

UDC groundwater protection/seawater intrusion amendments

In response to December 5, 2002 Compliance Order
concerning Marrowstone Island

March 3, 2003

Section 3 Land Use Districts

3.6 Overlay Districts

3.6.5 Critical Aquifer Recharge Areas.

a. **Classification.** Critical Aquifer Recharge Areas are naturally susceptible due to the existence of permeable soils or a seawater wedge in coastline aquifers. Certain overlying land uses can lead to water quality and/or quantity degradation. The following classifications define Critical Aquifer Recharge Areas.

(1) **Susceptible Aquifer Recharge Areas** are those with geologic and hydrologic conditions that promote rapid infiltration of recharge waters to groundwater aquifers. For the purposes of this section, unless otherwise determined by preparation of an Aquifer Recharge Area Report authorized under this section, the following geologic units, as identified from available State of Washington Department of Natural Resources geologic mapping, define Susceptible Aquifer Recharge Areas for east Jefferson County:

- i. Alluvial fans (Ha),
- ii. Artificial fill (Hx),
- iii. Beach sand & gravel (Hb),
- iv. Dune sand (Hd),
- v. Flood plain alluvium (Hf),
- vi. Vashon recessional outwash in deltas and alluvial fans (Vrd),
- vii. Vashon recessional outwash in meltwater channels (Vro),
- viii. Vashon ice contact stratified drift (Vi),
- ix. Vashon ablation till (Vat),
- x. Vashon advance outwash (Vao),
- xi. Whidbey formation (Pw), and
- xii. Pre-Vashon stratified drift (Py).

(2) Those areas meeting the requirements of Susceptible Aquifer Recharge Areas (above) and which are overlain by the following land uses as identified in this Code are subject to the provisions of the protection standards in this Section:

- i. All Industrial Land Uses
- ii. All Commercial Uses
- iii. All Rural Residential Land Uses
 - A. requiring a Discretionary Use or Conditional Use Permit or
 - B. with nonconforming uses that would otherwise require a Discretionary Use or Conditional Use Permit
- iv. Unsewered Planned Rural Residential Developments
- v. Unsewered residential development with gross densities greater than one unit per acre

(3) **Special Aquifer Recharge Protection Areas** include:

- i. Sole Source Aquifers designated by the U.S. Environmental Protection Agency in accordance with the Safe Drinking Water Act of 1974 (Public Law 93-523).

- ii. Special protection areas designated by the Washington Department of Ecology under Chapter 173-200 WAC.
 - iii. Wellhead Protection Areas determined in accordance with delineation methodologies specified by the Washington Department of Health under authority of Chapter 246-290 WAC.
 - iv. Ground Water Management Areas designated by the Washington Department of Ecology in cooperation with local government under Chapter 173-100 WAC.
- (4) **Seawater Intrusion Protection Zones (SIPZ)** are aquifers and land overlying aquifers with some degree of vulnerability to seawater intrusion. SIPZ are defined either by proximity to marine shoreline or by proximity to groundwater sources that have demonstrated high chloride readings. All islands and land area within ¼ mile of marine shorelines and associated aquifers together compose the coastal SIPZ. Additionally, areas within 1000 feet of a groundwater source with a history of chloride analyses above 100 milligrams per liter (mg/L) are categorized as either at risk (between 100 mg/L and 200 mg/L) or high risk (over 200 mg/L) SIPZ. Individual groundwater sources with a history of chloride analyses above 200 mg/L shall be considered “sea-salt water intrusion areas,” which are among the “sources or potential sources of contamination” listed in Washington Administrative Code (WAC) 173-160-171, implementing code for the Water Well Construction Act.

The whole of Marrowstone Island will be designated a high risk SIPZ and a “sea-salt water intrusion area” per WAC 173-160-171 on December 31, 2004 or when public water is available to the Island, whichever is sooner. Jefferson County is actively working with partner agencies to establish a public water source on Marrowstone Island as a long-term solution to aquifer degradation due to seawater intrusion.

In some cases, high chloride readings may be indicative of connate seawater (i.e., relic seawater in aquifers as opposed to active seawater intrusion). When best available science or a hydrogeologic assessment demonstrate that high chloride readings in a particular area are due to connate seawater, the area in question shall *not* be considered an at risk or high risk SIPZ. When the status of an area is in question, the UDC Administrator is responsible for making the determination based upon recommendation from County Department of Health and Human Services.

- b. **Designation.** Jefferson County shall prepare and exhibit dated Critical Aquifer Recharge Area maps which demonstrate the approximate distribution of the Susceptible Aquifer Recharge Areas, Special Aquifer Recharge Protection Areas, and Seawater Intrusion Protection Zones. The Critical Aquifer Recharge Area maps shall be periodically revised, modified, and updated to reflect additional information.
- c. **Applicability.**
 - (1) The following land use activities are considered high impact land uses due to the probability and/or potential magnitude of their adverse effects on groundwater and shall be prohibited in Susceptible Aquifer Recharge Areas and Special Aquifer Recharge Protection Areas. In all other areas of the County outside of Susceptible Aquifer Recharge Areas and Special Aquifer Recharge Protection Areas, these activities shall require an Aquifer Recharge Area Report pursuant to this Section.
 - i. Chemical manufacturing and reprocessing;
 - ii. Creosote/asphalt manufacturing or treatment (except that asphalt batch plants may be permitted in Susceptible Aquifer Recharge Areas ONLY if such areas lie outside of Special Aquifer Recharge Protection Areas and ONLY if best management practices are implemented pursuant to sections 4.24.8d and 6.17 of this Code and an accepted Aquifer Recharge Area Report);
 - iii. Electroplating and metal coating activities;
 - iv. Hazardous waste treatment, storage and disposal facilities;
 - v. Petroleum product refinement and reprocessing;

- vi. Underground storage tanks for petroleum products or other hazardous materials;
 - vii. Recycling facilities as defined in this Code;
 - viii. Solid waste landfills;
 - ix. Waste piles as defined in Chapter 173-304 AC;
 - x. Wood and wood products preserving;
 - xi. Storage and primary electrical battery processing and reprocessing.
- (2) All other land uses shall be subject to the protection standards contained in this Section and mitigating conditions included with an Aquifer Recharge Area Report, where applicable.
- (3) **Seawater Intrusion Protection Zones.** Marine shorelines and islands are susceptible to a condition that is known as seawater intrusion. Seawater intrusion is a condition in which the saltwater/freshwater interface in an aquifer moves inland so that wells drilled on upland areas cannot obtain freshwater suitable for public consumption without significant additional treatment and cost. Maintaining a stable balance in the saltwater/freshwater interface is primarily a function of the rate of aquifer recharge (primarily through rainfall) and the rate of groundwater withdrawals (primarily through wells). ~~The Washington Department of Ecology is the agency with statutory authority to regulate groundwater withdrawal for individual wells in Jefferson County.~~ New development, redevelopment, and land use activities on islands and in close proximity to marine shorelines in particular should be developed in such a manner to maximize aquifer recharge and maintain the saltwater/freshwater balance to the maximum extent possible by infiltrating stormwater runoff so that it recharges the aquifer.
- d. **Protection Standards.**
- (1) **General.** The following protection standards shall apply to land use activities in Susceptible Aquifer Recharge Areas and Special Aquifer Protection Areas, and when specified in Seawater Intrusion Protection Zones, unless mitigating conditions have been identified in a Critical Aquifer Recharge Report that has been prepared pursuant to this section.
- (2) **Stormwater Disposal.**
- i. Stormwater runoff shall be controlled and treated in accordance with best management practices and facility design standards as identified and defined in the Stormwater Management Manual for the Puget Sound Basin, as amended and the stormwater provisions contained in Section 6 of this Code.
 - ii. To help prevent seawater from intruding landward into underground aquifers, all new development activity on Marrowstone Island, Indian Island and within ¼ mile of any marine shoreline shall be required to infiltrate all stormwater runoff onsite. The Administrator will consider requests for exceptions to this policy on a case-by-case basis and may require a hydrogeologic assessment.
- (3) **On-Site Sewage Disposal.**
- i. All land uses identified in Section 3.6.5.a and Special Aquifer Recharge Protection Areas that are also classified as Susceptible Aquifer Recharge Areas (as defined in this Section), shall be designated Areas of Special Concern pursuant to Chapter 246-272-21501 WAC.
 - A. Such designation shall identify minimum land area and best management practices for nitrogen removal as design parameters necessary for the protection of public health and groundwater quality.
 - B. Best Management Practices (BMPs) shall be adopted by action of the Board of Health.

- ii. As new information becomes available that would classify an area as a Special Aquifer Recharge Protection Area or an Area of Special Concern under this Section, said area may be designated as such by the County. Any additional Areas of Special Concern designated through this process shall receive the same protections identified in Subsection (3)i.A and B above.
- (4) **Golf Courses and Other Turf Cultivation.** Golf courses shall be developed and operated in a manner consistent with "Best Management Practices for Golf Course Development and Operation", King County Environmental Division (now: Department of Development and Environmental Services), January 1993. Recreational and institutional facilities (e.g. parks and schools) with extensive areas of cultivated turf, shall be operated in a manner consistent with portions of the aforementioned best management practices pertaining to fertilizer and pesticide use, storage, and disposal.
 - (5) **Commercial Agriculture.** Commercial agricultural activities, including landscaping operations must be operated in accordance with best management practices for fertilizer, pesticide, and animal waste management as developed by the Jefferson County Conservation District.
 - (6) **Above Ground Storage Tanks.** Above ground tanks shall be fabricated, constructed, installed, used and operated in a manner which prevents the release of a hazardous substances or dangerous wastes to the ground or groundwater. Above ground storage tanks intended to hold or store hazardous substances or dangerous wastes are provided with an impervious containment area, equivalent to or greater than 100 percent of the tank volume, enclosing and underlying the tank, or ensure that other measures are undertaken as prescribed by the Uniform Fire Code which provide an equivalent measure of protection.
 - (7) **Mining and Quarrying.** Mining and quarrying performance standards containing ground water protection best management practices pertaining to operation, closure, and the operation of gravel screening, gravel crushing, cement concrete batch plants, and asphalt concrete batch plants, where allowed, are contained in Sections 4 and 6 of this Code.
 - (8) **Hazardous Materials.** Land use activities that generate hazardous waste, which are not prohibited outright under this code, and which are conditionally exempt from regulation by the Washington Department of Ecology under WAC 173-303-100, or which use, store, or handle hazardous substances, shall be required to prepare and submit a hazardous materials management plan that demonstrates that the development will not have an adverse impact on ground water quality. The hazardous materials management plan must be updated annually by the facility owner.
 - (9) **Well Drilling, Land Division, and Building Permits** in Seawater Intrusion Protection Zones.
 - i. *Well Drilling:* The Washington State Department of Ecology regulates well drilling pursuant to the Water Well Construction Act. Proposed wells, including those exempt from permitting requirements, must be sited at least 100 feet from "known or potential sources of contamination," which include "Sea-salt water intrusion areas" (WAC 178-160-171), unless a variance is obtained from Ecology per WAC 173-160-106.
 - ii. *Subdivisions:* Applications for land division (UDC Section 7) when the average net density proposed is less than five acres per dwelling unit must include specific and conclusive proof of adequate supplies of potable water through a qualifying hydrogeologic assessment (relevant components of an Aquifer Recharge Area Report per UDC 3.6.10.e) that demonstrates that the

creation of new lots and corresponding use of water will not impact the subject aquifer such that water quality is degraded by seawater intrusion.

Marrowstone Island Subdivision Moratorium: Due to the documented phenomenon of seawater intrusion on Marrowstone Island and the existence of undeveloped lots of record, Jefferson County has imposed a moratorium on additional land divisions on the Island until such time as public water is available.

iii. *Building Permits:*

- A. Evidence of potable water may be an individual well, connection to a public water system, or an alternative system. Whatever method is selected, the regulatory and operational standards for that method must be met, including Jefferson County Health Codes and Washington Administrative Code.
- B. All types of building permits that require proof of potable water use are subject to this policy, specifically building permits for new single-family residences (SFRs) or other structures with plumbing that are not associated with an existing SFR (i.e., shops or garages with a bathroom).

iv. Voluntary and mandatory measures of the Jefferson County seawater intrusion policy apply to development proposals within the coastal, at risk, and high risk SIPZ, and upon Marrowstone Island, in the following manner, in addition to all existing applicable Health Codes:

A. COASTAL SIPZ

VOLUNTARY ACTIONS:

- 1. Water conservation measures.
- 2. Installation of a flow meter.
- 3. On-going well monitoring for chloride concentration.
- 4. Submittal of data to County.

MANDATORY ACTIONS:

- 1. For proof of potable water on a building permit application, applicant must utilize DOH-approved public water system *if available*.
- 2. If public water is unavailable, an individual well may be used as proof of potable water subject to the following requirements:
 - o Chloride concentration of a laboratory-certified well water sample submitted with building permit application.
- 3. If public water is unavailable, a qualifying alternative system may be used as proof of potable water.

B. AT RISK SIPZ

VOLUNTARY ACTIONS:

- 1. Water conservation measures.

MANDATORY ACTIONS:

- 1. For proof of potable water on a building permit application, applicant must utilize DOH-approved public water system *if available*.
- 2. If public water is unavailable, an individual well may be used as proof of potable water subject to the following requirements:
 - o Chloride concentration of a laboratory-certified well water sample submitted with building permit application.

- Installation of a flow meter.
 - On-going well monitoring for chloride concentration.
 - Submittal of flow and chloride data to the County per monitoring program.
3. If public water is unavailable, a qualifying alternative system may be used as proof of potable water.

C. HIGH RISK SIPZ

MANDATORY ACTIONS:

1. Water conservation measures (per list maintained by UDC Administrator).
2. For proof of potable water on a building permit application, applicant must utilize DOH-approved public water system *if available*.
3. If public water is unavailable, an individual well *may only be used* as proof of potable water subject to the following requirements:
 - Variance from Chapter 173 WAC standards granted by Ecology per WAC 173-160-106 for a new groundwater well within 100 feet of a sea-salt water intrusion area per WAC 173-160-171 (i.e., within 100 feet of a groundwater source showing chloride concentrations above 200 mg/L or within 100 feet of the marine shoreline); *or* for an existing groundwater well not subject to an Ecology variance, applicant must provide evidence through a hydrogeologic assessment (relevant components of an Aquifer Recharge Area Report per UDC 3.6.10.e) of a reasonable probability that the subject aquifer will *not* be degraded by the proposed use of the well.
 - Chloride concentration of a laboratory-certified well water sample submitted with building permit application.
 - If chloride concentration exceeds 250 mg/L in a water sample submitted for a building permit, then the property owner shall be required to record a restrictive covenant that indicates a chloride reading exceeded the U.S. Environmental Protection Agency secondary standard (250 mg/L) under the National Secondary Drinking Water Regulations.
 - Installation of a flow meter.
 - On-going well monitoring for chloride concentration.
 - Submittal of flow and chloride data to the County per monitoring program.
4. If public water is unavailable, a qualifying alternative system may be used as proof of potable water.

C. MARROWSTONE ISLAND

In addition to all voluntary and mandatory actions associated with the applicable SIPZ as described above, the following measures apply to all development proposals on Marrowstone Island that include groundwater withdrawal:

VOLUNTARY ACTIONS

1. Installation of timers together with new well pump installations to enable pump use limitation to low demand times.

MANDATORY ACTIONS

1. The use of a new well shall be conditioned through the associated building permit such that enrollment in a County-sponsored monitoring program is required, including periodic submittal of flow and chloride data as determined by the County.
2. Installation of a source-totalizing meter (flow).
3. Installation of a variable speed pump, controllable from the surface, in order to enable reduction of withdrawal rate, as may be necessary.
4. Installation of a 1,000-gallon minimum storage tank [that shall conform to the ANSI/NSF Standard 61.](#)
5. **Marrowstone Island Groundwater Use Limitation:** Groundwater withdrawal from all individual exempt wells, new and existing, on Marrowstone Island shall be limited to 1,000 gallons per day under the authority of the Growth Management Act (RCW 36.70A).

- (10) **Mitigating Conditions.** The Administrator may require additional mitigating conditions, as needed, to provide protection to all Critical Aquifer Recharge Areas to ensure that the subject land or water use action will not pose a risk of significant adverse groundwater quality impacts. The determination of significant adverse groundwater quality impacts will be based on the Antidegradation policy included in Chapter 173-200 WAC.
- (11) **Authority for Denial.** The Administrator may deny approval if the protection standards contained herein or added mitigating conditions cannot prevent significant adverse groundwater quality impacts.