

## Chapter 7 Design Goals

The purpose of the information in Chapters 7 through 10 is to provide engineers, designers, technicians, inspectors, and others with a reference to City of Redmond's goals and standards for the planning and design of clearing and grading activities and stormwater management facilities.

The following design goals are applied to clearing, grading, and stormwater system designs in Redmond. Design goals are broad targets that indicate desirable outcomes, even though they may not be fully met in specific situations. Failure to completely meet a general design goal (e.g., minimize erosion and sedimentation) is not intended to constitute a deficiency subject to legal or procedural challenge. The goal must, however, be reasonably addressed in specific situations. If an alternate approach to a project's stormwater management design would provide a significantly greater achievement of a goal without significant additional cost (monetary, land use, etc.) then the alternative could be considered an alternative that is reasonable and could be required under this chapter. Clearing, Grading, and Stormwater Management goals and design requirements need to be compliant with Redmond Municipal Code 15.24 intent, goals, and requirements. Specific situations can only be evaluated on a case-by-case basis.

### 7.1 Provide a Basic System of Drainage

The drainage system shall:

- serve all lots and site improvements that are part of or affected by the project;
- direct runoff off of and away from buildings, traveled ways, and other developed surfaces; and
- provide water quality management where appropriate.

Basic systems protect walkways, crosswalks, etc., from concentrated runoff flows (for example, by adding catch basins upslope of the walkways).

### 7.2 Prevent Flooding of Inhabited Buildings

Overflow and emergency runoff routes shall be provided. Floodways adjacent to defined channels should accommodate flood flows (to at least the 100-year storm from fully developed upstream conditions). Projects that are located within the floodplain shall submit a Flood Control Zone Application (Appendix E) prior to submittal of final engineering drawings.

### 7.3 Minimize Erosion and Sedimentation

During construction, development activities can have significant and long term impacts on aquatic ecosystems. Reducing these impacts by meeting all 12 elements of the Temporary Erosion and Sediment Control Plan, and responding quickly to unforeseen additional erosion and

sediment control needs greatly reduces the impacts from construction. In addition, permanent stormwater controls need to control runoff volumes for the design frequency storms to reduce adverse hydrologic impacts from runoff volume increases.

#### **7.4 Minimize Water Quality Degradation**

Runoff treatment facilities are necessary and required by State law and Redmond Municipal Code to reduce degradation of surface water bodies and groundwater. Site layouts and stormwater designs that minimize pollution-generating impervious surfaces, inherently reduce pollution. Last, source control measures in the site design are required to reduce the quantity of pollution sources contaminating runoff.

#### **7.5 Don't Mix Clean and Untreated Stormwater**

Stormwater that has been treated for water quality should not be mixed with stormwater that has not been treated for water quality.

#### **7.6 Protect Water-Related Habitat**

Refer to the Critical Areas Code Requirements (contained in the Redmond Zoning Code).

#### **7.7 Maintain Recharge and Subsurface Flow Patterns**

Maintaining groundwater supplies is important, but do not increase recharge over natural conditions without careful hydro-geologic studies to avoid land stability problems. In areas of existing land stability concerns, recharge should be reduced. Water quality is critical for recharge areas. Infiltration of runoff from PGIS is limited by Wellhead Protection Zones; infiltration from clean surfaces is encouraged (see Section 8.7.4.3).

#### **7.8 Address "Real-World" Conditions**

Engineering designs should recognize that field conditions, debris, and poor maintenance/repair practices exist which need to be considered so long-term viability is possible.

#### **7.9 Provide for Operation and Maintenance**

Elements of the system proposed need to be capable of operating in the municipal context, have good access for maintenance and operation, and need to avoid very specialized parts, equipment, and operator qualifications whenever possible.

#### **7.10 Proceed Based on Clear, Professional Thinking**

Engineering documents submitted for approval must have clear concepts (including a narrative description if concepts are non-standard or not obvious) and design explanations, calculations, and other supporting information to show that the construction drawings implement the concepts.

### **7.11 Meet Standards**

Designs need to: (1) comply with City regulations and standards; (2) comply with accepted legal principles; (3) apply sound engineering principles; and (4) include alternatives or adjustments to enhance aesthetics.