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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: JACKPOT DEPOSIT

ALTERNATE NAMES:

MOHAVE COUNTY MILS NUMBER: 310B

LOCATION: TOWNSHIP 16 N RANGE 20.5W SECTION 35 QUARTER --
LATITUDE: N 34DEG 41MIN 05SEC LONGITUDE: W 114DEG 26MIN 18SEC
TOPO MAP NAME: TOPOCK - 7.5 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:
UNKNOWN

BIBLIOGRAPHY:
ADMMR JACKPOT DEPOSIT FILE
USGS TOPOCK 7.5 MIN QUAD

DRAFT
REPORT of the PHASE I and PHASE II ACOUSTICAL AND VISUAL CHIROPTERAN SURVEYS for the JACKPOT MINE (A.K.A. JACKPOT DEPOSIT), HAVASU NATIONAL WILDLIFE REFUGE, THE NEEDLES, MOJAVE COUNTY, ARIZONA

Prepared for

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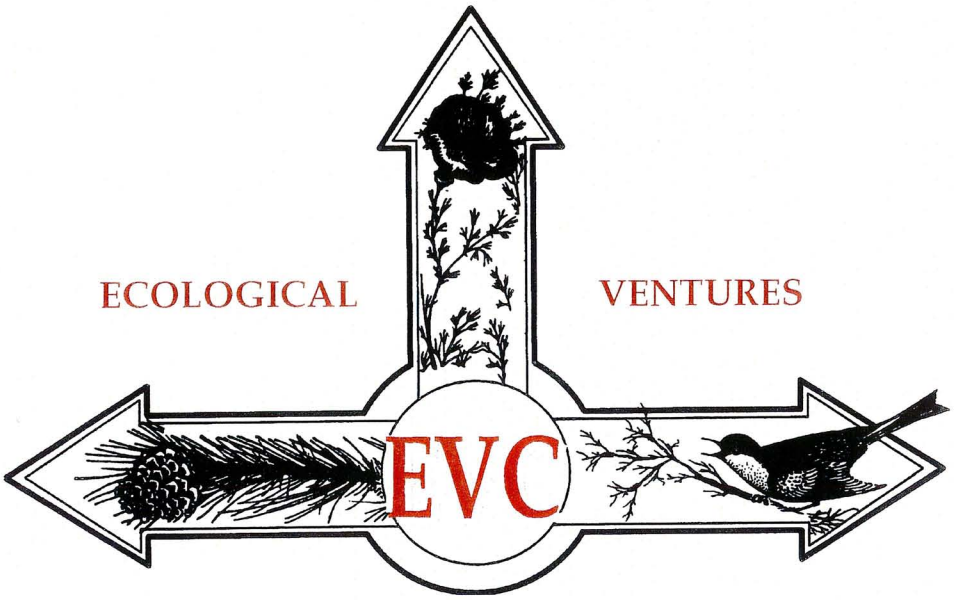
Pine Valley, California 91962

19 December 2001



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REPORT of the PHASE I and PHASE II ACOUSTICAL AND VISUAL CHIROPTERAN SURVEYS for the JACKPOT MINE (A.K.A JACKPOT DEPOSIT), HAVASU NATIONAL WILDLIFE REFUGE, THE NEEDLES, MOJAVE COUNTY, ARIZONA

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19 December 2001

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Executive Summary

At the request of the Havasu National Wildlife Refuge (HNWR), Ecological Ventures California, Inc. conducted a focused chiropteran survey at the Jackpot mine, in Mojave County, Arizona. In an effort to insure public safety, an immediate management step may be needed to either seal and/or gate the six (6) portals (3-adits, 2 shallow shafts, and 1-chimney). The results of the survey indicate that Adit #1 of the abandoned mine is utilized by the following chiropteran species during late autumn: California leaf-nosed bat (*Macrotus californicus*), and California myotis (*Myotis californicus*).

I. Introduction

At the request of the Havasu National Wildlife Refuge, Ecological Ventures California, Inc. conducted a focused chiropteran survey at the Jackpot mine. The management of abandoned mines represents an increasing concern for the public agencies charged with the stewardship of the lands on which the mines are located. These concerns may include, but are limited to the following: potential toxic / hazardous waste clean-up issues; site reclamation; preservation of points of historical interest; public safety issues; potential reactivation of existing claims; and protection of sensitive biological resources. It is our understanding that in an effort to insure public safety, an immediate management step may be needed to either seal, gate and/or fence the six (6) portals (3-adits, 2 shallow shafts, and 1-chimney). This Draft report represents the findings of the Phase I and II chiropteran surveys of the Jackpot mine's three (3) primary portals (adits) and will include the following information: a general site evaluation (location, associated habitats; mine description; an assessment of each portal's potential to be utilized by any chiropteran species); results of acoustical and visual bat surveys; and management recommendations for how to avoid and/or minimize impacts to chiropteran species.

The typical three-phased approach used to assess potential chiropteran use of mine portals are defined as follows:

- ***Phase I*** surveys provide external and limited internal assessments, a physical description of each portal, and an assessment of each portal's potential for use by any bat species.

- ***Phase II*** surveys include a one-night only acoustical and external night vision or infrared assisted visualization survey of any portals that have any potential for use by bats (as determined by the Phase I survey). Phase II surveys should be conducted during the peak season of bat activity.

- ***Phase III*** surveys include a minimum of a one-night survey, combining acoustical, night vision or infrared visualizations of bat activity at mine portals, and capture data (to determine, gender, age, and reproductive status). These surveys should be conducted at least four times a year (Winter, Spring, Summer, and Fall) within portals known to be used by bats, as determined during the Phase II survey. In addition, a winter survey of the internal portions of a mine may be required if it is necessary to determine if a site is being used as a hibernaculum. Please note that an internal mine

survey is inherently dangerous (very few qualified experts), relatively expensive, and potentially irreparably disruptive to a hibernating bat population.

II. Site Location, History and Description of Mine

The Jackpot mine is located within "The Needles" of the HNWR, Mojave County, Arizona (Figure 1). The study site is located at N34°41'095" W114°26'16.72", at an elevation of 496-feet, approximately 2.5-miles south of Interstate 40 (Historic Route 66), one mile east of the Colorado River. Topography is generally mountainous with foothills and frequent desert washes. The Jackpot Mine features are located within the foothills, have an average slope of 30%, and a west-facing aspect. Creosote brush scrub comprises the plant community. The nearest water source is Jackpot Springs, located 300-yards southeast of the Jackpot Mine features.

Mining operations at the Jackpot Mine (A.K.A. Jackpot Deposit) for the extraction of gold, silver, copper, and tin ore began approximately in 1930 and terminated approximately in the early 1950s. It should be noted that a records search by the Arizona Department of Mines and Mineral Resources (ADMMR) revealed that the Jackpot Mines' name, as recorded, is actually Jackpot Deposit. In addition, it would appear that from the lack of any other mine-specific information that the past operators of this mine were negligent when it came to submitting the required information to the ADMMR. This statement is incorrect. Ken Phillips ADMMR 3-13-2002

Vehicular access to the Jackpot Mine site is relatively difficult and includes a rough and narrow four-wheel drive trail that terminates approximately 3/4-mile from the mine. The remaining distance to the mine must be accessed via a well-worn foot trail. Evidence of recent human entrance into the mine was limited to one set of boot prints.

The primary workings of the Jackpot mine involve three adits with drifts and two shallow shafts.

- **Adit #1:** This mine feature currently shows no internal or external support timbers. The internal measurements of this adit are as follows: approximately 6 to 8-feet from sill to ceiling, 4 to 5-feet from sidewall to sidewall, and has a combined (primary adit, and two drifts) length of approximately 465-feet (Figure 2, Photographs 1, 2, and 3). The portal entrance to the primary adit is approximately 75-80% occluded by eroded over-burden. The occlusion at the adit entrance may have a beneficial (stabilizing) effect on the internal environmental conditions by limiting the external environmental influences.

- **Adit #2:** This mine feature currently shows no internal or external support timbers. The internal measurements of this adit are as follows: approximately 6 to 8-feet from sill to ceiling, 5 to 6-feet from sidewall to sidewall, and has a combined (primary adit, two drifts, and a chimney) length of approximately 85-feet (Figure 3, Photograph 4). The remains of a concrete frame around the adit entrance indicate that a heavy door was constructed. All internal structures exhibited evidence of thick soot (fire) deposits. A 30-foot long by 1.5-foot

diameter vertical chimney rises from the ceiling, near the face of the primary adit. In addition, abundant old broken bottles, miscellaneous litter, and an old metal "army" cot frame were found inside Adit #2. The physical evidence, indicates that this mine feature served as a powder room and living quarters after the ore vein played out. The portal entrance is approximately 30% occluded by rock debris.

- **Adit #3:** This mine feature currently shows no internal or external support timbers. The internal measurements of this adit are as follows: approximately 6 to 8-feet from sill to ceiling, 4 to 5-feet from sidewall to sidewall, and has a combined (primary adit, and one drift) length of approximately 130-feet (Figure 4, Photograph 5). The portal entrance to the primary adit is approximately 20% occluded by rock debris. **Please Note**: A partially exposed unexploded stick of dynamite was identified on the sill near the face of the primary adit.

- Secondary workings include two shallow (approximately 7-feet and 25-feet in depth) exploratory shafts.

III. Chiropteran Survey Methods

Phase I:
The physical features of the Jackpot Mine were assessed for the likelihood of chiropteran use, based on mine features, airflow, and temperature regimes. All accessible roosting (day or night) locations were inspected between 0930-1600 hours on 10 December 2001, for the presence of chiropterans. Presence is determined either by direct observation of a chiropteran or by sign indicating prolonged use by chiropterans (e.g. guano accumulations, urine staining, and portions of insects discarded during foraging).

Phase II:
Determining the presence of different bat species can also be achieved through monitoring echolocation calls (Ahlén, 1981; Fenton and Bell, 1981; O'Farrell, 1997), because echolocation calls of many bats seem to be unique (Simmons et al., 1979). Prior to the onset of darkness, an acoustical monitoring system (Anabat II) was set up to monitor any echolocation calls emitted from chiropterans leaving or entering the Jackpot Mine. The Anabat system was located approximately 20-feet from the opening to Adit 1 (this was the only Adit that exhibited roosting bats and large guano piles). The monitoring system was placed so that any exiting and/or entering chiropterans would be detected as they emitted echolocation calls. Recorded calls of chiropterans exiting a roost are often of an atypical nature as they often initially emit high-clutter or social calls; however, chiropterans will soon emit normal echolocation calls as they leave the immediate vicinity of the roost to drink and forage.

The acoustical monitoring system was operated between 1700 (50 minutes before twilight) and 1830 hours, on 10 December 2001. Environmental conditions were recorded during acoustical monitoring (Table 1). Logistical constraints dictated the survey dates. High levels of moon illumination may negatively affect chiropteran activity. Although foraging may take place at a reduced rate during periods of high amounts of moon illumination, chiropterans should exhibit

normal emergence behavior, allowing for a normal Phase II survey to be performed. The survey was performed 4 days prior to the new moon, with moonrise at 0307 hours, and moonset occurring at 1456 hours.

Table 1. Environmental Conditions Encountered During Acoustical Monitoring

	Time	Ambient Temp.	Average Wind Speed	Cloud Cover	% Moon
Survey Start:	1700	59.3°F	7.5 mph (southwest)	5%	None
Survey End:	1830	58.6°F	2.6 mph (southwest)	5%	None

The 2.5-hour survey window was sufficient to allow for any chiropterans roosting within the mine to exit and begin their nightly foraging and possibly return for night roosting. Successful use of the Anabat detector in identifying bats by their echolocation calls is dependent upon operator skill and experience (O'Farrell et al., 1999). Light intensifier equipment (NAIT NVPS-10) was employed to augment acoustical monitoring information.

IV. Results of Focused Chiropteran Surveys

Phase I:

After an initial examination of the external and internal features of the 3 Adits, it was determined that there is a potential for the occurrence of chiropterans at all three Adits. However, Adit #1 differs from Adit #2 and #3 in the percent closure of it's portal (80% occlusion), higher internal ambient temperatures (79 to 80 degrees Fahrenheit), and higher internal relative humidity (30 to 40%); consequently, these internal environmental conditions could lead to the use of Adit 1 during different seasons and for different purposes (winter roost, maternity roost, and day and night roost). Visual inspection of the internal features of Adit #1 indicated heavy use by chiropterans – e.g. large accumulations of guano, approximately 50 to 100 large-eared bats flying within the more distant portions of the drift tunnels, strong odor of bats, and very little physical evidence of frequent trespass. In addition, desert tortoise, ring-tailed cat, and kit fox scat was detected in Adits #1 and #2 (Table #2).

Table 2. Physical and Environmental Internal Conditions of Adits 1-3

	% Portal Closure	Total Internal Distance	Temp. (F)	% Relative Humidity	Guano (Yes/No)	Evidence of Recent Trespass (Yes/No)	Bats Present (Yes/No)
Adit #1:	80%	465-ft.	79-80-deg.	30-40%	Yes	Yes	Yes
Adit #2:	30%	85-ft.	80.6-deg.	28%	Yes	No	No
Adit #3:	20%	130-ft.	80.3-deg.	28%	Yes	No	No

Direct observations of chiropteran use (e.g. guano accumulations, large sphinx moth parts, and urine staining) were detected in both Adits #2 and #3. These two Adits appear to indicate use as a night roosting site. The physical evidence of frequent and intense human trespass and similarity of the internal and external environmental conditions would appear to preclude these two Adits from being used for other purposes.

Phase II:
Acoustical monitoring of chiropteran echolocation sequences yielded 117 recordings. A total of 88 calls were identified to species. Echolocation sequences of the following two species were identified: California myotis (*Myotis californicus*) and California leaf-nosed bat (*Macrotus californicus*) (Appendix A – Acoustical Recordings). The first echolocation sequence was detected at 1750 hours and the last was recorded at 1829 hours.

It was determined through subsequent visual observations and acoustical monitoring that Adit #2 and #3 are utilized as a night roost. The concurrence of visual observations and acoustical data demonstrate that *Myotis californicus*, and *Macrotis californicus* utilize Adit #1 as a day and night roost. In addition, it is highly probable that Adit #1 is also utilized as a hibernaculum by *Myotis* species (one hibernating *Myotis* detected during internal assessment) and by *Macrotis cailfornicus* as a winter roost and quite possibly as a maternity colony during the spring and summer months.

It is also possible that several additional chiropteran species may utilize all three Adits during the warmer months of the year.

V. Conclusions and Recommendations:

The portals and underground structures of the Jackpot Mine located in The Needles of Havasu National Wildlife Refuge, Mojave County, Arizona are utilized as a day and night roost by chiropterans during the winter. Concurrence of visual and acoustical data support the conclusion that the bats currently utilizing the mine are *Macrotis californicus* and *Myotis californicus.* These conclusions agree with data on roosting preferences for these species (Appendix B – Species Information).

Additional Phase III surveys would need to be performed in order to establish the degree of spring, summer, and fall useage, e.g. if the Jackpot Mine is a hibernacula, a maternity roost or as a stop-over point for migratory chiropterans.

Public safety concerns and impacts to any chiropterans utilizing the mine should be avoided or minimized. Human related impacts may be minimized by posting signs, constructing bat and tortoise-accessible gates, and constructing a perimeter security chain-link fence. In addition, the following recommendations and construction specifications should be implemented if at all feasible:

- To insure that the existing configuration of the entrances is enhanced and maintained, the portals at all three Adits should be stabilized with concrete reinforced chain-link fencing. There is a very real potential that the portal opening at Adit #1 could be sealed by overburden sediment within the very near future. A partial closure and stabilization (between 50 and 60%) of the portal openings at Adits #2 and #3 could create a more stabilized internal environment, more acceptable to chiropteran use.

- Because several bat species do not adapt well to "Bat Gates", each gated portal entrance should be monitored seasonally for at least one full year and then again in one subsequent year. If a particular bat species exhibits an adverse reaction to the portal gate, then an alternative structure may be designed and implemented (Tuttle et al., 1998). In addition, it is important to note that "bat gates" and chain link fences only keep the honest and law abiding public out, trespass into a fenced area is usually less intrusive than the possible blasting or destruction of a "bate gate".

- Due to the remote and difficult access to the site, it would be advised that all equipment and materials be flown in.

- All work at Adit #1 should be conducted in late fall and be completed as quickly as possible.

- The two exploratory shafts present a potential fall and trapping risk to both humans and wildlife and as such should be sealed or backfilled.

VI. Literature Cited

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FIGURE 1. Project Vicinity and Location Map

Jackpot Mine (A.K.A. Jackpot Deposit)
Havasu National Wildlife Refuge, Mojave County, Arizona

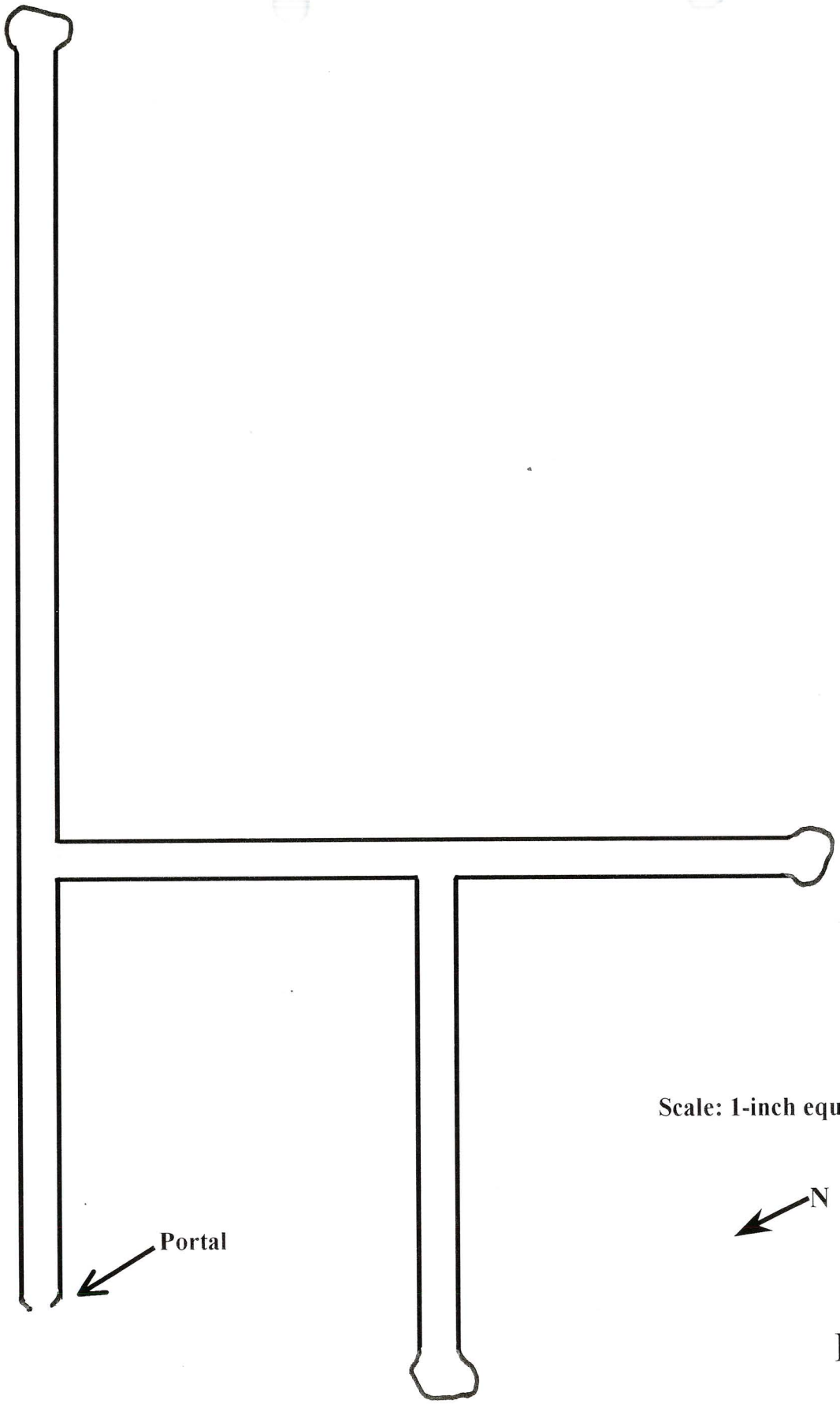
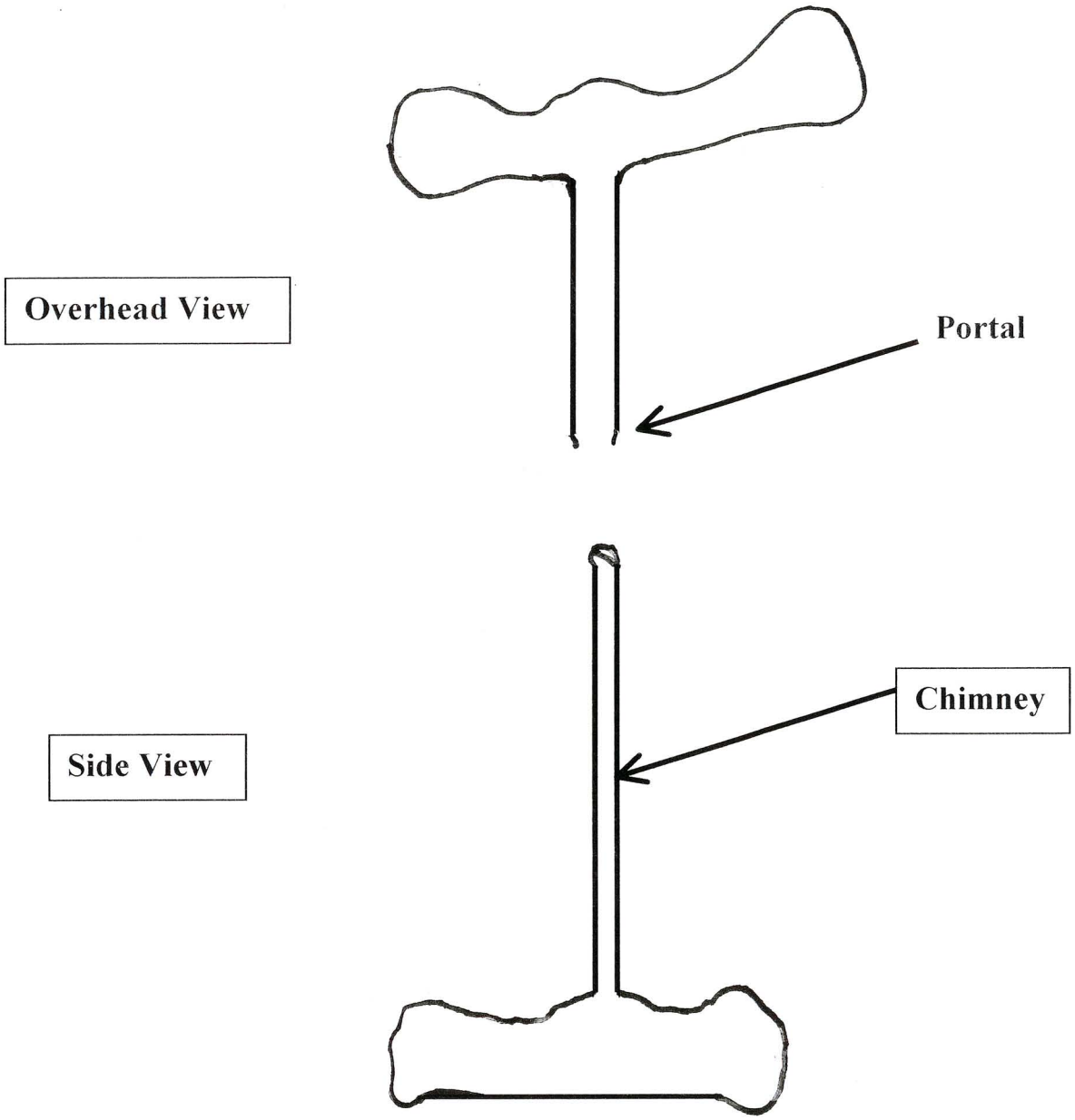


FIGURE 2

Jackpot Mine (A.K.A. Jackpot Deposit)
Internal Configuration of Adit #1
Overhead View

Ecological Ventures California, Inc.
December 2001

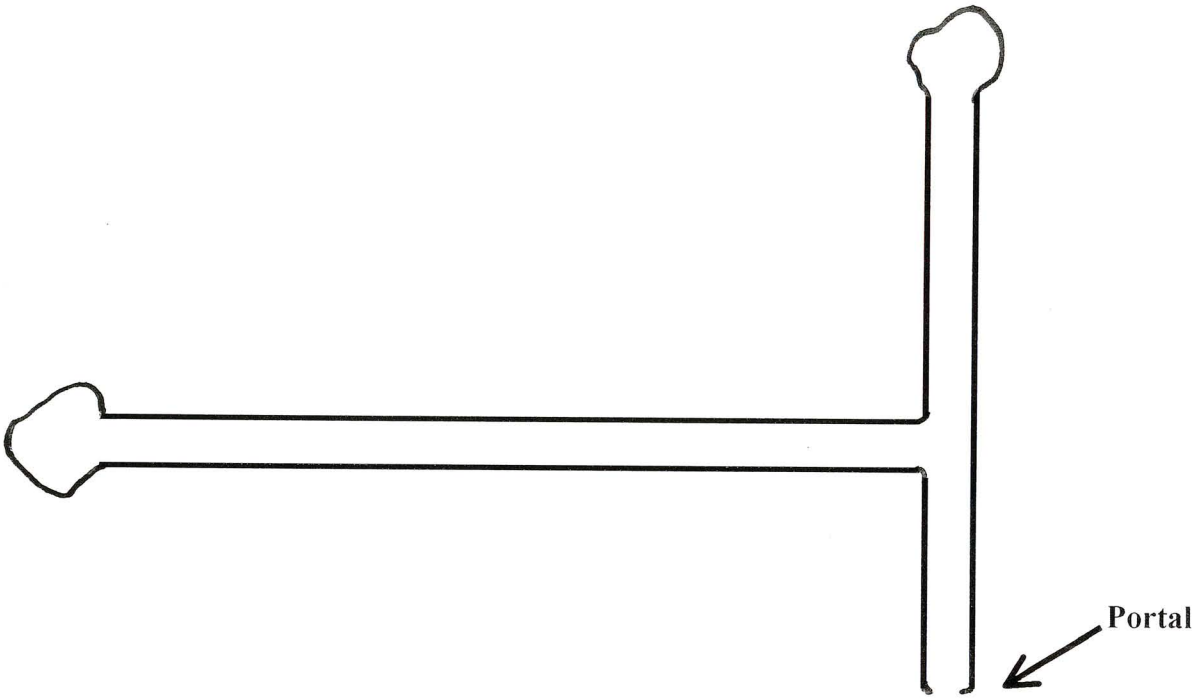


Scale: 1-inch equals 20-feet

N

FIGURE 3

Jackpot Mine (A.K.A. Jackpot Deposit)
Internal Configuration of Adit #2



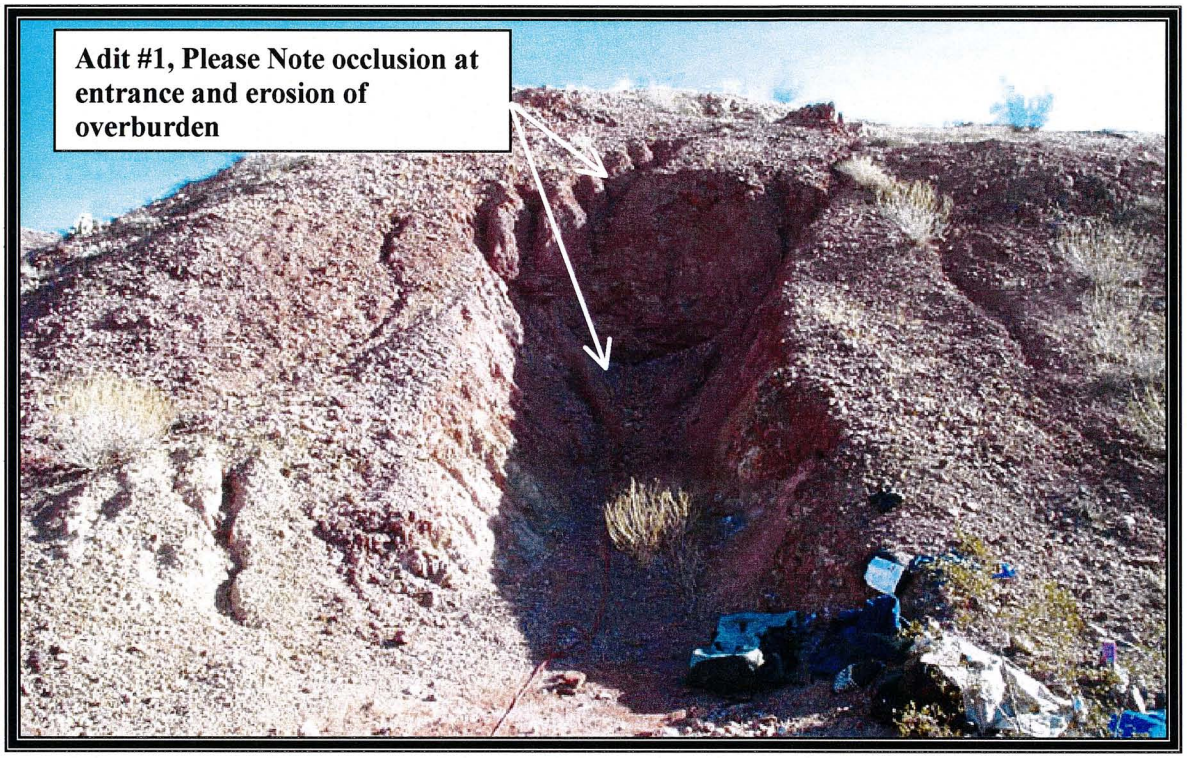
Scale: 1-inch equals 20-feet

N

FIGURE 4

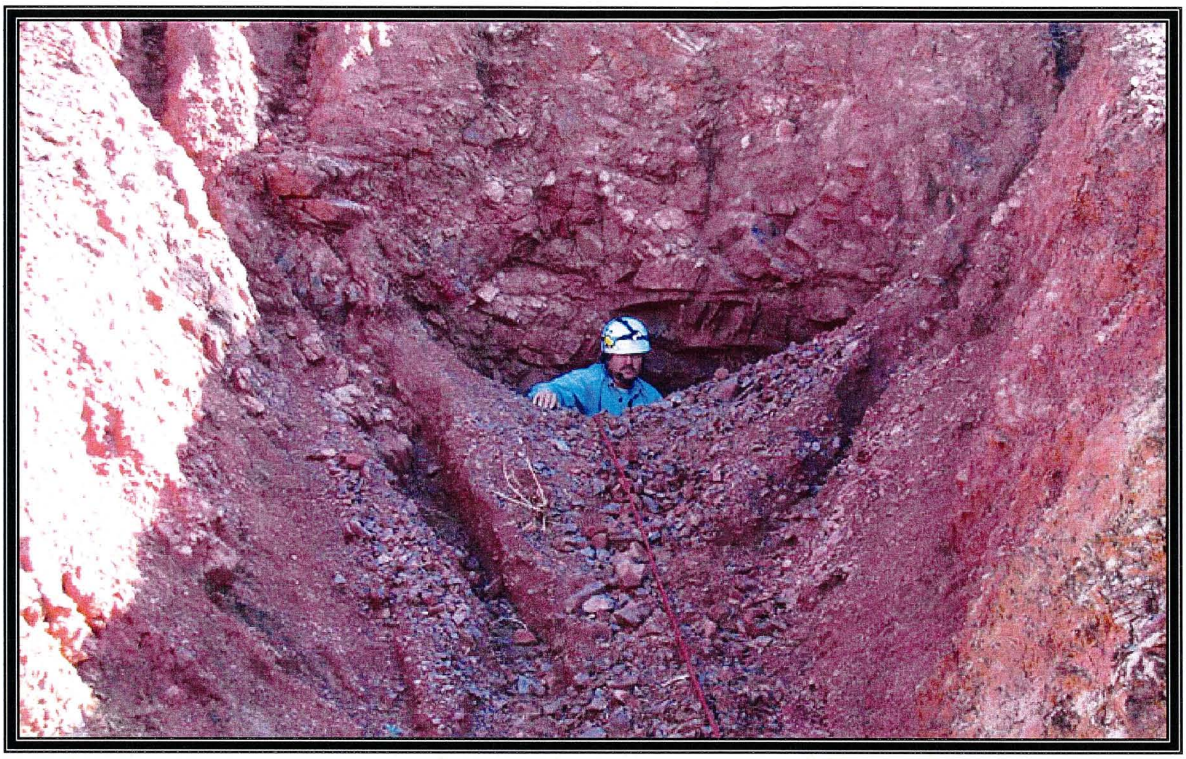
Jackpot Mine (A.K.A. Jackpot Deposit)
Internal Configuration of Adit #3
Overhead View

Ecological Ventures California, Inc.
December 2001



Photograph #1

Jackpot Mine (A.K.A. Jackpot Deposit)
Adit #1
View East



Photograph #2

Jackpot Mine (A.K.A. Jackpot Deposit)
Adit #1, 80% Occluded Portal
View East

Photograph #3

Jackpot Mine (A.K.A. Jackpot Deposit)
Adit #1, Close-up of Portal

Photograph #4

Jackpot Mine (A.K.A. Jackpot Deposit)
Adit #2
View Southeast

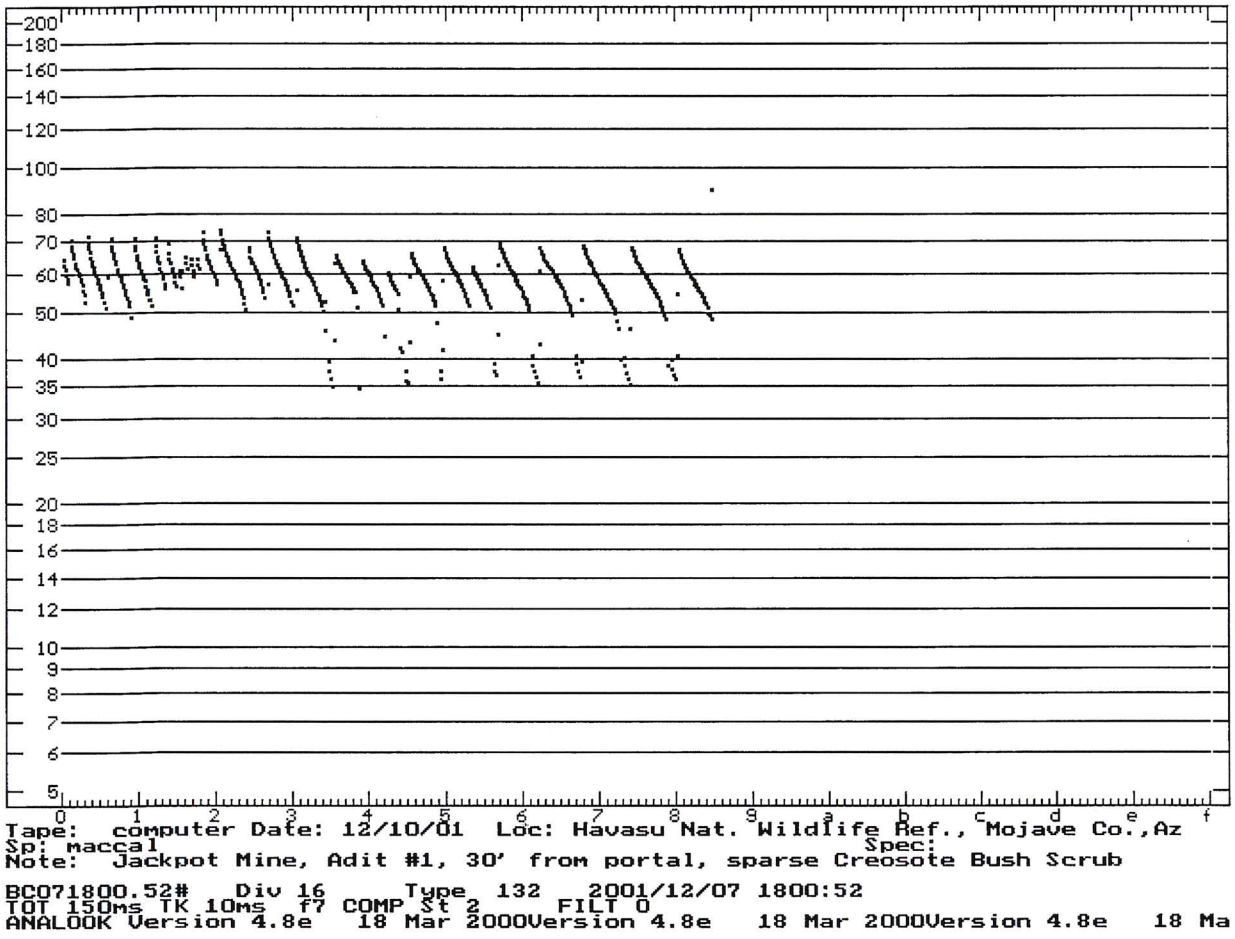
Photograph #5

Jackpot Mine (A.K.A. Jackpot Deposit)
Adit #3
View Southeast

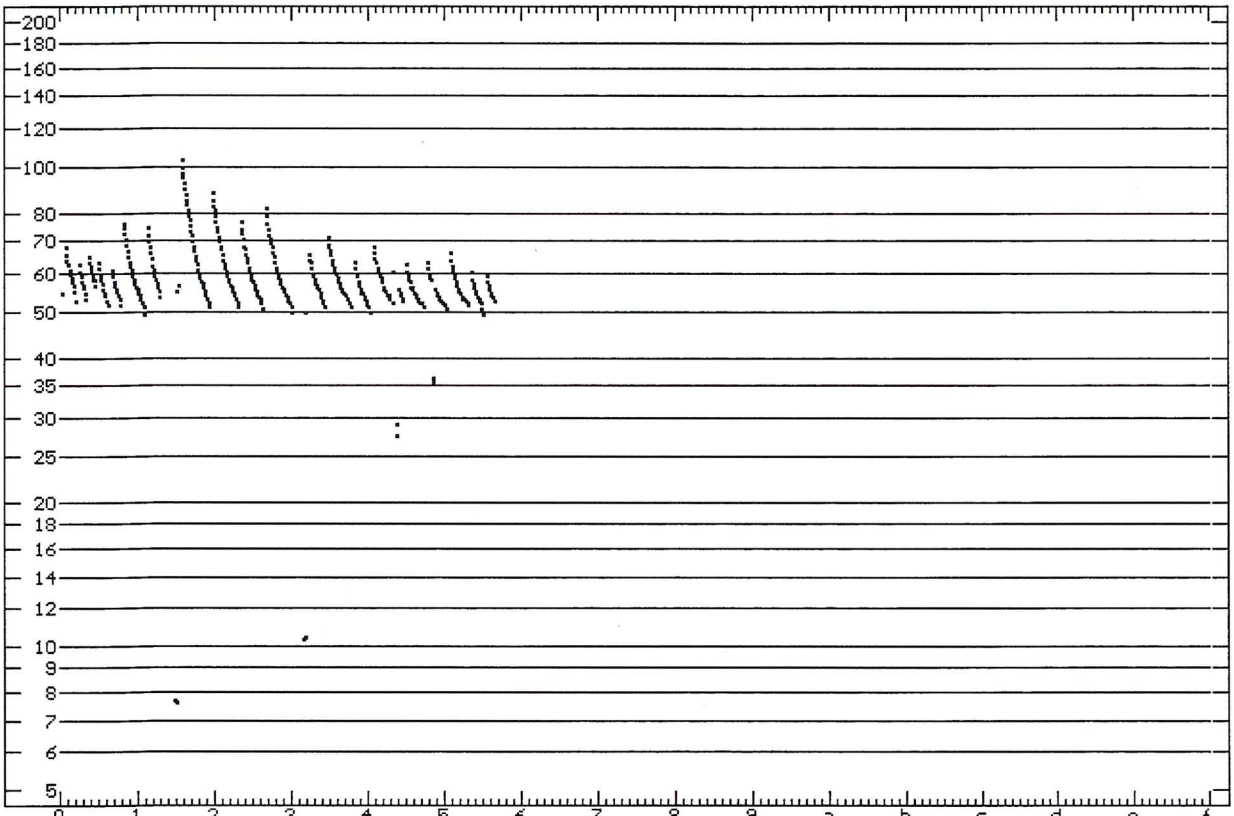
Appendix A

Representative Samples of Recorded Echolocation Sequences

Echolocation sequence of *Macrotus californicus*. Time between calls is compressed. X- axis: milliseconds, Y-axis: kHz.



Echolocation sequence of *Myotis californicus*. Time between calls is compressed. X- axis: milliseconds, Y-axis: kHz.



APPENDIX B

Chiropteran Life History Information

Family *PHYLLOSTOMIDAE*

Macrotus californicus – California Leaf-nosed Bat

Description: A leaf-nosed bat with a short rostrum.

Distribution: Historically occurred across southern portion of the state. Currently confined to desert mountains of the Colorado River Basin. Year round resident. Not detected during the study.

Habitat: Lower elevation desert scrub. Roosts located near desert riparian areas.

Winter Status: Does not hibernate. Gather in warm winter roosts. Active year-round.

Roost Selection: Day roosts in caves and mines.

Reproduction: A single young is born in May to June. Females congregate in maternity colonies (up to 100 individuals). Often, within the maternity colonies, there are several clusters of females associated with an adult male.

Food Habits: Gleans prey items from vegetation or the ground. Does not require drinking water.

Conservation: Sensitive to roost site disturbance. Impacted by recreational caving and mining operations.

Status: FSC, CSC, Forest Service (FS) sensitive species, Bureau of Land Management (BLM) sensitive species.

Family *VESPERTILIONIDAE* (Mouse-eared Bats)

Myotis californicus – California myotis

Description: Small-eared *Myotis* with a keeled calcar. Often indistinguishable from *M. ciliolabrum.*

Distribution: Found in western North America, from the Alaskan panhandle south to Chiapas, Mexico. Occurs throughout California.

Habitat: Found in a variety of habitats from low elevation to 6,000 ft.

Winter Status: A year-round resident that hibernates, but is active periodically to drink and forage.

Roost Selection: A crevice rooster that inhabits caves, mines, buildings, rock crevices, hollow trees and exfoliating bark. Generally roosts singly or in small groups.

Reproduction: Birth to a single young occurs in May to June. May form small maternity colonies of less than 100 individuals.

Food Habits: Consumes small prey items, primarily moths and dipterans. A short range flier that forages primarily along forest edges.

Conservation: Pesticide spraying and mine closures or renewed mining operations.

Status: Widespread and regionally common.