
ASSESSMENT AND DELINEATION OF VEGETATION COMMUNITY IMPACTS AND WETLAND MAPPING AT THE RED DOG MINE

Prepared for
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by

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BACKGROUND

Based on observations made during a vegetation assessment conducted 21 June–2 July, vegetation in the vicinity of the Red Dog mine is being affected by fugitive dust deposition related to mine operations. The cause of this affect is the subject of a separate study. The work outlined in this scope is intended to the extent of affected vegetation surrounding the mine facilities and establish permanent monitoring plots to track interannual changes in plant cover. In addition, we also will incorporate a wetland survey using methods outlined in *The Wetland Delineation Manual* (USACE 1987) and *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region* (USACE 2006) to address specific regulatory issues within the immediate mine area.

OBJECTIVES

The data products produced from this study will be used to satisfy specific land management needs within the mine area.

1. A map coverage illustrating the limits of the affected areas surrounding the mine site. This map will classify vegetation impacts based on cover reduction and affected species composition.
2. Establishment of permanent vegetation monitoring plots to allow interannual changes in plant cover and community composition to be documented. This data will be used to produce annual updates of the affected area map coverage.
3. A detailed wetland map that includes wetland boundaries, wetland (and upland) vegetation communities, and wetland habitats suitable for the needs of Clean Water Act Section 404 permit applications and NEPA-type environmental impact studies with the 650 acres of land adjacent to the mine facilities.

TECHNICAL APPROACH

IMPACT AREA DELINEATION

Delineation of the affected vegetation area around the mine will be accomplished by sampling vegetation along approximately six kilometer transects that extent radially from the mine facilities. Monitoring plots will be situated along these transects at 0m, 500m, 1000m, 2000m, 3500m, and 5500m. At each monitoring plot, plant cover will be quantitatively measured using a point intercept sample method (100 points per plot). Vascular plants will be identified to species, and non-vascular plants (lichens, mosses, and liverworts) will be identified to genus, with species identification where possible. The exact location of the vegetation plots will take into account landscape features (wind shelter, snow bed locations, slope and aspect) and vegetation community structure.

Vegetation impacts along the transect will be determined by comparing plant cover values to areas outside the mine's dust shadow. The exact area of influence of the mine is being determined as part of another study, and this information will be incorporated when it becomes available. Vegetation plots will be monitored annually and the data analyzed to provide information on changes in cover by species and life form. Recent effort to reduce fugitive dust emissions from the mine's facilities should be reflected in a recovery of sensitive plant species within the affected area.

WETLAND MAPPING

Areas requiring detailed wetland mapping will be digitized at 1:1,200-scale to accurately define upland/wetland boundaries. During mapping, addition photography, to the extent

available, will be examined using a stereoscope to help interpret boundary delineation. Each polygon will be coded with a Level IV vegetation class (*The Alaska Vegetation Classification* (Vioreck et al. 1992) and a National Wetland Inventory (NWI) type. Minimum polygon sizes will be 0.1 acres for waterbodies and 0.5 acres for other terrestrial classes.

Field verification of wetlands will be conducted as outlined in *The Wetland Delineation Manual* (USACE 1987) and *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region* (USACE 2006). We will verify the location of existing upland/wetland boundaries, verify wetland classes, and determine upland/wetland boundaries in unmapped areas within a 650 acre area adjacent to mine facilities.

STATEMENT OF COST/SCHEDULE

STUDY SCHEDULE

The proposed study will be conducted during 2006. Below is our estimated schedule for completing the various stages of this study.

28 July–4 August 2006 Perform field vegetation assessments and wetland map verifications.

30 October 2006 Submit wetland map and report for review.

30 December 2006 Submit vegetation assessment report. This report may be combined with our vegetation impact study report to reduce a duplication of effort.