

*Memorandum*

To File

From Jen Dillon Sivils

Date February 24, 2005

Subject Sterling Highway Project MP 45 to 60; Vegetation Mapping

The Alaska Department of Transportation & Public Facilities (DOT&PF) is evaluating alternatives to improve the Sterling Highway from Milepost (MP) 45 to 60. This section of Sterling Highway is located along the Kenai River in the Copper Landing area on the Kenai Peninsula. It has long been acknowledged that MP 45 to 60 of the Sterling Highway has needed improvements to address peak season traffic delays and to upgrade the highway to “rural principal arterial” standards. HDR Alaska, Inc., is supporting the DOT&PF through the process mandated by the National Environmental Policy Act that entails preparation of a supplemental environmental impact statement (SEIS).

Vegetation mapping was completed for the Sterling Highway Project MP 45 to 60. Dominant vegetation types along the Cooper Creek Alternative, “G” South Alternative, and Juneau Creek “F” Alternative were delineated and coded using Level IV of the Alaska Vegetation Classification System (Viereck et al., 1992). For the majority of the mapping, vegetation was delineated in a ¼-mile corridor around project alternatives. Vegetation mapping was extended beyond the ¼-mile corridor in areas where alternatives would require major creek/river crossings. Construction activities at these creek/river crossings may result in the disturbance of additional vegetation beyond the alternative’s footprint. Vegetation mapping was extended in these areas to ensure construction-related impacts to vegetation could be assessed in the SEIS. Vegetation types were also delineated in the area adjacent to the existing Quartz Creek material site. This vegetation mapping will serve as the basis for discussion of potential project related impacts to vegetation and wildlife.

The USDA Forest Service prepared detailed vegetation mapping for a portion of the study area that is located within the Chugach National Forest (approximately half of the study area). This mapping was based on the Alaska Vegetation Classification System (Viereck et al., 1992). The Forest Service’s existing vegetation mapping was extended for the entire study area primarily using aerial photography interpretation. Preliminary vegetation mapping derived from air photo interpretation was compared to field-collected vegetation data (obtained from wetland delineation field efforts). If the preliminary vegetation mapping differed from field-collected data, the mapping was revised to match actual, on the ground conditions. After finalizing the vegetation mapping, the data was incorporated into Geographic Information Systems (GIS) by

digitizing the vegetation type boundaries onto a digital, orthorectified air photo. The following resources were used to map the dominant cover types along the Sterling Highway Project alternatives:

- Ecological Mapping Unit GIS layer, USDA Forest Service, 3/29/00.
- Aerial photographs from AeroMap U.S.:
 - taken 5/3/00, scale 1:12,000, true color
 - taken 9/17/85, scale 1" = 1000', true color
 - taken 8/8/64, scale 1:6,000, black and white
- National Wetlands Inventory (NWI) maps for quadrangles Seward C-8, Seward B-8, Kenai C-1, and Kenai B-1.
- Existing GIS layers including streams, water bodies, and NWI mapping.
- Digital orthorectified aerial photograph from AeroMap U.S. taken 10/9/00 with 2'-pixel resolution.
- Detailed field notes from wetland delineation, COE wetland determination data forms, and photographs.
- GPS coordinates of field observation locations.
- The Alaska Vegetation Classification by Viereck et al., 1992, USDA Forest Service.

The results of the vegetation mapping for the Sterling Highway Project MP 45 to 60 are presented on Figures 2 through 10. Cover types found in the study area were divided into seven broad categories for discussion. These categories are: needle-leaved forests, broad-leaved forests, mixed needle-leaved and broad-leaved forests, shrub thickets, dry meadows, wet meadows, and non-vegetated areas.

Needle-leaved forests are found throughout the study area and are dominated by evergreen species such as Lutz spruce (*Picea lutzii*), black spruce (*Picea mariana*), or mountain hemlock (*Tsuga mertensiana*). More than one evergreen tree species can be present in these forests and the density of the canopy ranges from 10% to 60%. Needle-leaved forests comprise approximately 36% of the mapped study area. Understory species in these forests are variable depending upon a variety of factors including overstory species, slope, aspect, soil conditions, and hydrology. The Alaska Vegetation Classification System codes for needle-leaved forests in the study area include IA2c, IA2e, IA2f, IA2g, IA2i, IA2j, IA3c, IA3d, IIA2a, and IIA3a.

Broad-leaved forests are scattered throughout the study area and are dominated by paper birch (*Betula papyrifera*), quaking aspen (*Populus tremuloides*), or black cottonwood (*Populus balsamifera*). More than one species of tree can be present and understory species are variable. Canopy closure in these forests ranges from 10% to 100%. Broad-leaved forests comprise approximately 8% of the mapped study area. The Alaska Vegetation Classification System codes for broad-leaved forests in the study area are IB1d, IB1e, IB2a, IB2b, IB2c, and IB3a.

Mixed needle-leaved and broad-leaved forests are the most common vegetative type in the study area, comprising approximately 38% of the mapped study area. These areas are dominated by a mix of needle-leaved and broad-leaved trees including Lutz spruce, black spruce, mountain hemlock, paper birch, quaking aspen, and black cottonwood. Canopy closure ranges from 10% to 100% and understory species are variable. The Alaska Vegetation Classification System codes for mixed forests in the study area are IC1a, IC1d, IC2a, IC2b, IC2c, IC2d, IC2e, and IC3a.

Shrub thickets are dominated by broad-leaved shrubs such as Sitka alder (*Alnus sinuata*) and various willow species (*Salix* spp.). Shrub thickets usually have dense canopies and are typically located adjacent to streams. This cover type comprises 2% of the mapped study area. The Alaska Vegetation Classification System codes for shrub thickets in the study area are IIB1b, IIB1d, IIB2a, and IIC2g.

Dry meadows are dominated by bluejoint reedgrass (*Calamagrostis canadensis*) or fireweed (*Chamerion angustifolium*) with lesser amounts of other plants including Sitka alder, and oak fern (*Gymnocarpium dryopteris*). Dry meadows comprise approximately 4% of the mapped study area and are primarily found in disturbed areas (such as adjacent to the existing highway and in avalanche chutes). The Alaska Vegetation Classification System codes for dry meadows in the study area are IIIA2b and IIIB2b.

Wet meadows are wetlands that are dominated by a variety of herbaceous plants including beaked sedge (*Carex utriculata*), water sedge (*Carex aquatilis*), and Chamisso's cotton grass (*Eriophorum russeolum*). This vegetation type comprises 1% of the mapped study area and is found either in close proximity to the Kenai River or up in the Juneau Creek Valley. The Alaska Vegetation Classification System code for wet meadows in the study area is IIIA3k.

Non-vegetated cover types in the study area include the Kenai River, the lower reach of Kenai Lake, ponds, rock outcrops, gravel bars, bare soil, and developed areas. These cover types comprise approximately 11% of the mapped study area. The Alaska Vegetation Classification System does not classify non-vegetated areas so codes for these areas were taken from the Chugach National Forest coding system. The following codes are used for non-vegetated areas: IVA22, IVA23, IVA24, IVA4, IVA63, IVB, and IVB2.

Direct and construction-related impacts from the project alternatives to vegetation types and wildlife will be analyzed and discussed in the SEIS.