

# Oregon Framework Geographic Data Themes and Elements

Source: OGIC Framework Implementation Team

(<http://www.gis.state.or.us/coord/FIT.html>)

## Geodetic Control

Geodetic control provides the means for determining locations of features referenced to common, nationally-used horizontal and vertical coordinate systems. Geodetic data provide the basic reference Framework for all geodata and provide a method for relating different layers and sets of geodata to one another. Geodetic data are essential in developing a common coordinate reference for all other geographic features. Horizontal or vertical location is used as a basis for obtaining locations of other points. The Oregon geodata Framework should include, at a minimum, the following geodetic control feature and attribute data:

- geodetic control points, referenced to the National Spatial Reference System maintained by the National Geodetic Survey
- station name
- bench mark
- GPS base station
- monument/survey marker
- feature identification code
- latitude and longitude (with accuracy code) for each control point, or state plane or UTM coordinates
- ellipsoid height or orthometric height (with accuracy code) for each control point
- selected projection

The latitude, longitude, and ellipsoid height should be determined relative to the Geodetic Reference System of 1980 reference ellipsoid, a mathematical model of the Earth. The orthometric height should be determined relative to the most current geoid model for the United States, GEOID93, developed by the National Geodetic Survey.

## Cadastral (property ownership)

Cadastral, or land rights, information is arguably the most important geographic data set for local government users. Cadastral information is the graphic and attribute data describing parcels of land and the rights people hold to those parcels. Cadastral data serves as the foundation upon which the majority of local thematic geodata is compiled. In Oregon, the Public Land Survey System (PLSS) serves as the cadastral reference grid to which land rights features and attributes are linked. The cadastral geodata Framework should include at least the following features and attributes:

- 1/4 section, section, township, and range lines (PLSS)
- PLSS section, township, and range numbers
- subdivision boundary, blocks, lots
- subdivision name
- tax lot boundary
- feature identification code (unique tax lot ID)
- owner's name
- mailing address
- public ownership
- situs address

- accuracy level
- boundary corner
- document reference

### Administrative Boundaries

Administrative and governmental boundaries are the district, service, governmental, election, and census polygons that serve to organize administrative and governmental functions.

Administrative and governmental boundaries define geographic areas within which resources can be targeted and services can be reasonably managed. The geographic features for administrative and governmental boundaries that should be considered for inclusion in the Oregon geodata Framework are:

- fire or emergency district
- public school district
- utility service boundary
- tax code boundaries
- Urban Growth Boundaries
- wilderness
- greenways
- watershed council boundary
- political boundary
- county boundary
- city boundary
- American Indian Reservations and Trustlands
- zip code boundary
- unique identifier
- census blocks and tracts

Each should have the name and the applicable Federal Information Processing Standard (FIPS) code, if available, to serve as its unique identifier. In addition, the boundaries of the features should include information about other features (such as roads, railroads, or streams) with which the boundaries are associated.

### Cultural Features

Addresses are an important locational key for local governments, particularly for emergency services. Addresses are typically attribute information that are linked to individual tax lots as discrete situs addresses. One of the primary difficulties in developing an effective and comprehensive situs address database for local government is that there are often multiple addresses for individual tax lots, and sometimes a single address for multiple tax lots. Because of the one-to-many and many-to-one aspect of the relationship between addresses and tax lots, it is necessary, or at least advisable, to develop a graphic point coverage for situs addresses. There are also many other cultural features that are an important part of this theme. The geodata Framework for cultural features in Oregon should include the following feature and attribute data elements:

- situs address point coverage
- street number, name, prefix and/or suffix direction, and type
- archaeological sites
- public building outlines
- cemeteries
- demographic data
- historic sites

- critical facilities (homeland security)
- recreation sites

### Transportation

The primary and secondary road network and associated features, facilities, and attributes constitute the transportation theme. This theme includes a linear referencing system important for locating incidents within the network. In addition, a feature identification code should be developed and applied to every segment of the network and to all associated features and facilities. The geodata Framework in Oregon for transportation data should include, at a minimum, the following feature and attribute data elements:

- airports
- bridges
- culverts
- traffic analysis zones
- transportation structures
- road centerlines
- status (open/closed; gated)
- address ranges
- railroads
- trails
- ports
- heliports
- light houses
- military operations
- navigation hazards
- airports, runways
- VOR
- cablecar and chairlifts
- linear referencing system (route-mile posts)
- name
- feature identification code
- functional classification

### Digital Orthoimagery

An orthoimage is a georeferenced image prepared from a perspective photograph or other remotely-sensed data in which displacements of images due to sensor orientation and terrain relief have been removed. Many geographic features can be interpreted and compiled from the orthoimage. Orthoimages can serve as a backdrop, in addition to linking the results of an application to the landscape. The Oregon geodata Framework should include, at a minimum:

- digital orthoimages, cast on the latest available datum
- feature identification code for each image
- measurable accuracy and resolution
- image georeferencing

The geodata Framework will likely include imagery that varies in resolution from sub-meter to tens of meters. High-resolution data (one meter or smaller pixels) are thought to be the most useful to support local data needs. For some regional, state, and federal uses, lower resolution imagery may be required.

### Elevation Data (hypsoigraphy)

Elevation refers to a spatially referenced vertical position above or below a datum surface. Digital, georeferenced elevation data can exist in several forms, including digital elevation models (DEMs), triangulated irregular networks, vector contour files, and spot elevations. The other forms of elevation data can be derived from DEMs, so the DEM should serve as the minimum element for elevation data within the Oregon geodata Framework. The geodata Framework for elevations of land surfaces should at least include:

- digital elevation models
- feature identification code
- density of elevation values
- selected base datum

Many existing land surface elevations are referenced to the National Geodetic Vertical Datum of 1929, but implementation of the National Geodetic Vertical Datum of 1988 should be addressed in any standard that deals with elevation data.

### Hydrography

Hydrography defines a surface water feature that may or may not be connected to other surface water features. These surface water features are commonly referred to as reaches. The hydrography geodata Framework in Oregon should at least include the following feature and attribute components:

- stream reaches
- open water shorelines
- miscellaneous features (wells, springs, watersheds, etc.)
- name
- feature identification code
- connectivity (flow paths)
- direction of flow
- measurable accuracy level or range
- classification by reach type

### Utilities

It may be that standards for utilities are developed in two or more phases, one or more for service facilities that are provided or managed at the local government level, and one or more for cross-country transmission lines, distribution lines, and facilities generally managed by public utilities or the private sector. The general data content for the infrastructure geodata Framework in Oregon should, at a minimum, include the following:

- transmission/distribution lines (electric, gas, telecommunications)
- water/wastewater/stormwater pipelines
- node facilities (manholes, valves, poles, transformers, towers, outfalls, etc.)
- feature identification code

### Geoscience Features

The features of the Geoscience Framework data theme for Oregon should include:

- geology
- geomorphology
- soils
- caves
- feature identification codes

### Bioscience Features

Bioscience features relate to biological datasets of statewide concern. Many of the bioscience features relate to the biological information needs of the Oregon Plan for Salmon and Watersheds established by Executive Order. The goal of the Oregon Plan is to enhance, restore, and protect Oregon's native salmonid population, watersheds, fish, and wildlife habitat and water quality while sustaining a healthy economy. Thus, the features of the Bioscience Framework data theme for Oregon should include:

- wildlife habitat distribution
- anadromous fish habitat distributions
- fish stock status
- hatchery release locations
- marine species habitat distributions
- vegetation species
- vegetation structure
- plant species ranges
- plant community ranges
- seed zones
- wetlands
- riparian areas
- historic vegetation communities
- weed distribution
- feature identification codes

### Landcover/Land Use

The features of the Landcover/Land Use Framework data theme for Oregon should include:

- industrial ownership
- landcover classification
- land use classification
- feature identification codes

### Climate

The features of the Climate Framework data theme for Oregon should include:

- 100 year peak flow
- 24 hour rain intensity
- annual rainfall
- annual snowfall
- RAWs
- temperature ranges
- feature identification codes

### Hazards

The features of the Hazard Framework data theme for Oregon should include:

- coastal erosion areas
- debris flow hazard
- drought areas
- dust storm occurrence

- faults
- flood zone
- tsunami zone
- wildfire water sources
- wildfire lookouts
- wildfire occurrence
- wildfire burned areas
- wildfire fuel sources
- wildland/urban interface boundary
- hazardous materials
- windstorm hazard
- winter storm occurrence
- volcano hazard