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# Analytical results of plant and soil samples collected near Flat, Iditarod, and Livengood, Alaska in 1984

By

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. Any use of trade names is for descriptive purposes only and does not imply endorsement by the USGS.

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## INTRODUCTION

In late August of 1984, we collected samples of native plants and soil profile horizons in three areas of Alaska. Two of the areas are represented by sampling sites near active placer operations (the Golden Horn mine near Flat, and Lillian Creek near Livengood), and the third (near Iditarod) is a site with no known placer gold (fig. 1). An additional soil sample was collected from the active placer operation at Lillian Creek from the area described by the operator as the "pay zone." Two additional plant species were collected from the tailings piles at the abandoned Golden Horn mine at Flat, and samples of moss and horsetail were collected from Lillian Creek, close to site LV-2.

All samples were collected as part of a preliminary reconnaissance-type sampling program to determine if gold is mobile under present-day conditions.

## COLLECTION METHODS AND SAMPLE DESCRIPTIONS

### Vegetation Samples

Representative plant species (table 1) from each level of the forest canopy were collected as close as possible to the soil-sampling sites. The terminal (18-30 cm) growth of tree and shrub species was collected using stainless-steel clippers. The herbaceous samples (fireweed and horsetail) consisted of the above-ground parts; the mull samples were collected from the living top layer of the soil profiles; and the Reindeermoss samples were composited from the area surrounding the soil-sampling sites.

Of the 13 species collected, only labrador tea occurred at all sites. There is a species difference between the samples of birch trees at Livengood (River Birch), and Iditarod and Flat (Paper Birch). Alder was collected at all sites except FT-2, and reindeermoss at all sites except the background site (ID-3). Dwarf birch, blueberry, willow, and fireweed were not found at the Livengood area. Hemlock was sampled at FT-1 and ID-3, tamarack at FT-2, and white spruce at LV-1 and LV-2. A sample each of horsetail and moss were collected from Lillian Creek (close to LV-2). Horsetail was also colleted from the old tailings pile at the Golden Horn mine along with fireweed.

### Soil Samples

At the Iditarod and Livengood sampling locations, small pits were dug to a depth of about 1 m; at the Flat sampling locations, the side walls of 2-m-deep exploration trenches were sampled after digging to expose fresh material. At all locations, the various soil horizons were identified and described, and two samples of each horizon were collected in 1 l nitric-acid-washed polypropylene bottles. Three additional samples were collected in the main "pay zone" directly above the weathered bedrock at the active placer operation in Livengood. A large sample from this "pay zone" (sample LV-4) was panned in the field and the recovered gold was saved for additional observations and analyses.

Brief descriptions of the soils collected at the three locations are given in table 2. Acronyms describing the profiles correspond to the locations in figure 1. All soil profiles, except LV-2, contain only an organic-rich surface horizon over parent material and, therefore, show minimal soil development. Profile LV-2, collected from a side slope above Lillian Creek (fig. 1), contains a buried surface horizon. The side slopes at this

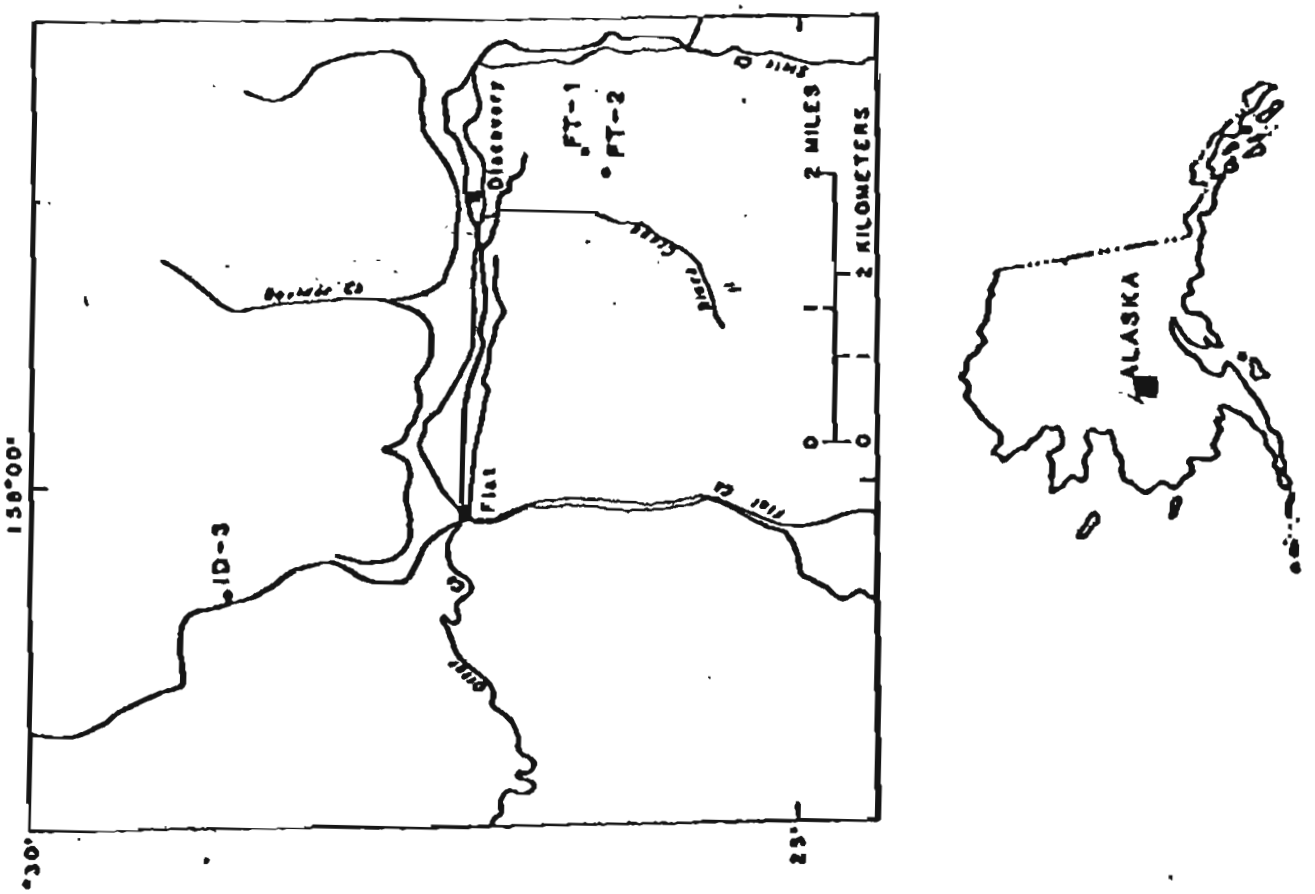


Figure 1. General location map showing the sampling locations at Iditarod, Flat, and Livengood, Alaska.

location consist of a series of buried organic horizons, probably due to solifluction and surface creep. All soil profiles sampled suggest constant oxidizing conditions in the surface horizons, and alternating oxidizing (dry) and reducing (water-saturated) conditions in the C-horizon. The sample from the placer mine (LV-4) has the characteristics of the soil C-horizons.

## ANALYTICAL METHODS

### Soil and Plant Preparation

The soils were dried under forced air at ambient temperature, classified, and disaggregated. The minus 10-mesh fraction was used for all analytical work. A small split of this material was ground in an agate shatter box to pass 100 mesh and was used for all total analyses.

The vegetation materials were dried at 50°C for 1 week in a forced air oven, ground with a Wiley mill, and split. One set of split samples were ashed at 500°C for inductively coupled plasma-atomic emission spectroscopy and the unashed or raw samples were submitted for neutron activation analysis.

### Total Element Content Determinations

Table 3 lists the methods used for total element determination. All analyses were performed at the USGS Analytical Chemistry Laboratories, Denver, CO. Table 4 lists the methods used for the extractable elements.

## CODING EXPLANATIONS FOR TABLES 5 and 6

The first character of the sample identification (A) in table 5 indicates the vegetation samples were collected in the State of Alaska, and the second and third characters represent the geographical sampling locations within the state (ID = Iditarod or Flat areas; LV = Livengood area). The fourth character (4) indicates the year of collection, 1984. The fifth character (1, 2, or 3) represents the sampling site within a geographical location. The sixth and seventh characters of the sample identification indicate the plant species collected, as follows:

AL - Alder
BB - Blueberry
DB - Dwarf Birch
ES - Horsetail
FW - Fireweed
LL - Tamarack
LT - Labrador Tea
MH - Mountain Hemlock
RM - Reindeermoss
TB - Tree Birch or Paper Birch
WS - White Spruce
WW - Willow.

Where present, the eighth character (x, or -), indicates a split, and the ninth character (1, or 2) the locality within a sampling site.

The characters following the element symbols indicate units of measurement and analytical methods, respectively:

Units of Measurement

ppm - parts per million
ppb - parts per billion
% - percent

Analytical Methods

n - neutron activation analysis
s - inductively coupled plasma-atomic emission spectroscopy
blank - continuous flow hydride generation-atomic absorption spectroscopy

The following list interprets the symbols used in table 6. The fourth through eighth characters of the sample identification indicate soil horizon according to the U.S. Department of Agriculture (1952) nomenclature. The characters following the element symbol indicate units of measurement-analytical method, respectively:

Units of Measurement

ppm - parts per million
ppb - parts per billion
% - percent
mmhos/cm - milimhos per centimeter

Analytical Methods (Methods p and w represent an extractable fraction of the total element content in the sample; the remaining methods represent the total content.)

c - continuous flow cold vapor-atomic absorption spectroscopy

h - continuous flow hydride generation-atomic absorption spectroscopy

p - 20 gm soil extracted with 100 ml hydrogen peroxide-acetic acid

s - inductively coupled plasma-atomic emission spectroscopy

w - 20 gm soil extracted with 100 ml water

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Table 1. List of vegetation species samples at Flat (FT-), Iditarod (ID-), and Livengood (LV-), Alaska

| Species collected | Sites | | | | |
|---|---|---|---|---|---|
| | FT-1 | FT-2 | ID-3 | LV-1 | LV-2 |
| Forest Mull* | X | X | X | X | X |
| *Cladonium rangifeina* (Reindeer moss) | X | X | | X | |
| *Equisetum pratense* L. (Horsetail**) | | X | X | | X |
| *Epilobium angustifolium* L. subsp. *angustifolium* (Fireweed**) | X | X X | X | | |
| *Ledum palustre* L. subsp. *decumbens* (Ait.) Hult. (Labrador tea) | X | X | X | X | X |
| *Betula nana* L. subsp. *exilis* (Sukatusch.) Hult. (Dwarf birch) | X | X | X | | |
| *Vaccinium uliginosum* L. subsp. *alpinum* (Bigel.) Hult. (Alpine blueberry) | | X | XX | | |
| *Alnus incana* (L.) Moench (Alder) | X | | X | X | X |
| *Salix* sp. (Willow) | X | X | X | | |
| *Betula occidentalis* Hook (Tree birch) | X | X | X | | |
| *B. papyrifera* Marsh. subsp. *humilis* (Regel) Hult. (Paper birch) | | | | X | X |
| *Tsuga Mertensiana* (Bong.) Sarg. (Mountain hemlock) | X | | X | | |
| *Picea glauca* (Moench) Voss (White spruce) | | | | X | X |
| *Larix laricina* (Du Roi) K. Koch (Tamarack) | | X | | | |

*Analysis pending.

**Collected also at abandoned Golden Horn mine site near site FT-2.

| Horizon description | Depth (cm) | Matrix color: Wet color | Matrix color: Dry color | Mottles: Wet Color | Mottles: Dry color | Mottles: Abundance | Description |
|---|---|---|---|---|---|---|---|
| | | | | FT-1 | | | |
| O1 | 0-14 | --[1] | -- | -- | -- | -- | Root mat |
| O2 | 14-24 | 10YR3/4[2] | 10YR5/3 | -- | -- | -- | Silt |
| C1 | 24-36 | 2.5Y5/4 | 2.5Y6/3 | 10YR5/8 | 10YR6/8 | 1% | Silt |
| C2 | 36-90+ | 2.5Y5/4 | 2.5Y6/4 | 10YR5/8 | 10YR6/8 | 20% | Silt |
| | | | | FT-2 | | | |
| Living moss mat | 0-12 | | | not sampled | | | |
| O1 | 12-15 | | | not sampled | | | |
| A1 | 15-37 | 10YR3/2 | 10YR5/3 | -- | -- | -- | Silt |
| C1 | 37-50 | 2.5Y4/4 | 2.5Y6/3 | -- | -- | -- | Silt |
| C2g | 50-60 | 2.5Y5/4 | 2.5Y6/3 | 2.5Y5/2<br>7.5YR4/4 | 2.5Y7/0<br>7.5YR5/8 | 30%<br>30% | Silt |
| IIC3 | 60-80 | 10YR4/4 | 10YR6/5 | -- | -- | -- | Transition zone |
| IIC4 | 80-120+ | 10Yr5/6 | 10YR7/6 | -- | -- | -- | Weathered monzonite |
| | | | | ID-3 | | | |
| Fibric peat | 0-20 | | | not sampled | | | |
| O2 | 20-23 | 10YR2/1 | 10YR3/2 | -- | -- | -- | Highly organic |
| C1 | 23-43 | 2.5Y5/2 | 2/5Y6/2 | 7.5YR4/4 | 7.5YR5/6 | 30% | Silt |
| C2 | 43-50 | 2.5Y3/2 | 2.5Y5/2 | 7.5YR4/4 | 7.5YR5/6 | 10% | 2.5Y3/0 organic stains between varve-like layers |
| C3 | 50-70 | 2.5Y4/2 | 2.5Y7/2 | 7.5YR4/4 | 7.5YR5/6 | 20% | Silt |
| | | | | LV-1 | | | |
| O2 | 0-4 | 10YR2/2 | 10YR3/2 | -- | -- | -- | Highly organic |
| C1 | 4-17 | 2.5Y5/4 | 2.5Y6/3 | -- | -- | -- | Silt |
| C2 | 17-26 | 2.5Y4/4 | 2.5Y6/2 | -- | -- | -- | Silt |
| C3 | 26-55 | 2.5Y4/3 | 2.5Y7/2 | -- | -- | -- | Silt |
| IIC4 | 55-70+ | 10YR5/5-5/6 | 10YR4/3 | -- | -- | -- | Sand and gravel |
| | | | | LV-2 | | | |
| O1 | 0-8 | | | not sampled | | | |
| O2 | 8-11 | N2/0 | 10YR3/2 | -- | -- | -- | Highly organic |
| C1 | 11-19 | 10YR3/2 | 10YR5/1 | -- | -- | -- | Silt |
| A1b | 19-24 | N2/0 | 10YR4/2 | -- | -- | -- | Highly organic silt |
| C2 | 24-33 | 10YR3/1 | 10YR5/2 | -- | -- | -- | Silt |
| C3 | 33-74 | 10YR3/2 | 2.5Y5/2 | -- | -- | -- | Silt |
| C4 | 74-90+ | 10YR3/3 | 2.5Y5/3 | -- | -- | -- | Silt |
| | | | | LV-4 | | | |
| Undefined | 8+ meters | mottled matrix | | 2.5Y4/3<br>5YR4/6 | 2.5Y5/2<br>10YR6/6 | 70%<br>30% | Silt |

[1]Not present or determinable.
[2]Munsell color notation.

**Table 3.--Methods used for total element content of plants and soils**

[AAS = atomic absorption spectroscopy; ICAP-AES = inductively coupled argon plasma-atomic emission spectroscopy; and NAA = neutron activation analysis]

| Element | Method | Reference |
|---|---|---|
| As, Sb | Hydride generation-AAS | Crock and Lichte, 1982. |
| Hg | Cold vapor-AAS | Koirtyohann and Khalil, 1976. |
| C, S | Leco standard combustion | Standard manufacturer techniques |
| Au (soils) | $HBr-Br_2$ digestion, AAS | Thompson and others, 1968. |
| 44-element scan | ICP-AES | Crock and others, 1983. |
| Au (plants) | NAA, raw material | Standard manufacturer techniques |

**Table 4.--Methods used for extractable element content of soils**

[HOAc = hydrogen peroxide-acetic acid]

| Element/Parameter | Method | Reference |
|---|---|---|
| pH | Soil slurry | Crock and Severson, 1980. |
| Organic Au | $H_2O_2$/HOAc digest-AAS | Severson and others, 1985. |
| Water-extractable Au | Water extraction | Severson and others, 1985. |
| Total organic carbon | Wet oxidation | Wershaw, 1982 |
| Specific conductivity | Myron L DS meter | Standard manufacturer technique |
| Water-solubilized cation and anions | Ion chromatography | Standard manufacturer technique (Dionex, Inc.) |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.
[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value sh

| Sample | Al | %-s | As ppm-s | As | ppm | As ppm-n | Au ppb-n | Ba ppm-s | Be ppm-s | Br ppm-n | Ca | %-s | Cd ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant samples collected near Flat, Alaska location-1 (FT-1). | | | | | | | | | | | | | |
| AID41AL | 1.70 | | <20 | 1.10 | | 1.10 | 7.90 | 880 | <2 | 1.40 | | 10.0 | <4 |
| AID41ALX | 1.80 | | <20 | -- | | -- | -- | 1,800 | <2 | -- | | 19.0 | <4 |
| AID41BB | .94 | | <20 | .70 | | -- | -- | 600 | <2 | -- | | 17.0 | 8 |
| AID41BR | 2.20 | | 40 | .90 | | -- | -- | 790 | <2 | -- | | 15.0 | 8 |
| AID41DB | .43 | | <20 | <.10 | | .11 | .80 | 1,500 | <2 | .57 | | 17.0 | 10 |
| AID41FW | .72 | | <20 | 1.30 | | 1.20 | 2.20 | 1,700 | <2 | 2.40 | | 17.0 | <4 |
| AID41FWX | .80 | | <20 | 1.30 | | -- | -- | 670 | <2 | -- | | 18.0 | <4 |
| AID41LT | 3.60 | | 60 | 1.10 | | 1.50 | 2.40 | 400 | <2 | .61 | | 16.0 | <4 |
| AID41MH | .38 | | <20 | .50 | | .13 | .40 | 920 | <2 | 2.60 | | 19.0 | <4 |
| AID41MHX | .40 | | <20 | <.10 | | -- | -- | 940 | <2 | -- | | 19.0 | <4 |
| AID41RM | 7.30 | | 70 | 2.30 | | 3.00 | 5.20 | 930 | <2 | 2.00 | | 3.0 | <4 |
| AID41TR | .18 | | <20 | .20 | | .24 | .80 | 1,500 | <2 | 1.20 | | 20.0 | 10 |
| AID41TBX | .19 | | <20 | .20 | | .38 | .80 | 2,300 | <2 | 1.20 | | 21.0 | 10 |
| AID41WW | .38 | | <20 | .10 | | -- | -- | 900 | <2 | -- | | 17.0 | 150 |
| AID41WWX | .40 | | <20 | .14 | | -- | -- | 260 | <2 | -- | | 17.0 | 140 |
| Plant samples collected near Flat, Alaska location-2 (FT-2). | | | | | | | | | | | | | |
| AID42FS-1 | .43 | | <20 | 3.70 | | -- | -- | 870 | <2 | -- | | 9.1 | <4 |
| AID42ESX1 | .39 | | <20 | -- | | -- | -- | 830 | <2 | -- | | 9.2 | <4 |
| AID42ES-2 | 1.00 | | 40 | 7.60 | | -- | -- | 2,100 | <2 | -- | | 11.0 | <4 |
| AID42ESX2 | .51 | | 40 | -- | | -- | -- | 2,200 | <2 | -- | | 12.0 | <4 |
| AID42BB | .35 | | 40 | .58 | | .46 | .98 | 850 | <2 | 1.10 | | 16.0 | 11 |
| AID42DB | .50 | | 40 | 2.70 | | .79 | 2.90 | 1,300 | <2 | 1.30 | | 17.0 | 8 |
| AID42DBX | .49 | | 40 | 5.80 | | .52 | 3.50 | 1,300 | <2 | 1.40 | | 17.0 | 9 |
| AID42FW | 3.30 | | <20 | 2.20 | | 1.77 | 7.70 | 1,000 | <2 | 3.60 | | 15.0 | <4 |
| AID42FWX | .18 | | 30 | 1.40 | | 1.70 | 9.30 | 640 | <2 | 4.33 | | 25.0 | <4 |
| AID42FW-2 | .17 | | 20 | 1.70 | | -- | -- | 620 | <2 | -- | | 24.0 | <4 |
| AID42LL | 1.80 | | 40 | 1.10 | | .93 | 11.60 | 750 | <2 | 1.40 | | 15.0 | <4 |
| AID42LLX | 1.90 | | 50 | -- | | -- | -- | 240 | <2 | -- | | 16.0 | <4 |
| AID42LT | .68 | | 90 | .20 | | -- | -- | 340 | <2 | -- | | 19.0 | <4 |
| AID42LTX | .71 | | 60 | .63 | | .73 | 10.50 | 1,000 | <2 | 1.40 | | 20.0 | <4 |
| AID42TR | .16 | | 90 | .56 | | .65 | .40 | 250 | <2 | 1.50 | | 19.0 | 5 |
| AID42TRX | .15 | | 30 | 1.00 | | -- | -- | 840 | <2 | -- | | 20.0 | 5 |
| AID42WW | .38 | | <20 | .62 | | -- | -- | 160 | <2 | -- | | 18.0 | 48 |
| AID42WWX | .37 | | <20 | .60 | | -- | -- | 520 | <2 | -- | | 18.0 | 47 |
| Plant samples collected near Iditarod, Alaska location-3 (ID-3). | | | | | | | | | | | | | |
| AID43AL | .06 | | <20 | .40 | | <.30 | <2.00 | 990 | <2 | 153.00 | | 24.0 | <4 |
| AID43BB | .35 | | <20 | .33 | | -- | -- | 460 | <2 | -- | | 18.0 | 18 |
| AID43DB | .20 | | 20 | .40 | | <.20 | <2.00 | 1,300 | <2 | 176.00 | | 16.0 | 14 |
| AID43DBX | .22 | | 30 | -- | | -- | -- | 1,300 | <2 | -- | | 17.0 | 13 |
| AID43FW | .19 | | 50 | 4.00 | | -- | -- | 1,100 | <2 | -- | | 24.0 | <4 |
| AID43ES | .04 | | <20 | -- | | <.40 | <4.00 | 520 | <2 | 373.00 | | 13.0 | <4 |
| AID43LT | .30 | | <20 | .20 | | .25 | 2.70 | 1,000 | <2 | 30.90 | | 19.0 | <4 |
| AID43MH | .27 | | <20 | -- | | .32 | <.80 | 770 | <2 | 58.00 | | 26.0 | <4 |
| AID43MHX | .27 | | 20 | .30 | | .11 | <.80 | 790 | <2 | 51.00 | | 26.0 | <4 |
| AID43TB | .04 | | <20 | .15 | | <.10 | <1.00 | 930 | <2 | 105.00 | | 21.0 | 32 |
| AID43WW | .38 | | <20 | .30 | | -- | -- | 790 | <2 | -- | | 22.0 | 31 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Ce ppm-s | Co ppm-s | Cr ppm-s | Cu ppm-s | Fe %-s | K %-s | La ppm-s | La ppm-n | Li ppm-s | Mn ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|
| **Plant samples collected near Flat, Alaska location-1 (FT-1).--Continued** | | | | | | | | | | |
| AID41AL | 25 | 40 | 16 | 240 | 1.10 | 11.0 | 15 | 1.10 | 5 | 25,000 |
| AID41ALX | 30 | 40 | 16 | 250 | 1.10 | 11.0 | 19 | -- | 6 | 24,000 |
| AID41BB | <8 | 14 | 13 | 330 | .60 | 16.0 | 6 | -- | 5 | 53,000 |
| AID41BB | 19 | 18 | 23 | 250 | 1.40 | 14.0 | 12 | -- | 9 | 50,000 |
| AID41DB | <8 | 85 | 11 | 520 | .42 | 16.0 | <4 | .06 | <4 | 43,000 |
| AID41FW | 19 | 8 | 17 | 90 | .38 | 22.0 | 20 | 1.30 | 8 | 14,000 |
| AID41FWX | 14 | 8 | 25 | 100 | .45 | 22.0 | 23 | -- | 7 | 15,000 |
| AID41LT | 42 | 25 | 42 | 310 | 2.50 | 12.0 | 27 | .72 | 15 | 32,000 |
| AID41MH | <8 | 5 | 5 | 180 | .20 | 17.0 | <4 | .04 | <4 | 50,000 |
| AID41MHX | <8 | 6 | 6 | 210 | .23 | 17.0 | <4 | -- | <4 | 54,000 |
| AID41RM | 63 | 15 | 85 | 230 | 3.40 | 5.6 | 32 | .95 | 39 | 5,300 |
| AID41TB | 11 | 26 | 8 | 230 | .18 | 16.0 | 4 | .17 | <4 | 30,000 |
| AID41TBX | <8 | 28 | 7 | 210 | .18 | 15.0 | <4 | .17 | <4 | 30,000 |
| AID41WW | 45 | 140 | 4 | 130 | .12 | 24.0 | 41 | -- | <4 | 15,000 |
| AID41WWX | 38 | 150 | 5 | 130 | .12 | 24.0 | 41 | -- | <4 | 16,000 |
| **Plant samples collected near Flat, Alaska location-2 (FT-2).--Continued** | | | | | | | | | | |
| AID42ES-1 | 10 | 8 | 16 | 30 | .25 | 14.0 | 6 | -- | <4 | 390 |
| AID42ESX1 | 15 | 9 | 23 | 86 | .25 | 12.0 | 5 | -- | 9 | 390 |
| AID42ES-2 | <8 | 14 | 30 | 130 | .53 | 7.5 | 6 | -- | <4 | 840 |
| AID42ESX2 | <8 | 13 | 19 | 93 | .36 | 8.8 | 6 | -- | <4 | 830 |
| AID42BB | <8 | 11 | 43 | 220 | .31 | 17.0 | <4 | .03 | <4 | 47,000 |
| AID42DB | <8 | 11 | 17 | 310 | .50 | 16.0 | <4 | .05 | <4 | 53,000 |
| AID42DBX | <8 | 11 | 16 | 240 | .41 | 16.0 | <4 | .04 | <4 | 52,000 |
| AID42FW | 33 | 28 | 270 | 100 | 2.80 | 13.0 | 21 | 1.90 | 14 | 5,400 |
| AID42FWX | 33 | 5 | 9 | 120 | .23 | 17.0 | 16 | 1.90 | <4 | 4,000 |
| AID42FW-2 | 28 | 6 | 8 | 120 | .22 | 18.0 | 17 | -- | <4 | 4,100 |
| AID42LL | <8 | 10 | 30 | 180 | .88 | 14.0 | <4 | .05 | 6 | 30,000 |
| AID42LLX | 9 | 10 | 37 | 190 | .98 | 14.0 | 5 | -- | 7 | 31,000 |
| AID42LT | <8 | 5 | 15 | 220 | .47 | 18.0 | <4 | -- | <4 | 43,000 |
| AID42LTX | <8 | 6 | 17 | 220 | .45 | 17.0 | <4 | .05 | 4 | 44,000 |
| AID42TB | <8 | 7 | 7 | 200 | .19 | 13.0 | <4 | .04 | <4 | 39,000 |
| AID42TBX | <8 | 8 | 7 | 210 | .19 | 14.0 | <4 | -- | 4 | 38,000 |
| AID42WW | 18 | 65 | 10 | 170 | .27 | 21.0 | 13 | -- | <4 | 11,000 |
| AID42WWX | 17 | 65 | 10 | 160 | .26 | 21.0 | 10 | -- | <4 | 10,000 |
| **Plant samples collected near Iditarod, Alaska location-3 (ID-3).--Continued** | | | | | | | | | | |
| AID43AL | <8 | 6 | 3 | 180 | .12 | 17.0 | <4 | <.10 | <4 | 4,600 |
| AID43BB | <8 | 4 | 5 | 240 | .21 | 16.0 | <4 | -- | <4 | 47,000 |
| AID43DB | <8 | 10 | 6 | 230 | .23 | 17.0 | <4 | <.10 | <4 | 68,000 |
| AID43DBX | <8 | 11 | 5 | 220 | .26 | 17.0 | <4 | <4.00 | <4 | 70,000 |
| AID43FW | <8 | 4 | 4 | 110 | .17 | 16.0 | <4 | -- | <4 | 2,100 |
| AID43ES | <8 | 3 | <2 | 58 | .04 | 9.1 | <4 | <.20 | 7 | 600 |
| AID43LT | <8 | 4 | 6 | 280 | .20 | 17.0 | <4 | <.02 | <4 | 61,000 |
| AID43MH | <8 | 4 | 7 | 100 | .20 | 12.0 | <4 | <.05 | <4 | 53,000 |
| AID43MHX | <8 | 4 | 5 | 97 | .19 | 12.0 | <4 | <.05 | <4 | 51,000 |
| AID43TB | <8 | 21 | <2 | 72 | .04 | 11.0 | <4 | <.06 | <4 | 3,200 |
| AID43WW | <8 | 13 | 3 | 85 | .09 | 16.0 | <4 | -- | <4 | 8,100 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Mg | %-s | Mo ppm-s | Na | %-s | Nb ppm-s | Nd ppm-s | Ni ppm-s | P | %-s | Pb ppm-s | Sb | ppm | Sc ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant samples collected near Flat, Alaska location-1 (FT-1).--Continued | | | | | | | | | | | | | | |
| AID41AL | 7.5 | <4 | .12 | <8 | | 17 | 200 | | 5.30 | | <8 | | .06 | <4 |
| AID41ALX | 7.5 | <4 | .14 | <8 | | 15 | 190 | | 5.20 | | <8 | | -- | <4 |
| AID41BB | 5.6 | <4 | .14 | <8 | | <8 | 110 | | 7.60 | | 9 | | .26 | <4 |
| AID41BR | 5.4 | <4 | .20 | <8 | | 13 | 93 | | 6.20 | | 17 | | .27 | 4 |
| AID41DB | 6.7 | <4 | .11 | <8 | | <8 | 92 | | 8.20 | | <8 | | .04 | <4 |
| AID41FW | 7.9 | <4 | .17 | <8 | | 9 | 26 | | 3.00 | | 19 | | .24 | <4 |
| AID41FWX | 8.3 | 4 | .19 | <8 | | <8 | 28 | | 3.20 | | <8 | | .25 | <4 |
| AID41LT | 4.0 | <4 | .23 | <8 | | 15 | 71 | | 4.80 | | 16 | | .15 | 7 |
| AID41MH | 4.9 | <4 | .08 | <8 | | <8 | 55 | | 5.30 | | <8 | | .05 | <4 |
| AID41MHX | 5.1 | <4 | .08 | <8 | | <8 | 57 | | 5.70 | | 9 | | .08 | <4 |
| AID41RM | 2.6 | <4 | 1.20 | <8 | | 25 | 44 | | 1.20 | | 30 | | .44 | 13 |
| AID41TB | 6.5 | <4 | .06 | <8 | | <8 | 67 | | 8.60 | | <8 | | .03 | <4 |
| AID41TBX | 6.7 | <4 | .06 | <8 | | <8 | 67 | | 8.90 | | <8 | | .02 | <4 |
| AID41WW | 4.7 | <4 | .05 | <8 | | 15 | 160 | | 6.80 | | <8 | | <.02 | <4 |
| AID41WWX | 4.9 | <4 | .05 | <8 | | 35 | 170 | | 7.10 | | <8 | | .12 | <4 |
| Plant samples collected near Flat, Alaska location-2 (FT-2).--Continued | | | | | | | | | | | | | | |
| AID42ES-1 | 3.1 | <4 | .20 | <8 | | <8 | 55 | | .84 | | <8 | | .19 | <4 |
| AID42ESX1 | 3.2 | <4 | .19 | <8 | | <8 | 58 | | .85 | | <8 | | -- | <4 |
| AID42ES-2 | 3.9 | <4 | .26 | <8 | | <8 | 58 | | 1.10 | | <8 | | .29 | <4 |
| AID42ESX2 | 3.8 | <4 | .19 | <8 | | <8 | 53 | | 1.10 | | <8 | | -- | <4 |
| AID42BB | 6.8 | <4 | .16 | <8 | | 9 | 160 | | 8.50 | | 9 | | .11 | <4 |
| AID42DB | 6.5 | <4 | .16 | <8 | | <8 | 98 | | 8.30 | | 8 | | .05 | <4 |
| AID42DBX | 6.6 | <4 | .16 | <8 | | <8 | 93 | | 8.40 | | 14 | | .02 | <4 |
| AID42FW | 7.4 | <4 | .66 | <8 | | 22 | 210 | | 2.20 | | <8 | | .10 | 11 |
| AID42FWX | 4.7 | <4 | .15 | <8 | | 17 | 75 | | 3.30 | | <8 | | .12 | <4 |
| AID42FW-2 | 4.6 | <4 | .14 | <8 | | 15 | 73 | | 3.20 | | <8 | | .23 | <4 |
| AID42LL | 4.7 | <4 | .35 | <8 | | <8 | 87 | | 5.10 | | 12 | | .12 | <4 |
| AID42LLX | 4.8 | <4 | .38 | <8 | | <8 | 89 | | 5.40 | | 16 | | -- | <4 |
| AID42LT | 5.0 | <4 | .18 | <8 | | 11 | 46 | | 5.40 | | <8 | | <.02 | <4 |
| AID42LTX | 5.2 | <4 | .20 | <8 | | <8 | 46 | | 5.60 | | <8 | | .04 | <4 |
| AID42TB | 9.1 | <4 | .15 | <8 | | <8 | 91 | | 7.40 | | <8 | | .07 | <4 |
| AID42TBX | 9.4 | <4 | .14 | <8 | | <8 | 94 | | 7.40 | | <8 | | .05 | <4 |
| AID42WW | 6.0 | <4 | .15 | <8 | | 11 | 140 | | 5.40 | | <8 | | .15 | <4 |
| AID42WWX | 6.0 | <4 | .15 | <8 | | 17 | 140 | | 5.40 | | <8 | | .16 | <4 |
| Plant samples collected near Iditarod, Alaska location-3 (ID-3).--Continued | | | | | | | | | | | | | | |
| AID43AL | 6.7 | 4 | .05 | <8 | | <8 | 50 | | 3.30 | | <8 | | .04 | <4 |
| AID43BR | 6.8 | <4 | .08 | <8 | | <8 | 36 | | 4.70 | | <8 | | <.02 | <4 |
| AID43DB | 6.5 | <4 | .09 | <8 | | <8 | 68 | | 7.30 | | <8 | | .02 | <4 |
| AID43DBX | 6.7 | <4 | .09 | <8 | | <8 | 68 | | 7.40 | | <8 | | -- | <4 |
| AID43FW | 7.0 | <4 | .22 | <8 | | <8 | 53 | | 3.50 | | <8 | | .07 | <4 |
| AID43FS | 4.2 | <4 | .11 | <8 | | <8 | 23 | | .96 | | <8 | | -- | <4 |
| AID43LT | 5.0 | <4 | .07 | <8 | | <8 | 27 | | 5.60 | | <8 | | <.02 | <4 |
| AID43MH | 2.5 | <4 | .08 | <8 | | <8 | 25 | | 2.80 | | <8 | | -- | <4 |
| AID43MHX | 2.5 | <4 | .08 | <8 | | <8 | 12 | | 2.60 | | 10 | | <.02 | <4 |
| AID43TB | 5.3 | <4 | .03 | <8 | | <8 | 41 | | 3.80 | | <8 | | .02 | <4 |
| AID43WW | 6.6 | 9 | .08 | <8 | | <8 | 46 | | 4.30 | | <8 | | .02 | <4 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Sr ppm-s | Th ppm-s | Ti % | V ppm-s | Y ppm-s | Yb ppm-s | Zn ppm-s |
|---|---|---|---|---|---|---|---|
| Plant samples collected near Flat, Alaska location-1 (FT-1).--Continued | | | | | | | |
| AID41AL | 1,600 | <8 | .05 | 15 | 26 | <2 | 960 |
| AID41ALX | 1,700 | <8 | .05 | 16 | 28 | <2 | 940 |
| AID41BB | 500 | 12 | .03 | 6 | 5 | <2 | 6,500 |
| AID41BB | 860 | 15 | .07 | 24 | 13 | <2 | 4,100 |
| AID41DB | 760 | <8 | .02 | <4 | <4 | <2 | 8,100 |
| AID41FW | 1,200 | <8 | .02 | 4 | 13 | <2 | 780 |
| AID41FWX | 1,300 | <8 | .03 | 5 | 13 | <2 | 820 |
| AID41LT | 380 | <8 | .15 | 46 | 27 | <2 | 1,300 |
| AID41MH | 400 | 12 | .01 | <4 | <4 | <2 | 2,000 |
| AID41MHX | 410 | 14 | .01 | <4 | <4 | <2 | 2,100 |
| AID41RM | 190 | 9 | .31 | 110 | 17 | 2 | 520 |
| AID41TB | 1,400 | <8 | <.01 | <4 | 4 | <2 | 3,000 |
| AID41TBX | 1,500 | 10 | <.01 | <4 | <4 | <2 | 3,100 |
| AID41WW | 1,900 | <8 | <.01 | <4 | 44 | <2 | 3,400 |
| AID41WWX | 2,000 | 12 | <.01 | <4 | 46 | <2 | 3,600 |
| Plant samples collected near Flat, Alaska location-2 (FT-2).--Continued | | | | | | | |
| AID42ES-1 | 750 | <8 | .02 | 6 | 7 | <2 | 110 |
| AID42ESX1 | 760 | <8 | .02 | 8 | 8 | <2 | 110 |
| AID42ES-2 | 1,000 | <8 | .05 | 13 | 7 | <2 | 270 |
| AID42ESX2 | 1,100 | <8 | .03 | 9 | 6 | <2 | 270 |
| AID42BB | 390 | 14 | .02 | <4 | <4 | <2 | 6,200 |
| AID42DB | 450 | <8 | .03 | <4 | <4 | <2 | 10,000 |
| AID42DBX | 430 | 13 | .02 | <4 | <4 | <2 | 9,800 |
| AID42FW | 1,800 | <8 | .22 | 78 | 15 | <2 | 240 |
| AID42FWX | 2,500 | <8 | <.01 | <4 | 21 | <2 | 200 |
| AID42FW-2 | 2,500 | <8 | <.01 | <4 | 20 | <2 | 190 |
| AID42LL | 500 | <8 | .05 | 17 | 4 | <2 | 1,300 |
| AID42LLX | 510 | <8 | .07 | 19 | <4 | <2 | 1,400 |
| AID42LT | 190 | 16 | .03 | <4 | <4 | <2 | 1,100 |
| AID42LTX | 200 | 9 | .03 | <4 | <4 | <2 | 1,100 |
| AID42TB | 670 | <8 | <.01 | <4 | <4 | <2 | 5,900 |
| AID42TBX | 700 | 9 | <.01 | <4 | <4 | <2 | 6,000 |
| AID42WW | 1,800 | <8 | .01 | <4 | 8 | <2 | 3,300 |
| AID42WWX | 1,800 | 8 | .02 | <4 | 7 | <2 | 3,400 |
| Plant samples collected near Iditarod, Alaska location-3 (ID-3).--Continued | | | | | | | |
| AID43AL | 1,400 | <8 | <.01 | <4 | <4 | <2 | 790 |
| AID43BB | 830 | <8 | .01 | <4 | <4 | <2 | 1,800 |
| AID43DB | 600 | 25 | .01 | <4 | <4 | <2 | 7,500 |
| AID43DBX | 610 | 19 | .02 | <4 | <4 | <2 | 7,200 |
| AID43FW | 1,400 | <8 | <.01 | <4 | <4 | <2 | 270 |
| AID43FS | 790 | <8 | <.01 | <4 | <4 | <2 | 280 |
| AID43LT | 300 | 20 | .01 | <4 | <4 | <2 | 1,100 |
| AID43MH | 450 | 15 | .01 | <4 | <4 | <2 | 2,400 |
| AID43MHX | 440 | 13 | .01 | <4 | <4 | <2 | 2,400 |
| AID43TB | 1,200 | <8 | <.01 | <4 | <4 | <2 | 3,100 |
| AID43WW | 1,400 | <8 | <.01 | <4 | <4 | <2 | 2,300 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Al | %-s | As ppm-s | As ppm | As ppm-n | Au ppb-a | Ba ppm-s | Be ppm-s | Br ppm-n | Ca | %-s | Cd ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant samples collected near Livengood, Alaska location-1 (LV-1). | | | | | | | | | | | | |
| ALV41AL | .92 | | 130 | 5.00 | 5.90 | 13.80 | 580 | <2 | 2.20 | | 20.0 | <4 |
| ALV41ALX | .90 | | 120 | 5.10 | 5.10 | 13.00 | 620 | <2 | 2.10 | | 20.0 | <4 |
| ALV41LT | 1.30 | | 270 | 7.50 | 8.98 | 61.40 | 420 | <2 | .58 | | 18.0 | <4 |
| ALV41RM | 8.00 | | 2,300 | 510.00 | 396.00 | 32.00 | 1,400 | 2 | 2.80 | | 1.4 | <4 |
| ALV41RMX | 7.90 | | 2,300 | 530.00 | 399.00 | 37.00 | 1,400 | 3 | 3.10 | | 1.3 | <4 |
| ALV41TBX | 1.30 | | 330 | 12.00 | 11.60 | 48.80 | 1,000 | <2 | 1.20 | | 18.0 | 15 |
| ALV41WS | .60 | | 150 | 6.10 | -- | -- | 2,400 | <2 | -- | | 21.0 | <4 |
| ALV41WSX | .63 | | 160 | 6.30 | -- | -- | 2,400 | <2 | -- | | 22.0 | <4 |
| Plant samples collected near Livengood, Alaska location-2 (LV-2). | | | | | | | | | | | | |
| ALV42AL | .93 | | 150 | 5.70 | 6.60 | 48.90 | 970 | <2 | 1.10 | | 14.0 | <4 |
| ALV42ES | .73 | | 1,100 | 230.00 | 274.00 | 31.40 | 320 | <2 | 23.00 | | 9.1 | 5 |
| ALV42FSX | .85 | | 1,200 | -- | -- | -- | 340 | <2 | -- | | 9.2 | 5 |
| ALV42LT | 1.80 | | 290 | 9.70 | 11.20 | 106.00 | 750 | <2 | .59 | | 14.0 | <4 |
| ALV42LTX | 2.00 | | 310 | 10.00 | -- | -- | 820 | <2 | -- | | 15.0 | <4 |
| ALV42TB | .80 | | 130 | 3.60 | 4.40 | 37.70 | 870 | <2 | .58 | | 11.0 | 7 |
| ALV42WS | 3.10 | | 800 | 40.00 | -- | -- | 1,900 | <2 | -- | | 13.0 | <4 |
| ALV42WSX | 3.20 | | 820 | 39.00 | -- | -- | 1,900 | <2 | -- | | 13.0 | <4 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Ce ppm-s | Co ppm-s | Cr ppm-s | Cu ppm-s | Fe %-s | K %-s | La ppm-s | La ppm-n | Li ppm-s | Mn ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|
| Plant samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | | | | |
| ALV41AL | 8 | 11 | 17 | 170 | 1.10 | 15.0 | <4 | .27 | <4 | 14,000 |
| ALV41ALX | <8 | 11 | 19 | 180 | 1.10 | 15.0 | <4 | .25 | <4 | 14,000 |
| ALV41LT | <8 | 10 | 37 | 240 | .96 | 14.0 | 6 | .25 | 8 | 21,000 |
| ALV41RM | 58 | 31 | 220 | 91 | 6.00 | 2.6 | 33 | 7.40 | 45 | 1,000 |
| ALV41RMX | 64 | 31 | 240 | 80 | 5.90 | 2.8 | 37 | 7.50 | 45 | 930 |
| ALV41TBX | 17 | 26 | 39 | 180 | 1.30 | 12.0 | 6 | .37 | 8 | 17,000 |
| ALV41WS | <8 | 7 | 17 | 100 | .50 | 12.0 | <4 | -- | 6 | 11,000 |
| ALV41WSX | <8 | 8 | 22 | 100 | .55 | 12.0 | <4 | -- | 5 | 12,000 |
| Plant samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | | | | |
| ALV42AL | <8 | 10 | 24 | 250 | .81 | 14.0 | 4 | .24 | 4 | 9,800 |
| ALV42ES | 15 | 9 | 19 | 74 | 1.20 | 10.0 | 7 | 2.80 | 6 | 27[illegible] |
| ALV42ESX | 17 | 7 | 22 | 82 | 1.30 | 9.9 | 8 | -- | 7 | 260 |
| ALV42LT | 16 | 9 | 57 | 210 | 1.30 | 14.0 | 9 | .41 | 10 | 7,000 |
| ALV42LTX | 15 | 11 | 55 | 210 | 1.40 | 14.0 | 9 | -- | 11 | 6,200 |
| ALV42TB | <8 | 9 | 24 | 300 | .77 | 14.0 | <4 | .14 | 5 | 16,000 |
| ALV42WS | 26 | 20 | 99 | 98 | 2.80 | 10.0 | 16 | -- | 22 | 9,100 |
| ALV42WSX | 29 | 18 | 81 | 100 | 2.80 | 10.0 | 16 | -- | 19 | 9,200 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Mg | %-s | Mo ppm-s | Na | %-s | Nb ppm-s | Nd ppm-s | Ni ppm-s | P | %-s | Pb ppm-s | Sb | ppm | Sc ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Plant samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | | | | | | | | |
| ALV41AL | 6.3 | | 19 | | .07 | <8 | <8 | 240 | | 3.80 | 8 | | .47 | <4 |
| ALV41ALX | 6.4 | | 21 | | .08 | <8 | <8 | 240 | | 3.90 | <8 | | .48 | <4 |
| ALV41LT | 5.9 | | 9 | | .14 | <8 | 10 | 100 | | 4.80 | 11 | | .80 | <4 |
| ALV41RM | 2.1 | | 7 | | .75 | <8 | 31 | 200 | | .38 | 45 | | 19.00 | 19 |
| ALV41RMX | 2.0 | | 7 | | .73 | <8 | 31 | 190 | | .37 | 44 | | 18.30 | 19 |
| ALV41TBX | 8.2 | | <4 | | .11 | <8 | 16 | 160 | | 5.00 | 17 | | 1.10 | <4 |
| ALV41WS | 2.5 | | <4 | | .06 | <8 | 10 | 48 | | 3.70 | 8 | | .52 | <4 |
| ALV41WSX | 2.7 | | <4 | | .06 | <8 | <8 | 51 | | 4.00 | 10 | | .50 | <4 |
| Plant samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | | | | | | | | |
| ALV42AL | 14.0 | | <4 | | .10 | 11 | <8 | 290 | | 3.10 | 10 | | .57 | <4 |
| ALV42ES | 5.3 | | <4 | | .10 | <8 | 10 | 56 | | .66 | <8 | | 1.70 | <4 |
| ALV42ESX | 5.3 | | <4 | | .11 | <8 | 15 | 58 | | .66 | <8 | | -- | <4 |
| ALV42LT | 8.1 | | <4 | | .21 | <8 | 8 | 81 | | 4.70 | 11 | | .95 | 4 |
| ALV42LTX | 8.4 | | <4 | | .23 | <8 | <8 | 83 | | 4.70 | 15 | | .96 | 4 |
| ALV42TB | 17.0 | | <4 | | .08 | <8 | <8 | 270 | | 4.60 | 11 | | .42 | <4 |
| ALV42WS | 4.7 | | <4 | | .25 | <8 | 9 | 170 | | 2.60 | 31 | | 2.80 | 8 |
| ALV42WSX | 4.8 | | <4 | | .26 | <8 | 16 | 170 | | 2.70 | 30 | | 2.80 | 8 |

Table 5.-- Analytical results for plant samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Sr ppm-s | Th ppm-s | Ti % | V ppm-s | Y ppm-s | Yb ppm-s | Zn ppm-s |
|---|---|---|---|---|---|---|---|
| Plant samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | |
| ALV41AL | 1,700 | <8 | .03 | 15 | <4 | <2 | 1,200 |
| ALV41ALX | 1,700 | <8 | .03 | 15 | <4 | <2 | 1,200 |
| ALV41LT | 440 | <8 | .04 | 32 | <4 | <2 | 820 |
| ALV41RM | 250 | 19 | .44 | 270 | 19 | 3 | 440 |
| ALV41RMX | 240 | <8 | .39 | 260 | 19 | 2 | 430 |
| ALV41TBX | 1,400 | <8 | .08 | 40 | 6 | <2 | 4,600 |
| ALV41WS | 970 | <8 | .03 | 15 | <4 | <2 | 1,400 |
| ALV41WSX | 1,000 | <8 | .03 | 16 | <4 | <2 | 1,400 |
| Plant samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | |
| ALV42AL | 780 | <8 | .05 | 23 | <4 | <2 | 1,000 |
| ALV42ES | 610 | <8 | .03 | 58 | 12 | <2 | 420 |
| ALV42ESX | 520 | <8 | .04 | 68 | 13 | <2 | 430 |
| ALV42LT | 420 | <8 | .09 | 47 | 4 | <2 | 1,300 |
| ALV42LTX | 430 | <8 | .08 | 47 | 5 | <2 | 1,300 |
| ALV42TB | 590 | <8 | .04 | 19 | <4 | <2 | 6,200 |
| ALV42WS | 800 | <8 | .14 | 95 | 8 | <2 | 1,100 |
| ALV42WSX | 830 | <8 | .15 | 96 | 9 | <2 | 1,100 |

Table 6.-- Analytical results for soil samples collected near Flat, Iditarod, and Livengood, Alaska.
[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value sh

| Sample | As ppm-h | As ppm-s | Al | Ag-s | Au ppm | Au ppb-w | Au ppm-p | Ba ppm-s | Be ppm-s | Total C% | Organic C ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil samples collected near Flat, Alaska location-1 (FT-1). | | | | | | | | | | | |
| FT1D1 | 21.0 | 20 | 2.5 | <.05 | 1 | .02 | 320 | <1 | | 35.10 | 240 |
| FT1D2 | 41.0 | 40 | 4.7 | <.05 | 7 | .02 | 540 | <1 | | 20.60 | 530 |
| FT1C1 | 120.0 | 90 | 7.3 | .05 | 3 | <.02 | 860 | 2 | | 1.69 | 40 |
| FT1C2 | 190.0 | 160 | 7.8 | .10 | 21 | .10 | 1,100 | 2 | | .44 | 28 |
| Soil samples collected near Flat, Alaska location-2 (FT-2). | | | | | | | | | | | |
| FT2A1 | 42.0 | 40 | 5.8 | <.05 | <1 | <.02 | 650 | 1 | | 8.51 | 70 |
| FT2C1 | 63.0 | 50 | 6.6 | <.05 | <1 | .02 | 720 | 1 | | 3.11 | 30 |
| FT2C2G | 70.0 | 70 | 7.1 | <.05 | 1 | .02 | 790 | 1 | | 3.28 | 30 |
| FT2IIC3 | 380.0 | 330 | 7.6 | .16 | 29 | .16 | 1,400 | 3 | | .21 | 30 |
| FT2IIC4 | 640.0 | 590 | 8.9 | .88 | 750 | .78 | 1,400 | 4 | | .05 | 22 |
| Soil samples collected near Iditarod, Alaska location-3 (ID-3). | | | | | | | | | | | |
| ID3D2 | 8.2 | <10 | 2.1 | <.05 | 5 | .02 | 380 | <1 | | 35.00 | 480 |
| ID3C1 | 14.0 | <10 | 6.6 | <.05 | <1 | <.02 | 850 | 1 | | 4.33 | 100 |
| ID3C2 | 13.0 | <10 | 6.8 | <.05 | <1 | <.02 | 880 | 1 | | 5.07 | 120 |
| ID3C3 | 22.0 | 20 | 6.4 | <.05 | <1 | <.02 | 870 | 1 | | 1.03 | 60 |
| Soil samples collected near Livengood, Alaska location-1 (LV-1). | | | | | | | | | | | |
| LV1D2 | 390.0 | 330 | 5.0 | <.05 | 6 | .02 | 1,000 | 2 | | 18.30 | 465 |
| LV1C1 | 750.0 | 620 | 7.0 | .07 | 3 | .04 | 1,000 | 2 | | 1.65 | 70 |
| LV1C2 | 810.0 | 660 | 7.0 | .09 | 2 | .06 | 1,200 | 3 | | 1.10 | 60 |
| LV1C3 | 3,400.0 | 3,200 | 6.7 | .24 | 2 | .05 | 1,700 | 5 | | .54 | 40 |
| LV1IIC4 | 6,100.0 | 6,000 | 8.7 | .37 | 15 | .02 | 1,900 | 6 | | .51 | 40 |
| Soil samples collected near Livengood, Alaska location-2 (LV-2). | | | | | | | | | | | |
| LV2D2 | 330.0 | 320 | 3.7 | .06 | 4 | .05 | 580 | <1 | | 22.40 | 450 |
| LV2C1 | 430.0 | 410 | 5.7 | .56 | 14 | .06 | 790 | 1 | | 9.11 | 260 |
| LV2A1B | 210.0 | 560 | 5.5 | .45 | 14 | .04 | 790 | 1 | | 11.80 | 200 |
| LV2C2 | 1,100.0 | 1,000 | 7.0 | .50 | 18 | .05 | 1,000 | 2 | | 2.29 | 70 |
| LV2C3 | 850.0 | 720 | 6.6 | .18 | 14 | .07 | 960 | 2 | | 1.74 | 50 |
| LV2C4 | 600.0 | 530 | 6.1 | .13 | 8 | .04 | 880 | 1 | | 2.09 | 60 |
| Sample collected from the 'pay zone' of a placer mine near Livengood, Alaska location-4 (LV-4). | | | | | | | | | | | |
| LV4 | 2,100.0 | 2,100 | 7.3 | 1.20 | 200 | .02 | 2,200 | 3 | | .47 | 35 |

Table 6.-- Analytical results for soil samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Ce ppm-w | Ca %-s | Cd ppm-s | Ce ppm-s | Cl ppm-w | Co ppm-s | Cr ppm-s | Cu ppm-s | Fe %-s | Ga ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil samples collected near Flat, Alaska location-1 (FT-1).--Continued | | | | | | | | | | |
| FT1D1 | 12 | .42 | <2 | 22 | 6.00 | 4 | 31 | 11 | 1.0 | 4 |
| FT1D2 | 32 | .59 | <2 | 40 | 3.80 | 6 | 50 | 15 | 2.5 | 11 |
| FT1C1 | 2 | .77 | <2 | 76 | 1.50 | 15 | 120 | 31 | 4.1 | 16 |
| FT1C2 | 2 | .70 | <2 | 81 | 12.00 | 21 | 140 | 41 | 4.4 | 18 |
| Soil samples collected near Flat, Alaska location-2 (FT-2).--Continued | | | | | | | | | | |
| FT2A1 | 4 | .81 | <2 | 49 | 1.00 | 5 | 63 | 12 | 2.9 | 15 |
| FT2C1 | 2 | .75 | <2 | 59 | .73 | 10 | 100 | 21 | 4.0 | 16 |
| FT2C2G | 2 | .78 | <2 | 68 | .85 | 11 | 110 | 24 | 4.6 | 16 |
| FT2IIC3 | 2 | 2.30 | <2 | 59 | .30 | 59 | 580 | 110 | 6.5 | 17 |
| FT2IIC4 | 4 | .87 | <2 | 74 | .61 | 21 | 180 | 190 | 3.8 | 19 |
| Soil samples collected near Iditarod, Alaska location-3 (ID-3).--Continued | | | | | | | | | | |
| ID3D2 | 77 | 1.00 | <2 | 26 | 6.00 | 16 | 32 | 10 | 1.4 | 5 |
| ID3C1 | 29 | .87 | <2 | 59 | 6.50 | 15 | 120 | 16 | 3.8 | 15 |
| ID3C2 | 27 | .84 | <2 | 61 | .51 | 18 | 130 | 20 | 3.8 | 15 |
| ID3C3 | 10 | .73 | <2 | 66 | .58 | 23 | 140 | 29 | 4.2 | 15 |
| Soil samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | | | | |
| LV1D2 | 85 | .85 | <2 | 65 | 6.20 | 10 | 89 | 42 | 2.2 | 15 |
| LV1C1 | 13 | .90 | <2 | 75 | 1.10 | 11 | 110 | 22 | 3.8 | 17 |
| LV1C2 | 7 | .85 | <2 | 95 | 1.30 | 12 | 120 | 28 | 3.8 | 19 |
| LV1C3 | 7 | .56 | 4 | 150 | 1.20 | 10 | 100 | 37 | 4.8 | 25 |
| LV1IIC4 | 8 | .19 | 4 | 75 | .55 | 28 | 350 | 140 | 6.0 | 16 |
| Soil samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | | | | |
| LV2D2 | 67 | 1.00 | <2 | 33 | 4.40 | 20 | 200 | 23 | 2.4 | 9 |
| LV2C1 | 61 | 1.10 | <2 | 46 | 5.40 | 25 | 260 | 29 | 3.5 | 13 |
| LV2A1B | 48 | 1.10 | <2 | 48 | 5.20 | 28 | 300 | 36 | 3.8 | 13 |
| LV2C2 | 17 | .55 | <2 | 68 | 1.50 | 37 | 430 | 36 | 4.9 | 17 |
| LV2C3 | 15 | .66 | <2 | 72 | 2.80 | 38 | 440 | 30 | 4.5 | 17 |
| LV2C4 | 15 | .65 | <2 | 57 | 2.50 | 37 | 460 | 31 | 4.5 | 15 |
| Sample collected from the 'pay zone' of a placer mine near Livengood, Alaska location-4 (LV-4).--Continued | | | | | | | | | | |
| LV4 | 44 | .51 | 2 | 110 | .49 | 21 | 200 | 57 | 5.0 | 16 |

Table 6.-- Analytical results for soil samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Hg ppm-c | K | %-s | La ppm-s | Li ppm-s | Mg | %-s | Mg ppm-w | Mn ppm-w | Mn ppm-s | Mo ppm-c | Na ppm-w |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil samples collected near Flat, Alaska location-1 (FT-1).--Continued | | | | | | | | | | | | |
| FT1D1 | .21 | .57 | 10 | 9 | .25 | 5 | 2.4 | 340 | <2 | 13 |
| FT1D2 | .17 | 1.00 | 19 | 18 | .48 | 17 | 4.0 | 310 | <2 | 24 |
| FT1C1 | .10 | 1.60 | 35 | 34 | .98 | 1 | .2 | 810 | <2 | 5 |
| FT1C2 | .14 | 1.70 | 37 | 38 | 1.00 | 1 | .1 | 680 | <2 | 16 |
| Soil samples collected near Flat, Alaska location-2 (FT-2).--Continued | | | | | | | | | | | | |
| FT2A1 | .45 | 1.40 | 23 | 23 | .54 | 2 | .1 | 480 | <2 | 11 |
| FT2C1 | .18 | 1.40 | 28 | 30 | .87 | 1 | .1 | 310 | <2 | 5 |
| FT2C2G | .11 | 1.50 | 30 | 31 | .92 | 1 | <.1 | 320 | <2 | 6 |
| FT2IIC3 | .08 | 1.60 | 35 | 35 | 5.30 | 1 | .2 | 1,400 | <2 | 6 |
| FT2IIC4 | .16 | 3.50 | 36 | 25 | 2.50 | 2 | .4 | 740 | <2 | 7 |
| Soil samples collected near Iditarod, Alaska location-3 (ID-3).--Continued | | | | | | | | | | | | |
| ID3D2 | .10 | .45 | 10 | 11 | .33 | 20 | 7.2 | 840 | <2 | 11 |
| ID3C1 | .10 | 1.30 | 27 | 35 | .85 | 8 | .5 | 510 | <2 | 8 |
| ID3C2 | .10 | 1.40 | 28 | 36 | .85 | 8 | .8 | 580 | <2 | 8 |
| ID3C3 | .06 | 1.40 | 31 | 35 | .92 | 3 | .3 | 500 | <2 | 4 |
| Soil samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | | | | | | |
| LV1D2 | .15 | 1.20 | 30 | 19 | .60 | 42 | 19.0 | 980 | <2 | 13 |
| LV1C1 | .04 | 1.60 | 37 | 36 | .91 | 5 | .5 | 380 | <2 | 9 |
| LV1C2 | .12 | 1.80 | 45 | 36 | .91 | 2 | .2 | 410 | <2 | 5 |
| LV1C3 | .14 | 2.00 | 68 | 40 | .81 | 3 | .1 | 330 | 7 | 16 |
| LV1IIC4 | .54 | 2.50 | 32 | 100 | .73 | 3 | .1 | 270 | 7 | 7 |
| Soil samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | | | | | | |
| LV2D2 | .31 | .95 | 15 | 19 | 1.80 | 148 | 4.9 | 870 | <2 | 8 |
| LV2C1 | .38 | 1.30 | 22 | 31 | 2.10 | 111 | 1.7 | 930 | <2 | 18 |
| LV2A1R | .42 | 1.40 | 23 | 32 | 2.00 | 93 | .8 | 1,200 | <2 | 9 |
| LV2C2 | .38 | 2.10 | 30 | 43 | 2.10 | 33 | .2 | 1,700 | <2 | 7 |
| LV2C3 | .46 | 1.80 | 31 | 38 | 2.50 | 31 | .2 | 1,600 | <2 | 7 |
| LV2C4 | .44 | 1.60 | 27 | 35 | 3.20 | 31 | .2 | 1,000 | <2 | 9 |
| Sample collected from the 'pay zone' of a placer mine near Livengood, Alaska location-4 (LV-4).--Continued | | | | | | | | | | | | |
| LV4 | 1.20 | 2.90 | 53 | 37 | .70 | 17 | .1 | 500 | 4 | 5 |

Table 6.-- Analytical results for soil samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | Na %-s | Nb ppm-s | Nd ppm-s | Ni ppm-s | P %-s | Pb ppm-s | Ph | Total S% | Sb ppb-h | Sc ppm-s |
|---|---|---|---|---|---|---|---|---|---|---|
| Soil samples collected near Flat, Alaska location-1 (FT-1).--Continued | | | | | | | | | | |
| FT1D1 | .47 | <4 | 10 | 11 | .12 | 5 | 3.62 | .08 | 39.0 | 5 |
| FT1D2 | .92 | <4 | 18 | 19 | .12 | 12 | 3.95 | .06 | 3.3 | 8 |
| FT1C1 | 1.20 | 4 | 33 | 43 | .07 | 17 | 4.43 | .01 | 9.5 | 15 |
| FT1C2 | 1.10 | 5 | 36 | 55 | .08 | 15 | 4.87 | <.01 | 15.0 | 17 |
| Soil samples collected near Flat, Alaska location-2 (FT-2).--Continued | | | | | | | | | | |
| FT2A1 | 1.60 | 5 | 23 | 19 | .08 | 10 | 4.38 | .01 | 1.9 | 10 |
| FT2C1 | 1.10 | <4 | 26 | 33 | .08 | 11 | 4.56 | .01 | 2.4 | 12 |
| FT2C2G | 1.10 | 6 | 27 | 34 | .09 | 14 | 4.56 | .01 | 3.1 | 13 |
| FT2IIC3 | 1.20 | 8 | 36 | 300 | .14 | 15 | 4.47 | <.01 | 23.0 | 22 |
| FT2IIC4 | 2.70 | 13 | 33 | 110 | .18 | 22 | 4.76 | <.01 | 55.0 | 14 |
| Soil samples collected near Iditarod, Alaska location-3 (ID-3).--Continued | | | | | | | | | | |
| ID3D2 | .30 | <4 | 12 | 16 | .10 | 16 | 4.36 | .12 | 20.0 | 5 |
| ID3C1 | 1.10 | 5 | 26 | 48 | .06 | 10 | 4.99 | .02 | 4.3 | 13 |
| ID3C2 | 1.10 | 5 | 26 | 51 | .07 | 12 | 4.97 | .02 | 4.4 | 14 |
| ID3C3 | 1.00 | 6 | 30 | 64 | .05 | 13 | 4.93 | <.01 | 18.0 | 14 |
| Soil samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | | | | |
| LV1D2 | .73 | 7 | 29 | 58 | .12 | 15 | 4.24 | .05 | 120.0 | 9 |
| LV1C1 | 1.10 | 7 | 33 | 37 | .04 | 15 | 4.49 | .02 | 11.0 | 12 |
| LV1C2 | 1.10 | 7 | 38 | 40 | .04 | 22 | 4.73 | .03 | 13.0 | 12 |
| LV1C3 | 1.20 | 26 | 60 | 46 | .06 | 22 | 4.89 | .13 | 120.0 | 8 |
| LV1IIC4 | .08 | 6 | 36 | 290 | .09 | 8 | 5.30 | .02 | 280.0 | 22 |
| Soil samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | | | | |
| LV2D2 | .59 | <4 | 15 | 180 | .09 | 8 | 4.62 | .08 | 73.0 | 8 |
| LV2C1 | .97 | 6 | 18 | 210 | .08 | 12 | 5.26 | .04 | 100.0 | 14 |
| LV2A1B | .74 | <4 | 23 | 240 | .10 | 12 | 5.36 | .06 | 110.0 | 14 |
| LV2C2 | .58 | 5 | 27 | 260 | .08 | 13 | 6.14 | .02 | 250.0 | 15 |
| LV2C3 | .89 | <4 | 32 | 290 | .07 | 11 | 6.20 | .01 | 210.0 | 15 |
| LV2C4 | .89 | 4 | 28 | 330 | .05 | 11 | 5.92 | <.01 | 140.0 | 14 |
| Sample collected from the 'pay zone' of a placer mine near Livengood, Alaska location-4 (LV-4).--Continued | | | | | | | | | | |
| LV4 | .78 | 7 | 45 | 130 | .10 | 37 | 6.76 | .02 | 220.0 | 15 |

Table 6.-- Analytical results for soil samples collected near Flat, Iditarod, and Livengood, Alaska.--Continued

| Sample | SO4 ppm-w | Sp.Cond umhos/cm | Sr ppm-s | Th ppm-s | Ti % | V ppm-s | Y ppm-s | Yb ppm-s | Zn ppm-s |
|---|---|---|---|---|---|---|---|---|---|
| Soil samples collected near Flat, Alaska location-1 (FT-1).--Continued | | | | | | | | | |
| FT1D1 | 15.0 | 189 | 54 | <4 | .16 | 39 | 5 | <1 | 46 |
| FT1D2 | 10.0 | 172 | 91 | 5 | .30 | 70 | 11 | 1 | 47 |
| FT1C1 | 2.0 | 29 | 130 | 9 | .43 | 150 | 18 | 2 | 81 |
| FT1C2 | 3.6 | 22 | 130 | 9 | .44 | 150 | 23 | 2 | 92 |
| Soil samples collected near Flat, Alaska location-2 (FT-2).--Continued | | | | | | | | | |
| FT2A1 | 3.0 | 40 | 120 | 6 | .36 | 71 | 19 | 2 | 52 |
| FT2C1 | 1.1 | 32 | 120 | 10 | .40 | 120 | 11 | 1 | 70 |
| FT2C2G | 1.3 | 25 | 130 | 8 | .43 | 130 | 13 | 1 | 69 |
| FT2IIC3 | 2.2 | 27 | 260 | 8 | .47 | 160 | 24 | 2 | 120 |
| FT2IIC4 | 3.3 | 24 | 250 | 25 | .34 | 100 | 22 | 2 | 63 |
| Soil samples collected near Iditarod, Alaska location-3 (ID-3).--Continued | | | | | | | | | |
| ID3D2 | 12.0 | 167 | 98 | <4 | .13 | 36 | 8 | <1 | 31 |
| ID3C1 | 2.4 | 53 | 130 | 7 | .46 | 130 | 15 | 2 | 74 |
| ID3C2 | 2.5 | 55 | 130 | 7 | .44 | 130 | 17 | 2 | 79 |
| ID3C3 | 1.9 | 36 | 120 | 7 | .43 | 130 | 18 | 2 | 81 |
| Soil samples collected near Livengood, Alaska location-1 (LV-1).--Continued | | | | | | | | | |
| LV1D2 | 11.0 | 170 | 150 | 8 | .30 | 100 | 16 | 2 | 100 |
| LV1C1 | 3.1 | 32 | 170 | 9 | .39 | 130 | 18 | 2 | 82 |
| LV1C2 | 6.0 | 34 | 170 | 10 | .36 | 130 | 21 | 2 | 87 |
| LV1C3 | 2.6 | 25 | 210 | 23 | .33 | 110 | 34 | 4 | 150 |
| LV1IIC4 | 2.9 | 34 | 130 | 10 | .30 | 340 | 23 | 3 | 500 |
| Soil samples collected near Livengood, Alaska location-2 (LV-2).--Continued | | | | | | | | | |
| LV2D2 | 8.3 | 212 | 130 | <4 | .19 | 85 | 9 | 1 | 73 |
| LV2C1 | 7.2 | 150 | 160 | <4 | .31 | 130 | 15 | 2 | 100 |
| LV2A1B | 6.9 | 128 | 150 | 7 | .27 | 130 | 16 | 2 | 120 |
| LV2C2 | 3.8 | 52 | 150 | 8 | .31 | 180 | 12 | 1 | 150 |
| LV2C3 | 3.2 | 52 | 160 | 10 | .31 | 160 | 14 | 2 | 130 |
| LV2C4 | 3.7 | 53 | 140 | 8 | .30 | 160 | 15 | 2 | 120 |
| Sample collected from the 'pay zone' of a placer mine near Livengood, Alaska location-4 (LV-4).--Continued | | | | | | | | | |
| LV4 | 8.8 | 58 | 290 | 16 | .34 | 210 | 21 | 2 | 330 |