U87SHEØIMTUS

STATUS REVIEW OF *Penstemon lemhiensis*

U.S. FOREST SERVICE - REGION 1

BEAVERHEAD AND BITTERROOT NATIONAL FORESTS

MONTANA

Prepared by:

J. Stephen Shelly, Botanist
Montana Natural Heritage Program
State Library Building
1515 E. 6th Avenue
Helena, MT 59620

Order No. 40-0356-7-366

18 December 1987

TABLE OF CONTENTS

		Page
I.	SPECIES INFORMATION	
	A. Classification	1
	B. Present legal or other formal status	1
	C. Description	2
	D. Geographical distribution	3
	E. Habitat	13
	F. Population demography and biology	16
	G. Population ecology	21
	H. Land ownership (Montana)	22
II.	ASSESSMENT AND MANAGEMENT RECOMMENDATIONS	
	A. Threats to currently known populations (Montana)	23
	B. Management practices and response	25
	C. Recommendations for maintaining viable populations	26
	D. Recommendations for further assessment	27
	E. Summary	28
III.	LITERATURE CITED	29
IV.	ELEMENT OCCURRENCE PRINT-OUTS AND MAPS	30
V.	PHOTOGRAPHS	67

I. SPECIES INFORMATION

A. CLASSIFICATION

1. SCIENTIFIC NAME: Penstemon lemhiensis (Keck) Keck & Cronquist.

2. COMMON NAME: Lemhi beardtongue.

3. FAMILY: Scrophulariaceae (Figwort Family).

4. GENUS: Penstemon lemhiensis is one of approximately 250 species in the genus; most of the species occur in the western United States (Cronquist et al., 1984). Within Penstemon, P. lemhiensis belongs to the subgenus Habroanthus, section Glabri, series Speciosi (Ramstetter, 1983). The subgenus contains four other species in the Pacific Northwest region (P. cyaneus, P. payettensis, P. pennellianus, and P. speciosus); of these, only the first two also occur in Montana. Although they are superficially similar, these species are "technically well-marked taxa which occupy distinctive and hardly overlapping geographic areas" (Hitchcock et al., 1959).

5. SPECIES: When it was initially described, P. lemhiensis was considered to be a subspecies of P. speciosus Dougl. ex Lindl., a more common, widespread taxon (Keck, 1940). It was later elevated to the species level by Keck and Cronquist (1957). According to Hitchcock et al. (1959), P. lemhiensis "...appears to be a well-marked local species, fully as valid as the other species of the (subgenus)."

   In Montana, P. lemhiensis is one of 29 species reported for the genus (Dorn, 1984).

B. PRESENT LEGAL OR OTHER FORMAL STATUS

1. FEDERAL STATUS

   a. U.S. FISH AND WILDLIFE SERVICE: Penstemon lemhiensis is currently included in Category 2 of the U.S. Fish and Wildlife Service Notice of Review (Federal Register, 9/27/85), under consideration for federal listing as a threatened species. Category 2 taxa are those "...for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological

vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules" (= Federal candidate taxa).

b. U.S. FOREST SERVICE: Penstemon lemhiensis is currently included on the list of proposed sensitive species for Region 1 (Northern Region) of the U.S. Forest Service (Pierce et al., 1987 draft). Agency objectives and policy in the 1984 Forest Service Manual provide for the management and protection of sensitive species (Sections 2670.22, 2670.32). Under these guidelines, the U.S. Forest Service is to "(a)void or minimize impacts to species whose viability has been identified as a concern" (2670.32.3), and is to "(e)stablish objectives for Federal candidate species, in cooperation with the FWS...and the states" (2670.32.5).

2. STATE: Penstemon lemhiensis has been listed as "recommended threatened" by the Montana Rare Plant Project (Lesica et al., 1984). This category includes "(a)ny species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range in Montana."

Penstemon lemhiensis is currently listed by the Montana Natural Heritage Program (Shelly, 1987) as "threatened throughout range" (21-100 occurrences; global rank = G3). In Montana, it is listed as "endangered in state" (6-20 occurrences; state rank = S2).

None of these federal or state ranks currently provide any direct legal protection for P. lemhiensis.

C. DESCRIPTION

1. GENERAL NONTECHNICAL DESCRIPTION: Penstemon lemhiensis is a stout herb with stems which are mostly about 15-30 inches tall. The flowers are bright blue to purple in color, and about 1½-2 inches long. The basal leaves are entire, with no teeth or lobes, and are large, being about 3-6 inches long. The stem leaves are shorter, about 1-4 inches long, and are opposite. The plants are in flower from early June to July, depending on weather conditions and altitude. See Section V for color photos of plants and habitat.

2. TECHNICAL DESCRIPTION: Perennial herb, 3-7 dm. (12-28 in.) tall, with one-several stout stems from a branched caudex; herbage often finely hirtellous-puberulent at least in part; leaves entire, the basal ones clustered, up to 15-20 cm. (6-8 in.) long and 1-2.5 cm. (0.4-1 in.) wide, with petiolate, oblanceolate to narrowly elliptic blades; cauline leaves sessile, opposite, mostly lanceolate, up to ca. 10-12 cm. (4-4.8 in.) long and 1-2 cm. (0.4-0.8 in.) wide; inflorescence glabrous, of several-many loose verticillasters, more or less secund in life; calyx 7-11 mm. (0.27-0.43 in.) long, the segments lanceolate to narrowly ovate, evidently but not strongly scarious-margined below, tapering to a long-acuminate or subcaudate tip; corolla bright blue to purplish, 40-55 mm. (1.5-2 in.) long, ca. 1.5 cm. (0.6 in.) wide at the mouth; pollen sacs 1-3 mm. (0.04-0.12 in.) long, divaricate, evidently dentate-ciliolate along the sutures, pubescent near the connective and on side away from dehiscence; staminode glabrous; capsules ca. 10-15 mm. (0.4-0.6 in.) long; seeds ca. 2-3 mm. (0.08-0.12 in.) long (adapted from Hitchcock et al., 1959; Dorn, 1984).

3. LOCAL FIELD CHARACTERS: Penstemon lemhiensis is a very striking, tall, conspicuous species which, when in full bloom, is easy to see during surveys. The most reliable, easily observed distinguishing features include: a.) the large, bright blue corollas (flower tubes), b.) the sharp, narrow, elongated tips on the calyx lobes (green structures at the base of the flower tube), and c.) the lack of hairs on the staminode (a sterile filament within the flower tube which does not bear an anther (= pollen sacs) at its tip). Penstemon lemhiensis is thus very distinctive in comparison to other species which were most frequently encountered during field surveys (especially P. aridus, P. procerus, and P. radicosus). These latter species have smaller flowers, and differ with respect to the other floral features.

D. GEOGRAPHICAL DISTRIBUTION

1. RANGE: Penstemon lemhiensis is a regional endemic, known from east-central Idaho (Lemhi County) and southwestern Montana (Beaverhead and Ravalli Counties). It has been located on the Bitterroot and Beaverhead National Forests in Montana (U.S. Forest Service, Region 1), and on the Salmon National Forest in Idaho (U.S. Forest

Service, Region 4).

2. CURRENT SITES: In Idaho, Penstemon lemhiensis is recently documented (1973-1980) from 11 sites, and historically from four sites; all of these locations are in Lemhi County (Steve Caicco, Idaho Natural Heritage Program, pers. comm.). In Montana, P. lemhiensis is recently documented (1983-1987) from 19 sites; all of these locations are in Beaverhead County. The legal descriptions, latitude and longitude, elevations, USGS topographic quad names, and locations of the Montana sites are provided in Table 1. These are subdivided to indicate those sites which occur wholly or partially on U.S. Forest Service lands (Table 1A), and those sites which occur on lands of other ownership (Table 1B). The distribution in Montana is indicated in Figure 1; the exact locations are indicated on the maps provided in Section IV, pp. 53-66. Field surveys were conducted by the author on 18-22 June 1986 and 16-19 June 1987.

   Throughout this report, the three-digit occurrence numbers are indicated in parentheses after the site names; these correspond to the occurrence numbers provided in the tables and computer print-outs.

3. HISTORICAL SITES (MONTANA): Three historical locations of Penstemon lemhiensis are documented by voucher specimens in Montana; two of these locations are in Ravalli County, and one is in Beaverhead County. The existing data on these sites are summarized in Table 2. It should be emphasized that the specimen labels from these records provide only general location information. The legal descriptions (Sapphire Foothills (004) and Conner-Sula (007) records) are approximate, and only indicate where the records were mapped in the Natural Heritage Program data base. The record west of Big Hole National Battlefield (021) was too vague to map in the data base.

   Additional surveys are needed to assess whether these areas still support Penstemon lemhiensis. Some surveys were conducted by J. Ramstetter in 1983, along Highway 93 in the vicinities of Conner, Sula, and Darby, but the species was not relocated (Ramstetter, 1983).

   These historical locations are included within the species' range indicated in Figure 1.

TABLE 1A. Penstemon lemhiensis locations wholly or partially occurring on U.S. Forest Service lands, Beaverhead County, Montana.

EOCODE (SUBSTR) Occurrence number: 001
SURVEYSITE Site name: ARGENTA
COUNTYNAME COUNTY: BEAVERHEAD SECTION TRSCOMM
TOWNRANGE Township & Range: 006S011W Section: 15 Subsection/additional sections: SE4;22,NE4;23,NW4NW4
LAT Latitude: 451818 LONG Longitude: 1125545 ELEV Elevation: 6700
QUADNAME USGS Quad: ERMONT
DIRECTIONS Location: S. PIONEER MOUNTAINS, N. SIDE OF BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. 2400), 0.2 MI. W. OF RATTLESNAKE CR. ROAD (N.F. RD. 192), CA. 4 AIR MI. WNW. OF ARGENTA.

Occurrence number: 009
Site name: FRENCH CREEK
COUNTY: BEAVERHEAD
Township & Range: 006S011W Section: 11 Subsection/additional sections: E2,14NE4NW4
Latitude: 451932 Longitude: 1125435 Elevation: 7000
USGS Quad: ERMONT
Location: PIONEER MOUNTAINS, SLOPE ABOVE FRENCH CREEK, ALONG THE FRENCH CREEK-THIEF CREEK ROAD (BEAVERHEAD N.F. RD. #606) 4 AIR MILES NW OF ARGENTA; ALSO, MOUTH OF RED GULCH.

Occurrence number: 010
Site name: QUARTZ HILL GULCH
COUNTY: BEAVERHEAD
Township & Range: 001S011W Section: 26 Subsection/additional sections: E2SE4
Latitude: 454305 Longitude: 1125509 Elevation: 8000
USGS Quad: VIPOND PARK (15)
Location: HEAD OF QUARTZ HILL GULCH, ALONG BEAVERHEAD N.F. RD. 187; 0.7 AIR MILES ENE. OF GRAY JOCKEY PEAK, CA. 5 AIR MI. SSE. OF WISE RIVER, PIONEER MOUNTAINS.

Occurrence number: 011
Site name: ECHO GULCH
COUNTY: BEAVERHEAD
Township & Range: 001S011W Section: 36 Subsection/additional sections: W2,35E2SE4
Latitude: 454231 Longitude: 1125445 Elevation: 8100
USGS Quad: VIPOND PARK (15)
Location: NEAR HEAD OF ECHO GULCH, SLOPES 0-0.5 AIR MI. N. OF VIPOND PARK, ALONG BEAVERHEAD N.F. RD. 187; 0.5-0.75 AIR MI. W. AND SW. OF QUARTZ HILL, PIONEER MOUNTAINS.

Occurrence number: 012
Site name: RED BUTTE
COUNTY: BEAVERHEAD
Township & Range: 006S011W Section: 15 Subsection/additional sections: NE4,10S2
Latitude: 451908 Longitude: 1125600 Elevation: 6800
USGS Quad: ERMONT
Location: CA. 4.5 AIR MI. NW OF ARGENTA, CENTERED 0.5 AIR MI. ESE OF RED BUTTE, RATTLESNAKE CREEK DRAINAGE CA. 1 MI. SE OF KELLY RESERVOIR, PIONEER MOUNTAINS.

TABLE 1A. (cont.).

Occurrence number: 013
Site name: BLACK MOUNTAIN ROAD
COUNTY: BEAVERHEAD
Township & Range: 006S011W Section: 21 Subsection/additional sections: W2SE4NE4,20SE4SE4
Latitude: 451749 Longitude: 1125745 Elevation: 7200
USGS Quad: ERMONT
Location: CA. 5 AIR MI WNW. OF ARGENTA, ALONG BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. #2400) CA. 3 AIR MI SSE. OF BLACK MOUNTAIN, PIONEER MOUNTAINS.

Occurrence number: 014
Site name: ERMONT GULCH
COUNTY: BEAVERHEAD
Township & Range: 006S011W Section: 33 Subsection/additional sections: NE4SE4,34W2
Latitude: 451603 Longitude: 1125646 Elevation: 6740
USGS Quad: ERMONT
Location: CA 4.3 AIR MI WSW. OF ARGENTA, ALONG BEAVERHEAD N.F. RD. #7467 AT HEAD OF ERMONT GULCH, CA. 2.2 AIR MI. N. OF BADGER PASS, PIONEER MOUNTAINS.

Occurrence number: 016
Site name: TRAPPER CREEK
COUNTY: BEAVERHEAD
Township & Range: 002S010W Section: 20 Subsection/additional sections: W2SE4
Latitude: 453913 Longitude: 1125154 Elevation: 6800
USGS Quad: VIPOND PARK (15)
Location: PIONEER MOUNTAINS, TRAPPER CREEK DRAINAGE, ALONG BEAVERHEAD N.F. RD. #188; ABOUT 10 MILES WEST OF MELROSE; ABOUT 1 AIR MILE SSE. OF ORE CAMP HILL.

Occurrence number: 017
Site name: BROWNES LAKE
COUNTY: BEAVERHEAD
Township & Range: 003S010W Section: 34 Subsection/additional sections: S2SW4
Latitude: 453131 Longitude: 1124947 Elevation: 6650
USGS Quad: VIPOND PARK (15)
Location: PIONEER MOUNTAINS, ROCK CREEK DRAINAGE, ALONG ROCK CREEK ROAD ABOUT 6 MILES WEST OF I-15, NEAR WEST END OF BROWNES LAKE.

Occurrence number: 018
Site name: KEARNS CREEK
COUNTY: BEAVERHEAD
Township & Range: 006S011W Section: 16 Subsection/additional sections: NE4
Latitude: 451853 Longitude: 1125651 Elevation: 6900
USGS Quad: ERMONT
Location: PIONEER MOUNTAINS, KEARNS CREEK, ADJACENT TO SILVER RULE MINE; ABOUT 0.5 AIR MILE SOUTHWEST OF RED BUTTE; ABOUT 0.75 AIR MILE WEST OF RATTLESNAKE CREEK.

TABLE 1A. (cont.).

Occurrence number: 019
Site name: BADGER PASS NORTH
COUNTY: BEAVERHEAD
Township & Range: 007S011W Section: 09 Subsection/additional sections: NE4NE4,10NW4,3SW4
Latitude: 451437 Longitude: 1125648 Elevation: 6980
USGS Quad: BANNACK
Location: SOUTHERN PIONEER MOUNTAINS, 0.7-1.2 AIR MILES NNE OF BADGER PASS; ABOUT 15 AIR MILES WEST OF DILLON.

Occurrence number: 020
Site name: SELWAY CREEK
COUNTY: BEAVERHEAD
Township & Range: 008S015W Section: 27 Subsection/additional sections: SW4NE4
Latitude: 450647 Longitude: 1132524 Elevation: 7200
USGS Quad: KITTY CREEK
Location: BLOODY DICK CREEK DRAINAGE, SLOPES ABOVE SELWAY CREEK, ABOUT 2 MILES SOUTHEAST OF RESERVOIR LAKE; ABOUT 4 MILES EAST OF MONTANA-IDAHO STATE LINE.

TABLE 1B. Penstemon lemhiensis locations on areas other than U.S. Forest Service lands, Beaverhead County, Montana.

Occurrence number: 002
Site name: TRAIL CREEK
COUNTY: BEAVERHEAD
Township & Range: 010S014W Section: 18 Subsection/additional sections: S2;T10SR15W:24NE4
Latitude: 445733 Longitude: 1132132 Elevation: 6520
USGS Quad: EVERSON CREEK, LEMHI PASS
Location: TRAIL CREEK, ALONG ROAD TO LEMHI PASS (BEAVERHEAD N.F. RD. 3909.2), CA. 3.5-4.5 AIR MI. ESE. OF LEMHI PASS.

Occurrence number: 003
Site name: LEMHI PASS
COUNTY: BEAVERHEAD
Township & Range: 010S015W Section: 15 Subsection/additional sections: SE4NW4,NE4SE4,14SW4
Latitude: 445757 Longitude: 1132538 Elevation: 6960
USGS Quad: LEMHI PASS
Location: NORTH SIDE OF LEMHI PASS ROAD (BEAVERHEAD N.F. RD. 3909.2), 1.0-1.6 AIR MILES SE OF LEMHI PASS, CA. 1.4-2.0 MILES WEST OF SELWAY RANCH.

Occurrence number: 005
Site name: BADGER PASS
COUNTY: BEAVERHEAD
Township & Range: 007S011W Section: 22 Subsection/additional sections: N2NW4
Latitude: 451254 Longitude: 1125626 Elevation: 7260
USGS Quad: BANNACK
Location: 1.45 AIR MILES SSE. OF BADGER PASS, ADJACENT TO MICROWAVE TOWER ON GRAVEL ROAD 1.3 AIR MI. S. OF BIG HOLE ROAD (ST. HWY. 278), CA. 4.5 AIR MI. NNE. OF BANNACK.

Occurrence number: 006
Site name: BIG HOLE BATTLEFIELD
COUNTY: BEAVERHEAD
Township & Range: 002S017W Section: 24 Subsection/additional sections: W2SE4,13SW4,23SE4
Latitude: 453842 Longitude: 1133919 Elevation: 6320
USGS Quad: BIG HOLE BATTLEFIELD
Location: BIG HOLE NATIONAL BATTLEFIELD, 9 MILES WEST OF WISDOM ON ST. HWY. 43.

Occurrence number: 008
Site name: JOHNSON GULCH
COUNTY: BEAVERHEAD
Township & Range: 011S011W Section: 18 Subsection/additional sections: SE4
Latitude: 445217 Longitude: 1125858 Elevation: 6500
USGS Quad: DEER CANYON
Location: NORTH SIDE OF JOHNSON GULCH, ALONG THE ROAD CA. 10 MI. SE. OF GRANT.

TABLE 1B. (cont.).

Occurrence number: 015
Site name: ROBERTS GULCH
COUNTY: BEAVERHEAD
Township & Range: 009S014W Section: 33 Subsection/additional sections: N2SE4
Latitude: 450025 Longitude: 1131908 Elevation: 6520
USGS Quad: COYOTE CREEK
Location: MOUTH OF ROBERTS GULCH, CA. 1 AIR MI. NW. OF BLOODY DICK CREEK, CA. 12.5 AIR MI. WEST OF GRANT AND 6.5 AIR MI. ENE. OF LEMHI PASS.

Occurrence number: 022
Site name: MEDICINE LODGE CREEK
COUNTY: BEAVERHEAD
Township & Range: 013S012W Section: 03 Subsection/additional sections: SE4NE4,NE4SE4
Latitude: 444359 Longitude: 1130224 Elevation: 6970
USGS Quad: MORRISON LAKE (15)
Location: MEDICINE LODGE CREEK DRAINAGE, 0.15 AIR MILES WNW. OF CONFLUENCE OF MEDICINE LODGE AND HILDRETH CREEKS, CA. 19 AIR MILES SOUTH OF GRANT.

TABLE 2. Historical locations, Penstemon lemhiensis, Ravalli and Beaverhead Counties, Montana.

Occurrence number: 004
Site name: SAPPHIRE FOOTHILLS
COUNTY: RAVALLI
Township & Range: 003N019W Section: 08 Subsection/additional sections:
Latitude: 460125 Longitude: 1135840 Elevation: 5880
USGS Quad: BALD TOP MOUNTAIN
Location: 10 MI. E. OF DARBY, SAPPHIRE MTS. FOOTHILLS.

Occurrence number: 007
Site name: CONNER-SULA
COUNTY: RAVALLI
Township & Range: 002N020W Section: 35 Subsection/additional sections:
Latitude: 455230 Longitude: 1140322 Elevation: 4280
USGS Quad: ROBBINS GULCH, MEDICINE HOT SPRINGS
Location: BETWEEN CONNER AND SULA (HISTORICAL COLLECTION).

Occurrence number: 021
Site name: WEST OF BIG HOLE BATTLEFIELD
COUNTY: BEAVERHEAD
Township & Range: Section: Subsection/additional sections:
Latitude: 0 Longitude: 0 Elevation: 5000
USGS Quad: UNMAPPABLE
Location: WEST OF BIG HOLE BATTLEFIELD.

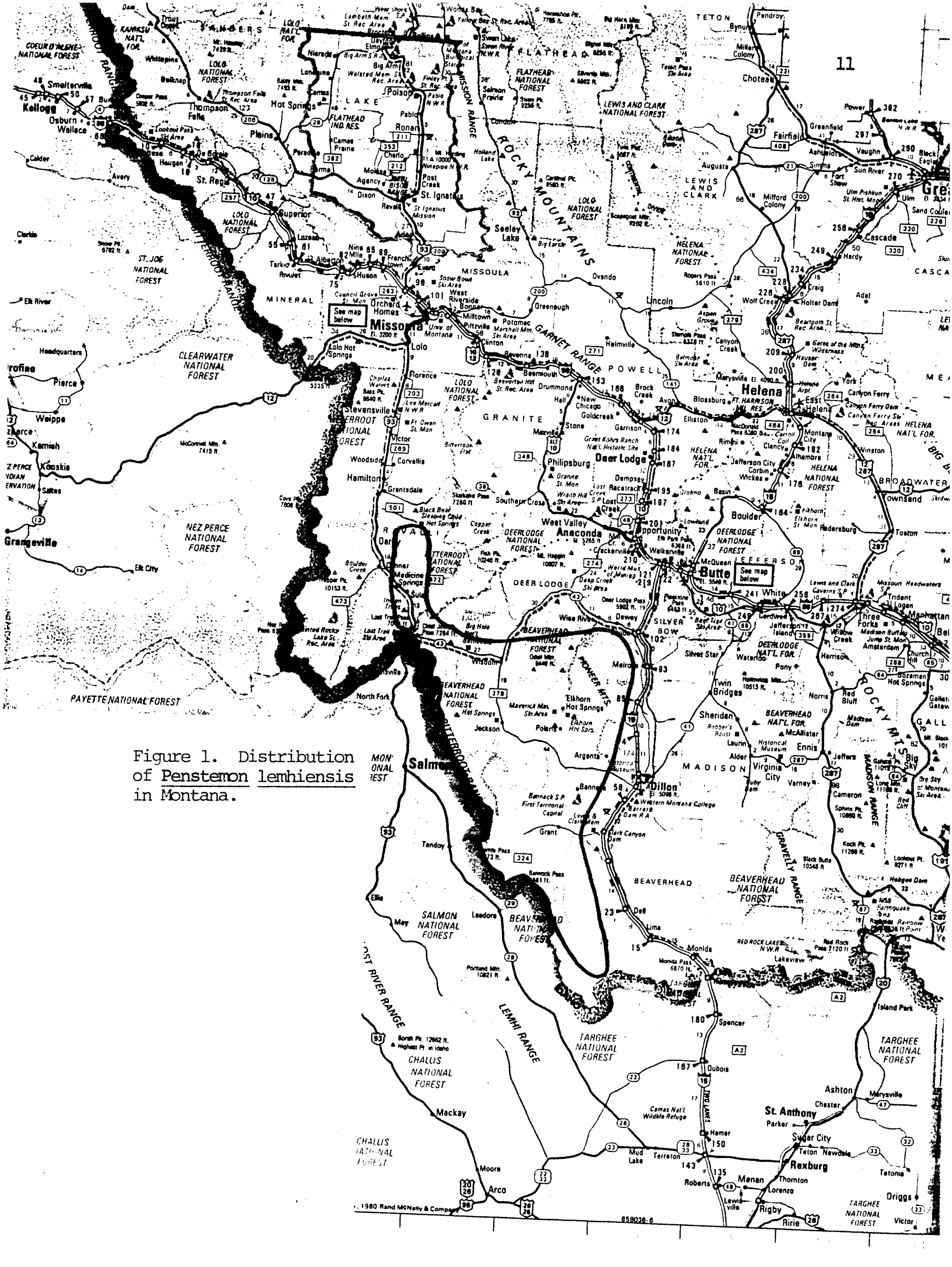


Figure 1. Distribution of Penstemon lemhiensis in Montana.

4. UNVERIFIED/UNDOCUMENTED REPORTS (MONTANA): The following locations have not been entered in the MTNHP data base, because a.) they are sites consisting of one or a few plants which were not confirmed during recent field surveys, or b.) they consist of single individuals which could not justifiably be documented by collection of a voucher specimen. All of these locations are in Beaverhead County.

   a. Nicholia Creek (T16S, R11W, Sections 1 and 2): 1-2 plants observed adjacent to gravel pits several years ago, by J. Christensen, Beaverhead National Forest.

   b. Bloody Dick Creek drainage

      i. T10S, R14W, Section 4; T9S, R14W, Section 34: scattered plants observed along Beaverhead National Forest Road #181, by J. Christensen; road recently graded, plants not found during 1987 surveys, and presumed extirpated.

      ii. T10S, R14W, Section 5: one plant observed on roadcut along Beaverhead National Forest Road #181 during 1987 surveys.

      iii. T9S, R15W, Section 14, S½SW¼: one plant (pre-flowering) observed on roadcut along Beaverhead N.F. Road #181 during 1987 surveys; previously reported by J. Christensen, Beaverhead National Forest.

   c. Birch Creek drainage (T5S, R10W, Section 15): one plant observed in the vicinity of Farlin Gulch by J. Christensen, Beaverhead National Forest; not found during 1987 surveys.

5. AREAS SURVEYED BUT SPECIES NOT LOCATED: The following areas were surveyed for <u>Penstemon lemhiensis</u> because the habitat appeared suitable, but the species was not located within them. The actual areas surveyed are smaller than the portions of the sections indicated. All of these locations are in Beaverhead County. Locations which are wholly or partially on U.S. Forest Service lands are indicated with an asterisk (*).

   *a. T3S, R10W, Section 32, S½NE¼, S½NW¼ (USGS Vipond Park Quadrangle).

*b. T3S, R11W, Section 1, center of W½ (USGS Vipond Park Quadrangle).

*c. T5S, R10W, Section 9, E½NE¼SW¼, W½NW¼SE¼ (USGS Twin Adams Mountain Quadrangle).

*d. T5S, R10W, Section 6, S½SW¼SE¼, SE¼SE¼SW¼; Section 7, N½NW¼NE¼, NE¼NE¼NW¼ (USGS Ermont Quadrangle).

*e. T6S, R11W, Section 22, SE¼SE¼; Section 23, W½SW¼, SE¼SW¼NW¼ (USGS Ermont Quadrangle).

*f. T6S, R11W, Section 33, E½SW¼ (USGS Ermont Quadrangle).

g. T7S, R11W, Section 7, SE¼SE¼, E½SW¼SE¼ (USGS Bannack Quadrangle).

*h. T8S, R15W, Section 8, S½NW¼SW¼, N½SW¼SW¼ (USGS Selway Mountain Quadrangle).

*i. T8S, R15W, Section 21, S½NW¼, NE¼SW¼ (USGS Selway Mountain and Kitty Creek Quadrangles).

*j. T8S, R15W, Section 26, W½SW¼SW¼; Section 27, NE¼SE¼SE¼, S½NE¼SE¼, NW¼NE¼SE¼, SW¼SE¼NE¼, SE¼SW¼NE¼ (USGS Kitty Creek Quadrangle).

*k. T9S, R14W, Section 28, W½SW¼NW¼; Section 29, NE¼SE¼NE¼ (USGS Coyote Creek Quadrangle).

l. T9S, R14W, Section 31, S½NE¼SE¼, NW¼SE¼SE¼ (USGS Coyote Creek Quadrangle).

*m. T9S, R15W, Section 3, S½NW¼SW¼, SW¼SW¼, W½SE¼SW¼; Section 4, NE¼SE¼SE¼ (USGS Kitty Creek Quadrangle).

E. HABITAT

1. ASSOCIATED VEGETATION: Penstemon lemhiensis generally occurs in areas below or near the lower tree line of forests dominated by Pseudotsuga menziesii (Douglas Fir) and/or Pinus contorta (Lodgepole Pine). The associated vegetation is most often dominated by Artemisia tridentata (Big Sagebrush) and bunchgrasses, including Agropyron spicatum (Bluebunch Wheatgrass) and Festuca idahoensis (Idaho Fescue). Other native plant species observed with P. lemhiensis include:

Achillea millefolium (Common Yarrow)
Antennaria microphylla (Rosy Pussytoes)

Artemisia frigida (Fringed Sagewort)
Aster stenomeres (Northwest Aster)
Astragalus miser (Weedy Milkvetch)
Balsamorhiza sagittata (Arrowleaf Balsamroot)
Berberis repens (Creeping Oregongrape)
Chrysothamnus nauseosus (Common Rabbit-brush)
Chrysothamnus viscidiflorus (Green Rabbit-brush)
Comandra umbellata (Bastard Toad-flax)
Eriogonum umbellatum (Sulphur Buckwheat)
Geranium viscosissimum (Sticky Geranium)
Geum triflorum (Old Man's Whiskers)
Helianthella quinquenervis (Nodding Helianthella)
Juniperus communis (Common Juniper)
Juniperus scopulorum (Rocky Mountain Juniper)
Koeleria cristata (Prairie Junegrass)
Lupinus leucophyllus (Velvet Lupine)
Lupinus sericeus (Silky Lupine)
Pedicularis contorta (Coiled-beak Lousewort)
Penstemon aridus (Stiff-leaf Penstemon)
Penstemon procerus (Littleflower Penstemon)
Penstemon radicosus (Mat-root Penstemon)
Phacelia heterophylla (Varileaf Phacelia)
Phacelia linearis (Threadleaf Phacelia)
Poa secunda (Sandberg's Bluegrass)
Rosa woodsii (Woods Rose)
Sedum borschii (Borsch's Stonecrop)
Sedum lanceolatum (Lance-leaved Stonecrop)
Senecio canus (Woolly Groundsel)
Sitanion hystrix (Bottlebrush Squirreltail)
Townsendia parryi (Parry's Townsendia)

Additional associated species reported by Ramstetter (1983) include:

Castilleja spp. (Paintbrush)
Collinsia parviflora (Small-flowered Blue-eyed Mary)
Erigeron compositus (Cut-leaved Daisy)
Frasera albicaulis (White-stemmed Frasera)
Hieracium cynoglossoides (Houndstongue Hawkweed)
Lithospermum ruderale (Wayside Gromwell)
Orthocarpus tenuifolius (Thin-leaved Owl Clover)
Potentilla gracilis (Northwest Cinquefoil)

Associated introduced species include:

Bromus inermis (Smooth Brome)
Bromus tectorum (Cheatgrass Brome)
Cynoglossum officinale (Common Hound's-tongue)
Poa pratensis (Kentucky Bluegrass)
Tragopogon dubius (Yellow Salsify)

The sites occurring at the highest elevations (Quartz Hill Gulch (010), Echo Gulch (011)), in

the northeastern Pioneer Mountains, occur in openings in forests dominated by Pinus contorta, and to a lesser extent, Pseudotsuga menziesii. Artemisia tridentata is not an associated species at these locations. These openings are dominated by forb species, most notably Astragalus miser, Pedicularis contorta, and Townsendia parryi. These two sites are ecologically distinct from those found in the sagebrush areas to the south and west.

On the herbarium specimen label for one historical record (Sapphire Foothills (004)), the habitat is described as the "Ponderosa Pine Zone" (Pinus ponderosa).

2. TOPOGRAPHY: In Montana, populations of P. lemhiensis are most often found on steep, east- to southwest-facing slopes. A few sites have been found on northeast- and northwest-facing slopes. In a few locations (i.e., Trail Creek (002), Big Hole Battlefield (006)), the populations occur partially on level ground. For four sites studied in Montana, Ramstetter (1983) found the slopes to range from 20-45%.

   The recently verified sites in Montana range from 1892 m (6200 ft.) to 2470 m (8100 ft.) in elevation. The historical sites in Ravalli County may have occurred as low as 1305 m (4280 ft.) in elevation (Conner-Sula (007)).

3. SOIL RELATIONSHIPS: Within the appropriate habitat, Penstemon lemhiensis often prefers areas which are more sparsely vegetated. The soils in these microhabitats are often very gravelly in nature. However, the soil texture is highly variable; P. lemhiensis has been found in soils which range in texture from fine clay to sand (Ramstetter, 1983). During the course of field surveys by the author in 1986 and 1987, the species was most often found in soil areas characterized as gravelly loams.

   Penstemon lemhiensis is not restricted to any particular geological substrate; known sites have been found on granitic soils, as well as limestone and other sedimentary substrates.

4. REGIONAL CLIMATE: The climate of southwestern Montana can generally be classified as cool and dry, with locally greater amounts of precipitation in the mountains. For the distributional area of P. lemhiensis in Montana, the nearest

climatological stations are located in Dillon (1590 m (5215 ft.)) and Wisdom (1850 m (6068 ft.)). Data for the period 1951-1980 are provided by the U.S. Department of Commerce (1982). At Dillon, the mean annual precipitation was 24.21 cm (9.53 in.); the mean annual temperature was 5.9° C (42.6°F), and the mean July maximum temperature was 28.5° C (83.3° F). At Wisdom, the mean annual precipitation was 29.01 cm (11.44 in.); the mean annual temperature was 1.7° C (35.1°F), and the mean July maximum temperature was 25.7°C (78.2°F).

F. POPULATION DEMOGRAPHY AND BIOLOGY

1. PHENOLOGY: Penstemon lemhiensis is in bloom from early June to late July, depending upon climatic conditions and elevation. On some very warm, exposed sites, such as south-facing roadbanks where the species has been sporadically found, it may begin blooming by late May. Mature fruits are present during late August and early September, and seeds are dispersed sporadically from the dehiscing capsules during that time. At the Big Hole National Battlefield (006), Ramstetter (1983) found that, in 1982, flower buds began to develop by 12 June, and plants were in bloom by 27 June; all flowers in an inflorescence opened within three to five days. In 1983, most inflorescences at Argenta (001), Badger Pass (005), and Lemhi Pass (003) had dropped their flowers, and fruits were developing, by 23-26 July; at the Battlefield, most flowers had dropped, but no developing fruits were seen. Ramstetter (1983) additionally states that "(o)bservations made in 1982 and 1983 indicate that the sexual reproductive period at higher elevations is somewhat shorter than at lower elevations." In 1986, the peak blooming period at the high elevation sites in the northeastern Pioneer Mountains (Quartz Hill Gulch (010), Echo Gulch (011)) had just begun on 8 July, indicating that the peak reproductive period is later at such sites.

2. POPULATION SIZE AND CONDITION (MONTANA): Populations of P. lemhiensis range in size from single, isolated plants to 500 or more individuals; these populations contain from one to five subpopulations. The average population size, not including the several isolated plants observed, is approximately 157. The total number of plants observed in Montana to date is approximately 2675-3000.

Details regarding population size and condition are summarized in Table 3.

3. REPRODUCTIVE BIOLOGY

a. TYPE OF REPRODUCTION: The flowers of P. lemhiensis are protandrous (the anthers dehisce before the stigma is receptive); anthers begin to shed pollen approximately two days before the stigma becomes sticky and receptive (Ramstetter, 1983).

Breeding system studies conducted at the Big Hole National Battlefield by Ramstetter (1983) suggest that P. lemhiensis is an obligate out-crosser. Plants with flowers which were not manipulated (control) yielded an average of 17.80% mature seed set. However, seed set may be somewhat limited by the level of insect pollination; plants cross-pollinated by hand yielded an average of 22.51% mature seed set, significantly higher than the average for the control plants. Obligate out-crossing was further suggested in plants which were self-pollinated by hand; an average of only 2.10% mature seed set was obtained. However, open-pollinated flowers whose anthers were removed initiated an average of 17.29% seed set. Little evidence of agamospermy (asexual seed production) was found. During surveys in 1986 and 1987 no evidence of any vegetative reproduction was observed.

b. POLLINATION BIOLOGY: During observations of insect visitors to P. lemhiensis at the Big Hole National Battlefield, 13 insects that made contact with some part of the flowers were collected (Ramstetter, 1983). Of these, two species (Pseudomasaris vespoides, Osmia brevis) were thought to possibly be the most important pollinators. Pseudomasaris vespoides is a pollen-collecting vespid wasp; these wasps have long bodies, and during flower visits they completely enter the corollas. They were not observed to visit flowers of any other plants. Ramstetter (1983) concluded that "(i)f P. vespoides is as constant to Penstemon lemhiensis as my observations indicate, the wasp may be an especially important pollinator." During surveys by the author in 1986 and 1987, the vespid wasp was by far the most frequently observed insect visitor on P. lemhiensis.

TABLE 3. Population size and condition, Penstemon lemhiensis, Beaverhead County, Montana.

Occurrence number: 001
Site name: ARGENTA
Acreage: 10
Population size and condition: 206 PLANTS COUNTED IN 1986 (204 ON PRIVATE INHOLDING, 2 ON U.S.F.S. LAND); A FEW PLANTS OCCUR ON ROADBANKS; LOW LEVEL OF GRAZING; WEED INVASION ALONG THE ROAD.

Occurrence number: 002
Site name: TRAIL CREEK
Acreage: 10
Population size and condition: 60-70 PLANTS, 5 SUBPOPULATIONS; IN FULL FLOWER; MOST PLANTS OCCUR ALONG ROADSIDE.

Occurrence number: 003
Site name: LEMHI PASS
Acreage: 15
Population size and condition: 164 PLANTS COUNTED, 3 SUBPOPULATIONS; CA. 90% OF THE PLANTS OCCUR ON NATIVE SAGEBRUSH SLOPES ABOVE THE ROAD; SPECIES OCCURS IN MORE OPEN, GRAVELLY AREAS.

Occurrence number: 005
Site name: BADGER PASS
Acreage: 10
Population size and condition: 190 PLANTS COUNTED; CA. 75 PLANTS ARE WITHIN A FENCE EXCLOSURE, WHICH WAS CONSTRUCTED TO PROTECT PART OF THE POPULATION.

Occurrence number: 006
Site name: BIG HOLE BATTLEFIELD
Acreage: 50
Population size and condition: THREE SUBPOPULATIONS, WITH 447 PLANTS (S. OF "SIEGE AREA" & ROADCUT ALONG SLOPE), "HUNDREDS" (N. OF "SIEGE AREA"), AND CA. 40 BELOW VISITOR'S CENTER; NO PLANTS FOUND OUTSIDE BATTLEFIELD BOUNDARIES.

Occurrence number: 008
Site name: JOHNSON GULCH
Acreage: 0
Population size and condition: ONE PLANT (SPECIMEN IS ONE TOPSNATCHED STEM).

TABLE 3. (cont.).

Occurrence number: 009
Site name: FRENCH CREEK
Acreage: 17
Population size and condition: 138 PLANTS COUNTED (CA. 150 TOTAL) IN MAIN POPULATION, WITH 22 PLANTS COUNTED IN SUBPOPULATION AT THE MOUTH OF RED GULCH; AREA TO NORTH SUBJECT TO MINING DISTURBANCE, AND PLANTS HAVE BEEN OBSERVED THERE (J. CHRISTENSEN, U.S.F.S.).

Occurrence number: 010
Site name: QUARTZ HILL GULCH
Acreage: 15
Population size and condition: 203 PLANTS COUNTED, IN FLOWER; NEARBY AREAS SUBJECT TO MINING DISTURBANCE.

Occurrence number: 011
Site name: ECHO GULCH
Acreage: 45
Population size and condition: 252 PLANTS COUNTED IN SOUTH SUBPOPULATION, 100-150 PLANTS IN NORTH SUBPOPULATION; IN FLOWER; MINING TEST PITS OBSERVED NEAR NORTH SUBPOPULATION.

Occurrence number: 012
Site name: RED BUTTE
Acreage: 20
Population size and condition: 142 PLANTS COUNTED IN MAIN POPULATION (CENTRUM), 169 TOTAL, 3 SUBPOPULATIONS; IN FLOWER; MAIN POPULATION NEAR, BUT NOT RIGHT ALONG, A LIGHTLY-USED GRAVEL ROAD.

Occurrence number: 013
Site name: BLACK MOUNTAIN ROAD
Acreage: 20
Population size and condition: CA. 100-125 PLANTS TOTAL, MAINLY IN TWO SUBPOPULATIONS AND SCATTERED ALONG ROADSIDE; IN FLOWER.

Occurrence number: 014
Site name: ERMONT GULCH
Acreage: 5
Population size and condition: 76 PLANTS COUNTED; IN FLOWER; AREA SUBJECT TO MODERATE TO HEAVY GRAZING.

Occurrence number: 015
Site name: ROBERTS GULCH
Acreage: 5
Population size and condition: 54 PLANTS COUNTED; IN FLOWER; HABITAT RELATIVELY UNDISTURBED, SOME GRAZING USE.

TABLE 3. (cont.).

Occurrence number: 016
Site name: TRAPPER CREEK
Acreage: 1
Population size and condition: 18 PLANTS COUNTED; FLOWERING; POPULATION OCCURS RIGHT ALONG ROADSIDE.

Occurrence number: 017
Site name: BROWNES LAKE
Acreage: 1
Population size and condition: ONLY 4 PLANTS SEEN, 2 ON ROADSIDE AND 2 ON NATURAL SLOPE ABOVE ROAD.

Occurrence number: 018
Site name: KEARNS CREEK
Acreage: 5
Population size and condition: 52 PLANTS COUNTED, 4 SUBPOPULATIONS; FLOWERING; MOST ABUNDANT ON EAST-FACING SLOPE ALONG CREEK, ON GRAVELLY OPEN SLOPE; SOME GRAZING AND MINING ACTIVITY IN THE AREA.

Occurrence number: 019
Site name: BADGER PASS NORTH
Acreage: 4
Population size and condition: ABOUT 200 PLANTS COUNTED, POPULATION = EST. 300+ PLANTS, 3 SUBPOPULATIONS OBSERVED; FLOWERING; NUMEROUS PLANTS GROWING THROUGH BRANCHES OF SAGEBRUSH SHRUBS; AREA IS LIGHTLY TO MODERATELY GRAZED.

Occurrence number: 020
Site name: SELWAY CREEK
Acreage: 1
Population size and condition: SIX PLANTS OBSERVED, IN 2 CLUMPS; FLOWERING; PLANTS ASSOCIATED WITH STEEP ROCK OUTCROP AREAS, AND NOT OBSERVED IN DENSER SURROUNDING VEGETATION.

Occurrence number: 022
Site name: MEDICINE LODGE CREEK
Acreage: 20
Population size and condition: UNKNOWN; POPULATION REPORTED TO BE LARGE BY J. CHRISTENSEN.

Only an individual of Bombus sp. (bumblebee) was additionally observed visiting P. lemhiensis, and it did not fully enter the corollas.

c. SEED DISPERSAL AND BIOLOGY: The seeds of P. lemhiensis have no appendages that might aid in long-distance dispersal. It is likely that most seeds fall from dehisced capsules, and remain near the parent plant (Ramstetter, 1983).

In laboratory seed gemination experiments, only seeds that were cold-treated or treated with gibberellic acid (a growth hormone) germinated; it is likely that seeds of P. lemhiensis also require a cold treatment prior to germination in the field (Ramstetter, 1983).

G. POPULATION ECOLOGY

1. BIOLOGICAL INTERACTIONS

a. COMPETITION: At the Big Hole National Battlefield (006), sampling of vegetation in areas with and without P. lemhiensis indicated that the occurrence of the species is correlated with vegetation density (Ramstetter, 1983). Penstemon lemhiensis was found growing most frequently in areas of lower vegetation cover, and rarely in areas of higher cover; this pattern of sensitivity to high vegetation density was not apparent for other plant species associated with P. lemhiensis. In particular, areas of higher sagebrush and bunchgrass cover contained the fewest occurrences of P. lemhiensis. Additionally, it was theorized that P. lemhiensis occurs more often on steeper slopes at the Battlefield site, where natural soil slippage may be greater, because the sagebrush and bunchgrasses are not as dominant as on more gradual slopes.

Further evidence for the apparently poor competitive ability of P. lemhiensis is provided by the observation that, in several places, individuals have colonized disturbed areas where vegetative cover is very low, i.e., roadcuts. This phenomenon has been observed at the Big Hole National Battlefield (006) (Ramstetter, 1983), Argenta (001), Trail Creek (002), Lemhi Pass (003), Badger

Pass (005), Black Mountain Road (013), Trapper Creek (016), and Brownes Lake (017) sites. In most of these cases, a few individuals have become established on the banks of roadcuts adjacent to steep slopes supporting undisturbed vegetation. At many such sites, the majority of the plants occur in the native habitat areas; an exception occurs at the Big Hole National Battlefield (006), where the density of P. lemhiensis is much greater on the roadcut along the old highway than it is on the sagebrush slope above it (Ramstetter, 1983); however, the majority of the plants are still found scattered on the native slope above the road.

b. HERBIVORY: Penstemon lemhiensis is subject to moderate to heavy browsing, most likely from deer and cattle; the species appears to be very sensitive to heavy grazing. Ramstetter (1983) found the percent of browsed stalks at the Battlefield (006) and Argenta (001) sites to be 23% and 90%, respectively. No plants were seen outside the Battlefield area; the latter is fenced, and is not used for livestock grazing. Similarly, during surveys by the author in 1986, on the west side of the Big Hole Battlefield, individuals were seen growing right to the boundary fence on the Park property; none were found outside the fence, in an area subject to grazing and weed invasion.

An unusual phenomenon was observed at the Badger Pass North (019) site in 1987. Numerous plants were growing up through the branches of sagebrush shrubs, many of which were dead; this may be a result of the moderate livestock grazing which is occurring in the area. The microhabitat under the shrubs appears open enough for seedling establishment, and the mature plants are then apparently protected from browsing. This phenomenon was not observed at any other location in Montana.

H. LAND OWNERSHIP (MONTANA)

1. The land ownership for the 19 occurrences currently known in Montana is given below. The exact locations are provided in Table 1, pp. 5-9.

a. U.S. Forest Service (Beaverhead National Forest):

French Creek (009)
Quartz Hill Gulch (010)
Echo Gulch (011)
Red Butte (012)
Black Mountain Road (013)
Trapper Creek (016)
Badger Pass North (019)
Selway Creek (020)

b. U.S. Forest Service (Beaverhead National Forest) and private land:

Argenta (001)
Kearns Creek (018)

c. U.S. Forest Service (Beaverhead National Forest) and U.S. Bureau of Land Management:

Ermont Gulch (014)

d. U.S. Bureau of Land Management, U.S. National Park Service, private land, or other:

Trail Creek (002)
Lemhi Pass (003)
Badger Pass (005)
Big Hole Battlefield (006)
Johnson Gulch (008)
Roberts Gulch (015)
Medicine Lodge Creek (022)

e. Unknown:

Sapphire Foothills (004)
Conner-Sula (007)

Brownes Lake (017): this site may occur partially on Beaverhead National Forest land.

West of Big Hole Battlefield (021)

II. ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

A. THREATS TO CURRENTLY KNOWN POPULATIONS (MONTANA): On the basis of ecological studies conducted by Ramstetter (1983), and field surveys conducted by the author in 1986 and 1987, populations of *P. lemhiensis* are potentially or actively threatened by i) grazing, ii) mining activities, and iii) weed control by herbicide spraying. The sites threatened by these activities are reviewed below:

1. GRAZING: As discussed in Section I.G.1.b., p. 22, P. lemhiensis is a palatable forb subject to herbivory, and appears to be sensitive to heavy grazing, either by wildlife or domestic livestock. The populations which appear to be most impacted by such activity include the Argenta (001), Ermont Gulch (014), and Badger Pass North (019) sites.

   As noted above, Ramstetter (1983) found that the percent of browsed stalks at the Argenta (001) site was 90%. During surveys in 1986 and 1987, it did not appear that this site had been recently grazed by domestic livestock. This population is adjacent to a riparian area along Kearns Creek, and it is likely that the browsing which is occurring is from deer use.

   The Ermont Gulch (014) site, which occurs on U.S.F.S. and BLM lands, is in an area that is subject to moderate to heavy livestock use. The population is 0.2 air miles NNE of a reservoir which is heavily used by domestic cattle. Because this is a fairly small population (76 plants counted in 1986), it is particularly susceptible to impacts from grazing use.

   The Badger Pass North (019) site is also in an area which is subject to moderate livestock use, although the heaviest impacts are occurring along a drainage one-half mile east of the site. This is a larger population, consisting of approximately 300 plants. One possible ecological result of grazing use at this site was noted in Section I.G.1.b., p. 22; numerous plants at this site were growing up through branches of dead or partially dead sagebrush shrubs. Such a response may be due to past heavier browsing, from which plants under such shrubs have been naturally protected.

   Throughout the other areas surveyed in Beaverhead County, evidence of some past livestock use was noted. It is possible that, should grazing be continued in the future, some or all of the other populations could be impacted.

2. MINING: Mining activity, especially for gold, is increasing in many places in western Montana, including Beaverhead County.

   The populations of P. lemhiensis which are most likely to be potentially impacted by such land use include Argenta (001), French Creek (009), Red

Butte (012), Black Mountain Road (013), and Ermont Gulch (014). Of these occurrences, the French Creek (009) population is the most likely to be threatened. Several mines are located on the slopes just north of the main population area; plants have also been reported to occur within the mine areas by J. Christensen (Beaverhead N.F., pers. comm.).

Another area which is potentially threatened by increased mining activity is in the northeastern Pioneer Mountains (Quartz Hill Gulch (010) and Echo Gulch (011) populations). The Quartz Hill Gulch site is located approximately one air mile west of a large mining area on the north side of the drainage. At the Echo Gulch site, approximately 1.5 air miles south of Quartz Hill Gulch, numerous test pits were observed near the north subpopulation.

Road improvements to mines in the Trapper Creek drainage could impact the few plants in that area (016), which occur along the road approximately 10 miles west of Melrose.

3. WEED CONTROL ACTIVITIES: The use of herbicides to control weeds is a known threat to portions of the following populations on U.S. Forest Service lands: Argenta (001), French Creek (009), and Black Mountain Road (013). In these areas, some individuals of P. lemhiensis have colonized disturbed soils on roadcuts, owing to the species' inherently low competitive ability. Some spraying has already occurred at the Argenta and French Creek sites.

   Other sites where plants have colonized areas which may be subject to herbicide spraying include Trail Creek (002) and Lemhi Pass (003); portions of these populations occur along roadsides on private lands.

B. MANAGEMENT PRACTICES AND RESPONSE: As previously discussed, P. lemhiensis has some degree of tolerance to disturbance, as evidenced by its ecological preference for more open microhabitats (i.e., rock outcrop areas and steep rocky slopes with some natural soil slippage). Surface alteration of small areas adjacent to the larger populations thus may not have an adverse effect on the long-term viability of such sites. However, it should be strongly emphasized that most populations are small, and the total number of known individuals in Montana is only approximately 2675-3000. In addition, the species occupies only a

very small percentage of the apparently suitable habitat in Beaverhead County. Thus, the species is particularly vulnerable to critical endangerment should any large-scale habitat alteration be planned near or within any of the known populations. Though capable of occupying lightly disturbed areas, it is doubtful that populations of P. lemhiensis could recover from any major alterations.

The response of P. lemhiensis to herbicide spraying is currently unknown. Though it is likely that established plants would be destroyed by such treatment, it is possible that the species may be fairly tolerant if population areas in native habitats are left carefully untreated. The plants in these areas may then be able to serve as a seed source for recolonization of treated roadbanks, etc.

The sensitivity of the primary pollinators (Pseudomasaris vespoides, Osmia brevis) to management practices (i.e., herbicide and/or insecticide spraying) should also be carefully considered. Impacts on these insects, especially Pseudomasaris, may have a detrimental influence on seed set in Penstemon lemhiensis.

C. RECOMMENDATIONS FOR MAINTAINING VIABLE POPULATIONS: The following recommendations are made to insure the long-term persistence of viable populations of P. lemhiensis on U.S. Forest Service lands in Montana:

1. Protection of natural habitats which currently support large populations. The following populations on U.S. Forest Service lands should be considered in any habitat alteration projects which may occur in their vicinity:

   French Creek (009)
   Quartz Hill Gulch (010)
   Echo Gulch (011)
   Red Butte (012)
   Black Mountain Road (013)
   Kearns Creek (018)
   Badger Pass North (019)

   If disturbance is proposed within or near these population areas, detailed surveys of the areas should be conducted, and mitigation measures developed to reduce or eliminate project impacts.

2. Notification of herbicide spray and road maintenance crews of locations of populations occurring wholly or partially along roadsides. Maps detailing the following locations should be

provided to such crews, to aid in reducing or eliminating unnecessary impacts on, or loss of, these sites.

Argenta (001)
Quartz Hill Gulch (010)
Black Mountain Road (013)
Trapper Creek (016)
Brownes Lake (017)

3. Minimization of livestock grazing in native habitats supporting large populations. In general, natural sites supporting *P. lemhiensis* populations occur on steep slopes which are less subject to heavy grazing pressure. However, owing to the vulnerability of the species to such land use, the following locations on U.S. Forest Service lands should be considered sensitive:

   Red Butte (012)
   Ermont Gulch (014)
   Badger Pass North (019)

   Where possible, stocking rates should be reduced, and grazing should be limited to late summer, after seed set has occurred.

4. Analysis of pesticide treatments, to assess potential impacts on plants and insect pollinators. Because specific pollinators are needed to insure effective seed set, pesticide treatments should be carefully analyzed whenever areas near or within *P. lemhiensis* populations could be impacted. Such an analysis should be completed for proposed projects involving any of the known sites.

D. RECOMMENDATIONS FOR FURTHER ASSESSMENT

1. Further surveys in the vicinities of the historical collections in southern Ravalli County, and west of the Big Hole National Battlefield in Beaverhead County. If future surveys fail to relocate these historical sites, this may provide further evidence for a decline on the northern edge of the species' range.

2. Establishment of monitoring studies on U.S. Forest Service lands. Such studies would be especially useful in assessing impacts of grazing use. Locations which could potentially provide useful data include:

Ermont Gulch (014)
Badger Pass North (019)

In addition, it should be noted that a portion of the Badger Pass (005) population is located within a fence exclosure, which was established by the Bureau of Land Management to aid in protecting the site. This provides an excellent opportunity to assess population trends inside and outside the exclosure; a cooperative quantitative study between the U.S. Forest Service and the Bureau of Land Management could perhaps be arranged.

3. Further surveys in potential habitats in Beaverhead County. Areas which could possibly support additional populations of *P. lemhiensis* include:

   a. Southern Beaverhead County (Nicholia Creek and adjacent drainages).

   b. Big Hole Divide, south of Big Hole Pass.

   c. West Pioneer Mountains, including the upper Grasshopper Creek and Wise River drainages.

   d. East slope of the Beaverhead Mountains, between Jackson and Wisdom.

E. SUMMARY: *Penstemon lemhiensis* is a regional endemic species which is currently known from Beaverhead County, Montana, and adjacent Lemhi County, Idaho. It is a Category 2 candidate species, being considered for listing under the federal Endangered Species Act of 1973 by the U.S. Fish and Wildlife Service. In addition, it is a proposed sensitive species in Region 1 of the U.S. Forest Service. Although there are 19 currently known sites in Montana, and 11 recently documented sites in Idaho, the population sizes are small on the average; in addition, the species occupies only a small percentage of the apparently suitable habitat in Beaverhead County, Montana. Ecological and status review studies indicate that, while the species is moderately tolerant of minor habitat disturbance, it is susceptible to declines in areas of heavy grazing and major habitat alteration (i.e., mining). Future land use activities in the vicinity of known populations should be planned with consideration for maintaining them, to help insure that listing of *Penstemon lemhiensis* under the federal Endangered Species Act does not become necessary in the future.

III. LITERATURE CITED

Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.L. Reveal, and P.K. Holmgren. 1984. Intermountain Flora, Volume Four. New York Botanical Garden, Bronx. 573 pp.

Dorn, R.D. 1984. Vascular Plants of Montana. Mountain West Publishing, Cheyenne, Wyoming. 276 pp.

Federal Register. 1985. Endangered and threatened wildlife and plants; review of plant taxa for listing as endangered or threatened species; notice of review. September 27, 1985. Fed. Reg. 50 (188): 39525-39584.

Hitchcock, C.L., A. Cronquist, M. Ownbey, and J.W. Thompson. 1959. Vascular Plants of the Pacific Northwest, Part Four. University of Washington Press, Seattle. 510 pp.

Keck, D.D. 1940. Studies in Penstemon VII. The subsections Gairdneriani, Deusti, and Arenarii of the Graciles, and miscellaneous new species. Amer. Midl. Nat. 23: 594-616.

Keck, D.D., and A. Cronquist. 1957. Studies in Penstemon-IX. Notes on northwestern American species. Brittonia 8: 247-250.

Lesica, P., G. Moore, K.M. Peterson, and J.H. Rumely. 1984. Vascular Plants of Limited Distribution in Montana. Monograph No. 2, Montana Academy of Sciences, Supplement to the Proceedings, Vol. 43. 61 pp.

Shelly, J.S. 1987. Plant Species of Special Concern. Montana Natural Natural Heritage Program, Helena. 12 pp.

Pierce, J., W. Hann, and W. Ruediger. 1987. Federally listed vascular plant species and proposed sensitive plant species list for the Northern Region (draft). U.S. Forest Service, Missoula, Montana. 33 pp.

Ramstetter, J. 1983. An ecological study of the regional endemic Penstemon lemhiensis (Keck) Keck & Cronq. (Scrophulariaceae). M.A. Thesis, University of Montana, Missoula. 116 pp.

U.S. Department of Commerce. 1982. Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1951-80. National Oceanic and Atmospheric Administration, Climatography of the United States No. 81. 23 pp.

IV. ELEMENT OCCURRENCE PRINT-OUTS AND MAPS (PP. 31-66)

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.001
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 6,5 IDENT: Y EORANK: B
EORANKCOMM: LARGE POPULATION, OCCURS PARTIALLY ON DISTURBED ROADBANK.
SURVEYDATE: 1986-06-20 LASTOBS: 1987-06-12 FIRSTOBS: 1976 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511238
QUADNAME: ERMONT PRECISION: SC
LAT: 451818 LONG: 1125545 S: 451814 N: 451822 E: 1125540 W: 1125552
TOWNRANGE: 006S011W SECTION: 15 MERIDIAN: PR
TRSCOMM: SE4;22,NE4;23,NW4NW4 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: S. PIONEER MOUNTAINS, N. SIDE OF BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. 2400), 0.2 MI. W. OF RATTLESNAKE CR. ROAD (N.F. RD. 192), CA. 4 AIR MI. WNW. OF ARGENTA.
GENDESC: MODERATELY STEEP, SE. TO SW.- FACING SLOPES; MOST FREQUENT IN SPARSELY VEGETATED, ROCKY AREAS; ARTEMISIA TRIDENTATA/ FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, WITH BROMUS, SENECIO.
ELEV: 6700 SIZE: 10
EODATA: 206 PLANTS COUNTED IN 1986 (204 ON PRIVATE INHOLDING, 2 ON U.S.F.S. LAND); A FEW PLANTS OCCUR ON ROADBANKS; LOW LEVEL OF GRAZING; WEED INVASION ALONG THE ROAD.

COMMENTS: VOUCHERS-WATSON, T.J. (1277), 1976, MONTU (SEC. 23); SHELLY, J.S. (1140) & G.V. KING, 1986, MONTU; ELOFSON, S.N., MONTU.
MACODE1: FFSNFBEAV1MTUS CONTAINED1: N MACODE2: PRIVATEOWNMTUS CONTAINED2: N
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: ARGENTA
OWNER: UNKNOWN
OWNERCOMM:
PROTCOMM: IN S15, EO IS MOSTLY ON PRIVATE LAND, W/IN BEAVERHEAD N.F.
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS U85LES02MTUS S76 WATUMMTUS U83RAM01MTUS PNDRAM01MTUS SNDELOUM
DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO: N
TRANSCRIBR: 86-02-25 JSS CDREV: Y MAPPER: 86-02-26 JSS QC: Y
UPDATE: 87-11-17 CDJ

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.002
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 2,3 IDENT: Y EORANK: D
EORANKCOMM: SMALL SUBPOPULATIONS ALONG ROAD.
SURVEYDATE: 1986-06-22 LASTOBS: 1986-06-22 FIRSTOBS: 1970 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4411383 4411384
QUADNAME: EVERSON CREEK, LEMHI PASS PRECISION: SC
LAT: 445733 LONG: 1132132 S: 445710 N: 445734 E: 1132129 W: 1132250
TOWNRANGE: 010S014W SECTION: 18 MERIDIAN: PR
TRSCOMM: S2;T10SR15W:24NE4 PHYSPROV: NR WATERSHED: 10020001
DIRECTIONS: TRAIL CREEK, ALONG ROAD TO LEMHI PASS (BEAVERHEAD N.F. RD. 3909.2), CA. 3.5-4.5 AIR MI. ESE. OF LEMHI PASS.

GENDESC: SANDY TO GRAVELLY LOAM SOILS, ON ALLUVIAL FAN AND ALONG ROAD; ARTEMISIA TRIDENTATA/POA SECUNDA, WITH BROMUS TECTORUM, SITANION HYSTRIX, CHRYSOTHAMNUS NAUSEOSUS.
ELEV: 6520 SIZE: 10
EODATA: 60-70 PLANTS, 5 SUBPOPULATIONS; IN FULL FLOWER; MOST PLANTS OCCUR ALONG ROADSIDE.

COMMENTS: VOUCHERS-WATSON, T.J. (1279), 1976, MONTU; STICKNEY, P.F. (2107), 1970, MONT.
MACODE1: PRIVATEOWNMTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: TRAIL CREEK
OWNER: UNKNOWN
OWNERCOMM:
PROTCOMM: ADJACENT TO BLM LAND.
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S70STIMTMTUS S76WATUMMTUS U85 LES02MTUS PNDRAM01MTUS
DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO: N
TRANSCRIBR: 86-02-27 JSS CDREV: Y MAPPER: 86-02-27 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.003
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 7,3 IDENT: Y EORANK: C
EORANKCOMM: MODERATE-SIZED POPULATIONS, IN NATIVE HABITAT & ALONG ROAD.
SURVEYDATE: 1986-06-22 LASTOBS: 1986-06-22 FIRSTOBS: 1983 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4411384
QUADNAME: LEMHI PASS PRECISION: SC
LAT: 445757 LONG: 1132538 S: 445745 N: 445800 E: 1132452 W: 1132542
TOWNRANGE: 010S015W SECTION: 15 MERIDIAN: PR
TRSCOMM: SE4NW4,NE4SE4,14SW4 PHYSPROV: NR WATERSHED: 10020001
DIRECTIONS: NORTH SIDE OF LEMHI PASS ROAD (BEAVERHEAD N.F. RD. 3909.2), 1.0-1.6 AIR MILES SE. OF LEMHI PASS, CA. 1.4-2.0 MILES WEST OF SELWAY RANCH.
GENDESC: GRAVELLY LOAM SOILS, ON SW. TO SE.-FACING SLOPES; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH PHACELIA HETEROPHYLLA, BROMUS TECTORUM, LUPINUS, PHLOX, POA, ACHILLEA, ROSA.
ELEV: 6960 SIZE: 15
EODATA: 164 PLANTS COUNTED, 3 SUBPOPULATIONS; CA. 90% OF THE PLANTS OCCUR ON NATIVE SAGEBRUSH SLOPES ABOVE THE ROAD; SPECIES OCCURS IN MORE OPEN, GRAVELLY AREAS.

COMMENTS: VOUCHER-SHELLY, J.S. (1155) AND G.V. KING, 1986, MONTU.

MACODE1: PRIVATEOWNMTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: LEMHI PASS
OWNER: UNKNOWN
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS PNDRAM01MTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO: N
TRANSCRIBR: 86-02-27 JSS CDREV: Y MAPPER: 86-02-27 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.004
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 2,8 IDENT: Y EORANK:
EORANKCOMM:
SURVEYDATE: 1952-07-17 LASTOBS: 1952-07-17 FIRSTOBS: 1952 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTRAVA
QUADCODE: 4611318
QUADNAME: BALD TOP MOUNTAIN PRECISION: G
LAT: 460125 LONG: 1135840 S: 0 N: 0 E: 0 W: 0
TOWNRANGE: 003N019W SECTION: 08 MERIDIAN: PR
TRSCOMM: PHYSPROV: NR WATERSHED: 17010205
DIRECTIONS: 10 MI. E. OF DARBY, SAPPHIRE MTS. FOOTHILLS (HISTORICAL COLLECTION).

GENDESC: SANDY GRANITIC SOIL, PONDEROSA PINE ZONE.

ELEV: 5880 SIZE: 0
EODATA: UNKNOWN; OLD COLLECTION, GENERAL LOCATION; BPA RIVER STUDY (U85LES02MT) LISTS QUAD AS FRENCH BASIN, SLIGHTLY ESE. OF DARBY.

COMMENTS: DARBY VICINITY SEARCHED IN 1983 BY J. RAMSTETTER, WITH NO SUCCESS (SEE EF); NEEDS MORE SURVEY WORK.
MACODE1: FFSNFBITT1MTUS CONTAINED1: ? MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: SAPPHIRE FOOTHILLS
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: WRIGHT, J.C. (S.N.), 1952, MONT, BOZEMAN, MT.

SOURCECODE: S52WRIMTMTUS U85LES02MTUS

DATASENS: N BOUNDARIES: N PHOTOS: N OWNERINFO: N
TRANSCRIBR: 86-02-27 JSS CDREV: Y MAPPER: 86-02-27 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.005
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 4 TENTEN: 5,3 IDENT: Y EORANK: B
EORANKCOMM: LARGE POPULATION, MOSTLY NATIVE HABITAT, FENCE EXCLOSURE.
SURVEYDATE: 1986-06-20 LASTOBS: 1986-06-20 FIRSTOBS: 1972 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511228
QUADNAME: BANNACK PRECISION: SC
LAT: 451254 LONG: 1125626 S: 451250 N: 451300 E: 1125623 W: 1125631
TOWNRANGE: 007S011W SECTION: 22 MERIDIAN: PR
TRSCOMM: N2NW4 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: 1.45 AIR MILES SSE. OF BADGER PASS, ADJACENT TO MICROWAVE TOWER ON GRAVEL ROAD 1.3 AIR MI. S. OF BIG HOLE ROAD (ST. HWY. 278), CA. 4.5 AIR MI. NNE. OF BANNACK.
GENDESC: GRAVELLY LOAM SOILS, E. TO NE. ASPECT; ARTEMISIA TRIDENTATA/ PSEUDOTSUGA MENZIESII/FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, LUPINUS LEUCOPHYLLUS, ANTENNARIA MICROPHYLLA, GEUM, SEDUM.
ELEV: 7260 SIZE: 10
EODATA: 190 PLANTS COUNTED; CA. 75 PLANTS ARE WITHIN A FENCE EXCLOSURE, WHICH WAS CONSTRUCTED TO PROTECT PART OF THE POPULATION.

COMMENTS: VOUCHERS-SHELLY, J.S. (1147) AND G.V. KING, 1986, MONTU; KOVALCHICK, B.L., 1972, MONTU.
MACODE1: FBLRADILL1MTUS CONTAINED1: Y MACODE2: FBLDOBUTT1MTUS CONTAINED2: Y
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: BADGER PASS
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS PNDRAM01MTUS U85 LES02MTUS S72KOVUMMTUS
DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 86-03-03 JSS CDREV: Y MAPPER: 86-03-03 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.006
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 7,8 IDENT: Y EORANK: B
EORANKCOMM: LARGE POPULATION; PORTION OF HABITAT RECENTLY BURNED.
SURVEYDATE: 1983-07-26 LASTOBS: 1986-07-08 FIRSTOBS: 1976 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511366
QUADNAME: BIG HOLE BATTLEFIELD PRECISION: SC
LAT: 453842 LONG: 1133919 S: 453831 N: 453913 E: 1133830 W: 1133930
TOWNRANGE: 002S017W SECTION: 24 MERIDIAN: PR
TRSCOMM: W2SE4,13SW4,23SE4 PHYSPROV: NR WATERSHED: 10020004
DIRECTIONS: BIG HOLE NATIONAL BATTLEFIELD, 9 MILES WEST OF WISDOM ON ST. HWY. 43.

GENDESC: SAGEBRUSH STEPPE PORTION OF SE. FACE OF BATTLE MTN., AND ON NW.-FACING BENCHLAND BELOW VISITOR'S CENTER; ARTEMISIA TRIDENTATA/AGROPYRON SPICATUM/FESTUCA IDAHOENSIS.
ELEV: 6320 SIZE: 50
EODATA: THREE SUBPOPULATIONS, WITH 447 PLANTS (S. OF "SIEGE AREA" & ROADCUT ALONG SLOPE), "HUNDREDS" (N. OF "SIEGE AREA"), AND CA. 40 BELOW VISITOR'S CENTER; NO PLANTS FOUND OUTSIDE BATTLEFIELD BOUNDARIES.
COMMENTS: VOUCHERS: HITCHCOCK (19189),NO DATE, WTU; WATSON,T.J.(1271), 1976, MONTU (093357); PIERCE,J. (798), 1980, MONTU (86884).
MACODE1: FNPNPBIGH1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: BIG HOLE BATTLEFIELD
OWNER:
OWNERCOMM:
PROTCOMM: SITE IS WITHIN THE BIG HOLE NATIONAL BATTLEFIELD.
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: PIERCE, JOHN. 737 LOCUST STREET, MISSOULA, MT 59802.

SOURCECODE: PNDPIE01MTUS S76WATUMMTUS S80PIEUMMTUS U85LES02MTUS SND HITUWMTUS PNDRAM01MTUS F83RAM01MTUS U83RAM01
DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO:
TRANSCRIBR: 86-03-06 JSS CDREV: Y MAPPER: 86-03-06 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.007
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 6,10 IDENT: Y EORANK:
EORANKCOMM:
SURVEYDATE: 1950-06-20 LASTOBS: 1950-06-20 FIRSTOBS: 1950 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTRAVA
QUADCODE: 4511481 4511471
QUADNAME: ROBBINS GULCH, MEDICINE HOT SPRINGS PRECISION: G
LAT: 455230 LONG: 1140322 S: 0 N: 0 E: 0 W: 0
TOWNRANGE: 002N020W SECTION: 35 MERIDIAN: PR
TRSCOMM: PHYSPROV: NR WATERSHED: 17010205
DIRECTIONS: BETWEEN CONNER AND SULA (HISTORICAL COLLECTION).

GENDESC: ON ROCKY HILLSIDE ABOVE RIVER.

ELEV: 4280 SIZE: 0
EODATA: UNKNOWN; NEEDS ADDITIONAL FIELD SURVEY.

COMMENTS: SOME SEARCHING WAS DONE OFF OF HWY. 93 IN THE VICINITY OF CONNER, SULA, & DARBY IN 1983, WITH NO SUCCESS (SEE EF).
MACODE1: PRIVATEOWNMTUS CONTAINED1: ? MACODE2: FFSNFBITT1MTUS CONTAINED2: ?
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: CONNER-SULA
OWNER: UNKNOWN
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: MCCALL, T.G. & V.C. (352), 1950, MONTU (49394), DET. BY DAVID D. KECK.
SOURCECODE: S50MCCUMMTUS A57KEC01MTUS

DATASENS: N BOUNDARIES: N PHOTOS: N OWNERINFO: N
TRANSCRIBR: 86-03-06 JSS CDREV: Y MAPPER: 86-03-06 JSS QC: Y
UPDATE: 87-11-17 CDJ

No

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.008
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 2,1 IDENT: Y EORANK:
EORANKCOMM:
SURVEYDATE: 1984-07-06 LASTOBS: 1984-07-06 FIRSTOBS: 1984 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4411278
QUADNAME: DEER CANYON PRECISION: M
LAT: 445217 LONG: 1125858 S: 0 N: 0 E: 0 W: 0
TOWNRANGE: 011S011W SECTION: 18 MERIDIAN: PR
TRSCOMM: SE4 PHYSPROV: NR WATERSHED: 10020001
DIRECTIONS: NORTH SIDE OF JOHNSON GULCH, ALONG THE ROAD CA. 10 MI. SE. OF GRANT.

GENDESC: SILTY SOIL OF A BENCH; WITH ARTEMISIA TRIDENTATA AND AGROPYRON SPICATUM.

ELEV: 6500 SIZE: 0
EODATA: ONE PLANT (SPECIMEN IS ONE TOPSNATCHED STEM).

COMMENTS: VOUCHER-LESICA, P. (3110), 1984, MONTU (06215).

MACODE1: FBLRADILL1MTUS CONTAINED1: Y MACODE2: FBLDOBUTT1MTUS CONTAINED2: Y
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: JOHNSON GULCH
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM: -
BESTSOURCE: LESICA, P. DEPT. OF BOTANY, UNIV. OF MONTANA, MISSOULA, MT.

SOURCECODE: PNDLES01MTUS S84LESUMMTUS

DATASENS: N BOUNDARIES: N PHOTOS: N OWNERINFO:
TRANSCRIBR: 86-03-06 JSS CDREV: Y MAPPER: 86-03-06 JSS QC: Y
UPDATE: 87-11-17 CDJ

YES

2 Transects established
7/27/89

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.009
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 2 TENTEN: 7,4 IDENT: Y EORANK: BC
EORANKCOMM: MEDIUM-SIZED POPULATION; NATIVE HABITAT, BUT NEAR ROAD.
SURVEYDATE: 1986-06-19 LASTOBS: 1986-06-19 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511238
QUADNAME: ERMONT PRECISION: SC
LAT: 451932 LONG: 1125435 S: 451903 N: 451941 E: 1125430 W: 1125504
TOWNRANGE: 006S011W SECTION: 11 MERIDIAN: PR
TRSCOMM: E2,14NE4NW4 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: PIONEER MOUNTAINS, SLOPE ABOVE FRENCH CREEK, ALONG THE FRENCH CREEK-THIEF CREEK ROAD (BEAVERHEAD N.F. RD. #606) 4 AIR MILES NW. OF ARGENTA; ALSO, MOUTH OF RED GULCH.
GENDESC: STEEP, E. & SE.-FACING SLOPE, IN GRAVELLY LOAM SOIL; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, WITH JUNIPERUS SCOPULORUM, PSME, ARTEMISIA FRIGIDA.
ELEV: 7000 SIZE: 17
EODATA: 138 PLANTS COUNTED (CA. 150 TOTAL) IN MAIN POPULATION, WITH 22 PLANTS COUNTED IN SUBPOPULATION AT THE MOUTH OF RED GULCH; AREA TO NORTH SUBJECT TO MINING DISTURBANCE, AND PLANTS HAVE BEEN OBSERVED THERE (J. CHRISTENSEN, U.S.F.S.).
COMMENTS: VOUCHER-SHELLY, J.S. (1130) AND G.V. KING, 1986, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: FRENCH CREEK
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS PNDCHR01MTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 86-07-03 JSS CDREV: Y MAPPER: 86-07-03 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.010
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 6 TENTEN: 3,2 IDENT: Y EORANK: B
EORANKCOMM: GOOD POPULATION, MOSTLY IN NATIVE HABITAT; SOME ALONG ROAD.
SURVEYDATE: 1986-07-08 LASTOBS: 1986-07-08 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511268
QUADNAME: VIPOND PARK (15) PRECISION: SC
LAT: 454305 LONG: 1125509 S: 0 N: 0 E: 0 W: 0
TOWNRANGE: 001S011W SECTION: 26 MERIDIAN: PR
TRSCOMM: E2SE4 PHYSPROV: NR WATERSHED: 10020004
DIRECTIONS: HEAD OF QUARTZ HILL GULCH, ALONG BEAVERHEAD N.F. RD. 187; 0.7 AIR MILES ENE. OF GRAY JOCKEY PEAK, CA. 5 AIR MI. SSE. OF WISE RIVER, PIONEER MOUNTAINS.
GENDESC: EAST-FACING SLOPE, ON CLAY LOAM SOILS; OPENINGS IN PINUS CONTORTA/PSEUDOTSUGA MENZIESII FOREST, WITH JUNIPERUS COMMUNIS, TOWNSENDIA PARRYI, PEDICULARIS CONTORTA.
ELEV: 8000 SIZE: 15
EODATA: 203 PLANTS COUNTED, IN FLOWER; NEARBY AREAS SUBJECT TO MINING DISTURBANCE.

COMMENTS: VOUCHER-SHELLY, J.S. (1192), 1986, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: QUARTZ HILL GULCH
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 8-9 JULY.
SOURCECODE: F86SHE05MTUS PNDSHE01MTUS S86SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 86-10-17 JSS CDREV: Y MAPPER: 86-10-17 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.011
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 7 TENTEN: 4,2 IDENT: Y EORANK: AB
EORANKCOMM: LARGE POPULATION, MOSTLY IN UNDISTURBED HABITAT.
SURVEYDATE: 1986-07-08 LASTOBS: 1986-07-08 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511268
QUADNAME: VIPOND PARK (15) PRECISION: SC
LAT: 454231 LONG: 1125445 S: 454205 N: 454237 E: 1125435 W: 1125510
TOWNRANGE: 001S011W SECTION: 36 MERIDIAN: PR
TRSCOMM: W2,35E2SE4 PHYSPROV: NR WATERSHED: 10020004
DIRECTIONS: NEAR HEAD OF ECHO GULCH, SLOPES 0-0.5 AIR MI. N. OF VIPOND PARK, ALONG BEAVERHEAD N.F. RD. 187; 0.5-0.75 AIR MI. W. AND SW. OF QUARTZ HILL, PIONEER MOUNTAINS.
GENDESC: SOUTH AND EAST-FACING SLOPES, ON GRAVELLY SILT LOAM SOILS; PINUS CONTORTA/GRASSLAND, WITH PEDICULARIS CONTORTA, TOWNSENDIA PARRYI, ANTENNARIA MICROPHYLLA, FESTUCA IDAHOENSIS.
ELEV: 8100 SIZE: 45
EODATA: 252 PLANTS COUNTED IN SOUTH SUBPOPULATION, 100-150 PLANTS IN NORTH SUBPOPULATION; IN FLOWER; MINING TEST PITS OBSERVED NEAR NORTH SUBPOPULATION.

COMMENTS: VOUCHER-SHELLY, J.S. (1199), 1986, MONTU; AREA NEEDS ADDITIONAL SURVEY.
MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: ECHO GULCH
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 8-9 JULY.
SOURCECODE: F86SHE05MTUS PNDSHE01MTUS S86SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 86-10-24 JSS CDREV: Y MAPPER: 86-10-24 JSS QC: Y
UPDATE: 87-11-30 JSS

YES?

Could only locate ca. 12 plants 7/27/89

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.012
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 3 TENTEN: 5,5 IDENT: Y EORANK: B
EORANKCOMM: MODERATE-SIZED POPULATION; HABITAT IN GOOD CONDITION.
SURVEYDATE: 1986-06-19 LASTOBS: 1986-06-19 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511238
QUADNAME: ERMONT PRECISION: SC
LAT: 451908 LONG: 1125600 S: 451845 N: 451915 E: 1125549 W: 1125618
TOWNRANGE: 006S011W SECTION: 15 MERIDIAN: PR
TRSCOMM: NE4,10S2 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: CA. 4.5 AIR MI. NW. OF ARGENTA, CENTERED 0.5 AIR MI. ESE. OF RED BUTTE, RATTLESNAKE CREEK DRAINAGE CA. 1 MI. SE. OF KELLY RESERVOIR, PIONEER MOUNTAINS.
GENDESC: S. AND SW.-FACING SLOPES, LOAMY SOILS; ARTEMISIA TRIDENTATA/ FESTUCA IDAHOENSIS/AGROPYRON SPICATUM, WITH SENECIO CANUS, PHACELIA LINEARIS, KOELERIA MACRANTHA, PSME.
ELEV: 6800 SIZE: 20
EODATA: 142 PLANTS COUNTED IN MAIN POPULATION (CENTRUM), 169 TOTAL, 3 SUBPOPULATIONS; IN FLOWER; MAIN POPULATION NEAR, BUT NOT RIGHT ALONG, A LIGHTLY-USED GRAVEL ROAD.

COMMENTS: VOUCHER-SHELLY, J.S. (1133) AND G.V. KING, 1986, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: RED BUTTE
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 86-10-28 JSS CDREV: Y MAPPER: 86-10-31 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.013
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 4 TENTEN: 3,6 IDENT: Y EORANK: C
EORANKCOMM: SMALLER POPULATION, MANY PLANTS ON ROADSIDE.
SURVEYDATE: 1986-06-20 LASTOBS: 1986-06-20 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511238
QUADNAME: ERMONT PRECISION: SC
LAT: 451749 LONG: 1125745 S: 451725 N: 451753 E: 1125652 W: 1125805
TOWNRANGE: 006S011W SECTION: 21 MERIDIAN: PR
TRSCOMM: W2SE4NE4,20SE4SE4 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: CA. 5 AIR MI WNW. OF ARGENTA, ALONG BLACK MOUNTAIN ROAD (BEAVERHEAD N.F. RD. #2400) CA. 3 AIR MI. SSE. OF BLACK MOUNTAIN, PIONEER MOUNTAINS.
GENDESC: EAST AND SE.-FACING SLOPES, RED-COLORED LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH PHACELIA LINEARIS, ERIOGONUM, ASTER, BERBERIS.
ELEV: 7200 SIZE: 20
EODATA: CA. 100-125 PLANTS TOTAL, MAINLY IN TWO SUBPOPULATIONS AND SCATTERED ALONG ROADSIDE; IN FLOWER.

COMMENTS: VOUCHER-SHELLY, J.S. (1142) AND G.V. KING, 1986, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: BLACK MOUNTAIN ROAD
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 86-10-28 JLB CDREV: Y MAPPER: 86-11-04 JLB QC: Y
UPDATE: 87-11-30 JSS

One plant seen in 1989 NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.014
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 5 TENTEN: 5,9 IDENT: Y EORANK: C
EORANKCOMM: SMALL POPULATION, NATIVE HABITAT IMPACTED BY GRAZING.
SURVEYDATE: 1986-06-20 LASTOBS: 1986-06-20 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511238
QUADNAME: ERMONT PRECISION: SC
LAT: 451603 LONG: 1125646 S: 451558 N: 451607 E: 1125644 W: 1125651
TOWNRANGE: 006S011W SECTION: 33 MERIDIAN: PR
TRSCOMM: NE4SE4,34W2 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: CA 4.3 AIR MI. WSW. OF ARGENTA, ALONG BEAVERHEAD N.F. RD. #7467 AT HEAD OF ERMONT GULCH, CA. 2.2 AIR MI. N. OF BADGER PASS, PIONEER MOUNTAINS.
GENDESC: SE.-FACING SLOPE, LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, ANTENNARIA MICROPHYLLA, KOELERIA MACRANTHA, COMANDRA UMBELLATA, ERIOGONUM.
ELEV: 6740 SIZE: 5
EODATA: 76 PLANTS COUNTED; IN FLOWER; AREA SUBJECT TO MODERATE TO HEAVY GRAZING.

COMMENTS: VOUCHER-SHELLY, J.S. (1146) AND G.V. KING, 1986, MONTU

MACODE1: FFSNFBEAV1MTUS CONTAINED1: N MACODE2: FBLRADILL1MTUS CONTAINED2: N
MACODE3: FBLDOBUTT1MTUS CONTAINED3: N ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: ERMONT GULCH
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO:
TRANSCRIBR: 86-10-28 JSS CDREV: Y MAPPER: 86-11-04 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.015
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 5,10 IDENT: Y EORANK: B
EORANKCOMM: SMALL POPULATION, NATIVE HABITAT IN GOOD CONDITION.
SURVEYDATE: 1986-06-22 LASTOBS: 1986-06-22 FIRSTOBS: 1986 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511313
QUADNAME: COYOTE CREEK PRECISION: SC
LAT: 450025 LONG: 1131908 S: 450020 N: 450031 E: 1131903 W: 1131912
TOWNRANGE: 009S014W SECTION: 33 MERIDIAN: PR
TRSCOMM: N2SE4 PHYSPROV: NR WATERSHED: 10020001
DIRECTIONS: MOUTH OF ROBERTS GULCH, CA. 1 AIR MI. NW. OF BLOODY DICK CREEK, CA. 12.5 AIR MI. WEST OF GRANT AND 6.5 AIR MI. ENE. OF LEMHI PASS.
GENDESC: EAST-FACING SLOPE ALONG SMALL DRAINAGE, LOAM SOILS; ARTEMISIA TRIDENTATA/AGROPYRON SPICATUM, CHRYSOTHAMNUS VISCIDIFLORUS, ARTEMISIA FRIGIDA, LUPINUS, ANTENNARIA.
ELEV: 6520 SIZE: 5
EODATA: 54 PLANTS COUNTED; IN FLOWER; HABITAT RELATIVELY UNDISTURBED, SOME GRAZING USE.

COMMENTS: VOUCHER- SHELLY, J.S. (1156) AND G.V. KING, 1986, MONTU.

MACODE1: FBLRADILL1MTUS CONTAINED1: Y MACODE2: FBLDOBUTT1MTUS CONTAINED2: Y
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: ROBERTS GULCH
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1986. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 18-22 JUNE.
SOURCECODE: F86SHE03MTUS PNDSHE01MTUS S86SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO:
TRANSCRIBR: 86-10-28 JSS CDREV: Y MAPPER: 86-11-04 JSS QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.016
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 13 TENTEN: 6,5 IDENT: Y EORANK: D
EORANKCOMM: SMALL, VULNERABLE ROADSIDE POPULATION.
SURVEYDATE: 1987-06-16 LASTOBS: 1987-06-16 FIRSTOBS: 1987 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511257
QUADNAME: VIPOND PARK (15) PRECISION: SC
LAT: 453913 LONG: 1125154 S: 453911 N: 453915 E: 1125152 W: 1125156
TOWNRANGE: 002S010W SECTION: 20 MERIDIAN: PR
TRSCOMM: W2SE4 PHYSPROV: NR WATERSHED: 10020004
DIRECTIONS: PIONEER MOUNTAINS, TRAPPER CREEK DRAINAGE, ALONG BEAVERHEAD N.F. RD. #188; ABOUT 10 MILES WEST OF MELROSE; ABOUT 1 AIR MILE SSE. OF ORE CAMP HILL.
GENDESC: GRAVELLY LOAM SOILS, ON ROADSIDE; ARTEMISIA TRIDENTATA/ AGROPYRON SPICATUM/FESTUCA IDAHOENSIS, GERANIUM VISCOSISSIMUM, ERIOGONUM UMBELLATUM.
ELEV: 6800 SIZE: 1
EODATA: 18 PLANTS COUNTED; FLOWERING; POPULATION OCCURS RIGHT ALONG ROADSIDE.

COMMENTS: VOUCHER-SHELLY, J.S. (1335), 1987, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: TRAPPER CREEK
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.
SOURCECODE: F87SHE02MTUS PNDSHE01MTUS S87SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO:
TRANSCRIBR: 87-08-06 JSS CDREV: Y MAPPER: 87-08-10 JEG QC: Y
UPDATE: 87-11-17 CDJ

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.017
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 14 TENTEN: 7,9 IDENT: Y EORANK: D
EORANKCOMM: SMALL POPULATION; PARTIALLY ALONG ROADSIDE.
SURVEYDATE: 1987-06-17 LASTOBS: 1987-06-17 FIRSTOBS: 1987 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511257
QUADNAME: VIPOND PARK (15) PRECISION: SC
LAT: 453131 LONG: 1124947 S: 453129 N: 453133 E: 1124945 W: 1124949
TOWNRANGE: 003S010W SECTION: 34 MERIDIAN: PR
TRSCOMM: S2SW4 PHYSPROV: NR WATERSHED: 10020004
DIRECTIONS: PIONEER MOUNTAINS, ROCK CREEK DRAINAGE, ALONG ROCK CREEK ROAD ABOUT 6 MILES WEST OF I-15, NEAR WEST END OF BROWNES LAKE.
GENDESC: GRAVELLY LOAM SOILS, ON ROADSIDE AND SLOPE ABOVE ROAD; PSEUDOTSUGA MENZIESII/AGROPYRON SPICATUM, WITH CERCOCARPUS MONTANUS, SENECIO CANUS, PENSTEMON ARIDUS.
ELEV: 6650 SIZE: 1
EODATA: ONLY 4 PLANTS SEEN, 2 ON ROADSIDE AND 2 ON NATURAL SLOPE ABOVE ROAD.

COMMENTS: VOUCHER-SHELLY, J.S. (1339), 1987, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: MACODE2: PRIVATEOWNMTUS CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: BROWNES LAKE
OWNER:
OWNERCOMM:
PROTCOMM: SITE MAY OCCUR ON PRIVATE INHOLDING.
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.
SOURCECODE: F87SHE02MTUS PNDSHE01MTUS S87SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO:
TRANSCRIBR: 87-08-06 JSS CDREV: Y MAPPER: 87-08-10 JEG QC: Y
UPDATE: 87-11-17 CDJ

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.018
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 6 TENTEN: 5,6 IDENT: Y EORANK: C
EORANKCOMM: SMALLER POPULATION; SOME MINING AND GRAZING NEARBY.
SURVEYDATE: 1987-06-17 LASTOBS: 1987-06-17 FIRSTOBS: 1987 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511238
QUADNAME: ERMONT PRECISION: SC
LAT: 451853 LONG: 1125651 S: 451845 N: 451909 E: 1125649 W: 1125715
TOWNRANGE: 006S011W SECTION: 16 MERIDIAN: PR
TRSCOMM: NE4 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: PIONEER MOUNTAINS, KEARNS CREEK, ADJACENT TO SILVER RULE MINE; ABOUT 0.5 AIR MILE SOUTHWEST OF RED BUTTE; ABOUT 0.75 AIR MILE WEST OF RATTLESNAKE CREEK.
GENDESC: GRAVELLY LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH SENECIO CANUS, BALSAMORHIZA SAGITTATA, HELIANTHELLA QUINQUENERVIS, LUPINUS SERICEUS, PSME, PICO.
ELEV: 6900 SIZE: 5
EODATA: 52 PLANTS COUNTED, 4 SUBPOPULATIONS; FLOWERING; MOST ABUNDANT ON EAST-FACING SLOPE ALONG CREEK, ON GRAVELLY OPEN SLOPE; SOME GRAZING AND MINING ACTIVITY IN THE AREA.

COMMENTS: VOUCHER-SHELLY, J.S. (1342), 1987, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: N MACODE2: PRIVATEOWNMTUS CONTAINED2: N
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: KEARNS CREEK
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.
SOURCECODE: F87SHE02MTUS PNDSHE01MTUS S87SHE7MMTUS PNDCHR01MTUS

DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO:
TRANSCRIBR: 87-08-06 JSS CDREV: Y MAPPER: 87-08-10 JEG QC: Y
UPDATE: 87-11-30 JSS

YES

One transect established 1989-07-28 (50 m transect)

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.019
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 8 TENTEN: 5,1 IDENT: Y EORANK: B
EORANKCOMM: MODERATE-SIZED POPULATION; FAIR TO GOOD CONDITION RANGELAND.
SURVEYDATE: 1987-06-18 LASTOBS: 1987-06-18 FIRSTOBS: 1987 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511228
QUADNAME: BANNACK PRECISION: SC
LAT: 451437 LONG: 1125648 S: 451435 N: 451457 E: 1125628 W: 1125653
TOWNRANGE: 007S011W SECTION: 09 MERIDIAN: PR
TRSCOMM: NE4NE4,10NW4,3SW4 PHYSPROV: NR WATERSHED: 10020002
DIRECTIONS: SOUTHERN PIONEER MOUNTAINS, 0.7-1.2 AIR MILES NNE. OF BADGER PASS; ABOUT 15 AIR MILES WEST OF DILLON.

GENDESC: BROWN LOAM SOILS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH PSEUDOTSUGA MENZIESII, BALSAMORHIZA SAGITTATA, LUPINUS SERICEUS, ANTENNARIA MICROPHYLLA, ASTER STENOMERES.
ELEV: 6980 SIZE: 4
EODATA: ABOUT 200 PLANTS COUNTED, POPULATION = EST. 300+ PLANTS, 3 SUBPOPULATIONS OBSERVED; FLOWERING; NUMEROUS PLANTS GROWING THROUGH BRANCHES OF SAGEBRUSH SHRUBS; AREA IS LIGHTLY TO MODERATELY GRAZED.
COMMENTS: VOUCHER-SHELLY, J.S. (1343), 1987, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: BADGER PASS NORTH
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.
SOURCECODE: F87SHE02MTUS PNDSHE01MTUS S87SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 87-08-06 JSS CDREV: Y MAPPER: 87-08-10 JEG QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.020
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 7,2 IDENT: Y EORANK: D
EORANKCOMM: VERY SMALL POPULATION; NATIVE HABITAT, SOME GRAZING IMPACTS.
SURVEYDATE: 1987-06-19 LASTOBS: 1987-06-19 FIRSTOBS: 1987 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4511314
QUADNAME: KITTY CREEK PRECISION: SC
LAT: 450647 LONG: 1132524 S: 450642 N: 450649 E: 1132522 W: 1132530
TOWNRANGE: 008S015W SECTION: 27 MERIDIAN: PR
TRSCOMM: SW4NE4 PHYSPROV: NR WATERSHED: 10020001
DIRECTIONS: BLOODY DICK CREEK DRAINAGE, SLOPES ABOVE SELWAY CREEK, ABOUT 2 MILES SOUTHEAST OF RESERVOIR LAKE; ABOUT 4 MILES EAST OF MONTANA-IDAHO STATE LINE.
GENDESC: ROCK OUTCROPS; ARTEMISIA TRIDENTATA/FESTUCA IDAHOENSIS, WITH ERIOGONUM UMBELLATUM, PHACELIA FRANKLINII, SEDUM LANCEOLATUM, LUPINUS SERICEUS, PSEUDOTSUGA MENZIESII, PICO.
ELEV: 7200 SIZE: 1
EODATA: SIX PLANTS OBSERVED, IN 2 CLUMPS; FLOWERING; PLANTS ASSOCIATED WITH STEEP ROCK OUTCROP AREAS, AND NOT OBSERVED IN DENSER SURROUNDING VEGETATION.

COMMENTS: VOUCHER-SHELLY, J.S. (1344), 1987, MONTU.

MACODE1: FFSNFBEAV1MTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: SELWAY CREEK
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: SHELLY, J.S. 1987. FIELD SURVEYS IN BEAVERHEAD COUNTY OF 16-19 JUNE.
SOURCECODE: F87SHE02MTUS PNDSHE01MTUS S87SHEUMMTUS

DATASENS: N BOUNDARIES: Y PHOTOS: Y OWNERINFO:
TRANSCRIBR: 87-08-06 JSS CDREV: Y MAPPER: 87-08-10 JEG QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.021
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 0 TENTEN: IDENT: Y EORANK:
EORANKCOMM:
SURVEYDATE: 1947-07-23 LASTOBS: 1947-07-23 FIRSTOBS: 1947 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE:
QUADNAME: UNMAPPABLE PRECISION: U
LAT: 0 LONG: 0 S: 0 N: 0 E: 0 W: 0
TOWNRANGE: SECTION: MERIDIAN: PR
TRSCOMM: PHYSPROV: NR WATERSHED: 10020004
DIRECTIONS: WEST OF BIG HOLE BATTLEFIELD (HISTORICAL COLLECTION).

GENDESC: SAGEBRUSH AREA.

ELEV: 5000 SIZE: 0
EODATA: UNKNOWN; MAY POSSIBLY HAVE BEEN FROM JUST OUTSIDE WESTERN BOUNDARY OF BIG HOLE BATTLEFIELD, IN AREA THAT IS NOW DISTURBED BY GRAZING (1986); ELEVATION GIVEN IS LOWER THAN PRESENT IN AREA.
COMMENTS: SPECIMEN DETERMINED BY D. KECK; FIRST MONTANA RECORD.

MACODE1: CONTAINED1: MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

MOREMGMT: SITECODE:
SITENAME: WEST OF BIG HOLE BATTLEFIELD
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: ROSE, FRANK H. (3502). 1947. SPECIMEN #092520 UM.

SOURCECODE: S47ROSUMMTUS A57KEC01MTUS

DATASENS: N BOUNDARIES: N PHOTOS: N OWNERINFO:
TRANSCRIBR: 87-09-25 JSS CDREV: Y MAPPER: QC: Y
UPDATE: 87-11-30 JSS

NO

ELEMENT OCCURRENCE RECORD

EOCODE: PDSCR1L3N0.022
NAME: PENSTEMON LEMHIENSIS
COMNAME: LEMHI BEARDTONGUE
MARGNUM: 1 TENTEN: 9,1 IDENT: Y EORANK:
EORANKCOMM:
SURVEYDATE: 1987- - LASTOBS: 1987- - FIRSTOBS: 1987 GRANK: G3
SRANK: S2 STATE: MT COUNTYNAME: MTBEAV
QUADCODE: 4411361
QUADNAME: MORRISON LAKE (15) PRECISION: SC
LAT: 444359 LONG: 1130224 S: 444350 N: 444408 E: 1130216 W: 1130230
TOWNRANGE: 013S012W SECTION: 03 MERIDIAN: PR
TRSCOMM: SE4NE4,NE4SE4 PHYSPROV: NR WATERSHED: 10020001
DIRECTIONS: MEDICINE LODGE CREEK DRAINAGE, 0.15 AIR MILES WNW. OF CONFLUENCE OF MEDICINE LODGE AND HILDRETH CREEKS, CA. 19 AIR MILES SOUTH OF GRANT.
GENDESC: UNKNOWN; SPECIES OFTEN OCCURS IN SAGEBRUSH/BUNCHGRASS HABITATS AT HIGHER ELEVATIONS.

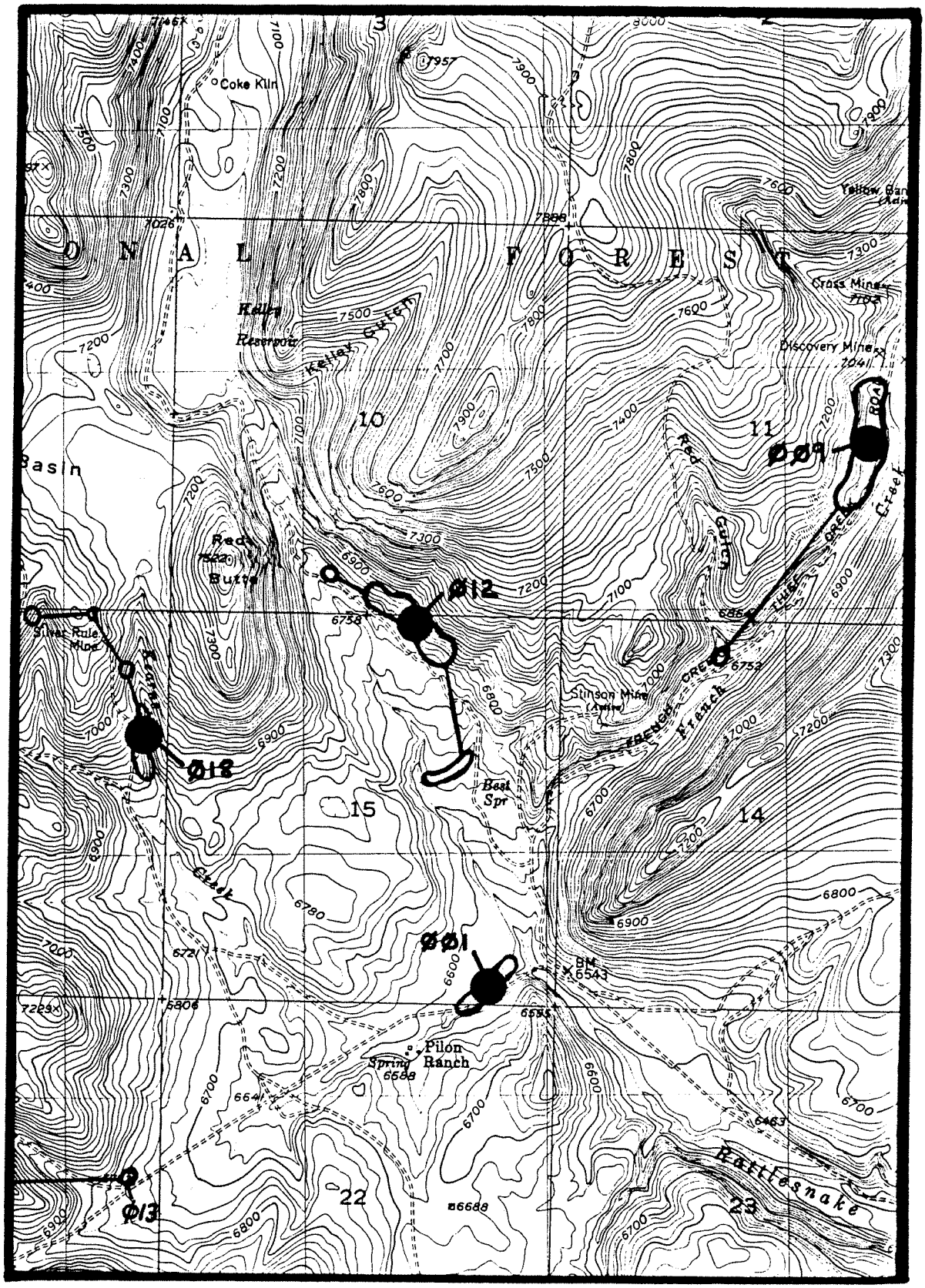
ELEV: 6970 SIZE: 20
EODATA: UNKNOWN; POPULATION REPORTED TO BE LARGE BY J. CHRISTENSEN.

COMMENTS: SITE LOCATED BY J. CHRISTENSEN, BEAVERHEAD NATIONAL FOREST.

MACODE1: PRIVATEOWNMTUS CONTAINED1: Y MACODE2: CONTAINED2:
MACODE3: CONTAINED3: ADLMAS: MORELAN: MOREPROT:

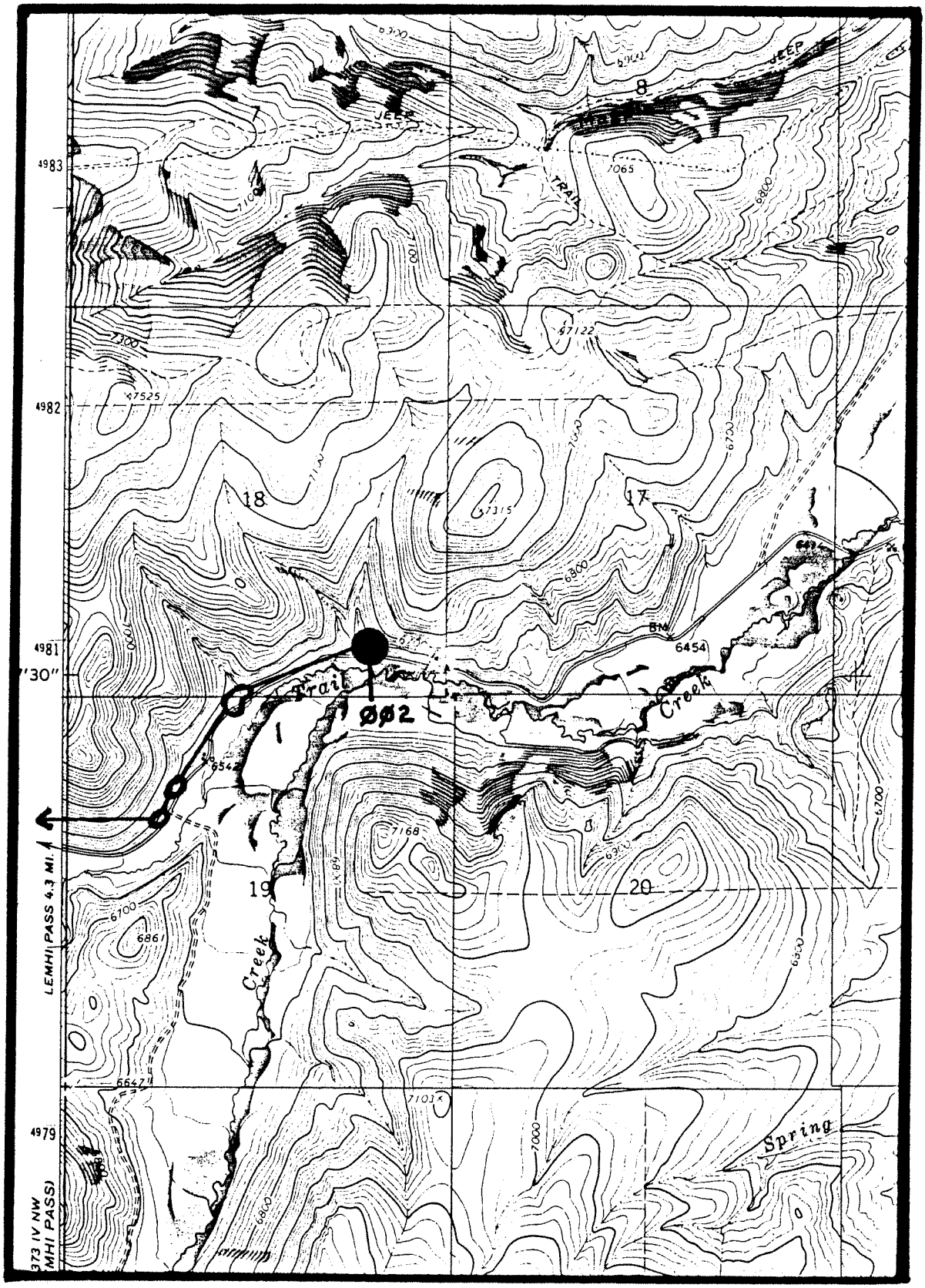
MOREMGMT: SITECODE:
SITENAME: MEDICINE LODGE CREEK
OWNER:
OWNERCOMM:
PROTCOMM:
MGMTCOMM:
MONITOR: MONITORNUM:
BESTSOURCE: CHRISTENSEN, JIM. BEAVERHEAD NATIONAL FOREST, DILLON RANGER DISTRICT, 610 N. MONTANA ST., DILLON, MT 59725.
SOURCECODE: PNDCHR01MTUS

DATASENS: N BOUNDARIES: Y PHOTOS: N OWNERINFO: N
TRANSCRIBR: 87-12-11 JSS CDREV: Y MAPPER: 87-12-11 JSS QC: N
UPDATE: 87-12-14 JSS



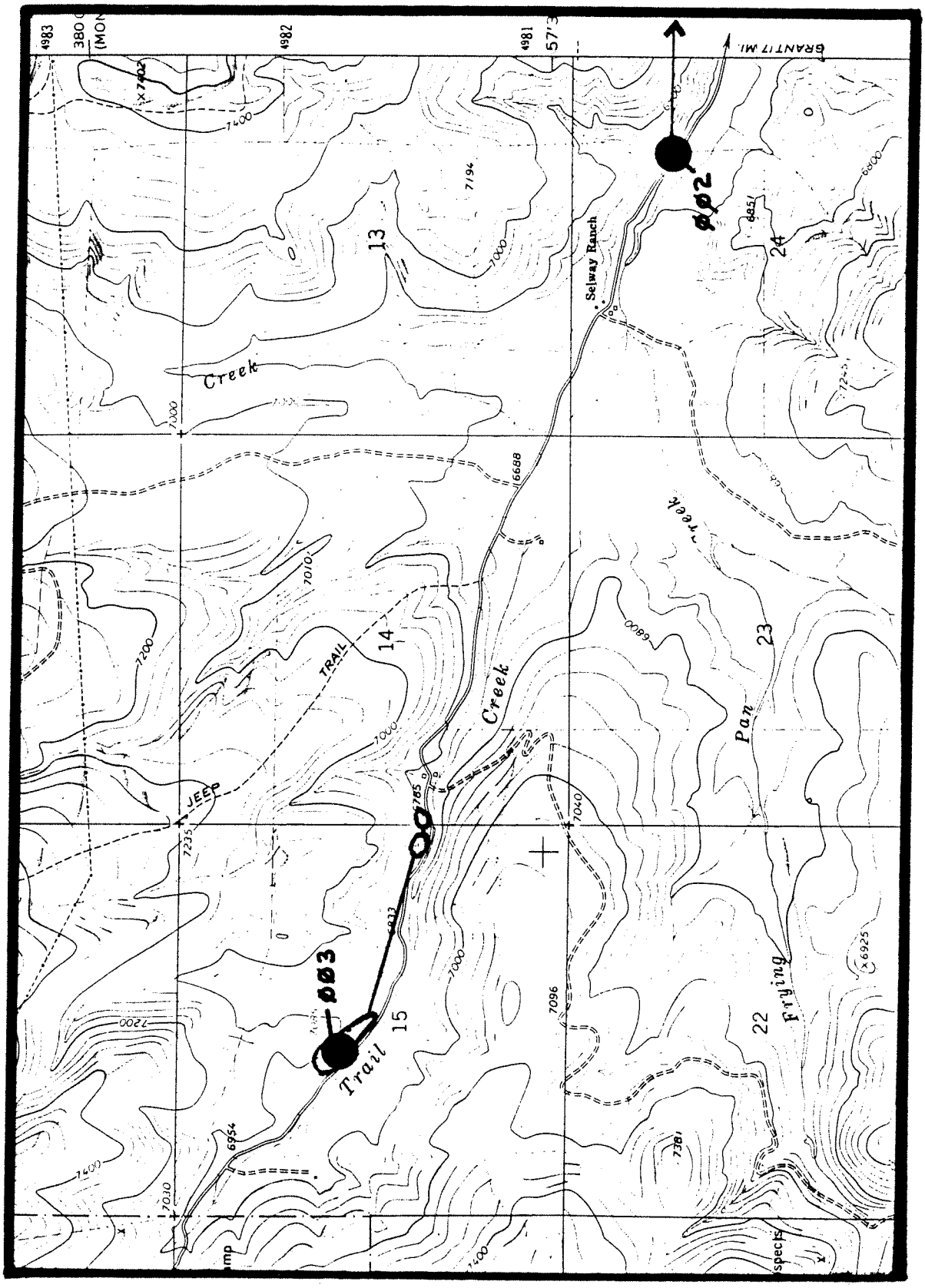
USGS Ermont Quadrangle (7.5')

Penstemon lemhiensis



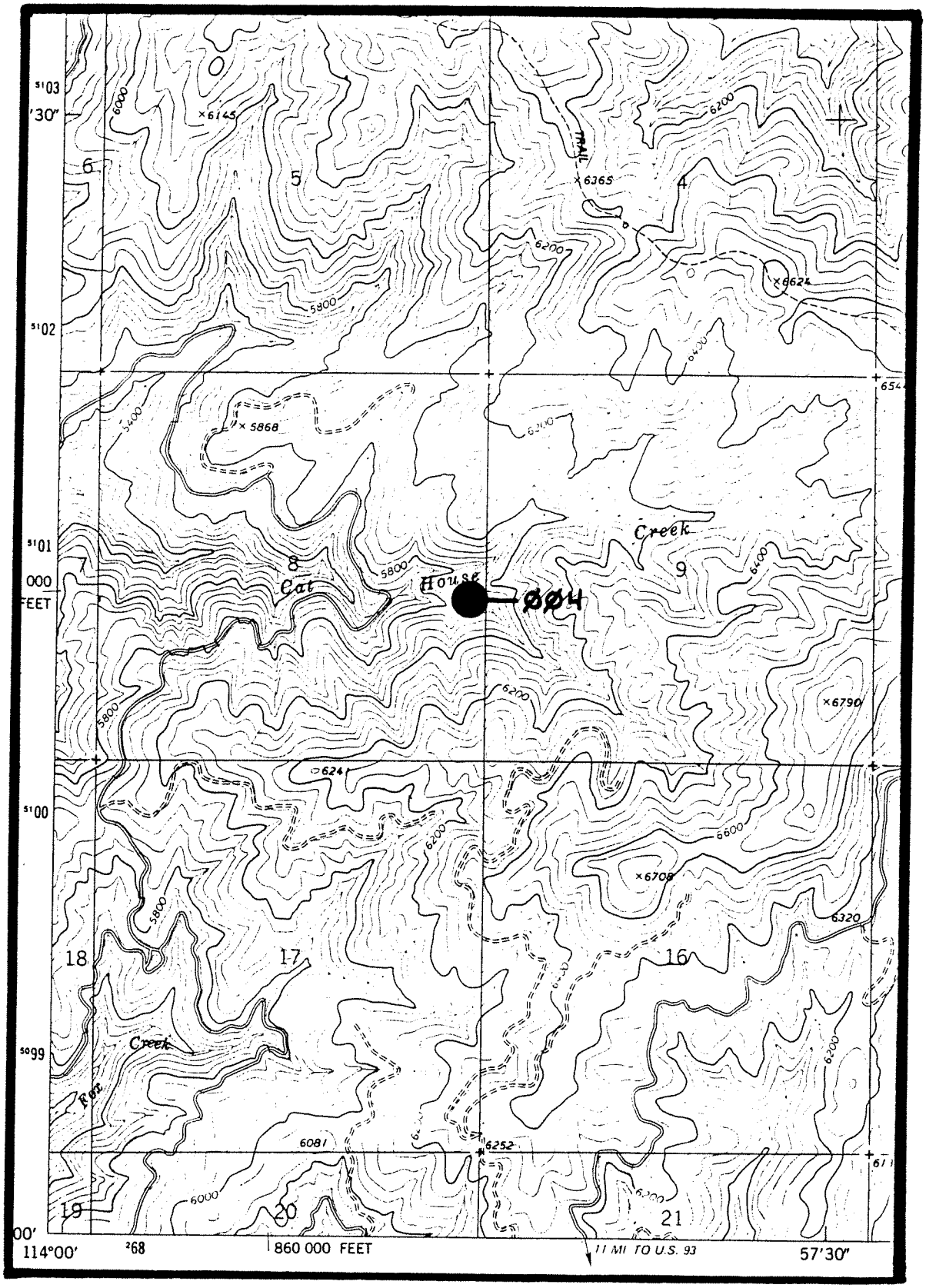
USGS Everson Creek Quadrangle (7.5')

Penstemon lemhiensis



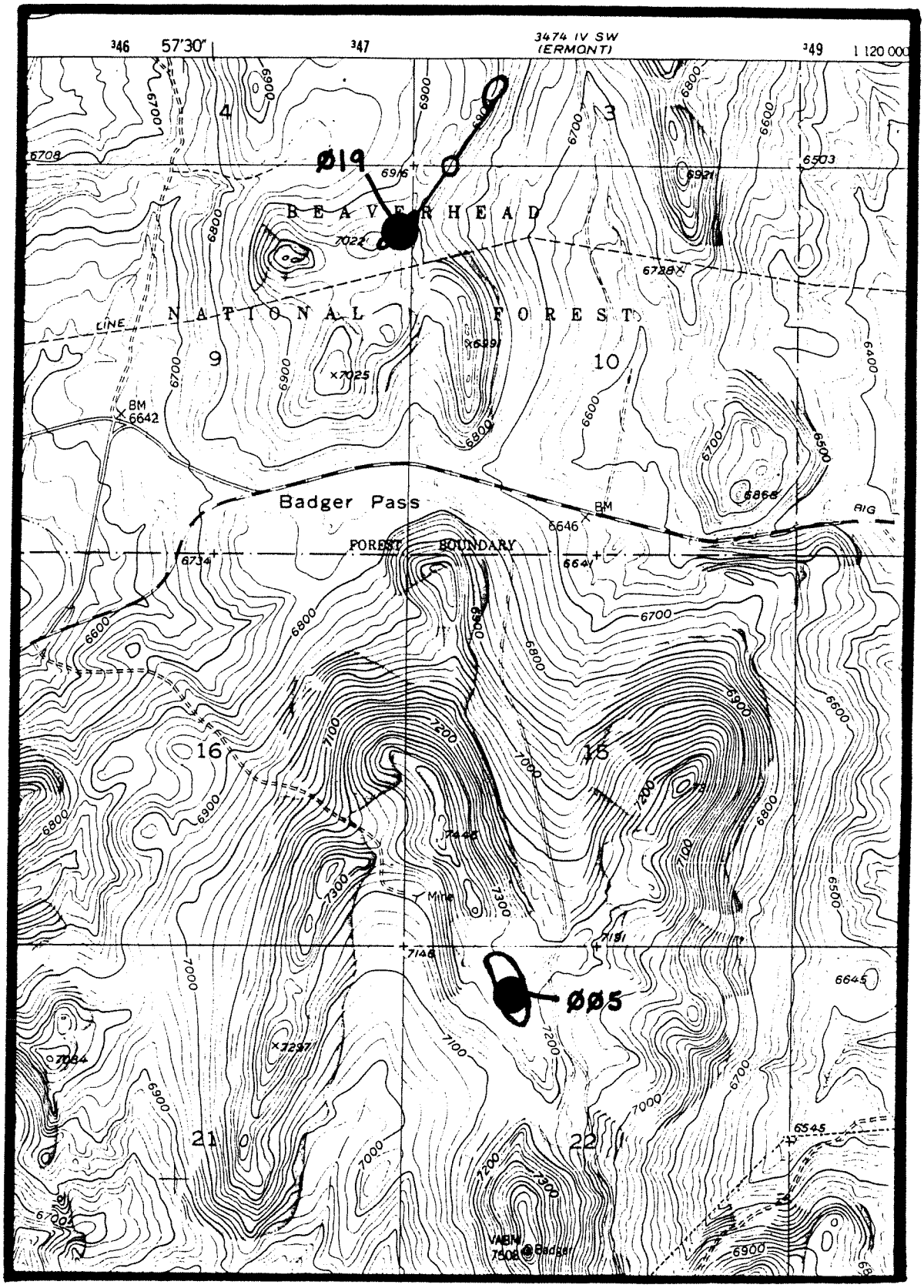
USGS Lemhi Pass Quadrangle (15')

Penstemon lemhiensis



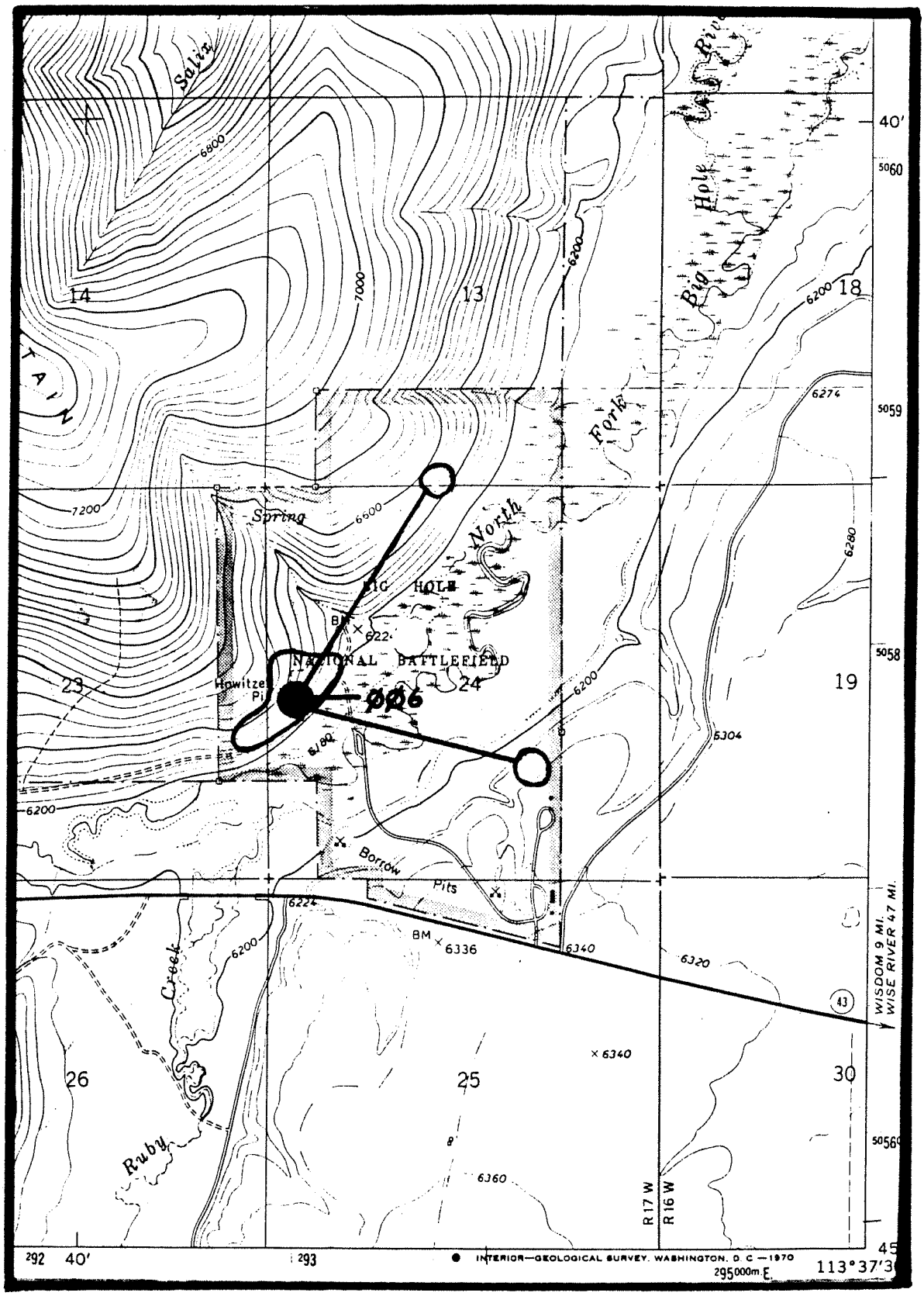
USGS Bald Top Mountain Quadrangle (7.5')

Penstemon lemhiensis (general historical location)



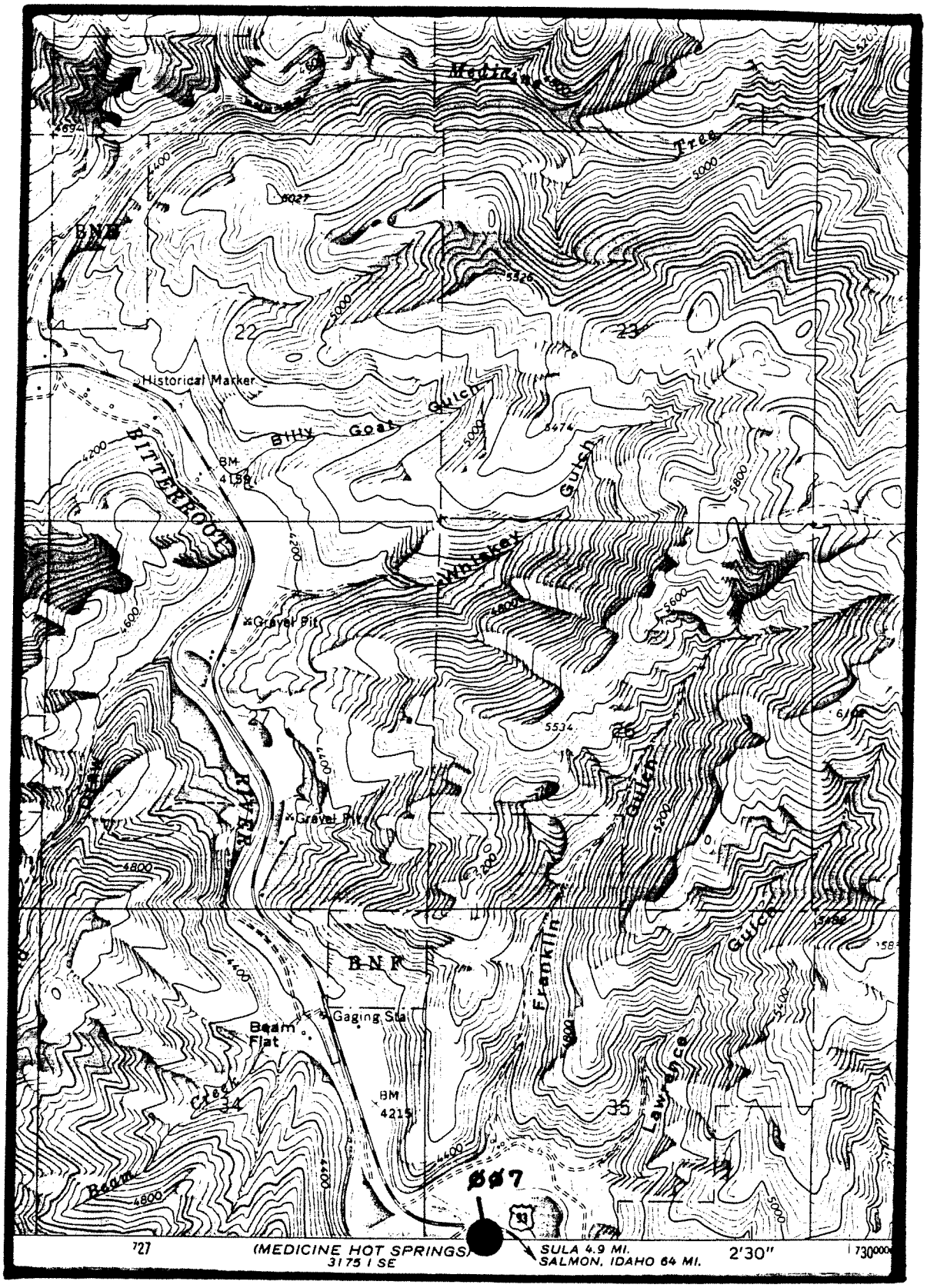
USGS Bannack Quadrangle (7.5')

Penstemon lemhiensis



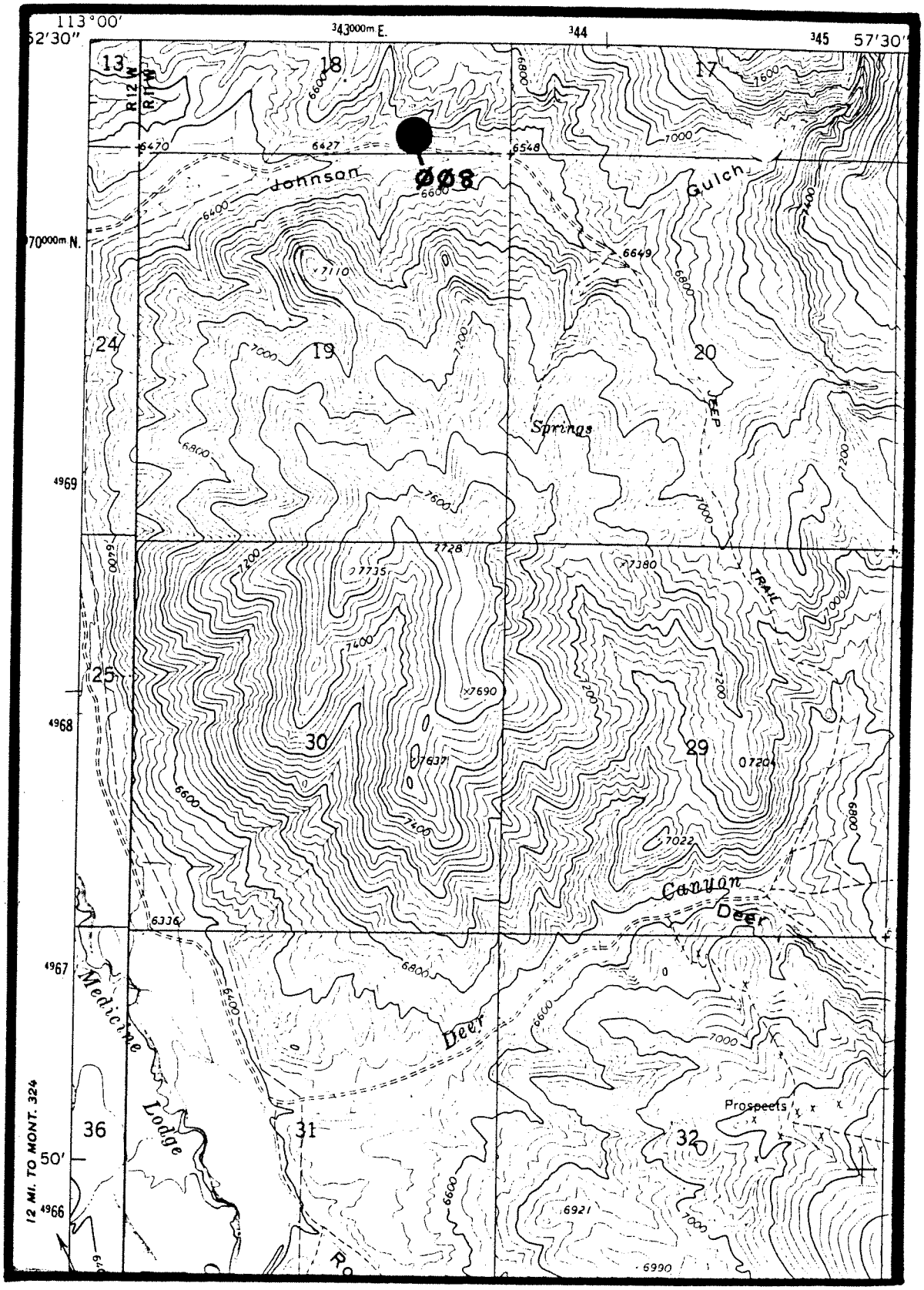
USGS Big Hole Battlefield Quadrangle (7.5')

<u>Penstemon lemhiensis</u>



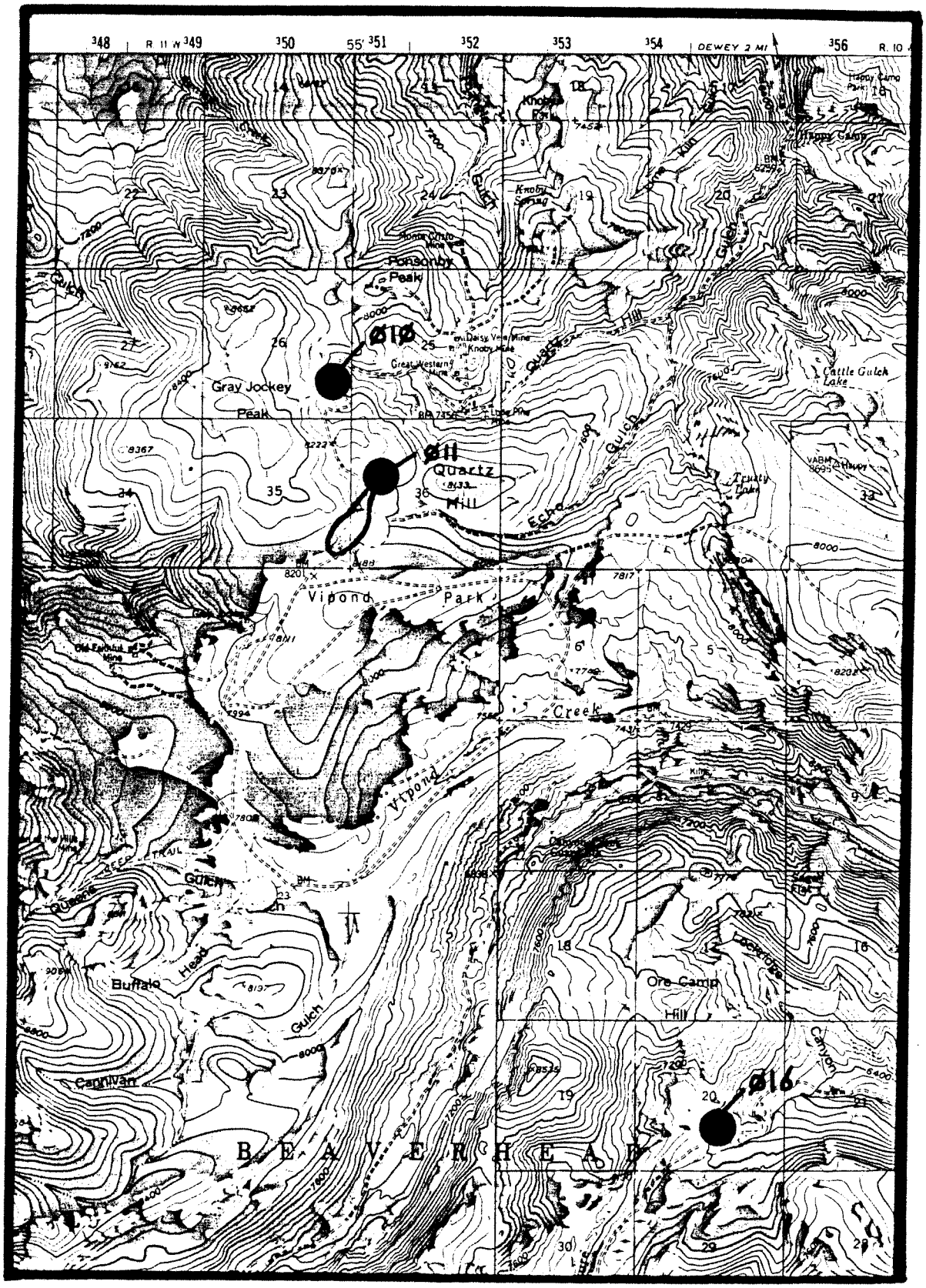
USGS Robbins Gulch Quadrangle (7.5')

<u>Penstemon</u> <u>lemhiensis</u> (general historical location)



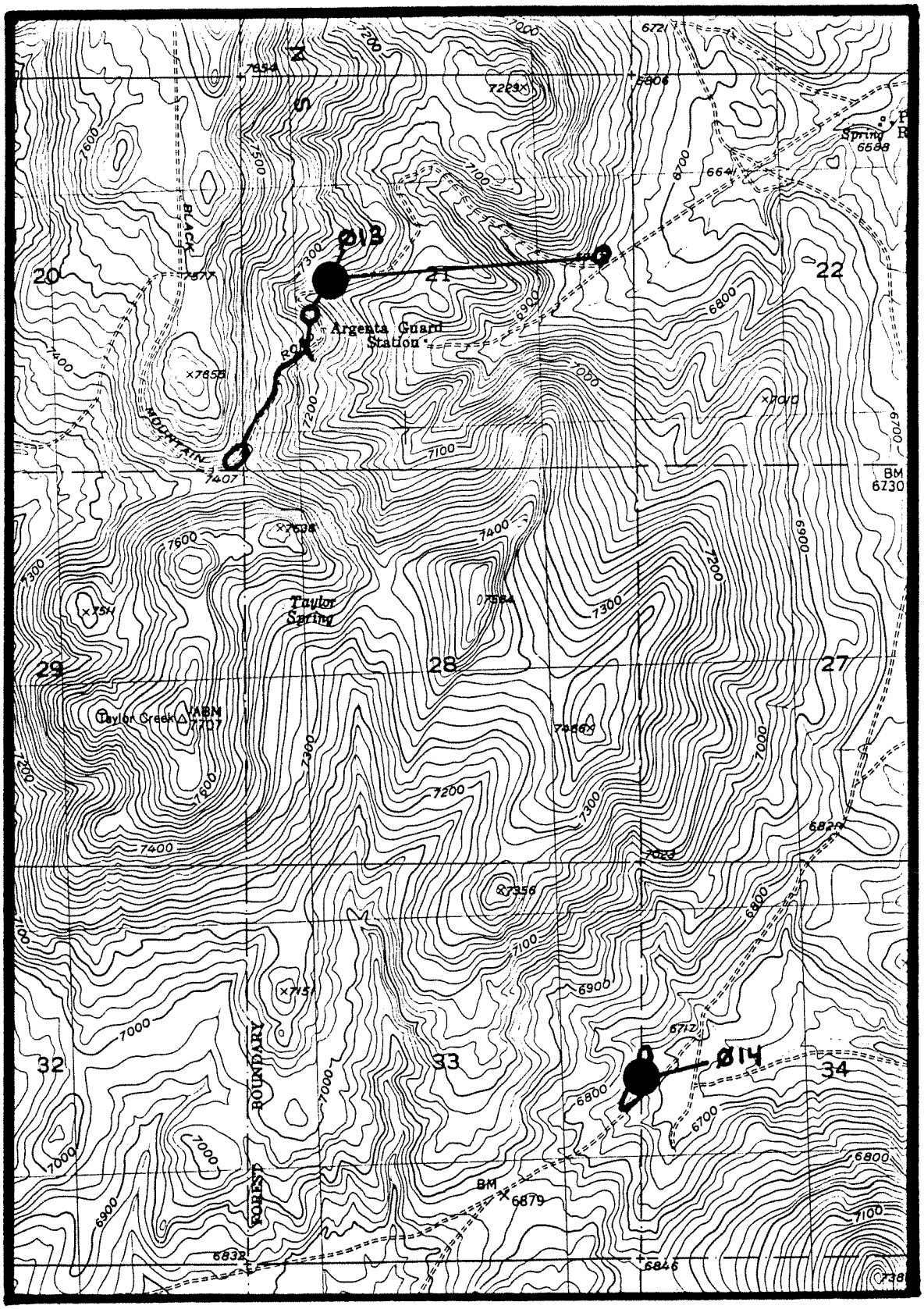
USGS Deer Canyon Quadrangle (7.5')

<u>Penstemon lemhiensis</u>



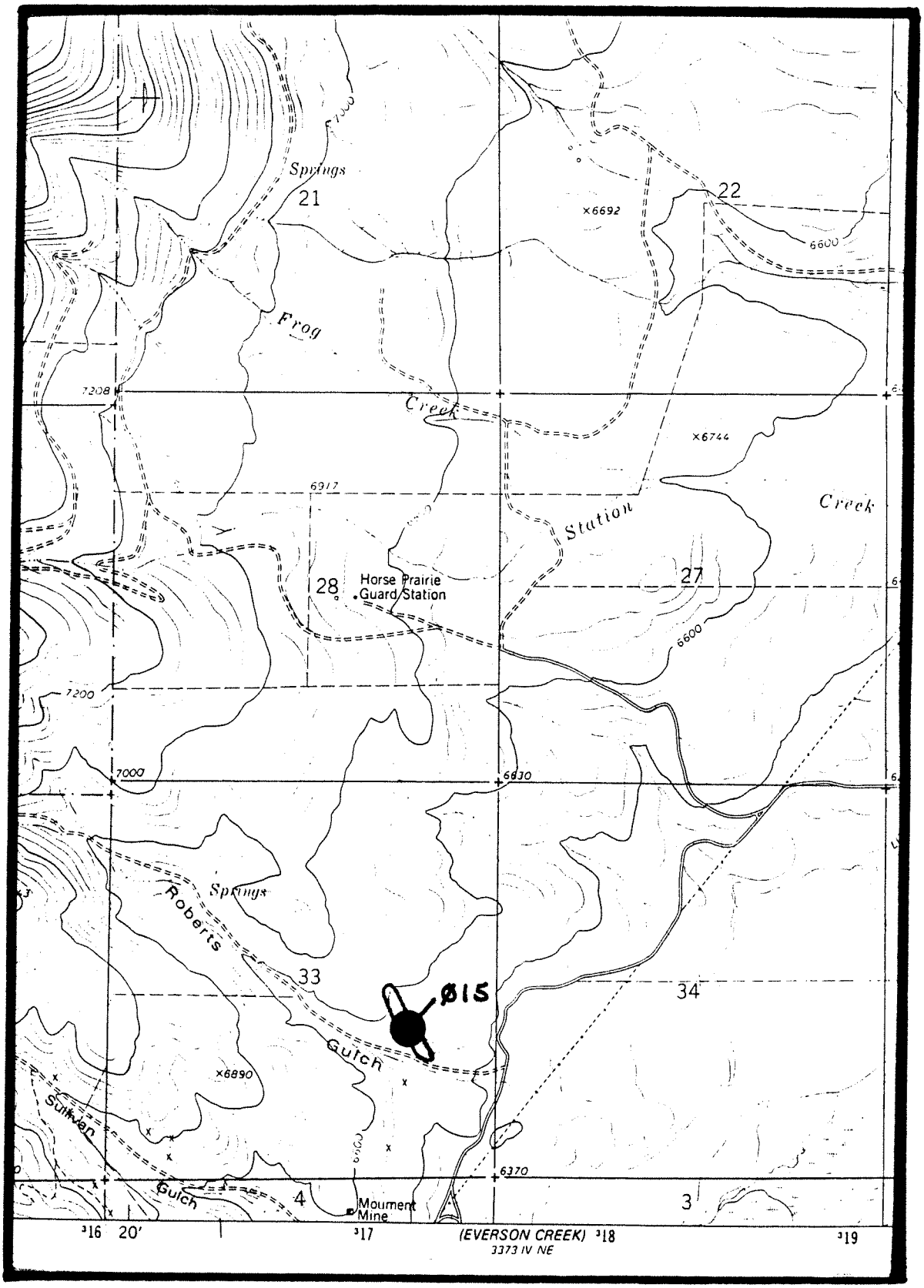
USGS Vipond Park Quadrangle (15')

<u>Penstemon lemhiensis</u>



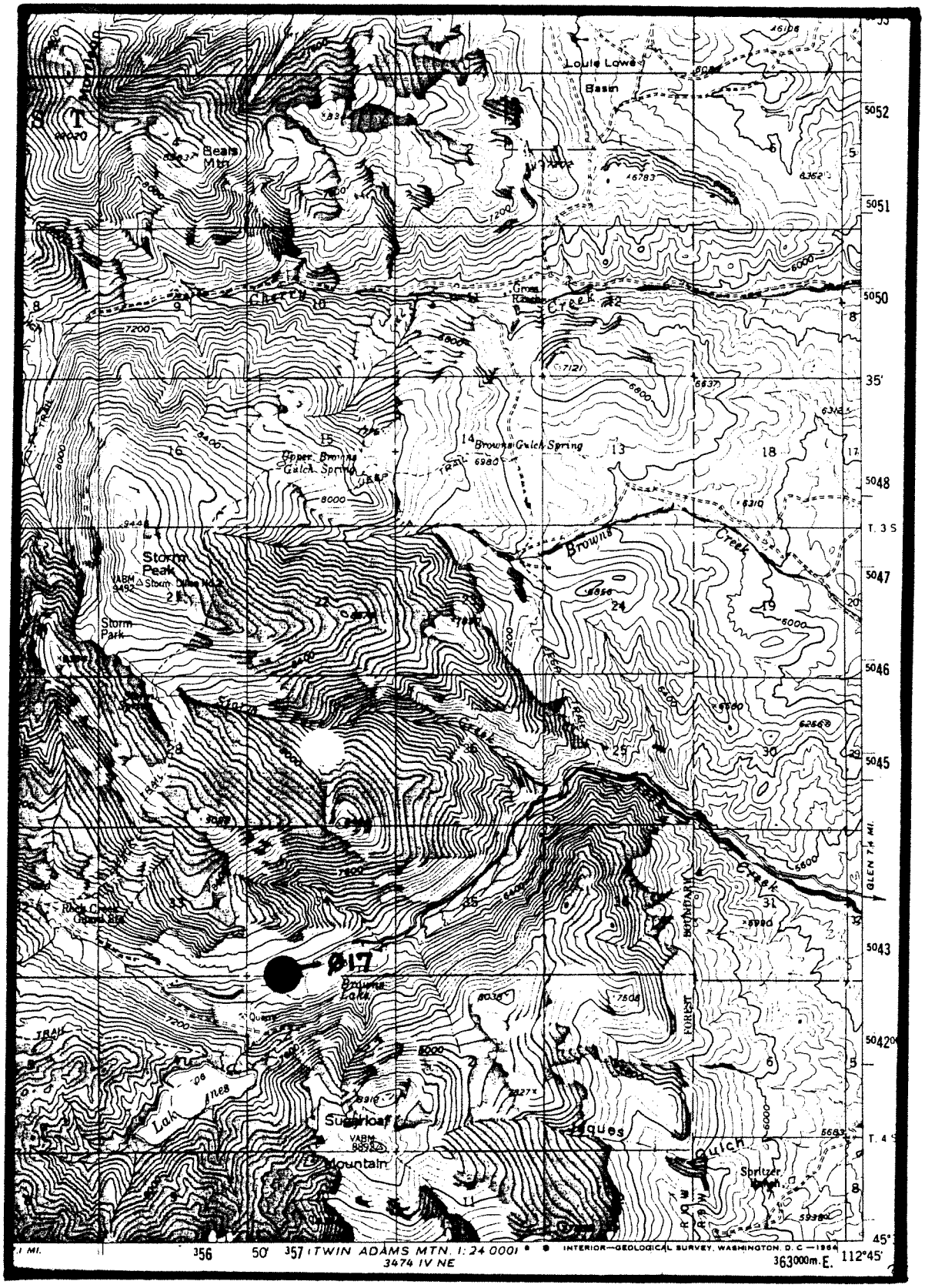
USGS Ermont Quadrangle (7.5')

<u>Penstemon lemhiensis</u>



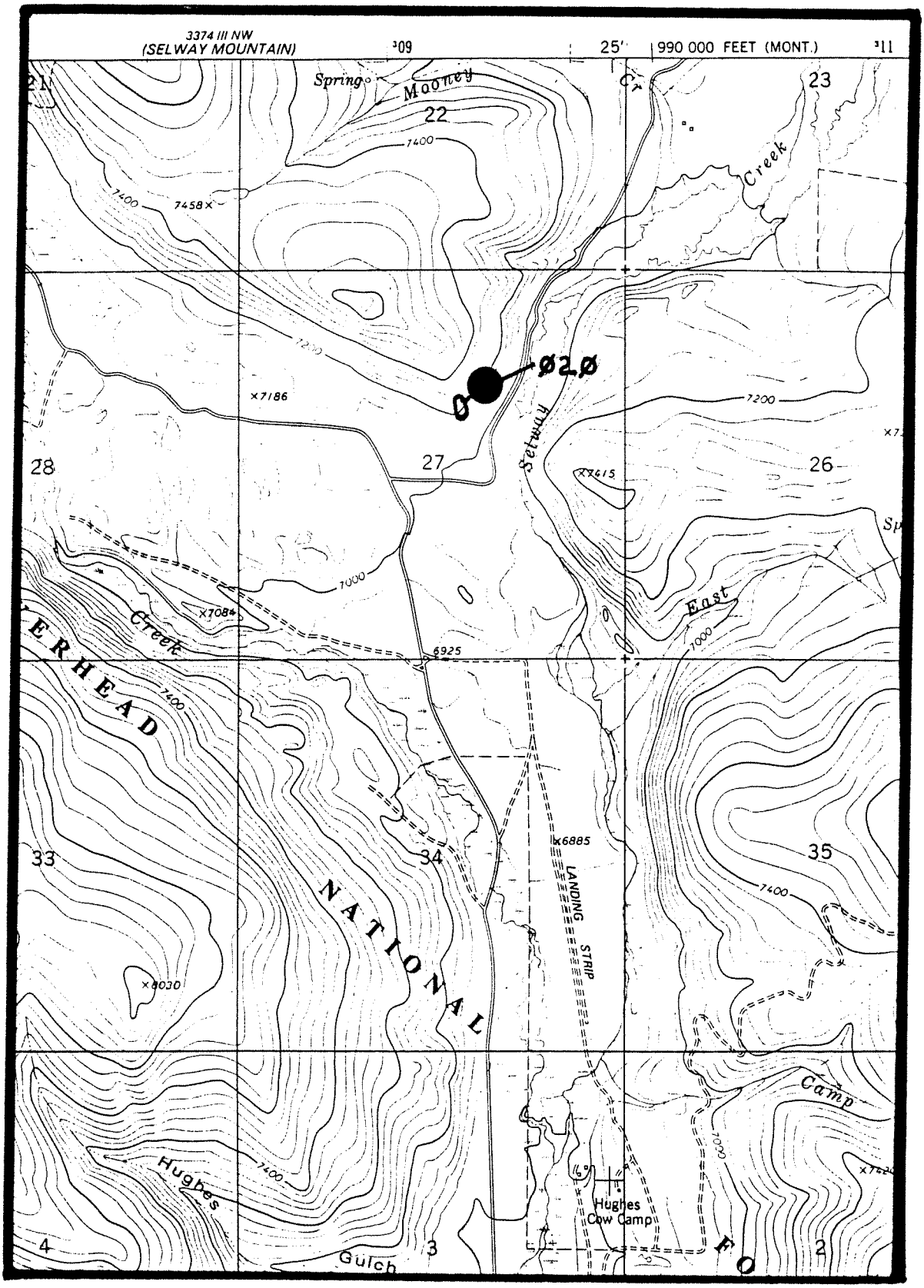
USGS Coyote Creek Quadrangle (7.5')

Penstemon lemhiensis



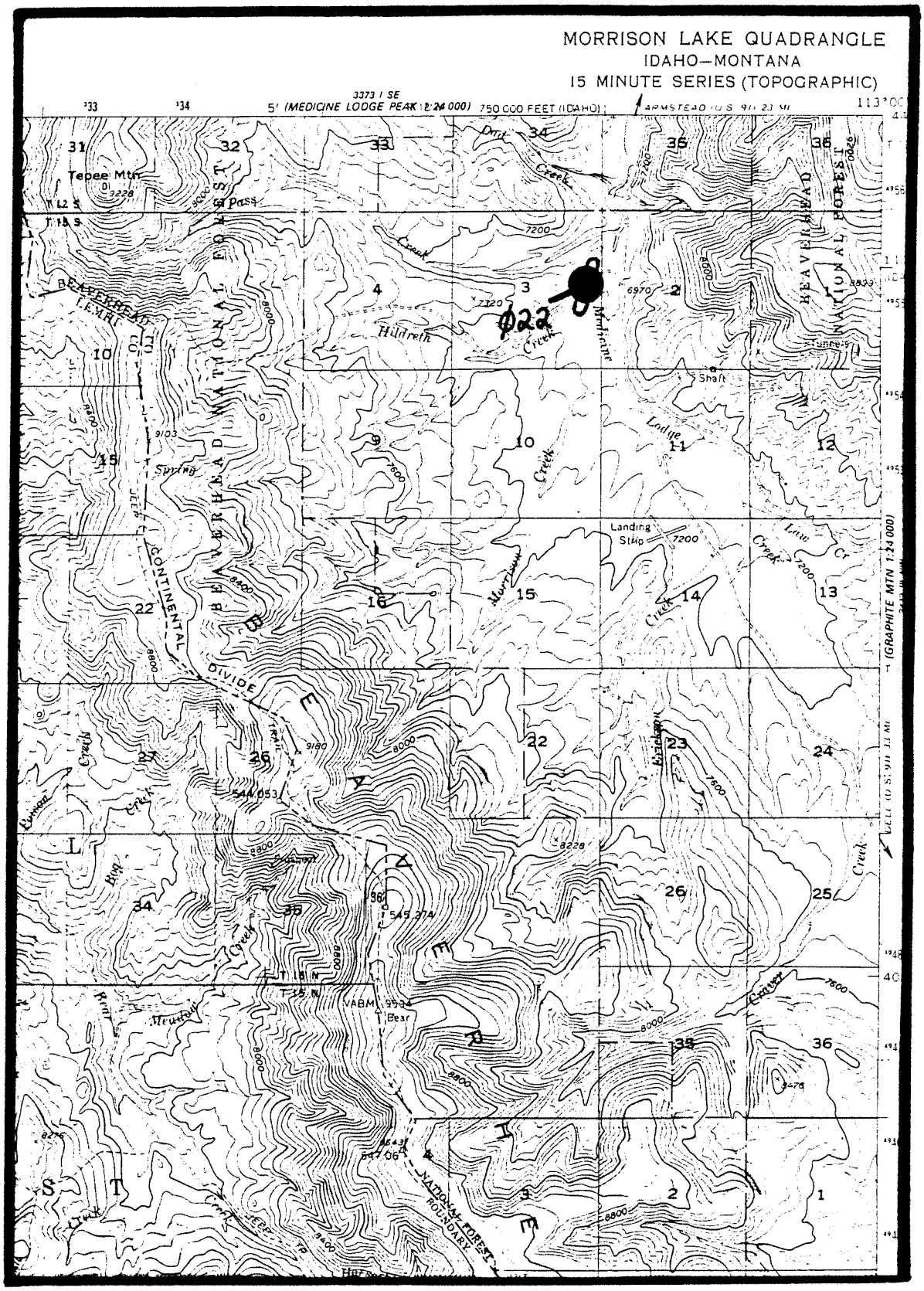
USGS Vipond Park Quadrangle (15')

<u>Penstemon lemhiensis</u>



USGS Kitty Creek Quadrangle (7.5')

Penstemon lemhiensis



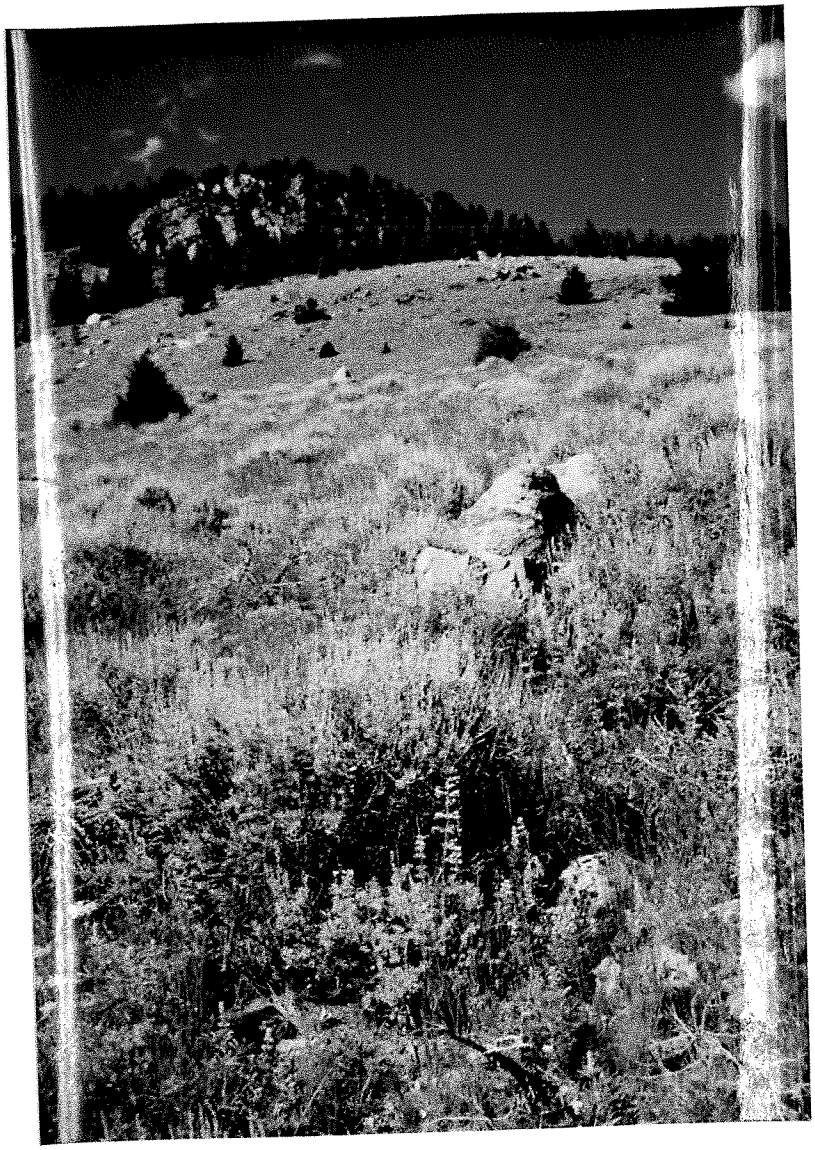
USGS Morrison Lake Quadrangle (15')

<u>Penstemon lemhiensis</u>

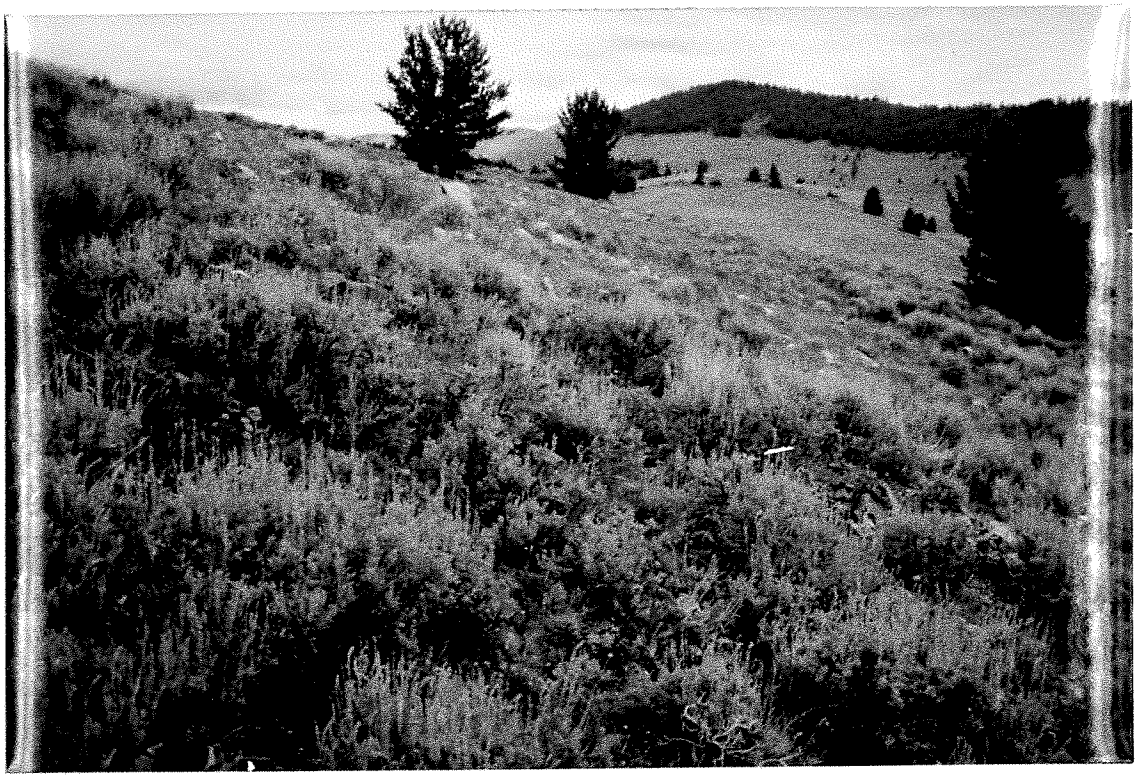
V. PHOTOGRAPHS (PP. 68-72)

A. <u>Penstemon</u> <u>lemhiensis</u> - habit (Lemhi Pass (003) site).

B. Penstemon lemhiensis - inflorescence (French Creek (009) site).



C. Penstemon lemhiensis - habitat (Red Butte (Ø12) site).



D. Penstemon lemhiensis - habitat (Badger Pass North (Ø19) site).

E. Penstemon lemhiensis - habitat (French Creek (009) site).