

## 4.0 Affected Environment

The purpose of this section is to provide a description of the environment that might be affected by the alternatives discussed in Section 3. Because the Hanford Site is so large, the description includes much of the Site itself, as well as the surrounding areas. Information used in this section was taken from the *Hanford Site National Environmental Policy Act (NEPA) Characterization Report* (Neitzel 2002a), unless otherwise noted.

The affected environment section includes:

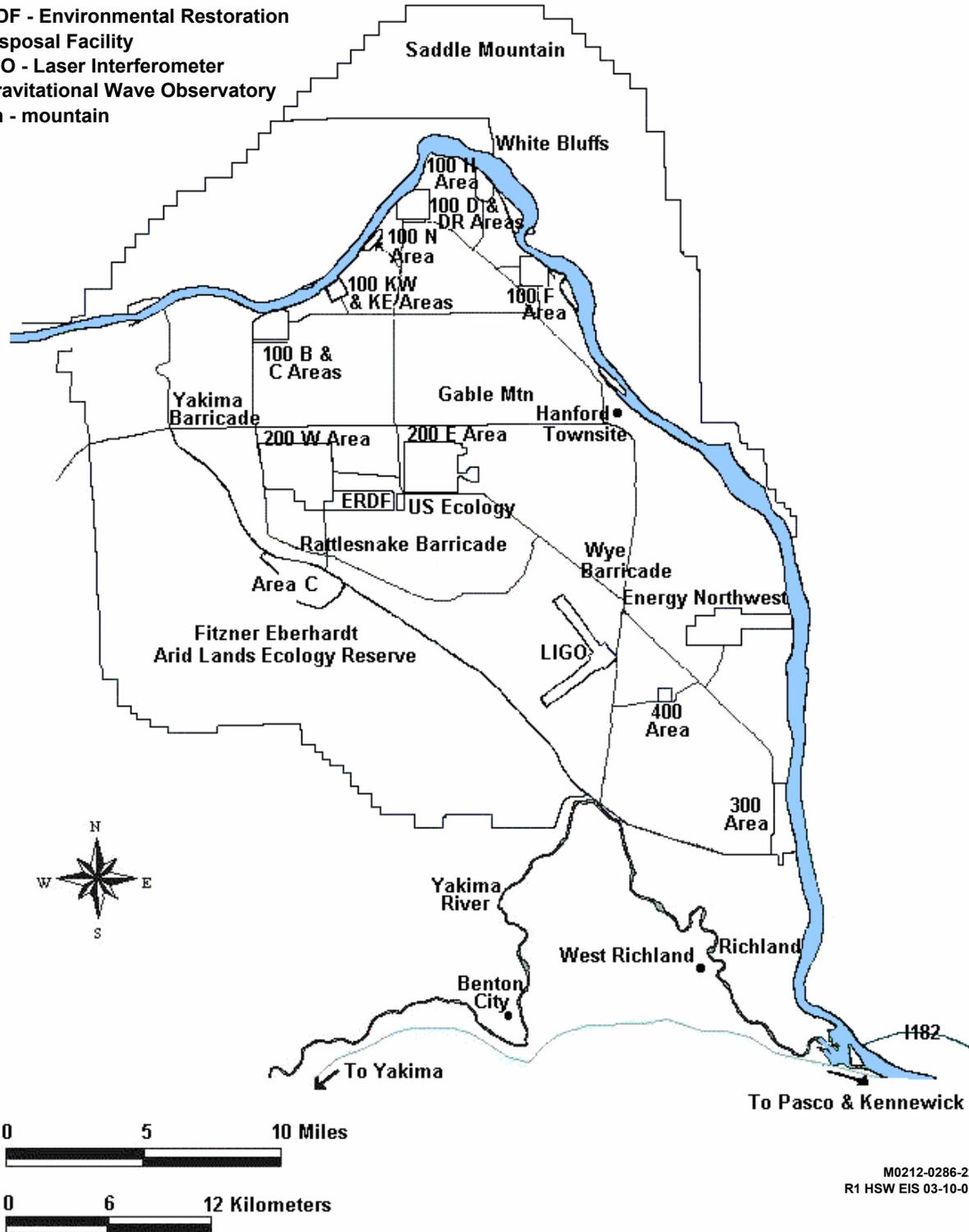
- Land Use
- Meteorology and Air Quality
- Geology, Soils, and Seismology
- Hydrology
- Biology and Ecology
- Cultural Resources
- Socioeconomics
- Noise
- Occupational Safety
- Occupational Radiation Exposure.

### 4.1 Introduction

The focus of solid waste management activities related to the Hanford Solid (Radioactive and Hazardous) Waste Environmental Impact Statement (HSW EIS) is within the existing boundaries of the Hanford Site 200 Areas or at the Environmental Restoration and Disposal Facility (ERDF). Located on the Central Plateau (i.e., 200 Area Plateau) of the Hanford Site, the 200 East and 200 West Areas are approximately 8 and 11 km (5 and 7 mi), respectively, south and west of the Columbia River. The 200 Areas facilities were built to process irradiated fuel from the production reactors. Subsequent liquid wastes, produced as a result of the fuel processing, were placed in tanks or disposed of in cribs, ponds, or ditches in the 200 Areas. Treatment, storage, and disposal of solid wastes are accomplished in the 200 Areas.

The U.S. Department of Energy (DOE) Hanford Site (Figure 4.1) lies within the semiarid Pasco Basin of the Columbia Plateau in southeastern Washington State. The Site occupies an area of about 1,517 km<sup>2</sup> (586 mi<sup>2</sup>) north of the confluence of the Yakima River with the Columbia River. The Hanford Site measures approximately 50 km (31 mi) north to south and 40 km (25 mi) east to west. The major portion of this land, with restricted public access, provides a buffer for the smaller areas currently used for nuclear materials storage, waste storage, and waste disposal.

ERDF - Environmental Restoration  
 Disposal Facility  
 LIGO - Laser Interferometer  
 Gravitational Wave Observatory  
 mtn - mountain



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**Figure 4.1.** Department of Energy – Hanford Site (after Neitzel 2002a)

1 The Columbia River flows through the northern part of the Hanford Site and, turning south, forms  
2 part of the eastern Site boundary. The Yakima River runs near the southern boundary of the Hanford Site,  
3 joining the Columbia River at the city of Richland that bounds the Hanford Site on the southeast. Rattle-  
4 snake Mountain, Yakima Ridge, and Umtanum Ridge form the southwestern and western boundaries.  
5 Saddle Mountain constitutes the northern boundary of the Hanford Site. Two small east-west ridges,  
6 Gable Butte and Gable Mountain, rise above the plateau in the central part of the Hanford Site.  
7 Adjoining lands to the west, north, and east are principally agricultural and rangeland. The cities of  
8 Kennewick, Pasco, and Richland (Tri-Cities) and the city of West Richland constitute the nearest  
9 population centers and are located south-southeast of the Hanford Site.

## 11 4.2 Land Use

13 DOE completed the Hanford Comprehensive Land-Use Plan Environmental Impact Statement  
14 (HCP EIS; DOE 1999) in September 1999. A Record of Decision (ROD) was issued on November 2,  
15 1999 (64 FR 61615), which adopted the Preferred Alternative as discussed in the EIS. The purpose of  
16 this land-use plan and its implementing policies and procedures is to facilitate decision-making about  
17 Hanford Site uses and facilities over at least the next 50 years. The Preferred Alternative map from the  
18 Final Hanford Comprehensive Land-Use Plan EIS ROD shown in Figure 4.2 represents the DOE future  
19 land-management values, goals, and objectives. The land-use plan consists of several key elements that  
20 are included in the DOE Preferred Alternative in the Final HCP EIS (DOE 1999). These elements include  
21 a land-use map that addresses the Hanford Site as five geographic areas—Wahluke Slope, Columbia  
22 River Corridor, Central Plateau, all other areas of the site, and the Fitzner/Eberhardt Arid Lands Ecology  
23 Reserve (ALE). The key elements of the Hanford Comprehensive Land-Use Plan include a map that  
24 depicts the planned future uses, a set of land-use designations defining the allowable uses for each area of  
25 the Hanford Site, and the planning and implementing policies and procedures that will govern the review  
26 and approval of future land uses. Together these four elements create the Hanford Comprehensive Land-  
27 Use Plan. Much of the land is undeveloped, providing a buffer area for the smaller operations areas.  
28 Public access to most facility areas is restricted.

30 The key features of the Hanford Site that form the basis for the five geographic areas used in the  
31 environmental impact analysis and land-use plans are summarized as follows:

33 **Wahluke Slope.** The area north of the Columbia River and the Hanford Site proper encompasses  
34 approximately 357 km<sup>2</sup> (138 mi<sup>2</sup>) of relatively undisturbed or recovering shrub-steppe habitat  
35 managed by the U.S. Fish and Wildlife Service (FWS) for DOE. These lands consist of two overlay  
36 wildlife management units within the Hanford Reach National Monument/Saddle Mountain National  
37 Wildlife Refuge, the 130 km<sup>2</sup> (50 mi<sup>2</sup>) Saddle Mountain Unit, and the 225 km<sup>2</sup> (87 mi<sup>2</sup>) Wahluke  
38 Unit. Portions of the Saddle Mountain Unit, which is closed to public access, still serve as buffer  
39 areas for the Hanford Site. The Wahluke Unit is open to public recreational access. A small strip of  
40 land approximately 1.62 km<sup>2</sup> (0.63 mi<sup>2</sup>) located between State Route (SR) 243 and the Columbia  
41 River west of SR 24 is managed by the Washington State Department of Fish and Wildlife.