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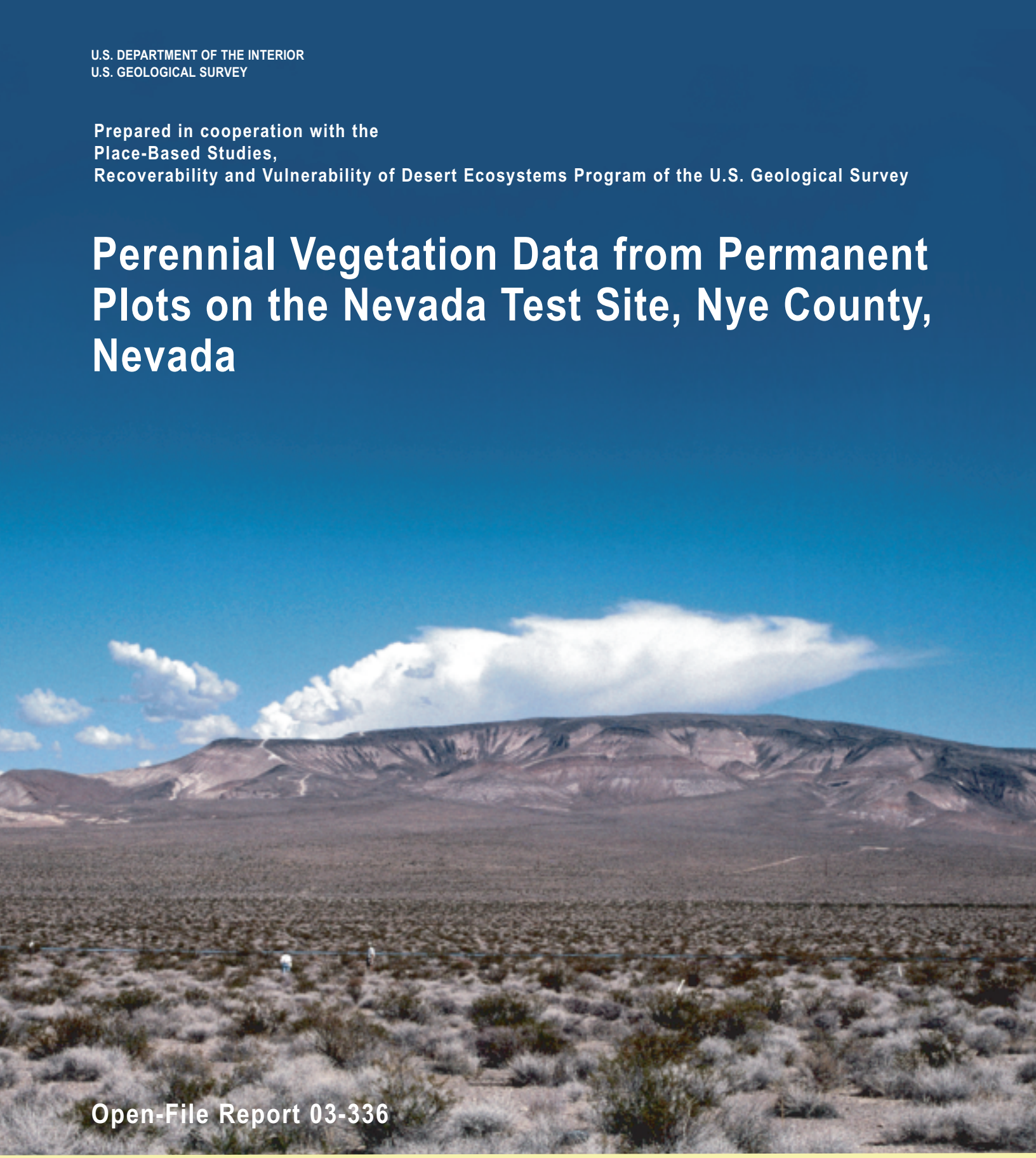
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
Place-Based Studies,
Recoverability and Vulnerability of Desert Ecosystems Program of the U.S. Geological Survey

Perennial Vegetation Data from Permanent Plots on the Nevada Test Site, Nye County, Nevada



Open-File Report 03-336

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COVER PHOTOGRAPH

(1999). Skull Mountain from Rock Valley, Nevada Test Site (Phil Medica)

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By Robert H. Webb, Marilyn B. Murov, Todd C. Esque, Diane E. Boyer, Lesley A. DeFalco, Dustin F. Haines, Dominic Oldershaw, Sara J. Scoles, Kathryn A. Thomas, Joan B. Blainey, and Philip A. Medica

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Recoverability and Vulnerability of Desert Ecosystems Project

of the U.S. Geological Survey

Tucson, Arizona
2003

U.S. DEPARTMENT OF THE INTERIOR

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U.S. GEOLOGICAL SURVEY

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CONVERSION FACTORS AND DATUMS

CONVERSION FACTORS

Multiply	By	To obtain
inch (in)	25.41	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
square foot (ft^2)	0.09290	square meter
square mile (mi^2)	2.590	square kilometer

VERTICAL DATUM

Vertical coordinate information is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

HORIZONTAL DATUM

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83), unless otherwise noted. UTM coordinates are given as zone12.

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ABSTRACT

Perennial vegetation data from 68 permanent plots on the Nevada Test Site, Nye County, Nevada, are given for the period of 1963 through 2002. Dr. Janice C. Beatley established the plots in 1962 and then measured them periodically from 1963 through 1975. We remeasured 67 of these plots between 2000 and 2003; the remaining plot was destroyed at some time between 1975 and 1993. The plots ranged from 935 to 2,274 m in elevation and are representative of common plant associations of the Mojave Desert, the transition to Great Basin Desert, and pinyon-juniper woodlands. The purpose of this report is to describe the complete set of ecological data that Beatley collected from the Nevada Test Site from 1963 through 1975 and to present the data for perennial vegetation collected from 2000 through 2003.

INTRODUCTION

Agencies responsible for land management in the Mojave Desert have a need to understand the rate of changes to ecosystems, particularly the recovery that follows severe disturbances. Two major elements of the Recoverability and Vulnerability of Desert Ecosystems Program of the U.S. Geological Survey involve the study of perennial vegetation recovery following severe disturbances and ecosystem changes in response to climatic fluctuations. The Nevada Test Site (NTS; fig. 1) has high security, which controls the amount of disturbance to the landscape (approximately 8%, Hunter and Medica, 1992). This protection makes NTS an ideal place to conduct long-term ecosystem research. Established in 1951 for the purpose of testing nuclear weapons (Fehner and Gosling, 2000), managers eliminated grazing by domestic animals and strictly controlled access to the 1,375 mi^2 NTS.

In 1962, Dr. Janice C. Beatley, a principal investigator with the University of California, Laboratory of Nuclear Medicine and Radiation Biology, was funded by the U.S. Atomic Energy Commission to study the effects of ionizing radiation on various aspects of the Mojave and Great Basin Desert ecosystems. She established permanent plots on NTS for this purpose and began measurements in 1963. The focus of her research changed after the Limited Test Ban Treaty of 1963, when she initiated a characterization of the common plant associations of the northern Mojave and transition Great Basin Desert and to document long-term changes in these ecosystems. This report discusses the types of data that Beatley collected and presents data on perennial vegetation that Beatley collected from 1963 through 1975 and that we collected from the plots from 2000 through 2003.

Purpose And Scope

The purpose of this report is to document all of the methods used by Dr. Beatley to measure ecosystem attributes on NTS and to present data on perennial vegetation on the plots collected from 1963 through 2003. This report contains a synthesis of methods used to collect data from these plots as well as a limited discussion of other available data. These methods were

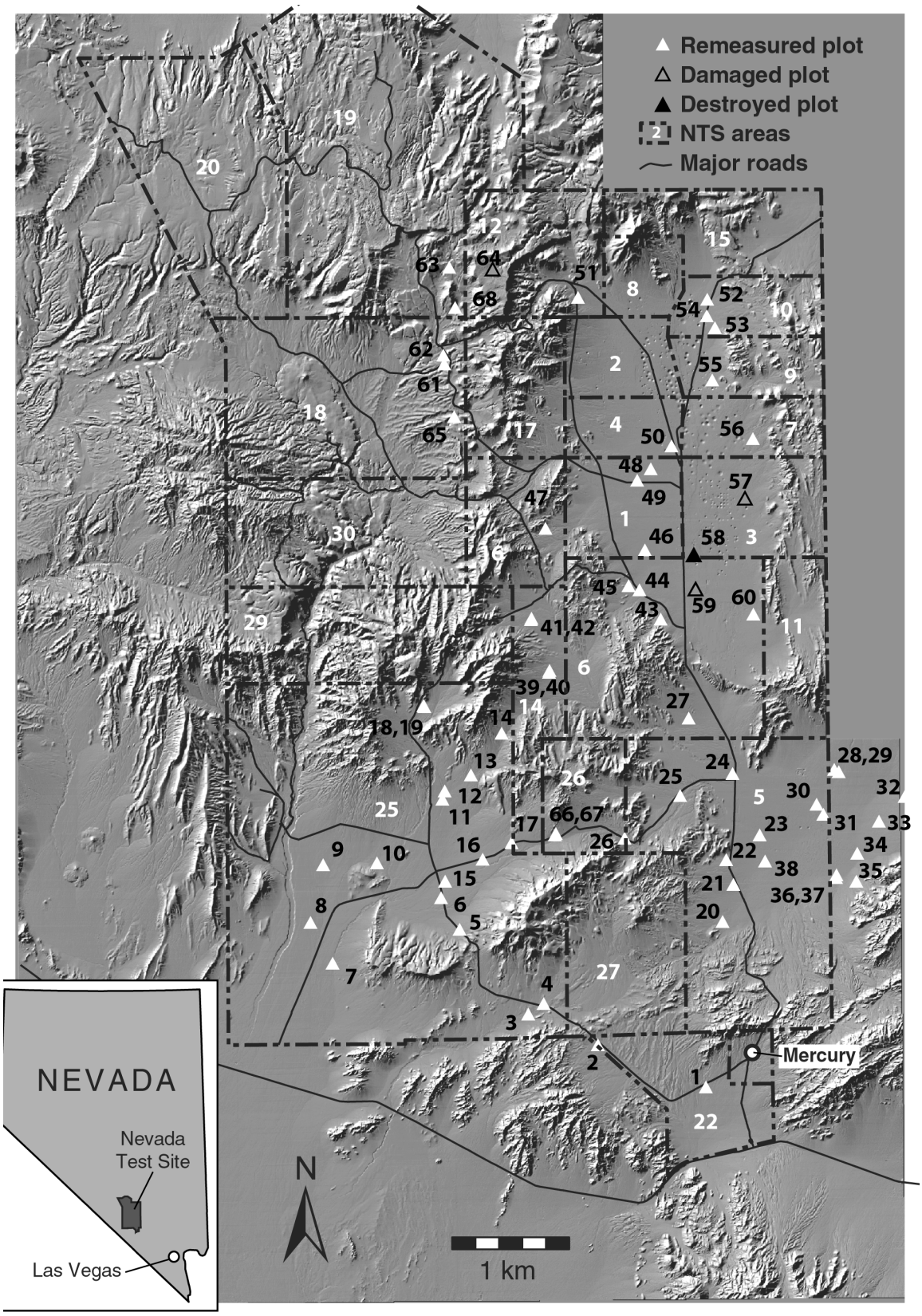

Figure 1. Map of the Nevada Test Site showing the locations of the Beatley permanent plots. The map is based on a 10-m digital elevation model.

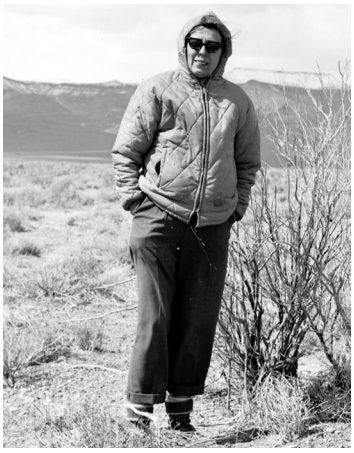

Figure 2. Dr. Janice C. Beatley on Plot 54 in March

either previously published by Beatley, unpublished but determined from her notes and (or) data, or determined to have been a necessary component of her study design during our remeasurement of the plots from 2000 through 2003.

Acknowledgments

We wish to thank the U.S. Department of Energy, Nevada Operations Office, and Bechtel Nevada for their logistical and technical support. We especially thank Bob Furlow and Fred Penrod of the Department of Energy for their help with all aspects of work on NTS. Jerry Magner of the U.S. Geological Survey and Kathleen Matson of Bechtel Nevada Corporation, co-located at the Nevada Test Site USGS Field Office/Core Library, provided extensive logistical support. Scientists who helped with the field work on this project include Jonathan R. Abu-Saba, Lisa M. Barnhill, Dorothy A. Beals, Janice E. Bowers, Catherine J. Bukowski, Elizabeth A. Burguieres, Julie M. Day, Elizabeth S. Deliso, Sara E. Eckert, Ann G. Frazier, Kimberley A. Goodwin, Kelly J. Goward, Jessica L.Grandas, Sharleen P. Johnson, Megan E. Kelley, Adam Malisch, Sharilyn L. Meyers, David M. Miller, W. Kent Ostler, Robyn M. Powers, Helen A. Raichle, Elizabeth M. Ralston, Kristin K. Riebeling, Heather L. Robinson, Renée J. Rondeau, Mary B. Saethre, Nira Salant, Caimee A. Schoenbaechler, Andrew K. Thorpe, and Jason A. Williams. John Freudenstein of Ohio State University and John Caruso of the University of Cincinnati provided information on Beatley's career and legacy in Ohio. We especially thank Mary Killeem of the University of Cincinnati for supplying us with Dr. Beatley's final curriculum vitae. Alan Flint of the U.S. Geological Survey supplied the 10-m digital elevation model depicted in Figure 1. Peter G. Griffiths produced the geographical information system graphics used in this report. The report was critically reviewed by W. Kent Ostler of Bechtel Nevada, Richard Hunter of Salisbury University, and Debra Hughson of Mojave National Preserve (National Park Service). We especially thank Dr. Beatley for her foresight in setting up these ecological study plots.

Notes on Units and Species Nomenclature

A mixture of types of units are used in this report, reflecting how Beatley originally made her measurements and the standard usage of metric units in scientific reports. Beatley mostly used English units for her measurements; some exceptions include quadrat frames, which were 0.1 m^2 in area. We remeasured her plots in English units to allow direct comparisons, although our remeasurements of plant heights were generally in centimeters. We converted her temperature and precipitation measurements, originally collected in English units, to metric units. As an aid to any future researchers who may want to remeasure these plots, we report some values in the original English units as this more easily facilitates reoccupation and remeasurement of these plots.

We have chosen to retain many of the species names that Beatley used in her original analysis. Taxonomic revisions are constantly made, and the choice of whether to accept a change to the name of a species often depends on widespread acceptance in the scientific community, which may require up to a decade after the proposed change. In this report, we opt for a conservative approach to changing Beatley's original species names. We change her *Haplopappus*

cooperi to *Ericameria cooperi* because that revision has been long accepted. Beatley herself chose to use *Psorothamnus* instead of *Dalea* for that genus of the Fabaceae. We retain usage of *Stipa speciosa* and *Oryzopsis hymenoides* (both are proposed for the genus *Achnatherum*); *Ceratoides lanata* (instead of *Krashinninikovia lanata*); and the genus *Hilaria* (instead of *Pleuraphis*).

THE LEGACY OF DR. JANICE C. BEATLEY

Dr. Janice C. Beatley (fig. 2) was born in Columbus, Ohio, on March 18, 1919, and she received her B.S. (1940), M.S. (1948), and Ph.D (1953) degrees in botany from Ohio State University (Stuckey, 1990). After holding several non-tenured teaching positions in the East, she moved west to New Mexico Highlands University in 1959 and to the University of California at Los Angeles (UCLA), Laboratory of Nuclear Medicine and Radiation Biology, in 1960. She was part of a larger team of UCLA researchers who contracted with the U.S. Atomic Energy Commission (USAEC) to do ecological work on NTS between June 1960 and March 1973. From 1973 until her death in November 1987, she was an Associate Professor in the Department of Biological Sciences at the University of Cincinnati in Ohio.

The Laboratory of Nuclear Medicine and Radiation Biology was primarily interested in the effects of ionizing radiation released during above-ground nuclear testing on the desert environment of NTS. In 1962, Beatley established a network of 68 permanent ecological plots on NTS with the intent of addressing a number of long-term ecological questions primarily related to the effects of ionizing radiation. With establishment of the Limited Test Ban Treaty of 1963 (Fehner and Gosling, 2000), Beatley's interests shifted from the effects of ionizing radiation to vegetation mapping and ecosystem processes. The plots are within the major vegetation assemblages of the Mojave Desert, and their siting was due in part to her interest in describing and mapping plant communities on NTS (Beatley, 1976c), particularly the spatial distribution of creosote bush (*Larrea tridentata*).

During her career (Stuckey, 1990), Janice Beatley wrote 42 publications, including two books (*e.g.*, Beatley, 1976c). Thirty of her publications are described in a recent annotated bibliography (Wills and Ostler, 2001). Beatley only published some of the data collected from her plots between the mid-1960s and early 1980s (Beatley, 1969a, 1969b, 1979, 1980). Because her plots were designed for repeated measurements to assess long-term change, most of the data are unpublished, particularly for her plots that document disturbance recovery. Beatley spent much of her time in the 1970s putting all of her data into computer files for final analysis. After Dr. Beatley died on November 14, 1987, her estate provided an endowment to Ohio State University, which was used to create the Janice Carson Beatley Herbarium Award in 1988. This award annually funds 2-5 students with up to $1,500 each for field studies in plant systematics and ecology. The first award was given in 1990 by the Department of Botany at Ohio State University, which later was reorganized into the Department of Evolution, Ecology, and Organismal Biology.

As part of her last requests, Beatley gave her data to the U.S. Geological Survey (USGS) after her death in 1987. The contents of her office that were related to work on NTS were not well described. No overall description of the permanent plots or the exact nature or purpose of several measurements was found. The contents of Beatley's office were packed and shipped to the USGS Project Office, located at the Desert Laboratory in Tucson, Arizona. Data were available in computer printouts and 9-track tapes that were translated onto modern computer media; computer punch cards, which Beatley used to create the 9-track tapes, were discarded. All the materials from Beatley's office have recently been moved to long-term storage at the USGS facility in Henderson, Nevada. The purpose of this publication is to provide access to part of her extensive dataset, which appeared to be her intention when she gave her data to USGS.

Reoccupation of the Beatley ecological study plots provides invaluable data on long-term changes in undisturbed Mojave Desert ecosystems. In addition, Beatley's study design allows an opportunity for assessing long-term recovery from several types of disturbances. This report describes the Beatley permanent plots, depicts the data for perennial vegetation, and discusses their usefulness for addressing several important ecological questions. Our remeasurement of the Beatley permanent plots between 1999 and 2003 validates her long-term vision of what would be needed to understand ecosystem change in the Mojave Desert.

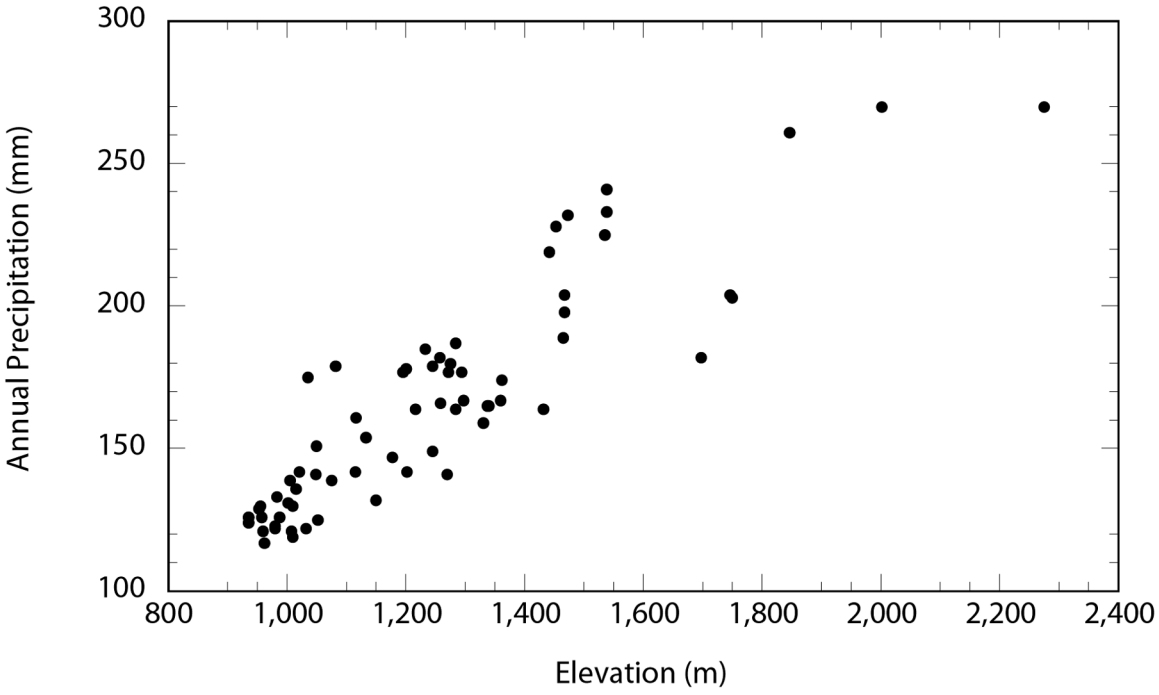

Figure 3. Graph showing the relation between elevation and annual precipitation for the 68 permanent plots on the Nevada Test Site. Precipitation data were collected between 1963 and 1972 (Beatley, 1976c).

METHODS

As previously noted, Beatley did not leave an overall description of her plots, or the design of her studies, except to the extent of what appears in her publications. In particular, those interested in Beatley's descriptions of her work are directed to several key publications that she wrote (Beatley, 1965, 1976c, 1979). The following descriptions were developed by both reading her generalized descriptions and knowing the specifics of her plots and their locations as determined during our remeasurements.

The Study Design and History of the Plots

Beatley established 68 study plots beginning in the fall of 1962. Of the 68 plots, 59 plots are in undisturbed settings selected to document long-term ecological changes in "climax" vegetation (Beatley, 1980). Nine plots were established to document disturbance response; some of the disturbed plots were paired with nearby undisturbed plots while others represent disturbance gradients. Some of Beatley's plots coincided with plots originally established in the late 1950s by Rickard (Rickard and Beatley, 1965). The plots ranged in elevation from 935 to 2,274 m in elevation (fig. 3) and are representative of the climate and elevational range of the Mojave Desert.

Beatley (1979) provided only a vague description of why her plots were located where they are without describing in detail the exact procedure for choosing her corner posts. From our visitation of the plots and reading her papers, we can assume that she had several overall hypotheses that she was testing. One of those concerned the spatial distribution, and patchiness, of creosote bush on the landscape, because many of her plots (*e.g.*, plots 44, 48, 49, 54) were in isolated patches of creosote bush within a larger plant assemblage with no creosote bush. The publication of Beatley (1974b) implies this study design. Another concerned changes with respect to elevation above closed playa basins, again indicated by the publication of Beatley (1975). Finally, it is apparent that she sought replicate plots for the major plant assemblages of NTS. Whether the exact locations of the plots were determined randomly or because of some now-unapparent factor (*e.g.*, road access) cannot be known. A listing of the plots, their dominant vegetation, and their locations appears in Table 1.

Several plots (48, 52-54) are sited to assess long-term recovery from the effects of atmospheric nuclear testing with distance away from ground zero (Beatley, 1965). Three plots (19, 40, 42) were established in blackbrush (*Coleogyne ramosissima*) assemblages that were burned in the 1950s. One plot (67) was located in the Wahmonie townsite, which was abandoned in 1928; this townsite has been repeatedly measured by other researchers as part of on-going studies of disturbance recovery in the Mojave Desert (Wells, 1961; Webb and Wilshire, 1980; Webb, 2002; Webb and Thomas, 2003).

Several of Beatley's plots were damaged or threatened by construction projects during her tenure on NTS. Plots 24, 61, and 62 had road or other construction near or adjacent to the plots at known times in the 1960s. In the case of plot 24, our remeasurements suggest that plants on one side of the plot were enhanced by runoff from a nearby road, and therefore data from this plot must be interpreted carefully. About one half of another plot (57) was damaged by construction in 1965, and Beatley established a new plot 57N nearby in 1966; both plots were remeasured, with the original plot 57, which we refer to in Appendix 1 as plot 57A, now partially representing disturbance recovery. Three plots (9, 29, and 31) were either damaged by gophers between 1963 and 1975 or had "questionable history" (Beatley, 1980); our remeasurements indicate that these plots did not have significant problems between 2000 and 2003 and were retained in the set. Between 1975 and 1992, one plot (58) was destroyed by an underground nuclear test. Another plot (59) was damaged during construction of an NTS facility, and although about one-third of the plot was destroyed, this plot was remeasured for its undisturbed section. One plot (64) was damaged by road construction at an unknown time after 1975, but its undisturbed sections were remeasured.

Two additional studies that post-date Beatley's work should be noted. Ostler and others (2000) provide a new vegetation map of NTS that supercedes Beatley's map (Beatley, 1976c). Between 1987 and 1994, the Basic Environmental Compliance And Monitoring Program (BECAMP) measured climate, annual and perennial vegetation, and rodent populations at many sites (Hunter, 1994), including within or adjacent to several Beatley plots. None of Beatley's plots were replicated using her methods, however, and the relation between the BECAMP measurements and the data presented in Appendix 1 is unclear. We are remeasuring the BECAMP plots to determine this relation and will provide those results in a subsequent report.

Geometry of the Plots

Each plot was established with a primary goal of measurement of perennial vegetation within a 100 foot by 100 foot square area, referred to here as the central area. At least three plots varied in dimensions from the 100 ft by 100 ft design owing to site-specific objectives or geometric constraints. Plots 66 and 67 (Wahmonie townsite) were set up as 75 ft by 300 ft plots, joined along a center 300 ft line. Plot 57N, set up after the original plot 57 was damaged, was 75 ft by 150 ft; Beatley left no explanation as to why she deviated from her original 100 ft by 100 ft design for this plot. The types of corner posts varied considerably from 1 in. angle iron (the most stable) to 4 in. by 4 in. wooden stakes to 1 in. by 1 in. stakes to wood lath (least stable). Measurements of perennial vegetation were made from steel tapes stretched across the plot (see below), and additional stakes marked the locations of where these lines were placed. In all cases, the original study design called for the lines to be 10.0 ft apart, indicating that the typical plot had 11 marks on two sides, including 9 markers between the cornerposts. Most of these markers were 1/4 in. steel stakes with hooked ends, although on some plots (*e.g.*, plots 66 and 67) wooden lath was used instead.

In order to remeasure the plots, we had to determine how accurately Beatley measured these dimensions, as well as whether the plots were consistently square. For most plots, the dimensions between cornerposts on the sides with additional stakes varied between 99.9 and 100.1 ft; the dimension along the lines varied between about 100.5 and 101.0 ft. We suspect that the longer distance occurred because of the leaders used on the steel tapes that Beatley used, and we adjusted the length along these lines to 100.0 ft to be consistent with her measurements. By stretching steel tapes between the cornerposts, we determined that the intermediate stakes were generally accurate to ±0.1 ft, both in distance along the line and distance to one side or the other from the line. This is the same magnitude of error that we believe to be inherent in our measurements with the same equipment.

We encountered five possibilities of plot re-establishment, depending upon how many cornerposts remained standing. In the best-case scenario of all four cornerposts standing, the plots were relatively easy to reoccupy. In the case of no cornerposts standing, we carefully measured the distances between the existing intermediate stakes and re-established the cornerposts. All stakes were replaced with 3/8 in. steel reinforcing bar (rebar) from 2000 through 2003.

For all plots, a perimeter fence cordoned off the central area from vehicular use and extraneous trampling, and a sign stating the project name faced the nearest access point. In general, the perimeter fence consisted of light fence posts driven outside the four corners of the central area and connected with 1/16 in. light wire. Few of these fences were intact when we relocated the plots, owing to a combination of wind, weathering of the metal, occasional visitation by NTS security, and (or) passage of pronghorn antelope or feral horses. As described below, rainfall, air temperature, soil temperature, and soil moisture measurements were made at one point within the central area. Annual plants were sampled outside of the central area, and rodents were trapped at 8 points around the perimeter of the plot with one trap station in the center of the plot. Some plots were measured as part of the BECAMP studies of the late 1980s and early 1990s (*e.g.*, Hunter, 1994), and these transects were marked with a combination of wood lath painted white on top and other markers, including white PVC pipe encasing metal fence posts. As a result, many different types of stakes with different geometric configurations are adjacent to these plots. In addition, an array of closely spaced metal stakes appear within the central area of some of the plots; the purpose of this array is unknown.

Photography of the Plots

Beatley had most of her plots photographed from the bed of a truck in April and May, 1964, as part of her long-term documentation of these plots. Camera stations were established on opposing corners of the plots just outside of the perimeter fence. Two professional photographers — either Richard (Doc) Collier or Richard Borden — took the photographs in 1964; Beatley took photographs in 1974 and 1975. The professional photographers worked for Pan Am, the primary contractor with the USAEC at the time. We have no way of knowing which photographer took which photograph, so all of the photographs are attributed to Beatley in this report. The photographers mounted a 4x5 Crown Graphic camera equipped with a 135 mm lens and 4 in. by 5 in. Plus-X film in cut-film holders, on a tripod in the bed of a truck to take downward-looking photographs of the plots. Two photographs were taken from each camera station, generally showing a corner of the plot near the edge of the photograph.

Some plots (*e.g.*, Plots 39, 41, and 64) were either not photographed in 1964 or the negatives were lost; for other photographs, one or more of the exposed negatives was lost before transfer to the U.S. Geological Survey; and for one plot (Plot 58), the camera stations were destroyed by subsequent land use. Some plots (*e.g.*, Plot 18) were apparently not photographed in 1964 or 1965, but in 1974 and 1975, Beatley photographed these plots using a hand-held 35 mm camera with a lens of 70 to 100 mm focal length from standing positions within the plot. Like the professional photographers, Beatley used black-and-white negative film.

We replicated all available photographs of the permanent plots using a Crown Graphic 4x5 camera with a 135 mm lens and modern color and black-and-white film. A total of 351 views of the permanent plots were matched from 1999 through 2003 as part of this study, and examples of the original and matches are given in Appendix 1. A listing of the relevant data for the plot photography appears in Table A-69.

Environmental Data

Environmental data were collected from all plots every two weeks for the 10 years spanning 1963-1972. The data include: 1) soil temperature; 2) soil moisture potential, using gypsum blocks, at 3, 6, and 10 in. depths; 3) soil pH and particle-size distribution; 4) radiation exposure on dosimeter film badges; 5) maximum-minimum air temperatures; and 6) precipitation in storage gages. These data were collected for all plots at roughly two-week intervals between 1963 and 1972. The log books for these measurements were retained after Beatley died, providing the exact dates of environmental measurements. Although there are some missing data, as a whole the data are remarkably complete.

Soil temperature was recorded using thermistors embedded in gypsum blocks; these temperature readings are instantaneous and only reflect conditions at the time of measurement. All gypsum blocks were calibrated on pressure-plate apparatus; the calibration curves were developed and applied to the raw data by Dr. Beatley and her staff. These data have not been published and are not included in this report. Particle-size distribution and soil pH were measured for soil pits; the particle-size distribution, measured using a coarse set of engineering screens with openings in English units, were deemed unusable for subsequent work. Soil pH was measured using a soil slurry and a standard pH meter. Beatley did not publish these data and they are not included in this report. Radiation exposure is discussed in the following section.

Air temperatures were measured using recording maximum-minimum mercury thermometers placed in a makeshift shelter at a height of 1 ft above the ground surface. These thermometers only record the maximum and minimum temperatures between readings and therefore do not provide a continuous record of temperature on a daily basis. Precipitation (mostly rainfall) was measured in a storage gage placed below ground surface and equipped with a small amount of oil to minimize evaporation. Precipitation collected in an above-ground funnel flowed into the storage gage, which periodically was measured and emptied. Rainfall data are valuable for monthly and annual precipitation estimates only. These data are only included in this report as mean-annual precipitation (Table 1).

Other climate data are available for NTS (Table 2). In addition to data from Yucca Mountain and vicinity (Flint and Davies, 1997), storage rainfall gages were placed near several Beatley plots during the period of BECAMP studies, 1989-1995 (*e.g.*, Hunter, 1994). Climatic data also are routinely collected near major DOE facilities on NTS, such as at Mercury, as well as in surrounding communities and other locations (Table 2). These data were used to model precipitation for the Beatley plots to determine the 1963-1972 average, measured on the plots, with a modeled average predicted for 1958-2000.

Monthly precipitation data were spatially distributed over NTS using an interpolation scheme developed as a combination of multivariate regression using geospatial position, elevation, and inverse distance weighting. The weighting scheme reverts to only inverse distance if the regression fit becomes statistically insignificant. Three sources of monthly precipitation data, representing 35 stations over an area of approximately 15,000 km^2, were used (see Table 2).

Monthly precipitation was calculated using the gradient plus inverse distance-squared method (GIDS) (Nalder and Wein, 1998). Multiple linear-regression coefficients define precipitation along north-south, east-west, and elevation gradients for each month. These gradients are used to weight inverse distance-squared interpolation as follows:

$$Z = \frac{\left[\sum_{i=1}^{N} \frac{Z_i + (X - X_i) \times C_x + (Y - Y_i) \times C_y + (E - E_i) \times C_e}{d_i^2}\right]}{\left[\sum_{i=1}^{N} \frac{1}{d_i^2}\right]}$$

where X and X_i are the easting of a grid cell and climate station i, Y and Y_i are the northing of a grid cell and precipitation station i, and E and E_i are the elevation of a grid cell and a precipitation station. C_x, C_y, and C_e are the multiple linear regression coefficients for easting, northing, and elevation, respectively. N is the number of precipitation stations and d_i is the distance between a grid cell and precipitation station i. Monthly precipitation was summed to annual totals and averaged over the period of record; those modeled annual precipitation totals appear in Appendix 1. For selected plots, a time series of modeled annual precipitation over the period of perennial plant measurements appears in Figure 4.

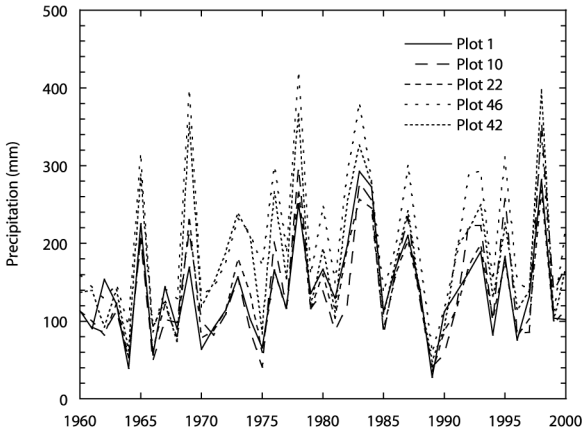

Figure 4. Time series of modeled precipitation for selected Beatley plots on the Nevada Test Site, 1960-2000.

Radiation Dosages

All plots were monitored with film badges (Dupont Type 556, component film 508 and 834, containing a filter for beta and low-energy gamma) suspended from the under side of a plywood cover for a maximum-minimum thermometer installation at 12 in. height above the soil surface. These data were collected concurrently with environmental data from 1963 through 1972. The installations were on the northeast sides of shrub-clumps at the periphery of the shrub canopy. Film badges were exposed to gamma-radiation levels intermediate between those of the open soil surface in one direction and the accumulated debris around the bases of the shrubs in the other direction. Badges were collected and replaced weekly or monthly, as desirable with changing seasonal air temperatures.

Among the papers left by Beatley was a description by REECO Dosimetry of the types of film badges used by Beatley on NTS. From November 1962 until 1969, the E.I. Dupont type 556 film packet consisted of a U-shaped strip of lead (0.028 in. by 0.5 in.) pressed about one end of the packet and sealed within a 4-mm thick plastic bag. The type 556 film contained two components: 519 low range and 834 high range. The film was pre-numbered at the factory with impression dies so that the film was readily identified before and after processing and was routinely calibrated to radium and ^{60}Co gamma sources. Beta calibrations were made with ^{90}Sr - ^{90}Yt point sources and uranium slab sources. Under field conditions the minimum reportable gamma dose was 30 mrem and the minimum reportable beta dose was 50 mrad. Film were read on an Eberline transmission densitometer using a ^{137}Cs calibration curve that best represents the mixed radiation fields at NTS. ^{60}Co exposures are approximately 15% higher than ^{137}Cs. In late 1969 and early 1970, the type 556 film was phased out because the manufacturer discontinued its production, and it was replaced with Eastman Kodak type 3 film. Kodak type 3 film packets contain two components similar to Dupont 556 components. Minimum reportable doses are the same; however, Kodak type 3 film is more sensitive so the initial base fog is greater than Dupont 556 film. The film sensitivity varies with the type and energy of exposure but occurs generally at energies below 0.2 mev; the film is also very sensitive to heat, light, and humidity.

Annual Plants

Beatley measured annual plants at peak production during the spring months on all plots for 6 years and on 7 selected plots for 10 years. She was particularly interested in invasive annuals, both Mediterranean annual grasses (*Bromus rubens*; Beatley, 1966b) and summer weedy herbs (*Salsola iberica*; Beatley, 1973).

Winter annuals were measured during their reproductive peak in April-June from 1963-1968 for 61 plots and 1963-1972 for plots 3, 4, 48, and 52-55. Cover-class, average height, and density were measured for each species in quadrat frames placed along a line 10 feet outside of the central area and parallel to one of the sides. Each line was 100-ft long, and the 0.1 m^2 frames were placed every 2 ft for a total of 50 estimates per plot (Beatley, 1969a). Beginning in 2000, the ends of lines on the remeasured plots were marked with 3/8 in. rebar.

In addition, biomass of all winter annual species combined was measured destructively for each of the 68 plots between 1964 and 1966 by harvesting plants within 0.1 m^2 frames placed every 5 ft (20 measurements per plot and adjacent to the 100-ft line (Beatley, 1969a). The side of the plot chosen varied to minimize cumulative-disturbance effects in subsequent years. Summer annuals were measured on all plots for 5 years and on 5 plots annually for an additional 5 years using the same techniques. Beatley published some of these results (Beatley, 1966a, 1966b, 1967, 1969a), mostly of a qualitative nature, and Hunter (1991) reported density data collected from Rock Valley plots between 1963 and 1972. We remeasured winter annuals on a subset of the Beatley plots between 2000 and 2003 and will report the data in subsequent publications. Extensive additional work is warranted in relating the annuals to environmental data.

Perennial Vegetation

Measurement of perennial vegetation was the key component of Beatley's sampling design, and she reported her results for perennial vegetation in undisturbed plots primarily in Beatley (1979, 1980). She differentiated "perennial vegetation" into woody perennials and herbaceous perennials and measured the second type more frequently. We discontinue this approach and lump the two groups together in this

report. Because Beatley measured both types of vegetation using the same method, we refer to both as perennial vegetation in the following methods description.

Perennial vegetation was measured in the central area using the line-intercept method on eleven 100-foot lines spaced 10-feet apart. As a result, most plots represent intercepts over an 1,100 ft distance. As noted above, the original lines were marked with a variable combination of large nails, hooked stakes, or wooden stakes at both ends of the transects; these markers were replaced with 3/8 in. rebar between 2000 and 2003. The intercept start and end were measured for each plant; and overlapping canopies were recorded separately, making the sum of the individual plant covers greater than the total ground cover. The maximum height of individuals, as differentiated from the maximum height encountered along the intercept, and their phenological status were noted (Beatley, 1980). We multiplied the maximum height by the intercept distance to create a two-dimensional index of biomass, in units of m^2, and report this information in the B tables included in Appendix 1.

Perennial vegetation was measured in the summer and fall of 1963 and the spring of 1975 and is presented in summary form for all plots in Appendix 1. This dataset was also presented in Beatley (1979, 1980), although many plots were combined to provide a vegetation-assemblage average in those reports. Herbaceous perennials were measured annually between 1963 and 1967 and again in 1975, but we only present the data collected simultaneously with the woody perennials in Appendix 1. Most disturbed plots were measured in 1963, 1964, 1965, 1966, 1967, 1970, and 1975, and these additional years of data for these plots (*e.g.*, plots 52-54) are presented in Appendix 1 as well. As previously noted, plot 57 is a special case where the original plot, which we refer to as plot 57A, was partially destroyed in 1965; we present the 1963 and 2002 data for this plot. The new plot, which Beatley called 57N, has data from 1966, 1975, and 2002.

Beatley designed her interpretations around a set of codes for each plant. For condition of whole plant, the codes are: L = living (dormant or barely alive); D = dead; V = vegetative (with leaves or bracts); F = flowering, fruiting, or reproductive buds; S = living sprouts present; and N = no condition was noted (but the plant was alive). For condition of portion of plant intercepted by the line, she also used the following codes: L = living, D = dead, B = a combination of live and dead parts, and S = sprouts. Our interpretation of her codes is straight forward for L, D, V, and F, and we added another code (dblp = dead branch on a live plant) to correctly separate dead from live cover while maintaining the statistics on number of live plants and their average height. N, S, and B are calculated as live plants in our calculations, although we did not change her codes in the data files. Beatley double-coded these notations for some species on some plots. We interpreted her double-coded entries as: LB = L, NB = L, SB = L, LD = dblp, ND = dblp, and SD = dblp.

Our interpretation of Beatley's codes introduces an unknown amount of error into our calculations. We strictly separated dead and live portions of plants in our intercept data, and it is not apparent that Beatley did the same. It is also not apparent that she needed to do this, because much of the dead plant material we encountered resulted from a severe drought in 1989-1991 and that may have produced different vegetative conditions than what Beatley encountered. This interpretation is supported by Beatley's photographs, which do not show large amounts of dead parts on plants on her plots in 1964. To ensure quality control in our re-analysis of Beatley's data, we compared our summary data with the data that she calculated and reported in Beatley (1979), whenever she reported data that were not averaged over more than one plot.

We do not report all of the data for perennial vegetation that Beatley collected, in part because she did not necessarily leave an unambiguous method for us to replicate. For example, perennial seedlings were measured annually on all plots for 5 years; these data have not been published or remeasured. Definition of "seedling" is problematic and requires an interpretation that we cannot make in a manner reproducible with Beatley's measurements. We do not provide any analysis of Beatley's phenological information, which she used to construct an elaborate model of plant phenology in the Mojave Desert (Beatley, 1974a), because much of the data she used in this analysis was obtained in the bi-weekly visits to the plots to capture environmental data.

Rodents

Rodents were censused on all plots once annually for 5 years (Beatley, 1976a, 1976b). These data are probably inadequate for proper population

studies of rodents but can be used as an index of species composition. Small mammal transect lines were superimposed over the central area to form an effective trapping area of 1.14 ha. Seven lines with 7 traps — making a total of 49 trap stations with one trap per station — spaced at 15-m intervals formed the 91 by 91 m grid. Each plot was sampled after the end of the reproductive season in July-September using Sherman live traps baited with rolled barley. Sampling occurred for 2 consecutive nights; this sampling protocol of only 2 nights per year precludes any assessment of absolute density of all rodents, but instead yields species composition information primarily on animals that are nocturnally active in July. We have remeasured rodents on several Beatley plots and will report the data in subsequent reports.

SIGNIFICANCE OF THE BEATLEY DATA

The Beatley plot data, combined with our remeasurements from 2000-2003, represent the longest ecological dataset from the Mojave Desert. Because of these data, long-term changes in annual plants, perennial vegetation, and rodent populations can be detected and compared with climatic fluctuations or other variables that create conditions for environmental change. Here we provide some generalized discussion of the implications of the perennial vegetation data (Appendix 1) in determining the causes for change in the Mojave Desert.

Climatically Driven Changes

Beatley (1980) concluded that most of the living plants in 1963 were still present when she remeasured her plots in 1975. An additional 20-30 percent of the plants measured in 1975 were new, and total cover had increased as a result of high rainfall in the late 1960s and early 1970s (fig. 4). Beatley (1980) concluded that the size and cover of woody perennial plants in the Mojave Desert are strongly correlated with precipitation.

The period between 1975, when Beatley last measured the plots, and 2000 had several climatic extremes. The period of 1977-1984 was one of the wettest periods of the 20th century; an extreme drought occurred in 1989-1991 (Hunter, 1994; Flint and Davies, 1997); and lesser albeit significant droughts occurred in 1996 and 1999-2002 (fig. 4). Many shrubs died during the 1989-1991 drought, suggesting that droughts are a major mechanism for change in Mojave Desert ecosystems. Certain frost-sensitive species, such as spiny menodora (*Menodora spinescens*), suffered major damage during a severe frost on December 24-25, 1990. Another possible factor is the gradually rising levels of carbon dioxide in the atmosphere, which would tend to promote increased biomass.

Despite the droughts and frosts, the increase in biomass between 1963 and 2000 is striking (Appendix 1). Associations dominated by creosote bush had large increases in the heights of individual plants as well as increases in total cover, whereas assemblages dominated by Chenopod species (saltbushes) had large decreases in cover. Some blackbrush assemblages, in contrast, had small decreases in perennial plant cover, probably as a result of the droughts (Appendix 1). Whether precipitation increases alone caused increased plant growth, or whether carbon dioxide increases played a significant role, will be the subject of future research.

Disturbance Recovery

Part of Beatley's experimental design for plot location emphasized recovery from a variety of different disturbances. In particular, she emphasized recovery from fires that have occurred naturally (lightning strikes) or as a result of human activities on NTS. As part of her larger study design, she established three replicate sets of paired burned-undisturbed plots in blackbrush assemblages in Topopah and Mid Valleys (plots 18-19, 39-42; fig. 1). Two of these plot pairs were placed within a larger area that burned after a lightning strike in 1959, and the third was in an area that burned about 1950. Repeat photography of these sites (Appendix 1) shows several important changes in 36 years. First, Joshua trees (*Yucca brevifolia*) have increased dramatically in the background unburned areas, supporting the interpretation of Joshua trees as a relatively fast-growing and medium-lived species (Comanor and Clark, 2000). Second, mortality is so high on the disturbed plots, and growth rates are so large, that identifying common individuals in replicate photographs is difficult. In the burned plot, the cover and biomass of perennial vegetation — particularly

woody shrubs — is much higher after 36 years of recovery, indicating that recovery is occurring relatively quickly (Appendix 1).

Reoccupation of the permanent plots verifies what is visibly obvious in the photographs. One important caveat about the disturbance monitoring plots is that they are always paired by straddling them at the formerly "hard edge" of disturbances. This emphasizes recovery at disturbance edges adjacent to intact vegetation stands. We have considered recovery on the plots and made observations in the larger study area. One important insight is that there may have been as few as one blackbrush establishment event on burned sites during the past 36-50 years. The pattern of germination also seems to be in a thin band along the edge of the disturbance, and no more than 20 m from the edge of the intact blackbrush stand. We hypothesize that this line may be linked to granivore activities.

In the 1960s and 1970s, grasses (notably *Stipa speciosa*) dominated the perennial vegetation on many of the plots in Yucca Flat and on plots recovering from disturbances (Hunter, 1994). The drought in 1989, one of the most severe in the history of southern Nevada, greatly reduced the grasses on the burned plots, and now the proportions of long-lived and short-lived shrubs are about equal to grasses in terms of vegetation cover (Appendix 1). Total cover on the burned plots is approaching the total cover on nearby undisturbed plots after 50 years of recovery, in accord with what is known of recovery in other types of disturbed areas (Webb and Thomas, 2003). Despite the increases in woody vegetation, the species composition is not even close to the undisturbed plots, and extrapolation suggests that as long as a millennium will be required for recovery of species composition.

Benefits of Long-Term Monitoring

The Beatley permanent plots represent long-term monitoring that is beneficial to researchers and land managers. They provide critical ecological information that can be collected in no other way. The history and data of the Beatley plots illustrate the opportunities to generate and test hypotheses about environmental change far outside the normal time-frame of 3-5 year funding cycles. From these plots, we are generating information about disturbance-recovery regimes, climate change, non-native plant invasions, and plant/animal interactions through synthesis of data collected over a half century. What we learn from the Beatley plots is stimulating discovery and insight for a geographic area much greater than that occupied by the sites, and of immediate use to managers, researchers, and the general public. The data from these plots are also important for generating significant ecological hypotheses that will be tested using field-scale experiments on and off of NTS. The continued preservation and periodic monitoring of the Beatley permanent plots will continue to provide an irreplaceable record of vegetation change over time in the Mojave Desert.

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Table 1A. Summary characteristics of the 68 Beatley permanent plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Nevada Quadrangle Sheet (7.5')	Plant assemblage (1963-1975)[1]	Plant assemblage (2000-2001)[1]
1	Camp Desert Rock	*Larrea-Ambrosia*	*Larrea-Krameria-Ambrosia*
2	Specter Range NW	*Larrea-Grayia-Lycium*	*Larrea-Ambrosia-Ephedra*
3	Specter Range NW	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Ambrosia-Larrea-Lycium*
4	Specter Range NW	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Ambrosia-Oryzopsis-Larrea*
5	Specter Range NW	*Larrea-Lycium-Grayia*	*Larrea-Krameria-Ambrosia*
6	Jackass Flats	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Ambrosia-Larrea-Ephedra*
7	Jackass Flats	*Larrea-Ambrosia*	*Menodora-Larrea-Ambrosia*
8	Busted Butte	*Larrea-Ambrosia*	*Ambrosia-Larrea-Oryzopsis*
9	Jackass Flats	*Menodora-Ephedra*	*Menodora-Ephedra-Krameria*
10	Jackass Flats	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Ambrosia-Larrea-Lycium*
11	Jackass Flats	*Larrea-Lycium-Grayia*	*Larrea-Ephedra-Krameria*
12	Jackass Flats	*Larrea-Lycium-Grayia*	*Larrea-Ephedra-Krameria*
13	Skull Mountain	*Coleogyne/Larrea-Grayia-Lycium*	*Coleogyne-Lycium-Ephedra*
14	Mine Mountain	*Coleogyne/Grayia-Lycium*	*Menodora-Coleogyne-Lycium*
15	Jackass Flats	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Larrea-Lycium-Ambrosia*
16	Skull Mountain	*Larrea-Lycium-Grayia*	*Larrea-Ambrosia-Lycium*
17	Skull Mountain	*Larrea-Lycium-Grayia*	*Larrea-Lycium-Ephedra*
18	Topopah Spring	*Coleogyne*	*Coleogyne-Ephedra*
19	Topopah Spring	*Ephedra*	*Ephedra-Encelia*
20	Cane Spring	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Larrea-Ambrosia-Ceratoides*
21	Cane Spring	*Larrea-Lycium-Grayia*	*Larrea-Oryzopsis*
22	Cane Spring	*Larrea-Ambrosia*	*Larrea-Ambrosia-Psorothamnus*
23	Frenchman Lake	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Larrea-Ambrosia*
24	Cane Spring	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Larrea-Ambrosia-Ephedra*
25	Cane Spring	*Larrea-Ambrosia/Larrea-Lycium-Grayia*	*Ambrosia-Larrea-Ephedra*
26	Cane Spring	*Grayia-Lycium*	*Ephedra-Hymenoclea-Lycium*
27	Yucca Lake	*Larrea-Lycium-Grayia*	*Larrea-Krameria-Ambrosia*
28	Frenchman Lake	*Larrea-Ambrosia*	*Larrea-Ambrosia*
29	Frenchman Lake	*Larrea-Atriplex*	*Ephedra- Atriplex confertifolia -Krameria*
30	Frenchman Lake	*Atriplex canescens*	*Atriplex canescens*
31	Frenchman Lake	*Atriplex confertifolia*	*Atriplex confertifolia*
32	Frenchman Lake SE	*Larrea-Ambrosia*	*Ambrosia-Menodora-Krameria*
33	Frenchman Lake	*Larrea-Psorothamnus*	*Larrea-Krameria*
34	Frenchman Lake	*Larrea-Lycium shockleyi-Atriplex*	*Lycium shockleyi-Larrea*
35	Frenchman Lake	*Larrea-Lycium shockleyi-Atriplex*	*Atriplex confertifolia*
36	Frenchman Lake	*Larrea-Lycium shockleyi-Atriplex*	*Larrea-Lycium shockleyi-Ambrosia*
37	Frenchman Lake	*Lycium shockleyi-Atriplex*	*Lycium shockleyi*
38	Frenchman Lake	*Lycium pallidum-Grayia*	*Lycium pallidum-Grayia*

Table 1A. Summary characteristics of the 68 Beatley permanent plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Nevada Quadrangle Sheet (7.5')	Plant assemblage (1963-1975)[1]	Plant assemblage (2000-2001)[1]
39	Mine Mountain	*Coleogyne/Grayia-Lycium*	*Coleogyne-Ephedra-Lycium*
40	Mine Mountain	*Ephedra-Lycium*	*Achnatherum-Ephedra-Hymenoclea*
41	Mine Mountain	*Coleogyne*	*Coleogyne-Ephedra*
42	Mine Mountain	*Ephedra*	*Ephedra*
43	Yucca Lake	*Larrea-Atriplex/Coleogyne*	*Larrea-Ephedra-Coleogyne*
44	Yucca Lake	*Coleogyne/Larrea-Grayia-Lycium*	*Coleogyne-Larrea-Ephedra*
45	Yucca Lake	*Coleogyne/Grayia-Lycium*	*Coleogyne-Ephedra-Lycium*
46	Yucca Flat	*Grayia-Lycium*	*Ephedra-Lycium-Grayia*
47	Tippipah Spring	*Larrea-Grayia-Lycium*	*Coleogyne-Ericameria-Artemisia tridentata*
48	Yucca Flat	*Grayia-Larrea*	*Larrea-Hymenoclea*
49	Yucca Flat	*Larrea-Grayia-Lycium*	*Larrea-Ephedra-Lycium*
50	Yucca Flat	*Grayia-Lycium*	*Oryzopsis-Atriplex-Lycium*
51	Rainier Mesa	*Coleogyne*	*Coleogyne-Ephedra*
52	Oak Spring	*Hymenoclea-Lycium*	*Oryzopsis-Hymenoclea*
53	Oak Spring	*Ceratoides-Hymenoclea*	*Oryzopsis-Stipa*
54	Oak Spring	*Lycium-Larrea-Coleogyne*	*Larrea-Oryzopsis-Lycium*
55	Yucca Flat	*Larrea-Lycium-Grayia*	*Larrea-Lycium*
56	Paiute Ridge	*Coleogyne/Larrea-Grayia-Lycium*	*Coleogyne-Larrea*
57A	Paiute Ridge	*Larrea-Grayia-Lycium*	Mixed disturbed-undisturbed
57N	Paiute Ridge	*Larrea-Grayia-Lycium*	*Larrea-Lycium-Ceratoides*
58	Yucca Flat	*Atriplex-Ceratoides*	Destroyed
59	Yucca Lake	*Atriplex-Kochia*	Mixed disturbed-undisturbed
60	Plutonium Valley	*Grayia-Lycium*	*Chrysothamnus viscidiflorus-Lycium-Grayia*
61	Ammonia Tanks	*Artemisia nova*	*Artemisia nova*
62	Ammonia Tanks	*Artemisia tridentata*	*Artemisia tridentata*
63	Ammonia Tanks	*Artemisia nova*-Pinyon-Juniper	Juniper-Pinyon-*Artemisia nova*
64	Rainier Mesa	*Artemisia nova*-Pinyon-Juniper	*Purshia*-Pinyon-*Artemisia nova*
65	Tippipah Spring	*Atriplex canescens*	*Oryzopsis-Eriogonum kearneyi*
66	Skull Mountain	*Larrea-Grayia-Lycium*	*Larrea-Ephedra-Thamnosma*
67	Skull Mountain	*Ephedra-Lycium*	*Ephedra-Thamnosma-Larrea*
68	Rainier Mesa	*Artemisia tridentata*-Pinyon-Juniper	*Artemisia tridentata*-Pinyon-Juniper

1. Beatley's plant assemblage (1963-1975) is based on her interpretation of the mappable vegetation unit, which may or may not reflect dominant species by cover. Her use of '/' reflects her identification of low-cover but important subdominants. Our plant assemblage type is based on the top three or less species in terms of cover. Therefore, the latter two columns of this table cannot be directly compared.

Table 1B. Summary characteristics of the 68 Beatley permanent plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	1st Corner[2] Easting	1st Corner[2] Northing	Elevation (m)[2]	Annual Precipitation (mm)	Original Purpose of Plot	Plot Condition
1	586082	4055318	1020	142	Undisturbed	Good
2	577798	4058539	1082	179	Undisturbed	Good
3	572425	4060844	1035	175	Undisturbed, IBP	Good
4	573610	4061656	1049	151	Undisturbed, IBP	Good
5	567150	4067288	1114	142	Undisturbed	Good
6	565733	4069659	1075	139	Undisturbed	Good
7	557383	4064717	979	122	Undisturbed	Good
8	555685	4067788	961	117	Undisturbed	Good
9	556660	4072190	1009	130	Undisturbed	Good
10	560790	4072331	1051	125	Undisturbed	Good
11	565838	4077127	1202	142	Undisturbed	Good
12	565996	4077753	1245	149	Undisturbed	Good
13	568006	4078978	1297	167	Undisturbed	Good
14	570374	4082145	1465	189	Undisturbed	Good
15	566051	4070942	1149	132	Undisturbed	Good
16	568895	4072581	1177	147	Undisturbed	Good
17	571147	4073855	1269	141	Undisturbed	Good
18	564458	4084205	1452	228	Control for 19	Good
19	564392	4084216	1442	219	Burned in 1959	Good
20	587360	4067886	1005	139	Undisturbed	Good
21	588207	4070688	982	133	Undisturbed	Good
22	587651	4072554	1001	131	Undisturbed	Good
23	590196	4074435	979	123	Undisturbed	Good
24	588148	4079095	1048	141	Undisturbed	Minor damage
25	584095	4077437	1116	161	Undisturbed	Good
26	579842	4074196	1232	185	Undisturbed	Good
27	584780	4083308	1132	154	Undisturbed	Good
28	596296	4079223	1007	121	Undisturbed	Good
29	595950	4079392	987	126	Undisturbed	Good
30	594597	4076762	957	126	Undisturbed	Good
31	595126	4075982	954	130	Undisturbed	Good
32	601358	4077357	1031	122	Undisturbed	Good
33	599387	4075488	1009	119	Undisturbed	Good
34	597722	4073049	935	124	Undisturbed	Good
35	597639	4070916	1015	136	Undisturbed	Good
36	596075	4071221	935	126	Undisturbed	Good
37	596126	4071396	953	129	Undisturbed	Good
38	590648	4072451	959	121	Undisturbed	Good

Table 1B. Summary characteristics of the 68 Beatley permanent plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	1st Corner[2] Easting	1st Corner[2] Northing	Elevation (m)[2]	Annual Precipitation (mm)	Original Purpose of Plot	Plot Condition
39	574064	4086900	1467	204	Control for 39	Good
40	574031	4086764	1467	198	Burned ~1950	Good
41	572680	4090850	1538	241	Control for 42	Good
42	572661	4090761	1538	233	Burned 1959	Good
43	582621	4090807	1274	180	Undisturbed	Good
44	580985	4092999	1257	182	Undisturbed	Good
45	580147	4093321	1284	187	Undisturbed	Good
46	581411	4096052	1245	179	Undisturbed	Good
47	573772	4097654	1472	232	Undisturbed	Good
48	580825	4101300	1283	164	Tower (T-1) shots	Good
49	581867	4102183	1258	166	Control for 48	Good
50	583431	4103937	1337	165	Undisturbed	Good
51	576238	4115181	1535	225	Undisturbed	Good
52	586207	4115020	1359	167	Sedan 1962	Good
53	586167	4113778	1431	164	Sedan 1962	Good
54	586774	4112900	1362	174	Sedan 1962	Good
55	586582	4108939	1330	159	Balloon Tests	Good
56	589693	4104467	1339	165	Undisturbed	Good
57A	589579	4100067	1271	177	Undisturbed	Damaged
57N	589579	4100067	1271	177	Undisturbed	Good
58	37.002	116.042	1200	178	Undisturbed	Destroyed
59	585288	4093008	1195	177	Undisturbed	Damaged
60	589723	4091158	1216	164	Undisturbed	Good
61	565988	4110149	1746	204	Undisturbed	Good
62	565902	4110810	1749	203	Undisturbed	Good
63	566361	4117467	2001	270	Undisturbed	Good
64	570051	4117144	2274	270	Undisturbed	Damaged
65	566710	4106154	1697	182	Undisturbed	Good
66	574534	4074529	1294	177	Control for 67	Good
67	574486	4074440	1294	177	Ghost town	Good
68	566807	4114414	1846	261	Undisturbed	Good

2. UTM (zone 12S) and elevation data are from hand-held GPS units, which reported an accuracy of between ±3 and ±5 m.

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Table 1C. Summary characteristics of the 68 Beatley permanent plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	NTS[3] Area	NTS[3] Grid	Geomorphic Surface	Slope[4] (degrees)	Aspect[4] (degrees)	Elevation[5] Above Playa (m)
1	22	S-7	alluvial fan	16.8	308.3	NA
2	22	N-8	alluvial fan	2.3	161.6	NA
3	25	J-10	alluvial fan	11.7	346.0	NA
4	25	J-11	alluvial fan	6.4	63.4	NA
5	25	G-13	alluvial fan	6.1	144.5	NA
6	25	E-15	alluvial fan	5.9	194.0	NA
7	25	ZZ-15	alluvial fan	5.1	98.1	NA
8	25	XX-14	alluvial fan	1.4	0.0	NA
9	25	ZZ-16	alluvial fan	3.0	135.0	NA
10	25	B-16	alluvial fan	1.4	270.0	NA
11	25	F-19	alluvial fan	11.7	104.0	NA
12	25	F-19	alluvial fan	12.0	229.8	NA
13	25	G-19	alluvial fan	5.9	104.0	NA
14	25	I-21	broken terrain	11.2	18.4	NA
15	25	F-15	alluvial fan	5.1	135.0	NA
16	25	H-17	alluvial fan	3.0	135.0	NA
17	25	I-17	alluvial fan	10.0	315.0	NA
18	25	F-23	alluvial fan	20.0	275.9	NA
19	25	F-23	alluvial fan	9.0	135.0	NA
20	5	T-14	alluvial fan	6.1	315.0	58 Frenchman
21	5	U-15	alluvial fan	2.9	0.0	40 Frenchman
22	5	T-16	alluvial fan	5.1	278.1	24 Frenchman
23	5	V-17	alluvial fan	9.9	90.0	80 Frenchman
24	5	U-20	alluvial fan	10.2	326.3	88 Frenchman
25	5	R-19	alluvial fan	7.9	84.8	271 Frenchman
26	5	O-17	alluvial fan	10.1	219.3	890 Frenchman
27	6	R-22	alluvial fan	2.9	0.0	183 Frenchman
28	5	Z-19	alluvial fan	8.1	344.8	49 Frenchman
29	5	Z-19	alluvial fan	12.9	135.0	49 Frenchman
30	5	Y-18	alluvial fan	4.0	45.0	7 Frenchman
31	5	Y-18	playa	10.1	129.3	0.7 Frenchman
32	Nellis	W64C	alluvial fan	no data	no data	70 Frenchman
33	Nellis	W64B	alluvial fan	5.9	104.0	52 Frenchman
34	5	Z-16	playa	11.7	115.0	2 Frenchman
35	5	Z-15	broken terrain	31.3	189.5	67 Frenchman
36	5	Z-15	playa	2.3	108.4	3 Frenchman
37	5	Z-15	playa	6.1	315.0	3 Frenchman
38	5	W-16	alluvial fan	3.2	153.4	7 Frenchman
39	14	L-24	alluvial fan	8.3	329.0	NA
40	14	L-24	alluvial fan	14.0	180.0	NA
41	14	K-26	alluvial fan	15.6	26.6	NA
42	14	K-26	alluvial fan	6.4	296.6	NA
43	6	Q-26	alluvial fan	11.4	60.3	70 Yucca
44	6	P-27	alluvial fan	4.5	251.6	61 Yucca
45	6	P-27	alluvial fan	3.7	168.7	82 Yucca
46	1	P-29	alluvial fan	13.8	14.7	12 Yucca

Table 1C. Summary characteristics of the 68 Beatley permanent plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	NTS[3] Area	NTS[3] Grid	Geomorphic Surface	Slope[4] (degrees)	Aspect[4] (degrees)	Elevation[5] Above Playa (m)
47	16	K-30	alluvial fan	13.5	351.0	NA
48	1	P-32	alluvial fan	7.7	111.8	82 Yucca
49	1	P-32	alluvial fan	3.0	135.0	67 Yucca
50	2	P-37	alluvial fan	1.0	135.0	61 Yucca
51	12	M-39	alluvial fan	2.3	161.6	317 Yucca
52	10	T-39	alluvial fan	8.3	121.0	140 Yucca
53	10	T-38	alluvial fan	6.4	333.4	149 Yucca
54	10	T-38	alluvial fan	5.2	326.3	152 Yucca
55	9	U-36	alluvial fan	13.9	315.0	119 Yucca
56	7	V-33	alluvial fan	15.4	329.9	131 Yucca
57	3	V-31	alluvial fan	11.7	335.0	61 Yucca
58	3	S-29	alluvial fan	4.5	288.4	14 Yucca
59	6	S-27	playa	9.1	141.3	3 Yucca
60	6	V-26	alluvial fan	6.4	206.6	10 Yucca
61	18	F-37	broken terrain	58.8	328.0	NA
62	18	F-37	broken terrain	3.2	296.6	NA
63	19	F-40	alluvial fan	12.2	170.0	NA
64	12	I-40	mesa	22.0	82.9	NA
65	18	G-34	alluvial fan	34.5	123.1	NA
66	26	L-17	alluvial fan	17.8	308.7	NA
67	26	L-17	alluvial fan	3.7	78.7	NA
68	12	G-39	broken terrain	22.3	322.4	NA

3. Area and grid numbers come from long-established maps and are the primary location information used by Department of Energy employees in describing locations on NTS. 4. From analysis of the 10-m digital elevation model (see fig. 1). 5. NA, the plot is not in a closed drainage basin with a playa. The two major playas -- Frenchman and Yucca Lakes -- are identified.

Table 2A. Climate stations in the vicinity of the Nevada Test Site.

Site Name	Station ID	Latitude (North)	Longitude (West)	Elevation (m)	Beginning Date	Ending Date
Buster Jangle Y	na	37°03'46"	116°03'09"	1241	2/1960	current
Well 5B	na	36°48'07"	115°57'55"	939	10/1962	current
Yucca Dry Lake	na	36°57'23"	116°02'51"	1196	5/1958	current
Rainier Mesa	na	37°11'28"	116°12'55"	2283	3/1959	current
Mid Valley	na	36°58'21"	116°110'19"	1420	9/1964	current
PHS Farm	na	37°12'32"	116°02'19"	1392	10/1964	current
Tippipah Springs 2	na	37° 03'11"	116°11'29"	1518	5/1960	current
Little Feller 2	na	37°07'05"	116°18'14"	1561	8/1976	current
Pahute Mesa 1	na	37°14'56"	116°26'15"	1997	1/1964	current
Mercury	na	36°39'39"	116°00'36"	1149	9/1962	current
Desert Rock	na	36°37'16"	116°01'33"	991	10/1963	current
Jackass Flats	na	36°47'05"	116°17'20"	1043	12/1957	current
Cane Springs	na	36°48'44"	116°05'29"	1219	9/1964	current
40 Mile Canyon	na	37°02'57"	116°17'15"	1469	2/1960	current
Rock Valley	na	36°41'07"	116°11'32"	1036	3/1963	current
E Tunnel	na	37°11'30"	116°12'04"	1905	12/1996	current
Area 6	na	36°53'58"	116°02'04"	1131	2/1997	current
Amargosa Farms	150	36°34'18"	116°27'43"	747	12/1/1965	12/31/2000
Beatty	714	36°55'00"	116°45'00"	1007	7/1/1948	11/30/1972
Beatty 8 N	718	36°59'42"	116°43'06"	1082	12/1/1972	12/31/2000
Desert NWR	2243	36°26'16"	115°21'35"	890	7/1/1948	12/31/2000
Diablo	2276	37°55'00"	116°03'00"	1556	9/1/1959	3/22/1979
Hiko	3671	37°33'29"	115°13'25"	1189	9/1/1989	12/31/2000
Indian Springs	3980	36°35' 00"	115°41'00"	952	7/1/1948	6/30/1964
Key Pittman WMA	4143	37°37' 00"	115°13'00"	1204	3/1/1964	5/31/1989
Lathrop Wells	4457	36°39' 00"	116°24'00"	814	7/1/1948	1/31/1963
Lathrop Wells 16 SSE	4473	36°25'00"	116°21'00"	665	11/1/1970	8/31/1977
Pahrump	5890	36°16'43"	116°00'11"	815	11/1/1948	12/31/2000
Penoyer Valley	6130	37°38'55"	115°48'03"	1463	3/1/1967	12/31/2000
Tempiute 4 NW	7983	37°41'00"	115°43'00"	1490	4/29/1972	12/31/1985

Table 2B. Weather stations at Yucca Mountain, Nevada (Flint and Davies, 1996).

Station Name	Northing UTMz11 NAD 27	Easting UTM z11 NAD 27	Elevation (m)	Beginning Date	Ending Date
Weather Station 1 (WX1)	4076521	550424	1163	1/1/1988	9/30/1994
Weather Station 2a (WX2a)	4075931	564332	1154	4/18/1987	3/7/1989
Weather Station 2b (WX2b)	4071986	563430	1055	3/7/1989	9/30/1994
Weather Station 3 (WX3)	4080316	548038	1351	7/16/1987	9/30/1994
Weather Station 4a (WX4a)	4076856	547504	1498	7/1/1997	6/8/1990
Weather Station 4b (WX4b)	4075990	547481	1489	6/8/1990	9/30/1994
Weather Station 5a (WX5a)	4083775	546453	1789	6/23/1988	10/4/1993
Weather Station 5b (WX5b)	4082370	547984	1563	10/4/1993	9/30/1994

APPENDIX 1

Explanation for Appendix Tables

This appendix consists of tables and figures for each of the 68 permanent plots on the Nevada Test Site originally established by Dr. Janice C. Beatley in 1962. The figures are self explanatory photographic matches, and the photographic information appears in Table 69. The following explanations apply to the tables, which constitute the bulk of this appendix. Each plot is represented by at least one A table, which contains summary geospatial and attribute data, and at least one B table, which gives the summary data for perennial plants.

For the A tables, area and grid coordinates come from maps of NTS and are the primary locating coordinates for explaining where the plots are to Department of Energy personnel who control access to NTS. The GPS readings are from hand-held units that typically have an estimated position error (EPE) of ±3 and ±5 m. These readings were used to calculate the plot elevation from 10 m digital-elevation models (DEMs) of NTS. Similarly, plot slope and aspect were calculated from these DEMs. The exception is plot 32, which lies east of NTS on Nellis Air Force base and for which a 10-m DEM is unavailable. NA -- not recorded or not applicable. Annual precipitation was both measured and modeled as described in the text. The parent material and substrate on the alluvial fans was determined through inspection of the plot. The "Slate geologic unit" is determined from digital surficial geology maps published by Slate and others (1999) and available as Arc/Info files. The Beatley plant assemblage is derived from Beatley (1979) and does not necessarily reflect numerical dominance by cover; the same is true for the Ostler-Hanson plant-assemblage and land-unit classification, which is derived from digital vegetation-landform maps of NTS (Ostler and others, 2000). Other information on the A tables is self-explanatory.

The B tables represent the summarized plant data for each plot. As explained in the units and nomenclature section, the species list reflects mostly the species names used at the time Beatley originally measured her plots. We made the following exceptions for name changes that occurred since 1963 but that Beatley did not adopt: *Erioneuron pulchellum* = *Tridens pulchellum*; *Ericameria cooperi* and *E. laricifolius* = *Haplopappus cooperi* and *H. laricifolius*, respectively; and *Xylorhiza tortifolia* = *Machaeranthera tortifolia* = *Aster abatus*. The following name changes are included in Wethermax (2002) but are not adopted here: *Achnatherum speciosum* = *Stipa speciosa*, *Achnatherum hymenoides* = *Oryzopsis hymenoides*, *Elymus* = *Sitanian*, *Escobaria vivipara* = *Coryphantha vivipara*, *Pleuriphis jamesii* = *Hilaria jamesii*, and *Krascheninnikovia lanata* = *Ceratoides lanata*. See pages 3-4 for more discussion. Finally, although *Yucca baccata* v. *vespertina* is no longer recognized as a distinct subspecies, we follow Beatley's original designation. Although we question Beatley's identification of *Artemisia nova* on several plots (notably plot 61), and instead think the plants may be *A. tridentata* stunted owing to unfavorable edaphic conditions, we leave the former name intact. Number of plants = the number of live plants and dead branches on live plants encountered in the line intercepts; average height = the average of the maximum heights of all individuals of that species encountered on the line (not the maximum height along the intercept); cover = total percent of intercept length occupied by that species irrespective of stature; and biomass index = coverage distance (m) times maximum height (m) and summed per species to yield an index of biomass. The cover contains some overlap among species owing to structure issues (e.g., *Larrea* shading of *Grayia*, but both are measured) and therefore is generally larger than absolute ground cover.

Table A-1A. Site characteristics for Plot 1.

Location: Mercury Valley

NTS Area: 22 NTS Grid: S-7

USGS 7.5' Quadrangle Name: Camp Desert Rock

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4055318	586082	Standing
Corner 2:	NW	4055347	586089	Standing
Corner 3:	NE	4055341	586118	Standing
Corner 4:	SE	4055310	586110	Standing

DEM Plot Elevation: 1094 m Plot Aspect: 308°

Elevation Above Playa (Playa Name): NA Plot Slope: 17°

Annual Precipitation
Measured: 142 mm
Modeled: 137 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, limestone, desert pavement, shallow caliche layer

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*

Ostler-Hanson Plant Association: *Larrea-Yucca schidigera-Ambrosia*

Ostler-Hanson Land Unit: 1137

Abundance of Biological Soil Crusts: occur throughout plot, with lichens, locally heavily

Type and Date of Disturbance: none

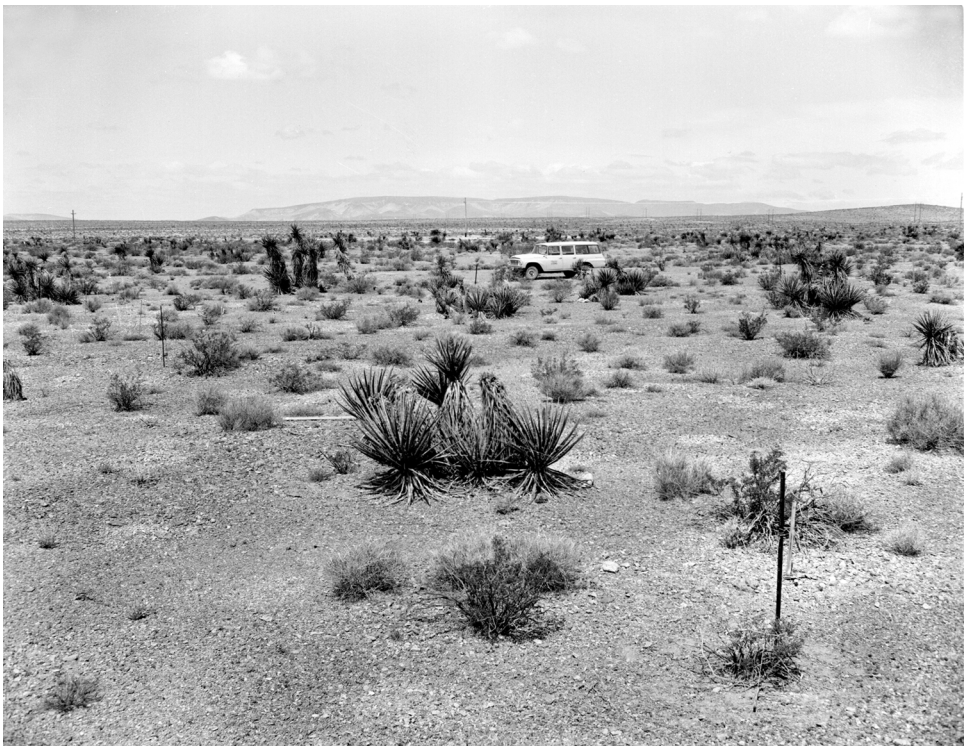
Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 11 May 2000

Figure A-1. Photographs showing Plot 1.



A. (April 19, 1964). View northwesterly across Plot 1, showing Mojave yucca (*Yucca schidigera*) in the foreground and Skull Mountain in the background. The vegetation assemblage is creosote bush (*Larrea tridentata*) - white bursage (*Ambrosia dumosa*) (Janice Beatley Collection, 13-A).

B. (May 12, 2000). Little change has occurred in the Mojave yuccas, and the creosote bushes in the foreground have grown considerably (R.H. Webb, Stake 4033A).

Table A-1B. Summary plant data for Plot 1.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	1	1	1
Ambrosia dumosa	13	26	46
Echinocactus polycephalus	1	1	1
Ephedra nevadensis	11	11	9
Erioneuron pulchellum	0	0	115
Krameria parvifolia	22	25	32
Larrea tridentata	36	34	39
Lycium andersonii	11	10	10
Menodora spinescens	0	0	2
Opuntia ramosissima	2	1	1
Oryzopsis hymenoides	0	1	0
Psorothamnus fremontii	0	0	1
Sphaeralcea ambigua	0	2	2
Yucca schidigera	21	16	12
Total Live	118	128	271
Dead Shrub	21	14	21
Total	139	142	292

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.09	0.09	0.09
Ambrosia dumosa	1.25	2.55	3.36
Echinocactus polycephalus	0.13	0.18	0.17
Ephedra nevadensis	1.39	2.08	1.04
Erioneuron pulchellum	0.00	0.00	1.16
Krameria parvifolia	1.95	2.17	3.83
Larrea tridentata	6.98	6.24	9.10
Lycium andersonii	1.77	1.74	1.33
Menodora spinescens	0.00	0.00	0.13
Opuntia ramosissima	0.09	0.03	0.08
Oryzopsis hymenoides	0.00	0.09	0.00
Psorothamnus fremontii	0.00	0.00	0.10
Sphaeralcea ambigua	0.00	0.05	0.03
Yucca schidigera	3.65	2.56	1.54
Total Live	17.32	17.77	21.95
Dead Shrub	1.75	0.11	3.20
Total	19.07	17.89	25.15

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.15	0.18	0.15
Ambrosia dumosa	0.23	0.29	0.33
Echinocactus polycephalus	0.25	0.36	0.36
Ephedra nevadensis	0.48	0.55	0.50
Erioneuron pulchellum	0.00	0.00	0.03
Krameria parvifolia	0.16	0.17	0.23
Larrea tridentata	0.68	0.66	0.94
Lycium andersonii	0.41	0.42	0.40
Menodora spinescens	0.00	0.00	0.13
Opuntia ramosissima	0.10	0.36	0.36
Oryzopsis hymenoides	0.00	0.43	0.00
Psorothamnus fremontii	0.00	0.00	0.25
Sphaeralcea ambigua	0.00	0.25	0.15
Yucca schidigera	1.05	1.16	1.06

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.05	0.05	0.05
Ambrosia dumosa	0.99	2.85	4.08
Echinocactus polycephalus	0.11	0.22	0.21
Ephedra nevadensis	2.34	4.09	2.01
Erioneuron pulchellum	0.00	0.00	0.12
Krameria parvifolia	1.10	1.32	3.13
Larrea tridentata	17.12	14.76	29.64
Lycium andersonii	2.46	2.45	1.74
Menodora spinescens	0.00	0.00	0.05
Opuntia ramosissima	0.03	0.03	0.10
Oryzopsis hymenoides	0.00	0.13	0.00
Psorothamnus fremontii	0.00	0.00	0.09
Sphaeralcea ambigua	0.00	0.06	0.01
Yucca schidigera	13.00	12.38	5.93
Total Live	37.19	38.33	47.16

Table A-2A. Site characteristics for Plot 2.

Location: Mercury Valley

NTS Area: 22 NTS Grid: N-8

USGS 7.5' Quadrangle Name: Specter Range NW

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4058539	577798	On ground
Corner 2:	NW	4058569	577804	On ground
Corner 3:	NE	4058562	577834	Standing
Corner 4:	SE	4058533	577826	On ground

DEM Plot Elevation: 1091 m Plot Aspect: 162°

Elevation Above Playa (Playa Name): NA Plot Slope: 2°

Annual Precipitation
Measured: 179 mm
Modeled: 145 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, limestone, deep soil, lots of calcrete rubble on surface

Slate Geologic Unit: Tgy

Beatley Plant Assemblage: *Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: *Grayia-Larrea-Lycium*

Ostler-Hanson Land Unit: 3

Abundance of Biological Soil Crusts: occur throughout plot

Type and Date of Disturbance: none

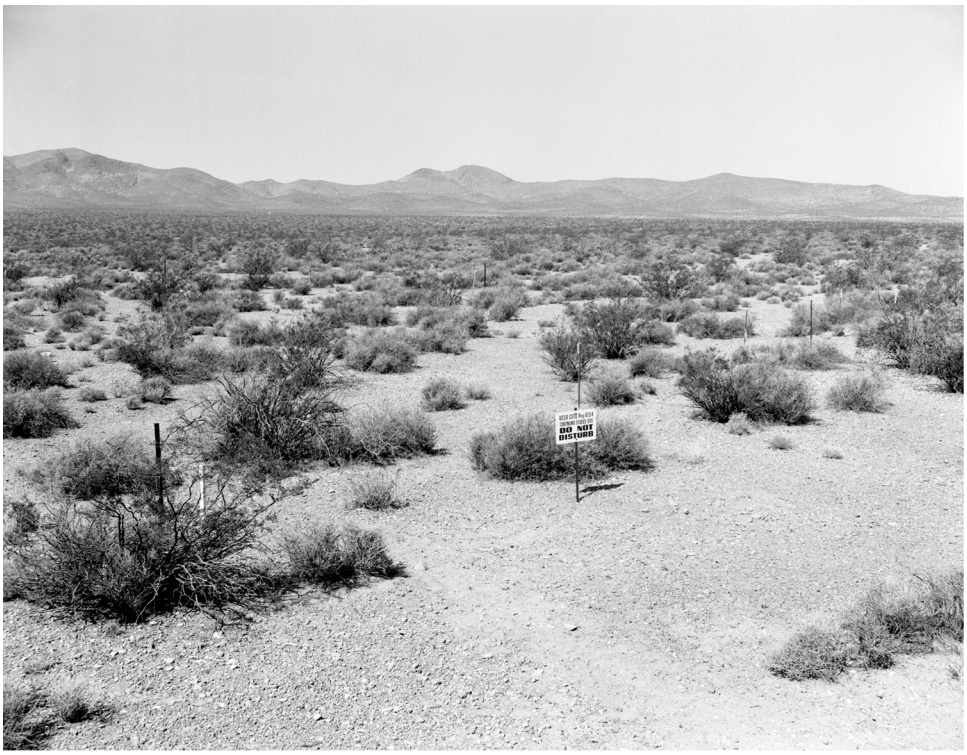
Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 12 May 2000

Figure A-2. Photographs showing Plot 2.



A. (May 14, 1964). View southwesterly across Plot 2 showing the original plot sign and a creosote bush - spiny hopsage (*Grayia spinosa*) - wolfberry (*Lycium anderson*) community. The Specter Range appears in the background (Janice Beatley Collection, 110-B).

B. (May 12, 2000). The creosote bush have grown much larger, and more white bursage are apparent throughout the view. The species composition has shifted, owing to the extensive loss of spiny hopsage, to a creosote bush - white bursage assemblage (R.H. Webb, Stake 4034B).

Table A-2B. Summary plant data for Plot 2.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	19	21	9
Ambrosia dumosa	17	16	49
Ceratoides lanata	36	31	26
Dichelostemma pulchella	0	3	0
Ephedra nevadensis	1	6	10
Grayia spinosa	48	78	12
Hymenoclea salsola	0	1	5
Larrea tridentata	12	16	22
Lycium andersonii	14	20	13
Mirabilis pudica	0	0	3
Opuntia basilaris	0	1	0
Oryzopsis hymenoides	0	3	1
Sitanion hystrix	0	3	0
Sphaeralcea ambigua	0	0	2
Stanleya pinnata	0	0	1
Stipa speciosa	0	1	0
Tetradymia axillaris	1	1	1
Total Live	148	201	154
Dead grass	0	2	0
Dead shrub	18	46	113
Total	166	249	267

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	1.53	1.08	0.39
Ambrosia dumosa	1.65	1.56	3.86
Ceratoides lanata	3.35	2.14	1.75
Dichelostemma pulchella	0.00	0.04	0.00
Ephedra nevadensis	0.04	0.66	2.23
Grayia spinosa	9.55	11.66	1.57
Hymenoclea salsola	0.00	0.05	0.44
Larrea tridentata	3.40	5.39	9.49
Lycium andersonii	2.63	2.22	1.20
Mirabilis pudica	0.00	0.00	0.33
Opuntia basilaris	0.00	0.04	0.00
Oryzopsis hymenoides	0.00	0.21	0.09
Sitanion hystrix	0.00	0.05	0.00
Sphaeralcea ambigua	0.00	0.00	0.09
Stanleya pinnata	0.00	0.00	0.05
Stipa speciosa	0.00	0.03	0.00
Tetradymia axillaris	0.02	0.16	0.10
Total Live	22.15	25.29	21.58
Dead grass	0.00	0.11	0.00
Dead shrub	5.28	4.74	10.39
Total	27.44	30.14	31.97

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.24	0.21	0.31
Ambrosia dumosa	0.36	0.39	0.42
Ceratoides lanata	0.38	0.43	0.49
Dichelostemma pulchella	0.00	0.19	0.00
Ephedra nevadensis	0.41	0.42	0.68
Grayia spinosa	0.59	0.60	0.70
Hymenoclea salsola	0.00	0.56	0.47
Larrea tridentata	1.37	1.25	1.81
Lycium andersonii	0.50	0.40	0.46
Mirabilis pudica	0.00	0.00	0.34
Opuntia basilaris	0.00	0.15	0.00
Oryzopsis hymenoides	0.00	0.29	0.48
Sitanion hystrix	0.00	0.29	0.00
Sphaeralcea ambigua	0.00	0.00	0.24
Stanleya pinnata	0.00	0.00	0.53
Stipa speciosa	0.00	0.18	0.00
Tetradymia axillaris	0.41	0.53	0.91

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	1.21	0.86	0.41
Ambrosia dumosa	2.22	2.28	5.81
Ceratoides lanata	4.68	3.31	2.95
Dichelostemma pulchella	0.00	0.02	0.00
Ephedra nevadensis	0.05	1.24	5.54
Grayia spinosa	20.25	24.83	4.47
Hymenoclea salsola	0.00	0.10	0.72
Larrea tridentata	17.99	28.12	62.54
Lycium andersonii	4.67	3.15	2.13
Mirabilis pudica	0.00	0.00	0.33
Opuntia basilaris	0.00	0.02	0.00
Oryzopsis hymenoides	0.00	0.21	0.15
Sitanion hystrix	0.00	0.04	0.00
Sphaeralcea ambigua	0.00	0.00	0.11
Stanleya pinnata	0.00	0.00	0.08
Stipa speciosa	0.00	0.02	0.00
Tetradymia axillaris	0.02	0.29	0.31
Total Live	51.09	64.49	85.54

Table A-3A. Site characteristics for Plot 3.

Location: Rock Valley

NTS Area: 25 NTS Grid: J-10

USGS 7.5' Quadrangle Name: Specter Range NW

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4060816	572419	On ground
Corner 2:	NW	4060844	572425	Standing
Corner 3:	NE	4060823	572433	Standing
Corner 4:	SE	4060813	572444	Standing

DEM Plot Elevation: 1027 m Plot Aspect: 346°

Elevation Above Playa (Playa Name): NA Plot Slope: 12°

Annual Precipitation
Measured: 175 mm
Modeled: 148 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, volcanic, ryholite

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Psorothamnus-Lycium*

Ostler-Hanson Land Unit: 333

Abundance of Biological Soil Crusts: moderate distribution of crusts

Type and Date of Disturbance: none

Plot Condition: good

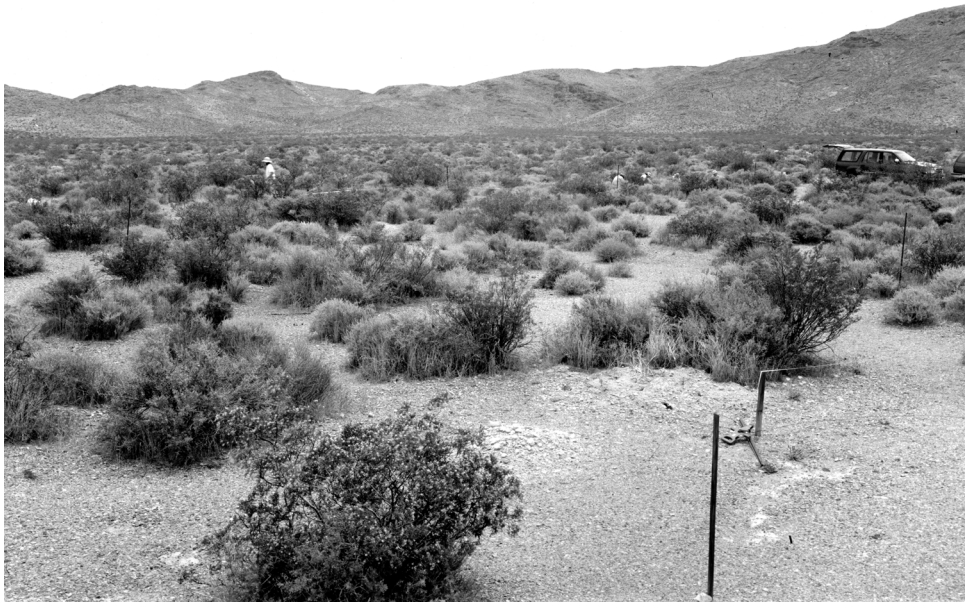
Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 9 May 2000

Figure A-3. Photographs showing Plot 3.

A. (April 19, 1964). View southeasterly across Plot 3 showing the typical mixed creosote bush community in that area and part of the Specter Range in the background (Janice Beatley Collection, 15-A).



B. (May 9, 2000). The biomass throughout the plot has increased considerably since the original photograph was taken. The lighter colored material in the foreground is bioturbation from digging by an unknown animal species, possibly badger (R.H. Webb, Stake 4020B).

Table A-3B. Summary plant data for Plot 3.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	1	2	0
Ambrosia dumosa	38	40	102
Ceratoides lanata	3	4	1
Coleogyne ramosissima	8	8	11
Cuscuta nevadensis	0	0	0
Ephedra nevadensis	27	23	23
Grayia spinosa	31	37	6
Krameria parvifolia	3	5	8
Larrea tridentata	22	24	24
Lycium andersonii	27	20	16
Lycium pallidum	21	21	21
Oryzopsis hymenoides	0	0	1
Psorothamnus fremontii	2	3	4
Sphaeralcea ambigua	0	0	6
Stephanomeria species	0	0	1
Xylorhiza tortifolia	1	4	4
Total live	184	191	228
Dead grass	0	0	1
Dead shrub	15	23	38
Dead herbaceous	0	1	0
Total	199	215	267

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.34	0.32	0.00
Ambrosia dumosa	4.17	4.58	11.12
Ceratoides lanata	0.28	0.40	0.15
Coleogyne ramosissima	1.69	1.59	2.20
Cuscuta nevadensis	0.00	0.00	0.00
Ephedra nevadensis	2.17	2.57	3.86
Grayia spinosa	3.78	4.07	0.76
Krameria parvifolia	0.38	0.67	1.45
Larrea tridentata	2.45	5.29	6.56
Lycium andersonii	6.72	4.81	2.54
Lycium pallidum	2.64	2.90	4.16
Oryzopsis hymenoides	0.00	0.00	0.05
Psorothamnus fremontii	0.22	0.45	0.80
Sphaeralcea ambigua	0.00	0.00	0.36
Stephanomeria species	0.00	0.00	0.04
Xylorhiza tortifolia	0.03	0.15	0.22
Total live	24.86	27.81	34.26
Dead grass	0.00	0.00	0.07
Dead shrub	5.55	3.07	5.18
Dead herbaceous	0.00	0.07	0.00
Total	30.41	30.95	39.52

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.33	0.32	0.00
Ambrosia dumosa	0.36	0.40	0.42
Ceratoides lanata	0.40	0.48	0.69
Coleogyne ramosissima	0.63	0.63	0.58
Cuscuta nevadensis	0.00	0.00	0.00
Ephedra nevadensis	0.40	0.49	0.57
Grayia spinosa	0.50	0.50	0.65
Krameria parvifolia	0.20	0.21	0.28
Larrea tridentata	0.74	0.78	1.06
Lycium andersonii	0.71	0.58	0.54
Lycium pallidum	0.60	0.59	0.71
Oryzopsis hymenoides	0.00	0.00	0.48
Psorothamnus fremontii	0.23	0.30	0.41
Sphaeralcea ambigua	0.00	0.00	0.34
Stephanomeria species	0.00	0.00	0.33
Xylorhiza tortifolia	0.13	0.37	0.37

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.37	0.39	0.00
Ambrosia dumosa	5.38	6.28	16.15
Ceratoides lanata	0.37	0.66	0.33
Coleogyne ramosissima	3.53	3.29	4.83
Cuscuta nevadensis	0.00	0.00	0.00
Ephedra nevadensis	3.17	4.44	7.76
Grayia spinosa	7.04	7.50	1.80
Krameria parvifolia	0.31	0.51	1.27
Larrea tridentata	6.42	14.53	26.12
Lycium andersonii	38.77	29.36	5.11
Lycium pallidum	5.02	5.78	10.44
Oryzopsis hymenoides	0.00	0.00	0.07
Psorothamnus fremontii	0.19	0.51	1.25
Sphaeralcea ambigua	0.00	0.00	0.63
Stephanomeria species	0.00	0.00	0.04
Xylorhiza tortifolia	0.01	0.21	0.30
Total live	70.56	73.46	76.11

Table A-4A. Site characteristics for Plot 4.

Location: Rock Valley

NTS Area: 25 NTS Grid: J-11

USGS 7.5' Quadrangle Name: Specter Range NW

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4061662	573575	Missing
Corner 2:	NW	4061692	573582	Missing
Corner 3:	NE	4061681	573610	Standing
Corner 4:	SE	4061656	573606	Standing

DEM Plot Elevation: 1053 m Plot Aspect: 63°

Elevation Above Playa (Playa Name): NA Plot Slope: 6°

Annual Precipitation
Measured: 151 mm
Modeled: 147 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, basalt, old geomorphic surface, well-varnished gravels

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Ceratoides-Grayia-Ambrosia*

Ostler-Hanson Land Unit: 301

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: north side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 11 May 2000

Figure A-4. Photographs showing Plot 4.

A. (April 22, 1964). View northerly across Plot 4 showing Skull Mountain in the background. The vegetation is a typical mixed-shrub community with scattered creosote bushes (Janice Beatley Collection, 22-B).

B. (May 9, 2000). Cover and biomass of the undisturbed vegetation has increased considerably (R.H. Webb, Stake 4021A).

Table A-4B. Summary plant data for Plot 4.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	1	1	1
Ambrosia dumosa	30	40	95
Ceratoides lanata	37	73	9
Ephedra nevadensis	8	11	10
Grayia spinosa	30	47	2
Krameria parvifolia	32	20	28
Larrea tridentata	12	12	13
Lycium andersonii	5	6	7
Lycium pallidum	21	21	14
Oryzopsis hymenoides	0	15	5
Total live	176	246	184
Dead shrubs	15	32	112
Total	191	278	296

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.13	0.15	0.07
Ambrosia dumosa	3.03	3.68	11.12
Ceratoides lanata	3.18	5.41	0.31
Ephedra nevadensis	1.34	1.61	1.49
Grayia spinosa	4.50	4.90	0.16
Krameria parvifolia	3.00	1.99	2.89
Larrea tridentata	2.07	1.58	3.48
Lycium andersonii	0.70	0.63	0.68
Lycium pallidum	2.55	2.05	2.11
Oryzopsis hymenoides	0.10	1.22	0.39
Total live	20.49	23.23	22.71
Dead shrubs	2.05	3.32	10.18
Total	22.54	26.55	32.89

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.41	0.41	0.33
Ambrosia dumosa	0.29	0.31	0.40
Ceratoides lanata	0.34	0.37	0.40
Ephedra nevadensis	0.45	0.55	0.58
Grayia spinosa	0.50	0.45	0.52
Krameria parvifolia	0.13	0.16	0.27
Larrea tridentata	0.62	0.62	0.90
Lycium andersonii	0.49	0.43	0.43
Lycium pallidum	0.48	0.47	0.53
Oryzopsis hymenoides	0.00	0.34	0.48

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.17	0.21	0.08
Ambrosia dumosa	3.08	4.37	15.62
Ceratoides lanata	3.85	7.22	0.49
Ephedra nevadensis	2.15	3.11	3.03
Grayia spinosa	7.73	7.94	0.28
Krameria parvifolia	1.34	1.19	2.65
Larrea tridentata	4.23	3.67	11.24
Lycium andersonii	1.17	1.05	1.02
Lycium pallidum	4.48	3.26	3.85
Oryzopsis hymenoides	0.10	1.48	0.66
Total live	28.22	33.50	38.92

Table A-5A. Site characteristics for Plot 5.

Location: Jackass Flats

NTS Area: 25 NTS Grid: G-13

USGS 7.5' Quadrangle Name: Specter Range NW

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4067288	567150	Standing
Corner 2:	NW	4067308	567172	Standing
Corner 3:	NE	4067287	567193	Standing
Corner 4:	SE	4067267	567173	Standing

DEM Plot Elevation: 1110 m Plot Aspect: 145°

Elevation Above Playa (Playa Name): NA Plot Slope: 6°

Annual Precipitation
Measured: 142 mm
Modeled: 144 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, basaltic alluvium, rocks old & varnished

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Lycium pallidum-Krameria*

Ostler-Hanson Land Unit: 215

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

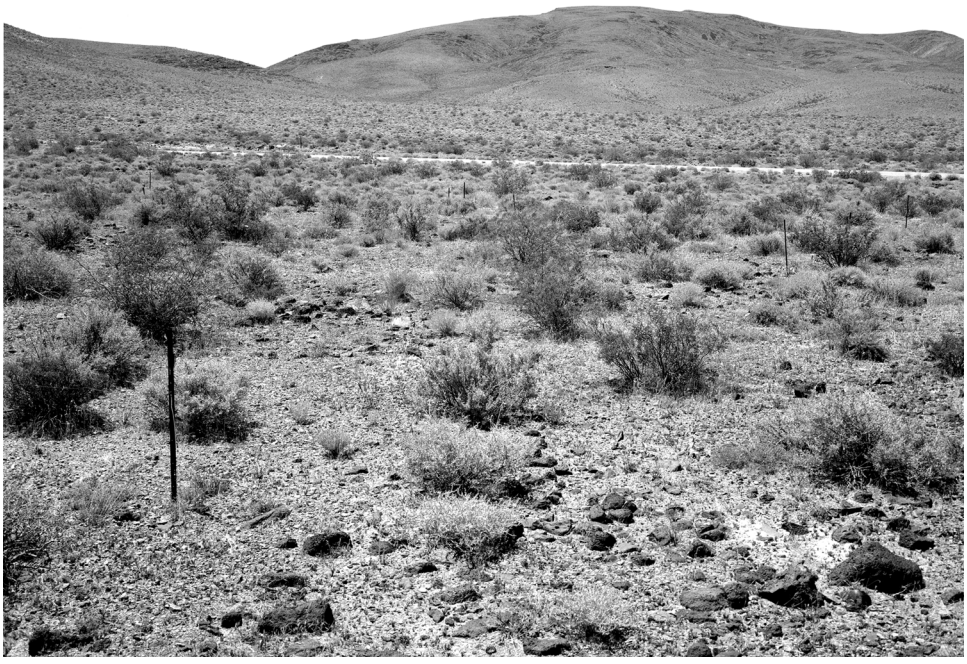
Location of Transect 1: southwest side of plot

Direction Transects Are Read: southeast to northwest

Date(s) Plot Remeasured: 12 May 2000

Figure A-5. Photographs showing Plot 5.

A. (May 7, 1964). This southerly view across Plot 5 shows the flanks of Little Skull Mountain in the background. The vegetation is dominated by creosote bush, and the rocky alluvium has a considerable coarse-particle content dominated by basalt (Janice Beatley Collection, 61-B).



B. (May 12, 2000). Although most of the rocks depicted in the first view are in the same places, the vegetation biomass has increased considerably. The species composition has changed, with spiny hopsage diminishing in importance and range ratany (*Krameria parviflora*) increasing on the plot (R.H. Webb, Stake 4037A).

Table A-5B. Summary plant data for Plot 5.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0	3	1
Ambrosia dumosa	3	4	15
Ceratoides lanata	0	1	0
Encelia frutescens	0	0	2
Ephedra nevadensis	1	0	2
Eriogonum inflatum	3	6	10
Grayia spinosa	6	1	0
Hymenoclea salsola	0	1	0
Krameria parvifolia	12	10	21
Larrea tridentata	9	11	22
Lycium andersonii	4	5	6
Lycium pallidum	16	12	6
Opuntia basilaris	1	0	0
Opuntia echinocarpa	0	0	1
Oryzopsis hymenoides	0	2	0
Psorothamnus fremontii	0	0	1
Sphaeralcea ambigua	0	11	44
Total live	55	67	131
Dead shrubs	10	12	24
Total	65	79	155

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.00	0.03	0.12
Ambrosia dumosa	0.25	0.38	1.44
Ceratoides lanata	0.00	0.07	0.00
Encelia frutescens	0.00	0.00	0.15
Ephedra nevadensis	0.11	0.00	0.15
Eriogonum inflatum	0.13	0.12	0.47
Grayia spinosa	0.91	0.20	0.00
Hymenoclea salsola	0.00	0.10	0.00
Krameria parvifolia	1.64	1.45	2.66
Larrea tridentata	1.91	2.90	5.33
Lycium andersonii	0.88	1.16	1.02
Lycium pallidum	2.75	2.44	0.76
Opuntia basilaris	0.05	0.00	0.00
Opuntia echinocarpa	0.00	0.00	0.02
Oryzopsis hymenoides	0.00	0.07	0.00
Psorothamnus fremontii	0.00	0.00	0.06
Sphaeralcea ambigua	0.00	0.42	1.23
Total live	8.62	9.35	13.41
Dead shrubs	1.15	1.50	1.46
Total	9.77	10.85	14.87

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.00	0.06	0.36
Ambrosia dumosa	0.23	0.27	0.32
Ceratoides lanata	0.00	0.36	0.00
Encelia frutescens	0.00	0.00	0.18
Ephedra nevadensis	0.43	0.00	0.44
Eriogonum inflatum	0.18	0.08	0.45
Grayia spinosa	0.46	0.46	0.00
Hymenoclea salsola	0.00	0.51	0.00
Krameria parvifolia	0.19	0.20	0.23
Larrea tridentata	0.94	0.80	0.88
Lycium andersonii	0.69	0.64	0.65
Lycium pallidum	0.59	0.60	0.70
Opuntia basilaris	0.13	0.00	0.00
Opuntia echinocarpa	0.00	0.00	0.30
Oryzopsis hymenoides	0.00	0.17	0.00
Psorothamnus fremontii	0.00	0.00	0.23
Sphaeralcea ambigua	0.00	0.12	0.18

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Acamptopappus shockleyi	0.00	0.01	0.14
Ambrosia dumosa	0.21	0.36	1.79
Ceratoides lanata	0.00	0.09	0.00
Encelia frutescens	0.00	0.00	0.13
Ephedra nevadensis	0.16	0.00	0.23
Eriogonum inflatum	0.08	0.05	0.74
Grayia spinosa	1.51	0.31	0.00
Hymenoclea salsola	0.00	0.17	0.00
Krameria parvifolia	1.12	1.00	2.30
Larrea tridentata	6.91	9.06	16.99
Lycium andersonii	2.05	2.57	2.28
Lycium pallidum	5.94	5.14	1.93
Opuntia basilaris	0.02	0.00	0.00
Opuntia echinocarpa	0.00	0.00	0.02
Oryzopsis hymenoides	0.00	0.06	0.00
Psorothamnus fremontii	0.00	0.00	0.05
Sphaeralcea ambigua	0.00	0.23	0.91
Total live	17.98	19.03	27.52

Table A-6A. Site characteristics for Plot 6.

Location: Jackass Flats

NTS Area: 25 NTS Grid: E-15

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4069659	565702	Standing
Corner 2:	NW	4069689	565701	Standing
Corner 3:	NE	4069690	565733	On ground
Corner 4:	SE	4069659	565733	Standing

DEM Plot Elevation: 1064 m Plot Aspect: 194°

Elevation Above Playa (Playa Name): NA Plot Slope: 6°

Annual Precipitation
Measured: 139 mm
Modeled: 139 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, volcanic, young geomorphic surface

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Ambrosia-Larrea-Grayia*

Ostler-Hanson Land Unit: 230

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

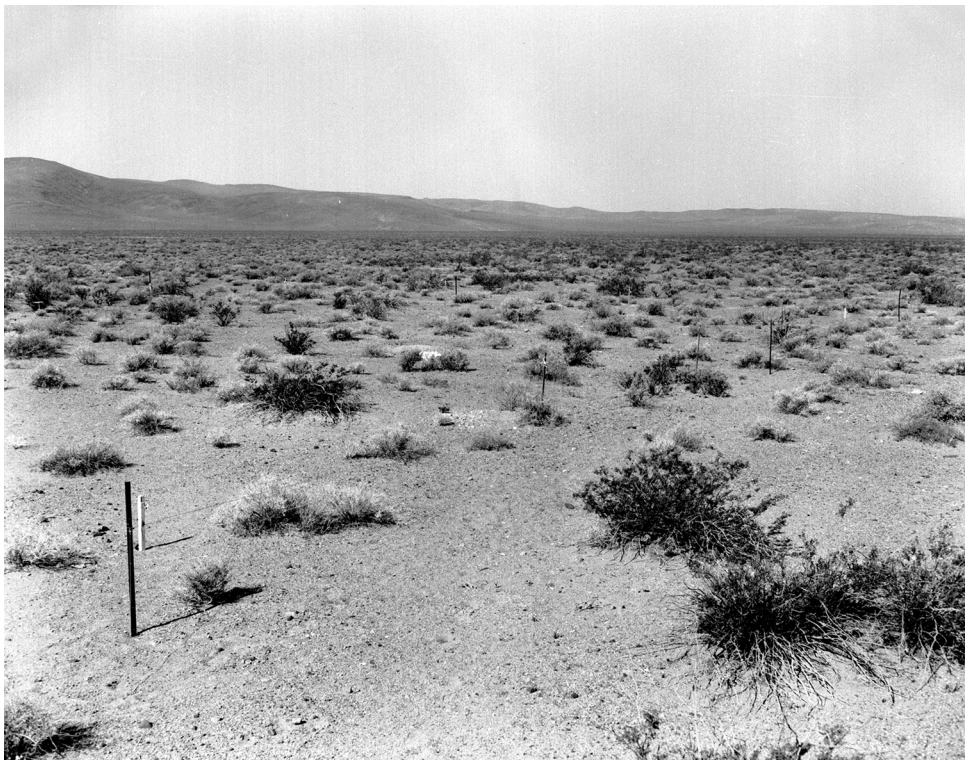
Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 2 April 2001

Figure A-6. Photographs showing Plot 6.



A. (May 14, 1964). In this southwesterly view across Plot 6, a creosote bush - white bursage community appears in the foreground and the westerly flanks of Little Skull Mountain appear in the background (Janice Beatley Collection, 112-B).

B. (April 5, 2001). Most of the individual plants depicted in the original view are much larger in 2001, and in general the increase in biomass is striking (R.H. Webb, Stake 4103B).

Table A-6B. Summary plant data for Plot 6.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	45	65	102
Ephedra nevadensis	5	11	30
Grayia spinosa	13	16	3
Krameria parvifolia	22	19	17
Larrea tridentata	27	27	24
Lycium andersonii	5	11	6
Psorothamnus fremontii	0	1	1
Total live	117	150	183
Dead shrubs	10	10	19
Total	127	160	202

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	0.33	0.36	0.37
Ephedra nevadensis	0.38	0.40	0.47
Grayia spinosa	0.46	0.58	0.68
Krameria parvifolia	0.18	0.18	0.24
Larrea tridentata	0.78	0.71	1.07
Lycium andersonii	0.55	0.47	0.52
Psorothamnus fremontii	0.00	0.18	0.48

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	4.68	7.33	10.72
Ephedra nevadensis	0.51	1.18	2.89
Grayia spinosa	1.39	2.69	0.34
Krameria parvifolia	2.24	2.06	2.14
Larrea tridentata	3.26	5.90	5.65
Lycium andersonii	1.05	1.76	0.67
Psorothamnus fremontii	0.00	0.12	0.02
Total live	13.14	21.05	22.42
Dead shrubs	5.16	1.01	2.46
Total	18.30	22.05	24.88

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	5.62	9.39	13.53
Ephedra nevadensis	0.68	2.02	4.91
Grayia spinosa	2.16	5.31	0.77
Krameria parvifolia	1.29	1.32	1.89
Larrea tridentata	9.30	15.03	20.71
Lycium andersonii	1.87	2.85	1.01
Psorothamnus fremontii	0.00	0.07	0.03
Total live	20.91	35.99	42.85

Table A-7A. Site characteristics for Plot 7.

Location: Jackass Flats

NTS Area: 25 NTS Grid: ZZ-15

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4069717	557352	Standing
Corner 2:	NW	4069748	557353	Standing
Corner 3:	NE	4069749	557382	Standing
Corner 4:	SE	4069717	557383	Standing

DEM Plot Elevation: 913 m Plot Aspect: 98°

Elevation Above Playa (Playa Name): NA Plot Slope: 5°

Annual Precipitation
Measured: 122 mm
Modeled: 130 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, sandy mixed, mostly volcanic

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Ambrosia*

Ostler-Hanson Plant Association: *Menodora-Ambrosia-Larrea*

Ostler-Hanson Land Unit: 351

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 4 April 2001

Figure A-7. Photographs showing Plot 7.

A. (May 14, 1964). This view is north across Plot 7 towards the Calico Hills and Shoshone Mountain in the background. The vegetation is creosote bush - white bursage with several other species present in the sandy substrate (Janice Beatley Collection, 107-B).

B. (April 5, 2001). The density, cover, and biomass of perennial vegetation has greatly increased, and numerous shrubs that were present in 1964 are still present. In 2001, spiny menodora (*Menodora spinescens*) has increased to become the most abundant species by cover (R.H. Webb, Stake 4109B).

Table A-7B. Summary plant data for Plot 7.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	55	51	22
Ambrosia dumosa	33	42	56
Atriplex canescens	2	2	3
Ceratoides lanata	5	8	4
Larrea tridentata	18	24	24
Menodora spinescens	44	48	105
Oryzopsis hymenoides	9	30	27
Sphaeralcea emoryi	0	1	1
Total Live	166	206	242
Dead Grass	0	0	7
Dead Shrub	10	22	103
Total	176	228	352

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	4.37	3.25	0.61
Ambrosia dumosa	4.16	4.67	3.78
Atriplex canescens	0.37	0.52	0.00
Ceratoides lanata	0.38	0.55	0.12
Larrea tridentata	3.84	4.65	3.78
Menodora spinescens	7.18	6.84	7.88
Oryzopsis hymenoides	0.42	2.59	0.96
Sphaeralcea emoryi	0.00	0.10	0.02
Total Live	20.73	23.15	17.15
Dead Grass	0.00	0.00	0.15
Dead Shrub	1.81	2.22	11.79
Total	22.54	25.37	29.09

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.18	0.18	0.21
Ambrosia dumosa	0.33	0.30	0.29
Atriplex canescens	0.47	0.83	0.56
Ceratoides lanata	0.38	0.33	0.38
Larrea tridentata	0.67	0.77	0.84
Menodora spinescens	0.15	0.17	0.21
Oryzopsis hymenoides	0.28	0.30	0.33
Sphaeralcea emoryi	0.00	0.33	0.06

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	2.81	2.04	0.44
Ambrosia dumosa	4.66	5.04	4.02
Atriplex canescens	0.58	1.44	0.00
Ceratoides lanata	0.48	0.68	0.16
Larrea tridentata	9.43	12.79	11.35
Menodora spinescens	3.83	3.96	6.38
Oryzopsis hymenoides	0.40	2.86	1.09
Sphaeralcea emoryi	0.00	0.11	0.00
Total Live	22.20	28.90	23.45

Table A-8A. Site characteristics for Plot 8.

Location: Jackass Flats

NTS Area: 25 NTS Grid: XX-14

USGS 7.5' Quadrangle Name: Busted Butte

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4067758	555685	Standing
Corner 2:	NW	4067788	555685	Standing
Corner 3:	NE	4067789	555715	Standing
Corner 4:	SE	4067759	555715	Standing

DEM Plot Elevation: 939 m Plot Aspect: 0°

Elevation Above Playa (Playa Name): NA Plot Slope: 1°

Annual Precipitation
Measured: 117 mm
Modeled: 127 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed sand mostly volcanic aeolin sand

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*

Ostler-Hanson Plant Association: *Ambrosia-Oryzopsis-Acamptopappus*

Ostler-Hanson Land Unit: 352

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 4 April 2001

Figure A-8. Photographs showing Plot 8.

A. (April 17, 1964). This view is northeasterly across Plot 8 and Jackass Flats towards the Calico Hills, Shoshone Mountain, and Lookout Peak. The vegetation is creosote bush dominated with several other species present. Janice Beatley appears at the extreme left side measuring annuals (Janice Beatley Collection, 8-B).

B. (April 5, 2001). The increase in cover, density, and biomass of the perennial species is striking in the 37 years between the original view and its match (R.H. Webb, Stake 4107A).

Table A-8B. Summary plant data for Plot 8.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	59	68	47
Ambrosia dumosa	62	75	107
Ceratoides lanata	3	10	14
Larrea tridentata	14	25	24
Menodora spinescens	1	2	3
Oryzopsis hymenoides	17	47	60
Sphaeralcea emoryi	0	1	0
Total Live	156	228	255
Dead Grass	0	2	16
Dead Shrub	9	14	40
Total	165	244	311

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.25	0.22	0.26
Ambrosia dumosa	0.31	0.29	0.35
Ceratoides lanata	0.41	0.41	0.43
Larrea tridentata	0.55	0.67	0.74
Menodora spinescens	0.23	0.11	0.18
Oryzopsis hymenoides	0.25	0.37	0.36
Sphaeralcea emoryi	0.00	0.48	0.00

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	5.85	5.31	2.25
Ambrosia dumosa	8.94	8.17	12.55
Ceratoides lanata	0.22	0.85	0.86
Larrea tridentata	1.57	3.53	3.34
Menodora spinescens	0.25	0.07	0.54
Oryzopsis hymenoides	0.91	5.74	2.86
Sphaeralcea emoryi	0.00	0.06	0.00
Total Live	17.74	23.74	22.40
Dead Grass	0.00	0.13	0.56
Dead Shrub	0.89	1.43	5.75
Total	18.63	25.29	28.72

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	5.96	4.08	2.07
Ambrosia dumosa	10.13	8.93	15.65
Ceratoides lanata	0.32	1.29	1.22
Larrea tridentata	2.82	8.09	8.80
Menodora spinescens	0.20	0.03	0.34
Oryzopsis hymenoides	0.89	7.58	3.95
Sphaeralcea emoryi	0.00	0.10	0.00
Total Live	20.31	30.11	32.03

Table A-9A. Site characteristics for Plot 9.

Location: Jackass Flats

NTS Area: 25

NTS Grid: ZZ-16

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4072154	556655	Standing
Corner 2:	NW	4072190	556660	On ground, replaced in original position
Corner 3:	NE	4072185	556690	Standing
Corner 4:	SE	4072154	556685	Standing

DEM Plot Elevation: 992 m

Plot Aspect: 135°

Elevation Above Playa (Playa Name): NA

Plot Slope: 3°

Annual Precipitation
Measured: 130 mm
Modeled: 132 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Menodora-Ephedra*

Ostler-Hanson Plant Association: *Menodora-Ephedra-Krameria*

Ostler-Hanson Land Unit: 313

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: NA

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 7 April 2001

Figure A-9. Photographs showing Plot 9.

A. (April 17, 1964). This northerly view across Plot 9 and Jackass Flats shows a vegetation assemblage dominated by spiny menodora and Mormon tea (*Ephedra nevadensis*) with the Calico Hills in the background. An individual is measuring annual plants at right midground (Janice Beatley Collection, 9-B).

B. (April 7, 2001). Despite the fact that the spiny menodora has died back owing either to recent drought or freezes in 1989-1990, the biomass of perennial vegetation is still much higher than it was in 1964 (R.H. Webb, Stake 4126B).

Table A-9B. Summary plant data for Plot 9.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	1	0	2
Ceratoides lanata	1	1	0
Coleogyne ramosissima	1	1	5
Ephedra nevadensis	31	42	53
Krameria parvifolia	22	25	25
Larrea tridentata	2	3	2
Menodora spinescens	61	75	97
Opuntia echinocarpa	1	0	0
Oryzopsis hymenoides	9	23	35
Sphaeralcea emoryi	0	1	0
Total Live	129	171	219
Dead Grass	0	0	7
Dead Shrub	8	15	66
Total	137	186	292

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	0.01	0.00	0.35
Ceratoides lanata	0.13	0.08	0.00
Coleogyne ramosissima	0.08	0.11	0.65
Ephedra nevadensis	5.79	6.85	6.49
Krameria parvifolia	3.12	2.99	2.88
Larrea tridentata	0.01	0.29	0.16
Menodora spinescens	9.45	10.03	6.51
Opuntia echinocarpa	0.25	0.00	0.00
Oryzopsis hymenoides	0.53	1.39	1.41
Sphaeralcea emoryi	0.00	0.01	0.00
Total Live	19.36	21.75	18.46
Dead Grass	0.00	0.00	0.17
Dead Shrub	2.28	1.94	12.89
Total	21.65	23.69	31.53

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	0.20	0.00	0.42
Ceratoides lanata	0.36	0.41	0.00
Coleogyne ramosissima	0.51	0.66	0.61
Ephedra nevadensis	0.41	0.50	0.48
Krameria parvifolia	0.21	0.21	0.25
Larrea tridentata	0.67	0.54	0.55
Menodora spinescens	0.17	0.15	0.14
Opuntia echinocarpa	0.30	0.00	0.00
Oryzopsis hymenoides	0.34	0.27	0.34
Sphaeralcea emoryi	0.00	0.33	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Ambrosia dumosa	0.01	0.00	0.55
Ceratoides lanata	0.15	0.11	0.00
Coleogyne ramosissima	0.14	0.24	1.59
Ephedra nevadensis	9.71	12.54	11.79
Krameria parvifolia	2.35	2.21	2.51
Larrea tridentata	0.01	0.52	0.34
Menodora spinescens	5.65	5.60	3.60
Opuntia echinocarpa	0.25	0.00	0.00
Oryzopsis hymenoides	0.58	1.30	1.74
Sphaeralcea emoryi	0.00	0.01	0.00
Total Live	18.86	22.54	22.12

Table A-10A. Site characteristics for Plot 10.

Location: Jackass Flats

NTS Area: 25 NTS Grid: B-16

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4072305	560773	Standing
Corner 2:	NW	4072331	560790	Missing
Corner 3:	NE	4072316	560814	Standing
Corner 4:	SE	4072289	560799	Standing

DEM Plot Elevation: 1038 m Plot Aspect: 270°

Elevation Above Playa (Playa Name): NA Plot Slope: 1°

Annual Precipitation
Measured: 125 mm
Modeled: 136 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed mostly volcanic eolian sand

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Ambrosia-Larrea-Oryzopsis*

Ostler-Hanson Land Unit: 322

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

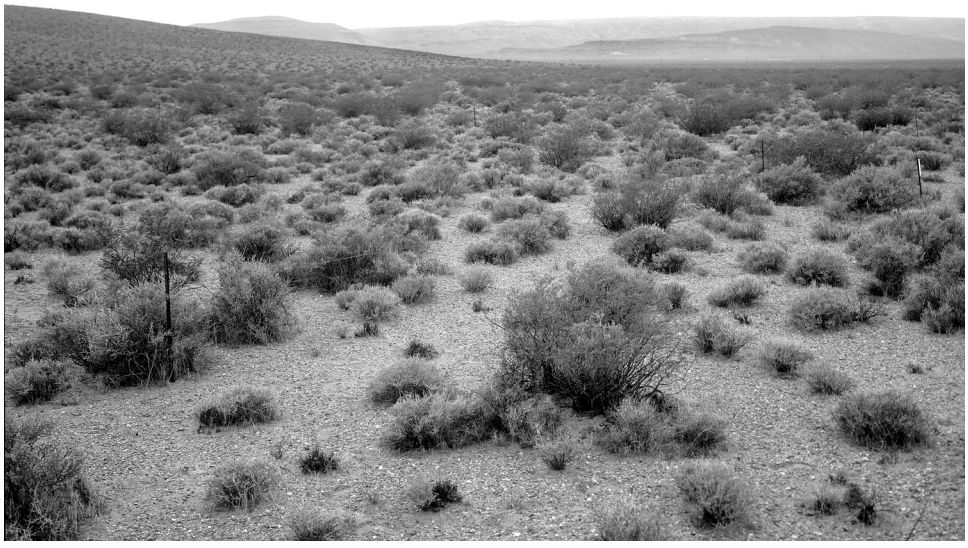
Location of Transect 1: northeast side of plot

Direction Transects Are Read: southeast to northwest

Date(s) Plot Remeasured: 4 April 2001

Figure A-10. Photographs showing Plot 10.

A. (April 18, 1964). This westerly view across Plot 10 shows a mixed creosote-bush assemblage in the plot and Yucca Mountain in the background (Janice Beatley Collection, 12-B).



B. (April 6, 2001). The increase in density, cover, and biomass of perennial vegetation is striking, and white bursage, in the foreground, has particularly increased (R.H. Webb, Stake 4123A).

Table A-10B. Summary plant data for Plot 10.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	12	18	45
Ambrosia dumosa	61	75	98
Ceratoides lanata	23	22	3
Ericameria cooperi	2	2	3
Grayia spinosa	12	17	7
Larrea tridentata	20	25	22
Lycium pallidum	16	19	17
Menodora spinescens	2	1	19
Oryzopsis hymenoides	9	45	12
Sphaeralcea emoryi	0	3	0
Total Live	157	227	226
Dead Grass	0	2	15
Dead Shrub	1	8	44
Total	158	237	285

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	1.08	1.61	3.93
Ambrosia dumosa	4.95	5.88	5.95
Ceratoides lanata	1.65	1.64	0.16
Ericameria cooperi	0.20	0.16	0.31
Grayia spinosa	2.64	2.18	0.60
Larrea tridentata	4.84	5.85	5.26
Lycium pallidum	3.43	3.54	3.97
Menodora spinescens	0.21	0.08	1.65
Oryzopsis hymenoides	0.26	3.63	0.35
Sphaeralcea emoryi	0.00	0.06	0.00
Total Live	19.25	24.63	22.18
Dead Grass	0.00	0.07	0.47
Dead Shrub	0.15	1.34	6.97
Total	19.41	26.04	29.63

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.23	0.27	0.32
Ambrosia dumosa	0.23	0.28	0.29
Ceratoides lanata	0.37	0.38	0.41
Ericameria cooperi	0.22	0.36	0.35
Grayia spinosa	0.63	0.66	0.62
Larrea tridentata	0.78	0.89	1.06
Lycium pallidum	0.67	0.71	0.71
Menodora spinescens	0.18	0.28	0.23
Oryzopsis hymenoides	0.22	0.37	0.29
Sphaeralcea emoryi	0.00	0.28	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.88	1.57	4.31
Ambrosia dumosa	3.95	5.72	5.88
Ceratoides lanata	2.17	2.32	0.23
Ericameria cooperi	0.15	0.17	0.39
Grayia spinosa	5.68	5.03	1.34
Larrea tridentata	13.63	18.88	19.45
Lycium pallidum	7.86	8.49	9.56
Menodora spinescens	0.12	0.08	1.34
Oryzopsis hymenoides	0.21	4.97	0.35
Sphaeralcea emoryi	0.00	0.07	0.00
Total Live	34.67	47.31	42.86

Table A-11A. Site characteristics for Plot 11.

Location: Jackass Flats

NTS Area: 25

NTS Grid: F-19

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4077098	565850	Standing
Corner 2:	NW	4077127	565858	Standing
Corner 3:	NE	4077119	565888	Standing
Corner 4:	SE	4077091	565881	Standing

DEM Plot Elevation: 1193 m

Plot Aspect: 104°

Elevation Above Playa (Playa Name): NA

Plot Slope: 12°

Annual Precipitation
Measured: 142 mm
Modeled: 152 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed volcanic alluvium

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Krameria-Ephedra*

Ostler-Hanson Land Unit: 227

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: north side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 3 April 2001

Figure A-11. Photographs showing Plot 11.

A. (April 30, 1964). This easterly view across Plot 11 shows a mixed creosote bush scrub assemblage with Kiwi Mesa in the background. Janice Beatley is standing in the photograph at left midground (Janice Beatley Collection, 46-B).

B. (June 8, 2001). The density, cover, and biomass of the perennial vegetation has increased dramatically in the 37 years that have elapsed between the original and matched photograph. Wolfberry and spiny hopsage decrease significantly on this plot, indicating that most of the increases are in creosote bush, range ratany, and Mormon tea (Dominic Oldershaw, Stake 4051B).

Table A-11B. Summary plant data for Plot 11.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	16	18	17
Ambrosia dumosa	0	1	6
Ceratoides lanata	0	2	1
Coleogyne ramosissima	1	1	1
Ephedra nevadensis	19	25	30
Eriogonum inflatum	0	2	3
Grayia spinosa	0	2	2
Krameria parvifolia	33	37	38
Larrea tridentata	39	43	42
Lycium andersonii	12	15	15
Menodora spinescens	6	11	27
Oryzopsis hymenoides	7	20	11
Xylorhiza tortifolia	0	1	2
Total Live	133	178	195
Dead Grass	0	0	3
Dead Shrub	9	6	21
Total	142	184	219

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.92	0.90	1.11
Ambrosia dumosa	0.00	0.02	0.34
Ceratoides lanata	0.00	0.13	0.09
Coleogyne ramosissima	0.15	0.19	0.32
Ephedra nevadensis	1.91	3.24	4.72
Eriogonum inflatum	0.00	0.02	0.13
Grayia spinosa	0.00	0.05	0.11
Krameria parvifolia	3.56	4.40	4.30
Larrea tridentata	5.28	6.67	6.10
Lycium andersonii	1.79	2.67	1.44
Menodora spinescens	0.25	0.95	2.73
Oryzopsis hymenoides	0.15	1.94	0.50
Xylorhiza tortifolia	0.00	0.02	0.06
Total Live	14.03	21.19	21.94
Dead Grass	0.00	0.00	0.15
Dead Shrub	1.45	2.90	2.95
Total	15.48	24.09	25.03

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.14	0.18	0.25
Ambrosia dumosa	0.00	0.30	0.26
Ceratoides lanata	0.00	0.38	0.78
Coleogyne ramosissima	0.53	0.48	0.87
Ephedra nevadensis	0.32	0.46	0.51
Eriogonum inflatum	0.00	0.08	0.36
Grayia spinosa	0.00	0.43	0.85
Krameria parvifolia	0.17	0.20	0.26
Larrea tridentata	0.62	0.63	0.74
Lycium andersonii	0.45	0.47	0.41
Menodora spinescens	0.09	0.14	0.20
Oryzopsis hymenoides	0.16	0.31	0.31
Xylorhiza tortifolia	0.00	0.10	0.34

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.46	0.57	0.95
Ambrosia dumosa	0.00	0.02	0.27
Ceratoides lanata	0.00	0.16	0.14
Coleogyne ramosissima	0.28	0.31	0.88
Ephedra nevadensis	2.09	5.42	8.79
Eriogonum inflatum	0.00	0.00	0.15
Grayia spinosa	0.00	0.08	0.32
Krameria parvifolia	2.09	3.10	3.77
Larrea tridentata	11.31	14.53	16.40
Lycium andersonii	2.79	4.29	2.16
Menodora spinescens	0.09	0.45	1.87
Oryzopsis hymenoides	0.09	2.14	0.57
Xylorhiza tortifolia	0.00	0.01	0.07
Total Live	19.19	31.08	36.34

Table A-12A. Site characteristics for Plot 12.

Location: Jackass Flats

NTS Area: 25

NTS Grid: F-19

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4077726	565982	Standing
Corner 2:	NW	4077753	565996	Standing
Corner 3:	NE	4077738	566024	Standing
Corner 4:	SE	4077713	566010	Standing

DEM Plot Elevation: 1209 m

Plot Aspect: 230°

Elevation Above Playa (Playa Name): NA

Plot Slope: 12°

Annual Precipitation
Measured: 149 mm
Modeled: 154 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed volcanic alluvium

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Krameria-Lycium*

Ostler-Hanson Land Unit: 227

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

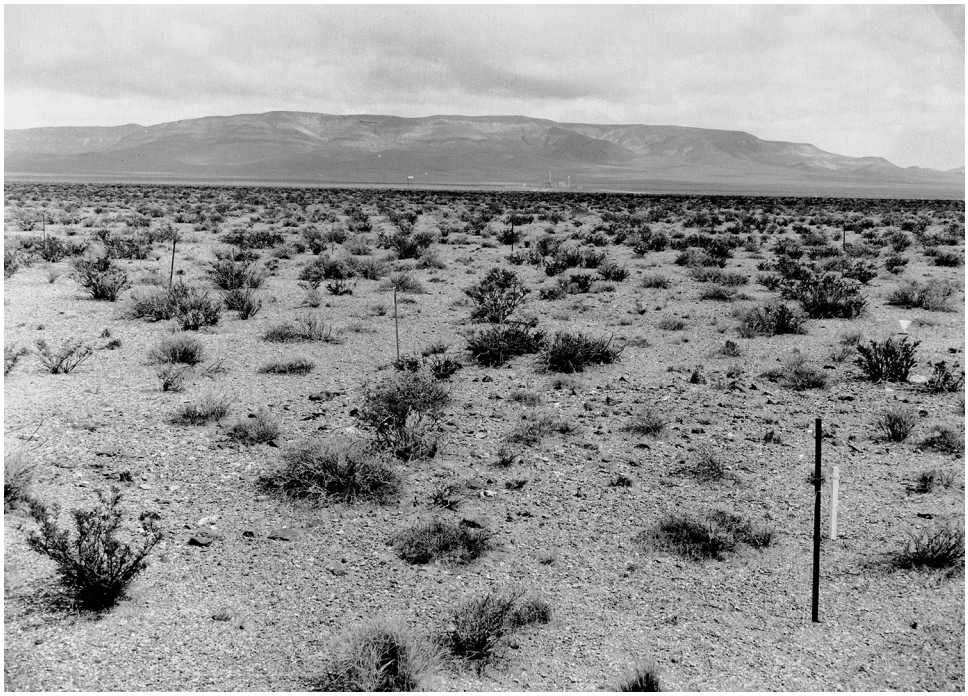
Plot Condition: good

Location of Transect 1: northeast side of plot

Direction Transects Are Read: northwest to southeast

Date(s) Plot Remeasured: 3 April 2001

Figure A-12. Photographs showing Plot 12.



A. (May 6, 1964). This southeasterly view across Plot 12 and Jackass Flats shows the north side of Skull Mountain in the distance. The vegetation assemblage is creosote bush with other species present (Janice Beatley Collection, 51-A).

B. (June 8, 2001). The density, cover, and biomass of the perennial vegetation has increased dramatically in the intervening 37 years between the original and the match photograph. Again, wolfberry and spiny hopsage have decreased while other species have greatly increased (Dominic Oldershaw, Stake 4052A).

Table A-12B. Summary plant data for Plot 12.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	7	7	7
Ambrosia dumosa	1	0	18
Ceratoides lanata	8	10	1
Coleogyne ramosissima	0	0	3
Ephedra nevadensis	10	16	31
Eriogonum inflatum	1	3	0
Grayia spinosa	6	10	3
Krameria parvifolia	34	38	33
Larrea tridentata	58	60	59
Lycium andersonii	19	22	14
Oryzopsis hymenoides	18	40	8
Xylorhiza tortifolia	0	1	0
Total Live	162	207	177
Dead Grass	0	0	10
Dead Shrub	5	5	30
Total	167	212	217

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.25	0.35	0.33
Ambrosia dumosa	0.08	0.00	1.42
Ceratoides lanata	0.35	0.71	0.05
Coleogyne ramosissima	0.00	0.00	0.41
Ephedra nevadensis	0.63	1.01	3.85
Eriogonum inflatum	0.06	0.07	0.00
Grayia spinosa	0.75	0.95	0.22
Krameria parvifolia	3.26	4.35	3.64
Larrea tridentata	3.49	10.48	8.30
Lycium andersonii	3.37	3.91	0.90
Oryzopsis hymenoides	0.74	2.93	0.25
Xylorhiza tortifolia	0.00	0.04	0.00
Total Live	12.98	24.78	19.35
Dead Grass	0.00	0.00	0.26
Dead Shrub	6.76	0.46	4.98
Total	19.75	25.25	24.60

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.12	0.21	0.23
Ambrosia dumosa	0.18	0.00	0.32
Ceratoides lanata	0.29	0.36	0.40
Coleogyne ramosissima	0.00	0.00	0.71
Ephedra nevadensis	0.34	0.37	0.51
Eriogonum inflatum	0.33	0.05	0.00
Grayia spinosa	0.48	0.45	0.62
Krameria parvifolia	0.17	0.19	0.25
Larrea tridentata	0.60	0.63	0.71
Lycium andersonii	0.42	0.46	0.31
Oryzopsis hymenoides	0.22	0.29	0.24
Xylorhiza tortifolia	0.00	0.28	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.11	0.23	0.29
Ambrosia dumosa	0.05	0.00	1.64
Ceratoides lanata	0.35	0.85	0.06
Coleogyne ramosissima	0.00	0.00	0.92
Ephedra nevadensis	0.72	1.36	7.57
Eriogonum inflatum	0.07	0.01	0.00
Grayia spinosa	1.26	1.50	0.51
Krameria parvifolia	1.89	2.80	3.11
Larrea tridentata	6.44	22.71	20.12
Lycium andersonii	5.04	6.13	0.90
Oryzopsis hymenoides	0.60	2.94	0.23
Xylorhiza tortifolia	0.00	0.03	0.00
Total Live	16.52	38.56	35.34

Table A-13A. Site characteristics for Plot 13.

Location: Jackass Flats

NTS Area: 25 NTS Grid: G-19

USGS 7.5' Quadrangle Name: Skull Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4078985	567967	On ground or missing
Corner 2:	NW	4079005	567990	On ground or missing
Corner 3:	NE	4078978	568006	On ground or missing
Corner 4:	SE	4078959	567982	Standing

DEM Plot Elevation: 1288 m Plot Aspect: 104°

Elevation Above Playa (Playa Name): NA Plot Slope: 6°

Annual Precipitation
Measured: 167 mm
Modeled: 164 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Coleogyne*/*Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: *Coleogyne-Lycium-Ephedra*

Ostler-Hanson Land Unit: 233

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none

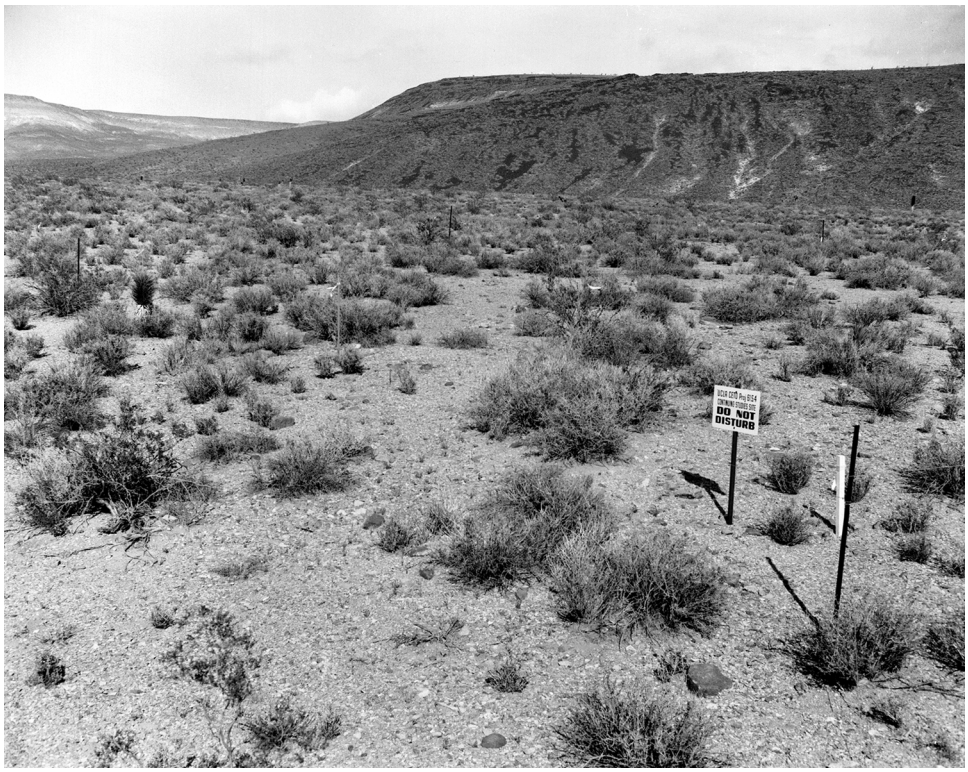
Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 8 May 2001

Figure A-13. Photographs showing Plot 13.



A. (May 6, 1964). This easterly view across Plot 13 shows a narrow valley with a mixed shrub community dominated by blackbrush (*Coleogyne ramosissima*) and creosote bush. Kiwi Mesa appears in the distance. Joshua trees (*Yucca brevifolia*) and creosote bush are two of the most obvious species present (Janice Beatley Collection, 53-A).

B. (June 8, 2001). The Joshua trees have grown considerably, and several new ones can be seen in the distance. The density, cover, and biomass of perennial vegetation has increased considerably, and many changes have occurred in the relative dominance of species on the plot (Dominic Oldershaw, Stake 4055A).

Table A-13B. Summary plant data for Plot 13.

Number of Plants

SPECIES	1963	1975	2001
Ambrosia dumosa	5	6	22
Ceratoides lanata	1	1	0
Coleogyne ramosissima	81	87	92
Ephedra nevadensis	18	19	22
Ericameria cooperi	4	20	18
Eriogonum fasciculatum	0	0	2
Grayia spinosa	17	25	5
Krameria parvifolia	0	0	2
Larrea tridentata	5	7	10
Lycium andersonii	34	35	32
Oryzopsis hymenoides	0	1	2
Stipa speciosa	4	4	16
Xylorhiza tortifolia	1	9	14
Total Live	170	214	237
Dead Grass	0	0	0
Dead Shrub	17	27	34
Total	187	241	271

Cover (%)

SPECIES	1963	1975	2001
Ambrosia dumosa	0.62	0.54	0.97
Ceratoides lanata	0.05	0.02	0.00
Coleogyne ramosissima	9.88	10.36	8.90
Ephedra nevadensis	1.96	2.96	3.14
Ericameria cooperi	0.18	1.07	1.52
Eriogonum fasciculatum	0.00	0.00	0.06
Grayia spinosa	2.18	2.62	0.46
Krameria parvifolia	0.00	0.00	0.07
Larrea tridentata	1.38	1.62	3.11
Lycium andersonii	7.10	7.05	3.47
Oryzopsis hymenoides	0.00	0.05	0.07
Stipa speciosa	0.25	0.40	1.44
Xylorhiza tortifolia	0.06	0.35	0.63
Total Live	23.67	27.05	23.85
Dead Grass	0.00	0.00	0.00
Dead Shrub	2.65	2.82	8.64
Total	26.33	29.87	32.48

Average Height (m)

SPECIES	1963	1975	2001
Ambrosia dumosa	0.28	0.29	0.24
Ceratoides lanata	0.25	0.41	0.00
Coleogyne ramosissima	0.41	0.43	0.50
Ephedra nevadensis	0.43	0.54	0.58
Ericameria cooperi	0.32	0.19	0.32
Eriogonum fasciculatum	0.00	0.00	0.48
Grayia spinosa	0.50	0.45	0.58
Krameria parvifolia	0.00	0.00	0.20
Larrea tridentata	1.12	0.95	1.34
Lycium andersonii	0.42	0.47	0.36
Oryzopsis hymenoides	0.00	0.28	0.45
Stipa speciosa	0.27	0.29	0.47
Xylorhiza tortifolia	0.23	0.25	0.28

Biomass Index (m^2)

SPECIES	1963	1975	2001
Ambrosia dumosa	0.60	0.56	0.84
Ceratoides lanata	0.05	0.02	0.00
Coleogyne ramosissima	15.14	16.99	15.44
Ephedra nevadensis	3.25	5.78	6.49
Ericameria cooperi	0.20	0.89	1.70
Eriogonum fasciculatum	0.00	0.00	0.10
Grayia spinosa	3.75	3.91	0.94
Krameria parvifolia	0.00	0.00	0.05
Larrea tridentata	5.77	5.29	16.13
Lycium andersonii	10.48	11.49	4.33
Oryzopsis hymenoides	0.00	0.05	0.11
Stipa speciosa	0.23	0.42	2.41
Xylorhiza tortifolia	0.05	0.36	0.62
Total Live	39.51	45.76	49.16

Table A-14A. Site characteristics for Plot 14.

Location: Mid Valley

NTS Area: 25 NTS Grid: I-21

USGS 7.5' Quadrangle Name: Mine Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4082123	570335	Standing
Corner 2:	NW	NA	NA	Standing
Corner 3:	NE	4082145	570374	On ground
Corner 4:	SE	4082116	570367	On ground

DEM Plot Elevation: 1457 m Plot Aspect: 18°

Elevation Above Playa (Playa Name): NA Plot Slope: 11°

Annual Precipitation
Measured: 189 mm
Modeled: 186 mm

Parent Material Type: broken terrain

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Coleogyne*/*Grayia-Lycium*

Ostler-Hanson Plant Association: *Coleogyne-Lycium-Ephedra*

Ostler-Hanson Land Unit: 240

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: NA

Plot Condition: good

Location of Transect 1: NA

Direction Transects Are Read: southwest to northeast

Date(s) Plot Remeasured: 8 May 2001

Figure A-14. Photographs showing Plot 14.

A. (May 6, 1964). This northwesterly view across Plot 14 shows scattered Joshua trees and a mixed shrub community dominated by blackbrush, spiny hopsage, wolfberry, and spiny menodora. This view is above the upper elevation limit for creosote bush in this area. Part of the access road to the plot appears at right foreground, and Shoshone Mountain appears in the background (Janice Beatley Collection, 56-B).

B. (June 8, 2001). Several changes are apparent in this match. The large Joshua tree at left midground has died, and its remains are still present. In general, Joshua trees have increased considerably in the background. Spiny menodora has become the dominant species in terms of cover. The biomass and cover of perennial shrubs has increased throughout the plot, despite the fact that spiny hopsage has decreased considerably here. The access road has partially revegetated, mostly with perennial grasses and short-lived shrubs (Dominic Oldershaw, Stake 4057B).

Table A-14B. Summary plant data for Plot 14.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0	1	0
Astragalus lentiginosus	0	4	0
Ceratoides lanata	7	13	10
Coleogyne ramosissima	56	57	68
Ephedra nevadensis	10	11	18
Ericameria cooperi	0	0	1
Grayia spinosa	54	67	12
Lycium andersonii	24	29	32
Menodora spinescens	139	198	232
Oryzopsis hymenoides	0	1	1
Phlox stansburyi	0	32	23
Sitanion hystrix	5	6	9
Sphaeralcea ambigua	0	0	1
Stipa speciosa	34	55	12
Yucca brevifolia	3	2	4
Total Live	332	476	423
Dead Grass	0	0	6
Dead Shrub	16	9	48
Total	348	485	477

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0.00	0.01	0.00
Astragalus lentiginosus	0.00	0.10	0.00
Ceratoides lanata	0.45	0.92	0.73
Coleogyne ramosissima	8.45	7.48	7.21
Ephedra nevadensis	1.25	1.28	2.14
Ericameria cooperi	0.00	0.00	0.02
Grayia spinosa	8.31	9.92	1.30
Lycium andersonii	2.76	2.82	2.45
Menodora spinescens	17.99	25.42	29.95
Oryzopsis hymenoides	0.00	0.03	0.07
Phlox stansburyi	0.00	0.49	0.37
Sitanion hystrix	0.24	0.41	0.40
Sphaeralcea ambigua	0.00	0.00	0.01
Stipa speciosa	1.54	2.52	0.68
Yucca brevifolia	0.54	0.72	0.42
Total Live	41.51	52.11	45.75
Dead Grass	0.00	0.00	0.15
Dead Shrub	2.93	1.45	9.69
Total	44.44	53.56	55.59

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0.00	0.25	0.00
Astragalus lentiginosus	0.00	0.10	0.00
Ceratoides lanata	0.35	0.40	0.46
Coleogyne ramosissima	0.41	0.37	0.47
Ephedra nevadensis	0.37	0.45	0.54
Ericameria cooperi	0.00	0.00	0.30
Grayia spinosa	0.43	0.56	0.57
Lycium andersonii	0.36	0.35	0.36
Menodora spinescens	0.18	0.21	0.28
Oryzopsis hymenoides	0.00	0.20	0.54
Phlox stansburyi	0.00	0.09	0.17
Sitanion hystrix	0.27	0.25	0.39
Sphaeralcea ambigua	0.00	0.00	0.05
Stipa speciosa	0.27	0.29	0.39
Yucca brevifolia	0.35	2.11	1.01

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0.00	0.01	0.00
Astragalus lentiginosus	0.00	0.03	0.00
Ceratoides lanata	0.54	1.38	1.26
Coleogyne ramosissima	12.34	9.86	11.68
Ephedra nevadensis	1.80	1.99	4.40
Ericameria cooperi	0.00	0.00	0.02
Grayia spinosa	12.25	18.94	2.49
Lycium andersonii	3.43	3.56	3.04
Menodora spinescens	11.78	18.80	29.44
Oryzopsis hymenoides	0.00	0.02	0.13
Phlox stansburyi	0.00	0.13	0.24
Sitanion hystrix	0.23	0.36	0.51
Sphaeralcea ambigua	0.00	0.00	0.00
Stipa speciosa	1.48	2.52	0.91
Yucca brevifolia	0.56	7.67	2.17
Total Live	44.40	65.28	56.28

Table A-15A. Site characteristics for Plot 15.

Location: Jackass Flats

NTS Area: 25 NTS Grid: F-15

USGS 7.5' Quadrangle Name: Jackass Flats

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4070942	566051	Standing
Corner 2:	NW	4070970	566062	Standing
Corner 3:	NE	4070967	566089	Standing
Corner 4:	SE	4070934	566082	Standing

DEM Plot Elevation: 1078 m Plot Aspect: 135°

Elevation Above Playa (Playa Name): NA Plot Slope: 5°

Annual Precipitation
Measured: 132 mm
Modeled: 140 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, volcanic alluvium

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Lycium-Ambrosia*

Ostler-Hanson Land Unit: 229

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

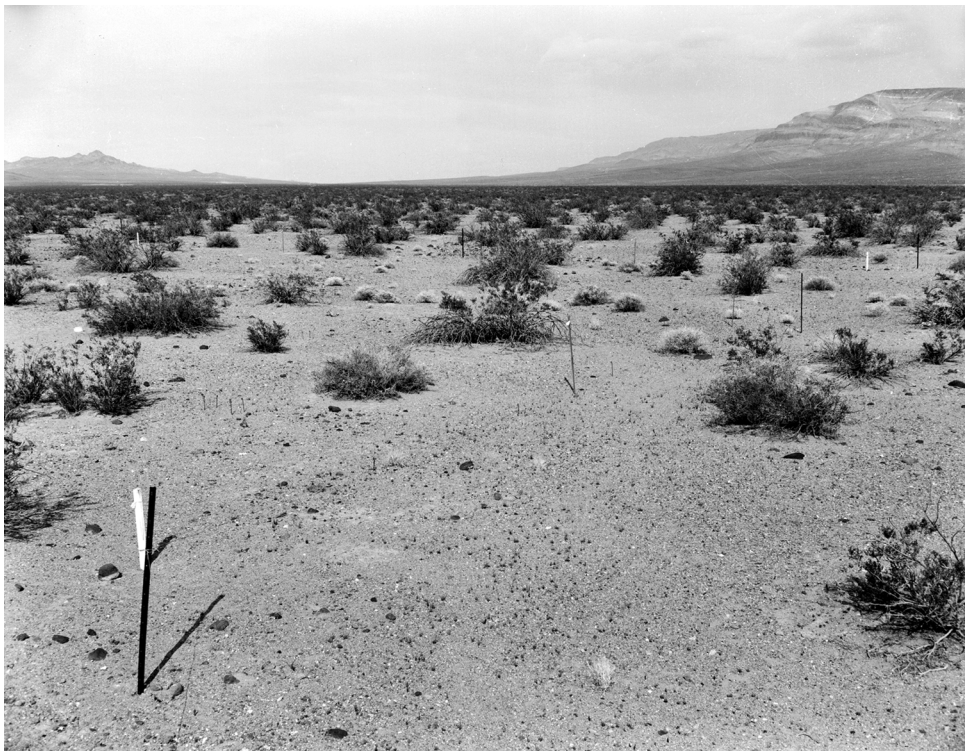
Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 2 April 2001

Figure A-15. Photographs showing Plot 15.



A. (April 28, 1964). This easterly view across Plot 15 shows Skull Mountain in the right background and Lookout Peak in the left background. The vegetation is creosote bush - white bursage with several other species present (Janice Beatley Collection, 38-B).

B. (April 6, 2001). The density, cover, and biomass of perennial vegetation has increased considerably in the 37 years that span the original photograph and its match. Spiny hopsage decreased here while wolfberry has increased to become a subdominant (R.H. Webb, Stake 4121B).

Table A-15B. Summary plant data for Plot 15.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	1	4	16
Ambrosia dumosa	6	9	105
Grayia spinosa	0	1	5
Larrea tridentata	32	40	47
Lycium andersonii	9	7	10
Opuntia echinocarpa	0	1	0
Oryzopsis hymenoides	6	9	16
Total Live	54	71	199
Dead Grass	0	0	1
Dead Shrub	1	1	10
Total	55	72	210

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.18	0.18	0.27
Ambrosia dumosa	0.31	0.36	0.29
Grayia spinosa	0.00	0.48	0.76
Larrea tridentata	1.05	0.93	1.38
Lycium andersonii	0.51	0.61	0.61
Opuntia echinocarpa	0.00	0.23	0.00
Oryzopsis hymenoides	0.26	0.30	0.32

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.04	0.18	0.90
Ambrosia dumosa	0.77	1.13	8.92
Grayia spinosa	0.00	0.09	0.65
Larrea tridentata	9.62	11.71	12.11
Lycium andersonii	1.62	1.40	1.96
Opuntia echinocarpa	0.00	0.03	0.00
Oryzopsis hymenoides	0.20	0.63	0.86
Total Live	12.25	15.16	25.40
Dead Grass	0.00	0.00	0.05
Dead Shrub	1.46	0.06	3.68
Total	13.71	15.23	29.13

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.02	0.14	0.77
Ambrosia dumosa	1.00	1.44	9.43
Grayia spinosa	0.00	0.15	1.70
Larrea tridentata	37.90	39.55	56.79
Lycium andersonii	2.75	2.89	4.41
Opuntia echinocarpa	0.00	0.02	0.00
Oryzopsis hymenoides	0.18	0.70	0.95
Total Live	41.85	44.90	74.05

Table A-16A. Site characteristics for Plot 16.

Location: Jackass Flats

NTS Area: 25

NTS Grid: H-17

USGS 7.5' Quadrangle Name: Skull Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4072553	568887	Standing
Corner 2:	NW	4072581	568895	Standing
Corner 3:	NE	4072576	568925	Standing
Corner 4:	SE	4072547	568918	Standing

DEM Plot Elevation: 1162 m

Plot Aspect: 135°

Elevation Above Playa (Playa Name): NA

Plot Slope: 3°

Annual Precipitation
Measured: 147 mm
Modeled: 149 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed volcanic alluvium

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Oryzopsis*

Ostler-Hanson Land Unit: 181

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

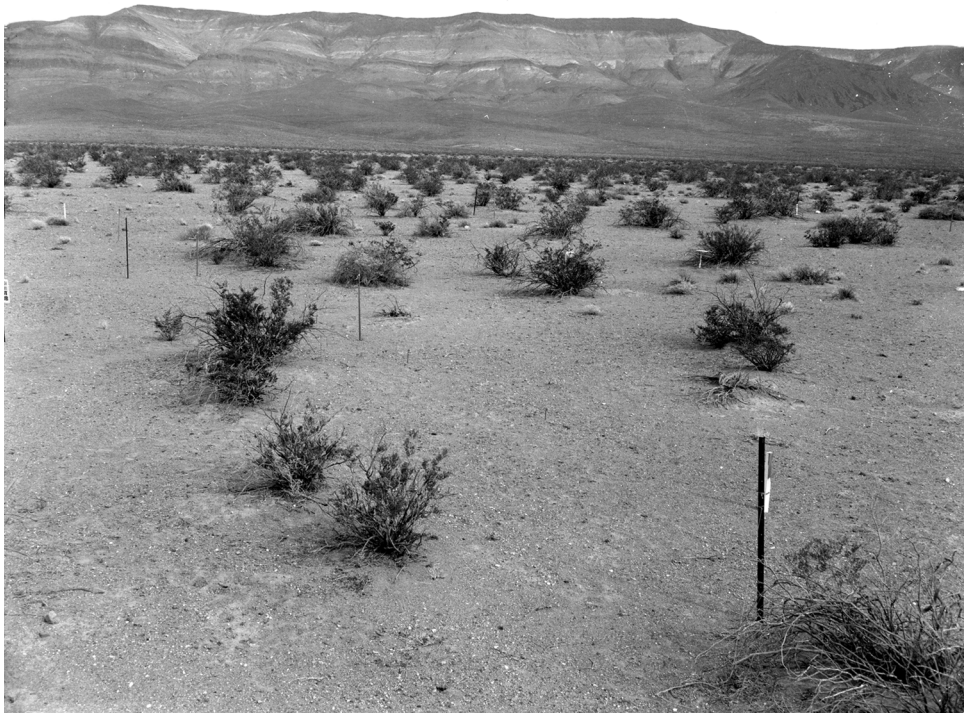
Plot Condition: good

Location of Transect 1: west side of plot

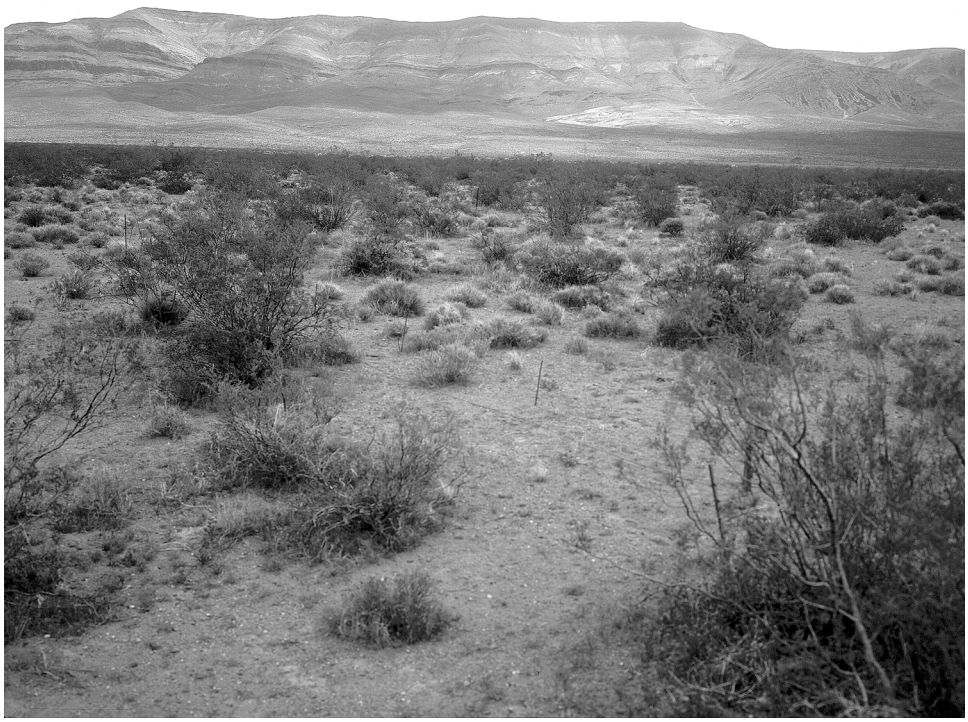
Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 5 April 2001

Figure A-16. Photographs showing Plot 16.



A. (April 28, 1964). This southeasterly view across Plot 16 shows creosote bush - white bursage vegetation with Skull Mountain in the background. Spiny hopsage is a significant subdominant species here (Janice Beatley Collection, 39-A).



B. (April 5, 2001). The density, cover, and biomass of the perennial vegetation has increased considerably. The increase is particularly noteworthy in creosote bush, which now partially blocks the fence posts in the view. Spiny hopsage has decreased here while wolfberry has increased (R.H. Webb, Stake 4101B).

Table A-16B. Summary plant data for Plot 16.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0	5	9
Ambrosia dumosa	1	0	55
Grayia spinosa	3	1	0
Hymenoclea salsola	0	0	3
Larrea tridentata	25	31	40
Lycium andersonii	6	7	7
Oryzopsis hymenoides	5	18	19
Total Live	40	62	133
Dead Grass	0	1	0
Dead Shrub	3	3	11
Total	43	66	144

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.06	0.66
Ambrosia dumosa	0.02	0.00	4.74
Grayia spinosa	0.45	0.13	0.00
Hymenoclea salsola	0.00	0.00	0.26
Larrea tridentata	6.02	8.13	10.92
Lycium andersonii	0.85	0.79	1.03
Oryzopsis hymenoides	0.12	1.77	0.94
Total Live	7.45	10.88	18.55
Dead Grass	0.00	0.05	0.00
Dead Shrub	2.00	0.38	3.41
Total	9.45	11.31	21.95

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.09	0.31
Ambrosia dumosa	0.25	0.00	0.32
Grayia spinosa	0.62	0.46	0.00
Hymenoclea salsola	0.00	0.00	0.36
Larrea tridentata	1.11	1.13	1.45
Lycium andersonii	0.52	0.54	0.49
Oryzopsis hymenoides	0.26	0.31	0.28

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.03	0.75
Ambrosia dumosa	0.02	0.00	5.52
Grayia spinosa	0.98	0.20	0.00
Hymenoclea salsola	0.00	0.00	0.35
Larrea tridentata	22.80	32.71	56.86
Lycium andersonii	1.45	1.36	1.84
Oryzopsis hymenoides	0.10	1.90	0.90
Total Live	25.34	36.19	66.22

Table A-17A. Site characteristics for Plot 17.

Location: Jackass Flats

NTS Area: 25

NTS Grid: I-17

USGS 7.5' Quadrangle Name: Skull Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4073825	571148	Standing
Corner 2:	NW	4073855	571147	Standing
Corner 3:	NE	4073856	571177	Standing
Corner 4:	SE	4073825	571179	Standing

DEM Plot Elevation: 1244 m

Plot Aspect: 315°

Elevation Above Playa (Playa Name): NA

Plot Slope: 10°

Annual Precipitation
Measured: 141 mm
Modeled: 159 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Lycium-Grayia*

Ostler-Hanson Land Unit: 179

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

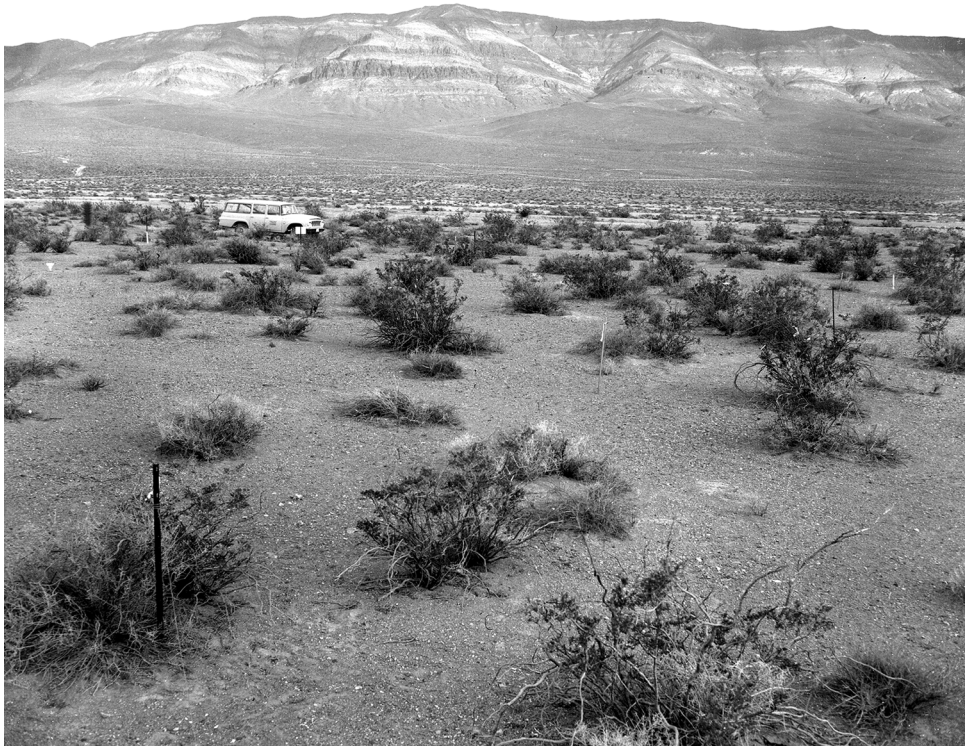
Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 5 April 2001

Figure A-17. Photographs showing Plot 17.



A. (April 28, 1964). This southeasterly view across Plot 17 shows the north flank of Skull Mountain in the background. The vegetation is a mixed creosote bush scrub association and is dominated by relatively few, large individuals. The Cane Springs road crosses the midground (Janice Beatley Collection, 41-B).

B. (April 5, 2001). The cover, density, and biomass of perennial vegetation is large enough to obscure the Cane Springs road. The dominants now are creosote bush, wolfberry, and Mormon tea, and spiny hopsage, which once was a subdominant here, has greatly decreased. Much of the increase is attributable to an increase in size of persisting creosote bush (R.H. Webb, Stake 4105A).

Table A-17B. Summary plant data for Plot 17.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	2	3	9
Ambrosia dumosa	0	1	13
Atriplex canescens	0	1	7
Ceratoides lanata	2	7	6
Ephedra nevadensis	5	6	12
Grayia spinosa	24	13	14
Krameria parvifolia	3	6	10
Larrea tridentata	31	35	42
Lepidium fremontii		2	3
Lycium andersonii	32	32	39
Lycium pallidum	0	0	1
Oryzopsis hymenoides	0	4	2
Thamnosma montana	1	2	2
Xylorhiza tortifolia	1	0	1
Total Live	101	112	161
Dead Grass	0	0	0
Dead Shrub	6	19	27
Total	107	131	188

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.09	0.18	0.53
Ambrosia dumosa	0.00	0.11	1.07
Atriplex canescens	0.00	0.16	0.35
Ceratoides lanata	0.05	0.39	0.26
Ephedra nevadensis	0.53	0.55	1.85
Grayia spinosa	3.09	1.69	1.46
Krameria parvifolia	0.39	0.62	0.95
Larrea tridentata	8.38	9.59	12.00
Lepidium fremontii	0.00	0.41	0.40
Lycium andersonii	8.73	5.41	5.65
Lycium pallidum	0.00	0.00	0.16
Oryzopsis hymenoides	0.01	0.59	0.05
Thamnosma montana	0.11	0.25	0.38
Xylorhiza tortifolia	0.05	0.00	0.04
Total Live	21.42	19.95	25.15
Dead Grass	0.00	0.00	0.00
Dead Shrub	1.72	4.22	5.48
Total	23.14	24.16	30.63

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.28	0.29	0.32
Ambrosia dumosa	0.00	0.51	0.32
Atriplex canescens	0.00	0.91	0.56
Ceratoides lanata	0.42	0.38	0.41
Ephedra nevadensis	0.38	0.46	0.53
Grayia spinosa	0.51	0.57	0.59
Krameria parvifolia	0.19	0.19	0.23
Larrea tridentata	1.01	0.96	1.30
Lepidium fremontii	0.00	0.69	0.52
Lycium andersonii	0.52	0.45	0.48
Lycium pallidum	0.00	0.00	0.30
Oryzopsis hymenoides	0.00	0.36	0.26
Thamnosma montana	0.25	0.25	0.34
Xylorhiza tortifolia	0.28	0.00	0.30

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.09	0.22	0.62
Ambrosia dumosa	0.00	0.19	1.28
Atriplex canescens	0.00	0.50	0.63
Ceratoides lanata	0.08	0.54	0.36
Ephedra nevadensis	0.74	1.03	3.59
Grayia spinosa	5.69	3.44	3.21
Krameria parvifolia	0.26	0.39	0.79
Larrea tridentata	29.87	33.38	55.28
Lepidium fremontii	0.00	0.91	0.70
Lycium andersonii	15.49	9.10	9.14
Lycium pallidum	0.00	0.00	0.16
Oryzopsis hymenoides	0.01	0.71	0.03
Thamnosma montana	0.09	0.21	0.41
Xylorhiza tortifolia	0.04	0.00	0.04
Total Live	52.35	50.62	76.25

Table A-18A. Site characteristics for Plot 18.

Location: Topopah Valley

NTS Area: 25 NTS Grid: F-23

USGS 7.5' Quadrangle Name: Topopah Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4084205	564458	NA
Corner 2:	NW	NA	NA	NA
Corner 3:	NE	NA	NA	NA
Corner 4:	SE	NA	NA	NA

DEM Plot Elevation: 1459 m Plot Aspect: 276°

Elevation Above Playa (Playa Name): NA Plot Slope: 20°

Annual Precipitation
Measured: 228 mm
Modeled: 189 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Coleogyne*

Ostler-Hanson Plant Association: *Coleogyne-Ephedra*

Ostler-Hanson Land Unit: 437

Abundance of Biological Soil Crusts: light scattered crust cover

Type and Date of Disturbance: none (control for Plot 19)

Plot Condition: good

Location of Transect 1: NA

Direction Transects Are Read: NA

Date(s) Plot Remeasured: 20 May 00

Figure A-18. Photographs showing Plot 18.

A. (May 7, 1964). This westerly view across Plot 18 and Topopah Valley shows the Calico Hills in the distance. This view shows snow on the hills, indicating that a late spring storm occurred just before the photograph was taken. The vegetation is a nearly monospecific blackbrush stand. The bare areas in the background are the result of a fire in the mid-1950s, and this plot combined with Plot 19 represent a fire-recovery study (Janice Beatley Collection, 60-B).

B. (June 20, 2000). Other fires that occurred after 1964 are apparent in the background, although the plot has remained undisturbed. Individual blackbrush appear to be larger in 2000, but overall little change is apparent in the undisturbed vegetation. Mormon tea has increased in importance on the plot. Several chollas (*Opuntia echinocarpa*) now protrude above the blackbrush canopy in the midground (R.H. Webb, Stake 4043B).

Table A-18B. Summary plant data for Plot 18.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Calochortus species	0	0	6
Coleogyne ramosissima	278	393	294
Coryphantha vivipara rosea	0	1	0
Ephedra nevadensis	16	16	19
Opuntia echinocarpa	0	0	2
Stipa speciosa	0	5	1
Total Live	294	415	322
Dead	1	7	41
Total	295	422	322

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Calochortus species	0.00	0.00	0.34
Coleogyne ramosissima	0.38	0.37	0.43
Coryphantha vivipara rosea	0.00	0.13	0.00
Ephedra nevadensis	0.42	0.49	0.53
Opuntia echinocarpa	0.00	0.00	0.46
Stipa speciosa		0.47	0.47

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Calochortus species	0.00	0.00	0.07
Coleogyne ramosissima	42.95	43.88	32.80
Coryphantha vivipara rosea	0.00	0.01	0.00
Ephedra nevadensis	2.07	1.90	2.06
Opuntia echinocarpa	0.00	0.00	0.07
Stipa speciosa	0.00	0.27	0.05
Total Live	45.03	46.06	35.06
Dead	0.10	0.85	2.23
Total	45.13	46.91	37.29

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Calochortus species	0.00	0.00	0.08
Coleogyne ramosissima	56.54	56.75	49.20
Coryphantha vivipara rosea	0.00	0.00	0.00
Ephedra nevadensis	3.18	3.24	3.78
Opuntia echinocarpa	0.00	0.00	0.12
Stipa speciosa	0.00	0.43	0.09
Total Live	59.72	60.42	53.27

Table A-19A. Site characteristics for Plot 19.

Location: Topopah Valley

NTS Area: 25

NTS Grid: F-23

USGS 7.5' Quadrangle Name: Topopah Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4084216	564392	NA
Corner 2:	NW	NA	NA	NA
Corner 3:	NE	NA	NA	NA
Corner 4:	SE	NA	NA	NA

DEM Plot Elevation: 1466 m

Plot Aspect: 135°

Elevation Above Playa (Playa Name): NA

Plot Slope: 9°

Annual Precipitation
Measured: 219 mm
Modeled: 189 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Ephedra*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 437

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: fire in 1959

Plot Condition: good

Location of Transect 1: south edge of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 20-Jun-00

Figure A-19. Photographs showing Plot 19.

A. (May 7, 1964). This westerly view across Plot 19 shows a nearly denuded area following a fire in the mid-1950s. The Calico Hills appear in the background (Janice Beatley Collection, 58-B).

B. (June 20, 2000). Some recovery of perennial vegetation has occurred in the intervening 36 years between the original and matched photograph. Most of the shrubs now prominent are Mormon tea, although several other species are also present (R.H. Webb, Stake 4038A).

Table A-19B. Summary plant data for Plot 19.

	Number of Plants							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Acamptopappus shockleyi	0	0	0	0	0	0	0	1
Oryzopsis hymenoides	0	0	0	0	0	0	0	1
Astragalus lentiginosus fremontii	0	0	0	0	1	0	0	1
Calochortus species	0	0	0	0	0	0	0	1
Coleogyne ramosissima	0	0	1	1	1	1	1	2
Dichelostemma pulchella	0	0	9	0	0	0	0	0
Encelia virginensis	0	0	0	0	0	0	0	65
Ephedra nevadensis	23	22	15	21	23	22	17	35
Ericameria cooperi	0	0	0	0	0	0	0	1
Hymenoclea salsola	0	0	0	0	0	1	1	2
Opuntia echinocarpa	0	0	0	0	0	0	0	1
Salazaria mexicana	0	0	0	0	0	0	0	1
Sitanion hystrix	0	0	0	0	0	0	0	1
Sphaeralcea ambigua	3	1	11	18	16	0	22	111
Stephanomeria parryi	0	0	0	1	0	0	0	0
Stipa speciosa	0	0	6	11	9	6	7	13
Total Live	26	23	42	52	50	30	48	237
Dead	1	0	0	0	2	0	1	11
Total	27	23	42	52	52	30	49	248

	Average Height (m)							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
Oryzopsis hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.31
Calochortus species	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
Coleogyne ramosissima	0.00	0.00	0.25	0.30	0.28	0.38	0.46	0.65
Dichelostemma pulchella	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
Encelia virginensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32
Ephedra nevadensis	0.29	0.30	0.30	0.28	0.40	0.46	0.50	0.61
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Hymenoclea salsola	0.00	0.00	0.00	0.00	0.00	0.43	0.13	0.63
Opuntia echinocarpa	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.26
Salazaria mexicana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
Sphaeralcea ambigua	0.27	0.28	0.16	0.36	0.32	0.00	0.05	0.34
Stephanomeria parryi	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
Stipa speciosa	0.00	0.00	0.15	0.30	0.27	0.33	0.44	0.46

Table A-19B (continued). Summary plant data for Plot 19.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Oryzopsis hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.09
Calochortus species	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Coleogyne ramosissima	0.00	0.00	0.04	0.01	0.02	0.02	0.10	0.53
Dichelostemma pulchella	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00
Encelia virginensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.45
Ephedra nevadensis	1.87	1.60	1.14	1.75	2.09	2.75	2.21	7.18
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Hymenoclea salsola	0.00	0.00	0.00	0.00	0.00	0.07	0.02	0.39
Opuntia echinocarpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Salazaria mexicana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Sphaeralcea ambigua	0.15	0.10	0.26	0.88	1.01	0.00	0.43	3.39
Stephanomeria parryi	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Stipa speciosa	0.00	0.00	0.22	0.63	0.54	0.67	0.78	1.05
Total Live	2.03	1.70	1.77	3.31	3.66	3.52	3.54	18.82
Unknown Dead	0.01	0.00	0.00	0.00	0.00	0.00	0.29	1.85
Total	2.04	1.70	1.77	3.31	3.66	3.52	3.83	20.67

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Oryzopsis hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
Calochortus species	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Coleogyne ramosissima	0.00	0.00	0.03	0.01	0.02	0.02	0.15	1.15
Dichelostemma pulchella	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Encelia virginensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.85
Ephedra nevadensis	1.97	1.77	1.25	1.93	3.22	4.75	17.00	18.32
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
Hymenoclea salsola	0.00	0.00	0.00	0.00	0.00	0.11	0.01	0.82
Opuntia echinocarpa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Salazaria mexicana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Sphaeralcea ambigua	0.15	0.09	0.17	1.15	1.20	0.00	0.09	4.34
Stephanomeria parryi	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Stipa speciosa	0.00	0.00	0.11	0.70	0.54	0.69	1.20	1.72
Total Live	2.12	1.87	1.60	3.81	4.99	5.57	18.45	35.69

Table A-20A. Site characteristics for Plot 20.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: T-14

USGS 7.5' Quadrangle Name: Cane Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4067866	587326	Standing
Corner 2:	NW	4067856	587332	Wood on ground; angle iron standing
Corner 3:	NE	4067886	587360	Standing
Corner 4:	SE	4067857	587355	Standing

DEM Plot Elevation: 999 m Plot Aspect: 315°

Elevation Above Playa (Playa Name): 57.9 m (Frenchman) Plot Slope: 6°

Annual Precipitation
Measured: 139 mm
Modeled: 133 mm

Parent Material Type: alluvial fan

Substrate: lower alluvial fan, very sandy w/pebbles, volcanic

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Grayia-Ceratoides*

Ostler-Hanson Land Unit: 6

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 16 April 2002

Figure A-20. Photographs showing Plot 20.

A. (April 16, 1964). This southeasterly view across Plot 20 and the southwesterly cover of Frenchman Flat shows a mixed creosote bush scrub with white bursage as the subdominant. The Spotted Range appears in the background. Janice Beatley is measuring annuals at left (Janice Beatley Collection, 4-A).

B. (April 16, 2002). The change here is less visible than at other plots in this type of vegetation, although comparison of the corner posts with the heights of shrubs shows that creosote bush, in particularly, has increased in size. The vegetation is now dominated by creosote bush and white bursage, with winterfat (*Ceratoides lanata*) as an important subdominant (Dominic Oldershaw, Stake 4100A).

Table A-20B. Summary plant data for Plot 20.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	18	30	14
Ambrosia dumosa	21	28	72
Atriplex canescens	0	2	0
Ceratoides lanata	29	40	25
Grayia spinosa	26	28	6
Larrea tridentata	27	42	44
Lycium andersonii	10	12	10
Mirabilis pudica	1	2	2
Oryzopsis hymenoides	8	40	11
Sitanion hystrix	0	0	2
Tetradymia axillaris	1	0	1
Total Live	141	224	187
Dead Grass	0	19	5
Dead Shrub	10	1	44
Total	151	256	236

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1.51	2.45	0.89
Ambrosia dumosa	1.62	2.46	5.02
Atriplex canescens	0.00	0.16	0.00
Ceratoides lanata	2.06	3.84	1.51
Grayia spinosa	3.57	4.15	0.60
Larrea tridentata	8.33	10.27	6.92
Lycium andersonii	1.20	1.62	0.65
Mirabilis pudica	0.03	0.12	0.09
Oryzopsis hymenoides	0.29	2.39	0.50
Sitanion hystrix	0.00	0.00	0.06
Tetradymia axillaris	0.04	0.00	0.13
Total Live	18.65	27.46	16.36
Dead Grass	0.00	2.09	0.10
Dead Shrub	2.24	0.04	3.25
Total	20.88	29.59	19.71

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.28	0.28	0.26
Ambrosia dumosa	0.25	0.30	0.32
Atriplex canescens	n.d.	0.87	n.d.
Ceratoides lanata	0.42	0.50	0.44
Grayia spinosa	0.64	0.68	0.48
Larrea tridentata	1.04	1.01	1.07
Lycium andersonii	0.56	0.53	0.44
Mirabilis pudica	0.20	0.09	0.25
Oryzopsis hymenoides	0.20	0.26	0.21
Sitanion hystrix	n.d.	n.d.	0.36
Tetradymia axillaris	0.36	n.d.	0.59

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1.63	2.47	0.93
Ambrosia dumosa	1.73	2.69	5.82
Atriplex canescens	0.00	0.46	0.00
Ceratoides lanata	3.11	6.84	2.27
Grayia spinosa	8.35	9.61	1.11
Larrea tridentata	29.53	35.78	25.40
Lycium andersonii	2.31	2.84	1.02
Mirabilis pudica	0.02	0.03	0.07
Oryzopsis hymenoides	0.24	2.18	0.37
Sitanion hystrix	0.00	0.00	0.08
Tetradymia axillaris	0.04	0.00	0.25
Total Live	46.95	62.90	37.34

Table A-21A. Site characteristics for Plot 21.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: U-15

USGS 7.5' Quadrangle Name: Cane Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4070661	588169	Angle iron standing; 3 wood corners standing
Corner 2:	NW	4070691	588176	Angle iron standing; 3 wood corners standing
Corner 3:	NE	4070686	588205	Angle iron standing; 3 wood corners standing
Corner 4:	SE	4070656	588198	Angle iron standing; 3 wood corners standing

DEM Plot Elevation: 981 m Plot Aspect: 0°

Elevation Above Playa (Playa Name): 40 m (Frenchman) Plot Slope: 3°

Annual Precipitation
Measured: 133 mm
Modeled: 127 mm

Parent Material Type: alluvial fan

Substrate: not much rock varnish, pavement not well developed, very sandy alluvial, w/volcanic pebbles veneer

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Oryzopsis-Grayia*

Ostler-Hanson Land Unit: 101

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 16 April 2002

Figure A-21. Photographs showing Plot 21.

A. (April 29, 1964). This westerly view across Plot 21 shows a mixed shrub assemblage in western Frenchman Flat with some low hills that are east of Mount Salyer. The vegetation is dominated by creosote bush, wolfberry, and spiny hopsage (Janice Beatley Collection, 44-B).

B. (April 16, 2002). Most of the individuals of creosote bush are in the same place and are only slightly larger. Wolfberry and spiny hopsage have greatly decreased here, and Indian rice grass (*Stipa hymenoides*) has significant cover. White bursage has increased in density, but not as much as other plots in this vegetation association (Dominic Oldershaw, Stake 4213A).

Table A-21B. Summary plant data for Plot 21.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1	2	4
Ambrosia dumosa	0	1	8
Grayia spinosa	10	16	3
Larrea tridentata	35	43	46
Lycium andersonii	3	4	5
Mirabilis pudica	0	1	0
Oryzopsis hymenoides	11	36	19
Total Live	60	103	85
Dead Grass	0	3	1
Dead Shrub	3	2	1
Total	63	108	87

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.08	0.18	0.30
Ambrosia dumosa	0.00	0.02	0.43
Grayia spinosa	1.08	1.86	0.35
Larrea tridentata	7.49	9.72	8.63
Lycium andersonii	0.61	0.83	0.75
Mirabilis pudica	0.00	0.07	0.00
Oryzopsis hymenoides	0.54	2.93	1.00
Total Live	9.80	15.61	11.45
Dead Grass	0.00	0.23	0.02
Dead Shrub	0.74	0.30	0.30
Total	10.54	16.14	11.77

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.25	0.24	0.29
Ambrosia dumosa	0.00	0.20	0.27
Grayia spinosa	0.44	0.56	0.64
Larrea tridentata	0.79	0.77	0.95
Lycium andersonii	0.40	0.51	0.55
Mirabilis pudica	0.00	0.10	0.00
Oryzopsis hymenoides	0.26	0.27	0.25

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.07	0.16	0.33
Ambrosia dumosa	0.00	0.01	0.32
Grayia spinosa	1.66	3.63	0.81
Larrea tridentata	21.48	26.53	29.81
Mirabilis pudica	0.82	1.46	0.00
Lycium andersonii	0.00	0.02	1.61
Oryzopsis hymenoides	0.48	2.95	0.84
Total Live	24.51	34.77	33.72

Table A-22A. Site characteristics for Plot 22.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: T-16

USGS 7.5' Quadrangle Name: Cane Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4072526	587612	Standing
Corner 2:	NW	4072555	587621	Standing
Corner 3:	NE	4072520	587643	Standing
Corner 4:	SE	4072549	587650	Standing

DEM Plot Elevation: 999 m Plot Aspect: 278°

Elevation Above Playa (Playa Name): 40 m (Frenchman) Plot Slope: 5°

Annual Precipitation
Measured: 131 mm
Modeled: 134 mm

Parent Material Type: alluvial fan

Substrate: sandy alluvial, w/pebbles and rocks, some varnished, volcanic, older than plot 20 and 21

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*

Ostler-Hanson Plant Association: *Larrea-Ambrosia-Grayia*

Ostler-Hanson Land Unit: 476

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 18 April 2002

Figure A-22. Photographs showing Plot 22.

A. (April 16, 1964). This northwesterly view across Plot 22 shows a creosote bush - white bursage vegetation assemblage in western Frenchman Flat. The same low hills shown in Figure 24 are now closer in this view. Volcanic clasts litter the soil surface in the foreground, and Janice Beatley is measuring annual vegetation in the right midground (Janice Beatley Collection, 6-B).

B. (April 18, 2002). The individual creosote bushes are much larger now, and white bursage has increased in density and size. Fremont's dalea (*Psorothamnus fremontii*) has become a subdominant here (Dominic Oldershaw, Stake 4158B).

Table A-22B. Summary plant data for Plot 22.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	40	64	60
Atriplex confertifolia	1	6	5
Eriogonum inflatum	0	2	2
Ephedra nevadensis	1	0	0
Grayia spinosa	9	19	4
Krameria parvifolia	1	2	4
Larrea tridentata	24	25	30
Lycium andersonii	4	6	6
Lycium pallidum oligospermum	1	1	2
Mirabilis bigelovii	0	1	0
Psorothamnus fremontii	8	13	9
Stipa speciosa	0	1	0
Total Live	89	140	122
Dead Grass	0	0	0
Dead Shrub	16	21	56
Total	105	161	178

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	4.64	4.90	4.63
Atriplex confertifolia	0.09	0.63	0.38
Eriogonum inflatum	0.00	0.07	0.31
Ephedra nevadensis	0.13	0.00	0.00
Grayia spinosa	0.89	2.14	0.59
Krameria parvifolia	0.23	0.26	0.57
Larrea tridentata	6.96	6.50	7.20
Lycium andersonii	0.81	1.12	0.66
Lycium pallidum oligospermum	0.37	0.43	0.69
Mirabilis bigelovii	0.00	0.09	0.00
Psorothamnus fremontii	0.61	1.46	1.25
Stipa speciosa	0.00	0.09	0.00
Total Live	14.73	17.69	16.28
Dead Grass	0.00	0.00	0.00
Dead Shrub	3.29	2.15	7.68
Total	18.02	19.84	23.96

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.33	0.32	0.33
Atriplex confertifolia	0.46	0.51	0.32
Eriogonum inflatum	0.00	0.20	0.49
Ephedra nevadensis	0.41	0.00	0.00
Grayia spinosa	0.45	0.46	0.60
Krameria parvifolia	0.38	0.34	0.37
Larrea tridentata	0.83	0.85	1.11
Lycium andersonii	0.54	0.55	0.44
Lycium pallidum oligospermum	0.84	0.97	0.78
Mirabilis bigelovii	0.00	0.38	0.00
Psorothamnus fremontii	0.23	0.34	0.44
Stipa speciosa	0.00	0.36	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	5.43	5.68	5.41
Atriplex confertifolia	0.14	1.06	0.40
Eriogonum inflatum	0.00	0.05	0.54
Ephedra nevadensis	0.17	0.00	0.00
Grayia spinosa	1.40	3.57	1.22
Krameria parvifolia	0.29	0.36	0.74
Larrea tridentata	21.48	18.95	27.09
Lycium andersonii	1.48	2.10	1.03
Lycium pallidum oligospermum	1.05	1.38	1.94
Mirabilis bigelovii	0.00	0.12	0.00
Psorothamnus fremontii	0.54	1.82	2.11
Stipa speciosa	0.00	0.11	0.00
Total Live	31.98	35.20	40.48

Table A-23A. Site characteristics for Plot 23.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: V-17

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4074412	590158	Standing
Corner 2:	NW	4074442	590165	Standing
Corner 3:	NE	4074433	590196	Standing
Corner 4:	SE	4074404	590188	Standing

DEM Plot Elevation: 968 m Plot Aspect: 90°

Elevation Above Playa (Playa Name): 24 m (Frenchman) Plot Slope: 10°

Annual Precipitation
Measured: 123 mm
Modeled: 125 mm

Parent Material Type: alluvial fan

Substrate: sandy alluvium w/volcanic pebble veneer

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Ambrosia-Acamptopappus*

Ostler-Hanson Land Unit: 103

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 17 April 2002

Figure A-23. Photographs showing Plot 23.

A. (April 25, 1964). This east-northeast view across Plot 23 shows a mixed creosote bush scrub assemblage with Frenchman Lake in the background. The Ranger Mountains appear in the extreme right background, and the Buried Hills appear in the center-left background (Janice Beatley Collection, 30-B).

B. (April 20, 2002). Individual creosote bushes have increased considerably in size, and white bursage has increased in density in this matched view. Wolfberry and spiny hopsage have greatly decreased on this plot (Dominic Oldershaw, Stake 4176B).

Table A-23B. Summary plant data for Plot 23.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	22	28	9
Ambrosia dumosa	27	38	43
Ceratoides lanata	3	5	7
Ephedra nevadensis	2	3	3
Grayia spinosa	9	14	4
Hymenoclea salsola	7	15	3
Larrea tridentata	22	20	21
Lycium andersonii	5	7	4
Oryzopsis hymenoides	2	9	3
Psorothamnus fremontii	1	1	0
Total Live	100	140	97
Dead Grass	0	0	1
Dead Shrub	27	10	45
Total	127	150	143

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1.88	2.52	0.53
Ambrosia dumosa	2.45	3.25	3.31
Ceratoides lanata	0.18	0.43	0.41
Ephedra nevadensis	0.13	0.39	0.40
Grayia spinosa	0.90	1.62	0.15
Hymenoclea salsola	0.49	1.05	0.31
Larrea tridentata	2.65	3.73	5.63
Lycium andersonii	0.78	0.96	0.40
Oryzopsis hymenoides	0.10	0.45	0.07
Psorothamnus fremontii	0.11	0.11	0.00
Total Live	9.67	14.50	11.21
Dead Grass	0.00	0.00	0.02
Dead Shrub	2.41	0.77	4.87
Total	12.08	15.27	16.10

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.25	0.26	0.24
Ambrosia dumosa	0.30	0.34	0.34
Ceratoides lanata	0.32	0.48	0.44
Ephedra nevadensis	0.43	0.47	0.42
Grayia spinosa	0.41	0.50	0.50
Hymenoclea salsola	0.33	0.36	0.37
Larrea tridentata	0.71	0.73	0.93
Lycium andersonii	0.43	0.36	0.43
Oryzopsis hymenoides	0.30	0.23	0.24
Psorothamnus fremontii	0.25	0.36	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1.72	2.35	0.45
Ambrosia dumosa	2.56	3.84	3.91
Ceratoides lanata	0.23	0.80	0.59
Ephedra nevadensis	0.19	0.78	0.54
Grayia spinosa	1.29	3.06	0.23
Hymenoclea salsola	0.53	1.46	0.44
Larrea tridentata	6.62	9.25	17.86
Lycium andersonii	1.33	1.35	0.56
Oryzopsis hymenoides	0.10	0.37	0.06
Psorothamnus fremontii	0.09	0.13	0.00
Total Live	14.67	23.39	24.64

Table A-24A. Site characteristics for Plot 24.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: U-20

USGS 7.5' Quadrangle Name: Cane Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4079061	588105	Standing
Corner 2:	NW	4079092	588114	Standing
Corner 3:	NE	4079090	588143	Standing
Corner 4:	SE	4079060	588137	Standing

DEM Plot Elevation: 1034 m Plot Aspect: 326°

Elevation Above Playa (Playa Name): 88 m (Frenchman) Plot Slope: 10°

Annual Precipitation
Measured: 141 mm
Modeled: 139 mm

Parent Material Type: alluvial fan

Substrate: silty alluvium, weak desert pavement

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Lycium-Ambrosia*

Ostler-Hanson Land Unit: 139

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

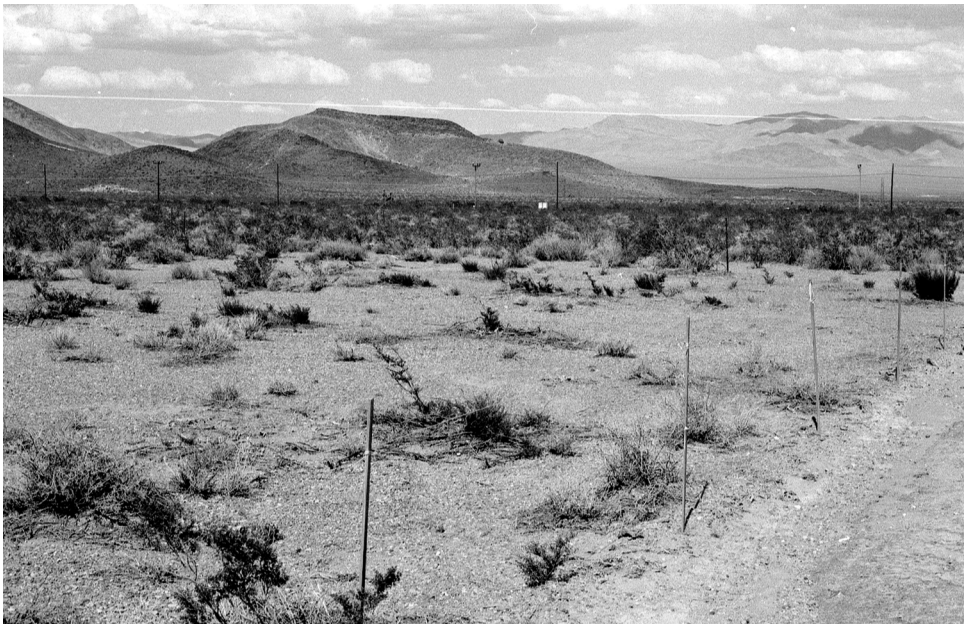
Plot Condition: minor damage from road construction on south side of plot, 1964

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 18 April 2002

Figure A-24. Photographs showing Plot 24.



A. (1974). This northeasterly view across Plot 24 shows damage caused by construction after the plot was established. The plot is in the undisturbed vegetation in the midground. The vegetation is another mixed creosote bush scrub association. The Mercury Highway crosses the view at the line of power poles in the midground. Massachusetts Mountain appears in the left background, and the Buried Hills appear in the right background (Janice Beatley Collection, 16A).

B. (April 21, 2002). The formerly disturbed vegetation has increased in biomass, in part because runoff from the newly paved road enhanced the adjacent vegetation owing to water harvesting. The road that just appears in the lower right was lightly paved, allowing runoff to move into the adjacent vegetation. Again, wolfberry and spiny hopsage decrease, and Mormon tea has increased on this plot (Dominic Oldershaw, Stake 4191B).

Table A-24B. Summary plant data for Plot 24.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	3	4	0
Ambrosia dumosa	22	24	35
Ceratoides lanata	0	0	1
Ephedra nevadensis	10	21	12
Eriogonum inflatum	0	1	0
Grayia spinosa	5	18	2
Larrea tridentata	49	54	64
Lycium andersonii	11	17	11
Total Live	100	139	125
Dead Grass	0	0	0
Dead Shrub	26	18	41
Total	126	157	166

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.20	0.29	0.00
Ambrosia dumosa	1.62	2.18	3.34
Ceratoides lanata	0.00	0.00	0.01
Ephedra nevadensis	1.20	1.40	1.43
Eriogonum inflatum	0.00	0.05	0.00
Grayia spinosa	0.51	1.72	0.15
Larrea tridentata	9.63	10.11	12.09
Lycium andersonii	2.06	2.95	0.97
Total Live	15.22	18.71	17.98
Dead Grass	0.00	0.00	0.00
Dead Shrub	3.83	1.57	6.14
Total	19.05	20.28	24.12

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.22	0.27	0.00
Ambrosia dumosa	0.27	0.31	0.33
Ceratoides lanata	0.00	0.00	0.48
Ephedra nevadensis	0.36	0.33	0.48
Eriogonum inflatum	0.00	0.05	0.00
Grayia spinosa	0.44	0.49	0.64
Larrea tridentata	0.78	0.77	0.93
Lycium andersonii	0.47	0.50	0.43

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.15	0.26	0.00
Ambrosia dumosa	1.71	2.50	3.98
Ceratoides lanata	0.00	0.00	0.01
Ephedra nevadensis	1.52	1.84	2.32
Eriogonum inflatum	0.00	0.01	0.00
Grayia spinosa	0.74	2.99	0.32
Larrea tridentata	25.47	27.10	39.18
Lycium andersonii	3.37	5.10	1.48
Total Live	32.97	39.80	47.30

Table A-25A. Site characteristics for Plot 25.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: R-19

USGS 7.5' Quadrangle Name: Cane Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4077392	584094	Standing
Corner 2:	NW	4077413	584071	Standing
Corner 3:	NE	4077436	584091	Standing
Corner 4:	SE	4077415	584115	Standing

DEM Plot Elevation: 1093 m Plot Aspect: 85°

Elevation Above Playa (Playa Name): 155 m (Frenchman) Plot Slope: 8°

Annual Precipitation
Measured: 161 mm
Modeled: 156 mm

Parent Material Type: alluvial fan

Substrate: silty alluvium, weak desert pavement

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Ambrosia*/*Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Grayia-Hymenoclea-Ambrosia*

Ostler-Hanson Land Unit: 152

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

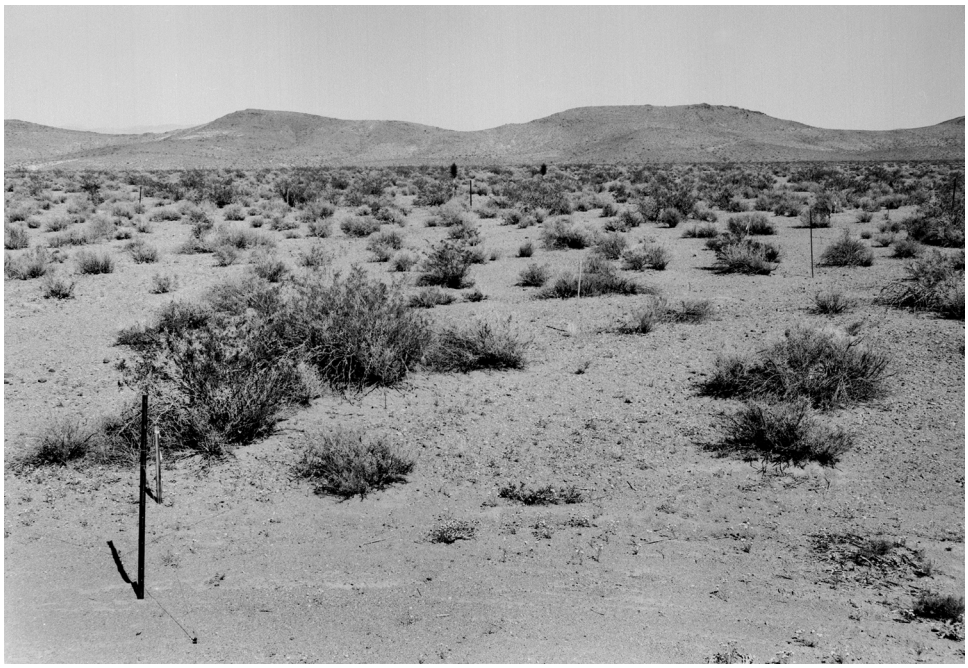
Plot Condition: good

Location of Transect 1: north side of plot

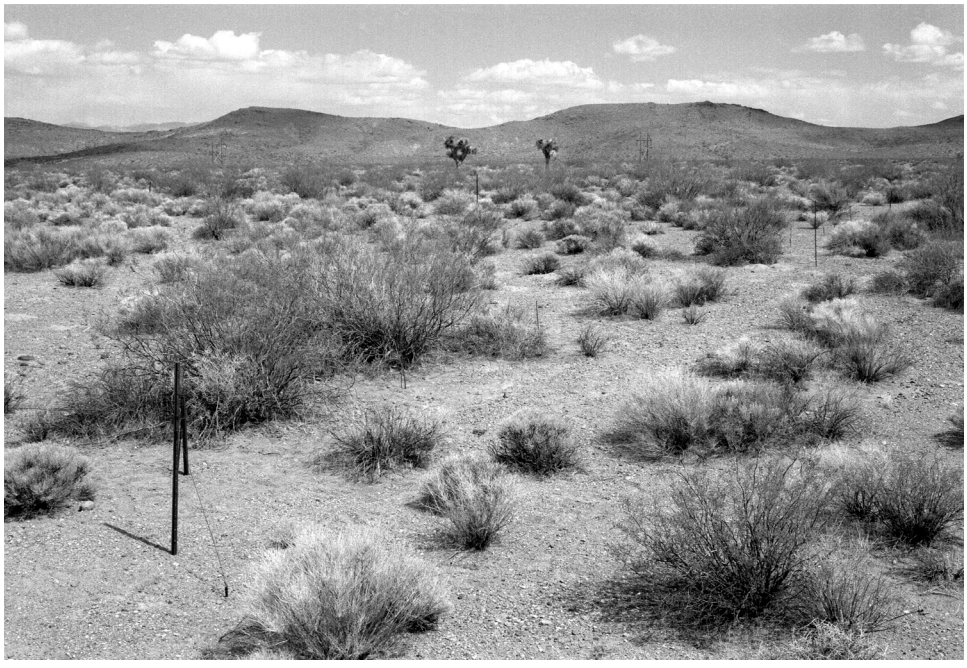
Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 20 April 2002

Figure A-25. Photographs showing Plot 25.



A. (May 10, 1964). This southeasterly view across Plot 25 shows scattered Joshua trees in the distance and a mixed-shrub assemblage dominated by creosote bush in the plot. The hills in the distance are part of an unnamed mountain range that has Mount Salyer as its summit (Janice Beatley Collection, no number).



B. (April 20, 2002). There has been a considerable increase in density, cover, and biomass of perennial vegetation in the plot. White bursage has greatly increased here and is now the numerical dominant in terms of cover. The Joshua trees in the midground have increased in stature. A new powerline crosses the view in the distance (Dominic Oldershaw, Stake 4180B).

Table A-25B. Summary plant data for Plot 25.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0	0	1
Ambrosia dumosa	22	41	62
Dyssodia cooperi	0	1	0
Ephedra nevadensis	7	9	18
Ericameria cooperi	2	6	11
Grayia spinosa	27	39	16
Hymenoclea salsola	12	28	20
Larrea tridentata	7	14	11
Lycium andersonii	8	19	18
Mirabilis pudica	0	0	1
Oryzopsis hymenoides	2	7	1
Psorothamnus fremontii	1	3	4
Stephanomeria parryi	0	6	0
Stipa speciosa	0	0	4
Yucca brevifolia	0	0	1
Total Live	88	173	168
Dead Grass	0	0	1
Dead Shrub	12	18	41
Total	100	191	210

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.00	0.00	0.06
Ambrosia dumosa	2.05	3.15	5.33
Dyssodia cooperi	0.00	0.04	0.00
Ephedra nevadensis	0.92	1.76	2.77
Ericameria cooperi	0.23	0.63	0.86
Grayia spinosa	3.83	4.15	1.44
Hymenoclea salsola	1.45	3.65	2.34
Larrea tridentata	0.87	3.32	4.12
Lycium andersonii	1.29	2.27	1.15
Mirabilis pudica	0.00	0.00	0.02
Oryzopsis hymenoides	0.07	0.43	0.05
Psorothamnus fremontii	0.04	0.35	0.56
Stephanomeria parryi	0.00	0.06	0.00
Stipa speciosa	0.00	0.00	0.18
Yucca brevifolia	0.00	0.00	0.00
Total Live	10.75	19.81	18.87
Dead Grass	0.00	0.00	0.02
Dead Shrub	3.15	3.10	8.59
Total	13.89	22.91	27.48

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.00	0.00	0.37
Ambrosia dumosa	0.34	0.34	0.42
Dyssodia cooperi	0.00	0.08	0.00
Ephedra nevadensis	0.53	0.64	0.59
Ericameria cooperi	0.34	0.41	0.36
Grayia spinosa	0.53	0.58	0.70
Hymenoclea salsola	0.41	0.53	0.60
Larrea tridentata	1.18	1.23	1.57
Lycium andersonii	0.47	0.50	0.46
Mirabilis pudica	0.00	0.00	0.15
Oryzopsis hymenoides	0.20	0.31	0.19
Psorothamnus fremontii	0.15	0.30	0.41
Stephanomeria parryi	0.00	0.03	0.00
Stipa speciosa	0.00	0.00	0.43
Yucca brevifolia	0.00	0.00	0.98

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.00	0.00	0.08
Ambrosia dumosa	2.39	4.00	7.59
Dyssodia cooperi	0.00	0.01	0.00
Ephedra nevadensis	1.58	4.08	6.18
Ericameria cooperi	0.26	0.93	1.08
Grayia spinosa	7.12	8.38	3.51
Hymenoclea salsola	2.11	6.80	5.07
Larrea tridentata	3.11	12.93	17.96
Lycium andersonii	2.20	3.95	1.76
Mirabilis pudica	0.00	0.00	0.01
Oryzopsis hymenoides	0.05	0.49	0.03
Psorothamnus fremontii	0.02	0.43	0.88
Stephanomeria parryi	0.00	0.01	0.00
Stipa speciosa	0.00	0.00	0.27
Yucca brevifolia	0.00	0.00	0.00
Total Live	18.84	42.00	44.42

Table A-26A. Site characteristics for Plot 26.

Location:

NTS Area: 5 NTS Grid: O-17

USGS 7.5' Quadrangle Name: Cane Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4074175	579802	Leaning
Corner 2:	NW	4074208	579810	Standing
Corner 3:	NE	4074196	579842	Missing
Corner 4:	SE	4074169	579832	Standing

DEM Plot Elevation: 1212 m Plot Aspect: 219°

Elevation Above Playa (Playa Name): 271 m (Frenchman) Plot Slope: 10°

Annual Precipitation
Measured: 185 mm
Modeled: 180 mm

Parent Material Type: alluvial fan

Substrate: sandy, silty alluvium

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Grayia-Lycium*

Ostler-Hanson Plant Association: *Hymenoclea-Ephedra-Stipa*

Ostler-Hanson Land Unit: 157

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 19 April 2002

Figure A-26. Photographs showing Plot 26.

A. (May 10, 1964). The view is west-southwest across Plot 26 across Wahmonie Flat towards the eastern edge of Skull Mountain. The powerlines mark the Cane Springs Road, which crosses the view from east to west. The vegetation assemblage is spiny hopsage and wolfberry (Janice Beatley Collection, 88-B).

B. (April 19, 2002). Many individuals persist on this plot and are now larger. The dominants on this plot have shifted to Mormon tea, cheesebush (*Hymenoclea salsola*), and wolfberry (Dominic Oldershaw, Stake 4161B).

Table A-26B. Summary plant data for Plot 26.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Arabis glaucovalvula	0	1	1
Atriplex canescens	0	1	4
Coleogyne ramosissima	0	1	3
Dyssodia cooperi	0	0	3
Ephedra nevadensis	32	56	84
Grayia spinosa	44	32	7
Hymenoclea salsola	40	82	52
Krameria parvifolia	0	0	1
Lycium andersonii	9	16	15
Mirabilis pudica	3	1	0
Oryzopsis hymenoides	9	21	5
Psorothamnus fremontii	0	6	7
Sitanion hystrix	1	2	2
Stephanomeria parryi	0	23	0
Stipa speciosa	3	75	12
Tetradymia axillaris	0	0	2
Thamnosma montana	17	32	39
Xylorhiza tortifolia	0	0	2
Total Live	158	349	239
Dead Grass	0	0	11
Dead Shrub	22	20	43
Total	180	369	293

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Arabis glaucovalvula	0.00	0.03	0.01
Atriplex canescens	0.00	0.20	0.29
Coleogyne ramosissima	0.00	0.05	0.44
Dyssodia cooperi	0.00	0.00	0.24
Ephedra nevadensis	3.05	9.61	12.95
Grayia spinosa	8.10	4.44	0.50
Hymenoclea salsola	3.99	10.84	6.20
Krameria parvifolia	0.00	0.00	0.23
Lycium andersonii	1.58	1.83	1.36
Mirabilis pudica	0.19	0.02	0.00
Oryzopsis hymenoides	0.49	2.04	0.17
Psorothamnus fremontii	0.00	0.41	0.86
Sitanion hystrix	0.08	0.15	0.05
Stephanomeria parryi	0.00	0.34	0.00
Stipa speciosa	0.20	7.02	0.73
Tetradymia axillaris	0.00	0.00	0.00
Thamnosma montana	2.31	4.75	4.38
Xylorhiza tortifolia	0.00	0.00	0.18
Total Live	19.99	41.70	28.60
Dead Grass	0.00	0.00	0.30
Dead Shrub	2.74	3.03	6.65
Total	22.73	44.73	35.55

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Arabis glaucovalvula	0.00	0.28	0.32
Atriplex canescens	0.00	0.97	0.80
Coleogyne ramosissima	0.00	0.51	0.55
Dyssodia cooperi	0.00	0.00	0.26
Ephedra nevadensis	0.45	0.56	0.62
Grayia spinosa	0.59	0.56	0.61
Hymenoclea salsola	0.46	0.49	0.57
Krameria parvifolia	0.00	0.00	0.32
Lycium andersonii	0.56	0.51	0.48
Mirabilis pudica	0.23	0.05	0.00
Oryzopsis hymenoides	0.24	0.33	0.30
Psorothamnus fremontii	0.00	0.28	0.50
Sitanion hystrix	0.28	0.38	0.29
Stephanomeria parryi	0.00	0.04	0.00
Stipa speciosa	0.27	0.43	0.45
Tetradymia axillaris	0.00	0.00	0.72
Thamnosma montana	0.41	0.44	0.41
Xylorhiza tortifolia	0.00	0.00	0.41

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Arabis glaucovalvula	0.00	0.03	0.01
Atriplex canescens	0.00	0.65	0.70
Coleogyne ramosissima	0.00	0.08	0.89
Dyssodia cooperi	0.00	0.00	0.21
Ephedra nevadensis	4.95	19.66	30.04
Grayia spinosa	16.78	8.71	1.03
Hymenoclea salsola	6.20	19.53	12.22
Krameria parvifolia	0.00	0.00	0.24
Lycium andersonii	3.04	3.15	2.07
Mirabilis pudica	0.17	0.00	0.00
Oryzopsis hymenoides	0.43	2.31	0.15
Psorothamnus fremontii	0.00	0.61	1.57
Sitanion hystrix	0.08	0.20	0.06
Stephanomeria parryi	0.00	0.04	0.00
Stipa speciosa	0.24	10.59	1.15
Tetradymia axillaris	0.00	0.00	0.00
Thamnosma montana	3.30	7.21	6.28
Xylorhiza tortifolia	0.00	0.00	0.26
Total Live	35.18	72.75	56.88

Table A-27A. Site characteristics for Plot 27.

Location: Frenchman Flat

NTS Area: 6 NTS Grid: R-22

USGS 7.5' Quadrangle Name: Yucca Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4083280	584745	Standing
Corner 2:	NW	4083310	584749	Standing
Corner 3:	NE	4083308	584780	Standing
Corner 4:	SE	4083276	584775	Standing

DEM Plot Elevation: 1129 m Plot Aspect: 0°

Elevation Above Playa (Playa Name): 182.9 m (Frenchman) Plot Slope: 3°

Annual Precipitation
Measured: 154 mm
Modeled: 152 mm

Parent Material Type: alluvial fan

Substrate: mixed mostly volcanic alluvium w/some limestone

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: *Larrea-Krameria-Grayia*

Ostler-Hanson Land Unit: 126

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: vehicle drove through center of plot, second set of tracks noticed 11 Dec 01

Location of Transect 1: east side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 20 April 2002

Figure A-27. Photographs showing Plot 27.

A. (May 10, 1964). This northwesterly view across Plot 27 shows a creosote bush - wolfberry - spiny hopsage assemblage in the northern part of Frenchman Flat. Scattered Joshua trees appear in the midground and distance. A low range of unnamed mountains appears in the distance (Janice Beatley Collection, no number).

B. (April 20, 2002). Many individual creosote bushes are much larger in 2002. Both wolfberry and spiny hopsage have decreased here, and now range ratany and white bursage are the subdominants. The Joshua trees in the distance are no longer as apparent as they once were (Dominic Oldershaw, Stake 4177A).

Table A-27B. Summary plant data for Plot 27.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	2	7	9
Erioneuron pulchellum	0	1	1
Grayia spinosa	3	21	0
Krameria parvifolia	16	17	28
Larrea tridentata	44	46	43
Lycium andersonii	19	11	8
Opuntia echinocarpa	0	0	1
Oryzopsis hymenoides	0	0	1
Total Live	84	103	91
Dead Grass	0	0	0
Dead Shrub	10	11	30
Total	94	114	121

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.14	0.65	0.92
Erioneuron pulchellum	0.00	0.01	0.01
Grayia spinosa	0.27	2.28	0.00
Krameria parvifolia	2.18	3.05	4.30
Larrea tridentata	7.96	8.94	7.55
Lycium andersonii	3.67	2.11	0.38
Opuntia echinocarpa	0.00	0.00	0.06
Oryzopsis hymenoides	0.00	0.00	0.05
Total Live	14.23	17.03	13.28
Dead Grass	0.00	0.00	0.00
Dead Shrub	2.55	1.92	5.55
Total	16.78	18.95	18.84

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.25	0.30	0.38
Erioneuron pulchellum	0.00	0.03	0.00
Grayia spinosa	0.47	0.55	0.00
Krameria parvifolia	0.22	0.24	0.25
Larrea tridentata	0.84	0.80	0.90
Lycium andersonii	0.45	0.44	0.35
Opuntia echinocarpa	0.00	0.00	0.51
Oryzopsis hymenoides	0.00	0.00	0.31

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.15	0.68	1.16
Erioneuron pulchellum	0.00	0.00	0.00
Grayia spinosa	0.44	4.38	0.00
Krameria parvifolia	1.59	2.55	4.22
Larrea tridentata	24.89	25.66	21.84
Lycium andersonii	5.60	3.20	0.41
Opuntia echinocarpa	0.00	0.00	0.11
Oryzopsis hymenoides	0.00	0.00	0.06
Total Live	32.67	36.47	27.80

Table A-28A. Site characteristics for Plot 28.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: Z-19

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4079198	596258	Standing
Corner 2:	NW	4079228	596267	Standing
Corner 3:	NE	4079223	596296	Standing
Corner 4:	SE	4079194	596289	Standing

DEM Plot Elevation: 989 m Plot Aspect: 345°

Elevation Above Playa (Playa Name): 48.8 m (Frenchman) Plot Slope: 8°

Annual Precipitation
Measured: 121 mm
Modeled: 131 mm

Parent Material Type: alluvial fan

Substrate: sandy alluvium w/pebbles, volcanics

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Ambrosia*

Ostler-Hanson Plant Association: *Larrea-Acamptopappus-Ambrosia*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 18 April 2002

Figure A-28. Photographs showing Plot 28.

A. (April 22, 1964). In this south-southwesterly view across Plot 28 and the northern part of Frenchman Flat, a cresote bush - white bursage assemblage is shown. Frenchman Lake appears in the distance, with (from right to left) the Specter Range, Red Mountain, and the Ranger Mountains in the distance (Janice Beatley Collection, 32-A).

B. (April 18, 2002). This is one of the few plots on the Nevada Test Site within the range of creosote bush that has not changed dramatically from a visual perspective, although a careful comparison reveals that the creosote bush are taller and the total cover on the plot is larger (Dominic Oldershaw, Stake 4153A).

Table A-28B. Summary plant data for Plot 28.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	37	76	1
Ambrosia dumosa	43	35	26
Atriplex canescens	4	6	9
Atriplex confertifolia	3	1	3
Ceratoides lanata	1	1	1
Ephedra nevadensis	1	1	0
Grayia spinosa	9	16	1
Krameria parvifolia	2	3	6
Larrea tridentata	23	24	23
Mirabilis pudica	5	6	0
Oryzopsis hymenoides	6	2	0
Total Live	134	171	70
Dead Grass	0	0	0
Dead Shrub	19	20	133
Total	153	191	203

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	2.08	4.62	0.03
Ambrosia dumosa	4.08	2.76	1.28
Atriplex canescens	0.29	0.74	0.93
Atriplex confertifolia	0.43	0.11	0.19
Ceratoides lanata	0.04	0.03	0.00
Ephedra nevadensis	0.17	0.06	0.00
Grayia spinosa	1.04	1.75	0.12
Krameria parvifolia	0.12	0.21	0.40
Larrea tridentata	5.92	7.15	5.69
Mirabilis pudica	0.32	0.48	0.00
Oryzopsis hymenoides	0.20	0.04	0.00
Total Live	14.68	17.95	8.64
Dead Grass	0.00	0.00	0.00
Dead Shrub	2.74	2.04	11.54
Total	17.42	19.98	20.17

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.17	0.18	0.23
Ambrosia dumosa	0.25	0.25	0.26
Atriplex canescens	0.41	0.50	0.53
Atriplex confertifolia	0.35	0.43	0.32
Ceratoides lanata	0.23	0.30	0.44
Ephedra nevadensis	0.25	0.18	0.00
Grayia spinosa	0.50	0.54	0.42
Krameria parvifolia	0.19	0.25	0.21
Larrea tridentata	1.06	1.11	1.12
Mirabilis pudica	0.27	0.08	0.00
Oryzopsis hymenoides	0.18	0.11	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1.62	3.02	0.02
Ambrosia dumosa	3.57	2.52	1.22
Atriplex canescens	0.47	1.32	1.81
Atriplex confertifolia	0.49	0.16	0.20
Ceratoides lanata	0.03	0.03	0.00
Ephedra nevadensis	0.15	0.04	0.00
Grayia spinosa	1.81	3.24	0.17
Krameria parvifolia	0.08	0.17	0.39
Larrea tridentata	20.95	26.72	22.11
Mirabilis pudica	0.33	0.14	0.00
Oryzopsis hymenoides	0.13	0.01	0.00
Total Live	29.61	37.40	25.93

Table A-29A. Site characteristics for Plot 29.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: Z-19

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4079369	595913	NA
Corner 2:	NW	4079399	595922	NA
Corner 3:	NE	4079392	595950	NA
Corner 4:	SE	4079361	595941	NA

DEM Plot Elevation: 991 m Plot Aspect: 135°

Elevation Above Playa (Playa Name): 49 m (Frenchman) Plot Slope: 13°

Annual Precipitation
Measured: 126 mm
Modeled: 131 mm

Parent Material Type: alluvial fan

Substrate: silty sandy w/jagged pebble/cobble surface

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Atriplex*

Ostler-Hanson Plant Association: *Ephedra-Krameria-Atriplex confertifolia*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: NA

Plot Condition: good

Location of Transect 1: north side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 18 April 2002

Figure A-29. Photographs showing Plot 29.

A. (April 22, 1964). In this southerly view across Plot 29, a creosote bush - shadscale (*Atriplex confertifolia*) community appears north of Frenchman Lake. In 1964, the plot was dominated by Mormon tea, range ratany, and shadscale. The Ranger Mountains appear in the distance (Janice Beatley Collection, 34-A).

B. (April 18, 2002). The three dominant species are still present and still dominate. Visually, the biomass appears to have increased at least slightly (Dominic Oldershaw, Stake 4151B).

Table A-29B. Summary plant data for Plot 29.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	3	3	3
Atriplex confertifolia	19	18	61
Ephedra nevadensis	50	75	58
Krameria parvifolia	59	45	17
Larrea tridentata	4	1	3
Total Live	135	142	142
Dead Grass	0	0	0
Dead Shrub	71	45	82
Total	206	187	224

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.14	0.16	0.34
Atriplex confertifolia	0.33	0.31	0.30
Ephedra nevadensis	0.40	0.41	0.39
Krameria parvifolia	0.19	0.19	0.17
Larrea tridentata	0.36	0.20	0.56

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.15	0.16	0.15
Atriplex confertifolia	1.95	1.95	4.28
Ephedra nevadensis	6.73	9.43	4.80
Krameria parvifolia	5.93	4.49	1.24
Larrea tridentata	0.51	0.02	0.57
Total Live	15.26	16.05	11.04
Dead Grass	0.00	0.00	0.00
Dead Shrub	6.05	2.92	7.72
Total	21.32	18.96	18.75

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.07	0.09	0.16
Atriplex confertifolia	2.28	2.70	4.54
Ephedra nevadensis	9.44	15.01	6.75
Krameria parvifolia	3.99	3.10	0.76
Larrea tridentata	0.61	0.01	1.14
Total Live	16.39	20.90	13.35

Table A-30A. Site characteristics for Plot 30.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: Y-18

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4076734	594561	Standing
Corner 2:	NW	4076764	594567	Standing
Corner 3:	NE	4076762	594597	Standing
Corner 4:	SE	4076731	594592	Standing

DEM Plot Elevation: 9471 m Plot Aspect: 45°

Elevation Above Playa (Playa Name): 6 m (Frenchman) Plot Slope: 4°

Annual Precipitation
Measured: 126 mm
Modeled: 125 mm

Parent Material Type: alluvial fan

Substrate: silty alluvium w/rocks & pebbles, volcanic

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Atriplex canescens*

Ostler-Hanson Plant Association: *Atriplex canescens*

Ostler-Hanson Land Unit: 75

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

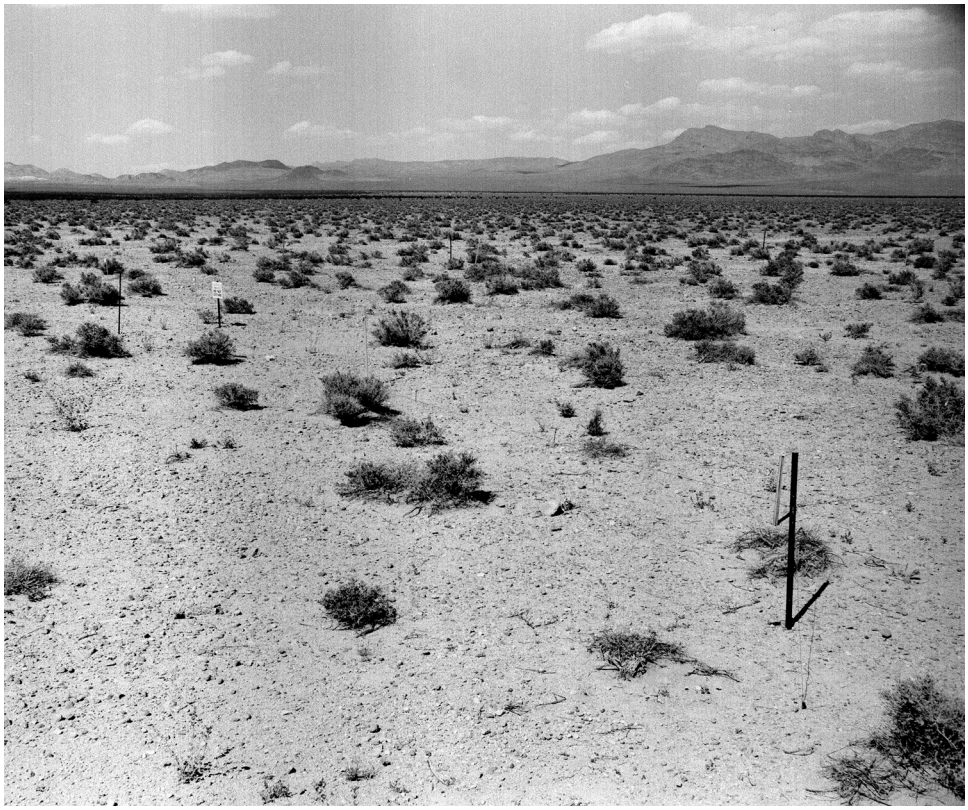
Plot Condition: good

Location of Transect 1: north side of plot

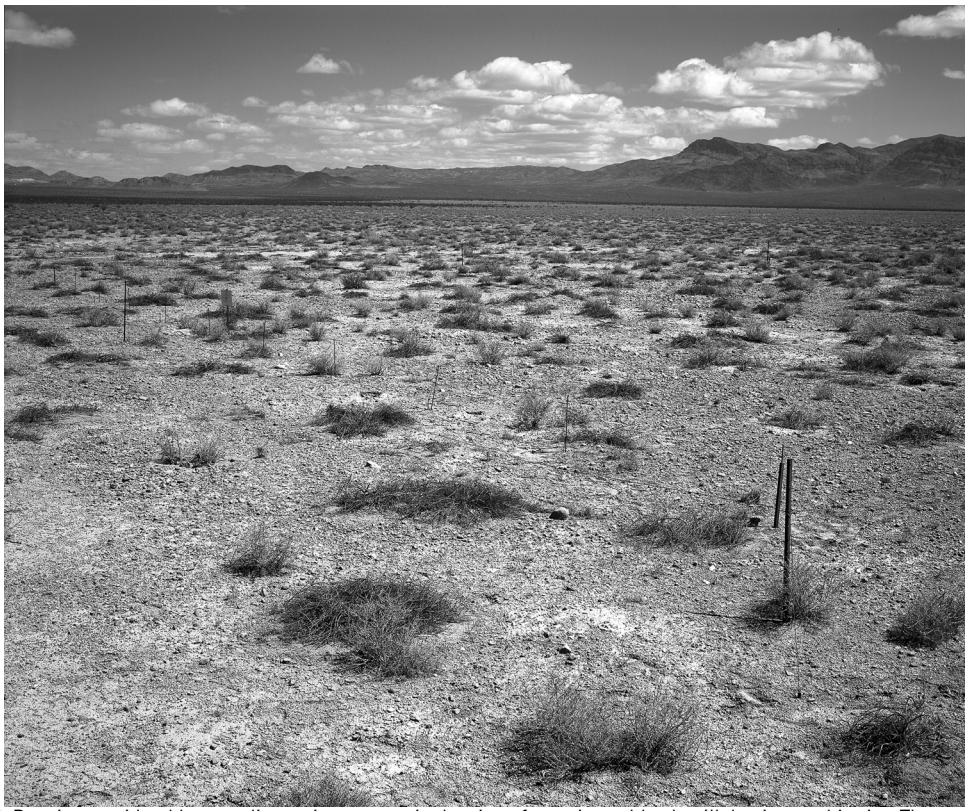
Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 18 April 02

Figure A-30. Photographs showing Plot 30.



A. (May 11, 1964). In this northeasterly view across Plot 30, a four-wing saltbush (*Atriplex canescens*) assemblage appears north of Frenchman Flat. The Buried Hills appear in the distance (Janice Beatley Collection, 63-A).



B. (April 18, 2002). Despite considerable mortality, as is apparent in the view, four-wing saltbush still dominates this site. The apparent increase in gravel lag cover is the result of periodic windstorms that add or remove the type of sand cover that was present in 1964 (Dominic Oldershaw, Stake 4155A).

Table A-30B. Summary plant data for Plot 30.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	1	1	0
Astragalus lentiginosus fremontii	0	1	0
Atriplex canescens	38	52	34
Atriplex confertifolia	2	3	6
Mirabilis pudica	2	7	0
Oryzopsis hymenoides	0	3	1
Polygala subspinosa heterorhyncha	0	5	2
Sphaeralcea parvifolia	0	4	2
Total Live	43	76	43
Dead	4	5	63
Total	47	81	106

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.14	0.12	0.00
Astragalus lentiginosus fremontii	0.00	0.02	0.00
Atriplex canescens	4.45	6.13	0.96
Atriplex confertifolia	0.26	0.36	0.17
Mirabilis pudica	0.07	0.70	0.00
Oryzopsis hymenoides	0.00	0.14	0.03
Polygala subspinosa heterorhyncha	0.00	0.17	0.00
Sphaeralcea parvifolia	0.00	0.10	0.02
Total Live	4.92	7.74	1.18
Dead	0.52	0.25	2.10
Total	5.44	7.98	3.28

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.23	0.23	0.00
Astragalus lentiginosus fremontii	0.00	0.05	0.00
Atriplex canescens	0.36	0.37	0.40
Atriplex confertifolia	0.37	0.29	0.27
Mirabilis pudica	0.24	0.11	0.00
Oryzopsis hymenoides	0.00	0.13	0.10
Polygala subspinosa heterorhyncha	0.00	0.04	0.00
Sphaeralcea parvifolia	0.00	0.06	0.07

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.10	0.40	0.00
Astragalus lentiginosus fremontii	0.00	0.06	0.00
Atriplex canescens	5.86	20.54	4.35
Atriplex confertifolia	0.35	1.22	0.49
Mirabilis pudica	0.06	2.35	0.00
Oryzopsis hymenoides	0.00	0.46	0.01
Polygala subspinosa heterorhyncha	0.00	0.58	0.00
Sphaeralcea parvifolia	0.00	0.34	0.00
Total Live	6.37	25.94	4.85

Table A-31A. Site characteristics for Plot 31.

Location: Frenchman Flat

NTS Area: 5

NTS Grid: Y-18

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4075956	595086	Standing
Corner 2:	NW	4075983	595095	NA
Corner 3:	NE	4075982	595126	NA
Corner 4:	SE	4075955	595117	Standing

DEM Plot Elevation: 942 m

Plot Aspect: 129°

Elevation Above Playa (Playa Name): 2 m (Frenchman)

Plot Slope: 10°

Annual Precipitation
Measured: 130 mm
Modeled: 124 mm

Parent Material Type: playa

Substrate: silty alluvium w/pebbles; rocks, mostly volcanic

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Atriplex confertifolia*

Ostler-Hanson Plant Association: *Atriplex confertifolia*

Ostler-Hanson Land Unit: 75

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 18 April 2002

Figure A-31. Photographs showing Plot 31.

A. (May 11, 1964). In this southerly view across Plot 31, Frenchman Lake appears in the low point of the valley with the Ranger Mountains in the distance. The vegetation here is shadscale (Janice Beatley Collection, 72-B).

B. (April 18, 2002). Shadscale continues to dominate this plot despite considerable mortality in this species in the intervening 38 years (Dominic Oldershaw, Stake 4156B).

Table A-31B. Summary plant data for Plot 31.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Astragalus lentiginosus fremontii	0	12	0
Atriplex confertifolia	59	65	34
Oryzopsis hymenoides	2	2	3
Sphaeralcea parvifolia	0	5	0
Total Live	59	84	37
Dead Grass	0	0	0
Dead Shrubs	30	10	70
Total	89	94	107

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Astragalus lentiginosus fremontii	0.00	0.09	0.00
Atriplex confertifolia	0.33	0.33	0.33
Oryzopsis hymenoides	0.21	0.09	0.18
Sphaeralcea parvifolia	0.00	0.09	0.00

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Astragalus lentiginosus fremontii	0.00	0.37	0.00
Atriplex confertifolia	6.16	7.45	4.16
Oryzopsis hymenoides	0.07	0.07	0.11
Sphaeralcea parvifolia	0.00	0.09	0.00
Total Live	6.24	7.98	4.27
Dead Grass	0.00	0.00	0.00
Dead Shrubs	2.48	0.98	7.26
Total	8.72	8.96	11.54

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Astragalus lentiginosus fremontii	0.00	0.13	0.00
Atriplex confertifolia	7.50	9.93	4.80
Oryzopsis hymenoides	0.05	0.03	0.08
Sphaeralcea parvifolia	0.00	0.03	0.00
Total Live	7.55	10.11	4.88

Table A-32A. Site characteristics for Plot 32.

Location: Frenchman Flat

NTS Area: Nellis NTS Grid: W64C

USGS 7.5' Quadrangle Name: Frenchman Lake SE

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4077331	601322	Standing
Corner 2:	NW	4077361	601328	Standing
Corner 3:	NE	4077357	601358	Standing
Corner 4:	SE	4077327	601350	Standing

GPS Plot Elevation: 1031 m Plot Aspect: NA°

Elevation Above Playa (Playa Name): 64 m (Frenchman) Plot Slope: NA°

Annual Precipitation
Measured: 122 mm
Modeled: NA mm

Parent Material Type: alluvial fan

Substrate: sandy, no soil crusts

Slate Geologic Unit: NA

Beatley Plant Assemblage: *Larrea-Ambrosia*

Ostler-Hanson Plant Association: *Ambrosia-Psorothamnus-Menodora*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: NA

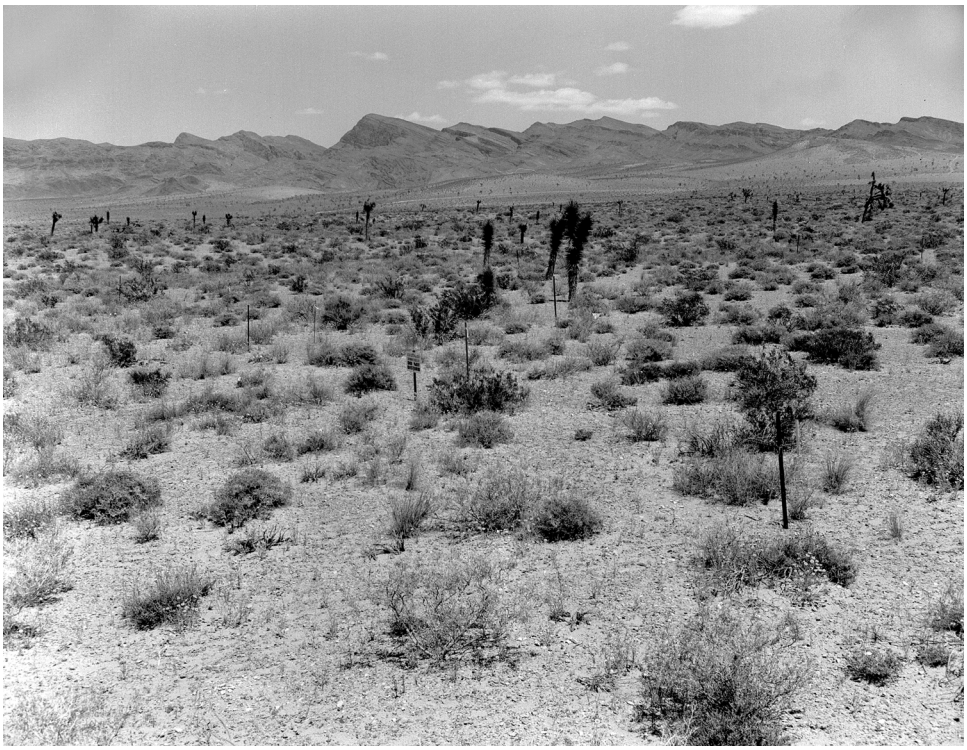
Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 19 April 2002

Figure A-32. Photographs showing Plot 32.



A. (May 11, 1964). In this north-northeasterly view across Plot 32, a creosote bush - white bursage assemblage appears south of the Buried Hills. Joshua trees are scattered across the landscape (Janice Beatley Collection, 70-A).

B. (April 19, 2002). White bursage, range ratany, and spiny menodora have increased here. The Joshua trees have increased in density and size in the intervening 38 years. This is one of the few sites at which creosote bush has decreased significantly in cover. The light color on the background hills is sunlight piercing through a generally overcast sky (Dominic Oldershaw, Stake 4164A).

Table A-32B. Summary plant data for Plot 32.

Number of Plants

SPECIES	1963	1975	2002
Ambrosia dumosa	46	61	69
Ceratoides lanata	0	0	1
Ephedra nevadensis	2	4	5
Grayia spinosa	0	0	1
Krameria parvifolia	16	15	25
Larrea tridentata	9	10	10
Menodora spinescens	27	23	32
Oryzopsis hymenoides	10	37	8
Psorothamnus fremontii	18	20	20
Sphaeralcea ambigua	0	0	0
Sporobolus airoides	0	0	12
Stipa speciosa	0	0	1
Yucca brevifolia	2	2	5
Total Live	130	172	189
Dead Grass	0	6	8
Dead Shrub	20	15	45
Total	150	193	242

Cover (%)

SPECIES	1963	1975	2002
Ambrosia dumosa	5.58	7.07	6.93
Ceratoides lanata	0.00	0.00	0.05
Ephedra nevadensis	0.42	0.46	0.54
Grayia spinosa	0.00	0.00	0.04
Krameria parvifolia	2.26	2.24	2.85
Larrea tridentata	1.34	1.98	0.79
Menodora spinescens	2.92	2.75	3.13
Oryzopsis hymenoides	0.45	2.05	0.22
Psorothamnus fremontii	2.25	3.11	2.30
Sphaeralcea ambigua	0.00	0.00	0.00
Sporobolus airoides	0.00	0.00	0.40
Stipa speciosa	0.00	0.00	0.01
Yucca brevifolia	0.32	0.53	1.86
Total Live	15.54	20.18	19.10
Dead Grass	0.00	0.24	0.27
Dead Shrub	2.88	1.36	5.40
Total	18.42	21.78	24.77

Average Height (m)

SPECIES	1963	1975	2002
Ambrosia dumosa	0.31	0.30	0.34
Ceratoides lanata	0.00	0.00	0.36
Ephedra nevadensis	0.74	0.50	0.49
Grayia spinosa	0.00	0.00	0.46
Krameria parvifolia	0.32	0.27	0.32
Larrea tridentata	0.63	0.64	0.74
Menodora spinescens	0.20	0.18	0.22
Oryzopsis hymenoides	0.30	0.29	0.20
Psorothamnus fremontii	0.45	0.44	0.54
Sphaeralcea ambigua	0.00	0.00	0.00
Sporobolus airoides	0.00	0.00	0.32
Stipa speciosa	0.00	0.00	0.48
Yucca brevifolia	2.51	3.68	3.67

Biomass Index (m^2)

SPECIES	1963	1975	2002
Ambrosia dumosa	6.36	7.75	8.19
Ceratoides lanata	0.00	0.00	0.05
Ephedra nevadensis	1.05	0.90	0.90
Grayia spinosa	0.00	0.00	0.06
Krameria parvifolia	2.59	2.18	3.14
Larrea tridentata	3.21	4.79	1.93
Menodora spinescens	2.10	1.80	2.47
Oryzopsis hymenoides	0.52	2.19	0.13
Psorothamnus fremontii	4.12	5.44	4.28
Sphaeralcea ambigua	0.00	0.00	0.00
Sporobolus airoides	0.00	0.00	0.44
Stipa speciosa	0.00	0.00	0.01
Yucca brevifolia	2.65	6.60	24.99
Total Live	22.60	31.67	46.61

Table A-33A. Site characteristics for Plot 33.

Location: Frenchman Flat

NTS Area: Nellis NTS Grid: W64B

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4075464	599351	Standing
Corner 2:	NW	4075492	599356	Standing
Corner 3:	NE	4075488	599387	Standing
Corner 4:	SE	4075457	599381	Standing

DEM Plot Elevation: 986 m Plot Aspect: 104°

Elevation Above Playa (Playa Name): 52 m (Frenchman) Plot Slope: 6°

Annual Precipitation
Measured: 119 mm
Modeled: 130 mm

Parent Material Type: alluvial fan

Substrate: desert pavement, limestone

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Psorothamnus*

Ostler-Hanson Plant Association: *Larrea-Psorothamnus-Krameria*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: good cover

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 19 April 2002

Figure A-33. Photographs showing Plot 33.

A. (April 24, 1964). In this northeasterly view across Plot 33, a sparse creosote bush assemblage appears in eastern Frenchman Flat. Fremont's dalea (*Psorothamnus fremontii*) is a subdominant here, and Joshua trees appear in the distance (Janice Beatley Collection, 26-A).

B. (April 19, 2002). The size of individual creosote bushes has increased, and range ratany has become the subdominant. Joshua trees have increased in size and density in the distance. Note the Joshua tree in the left foreground that was a nondescript seedling in 1964 (Dominic Oldershaw, Stake 4167A).

Table A-33B. Summary plant data for Plot 33.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0	2	2
Ceratoides lanata	0	0	1
Ephedra nevadensis	1	2	3
Eriogonum inflatum	0	5	2
Erioneuron pulchellum	0	0	64
Grayia spinosa	0	0	1
Krameria parvifolia	12	13	16
Larrea tridentata	11	14	13
Opuntia echinocarpa	0	0	1
Opuntia ramosissima	1	2	0
Oryzopsis hymenoides	2	1	0
Psorothamnus fremontii	24	26	0
Total Live	51	65	101
Dead Grass	0	1	1
Dead Shrubs	8	9	23
Total	59	75	125

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.00	0.07	0.21
Ceratoides lanata	0.00	0.00	0.11
Ephedra nevadensis	0.18	0.59	0.15
Eriogonum inflatum	0.00	0.11	0.03
Erioneuron pulchellum	0.00	0.00	1.54
Grayia spinosa	0.00	0.00	0.01
Krameria parvifolia	1.15	1.66	1.70
Larrea tridentata	2.05	3.38	2.50
Opuntia echinocarpa	0.00	0.00	0.05
Opuntia ramosissima	0.07	0.16	0.00
Oryzopsis hymenoides	0.09	0.07	0.00
Psorothamnus fremontii	2.49	3.14	0.00
Total Live	6.04	9.19	6.05
Dead Grass	0.00	0.05	0.02
Dead Shrubs	1.25	0.95	2.57
Total	7.28	10.19	8.64

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.00	0.15	0.22
Ceratoides lanata	0.00	0.00	0.32
Ephedra nevadensis	0.46	0.64	0.43
Eriogonum inflatum	0.00	0.11	0.00
Erioneuron pulchellum	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00
Krameria parvifolia	0.19	0.26	0.27
Larrea tridentata	0.69	0.69	0.91
Opuntia echinocarpa	0.00	0.00	0.12
Opuntia ramosissima	0.36	0.22	0.00
Oryzopsis hymenoides	0.37	0.33	0.00
Psorothamnus fremontii	0.36	0.42	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.00	0.04	0.16
Ceratoides lanata	0.00	0.00	0.12
Ephedra nevadensis	0.28	1.26	0.17
Eriogonum inflatum	0.00	0.04	0.00
Erioneuron pulchellum	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00
Krameria parvifolia	0.78	1.44	1.55
Larrea tridentata	5.09	8.30	7.10
Opuntia echinocarpa	0.00	0.00	0.02
Opuntia ramosissima	0.09	0.19	0.00
Oryzopsis hymenoides	0.11	0.08	0.00
Psorothamnus fremontii	3.33	4.61	0.00
Total Live	9.68	15.96	8.95

Table A-34A. Site characteristics for Plot 34.

Location: Frenchman Flat

NTS Area: 5

NTS Grid: Z-16

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4073028	597687	NA
Corner 2:	NW	4073056	597694	NA
Corner 3:	NE	4073049	597722	NA
Corner 4:	SE	4073021	597716	NA

DEM Plot Elevation: 940 m

Plot Aspect: 115°

Elevation Above Playa (Playa Name): 2 m (Frenchman)

Plot Slope: 12°

Annual Precipitation
Measured: 124 mm
Modeled: 124 mm

Parent Material Type: playa

Substrate: pebbles, well developed crust

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium shockleyi-Atriplex*

Ostler-Hanson Plant Association: *Lycium shockleyi-Larrea*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: well developed

Type and Date of Disturbance: NA

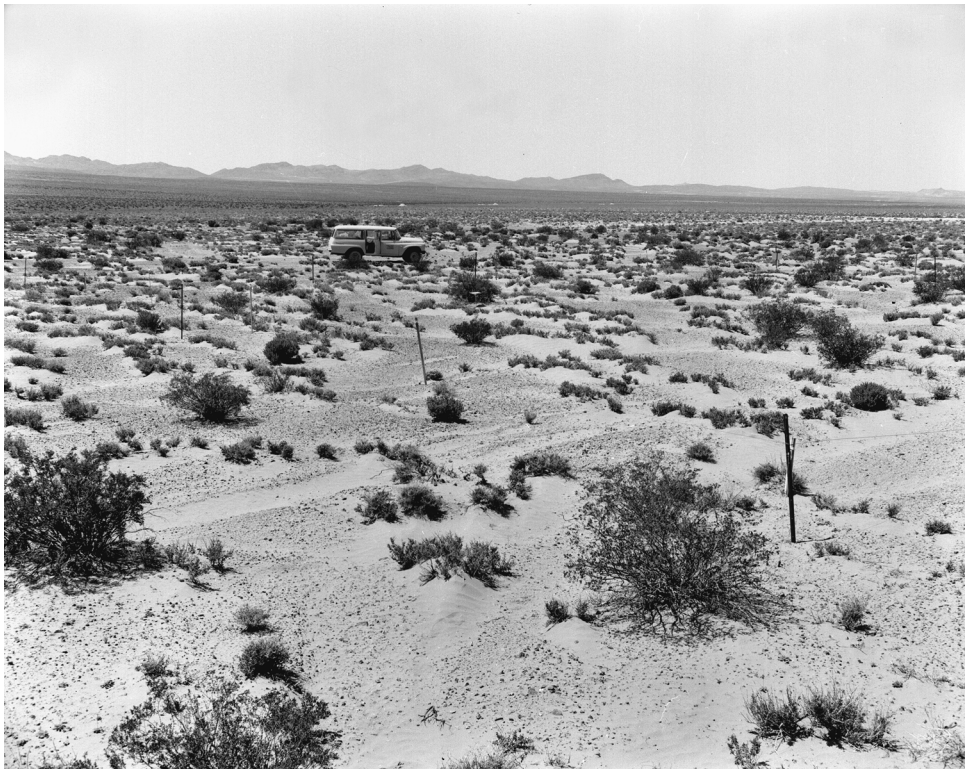
Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 17 April 2002

Figure A-34. Photographs showing Plot 34.



A. (May 11, 1964). The view shown is southwesterly across Plot 34 in southern Frenchman Flat. This plot is on the southeast corner of Frenchman Lake. The mountains in the distance are part of the Mercury Ridge north of Mercury, Nevada. The vegetation assemblage is a mixture of creosote bush, Shockley's desert thorn (*Lycium shockleyi*), and shadscale (Janice Beatley Collection, 73-A).

B. (April 20, 2002). The creosote bush have grown considerably, and Shockley's desert thorn is now the dominant species. The darkened ground surface is the result of the increase in prominence of biological soil crusts in this view. This increase may be largely the result of a difference in the type of photographic film, but the change appears to be real (Dominic Oldershaw, Stake 4175A).

Table A-34B. Summary plant data for Plot 34.

Number of Plants

SPECIES	1963	1975	2002
Ambrosia dumosa	5	9	6
Atriplex canescens	0	2	0
Atriplex confertifolia	6	5	1
Ceratoides lanata	1	4	1
Krameria parvifolia	0	1	1
Larrea tridentata	10	11	22
Lycium shockleyi	90	101	106
Total Live	112	133	137
Dead Grass	0	0	0
Dead Shrub	0	1	57
Total	112	134	194

Average Height (m)

SPECIES	1963	1975	2002
Ambrosia dumosa	0.18	0.23	0.21
Atriplex canescens	0.00	0.33	0.00
Atriplex confertifolia	0.22	0.36	0.12
Ceratoides lanata	0.28	0.27	0.28
Krameria parvifolia	0.00	0.41	0.35
Larrea tridentata	0.74	0.91	0.96
Lycium shockleyi	0.16	0.23	0.26

Cover (%)

SPECIES	1963	1975	2002
Ambrosia dumosa	0.47	0.72	0.28
Atriplex canescens	0.00	0.15	0.00
Atriplex confertifolia	0.43	0.55	0.04
Ceratoides lanata	0.04	0.20	0.08
Krameria parvifolia	0.00	0.11	0.08
Larrea tridentata	1.96	2.57	3.73
Lycium shockleyi	7.75	12.76	7.66
Total Live	10.65	17.06	11.87
Dead Grass	0.00	0.00	0.00
Dead Shrub	0.00	0.09	6.19
Total	10.65	17.15	18.06

Biomass Index (m^2)

SPECIES	1963	1975	2002
Ambrosia dumosa	0.28	0.57	0.15
Atriplex canescens	0.00	0.20	0.00
Atriplex confertifolia	0.37	0.80	0.01
Ceratoides lanata	0.03	0.23	0.08
Krameria parvifolia	0.00	0.15	0.10
Larrea tridentata	5.21	8.43	12.99
Lycium shockleyi	4.46	10.24	7.03
Total Live	10.35	20.60	20.36

Table A-35A. Site characteristics for Plot 35.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: Z-15

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4070888	597631	NA
Corner 2:	NW	4070916	597639	Standing
Corner 3:	NE	4070905	597669	Standing
Corner 4:	SE	4070876	597663	Standing

DEM Plot Elevation: 989 m Plot Aspect: 190°

Elevation Above Playa (Playa Name): 67 m (Frenchman) Plot Slope: 31°

Annual Precipitation
Measured: 136 mm
Modeled: 130 mm

Parent Material Type: broken terrain

Substrate: desert pavement, limestone

Slate Geologic Unit: QTa

Beatley Plant Assemblage: *Larrea-Lycium shockleyi-Atriplex*

Ostler-Hanson Plant Association: *Menodora-Lycium-Atriplex confertifolia*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: patchy

Type and Date of Disturbance: none

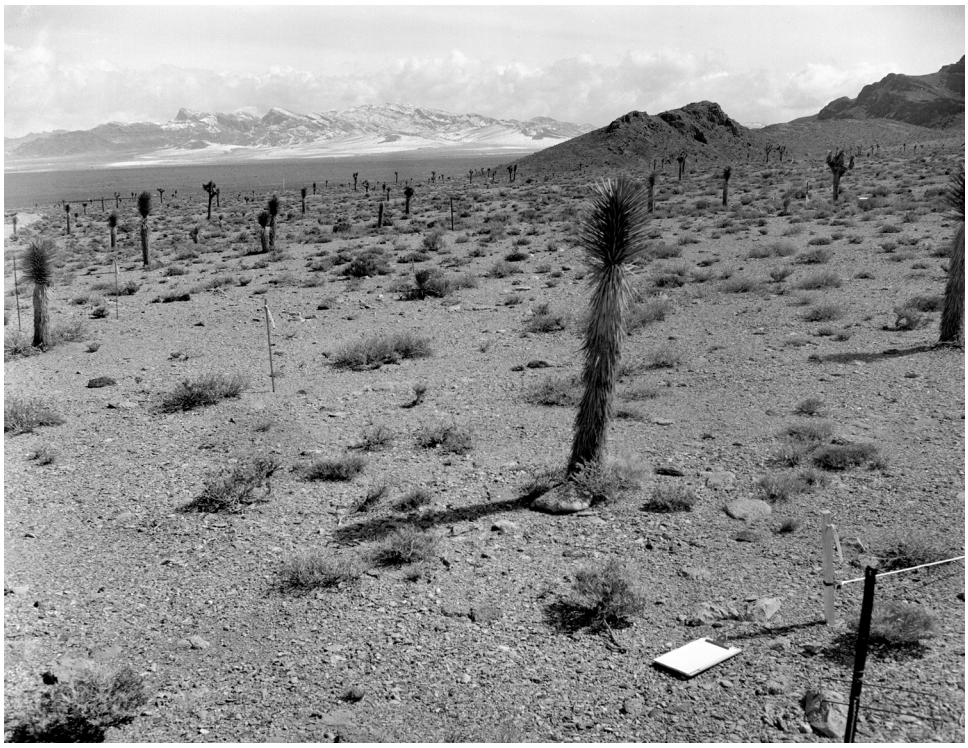
Plot Condition: good

Location of Transect 1: northwest side of plot

Direction Transects Are Read: southwest to northeast

Date(s) Plot Remeasured: 17 April 2002

Figure A-35. Photographs showing Plot 35.



A. (April 24, 1964). In this northeasterly view across Plot 35, a mixture of creosote bush, Shockley's desert thorn, and shadscale occurs between scattered Joshua trees. This plot is near the foothills of the Ranger Mountains, which are shown in the background (Janice Beatley Collection, 23-A).

B. (April 20, 2002). Shadscale now dominates the vegetation on this plot. The Joshua trees have greatly increased in height and density (Dominic Oldershaw, Stake 4172A).

Table A-35B. Summary plant data for Plot 35.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Astragalus tidestromii	1	6	0
Atriplex confertifolia	23	32	58
Cryptantha virginensis	0	4	0
Ephedra torreyana	3	5	1
Eriogonum inflatum	0	14	1
Erioneuron pulchellum	0	0	122
Krameria parvifolia	15	14	7
Larrea tridentata	3	5	3
Lepidium fremontii	0	1	1
Lycium shockleyi	40	42	14
Menodora spinescens	33	44	8
Opuntia basilaris	1	0	2
Oryzopsis hymenoides	1	0	0
Psorothamnus fremontii	2	0	0
Sphaeralcea parvifolia	0	7	3
Stipa speciosa	0	1	0
Yucca brevifolia	0	1	5
Yucca schidigera	0	0	1
Total Live	122	176	226
Dead Grass	0	0	1
Dead Shrub	10	12	129
Total	132	188	356

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Astragalus tidestromii	0.02	0.13	0.00
Atriplex confertifolia	1.52	2.84	2.62
Cryptantha virginensis	0.00	0.09	0.00
Ephedra torreyana	0.29	0.33	0.21
Eriogonum inflatum	0.00	0.32	0.01
Erioneuron pulchellum	0.00	0.00	1.56
Krameria parvifolia	1.35	1.05	0.35
Larrea tridentata	0.32	0.39	0.35
Lepidium fremontii	0.00	0.05	0.00
Lycium shockleyi	4.24	3.38	0.53
Menodora spinescens	2.05	3.73	0.53
Opuntia basilaris	0.02	0.00	0.06
Oryzopsis hymenoides	0.05	0.00	0.00
Psorothamnus fremontii	0.14	0.00	0.00
Sphaeralcea parvifolia	0.00	0.25	0.02
Stipa speciosa	0.00	0.08	0.00
Yucca brevifolia	0.00	0.10	0.61
Yucca schidigera	0.00	0.00	0.01
Total Live	9.98	12.74	6.85
Dead Grass	0.00	0.00	0.03
Dead Shrub	0.77	0.75	8.95
Total	10.75	13.48	15.82

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Astragalus tidestromii	0.08	0.09	0.00
Atriplex confertifolia	0.19	0.26	0.19
Cryptantha virginensis	0.00	0.10	0.00
Ephedra torreyana	0.40	0.35	0.43
Eriogonum inflatum	0.00	0.16	0.09
Erioneuron pulchellum	0.00	0.00	0.03
Krameria parvifolia	0.16	0.17	0.25
Larrea tridentata	0.42	0.33	0.59
Lepidium fremontii	0.00	0.30	0.19
Lycium shockleyi	0.21	0.20	0.26
Menodora spinescens	0.13	0.13	0.14
Opuntia basilaris	0.05	0.00	0.12
Oryzopsis hymenoides	0.23	0.00	0.00
Psorothamnus fremontii	0.18	0.00	0.00
Sphaeralcea parvifolia	0.00	0.20	0.10
Stipa speciosa	0.00	0.41	0.00
Yucca brevifolia	0.00	2.46	2.61
Yucca schidigera	0.00	0.00	0.16

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Astragalus tidestromii	0.00	0.06	0.00
Atriplex confertifolia	1.05	2.55	1.89
Cryptantha virginensis	0.00	0.03	0.00
Ephedra torreyana	0.37	0.43	0.30
Eriogonum inflatum	0.00	0.17	0.00
Erioneuron pulchellum	0.00	0.00	0.03
Krameria parvifolia	0.73	0.66	0.25
Larrea tridentata	0.49	0.48	0.72
Lepidium fremontii	0.00	0.06	0.00
Lycium shockleyi	3.06	2.33	0.47
Menodora spinescens	1.02	1.83	0.26
Opuntia basilaris	0.00	0.00	0.03
Oryzopsis hymenoides	0.04	0.00	0.00
Psorothamnus fremontii	0.10	0.00	0.00
Sphaeralcea parvifolia	0.00	0.19	0.00
Stipa speciosa	0.00	0.11	0.00
Yucca brevifolia	0.00	0.83	5.86
Yucca schidigera	0.00	0.00	0.00
Total Live	6.87	9.73	9.83

Table A-36A. Site characteristics for Plot 36.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: Z-15

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4071195	596037	NA
Corner 2:	NW	4071226	596046	NA
Corner 3:	NE	4071221	596075	NA
Corner 4:	SE	4071193	596067	NA

DEM Plot Elevation: 937 m Plot Aspect: 108°

Elevation Above Playa (Playa Name): 3 m (Frenchman) Plot Slope: 2°

Annual Precipitation
Measured: 126 mm
Modeled: 123 mm

Parent Material Type: playa

Substrate: cobbles, well developed crust

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Lycium shockleyi-Atriplex*

Ostler-Hanson Plant Association: *Lycium shockleyi-Larrea-Atriplex confertifolia*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: well developed

Type and Date of Disturbance: none

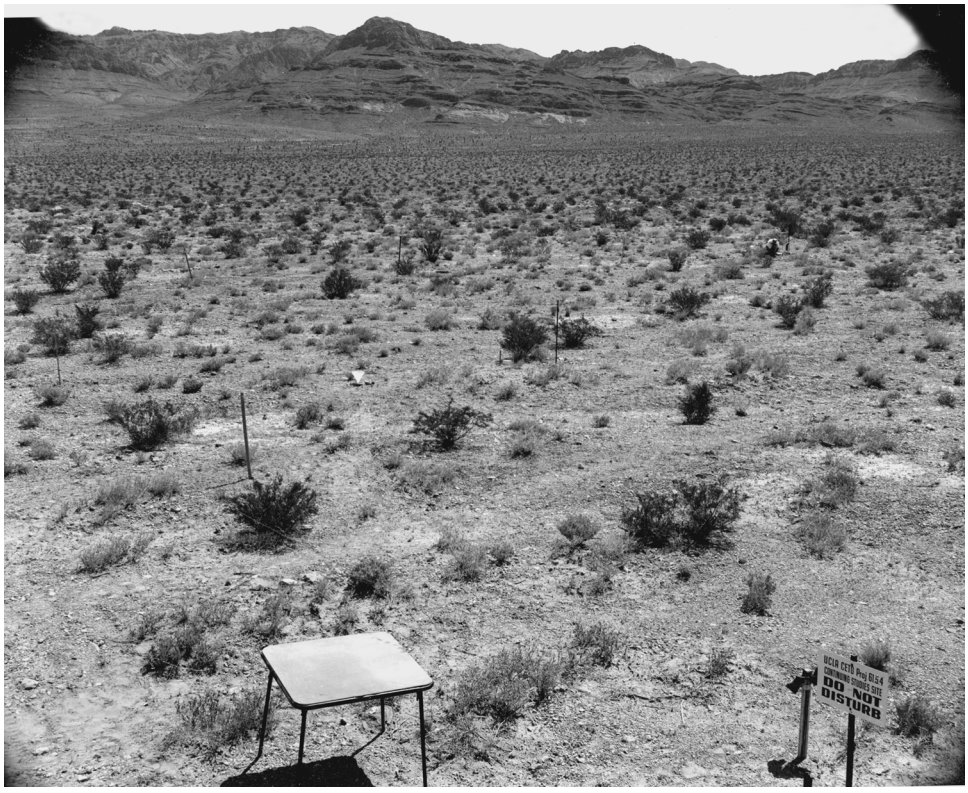
Plot Condition: good

Location of Transect 1: north side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 17 April 2002

Figure A-36. Photographs showing Plot 36.



A. (April 15, 1964). This southeasterly view across Plot 36 shows an alluvial fan with the Ranger Mountains in the background. The vegetation is dominated by creosote bush, Shockley's desert thorn, and shadscale. (Janice Beatley Collection, 1-A).

B. (April 20, 2002). The camera station is behind the original camera station, leading to a difference in perspective on the signs in the lower right foreground. Creosote bush have increased in size on the plot, and now white bursage is more numerically dominant than shadscale. Biological soil crusts are prominent in the foreground of this view and appear to have increased following the foot-traffic disturbance that affected the plot during its original measurements (Dominic Oldershaw, Stake 4169B).

Table A-36B. Summary plant data for Plot 36.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	27	38	4
Ambrosia dumosa	8	14	37
Atriplex confertifolia	15	12	12
Baileya multiradiata	0	1	0
Eriogonum inflatum	0	6	1
Erioneuron pulchellum	0	9	28
Hymenoclea salsola	1	1	0
Krameria parvifolia	0	0	1
Larrea tridentata	14	20	22
Lycium shockleyi	50	58	48
Mirabilis pudica	0	0	1
Opuntia echinocarpa	1	1	0
Opuntia ramosissima	1	1	1
Oryzopsis hymenoides	1	2	0
Psorothamnus fremontii	2	3	0
Stephanomeria pauciflora	0	0	0
Thamnosma montana	4	7	0
Total Live	124	173	155
Dead Grass	0	0	0
Dead Shrub	2	8	78
Total	126	181	233

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	1.80	1.99	0.09
Ambrosia dumosa	0.73	0.79	2.49
Atriplex confertifolia	1.05	1.16	0.56
Baileya multiradiata	0.00	0.01	0.00
Eriogonum inflatum	0.00	0.15	0.01
Erioneuron pulchellum	0.00	0.18	0.36
Hymenoclea salsola	0.05	0.10	0.00
Krameria parvifolia	0.00	0.00	0.00
Larrea tridentata	2.65	4.10	5.39
Lycium shockleyi	4.45	5.43	4.06
Mirabilis pudica	0.00	0.00	0.00
Opuntia echinocarpa	0.04	0.01	0.00
Opuntia ramosissima	0.04	0.05	0.02
Oryzopsis hymenoides	0.05	0.07	0.00
Psorothamnus fremontii	0.29	0.43	0.00
Stephanomeria pauciflora	0.00	0.00	0.00
Thamnosma montana	0.35	0.63	0.00
Total Live	11.49	15.09	12.99
Dead Grass	0.00	0.00	0.00
Dead Shrub	0.30	0.59	6.21
Total	11.79	15.68	19.20

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.15	0.16	0.14
Ambrosia dumosa	0.21	0.20	0.26
Atriplex confertifolia	0.26	0.29	0.26
Baileya multiradiata	0.00	0.08	0.00
Eriogonum inflatum	0.00	0.05	0.00
Erioneuron pulchellum	0.00	0.03	0.00
Hymenoclea salsola	0.28	0.30	0.00
Krameria parvifolia	0.00	0.00	0.33
Larrea tridentata	0.58	0.81	1.21
Lycium shockleyi	0.19	0.23	0.26
Mirabilis pudica	0.00	0.00	0.21
Opuntia echinocarpa	0.13	0.13	0.00
Opuntia ramosissima	0.13	0.15	0.05
Oryzopsis hymenoides	0.23	0.20	0.00
Psorothamnus fremontii	0.33	0.36	0.00
Stephanomeria pauciflora	0.00	0.00	0.00
Thamnosma montana	0.23	0.29	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.95	1.17	0.05
Ambrosia dumosa	0.50	0.57	2.37
Atriplex confertifolia	0.93	1.28	0.59
Baileya multiradiata	0.00	0.00	0.00
Eriogonum inflatum	0.00	0.03	0.00
Erioneuron pulchellum	0.00	0.02	0.00
Hymenoclea salsola	0.05	0.10	0.00
Krameria parvifolia	0.00	0.00	0.00
Larrea tridentata	5.54	11.47	22.59
Lycium shockleyi	3.01	4.33	3.68
Mirabilis pudica	0.00	0.00	0.00
Opuntia echinocarpa	0.02	0.00	0.00
Opuntia ramosissima	0.02	0.02	0.00
Oryzopsis hymenoides	0.03	0.05	0.00
Psorothamnus fremontii	0.31	0.53	0.00
Stephanomeria pauciflora	0.00	0.00	0.00
Thamnosma montana	0.29	0.64	0.00
Total Live	11.65	20.22	29.28

Table A-37A. Site characteristics for Plot 37.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: Z-15

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4071377	596085	Standing
Corner 2:	NW	4071405	596094	Standing
Corner 3:	NE	4071396	596126	Standing
Corner 4:	SE	4071368	596115	Standing

DEM Plot Elevation: 937 m Plot Aspect: 315°

Elevation Above Playa (Playa Name): 3 m (Frenchman) Plot Slope: 6°

Annual Precipitation
Measured: 129 mm
Modeled: 123 mm

Parent Material Type: playa

Substrate: relatively old laggard surface, silty alluvial w/solid gravel veneer and limestone quartzite

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Lycium shockleyi-Atriplex*

Ostler-Hanson Plant Association: *Lycium shockleyi-Atriplex confertifolia*

Ostler-Hanson Land Unit: NA

Abundance of Biological Soil Crusts: lots

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 17 April 2002

Figure A-37. Photographs showing Plot 37.

A. (April 22, 1964). This southeasterly view across Plot 37 shows an assemblage dominated by Shockley's desert thorn and shadscale. No Joshua trees are apparent in this view (Janice Beatley Collection, 35-B).

B. (April 20, 2002). Biological soil crusts now prominently appear throughout the plot. Shadscale has greatly decreased here, and several new Joshua trees appear (Dominic Oldershaw, Stake 4170B).

Table A-37B. Summary plant data for Plot 37.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0	2	0
Ambrosia dumosa	0	0	2
Atriplex confertifolia	20	30	0
Ceratoides lanata	3	3	1
Larrea tridentata	0	2	1
Lycium shockleyi	79	97	136
Oryzopsis hymenoides	6	8	0
Sphaeralcea parvifolia	0	3	0
Stanleya pinnata	0	5	0
Total Live	108	150	140
Dead Grass	0	0	1
Dead Shrub	0	6	71
Total	108	156	212

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.00	0.04	0.00
Ambrosia dumosa	0.00	0.00	0.08
Atriplex confertifolia	1.55	2.52	0.00
Ceratoides lanata	0.26	0.25	0.09
Larrea tridentata	0.00	0.05	0.22
Lycium shockleyi	10.10	14.08	9.25
Oryzopsis hymenoides	0.17	0.35	0.00
Sphaeralcea parvifolia	0.00	0.06	0.00
Stanleya pinnata	0.00	0.34	0.00
Total Live	12.09	17.68	9.65
Dead Grass	0.00	0.00	0.01
Dead Shrub	0.00	0.47	8.20
Total	12.09	18.15	17.85

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.00	0.11	0.00
Ambrosia dumosa	0.00	0.00	0.21
Atriplex confertifolia	0.28	0.30	0.00
Ceratoides lanata	0.33	0.52	0.66
Larrea tridentata	0.00	0.04	0.82
Lycium shockleyi	0.24	0.31	0.30
Oryzopsis hymenoides	0.19	0.26	0.00
Sphaeralcea parvifolia	0.00	0.16	0.00
Stanleya pinnata	0.00	0.43	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Acamptopappus shockleyi	0.00	0.02	0.00
Ambrosia dumosa	0.00	0.00	0.06
Atriplex confertifolia	1.62	3.29	0.00
Ceratoides lanata	0.30	0.44	0.20
Larrea tridentata	0.00	0.01	0.60
Lycium shockleyi	9.07	15.93	9.80
Oryzopsis hymenoides	0.12	0.32	0.00
Sphaeralcea parvifolia	0.00	0.03	0.00
Stanleya pinnata	0.00	0.48	0.00
Total Live	11.10	20.52	10.66

Table A-38A. Site characteristics for Plot 38.

Location: Frenchman Flat

NTS Area: 5 NTS Grid: W-16

USGS 7.5' Quadrangle Name: Frenchman Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4072424	590614	Standing
Corner 2:	NW	4072454	570619	Standing
Corner 3:	NE	4072431	590648	Standing
Corner 4:	SE	4072420	590644	Standing

DEM Plot Elevation: 951 m Plot Aspect: 153°

Elevation Above Playa (Playa Name): 6 m (Frenchman) Plot Slope: 3°

Annual Precipitation
Measured: 121 mm
Modeled: 123 mm

Parent Material Type: alluvial fan

Substrate: mixed alluvium, sandy w/pebbles

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Lycium pallidum-Grayia*

Ostler-Hanson Plant Association: *Lycium pallidum-Psorothamnus-Grayia*

Ostler-Hanson Land Unit: 80

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: one motorcycle track through plot, some rodent activity

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 17 April 2002

Figure A-38. Photographs showing Plot 38.

A. (May 11, 1964). In this south-southeasterly view across Plot 38, Frenchman Lake and the Ranger Mountains appear in the distance. Rabbit thorn (*Lycium pallidum* v. *oligospermum*) and spiny hopsage are the dominants on this plot (Janice Beatley Collection, 68-A).

B. (April 17, 2002). The plot is still dominated by rabbit thorn and spiny hopsage, although many individuals of the latter species have died (Dominic Oldershaw, Stake 4147A).

Table A-38B. Summary plant data for Plot 38.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0	0	1
Atriplex canescens	4	14	1
Ceratoides lanata	1	0	1
Grayia spinosa	20	22	12
Lycium andersonii	2	0	0
Lycium pallidum oligospermum	48	48	58
Mirabilis pudica	4	9	1
Oryzopsis hymenoides	0	1	0
Psorothamnus polydenius	3	2	1
Total Live	82	96	75
Dead Grass	0	0	0
Dead Shrub	4	9	27
Total	86	105	102

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.00	0.00	0.06
Atriplex canescens	0.45	1.38	0.09
Ceratoides lanata	0.05	0.00	0.00
Grayia spinosa	2.41	2.52	1.21
Lycium andersonii	0.30	0.00	0.00
Lycium pallidum oligospermum	10.45	13.13	15.67
Mirabilis pudica	0.25	0.72	0.07
Oryzopsis hymenoides	0.00	0.07	0.00
Psorothamnus polydenius	0.29	0.35	0.01
Total Live	14.20	18.16	17.12
Dead Grass	0.00	0.00	0.00
Dead Shrub	0.34	1.13	5.75
Total	14.54	19.29	22.86

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.00	0.00	0.25
Atriplex canescens	0.60	0.59	0.51
Ceratoides lanata	0.36	0.00	0.22
Grayia spinosa	0.54	0.61	0.58
Lycium andersonii	0.58	0.00	0.00
Lycium pallidum oligospermum	0.67	0.73	0.77
Mirabilis pudica	0.27	0.09	0.00
Oryzopsis hymenoides	0.00	0.15	0.00
Psorothamnus polydenius	0.27	0.39	0.45

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ambrosia dumosa	0.00	0.00	0.05
Atriplex canescens	0.94	2.83	0.16
Ceratoides lanata	0.07	0.00	0.00
Grayia spinosa	4.51	5.72	2.49
Lycium andersonii	0.59	0.00	0.00
Lycium pallidum oligospermum	24.25	33.97	41.80
Mirabilis pudica	0.24	0.22	0.00
Oryzopsis hymenoides	0.00	0.04	0.00
Psorothamnus polydenius	0.25	0.45	0.01
Total Live	30.85	43.22	44.50

Table A-39A. Site characteristics for Plot 39.

Location: Mid Valley

NTS Area: 14 NTS Grid: L-24

USGS 7.5' Quadrangle Name: Mine Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4086870	574057	Standing
Corner 2:	NW	4086900	574064	Standing
Corner 3:	NE	4086890	574093	Standing
Corner 4:	SE	4086862	574086	Standing

DEM Plot Elevation: 1381 m Plot Aspect: 329°

Elevation Above Playa (Playa Name): NA Plot Slope: 8°

Annual Precipitation
Measured: 204 mm
Modeled: 189 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, rhyolite

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Coleogyne*/*Grayia-Lycium*

Ostler-Hanson Plant Association: *Coleogyne-Grayia-Ephedra*

Ostler-Hanson Land Unit: 455

Abundance of Biological Soil Crusts: patchy but locally heavy

Type and Date of Disturbance: none (control for Plot 40)

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 13 May 2000

Figure A-39. Photograph showing Plot 39.

(May 10, 2000). This northeasterly view across Plot 39 shows a blackbrush assemblage in Mid Valley. Mine Mountain appears in the distance. Mormon tea and wolfberry are the subdominants on this plot. This plot either was not photographed in 1964 or the negatives have been lost (R.H. Webb, Stake 4029).

Table A-39B. Summary plant data for Plot 39.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Arabis pulchra munciensis	0	1	0
Artemisia spinescens	10	7	2
Ceratoides lanata	11	21	7
Coleogyne ramosissima	144	154	165
Ephedra nevadensis	25	28	27
Ericameria cooperi	10	9	10
Grayia spinosa	47	51	6
Lycium andersonii	23	23	19
Opuntia echinocarpa	0	0	1
Oryzopsis hymenoides	0	0	1
Sitanion hystrix	2	12	0
Stephanomeria parryi	0	1	0
Stipa speciosa	14	37	2
Stipa x *Oryzopsis* hybrid	1	4	0
Tetradymia axillaris	2	1	0
Tetradymia glabrata	1	2	0
Total Live	290	351	240
Dead Grass	0	0	13
Dead Shrubs	33	10	62
Total	323	361	315

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Arabis pulchra munciensis	0.00	0.02	0.00
Artemisia spinescens	0.62	0.44	0.05
Ceratoides lanata	0.55	1.62	0.71
Coleogyne ramosissima	16.89	18.41	20.67
Ephedra nevadensis	3.72	4.59	4.45
Ericameria cooperi	0.68	1.25	1.09
Grayia spinosa	6.75	8.47	0.50
Lycium andersonii	2.46	2.96	1.45
Opuntia echinocarpa	0.00	0.00	0.02
Oryzopsis hymenoides	0.00	0.00	0.02
Sitanion hystrix	0.13	0.96	0.00
Stephanomeria parryi	0.00	0.01	0.00
Stipa speciosa	0.75	2.64	0.06
Stipa x *Oryzopsis* hybrid	0.06	0.73	0.00
Tetradymia axillaris	0.07	0.02	0.00
Tetradymia glabrata	0.11	0.25	0.00
Total Live	32.79	42.36	29.03
Dead Grass	0.00	0.00	0.51
Dead Shrubs	3.76	1.31	10.07
Total	36.55	43.67	39.61

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Arabis pulchra munciensis	0.00	0.46	0.00
Artemisia spinescens	0.17	0.16	0.15
Ceratoides lanata	0.34	0.36	0.49
Coleogyne ramosissima	0.38	0.36	0.47
Ephedra nevadensis	0.43	0.44	0.60
Ericameria cooperi	0.23	0.28	0.36
Grayia spinosa	0.55	0.59	0.55
Lycium andersonii	0.33	0.35	0.36
Opuntia echinocarpa	0.00	0.00	0.69
Oryzopsis hymenoides	0.00	0.00	0.46
Sitanion hystrix	0.32	0.34	0.00
Stephanomeria parryi	0.00	0.03	0.00
Stipa speciosa	0.34	0.36	0.32
Stipa x *Oryzopsis* hybrid	0.53	0.60	0.00
Tetradymia axillaris	0.33	0.64	0.00
Tetradymia glabrata	0.53	0.56	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Arabis pulchra munciensis	0.00	0.03	0.00
Artemisia spinescens	0.36	0.26	0.03
Ceratoides lanata	0.62	2.19	1.13
Coleogyne ramosissima	24.57	24.16	34.40
Ephedra nevadensis	6.71	8.00	9.47
Ericameria cooperi	0.57	1.23	1.34
Grayia spinosa	12.92	17.23	1.06
Lycium andersonii	2.94	3.60	1.84
Opuntia echinocarpa	0.00	0.00	0.04
Oryzopsis hymenoides	0.00	0.00	0.03
Sitanion hystrix	0.14	1.09	0.00
Stephanomeria parryi	0.00	0.00	0.00
Stipa speciosa	1.03	3.37	0.07
Stipa x *Oryzopsis* hybrid	0.11	1.58	0.00
Tetradymia axillaris	0.08	0.04	0.00
Tetradymia glabrata	0.20	0.49	0.00
Total Live	50.24	63.27	49.41

Table A-40A. Site characteristics for Plot 40.

Location: Mid Valley

NTS Area: 14 NTS Grid: L-24

USGS 7.5' Quadrangle Name: Mine Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4086764	574031	Standing
Corner 2:	NW	4086794	574040	Standing
Corner 3:	NE	4086789	574096	Standing
Corner 4:	SE	4086757	574061	Standing

DEM Plot Elevation: 1383 m Plot Aspect: 180°

Elevation Above Playa (Playa Name): NA Plot Slope: 14°

Annual Precipitation
Measured: 198 mm
Modeled: 188 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, rhyolite

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Ephedra-Lycium*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 455

Abundance of Biological Soil Crusts: scattered, locally heavy

Type and Date of Disturbance: fire occurred in 1959

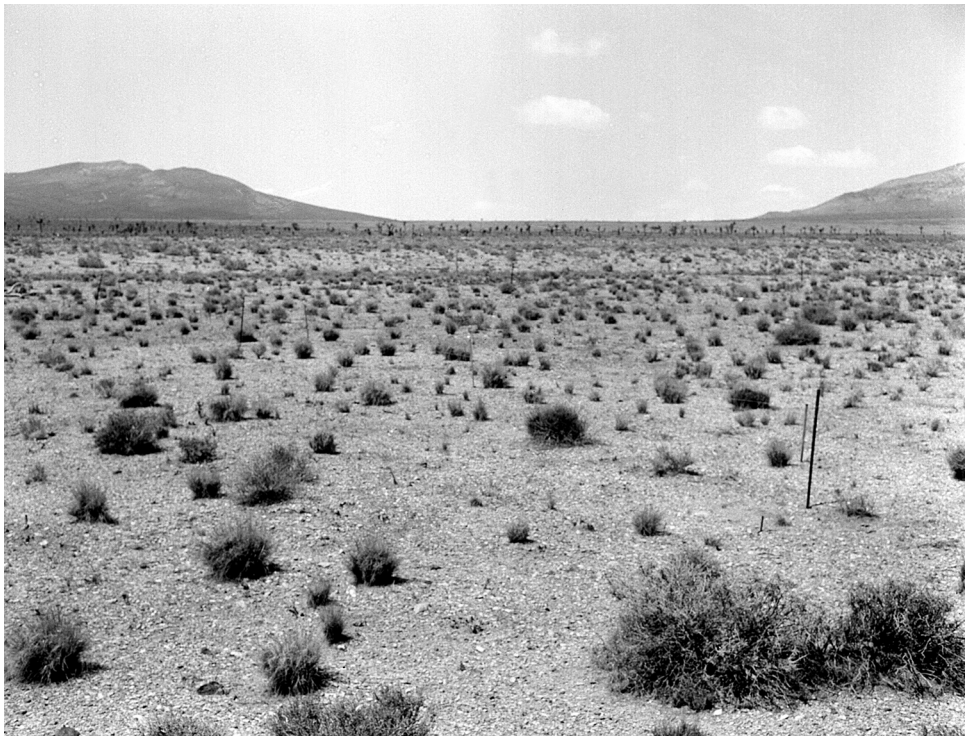
Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 13 May 2000

Figure A-40. Photographs showing Plot 40.



A. (1964). This southwesterly view across Plot 40 shows an area recovering from a fire that occurred in 1959. The southern flanks of Shoshone Mountain appear in the distance at right, and an unnamed mountain range that has Lookout Peak as its summit appears in the distance at left. Scattered Mormon tea and perennial grasses (mostly needlegrass, *Stipa speciosa*) appear in the foreground (Janice Beatley Collection, 40-2).

B. (May 10, 2000). Considerable change has occurred here as the disturbed assemblage has recovered some of its cover of perennial vegetation. Needlegrass, Mormon tea, cheesebush, and turpintinebroom (*Thamnosma montana*) dominate the vegetation. In the background, Joshua trees have increased considerably in stature and number (R.H. Webb, Stake 4027A).

Table A-40B. Summary plant data for Plot 40.

	Number of Plants							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Arabis pulchra munciensis	0	0	0	0	0	0	1	0
Artemisia spinescens	0	0	0	0	0	0	1	2
Atriplex canescens	0	0	0	0	0	0	0	2
Calochortus flexuosus	0	0	0	1	0	0	2	0
Chrysothamnus viscidiflorus	0	0	0	0	0	0	0	26
Coleogyne ramosissima	1	1	1	1	1	1	1	4
Ephedra nevadensis	12	10	10	17	14	17	20	28
Ericameria cooperi	0	0	0	0	0	0	0	3
Eriogonum inflatum	0	0	0	0	0	0	0	4
Haplopappus sp.	0	0	0	0	0	0	0	4
Hymenoclea salsola	6	4	6	6	7	11	13	20
Linum lewisii	0	0	0	0	0	0	0	1
Lycium andersonii	8	8	8	8	9	8	10	8
Oryzopsis hymenoides	0	2	6	7	8	5	8	13
Sitanion hystrix	14	10	19	27	23	14	29	0
Sphaeralcea ambigua	1	20	26	30	34	0	9	21
Stephanomeria parryi	0	0	0	4	1	0	7	0
Stipa speciosa	68	179	98	110	114	103	176	122
Stipa x *Oryzopsis*	4	0	1	1	1	1	0	0
Tetradymia glabrata	0	0	0	0	0	1	1	0
Thamnosma montana	1	1	1	1	1	1	0	28
Yucca brevifolia	0	0	0	0	0	0	0	3
Total Live	115	235	176	213	213	162	278	289
Dead Grass	0	2	1	0	0	0	1	19
Dead Shrub	3	1	0	0	0	1	0	16
Total	118	238	177	213	213	163	279	324

	Average Height (m)							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Arabis pulchra munciensis	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00
Artemisia spinescens	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.17
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53
Calochortus flexuosus	0.00	0.00	0.00	0.10	0.00	0.00	0.03	0.00
Chrysothamnus viscidiflorus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
Coleogyne ramosissima	0.41	0.36	0.38	0.43	0.41	0.43	0.48	0.45
Ephedra nevadensis	0.33	0.31	0.39	0.40	0.47	0.53	0.53	0.51
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haplopappus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
Hymenoclea salsola	0.37	0.36	0.45	0.40	0.41	0.47	0.45	0.51
Linum lewisii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28
Lycium andersonii	0.30	0.29	0.35	0.36	0.35	0.41	0.44	0.38
Oryzopsis hymenoides	0.00	0.15	0.40	0.45	0.41	0.45	0.37	0.46
Sitanion hystrix	0.22	0.21	0.28	0.30	0.28	0.29	0.24	0.00
Sphaeralcea ambigua	0.15	0.05	0.17	0.20	0.23	0.00	0.07	0.19
Stephanomeria parryi	0.00	0.00	0.00	0.07	0.10	0.00	0.03	0.00
Stipa speciosa	0.48	0.19	0.40	0.44	0.43	0.42	0.43	0.51

Table A-40B (continued). Summary plant data for Plot 40.

				Average Height (m)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Stipa x *Oryzopsis*	0.39	0.00	0.51	0.76	0.69	0.74	0.00	0.00
Tetradymia glabrata	0.00	0.00	0.00	0.00	0.00	0.25	0.38	0.00
Thamnosma montana	0.25	0.33	0.33	0.30	0.33	0.33	0.00	0.32
Yucca brevifolia	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.42

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Arabis pulchra munciensis	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Artemisia spinescens	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.16
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Calochortus flexuosus	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
Chrysothamnus viscidiflorus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.62
Coleogyne ramosissima	0.03	0.06	0.12	0.05	0.08	0.09	0.14	0.61
Ephedra nevadensis	1.28	1.14	1.90	1.90	2.12	2.61	3.97	4.63
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Haplopappus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Hymenoclea salsola	0.65	0.52	0.66	0.75	0.79	1.39	2.19	2.52
Linum lewisii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Lycium andersonii	0.76	0.85	0.95	0.93	1.05	1.03	1.58	0.57
Oryzopsis hymenoides	0.00	0.05	0.45	0.47	0.65	0.48	0.91	0.66
Sitanion hystrix	0.75	0.69	1.21	2.09	1.90	0.98	1.94	0.00
Sphaeralcea ambigua	0.03	0.35	0.70	0.86	1.19	0.00	0.15	0.35
Stephanomeria parryi	0.00	0.00	0.00	0.05	0.02	0.00	0.07	0.00
Stipa speciosa	6.94	7.60	8.93	10.58	10.63	9.71	19.03	6.78
Stipa x *Oryzopsis*	0.28	0.00	0.11	0.22	0.16	0.19	0.00	0.00
Tetradymia glabrata	0.00	0.00	0.00	0.00	0.00	0.01	0.13	0.00
Thamnosma montana	0.05	0.07	0.07	0.09	0.08	0.11	0.00	2.22
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Total Live	10.76	11.33	15.11	17.99	18.67	16.60	30.17	20.81
Dead Grass	0.00	0.04	0.04	0.00	0.00	0.00	0.07	2.97
Dead Shrub	0.13	0.05	0.00	0.00	0.00	0.02	0.00	2.55
Total	10.89	11.41	15.15	17.99	18.67	16.62	30.25	26.33

Table A-40B (continued). Summary plant data for Plot 40.

	Biomass Index (m^2)							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Arabis pulchra munciensis	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Artemisia spinescens	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.11
Atriplex canescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Calochortus flexuosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chrysothamnus viscidiflorus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88
Coleogyne ramosissima	0.04	0.08	0.15	0.07	0.11	0.13	0.22	1.17
Ephedra nevadensis	1.64	1.44	2.49	2.86	3.30	4.84	7.34	9.13
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haplopappus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Hymenoclea salsola	0.90	0.69	1.13	1.09	1.25	2.40	3.75	4.85
Linum lewisii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Lycium andersonii	0.83	0.90	1.21	1.25	1.37	1.47	2.43	0.82
Oryzopsis hymenoides	0.00	0.03	0.68	0.80	0.92	0.77	1.12	1.20
Sitanion hystrix	0.58	0.58	1.23	2.29	1.96	0.95	1.84	0.00
Stephanomeria parryi	0.00	0.00	0.00	0.70	1.15	0.00	0.05	0.00
Sphaeralcea ambigua	0.00	0.05	0.45	0.01	0.01	0.00	0.01	0.25
Stipa speciosa	12.00	9.44	14.56	18.64	18.17	15.51	29.75	12.07
Stipa x *Oryzopsis*	0.41	0.00	0.19	0.56	0.38	0.47	0.00	0.00
Tetradymia glabrata	0.00	0.00	0.00	0.00	0.00	0.01	0.16	0.00
Thamnosma montana	0.05	0.08	0.08	0.09	0.09	0.12	0.00	2.49
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Total Live	16.44	13.29	22.17	28.35	28.71	26.68	46.70	34.84

Table A-41A. Site characteristics for Plot 41.

Location: Mid Valley

NTS Area: 14 NTS Grid: K-26

USGS 7.5' Quadrangle Name: Mine Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4090825	572644	Standing
Corner 2:	NW	4090854	572651	Standing
Corner 3:	NE	4090850	572680	Standing
Corner 4:	SE	4090818	572674	Standing

DEM Plot Elevation: 1447 m Plot Aspect: 27°

Elevation Above Playa (Playa Name): NA Plot Slope: 16°

Annual Precipitation
Measured: 241 mm
Modeled: 212 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed volcanic w/granite? Mostly rhyolite no basalt

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Coleogyne*

Ostler-Hanson Plant Association: *Coleogyne-Ephedra*

Ostler-Hanson Land Unit: 844

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none (control for Plot 42)

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 13 May 2000

Figure A-41. Photograph showing Plot 41.

(May 10, 2000). This westerly view across Plot 41 and the northern part of Mid Valley shows a blackbrush assemblage with Mormon tea. Shoshone Mountain appears in the background. Apparently no photographs were taken of this plot in 1964 (R.H. Webb, Stake 4023A).

Table A-41B. Summary plant data for Plot 41.

	Number of Plants		
SPECIES	**1963**	**1975**	**2000**
Artemisia tridentata	0	0	2
Chrysothamnus viscidiflorus	1	1	1
Coleogyne ramosissima	356	368	321
Coryphantha sp.	0	0	2
Ephedra nevadensis	26	43	52
Opuntia echinocarpa	0	1	2
Sitanion hystrix	1	0	0
Stipa speciosa	0	1	0
Total Live	383	414	380
Dead Grass	0	0	0
Dead Shrub	26	9	36
Total	409	423	416

	Cover (%)		
SPECIES	**1963**	**1975**	**2000**
Artemisia tridentata	0.00	0.00	0.15
Chrysothamnus viscidiflorus	0.11	0.12	0.04
Coleogyne ramosissima	44.88	44.15	31.64
Coryphantha sp.	0.00	0.00	0.04
Ephedra nevadensis	2.62	4.59	4.66
Opuntia echinocarpa	0.00	0.04	0.08
Sitanion hystrix	0.04	0.00	0.00
Stipa speciosa	0.00	0.04	0.00
Total Live	47.61	48.94	36.60
Dead Grass	0.00	0.00	0.00
Dead Shrub	2.50	0.84	5.00
Total	50.11	49.77	41.60

	Average Height (m)		
SPECIES	**1963**	**1975**	**2000**
Artemisia tridentata	0.00	0.00	0.66
Chrysothamnus viscidiflorus	0.38	0.41	0.36
Coleogyne ramosissima	0.42	0.37	0.43
Coryphantha sp.	0.00	0.00	0.06
Ephedra nevadensis	0.36	0.43	0.52
Opuntia echinocarpa	0.00	0.18	0.30
Sitanion hystrix	0.25	0.00	0.00
Stipa speciosa	0.00	0.30	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2000**
Artemisia tridentata	0.00	0.00	0.20
Chrysothamnus viscidiflorus	0.14	0.16	0.04
Coleogyne ramosissima	69.05	60.54	49.82
Coryphantha sp.	0.00	0.00	0.01
Ephedra nevadensis	3.82	7.49	9.02
Opuntia echinocarpa	0.00	0.02	0.08
Sitanion hystrix	0.03	0.00	0.00
Stipa speciosa	0.00	0.04	0.00
Total Live	73.01	68.25	59.17

Table A-42A. Site characteristics for Plot 42.

Location: Mid Valley

NTS Area: 14 NTS Grid: K-26

USGS 7.5' Quadrangle Name: Mine Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4090789	572634	Standing
Corner 2:	NW	4090794	572635	Standing
Corner 3:	NE	4090785	572638	Standing
Corner 4:	SE	4090761	572661	Standing

DEM Plot Elevation: 1449 m Plot Aspect: 297°

Elevation Above Playa (Playa Name): NA Plot Slope: 6°

Annual Precipitation
Measured: 233 mm
Modeled: 211 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed volcanic w/granite? Mostly rhyolite no basalt

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Ephedra*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 844

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: fire occurred in 1959

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 13 May 2000

Figure A-42. Photograph showing Plot 42.

(May 9, 2000). This northwesterly view across Plot 42 shows an area burned in the late 1950s in Mid Valley. The assemblage is dominated by Mormon tea and needlegrass. Apparently no photographs were taken of this plot in 1964 (R.H. Webb, Stake 4025).

Table A-42B. Summary plant data for Plot 42.

	Number of Plants							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Astragalus lentiginosus fremontii	0	1	3	123	130	0	45	2
Calochortus flexuosus	0	0	0	3	1	0	0	0
Chrysothamnus nauseosus	0	0	0	0	0	0	2	6
Coleogyne ramosissima	0	0	0	0	0	0	0	5
Ephedra nevadensis	26	16	26	39	38	31	39	61
Ephedra viridis	0	0	0	0	0	0	0	2
Ericameria laricifolia	0	0	0	0	0	0	0	1
Erioneuron pulchellum	0	0	0	0	0	0	0	3
Oryzopsis hymenoides	0	0	0	0	0	0	0	1
Sitanion hystrix	0	0	0	0	0	0	1	0
Sphaeralcea ambigua monticola	3	6	26	58	135	0	29	113
Stephanomeria parryi	0	0	2	8	2	0	0	0
Stipa speciosa	0	0	0	1	4	4	8	19
Total Live	29	23	57	232	310	35	124	213
Dead Grass	0	0	0	0	0	0	0	8
Dead Shrub	7	15	1	0	7	1	0	5
Total	36	38	58	232	317	36	124	226

	Average Height (m)							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Astragalus lentiginosus fremontii	0.00	0.08	0.07	0.16	0.20	0.00	0.08	0.19
Calochortus flexuosus	0.00	0.00	0.00	0.09	0.15	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.70
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.38
Ephedra nevadensis	0.26	0.26	0.28	0.37	0.41	0.59	0.00	0.75
Ephedra viridis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89
Ericameria laricifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
Erioneuron pulchellum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Oryzopsis hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00
Sphaeralcea ambigua monticola	0.14	0.15	0.17	0.27	0.40	0.00	0.05	0.32
Stephanomeria parryi	0.00	0.00	0.08	0.09	0.08	0.00	0.00	0.00
Stipa speciosa	0.00	0.00	0.00	0.18	0.34	0.45	0.37	0.56

Table A-42B (continued). Summary plant data for Plot 42.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Astragalus lentiginosus fremontii	0.00	0.01	0.06	5.34	10.24	0.00	0.99	0.12
Calochortus flexuosus	0.00	0.00	0.00	0.07	0.05	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.09	1.12
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	9.84	0.62
Ephedra nevadensis	1.72	1.27	1.56	3.24	3.89	5.84	0.00	17.72
Ephedra viridis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73
Ericameria laricifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
Erioneuron pulchellum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Oryzopsis hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Sphaeralcea ambigua monticola	0.00	0.16	0.54	2.52	11.70	0.00	0.88	3.21
Stephanomeria parryi	0.00	0.00	0.02	0.15	0.04	0.00	0.00	0.00
Stipa speciosa	0.00	0.00	0.00	0.05	0.21	0.25	0.74	1.78
Total Live	1.72	1.45	2.18	11.36	26.13	6.09	12.55	25.76
Dead Grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
Dead Shrub	0.58	0.73	0.03	0.00	0.50	0.07	0.00	1.12
Total	2.30	2.17	2.21	11.36	26.63	6.16	12.55	27.34

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2000**
Astragalus lentiginosus fremontii	0.00	0.00	0.02	3.08	7.30	0.00	0.35	0.08
Calochortus flexuosus	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.00
Chrysothamnus nauseosus	0.00	0.00	0.00	0.00	0.00	0.00	0.14	2.89
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	23.03	1.28
Ephedra nevadensis	1.72	1.25	1.63	4.34	5.87	12.12	0.00	47.91
Ephedra viridis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.31
Ericameria laricifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.95
Erioneuron pulchellum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oryzopsis hymenoides	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Sphaeralcea ambigua monticola	0.00	0.07	0.44	2.73	16.96	0.00	0.17	3.98
Stephanomeria parryi	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00
Stipa speciosa	0.00	0.00	0.00	0.03	0.24	0.39	1.00	3.56
Total Live	1.72	1.32	2.10	10.25	30.41	12.51	24.71	63.13

Table A-43A. Site characteristics for Plot 43.

Location: Yucca Flat

NTS Area: 6 NTS Grid: Q-26

USGS 7.5' Quadrangle Name: Yucca Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4090774	582619	On ground
Corner 2:	NW	4090807	582621	On ground
Corner 3:	NE	4090807	582651	Standing
Corner 4:	SE	4090776	582650	On ground

DEM Plot Elevation: 1266 m Plot Aspect: 60°

Elevation Above Playa (Playa Name): 70 m (Yucca) Plot Slope: 11°

Annual Precipitation
Measured: 180 mm
Modeled: 174 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan

Slate Geologic Unit: QTa

Beatley Plant Assemblage: *Larrea-Atriplex*/*Coleogyne*

Ostler-Hanson Plant Association: *Atriplex confertifolia-Ephedra-Larrea*

Ostler-Hanson Land Unit: 552

Abundance of Biological Soil Crusts: moderate to heavy cover

Type and Date of Disturbance: none

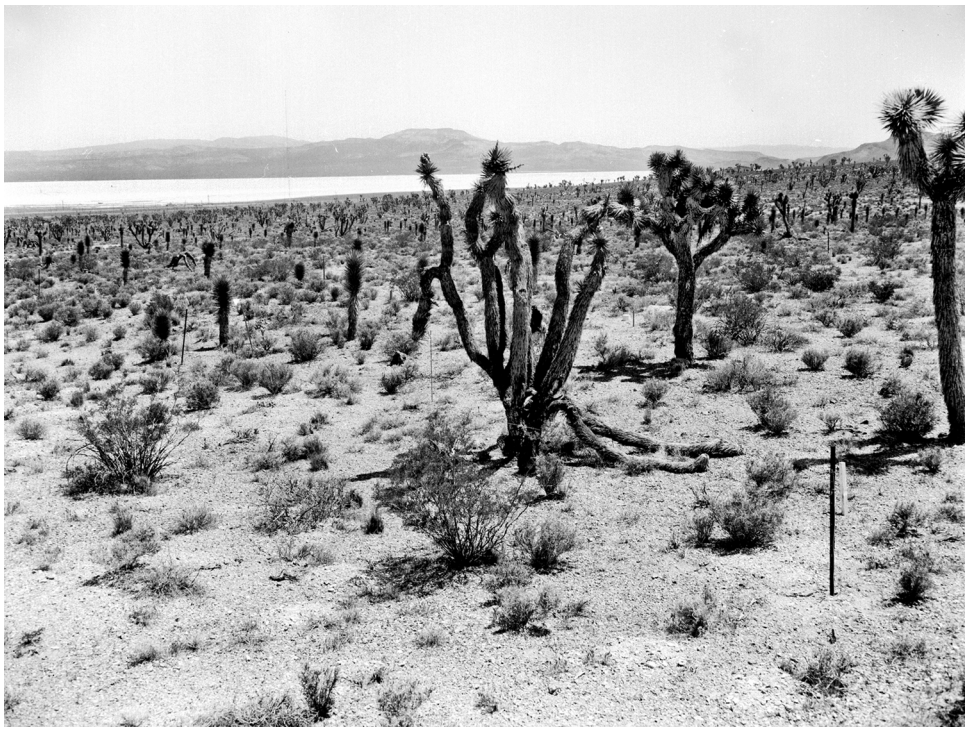
Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 7 May 2001

Figure A-43. Photographs showing Plot 43.



A. (May 12, 1964). This southeasterly view across Plot 43 shows Yucca Lake in the bottom of the valley with a collection of different mountains in the distance. These include the Half Pint Range in the far distance and the southerly extension of Paiute Ridge at left. The vegetation is a creosote bush mixed assemblage with shadscale, blackbrush, and a large number of Joshua trees on the plot and in the distance (Janice Beatley Collection, 99-A).

B. (June 7, 2001). The assemblage composition has changed, with shadscale reduced in abundance while Mormon tea has increased. Although many of the Joshua trees on the plot appear larger now, the number of Joshua trees has not noticeably increased (Dominic Oldershaw, Stake 4044A).

Table A-43B. Summary plant data for Plot 43.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	42	26	10
Artemisia spinescens	7	6	0
Atriplex confertifolia	64	74	34
Coleogyne ramosissima	24	26	34
Coryphantha vivipara rosea	0	1	0
Ephedra nevadensis	17	33	28
Eriogonum inflatum	2	9	10
Erioneuron pulchellum	0	11	2
Grayia spinosa	1	0	1
Krameria parvifolia	0	0	1
Larrea tridentata	13	17	30
Lycium andersonii	1	3	5
Menodora spinescens	4	5	10
Oryzopsis hymenoides	6	10	2
Psorothamnus fremontii	0	0	1
Sphaeralcea ambigua	5	4	3
Stipa speciosa	14	39	4
Viguiera deltoidea	0	0	1
Yucca brevifolia	4	4	5
Total Live	204	268	181
Dead Grass	0	1	1
Dead Shrub	38	18	82
Total	242	287	264

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	2.61	1.20	0.82
Artemisia spinescens	0.42	0.36	0.00
Atriplex confertifolia	7.29	12.95	2.16
Coleogyne ramosissima	2.23	2.71	3.90
Coryphantha vivipara rosea	0.00	0.02	0.00
Ephedra nevadensis	2.05	3.73	6.48
Eriogonum inflatum	0.11	0.35	0.39
Erioneuron pulchellum	0.00	0.25	0.03
Grayia spinosa	0.13	0.00	0.09
Krameria parvifolia	0.00	0.00	0.05
Larrea tridentata	2.15	3.71	9.65
Lycium andersonii	0.12	0.25	0.27
Menodora spinescens	0.16	0.23	1.42
Oryzopsis hymenoides	0.19	0.83	0.17
Psorothamnus fremontii	0.00	0.00	0.16
Sphaeralcea ambigua	0.11	0.11	0.05
Stipa speciosa	0.83	3.84	0.41
Viguiera deltoidea	0.00	0.00	0.05
Yucca brevifolia	0.39	0.95	1.16
Total Live	18.78	31.47	27.27
Dead Grass	0.00	0.03	0.03
Dead Shrub	2.77	2.17	9.06
Total	21.55	33.67	36.36

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.15	0.20	0.27
Artemisia spinescens	0.21	0.23	0.00
Atriplex confertifolia	0.35	0.44	0.39
Coleogyne ramosissima	0.41	0.44	0.55
Coryphantha vivipara rosea	0.00	0.05	0.00
Ephedra nevadensis	0.33	0.46	0.63
Eriogonum inflatum	0.23	0.08	0.33
Erioneuron pulchellum	0.00	0.04	0.05
Grayia spinosa	0.53	0.00	0.20
Krameria parvifolia	0.00	0.00	0.51
Larrea tridentata	0.90	1.22	1.52
Lycium andersonii	0.30	0.31	0.13
Menodora spinescens	0.10	0.16	0.24
Oryzopsis hymenoides	0.19	0.36	0.46
Psorothamnus fremontii	0.00	0.00	0.43
Sphaeralcea ambigua	0.14	0.08	0.11
Stipa speciosa	0.27	0.44	0.44
Viguiera deltoidea	0.00	0.00	0.22
Yucca brevifolia	2.29	2.71	2.87

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	1.45	0.83	0.80
Artemisia spinescens	0.30	0.31	0.00
Atriplex confertifolia	9.16	20.32	3.22
Coleogyne ramosissima	3.36	4.22	7.55
Coryphantha vivipara rosea	0.00	0.00	0.00
Ephedra nevadensis	2.55	5.95	13.74
Eriogonum inflatum	0.08	0.12	0.48
Erioneuron pulchellum	0.00	0.04	0.00
Grayia spinosa	0.23	0.00	0.06
Krameria parvifolia	0.00	0.00	0.09
Larrea tridentata	6.51	14.98	50.85
Lycium andersonii	0.12	0.28	0.30
Menodora spinescens	0.06	0.14	1.10
Oryzopsis hymenoides	0.13	1.06	0.41
Psorothamnus fremontii	0.00	0.00	0.02
Sphaeralcea ambigua	0.05	0.03	0.03
Stipa speciosa	0.84	6.07	0.68
Viguiera deltoidea	0.00	0.00	3.51
Yucca brevifolia	3.30	9.64	9.87
Total Live	28.13	63.96	92.71

Table A-44A. Site characteristics for Plot 44.

Location: Yucca Flat

NTS Area: 6 NTS Grid: P-27

USGS 7.5' Quadrangle Name: Yucca Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4092999	580985	Standing
Corner 2:	NW	4093018	580990	Standing
Corner 3:	NE	4093011	581018	Standing
Corner 4:	SE	4092982	581011	Standing

DEM Plot Elevation: 1257 m Plot Aspect: 252°

Elevation Above Playa (Playa Name): 61 m (Yucca) Plot Slope: 5°

Annual Precipitation
Measured: 182 mm
Modeled: 171 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, strong desert pavement, heavy AV horizon

Slate Geologic Unit: QTa

Beatley Plant Assemblage: *Coleogyne*/*Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: *Coleogyne-Lycium-Grayia*

Ostler-Hanson Land Unit: 554

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: northeast side of plot

Direction Transects Are Read: southeast to northwest

Date(s) Plot Remeasured: 9 May 2001

Figure A-44. Photographs showing Plot 44.

A. (May 12, 1964). The view is southerly across Plot 44 and towards the CP Hills and unnamed mountains on the southwestern side of Yucca Flat. The Tippipah Highway crosses the view in the midground. The vegetation association is blackbrush with creosote bush, spiny hopsage, and wolfberry. Scattered Joshua trees appear on the plot and in the midground (Janice Beatley Collection, 90-B).

B. (June 7, 2001). Overall, the sizes of individuals appear to have increased through most of the plot. Of the species on this plot, Mormon tea has increased while spiny hopsage has decreased. The Joshua trees may have decreased slightly in density while most persisting individuals have increased in height (Dominic Oldershaw, Stake 4047B).

Table A-44B. Summary plant data for Plot 44.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0	1	0
Arabis pulchra munciensis	0	8	0
Artemisia spinescens	10	6	3
Coleogyne ramosissima	61	68	85
Delphinium parishii	0	2	0
Echinocereus engelmanii	0	1	0
Ephedra nevadensis	16	20	40
Ericameria cooperi	6	4	4
Grayia spinosa	32	39	12
Hymenoclea salsola	0	1	1
Larrea tridentata	4	6	9
Lycium andersonii	22	35	32
Menodora spinescens	2	2	4
Opuntia echinocarpa	1	0	0
Oryzopsis hymenoides	0	1	0
Sitanion hystrix	1	1	3
Stephanomeria parryi	0	2	0
Stipa speciosa	7	14	12
Tetradymia axillaris	1	1	1
Xylorhiza tortifolia	1	4	3
Total Live	164	216	209
Dead Grass	0	0	0
Dead Shrub	39	7	34
Total	203	223	243

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.05	0.00
Arabis pulchra munciensis	0.00	0.15	0.00
Artemisia spinescens	0.86	0.36	0.22
Coleogyne ramosissima	9.37	10.76	11.45
Delphinium parishii	0.00	0.04	0.00
Echinocereus engelmanii	0.00	0.10	0.00
Ephedra nevadensis	2.20	2.54	5.01
Ericameria cooperi	0.51	0.36	0.30
Grayia spinosa	4.92	4.64	0.95
Hymenoclea salsola	0.00	0.02	0.02
Larrea tridentata	1.25	1.85	5.31
Lycium andersonii	2.68	6.02	3.04
Menodora spinescens	0.09	0.13	0.29
Opuntia echinocarpa	0.05	0.00	0.00
Oryzopsis hymenoides	0.00	0.10	0.00
Sitanion hystrix	0.05	0.14	0.19
Stephanomeria parryi	0.00	0.03	0.00
Stipa speciosa	0.26	1.26	0.83
Tetradymia axillaris	0.11	0.30	0.00
Xylorhiza tortifolia	0.05	0.09	0.15
Total Live	22.42	28.94	27.75
Dead Grass	0.00	0.00	0.00
Dead Shrub	4.28	1.11	6.34
Total	26.70	30.05	34.08

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.28	0.00
Arabis pulchra munciensis	0.00	0.38	0.00
Artemisia spinescens	0.27	0.22	0.28
Coleogyne ramosissima	0.52	0.47	0.60
Delphinium parishii	0.00	0.27	0.00
Echinocereus engelmanii	0.00	0.25	0.00
Ephedra nevadensis	0.47	0.51	0.57
Ericameria cooperi	0.30	0.27	0.38
Grayia spinosa	0.52	0.53	0.56
Hymenoclea salsola	0.00	0.66	0.68
Larrea tridentata	1.35	1.56	2.00
Lycium andersonii	0.40	0.50	0.37
Menodora spinescens	0.17	0.14	0.26
Opuntia echinocarpa	0.13	0.00	0.00
Oryzopsis hymenoides	0.00	0.33	0.00
Sitanion hystrix	0.38	0.38	0.55
Stephanomeria parryi	0.00	0.06	0.00
Stipa speciosa	0.26	0.34	0.54
Tetradymia axillaris	0.66	0.94	0.70
Xylorhiza tortifolia	0.15	0.23	0.26

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.04	0.00
Arabis pulchra munciensis	0.00	0.18	0.00
Artemisia spinescens	0.82	0.31	0.20
Coleogyne ramosissima	17.35	18.18	24.16
Delphinium parishii	0.00	0.03	0.00
Echinocereus engelmanii	0.00	0.09	0.00
Ephedra nevadensis	3.77	4.74	10.29
Ericameria cooperi	0.53	0.35	0.39
Grayia spinosa	8.84	8.63	1.71
Hymenoclea salsola	0.00	0.04	0.04
Larrea tridentata	5.05	9.45	31.70
Lycium andersonii	3.70	10.38	3.66
Menodora spinescens	0.05	0.05	0.25
Opuntia echinocarpa	0.02	0.00	0.00
Oryzopsis hymenoides	0.00	0.11	0.00
Sitanion hystrix	0.07	0.17	0.34
Stephanomeria parryi	0.00	0.00	0.00
Stipa speciosa	0.23	1.53	1.49
Tetradymia axillaris	0.24	0.95	0.00
Xylorhiza tortifolia	0.03	0.07	0.12
Total Live	40.71	55.31	74.36

Table A-45A. Site characteristics for Plot 45.

Location: Yucca Flat

NTS Area: 6

NTS Grid: P-27

USGS 7.5' Quadrangle Name: Yucca Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4093297	580112	Standing
Corner 2:	NW	4093327	580118	Standing
Corner 3:	NE	4093321	580147	Standing
Corner 4:	SE	4093290	580142	Standing

DEM Plot Elevation: 1277 m

Plot Aspect: 169°

Elevation Above Playa (Playa Name): 82 m (Yucca)

Plot Slope: 4°

Annual Precipitation
Measured: 187 mm
Modeled: 174 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed volcanic alluvium

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Coleogyne*/*Grayia-Lycium*

Ostler-Hanson Plant Association: *Coleogyne-Lycium-Ephedra*

Ostler-Hanson Land Unit: 558

Abundance of Biological Soil Crusts: light

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 10 May 2001

Figure A-45. Photographs showing Plot 45.

A. (May 12, 1964). This southerly view across Plot 45 shows a blackbrush assemblage with spiny hopsage and wolfberry as subdominants. The mountains in the distance are the same as those depicted in Figure 47 (Janice Beatley Collection, 91-B).

B. (June 7, 2001). Although the blackbrush has not changed much here, spiny hopsage has decreased and Mormon tea has increased on this plot. The Joshua trees in the distance appear little changed (Dominic Oldershaw, Stake 4049B).

Table A-45B. Summary plant data for Plot 45.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0	1	0
Ceratoides lanata	14	29	11
Coleogyne ramosissima	111	122	137
Ephedra nevadensis	16	24	32
Eriogonum inflatum	0	0	1
Grayia spinosa	18	24	16
Hymenoclea salsola	0	0	6
Lycium andersonii	56	63	45
Oryzopsis hymenoides	1	5	2
Sitanion hystrix	0	0	6
Stephanomeria parryi	0	3	0
Stipa speciosa	0	2	0
Tetradymia axillaris	3	2	1
Yucca brevifolia	0	0	1
Total Live	219	275	258
Dead Grass	0	0	0
Dead Shrub	33	16	35
Total	252	291	293

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0.00	0.02	0.00
Ceratoides lanata	1.20	1.98	0.72
Coleogyne ramosissima	18.14	18.24	20.66
Ephedra nevadensis	2.73	3.45	5.45
Eriogonum inflatum	0.00	0.00	0.03
Grayia spinosa	2.08	2.69	1.77
Hymenoclea salsola	0.00	0.00	0.11
Lycium andersonii	9.39	12.45	3.90
Oryzopsis hymenoides	0.05	0.53	0.09
Sitanion hystrix	0.00	0.00	0.17
Stephanomeria parryi	0.00	0.05	0.00
Stipa speciosa	0.00	0.05	0.00
Tetradymia axillaris	0.46	0.35	0.00
Yucca brevifolia	0.00	0.00	0.08
Total Live	34.05	39.80	32.98
Dead Grass	0.00	0.00	0.00
Dead Shrub	3.51	1.63	9.94
Total	37.56	41.43	42.92

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0.00	0.51	0.00
Ceratoides lanata	0.46	0.48	0.60
Coleogyne ramosissima	0.52	0.50	0.60
Ephedra nevadensis	0.49	0.58	0.70
Eriogonum inflatum	0.00	0.00	0.31
Grayia spinosa	0.50	0.58	0.63
Hymenoclea salsola	0.00	0.00	0.51
Lycium andersonii	0.43	0.52	0.41
Oryzopsis hymenoides	0.28	0.42	0.46
Sitanion hystrix	0.00	0.00	0.48
Stephanomeria parryi	0.00	0.08	0.00
Stipa speciosa	0.00	0.30	0.00
Tetradymia axillaris	0.56	0.71	0.42
Yucca brevifolia	0.00	0.00	0.68

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Arabis pulchra munciensis	0.00	0.03	0.00
Ceratoides lanata	1.84	3.62	1.42
Coleogyne ramosissima	32.52	31.23	41.21
Ephedra nevadensis	5.08	7.20	13.01
Eriogonum inflatum	0.00	0.00	0.03
Grayia spinosa	3.69	5.42	3.87
Hymenoclea salsola	0.00	0.00	0.18
Lycium andersonii	14.85	23.07	5.47
Oryzopsis hymenoides	0.05	0.79	0.15
Sitanion hystrix	0.00	0.00	0.28
Stephanomeria parryi	0.00	0.01	0.00
Stipa speciosa	0.00	0.06	0.00
Tetradymia axillaris	0.90	0.82	0.00
Yucca brevifolia	0.00	0.00	0.19
Total Live	58.93	72.24	65.80

Table A-46A. Site characteristics for Plot 46.

Location: Yucca Flat

NTS Area: 1

NTS Grid: P-29

USGS 7.5' Quadrangle Name: Yucca Flat

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4096028	581374	NA
Corner 2:	NW	4096059	581380	NA
Corner 3:	NE	4096052	581411	NA
Corner 4:	SE	4096022	581405	NA

DEM Plot Elevation: 1238 m

Plot Aspect: 15°

Elevation Above Playa (Playa Name): 41 m (Yucca)

Plot Slope: 14°

Annual Precipitation
Measured: 179 mm
Modeled: 166 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, desert pavement

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Grayia-Lycium*

Ostler-Hanson Plant Association: *Grayia-Lycium-Ceratoides*

Ostler-Hanson Land Unit: 581

Abundance of Biological Soil Crusts: moderate

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 9 April 2001

Figure A-46. Photographs showing Plot 46.

A. (May 12, 1964). In this southwesterly view across Plot 46, the southern part of Yucca Flat is dominated by spiny hopsage and wolfberry. Scattered Joshua trees appear in the distance. Mine Mountain appears in the background (Janice Beatley Collection, 98-A).

B. (April 8, 2001). Mormon tea has assumed dominance, as both spiny hopsage and wolfberry have declined. The few Joshua trees that once appeared in the distance are now mostly gone, and only one is readily apparent now (R.H. Webb, Stake 4127A).

Table A-46B. Summary plant data for Plot 46.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	65	66	32
Artemisia spinescens	11	20	6
Atriplex canescens	0	3	15
Ceratoides lanata	84	96	39
Chrysothamnus viscidiflorus	0	1	0
Ephedra nevadensis	13	21	48
Ericameria cooperi	1	0	0
Grayia spinosa	75	106	64
Hymenoclea salsola	0	2	4
Lycium andersonii	36	53	46
Opuntia echinocarpa	0	0	1
Oryzopsis hymenoides	0	1	16
Sitanion hystrix	2	6	0
Sphaeralcea ambigua	0	2	3
Stipa comata	0	0	12
Stipa speciosa	0	3	4
Tetradymia axillaris	3	5	3
Tetradymia glabrata	1	1	0
Unknown herbaceous perennial	0	0	1
Total Live	291	386	294
Dead Grass	0	0	6
Dead Shrub	46	18	129
Total	337	404	429

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	4.24	3.82	1.89
Artemisia spinescens	0.67	0.85	0.35
Atriplex canescens	0.00	0.45	1.55
Ceratoides lanata	6.04	6.22	2.14
Chrysothamnus viscidiflorus	0.00	0.01	0.00
Ephedra nevadensis	1.61	3.45	5.51
Ericameria cooperi	0.03	0.00	0.00
Grayia spinosa	11.00	12.72	4.95
Hymenoclea salsola	0.00	0.09	0.58
Lycium andersonii	3.63	7.34	5.32
Opuntia echinocarpa	0.00	0.00	0.03
Oryzopsis hymenoides	0.01	0.06	0.50
Sitanion hystrix	0.05	0.21	0.00
Sphaeralcea ambigua	0.00	0.02	0.06
Stipa comata	0.00	0.00	0.62
Stipa speciosa	0.00	0.24	0.29
Tetradymia axillaris	0.60	0.47	0.09
Tetradymia glabrata	0.07	0.18	0.00
Unknown herbaceous perennial	0.00	0.00	0.02
Total Live	27.93	36.12	23.89
Dead Grass	0.00	0.00	0.15
Dead Shrub	3.46	1.40	13.26
Total	31.39	37.52	37.31

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	0.18	0.20	0.24
Artemisia spinescens	0.21	0.16	0.29
Atriplex canescens	0.00	0.71	0.59
Ceratoides lanata	0.29	0.34	0.40
Chrysothamnus viscidiflorus	0.00	0.43	0.00
Ephedra nevadensis	0.38	0.51	0.54
Ericameria cooperi	0.13	0.00	0.00
Grayia spinosa	0.45	0.50	0.50
Hymenoclea salsola	0.00	0.44	0.49
Lycium andersonii	0.37	0.46	0.39
Opuntia echinocarpa	0.00	0.00	0.49
Oryzopsis hymenoides	0.00	0.36	0.25
Sitanion hystrix	0.29	0.25	0.00
Sphaeralcea ambigua	0.00	0.03	0.05
Stipa comata	0.00	0.00	0.34
Stipa speciosa	0.00	0.30	0.30
Tetradymia axillaris	0.67	0.57	0.57
Tetradymia glabrata	0.38	0.56	0.00
Unknown herbaceous perennial	0.00	0.00	0.35

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Acamptopappus shockleyi	2.72	2.63	1.58
Artemisia spinescens	0.49	0.54	0.36
Atriplex canescens	0.00	1.08	3.56
Ceratoides lanata	6.06	7.61	3.03
Chrysothamnus viscidiflorus	0.00	0.01	0.00
Ephedra nevadensis	2.27	6.15	11.25
Ericameria cooperi	0.01	0.00	0.00
Grayia spinosa	17.60	22.83	8.65
Hymenoclea salsola	0.00	0.13	1.01
Lycium andersonii	4.80	11.70	7.14
Opuntia echinocarpa	0.00	0.00	0.04
Oryzopsis hymenoides	0.01	0.08	0.46
Sitanion hystrix	0.04	0.17	0.00
Sphaeralcea ambigua	0.00	0.00	0.01
Stipa comata	0.00	0.00	0.69
Stipa speciosa	0.00	0.26	0.30
Tetradymia axillaris	1.33	0.91	0.19
Tetradymia glabrata	0.09	0.34	0.00
Unknown herbaceous perennial	0.00	0.00	0.02
Total Live	35.42	54.44	38.33

Table A-47A. Site characteristics for Plot 47.

Location: Yucca Flat

NTS Area: 16 NTS Grid: K-30

USGS 7.5' Quadrangle Name: Tippipah Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4097616	573753	Standing
Corner 2:	NW	4097644	573743	Leaning
Corner 3:	NE	4097654	573772	On ground
Corner 4:	SE	4097625	573783	On ground

DEM Plot Elevation: 1466 m Plot Aspect: 351°

Elevation Above Playa (Playa Name): NA Plot Slope: 14°

Annual Precipitation
Measured: 232 mm
Modeled: 199 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Grayia-Stipa-Coleogyne*

Ostler-Hanson Plant Association: *Grayia-Stipa-Coleogyne*

Ostler-Hanson Land Unit: 782

Abundance of Biological Soil Crusts: no crusts, some near road

Type and Date of Disturbance: NA

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 10 May 2001

Figure A-47. Photographs showing Plot 47.

A. (April 21, 1964). This northwesterly view across Plot 47 shows a mixture of shrubs with low hills in front of Syncline Ridge. This plot is at the extreme western edge of Yucca Flat. The vegetation is dominated by spiny hopsage, needlegrass, and blackbrush. A few Joshua trees are present (Janice Beatley Collection, 17-B).

B. (June 8, 2001). Blackbrush now dominates the plot, along with Cooper's goldenbush (*Ericameria cooperi*) and Great Basin sagebrush (*Artemisia tridentata*). The one persisting Joshua tree in the view has grown and branched (Dominic Oldershaw, Stake 4059B).

Table A-47B. Summary plant data for Plot 47.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	0	0	4
Artemisia tridentata	16	19	17
Calochortus flexuosus	0	0	1
Chrysothamnus viscidiflorus	0	0	1
Coleogyne ramosissima	64	63	94
Delphinium parishii	0	1	0
Ephedra nevadensis	25	32	29
Ericameria cooperi	45	44	35
Grayia spinosa	49	56	15
Hymenoclea salsola	5	7	9
Lycium andersonii	5	5	3
Oryzopsis hymenoides	0	0	1
Phlox stansburyi	0	0	6
Sitanion hystrix	8	10	15
Stipa speciosa	75	131	18
Tetradymia glabrata	4	6	3
Yucca brevifolia	1	1	1
Total Live	297	375	252
Dead Grass	0	0	24
Dead Shrub	55	22	83
Total	352	397	359

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	0.00	0.00	1.02
Artemisia tridentata	3.40	3.85	4.08
Calochortus flexuosus	0.00	0.00	0.01
Chrysothamnus viscidiflorus	0.00	0.00	0.11
Coleogyne ramosissima	9.85	9.82	13.44
Delphinium parishii	0.00	0.02	0.00
Ephedra nevadensis	2.77	3.31	3.81
Ericameria cooperi	4.10	4.75	4.62
Grayia spinosa	8.42	11.78	1.30
Hymenoclea salsola	0.35	0.82	1.04
Lycium andersonii	1.20	1.06	0.09
Oryzopsis hymenoides	0.00	0.00	0.12
Phlox stansburyi	0.00	0.00	0.45
Sitanion hystrix	0.53	0.68	1.30
Stipa speciosa	3.76	11.48	1.48
Tetradymia glabrata	1.05	1.34	0.38
Yucca brevifolia	0.14	0.18	0.20
Total Live	35.56	49.10	33.45
Dead Grass	0.00	0.00	1.15
Dead Shrub	6.45	3.57	12.62
Total	42.02	52.67	47.21

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	0.00	0.00	0.78
Artemisia tridentata	0.71	0.75	0.93
Calochortus flexuosus	0.00	0.00	0.32
Chrysothamnus viscidiflorus	0.00	0.00	0.27
Coleogyne ramosissima	0.52	0.50	0.61
Delphinium parishii	0.00	0.10	0.00
Ephedra nevadensis	0.38	0.48	0.63
Ericameria cooperi	0.31	0.34	0.40
Grayia spinosa	0.62	0.65	0.54
Hymenoclea salsola	0.40	0.48	0.59
Lycium andersonii	0.56	0.56	0.37
Oryzopsis hymenoides	0.00	0.00	0.53
Phlox stansburyi	0.00	0.00	0.23
Sitanion hystrix	0.35	0.30	0.46
Stipa speciosa	0.35	0.38	0.49
Tetradymia glabrata	0.67	0.68	0.59
Yucca brevifolia	1.55	2.39	3.33

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	0.00	0.00	2.82
Artemisia tridentata	8.79	10.98	12.84
Calochortus flexuosus	0.00	0.00	0.01
Chrysothamnus viscidiflorus	0.00	0.00	0.10
Coleogyne ramosissima	18.47	17.36	28.23
Delphinium parishii	0.00	0.01	0.00
Ephedra nevadensis	4.27	6.12	8.75
Ericameria cooperi	4.65	5.78	6.67
Grayia spinosa	17.87	27.15	2.72
Hymenoclea salsola	0.50	1.35	1.95
Lycium andersonii	2.69	2.10	0.11
Oryzopsis hymenoides	0.00	0.00	0.21
Phlox stansburyi	0.00	0.00	0.37
Sitanion hystrix	0.63	0.76	2.14
Stipa speciosa	4.76	15.17	2.56
Tetradymia glabrata	2.39	3.13	0.71
Yucca brevifolia	0.71	1.46	2.23
Total Live	65.71	91.36	72.42

Table A-48A. Site characteristics for Plot 48.

Location: Yucca Flat

NTS Area: 1

NTS Grid: P-32

USGS 7.5' Quadrangle Name: Yucca Flat

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4101300	580831	Standing
Corner 2:	NW	4101330	580825	Standing
Corner 3:	NE	4101321	580856	Standing, but in wrong place (3.8 feet off)
Corner 4:	SE	4101291	580859	Standing

DEM Plot Elevation: 1277 m

Plot Aspect: 112°

Elevation Above Playa (Playa Name): 82 m (Yucca)

Plot Slope: 8°

Annual Precipitation
Measured: 164 mm
Modeled: 165 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Grayia-Larrea*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 588

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: above-ground testing effects from T1 site

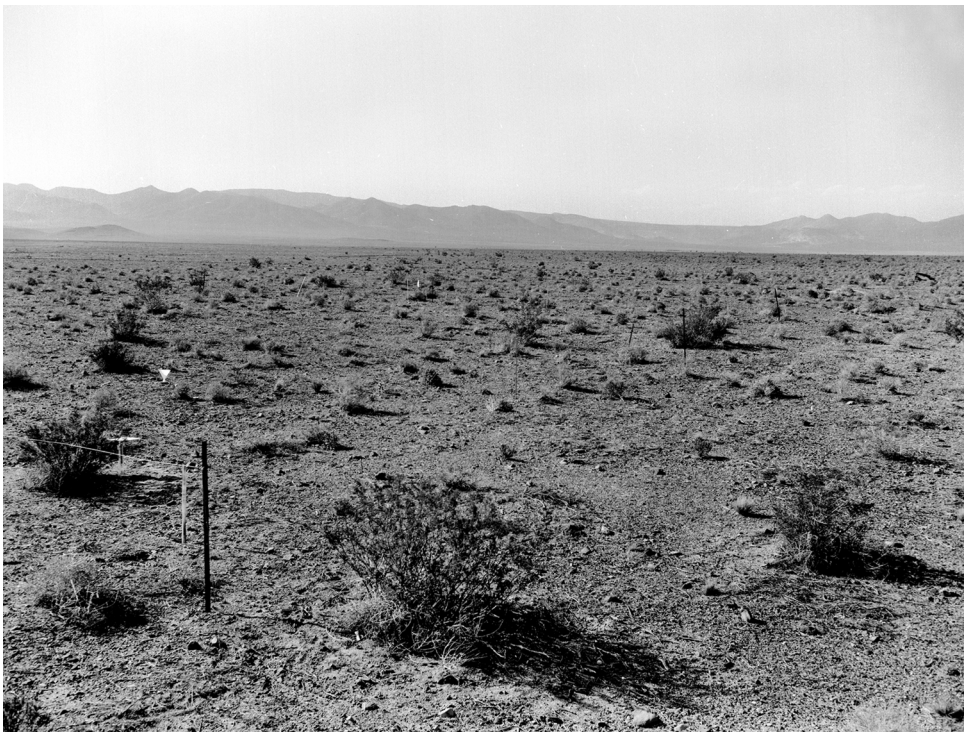
Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 6 April 2001

Figure A-48. Photographs showing Plot 48.



A. (May 12, 1964). In this northwesterly view across Plot 48, disturbance associated with above-ground nuclear testing, 1952-1957, is apparent on Yucca Flat. Approximately 1 mile west of this site, four tests were conducted at T-1 Ground Zero under the names of Easy, Simon, Apple II, and Galileo. The Eleana Range (right background) and Syncline Ridge (left background) appear in the distance. The funnel shown in the view is a

storage rainfall gage. The disturbed vegetation assemblage is dominated by spiny hopsage and creosote bush (Janice Beatley Collection, 93-B). B. (April 6, 2001). The increase in cover and biomass is striking here and reflects disturbance recovery. Creosote bush and cheesebush dominate this plot (R.H. Webb, Stake 4111B).

Table A-48B. Summary plant data for Plot 48.

	Number of Plants							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Astragalus lentiginosus	0	0	0	3	0	0	0	0
Ceratoides lanata	0	0	0	1	1	0	0	1
Chrysothamnus viscidiflorus	1	2	2	2	2	2	2	16
Coleogyne ramosissima	1	1	1	3	1	2	2	3
Dichelostemma pulchella	0	0	0	0	0	0	0	4
Ephedra nevadensis	0	0	0	0	0	0	0	1
Ericameria cooperi	3	2	3	2	3	2	2	0
Eriogonum inflatum	0	0	0	0	0	0	0	1
Grayia spinosa	16	17	20	23	24	27	27	2
Hymenoclea salsola	8	8	7	9	10	11	11	52
Larrea tridentata	4	3	5	6	6	9	9	14
Lycium andersonii	1	1	2	3	2	3	3	6
Opuntia basilaris	0	0	0	0	0	0	0	1
Oryzopsis hymenoides	0	0	0	1	1	0	0	5
Sphaeralcea ambigua	0	0	2	3	2	0	0	1
Stephanomeria parryi	0	0	0	0	0	0	0	0
Stipa speciosa	3	4	3	5	3	5	5	5
Total Live	37	38	45	61	55	61	61	112
Dead Grass	0	0	0	0	0	0	0	4
Dead Shrub	0	3	1	0	0	0	0	26
Total	37	41	46	66	55	61	61	142

	Average Height (m)							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Astragalus lentiginosus	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.20	0.23	0.00	0.30	0.17
Chrysothamnus viscidiflorus	0.30	0.30	0.39	0.43	0.46	0.47	0.42	0.31
Coleogyne ramosissima	0.25	0.28	0.36	0.30	0.38	0.38	0.44	0.81
Dichelostemma pulchella	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65
Ericameria cooperi	0.21	0.15	0.21	0.17	0.20	0.20	0.26	0.00
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
Grayia spinosa	0.43	0.42	0.50	0.57	0.58	0.60	0.64	0.47
Hymenoclea salsola	0.37	0.37	0.39	0.45	0.44	0.50	0.48	0.51
Larrea tridentata	1.06	0.91	1.19	1.05	1.43	1.67	2.09	2.77
Lycium andersonii	0.15	0.13	0.23	0.32	0.28	0.35	0.46	0.42
Opuntia basilaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
Oryzopsis hymenoides	0.00	0.00	0.00	0.33	0.41	0.00	0.33	0.31
Sphaeralcea ambigua	0.00	0.00	0.20	0.21	0.27	0.00	0.00	0.45
Stephanomeria parryi	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Stipa speciosa	0.20	0.14	0.30	0.35	0.33	0.28	0.38	0.39

Table A-48B (continued). Summary plant data for Plot 48.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Astragalus lentiginosus	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.01	0.02	0.00	0.02	1.61
Chrysothamnus viscidiflorus	0.07	0.15	0.17	0.20	0.22	0.32	0.34	0.00
Coleogyne ramosissima	0.06	0.05	0.07	0.17	0.08	0.11	0.17	0.83
Dichelostemma pulchella	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
Ericameria cooperi	0.16	0.10	0.14	0.11	0.12	0.14	0.25	0.00
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
Grayia spinosa	2.25	2.35	3.13	3.96	4.11	5.11	7.80	0.05
Hymenoclea salsola	0.85	0.90	0.95	1.05	1.23	1.55	2.15	5.56
Larrea tridentata	0.55	0.45	0.94	0.93	1.74	2.62	4.65	9.35
Lycium andersonii	0.11	0.10	0.17	0.24	0.18	0.31	0.47	0.75
Opuntia basilaris	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.03
Oryzopsis hymenoides	0.00	0.00	0.00	0.05	0.07	1.55	0.24	0.27
Sphaeralcea ambigua	0.00	0.00	0.09	0.08	0.03	2.62	0.00	0.14
Stephanomeria parryi	0.00	0.00	0.00	0.00	0.00	0.31	0.01	0.00
Stipa speciosa	0.10	0.12	0.19	0.27	0.10	0.22	1.37	0.36
Total Live	4.15	4.22	5.85	7.15	7.89	10.37	17.46	19.37
Dead Grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
Dead Shrub	0.00	0.39	0.05	0.00	0.00	0.00	0.00	8.05
Total	4.15	4.61	5.90	7.15	7.89	10.37	17.46	27.66

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Astragalus lentiginosus	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00
Chrysothamnus viscidiflorus	0.07	0.15	0.23	0.29	0.34	0.51	0.57	2.03
Coleogyne ramosissima	0.05	0.05	0.09	0.17	0.10	0.15	0.27	2.25
Dichelostemma pulchella	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
Ericameria cooperi	0.13	0.05	0.10	0.06	0.08	0.09	0.21	0.00
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Grayia spinosa	3.43	3.48	5.61	8.19	8.54	10.96	18.05	0.08
Hymenoclea salsola	1.15	1.20	1.33	1.70	1.92	2.73	3.63	10.16
Larrea tridentata	2.16	1.09	3.43	4.32	8.76	16.13	33.89	77.81
Lycium andersonii	0.06	0.04	0.13	0.25	0.17	0.36	0.74	1.09
Opuntia basilaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Oryzopsis hymenoides	0.00	0.00	0.00	0.05	0.10	0.00	0.30	0.27
Sphaeralcea ambigua	0.00	0.00	0.09	0.07	0.02	0.00	0.00	0.21
Stephanomeria parryi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa speciosa	0.07	0.06	0.19	0.37	0.10	0.21	1.76	0.46
Total Live	7.13	6.12	11.21	15.52	20.14	31.16	59.46	95.17

Table A-49A. Site characteristics for Plot 49.

Location: Yucca Flat

NTS Area: 1

NTS Grid: P-32

USGS 7.5' Quadrangle Name: Yucca Flat

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	NA
Corner 2:	NW	NA	NA	NA
Corner 3:	NE	4101986	581981	NA
Corner 4:	SE	NA	NA	NA

DEM Plot Elevation: 1265 m

Plot Aspect: 135°

Elevation Above Playa (Playa Name): 67 m (Yucca)

Plot Slope: 3°

Annual Precipitation
Measured: 166 mm
Modeled: 162 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan

Slate Geologic Unit: QTa

Beatley Plant Assemblage: *Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: *Grayia-Lycium-Larrea*

Ostler-Hanson Land Unit: 589

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none (control for Plot 48)

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 6 April 2001

Figure A-49. Photographs showing Plot 49.

A. (May 12, 1964). This northeasterly view across Plot 49 shows the undisturbed control area to which Plot 48 is compared. The vegetation here is dominated by creosote bush, spiny hopsage, and wolfberry. Syncline Ridge and the Eleana Range appear in the distance in this view across Yucca Flat. Only two Joshua trees are readily apparent in this view (Janice Beatley Collection, 96-A).

B. (April 6, 2001). Creosote bush has increased significantly in size in the intervening 37 years. Spiny hopsage and wolfberry have declined, while Mormon tea has greatly increased. The Joshua trees have increased significantly in height and density in the view (R.H. Webb, Stake 4116b).

Table A-49B. Summary plant data for Plot 49.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Atriplex canescens	0	2	8
Ceratoides lanata	1	2	1
Chrysothamnus viscidiflorus	0	1	0
Ephedra nevadensis	15	16	24
Grayia spinosa	35	52	11
Hymenoclea salsola	19	20	19
Larrea tridentata	7	9	16
Lycium andersonii	23	22	23
Mirabilis pudica	0	1	0
Oryzopsis hymenoides	2	2	20
Sphaeralcea ambigua	0	1	1
Stipa speciosa	6	12	3
Tetradymia axillaris	2	3	0
Xylorhiza tortifolia	1	2	5
Total Live	111	145	131
Dead Grass	0	0	1
Dead Shrub	15	11	54
Total	126	156	186

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Atriplex canescens	0.00	0.42	0.83
Ceratoides lanata	0.03	0.23	0.08
Chrysothamnus viscidiflorus	0.00	0.05	0.00
Ephedra nevadensis	1.86	2.49	6.25
Grayia spinosa	4.76	7.54	1.44
Hymenoclea salsola	1.85	2.54	1.95
Larrea tridentata	1.97	2.84	6.47
Lycium andersonii	4.46	5.50	2.96
Mirabilis pudica	0.00	0.01	0.00
Oryzopsis hymenoides	0.08	0.40	1.43
Sphaeralcea ambigua	0.00	0.05	0.13
Stipa speciosa	0.29	1.00	0.29
Tetradymia axillaris	0.14	0.47	0.00
Xylorhiza tortifolia	0.09	0.11	0.46
Total Live	15.54	23.64	22.29
Dead Grass	0.00	0.00	0.05
Dead Shrub	2.32	1.55	8.13
Total	17.85	25.19	30.47

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Atriplex canescens	0.00	0.64	0.58
Ceratoides lanata	0.38	0.43	0.65
Chrysothamnus viscidiflorus	0.00	0.10	0.00
Ephedra nevadensis	0.44	0.49	0.68
Grayia spinosa	0.56	0.54	0.63
Hymenoclea salsola	0.39	0.49	0.62
Larrea tridentata	1.32	1.51	2.02
Lycium andersonii	0.49	0.52	0.46
Mirabilis pudica	0.00	0.05	0.00
Oryzopsis hymenoides	0.19	0.43	0.34
Sphaeralcea ambigua	0.00	0.20	0.26
Stipa speciosa	0.32	0.40	0.37
Tetradymia axillaris	0.51	0.75	0.00
Xylorhiza tortifolia	0.20	0.17	0.33

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Atriplex canescens	0.00	0.87	1.69
Ceratoides lanata	0.03	0.33	0.18
Chrysothamnus viscidiflorus	0.00	0.02	0.00
Ephedra nevadensis	3.18	4.54	14.93
Grayia spinosa	9.32	14.52	3.31
Hymenoclea salsola	2.59	4.28	4.41
Larrea tridentata	9.86	16.10	46.49
Lycium andersonii	7.71	9.52	4.97
Mirabilis pudica	0.00	0.00	0.00
Oryzopsis hymenoides	0.06	0.61	1.69
Sphaeralcea ambigua	0.00	0.04	0.11
Stipa speciosa	0.31	1.44	0.37
Tetradymia axillaris	0.22	1.21	0.00
Xylorhiza tortifolia	0.06	0.07	0.51
Total Live	33.34	53.55	78.66

Table A-50A. Site characteristics for Plot 50.

Location: Yucca Flat

NTS Area: 2 NTS Grid: P-37

USGS 7.5' Quadrangle Name: Yucca Flat

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4103919	583394	On ground
Corner 2:	NW	4103948	583401	Standing
Corner 3:	NE	4103937	583431	Standing
Corner 4:	SE	4103910	583424	Standing

DEM Plot Elevation: 1254 m Plot Aspect: 135°

Elevation Above Playa (Playa Name): 61 m (Yucca) Plot Slope: 1°

Annual Precipitation
Measured: 165 mm
Modeled: 161 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, mixed alluvium volcanic paleozoic

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Grayia-Lycium*

Ostler-Hanson Plant Association: *Grayia-Atriplex canescens-Ceratoides*

Ostler-Hanson Land Unit: 759

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none

Plot Condition: road just touches outside plot at SW corner, evidence of gophers throughout plot

Location of Transect 1: east side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 6-8 April 2001

Figure A-50. Photographs showing Plot 50.

A. (May 13, 1964). In this southeasterly view across Plot 50 and Yucca Flat, a spiny hopsage - wolfberry assemblage appears in the foreground. The background mountains are Massachusetts Mountain (left) and the CP Hills (right); the CP Hogback is at right center (Janice Beatley Collection, 103-B).

B. (April 6, 2001). Owing to the decline of spiny hopsage, Indian rice grass is the dominant species on this plot, followed by four-wing saltbush (R.H. Webb, Stake 4115b).

Table A-50B. Summary plant data for Plot 50.

	Number of Plants		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	17	20	0
Atriplex canescens	20	39	29
Ceratoides lanata	48	65	18
Grayia spinosa	85	120	9
Lycium andersonii	31	42	40
Mirabilis pudica	4	13	0
Oryzopsis hymenoides	1	0	72
Stephanomeria parryi	0	4	0
Sphaeralcea ambigua	0	0	0
Stipa speciosa	0	2	1
Tetradymia axillaris	1	1	0
Sitanion hystrix	0	0	15
Total Live	206	305	168
Dead Grass	0	0	10
Dead Shrub	15	9	125
Total	221	314	303

	Cover (%)		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	1.17	1.50	0.00
Atriplex canescens	1.86	5.85	3.95
Ceratoides lanata	4.33	5.04	1.75
Grayia spinosa	12.35	16.85	0.88
Lycium andersonii	3.84	4.55	3.81
Mirabilis pudica	0.14	0.77	0.00
Oryzopsis hymenoides	0.09	0.00	6.46
Stephanomeria parryi	0.00	0.04	0.00
Sphaeralcea ambigua	0.00	0.00	0.00
Stipa speciosa	0.00	0.09	0.10
Tetradymia axillaris	0.06	0.13	0.00
Sitanion hystrix	0.00	0.00	1.09
Total Live	23.78	34.60	16.85
Dead Grass	0.00	0.00	0.80
Dead Shrub	1.15	0.99	17.79
Total	24.93	35.59	35.44

	Average Height (m)		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	0.25	0.26	0.00
Atriplex canescens	0.40	0.62	0.73
Ceratoides lanata	0.35	0.41	0.48
Grayia spinosa	0.50	0.55	0.57
Lycium andersonii	0.46	0.48	0.45
Mirabilis pudica	0.19	0.10	0.00
Oryzopsis hymenoides	0.20	0.00	0.36
Stephanomeria parryi	0.00	0.03	0.00
Sphaeralcea ambigua	0.00	0.00	0.00
Stipa speciosa	0.00	0.32	0.35
Tetradymia axillaris	0.43	0.53	0.00
Sitanion hystrix			0.36

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2001**
Artemisia spinescens	1.01	1.34	0.00
Atriplex canescens	2.61	12.35	10.03
Ceratoides lanata	5.47	7.26	2.91
Grayia spinosa	21.67	32.68	1.64
Lycium andersonii	6.18	7.35	5.66
Mirabilis pudica	0.09	0.28	0.00
Oryzopsis hymenoides	0.06	0.00	8.34
Stephanomeria parryi	0.00	0.00	0.00
Sphaeralcea ambigua	0.00	0.00	0.00
Stipa speciosa	0.00	0.10	0.12
Tetradymia axillaris	0.09	0.23	0.00
Sitanion hystrix	0.00	0.00	1.43
Total Live	37.08	61.27	28.58

Table A-51A. Site characteristics for Plot 51.

Location: Yucca Flat

NTS Area: 12

NTS Grid: M-39

USGS 7.5' Quadrangle Name: Rainier Mesa

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4115181	576238	Missing
Corner 2:	NW	4115212	576245	Missing
Corner 3:	NE	4115208	576275	Standing, but in wrong place
Corner 4:	SE	4115177	576269	Standing

DEM Plot Elevation: 1520 m

Plot Aspect: 162°

Elevation Above Playa (Playa Name): 317 m (Yucca)

Plot Slope: 2°

Annual Precipitation
Measured: 225 mm
Modeled: 194 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, volcanic

Slate Geologic Unit: QTa

Beatley Plant Assemblage: *Coleogyne*

Ostler-Hanson Plant Association: *Coleogyne-Ephedra*

Ostler-Hanson Land Unit: 640

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 19 April 2002

Figure A-51. Photographs showing Plot 51.

A. (April 21, 1964). Plot 51 is in the northwestern corner of Yucca Flat. This westerly view shows a blackbrush assemblage in the foreground, the roadcut for the Tippipah Highway behind, and the Eleana Range in the background. Rainier Mesa appears behind the notch saddle on the right side (Janice Beatley Collection, 20-B).

B. (June 10, 2001). Blackbrush has not changed significantly in the intervening 37 years, but Mormon tea has increased. Banana yucca (*Yucca baccata*) now appears in the foreground and is more prominent in the view (Dominic Oldershaw, Stake 4074B).

Table A-51B. Summary plant data for Plot 51.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Coleogyne ramosissima	299	396	318
Echinocereus engelmanii	0	1	1
Ephedra nevadensis	15	15	58
Grayia spinosa	1	0	0
Sphaeralcea ambigua monticola	0	1	0
Stephanomeria parryi	0	1	0
Stipa speciosa	5	4	0
Yucca baccata vespertina	3	3	10
Total Live	323	421	387
Dead Grass	1	0	0
Dead Shrub	27	14	0
Total	351	435	387

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Coleogyne ramosissima	40.05	42.86	30.28
Echinocereus engelmanii	0.00	0.04	0.16
Ephedra nevadensis	1.44	2.42	7.15
Grayia spinosa	0.19	0.00	0.00
Sphaeralcea ambigua monticola	0.00	0.01	0.00
Stephanomeria parryi	0.00	0.01	0.00
Stipa speciosa	0.29	0.45	0.00
Yucca baccata vespertina	0.58	0.65	0.55
Total Live	42.55	46.43	38.14
Dead Grass	0.04	0.00	0.00
Dead Shrub	2.81	1.35	14.61
Total	45.40	47.78	52.75

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Coleogyne ramosissima	0.37	0.38	0.46
Echinocereus engelmanii	0.00	0.10	0.14
Ephedra nevadensis	0.26	0.45	0.48
Grayia spinosa	0.46	0.00	0.00
Sphaeralcea ambigua monticola	0.00	0.05	0.00
Stephanomeria parryi	0.00	0.03	0.00
Stipa speciosa	0.37	0.43	0.00
Yucca baccata vespertina	0.56	0.75	0.68

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Coleogyne ramosissima	54.37	57.33	48.38
Echinocereus engelmanii	0.00	0.01	0.08
Ephedra nevadensis	1.39	3.81	13.67
Grayia spinosa	0.29	0.00	0.00
Sphaeralcea ambigua monticola	0.00	0.00	0.00
Stephanomeria parryi	0.00	0.00	0.00
Stipa speciosa	0.33	0.66	0.00
Yucca baccata vespertina	1.15	1.77	1.39
Total Live	57.53	63.59	63.51

Table A-52A. Site characteristics for Plot 52.

Location: Yucca Flat

NTS Area: 10 NTS Grid: T-39

USGS 7.5' Quadrangle Name: Oak Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4114990	586207	Standing
Corner 2:	NW	4115020	586215	Standing
Corner 3:	NE	4115014	586245	Standing
Corner 4:	SE	4114985	586237	Standing

DEM Plot Elevation: 1333 m Plot Aspect: 121°

Elevation Above Playa (Playa Name): 140 m (Yucca) Plot Slope: 8°

Annual Precipitation
Measured: 167 mm
Modeled: 170 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, volcanic, predominately rhyolite with some sedimentary rocks, sandy surface

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Hymenoclea-Lycium*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 665

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: blast disturbance (Sedan 1962)

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 8 April 2001

Figure A-52. Photographs showing Plot 52.

A. (May 8, 1964). Plots 52-55 represent disturbance effects with increasing distance from Sedan Crater, which formed after testing on July 6, 1962. The Sedan test, a part of the Plowshare Program, was an underground detonation designed to break the surface and create a crater to demonstrate the feasibility of peacetime use of atomic weapons to create infrastructure, in this case a depression for a lake. This northeasterly view across Plot 52 show the Rhyolite Hills on the northern side of Yucca Flat. Plot 52 represents the combined disturbance effects of shockwave damage, sand blasting, and significant overburden deposition. The vegetation is dominated by cheesebush and wolfberry. The carcass at left center is a Joshua tree flattened by the shock wave and dust cloud emanating from the detonation (Janice Beatley Collection, 78-A).

B. (April 8, 2001). The vegetation here is mostly grasses and dominated by Indian rice grass. Joshua trees have begun to resprout in this area (R.H. Webb, Stake 4139A).

Table A-52B. Summary plant data for Plot 52.

				Number of Plants				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0	0	0	0	0	0	0	1
Artemisia spinescens	0	0	0	0	0	0	0	0
Astragalus lentiginosus fremontii	0	0	0	2	0	0	0	0
Calochortus flexuosus	0	0	1	0	0	0	1	0
Ceratoides lanata	2	2	2	2	2	2	2	0
Coleogyne ramosissima	0	0	0	0	0	0	0	0
Ephedra nevadensis	0	0	0	0	0	0	0	0
Ericameria cooperi	0	0	0	0	0	0	0	0
Grayia spinosa	0	0	0	0	0	0	0	0
Hymenoclea salsola	0	1	1	2	2	3	3	24
Lepidium fremontii	0	0	0	0	0	1	0	0
Lycium andersonii	0	2	1	4	1	2	5	3
Oryzopsis hymenoides	33	59	103	108	114	94	102	99
Sitanion hystrix	3	0	0	0	0	0	0	0
Stephanomeria parryi	0	0	0	0	0	0	1	0
Stipa speciosa	1	1	1	1	1	0	3	7
Tetradymia axillaris	0	0	0	0	0	0	0	0
Tetradymia glabrata	0	0	0	0	0	0	0	0
Yucca brevifolia	0	0	0	0	0	0	0	0
Total Live	39	65	109	119	120	102	117	134
Dead Grass	0	2	0	1	0	0	7	15
Dead Shrubs	144	149	93	0	0	0	0	9
Total	183	216	202	120	120	102	124	158

				Average Height (m)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Artemisia spinescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
Calochortus flexuosus	0.00	0.00	0.05	0.00	0.00	0.00	0.05	0.00
Ceratoides lanata	0.34	0.14	0.23	0.17	0.22	0.29	0.38	0.00
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hymenoclea salsola	0.00	0.15	0.20	0.28	0.33	0.54	0.58	0.65
Lepidium fremontii	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00
Lycium andersonii	0.00	0.33	0.15	0.24	0.25	0.32	0.35	0.54
Oryzopsis hymenoides	0.23	0.25	0.30	0.35	0.34	0.38	0.28	0.27
Sitanion hystrix	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stephanomeria parryi	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Stipa speciosa	0.28	0.25	0.30	0.36	0.28	0.00	0.47	0.47
Tetradymia axillaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetradymia glabrata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-52B (continued). Summary plant data for Plot 52.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Artemisia spinescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00
Calochortus flexuosus	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
Ceratoides lanata	0.12	0.03	0.12	0.05	0.08	0.15	0.20	0.00
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hymenoclea salsola	0.00	0.02	0.04	0.08	0.23	0.49	0.66	3.05
Lepidium fremontii	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
Lycium andersonii	0.00	0.19	0.15	0.17	0.04	0.02	0.38	0.61
Oryzopsis hymenoides	1.39	3.75	9.05	10.52	11.00	7.42	7.39	6.83
Sitanion hystrix	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stephanomeria parryi	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Stipa speciosa	0.12	0.12	0.11	0.11	0.11	0.00	0.25	0.79
Tetradymia axillaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetradymia glabrata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Live	1.71	4.11	9.46	11.02	11.45	8.15	8.91	11.29
Dead Grass	0.00	0.05	0.00	0.05	0.00	0.00	0.40	0.56
Dead Shrubs	13.79	13.86	9.85	0.00	0.00	0.00	0.00	2.40
Total	15.50	18.02	19.32	11.07	11.45	8.15	9.31	14.25

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Artemisia spinescens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
Calochortus flexuosus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.13	0.01	0.09	0.03	0.06	0.15	0.26	0.00
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hymenoclea salsola	0.00	0.01	0.02	0.08	0.25	1.00	1.42	7.68
Lepidium fremontii	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00
Lycium andersonii	0.00	0.21	0.00	0.12	0.03	0.02	0.50	1.15
Oryzopsis hymenoides	1.11	3.37	9.68	12.63	13.00	9.65	7.66	6.48
Sitanion hystrix	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stephanomeria parryi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stipa speciosa	0.11	0.10	0.11	0.13	0.10	0.00	0.40	1.33
Tetradymia axillaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tetradymia glabrata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Live	1.41	3.71	9.91	13.04	13.44	10.92	10.25	16.64

Table A-53A. Site characteristics for Plot 53.

Location: Yucca Flat

NTS Area: 10 NTS Grid: T-38

USGS 7.5' Quadrangle Name: Oak Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4113778	586167	Standing
Corner 2:	NW	4113810	586170	Standing
Corner 3:	NE	4113805	586201	Standing
Corner 4:	SE	4113774	586196	Standing

DEM Plot Elevation: 1329 m Plot Aspect: 333°

Elevation Above Playa (Playa Name): 149 m (Yucca) Plot Slope: 6°

Annual Precipitation
Measured: 164 mm
Modeled: 169 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, volcanic, predominately rhyolite with some sedimentary rocks

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Ceratoides-Hymenoclea*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 670

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: blast disturbance (Sedan 1962)

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 18 April 2001

Figure A-53. Photographs showing Plot 53.

A. (July 16, 1965). This southeasterly view across Plot 53 shows a site that was damaged by sand blasting and the shock wave from the Sedan Test in July 1962. Banded Mountain appears in the distance. The vegetation is dominated by Indian rice grass; the most significant perennial shrubs are winterfat and cheesebush (Janice Beatley Collection, 3074-6).

B. (June 9, 2001). Resprouting creosote bushes visually dominate the view. Needlegrass is now the dominant grass, although Indian rice grass is still present. Much of the biomass visible in this view is the dried leaves of bristly fiddleneck (*Amsinckia tessellata*), a native annual (Dominic Oldershaw, Stake 4073).

Table A-53B. Summary plant data for Plot 53.

	Number of Plants							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0	0	0	0	0	0	0	0
Astragalus lentiginosus fremontii	0	2	0	0	0	0	0	0
Ceratoides lanata	0	0	0	1	0	1	1	1
Coleogyne ramosissima	0	0	0	0	0	0	0	0
Ephedra nevadensis	0	0	0	0	0	0	0	0
Ericameria cooperi	0	0	0	0	0	0	0	0
Grayia spinosa	0	0	0	0	0	0	0	0
Hymenoclea salsola	0	0	0	1	1	1	1	10
Larrea tridentata	1	3	1	0	0	0	0	5
Lycium andersonii	0	0	0	0	0	0	0	1
Oryzopsis hymenoides	30	55	81	96	94	95	145	90
Sitanion hystrix	5	1	1	3	1	0	2	0
Sphaeralcea ambigua	0	0	0	0	0	0	0	1
Stipa speciosa	0	0	0	0	0	0	0	23
Total Live	36	61	83	101	96	97	149	131
Dead Grass	3	1	0	0	0	0	0	11
Dead Shrubs	103	109	35	0	0	0	0	1
Total	142	171	118	101	96	97	149	143

	Average Height (m)							
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.36	0.00	0.33	0.33	0.29
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hymenoclea salsola	0.00	0.00	0.00	0.23	0.33	0.66	0.81	0.70
Larrea tridentata	0.86	0.90	1.30	0.00	0.00	0.00	0.00	1.98
Lycium andersonii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
Oryzopsis hymenoides	0.20	0.18	0.28	0.38	0.36	0.36	0.27	0.30
Sitanion hystrix	0.15	0.13	0.15	0.28	0.13	0.00	0.28	0.00
Sphaeralcea ambigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Stipa speciosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50

Table A-53B (continued). Summary plant data for Plot 53.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus lentiginosus fremontii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.05	0.00	0.06	0.08	0.09
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hymenoclea salsola	0.00	0.00	0.00	0.01	0.06	0.22	0.24	1.36
Larrea tridentata	0.00	0.00	0.38	0.00	0.00	0.00	0.00	2.38
Lycium andersonii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Oryzopsis hymenoides	1.13	2.74	6.58	8.33	9.43	7.20	10.70	7.09
Sitanion hystrix	0.24	0.03	0.04	0.10	0.01	0.00	0.10	0.00
Sphaeralcea ambigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Stipa speciosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.89
Total Live	1.36	2.76	7.00	8.48	9.50	7.48	11.12	13.87
Dead Grass	0.15	0.01	0.00	0.00	0.00	0.00	0.00	0.68
Dead Shrubs	8.64	9.59	4.26	0.00	0.00	0.00	0.00	0.32
Total	10.15	12.36	11.26	8.48	9.50	7.48	11.12	14.87

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Astragalus lentiginosus fremontii	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratoides lanata	0.00	0.00	0.00	0.05	0.00	0.07	0.09	0.09
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hymenoclea salsola	0.00	0.00	0.00	0.01	0.07	0.48	0.64	3.50
Larrea tridentata	0.00	0.00	1.66	0.00	0.00	0.00	0.00	17.66
Lycium andersonii	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Oryzopsis hymenoides	0.83	1.78	6.41	10.97	12.01	9.21	11.19	7.57
Sitanion hystrix	0.14	0.01	0.02	0.10	0.00	0.00	0.09	0.00
Sphaeralcea ambigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Stipa speciosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.05
Total Live	0.97	3.79	8.09	11.13	12.09	9.76	12.01	33.90

Table A-54A. Site characteristics for Plot 54.

Location: Yucca Flat

NTS Area: 10 NTS Grid: T-38

USGS 7.5' Quadrangle Name: Oak Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4112870	586768	Standing
Corner 2:	NW	4112900	586779	Standing
Corner 3:	NE	4112884	586807	Standing
Corner 4:	SE	4112852	586793	Standing

DEM Plot Elevation: 1343 m Plot Aspect: 326°

Elevation Above Playa (Playa Name): 152 m (Yucca) Plot Slope: 5°

Annual Precipitation
Measured: 174 mm
Modeled: 1670 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, limestone dolomite, alluvium predominantly

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Lycium-Larrea-Coleogyne*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 672

Abundance of Biological Soil Crusts: light

Type and Date of Disturbance: blast disturbance (Sedan 1962)

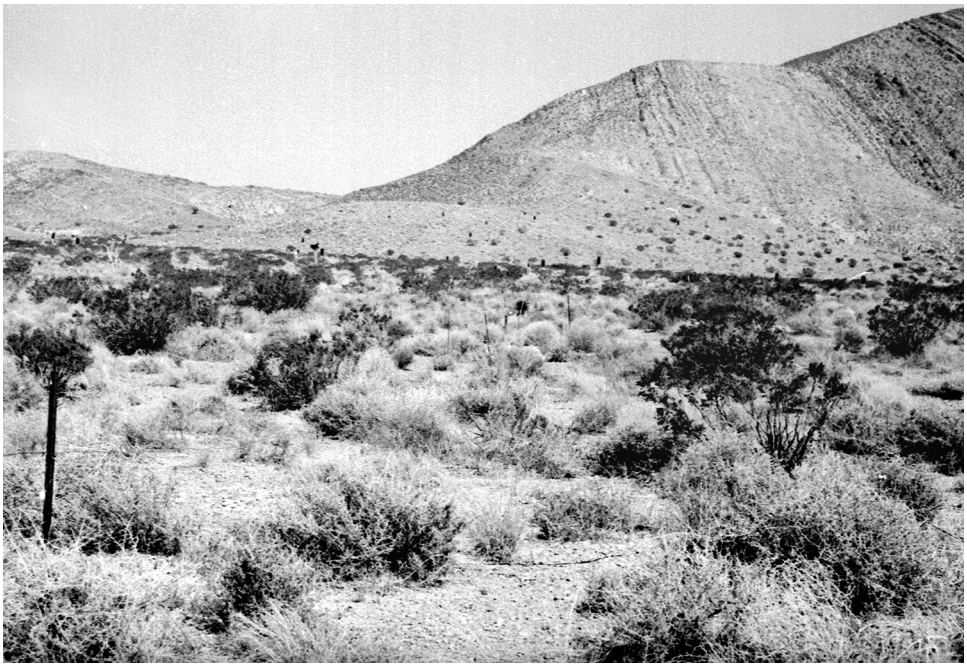
Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 8 April 2001

Figure A-54. Photographs showing Plot 54.



A. (June 1974). Plot 54 was only affected by the shockwave created by the Sedan Test on northern Yucca Flat. This southeasterly view across the plot shows Banded Mountain in the distance and a creosote bush assemblage in the foreground. Wolfberry is the dominant here, followed by creosote bush and blackbrush (Janice Beatley Collection, 19).

B. (April 8, 2001). Creosote bush has increased substantially here, blocking the view of the subshrubs in the midground. Joshua trees also appear to have increased (R.H. Webb, Stake 4143).

Table A-54B. Summary plant data for Plot 54.

				Number of Plants				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0	0	0	0	0	1	1	3
Ceratoides lanata	0	0	0	0	0	0	1	6
Coleogyne ramosissima	0	12	9	10	10	10	12	29
Ephedra nevadensis	0	0	0	0	0	0	0	0
Ericameria cooperi	0	0	0	0	0	0	0	1
Eriogonum inflatum	0	0	0	0	0	0	0	1
Grayia spinosa	0	0	0	0	0	0	1	0
Hymenoclea salsola	0	0	0	0	0	1	1	5
Larrea tridentata	1	7	10	6	8	9	13	22
Lepidium fremontii	0	0	1	1	2	4	25	2
Lycium andersonii	0	3	21	17	17	21	27	33
Opuntia basilaris	0	0	0	0	1	0	0	0
Oryzopsis hymenoides	4	8	23	26	32	28	57	92
Sitanion hystrix	0	5	7	12	8	5	22	0
Sphaeralcea ambigua	0	0	0	0	0	0	0	2
Stanleya pinnata	0	0	0	0	0	0	0	2
Stipa speciosa	0	0	0	1	2	2	6	5
Unknown grass	0	0	0	0	0	0	0	1
Total Live	5	35	71	73	80	81	166	204
Dead grass	0	0	0	0	0	0	0	6
Dead shrubs	170	163	107	0	0	2	49	11
Total	175	198	178	73	80	83	215	221

				Average Height (m)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.23
Ceratoides lanata	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.45
Coleogyne ramosissima	0.00	0.39	0.17	0.30	0.27	0.35	0.40	0.69
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Hymenoclea salsola	0.00	0.00	0.00	0.00	0.00	0.20	0.36	0.42
Larrea tridentata	0.48	1.01	0.52	0.55	0.64	0.75	1.05	1.72
Lepidium fremontii	0.00	0.00	0.18	0.38	0.24	0.44	0.40	0.34
Lycium andersonii	0.00	0.36	0.28	0.36	0.32	0.37	0.50	0.49
Opuntia basilaris	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00
Oryzopsis hymenoides	0.37	0.30	0.43	0.46	0.42	0.50	0.39	0.28
Sitanion hystrix	0.00	0.24	0.25	0.32	0.24	0.25	0.25	0.00
Sphaeralcea ambigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
Stanleya pinnata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43
Stipa speciosa	0.00	0.00	0.00	0.46	0.47	0.44	0.40	0.43
Unknown grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27

Table A-54B (continued). Summary plant data for Plot 54.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.28
Ceratoides lanata	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.54
Coleogyne ramosissima	0.00	1.45	0.76	0.67	0.68	0.77	0.85	3.70
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Hymenoclea salsola	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.50
Larrea tridentata	0.19	2.00	2.95	0.74	2.27	1.76	4.05	11.20
Lepidium fremontii	0.00	0.00	0.02	0.13	0.11	0.40	3.04	0.05
Lycium andersonii	0.00	0.19	2.28	1.71	2.12	2.02	4.45	4.84
Opuntia basilaris	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Oryzopsis hymenoides	2.20	0.29	1.85	2.41	2.75	2.21	5.00	5.98
Sitanion hystrix	0.00	0.29	0.45	0.62	0.41	0.16	0.91	0.00
Sphaeralcea ambigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Stanleya pinnata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
Stipa speciosa	0.00	0.00	0.00	0.05	0.12	0.05	0.40	0.57
Unknown grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Total Live	2.39	4.23	8.31	6.32	8.47	7.41	18.85	28.10
Dead grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
Dead shrubs	17.45	15.43	10.91	0.00	0.00	0.20	4.92	1.66
Total	19.84	19.65	19.22	6.32	8.47	7.61	23.77	30.05

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.25
Ceratoides lanata	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.80
Coleogyne ramosissima	0.00	1.92	0.47	0.69	0.68	0.98	1.21	8.93
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ericameria cooperi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Eriogonum inflatum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Hymenoclea salsola	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.61
Larrea tridentata	0.31	7.50	5.07	1.57	5.21	5.32	15.11	71.26
Lepidium fremontii	0.00	0.00	0.01	0.16	0.11	0.57	4.42	0.06
Lycium andersonii	0.00	0.23	2.34	2.13	2.41	2.69	7.63	8.78
Opuntia basilaris	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oryzopsis hymenoides	0.26	0.30	2.98	3.82	4.20	3.78	6.90	5.81
Sitanion hystrix	0.00	0.24	0.37	0.69	0.30	0.14	0.84	0.00
Sphaeralcea ambigua	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Stanleya pinnata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
Stipa speciosa	0.00	0.00	0.00	0.07	0.19	0.08	0.59	0.91
Unknown grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Total Live	0.57	10.19	11.24	9.14	13.11	13.58	36.86	97.89

Table A-55A. Site characteristics for Plot 55.

Location: Yucca Flat

NTS Area: 9 NTS Grid: U-36

USGS 7.5' Quadrangle Name: Yucca Flat

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4108942	586521	Standing
Corner 2:	NW	4108957	586520	Standing
Corner 3:	NE	4108956	586580	Standing
Corner 4:	SE	4108939	586582	Standing

DEM Plot Elevation: 1308 m Plot Aspect: 315°

Elevation Above Playa (Playa Name): 119 m (Yucca) Plot Slope: 14°

Annual Precipitation
Measured: 159 mm
Modeled: 167 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan, drained limestone terrain

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Lycium-Grayia*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 765

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: blast area associated with balloon testing

Plot Condition: good

Location of Transect 1: east side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 9 May 2001

Figure A-55. Photographs showing Plot 55.

A. (June 25 or 26, 1974). This northeasterly view of Plot 55 shows Banded Mountain in the background and a mixed creosote bush scrub in the foreground. Plot 55 was the least disturbed of any of the plots Beatley established to look at the effects of the Sedan Test. Creosote bush dominates, followed by wolfberry and spiny hopsage. Tumbleweeds (*Salsola iberica*) that have blown in from disturbed sites to the west litter the shrubs in the foreground (Janice Beatley Collection, 17).

B. (June 10, 2001). Creosote bush dominates, and Joshua trees are once again becoming established in the area. Wolfberry and cheesebush are subdominants here, and spiny hopsage has greatly decreased. Once again, Joshua trees in the background have increased in size and density (Dominic Oldershaw, Stake 4076B).

Table A-55B. Summary plant data for Plot 55.

				Number of Plants				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	5	5	4	5	4	4	15	17
Ambrosia dumosa	0	0	1	0	0	1	1	3
Aristida glauca	0	0	0	0	1	0	0	0
Ceratoides lanata	4	3	5	7	12	7	18	8
Coleogyne ramosissima	1	1	0	1	1	0	2	1
Eriogonum inflatum	0	0	15	5	22	0	6	2
Ephedra nevadensis	0	0	0	0	0	0	0	0
Erioneuron pulchellum	0	0	1	1	1	0	0	0
Grayia spinosa	8	6	6	5	4	5	12	0
Hymenoclea salsola	2	4	3	5	4	5	9	18
Larrea tridentata	20	24	22	21	20	18	27	37
Lepidium fremontii	0	0	0	0	1	0	3	0
Lycium andersonii	12	7	15	15	12	11	19	24
Oryzopsis hymenoides	1	0	0	2	0	0	14	24
Sitanion hystrix	0	0	0	0	0	0	2	0
Sphaeralcea ambigua	0	0	2	2	1	0	1	1
Sphaeralcea grossulariae	0	0	0	0	1	0	0	0
Stanleya pinnata	1	1	3	2	3	0	2	1
Stipa speciosa	2	1	2	3	3	1	3	6
Yucca brevifolia	0	0	0	0	0	0	0	0
Total Live	56	52	79	74	90	52	134	142
Dead Grass	0	0	0	0	0	0	0	0
Dead Shrub	46	27	1	0	3	0	4	19
Total	102	79	80	74	93	52	138	161

				Average Height (m)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.18	0.21	0.25	0.23	0.22	0.25	0.21	0.28
Ambrosia dumosa	0.00	0.00	0.41	0.00	0.00	0.36	0.36	0.27
Aristida glauca	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Ceratoides lanata	0.36	0.32	0.36	0.38	0.22	0.40	0.38	0.38
Coleogyne ramosissima	0.30	0.51	0.00	0.56	0.51	0.00	0.44	0.63
Eriogonum inflatum	0.00	0.00	0.27	0.30	0.16	0.00	0.14	0.30
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erioneuron pulchellum	0.00	0.00	0.03	0.05	0.03	0.00	0.00	0.00
Grayia spinosa	0.31	0.36	0.39	0.40	0.40	0.49	0.56	0.00
Hymenoclea salsola	0.33	0.29	0.33	0.32	0.35	0.41	0.40	0.44
Larrea tridentata	0.93	0.94	0.98	0.96	1.02	1.26	1.44	1.01
Lepidium fremontii	0.00	0.00	0.00	0.00	0.13	0.00	0.27	0.00
Lycium andersonii	0.29	0.33	0.36	0.35	0.36	0.40	0.44	0.44
Oryzopsis hymenoides	0.33	0.00	0.00	0.28	0.00	0.00	0.32	0.00
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00
Sphaeralcea ambigua	0.00	0.00	0.38	0.18	0.18	0.00	0.10	0.02
Sphaeralcea grossulariae	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Stanleya pinnata	1.30	1.45	0.52	0.85	0.54	0.00	0.48	0.56
Stipa speciosa	0.30	0.18	0.33	0.41	0.31	0.33	0.42	0.46
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A-55B (continued). Summary plant data for Plot 55.

				Cover (%)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.33	0.30	0.20	0.33	0.27	0.29	0.78	1.25
Ambrosia dumosa	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.29
Aristida glauca	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
Ceratoides lanata	0.20	0.27	0.26	0.46	0.41	0.41	1.41	0.66
Coleogyne ramosissima	0.03	0.05	0.00	0.06	0.06	0.00	0.11	0.07
Eriogonum inflatum	0.00	0.00	0.70	0.30	0.62	0.00	0.34	0.03
Ephedra nevadensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Erioneuron pulchellum	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.00
Grayia spinosa	0.36	0.42	0.59	0.74	0.40	0.78	1.49	0.00
Hymenoclea salsola	0.17	0.36	0.31	0.48	0.37	0.62	0.97	1.48
Larrea tridentata	4.36	4.72	5.50	4.79	5.30	6.10	7.82	19.40
Lepidium fremontii	0.00	0.00	0.00	0.00	0.03	0.00	0.18	0.00
Lycium andersonii	1.28	0.91	1.53	1.68	1.30	1.56	3.02	3.05
Oryzopsis hymenoides	0.05	0.00	0.00	0.13	0.00	0.00	1.13	1.37
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
Sphaeralcea ambigua	0.00	0.00	0.07	0.09	0.01	0.00	0.03	0.02
Sphaeralcea grossulariae	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
Stanleya pinnata	0.30	0.32	0.28	0.26	0.25	0.00	0.29	0.13
Stipa speciosa	0.07	0.04	0.14	0.19	0.11	0.07	0.25	0.34
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Live	7.15	7.39	9.60	9.52	9.27	9.85	17.92	28.08
Dead Grass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dead Shrub	2.90	1.78	0.23	0.00	0.32	0.00	0.39	3.28
Total	10.05	9.17	9.83	9.52	9.58	9.85	18.31	31.35

				Biomass Index (m^2)				
SPECIES	**1963**	**1964**	**1965**	**1966**	**1967**	**1970**	**1975**	**2001**
Acamptopappus shockleyi	0.20	0.21	0.17	0.26	0.19	0.23	0.63	1.14
Ambrosia dumosa	0.00	0.00	0.04	0.00	0.00	0.03	0.09	0.25
Aristida glauca	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
Ceratoides lanata	0.22	0.29	0.31	0.59	0.40	0.56	1.97	0.85
Coleogyne ramosissima	0.03	0.08	0.00	0.10	0.09	0.00	0.17	0.13
Ephedra nevadensis	0.00	0.00	0.67	0.33	0.33	0.00	0.17	0.00
Erioneuron pulchellum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayia spinosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eriogonum inflatum	0.39	0.49	0.73	1.17	0.48	1.20	3.10	0.03
Hymenoclea salsola	0.24	0.39	0.39	0.53	0.43	0.82	1.48	2.08
Larrea tridentata	13.48	15.03	17.75	15.49	18.49	26.06	40.54	126.75
Lepidium fremontii	0.00	0.00	0.00	0.00	0.01	0.00	0.21	0.00
Lycium andersonii	1.41	1.18	1.92	1.95	1.60	2.34	4.92	2.96
Oryzopsis hymenoides	0.05	0.00	0.00	0.15	0.00	0.00	1.27	1.81
Sitanion hystrix	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Sphaeralcea ambigua	0.00	0.00	0.08	0.05	0.01	0.00	0.01	0.00
Sphaeralcea grossulariae	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
Stanleya pinnata	1.26	1.50	0.89	0.80	0.59	0.00	0.50	0.24
Stipa speciosa	0.07	0.02	0.15	0.27	0.14	0.07	0.39	0.53
Yucca brevifolia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Live	17.35	19.19	23.09	21.69	22.83	31.32	55.49	136.77

Table A-56A. Site characteristics for Plot 56.

Location: Yucca Flat

NTS Area: 7 NTS Grid: V-33

USGS 7.5' Quadrangle Name: Paiute Ridge

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4104427	589683	Standing
Corner 2:	NW	4104448	589668	Standing
Corner 3:	NE	4104467	589693	Standing
Corner 4:	SE	4104444	589707	Standing

DEM Plot Elevation: 1321 m Plot Aspect: 330°

Elevation Above Playa (Playa Name): 131 m (Yucca) Plot Slope: 15°

Annual Precipitation
Measured: 165 mm
Modeled: 169 mm

Parent Material Type: alluvial fan

Substrate: moderately well developed desert pavement w/A-V horizon

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Coleogyne*/*Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: *Coleogyne-Larrea-Lycium*

Ostler-Hanson Land Unit: 709

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: west side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 20 April 2002

Figure A-56. Photographs showing Plot 56.

A. (May 9, 1964). This westerly view across Plot 56 shows the Eleana Range and Syncline Ridge in the distance across Yucca Flat. Shoshone Mountain juts above Syncline Ridge at left center. The vegetation here is dominated by blackbrush, creosote bush, spiny hopsage, and wolfberry (Janice Beatley Collection, 84-B).

B. (April 21, 2002). In the foreground, many of the same blackbrush appear. The creosote bushes appear to be enlarged, and Joshua trees do not appear to have changed in abundance (Dominic Oldershaw, Stake 4187B).

Table A-56B. Summary plant data for Plot 56.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Ceratoides lanata	0	0	1
Coleogyne ramosissima	122	135	138
Ephedra nevadensis	1	3	2
Grayia spinosa	25	35	7
Krameria parvifolia	0	0	1
Larrea tridentata	16	16	17
Lycium andersonii	23	34	10
Oryzopsis hymenoides	3	6	1
Sitanion hystrix	0	3	0
Stipa speciosa	0	1	4
Tetradymia axillaris	1	1	0
Xylorhiza tortifolia	1	1	1
Total Live	192	235	182
Dead Grass	0	1	0
Dead Shrub	18	4	44
Total	210	240	226

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Ceratoides lanata	0.00	0.00	0.07
Coleogyne ramosissima	15.17	15.99	16.90
Ephedra nevadensis	0.05	0.14	0.17
Grayia spinosa	2.57	3.23	0.94
Krameria parvifolia	0.00	0.00	0.23
Larrea tridentata	3.95	5.17	5.29
Lycium andersonii	3.15	4.29	0.89
Oryzopsis hymenoides	0.28	0.39	0.04
Sitanion hystrix	0.00	0.15	0.00
Stipa speciosa	0.00	0.04	0.15
Tetradymia axillaris	0.17	0.20	0.00
Xylorhiza tortifolia	0.05	0.07	0.08
Total Live	25.40	29.66	24.75
Dead Grass	0.00	0.06	0.00
Dead Shrub	2.67	0.36	8.90
Total	28.07	30.09	33.65

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Ceratoides lanata	0.00	0.00	0.39
Coleogyne ramosissima	0.45	0.44	0.56
Ephedra nevadensis	0.41	0.46	0.67
Grayia spinosa	0.47	0.46	0.65
Krameria parvifolia	0.00	0.00	0.51
Larrea tridentata	1.03	1.32	1.38
Lycium andersonii	0.38	0.45	0.36
Oryzopsis hymenoides	0.40	0.29	0.22
Sitanion hystrix	0.00	0.30	0.00
Stipa speciosa	0.00	0.25	0.35
Tetradymia axillaris	0.58	0.71	0.00
Xylorhiza tortifolia	0.43	0.36	0.38

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Ceratoides lanata	0.00	0.00	0.10
Coleogyne ramosissima	24.56	26.08	32.26
Ephedra nevadensis	0.07	0.22	0.29
Grayia spinosa	4.37	5.35	1.77
Krameria parvifolia	0.00	0.00	0.39
Larrea tridentata	13.81	23.95	26.93
Lycium andersonii	4.48	6.27	1.22
Oryzopsis hymenoides	0.35	0.43	0.03
Sitanion hystrix	0.00	0.17	0.00
Stipa speciosa	0.00	0.03	0.17
Tetradymia axillaris	0.34	0.48	0.00
Xylorhiza tortifolia	0.07	0.09	0.10
Total Live	48.05	63.07	63.27

Table A-57A. Site characteristics for Plot 57A.

Location: Yucca Flat

NTS Area: 3 NTS Grid: V-31

USGS 7.5' Quadrangle Name: Paiute Ridge

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	On ground or missing
Corner 2:	NW	4100073	589548	Standing
Corner 3:	NE	4100067	589579	Standing
Corner 4:	SE	NA	NA	On ground or missing

DEM Plot Elevation: 1254 m Plot Aspect: 335°

Elevation Above Playa (Playa Name): 61 m (Yucca) Plot Slope: 12°

Annual Precipitation
Measured: 177 mm
Modeled: 162 mm

Parent Material Type: alluvial fan

Substrate: mixed alluvium, weak desert pavement, limestone & volcanic

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 691

Abundance of Biological Soil Crusts: heavy

Type and Date of Disturbance: none

Plot Condition: about one-third of the plot was damaged in 1965 and abandoned by Beatley

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 21 April 2002

Figure A-57. Photographs showing Plot 57A.

A. (May 9, 1964). This southeasterly view across Plot 57 shows a creosote bush assemblage on the eastern side of Yucca Flat. Unnamed hills appear in the center of the view, and the flank of Camera Station Butte appears at left. The assemblage is dominated by creosote bush, spiny hopsage, and wolfberry (Janice Beatley Collection, 86-B).

B. (April 21, 2002). Plot 57 was disturbed in 1966, and recovery from that disturbance dominates the midground. The plot was re-established behind this camera station as Plot 57A. The creosote bushes are greatly increased in size on the plot, and spiny hopsage has declined. The Joshua trees appear to have greatly increased in number in the background (Dominic Oldershaw, Stake 4189B).

Table A-57B. Summary plant data for Plot 57A.

	Number of Plants	
SPECIES	**1963**	**2002***
Acamptopappus shockleyi	45	12
Artemisia spinescens	13	0
Atriplex confertifolia	18	1
Ceratoides lanata	17	16
Chrysothamnus viscidiflorus	0	3
Ephedra nevadensis	11	10
Grayia spinosa	24	2
Hymenoclea salsola	0	10
Larrea tridentata	22	42
Lycium andersonii	28	24
Menodora spinescens	4	4
Mirabilis pudica	0	0
Oryzopsis hymenoides	3	12
Sitanion hystrix	1	0
Stanleya pinnata	0	1
Stipa speciosa	1	0
Tetradymia glabrata	1	0
Total Live	188	137
Dead Grass	0	1
Dead Shrub	60	102
Total	248	240

	Cover (%)	
SPECIES	**1963**	**2002***
Acamptopappus shockleyi	2.65	0.40
Artemisia spinescens	0.95	0.00
Atriplex confertifolia	2.07	0.08
Ceratoides lanata	1.38	0.67
Chrysothamnus viscidiflorus	0.00	0.27
Ephedra nevadensis	1.40	0.80
Grayia spinosa	3.04	0.10
Hymenoclea salsola	0.00	0.73
Larrea tridentata	5.32	11.11
Lycium andersonii	3.17	2.01
Menodora spinescens	0.29	0.23
Mirabilis pudica	0.00	0.00
Oryzopsis hymenoides	0.16	0.30
Sitanion hystrix	0.06	0.00
Stanleya pinnata	0.00	0.09
Stipa speciosa	0.04	0.00
Tetradymia glabrata	0.08	0.00
Total Live	20.63	16.79
Dead Grass	0.00	0.02
Dead Shrub	4.99	9.48
Total	25.62	26.29

	Average Height (m)	
SPECIES	**1963**	**2002***
Acamptopappus shockleyi	0.19	0.21
Artemisia spinescens	0.23	0.00
Atriplex confertifolia	0.35	0.35
Ceratoides lanata	0.36	0.36
Chrysothamnus viscidiflorus	0.00	0.30
Ephedra nevadensis	0.32	0.41
Grayia spinosa	0.43	0.68
Hymenoclea salsola	0.00	0.44
Larrea tridentata	0.93	1.44
Lycium andersonii	0.40	0.42
Menodora spinescens	0.13	0.16
Mirabilis pudica	0.00	0.00
Oryzopsis hymenoides	0.25	0.20
Sitanion hystrix	0.20	0.00
Stanleya pinnata	0.00	0.26
Stipa speciosa	0.20	0.00
Tetradymia glabrata	0.43	0.00

	Biomass Index (m^2)	
SPECIES	**1963**	**2002***
Acamptopappus shockleyi	1.80	0.24
Artemisia spinescens	0.74	0.00
Atriplex confertifolia	2.43	0.10
Ceratoides lanata	1.67	0.91
Chrysothamnus viscidiflorus	0.00	0.30
Ephedra nevadensis	1.57	1.45
Grayia spinosa	4.64	0.15
Hymenoclea salsola	0.00	1.11
Larrea tridentata	18.57	56.94
Lycium andersonii	4.44	2.75
Menodora spinescens	0.13	0.15
Mirabilis pudica	0.00	0.00
Oryzopsis hymenoides	0.13	0.23
Sitanion hystrix	0.04	0.00
Stanleya pinnata	0.00	0.08
Stipa speciosa	0.02	0.00
Tetradymia glabrata	0.12	0.00
Total Live	36.31	64.40

*--plot was disturbed in 1965 to an unknown extent.

Table A-57C. Site characteristics for Plot 57N.

Location: Yucca Flat

NTS Area: 3 NTS Grid: V-31

USGS 7.5' Quadrangle Name: Paiute Ridge

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	NA
Corner 2:	NW	4100091	589681	NA
Corner 3:	NE	4100072	589694	NA
Corner 4:	SE	4100042	589665	NA

DEM Plot Elevation: 1254 m Plot Aspect: 335°

Elevation Above Playa (Playa Name): 61 m (Yucca) Plot Slope: 12°

Annual Precipitation
Measured: 177 mm
Modeled: 162 mm

Parent Material Type: alluvial fan

Substrate: mixed alluvium, weak desert pavement, limestone & volcanic

Slate Geologic Unit: NA

Beatley Plant Assemblage: *Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 691

Abundance of Biological Soil Crusts: heavy

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 21 April 2002

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Table A-57D. Summary plant data for Plot 57N.

	Number of Plants		
SPECIES	**1966**	**1975**	**2002**
Acamptopappus shockleyi	49	78	3
Artemisia spinescens	3	8	1
Atriplex confertifolia	32	31	5
Ceratoides lanata	33	52	34
Chrysothamnus viscidiflorus stenophyllus	0	1	0
Ephedra nevadensis	7	11	14
Grayia spinosa	18	18	7
Larrea tridentata	20	21	24
Lepidium fremontii	0	1	0
Lycium andersonii	23	28	29
Menodora spinescens	2	2	4
Oryzopsis hymenoides	12	15	19
Sitanion hystrix	0	3	1
Sphaeralcea ambigua monticola	2	0	0
Stanleya pinnata pinnata	0	2	0
Stipa speciosa	0	0	2
Tetradymia axillaris	4	3	0
Tetradymia glabrata	3	3	0
Yucca brevifolia	0	1	2
Total Live	208	278	145
Dead grass	1	1	2
Dead shrubs	86	37	123
Total	295	316	270

	Cover (%)		
SPECIES	**1966**	**1975**	**2002**
Acamptopappus shockleyi	2.32	3.51	0.08
Artemisia spinescens	0.20	0.34	0.07
Atriplex confertifolia	3.17	3.25	0.28
Ceratoides lanata	2.25	3.10	2.05
Chrysothamnus viscidiflorus stenophyllus	0.00	0.01	0.00
Ephedra nevadensis	0.70	1.07	0.84
Grayia spinosa	1.85	1.80	0.65
Larrea tridentata	4.01	5.68	7.86
Lepidium fremontii	0.00	0.03	0.00
Lycium andersonii	2.84	4.20	2.70
Menodora spinescens	0.17	0.09	0.28
Oryzopsis hymenoides	0.83	1.26	0.75
Sitanion hystrix	0.00	0.15	0.01
Sphaeralcea ambigua monticola	0.08	0.00	0.00
Stanleya pinnata pinnata	0.00	0.05	0.00
Stipa speciosa	0.00	0.00	0.11
Tetradymia axillaris	0.36	0.37	0.00
Tetradymia glabrata	0.37	0.41	0.00
Yucca brevifolia	0.00	0.18	0.32
Total Live	19.15	25.50	16.00
Dead grass	0.05	0.01	0.03
Dead shrubs	6.27	2.80	8.94
Total	25.47	28.31	24.96

	Average Height (m)		
SPECIES	**1966**	**1975**	**2002**
Acamptopappus shockleyi	0.19	0.19	0.17
Artemisia spinescens	0.25	0.24	0.25
Atriplex confertifolia	0.37	0.35	0.28
Ceratoides lanata	0.31	0.31	0.39
Chrysothamnus viscidiflorus stenophyllus	0.00	0.18	0.00
Ephedra nevadensis	0.34	0.47	0.43
Grayia spinosa	0.47	0.35	0.50
Larrea tridentata	0.89	1.05	1.10
Lepidium fremontii	0.00	0.23	0.00
Lycium andersonii	0.45	0.46	0.37
Menodora spinescens	0.17	0.11	0.10
Oryzopsis hymenoides	0.31	0.34	0.21
Sitanion hystrix	0.00	0.30	0.32
Sphaeralcea ambigua monticola	0.27	0.00	0.00
Stanleya pinnata pinnata	0.00	0.25	0.00
Stipa speciosa	0.00	0.00	0.33
Tetradymia axillaris	0.49	0.65	0.00
Tetradymia glabrata	0.51	0.54	0.00
Yucca brevifolia	0.00	3.81	2.24

	Biomass Index (m^2)		
SPECIES	**1966**	**1975**	**2002**
Acamptopappus shockleyi	1.57	2.43	0.05
Artemisia spinescens	0.17	0.27	0.06
Atriplex confertifolia	4.23	4.19	0.31
Ceratoides lanata	2.47	3.84	3.05
Chrysothamnus viscidiflorus stenophyllus	0.00	0.01	0.00
Ephedra nevadensis	0.81	1.68	1.44
Grayia spinosa	3.06	2.39	1.09
Larrea tridentata	12.82	21.49	34.54
Lepidium fremontii	0.00	0.02	0.00
Lycium andersonii	4.39	6.93	3.98
Menodora spinescens	0.10	0.03	0.13
Oryzopsis hymenoides	0.87	1.43	0.74
Sitanion hystrix	0.00	0.15	0.01
Sphaeralcea ambigua monticola	0.07	0.00	0.00
Stanleya pinnata pinnata	0.00	0.05	0.00
Stipa speciosa	0.00	0.00	0.11
Tetradymia axillaris	0.62	0.81	0.00
Tetradymia glabrata	0.63	0.73	0.00
Yucca brevifolia	0.00	2.32	2.60
Total Live	31.81	48.77	48.11

Table A-58A. Site characteristics for Plot 58.

Location: Yucca Flat

NTS Area: 3 NTS Grid: S-29

USGS 7.5' Quadrangle Name: Yucca Flat

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	Gone (destroyed by crater)
Corner 2:	NW	NA	NA	Gone (destroyed by crater)
Corner 3:	NE	NA	NA	Gone (destroyed by crater)
Corner 4:	SE	NA	NA	Gone (destroyed by crater)

DEM Plot Elevation: 1207 m Plot Aspect: 288°

Elevation Above Playa (Playa Name): 14 m (Yucca) Plot Slope: 5°

Annual Precipitation
Measured: 178 mm
Modeled: 162 mm

Parent Material Type: alluvial fan

Substrate: alluvial fan

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Atriplex-Ceratoides*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 9998

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none

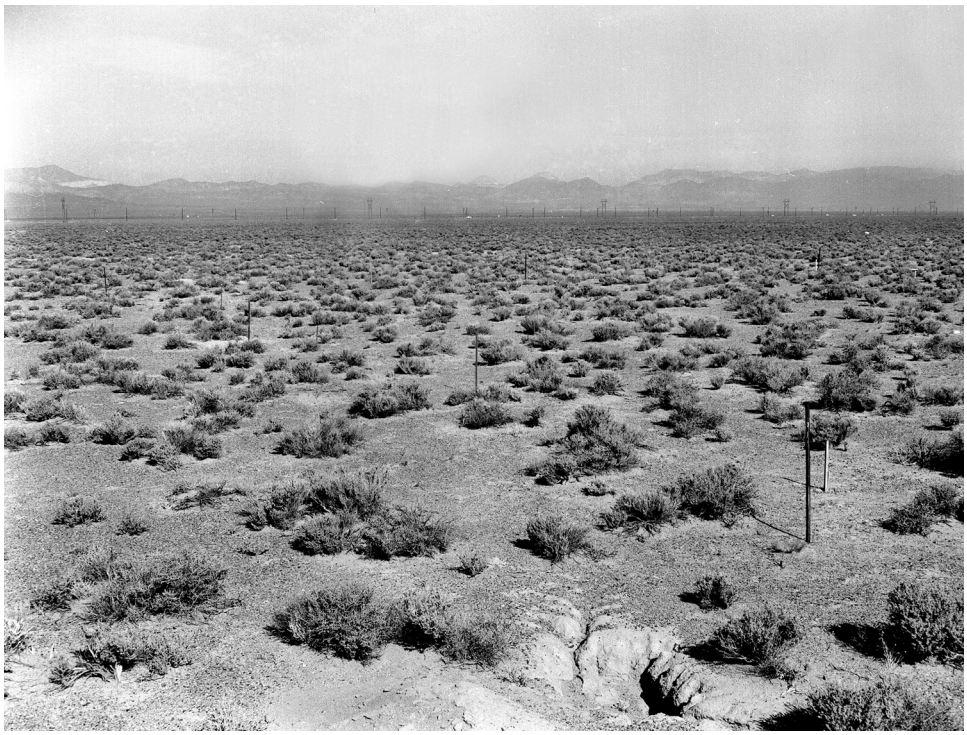
Plot Condition: plot destroyed by below-ground testing between 1975 and 2000

Location of Transect 1: NA

Direction Transects Are Read: NA

Date(s) Plot Remeasured: NA

Figure A-58. Photograph showing Plot 58.



A. (May 13, 1964). This northwesterly view across Plot 58 shows a shadscale - winterfat association with various mountains ringing the northern end of Yucca Flat appearing in the distance. This plot was destroyed at an unknown time owing to underground testing and could not be remeasured (Janice Beatley Collection, 106-A, Stake 4190).

Table A-58B. Summary plant data for Plot 58.

	Number of Plants	
SPECIES	**1963**	**1975**
Artemisia spinescens	33	88
Astragalus lentiginosus fremontii	0	2
Atriplex confertifolia	58	66
Ceratoides lanata	57	88
Grayia spinosa	2	4
Lycium andersonii	5	5
Mirabilis pudica	1	0
Oryzopsis hymenoides	5	27
Sitanion hystrix	1	0
Tetradymia axillaris	1	1
Total Live	163	281
Dead grass	0	1
Dead shrubs	16	19
Total	179	301

	Cover (%)	
SPECIES	**1963**	**1975**
Artemisia spinescens	2.67	4.80
Astragalus lentiginosus fremontii	0.00	0.02
Atriplex confertifolia	7.29	8.55
Ceratoides lanata	4.89	7.87
Grayia spinosa	0.34	0.74
Lycium andersonii	0.88	1.14
Mirabilis pudica	0.03	0.00
Oryzopsis hymenoides	0.13	2.50
Sitanion hystrix	0.03	0.00
Tetradymia axillaris	0.14	0.15
Total Live	16.39	25.76
Dead grass	0.00	0.01
Dead shrubs	1.29	2.32
Total	17.68	28.09

	Average Height (m)	
SPECIES	**1963**	**1975**
Artemisia spinescens	0.23	0.19
Astragalus lentiginosus fremontii	0.00	0.03
Atriplex confertifolia	0.34	0.37
Ceratoides lanata	0.30	0.39
Grayia spinosa	0.52	0.59
Lycium andersonii	0.49	0.52
Mirabilis pudica	0.13	0.00
Oryzopsis hymenoides	0.07	0.27
Sitanion hystrix	0.25	0.00
Tetradymia axillaris	0.48	0.64

	Biomass Index (m^2)	
SPECIES	**1963**	**1975**
Artemisia spinescens	2.13	3.33
Astragalus lentiginosus fremontii	0.00	0.00
Atriplex confertifolia	8.72	11.68
Ceratoides lanata	5.34	11.84
Grayia spinosa	0.58	1.45
Lycium andersonii	1.47	2.09
Mirabilis pudica	0.01	0.00
Oryzopsis hymenoides	0.03	2.32
Sitanion hystrix	0.02	0.00
Tetradymia axillaris	0.22	0.31
Total Live	18.54	33.02

Table A-59A. Site characteristics for Plot 59.

Location: Yucca Flat

NTS Area: 6

NTS Grid: S-27

USGS 7.5' Quadrangle Name: Yucca Lake

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	One corner intact (specific corner not recorded)
Corner 2:	NW	NA	NA	One corner intact (specific corner not recorded)
Corner 3:	NE	NA	NA	One corner intact (specific corner not recorded)
Corner 4:	SE	NA	NA	One corner intact (specific corner not recorded)

DEM Plot Elevation: 1198 m

Plot Aspect: 141°

Elevation Above Playa (Playa Name): 3 m (Yucca)

Plot Slope: 9°

Annual Precipitation
Measured: 177 mm
Modeled: 166 mm

Parent Material Type: playa

Substrate: NA

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Atriplex-Kochia*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 544

Abundance of Biological Soil Crusts: light

Type and Date of Disturbance: none

Plot Condition: about one-third of the plot was damaged by construction between 1975 and 2000

Location of Transect 1: NA

Direction Transects Are Read: NA

Date(s) Plot Remeasured: NA

Figure A-59. Photographs showing Plot 59.

A. (1964). This southwesterly view across Plot 59 shows the north end of Yucca Lake in the midground and the CP Hills in the distance. The vegetation here was shadscale and greenmolly (*Kochia americana*) (Janice Beatley Collection, no number).

B. (April 20, 2002). Plot 59 was disturbed by construction activities in the vicinity. Tracks left by bulldozers are apparent at lower left. The Tweezer Road crosses the view at midground. Approximately one third of the plot was disturbed by these activities, so the plot was not remeasured (Dominic Oldershaw, Stake 4184A).

Table A-59B. Summary plant data for Plot 59.

	Number of Plants		
SPECIES	**1963**	**1975**	**2003***
Atriplex confertifolia	50	84	4
Ceratoides lanata	0	0	1
Cymopterus globusus	0	3	0
Kochia americana vestita	120	131	23
Stipa speciosa	0	0	1
Total Live	170	218	29
Dead grass	0	0	1
Dead shrubs	16	13	108
Total	186	231	138

	Average Height (m)		
SPECIES	**1963**	**1975**	**2003***
Atriplex confertifolia	0.27	0.31	0.23
Ceratoides lanata	0.00	0.00	0.64
Cymopterus globusus	0.00	0.03	0.00
Kochia americana vestita	0.19	0.29	0.22
Stipa speciosa	0.00	0.00	0.20

	Cover (%)		
SPECIES	**1963**	**1975**	**2003***
Atriplex confertifolia	5.31	9.88	0.11
Ceratoides lanata	0.00	0.00	0.20
Cymopterus globusus	0.00	0.05	0.00
Kochia americana vestita	7.81	8.29	1.15
Stipa speciosa	0.00	0.00	0.00
Total Live	13.12	18.22	1.45
Dead grass	0.00	0.00	0.15
Dead shrubs	1.75	1.62	7.95
Total	14.86	19.84	9.55

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2003***
Atriplex confertifolia	4.97	11.54	0.06
Ceratoides lanata	0.00	0.00	0.43
Cymopterus globusus	0.00	0.00	0.00
Kochia americana vestita	5.21	9.02	0.89
Stipa speciosa	0.00	0.00	0.00
Total Live	10.18	20.57	1.38

*--plot affected by disturbance to unknown extent, 1975-2001.

Table A-60A. Site characteristics for Plot 60.

Location: Yucca Flat

NTS Area: 6 NTS Grid: V-26

USGS 7.5' Quadrangle Name: Plutonium Valley

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4091133	589686	On ground or missing
Corner 2:	NW	4091162	589693	On ground or missing
Corner 3:	NE	4091158	589723	On ground or missing
Corner 4:	SE	4091129	589716	Leaning

DEM Plot Elevation: 1199 m Plot Aspect: 207°

Elevation Above Playa (Playa Name): 9 m (Yucca) Plot Slope: 6°

Annual Precipitation
Measured: 164 mm
Modeled: 163 mm

Parent Material Type: alluvial fan

Substrate: mixed alluvium, weak desert pavement, mostly volcanic

Slate Geologic Unit: Qai

Beatley Plant Assemblage: *Grayia-Lycium*

Ostler-Hanson Plant Association: *Tetradymia-Lycium-Grayia*

Ostler-Hanson Land Unit: 660

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

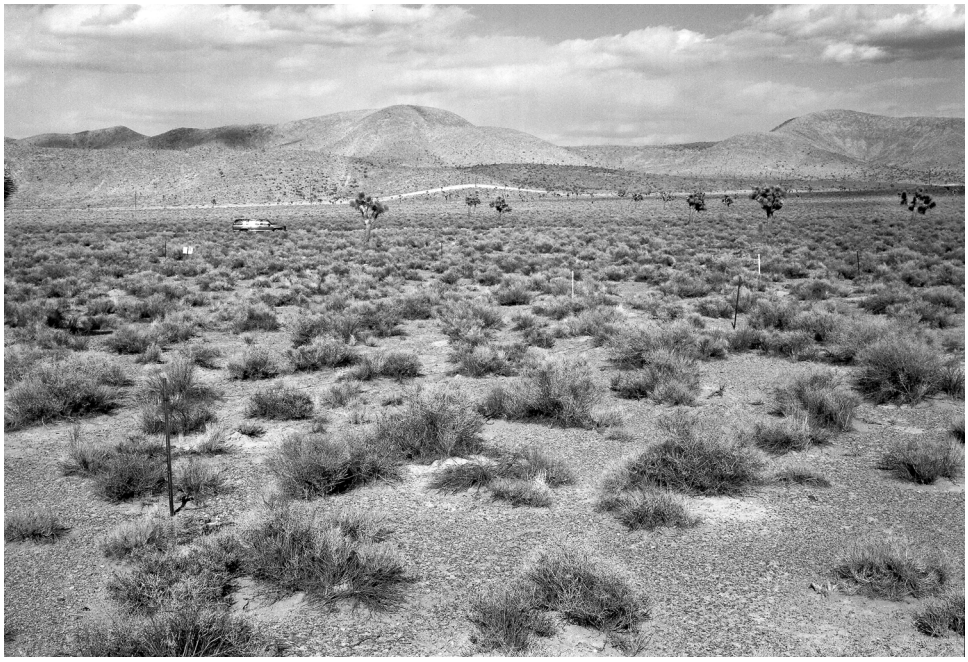
Location of Transect 1: south side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 18 April 2002

Figure A-60. Photographs showing Plot 60.

A. (May 13, 1964). This easterly view across Plot 60 shows unnamed hills on the eastern side of Yucca Flat in the distance. Only a few Joshua trees are visible in this view. Spiny hopsage and wolfberry dominate the vegetation on this plot (Janice Beatley Collection, 101-B).



B. (April 20, 2002). The vegetation is now dominated by green rabbitbrush (*Chrysothamnus viscidiflorus*), wolfberry, and spiny hopsage. The latter has declined on this plot much as it has throughout the Nevada Test Site. The background Joshua trees have greatly increased in number and height. The Orange Blossom Road, built after 1964, creates the roadcut that is obvious at center (Dominic Oldershaw, Stake 4183B).

Table A-60B. Summary plant data for Plot 60.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Artemisia spinescens	30	21	5
Atriplex canescens	1	2	13
Atriplex confertifolia	8	5	0
Ceratoides lanata	20	28	21
Chrysothamnus viscidiflorus	39	39	77
Ephedra nevadensis	2	3	5
Grayia spinosa	36	54	28
Hymenoclea salsola	0	1	0
Lycium andersonii	41	58	43
Oryzopsis hymenoides	1	1	7
Sitanion hystrix	0	3	16
Sphaeralcea ambigua monticola	0	4	0
Tetradymia glabrata	48	59	0
Yucca brevifolia	0	0	1
Total Live	226	278	216
Dead Grass	0	0	0
Dead Shrub	12	20	60
Total	238	298	276

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Artemisia spinescens	1.86	1.24	0.20
Atriplex canescens	0.13	0.45	1.31
Atriplex confertifolia	0.54	0.67	0.00
Ceratoides lanata	1.69	1.99	1.74
Chrysothamnus viscidiflorus	3.27	2.93	6.14
Ephedra nevadensis	0.41	0.73	0.58
Grayia spinosa	6.18	6.04	2.41
Hymenoclea salsola	0.00	0.18	0.00
Lycium andersonii	5.71	6.71	4.28
Oryzopsis hymenoides	0.04	0.07	0.35
Sitanion hystrix	0.00	0.18	0.99
Sphaeralcea ambigua monticola	0.00	0.11	0.00
Tetradymia glabrata	6.92	9.32	0.00
Yucca brevifolia	0.00	0.00	0.04
Total Live	26.75	30.61	18.03
Dead Grass	0.00	0.00	0.00
Dead Shrub	1.09	1.45	8.39
Total	27.84	32.06	26.42

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Artemisia spinescens	0.17	0.17	0.18
Atriplex canescens	0.66	0.72	0.65
Atriplex confertifolia	0.31	0.40	0.00
Ceratoides lanata	0.30	0.38	0.49
Chrysothamnus viscidiflorus	0.25	0.28	0.31
Ephedra nevadensis	0.41	0.65	0.68
Grayia spinosa	0.50	0.49	0.51
Hymenoclea salsola	0.00	0.58	0.00
Lycium andersonii	0.35	0.42	0.45
Oryzopsis hymenoides	0.23	0.20	0.29
Sitanion hystrix	0.00	0.39	0.28
Sphaeralcea ambigua monticola	0.00	0.14	0.00
Tetradymia glabrata	0.43	0.50	0.00
Yucca brevifolia	0.00	0.00	0.25

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Artemisia spinescens	1.14	0.74	0.13
Atriplex canescens	0.28	1.32	2.82
Atriplex confertifolia	0.57	0.89	0.00
Ceratoides lanata	1.85	2.79	2.97
Chrysothamnus viscidiflorus	2.84	2.77	6.54
Ephedra nevadensis	0.93	1.91	1.36
Grayia spinosa	10.58	10.58	4.31
Hymenoclea salsola	0.00	0.36	0.00
Lycium andersonii	6.78	9.82	7.20
Oryzopsis hymenoides	0.03	0.05	0.34
Sitanion hystrix	0.00	0.26	0.98
Sphaeralcea ambigua monticola	0.00	0.06	0.00
Tetradymia glabrata	10.41	16.42	0.00
Yucca brevifolia	0.00	0.00	0.03
Total Live	35.41	47.96	26.68

Table A-61A. Site characteristics for Plot 61.

Location:

NTS Area: 18 NTS Grid: F-37

USGS 7.5' Quadrangle Name: Ammonia Tanks

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4110123	565956	NA
Corner 2:	NW	4110154	565959	NA
Corner 3:	NE	4110149	565988	NA
Corner 4:	SE	4110119	565986	NA

DEM Plot Elevation: 1734 m Plot Aspect: 328°

Elevation Above Playa (Playa Name): NA Plot Slope: 59°

Annual Precipitation
Measured: 204 mm
Modeled: 222 mm

Parent Material Type: broken terrain

Substrate: silt w/pebbles & some stones on surface

Slate Geologic Unit: Tgc

Beatley Plant Assemblage: *Artemisia nova*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 1032

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good; road construction near west side

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 28 May 2002

Figure A-61. Photographs showing Plot 61.

A. (1964). This easterly view across Plot 61 shows damage adjacent to the plot owing to construction of the Pahute Airport Road. The northwestern corner of the plot appears at center, indicating that the disturbance did not affect the center of the plot. The hills in the background are volcanic cones associated with the west side of the Eleana Range. The vegetation in the plot is dominated by black sagebrush (*Artemisia nova*) (Janice Beatley Collection, no number).

B. (April 30, 2002). Considerable recovery has occurred in the disturbed foreground, as sagebrush and other species have colonized the formerly barren area. The plot is still dominated by black sagebrush (Dominic Oldershaw, Stake 3643).

Table A-61B. Summary plant data for Plot 61.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Arabis pulchra munciensis	0	2	0
Artemisia nova	236	280	233
Astragalus lentiginosus	0	1	0
Dichelostemma pulchella	0	17	0
Ephedra nevadensis	13	13	10
Grayia spinosa	14	15	5
Lycium andersonii	1	0	0
Oryzopsis hymenoides	2	0	3
Sitanion hystrix	27	20	20
Sphaeralcea ambigua	0	1	0
Stipa comata	0	0	1
Stipa speciosa	0	1	1
Total Live	293	350	273
Dead Grass	0	0	0
Dead Shrub	68	29	36
Total	361	379	309

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Arabis pulchra munciensis	0.00	0.03	0.00
Artemisia nova	27.38	36.06	24.96
Astragalus lentiginosus	0.00	0.01	0.00
Dichelostemma pulchella	0.00	0.16	0.00
Ephedra nevadensis	2.12	1.72	0.61
Grayia spinosa	1.30	1.79	0.60
Lycium andersonii	0.04	0.00	0.00
Oryzopsis hymenoides	0.09	0.00	0.14
Sitanion hystrix	1.41	0.72	0.90
Sphaeralcea ambigua	0.00	0.01	0.00
Stipa comata	0.00	0.00	0.04
Stipa speciosa	0.00	0.04	0.11
Total Live	32.34	40.54	27.35
Dead Grass	0.00	0.00	0.00
Dead Shrub	6.51	2.23	8.12
Total	38.85	42.76	35.47

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Arabis pulchra munciensis	0.00	0.14	0.00
Artemisia nova	0.36	0.39	0.37
Astragalus lentiginosus	0.00	0.03	0.00
Dichelostemma pulchella	0.00	0.08	0.00
Ephedra nevadensis	0.45	0.47	0.54
Grayia spinosa	0.44	0.40	0.40
Lycium andersonii	0.38	0.00	0.00
Oryzopsis hymenoides	0.23	0.00	0.38
Sitanion hystrix	0.25	0.29	0.30
Sphaeralcea ambigua	0.00	0.03	0.00
Stipa comata	0.00	0.00	0.48
Stipa speciosa	0.00	0.30	0.55

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Arabis pulchra munciensis	0.00	0.01	0.00
Artemisia nova	35.54	50.86	34.56
Astragalus lentiginosus	0.00	0.00	0.00
Dichelostemma pulchella	0.00	0.05	0.00
Ephedra nevadensis	3.31	2.83	1.24
Grayia spinosa	2.03	2.75	0.99
Lycium andersonii	0.05	0.00	0.00
Oryzopsis hymenoides	0.07	0.00	0.18
Sitanion hystrix	1.23	0.71	0.95
Sphaeralcea ambigua	0.00	0.00	0.00
Stipa comata	0.00	0.00	0.06
Stipa speciosa	0.00	0.04	0.20
Total Live	42.21	57.25	38.17

Table A-62A. Site characteristics for Plot 62.

Location:

NTS Area: 18 NTS Grid: F-37

USGS 7.5' Quadrangle Name: Ammonia Tanks

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4110796	565892	NA
Corner 2:	NW	4110796	565878	NA
Corner 3:	NE	4110810	056902?	NA
Corner 4:	SE	4110785	565918	NA

DEM Plot Elevation: 1748 m Plot Aspect: 297°

Elevation Above Playa (Playa Name): NA Plot Slope: 3°

Annual Precipitation
Measured: 203 mm
Modeled: 226.0 mm

Parent Material Type: broken terrain

Substrate: silty sand in depression

Slate Geologic Unit: QTc

Beatley Plant Assemblage: *Artemisia tridentata*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 948

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

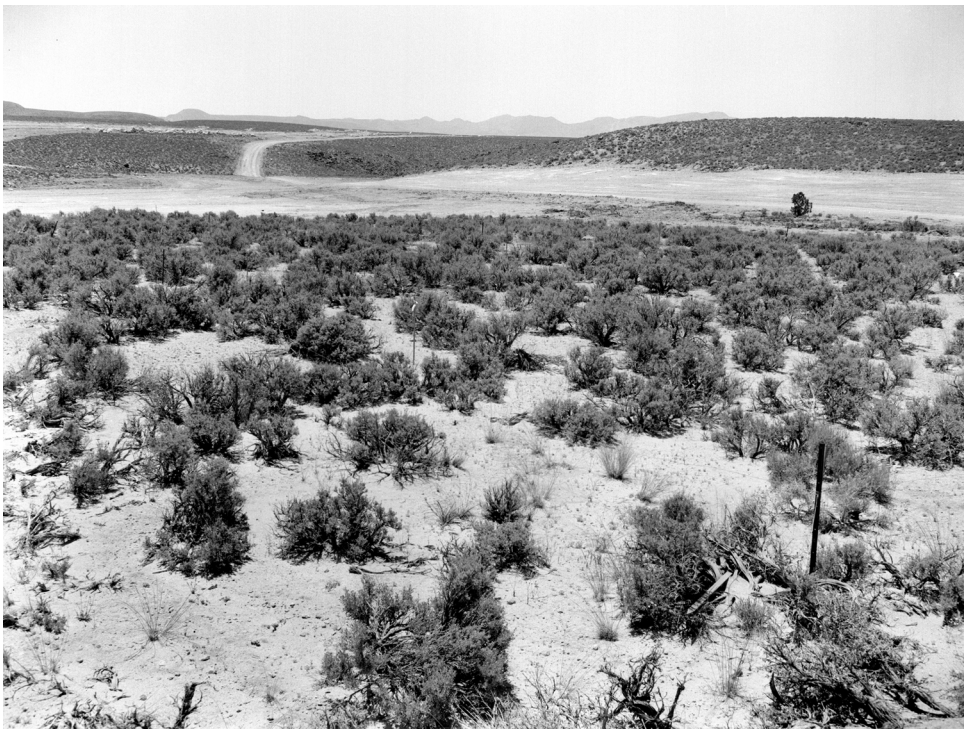
Plot Condition: good, but plot is surrounded by disturbance on all 4 sides

Location of Transect 1: southwest side of plot

Direction Transects Are Read: southeast to northwest

Date(s) Plot Remeasured: 28 May 2002

Figure A-62. Photographs showing Plot 62.



A. (Spring, 1964). This southerly view across Plot 62 shows a Great Basin sagebrush assemblage with considerable disturbance owing to road construction in the background. The mountains in the distance are south of Buckboard Mesa. The solitary tree at right midground is a Utah juniper (*Juniperus osteosperma*) (Janice Beatley Collection, no number).

B. (May 28, 2002). Many of the Great Basin sagebrush individuals are larger now. The disturbance scars in the background have largely healed from a visual perspective. The number and size of Utah junipers on the slopes at right midground have increased, as they have regionally (Dominic Oldershaw, Stake 4196A).

Table A-62B. Summary plant data for Plot 62.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Artemisia tridentata	158	179	169
Atriplex canescens	2	3	4
Chrysothamnus viscidiflorus	1	1	1
Cymopterus ripleyi	0	1	0
Ephedra nevadensis	1	2	2
Eriogonum kearneyi	5	8	9
Oryzopsis hymenoides	7	1	3
Sitanion hystrix	8	4	6
Stipa comata	27	5	3
Stipa speciosa	0	0	2
Total Live	209	204	199
Dead Grass	0	0	0
Dead Shrub	26	32	46
Total	235	236	245

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Artemisia tridentata	27.52	32.83	21.21
Atriplex canescens	0.26	0.36	0.54
Chrysothamnus viscidiflorus	0.05	0.04	0.01
Cymopterus ripleyi	0.00	0.01	0.00
Ephedra nevadensis	0.35	0.39	0.85
Eriogonum kearneyi	0.43	0.35	1.01
Oryzopsis hymenoides	0.50	0.05	0.22
Sitanion hystrix	0.52	0.31	0.35
Stipa comata	1.45	0.27	0.04
Stipa speciosa	0.00	0.00	0.11
Total Live	31.07	34.62	24.33
Dead Grass	0.00	0.00	0.00
Dead Shrub	3.98	4.42	12.91
Total	35.05	39.04	37.24

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Artemisia tridentata	0.60	0.65	0.62
Atriplex canescens	0.62	0.64	0.75
Chrysothamnus viscidiflorus	0.18	0.25	0.49
Cymopterus ripleyi	0.00	0.05	0.00
Ephedra nevadensis	0.81	0.69	1.01
Eriogonum kearneyi	0.45	0.27	0.60
Oryzopsis hymenoides	0.34	0.30	0.41
Sitanion hystrix	0.33	0.34	0.39
Stipa comata	0.26	0.22	0.17
Stipa speciosa	0.00	0.00	0.32

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Artemisia tridentata	61.60	77.07	50.03
Atriplex canescens	0.69	0.85	1.60
Chrysothamnus viscidiflorus	0.03	0.03	0.01
Cymopterus ripleyi	0.00	0.00	0.00
Ephedra nevadensis	0.94	1.07	2.53
Eriogonum kearneyi	0.65	0.54	1.86
Oryzopsis hymenoides	0.61	0.06	0.31
Sitanion hystrix	0.63	0.42	0.46
Stipa comata	1.40	0.22	0.02
Stipa speciosa	0.00	0.00	0.13
Total Live	66.54	80.26	56.97

Table A-63A. Site characteristics for Plot 63.

Location: Rainier Mesa

NTS Area: 19

NTS Grid: F-40

USGS 7.5' Quadrangle Name: Ammonia Tanks

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4117437	566326	Standing
Corner 2:	NW	4117466	566330	On ground
Corner 3:	NE	4117467	566361	On ground
Corner 4:	SE	4117436	566357	Standing

DEM Plot Elevation: 2000 m

Plot Aspect: 170°

Elevation Above Playa (Playa Name): NA

Plot Slope: 12°

Annual Precipitation
Measured: 270 mm
Modeled: 265 mm

Parent Material Type: alluvial fan

Substrate: old volcanic, rocky

Slate Geologic Unit: Tmr

Beatley Plant Assemblage: *Artemisia nova*-Pinyon-Juniper

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 1502

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good

Location of Transect 1: north side of plot

Direction Transects Are Read: west to east

Date(s) Plot Remeasured: 29 May 2002

Figure A-63. Photographs showing Plot 63.

A. (1964). This southwesterly view across Plot 63 shows a pinyon-juniper assemblage with black sagebrush as the dominant shrub. Singleleaf pinyon (*Pinus monophylla*) is the most visually dominant tree in this view. The west flank of Rattlesnake Ridge appears at left, and Timber Mountain appears in the distance.(Janice Beatley Collection, no number).

B. (May 29, 2002). The sizes of the individual black sagebrush have increased significantly. Both singleleaf pinyon and Utah juniper have increased in density and biomass (Dominic Oldershaw, Stake 3638A).

Table A-63B. Summary plant data for Plot 63.

	Number of Plants				Average Height (m)		
SPECIES	**1963**	**1975**	**2002**	**SPECIES**	**1963**	**1975**	**2002**
Arabis holboellii pinetorum	0	7	0	*Arabis holboellii pinetorum*	0.00	0.29	0.00
Artemisia nova	163	191	102	*Artemisia nova*	0.36	0.33	0.30
Astragalus purshii tinctus	0	5	0	*Astragalus purshii tinctus*	0.00	0.04	0.00
Astragalus species	0	0	1	*Astragalus* species	0.00	0.00	0.04
Brassicaceae species	0	0	1	Brassicaceae species	0.00	0.00	0.04
Calochortus flexuosus	0	40	0	*Calochortus flexuosus*	0.00	0.10	0.00
Chrysothamnus viscidiflorus puberulus	16	18	3	*Chrysothamnus viscidiflorus puberulus*	0.27	0.25	0.26
Crepis intermedia	0	13	0	*Crepis intermedia*	0.00	0.09	0.00
Dichelostemma pulchella	0	224	0	*Dichelostemma pulchella*	0.00	0.08	0.00
Ephedra nevadensis	0	0	2	*Ephedra nevadensis*	0.00	0.00	0.47
Ephedra viridis	4	6	3	*Ephedra viridis*	0.60	0.52	0.40
Eriogonum cespitosum	137	238	48	*Eriogonum cespitosum*	0.05	0.06	0.04
Hymenoxys cooperi	0	3	0	*Hymenoxys cooperi*	0.00	0.07	0.00
Juniperus monosperma	0	0	4	Juniperus monosperma	0.00	0.00	1.08
Juniperus osteosperma	13	13	18	*Juniperus osteosperma*	1.23	1.41	1.94
Lomatium nevadense nevadense	0	17	0	*Lomatium nevadense nevadense*	0.00	0.08	0.00
Oryzopsis hymenoides	15	2	2	*Oryzopsis hymenoides*	0.29	0.23	0.30
Perennial grass	0	0	30	Perennial grass	0.00	0.00	0.15
Phlox stansburyi	0	32	0	*Phlox stansburyi*	0.00	0.13	0.00
Pinus monophylla	26	35	33	*Pinus monophylla*	1.12	1.04	1.02
Poa fendleriana	1	6	0	*Poa fendleriana*	0.08	0.34	0.00
Poa sandbergii	14	27	0	*Poa sandbergii*	0.09	0.28	0.00
Poa species	0	0	29	*Poa* species	0.00	0.00	0.27
Purshia tridentata	2	3	4	*Purshia tridentata*	0.47	0.51	0.62
Senecio multilobatus	0	1	0	*Senecio multilobatus*	0.00	0.03	0.00
Sitanion hystrix	51	103	31	*Sitanion hystrix*	0.24	0.25	0.24
Sphaeralcea ambigua monticola	0	1	0	*Sphaeralcea ambigua monticola*	0.00	0.08	0.00
Stipa thurberiana	119	109	35	*Stipa thurberiana*	0.20	0.23	0.32
Streptanthus cordatus	0	15	0	*Streptanthus cordatus*	0.00	0.21	0.00
Unknown herbaceous perennial	0	0	7	Unknown herbaceous perennial	0.00	0.00	0.07
Unknown shrub	0	0	1	Unknown shrub	0.00	0.00	0.21
Viguiera multiform nevadensis	0	33	0	*Viguiera multiform nevadensis*	0.00	0.05	0.00
Total Live	561	1142	354				
Dead Grass	1	0	14				
Dead Shrub	13	13	64				
Total Live	575	1155	432				

Table A-63B (continued). Summary plant data for Plot 63.

	Cover (%)				Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**	**SPECIES**	**1963**	**1975**	**2002**
Arabis holboellii pinetorum	0.00	0.12	0.00	*Arabis holboellii pinetorum*	0.00	0.11	0.00
Artemisia nova	18.22	20.40	6.18	*Artemisia nova*	24.27	26.03	6.99
Astragalus purshii tinctus	0.00	0.08	0.00	*Astragalus purshii tinctus*	0.00	0.01	0.00
Astragalus species	0.00	0.00	0.01	*Astragalus* species	0.00	0.00	0.00
Brassicaceae species	0.00	0.00	0.01	Brassicaceae species	0.00	0.00	0.00
Calochortus flexuosus	0.00	0.45	0.00	*Calochortus flexuosus*	0.00	0.16	0.00
Chrysothamnus viscidiflorus puberulus	1.06	1.09	0.22	*Chrysothamnus viscidiflorus puberulus*	0.99	1.05	0.25
Crepis intermedia	0.00	0.22	0.00	*Crepis intermedia*	0.00	0.07	0.00
Dichelostemma pulchella	0.00	1.88	0.00	*Dichelostemma pulchella*	0.00	0.54	0.00
Ephedra nevadensis	0.00	0.00	0.13	*Ephedra nevadensis*	0.00	0.00	0.20
Ephedra viridis	0.78	0.59	0.34	*Ephedra viridis*	2.01	1.43	0.45
Eriogonum cespitosum	3.16	4.92	1.08	*Eriogonum cespitosum*	0.59	1.28	0.13
Hymenoxys cooperi	0.00	0.03	0.00	*Hymenoxys cooperi*	0.00	0.01	0.00
Juniperus monosperma	0.00	0.00	0.82	*Juniperus monosperma*	0.00	0.00	3.60
Juniperus osteosperma	4.39	5.17	7.98	*Juniperus osteosperma*	30.19	36.02	62.15
Lomatium nevadense nevadense	0.00	0.22	0.00	*Lomatium nevadense nevadense*	0.00	0.06	0.00
Oryzopsis hymenoides	0.77	0.07	0.07	*Oryzopsis hymenoides*	0.81	0.06	0.07
Perennial grass	0.00	0.00	0.67	Perennial grass	0.00	0.00	0.39
Phlox stansburyi	0.00	0.60	0.00	*Phlox stansburyi*	0.00	0.33	0.00
Pinus monophylla	5.18	7.82	6.27	*Pinus monophylla*	48.45	57.20	24.70
Poa fendleriana	0.02	0.19	0.00	*Poa fendleriana*	0.00	0.21	0.00
Poa sandbergii	0.41	0.71	0.00	*Poa sandbergii*	0.14	0.71	0.00
Poa species	0.00	0.00	0.88	*Poa* species	0.00	0.00	0.98
Purshia tridentata	0.55	0.82	0.85	*Purshia tridentata*	0.86	1.51	2.03
Senecio multilobatus	0.00	0.01	0.00	*Senecio multilobatus*	0.00	0.00	0.00
Sitanion hystrix	2.45	4.44	2.34	*Sitanion hystrix*	2.11	3.85	2.23
Sphaeralcea ambigua monticola	0.00	0.02	0.00	*Sphaeralcea ambigua monticola*	0.00	0.00	0.00
Stipa thurberiana	5.33	4.35	1.21	*Stipa thurberiana*	3.87	3.66	1.39
Streptanthus cordatus	0.00	0.26	0.00	*Streptanthus cordatus*	0.00	0.22	0.00
Unknown herbaceous perennial	0.00	0.00	0.13	Unknown herbaceous perennial	0.00	0.00	0.04
Unknown shrub	0.00	0.00	0.02	Unknown shrub	0.00	0.00	0.01
Viguiera multiform nevadensis	0.00	0.48	0.00	*Viguiera multiform nevadensis*	0.00	0.10	0.00
Total Live	42.33	54.94	29.21	Total Live	114.30	134.64	105.61
Dead Grass	0.40	0.00	0.48				
Dead Shrub	10.10	1.84	6.45				
Total Live	52.83	56.77	36.14				

Table A-64A. Site characteristics for Plot 64.

Location: Rainier Mesa

NTS Area: 12 NTS Grid: I-40

USGS 7.5' Quadrangle Name: Rainier Mesa

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4117113	570052	On ground
Corner 2:	NW	4117144	570051	Standing
Corner 3:	NE	NA	NA	Missing
Corner 4:	SE	NA	NA	On ground

DEM Plot Elevation: 2252 m Plot Aspect: 83°

Elevation Above Playa (Playa Name): NA Plot Slope: 22°

Annual Precipitation
Measured: 270 mm
Modeled: 321 mm

Parent Material Type: mesa

Substrate: NA

Slate Geologic Unit: Tmr

Beatley Plant Assemblage: *Artemisia nova*-Pinyon-Juniper

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 860

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none

Plot Condition: road was constructed through southeast corner of plot between 1975 and 2000

Location of Transect 1: north side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 30 May 2002

Figure A-64. Photograph showing Plot 64.

(June 7, 2003). This northeasterly view across Plot 64 shows the pinyon-juniper community that covers the top of Rainier Mesa. The foreground shrubs are bitterbrush (*Purshia tridentata)* (Dustin Haines and Todd Esque, Stake 4660).

Table A-64B. Summary plant data for Plot 64.

	Number of Plants				Average Height (m)		
SPECIES	**1964**	**1974**	**2002**	**SPECIES**	**1964**	**1974**	**2002**
Agoseris glauca	3	0	0	*Agoseris glauca*	0.04	0.00	0.00
Antennaria dimorpha	1	0	0	*Antennaria dimorpha*	0.03	0.00	0.00
Arenaria congesta subcongesta	21	4	0	*Arenaria congesta subcongesta*	0.11	0.06	0.00
Artemisia nova	59	75	83	*Artemisia nova*	0.42	0.49	0.36
Astragalus lentiginosus fremontii	0	0	1	*Astragalus lentiginosus fremontii*	0.00	0.00	0.13
Chrysothamnus viscidiflorus	2	4	10	*Chrysothamnus viscidiflorus*	0.33	0.23	0.19
Crepis intermedia	1	0	0	*Crepis intermedia*	0.15	0.00	0.00
Cryptantha flavoculata	0	1	0	*Cryptantha flavoculata*	0.00	0.05	0.00
Ephedra nevadensis	0	0	1	*Ephedra nevadensis*	0.00	0.00	0.72
Ephedra viridis	1	0	0	*Ephedra viridis*	0.18	0.00	0.00
Ericameria nana	12	9	3	*Ericameria nana*	0.27	0.23	0.18
Eriogonum cespitosum	2	3	0	*Eriogonum cespitosum*	0.08	0.04	0.00
Eriogonum microthecum lapidicola	29	32	0	*Eriogonum microthecum lapidicola*	0.05	0.06	0.00
Eriogonum species	0	0	10	*Eriogonum species*	0.00	0.00	0.05
Eriogonum umbellatum subaridum	5	5	6	*Eriogonum umbellatum subaridum*	0.07	0.16	0.07
Hymenoxys cooperi	0	11	0	*Hymenoxys cooperi*	0.00	0.03	0.00
Ipomopsis aggregata	0	0	1	*Ipomopsis aggregata*	0.00	0.00	0.02
Ipomopsis congesta	0	2	0	*Ipomopsis congesta*	0.00	0.08	0.00
Juniperus osteosperma	1	1	1	*Juniperus osteosperma*	3.30	3.66	4.18
Koeleria cristata	2	0	0	*Koeleria cristata*	0.28	0.00	0.00
Lesquerella kingii kingii	4	0	2	*Lesquerella kingii kingii*	0.06	0.00	0.05
Linanthus nuttallii	0	10	16	*Linanthus nuttallii*	0.00	0.15	0.09
Lomatium foeniculaceum fimbriatum	2	0	0	*Lomatium foeniculaceum fimbriatum*	0.06	0.00	0.00
Machaeranthera canescens	0	1	0	*Machaeranthera canescens*	0.00	0.03	0.00
Opuntia erinacea erinacea	15	15	9	*Opuntia erinacea erinacea*	0.19	0.17	0.13
Oryzopsis hymenoides	1	0	2	*Oryzopsis hymenoides*	0.33	0.00	0.26
Perennial grass	0	70	46	Perennial grass	0.00	0.19	0.16
Petradoria pumila	3	3	0	*Petradoria pumila*	0.19	0.15	0.00
Phlox stansburyi	6	0	0	*Phlox stansburyi*	0.09	0.00	0.00
Pinus monophylla	31	35	32	*Pinus monophylla*	2.76	2.74	2.61
Poa sandbergii	70	0	0	*Poa sandbergii*	0.27	0.00	0.00
Purshia tridentata	20	27	98	*Purshia tridentata*	0.52	0.50	0.66
Quercus gambelii	11	12	3	*Quercus gambelii*	1.09	1.16	0.84
Ribes velutinum velutinum	3	3	6	*Ribes velutinum velutinum*	1.10	1.05	0.53
Sitanion hystrix	48	0	1	*Sitanion hystrix*	0.24	0.00	0.28
Stipa pinetorum	65	0	4	*Stipa pinetorum*	0.22	0.00	0.26
Total Live	418	323	335				
Dead Grass	0	1	0				
Dead Shrub	21	10	15				
Total	439	334	350				

Table A-64B (continued). Summary plant data for Plot 64.

	Cover (%)				Biomass Index (m^2)		
SPECIES	**1964**	**1974**	**2002**	**SPECIES**	**1964**	**1974**	**2002**
Agoseris glauca	0.12	0.00	0.00	*Agoseris glauca*	0.02	0.00	0.00
Antennaria dimorpha	0.02	0.00	0.00	*Antennaria dimorpha*	0.00	0.00	0.00
Arenaria congesta subcongesta	0.44	0.08	0.00	*Arenaria congesta subcongesta*	0.21	0.02	0.00
Artemisia nova	7.16	9.65	8.55	*Artemisia nova*	11.40	17.73	12.61
Astragalus lentiginosus fremontii	0.00	0.00	0.09	*Astragalus lentiginosus fremontii*	0.00	0.00	0.04
Chrysothamnus viscidiflorus	0.12	0.31	0.49	*Chrysothamnus viscidiflorus*	0.13	0.36	0.50
Crepis intermedia	0.05	0.00	0.00	*Crepis intermedia*	0.03	0.00	0.00
Cryptantha flavoculata	0.00	0.02	0.00	*Cryptantha flavoculata*	0.00	0.00	0.00
Ephedra nevadensis	0.00	0.00	0.05	*Ephedra nevadensis*	0.00	0.00	0.13
Ephedra viridis	0.01	0.00	0.00	*Ephedra viridis*	0.01	0.00	0.00
Ericameria nana	0.97	0.68	0.07	*Ericameria nana*	0.99	0.64	0.05
Eriogonum cespitosum	0.06	0.05	0.00	*Eriogonum cespitosum*	0.02	0.01	0.00
Eriogonum microthecum lapidicola	0.56	0.66	0.00	*Eriogonum microthecum lapidicola*	0.11	0.15	0.00
Eriogonum species	0.00	0.00	0.04	*Eriogonum species*	0.00	0.00	0.01
Eriogonum umbellatum subaridum	0.13	0.17	0.12	*Eriogonum umbellatum subaridum*	0.04	0.13	0.03
Hymenoxys cooperi	0.00	0.11	0.00	*Hymenoxys cooperi*	0.00	0.01	0.00
Ipomopsis aggregata	0.00	0.00	0.01	*Ipomopsis aggregata*	0.00	0.00	0.00
Ipomopsis congesta	0.00	0.02	0.00	*Ipomopsis congesta*	0.00	0.00	0.00
Juniperus osteosperma	0.38	0.43	0.46	*Juniperus osteosperma*	4.23	5.24	6.50
Koeleria cristata	0.05	0.00	0.00	*Koeleria cristata*	0.04	0.00	0.00
Lesquerella kingii kingii	0.07	0.00	0.02	*Lesquerella kingii kingii*	0.01	0.00	0.00
Linanthus nuttallii	0.00	0.38	0.43	*Linanthus nuttallii*	0.00	0.22	0.16
Lomatium foeniculaceum fimbriatum	0.02	0.00	0.00	*Lomatium foeniculaceum fimbriatum*	0.00	0.00	0.00
Machaeranthera canescens	0.00	0.02	0.00	*Machaeranthera canescens*	0.00	0.00	0.00
Opuntia erinacea erinacea	1.40	1.13	0.39	*Opuntia erinacea erinacea*	0.89	0.70	0.17
Oryzopsis hymenoides	0.14	0.00	0.15	*Oryzopsis hymenoides*	0.15	0.00	0.13
Perennial grass	0.00	2.52	1.29	Perennial grass	0.00	1.80	0.74
Petradoria pumila	0.07	0.07	0.00	*Petradoria pumila*	0.05	0.04	0.00
Phlox stansburyi	0.08	0.00	0.00	*Phlox stansburyi*	0.03	0.00	0.00
Pinus monophylla	14.72	16.31	15.84	*Pinus monophylla*	160.03	187.30	168.69
Poa sandbergii	2.35	0.00	0.00	*Poa sandbergii*	2.35	0.00	0.00
Purshia tridentata	2.18	3.28	21.25	*Purshia tridentata*	5.14	6.38	62.06
Quercus gambelii	2.78	1.50	0.33	*Quercus gambelii*	11.28	6.04	1.19
Ribes velutinum velutinum	0.81	0.30	0.91	*Ribes velutinum velutinum*	3.39	1.21	2.29
Sitanion hystrix	1.96	0.00	0.04	*Sitanion hystrix*	1.68	0.00	0.03
Stipa pinetorum	2.85	0.00	0.11	*Stipa pinetorum*	2.33	0.00	0.09
Total Live	39.51	37.69	50.64	Total Live	204.56	227.99	255.44
Dead Grass	0.00	0.03	0.00				
Dead Shrub	3.54	1.69	4.01				
Total	43.05	39.41	54.65				

Table A-65A. Site characteristics for Plot 65.

Location: Rainier Mesa

NTS Area: 18

NTS Grid: G-34

USGS 7.5' Quadrangle Name: Tippipah Spring

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4106120	566683	Standing
Corner 2:	NW	4106151	566680	Standing
Corner 3:	NE	4106154	566710	Standing
Corner 4:	SE	4106123	5660714	Standing

DEM Plot Elevation: 1676 m

Plot Aspect: 123°

Elevation Above Playa (Playa Name): NA

Plot Slope: 35°

Annual Precipitation
Measured: 182 mm
Modeled: 213 mm

Parent Material Type: alluvial fan

Substrate: very sandy w/few pebbles

Slate Geologic Unit: Tgc

Beatley Plant Assemblage: *Atriplex canescens*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 943

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

Plot Condition: good, but feral horses use this area

Location of Transect 1: south side of plot

Direction Transects Are Read: east to west

Date(s) Plot Remeasured: 27 May 2002

Figure A-65. Photographs showing Plot 65.

A. (1964). In this east-northeasterly view across Plot 2, unnamed hills of the Eleana Range and Big Butte (left rear) appear in the background. Four-wing saltbush is the dominant shrub, Indian rice grass is the dominant grass, and pale evening primrose (*Oenothera pallida*) is a significant herbaceous perennial. Utah junipers appear in the midground. This plot lies in an unusually sandy place that results from the weathering of volcanic ash (Janice Beatley Collection, no number).

B. (May 27, 2002). Many of the same individual shrubs persist but appear to be slightly larger now. Owing to drought at the time of measurement, the pale evening primrose individuals were mostly small with few in bloom. The number of Utah junipers is about the same, but most of the individuals are much larger now (Dominic Oldershaw, Stake 4230B).

Table A-65B. Summary plant data for Plot 65.

	Number of Plants		
SPECIES	**1963**	**1975**	**2002**
Atriplex canescens	3	4	0
Chrysothamnus viscidiflorus	15	8	14
Dalea searlsiae	0	5	0
Ephedra nevadensis	0	0	1
Ephedra viridis	2	2	0
Eriogonum kearneyi	58	62	44
Fabaceae species	0	0	1
Oenothera pallida	0	5	229
Oryzopsis hymenoides	77	420	215
Psorothamnus polydenius	15	9	12
Stipa comata	0	0	10
Unknown herbaceous perennial	0	0	2
Total Live	170	515	528
Dead grass	0	12	25
Dead shrub	4	8	36
Total	174	535	589

	Cover (%)		
SPECIES	**1963**	**1975**	**2002**
Atriplex canescens	0.40	0.55	0.00
Chrysothamnus viscidiflorus	3.09	1.81	1.33
Dalea searlsiae	0.00	0.18	0.00
Ephedra nevadensis	0.00	0.00	0.23
Ephedra viridis	0.41	0.30	0.00
Eriogonum kearneyi	10.39	9.64	3.12
Fabaceae species	0.00	0.00	0.01
Oenothera pallida	0.00	0.07	2.67
Oryzopsis hymenoides	3.65	22.24	11.61
Psorothamnus polydenius	1.18	1.03	1.18
Stipa comata	0.00	0.00	0.45
Unknown herbaceous perennial	0.00	0.00	0.40
Total Live	19.13	35.82	20.99
Dead grass	0.00	0.75	0.51
Dead shrub	0.25	0.98	2.55
Total	19.37	37.55	24.05

	Average Height (m)		
SPECIES	**1963**	**1975**	**2002**
Atriplex canescens	0.73	0.84	0.00
Chrysothamnus viscidiflorus	0.50	0.54	0.45
Dalea searlsiae	0.00	0.13	0.00
Ephedra nevadensis	0.00	0.00	0.83
Ephedra viridis	0.71	0.71	0.00
Eriogonum kearneyi	0.42	0.41	0.24
Fabaceae species	0.00	0.00	0.00
Oenothera pallida	0.00	0.07	0.00
Oryzopsis hymenoides	0.21	0.27	0.32
Psorothamnus polydenius	0.36	0.39	0.37
Stipa comata	0.00	0.00	0.24
Unknown herbaceous perennial	0.00	0.00	0.10

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2002**
Atriplex canescens	1.11	1.50	0.00
Chrysothamnus viscidiflorus	5.36	3.45	2.20
Dalea searlsiae	0.00	0.10	0.00
Ephedra nevadensis	0.00	0.00	0.63
Ephedra viridis	1.02	0.76	0.00
Eriogonum kearneyi	15.47	14.98	2.70
Fabaceae species	0.00	0.00	0.00
Oenothera pallida	0.00	0.02	0.01
Oryzopsis hymenoides	2.78	21.74	13.19
Psorothamnus polydenius	1.92	1.54	1.86
Stipa comata	0.00	0.00	0.39
Unknown herbaceous perennial	0.00	0.00	0.02
Total Live	27.67	44.08	21.02

Table A-66A. Site characteristics for Plot 66.

Location: Jackass Flats

NTS Area: 26 NTS Grid: L-17

USGS 7.5' Quadrangle Name: Skull Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	NA
Corner 2:	NW	NA	NA	NA
Corner 3:	NE	NA	NA	NA
Corner 4:	SE	NA	NA	NA

DEM Plot Elevation: 1334 m Plot Aspect: 309°

Elevation Above Playa (Playa Name): NA Plot Slope: 18°

Annual Precipitation
Measured: 177 mm
Modeled: 173 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Larrea-Grayia-Lycium*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 187

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: none (control for Plot 67)

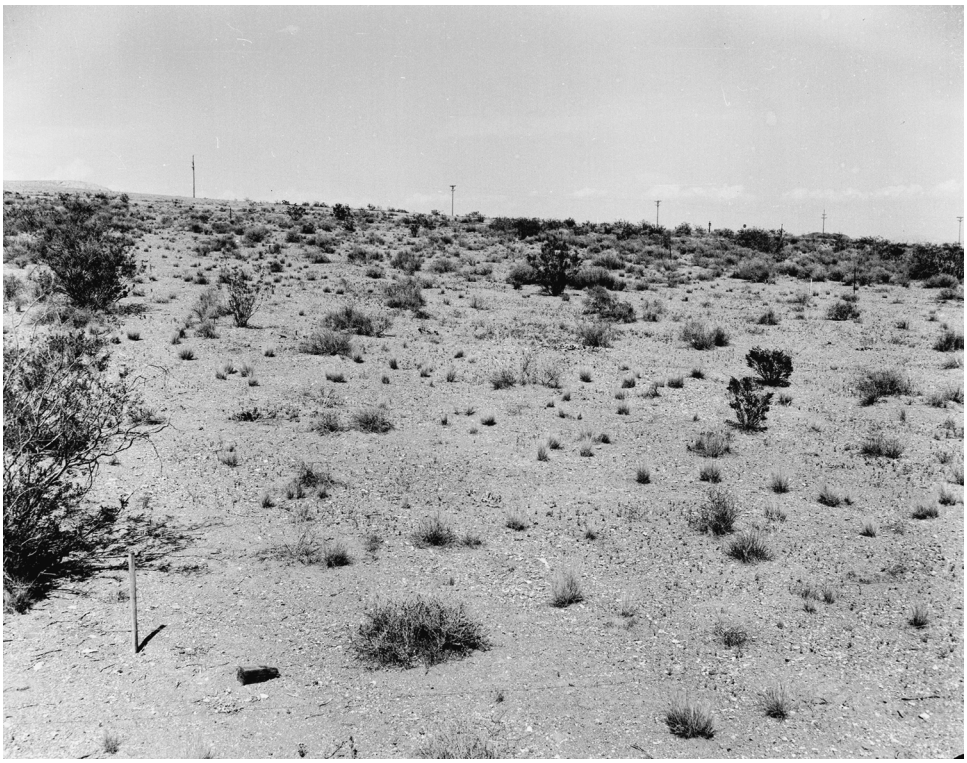
Plot Condition: good but one edge is historical disturbance

Location of Transect 1: east side

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 25 April 1999 (incorrectly), 10 April 2003 (correctly)

Figure A-66. Photographs showing Plots 66 and 67.



A. (May 1964). Plots 66 and 67 represent the recovery from the disturbance associated with Wahmonie townsite, constructed and abandoned in 1928. This northeasterly view shows the dividing line between the disturbed plot 67 (right) and part of control plot 66 (extreme left). Mormon tea and wolfberry were the dominants in the disturbed site here in 1964 (Janice Beatley Collection, 49-A).

B. (May 11, 2000). The density, cover, and biomass have increased dramatically on both plots 66 and 67. The recovery of the formerly barren area associated with the Wahmonie townsite is very striking (R.H. Webb, Stake 3822B).

Table A-66B. Summary plant data for Plot 66.

	Number of Plants		
SPECIES	**1963**	**1975**	**2003**
Acamptopappus shockleyi	1	1	0
Coleogyne ramosissima	1	1	3
Ephedra nevadensis	22	26	46
Ericameria cooperi	1	1	0
Grayia spinosa	48	43	9
Hymenoclea salsola	0	0	0
Larrea tridentata	24	29	42
Lycium andersonii	25	32	47
Salazaria mexicana	3	4	7
Stipa speciosa	18	59	5
Thamnosma montana	3	3	37
Yucca brevifolia	1	1	0
Total Live	147	200	196
Dead Grass	0	0	10
Dead Shrub	11	12	76
Total	158	212	282

	Cover (%)		
SPECIES	**1963**	**1975**	**2003**
Acamptopappus shockleyi	0.18	0.18	0.00
Coleogyne ramosissima	0.24	0.26	0.55
Ephedra nevadensis	3.49	4.02	6.89
Ericameria cooperi	0.16	0.15	0.00
Grayia spinosa	10.39	8.37	0.97
Hymenoclea salsola	0.00	0.00	0.00
Larrea tridentata	7.51	11.30	13.60
Lycium andersonii	4.86	5.06	4.10
Salazaria mexicana	0.22	0.62	0.81
Stipa speciosa	1.01	4.69	0.22
Thamnosma montana	0.23	0.45	3.69
Yucca brevifolia	0.52	0.07	0.00
Total Live	28.83	35.19	30.83
Dead Grass	0.00	0.00	0.29
Dead Shrub	1.94	5.00	13.15
Total	30.76	40.19	44.27

	Average Height (m)		
SPECIES	**1963**	**1975**	**2003**
Acamptopappus shockleyi	0.25	0.30	0.00
Coleogyne ramosissima	0.81	0.71	0.89
Ephedra nevadensis	0.41	0.52	0.57
Ericameria cooperi	0.30	0.38	0.00
Grayia spinosa	0.62	0.66	0.78
Hymenoclea salsola	0.00	0.00	0.00
Larrea tridentata	1.18	1.27	1.63
Lycium andersonii	0.48	0.45	0.42
Salazaria mexicana	0.29	0.40	0.46
Stipa speciosa	0.33	0.36	0.26
Thamnosma montana	0.26	0.38	0.37
Yucca brevifolia	2.82	0.30	0.00

	Biomass Index (m^2)		
SPECIES	**1963**	**1975**	**2003**
Acamptopappus shockleyi	0.15	0.19	0.00
Coleogyne ramosissima	0.67	0.63	1.65
Ephedra nevadensis	5.69	7.48	15.10
Ericameria cooperi	0.17	0.20	0.00
Grayia spinosa	22.80	19.46	2.69
Hymenoclea salsola	0.00	0.00	0.00
Larrea tridentata	33.41	52.88	85.45
Lycium andersonii	8.56	8.11	6.57
Salazaria mexicana	0.23	0.95	1.44
Stipa speciosa	1.24	5.94	0.20
Thamnosma montana	0.21	0.60	4.70
Yucca brevifolia	5.07	0.07	0.00
Total Live	78.21	96.50	117.81

Table A-67A. Site characteristics for Plot 67.

Location: Jackass Flats

NTS Area: 26

NTS Grid: L-17

USGS 7.5' Quadrangle Name: Skull Mountain

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	NA	NA	NA
Corner 2:	NW	NA	NA	NA
Corner 3:	NE	NA	NA	NA
Corner 4:	SE	NA	NA	NA

DEM Plot Elevation: 1328 m

Plot Aspect: 79°

Elevation Above Playa (Playa Name): NA

Plot Slope: 4°

Annual Precipitation
Measured: 177 mm
Modeled: 173 mm

Parent Material Type: alluvial fan

Substrate: NA

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Ephedra-Lycium*

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 187

Abundance of Biological Soil Crusts: NA

Type and Date of Disturbance: Wahmonie ghost town, abandoned in 1928

Plot Condition: good

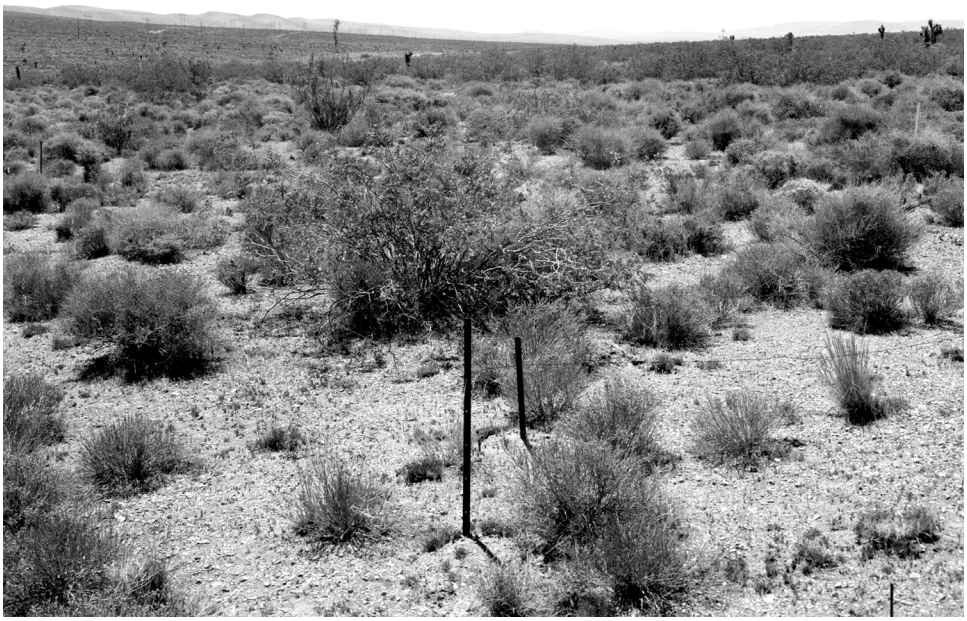
Location of Transect 1: east side of plot

Direction Transects Are Read: north to south

Date(s) Plot Remeasured: 25 April 1999 (incorrectly), 10 April 2003 (correctly)

Figure A-67. Photographs showing Plots 66 and 67.

A. (May 1964). This southwesterly view of Plot 67 shows Plot 66 in the midground. The background is Little Skull Mountain (at left) and Yucca Mountain (at right). The original vegetation in Plot 67 is represented by Plot 66, which is dominated by creosote bush, spiny hopsage, and wolfberry (Janice Beatley Collection, 50-B).



B. (May 11, 2000). The biomass of vegetation in the disturbed area has greatly increased. In the undisturbed vegetation of Plot 66, creosote bush, Mormon tea, and turpentinebroom now dominate. The number of Joshua trees appears to be more or less unchanged (R.H. Webb, Stake 3820).

Table A-67B. Summary plant data for Plot 67.

	Number of Plants				
SPECIES	**1963**	**1967**	**1970**	**1975**	**2003**
Acamptopappus shockleyi	5	3	4	5	5
Astragalus lentiginosus	0	54	0	0	0
Coleogyne ramosissima	0	0	0	0	2
Dyssodia cooperi	0	1	0	0	1
Ephedra nevadensis	25	22	29	32	56
Grayia spinosa	7	3	3	2	2
Hymenoclea salsola	6	12	17	18	5
Larrea tridentata	0	0	0	0	6
Lycium andersonii	12	14	16	17	23
Salazaria mexicana	5	5	5	5	7
Stipa speciosa	41	69	74	100	22
Thamnosma montana	4	5	5	6	42
Total Live	105	188	153	185	171
Dead Grass	0	0	0	0	18
Dead Shrub	8	89	11	8	61
Total	113	277	164	193	250

	Average Height (m)				
SPECIES	**1963**	**1967**	**1970**	**1975**	**2003**
Acamptopappus shockleyi	0.22	0.25	0.27	0.25	0.29
Astragalus lentiginosus	0.00	0.16	0.00	0.00	0.00
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.77
Dyssodia cooperi	0.00	0.10	0.00	0.00	0.06
Ephedra nevadensis	0.42	0.46	0.60	0.60	0.60
Grayia spinosa	0.48	0.58	0.67	0.75	0.78
Hymenoclea salsola	0.38	0.40	0.57	0.57	0.45
Larrea tridentata	0.00	0.00	0.00	0.00	1.92
Lycium andersonii	0.39	0.36	0.38	0.46	0.43
Salazaria mexicana	0.34	0.38	0.41	0.46	0.43
Stipa speciosa	0.37	0.32	0.32	0.39	0.29
Thamnosma montana	0.30	0.33	0.58	0.38	0.36

Table A-67B (continued). Summary plant data for Plot 67.

			Cover (%)		
SPECIES	**1963**	**1967**	**1970**	**1975**	**2003**
Acamptopappus shockleyi	0.45	0.37	0.47	0.48	0.44
Astragalus lentiginosus	0.00	1.97	0.00	0.00	0.00
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.34
Dyssodia cooperi	0.00	0.03	0.00	0.00	0.02
Ephedra nevadensis	3.27	3.11	4.85	6.71	9.81
Grayia spinosa	0.68	0.36	0.41	0.26	0.22
Hymenoclea salsola	0.70	1.00	3.18	3.07	0.28
Larrea tridentata	0.00	0.00	0.00	0.00	2.21
Lycium andersonii	2.03	1.94	2.56	2.62	2.24
Salazaria mexicana	0.44	0.71	0.82	0.99	0.99
Stipa speciosa	2.82	4.32	5.81	8.84	1.00
Thamnosma montana	0.43	0.56	0.60	0.84	4.01
Total Live	10.82	14.36	18.70	23.81	21.56
Dead Grass	0.00	0.00	0.00	0.00	1.04
Dead Shrub	1.04	3.56	1.10	0.57	13.75
Total	11.86	17.93	19.80	24.38	36.36

			Biomass Index (m^2)		
SPECIES	**1963**	**1967**	**1970**	**1975**	**2003**
Acamptopappus shockleyi	0.35	0.33	0.43	0.48	0.45
Astragalus lentiginosus	0.00	1.17	0.00	0.00	0.00
Coleogyne ramosissima	0.00	0.00	0.00	0.00	0.90
Dyssodia cooperi	0.00	0.01	0.00	0.00	0.00
Ephedra nevadensis	5.36	5.46	10.69	14.44	23.22
Grayia spinosa	1.20	0.74	0.98	0.68	0.59
Hymenoclea salsola	1.06	1.36	6.45	6.46	0.39
Larrea tridentata	0.00	0.00	0.00	0.00	17.50
Lycium andersonii	2.82	2.54	3.33	4.55	3.68
Salazaria mexicana	0.54	1.03	1.20	1.67	1.58
Stipa speciosa	3.72	5.21	7.11	12.31	1.01
Thamnosma montana	0.47	0.64	1.32	1.12	5.40
Total Live	15.52	18.48	31.51	41.71	54.74

Table A-68A. Site characteristics for Plot 68.

Location: Rainier Mesa

NTS Area: 12 NTS Grid: G-39

USGS 7.5' Quadrangle Name: Rainier Mesa

		GPS Readings (Zone 11S)		
	Location	Northing	Easting	Condition of Original Corners
Corner 1:	SW	4114400	566765	Found washed away (debris flow)
Corner 2:	NW	4114431	566783	On ground
Corner 3:	NE	4114414	566807	Standing
Corner 4:	SE	4114393	566791	Missing

DEM Plot Elevation: 1825 m Plot Aspect: 322°

Elevation Above Playa (Playa Name): NA Plot Slope: 22°

Annual Precipitation
Measured: 261 mm
Modeled: 240 mm

Parent Material Type: broken terrain

Substrate: sandy w/debris flow activity

Slate Geologic Unit: Qay

Beatley Plant Assemblage: *Artemisia tridentata*-Pinyon-Juniper

Ostler-Hanson Plant Association: NA

Ostler-Hanson Land Unit: 952

Abundance of Biological Soil Crusts: none

Type and Date of Disturbance: none

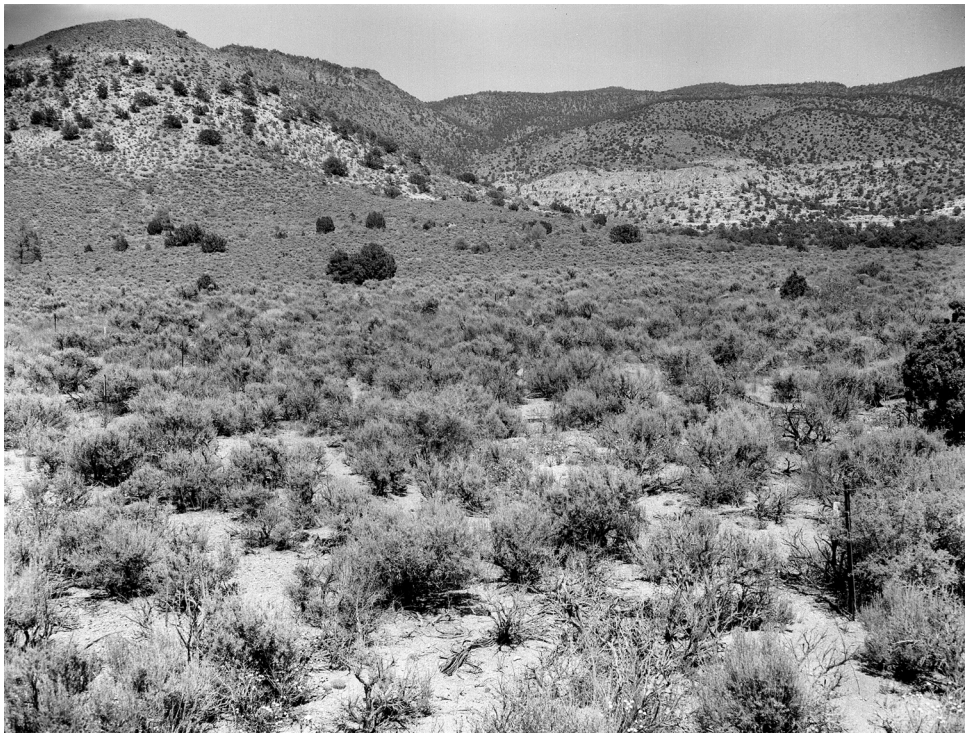
Plot Condition: debris flow activity pre-and post-Beatley measurements had minimal impact on plot. Feral horses are abundant in this valley

Location of Transect 1: west side of plot

Direction Transects Are Read: south to north

Date(s) Plot Remeasured: 28, 30 & 31 May 2002

Figure A-68. Photographs showing Plot 68.



A. (1964). In this easterly view across Plot 68, the western flank of Rainier Mesa dominates the skyline. The vegetation is Great Basin sagebrush with singleleaf pinyon and Utah juniper (Janice Beatley Collection, no number).

B. (April 28, 2002). The increase in density and biomass of singleleaf pinyon and Utah juniper, and particularly juniper, is striking. Needlegrass has declined significantly in the view, possibly owing to the wild horse herd that inhabits this little valley (Dominic Oldershaw, Stake 4198A).

Table A-68B. Summary plant data for Plot 68.

	Number of Plants		
SPECIES	**1964**	**1975**	**2002**
Artemisia tridentata	153	154	168
Astragalus lentiginosus	0	1	0
Atriplex canescens	8	14	7
Chrysothamnus viscidiflorus	11	23	31
Ephedra viridis	0	0	1
Eriogonum kearneyi	0	0	2
Eriogonum ovalifolium	0	1	0
Juniperus osteosperma	1	1	3
Oryzopsis hymenoides	16	8	7
Pinus monophylla	0	0	2
Poa fendleriana	0	1	0
Sitanion hystrix	25	28	3
Sphaeralcea ambigua	1	1	0
Stipa comata	168	334	12
Total Live	383	566	236
Dead Grass	1	2	0
Dead Shrub	91	81	87
Total	475	649	323

	Cover (%)		
SPECIES	**1964**	**1975**	**2002**
Artemisia tridentata	24.15	25.06	24.37
Astragalus lentiginosus	0.00	0.03	0.00
Atriplex canescens	1.57	3.36	0.52
Chrysothamnus viscidiflorus	1.64	2.71	2.45
Ephedra viridis	0.00	0.00	0.15
Eriogonum kearneyi	0.00	0.00	0.33
Eriogonum ovalifolium	0.00	0.04	0.00
Juniperus osteosperma	0.25	0.60	1.65
Oryzopsis hymenoides	1.07	0.45	0.15
Pinus monophylla	0.00	0.00	1.30
Poa fendleriana	0.00	0.04	0.00
Sitanion hystrix	1.76	1.52	0.08
Sphaeralcea ambigua	0.01	0.01	0.00
Stipa comata	16.34	17.55	0.75
Total Live	46.78	51.37	31.75
Dead Grass	0.08	0.05	0.00
Dead Shrub	13.15	12.12	12.80
Total	60.02	63.55	44.55

	Average Height (m)		
SPECIES	**1964**	**1975**	**2002**
Artemisia tridentata	0.71	0.70	0.78
Astragalus lentiginosus	0.00	0.18	0.00
Atriplex canescens	0.76	0.87	0.76
Chrysothamnus viscidiflorus	0.49	0.49	0.47
Ephedra viridis	0.00	0.00	0.75
Eriogonum kearneyi	0.00	0.00	0.56
Eriogonum ovalifolium	0.00	0.08	0.00
Juniperus osteosperma	1.57	2.18	2.73
Oryzopsis hymenoides	0.40	0.31	0.24
Pinus monophylla	0.00	0.00	3.06
Poa fendleriana	0.00	0.25	0.00
Sitanion hystrix	0.42	0.30	0.37
Sphaeralcea ambigua	0.33	0.18	0.00
Stipa comata	0.56	0.27	0.43

	Biomass Index (m^2)		
SPECIES	**1964**	**1975**	**2002**
Artemisia tridentata	61.02	68.48	73.01
Astragalus lentiginosus	0.00	0.02	0.00
Atriplex canescens	4.41	10.41	1.28
Chrysothamnus viscidiflorus	2.95	5.19	4.21
Ephedra viridis	0.00	0.00	0.37
Eriogonum kearneyi	0.00	0.00	0.62
Eriogonum ovalifolium	0.00	0.01	0.00
Juniperus osteosperma	1.30	4.39	17.20
Oryzopsis hymenoides	1.63	0.49	0.15
Pinus monophylla	0.00	0.00	11.31
Poa fendleriana	0.00	0.03	0.00
Sitanion hystrix	2.81	1.61	0.10
Sphaeralcea ambigua	0.01	0.01	0.00
Stipa comata	32.60	16.71	1.07
Total Live	106.72	107.35	109.32

Table A-69. Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 1	4032a	36.63988	116.03702	1022	04/19/1964	14-B	05/11/2000
Plot 1	4032b	36.63988	116.03702	1022	04/19/1964	14-A	05/11/2000
Plot 1	4033a	36.63938	116.03673	1021	04/19/1964	13-A	05/12/2000
Plot 1	4033b	36.63938	116.03673	1021	04/19/1964	13-B	05/12/2000
Plot 2	4034a	36.66955	116.12887	1087	05/14/1964	110-A	05/12/2000
Plot 2	4034b	36.66955	116.12887	1087	05/14/1964	110-B	05/12/2000
Plot 2	4035a	36.66923	116.12948	1087	05/14/1964	109-B	05/12/2000
Plot 2	4035b	36.66923	116.12948	1087	05/14/1964	109-A	05/12/2000
Plot 3	4019a	36.69008	116.18902	1029	04/19/1964	16-A	05/09/2000
Plot 3	4019b	36.69008	116.18902	1029	04/19/1964	16-B	05/09/2000
Plot 3	4020a	36.69055	116.18935	1028	04/19/1964	15-B	05/09/2000
Plot 3	4020b	36.69055	116.18935	1028	04/19/1964	15-A	05/09/2000
Plot 4	4021a	36.69767	116.17605	1055	04/22/1964	22-B	05/09/2000
Plot 4	4021b	36.69767	116.17605	1055	04/22/1964	22-A	05/09/2000
Plot 4	4022a	36.69810	116.17637	1050	04/22/1964	21-A	05/09/2000
Plot 4	4022b	36.69810	116.17637	1050	04/22/1964	21-B	05/09/2000
Plot 5	4036a	36.74867	116.24753	1112	05/07/1964	62-A	05/12/2000
Plot 5	4036b	36.74867	116.24753	1112	05/07/1964	62-B	05/12/2000
Plot 5	4037a	36.74930	116.24752	1117	05/07/1964	61-B	05/12/2000
Plot 5	4037b	36.74930	116.24752	1117	05/07/1964	61-A	05/12/2000
Plot 6	4102a	36.77033	116.26387	1079	05/14/1964	111-B	04/05/2001
Plot 6	4102b	36.77033	116.26387	1079	05/14/1964	111-A	04/05/2001
Plot 6	4103a	36.77074	116.26336	1088	05/14/1964	112-A	04/05/2001
Plot 6	4103b	36.77074	116.26336	1088	05/14/1964	112-B	04/05/2001
Plot 7	4109a	36.77135	116.35682	981	05/14/1964	107-A	04/05/2001
Plot 7	4109b	36.77135	116.35682	981	05/14/1964	107-B	04/05/2001
Plot 7	4110a	36.77177	116.35741	980	05/14/1964	108-A	04/05/2001
Plot 7	4110b	36.77177	116.35741	980	05/14/1964	108-B	04/05/2001
Plot 8	4107a	36.75388	116.37624	966	04/17/1964	8-B	04/05/2001
Plot 8	4107b	36.75388	116.37624	966	04/17/1964	8-A	04/05/2001
Plot 8	4108a	36.75427	116.37574	961	04/17/1964	7-B	04/05/2001
Plot 8	4108b	36.75427	116.37574	961	04/17/1964	7-A	04/05/2001
Plot 9	4125a	36.79382	116.36501	1010	04/18/1964	10-B	04/07/2001
Plot 9	4125b	36.79382	116.36501	1010	04/18/1964	10-A	04/07/2001
Plot 9	4126a	36.79341	116.36461	1019	04/18/1964	9-A	04/07/2001

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 9	4126b	36.79341	116.36461	1019	04/18/1964	9-B	04/07/2001
Plot 10	4123a	36.79470	116.31823	1059	04/18/1964	12-B	04/06/2001
Plot 10	4123b	36.79470	116.31823	1059	04/18/1964	12-A	04/06/2001
Plot 10	4124a	36.79458	116.31904	1031	04/18/1964	11-A	04/06/2001
Plot 10	4124b	36.79458	116.31904	1031	04/18/1964	11-B	04/06/2001
Plot 11	4050a	36.83767	116.26100	1193	04/30/1964	45A	06/08/2001
Plot 11	4050b	36.83767	116.26100	1193	04/30/1964	45B	06/08/2001
Plot 11	4051a	36.83739	116.26161	1191	04/30/1964	46A	06/08/2001
Plot 11	4051b	36.83739	116.26161	1191	04/30/1964	46B	06/08/2001
Plot 12	4052a	36.84343	116.25986	1220	05/06/1964	51A	06/08/2001
Plot 12	4052b	36.84343	116.25986	1220	05/06/1964	51B	06/08/2001
Plot 12	4053a	36.84289	116.25964	1222	05/06/1964	52A	06/08/2001
Plot 12	4053b	36.84289	116.25964	1222	05/06/1964	52B	06/08/2001
Plot 13	4054a	36.85429	116.23701	1308	05/06/1964	54A	06/08/2001
Plot 13	4054b	36.85429	116.23701	1308	05/06/1964	54B	06/08/2001
Plot 13	4055a	36.85435	116.23761	1301	05/06/1964	53A	06/08/2001
Plot 13	4055b	36.85435	116.23761	1301	05/06/1964	53B	06/08/2001
Plot 14	4056a	36.88280	116.21070	1457	05/06/1964	55A	06/08/2001
Plot 14	4056b	36.88280	116.21070	1457	05/06/1964	55B	06/08/2001
Plot 14	4057a	36.88230	116.21032	1460	05/06/1964	56A	06/08/2001
Plot 14	4057b	36.88230	116.21032	1460	05/06/1964	56B	06/08/2001
Plot 15	4121a	36.78192	116.25987	1103	04/28/1964	37-A	04/06/2001
Plot 15	4121b	36.78192	116.25987	1103	04/28/1964	38-B	04/06/2001
Plot 15	4122a	36.78226	116.25927	1115	04/28/1964	38-A	04/06/2001
Plot 15	4122b	36.78226	116.25927	1115	04/28/1964	37-B	04/06/2001
Plot 16	4101a	36.79662	116.22780	1184	04/28/1964	39-B	04/05/2001
Plot 16	4101b	36.79662	116.22780	1184	04/28/1964	39-A	04/05/2001
Plot 16	4104a	36.79621	116.22746	1182	04/28/1964	40-B	04/05/2001
Plot 16	4104b	36.79621	116.22746	1182	04/28/1964	40-A	04/05/2001
Plot 17	4105a	36.80790	116.20247	1272	04/28/1964	41-B	04/05/2001
Plot 17	4105b	36.80790	116.20247	1272	04/28/1964	41-A	04/05/2001
Plot 17	4106a	36.80757	116.20196	1266	04/28/1964	42-A	04/05/2001
Plot 17	4106b	36.80757	116.20196	1266	04/28/1964	42-B	04/05/2001
Plot 18	4042a	36.90130	116.27680	1457	05/07/1964	59-B	06/20/2000
Plot 18	4042b	36.90130	116.27680	1457	05/07/1964	59-A	06/20/2000
Plot 18	4043a	36.90158	116.27603	1462	05/07/1964	60-A	06/20/2000

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 18	4043b	36.90158	116.27603	1462	05/07/1964	60-B	06/20/2000
Plot 19	4038a	36.90178	116.27710	1448	05/07/1964	58-B	06/20/2000
Plot 19	4038b	36.90178	116.27710	1448	05/07/1964	58-A	06/20/2000
Plot 19	4039a	36.90150	116.27773	1444	05/07/1964	57-A	06/20/2000
Plot 19	4039b	36.90150	116.27773	1444	05/07/1964	57-B	06/20/2000
Plot 19	4040	36.90147	116.27765	1447	05/07/1964	31, 32	06/20/2000
Plot 19	4041	36.90153	116.27745	1457	05/07/1964	35	06/20/2000
Plot 20	4087a	36.75238	116.02131	997	04/16/1964	3A	4/16/2002
Plot 20	4087b	36.75238	116.02131	997	04/16/1964	3B	4/16/2002
Plot 20	4100a	36.75238	116.02131	997	04/16/1964	4-A	4/16/2002
Plot 20	4100b	36.75238	116.02131	997	04/16/1964	4-B	4/16/2002
Plot 21	4146a	36.77795	116.01199	972	04/29/1964	43-A	04/16/2002
Plot 21	4146b	36.77795	116.01199	972	04/29/1964	43-B	04/16/2002
Plot 21	4213a	36.77750	116.01161	970	04/29/1964	44-A	04/16/2002
Plot 21	4213b	36.77750	116.01161	970	04/29/1964	44-A	04/16/2002
Plot 22	4158a	36.79441	116.01783	1005	04/16/1964	6-A	04/18/2002
Plot 22	4158b	36.79441	116.01783	1005	04/16/1964	6-B	04/18/2002
Plot 22	4159a	36.79485	116.01797	987	04/16/1964	5-A	04/18/2002
Plot 22	4159b	36.79485	116.01797	987	04/16/1964	5-B	04/18/2002
Plot 23	4149a	36.81146	115.98876	955	04/24/1964	27-B	04/17/2002
Plot 23	4149b	36.81146	115.98876	955	04/24/1964	27-A	04/17/2002
Plot 23	4176a	36.81121	115.98936	961	04/25/1964	30-A	04/20/2002
Plot 23	4176b	36.81121	115.98936	961	04/25/1964	30-B	04/20/2002
Plot 24	4160a	36.85328	116.01126	1026	04/25/1964	29-A	04/18/2002
Plot 24	4160b	36.85328	116.01126	1026	04/25/1964	29-B	04/18/2002
Plot 24	4163a	36.85320	116.01151	1026	~1974	27a, 29a	04/19/2002
Plot 24	4163b	36.85320	116.01151	1026	~1974	28a	04/19/2002
Plot 24	4179a	36.85369	116.01165	1026	04/25/1964	28-B	04/20/2002
Plot 24	4179b	36.85369	116.01165	1026	04/25/1964	28-A	04/20/2002
Plot 24	4191a	38.85328	116.01203	1029	~1974	17a	04/21/2002
Plot 24	4191b	38.85328	116.01203	1029	~1974	19a	04/21/2002
Plot 24	4191c	38.85328	116.01203	1029	~1974	16a	04/21/2002
Plot 24	4191d	38.85328	116.01203	1029	~1974	18a	04/21/2002
Plot 25	4180a	36.83890	116.05725	1083	05/10/1964	none	04/20/2002
Plot 25	4180b	36.83890	116.05725	1083	05/10/1964	none	04/20/2002

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 25	4181a	36.83889	116.05651	1086	05/10/1964	none	04/20/2002
Plot 25	4181b	36.83889	116.05651	1086	05/10/1964	none	04/20/2002
Plot 26	4161a	36.81033	116.10485	1208	05/10/1964	88-A	04/19/2002
Plot 26	4161b	36.81033	116.10485	1208	05/10/1964	88-B	04/19/2002
Plot 26	4162a	36.81004	116.10538	1200	05/10/1964	87-A	04/19/2002
Plot 26	4162b	36.81004	116.10538	1200	05/10/1964	87-B	04/19/2002
Plot 27	4177a	36.89157	116.04849	1114	05/10/1964	12	04/20/2002
Plot 27	4177b	36.89157	116.04849	1114	05/10/1964	11	04/20/2002
Plot 27	4178a	36.89205	116.04896	1080	05/10/1964	none	04/20/2002
Plot 27	4178b	36.89205	116.04896	1080	05/10/1964	10	04/20/2002
Plot 28	4152a	36.85381	115.92033	985	04/22/1964	31-A	04/18/2002
Plot 28	4152b	36.85381	115.92033	985	04/22/1964	31-B	04/18/2002
Plot 28	4153a	36.85412	115.91975	982	04/22/1964	32-A	04/18/2002
Plot 28	4153b	36.85412	115.91975	982	04/22/1964	32-B	04/18/2002
Plot 29	4150a	36.85521	115.92362	987	04/22/1964	65-A	04/18/2002
Plot 29	4150b	36.85521	115.92362	987	04/22/1964	65-B	04/18/2002
Plot 29	4151a	36.85572	115.92402	987	04/22/1964	66-A	04/18/2002
Plot 29	4151b	36.85572	115.92402	987	04/22/1964	66-B	04/18/2002
Plot 30	4154a	36.83205	115.93901	942	05/11/1964	64-A	04/18/2002
Plot 30	4154b	36.83205	115.93901	942	05/11/1964	64-B	04/18/2002
Plot 30	4155a	36.83181	115.93968	940	05/11/1964	63-A	04/18/2002
Plot 30	4155b	36.83181	115.93968	940	05/11/1964	63-B	04/18/2002
Plot 31	4156a	36.82499	115.93374	938	05/11/1964	72-A	04/18/2002
Plot 31	4156b	36.82499	115.93374	938	05/11/1964	72-B	04/18/2002
Plot 31	4157a	36.82460	115.93340	945	05/11/1964	71-A	04/18/2002
Plot 31	4157b	36.82460	115.93340	945	05/11/1964	71-B	04/18/2002
Plot 32	4164a	36.83640	115.86377	1037	05/11/1964	70-A	04/19/2002
Plot 32	4164b	36.83640	115.86377	1037	05/11/1964	70-B	04/19/2002
Plot 32	4165a	36.83675	115.86316	1026	05/11/1964	69-A	04/19/2002
Plot 32	4165b	36.83675	115.86316	1026	05/11/1964	69-B	04/19/2002
Plot 33	4166a	36.82007	115.88552	983	04/24/1964	25-A	04/19/2002
Plot 33	4166b	36.82007	115.88552	983	04/24/1964	25-B	04/19/2002
Plot 33	4167a	36.81976	115.88612	980	04/24/1964	26-A	04/19/2002
Plot 33	4167b	36.81976	115.88612	980	04/24/1964	26-B	04/19/2002
Plot 34	4174a	36.79790	115.90508	933	05/11/1964	74-A	04/20/2002
Plot 34	4174b	36.79790	115.90508	933	05/11/1964	74-B	04/20/2002

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 34	4175a	36.79823	115.90460	938	05/11/1964	73-A	04/20/2002
Plot 34	4175b	36.79823	115.90460	938	05/11/1964	73-B	04/20/2002
Plot 35	4172a	36.77862	115.90589	997	04/24/1964	23-A	04/20/2002
Plot 35	4172b	36.77862	115.90589	997	04/24/1964	23-B	04/20/2002
Plot 35	4173a	36.77896	115.90538	1006	04/24/1964	24-A	04/20/2002
Plot 35	4173b	36.77896	115.90538	1006	04/24/1964	24-B	04/20/2002
Plot 36	4168a	36.78152	115.92319	924	04/15/1964	2-A	04/20/2002
Plot 36	4168b	36.78152	115.92319	924	04/15/1964	2-B	04/20/2002
Plot 36	4169a	36.78197	115.92361	936	04/15/1964	1-B	04/20/2002
Plot 36	4169b	36.78197	115.92361	936	04/15/1964	1-A	04/20/2002
Plot 37	4170a	36.78362	115.92307	932	04/22/1964	35-A	04/20/2002
Plot 37	4170b	36.78362	115.92307	932	04/22/1964	35-B	04/20/2002
Plot 37	4171a	36.78316	115.92272	938	04/22/1964	36-A	04/20/2002
Plot 37	4171b	36.78316	115.92272	938	04/22/1964	36-B	04/20/2002
Plot 38	4147a	36.79361	115.9843	947	05/11/1964	68-A	04/17/2002
Plot 38	4147b	36.79361	115.9843	947	05/11/1964	68-B	04/17/2002
Plot 38	4148a	36.79317	115.98390	936	05/11/1964	67-A	04/17/2002
Plot 38	4148b	36.79317	115.98390	936	05/11/1964	67-B	04/17/2002
Plot 39	4029	36.92493	116.16855	1378	05/10/2000	4029	05/10/2000
Plot 40	4026a	36.92388	116.16888	1378	1964	40-3	05/10/2000
Plot 40	4026b	36.92388	116.16888	1378	1964	40-4	05/10/2000
Plot 40	4027a	36.92427	116.16825	1372	1964	40-2	05/10/2000
Plot 40	4027b	36.92427	116.16825	1372	1964	40-1	05/10/2000
Plot 40	4028a	36.92408	116.16867	1374	June 1974	6	05/10/2000
Plot 40	4028b	36.92408	116.16867	1374	June 1974	7	05/10/2000
Plot 41	4023a	36.96095	116.18352	1441	05/10/2000	4023a	05/10/2000
Plot 41	4023b	36.96095	116.18352	1441	05/10/2000	4023b	05/10/2000
Plot 42	4024	36.96033	116.18393	1444	June 1974	3, 4	05/10/2000
Plot 42	4025	36.96003	116.18395	1446	05/10/2000	4025	05/10/2000
Plot 43	4044a	36.95977	116.07207	1273	05/12/1964	99A	06/07/2001
Plot 43	4044b	36.95977	116.07207	1273	05/12/1964	99B	06/07/2001
Plot 43	4045a	36.95937	116.07156	1266	05/12/1964	100A	06/07/2001
Plot 43	4045b	36.95937	116.07156	1266	05/12/1964	100B	06/07/2001
Plot 43	4228	36.95954	116.07211	1271	1959?	C59-647-7	05/31/02
Near Plot 43	4229	36.96172	116.06907	1250	1959?	none	05/31/02

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 44	4046a	36.97936	116.08967	1267	05/12/1964	89A	06/07/2001
Plot 44	4046b	36.97936	116.08967	1267	05/12/1964	89B	06/07/2001
Plot 44	4047a	36.97988	116.09007	1266	05/12/1964	90A	06/07/2001
Plot 44	4047b	36.97988	116.09007	1266	05/12/1964	90B	06/07/2001
Plot 45	4048a	36.98220	116.09941	1286	05/12/1964	92A	06/07/2001
Plot 45	4048b	36.98220	116.09941	1286	05/12/1964	92B	06/07/2001
Plot 45	4049a	36.98271	116.09984	1286	05/12/1964	91A	06/07/2001
Plot 45	4049b	36.98271	116.09984	1286	05/12/1964	91B	06/07/2001
Plot 46	4127a	37.00718	116.08487	1240	04/18/1964	98-A	04/08/2001
Plot 46	4127b	37.00718	116.08487	1240	04/18/1964	98-B	04/08/2001
Plot 46	4128a	37.00687	116.08547	1245	04/18/1964	97-A	04/08/2001
Plot 46	4128b	37.00687	116.08547	1245	04/18/1964	97-B	04/08/2001
Plot 47	4059a	37.02193	116.17042	1472	04/21/1964	17A	06/08/2001
Plot 47	4059b	37.02193	116.17042	1472	04/21/1964	17B	06/08/2001
Plot 47	4060a	37.02214	116.17109	1471	04/21/1964	18A	06/08/2001
Plot 47	4060b	37.02214	116.17109	1471	04/21/1964	18B	06/08/2001
Plot 48	4111a	37.05432	116.09050	1285	05/12/1964	93-A	04/06/2001
Plot 48	4111b	37.05432	116.09050	1285	05/12/1964	93-B	04/06/2001
Plot 48	4112a	37.05480	116.09106	1303	05/12/1964	94-B	04/06/2001
Plot 48	4112b	37.05480	116.09106	1303	05/12/1964	94-A	04/06/2001
Plot 48	4113	37.05436	116.09072	1067	04/06/2001	4113	04/06/2001
Plot 48	4118a	37.05448	116.09065	1299	06/1974	35 mm 8A	04/06/2001
Plot 48	4118b	37.05448	116.09065	1299	06/1974	35 mm 10A	04/06/2001
Plot 48	4118c	37.05448	116.09065	1299	06/1974	35 mm 9A	04/06/2001
Plot 48	4119a	37.05453	116.09071	1298	06/1974	35 mm 13	04/06/2001
Plot 48	4119b	37.05453	116.09071	1298	06/1974	35 mm 11A	04/06/2001
Plot 48	4119c	37.05453	116.09071	1298	06/1974	35 mm 12	04/06/2001
Plot 48	4119d	37.05453	116.09071	1298	06/1974	35 mm 11	04/06/2001
Plot 48	4119e	37.05453	116.09071	1298	06/1974	35 mm 10	04/06/2001
Plot 48	4120	37.05444	116.09060	1302	06/1974	35 mm 9	04/06/2001
Plot 48	4226	37.05450	116.09023	1291	1959?	C59-647-8	05/31/02
Plot 49	4116a	37.06201	116.07919	1279	05/12/1964	96-B	04/06/2001
Plot 49	4116b	37.06201	116.07919	1279	05/12/1964	96-A	04/06/2001
Plot 49	4117a	37.06246	116.07869	1283	05/12/1964	95-A	04/06/2001
Plot 49	4117b	37.06246	116.07869	1283	05/12/1964	95-B	04/06/2001
Plot 50	4114a	37.07767	116.06135	1276	05/13/1964	104-A	04/06/2001

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 50	4114b	37.07767	116.06135	1276	05/13/1964	104-B	04/06/2001
Plot 50	4115a	37.07820	116.06173	1275	05/13/1964	103-A	04/06/2001
Plot 50	4115b	37.07820	116.06173	1275	05/13/1964	103-B	04/06/2001
Plot 50	3641	37.07818	116.06133	1248	05/18/1964	none	05/30/02
Plot 50	3642	37.07772	116.06069	1268	05/13/1964	none	05/30/02
Plot 50	4222	37.07766	116.06097	1257	05/18/1964	none	05/31/02
Plot 50	4223	37.07816	116.06090	1257	05/18/1964	1	05/31/02
Plot 50	4224	37.07752	116.06090	1256	05/18/1964	none	05/31/02
Plot 50	4225	37.07756	116.06100	1258	05/13/1964	none	05/31/02
Plot 51	4074a	37.18024	116.14064	1509	04/21/1964	20A	06/10/2001
Plot 51	4074b	37.18024	116.14064	1509	04/21/1964	20B	06/10/2001
Plot 51	4075a	37.17991	116.14126	1509	04/21/1964	19A	06/10/2001
Plot 51	4075b	37.17991	116.14126	1509	04/21/1964	19B	06/10/2001
Plot 52	4061	37.17886	116.02756	1331	07/16/1965	3074-13	06/09/2001
Plot 52	4062	37.17841	116.02860	1341	07/16/1965	3074-12	06/09/2001
Plot 52	4129	37.17745	116.02814	1356	1964	C64-1790-3	04/08/2001
Plot 52	4130	37.17741	116.02871	1354	1964	C64-1790-4	04/08/2001
Plot 52	4131	37.17746	116.02871	1356	10/02/1962	C62-1392-1	04/08/2001
Plot 52	4132a	37.17745	116.02863	1351	06/1974	35 mm 27	04/08/2001
Plot 52	4132b	37.17745	116.02863	1351	06/1974	35 mm 28	04/08/2001
Plot 52	4133	37.17747	116.02862	1351	06/1974	35 mm 29	04/08/2001
Plot 52	4134	37.17763	116.02865	1350	10/02/1962	C62-1392-2	04/08/2001
Plot 52	4135a	37.17761	116.02848	1347	06/1974	35 mm 23A	04/08/2001
Plot 52	4135b	37.17761	116.02848	1347	06/1974	35 mm 24A	04/08/2001
Plot 52	4135c	37.17761	116.02848	1347	06/1974	35 mm 25A	04/08/2001
Plot 52	4136a	37.17769	116.02835	1351	05/08/1964	77-A	04/08/2001
Plot 52	4136b	37.17769	116.02835	1351	05/08/1964	77-B	04/08/2001
Plot 52	4137a	37.17777	116.02823	1343	07/16/1965	3074-9	04/08/2001
Plot 52	4137b	37.17777	116.02823	1343	07/16/1965	3074-10	04/08/2001
Plot 52	4137c	37.17777	116.02823	1343	07/1976	Roll 1 (#6)	04/08/2001
Plot 52	4137d	37.17777	116.02823	1343	07/1976	Roll 1 (#5)	04/08/2001
Plot 52	4138	37.17747	116.02850	1361	10/02/1962	C62-1392-4	04/08/2001
Plot 52	4139a	37.17733	116.02899	1360	05/08/1964	78-A	04/08/2001
Plot 52	4139b	37.17733	116.02899	1360	05/08/1964	78-B	04/08/2001
North of Plot 52	4140	37.17841	116.02874	1359	07/16/1965	3074-14	04/08/2001

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 53	4063a	37.16640	116.02908	1337	05/08/1964	76A	06/09/2001
Plot 53	4063b	37.16640	116.02908	1337	05/08/1964	76B	06/09/2001
Plot 53	4064a	37.16683	116.02947	1352	05/08/1964	75A	06/09/2001
Plot 53	4064b	37.16683	116.02947	1352	05/08/1964	75B	06/09/2001
Plot 53	4065	37.16668	116.02975	1339	07/1965	3074-2	06/09/2001
Plot 53	4066	37.16665	116.02943	1340	n.d.	C64-1786-11	06/09/2001
Plot 53	4067	37.16657	116.02912	1340	n.d.	C64-1790-01	06/09/2001
Plot 53	4068	37.16657	116.02917	1342	10/02/1962	C62-1391-9	06/09/2001
Plot 53	4069a	37.16643	116.02923	1342	06/1974	19A, 21A	06/09/2001
Plot 53	4069b	37.16643	116.02923	1342	06/1974	20A	06/09/2001
Plot 53	4070	37.16648	116.02931	1346	n.d.	C64-1786-10	06/09/2001
Plot 53	4071	37.16632	116.02945	1345	07/16/1965	3074-3	06/09/2001
Plot 53	4072	37.16630	116.02913	1349	06/1974	26	06/09/2001
Plot 53	4073	37.16632	116.02953	1344	07/16/1965	3074-6	06/09/2001
Plot 54	4081	37.15833	116.02270	1350	n.d.	C64-1786-7	06/10/2001
Plot 54	4082	37.15822	116.02243	1360	n.d.	C64-1786-9	06/10/2001
Plot 54	4083	37.15814	116.02263	1360	n.d.	C64-1786-6	06/10/2001
Plot 54	4084	37.15812	116.02251	1352	06/1974	20	06/10/2001
Plot 54	4141a	37.15823	116.02286	1377	05/09/1964	79-B	04/08/2001
Plot 54	4141b	37.15823	116.02286	1377	05/09/1964	79-A	04/08/2001
Plot 54	4142a	37.15843	116.02223	1382	05/09/1964	80-A	04/08/2001
Plot 54	4142b	37.15843	116.02223	1382	05/09/1964	80-B	04/08/2001
Plot 54	4143	37.15821	116.02284	1363	06/1974	35 mm #19	04/08/2001
Plot 54	4144	37.15814	116.02250	1364	06/1974	35 mm #21	04/08/2001
Plot 54	4145a	37.15827	116.02241	1360	06/1974	35 mm #16A	04/08/2001
Plot 54	4145b	37.15827	116.02241	1360	06/1974	35 mm #17A	04/08/2001
Plot 55	4076a	37.12279	116.02524	1319	06/1974	16, 18	06/10/2001
Plot 55	4076b	37.12279	116.02524	1319	06/1974	17	06/10/2001
Plot 55	4077	37.12286	116.02517	1331	05/09/1964	81A-B	06/10/2001
Plot 55	4078	37.12281	116.02528	1329	06/1974	12A, 14A, 13A, 15A	06/10/2001
Plot 55	4079	37.12287	116.02592	1323	06/1974	15, 14	06/10/2001
Plot 55	4080	37.12293	116.02616	1319	05/09/1964	82A-B	06/10/2001
Plot 56	4186a	37.08208	115.99123	1323	05/09/1964	83-A	04/20/2002
Plot 56	4186b	37.08208	115.99123	1323	05/09/1964	83-B	04/20/2002
Plot 56	4187a	37.08196	115.99049	1323	05/09/1964	84-A	04/21/2002
Plot 56	4187b	37.08196	115.99049	1323	05/09/1964	84-B	04/21/2002

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 57	4188a	37.04227	115.99268	1254	05/09/1964	85-A	04/21/2002
Plot 57	4188b	37.04227	115.99268	1254	05/09/1964	85-B	04/21/2002
Plot 57	4189a	37.04272	115.99311	1262	05/09/1964	86-A	04/21/2002
Plot 57	4189b	37.04272	115.99311	1262	05/09/1964	86-B	04/21/2002
Plot 58	4190	37.00190	116.04240	1200	05/13/1964	106-A	04/21/2002
Plot 59	4184a	36.97941	116.04143	1198	05/13/1964	none	04/20/2002
Plot 59	4184b	36.97941	116.04143	1198	05/13/1964	none	04/20/2002
Plot 59	4185a	36.97912	116.04210	1192	05/13/1964	none	04/20/2002
Plot 59	4185b	36.97912	116.04210	1192	05/13/1964	none	04/20/2002
Plot 60	4182a	36.96227	115.99216	1168	05/13/1964	102-A	04/20/2002
Plot 60	4182b	36.96227	115.99216	1168	05/13/1964	102-B	04/20/2002
Plot 60	4183a	36.96196	115.99265	1202	05/13/1964	101-A	04/20/2002
Plot 60	4183b	36.96196	115.99265	1202	05/13/1964	101-B	04/20/2002
Plot 61	3643	37.13544	116.25764	1755	05/18/1964	2	05/30/2002
Plot 61	4194a	37.13511	116.25748	1746	1964	none	05/28/2002
Plot 61	4194b	37.13511	116.25748	1746	1964	none	05/28/2002
Plot 61	4195a	37.13550	116.25691	1759	1964	none	05/28/2002
Plot 61	4195b	37.13550	116.25691	1759	1964	none	05/28/2002
Plot 61	4218	37.13548	116.25762	1761	05/18/1964	none	05/30/2002
Plot 61	4219	37.13531	116.25774	1749	05/18/1964	3	05/30/2002
Plot 61	4220	37.13578	116.25725	1762	05/18/1964	C64-1805-8	05/30/2002
Plot 61	4221	37.13552	116.25719	1763	05/18/1964	C64-1805-7	05/30/2002
Plot 61	4227	37.13558	116.25807	1758	05/18/1964	none	05/31/2002
Plot 62	3634	37.14091	116.25766	1751	1964	C64-1806-1	05/28/2002
Plot 62	3635	37.14095	116.25787	1746	1964	C64-1805-10	05/28/2002
Plot 62	3636	37.14108	116.25807	1752	1964	C64-1805-11	05/28/2002
Plot 62	4196a	37.14140	116.25792	1749	1964	none	05/28/2002
Plot 62	4196b	37.14140	116.25792	1749	1964	none	05/28/2002
Plot 62	4197a	37.14092	116.25806	1742	1964	none	05/28/2002
Plot 62	4197b	37.14092	116.25806	1742	1964	none	05/28/2002
Near Plot 62	3306	37.14052	116.25581	1817	1964	C64-1805-12	05/28/2002
Plot 63	3637a	37.20105	116.25272	1978	1964	none	05/29/2002
Plot 63	3637b	37.20105	116.25272	1978	1964	none	05/29/2002
Plot 63	3638a	37.20137	116.25214	1985	1964	none	05/29/2002
Plot 63	3638b	37.20137	116.25214	1985	1964	none	05/29/2002

Table A-69 (continued). Summary information on photographs of Beatley plots on the Nevada Test Site, Nye County, Nevada.

Plot Number	Stake[1] Number	Latitude (Degrees)	Longitude (Degrees)	Elevation (m)	Date of Original Photograph	Original Photo Number	Date of Match
Plot 65	4192a	37.99370	116.24914	1675	1964	none	05/27/2002
Plot 65	4192b	37.99370	116.24914	1675	1964	none	05/27/2002
Plot 65	4230a	37.99370	116.24914	1675	1964	none	05/27/2002
Plot 65	4230b	37.99370	116.24914	1675	1964	none	05/27/2002
Plot 66	3817	36.81368	116.16436	1314	05/01/1964	48-B	04/28/1999
Plot 66	3818	36.81363	116.16398	1314	05/01/1964	48-A	04/28/1999
Plot 66	3822a	36.81288	116.16486	1314	05/01/1964	47-B	04/28/1999
Plot 66	3823	36.81285	116.16508	1314	05/01/1964	47-A	04/28/1999
Plot 66-67	3819	36.81363	116.16398	1314	05/01/1964	50-B	04/28/1999
Plot 67	3820	36.81352	116.16365	1314	05/01/1964	50-A	04/28/1999
Plot 67	3821	36.81282	116.16461	1314	05/01/1964	49-B	04/28/1999
Plot 67	3822b	36.81288	116.16486	1314	05/01/1964	49-A	04/28/1999
Plot 67	4030	36.81288	116.16486	1314	6/25-26/1974	6-A	05/11/2000
Plot 67	4031	36.81288	116.16486	1314	6/25-26/1974	3-A	05/11/2000
Plot 68	4198	37.17365	116.24800	1818	1964	none	05/28/2002
Plot 68	4199	37.17376	116.24731	1822	1964	none	05/28/2002

1. Stake number is a unique number to identify photographic matches within the Desert Laboratory Repeat Photography Collection in Tucson, Arizona.