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Monitoring Systems Research and Development Division
Environmental Monitoring and Support Laboratory
U.S. ENVIRONMENTAL PROTECTION AGENCY
Las Vegas, NV 89114

April 1976

This study performed under a Memorandum
of Understanding No. AT(26-1)-539
for the
U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

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by
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Effective June 29, 1975, the National Environmental Research Center-Las Vegas (NERC-LV) was designated the Environmental Monitoring and Support Laboratory-Las Vegas (EMSL-LV). This Laboratory is one of three Environmental Monitoring and Support Laboratories of the Office of Monitoring and Technical Support in the U.S. Environmental Protection Agency's Office of Research and Development.

ABSTRACT

During August 1972, natural springs located on the Nevada Test Site were surveyed to determine the use by wildlife and the effort required for improving flow. Each spring is described and its use by wildlife noted. Methods of improving spring flow are suggested. It is believed that minimal effort at most of the springs would result in a significant improvement of waterflow with resulting benefits to wildlife.

The intention of the recommendations in this report is to encourage development of the Nevada Test Site springs and to maintain the wildlife now at the Site. There is no recommendation to bring in or support wildlife outside the Nevada Test Site area.

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INTRODUCTION

The Nevada Test Site encompasses approximately 1,350 square miles of desert area, ranging from the high flat plateaus to dry lake beds. This entire area is subject to high winds, sudden temperature changes, and erratic precipitation. The annual mean precipitation is uncertain at any specific location because it depends to a large extent on the elevation. (Quiring 1968) An overall annual mean is 9 inches of rain and snow.

During August 1972, a survey was conducted by the Farm and Animal Investigation Branch, Monitoring Systems Research and Development Division, to locate, identify, and describe the known springs within the boundaries of the Nevada Test Site (see figure 1). Periodic examination of these springs over the past several years and review of published material concerning their use and flow volume indicate a general reduction in flow volume in these springs.

The purposes of this study were to determine the use by wildlife of each spring during the hot, dry time of the year, and to determine the manpower and materials required to improve or reclaim these springs for the continual support of wildlife.

Although additional springs and other sources of water may exist on the Nevada Test Site, (U.S. Geological Survey 1971) this survey is concerned only with those springs which have a past record of use by wildlife.

No extensive tunneling, digging, or major land-removal projects are planned at the spring sites. The intention is to improve the immediate area at each site.

More comprehensive information on the historical development of the Nevada Test Site springs, the use by wildlife, and the hydrology of the area is available in other publications. (U.S. Geological Survey 1971; Hayward et al., 1963; Jorgensen and Hayward 1965; Worman 1969)

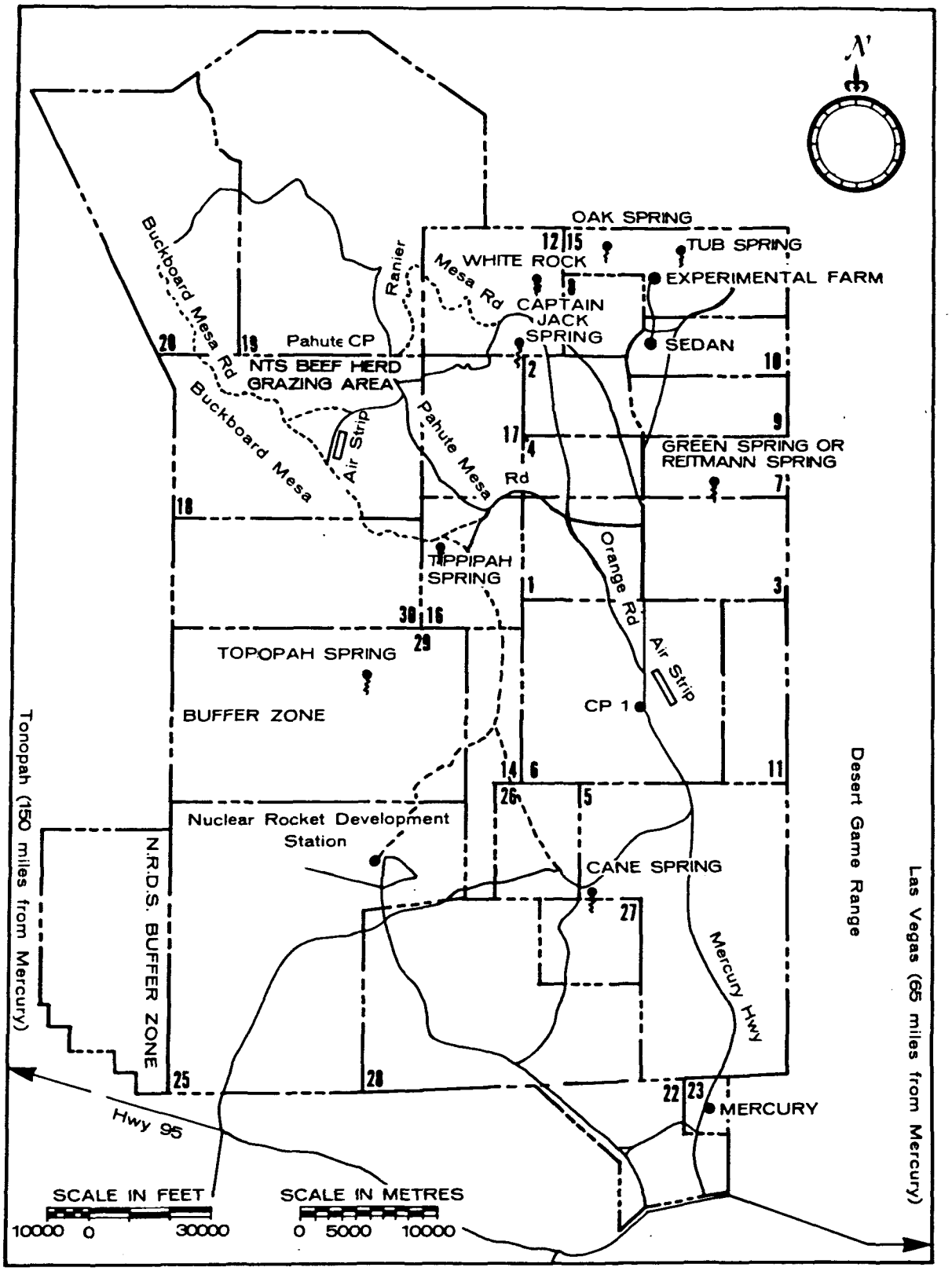

Figure 1. Location of Springs.

CANE SPRING

Location: East slope of the Skull Mountain, Area 27; Long. 116°06' W., Lat. 36°48' N., T. 13 S., R. 52 E., Sec. 26.

Three old, unoccupied buildings and a large willow tree mark the location of Cane Spring. Water is accessible from a circular dugout in the hillside and from a deep tunnel excavated to improve waterflow. Trenches from these sources lead down to a pond overgrown with cattails, aquatic grasses, and other vegetation (see Photos A and B). Although the spring provides a year-round flow, during the spring and summer months little water is available for wildlife because of vegetation utilization and surface evaporation.

In order to assure an adequate year-round supply of water, a small earthen or concrete dam should be constructed across the entrance of the tunnel. A

PHOTO A. Cane Spring--Entrance to tunnel excavated to improve waterflow

PHOTO B. Cane Spring--Spring at entrance of tunnel (see top arrow) flows downhill into pond (see bottom arrow).

plastic pipe could be run from the dam to a small catchment basin that would allow the overflow of surplus water to preserve the vegetation growth. Approximately 2 man-days would be required to accomplish restoration. Periodic surveys show that the spring is presently utilized by feral horses, coyotes, bobcats, deer, rabbits, and numerous species of birds. (Hayward et al, 1963; Jorgensen and Hayward 1965)

TIPPIPAH SPRING

Location: Northeast of the Shoshone Mountain, Area 16; Long. 116°12' W., Lat. 37°03' N., T. 10 S., R. 51 E., Sec. 26.

The remains of two stone buildings and other ranch structures are evidence of a once abundant supply of water from this spring. At the present time, there is a small pool 8 to 12 inches in depth at the end of a tunnel reaching about 30 feet into the hillside (see Photo C). Rock and dirt falling from the unsupported roof are gradually filling the entrance to this tunnel and may eventually seal off the spring.

Construction of a small concrete or earthen dam at the tunnel entrance, with an interconnecting pipe to a concrete trough or pond below the tunnel, would improve and conserve the water supply and provide water to deer and other large animals which have been observed in the area. A considerable amount of debris and earth would have to be removed from the entrance as well as from the floor of the tunnel. This would require a backhoe or some other type of power equipment. Approximately 2 to 4 man-days would be required to develop this spring.

At present, only coyotes, chukar, rabbits, birds, and smaller animals can enter the tunnel. (Hayward et al., 1963, Jorgensen and Hayward 1965)

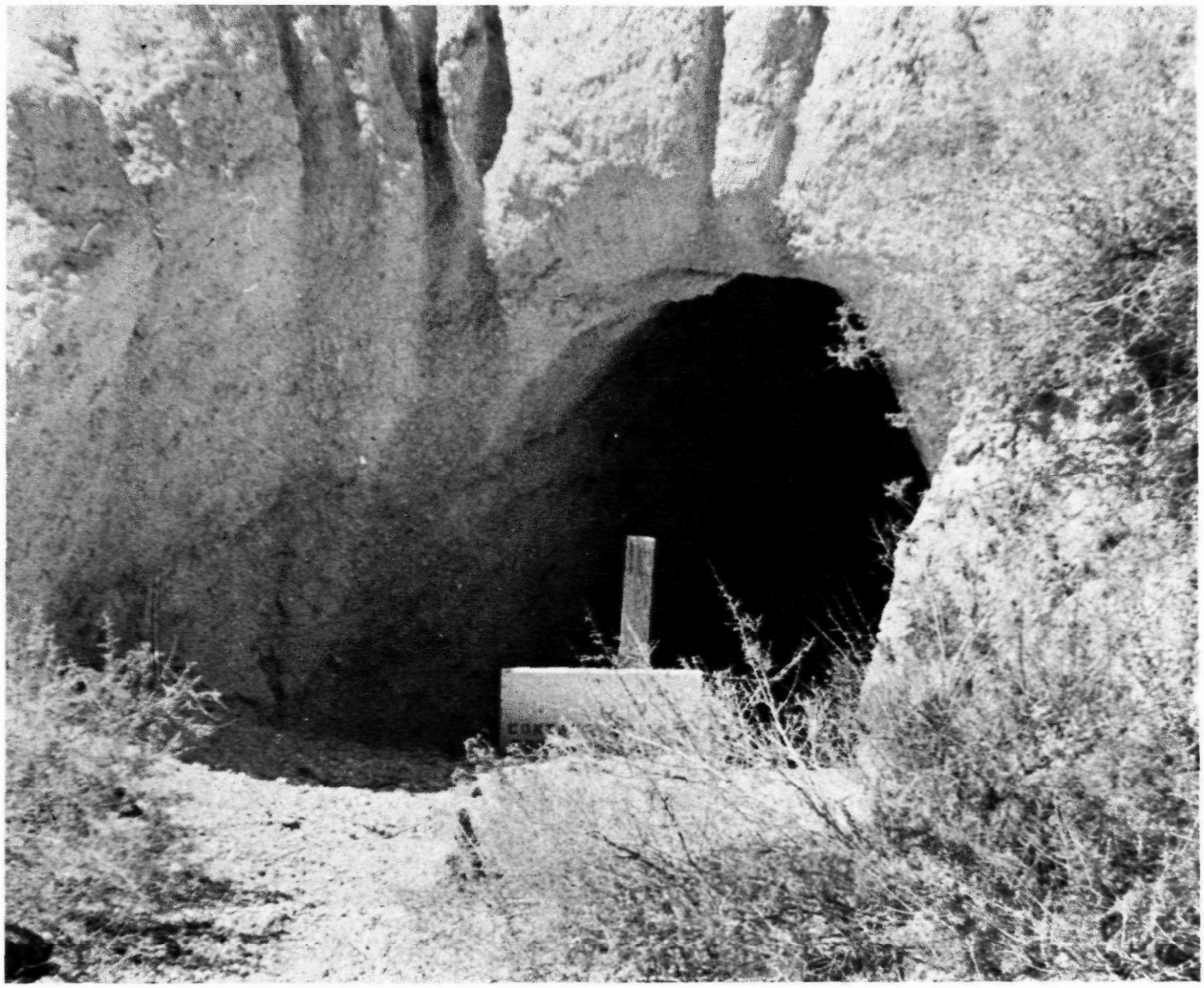

PHOTO C. Tippipah Spring--Entrance to tunnel going into spring

TOPOPAH SPRING

Location: Southwest of the foot of the Shoshone Mountain, Area 29; Long. 116°16' W., Lat. 36°56' N., T. 12 S., R. 51 E., Sec. 5.

This spring is completely covered with dirt and rock which have fallen from the roof of the tunnel. It is estimated that a large amount of earth would have to be removed, requiring 2 to 4 man-days. A new pipe and catchment basin would also have to be installed to replace the existing equipment (see Photo D). Numerous observations of deer, chukar, rabbits, and other wildlife in the area indicate it would be beneficial to develop this water source. (Hayward et al., 1963; Jorgensen and Hayward 1965)

PHOTO D. Topopah Spring--View of spring showing path of waterflow through pipe (see arrow)

GREEN SPRING

Location: Area 7; Long. 116°00' W., Lat. 37°05' N., T. 9 S., R. 53 E.

Green Spring is also known locally as Reitmann Spring, although neither of these names has been officially adopted by the U.S. Geological Survey.

This spring is an open pool containing about 6 gallons of water year-round (see Photo E). This spring is limited in size and scope because of natural formation and no artificial structures will improve the site. At the present time, there is no justification for changes. Continued maintenance, such as periodic removal of trash and debris, is recommended.

Coyotes, rabbits, and birds have been observed at this spring and on rare occasions deer tracks have been seen.

PHOTO E. Green Spring--Close-up view showing water and vegetation.

WHITE ROCK SPRING

Location: East of the Rainier Mesa, Area 12; Long. 116 08' W., 37 12' N., T. 9 S., R. 52 E., Sec. 4.

This spring consists of two tunnels dug into the rock on either side of a narrow canyon (see Photo F). Both tunnels have a small concrete dam across the entrance and provide a fairly abundant year-round water supply which is piped to a stock tank between the tunnels.

The plastic pipe running from the tunnels is broken and in need of repair or replacement. Also, both tunnels should be cleaned of cans and other debris. About 1 man-day would be required to repair and clean this spring. Wildlife observed in the vicinity includes deer, coyotes, bobcats, rabbits, chukar, doves, and numerous other small animals and birds. (Hayward et al., 1963; Jorgensen and Hayward 1965)

PHOTO F. White Rock Spring--View of spring (see top arrows) and water tank below (see bottom arrow)

CAPTAIN JACK SPRING

Location: Southwest of Area 12 Campsite near the conjunction of Areas 2, 12, and 17; Long. 116°10' W., Lat. 37°10' N., T. 9 W., R. 52 E., Sec. 19.

This spring is currently in excellent condition. The spring apparently is being well maintained by Nevada Test Site personnel as shown by the recent emplacement of a plastic pipe and a small metal tank which improve the spring site because the water is therefore more accessible to wildlife (see Photo G). Installation of several steel posts or other reinforcement would prevent the displacement of the pipe by horses and/or deer. This would require one-half man-day. For permanency, a concrete trough might also be constructed to replace the metal drum.

Wildlife observed in the area includes feral horses, deer, rabbits, and birds. (Hayward et al, 1963; Jorgensen and Hayward 1965)

PHOTO G. Captain Jack Spring--Water tank at spring

OAK SPRING

Location: Area 15; Long. 116°04' W., Lat. 37°15' N., T. 8 S., R. 53 E., Sec 20.

This spring was apparently developed to provide water for mining operations. There is evidence of a pipeline running to living quarters and a corral about a mile south of the spring. Because the present opening at the spring is small (about 1½ feet wide), water is unavailable to any animal larger than a coyote. The opening to the spring is filled in with dirt and overgrown with brush (see Photo H). The existing pipe and tank systems are badly rusted and plugged with dirt (see Photo I). In order to improve this spring, dirt and brush would have to be removed from the entrance and a new pipe and tank system installed. It is estimated that this would take a maximum of 4 man-days.

Wildlife observed in the area consists of deer, coyotes, bobcats, and numerous species of birds. (Hayward et al., 1963; Jorgensen and Hayward 1965)

PHOTO H. Oak Spring--Small entrance into spring

PHOTO I. Oak Spring--Rusted out tanks and pipe near spring

TUB SPRING

Location: Area 15, Long. 116°02' W., Lat. 37°14' N., T. 8 S., R. 52 E., Sec. 13.

Apparently this spring was developed during the operation of a mine located one mile southwest of the spring. It was also probably used by ranchers grazing cattle and horses in the area prior to the establishment of the Nevada Test Site.

The spring consists of a tunnel dug about 30 feet into the hillside which contains 2 to 3 feet of water year-round (see Photo J). The water is pooled within the tunnel by a small earthen dam at the entrance. Water is delivered from the dam via a 3-inch pipe to two small tanks located approximately 100 feet below the spring (see Photo K).

PHOTO J. Tub Spring--Entrance to tunnel at spring

PHOTO K. Tub Spring--3-inch pipe and tank near spring

Because the pipe is apparently partially plugged with dirt, very little water reaches the tanks, and during the summer months the small amount in the tanks evaporates quickly. To reclaim this water source, it will be necessary to clean out the present pipe or replace it with a new pipe. The existing tanks are adequate for the present time. About 2 man-days would be required to accomplish this work.

Animals observed at this spring include deer, rabbits, coyotes, bobcats, chukar, doves, and numerous small animals and birds. (Hayward et al., 1963; Jorgensen and Hayward 1965)

SUMMARY

A considerable number of wild animals and birds inhabit the Nevada Test Site, either as full-time residents or for shorter periods as migrants. Although new open water sources have been developed in support of construction work and Test Site operations, it is desirable to maintain the existing springs for continuing use by wildlife. All of these springs are in secluded locations which afford the wildlife opportunity for watering with minimum disturbance from people or operations.

This report does not cover all the springs on the Nevada Test Site, but deals with the most readily accessible and widely known springs. An attempt will be made at a later date to locate additional springs believed to exist in remote areas of the Nevada Test Site.

It is estimated that to stimulate or reactivate waterflow from the natural springs and to produce a more consistent waterflow, a minimal expenditure of labor and materials would be required. Generally, each of the springs could be upgraded to produce a year-round water supply by removing the debris and earth from the springs, constructing an earthen or concrete reservoir and installing long-lasting pipe connections to new tanks, concrete troughs, or ponds that are protected from encroaching vegetation and seepage loss.

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