of the need to amend the city's wellhead protection area map to take into account the

establishment of a new well or wells, or the redevelopment of an existing well or wells.

B. When sufficient new information is made available through citizens' or other jurisdictions' studies, or from other sources, to warrant a reevaluation of the wellhead protection area map, and at periodic intervals, but not less frequently than required by law, then the Public Works Director shall notify the Planning and Facilities Director of the need for possible amendments to the wellhead protection area map.

C. Prior to the adoption of such amendments, notice of a public hearing regarding such proposed amendments shall be given by publication and by mail to the property owner(s) of record within the proposed new wellhead protection areas.

D. In the event the wellhead protection area extends into the jurisdiction of Thurston County or Olympia, said affected jurisdiction shall be notified and requested to amend their wellhead protection regulations as appropriate prior to the adoption of such amendments, including timely notification to affected property owners.

(O2000-014, Amended, 07/18/2000; O97-028, Added, 04/21/1998)

16.26.080 Appeals.

Any person believed to be aggrieved by the application of the provisions of this chapter may appeal the matter to the Tumwater Hearing Examiner. Such appeals are governed by TMC 2.58. Appeals challenging wellhead protection area determinations in conjunction with the establishment of wellhead protection areas must be supported by technical evidence provided through competent and credible expert testimony using the methodology set forth in TMC 16.26.030 or an equivalent methodology deemed equally protective by the Hearing Examiner. The Hearing Examiner shall give substantial weight to the technical reports and information used by the City in establishing the particular wellhead protection area alleged to be improper.

(O97-028, Added, 04/21/1998)

16.26.090 Violation - Penalty.

A. Violation of the provisions of this chapter or failure to comply with any of its requirements shall constitute a misdemeanor and shall be punishable by a fine of not more than one thousand dollars or by imprisonment for not more than ninety days, or by both such fine and imprisonment. Each day such violation continues shall be considered a separate, distinct offense.

B. Any person who commits, participates in, assists or maintains such violation may be found guilty of a separate offense and suffer the penalties as set forth in subsection A of this section.

C. In addition to the penalties set forth in subsections A and B of this section, any violation of the provisions of this chapter is declared to be a public nuisance and may be abated through proceedings for injunctive or similar relief in Superior Court or other court of competent jurisdiction.

(O97-028, Added, 04/21/1998)