CHAPTER 7
GOAL 7: AREAS SUBJECT TO NATURAL DISASTERS & HAZARDS

SECTION 7.0 AREAS SUBJECT TO NATURAL DISASTERS AND HAZARDS GOAL

To protect life and property from natural disasters and hazards.

SECTION 7.1 AREAS SUBJECT TO NATURAL DISASTERS & HAZARDS BACKGROUND & DISCUSSION

7.1.100 GEOLOGY

Structurally, the Umatilla River basin area consists of a number of synclines and anticlines.[29] The City of Umatilla is situated near the intersection of two such features. The Service anticline trends northward from Service Buttes, northeast of Pine City, to Sillusi Butte in Washington. Locally, the remnants of this ridge are evident at Hermiston and Umatilla buttes. The folding of this anticline is sharply warped, low, and locally faulted. Trending at almost a right angle to the Service anticline is a rather broad syncline. The axis of this syncline carries westward from the vicinity of Athena to the Columbia River and generally parallels its course. This is a rather broad down warp and its exact location is indefinite.[30]

The major topographic features of the area are controlled by the Columbia River basalt. The exact thickness of the basalt in the Umatilla vicinity is not known, but is believed to exceed 2,500 feet. The basalt is locally evident at Umatilla Butte. With the exception of the Columbia River shoreline, which is comprised of recent alluvium, the Umatilla area consists of glaciofluviatile deposits of the Pleistocene era. All of this material consists of poorly sorted silt, sand, and gravel, deposited by the swollen ice-age Columbia River.[31]

The Service anticline is the only geologically restrictive feature of the area. In that the anticline is locally faulted, development and well drilling along it should be avoided. The exact location of the faults along the anticline are not known. The geological features of the Umatilla area are portrayed in *Figure 7.1-1*. As can be seen in *Figure 7.1-1*, some areas have basalt at or near the surface. These areas will present difficulties to development in the placing of underground utilities, grading and site preparation. This has been incorporated into the developable areas map.

[29] An anticline is an arch of stratified rock in which the layers bend upward to a crest. A syncline is a depression, similar formed, bending downward.
[30] G. M. Hogenson, Geology & Ground Water of the Umatilla Basin, p. 29-41.
[31] Ibid., p. 29-41.

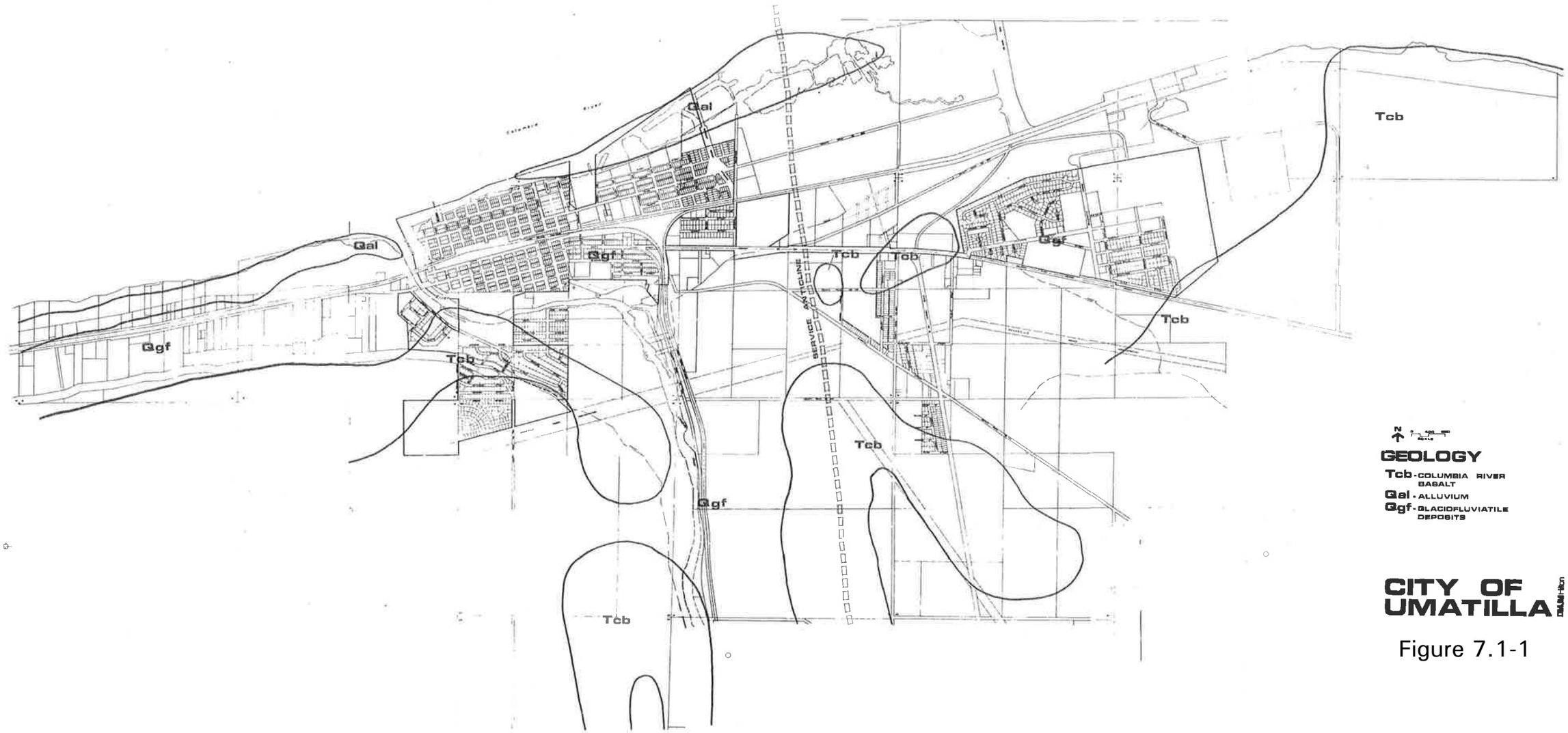
Qal
Tcb
Qal
Qgf
Qgf
Tcb
Tcb
Tcb
Qgf
SERVICE ANTICLINE
Tcb
Tcb
Qgf
Tcb
GEOLOGY
Tcb - COLUMBIA RIVER BASALT
Qal - ALLUVIUM
Qgf - GLACIOFLUVIATILE DEPOSITS
CITY OF UMATILLA

Figure 7.1-1

7.1.200 SLOPES

The results of a slope analysis of the Umatilla area are shown in *Figure 7.1-2* and reveal two areas of 12% to 25% slope. One extends from the gravel pits near Diagonal Road eastward in a narrow band to the southern end of McNary Dam. The second area begins south of the Umatilla River, above the central part of the City and extends westward just above and below the west extension irrigation canal. Additionally, there are very narrow banded areas greater than 12% slope along the banks of the Umatilla River and the south bank of the Columbia River.

Within Urban Growth Boundary there are some areas of 25% slope or greater. The majority of these areas are associated with gravel pit operations. However, there are some areas of 25% slope associated with the west extension irrigation canal. There are some additional areas below the viewpoint, near Hermiston Junction, and just below County Road 709 in the same vicinity. These areas of 25% slope or greater will generally require special construction techniques for development.

Three slope categories were derived, each having inherent development characteristics:[32]

- Less than 12%: least building cost and hazards
- 12%-25%: cost of building increases because of expense of constructing foundations, streets, and utilities
- 25%+: has even higher building costs plus these areas are also more likely to be subject to erosion, mudslides, and other natural hazards during periods of heavy rainfall.

7.1.300 FLOODPLAIN

The normal fluctuations in Lake Umatilla are controlled by the John Day Dam, and range from 262-265 feet. The greatest regulated fluctuations in Lake Umatilla range from 257-268 feet. Data from the Corps of Engineers on the discharge of the Columbia River indicates that the one hundred year flood is rated at 680,000 CFS and reaches an elevation of 276 feet at the Umatilla River to 279 feet at McNary Dam.[33]

As a result, the shoreline areas along the Columbia River and considerable portions of the McNary Wildlife Park are within the 100-year floodplain. Flooding on the Columbia River would also back water up the Umatilla River a little over one mile to an approximate elevation of 276 feet. Existing development is generally above this elevation and embankments along the Umatilla River are such as to contain any flooding.

The floodplain elevation behind McNary Dam is 340 feet. This will have very little impact on the area with the exception of the shoreline areas in Section 12. The 100-year floodplain is portrayed in *Figure 7.1-3*.

[32] Real Estate Research Corp., "The Cost of Sprawl", 1974, pg. 162.
[33] Corps of Engineers, Draft of the John Day Regulation Manual, Plate 16.

Figure 7.1-2

CITY OF UMATILLA

FIGURE 7.1-3

SECTION 7.2 (RESERVED FOR EXPANSION)

SECTION 7.3 AREAS SUBJECT TO NATURAL DISASTERS & HAZARDS FINDINGS

7.3.101 Development in areas of known natural disasters and hazards should exclude any facilities that are sensitive to this type of hazard.

7.3.102 Development within the floodplain should be limited to open space, recreation or other appropriate uses which minimize the potential loss to life or property and which comply with Federal and State regulations.

SECTION 7.4 AREAS SUBJECT TO NATURAL DISASTERS & HAZARDS POLICIES

7.4.101 The City will prohibit development or land form alterations in areas with natural development limitations except upon showing that design or engineering techniques can eliminate any public harm or adverse effects to surrounding persons or properties. Consideration shall be given to such natural hazards as:

- Slopes exceeding 25%
- Severe soil erosion potential (refer to Table 3.1-1, Soils Suitability)
- Areas within the 100-year flood plain (which will be considered open spaces)
- Seasonally high water table within 24 inches of the surface
- Land subject to slumping, movement, or geological fault