

Extended Map Legend

Current Vegetation Types of the Kittitas Valley Wind Power Project December 4, 2002

The attached current vegetation map for the Kittitas Valley Wind Power Project delineates the generalized plant cover types present within the project area as proposed through November 15, 2002. Cover types were delineated within a buffer area extending at least 300 meters (m) from proposed project facilities. In total, 25,131 hectares (ha) were included in the 300 m buffer corridor. In addition, lithosolic (shallow-soiled) plant communities were broken out within a smaller corridor, extending 50 m from the proposed facilities. It should be noted that proposed facilities locations were revised late in 2002. The 300 m buffer area on this version of the map was reduced in overall extent to reflect areas dropped from consideration. Due to slight changes in proposed alignments, the 50 m corridor, in which lithosols were broken out, may not exactly reflect current proposed facilities locations.

It is also important to note that the lithosol areas most often occurred in a mosaic pattern, alternating with deeper-soiled habitats. At the project scale, it was not possible to break out each small inclusion of lithosol. Therefore, a 50% threshold was used: *i.e.* when a polygon contained a total areal lithosol extent of 50% or greater, the polygon was typed as lithosol; and when the lithosol areas made up less than 50% of the mosaic, the polygon was typed as the deeper-soiled habitat.

The initial cover type mapping was accomplished using orthorectified, low altitude, digital true-color aerial photos obtained from Kittitas County. Cover types were delineated visually from these photos, and digitized directly into the project Geographic Information System (GIS) using the ArcView[®] 3.2a GIS application. Large scale preliminary field maps were then produced showing the vegetation polygons.

The initial vegetation typing was then field verified at the site in July of 2002 by two botanists. Using the preliminary field maps, the botanists visually surveyed the majority of ground within the 300 m buffer corridor to confirm the typing and boundaries of the preliminary map. In addition, they walked or drove the entire 50 m buffer corridor and broke out areas of lithosolic plant communities within the corridor. The lithosols were not distinguishable on the photos from the Grassland and Low Sagebrush cover types, so it was necessary to perform this delineation in the field.

Revisions were made to the current vegetation theme in the GIS based on the data gathered during the field verification process. This theme was then projected onto a USGS topographic base map, and output at a 1:12500 scale for the final version. The cover types delineated are described more fully below.

Wetlands (WE): This cover type includes emergent, scrub-shrub, and forested wetlands. These were typed based on current vegetation and hydrology present in July of 2002. No attempt was made to formally delineate these wetlands, and actual jurisdictional extent may be greater or lesser than shown. In addition, wetlands too small to be delineated from the aerial photos are not

shown on this map. A total of 1.6 ha were typed as wetlands, which is 0.01% of the 300 m buffer corridor.

Riparian (RI): The Riparian cover type was used to describe non-forested areas of riparian vegetation along drainages. Many of the drainages within the project area contained only dryland vegetation, and were therefore not typed in this category. In total, 55 ha of land fell into the Riparian category, or 0.2% of the 300 m buffer corridor.

Riparian Trees (RT): This cover type includes areas within riparian zones dominated by trees. Primarily this includes hydrophytic species such as cottonwoods (*Populus balsamifera* ssp. *trichocarpa*), but conifers are also present in some riparian areas. 279 total hectares were typed as Riparian Tree, which is 1.1% of the 300 m buffer corridor.

Dense Conifers (CF1) and Sparse Conifers (CF2): Upland areas dominated by coniferous trees were typed as either Dense or Sparse Conifers depending on the relative spatial density of the trees. In total 174 ha of land were typed as Conifers (0.7% of the 300 m buffer corridor) with 146 ha in the Dense category and 26 ha in the Sparse category.

Deciduous Shrub Thicket (TH): This cover type was used to describe upland areas dominated by deciduous shrubs. These tend to be located on more mesic sites than the Shrub-Steppe cover type (described below). Typical shrub species for this cover type include chokecherry (*Prunus virginiana*), bittercherry (*Prunus emarginata*), oceanspray (*Holodiscus discolor*), common snowberry (*Symphoricarpos albus*), and serviceberry (*Amelanchier alnifolia*). The Deciduous Shrub Thicket cover type is present on a total of 611 ha, or 2.4% of the 300 m buffer corridor.

Dense Shrub-Steppe (ST1), Moderate Shrub-Steppe (ST2), and Sparse Shrub-Steppe (ST3): Upland areas dominated by tall shrubs, primarily bitterbrush (*Purshia tridentata*), and which contained an understory of bunchgrasses (or in disturbed areas cheatgrass [*Bromus tectorum*]), were classed as Shrub-Steppe. The category was further broken down based on the relative spatial density of the shrub layer. Shrub-Steppe vegetation is typically found on drier sites than Deciduous Shrub Thicket types. Overall, the Shrub-Steppe category was present on 12,858 ha of land (51.2% of the 300 m buffer corridor), with 595 ha categorized as Dense, 6054 ha as Moderate, and 6209 ha categorized as Sparse.

Low Sagebrush (SL): The Low Sagebrush category was used to describe shallow-soiled areas dominated by low sagebrushes; primarily rigid sagebrush (*Artemisia rigida*). These areas are typically rockier and contain less biomass than the Shrub-Steppe category. Within the 50 m buffer corridor, the Low Sagebrush category was usually broken out as a Lithosolic Plant Community (see below). A total of 1,014 ha (or 4.0% of the 300 m buffer corridor) were typed as Low Sagebrush, however, that figure does not include the Low Sagebrush areas broken out as Lithosolic Plant Communities.

Grassland (GR): This cover type includes a variety of plant associations, all dominated by grass species. In most cases these are bunchgrasses, such as Sandberg's bluegrass (*Poa secunda*) or bluebunch wheatgrass (*Pseudoroegneria spicata*), but disturbed areas are sometimes dominated by cheatgrass or bulbous bluegrass (*Poa bulbosa*). Some of the Grassland areas are former

Shrub-Steppe habitats that have lost their shrub component due to fire or other disturbance. Most of the Lithosolic Plant Communities (see below) broken out of the 50 m buffer corridor came out of the Grassland category. A total of 7919 ha of ground (31.5% of the 300 m buffer corridor) were typed as Grassland, although this does not include the Grassland areas that were broken out as Lithosolic Plant Communities within the 50 m buffer corridor.

Lithosolic Plant Communities (LI): This cover type is actually a sub-category of two other cover types (Low Sagebrush and Grassland). It is characterized by a layer of low shrubs (rigid sagebrush) and/or low shrubby forbs (various buckwheats [*Eriogonum* spp.]), over a uniform layer of Sandberg's bluegrass. By definition, this cover type occurs on shallow, rocky soils. Because delineation of the lithosolic plant communities was only possible through on-site inspection, this sub-category was only broken out from the Low Sagebrush and Grassland types within the 50 m buffer corridor. It should be noted that in many parts of the project area, lithosols occur as small inclusions in deeper-soiled habitats. These inclusions are typically too small and numerous to map, even at the large scale presented here. For this reason, a 50% threshold was used in delineating the lithosols: *i.e.* where lithosols comprised 50% or more (as estimated visually) of the ground within a mapping unit, it was classed as a Lithosolic Plant Community. This results in some lithosolic polygons with significant inclusions of deeper-soiled habitats, and some non-lithosolic polygons that contain numerous shallow-soiled areas. In total, 1,836 ha were classed as lithosol, which is 39.0% of the 50 m buffer corridor.

Surface Water (WA): This category includes rivers, streams, and stock watering ponds. 12 ha were classified as Surface Water, which is 0.05% of the 300 m buffer corridor.

Talus (TA): The Talus cover type includes slopes comprised primarily of smaller rocks and boulders. This is a primarily non-vegetated type, although scattered trees, shrubs, and forbs may be present. A total of 50 ha of Talus were identified, which is 0.2% of the 300 m buffer corridor.

Developed (DE): This type includes residential homes, paved roads, farm buildings and yards, urban areas, and industrial/commercial land. It includes areas where human disturbance has removed or altered most or all of the vegetation. A total of 322 ha of Developed land were delineated, which is 1.3% of the 300 m buffer corridor.