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DRAFT REPORT
Gross Reservoir Hydroelectric Project
City of Boulder Open Space Preble's Meadow Jumping Mouse Survey
Boulder County, Colorado

FERC Project No. 2035

Prepared for
Denver Water
Denver, Colorado

Prepared by
Greystone
Englewood, Colorado

March 1998

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**GROSS RESERVOIR HYDROELECTRIC PROJECT
FERC PROJECT NO. 2035
CITY OF BOULDER OPEN SPACE PREBLE'S
MEADOW JUMPING MOUSE SURVEY**

INTRODUCTION

The Denver Water Board has proposed to survey for the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) at four sites along South Boulder Creek as part of its FERC hydroelectric relicensing project. The four sites were within properties owned by the City of Boulder Open Space.

The purpose of this study was to determine if the Preble's meadow jumping mouse occurs within areas along South Boulder Creek that had not previously been surveyed. The surveys were conducted under Colorado Division of Wildlife Scientific Collection License Number 97-0728.

Four sites were identified as potentially-suitable habitats for the mouse and were subsequently surveyed for the presence of the mouse. Site One included the western bank of South Boulder Creek upstream of the City of Boulder Open Space Facility Operations on Colorado State Highway 93. Site Two included an irrigation ditch west of South Boulder Creek downstream of the City of Boulder Open Space Mesa Trail Head. Site Three was along South Boulder Creek downstream of the town of Marshall. Site Four was downstream of Site Three and near the southern end of the South Boulder Trail. (Figure TES-1).

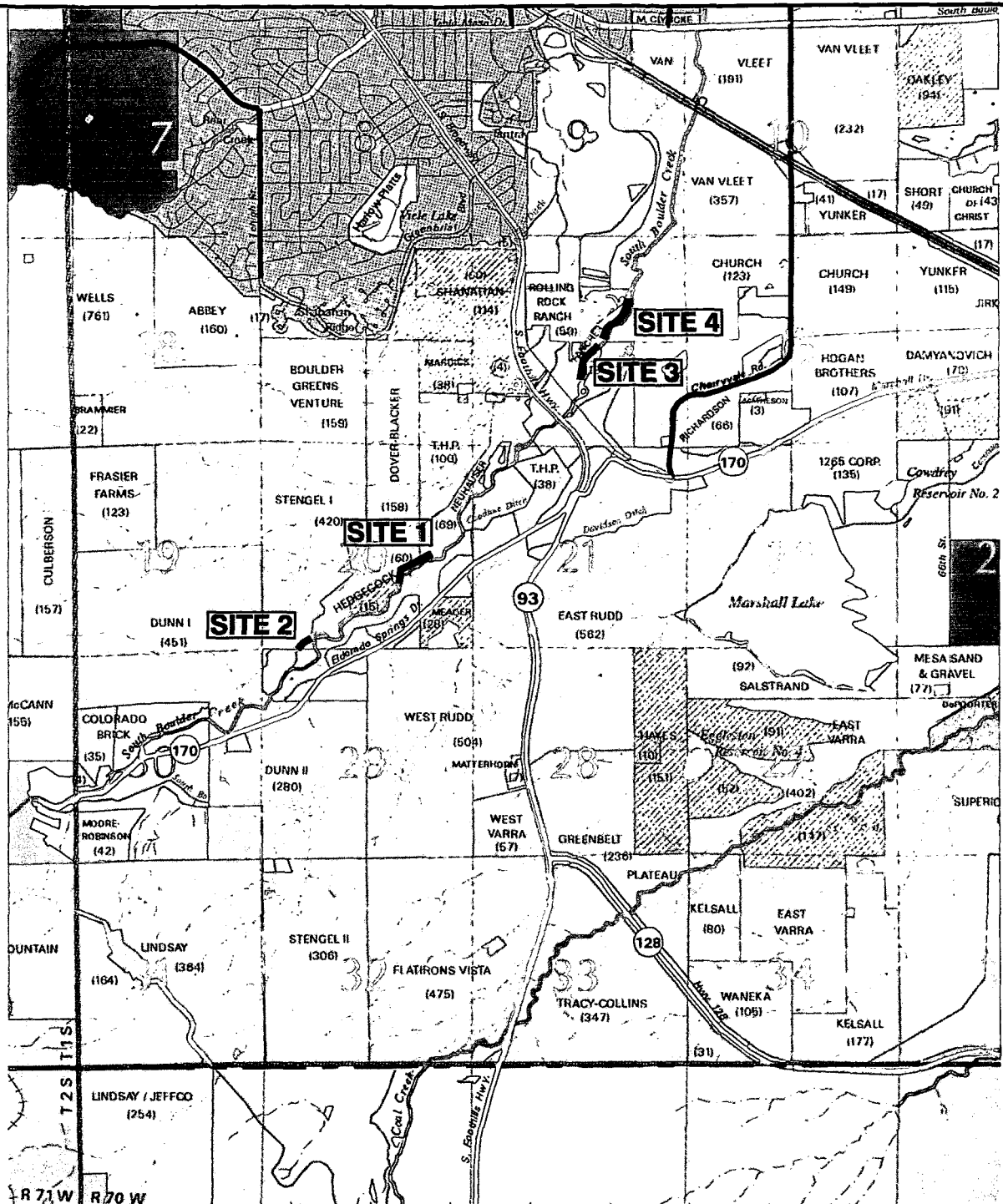
The U.S. Fish and Wildlife Service (FWS) has proposed the Preble's meadow jumping mouse for listing as a federal endangered species. Historically, the mouse occurred along the Front Range of the Rocky Mountains from Pueblo, Colorado to just north of Cheyenne, Wyoming. This species typically occurs within riparian habitats. Various vegetative structures characterize these areas. Overstory species include cottonwood (*Populus* sp.), sandbar willow (*Salix exigua*), and lead plant (*Amorpha fruticosa*). The understory is composed of a dense herbaceous cover of grasses and forbs. Overall, water also is present within these areas.

In 1995 studies within the City of Boulder Open Space found Preble's meadow jumping mice north (downstream) of the sites trapped during this effort. Other previous studies on City property found Preble's east, south, and north of the area covered in this study. However, the areas surveyed during this study had not been included within any previous studies (Bakeman 1997).

METHODS

The methods used to determine the presence or absence of the Preble's meadow jumping mouse followed those described in the FWS' Interim Survey Guidelines for Preble's meadow jumping mouse (FWS 1997).

Small mammal live-trapping was conducted between July 7 and August 8, 1997. One pair of parallel traplines was established within potentially-suitable habitats at each site. Figure TES-1 shows the



Source: Reprinted with the permission of City of Boulder Open Space, 1997.

LEGEND

- Open Space
- Easements (Conserv. Etc.)
- Under Contract
- No Public Access
- Mountain Parks
- Parks & Recreation
- County Open Space
- Federal Lands
- State Lands
- Other Lands (Utilities)
- Subdivisions
- NUPUD
- City Limits
- Creeks
- Intermittent Streams
- Ditches
- U.S./State Highways
- Freeways
- Divided Highways
- Undivided Highways
- Divided 4+ Lane Roads
- Undivided 4+ Lane Roads
- Other Major Roads
- Streets
- Roads Under Construction
- Railroads
- Boulder County Line

This map represents the unique landholdings within the Boulder Valley that have made Boulder a leader in the conservation and preservation of natural resources and heritage. Open Space properties are managed to preserve wildlife habitat, protect native plant species, and provide for passive recreation opportunities. The City of Boulder's Open Space program was instituted by voters in 1987.

This basemap is produced and edited by the Open Space GIS Lab, Jeff Holland, Robert Grover, Jon Osborne, Sean Metrick, and others, August, 1996. SUBJECT TO REVISION.

All ground information compiled on 1983 Merrick digital orthophotos. Fieldwork, digitizing, and analysis performed July, 1991, to July 1996. Map assembled in Arc/INFO from coverages created in Arc/INFO and Arc/Cad. Based in State Plane Coordinate System. For further information, contact the City of Boulder Open Space Department at 66 S. Cherryvale Rd., Boulder CO 80363; (303) 441-4142.

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The information depicted is provided as a graphical representation only. While source documents were developed in compliance with National Map Accuracy Standards, the City of Boulder provides no guarantee, express or implied, as to the accuracy and/or completeness of the information contained hereon.

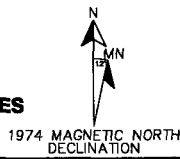
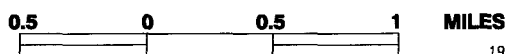
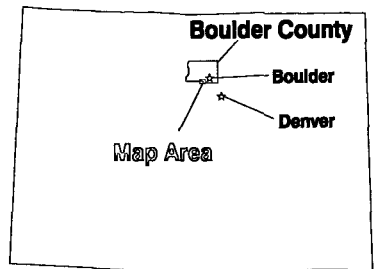
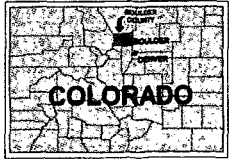


Figure TES-1
GROSS RESERVOIR HYDRO ELECTRIC PROJECT
FERC NO. 2035
Preble's Meadow Jumping Mouse
Survey Location Sites

**GROSS RESERVOIR HYDROELECTRIC PROJECT
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general location of the traplines. The traplines at Sites One, Three, and Four consisted of two parallel lines of 100 seasoned traps. The trapline at Site Two consisted of two sets of lines of 50 seasoned traps. All traps were placed at five-meter intervals. Traplines within each pair were separated by ten meters. All traps were baited with "omolene" sweet feed. All traplines followed either the irrigation ditch bank (Site Two) or the western bank of South Boulder Creek (Sites One, Three, and Four).

Upon capture of a Preble's the mouse was placed in a large "Ziploc" plastic bag. Once in the bag the mouse was weighed and the tail, head/body, and hind foot measurements recorded. Next, when possible, two pictures of each mouse were taken against a white background. After all data were recorded, an ear punch sample was taken from the first mouse captured before it was released. The ear punch sample was delivered to the Colorado Division of Wildlife (CDOW) for genetic testing. Due to the stress involved in obtaining ear punches, no punches were taken after the first capture.

All capture locations were semipermanently marked and photographed. The photographs are provided in **Appendix A**. In addition, capture locations were located on 7.5 minute quadrangle maps. Also upon capture of a Preble's, the FWS, CDOW, City of Boulder Open Space, and Denver Water were notified. All data were recorded on standard data sheets as provided by the FWS (**Appendix B**).

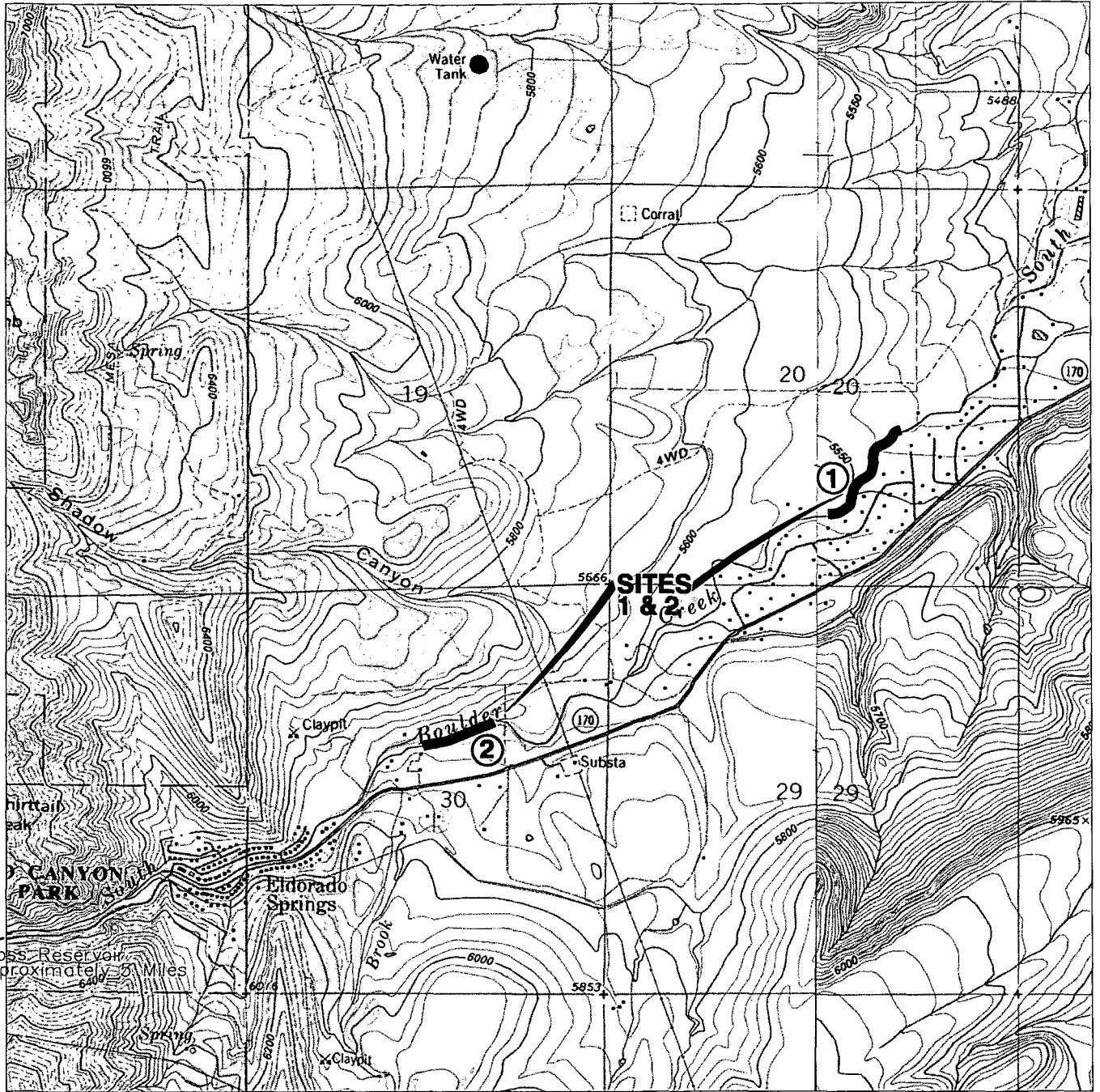
One Preble's was inadvertently killed during the trapping. This inadvertent kill, was preserved for use either in allozyme genetic studies or as a voucher specimen. The inadvertent kill was frozen until it was delivered to the CDOW.

RESULTS

Habitats

Site One

Habitats at this site varied from dense stands of sandbar willow to dense stands of cottonwood (**Appendix A**) (**Figure TES-2**). Understory species consisted of poison ivy (*Toxicodendron rydbergii*), wild licorice (*Glycyrrhiza lepidota*), thistle (*Cirsium* spp.), redtop (*Agrostis stolonifera*), field horsetail (*Equisetum arvense*), and meadow rue (*Thalictrum dasycarpum*). All areas surveyed had nearly 100 percent cover from both the overstory and understory. The soils within this area varied from moist to dry. Uplands consisted of Canada thistle (*Cirsium arvense*), western wheatgrass (*Agropyron smithii*), and cactus (*Opuntia* spp.).



Source: USGS Quadrangle of Louisville, Eldorado Springs, Colorado.

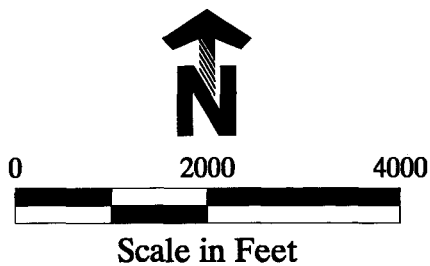


Figure TES-2
Preble's Meadow Jumping Mouse
Survey Locations

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Site Two

Site Two followed an irrigation ditch that runs parallel to the west side of South Boulder Creek (**Figure TES-2**). The habitats at Site Two consisted of dense herbaceous cover in the middle of the area and a dense stand of willow on the southern end of the transect (**Appendix A**). The northern end was a mixture of hawthorn, cottonwood, and willow with good herbaceous cover. Shrub species within this area included sandbar willow, western hawthorn (*Crataegus macracantha*), and snowberry (*Symphoricarpos occidentalis*). Understory species included timothy (*Phleum pratenses*), mannagrass (*Geyceria striata*), bentgrass (*Hgrostis scalora*), prairie dropseed (*Sporobolus heterolepis*), and American mannagrass (*Geyceria graudis*). In addition, numerous sedges and rushes occurred in the area. These species included, *Carex scoparia*, *Carex lanuginosa*, *Carex hystericma*, *Juncus confusus*, *Juncus articus*, *Juncus effusus*, and *Juncus longistylis*.

Site Three

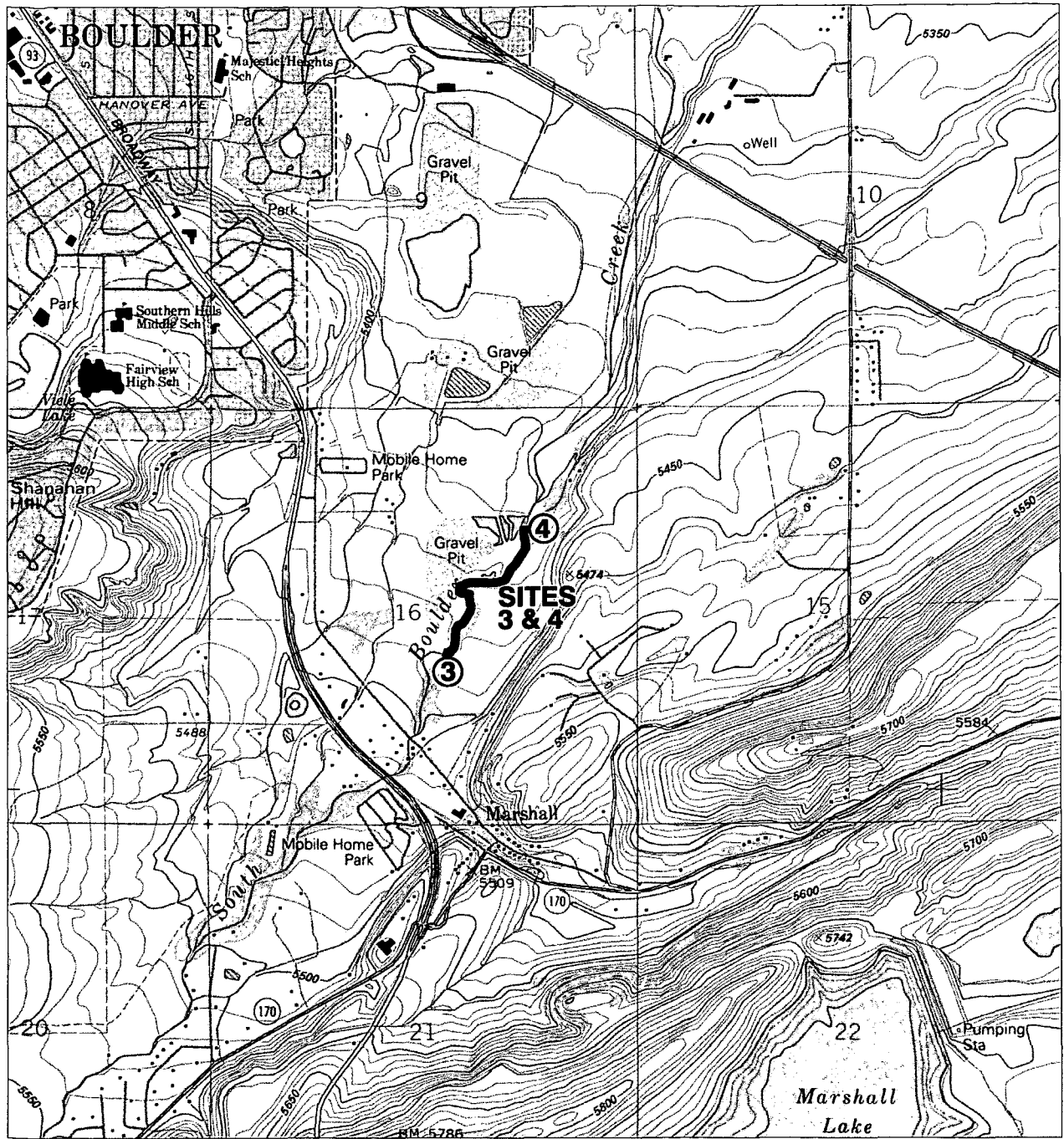
Site Three followed the western bank of South Boulder Creek and included a several acre island within the creek (**Appendix A**) (**Figure TES-3**). This island contained a dense stand of sandbar willow with a rocky to sandy substrate. Habitats along the creek included narrowleaf cottonwood (*Populus angustitolia*), boxelder (*Hegundo aceroides*), river birch (*Betula fontinalis*), western hawthorn, and alder (*Alnus incana*). Understory species consisted of red top, Canada bluegrass (*Poa compressa*), field horsetail, scouring rush (*Hippochaete laevigata*), burdock (*Arctium minus*), buttercup (*Ranunculus macounii*), and golden banner (*Thermopsis* spp.).

Site Four

Site Four also followed the western bank of South Boulder Creek. Habitats within this area consisted of an open stand of sandbar willow and cottonwood (**Appendix A**) (**Figure TES-3**). Understory species included wild licorice, false saloman's seal (*Maianthemum stellatum*), poison ivy, rush (*Juncus* spp.), agrimony (*Agrimonia strata*), and Wood's rose (*Rosa woodsii*).

Trapping Surveys

A total of 800 trap nights was conducted at each of the four sites. Weather during the surveys was hot with daytime highs in the 90s and overnight temperatures in the low 60s. Afternoon thunderstorms occurred occasionally during the survey period. However, during the surveys conducted at Site Four, heavy precipitation occurred during most of the survey period. Rains during the first two days of the survey were almost constant and the temperatures were in the low 50s at night and the mid 60s during the day.



↙ Gross Reservoir
Approximately 6.5 miles

Source: USGS Quadrangle of Louisville, Colorado.

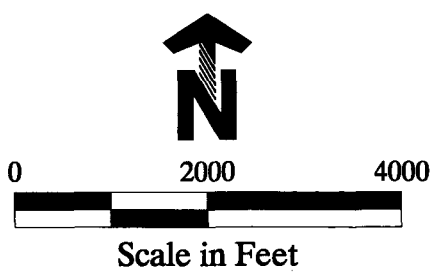


Figure TES-3
Preble's Meadow Jumping Mouse
Survey Locations

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A total of 3,200 trap nights was conducted during the survey. This resulted in a total of 8 Preble's meadow jumping mice, 61 deer mice, 41 voles, 3 woodrats, 8 house mice, one juvenile desert cottontail, and two juvenile starlings captured at the four sites (**Table TES-1**).

Site One

Twenty-six deer mice, two voles, one juvenile desert cottontail, three woodrats, eight house mice, and two juvenile starlings were captured at this site (**Table TES-1**). No Preble's meadow jumping mice were captured at this site. Raccoons tampered with numerous traps within this transect. However the number of tampered traps were not recorded for the first two nights, but was recorded for the last two nights. Based on this, a 47 percent trap availability was achieved for the last two nights of the survey (**Table TES-2**).

Site Two

Eleven deer mice, 19 voles, and four Preble's meadow jumping mice were captured at this site (**Figure TES-1**). **Appendix A** provides photographs of captures one and four. Capture two escaped while attempting an ear punch and capture three died during ear punch procedures. **Appendix A** also contains photographs of each capture site. A total trap availability of 85 percent was achieved at this site.

An adult female Preble's was captured at capture site one, two ear punches were taken in the right ear of this mouse. This site was within one foot of water. Vegetative species within this area included sedges and grasses. The distance to woody vegetation was approximately 50 to 70 feet. Herbaceous vegetation cover was 100 percent at the capture location.

At capture site two, an adult male Preble's was captured, no ear punches were taken on this mouse. Vegetative species at the capture location included willow and grasses. Vegetation cover at this site was nearly 100 percent. This capture location also was within one foot of water.

At capture site three an adult male Preble's was captured, no ear punches were taken on this mouse. This site was characterized by willow with a dense understory of grasses. Cover at this site was 90 percent.

The fourth Preble's was captured at capture site two. Because this was an adult male, it may have been the same animal as was captured at site two days' prior.

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**Table TES-1
Number of Animals Captured**

Location		Preble's Meadow Jumping Mouse	Deer Mouse	Meadow Vole	Woodrat sp.	House Mouse	Desert Cottontail	European Starling	Total
Site One	Night One	0	7	0	2	6	0	2	17
	Night Two	0	5	1	0	1	0	0	7
	Night Three	0	6	0	0	0	0	0	6
	Night Four	0	8	1	1	1	1	0	12
Total		0	26	2	3	8	1	0	42
Site Two	Night One	3	4	5	0	0	0	0	12
	Night Two	0	2	6	0	0	0	0	8
	Night Three	0	2	4	0	0	0	0	6
	Night Four	1	3	4	0	0	0	0	8
Total		4	11	19	0	0	0	0	34
Site Three	Night One	0	6	5	0	0	0	0	11
	Night Two	0	7	4	0	0	0	0	11
	Night Three	0	2	1	0	0	0	0	3
	Night Four	0	1	2	0	0	0	0	3
Total		0	16	12	0	0	0	0	28
Site Four	Night One	2	3	3	0	0	0	0	8
	Night Two	2	2	2	0	0	0	0	6

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**Table TES-1
 Number of Animals Captured**

Location	Preble's Meadow Jumping Mouse	Deer Mouse	Meadow Vole	Woodrat sp.	House Mouse	Desert Cottontail	European Starling	Total
Night Three	0	0	1	0	0	0	0	1
Night Four	0	3	2	0	0	0	0	5
Total	4	8	8	0	0	0	0	20
Grand Total	8	61	41	3	8	1	2	124

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**Table TES-2
Trap Availability**

Location		Number of Traps Set	Number of Traps Rolled or Tripped	Number of Traps Occupied by Animals	Number of Traps Available for Preble's Meadow Jumping Mouse	Percent of Traps Available
Site One	Night One	200	N/A	17	0	0
	Night Two	200	N/A	7	0	0
	Night Three	200	73	6	121	61
	Night Four	200	123	12	65	33
Total		400	196	42	186	47
Site Two	Night One	200	6	12	182	91
	Night Two	200	27	8	165	83
	Night Three	200	30	6	164	82
	Night Four	200	20	8	172	86
Total		800	83	34	683	85
Site Three	Night One	200	40	11	149	75
	Night Two	200	10	11	179	90
	Night Three	200	80	3	117	59
	Night Four	200	91	3	106	53
Total		800	221	28	551	69
Site Four	Night One	200	33	8	159	80
	Night Two	200	31	6	163	82
	Night Three	200	20	1	179	90
	Night Four	200	5	5	190	95
Total		800	89	20	691	86
Grand Total		2800	589	124	2111	66

N/A = The number of rolled or tripped traps was not recorded during this period.

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Site Three

Sixteen deer mice and 12 voles were captured at this site (**Table TES-1**). No Preble's meadow jumping mice were captured at this site. Total trap availability at this site was 68 percent during the survey period.

Site Four

At Site Four a total of eight deer mice, eight voles, and four Preble's meadow jumping mice were captured (**Table TES-1**). A 86 percent total trap availability was achieved at this site (**Table TES-2**).

At capture site one a subadult female Preble's was captured. No ear punch was taken from this mouse. A photograph of this mouse and the capture location is in **Appendix A**. The vegetation at this site consisted of willow with a dense grass understory. Cover at this site was 100 percent. This capture location was within two feet of South Boulder Creek.

At capture site two, a subadult male was captured. No ear punch was taken from this mouse and a photographs of the mouse and capture location are provided in **Appendix A**. The vegetation at this site was willow with a dense grass understory. This site was on the outside trapline across from capture location one. Thus, it was about ten meters from the waters' edge.

A subadult male Preble's was captured at capture site three. No ear punch was taken from this mouse and photographs of the mouse and capture location are provided in **Appendix A**. The vegetation at this site consisted of sedges and rushes with a gravelly substrate. Cover at this site was approximately 50 percent and was about ten yards from a stand of small willows. The trap was within two feet of the water.

An adult male Preble's was also captured at capture site four. No ear punch was taken from this mouse and photographs of the mouse and capture location are provided in **Appendix A**. Vegetation at this site consisted of sandy soils with sedges and was about ten yards from a small stand of willows. This site was four trap stations beyond capture site three. The herbaceous cover at this site was near 50 percent and the tree cover was near 20 percent. This site was within three feet of the water's edge.

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CONCLUSIONS

The results of the study suggest several conclusions. First, two populations of Preble's meadow jumping mice exist on South Boulder Creek where they had not been documented previously. Second, the Preble's captured at Site Two provided the furthest upstream population of mice on South Boulder Creek.

REFERENCES

- U.S. Fish and Wildlife Service. 1997. Interim Guidelines for Preble's meadow jumping mouse. Revised May 27, 1997. U.S. Fish and Wildlife Service, Denver, Colorado. 12 pages.
- Bakeman, M.E. 1997. Report on Habitat Findings of the Preble's Meadow Jumping Mouse. U.S. Fish and Wildlife Service, Denver, Colo.

APPENDIX A
PHOTOGRAPHS

South Boulder Creek
Site 1
Typical Habitat



South Boulder Creek
Site 1
Typical Habitat



South Boulder Creek
Site 1
Typical Habitat

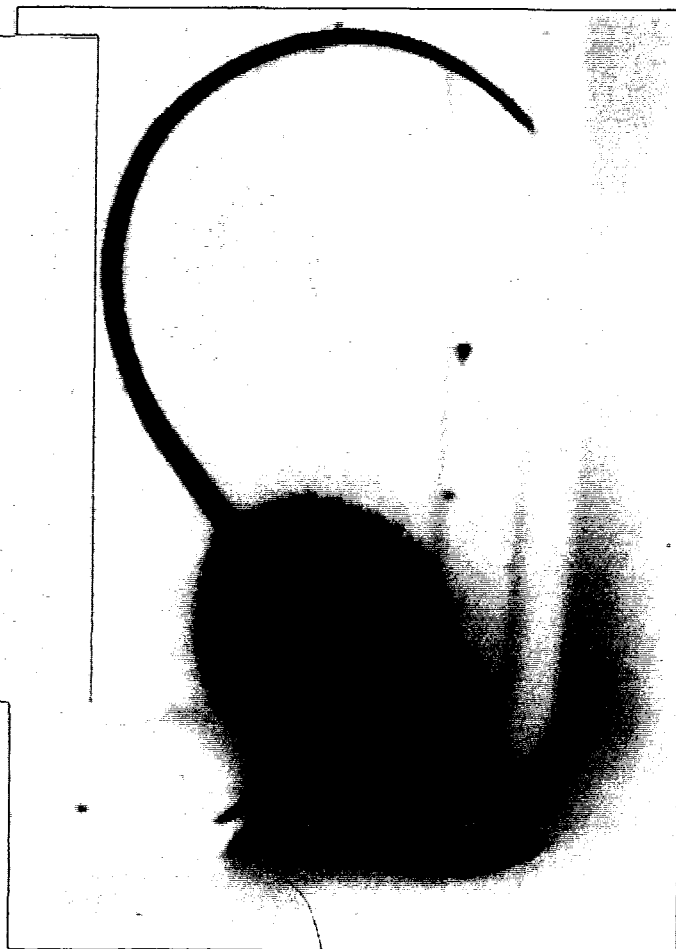




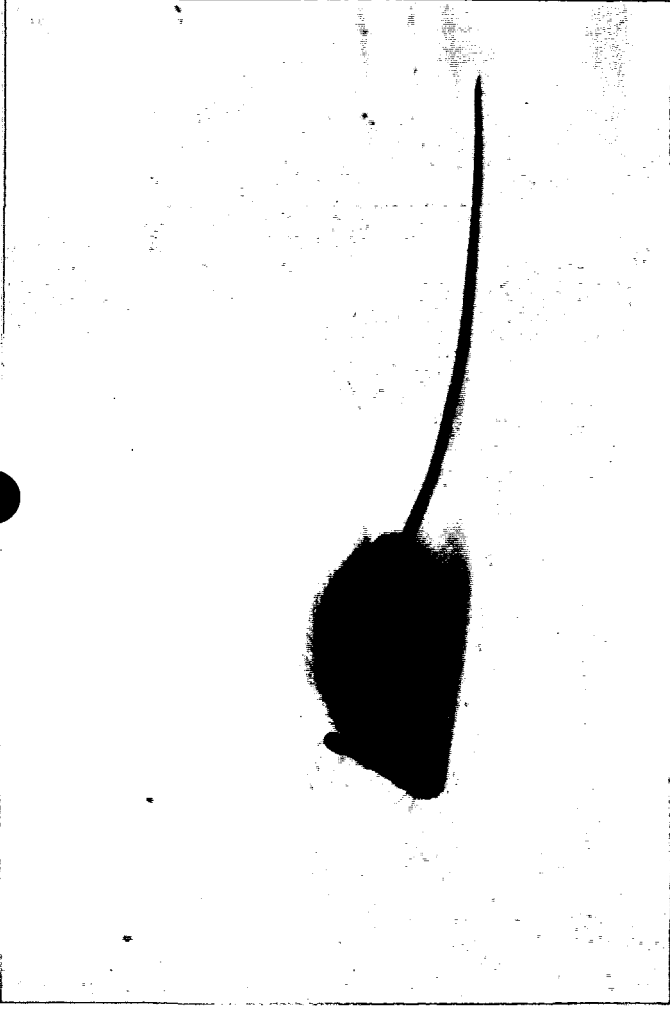
South Boulder Creek Site 2 Capture Locations 2 and 4



South Boulder Creek Site 2
Capture 4 Adult Male
Preble's Meadow Jumping Mouse



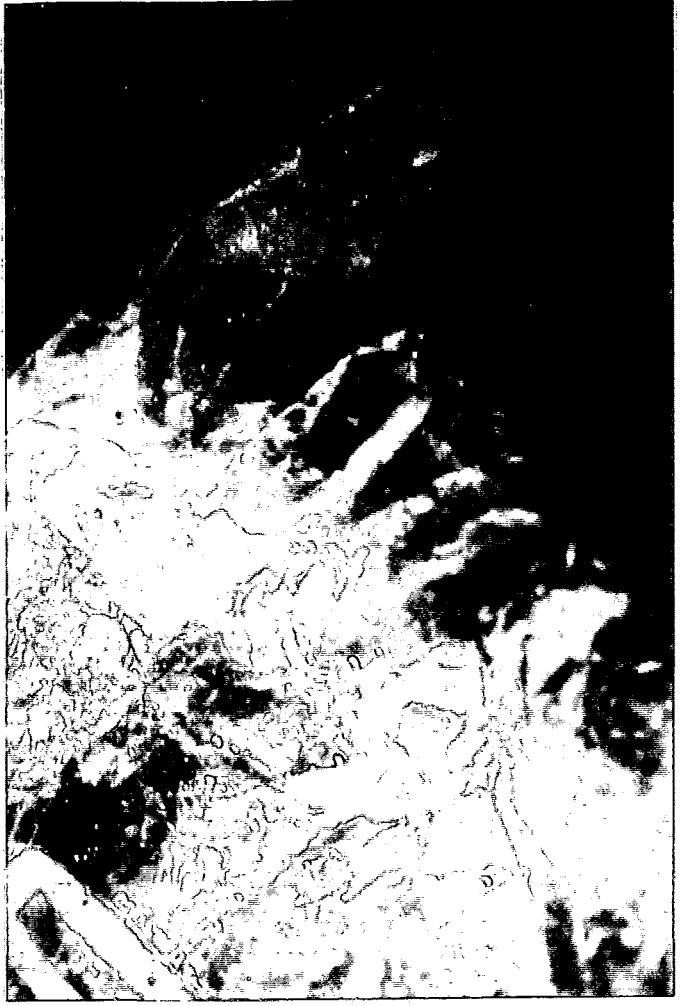
South Boulder Creek Site 2 Capture 4
Adult Male Preble's Meadow Jumping Mouse



South Boulder Creek Site 4 - Capture 2 - Subadult Male



South Boulder Creek - Site 4 - Capture 3 - Adult Male



South Boulder Creek - Site 4 - Capture 4 - Subadult Male



South Boulder Creek Site 2
Capture Location 1



South Boulder Creek
Capture 1
Adult Female
Preble's Meadow
Jumping Mouse



South Boulder Creek Site 2 Capture 1 Adult Female Preble's Meadow Jumping Mouse



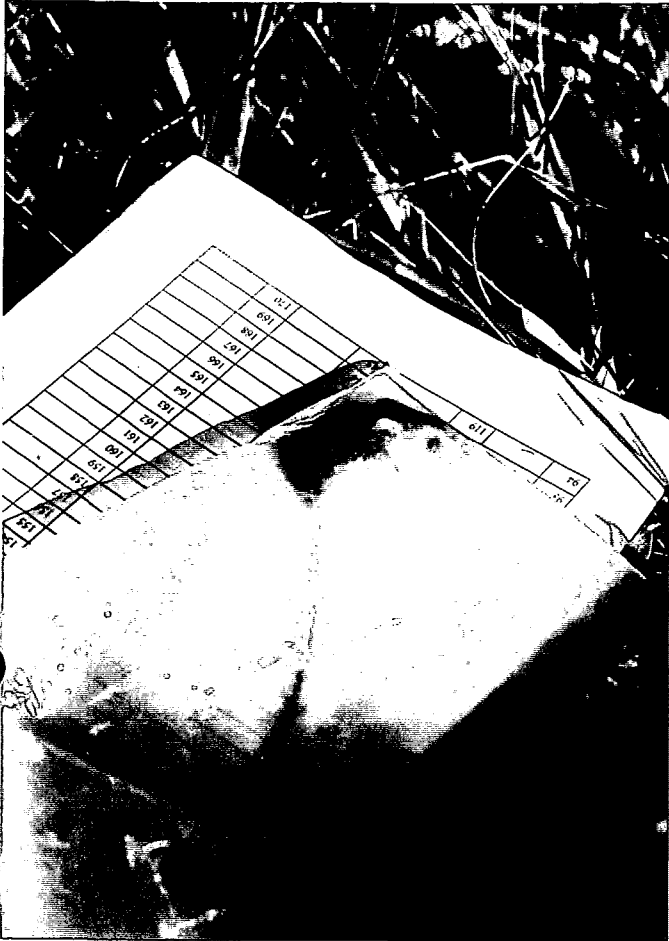
South Boulder Creek Site 2
Preble's Meadow Jumping Mouse
Capture Location 3



South Boulder Creek Site 2



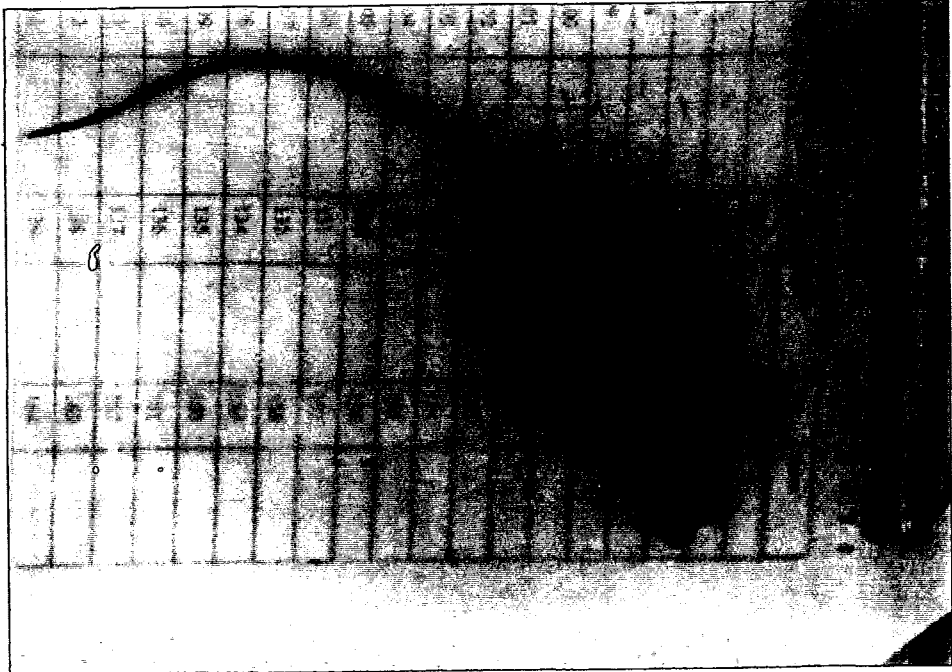
South Boulder Creek Site 2 Typical Habitat



South Boulder Creek Site
Capture Location 3



South Boulder Creek Site 2
Capture 2 Adult Male
Preble's Meadow Jumping Mouse



South Boulder Creek
Site 2 Capture 2
Adult Male Preble's
Meadow Jumping Mouse



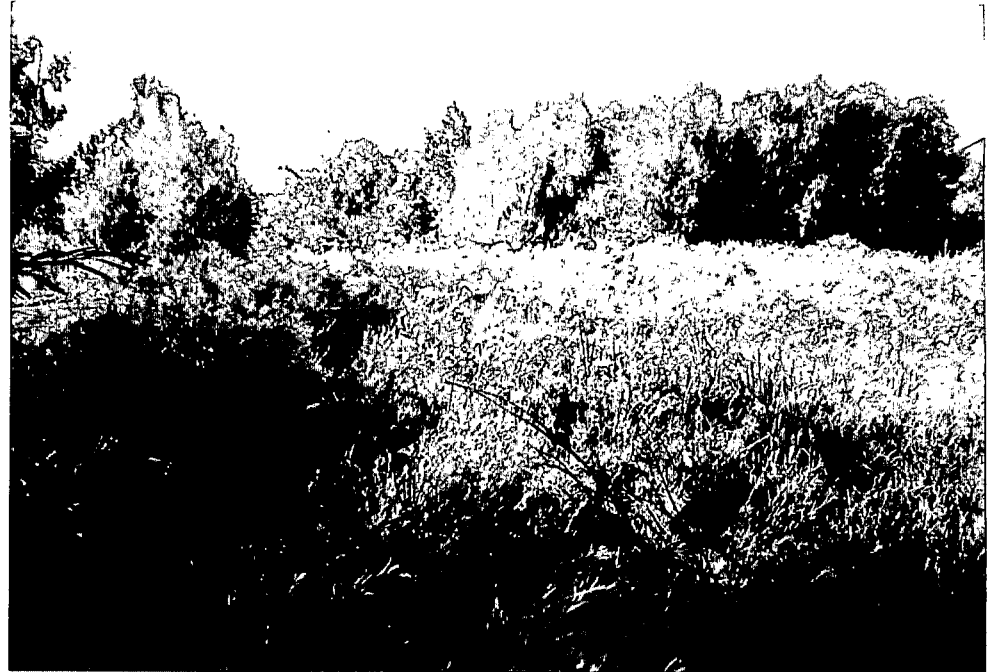
South Boulder Creek Site 3 Typical Habitat



South Boulder Creek Site 3 Typical Habitat



South Boulder Creek Site 3 Typical Habitat



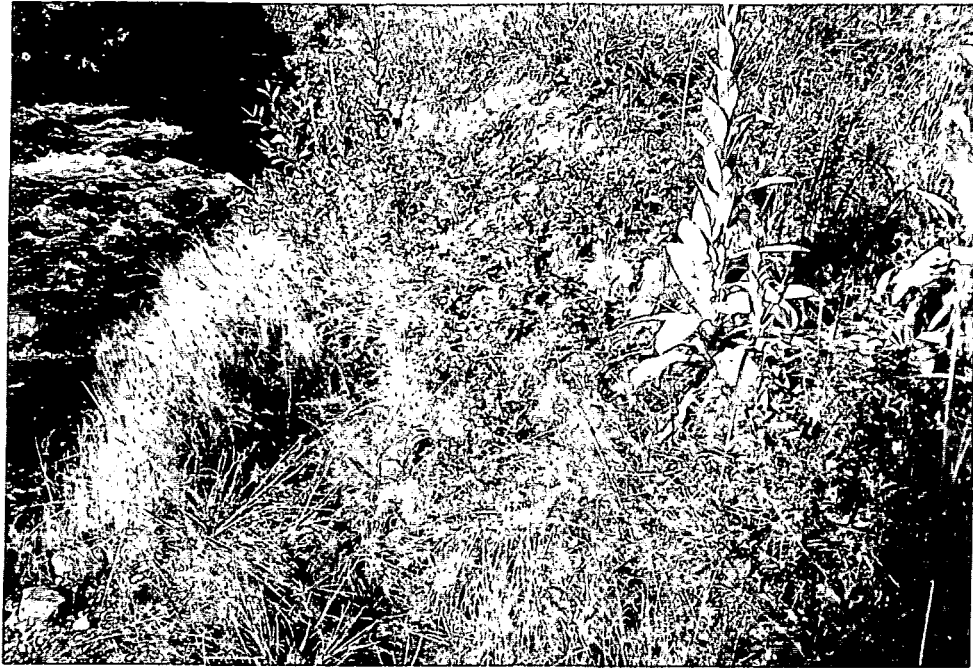
South Boulder Creek Site 3 Typical Habitat



South Boulder Creek Site 4 Typical Habitat



South Boulder Creek Site 4 Typical Habitat



South Boulder Creek Site 4 Capture Location 3



South Boulder Creek Site 4 Capture Location 4



South Boulder Creek Site 4 Capture Location 1



South Boulder Creek Site 4 Capture Location 2

**APPENDIX B
DATA SHEETS**

Zapus hudsonius preblei, Preble's Meadow Jumping Mouse

Recommended Survey Field Data Compilation Form

Z. h. preblei found? Yes No

Date of Survey 7-7-7-11

Surveyor(s) Mike Bonar

Full Name(s) Michael Bonar

Survey Section(s) 20 1/4 Section(s) N 1/2 SE 1/4 Township(s) T15

Location: Range(s) R70W County Boulder Site Name South Boulder Creek

USGS 7 1/2 Quad Map Name Louisville Elevation 5550' Site 1

UTM Coordinates (to the nearest 50 meters) 4421940 0.00, 4781000 0.00

Land Ownership City of Boulder open space

Ecological Condition/Management History Open space with limited grazing

outside of survey area

Directions Highway 93 to Boulder open space, south on South Boulder

to Site: Creek trail; west bank of South Boulder Creek

Brief Project Description (indicate proposed impact to site) N/A

Habitat Type Riparian wood land

Vegetation Structure Within Survey Area:

Total Tree Cover (%) _____

Total Shrub Cover (%) _____

Total Forb Cover (%) _____

Total Rock/Log Cover (%) _____

Total Graminoid Cover (%) _____

Total Bare Ground (%) _____

Total Moss/Lichen Cover (%) _____

Other Types of Cover (%) _____

Additional Associated Plant Species _____

Aspect (S, NNW, etc.) NE % Slope 0-1 Slope Shape (concave, convex, straight, etc.) Irreg.

Light Exposure (open, shaded, partial shade, etc.) Open to shaded

Topographic Position (crest, upslope, midslope, lowerslope, bottom, etc.) bottom on streambank

Moisture (dry, moist, saturated, inundated, seasonal seepage, etc.) Dry - moist

Hydrology, Geomorphology, and Soils at the Trap Site _____

Site's Climatological/Meteorological Conditions on Day Prior to Survey Hot days 90's; cool nights

Site's Climatological/Meteorological Conditions on Day of Survey 65° low pm thunderstorms

Type of Trap Used Smith/ Sherman Type and Amount of Bait Used 0.25g molone

Proximity, Degree, and Type of Human Development/Disturbance in Survey Area None recent

No. of Mice Found and/or Seen N/A Approximate Age or Maturity _____ Weight _____ gms.

Total Length _____ mm. Tail Length _____ mm. Hind Feet Length _____ mm.

Other characteristics (e.g., enlarged mammary glands - lactation, scars, missing limb or toe, etc.) _____

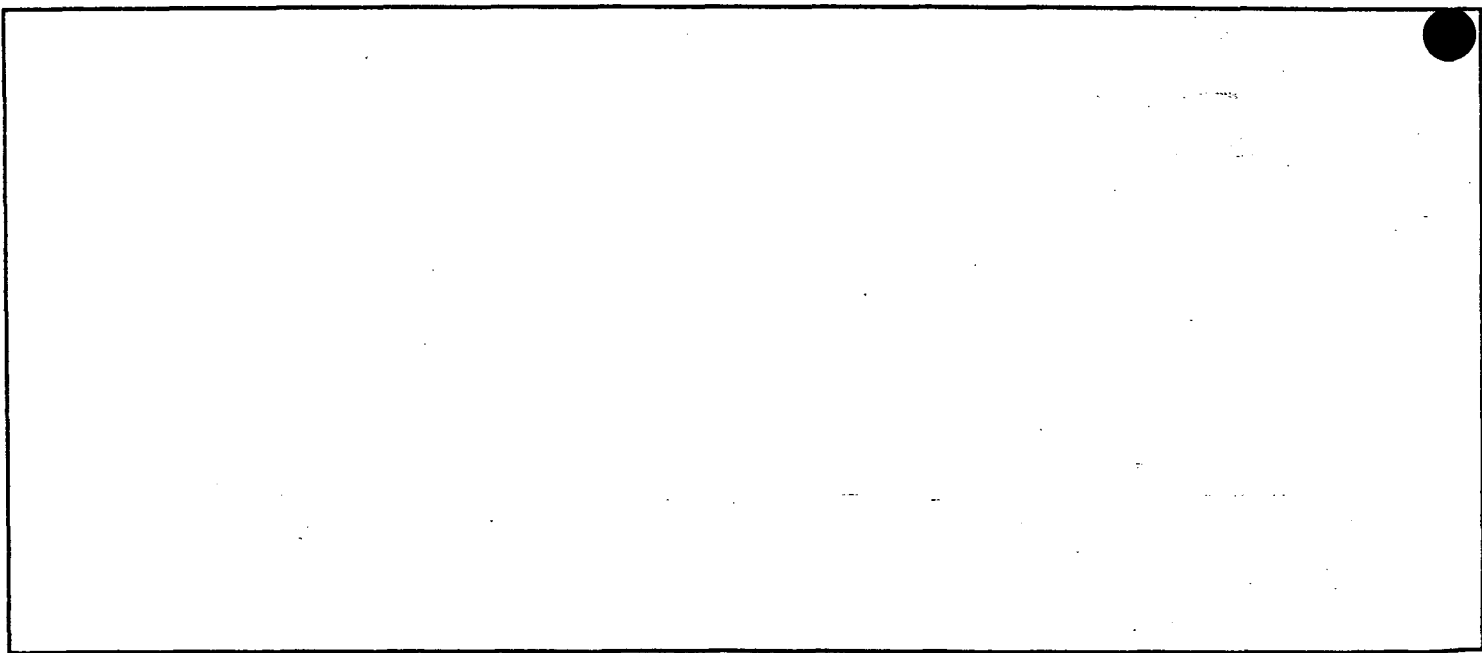
Associated Animal Species Deer mice, voles, woodrats, rabbits

Other Relevant Information (evidence of disease, predation, injury, etc.) _____

Type (e.g., fur-dying, toe-clipping, tag, etc.) and Exact Location of Markings _____

Photographs (mouse and its habitats): Photographer _____ Repository _____

Sketch of Surveying Area, Map of Site, etc.



Additional Comments (relevant ecological/ethological info.; if site is disqualified, DETAILED explanation)

Zapus hudsonius preblei, Preble's Meadow Jumping Mouse

Recommended Survey Field Data Compilation Form

Z. h. preblei found? Yes No

Date of Survey 7/15-7/19

Surveyor(s) Mike Bonar

Full Name(s) Michael Bonar

Survey Section(s) 30 ¼ Section(s) SE ¼ NW ¼ Township(s) T1S

Location: Range(s) R70W County Boulder Site Name South Boulder Creek
Site 2

USGS 7½ Quad Map Name Eldorado Springs Elevation 5680'

UTM Coordinates (to the nearest 50 meters) 4420580 0.00, 4770000 0.00

Land Ownership City of Boulder Open Space

Ecological Condition/Management History Open space with limited grazing
outside of survey area.

Directions Eldorado Springs Rd to Mesa trailhead; South Boulder Creek
to Site: trail North.

Brief Project Description (indicate proposed impact to site) N/A

Habitat Type wet meadow / willow

Vegetation Structure Within Survey Area:

Total Tree Cover (%) 25%

Total Shrub Cover (%) 25%

Total Forb Cover (%) 0-5%

Total Rock/Log Cover (%) 0-5%

Total Graminoid Cover (%) 100%

Total Bare Ground (%) 0

Total Moss/Lichen Cover (%) 0

Other Types of Cover (%) ^{Grass} 100%

Additional Associated Plant Species _____

Aspect (S, NNW, etc.) NE % Slope 0-1 Slope Shape (concave, convex, straight, etc.) straight

Light Exposure (open, shaded, partial shade, etc.) shade

Topographic Position (crest, upslope, midslope, lowerslope, bottom, etc.) Valley bottom

Moisture (dry, moist, saturated, inundated, seasonal seepage, etc.) Moist

Hydrology, Geomorphology, and Soils at the Trap Site Hummocks, moist

Site's Climatological/Meteorological Conditions on Day Prior to Survey day mid 90's clear

Site's Climatological/Meteorological Conditions on Day of Survey nights 70's clear

Type of Trap Used Smith/Sherman Type and Amount of Bait Used Omolene
Proximity, Degree, and Type of Human Development/Disturbance in Survey Area None Recent

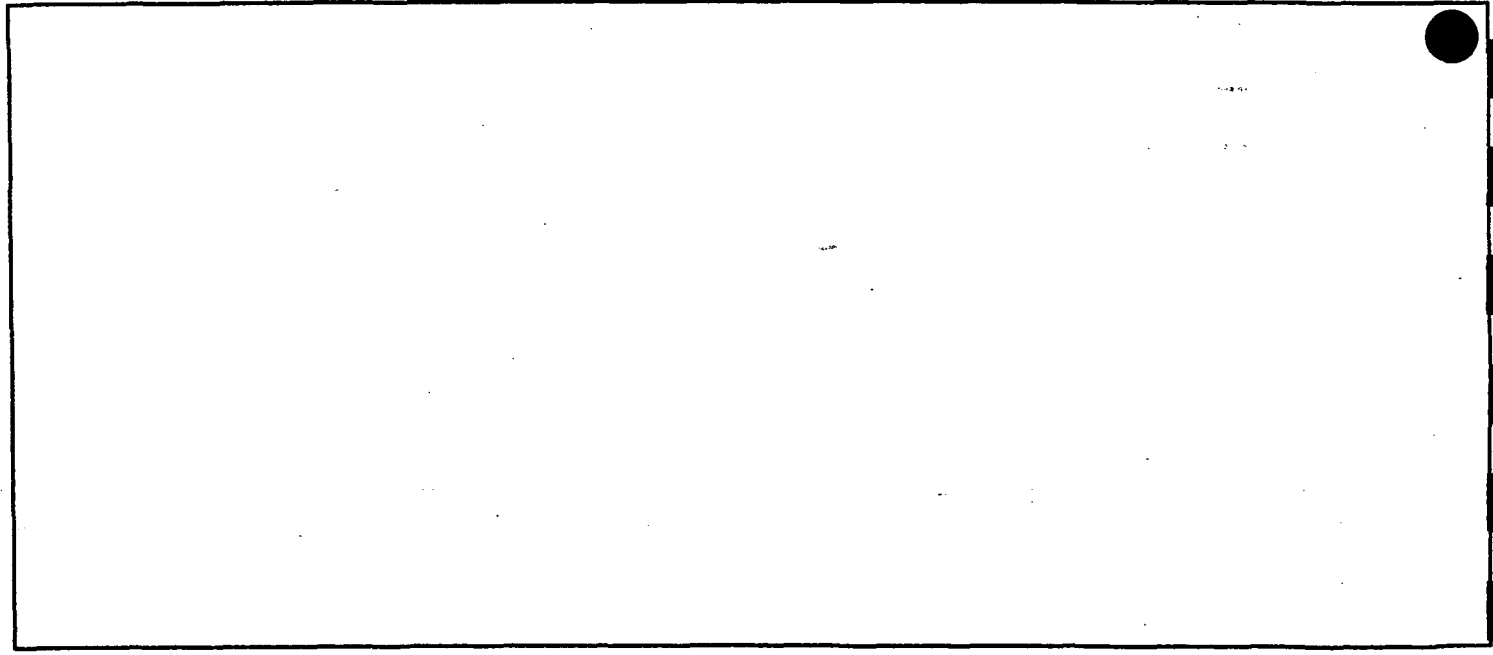
No. of Mice Found and/or Seen 4 Approximate Age or Maturity adults ^{see below} Weight gms.
Total Length mm. Tail Length mm. Hind Feet Length mm.
Other characteristics (e.g., enlarged mammary glands - lactation, scars, missing limb or toe, etc.)

Associated Animal Species Deer mice; voles
Other Relevant Information (evidence of disease, predation, injury, etc.)

Type (e.g., fur-dying, toe-clipping, tag, etc.) and Exact Location of Markings Two ear punches
on right ear on capture 1

Photographs (mouse and its habitats): Photographer M. Bosaw Repository In report

Sketch of Surveying Area, Map of Site, etc.



Additional Comments (relevant ecological/ethological info.; if site is disqualified, DETAILED explanation)

- Capture 1 7/16/97 ♀ adult T.L. 212 mm Tail L. 132 mm H.F. 30 mm Wt. 26g
- Capture 2 7/16/97 ♂ adult T.L. 196 mm Tail L. 116 mm H.F. 30 mm Wt. 22g
- Capture 3 7/16/97 ♂ adult T.L. 193 mm Tail L. 110 mm H.F. 30 mm Wt. 22g died
- Capture 4 7/19/97 ♂ adult T.L. 220 mm Tail L. 130 mm H.F. 30 mm Wt. 27g

(SUBMIT THIS FIELD DATA FORM WITH THE SURVEY REPORT)

Delivered to
COW
Judy Sheppard

Zapus hudsonius preblei, Preble's Meadow Jumping Mouse

Recommended Survey Field Data Compilation Form

Z. h. preblei found? Yes No

Date of Survey 7/21 - 7/25

Surveyor(s) Mike Bonar

Full Name(s) Michael Bonar

Survey Section(s) 16 ¼ Section(s) SW¼ NE¼ Township(s) T15

Location: Range(s) R70W County Boulder Site Name South Boulder Creek

USGS 7½ Quad Map Name Louisville Elevation 5400' Site 3

UTM Coordinates (to the nearest 50 meters) 5730500 0.00, 4802400 0.00

Land Ownership City of Boulder open space

Ecological Condition/Management History Open Space

Directions East of C.U. Gravel Pits

to Site: _____

Brief Project Description (indicate proposed impact to site) N/A

Habitat Type Riparian Woodland

Vegetation Structure Within Survey Area:

Total Tree Cover (%) _____

Total Shrub Cover (%) _____

Total Forb Cover (%) _____

Total Rock/Log Cover (%) _____

Total Graminoid Cover (%) _____

Total Bare Ground (%) _____

Total Moss/Lichen Cover (%) _____

Other Types of Cover (%) _____

Additional Associated Plant Species _____

Aspect (S, NNW, etc.) NE % Slope 0-1 Slope Shape (concave, convex, straight, etc.) meander

Light Exposure (open, shaded, partial shade, etc.) shaded

Topographic Position (crest, upperslope, midslope, lowerslope, bottom, etc.) bottom

Moisture (dry, moist, saturated, inundated, seasonal seepage, etc.) dry to moist

Hydrology, Geomorphology, and Soils at the Trap Site dry to moist

Site's Climatological/Meteorological Conditions on Day Prior to Survey Clear 90's; clear nights

Site's Climatological/Meteorological Conditions on Day of Survey 70's p.m. Thunderstorms

Type of Trap Used Smith/ Sherman Type and Amount of Bait Used 0 moline
Proximity, Degree, and Type of Human Development/Disturbance in Survey Area N/A

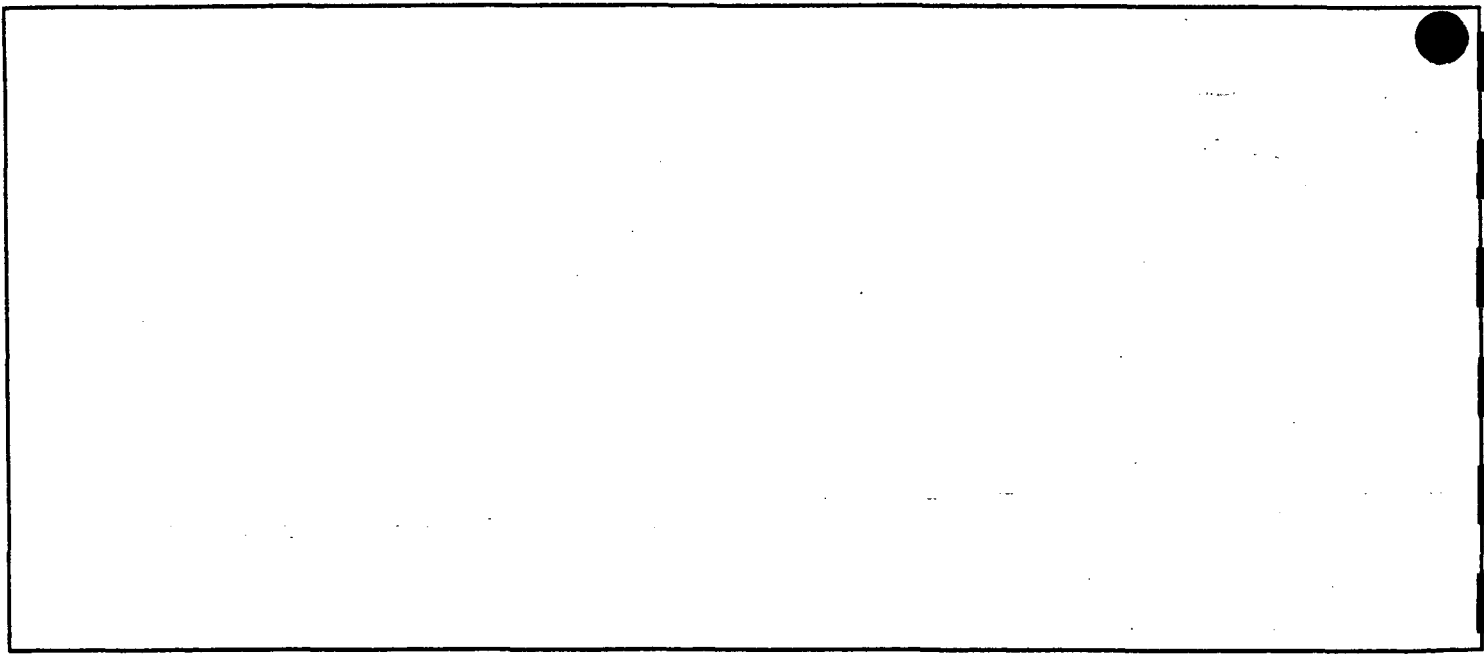
No. of Mice Found and/or Seen N/A Approximate Age or Maturity _____ Weight _____ gms.
Total Length _____ mm. Tail Length _____ mm. Hind Feet Length _____ mm.
Other characteristics (e.g., enlarged mammary glands - lactation, scars, missing limb or toe, etc.) _____

Associated Animal Species _____
Other Relevant Information (evidence of disease, predation, injury, etc.) _____

Type (e.g., fur-dying, toe-clipping, tag, etc.) and Exact Location of Markings _____

Photographs (mouse and its habitats): Photographer _____ Repository _____

Sketch of Surveying Area, Map of Site, etc.



Additional Comments (relevant ecological/ethological info.; if site is disqualified, DETAILED explanation)

Zapus hudsonius preblei, Preble's Meadow Jumping Mouse

Recommended Survey Field Data Compilation Form

Z. h. preblei found? Yes No

Date of Survey 8/4-8/8

Surveyor(s) Mike Bonar

Full Name(s) Michael Bonar

Survey Section(s) 16 ¼ Section(s) NE ¼ NE ¼ Township(s) T1S

Location: Range(s) R70W County Boulder Site Name South Boulder Creek

USGS 7½ Quad Map Name Louisville Elevation 5400' site 4

UTM Coordinates (to the nearest 50 meters) 44240000.00, 4808000.00

Land Ownership City of Boulder Open Space

Ecological Condition/Management History Open Space

Directions South End of South Boulder Creek trail at Gravel pits

to Site: _____

Brief Project Description (indicate proposed impact to site) N/A

Habitat Type _____	Vegetation Structure Within Survey Area:
Total Tree Cover (%) _____	Total Shrub Cover (%) _____
Total Forb Cover (%) _____	Total Rock/Log Cover (%) _____
Total Graminoid Cover (%) _____	Total Bare Ground (%) _____
Total Moss/Lichen Cover (%) _____	Other Types of Cover (%) _____

Additional Associated Plant Species _____

Aspect (S, NNW, etc.) NE % Slope 0-1 Slope Shape (concave, convex, straight, etc.) meander

Light Exposure (open, shaded, partial shade, etc.) shaded

Topographic Position (crest, upperslope, midslope, lowerslope, bottom, etc.) bottom

Moisture (dry, moist, saturated, inundated, seasonal seepage, etc.) dry to moist

Hydrology, Geomorphology, and Soils at the Trap Site moist to dry

Site's Climatological/Meteorological Conditions on Day Prior to Survey Rainy 60's, 70's near

Site's Climatological/Meteorological Conditions on Day of Survey end of survey

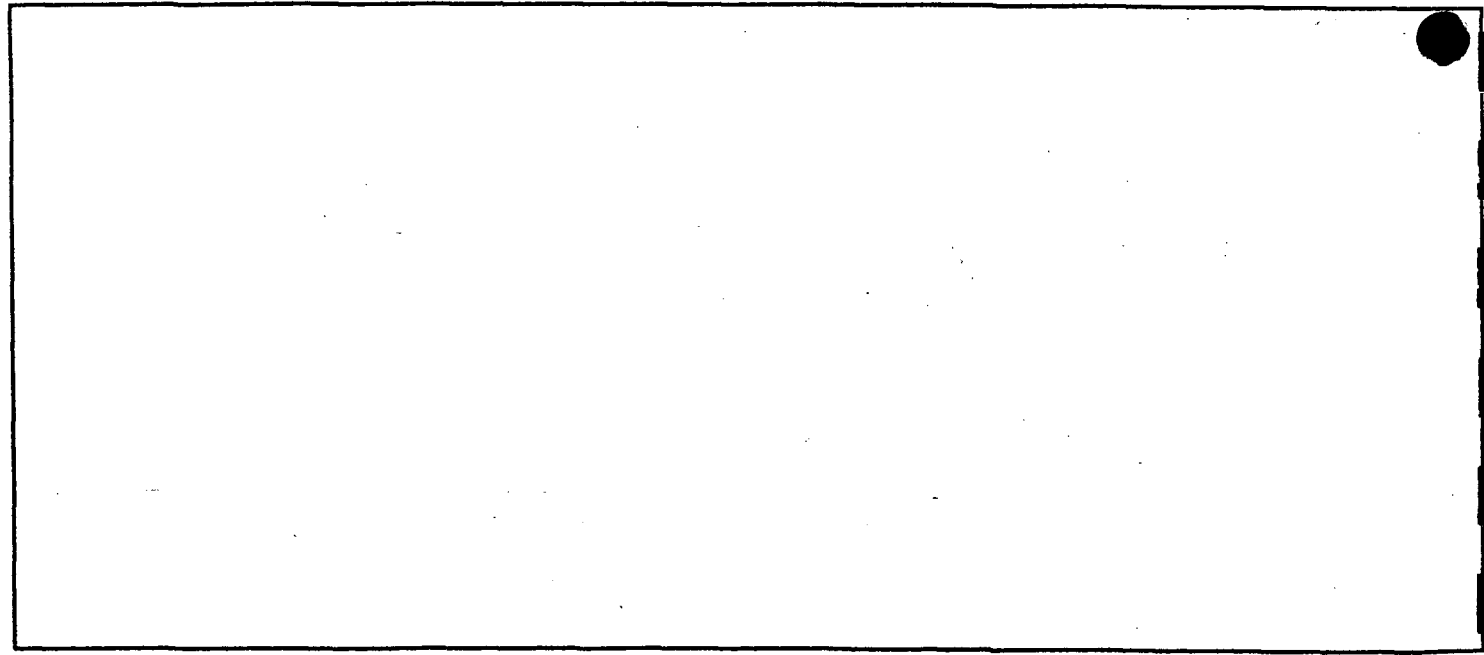
Type of Trap Used Smith/Sherman Type and Amount of Bait Used 0 moles
Proximity, Degree, and Type of Human Development/Disturbance in Survey Area None seen

No. of Mice Found and/or Seen 4 Approximate Age or Maturity see below Weight _____ gms.
Total Length _____ mm. Tail Length _____ mm. Hind Feet Length _____ mm.
Other characteristics (e.g., enlarged mammary glands - lactation, scars, missing limb or toe, etc.) _____

Associated Animal Species Per mice; voles
Other Relevant Information (evidence of disease, predation, injury, etc.) _____

Type (e.g., fur-dying, toe-clipping, tag, etc.) and Exact Location of Markings _____

Photographs (mouse and its habitats): Photographer M. Bonar Repository In report
Sketch of Surveying Area, Map of Site, etc.



Additional Comments (relevant ecological/ethological info.; if site is disqualified, DETAILED explanation)
Capture 1 8/5/97 subadult ♀ T.L. 212 mm Tail L. 131 H.F. 30 wt. 18g
Capture 2 8/5/97 subadult ♂ T.L. 192 mm Tail L. 114 H.F. 26 wt. 18g
Capture 3 8/6/97 subadult ♂ T.L. 181 mm Tail L. 116 H.F. 28 wt. 11g
Capture 4 8/6/97 adult ♂ T.L. 195 mm Tail L. 120 H.F. 30 wt 15g