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Critical Areas—Critical Aquifer Recharge Areas

DR005f



What are critical recharge areas?

The City provides potable water to the public using wells that draw from the aquifer (water bearing strata) below the City. The area which contributes groundwater to the individual well is the headwaters of the well (its wellhead). Five such wells are presently operated by the City. Aquifers are sensitive to activities occurring at the surface and can easily be contaminated.

Generally, areas closest to the city wells are the most critically sensitive to environmental impacts. However, soil permeability and localized surface water can further expand the sensitivity of these aquifers because they are often the sources that recharge an aquifer.

To mitigate potential negative impacts resulting from surface activities, the City regulates land uses differently within each Wellhead Protection Zone (WPZ). Some uses are prohibited within a WPZ while other uses require higher standards of protection to reduce the potential of contaminating the local aquifer.

Classification of WPZs

Wellhead Protection Zones are classified based by *time-of-travel*. This is the amount of time it take for a drop of water to reach the City's wells and get into the drinking water. The zones are:

Prohibited Activities

Land uses or activities for development that would pose a significant hazard to aquifers are prohibited in Wellhead Protection Zones 1 and 2. The City has a list of prohibited activities, examples are: solid waste landfills, permanent dewatering of the aquifer, chemical manufacturing, dry cleaning establishments using perchloroethylene solvents, and other land use activities that could result in a release of hazardous materials or otherwise pose a significant groundwater hazard.

Development in a WPZ

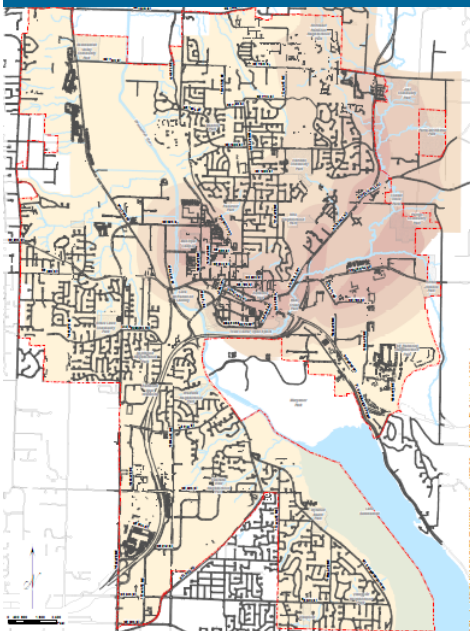
To reduce the potential impacts resulting from hazardous land uses or activities (not associated with residential land uses) in critically important WPZs, the Redmond Zoning Code requires that the uses or activities meet specific performance standards.

Generally, performance standards are triggered whenever *aggregate quantities* of hazardous materials or substances meet or exceed 20 liquid gallons or 200 solid pounds.

WPZs 1 and 2 Performance Standards

- **Secondary Containment** is required whenever the *aggregate quantities* threshold is met or exceeded. The only exemption to this regulation is when hazardous materials are stored in tanks approved by the

Wellhead Protection Zones



Wellhead Protection Zone 1, which represents a 6-month or less time-of-travel.

Wellhead Protection Zone 2, which represents a 1-year or less time-of-travel.

Wellhead Protection Zone 3, which represents a 10-year time-of-travel.

Wellhead Protection Zone 4 represents all the remaining areas of the City not included in Wellhead Protection Zones 1, 2, or 3.

The map on the left illustrates the extent of WPZs in the City. For a full-sized version of the Wellhead Protection Zones map, refer to Redmond Zoning Code [Chapter 21.64, Critical Areas, Map 64.6, Wellhead Protection Zones](#).

City of Redmond
Critical Areas Map
Effective April 16, 2011
Map 64.6 Wellhead Protection Zones



Washington State Department of Ecology and in compliance with the State Underground Storage Tank Regulations.

- **Vehicle Fueling Stations, Equipment Maintenance, and Washing Areas** require a containment system to collect and treat runoff. The system must also prevent the release of all substances associated with the activities. To aid emergency response to hazardous materials and substances, spill kits and appropriate emergency equipment shall be required.
- **Loading and Unloading Areas** require a secondary containment system or equivalent best management practices if any activity in the loading and unloading areas meet or exceed the *aggregate quantities* threshold.
- **Stormwater Infiltration Systems** may only infiltrate stormwater from non-pollution generating surfaces such as clean roofs and sidewalks as described in the [2012 Stormwater Technical Notebook](#).
- **Protection Standards During Construction** are required for any activity that involves hazardous materials or substances that meet or exceed the *aggregate quantities* threshold. As part of permitting a project, the City may require any or all of the following from the developer: a development

agreement, detailed monitoring and compliance with construction standards, a designated supervisor of hazardous materials and substances, secondary containment, specific practices and procedures for vehicles and equipment fueling, and plans for immediate response and clean-up.

- **Best Management Practices (BMPs)** for water quality are required for all new development. BMPs apply a variety of techniques, such as biofiltration swales and oil-water separators. The BMPs must be tailored to the unique situation of the development area and its context.
- **Monitoring Wells and Water Well** installation and removal must be reported to the City, and wells must be properly decommissioned if no longer in use. Similar requirements apply to Cathodic Protection Wells.
- **Fill Materials** imported to any site within the City must be verified clean through submittal of a fill material source statement.
- **Underground Hydraulic Elevator** and lift cylinders must have secondary containment to prevent leaks of hydraulic fluid underground.

WPZ 3 Performance Standards

Development within WPZ 3 needs to comply with the same performance standards as those outlined in WPZs 1 and 2 for *Vehicle Fueling, Equipment Maintenance, and Storage, Well Construction and Operation, Fill Materials, Cathodic Protection Wells, Underground Hydraulic Elevator Cylinders, and Best Management Practices*.

WPZ 4 Performance Standards

Development within WPZ 4 needs to

use *Best Management Practices* for water quality.

Critical Areas Report

Wellhead Protection Program staff review development proposals, construction and tenant improvement permits to help ensure that they are in compliance with codes related to groundwater protection, critical areas regulations, secondary containment requirements, and prohibited land uses.

Development or redevelopment of a property within WPZs 1, 2 or 3 will require the preparation of a [Critical Areas Report](#) for wellhead protection to determine that the proposed development and activities will not adversely impact groundwater resources. The CAR must be completed by a Professional Engineer or Licensed Geologist.

For [more information](#) regarding wellhead protection and development within WPZs, please contact the Wellhead Protection program via e-mail at groundwater@redmond.gov or calling Kevin Murphy at 425-556-2756.

Applicable Code Sections

RZC 21.64.050: *Critical Aquifer Recharge Areas*

RMC 13.07: *Wellhead Protection*

RMC 15.24: *Clearing, Grading, and Stormwater Management*

Guide: *2012 Stormwater Technical Notebook*

Questions: 425-556-2494 or planneroncall@redmond.gov.

You can also visit us in person at the Development Services Center located on the 2nd floor of City Hall. Open Monday through Friday from 8 am to 5 pm.

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