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Cultural Landscape Report
Manzanar National Historic Site





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Cover Art: Painted in 1943 by C.I.Morimoto depicting a view of Block 19, Manzanar. (Courtesy UCLA Special Collections)

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National Park Service, Summer 2005.

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Introduction

Historical Overview

On February 19, 1942, President Franklin D. Roosevelt signed Executive Order 9066, leading to the relocation and internment of 120,000 Japanese Americans. To carry out the order, the United States Government established 10 War Relocation Centers in Arizona, Arkansas, California, Wyoming, Utah, Idaho, and Colorado. Manzanar was the first center to open as the Owens Valley Reception Center. It held a total of 11,070 Japanese American citizens and Japanese immigrants during World War II.

On March 5, 1942, approximately one week after the Manzanar site was chosen, the U.S. Corps of Engineer's office in Los Angeles solicited bids for the construction of barracks, utilities, and other camp infrastructure. The first truckloads of lumber arrived on March 14. In the following days, workers began clearing the land and constructing the buildings. By April, buildings were being raised at the rate of two an hour and 25,000 board feet of lumber were being used every 10 minutes. Construction continued at this pace over several months.

On June 1, 1942, camp operations transferred from the Army's Wartime Civilian Control Administration (WCCA) to the War Relocation Authority (WRA), a federal agency established by President Roosevelt on March 18, 1942, by Executive Order 9012. The WRA was authorized to formulate and execute a relocation program to provide shelter, clothing, medical attention, and educational and recreational facilities for internees. By June, 1, 1942, 9,666 Japanese Americans were confined at Manzanar.

The War Relocation Center occupied 6,000 acres, but only the core area of the camp, approximately 550 acres, housed the internees. Enclosed by a barbed wire fence and surrounded by eight guard towers, each of the 36 blocks within this central area contained 14 barracks, a mess hall, recreation hall, laundry room, ironing room, and two latrine buildings. In addition to this housing area, the camp also included an administrative area and housing

for WRA staff, warehouses, factories, and a hospital. The internees used the firebreaks within the camp for recreation, and, in some cases, these open spaces were planted with row crops, orchards, and Victory gardens. Many internees built ornamental gardens that incorporated stylistic elements of traditional Japanese American design such as ponds, small bridges, paved paths, rock features, and vegetation. In addition to these gardens, relatively large public parks were built in the northern portion of the camp. Large-scale agricultural operations were developed north and south of the fenced camp and were maintained by internees. All of the ornamental gardens and agricultural crops were watered by an extensive irrigation system that included a diversion, reservoir, and miles of hand-dug ditches and channels.

The population of internees at Manzanar reached a peak of 10,046 on September 22, 1942. By 1944, the population had decreased significantly. The last internee left the camp November 21, 1945. WRA personnel occupied the camp for several more months to close out operations and work with other agencies to dispose of the camp's surplus property. Most barracks and other buildings were sold for re-use or scrap. Those remaining were condemned and demolished.

Today, the most visible remains of the camp are the two stone sentry posts at the entrance, the auditorium building, and the cemetery. The barbed wire fence that historically enclosed the camp has been reconstructed and defines the extent of the core area of the historic camp. In addition, there are numerous archeological (structural) features including concrete foundations, remnant gardens, portions of the extensive water system, vegetation, roads and other infrastructure that define the historic extent and character of the site.

More than 40 years after the last internee left Manzanar, Congress passed the Civil Liberties Act of 1988, acknowledging "a grave injustice was done to both citizens and permanent residents of Japanese ancestry by the evacuation, relocation, and internment of civilians during World War II."

In 1972, Manzanar was designated a California Historic Landmark (No. 850A). In 1976, it was listed in the National Register of Historic Places, and in 1985, designated a National Historic Landmark. The National Park Service evaluated all 10 War Relocation Centers in the mid-1980s for possible inclusion to the National Park System. Based on this assessment, Manzanar was determined to have the greatest potential as a unit of the

National Park System.[1]

In 1992, Congress recognized the importance of protecting and interpreting the historical, cultural, and natural resources associated with the relocation of Japanese Americans during World War II by establishing the Manzanar National Historic Site (P.L. 102-248). The purpose of the historic site is to preserve and interpret a representative War Relocation Center as an aspect of the nation's Pacific Campaign of World War II.

In addition to the use of the site as a War Relocation Center, Manzanar National Historic Site also contains evidence of earlier historical periods, including use by the Owens Valley Paiute and Shoshone, late 19th century ranchers, and the early 20th century farmers and fruit growers from town of Manzanar. These historic eras and periods of use are part of the landscape history at Manzanar and are evident in the physical landscape today. Although not the focus of this report, patterns and features that relate to these historic periods are addressed, as appropriate, in the analysis and the treatment sections of this document.

Management Summary

Manzanar National Historic Site is located in the Owens Valley in eastern California, between the towns of Lone Pine and Independence just west of Highway 395 and just east of the Sierra Nevada Mountain Range.

Management related to the treatment of the cultural landscape at Manzanar is outlined in the park's General Management Plan (1996). The General Management Plan (GMP) calls for the site to be "managed as a cultural landscape relating to the reception center era".[2] Key actions in the plan relating to treatment of the landscape include:

- Exterior restoration and conversion of the auditorium for use as a interpretive center
- Rehabilitation of the camp grid and road system
- Thinning and clearing of some areas of dense tree growth
- Reconstruction of the camp's perimeter fence
- Rehabilitation of some of the rock gardens and ponds constructed by the internees
- Reconstruction of sample barracks and single guard tower
- Management of orchards and ornamental plantings from both farming and relocation eras

- Improvement of the historic roadway alignments to accommodate one-way auto traffic[3]

Since establishment of the site in 1992, the park has undertaken general and emergency site stabilization work, cultural and historical research projects, archeological investigations, and a number of specific actions called for in the GMP. Some of these include:

- Rehabilitation work on the auditorium including exterior restoration and adaptive use as an interpretive center (2002-2004)
- Moving a period mess hall building to the site (2002)
- Reconstructing the camp perimeter fence (2001)
- Restoring the two rock sentry posts (2001)
- Replicating the camp entrance sign (2001)
- Work at the camp cemetery including reconstruction of the fence, stabilization and repair of the monument, and archeological survey (2001)
- Stabilizing stone masonry structures around the chicken ranch and administration areas (2001)

Scope and Methodology

The Cultural Landscape Report (CLR) for Manzanar consolidates existing research and documents the physical development of Manzanar as a War Relocation Center. Based on the evaluation of remaining resources, the CLR proposes treatment for the preservation of cultural landscape features in the context of the General Management Plan and other resource studies completed for the site. This information will be used to guide future site development and maintenance activities related to preservation of the cultural landscape.

The scope for the CLR was developed as a result of meetings coordinated by the Pacific West Cultural Landscape Program with park staff, staff from the Western Archeological Conservation Center, other NPS representatives, the California State Historic Preservation Office, and representation from the Manzanar Advisory Commission. The CLR team included a historian, historical landscape architects, a historical architect, archeologist, and a planner, with technical assistance from park staff and a fire management specialist.

Four source materials were particularly valuable during the research

portion of this project; the Manzanar Historic Resource Study,[4] the three-volume compilation of archeological investigations conducted at the site between 1993 and 1995,[5] the extensive archival records from the War Relocation Authority, which included written reports, photographs, and maps, and a master's thesis on the historic gardens.[6] Information from the park archive including records of the Los Angeles Department of Water and Power, issues of the Manzanar Free Press, the large collection of interviews coordinated by California State University, Fullerton and those conducted by Manzanar National Historic Site staff, and an extensive photographic collection were also used. Primary research was conducted at the Eastern California Museum, Independence; University of California, Los Angeles; the Bancroft Library at the University of California, Berkeley, and the Japanese American National Museum in Los Angeles, California.

Additional research for the CLR focused on consolidation and analysis of existing archeological data and ethnographic information. Questions established during the archeological research and documentation carried over into the CLR, including:

1. How does confinement or oppression influence the physical character or personal/cultural expression in that environment?
2. To what degree were the internees able to manifest their cultural traditions?
3. How were cultural activities and spaces developed as a part of daily life?

Many of the traditions brought to the camp were reflected in the design, construction, and use of materials in the development of landscape areas, including both personal and public gardens. These expressions are significant both as landscape designs and as expressions of cultural traditions within the context of internment.

Seven landscape characteristics were documented and evaluated in order to understand the physical and cultural landscape values of the site during the period of significance. These include: Natural Systems and Features, Spatial Organization, Cultural Traditions, Building Clusters and Structures, Circulation, Vegetation, and Archeological Resources.

Because a majority of the buildings were dismantled and the site largely abandoned for 60 years, few buildings or landscape features remain from the internment period. While the analysis documents historic conditions

and resources, the evaluation focuses on providing an overall understanding of the physical character of the landscape between 1942 and 1945, and to provide a framework for the preservation treatment of cultural landscape resources that remain today.

Site Boundaries (Figure 1)

The original boundary for the Manzanar War Relocation Center included more than 6,000 acres. The cultural landscape report, however, focuses on the authorized boundaries for the 814-acre historic site. This includes the primary buildings and landscape resources historically defining the extent of structural development at Manzanar between 1942 and 1945, including the residential barracks, WRA administrative area, the camp cemetery,

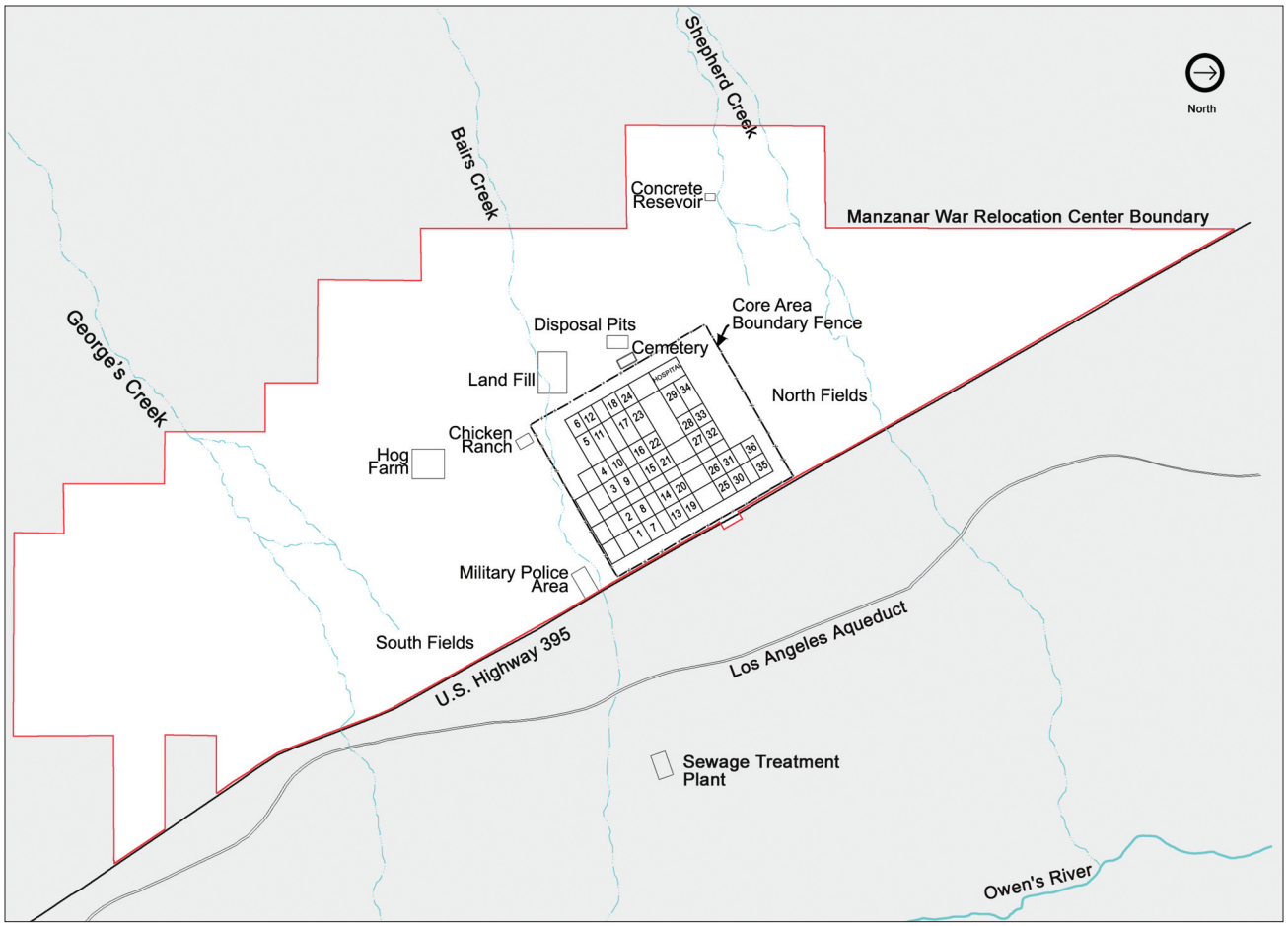


Figure 1. Study Boundary (Adapted from Three Farewells to Manzanar, WACC, 1996)

the camp hospital, warehouse area, roads, and support facilities such as the auditorium, portions of the camp irrigation system, and agricultural operations. Structures and developments outside the current NPS boundary that have been historically associated with the camp, such as the reservoir, agricultural fields and recreation areas, are addressed in the site history and in the evaluation.[7]

Terminology

In general and unless otherwise noted in the CLR, terminology used in the cultural landscape report relating to the internment of Japanese Americans at Manzanar is taken from specific references in the historical record. Guidance for the use of terms used in this report were based on previously published technical documents, historical reports, and NPS publications, including an NPS site bulletin Glossary prepared for Manzanar National Historic Site (See Appendix A). We acknowledge that a number of individuals and groups use different terminology.

Endnotes

Introduction

1 Since the initial assessment of potential sites by the NPS, research on other War Relocation Camps has led to the recognition of additional historic landmarks and the establishment on January 17, 2001 of Minidoka Internment National Monument as a unit of the NPS.
2 General Management Plan, pg.10, 1997, NPS. Use of the terminology "relocation center" from the GMP has been replaced in the CLR with "relocation center", which is the current terminology used by the NPS.
3 Record of Decision, General Management Plan and Final Environmental Impact Statement, Manzanar National Historic Site, January 3,1997.
4 The Evacuation and Relocation of Persons of Japanese Ancestry During World War II: A Historical Study of the Manzanar War Relocation Center, by Harlan Unrau, United States Department of the Interior, National Park Service, 1996.
5 Three Farewells to Manzanar by Burton et al., Vols. 1-3, Western Archeological and Conservation Center, National Park Service, U.S. Department of the Interior Publications in Archeology 67, 1997.
6 Gardens Below The Watchtower, Anna H. Tamura, Master's Thesis, University of Washington, 2002.
7 Treatments for historic resources located outside of the NPS boundary, but directly related to the Manzanar Relocation Center are beyond the scope of this report. However, recommendations for treatment do address the need for working with adjacent landowners and land management partners to develop appropriate preservation strategies for these resources.

Site History

Prehistory

Archeological evidence suggests that humans first entered the Owens Valley at least 12,000 years ago.[1] It appears that these early people moved frequently, maintaining base camps adjacent to riparian areas, and made frequent short-term use of camps in both the riparian and desert scrub vegetation zones. High elevations were used for hunting and plant gathering. Archeologists theorize that sometime between 1200 BC and 600 AD, the people of Owens Valley shifted their focus from lowland plant resources in riparian settings to the small game and plants of the desert scrub.

When Euro-Americans entered the Owens Valley in the 19th century, they encountered the Owens Valley Paiute, whose territory stretched from the Sierra Nevada crest to the west, east to the Inyo Mountains, south to Owens Lake, and north to the pine forests of Long Valley. The Owens Valley Paiute resided in year-round villages located along streams flowing from the Sierra Nevada. They were accomplished horticulturalists, constructing and maintaining irrigation ditch systems and diversion dams to water wild plants. The Owens Valley Paiute also traveled to temporary camps throughout their territory to hunt and obtain other plant resources. (See Analysis and Evaluation: Archeological Resources)

1829-1902: Euro-American Explorations and Early Settlements

Although the Owens Valley Paiute peoples developed permanent villages and occupied the region for thousands of years, Euro-American exploration of eastern California spurred by the fur trade, set the stage for non-Indian settlement in the Owens Valley. The record of Euro-American exploration in the Owens Valley begins in 1829-1830 when Hudson's Bay Company trapper Peter Ogden entered the area.[2] In 1834, Captain Joseph Reddeford Walker led a beaver trapping expedition and crossed through the Owens Valley en route to the Pacific Coast. A member of the Walker

party recorded his impression of the region, which represents the earliest known written description of the Owens Valley. He described the valley as "very poor, and almost destitute of grass."[3] Walker made subsequent trips through area, leading a mapping survey in 1845 that included the "Pathfinder," John C. Fremont. According to the Owens Valley's chronicler, W.A. Chalfant, Fremont named the valley after a member of the survey party, Richard Owens, because "he was a good mountaineer, good hunter and good shot; cool, brave and of good judgment." Though Fremont and Owens crossed the Sierra further south and did not enter the Owens Valley, Walker returned to the area and crossed the mountains west of China Lake through the pass now named after him.[4]

In Walker's subsequent travels through the region, he was joined by Edward M. Kern, a photographer and topographer who kept a journal of the trip. These early descriptions of the Owens Valley give a sense of how the area was initially viewed by Euro-Americans. As the party traversed the central portion of the valley, Kern observed that they were "obliged to keep some distance from [the Owens River] on account of a large marsh."[5] Kern described the Owens River as "a fine, bold stream." The presence of water in an otherwise arid landscape proved somewhat of a disappointment, however, when upon closer inspection Kern noted that the water of Owens Lake had a "strong, disagreeable, salty taste."[6]

During 1855-1856, A.W. Von Schmidt, working under federal contract, conducted the first federal land survey of the region east of the Sierra and south of Mono Lake.[7] Von Schmidt noted:

> The land in this valley is worthless with but a very few exceptions the only portion of any value is near the banks of the little streams of water coming from the Sierra Nevada Mountains. On a general average the country forming Owens Valley is worthless to the White Man. Both in soil and climate.[8]

At the time of Von Schmidt's survey there were no white settlers living in the Owens Valley. Soon however, prospectors overflowing from western California and the Sierra began scouring the region. By July of 1860, nearly 100 men were prospecting in the valley.[9] These itinerant miners led the way, opening the region to more permanent settlement. Drought conditions in the Central Valley of California in the early 1860s induced stockmen to locate adequate pasturelands for their livestock, eventually driving cattle and sheep through Walker Pass and into the Owens Valley. Cattle grazing began in the Lone Pine area in 1861.[10] By the mid-1860s, some 2,000 acres

of Inyo County land were enclosed with fences, giving rise to a nascent agricultural economy to support the region's miners.[11]

Following Von Schmidt's land survey, the next significant description of the Owens Valley landscape dates from 1859. In July of that year, Captain J.W. Davidson was sent from Fort Tejon, south of Bakersfield, to the Owens Valley to "examine the country well with reference to its fitness for the purpose of an Indian reservation" as well as to report on "the agricultural, timber and water resources."[12] Acreage for the proposed Indian reservation had been removed from Township 13 South, 35 East, just north of Independence.

Davidson's official account was titled "Report of the Results of an Expedition to Owens Lake, and River, with the Topographical Features of the County, the Climate, Soil, Timber, Water, and also, the Habits, Arms, and Means of Subsistence of the Indian Tribes seen upon the March." Davidson characterized the Owens Valley as "a vast meadow, watered every few miles with clear, cold mountain streams, and the grass as green (even in August) as in the first of spring." Davidson's narrative was condensed for publication in the *Los Angeles Star* in late August 1859, at the beginning of a three-year drought in southern California. This account represents the first detailed description of the character of the land that conceded its potential for permanent Euro-American settlement. Davidson asserted that the Owens Valley was "the finest watered portion of the lower half of the state," and that "wherever water touches [the soil], it produces abundantly." In considering the region's agricultural potential, Davidson concluded the Owens Valley was well suited to the production of wheat, barley, oats, rye, and fruit such as apples and pears. He asserted that: "to the Grazier, this is one of the finest parts of the state; to the Farmer, it offers every advantage but a market."[13]

Davidson's observations of the native population in the valley included a description of Paiute agricultural practices. He noted:

> They already have some idea of tilling the ground, as the ascequias (irrigation ditches) which they have made with the labor of their rude hands for miles in extent, and the care they bestow upon their fields of nut-grass, abundantly show. Wherever the water touches this soil of disintegrated granite, it acts like the wand of an Enchanter, and it may with truth be said that these Indians have made some portions of their Country, which otherwise were desert, to bloom and blossom as the rose.[14]

In 1860, the State of California began a comprehensive geological survey of the state. Under the direction of Josiah Whitney, a group of scientists including renowned naturalist William Brewer, undertook the California Geological Survey, initiating a period of exploration and documentation of natural resources throughout the uncharted areas of California. Brewer recorded aspects of the land in Owens Valley that had not appeared in earlier chronicles of the region, specifically the pervasive desert scrub vegetation. Brewer wrote:

> The aspect of these deserts is peculiar. In the distance, when individual bushes cannot be distinguished, they look like a gray plain of uncovered soil; near by they are still gray, or yellowish gray, but covered with bushes.[15]

The earlier descriptions of the region, which had focused on the irrigated areas along the Owens River and the shores of Owens Lake, had not considered the impact of the native Paiute use of the land, in which Sierra streams were diverted to irrigate crop fields. Brewer's observations offered a more comprehensive image of the larger desert landscape, beyond the irrigated areas.

As permanent settlement and Euro-American use of the area increased, along with an infusion of prospectors and the development of mining camps, tensions inevitably developed between the new settlers and the indigenous Paiute population. White homesteaders began using the resources that formed the basis of Paiute culture. Grazing livestock in the valley severely impacted the seed plants that were the basis of the Paiute's winter diet and decimated the irrigated meadows. In addition, the harvest of pinyon trees in the eastern Sierra eliminated another staple of the Paiute diet—the nut food produced by the pinyon pine. In an effort to replace the game and plant resources that had been depleted by the influx of settlers, the Paiute began raiding cattle herds. Violent outbreaks between settlers and Paiutes convinced the Army to establish Camp Independence near the present-day Inyo county seat in 1862. In the spring of 1863, Captain Moses A. McLaughlin, who pursued a "scorched earth" policy against the Paiute, took command of Camp Independence and gathered approximately 1,000 Indians on a forced march to San Sebastian Reservation in the southern San Joaquin Valley near Fort Tejon. This forced removal from the Owens Valley followed several years of bloody conflict between the Paiutes and the early settlers. Although some Indians escaped and returned to the Owens Valley, their tribal ways had been severely disrupted and their social and familial networks devastated. With the construction of Camp Independence, Indian

attacks ceased. Camp Independence remained active until 1877, providing protection for white settlers and travelers through the valley.[16]

While ranching operations began in the early 1860s, permanent settlement expanded significantly in 1865 as miners flooded the area following the discovery of silver at Cerro Gordo in the Inyo Mountains in 1865. At Bodie, north of the Owens Valley in Mono County, gold was discovered in the mid-1870s and a boomtown sprang up, reaching a peak population of nearly 16,000 in the early 1880s.[17] The Cerro Gordo mine, located high in the Inyo Mountains above Owens Lake, was one of the most productive silver mines in the state, yielding an estimated $17 million. At its height in the early 1870s, daily production at the Cerro Gordo mine reached 120 bars of silver (weighing 85 pounds each). Transporting the silver bullion to the San Francisco mint where it was refined represented one of the biggest problems for developers of Cerro Gordo mine. The journey by wagon took between three and four weeks to complete, but it established

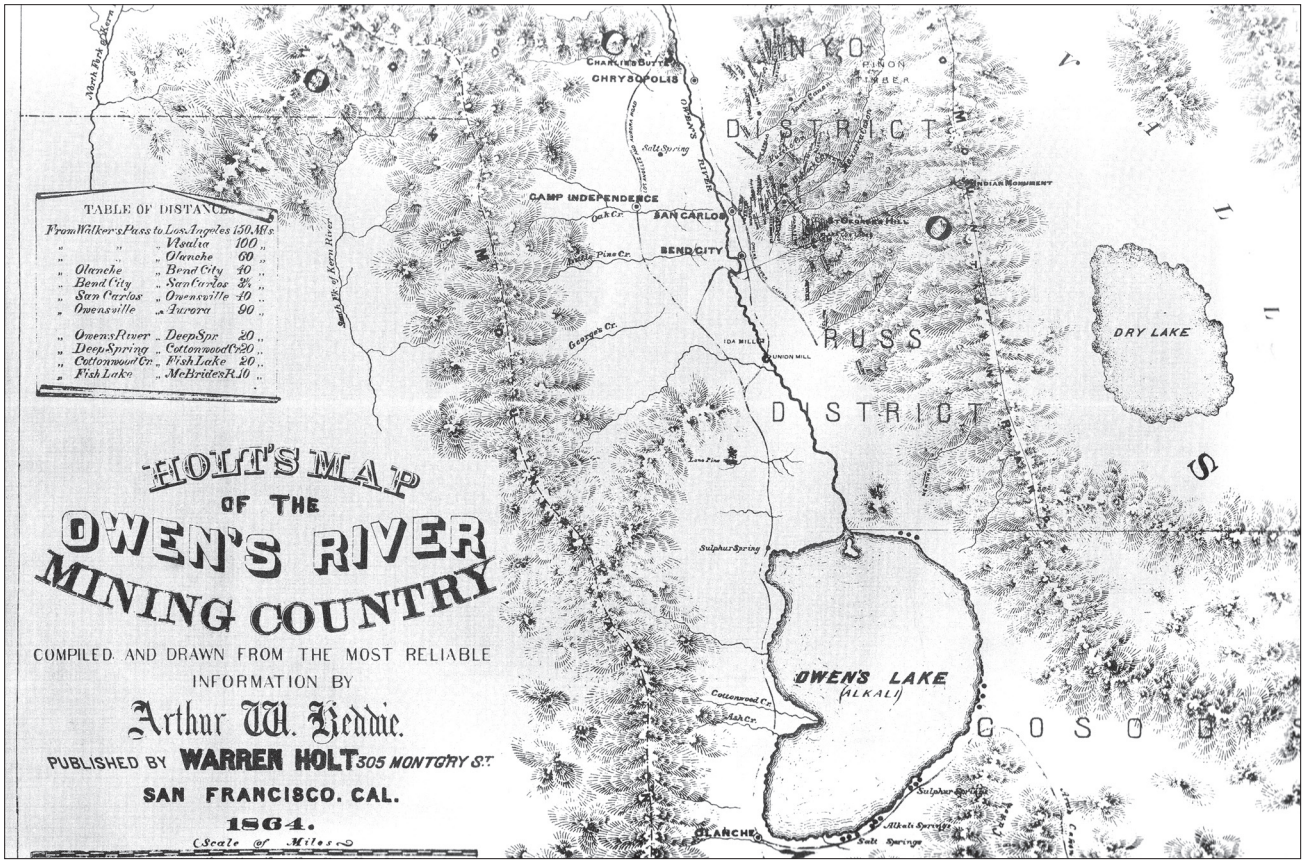


Figure 2. Owens's Valley Mining District, 1864. (Courtesy of the Eastern California Museum)



Figure 3. John Shepherd's ranch house was a stopping place for travelers passing through the Owen's Valley from the 1870s to the early 1900s. Photo ca. 1905. (Courtesy of the Eastern California Museum)

an economic link with the city of Los Angeles, which would later dominate the valley.[18] The Cerro Gordo mines were significant in the development of a permanent community in the Owens Valley for several reasons: it spurred development of transportation routes to link the area with distant markets; it created a local market for provisions including farm goods; and it instituted a connection between the Owens Valley region and the city of Los Angeles. (Figure 2)

In the early 1860s, cattlemen entering the valley encountered a Paiute village of about 100 inhabitants between the Sierra bajada and the marshy area along the Owens River. The main wagon route through the valley had developed along the western side of the valley, which connected various settlements, ranches, and springs.[19] The leader of the Indian settlement was a Paiute known to the settlers as Captain George, and early homesteaders who congregated in the vicinity came to call their community George's Creek. Among the first settlers here were John Shepherd and John Kispert. Kispert first entered the valley in 1859 while on a trapping expedition, and returned in 1861 to claim 400 acres, with water rights, on George's Creek.[20] Kispert erected a rock and adobe house and grew barley for the mines. This original structure was destroyed in the Owens Valley earthquake of 1872 and Kispert rebuilt on the site constructing a wood-frame Victorian-style house. (Figure 3)

The promise of the mines first attracted John Shepherd to the valley in 1862 when he hauled freight and maintained the stage stop at George's Creek. Shepherd homesteaded 160 acres north of the Kispert ranch, approximately three miles north of George's Creek, and on the future site of Manzanar.[21] Shepherd brought his wife and two children from Visalia to join him; John's brothers, George and James, also settled nearby at this time. While George Shepherd would soon leave the valley, James continued to ranch with his brother John at Shepherd Creek. One of John Shepherd's sons, James Edward, built a house south of the Shepherd Ranch on land patented in 1872.[22]

Shepherd assumed a prominent role in the early development of the area, and his diversified interests included the construction of a toll road from Owens Lake to the mining towns of Darwin and Panamint City.[23] He used Paiute labor under the supervision of Captain George to build the toll road and to work his ranch. Shepherd began acquiring title to adjoining homestead claims and eventually owned over 2,000 acres and controlled two-thirds of the water rights on Shepherd Creek.[24] Shepherd's home site was well watered, with an artesian well under a big cottonwood tree, with a flume and waterwheel near the house.[25]



Figure 4. Kispert Ranch on George's Creek, Ca. 1880. (Courtesy of the Eastern California Museum)

Shepherd began a ranching operation to supply the mines, growing alfalfa and grain crops for livestock feed. Like John Kispert, Shepherd's original cabin was destroyed in the 1872 earthquake, and he built a larger house to accommodate his growing family. His ornate nine-room Victorian-style ranch house became a landmark and stopping place for travelers and teamsters passing through the southern Owens Valley. The grounds surrounding Shepherd's house were landscaped with cottonwood, black walnut, willow, poplar, apple, and walnut trees. (Figure 4)

A Paiute camp and burial ground developed west of Shepherd's ranch, above the irrigated fields. The camp consisted of tents and shelters made from tule reeds, and housed an unspecified number of Paiutes, most of whom were employed by Shepherd.

Early homesteaders irrigated the former Paiute fields with water diverted from streams flowing down from the Sierra Nevada. In 1887, the Owens River itself was tapped to bring water to the George's Creek area. Colonel Sherman Stevens and several partners began construction of a ditch (Stevens Ditch) to take water from the river above Independence and convey it south. The ditch was 15 miles long and reached an area east of the George's Creek settlement by 1893, providing additional water for irrigation. By this time, the settlements at George's Creek and Shepherd Creek consisted of numerous ranches with small herds of cattle and some sheep. Fruit trees, including apple, pear, peach, apricot, nectarine, plum, and cherry were planted at several of these ranches.[26] (Figure 5)

1902-1941: Water Reclamation in the Owens Valley

By the turn of the 20th century, the agricultural-based economy of the Owens Valley prospered, but the region was still perceived as part of "undiscovered California." Individual homestead claims collectively patented some 200,000 acres in the Owens Valley, but for many, the Owens River remained an under-exploited water resource.[27]

In 1902, the Newlands Reclamation Act created the U.S. Reclamation Service, which provided for the irrigation and reclamation of undeveloped lands by constructing dams, channels, and flood control systems throughout the arid West.

In June 1903, Joseph B. Lippincott, the Pacific Coast region supervising engineer of the Reclamation Service, assigned Jacob Clausen to conduct

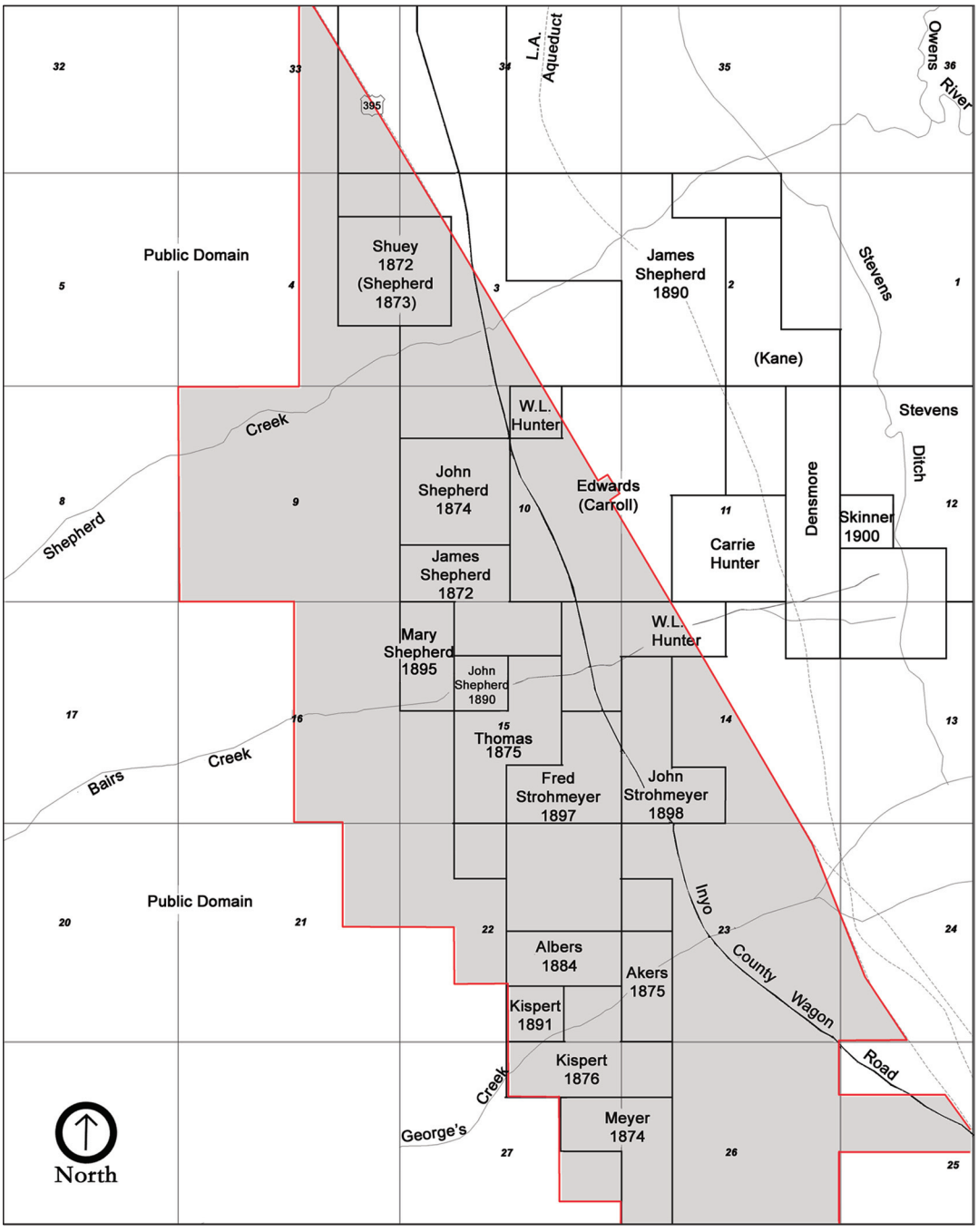


Figure 5. Map depicting land ownership in the Manzanar area, Owens Valley, ca. 1900. Shaded area shows the future boundary of the Manzanar War Relocation Center. (Adapted from *Three Farewells to Manzanar*, WACC 1966)

a reconnaissance of the Owens Valley to determine the extent of the unpatented public lands and to assess the possibility of storing water for its reclamation.[28] Lippincott recommended the Owens Valley survey data be given over to the city of Los Angeles. William Mulholland, chief engineer of the Los Angeles Bureau of Water Works and Supply (forerunner of the Los Angeles Department of Water and Power) assured the Reclamation Service that any water development project the city proposed would be a municipal undertaking.[29]

Jacob Clausen's survey resulted in the withdrawal of nearly half a million acres from homestead claims in the Owens Valley. Since most settlers had settled along the valley floor where access to irrigation was possible, the majority of the government withdrawals were located along the Sierra *bajada*, and on slopes where the existing system of irrigation canals did not exist. Clausen's proposed irrigation system would consist of a reservoir and 140-foot dam on the Owens River to ensure surplus water would always be available, even in years of deficient rainfall. Canals would carry the water along the base of the mountains on either side of the valley. Clausen calculated that diversion ditches from these upper canals to the valley floor would bring an additional 100,000 acres under irrigation. A petition circulated locally, and more than 400 local farmers, whose holdings represented approximately half of the valley's patented land, urged the federal government to proceed with the proposed irrigation project. Clausen's enthusiastic report did note some disadvantages, however, including extensive ground accumulations of alkali, the result of over-irrigation.[30]

Former Los Angeles mayor Fred Eaton had traveled to the Owens Valley in 1892 to explore opportunities for an irrigation project being advanced by Frank Austin of Lone Pine; Eaton was one of the earliest proponents of the plan to bring Owens Valley water to Los Angeles via an aqueduct. Following Lippincott's recommendation, Los Angeles Chief Engineer William Mulholland took charge of planning and construction of what would become the longest aqueduct in the world.[31] In 1905, Los Angeles began acquiring property and water rights throughout the valley; in 1907 the Reclamation Service formally withdrew from the Owens Valley Project.[32]

Around the same time Los Angeles was exploring the potential of the Owens River to provide the city with a new source of water, a plan to develop the water resources of the valley was initiated by George Chaffey. Chaffey was a successful engineer and businessman who constructed irrigation systems to carry Colorado River water north from Mexico to the deserts of

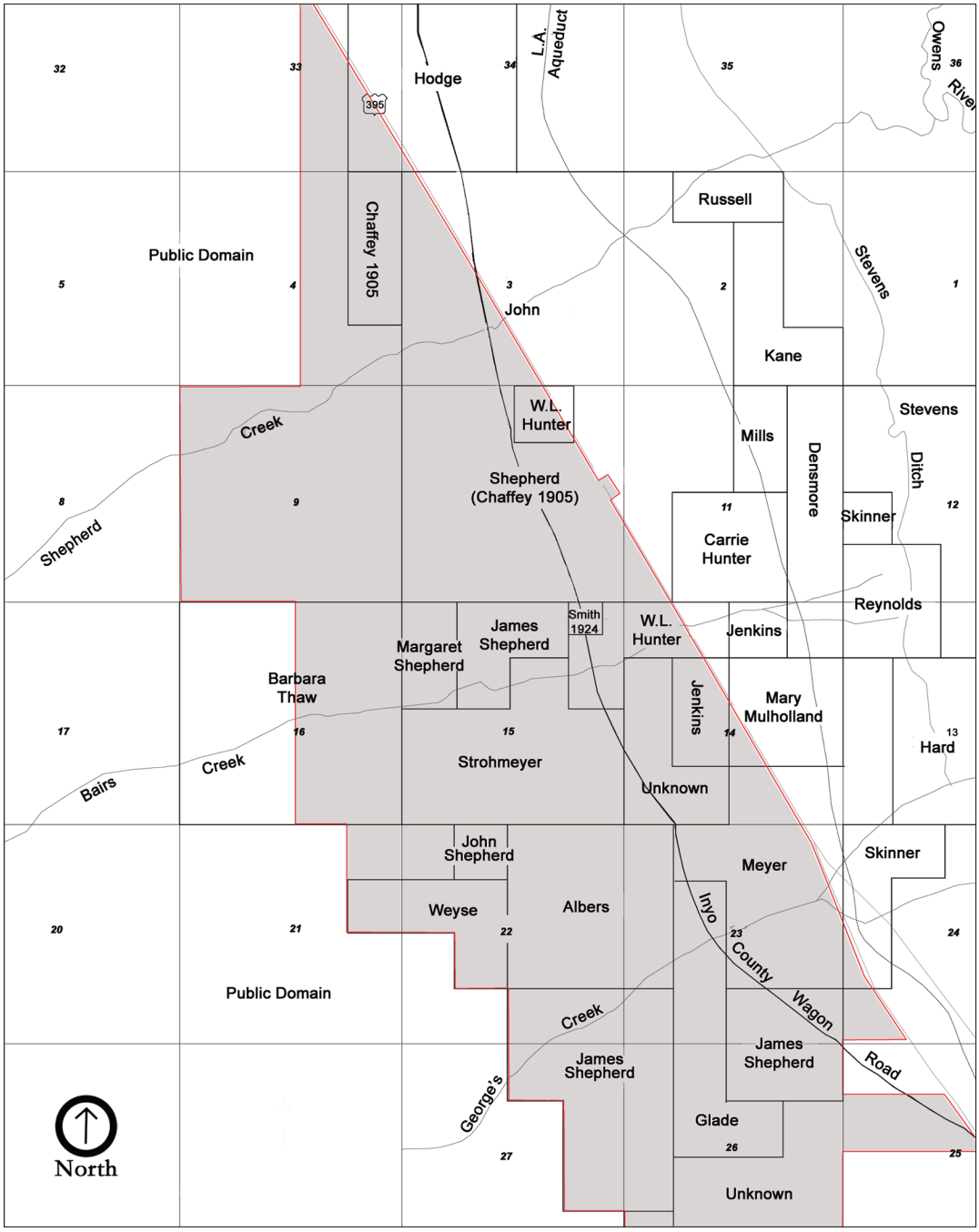


Figure 6. Map depicting land ownership in the Manzanar area, Owens Valley, ca. 1905. Shaded area shows the future boundary of the Manzanar War Relocation Center. (Adapted from *Three Farewells to Manzanar*, WACC 1996)

the Imperial Valley. Chaffey filed an application for water rights to build a reservoir on Cottonwood Creek in the southern end of the valley where a hydroelectric plant would power an electric railroad to Los Angeles.

In 1905, Chaffey purchased the Shepherd Ranch and all its water rights. Chaffey's brother Charles moved his family into the former Shepherd ranch house where he lived for the next several years. After leaving for Canada (where the family originated) the Shepherd ranch house became the home of farm superintendents who took over management of the Chaffey properties in the area.[33] (Figure 6)

Owens Valley Improvement Company and the Town of Manzanar

In 1910, Chaffey and his associates established the Owens Valley Improvement Company. By this time Chaffey had acquired more than 3,000 acres in the area, and owned all the water in Shepherd Creek and Bairs Creek, and a portion of the water in George's Creek.[34] The company set up a concrete pipe and tile drain factory west of the former Shepherd house in order to construct the necessary infrastructure to carry out Chaffey's valley irrigation plan.[35]

In August 1910, the Owens Valley Improvement Company (OVIC) laid out the first portion of its proposed irrigation colony on approximately 1,000 acres, which they called "Manzanar," Spanish for apple orchard.[36] The OVIC plan was to develop an agricultural colony based on the production of apples. The company platted a town site and laid a system of concrete and steel gravity flow irrigation pipes to carry water to the town from Shepherd and Bairs creeks.[37] The irrigation system was unique in the area, in that it was designed to prevent alkali deposits, which had made large portions of the southern valley unproductive.[38] (Figure 7)

The OVIC initiated a promotional campaign in San Francisco and Los Angeles, advertising 10-, 20-, and 40-acre parcels for sale. The parcels included ownership of one share per acre in the Manzanar Water Corporation, and the services of a zanjero or water distributor.[39] In 1911, the Owens Valley Improvement Company published a color promotional brochure that promoted apple growing at Manzanar, luring settlers with the promise of "Fortunes in Apples in Owens Valley, Inyo County, California."

In 1911, town residents Ira L. Hatfield and W.B. Engle planted nearly 50 acres of apple trees on their individual farms, and helped promote future

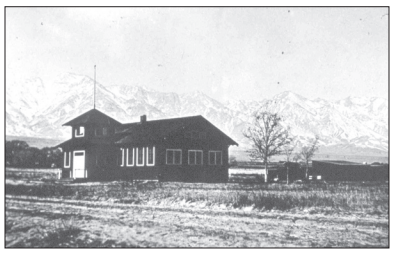


Figure 7. Concrete pipes were used to deliver water to orchards within the Owen's Valley Improvement Company irrigation colony at Manzanar. (Courtesy of the Eastern California Museum)

settlement through their membership in the Manzanar Commercial Club. Soon, a community began to take shape as roads were graded and several buildings constructed including a two-room schoolhouse, a community hall, cannery, garage, blacksmith shop, and store. The town was located near a "straight, broad highway" that had been constructed between Independence and Manzanar in 1912, and which was later incorporated into U.S. Highway 395.[40] (Figure 8)

The development consisted of the 160-acre town site, divided into 312 lots, and two outlying subdivisions comprising 3,000 acres, which were divided into 140 lots. Independence Avenue (now U.S. Highway 395) and Francis Street (now the Manzanar-Reward Road) intersected near the center of town. East-west streets in the town were laid out at one-mile intervals, and north-south streets ran parallel to Independence Avenue.[41] (Figure 9)

Figure 8. The Manzanar school, located west of downtown Manzanar, was constructed in 1911-1912. It served the community until ca. 1929, when the city of Los Angeles purchased most of the properties in town.



In 1918, the Manzanar Fruit and Canners Association was organized to "conduct and carry on … the business of canning, preserving, drying, packing and otherwise handling, disposing of and selling all kinds of deciduous and other fruits, and all kinds of vegetables."[42]

In addition to the apples, which included such varieties as Winesaps, Spitzenburgs, Roman Beauties, Delicious, New Town Pippens, and Arkansas Blacks, residents also planted their fields with alfalfa, corn, wheat, pear and

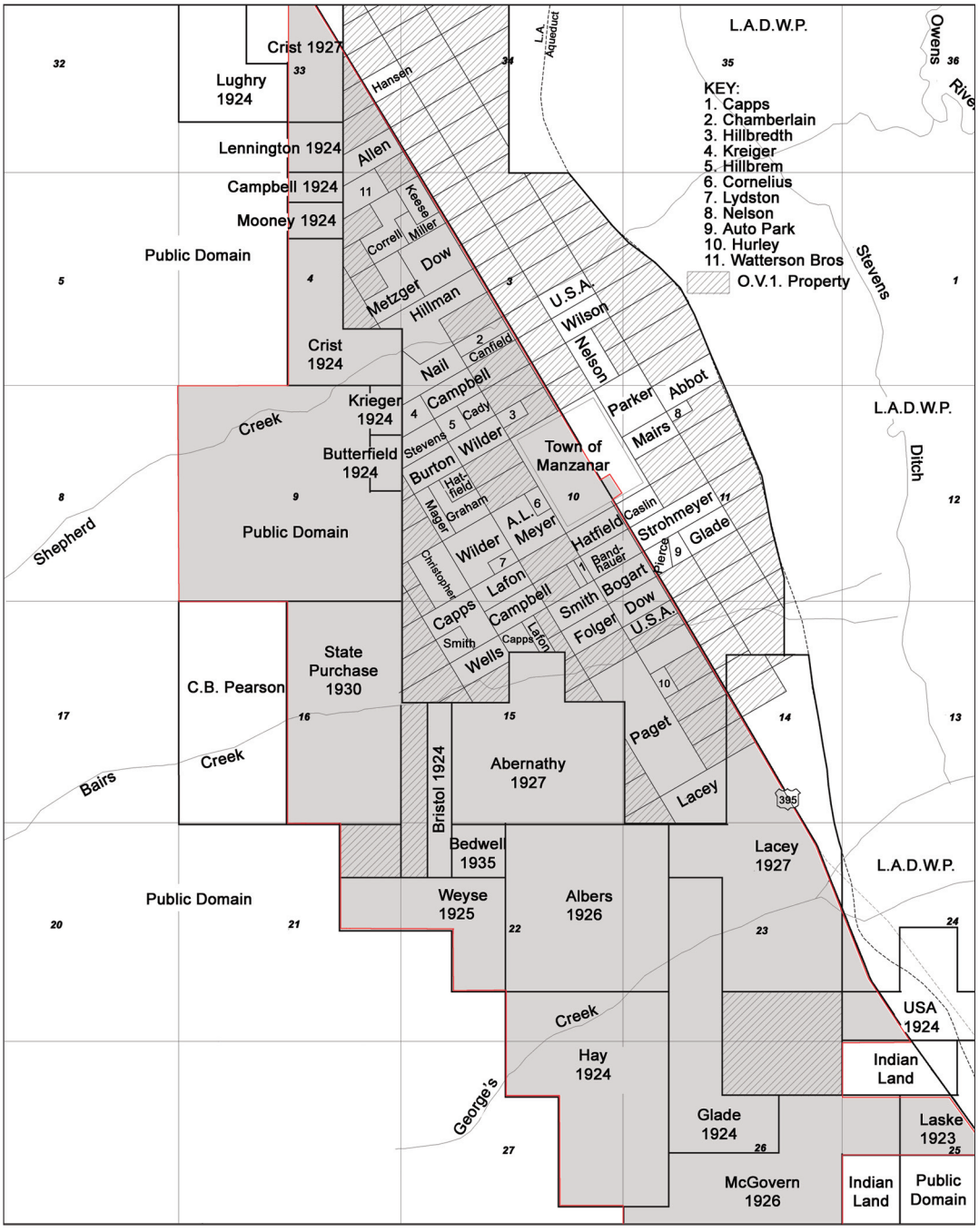


Figure 9. Map depicting land ownership for the town of Manzanar, 1927. (Adapted from *Three Farewells to Manzanar*, WACC 1996)

peach trees, grape vines, and acres of onions and potatoes. Beehives were tended for honey production.[43]

By 1922, Los Angeles began to purchase lands and water rights within the community of Manzanar, seeking to increase the amount of water delivered to the city from the Owens Valley. While the city systematically acquired individual properties throughout the valley, in September 1924, the city purchased the OVIC property and by 1927 it owned all the property in the town and surrounding subdivisions.

Many residents of Manzanar left the valley entirely, while some settled in Independence or Lone Pine and become employees of the Los Angeles Department of Water and Power.[44]

While Los Angeles was most concerned with protecting the watershed above the aqueduct, it did manage orchards in its newly acquired property, and continued operations of the packinghouse in the town's community hall for several years.[45]

The city's farming efforts were reported in the *Los Angeles Times Farm and Orchard Magazine* in its June 13, 1926 edition:

> …out of 3,000 acres acquired with water rights, around 1,200 acres had at one time or another been developed, a considerable portion to orchards. The Manzanar tract had been about half sold out to individual owners, the other half being [farmed] in part by the OVIC, which had subdivided it, when the city stepped in. Victor M. Christopher, who had been managing the company's farming operations, was employed by the city to look after the maintenance and leasing of the whole tract. He started in by giving the orchards a severe pruning followed by good irrigations. He had to yank out eighty acres of pears on one place because of blight. Three hundred acres of fruit, however, have been well cared for, pruned, sprayed and irrigated, and of this a third has been leased. Last year Mr. Christopher sold a fair apple crop from city-owned orchards.

The newspaper reported that because some of the crop fields were in "deplorable" condition, new irrigation systems were being constructed to "make possible a rapid extension of the alfalfa acreage." [46]

Another article in the *Los Angeles Times Farm and Orchard Magazine* was published in the November 30, 1927 edition, and noted "There were approximately 300 acres of orchard, the major portion of which has not yet

attained a full-production stage." Notwithstanding the long distance to the nearest market, the 1926 fruit crop from Manzanar included six carloads of peaches, 12 of Bartlett pears, and 37 carloads of apples. Most of the apples were Winesaps, with some Delicious and Arkansas Black varieties.

The second year's fruit crop was less productive due to a late spring frost, which caused extensive damage to the orchard trees. The city claimed that the destruction of the fruit crop would "in all probability lead to the discontinuance of orchard planting and use of the lands along surer and constantly remunerative channels." Although the city questioned the fitness of the Manzanar area for fruit-production, it was thought that the "prodigiously fertile soil" could successfully be brought under cultivation.[47]

The departure of the town residents, who tended smaller plots of land and relied on agriculture for their livelihood, brought about an inevitable decline in the agricultural productivity in the area. The city of Los Angeles had become the landowner of the vast majority of the Owens Valley, and its concern was with protecting the watershed, not developing an agricultural-based community.

A series of articles in the *Sacramento Union* lent credence to the belief that the powerful city had unjustly seized control of the area, letting the thriving community die out as its water resources were channeled out of the valley. The newspaper articles declaimed the "Pitiful Story of an Agricultural Paradise Created by California Pioneers, Condemned to Desert Waste by Water Looters."

> Manzanar was once famous for its apples. The orchardists of Manzanar won first prize at the State Fair in Sacramento and at the Watsonville apple show. Los Angeles water and power board came and bought every orchard and ranch that its agents could trick the owners into selling. The city immediately diverted the water from the ditches into the aqueduct. It dug wells and installed pumps to exhaust the underground water supply. Today Manzanar is a ghastly place. The orchards have died. The city has sent tractors to pull up the apple trees. … Vigorous trees just coming into full bearing are prostrate in one field; across the road the blazing trail of the firebrand is visible.[48]

The houses left behind by the farmers who had sold their properties to Los Angeles sat abandoned, and some were rented to Department of Water and

Power employees, farm tenants and other workers from the surrounding towns. Some Manzanar buildings were dismantled and their materials were reused, some structures were moved to Independence and Lone Pine, and others were left to deteriorate where they had been abandoned.[49]

In 1934, Los Angeles stopped irrigating the fields to increase groundwater pumping in its continuing effort to obtain all available water in the Owens Valley. In 1935, the Department of Water and Power asked the last remaining resident, a poultry farmer named Clarence Butterfield, to vacate his premises. On October 6, 1941, two months before the Japanese attack on Pearl Harbor, the Inyo County Board of Supervisors passed a resolution at the request of the City of Los Angeles that "all streets, alleys, lanes, etc. in the Town of Manzanar" be abandoned."[50] (Figure 10)

1942-1945: War Relocation Centers

A Nation Mobilizes for War

On December 7, 1941, Japanese warplanes attacked the U.S. Naval fleet at Pearl Harbor, Hawaii. The results were devastating. Approximately 2,400 Americans were killed, 1,300 wounded, 1,000 declared missing, 18 U.S. ships hit, and more than 200 aircraft damaged or destroyed. The attack resulted in the immediate entry of the United States into World War II and opened the Pacific phase of the war. The federal government began immediate preparations to mobilize the nation for war. In the hours and days after Pearl Harbor, the FBI and local law enforcement arrested hundreds of Japanese American community leaders and others who were sent to Department of Justice (DOJ) Internment Camps.

On February 19, 1942, President Roosevelt signed Executive Order 9066, which authorized the Secretary of War to "prescribe such military areas in such places and of such extent . . . from which any or all persons may be excluded." Secretary of War Henry Stimson delegated authority to implement the order to General John L. DeWitt of the Western Defense Command, and set forth a series of specific instructions. American citizens of Japanese descent, Japanese and German aliens, and any persons suspected of being potentially dangerous were excluded from designated military areas along the West Coast.[51] The Army declared the evacuation would eliminate the "danger of action … during any attempted enemy raids along the coast or in advance thereof as preparation for a full scale

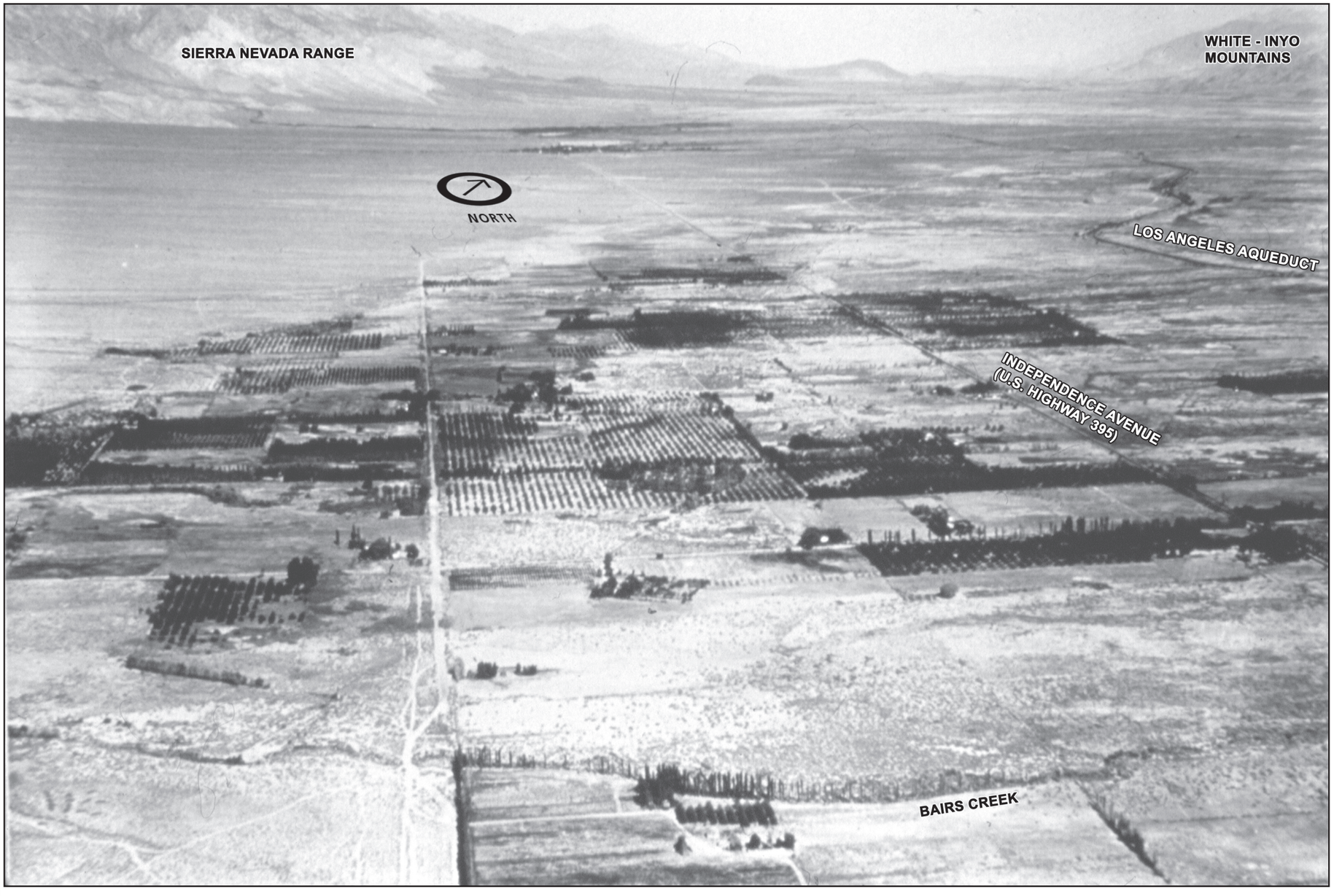


FIGURE 10

1934 Oblique Aerial

1934 oblique aerial view of Owens Valley, looking north.

Sources:
Three Farewells to Manzanar, WACC 1996
Photo collection, UCLA Geography Department Archives

Cultural Landscape Report
Manzanar National Historic Site 2006

National Park Service
Pacific West Region
Cultural Landscape Program

attack."[52]

During the following weeks, the War Department issued Public Proclamation Number One, which designated "military areas" along the west coast of the United States. Military Area Number One encompassed the western portions of California, Oregon, Washington, and Arizona. All portions of those states not included in Military Area Number One were placed in Military Area Number Two. These military areas were further divided into two zones: the coastal areas were "prohibited zones" and adjacent areas were "restricted zones." (Figure 11)

In a press release that accompanied the War Department's proclamation, the Army announced that "all Japanese, including those who are American



Figure 11. Map showing the locations of War Relocation Authority facilities. Shaded areas represent Military Areas One and Two. (Adapted from *Three Farewells to Manzanar*, WACC 1996)

born, [must] vacate all of Military Area Number One." At the time, there were more than 100,000 people of Japanese ancestry, the majority of them American citizens, residing on the West Coast. The War Department announcement was intended to encourage a mass evacuation on a volunteer basis, noting that those "Japanese . . . who move into the interior out of this area now will gain considerable advantage, and in all probability will not again be disturbed."[53]

Following the bombing of Pearl Harbor, the social and political climate cast suspicion on Japanese American populations along the West Coast. During the spring of 1942, Japanese American families consolidated their belongings, liquidated and closed their businesses, and hastily readied for an uncertain future. Even prior to the enactment of Executive Order 9066, Japanese American communities in Southern California had reason to expect eviction from their homes and businesses. In early February 1942, the Navy designated Terminal Island in San Pedro Harbor a "strategic area." Following this pronouncement, the Department of Justice issued a decree ordering all Japanese residents of Terminal Island to evacuate within 48 hours. Persons living on the island deemed "dangerous" were sent to DOJ internment camps in Montana and North Dakota. By the end of February, the entire population on Terminal Island had been evicted.

To carry out the military evacuation program the Army established the Wartime Civilian Control Administration (WCCA) on March 11, 1942. Its mission was "to provide for the evacuation of all persons of Japanese ancestry . . . with a minimum of economic and social dislocation; a minimum use of military personnel and maximum speed; and initially to employ all appropriate means to encourage voluntary migration."[54]

It was soon evident however, that voluntary relocation was a flawed policy, even though some 9,000 persons of Japanese ancestry left restricted areas along the West Coast[55] Interior states immediately protested the Army's resettlement plan, and made it clear that they would not accept an "uncontrolled Japanese migration."[56] Governor Carville of Nevada, for example, warned in a letter to General DeWitt that "permitting enemy aliens to go to all parts of the country," including his state, would be "conducive to the spread of sabotage and subversive activities."[57] The Army responded to the hostile reaction from interior states with Public Proclamation Number 4 on March 27, 1942, which prohibited all persons of Japanese ancestry from changing their place of residence and ordered them to remain within Military Area Number One. This would allow the Army to conduct "an

orderly, supervised, and thoroughly controlled evacuation."[58]

Before long, the Army realized that its plan to evacuate and resettle persons of Japanese ancestry from the West Coast could not be undertaken as a single operation, and recognized that the development of "intermediate assembly facilities [was] essential to the accomplishment of a rapid, compulsory evacuation."[59] Initially called "induction centers," the Army established what came to be called "Assembly Centers" near Japanese American communities to provide for a swift removal from the designated military areas. The assembly centers were located where "existing installations and facilities could be used to the maximum."[60] Many of these assembly centers were established at racetracks and fairgrounds where Japanese Americans stayed in primitive makeshift living facilities, including horse stalls. The Portland Assembly Center in the 11-acre Livestock Exposition Pavilion housed some 3,800 people under one roof.[61] The Army initially planned for the assembly centers to be used as a short-term solution principally to concentrate and confine Japanese Americans before relocating them outside the designated restricted zones. But the assembly center program ultimately lasted for 224 days. The Fresno Assembly Center was the last of these temporary centers to close, finally ceasing operations on October 30, 1942.[62]

The WCCA was charged with carrying out initial evacuation. On March 18, 1942, President Roosevelt created the War Relocation Authority (WRA) by Executive Order 9102, as an independent civilian authority responsible for formulating and executing a relocation program. With relocation of Japanese Americans from the restricted zones on the West Coast as its primary goal, the WRA established policies and guidelines for the construction of Reception Centers. With a budget of $5.5 million, the WRA was initially organized and administered as a unit of the Office for Emergency Management in the Executive Office of the President.[63] On June 1, 1942, the WRA took over administration of the evacuation and relocation program from the WCCA.

Site Selection

During the three-week period of "voluntary" relocation in early 1942, the Army began searching for appropriate facilities to house the Japanese Americans. Military authorities chose and acquired two sites—Manzanar, in the Owens Valley of California, and Parker, Arizona, located on the Colorado River Indian Reservation.[64] Initially called Reception Centers,

the Army planned to accommodate at least 10,000 persons at each site, to "provide temporary housing for those who were either unable to undertake their own evacuation or who declined to leave until forced to do so."[65]

The Army's criteria for identifying appropriate locations for reception centers initially focused on three primary factors: accessibility to railroad lines; isolation from military installations; and agricultural potential. In addition, the Army indicated that the sites should be located on public land so that improvements made through public expense would accrue to the federal government, not private property owners. Finally, the Army focused on acquiring large tracts of land to develop facilities to house thousands of people, since it claimed it would be as easy to patrol 5,000 people effectively as it would be to guard smaller groups.[66]

Western Defense Commander General DeWitt ordered his staff to inspect the proposed Owens Valley and Parker sites, and to report on the suitability of each site for development of assembly centers. A preliminary report on the Manzanar site was prepared February 28, 1942 by Colonel Karl Bendetsen and Lieutenant Colonel I.K. Evans of the Western Defense Command. Bendetsen and Evans reported that the Owens Valley area was "very well adapted to the relocation of enemy aliens and citizens" and noted that "the danger of sabotage of water supply [was] not a governing factor" in its selection of the Owens Valley site. Moreover, the Army determined that the area had agricultural potential to ultimately allow the camp to become "mostly, if not wholly, self-sustaining."[67]

On March 7, 1942, General DeWitt announced the Army had acquired a satisfactory site in the Owens Valley for a "processing station" to house 10,000 to 15,000 persons of Japanese ancestry. The WRA later reported that the Owens Valley was selected because of its distance from any vital defense project, its relative inaccessibility and isolation from main population centers, and the ease with which the area could be policed. DeWitt later wrote that site selection criteria included locating facilities near sources of power, light and water and noted that consideration was given to identifying sites where recreational facilities could be developed because "confinement would otherwise have been completely demoralizing."[68]

Although the Manzanar site met the requisite geographic qualifications, there were concerns about the decision to establish a wartime reception center in the Owens Valley. These concerns came from both area residents and from the City of Los Angeles. Los Angeles city officials vigorously objected

to the proposed 6,000-acre Owens Valley facility due to its proximity to the Los Angeles Aqueduct. The Los Angeles City Council formally expressed its objection to the proposed reception center in a resolution on March 9, 1942, stating that the city was "opposed to concentrating enemy aliens or their descendents in any area in which they could injure facilities requisite for our defense and very existence."[69] Seeking to dispel fears of potential sabotage to the municipal water supply, DeWitt assured the Los Angeles Department of Water and Power that "adequate provision[s]" would be made to protect the aqueduct.[70] Local resistance to the proposed reception center was less focused, although initial public reaction made it clear that the residents of Owens Valley "want[ed] no prison camps, no Japanese, and no deal wherein any part of the City of Los Angeles was concerned."[71] After working out the terms of the lease with the city and conducting a publicity campaign designed to assure area residents that the internment camp would be a "boon not a burden to the [local] community," the WCCA proceeded with its plans for the Owens Valley Reception Center.[72]

War Relocation Centers: Design and Construction Standards

According to the War Department's Final Report, there was no precedent for the type of building necessary to house families. Standard Army quartermaster plans existed for cantonment buildings, which were classed as "semi-permanent," and for theater of operations buildings, which were classed as "temporary". Both of these building types were designed to house soldiers near fields of combat, not multi-generational families. As a result, the Army faced the need to design new buildings or at the least, modify the available building styles. Based on the need for easy and fast construction, keeping costs low, and the limited availability of critical materials, the Army decided to use a modified theater of operations-type design for the construction of residential barracks. These structures, according to General DeWitt, "would adequately house all internees, young and old, male and female...".[73]

In June 1942, the WRA issued a set of standards for the construction of reception centers that were developed in consultation with General DeWitt and the Office of the Chief of Engineers. Entitled "Standards and Details—Construction of Japanese Evacuee Reception Centers," the construction specifications called for modifying standard "Theater of Operations-type" barracks with partitions for "family groups," and interior linings "where warranted by climactic conditions."[74] The final design for internee barracks called for wood frame structures on concrete block foundations,

100 feet long and 20 feet wide. The barracks buildings were equipped with sliding windows and doors at the end of each building and along the sides, providing entry into individual apartments.

In addition to developing a standard building type for the relocation centers, the Army also developed a uniform site plan for the camp, including an area approximately one-mile square in size, surrounded by a barbed-wire fence. Each center would have 36 rectangular blocks, with 14 residential barracks per block. Blocks of barracks buildings were separated by firebreaks, which created a grid system with four blocks grouped together. In addition to the housing barracks buildings, every block had one barracks designated as a recreation building, and a double barracks mess hall. Each block also included a laundry building, and separate latrine buildings for men and women.

Standardized relocation center site plans also called for construction of administrative buildings including offices and quarters for administration personnel, garages, a post office, and a fire station. Other buildings within the central area included warehouses, military police buildings with offices, interrogation rooms, and jails. The military police area was located near the main entrance to the camp, with a 90' flagpole erected in a "suitable location." Each center was designed to include hospital facilities with a minimum of 120 beds for a population of 10,000 people. Standard plans also defined the extent of necessary utility systems: a water supply that provided 100 gallons per capita per day with sufficient pressure to give adequate fire protection; and a sewage system that could handle 75 gallons per capita per day. Plans dictated that a "standard stock fence" be built using Japanese labor to enclose the evacuee housing area. Mid-way along the length of the fenced area, and at each corner, guard towers were specified "of a height commensurate with terrain conditions and equipped with searchlights." [75]

Initial Construction at Manzanar

A few days prior to enactment of Executive Order 9102, which established the WRA to facilitate the removal of persons of Japanese ancestry from the West Coast, workmen began construction at Manzanar. On March 5, 1942 the U.S. Army Corps of Engineers opened bids for construction of the buildings, roads, and utilities at the Manzanar site. Contract specifications called for 6,300,000 feet of lumber to be delivered to the site within 30 days.[76] The contractor, Griffith and Company, was charged with constructing a temporary city to house 10,000 people "as expeditiously as possible."



Figure 12. Before construction of the relocation center began in March 1942, military police camped in tents on the site. (Courtesy UCLA Special Collections)

The first truckloads of lumber arrived at Manzanar on March 14, and the following day the military police arrived and were encamped in field tents.[77] Within several days the contractors and the WCCA administration officials arrived. (Figure 12)

In addition to constructing buildings, initial site development required construction of transportation systems, and development of all infrastructure and utility systems including water distribution networks, fire suppression, sewage lines, electrical service, and telephone connections. Most of the basic infrastructure development of Manzanar was accomplished in three months.

Milton Silverman, a journalist for the *San Francisco Chronicle*, was assigned to report on development and construction of Manzanar.[78] Silverman described the scene at Manzanar prior to construction of the camp, and characterized the landscape as "nothing . . . but a frowzy, dilapidated orchard of old apple trees surrounded by spotty stands of sagebrush, rabbit brush, and mesquite."[79]

Incorporating the existing farm and fruit orchards from the former town of Manzanar, the WCCA supervising engineer noted that "extensive further development was not needed." Instead, workmen cleared the scrub

vegetation, leveled areas south of the central camp area for irrigation and establishment of agricultural fields, and dug ditches for water and sewer lines throughout the central area of the camp.[80] (Figure 13)

By March 17, the first buildings at Manzanar were under construction. On March 19, Silverman reported, "huge lumber trucks were roaring up the . . . highway from Los Angeles and 400 carpenters were already working a 10-hour shift." Within days, an administration building was standing where the old Manzanar packing house stood and within one day workmen started on the first 25 city blocks. (Figures 14 and 15) According to Silverman, the workmen proceeded…

> …like an Army of trained magicians. One crew led the way with small concrete blocks for foundations. A second followed with the girders and floor joists. A third came right along with the flooring, a fourth with prefabricated sections of sidewalls, a fifth with prefabricated trusses, a sixth slapped on the roof, a seventh followed with heavy tarpaper, and an eighth finished with doors, windows and partitions.
>
> All around them were other crews clearing and leveling the land ahead, excavating for sewer and water pipes, and bringing in

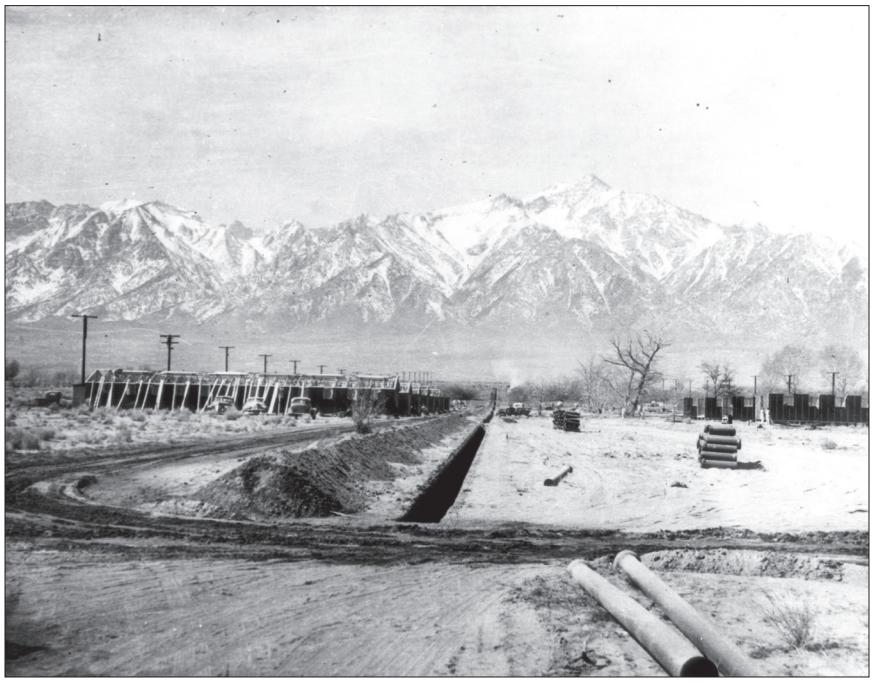


Figure 13. Water lines being installed along the camp roads as the barracks buildings are being constructed, March 1942. (Courtesy UCLA Special Collections)



Figure 14. Truckloads of building materials and supplies arriving at the Manzanar site in early March 1942. (Courtesy UCLA Special Collections)

> truckloads of the prefabricated sections made in a centralized prefabrication mill only a few hundred yards away. At the same time, still other workmen were setting up the first of 25 oil centers to hold fuel oil, 40 warehouses and the barracks for military police.
>
> The workmen had no time to build wooden buildings for themselves; they slept in a tent city.[81]

Although the Army's official record of operations at Manzanar described an efficient, assembly line-style construction process, many internees did not perceive the same sense of organization. As they arrived in greater numbers during the early spring of 1942, basic living facilities had yet to be completed. The WCCA was not prepared to receive the rapid influx of people; barracks were without doors, windows and steps. Latrines lacked plumbing and running water and a "portable" outhouse was dragged back and forth between barracks.[82] An open ditch two feet wide and four feet deep extended from Block 1 to Block 6, and carried raw sewage until the sewer lines were completed.

Figure 15. Contractors Griffith and Company of Los Angeles began the construction of buildings in March 1942, erecting barrack buildings at a rate of up to two buildings in one hour. (Courtesy UCLA Special Collections)



On March 21, a group of 81 Japanese American "volunteers" arrived at Manzanar from Los Angeles to help with construction.[83] Many of the early internees were "painters and plumbers, doctors and nurses, cooks,

and bakers, and stenographers" put to work "preparing for the imminent arrival of the first group of internees."[84] When the volunteers first arrived at Manzanar, they were greeted by a tent city that the military had erected to house military police and WCCA officials. Stacks of lumber and other construction materials were piled up near the entrance to the site. Buildings under construction in Block 1 included a barracks building and mess hall (although for the first arrivals, meals were prepared in the open).[85]

The following day, another contingent of Japanese Americans arrived from Los Angeles to assist with initial construction of the camp. After assembling at the Rose Bowl in Pasadena on March 23, 710 individuals made the 240-mile drive to the Owens Valley in a caravan of private cars escorted by Army jeeps.[86] Others departed on busses, and on trains bound for Lone Pine from the Santa Fe depot near Little Tokyo in downtown Los Angeles.[87]

Because Manzanar was initially established as the Owens Valley Reception Center (an assembly center) and subsequently designated a War Relocation Center, most Japanese Americans came directly from their homes to the Owens Valley without an intermediate stop at a temporary assembly center.[88]

Most internees came to Manzanar from California and Washington State. The sequence of their arrival coincided with Army plans to evacuate areas in order of their relative military importance.[89] Because Bainbridge Island, Washington was located close to the Bremerton Navy Yard in Puget Sound, it was the first area to be evacuated. On March 24, 1942, 64 families, including 227 individuals, were evacuated from Bainbridge Island by train from Seattle directly to Manzanar. Many of these individuals were farmers on Bainbridge Island, where they accounted for 80 percent of the strawberry crops produced.[90] Upon their arrival on April 1, 1942, this group was housed in Block 3.

Los Angeles County, including Terminal Island (home to a large community of fisherman and cannery workers) and the harbor communities south of Los Angeles were the next areas to be evacuated and were housed in Blocks 9 and 10. A number of these individuals were landscape gardeners, horticulturists, and like many internees from Bainbridge Island, were engaged in agricultural practices prior to World War II.[91]

Over 90 percent of the internees at Manzanar were from Los Angeles; the remaining 10 percent were from other California communities and

Bainbridge Island, Washington. The evacuation plan attempted to maintain community ties by moving entire neighborhoods to the same relocation center and, once there, housed them together.[92] Thus, in addition to the people from Bainbridge Island in Block 3 and the former residents of Terminal Island living in Blocks 9 and 10, Block 22 was filled with people from west Los Angeles and Block 28 with people from the San Fernando Valley.[93]

During the first month of the evacuation program, 3,000 internees at Manzanar were confined to a quarter-square mile enclosure encompassing 12 blocks of barracks along the southern portion of the camp.[94] An Inyo County resident who worked at the camp during construction remembers that the internees were presented with "horrible conditions" when they arrived at Manzanar. She recalled that there were some barracks built, "but they didn't have doors or windows in them. The construction people worked far into the night to get some of the barracks closed in and to get some of those people in out of the weather. There were women, children, and old people—just everybody, you know."[95] By mid-May the population at Manzanar reached 7,000. In some cases, up to 1,000 Japanese Americans arrived at Manzanar in a single day. An internee who arrived at Manzanar on April 12 later stated that: "These barracks were absolutely unfit for any human being to occupy. Nothing was completed."[96]

Infrastructure

Water Systems

The main source of domestic water for Manzanar was Shepherd Creek, with an auxiliary supply from two wells (#75 and #169) owned by the Los Angeles Department of Water and Power. During initial construction of the camp, water was provided on a temporary basis from an 84,000-gallon water tank located west of Block 24. It was soon evident that this tank was inadequate and had to be re-supplied an average of 15 times during a 24-hour period.[97]

Development of a water distribution system began with construction of a new reservoir to collect water from Shepherd Creek. On May 22, 1942, Los Angeles contractors Vinson and Pringle began construction of a 540,000-gallon capacity concrete dam and settling basin on Shepherd Creek, approximately 3,250 feet northwest of the camp's northern boundary. The reservoir was designed with earthen embankments reinforced with wire mesh and lined with concrete. Water was regulated by two gates and

diversions: one to a steel storage tank and the other fed the mains and laterals throughout the central area of the camp.[98]

Working under the supervision of foreman Jiro Matsuyama, internee work crews from the Engineering Section expanded the capacity of the reservoir shortly after initial construction. The increased capacity was achieved by adding concrete and rock to build up the walls of the reservoir. By early July the expansion was complete and increased capacity of the reservoir to approximately 800,000 gallons.[99] (Figure 16) Although Shepherd Creek flowed year-round, and the capacity of the reservoir increased, the camp used an average of 1.5 million gallons of water a day, straining capacity. As a result, the Fire Department prohibited public use of the fire hydrants because the average water pressure was only 30 to 60 pounds, which was "not sufficient in case of a major fire." The temptation to use water from the fire hydrants was too great for some to resist, as the hydrants provided an alternate source of water for irrigation of the lawns and personal gardens throughout the camp.[100]

The WCCA and the WRA made self-sustaining agricultural production an explicit goal for each of the relocation centers and, as a result, development of agricultural fields was one of the first projects undertaken during

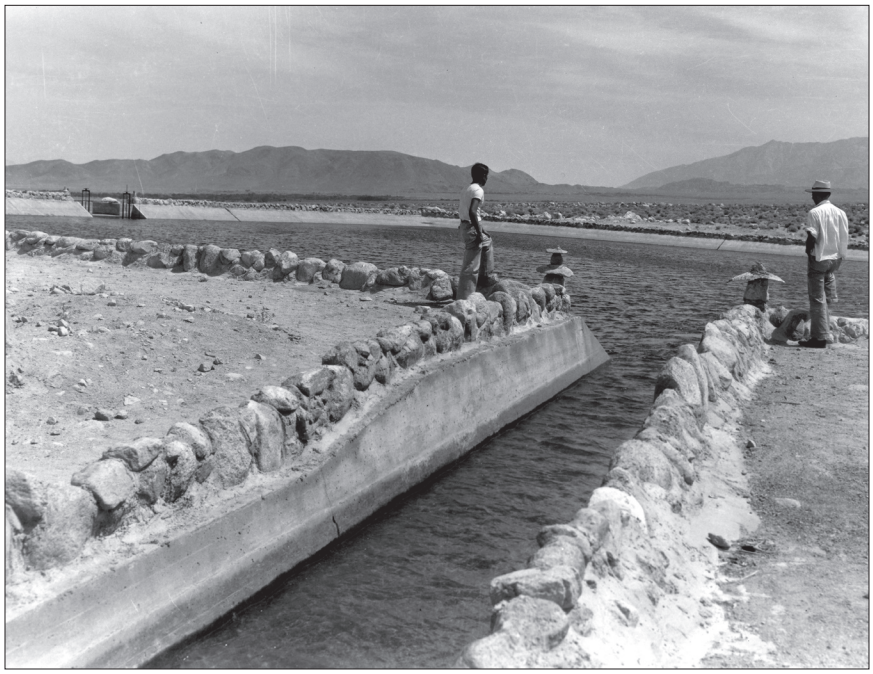


Figure 16. Internee laborers expanded the capacity of the camp reservoir and embellished the structure with ornamental rockwork, July 1942. (Courtesy UCLA Special Collections)



Figure 17. Extensive clearing of farm fields and development of irrigation systems was largely accomplished by manual labor provided by internees. (Courtesy UCLA Special Collections)

initial construction of the camp. Producing food for consumption in the camp was both an economic measure and a means to employ internees in a "worthwhile undertaking." Extensive agricultural fields, eventually totaling approximately 400 acres, were developed north and south of the residential area at Manzanar. Internee laborers constructed an extensive ditch irrigation system to bring water to the fields. The camp labor force cleared some 120 acres in the south field in April 1942, reconditioned more than eight miles of old ditch (which had been constructed in conjunction with development of the town of Manzanar), and dug two miles of new irrigation canals.[101] (Figure 17)

Ultimately, approximately 12 miles of irrigation ditches and pipelines were constructed for agricultural purposes. George's Creek, Bairs Creek, and Shepherd Creek were fed by Sierra snow. Although water flowed year round in George's Creek and Shepherd Creek, Bairs Creek was intermittent and by late summer, was dry. Los Angeles Department of Water and Power (LADWP) wells (#76 and #95) were tapped to supplement irrigation water for the southeast fields. In 1943, when additional farm fields were cleared and planted along the northern boundary of the central developed area, LADWP well #92 provided an auxiliary source of water for the late crops. Another LADWP well in the vicinity of the north agricultural fields, well #99, was not used because it had a crooked casting. The city of Los Angeles

had constructed these wells to increase groundwater storage throughout their property near Manzanar.[102]

Initial site development also included the development of a sewage system for the camp. For the first several months, sewage was treated by a single 100-foot-by-20-foot-by-6-foot-deep septic tank. But by the end of August 1942, a 1.25-million-gallon-a day-capacity sewage treatment plant was completed 1.5 miles east of the relocation center, east of Highway 395.

Electricity
The Los Angeles City Bureau of Power and Light supplied electric power to 730 buildings at Manzanar from its power station on Cottonwood Creek. Power poles extended down both sides of the streets between the laundry room and the women's latrine, and with one distribution pole in the center of each block. The electrical distribution system included 79 transformers ranging in size from 2 kVA to 37.5 kVA. The transformers were located adjacent to the street, midway along the edge of each residential block. Transformers were also located at the hospital complex, the staff housing area, the administration area and the military police group.

In addition to lighting the buildings, 190 alley and streetlights were provided. The streetlights did not provide sufficient light to assist nighttime trips to the latrine, so some of the blocks installed lighting systems on the north side of the latrine buildings. Residents also strung lights for nighttime recreational activities in the blocks; as early as July 1942, residents of Block 23 "strung lights on poles for ondo, [a traditional Japanese dance]."[103]

Telephones
Interstate Telephone and Telegraph Company of Bishop installed Manzanar's telephone system. Wires were installed on existing power poles, and installation was completed in November 1943. Telephones were installed in WRA offices and staff buildings, but not in the internees' barracks.[104]

Manzanar War Relocation Center: Camp Design and Development

Early site development at Manzanar began with the layout and construction of an internal road system. Primary roads were aligned in a grid, creating a regimented division of residential spaces and open areas. In this regard, roads defined the edges of blocks and firebreaks. Streets running east to west were designated by letters, running from A Street on the east to

I Street on the west. North-south streets were numbered, from 1st Street on the south to 11th Street on the north. The one road south of 1st Street was named Manzanar Street, which led to the warehouses and industrial buildings located southwest of the administration area.

Roads throughout the camp were surfaced with gravel and an application of oil to bind the material and minimize dust. According to the *Project Director's Final Report*, the cost for street and road construction at Manzanar was low "due to the type of sandy soil, which required very little additional gravel before the surface could be oiled . . . and were elevated very little above the adjacent ground." In addition to the streets that separated the blocks into groups of four, informal alleys led from the streets to the inner courtyard of the blocks. These routes were primarily used by maintenance crews, oil delivery trucks, and other service vehicles.

Service roads around the main entry and the warehouse area were constructed using a road-mix method of compacted gravel surfacing in order to carry heavy traffic and large freight trucks. In all, there were approximately 14 miles of oiled-surface streets in the center and 1.5 miles of oiled-surface roads in the farm area outside of the center. Approximately 5.5 miles of dirt roads were constructed in the farm area, and to the reservoir and sewage treatment plant.[105]

The system of streets and firebreaks divided the central area into 36 residential blocks, a hospital block, two staff housing blocks, an administrative block, two warehouse blocks, and a garage block. Firebreaks were 300 feet wide, with the exception of the central east-west firebreak, which was 600 feet wide.[106] The central firebreak, which effectively divided the camp into two sections, was most likely designed to stop fire from spreading throughout the entire camp with the prevailing north-south winds.

Barracks Blocks

Building construction for the barracks started in mid-March 1942 and the last blocks to be opened—Blocks 29-36, along the northern section of the central residential area—were ready for occupancy in mid-June. Construction proceeded 10 hours a day, seven days a week. Most of the laborers came from Los Angeles; however, a few local workers were hired. The "volunteer" contingent of Japanese Americans were not hired on construction crews; instead they were used for clearing buildings sites and roads, and for other low-skilled manual labor.[107]

At Manzanar, barracks were arranged in two parallel rows of seven barracks per row, for a total of 14 residential barracks in each block. In addition, a single barracks (Building 15) in the southwest corner was designated a recreation building, and a double barracks served as a mess hall in the northwest corner of each block. This arrangement created a central interior area in each of the blocks for support structures including separate latrine buildings for men and women, and a laundry room. Ironing rooms were added between the recreation building and the mess hall after initial construction of the blocks was completed. Oil tank storage platforms were erected at the western edge of the blocks, near the street, where oil tanks provided residents with a supply of heating oil for barracks stoves.

The fire department indicated that, from a safety standpoint, the overall alignment of the buildings was "well planned…the buildings being laid out to run north and south, an excellent idea due to the fact that most winds were from either of those directions." The fire department was less pleased with the close proximity of the buildings, noting that they were "too close together [and] during a high wind, fire could have raced out of control."[108]

The arrangement of buildings permitted the maximum number of structures to be built within the boundaries of each block. It also created uniformity to the blocks that troubled some parents who were afraid that if their children ventured beyond their block, they would get lost trying to find their way home amidst a bewildering array of identical buildings. The post office also had trouble identifying delivery addresses and the administration urged residents to indicate their address by hanging signs by their apartment door.[109]

As they arrived at Manzanar, Japanese Americans were registered and assigned living quarters. Initial distribution of barracks living space was confused and chaotic. The barracks were furnished only with a heating stove, a single hanging light bulb, and typically eight metal sleeping cots provided by the Army. Internees were given canvas bags, which they stuffed with straw to create mattresses. Eventually, they were replaced with cotton mattresses made in the camp's mattress factory. The first rules regarding housing were distributed on March 25, 1942. These rules forbid men from switching barracks without permission and prohibited cooking in apartments. Same-sex friends over the age of 18 could live together with the approval of their parents. The most common complaint about housing was the over-crowding and lack of privacy.[110]

Early in the construction at Manzanar, it was common for unrelated families and individuals to share an apartment. When the barracks were first occupied in March 1942, apartments were not partitioned and residents hung blankets and sheets for privacy.

The camp administration acknowledged the privacy problem, and by the end of April 1942, the director of the Lodging and Mess Division promised "Japanese carpenters" would construct five-foot tall three-sectioned screens as soon as material was available.[111] As originally constructed, the barracks were divided into four apartments each; over time, partitions were moved to accommodate families of various sizes.

The project to install permanent partitions in the barracks in order to distribute space according to family size did not begin until July, and coincided with the linoleum-laying project. The wood floors were covered with Pabco (also known as Mastipave), a material resembling linoleum, and screens were provided for the windows.[112]

Because the lumber that was used to construct the barracks buildings was green, it dried quickly in the arid climate, and gaps developed between the boards. Before the barracks were insulated and linoleum laid on the floors, dust and cold air seeped through the spaces between the floorboards and the cracks where the walls met the roof. Early arrivals developed an understandable dread of the coming winter weather and rumors began to circulate that the housing conditions "mean[t] certain death for old people and babies in the severe cold of Manzanar's winters."[113]

One internee described her first spring at Manzanar:

> …the rooms were not lined with plaster board and linoleum. Whenever the cold spring wind blew down from the snow covered Sierra Nevada mountains, the blast of cold wind would come into the rooms through the large holes and spaces between the floor boards and the walls.[114]

Another recalled:

> The floor was of wood with openings of about half an inch to an inch between the boards and there were holes here and there. The walls were built in the same fashion with big holes and openings visible on the inside…there was a big opening between the roof and

> the wall. Breezes blew through there and blew up from between the boards of the floor, Oh it was cold…The dust was just as bad inside the house as it was outside.[115]

A crew of internee workers, most from Terminal Island, laid the linoleum using tools they crafted themselves.[116] Former internee Jeanne Wakatsuki Houston recalled in her book, Farewell to Manzanar how the linoleum floors were appreciated in her barracks:

> We had linoleum floors of solid maroon. You had three colors to choose from—maroon, black, and forest green—and there was plenty of it around by (the spring of 1943). Some families would vie with one another for the most elegant floor designs, obtaining a roll of each color from the supply shed, cutting it into diamonds, squares, or triangles, shining it with heating oil, then leaving their doors open so that passers-by could admire the handiwork.[117]

The building insulating materials recommended in the "Standard and Details" document developed by the Army and the Corps of Engineers was plasterboard and Celotex lining. This material was delivered to Manzanar in August, and internee work crews began insulation of apartments in September. With the opening of all the residential blocks, crowded conditions had eased somewhat by October. By then, nearly two-thirds of the barracks had been lined with plasterboard, many partitions had been built dividing the barracks into apartments, and separate rooms had been partitioned out of apartments.[118]

Although the camp administration undertook measures to improve the livability of the barracks, the structures remained uniformly drab and anonymous. The exterior of the buildings was bleak at best. Soon after the internees were settled in their apartments, they began modifying the areas outside their barracks, constructing landscape features with whatever materials were available, fabricating stone-lined walkways, decorative concrete stoops, and a variety of wooden structures including small covered decks or porches adjacent to their barracks apartments.

In June, 1942, the administration announced that 200 pounds of rye grass seed was available to each block; rakes and shovels were also provided to anyone who would establish barracks lawns. Residents were initially told that there was "no need of worrying about water" to care for the lawns, but over time, the demand for water to irrigate lawns and the block gardens was so high that occasional shortages prompted the administration to



Figure 18. Internees planted lawns using seed provided by the WRA to mitigate the dusty conditions of the site. (Courtesy of Toyo Miyatake Studio)

impose water restrictions. In some cases, the residents tapped fire hydrants, diminishing the water pressure in the fire suppression system, which prompted stern reprimands from the fire department.[119]

In the beginning of June 1942, the first lawn in the camp was seeded in Block 6, between barracks 12 and 13 with $3.00 worth of grass seed ordered by mail from the Sears & Roebuck catalog. A Documentary Report described the project as a communal endeavor in which residents of both barracks buildings "pitched in: filling hollows, spading the earth, watering, bringing in topsoil—all by hand." By July 1942, over 100 lawns had been planted in the residential blocks.[120]

As the first summer progressed, the number of lawns in the residential blocks increased steadily, such that, by August the camp newspaper reported that Manzanar had "hundreds of sprouting lawns and one solitary lawnmower." Assistant Project Director Bob Brown acquired the lawnmower from a hardware store in Lone Pine.[121] Lawns fulfilled a practical and aesthetic need. Lawn areas minimized dust outside the barracks and also improved the drab, monotonous appearance of the rows of unadorned tarpaper barracks, which stretched along the residential blocks as far as the eye could see. (Figure 18)

By the middle of June, a survey of residential gardens noted that an average of five out of 14 barracks—or nearly every other apartment building—at Manzanar had some planting around it, usually a combination of flowers and vegetables in small plots near the apartment entries. Typical plant material used in the barracks gardens included potatoes, onions, cucumbers, Chinese cabbage, and watermelon, as well chrysanthemums, nasturtiums, carnations, and roses.[122]

The largest building in each block was the mess hall, located at the northwest end of each block, opposite the recreation hall. Measuring 40 x 100 feet the mess hall was constructed by joining two barracks buildings together. Mess Hall 1 was completed and opened on March 22, 1942; six more mess halls were completed by April 4, including the installation of sinks, sewers and water-main connections. Prior to their completion, mess hall staff washed dishes in water heated on outdoor stoves.[123] (Figure 19)

A brake drum hung from the corner of the mess hall and was struck with a wrench or piece of metal to announce mealtimes three times a day. Lines formed outside if the weather allowed, or inside if it was very cold, raining, or if the sun was exceptionally hot. Internees lined up to file past a counter



Figure 19. Mess hall workers heated water in garbage cans prior to completion of water main connections to the mess halls. (Courtesy UCLA Special Collections)

where food was served and then took the first available seat. Meals were consumed at tables with attached benches that seated eight people. The long mess hall lines and cafeteria-style dining not only caused discomfort and inconvenience, but communal dining was often blamed for the breakdown of family unity during the internment period.

Jeanne Wakatsuki Houston described the affect on her family of eating three meals a day in a mess hall:

> We stopped eating as a family. Mama tried to hold us together but it was hopeless. Granny was too feeble to walk across the block three times a day…my older brothers and sisters…. began eating with their friends….the grownups sat at another table. … My own family, after three years of mess hall living, collapsed as an integrated unit.[124]

Only one month after the first 13 mess halls began service, the floors were in such bad shape they needed to be reconstructed. The replacement floors were constructed to a double thickness, and covered with Mastipave.[125] Residents decorated the stark interiors of the mess halls at their own expense, hanging curtains on the windows and pictures on the walls.[126]

When the WRA took over administration on June 1, 1942, it made an inventory of existing conditions. At this time, there were 20 operating mess halls, each accommodating approximately 500 people. Sixteen additional mess halls remained inoperative because they lacked plumbing and stoves.

A report to the project director on the status of the mess operations observed that residents were forced to stand in line for periods approaching one hour, in temperatures exceeding 90 degrees. Another WRA administrator impugned the sanitary conditions, stating that "from the standpoint of public health and cleanliness of service….the original design, construction and equipment of each kitchen and mess hall at Manzanar was a definite menace to public health." Aside from the lack of proper dishwashing equipment, dirty dishwater was dumped outdoors, creating fetid pools of water outside.[127]

Mess hall construction was nearing completion by the end of July 1942, when 31 mess halls were operational and serving approximately 950 meals per day. The last five mess halls were constructed, but awaited delivery of the ovens.[128] Meals were designed to be economical, but nutritious. One out of every four kitchens was assigned two or three nutritional aides who

prepared formula for babies and special meals for young children.[129]

Separate 20 x 30 foot latrine buildings for men and women were located at the east end of the row of support buildings in each block. Men's latrines had eight toilets in two back to back rows, a urinal trough, sink, and 12 x 12 foot shower room. Women's latrines had 10 toilets, a sink, and 12 x 12 foot shower room.[130] Eventually, simple privacy stalls were constructed in the women's latrines.

When the internees first arrived at Manzanar, the latrines, like many of the other structures, were not yet complete. One resident recalled that the latrines in his block were built in two days, but for the first five days the block had no latrines. Some latrines also malfunctioned, resulting in trenches in the blocks full of "muck."[131]

Early arrivals also discovered that the bathing facilities were not yet operational; since the latrines lacked hot water connections, people were forced to bathe in cold water.[132] One evacuee noted the inconvenience of the early arrangements, and recalled that "The second day I took a shower but it was very cold, there was not hot water at all. I heard there was hot water in Block 1, so next morning I got up very early and hiked (from Block 10) to Block 1."[133]

Although the standard relocation center plans developed by the Army and Corps of Engineers called for "separate partitions to allow (a) reasonable degree of privacy" for the women's latrines, the partitions were not built right way. The lack of privacy in the toilet area was most difficult for female residents, who would often walk many blocks late at night hoping to find seclusion in an unoccupied latrine. Because of this, "midnight was often the most crowded time of all" in the women's latrines.[134]

Walking through the blocks carrying towels, soap, and toilet supplies, regardless of the weather, was a daily fact of life at Manzanar. Residents often wore getas, or slip-on shoes with thick wooden soles, when walking from their barracks to the shower rooms. Men in the camp made the traditional Japanese footwear out of 2x4 blocks, tracing the outline of a wearer's foot to get the correct size. A former internee recalled "they were very practical because….there was no sidewalk, it was good to keep your feet off (the ground.)"[135] To avoid tracking dust and dirt into the apartments, *getas* were often kept outside. Internees soon converted many of the shower rooms in the block latrines to provide a place for *ofuro*, or Japanese-style baths.[136]

Each block also had a laundry building located between Barracks 7 and 14. Like the other buildings in the barracks blocks, the laundry rooms were wood-frame buildings covered in tarpaper, but were built with cement rather than wood floors. Each laundry room had 14 laundry tubs (one for each residential barracks in the block). Hot and cold running water was provided for each laundry tub where internees hand-washed their clothing and bedding. Electrical outlets were installed "lower than usual due to [the] small stature of users."[137] Although some laundry buildings had communal laundry lines strung in them, "for the most part, housewives hung their wash on improvised lines put up by their husbands."[138]

Prior to the construction of laundry rooms, laundry was washed by hand inside the barracks. Internees boiled water and washed the clothes in tubs indoors to keep the clean clothes out of the dust.[139] The internees coveted apartments near the laundry rooms because it reduced the distance required to carry soiled clothes and bedding. One resident, who had a chance to move to a larger apartment declined to move because of proximity to the laundry facilities.[140]

Ironing rooms were the last buildings to be added to the blocks in large part because fuses often blew when internees ironed clothes in their apartments, blacking out entire buildings. Construction of the 36 ironing rooms started in June 1942. They were 20 x 28 foot wood frame buildings with tarpaper sheeting on the exteriors. Internees did not use them much, however, and the ironing rooms were soon taken over for other purposes. Some of the alternate uses for the ironing rooms included a sporting goods store, a fish market, and a *shoyu* (soy sauce) factory, as well as accommodating recreational activities and a variety of social clubs.[141]

Griffith and Company constructed 37 oil-storage tanks and platforms—one in each block and one at the Military Police Post. They were used to store fuel oil that was distributed through pipelines to the hot-water heaters (and later the cooking stoves) in the mess halls, to the hot water boilers in the boiler rooms attached to the latrines, and to the boiler rooms attached to the laundries. Fuel oil was also stored for daily distribution to the internees for the heating stoves in their barracks. There were two sizes of oil storage tanks at Manzanar: 12 had capacities of 2,450 gallons, and 25 had capacities of 1,250 gallons.

Medical Facilities/Hospital Complex

As Japanese Americans arrived at Manzanar they were subjected to mandatory inoculations against typhoid and small pox. The compulsory vaccine shots were dispensed at a temporary medical facility located in Block 1, Building 2. This facility originally occupied a single apartment in Building 2, set up March 21, 1942, and included five hospital beds.[142]

In mid-April 1942, medical services expanded to occupy an entire barracks in Block 7. This building was equipped with running water and was partitioned into 10-bed units, an operating room, a pharmacy, laboratory, an x-ray room, sterilizing room, utility room, linen room, record room, and kitchen.[143]

In late July 1942, medical services moved to a new 250-bed facility in the northwest corner of the residential area. The buildings comprising the hospital group were designed to provide "space for the principal medical activities carried on in any metropolitan community."[144] An administration building, general wards for adult patients, a pediatric ward, quarters for doctors and nurses, a surgery building, a morgue, a laundry building, storehouses for supplies and a boiler house were constructed as part of the hospital group.

Security and Surveillance Structures

Military Police Complex
South of the main camp entrance just beyond Bairs Creek, Griffith and Company constructed a complex of buildings to house 200 military police. Enlisted soldiers were housed in four standard barracks designed to accommodate 50 soldiers per structure. Although the basic construction was not much different from the internee barracks, there were some improvements. Interior spaces were finished with sheet rock and the exterior walls were painted white as "a protection against the weather." A separate barracks was used for officer's quarters. A latrine, a guardhouse, a motor repair building, a first aid station as well as a mess hall, recreational building, and a combination administration building and store room were built as part of the military police housing area during initial construction of the camp.[145]

Sentry Posts
At the entrance to the camp, two sentry posts served as control checkpoints

for visitors. Both buildings were designed and constructed by internee master stonemason Ryozo F. Kado in the late summer of 1942. Although similar in style, they were constructed to different dimensions and fulfilled slightly different functions. The larger of the two buildings, known as the military police sentry post, was built in the middle of the entry drive, near U.S. 395. This building was used by the military police to control vehicles and individuals leaving and entering the camp. The smaller structure, known as the internal police post, was located east of the military police sentry in the center of 1st Street, opposite the police station. Both remain today.

A third sentry building, also designed by Kado, was erected at the entrance to the military police post, south of the camp. The military post sentry was the smallest of the three rock-walled sentry buildings, measuring 8 x 10 feet, and was removed sometime after the war.

The sentry posts had interior lights as well as "canopied exterior lights" which allowed the police to "identify persons entering or leaving the Center or Military Post at night." At the military police sentry post, Kado designed a group of faux wood stanchions, which could be roped or chained to seal off access to the entry drive. Using cement tinted a light shade of brown, Kado scored the upright posts to imitate tree bark. He also used this technique on the windows and doors of both sentry posts.[146]

Fences

A five-foot-tall barbed wire fence was erected around the boundaries of the core developed area of the camp. The first WRA Director of Manzanar, Roy Nash, wrote in July 1942 that Manzanar was fenced with "an ordinary three-stranded barbed-wire fence across the front [the east boundary of the camp along Highway 395] and far enough back from the road on either side to control all automobile traffic."[147]

Los Angeles contractor C.J. Paradise Company built minor structures including wooden culverts in the water distribution system and also constructed the camp's fence system. Workers removed 5,000 lineal feet of old fencing from the Manzanar site, and installed 18,871 lineal feet of 5-stranded barbed wire on 4 x 4 inch redwood posts around the boundaries of the center area. Fencing in the vicinity of the cattle ranch was also reconditioned and used to pen in the animals.[148] Another fence enclosed the motor pool area, and a fence surrounded the camouflage net factory area. Fences also enclosed the chicken ranch and hog farm areas.[149]

Guard Towers

Project Director Nash reported in July 1942 that "four towers with flood lights overlook the center." WCCA Lieutenant Colonel Claude Washburn stated the following month that "three guard towers were needed along the western boundary," because "guards in [the] rear walk[ed] through brush" and were "unable to see much of their area. One man alone had no protection against attack." In September, the Army ordered construction of an additional guard tower on the west side of the camp, intending to prevent "unauthorized excursions … into the Sierra Crest region." Since "an innocent fishing trip [was] actually a federal felony offense, constituting violation of Exclusion Order No. 1; it warrants calling in the FBI for check-up."[150] By November, the last four guard towers were built. The eight guard towers cast shadows over the camp and would have been visible from most anywhere inside the boundaries. (Figure 20)



Figure 20. Guard towers at Manzanar were located at the corners and midway along each side of the camp perimeter fence. (Courtesy of Toyo Miyatake Studio)

The towers, built by local contractor Charles I. Summer of Lone Pine, were wooden structures supported on concrete piers embedded in the ground at "a sufficient depth to insure a sound footing to take care of the weight and wind load."[151]

Administration

A block of buildings for camp administration was located on the south side of 1st Street, just beyond the entrance to the camp. Nine buildings were constructed to provide for several administrative services and operations including an office building, post office, mess hall, and staff apartments.

The internees also used one building in the administration block as a town hall, where weekly community meetings were held. Manzanar's internal government representatives, the block managers, met regularly in the town hall.

Staff Housing
The staff housing area, with 18 buildings, was constructed south of the administration block. Like the buildings erected in the Children's Village, staff housing was constructed to a higher standard than the internees' barracks. Kitchens, bathrooms, hot and cold running water, and sound-insulated partitions between the apartments offered a level of comfort and privacy to the WRA staff that was unavailable to the internees.[152] Formal landscaping, including rock planters, lawn areas and foundation planting beds helped create a sense of comfort and convey a sense of permanence to the staff housing area.

Police Station and Jail
The original reception building in the administrative area was remodeled in 1942 by the WRA for use as a police station. A concrete floor was installed, a jail cell, and three partitions were added. The Manzanar internal police department occupied the new station beginning late July 1942.

Factories, Warehouses, and Industrial Production Facilities

Industrial production in support of the war effort (as well as a means to foster self-sufficiency for each of the camps) was an integral component of military plans for relocation center operations from the earliest planning

stages. Industrial enterprises at Manzanar, which were staffed by internee laborers, included a camouflage net factory, a mattress factory, and a garment factory. Factories were located on the south side of the camp between the warehouse blocks and the barbed wire perimeter fence.

Camouflage Net Factory

A camouflage net production factory was built by contract with the QRS Neon Corporation of Los Angeles. Comprising five buildings, the camouflage net facility was located within the boundaries of the camp, but separate from the core internee residential area: west of the administration group and south of the warehouse group. The buildings were designed for the production of camouflage nets for Army use. Although it remained open for only six months, the camouflage net factory produced as many as 10,000 camouflage nets per month during peak operations.[153] The camouflage net factory was a source of constant controversy for a number of reasons, including the fact that the jobs paid more than others in camp did and that only citizens were allowed to work there.[154]

After operation of the camouflage net factory ended, the WRA remodeled the storage shed (the easternmost building of the net factory complex) for use as a mattress factory. A fire destroyed the building in 1943, but not before internee laborers had produced some 4,000 mattresses for Manzanar residents.[155] The other shed building was reused as a food dehydration plant. At the western end of the camouflage net factory area a root storage building, built mostly below-grade, served to store foodstuffs. The cellar was located west of Building 4 in the former camouflage net factory complex. The first year's storage consisted of 230 tons of potatoes, 125 tons of onions, 60 tons of sweet potatoes, and 50 tons of squash.[156]

Warehouses

As part of the initial construction of the center, 29 warehouses were built in the two blocks south of 1st Street, between C and F streets. Aligned in rows, the warehouses were barracks-type buildings. A single row of seven warehouse buildings was built immediately east of the two warehouse blocks; two refrigerated warehouses were also erected along the south side of this block. The refrigerated warehouses were two 20' x 80' barracks-type buildings, connected by an annex, forming a "U"-shaped footprint to the buildings.

The garment factory, in which 100 sewing machines were used to produce mattress covers, curtains, hospital uniforms, and men's and women's

apparel, was located temporarily in Warehouse 31 in the fall of 1942, but moved to a new building constructed just west of the camouflage factory in early 1943. Smaller-scale industrial projects included a furniture shop, a sewing machine repair shop, and a typewriter shop. The furniture shop employed some 17 workers who fabricated chairs and tables, chests, draws and file cabinets for use at Manzanar.[157]

Motor Pool
The WRA established a controlled motor pool area west of the staff housing block and south of the first warehouse block. An office was constructed in this area that commanded a view of the entrance. One of the warehouse buildings was taken over as a garage, which had space to work on as many as eight vehicles at a time. Rotary hand pumps were attached to 50-gallon drums, which served to dispense gasoline.[158] By June 1942, the motor pool consisted of a fleet of 64 vehicles, including Army pickup trucks, dump trucks, and sedans.[159]

WRA Modifications and Additions

On June 1, 1942, the War Relocation Authority (WRA) assumed administration of the entire evacuation and relocation program from the WCCA, becoming the designated agency to manage Japanese American internment and relocation. This change of authority installed Roy Nash as the new Project Director at Manzanar. Upon arrival at Manzanar, Nash ordered an assessment of the physical conditions of the center. The WRA inspector assigned to the job noted that numerous improvements were needed to "bring the Manzanar camp up to standard for minimum requirements that the Army should have provided."[160]

One of the projects first identified by the WRA was the need to construct steps at the entry to the barracks apartments; original construction under the Army had omitted stairs from the plan. The WRA determined that 2,243 sets of steps would need to be constructed. This work began in June 1942 and by the end of the month the WRA reported that the work was about 75% complete when the lumber supply was "cut off," presumably due to wartime lumber shortages.[161]

Nash also suggested the main entry to the camp be relocated south in order to route vehicles through the security checkpoints. The original entrance to the camp was located 650 feet north of 1st Street in the vicinity of Block 7, which brought visitors directly to the internee residential

area. Manzanar Director Roy Nash wrote to the District Engineer of the California Division of Highways on August 14, 1942, requesting permission to move the entrance so that traffic entering the camp would be directed to the military checkpoint, and then on to the internal police area and the staff administrative blocks.[162] The work commenced shortly after Nash's request.

Schools and Classrooms

Construction standards under which the War Relocation Authority operated did not mandate the construction of schools in the camps. Since there was no provision for educational facilities under the agreement, the WRA contracted with the Farm Security Administration (FSA) to build the camp's school buildings. In June 1942, the FSA submitted plans for two elementary schools at Manzanar, a junior high school and senior high school, as well as an auditorium and gymnasium building.

Because of the large number of school-aged children interned at Manzanar, consideration was initially given to construction of a group of school buildings in the firebreak between blocks 22 and 28. Residents who viewed plans for these structures noted that they would be "pleasantly arranged to catch the morning sunlight through glassed windows facing the north and easterly sides."[163] These buildings were not constructed, however, due to limited availability of materials and contract labor shortages.

A number of temporary elementary schools opened on September 15, 1942 in Blocks 1 and 7, using non-partitioned recreational barracks. Within two days, cold weather combined with dust storms forced the schools out of operation until the barracks walls could be sealed and heating installed. By the end of the month, the two barracks buildings functioning as classrooms were outfitted with insulation and heating stoves.[164]

In 1944, when many internees had relocated, space in the residential barracks was available to convert to classroom use. Elementary schools were set up in Block 16, and Block 7 was remodeled for use as a high school. Remodeling projects consisted of adding extra windows and doors in the barracks, constructing partitions, and adding light fixtures, flooring, insulation, and heating stoves. Special landscaping projects also improved conditions of the school blocks. Pine trees brought in from the Sierra foothills alternated with locust trees in rows planted along the walkways to the school buildings. The central areas of the school blocks were planted with grass.[165]

In addition to remodeling barracks for the elementary and high schools, classes for preschool were added in Block 1, Building 14; half of Building 15 in Blocks 9, 20, 23, and 32; one-third of Building 15 in Blocks 17, 30, and 31; and Block 2, Building 15.

Children's Village

The mandatory removal of all persons of Japanese ancestry from the West Coast extended to all levels of society, including Japanese American orphans and half-Japanese babies living in Caucasian foster homes. Manzanar was the only War Relocation Center to have an orphanage, which was known as the Children's Village. Some children were orphans before the war, coming from the Salvation Army Children's Home in San Francisco, and from the Maryknoll and Shonien orphanages in Los Angeles. Other children became orphans as a result of the war when, for instance, their parents were arrested after Pearl Harbor. The Children's Village also received babies born to unwed mothers and others who were unable or unwilling to keep their children in the other camps. Eventually, 101 orphans ranging from newborns to 18-year-olds spent all or part of the war at Manzanar.

The Children's Village was built in the firebreak between Blocks 23 and 29. Two of the three buildings in the Children's Village housed the orphans. Boys and girls lived in separate dormitories. The kitchen, dining hall, recreation room, offices, and living quarters for the orphanage superintendent, Harry and Lillian Matsumoto, occupied the third building in the group.[166]

Auditorium

In February 1944, a cornerstone-laying ceremony was held to commemorate construction of the gymnasium-auditorium. Located in the eastern section of the central firebreak and oriented to B Street, the building was a wood-frame structure, with a two-story extension on the west side and a one-story wing on the north and south sides. The building was constructed using internee labor. O. E. Sisler supervised construction, with direct supervision of the internee construction crew assigned to J. W. Lawing, who was assisted by K. Kunishage, an internee. Finish and millwork was prepared in the carpenter shop in Warehouse 34, under the supervision of Jimmy Araki.[167] The auditorium was completed in September 1944 at a cost of just over $30,000. It was used for musical and theatrical performances, funerals, sporting events, dances, and also was the site of the graduation ceremony for the Manzanar High School class of 1944.[168]

By the end of the internment period, more than 800 buildings had been built at Manzanar, including 504 residential buildings (barracks); 72 bath and latrine buildings, 36 mess halls, recreation halls, ironing rooms and laundries. In addition, the hospital complex, the Children's Village, 40 warehouses, two refrigerated warehouses, two car garages, two truck garages, and an auditorium-gymnasium were built.[169]

Alternate Building Uses

Population fluctuated at Manzanar due to internees leaving on work furloughs, educational leaves, or relocating to new lives outside the restricted zone. The biggest shift in population came when 2,165 internees were transferred to Tule Lake Segregation Center. A group of 257 left Manzanar in October 1943; the remainder followed in February 1944. As the population decreased, some buildings in the blocks were appropriated for other purposes.

Alternate uses of the vacated barracks included churches, a sporting goods store, a canteen, flower shop, a laundry shop, watch repair and shoe repair shops, and, after April 1943, a photography studio. The Lone Pine branch of Bank of America set up a Manzanar branch, which maintained limited hours in Block 21, Barracks 8.

Unoccupied barracks were used for entertainment and socializing. The music hall, which was established in the recreation building of Block 24 contained a large space for the band, orchestra and chorus, and small rooms for instrument practice. Music lessons were also offered in the building. In early 1944, a separate barracks in Block 24 was designated for the practice of Japanese music. A Buddhist church was established in the recreation building in Block 13, and held its first service in September 1942, with a reported 1,600 people in attendance.[170]

In some cases, entire blocks were dedicated to specific uses. For example, Block 1, located close to the relocation center entrance, was used for community offices and bachelor's apartments. The laundry and ironing buildings in Block 1 were connected and used for the manufacture of *shoyu* (soy sauce) and tofu. In setting up the *shoyu* plant in Laundry Room 1, the residents anticipated that it would produce 5,000 gallons of *shoyu* per month. The equipment to produce the *shoyu*, which involved fermenting a mixture of soybeans, wheat, salt and water, belonged to Nobutaro Nakamura, who operated a *shoyu* business in Los Angeles prior to internment. The *shoyu* plant was set up in the west end of Laundry Room 1, and bean sprouts were

grown in the east end of the laundry room.[171]

All of Block 7, and the mess hall, ironing room, and one barracks building in Block 2, were used for the high school. The barracks in Block 16, in the center of the camp, were eventually used for elementary schools and as a community center. Prior to setting up the elementary school in Block 16, separate school facilities existed throughout the camp. The original school accommodations, however, were barracks buildings, austere facilities that lacked basic equipment such as desks and chairs. It was not an uncommon sight to see children going to and from school carrying chairs that members of their families had crafted for them out of scrap lumber, which they used at home and at school.[172]

Landscaping, Grounds Crews, and Maintenance

The administration established a maintenance division, which employed internee laborers to help maintain the camp. These crews collected garbage, disposed of rubbish from the streets, and were responsible for cutting grass in public areas. Another crew was charged with cleaning the approximately 100 grease traps in the mess halls and laundry rooms. The collected grease was dehydrated, deodorized and packed in drums for shipment to wartime recycling centers.

Landscaping Program

Sun, wind, extreme temperatures, and blowing sand combined to create a harsh desert environment at Manzanar. Dusty conditions were exasperated during initial construction at Manzanar as scrub vegetation was cleared and ground was leveled to build roads, prepare building sites, and establish agricultural fields. To control the dust, the government advocated a comprehensive landscaping program at Manzanar. A planting plan developed by the Soil Conservation Service called for planting 21,000 trees and 25,000 shrubs and for lawns to be established throughout the camp. Although the camp administration did not implement the plan, it did authorize a landscape program to improve conditions in public areas throughout the camp, including the hospital block, the Children's Village, the administrative block and in the staff housing area. The Public Works Division employed a crew of 45 men to plant and maintain these landscaped areas after they were planted.[173]

References to a "landscaping project" advanced by an internee named Mr. Yamazaki appear in Block Managers' Daily Reports from June 1942. Hopes were high that implementation of a comprehensive planting program was imminent. At the beginning of May 1942, the camp newspaper anticipated that "beautiful green lawns, surrounded by trees, shrubberies [sic] and flowers will soon become a reality at Manzanar." The newspaper attributed the delay in landscape improvement work to the fact that the necessary "equipment" was being used for the agricultural project.[174]

The propagation of trees at Manzanar started on May 18, 1942. Some 5,000 locust seedlings as well as "thirty-eight different varieties of bushes, shrubs, trees, plants, etc." were planted in a lath house (propagating nursery) erected near the southern boundary of the camp. Nine men worked in the lath house under the supervision of internee Joe Kishi. Owner of the Wilshire Nursery in Los Angeles, Kishi co-directed the plant propagation project with fellow internee Sho Komai, owner of Los Angeles' Westgate Nursery. Kuichiro Nishi, who owned the Pacific Rose Company of West Los Angeles, donated $6,000 worth of nursery stock to the project. Kishi submitted plans to the administration for use of a half-acre plot and requested $4,500 for construction of a greenhouse from which farm crops could be transplanted to the agricultural fields; however, the greenhouse was not built.[175]

The specific plants propagated in the lath house were not identified in the official record; however, some of the trees growing in the nursery were pines. Internee horticulturists improvised a method of growing a variety of perennials and annuals in the propagating nursery using individual containers made of milk cartons cut in half.

The administration established a work crew to undertake and maintain landscape improvement projects in public spaces, but internees were responsible for developing any landscaped areas within the residential blocks. The administration also sanctioned construction and development of two large-scale landscape improvement projects—Merritt Park and Cherry Park—in which extensive landscaping transformed the barren, sandy soil with lushly planted spaces. Elaborate gardens were also built at the hospital area.[176]

Agricultural Program and Animal Husbandry Projects

Agricultural production at Manzanar consisted of large-scale vegetable

farming, maintenance of the remnant fruit orchards, development of Victory gardens, and animal husbandry projects (chickens, hogs, and cattle). A poultry farm (known as the chicken ranch) was developed to provide eggs and meat for internee meals, and hogs and beef cattle were also raised for consumption.

While Caucasian staff supervised the overall agricultural program, internee laborers cultivated and harvested the crops. Because so many of the internees had backgrounds in agriculture, horticulture, and truck farming, they were instrumental in developing techniques to maximize agricultural production and then exhibited great ingenuity in devising various irrigation systems using available materials, principally cement and rocks.

Farm Fields

By instituting a program of agricultural production, the WRA ensured that "food for the subsistence of the evacuee residents . . . [was produced] as economically as possible." Using internee labor and adjacent land to cultivate crops also "materially reduced overall project transportation costs [associated with] hauling from Los Angeles, 225 miles to the south." Internees were given some freedom in selecting crops to plant, being "allowed to choose such crops as best suited evacuee mess hall tastes." In addition to vegetable crops, the internees also planted various herbs including coriander, lavender and caraway.[177]

In describing the establishment of an agricultural program, WRA administrators observed:

> Farm field acreage at the beginning of the center program were established on wastelands that had not been farmed for about fifteen years. The fields, having stood idle for such a long period, were covered with brush and badly hummocked with dunes caused by hard winds.
>
> [The soil consisted of] a light sandy type, lacking in sufficient nitrogen, potash, and phosphoric acid to produce good vegetable crops. Supplemental fertilizers had to be used. District is quite arid and predominantly sandy, therefore necessary to irrigate regularly.[178]

On April 15, 1942 a crew of about 40 internees began clearing off and burning the sagebrush, and digging irrigation ditches. Most of this work was done by hand. On May 16 they planted four acres of corn and three



Figure 21. The development of agricultural fields north and south of the camp perimeter fence required extensive grading of the sandy soil. Eventually the camp administration provided the internee farm workers with a tractor, but initial grading was accomplished with a single harrow. (Courtesy UCLA Special Collections)

acres of cucumbers. Planting of radishes, carrots, beets, turnips, pumpkins, tomatoes, melon, onions, and potatoes continued through the month. By the start of July 1942, six fields totaling 126 acres were under cultivation. On June 18 the first harvest consisting of 12 crates of red radishes was distributed to the mess halls.[179] (Figure 21)

By August 1942, more than 120 internee laborers were working in the agricultural fields. The supervisor was a Caucasian staff member, while internee Yoshio Sugihara was assistant farm superintendent, and Katsugoro Kawase was the general foreman.

Because the area had not been actively farmed in over a decade, and the internee workers were unfamiliar with the site's soils and climate, the first year of the agricultural program was somewhat experimental. Eventually, 80% of the vegetables consumed at Manzanar were produced on approximately 400 acres of agricultural fields adjacent to the camp. The WRA noted that "About 717 tons of vegetables, melons, and pears were produced in the 1942 farm season, with a value of $43,500 (as estimated on the basis of Los Angeles market reports.) This harvest was produced on only one-third of the available acreage. The administration was optimistic that the next season would be more productive, despite relying on a "makeshift irrigation system" in the agricultural fields.[180]

The growing season lasted from 120 to 180 days, making it "necessary to

dry store, dehydrate, and otherwise process vegetables to ensure maximum tonnage for winter use." Root vegetables grew best, with a high yield and a good quality. Other vegetables included tomatoes, peppers, eggplant, cucumbers, melon, squash, string beans and cabbage. While some plants were hardy enough to survive the desert heat, the strong late spring and early summer winds limited agricultural yields such as lettuce, peas, dry beans and sweet potatoes.[181]

Crop damage caused by persistent wind and blistering heat was exacerbated by jackrabbits that grazed in the fields. The camp newspaper reported on the menace:

> Jackrabbits have . . . eaten three acres of carrots and five acres of string beans and nibbled at cucumbers, beets and white radishes in such wanton fashion that the local farmers are wishing they could wring the neck of every jackrabbit in Owens Valley. Three rabbit drives by local residents have only exterminated 200 of them. The farmers attempted to poison the rabbits, but instead of the rabbits being poisoned, quails and doves were the unfortunate victims. Jackrabbits are still roaming the ranges and farmers are still cussing. Can anyone invent a good jackrabbit trap?[182]

To control the damage, five greyhounds and afghan hounds were purchased to try to control the rabbits. Internees also conducted several large-scale rabbit hunts.[183]

Despite the challenges posed by the climate, the pests, and the lack of extensive farm machinery, plans advanced to increase Manzanar's agricultural production through development of farm fields in 200 acres north of the camp. In 1942, internees planted and raised 21 varieties of vegetables in the south field, and in 1943 they added an additional eight kinds of vegetables including green beans, bell peppers, chili peppers, sweet potatoes, yams and gobo (burdock). Tomatoes were particularly successful, and space given over to tomato plants increased exponentially in 1943, expanding from 14 acres to 40. In 1943, 14 tons of tomatoes were sold to the Anaheim Cannery.[184] (Figure 22)

In the middle of the first year's growing season, camp administrators and staff were optimistic that the next year would find some 3,000 acres adjoining the camp's central developed area under agricultural production. Harvey Brown, the civil engineer of the Public Works Division and internee "irrigation expert," Tomio Harada pursued plans for increasing the acreage



Figure 22. Tomatoes were one of the more productive crops at Manzanar. Here, workers sort the harvest before delivering it to the mess halls. (Courtesy UCLA Special Collections)

of farm fields. Although these plans were never fully realized, some 400 acres of agricultural fields were ultimately developed.[185]

Samples of the first year's crop harvest were delivered to the offices of the local newspaper in Lone Pine to demonstrate that "Manzanar farmers can produce the best vegetables and fruits in Owens Valley." Examples of the camp's harvest included melons (honeydew, mush melon, and watermelon) as well as squash (hubbard and banana), cucumber, turnip, beet, radish, okra and pumpkin.[186] The watermelon crop was so productive that extra melons

were shipped to camps at Tule Lake, California, and Poston, Arizona.

By 1944, the camp population had declined and a lack of available labor caused the Farm Division to solicit high school students to conduct the harvest.[187]

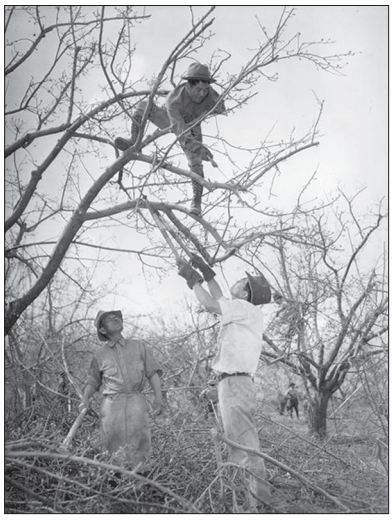
Orchards

In addition to the large-scale agriculture taking place outside the boundaries of the central camp area, reclaiming and maintaining the vestiges of fruit orchards on the site was an important component of the agricultural program at Manzanar. Remnant orchards from the turn-of-the-century farms included apple, pear, and other fruit trees located in the western portion of the site. On March 27, 1942, under the supervision of WCCA staff member Frank Cummings and internee orchard supervisor Ted Akahoshi, a crew of approximately 40 men started work to salvage the orchards trees. As a supervisor of the orchard program, Akahoshi held one of the most responsible jobs available to the Japanese American internee.

Akahoshi was a graduate of Stanford University (class of 1913) and manager of the Produce Merchants Association in Los Angeles. Orchard foreman Takeo Shima was "a nurseryman," who had worked for years at a large commercial apple orchard in Bakersfield. From the start, Shima claimed that the orchard contained some "very fine trees," and though the orchard had not been actively watered in more than a decade, Shima expected the trees could produce again, given some irrigation.[188]

By June 1, 1942 a crew of 20 men was digging irrigation ditches, thinning the orchard to increase the light, and pruning individual trees to enhance yield. By late August 1942, Shima's assistants Hideo Marumoto and Gummi Watanabe and their crews were waiting for ladders to be delivered so they could begin harvesting pears. Before it was done, 4,000 crates of Bartlett and winter nellis pears (*Pyrus communis* 'winter nelli' varieties) were harvested. The apple orchard produced approximately 600 lugs of newton, pippin, winesap and bell-flower varieties.[189] (Figure 23)

Figure 23. Manzanar's orchards, untended for more than a decade, required heavy pruning and irrigation to re-induce fruit production. (Courtesy Bancroft Library, University of California, Berkeley)



Chicken Ranch

In July 1943, internees began constructing buildings to raise chickens for eggs and meat consumption in the camp. The chicken ranch was located just beyond the boundary fence in the southwest corner of the camp. Following WRA-produced plans, the facility included a warehouse, eight brooder houses, and six laying houses.

In August 1943, orders were placed with the Sears & Roebuck catalog for unsexed day-old white leghorn chicks; the chicks arrived at Manzanar at a rate of 2,000 per week, until the capacity of approximately 12,000 hens was reached. By early 1944, the poultry project housed an estimated 6,200 pullets and 6,200 cockerel chicks. In addition to egg-laying hens, chickens were also raised to provide fresh poultry.[190]

From 1943 to 1944, between 20 and 28 internee laborers were on the payroll of the chicken ranch. The workers planted lawns around the warehouses and planned and laid out some flower gardens in the area; a ring of locust trees surrounded the entire complex.[191]

Hog Farm

Although planned as part of the animal husbandry program at Manzanar, objections from the City of Los Angeles postponed construction and development of a facility to raise hogs at the relocation center. The city was concerned that runoff from the hog ranch would pollute the water supply that fed the city aqueduct, and it initiated several attempts to block construction of the Hog Farm. Eventually the facility was built one-half mile south of the central camp area. The hog farm consisted of two large cement platforms, partitioned into 75-foot sections, with adjoining pens and cement drinking troughs. The hogs were delivered to Manzanar in November 1943 and, after being weaned, were fed mess hall garbage.

Cattle Ranch

The cattle ranch was the shortest-lived of the animal husbandry projects at Manzanar, lasting from December of 1943 to December 1944. Cattle were purchased in Mexico and grazed in a fenced-in area near George's Creek, south of the camp. Originally, 199 head of cattle were purchased, and in March 1944 an additional 95 head were added to the herd. Since the late fall and winter grasses in the cattle grazing area were "not of a quality to keep cattle fat," outside sources of cattle feed had to be provided. In any case, by the end of 1944 it was determined less costly to acquire beef through the Quartermaster Corps of the Army, and the cattle ranch was discontinued.[192]

Victory Gardens

While the agricultural program provided fruits, vegetables, meat, eggs, and herbs to the entire camp population, the Community Activities Section instituted a Victory garden program, which provided internees small

garden plots to cultivate for personal use. The Victory garden program also allowed for experimentation to determine what crops would grow best in the Owens Valley soil and climate, and a portion of the garden area was reserved for these experiments. Crops that produced successfully in small plots could then be planted in the larger agricultural fields.[193] In May 1942, internees Tak Muto and Massao Tanaka prepared plans for a large community Victory garden, which was located in the firebreak between Blocks 11 and 12 and 17 and 18. They selected this area because it was one of the few to have "black soil suitable for gardening." The Victory garden space in the firebreak was approximately 300' x 1200'. Tak Muto, co-director of the Victory garden program attended Ohio State University and was a "well-known San Fernando floriculturist and specialist in crossbreeding new varieties and seedlings."[194]

The garden plan designed by the internees included a system of gravel walks separating individual plots with a sundial located at the junction of the paths; however it is not known if this feature was ever erected, but paths were laid out to separate garden plots.

Internees acquired rights to garden plots for a nominal monthly rental fee of thirty-five cents for a 30' x 50' plot. They grew their own "vegetables for vitamins, flowers for morale, and gardening for recreation."[195] The majority of plots ranged in size from 10' x 50' to 30' x 50'. A few larger tracts were set aside as community gardens for some blocks where residents combined efforts and provided fresh produce for their own mess halls. Eventually, more than 120 families worked plots in the Victory garden. During the summers of 1942 and 1943, internee gardeners planted a flower border along the edges of the firebreak where the Victory garden was located; they dug and maintained all the Victory garden irrigation ditches, developed water schedules, and regulated irrigation hours.[196] (Figure 24)

Victory gardens made it possible for residents to grow what they desired, rather than rely on the crops cultivated in the camp's agricultural fields. In addition to flowers and vegetables, ornamental plants, including cactus, were grown in the Victory gardens.[197]

Describing the sense of satisfaction realized by working on personal Victory gardens, a former internee commented "that soil was very fertile, it was very black, and it was pretty nutritious. We had a plot of land, and we grew things like peanuts, and we had green beans, some tomatoes, and … that was the beauty of that particular area…the irrigation canal was coming



Figure 24. Victory gardens were established in the firebreaks between the barrack blocks. This large concentration of gardens was located in the firebreaks between Blocks 11 and 1`7 (pictured) and Blocks 12 and 18 in the western area of the camp. (Source unknown)

down the hill with water from the Sierra and we were able to irrigate very effectively that way."[198]

In 1943, the Victory garden program expanded, and internees developed gardens in the north-south firebreak between Blocks 22 and 23. Victory gardens were also established in 1943 in the area north of Blocks 32 and 33 (the north farm fields). Internee Masao Tanaka directed the project and he encouraged internees to file requests early for garden plots. Appealing to internees' interest in herbal medicines, Tanaka noted that gobo seeds were available to gardeners. In May 1943, products from the Victory gardens, including canning tomatoes, peppers, eggplants, and asters, were offered for sale to the community, representing an additional benefit of the hobby garden program: it could produce profits for the Community Activities Section and thereby fund other recreational pursuits.[199]

War Relocation Authority staff also planted Victory gardens east of the Administration housing area and some hired internees to tend their plots.

Other Agriculture

The chief goal of agricultural production at Manzanar was to provide foodstuffs to the camp population, but the internees were also able to assist in the war effort through participation in experimental crop projects. A significant program supported by the California Institute of Technology was devoted to cultivating the guayule plant, a small woody shrub native to the southwestern United States as a source of rubber or latex, needed for the war effort. The guayule project was not intended to produce raw material for the production of rubber but was meant to advance research into guayule production by identifying the species that would produce the best yields. A special propagating nursery building, called the guayule lath house, was constructed south of Block 6, between the edge of the central developed area and Bairs Creek. (Figure 25)



Figure 25. A special propagating nursery building was constructed as part of the WRA's experiments with guayule, a potential source of rubber during wartime. (Courtesy of the National Archives and Records Administration)

By August 1942, more than 200,000 seedlings of seven species of guayule were growing at Manzanar. The lath house expanded in September 1942, nearly doubling in size to accommodate the propagation of guayule plants. Internee laborers staffed the project, which, in addition to the lath house, included a two-acre tract where seedlings were transplanted.[200] (Figure 26)

Other agricultural projects at Manzanar were developed to contribute to the war effort, including the large-scale cultivation of chrysanthemum plants. The flower of the chrysanthemum was a source of pyrethrin, a



Figure 26. Guayule plants were moved from the propagating nursery to a section of the agricultural fields north of camp, 1943. (Courtesy of the Library of Congress, Prints and Photographs Division, Ansel Adams photographer)

critical ingredient in the manufacture of insecticides. Japan developed a monopoly on this product and the Drug and Oil Plant Project of the State of California requested that Manzanar grow chrysanthemums to compensate for the lack of pyrethrin available during the war. Eventually more than 50,000 chrysanthemum plants were planted in Manzanar's farm fields.[201] Other plants including coriander and lavender were grown "in quantity" in the agricultural program to support the State of California plant research project.[202]

Block Gardens and Landscape Improvements by Internees

In various ways, Japanese American cultural values helped some adjust to camp life. Two Japanese mottoes that were especially relevant throughout the internment period were: shikata ga ni (it cannot be helped, or, it is inevitable) and gaman (silent endurance). This mentality was the foundation on which the internees transformed Manzanar into a living Japanese American community. Perhaps the most expressive manifestations of these values were the landscape beautification projects initiated by the internees that proliferated throughout the camp.

With a large number of experienced landscape gardeners among the internee population, Manzanar's housing areas became showplaces for often elaborate and ingenious garden designs. Block landscape projects featured both personal and communal gardens. Typical residential landscape projects included lawn areas between barracks, small flower and vegetable gardens adjacent to barracks entries, ornamental foundation plantings and communal gardens at the mess halls. In addition to establishing and maintaining planted areas, residents also embellished the outdoor living areas with ornamental fences, benches, chairs, sun canopies and other rustic-style structures using scrap wood and tree limbs. (Figure 27)

Residents also constructed collective block gardens, which were often located in the space between Barracks 14 and the mess hall. The mess hall gardens, often containing trees and small structures, providing shade for the residents and a degree of relief from the tedium of standing in long lines at meal times. These gardens were also showcases for the many talented internee garden designers. Some of the more highly structured and articulated block gardens were built in Blocks 9, 12, 22, and 34.[203] These block gardens included lawn areas, flowerbeds, small decorative structures, bridges, and footpaths. Some incorporated water features such as fountains, streams, waterfalls, and fishponds in the design. The mess hall



Figure 27. Internees used salvaged materials such as old shipping crates and scrap lumber to build a variety of structures outside their barracks, including benches, tables, garden features and simple fences to define entries and yard areas. (Courtesy of Toyo Miyatake Studio)

garden in Block 6 featured fish ponds, a waterfall, and a diverse mixture of trees and plants, including pine and cedar trees, and camellias donated by internees Miyoji Uyematsu, Munejiro Matsuyama and Moiichiro Tachibana. Reportedly, the ponds also contained carp measuring up to 16 inches in length.[204] By August 1942, there were 28 fishponds at Manzanar. A Documentary Report from October 1942 mentioned the "artistic flower gardens" and "beautiful lawns," and noted: "visitors have ohed and ahed (sic) with sincere admiration."[205] A certain degree of competition existed among designers of mess hall gardens. This competitive impulse was nurtured in a reader survey conducted by the Manzanar Free Press in August 1942, which asked residents to choose the most beautiful and artistic garden in the camp. The two finalists in the competition were Block 22 garden, which was named Otaba no Ike ("Three Sack Pond") and Block 34 garden, called *San-shi-en ("Block 3 – 4 Garden")* .[206]

By the end of summer of 1942, residential gardens proliferated at Manzanar. From the beginning, however, there were limitations to the administration's support of the beautification projects. For example, the supply of cement,

which was used to construct ponds, bridges, walkways, footpaths and other structural elements was restricted, and only through creative arrangements could garden designers and builders acquire a sufficient quantity to build the more elaborate garden features. Although access to building supplies was limited, the camp administration publicly supported the "impulse toward decoration" that the gardens represented. Writing in the Manzanar Free Press, WRA Project Director Roy Nash noted that "Vegetables and flowers make delightful foundation plantings; dead wood has been woven into decorative fence patterns; lawns have made their appearance between barracks; a cactus garden adorns the circle near headquarters." Nash reported that people outside the camp had taken notice of the achievements of the internee landscape designers. Nash reported that the garden editor of the Los Angeles Examiner promised a hundred rose bushes to the camp. He urged residents to continue the garden projects: "Let us go from these beginnings to a campaign of beautification which will make Manzanar a garden spot next spring." Nash concluded his remarks with an appeal that had patriotic overtones, declaring that "To beautify Manzanar is one campaign in which all can enlist with a will."[207]

The gardens also attracted the attention of town residents and an article in the local newspaper reported that the "Ingenuity of the Japanese knows no end in expressing their individuality." The article noted that in addition to fishponds and transplanted trees, some of the gardens were fenced in by inventive uses of available materials, including "slats torn off vegetable crates and branches of trees."[208]

Other internee-constructed landscape modifications included hand-dug cellars beneath the barracks. The cellars provided extra storage space and also created cooler temperatures in the barracks during the hot summer months. In mid-July 1942, the temperature at Manzanar reached 110 degrees, and inside the barracks the temperatures were generally five degrees higher than the official outdoor reading. One resident of Block 23 dug a six-and-a-half-foot cellar beneath his barracks, which he noted not only kept his apartment cooler, it also deterred scorpions from nesting beneath the building. The fire department considered the cellars fire hazards due to the tendency of trash to accumulate in them; by the spring of 1943, residents were not permitted to construct cellars beneath their barracks.[209]

Many internees devised homemade awnings out of brush and scrap lumber to shield the apartments from the heat of the mid-day sun. (Figure 28) By September 1942, the proliferation of these window structures, and

the propensity for residents to construct fencing to provide a measure of privacy in backyard gardens, caused the administration to require permits from the fire department for any construction within the blocks. The fire department considered these structures a "definite fire hazard" and noted that the "slightest spontaneous combustion [could] wipe out the entire camp." Some residents rigged cloth or canvas awnings on their windows, but these were also forbidden.[210]



Figure 28. Using limbs and other found objects, a variety of structures such as awnings were built to shade barrack apartments from the hot summer sun. The Takemura family residence, shown here, was one of the more elaborately embellished barrack buildings at Manzanar. (Courtesy of the National Archives and Records Administration)

Hospital Garden

A large-scale landscaping project began at the hospital block when warm weather arrived in the spring of 1943. Under the direction of the hospital grounds foreman, Zintaro Ogami, crews planted lawns on the front and sides of the administration building as well as in the areas surrounding the doctors' and nurses' quarters. Flowerbeds were established, and locust, birch, poplar, pine, and pear trees were transplanted to the hospital grounds from other locations in the camp, including the fruit orchard that remained from the earlier town of Manzanar. Ryozo Kado, Manzanar's resident master stonemason, worked with Buneyoman Wada of the Public Works Department to design and build rock gardens, benches, and water features as part of the hospital landscaping program.[211] (Figure 29)



Figure 29. Photograph of Mr. Ioki, gardener at the hospital. (Courtesy of Toyo Miyatake Studio)

Recreation

Within days after the first internees arrived at Manzanar to assist in the construction of the camp, the administration noted that "the desire and need for organized leisure-time activities had become marked." With no place to go and nothing to do in the evenings, the camp administration recognized "the need to keep internees occupied was both immediate and acute." In order to initiate a recreation program for the residents, the WCCA established the Recreational Division, which joined the Mess and Lodging Division, the Community Service Division, the Public Works Division and the Employment Division in the earliest days of the camp's administrative management.

Prior to setting up a program of recreational activities, camp administrators met with internees who had "experience in recreation." At this meeting, the residents elected to "inaugurate a preschool and athletic program immediately." A range of indoor recreational pursuits would complement a rather loosely organized program of team sports: arts and crafts instruction, sewing classes, children's activities, and adult social activities, including dancing lessons, voice lessons, and establishment of a lending library.[212]

Recreational halls initially provided space for these activities, but many of these buildings were taken over in the fall of 1942 for use as an elementary school. Indoor recreational programs, including such traditional Japanese activities as ikebana (flower arranging), calligraphy, and lessons in tea service eventually found permanent homes in block recreational halls.

Team sports at Manzanar included baseball, softball, basketball, tennis, and volleyball, played on courts in the blocks and in the firebreaks. Because the limitation imposed on the use of water precluded planting ball fields with grass cover, the firebreak fields were characterized by sandy, loose soil.

Many of the block residents constructed facilities for basketball and volleyball games. These ball courts were constructed in the open area of each block, east of the men's latrines. Basketball backboards with hoops and posts to hang nets for volleyball games on a patch of leveled, sandy soil constituted these rudimentary block sports facilities, which were constructed by the residents out of available material acquired at their own expense. Some blocks residents built children's playgrounds with swings and slides and teeter-totters, and Block 14 built a cement wading pool.

During the summer of 1942, over 100 baseball teams organized. The teams generally organized around the internees' place of residence prior to coming to Manzanar, with team names such as the San Pedro Gophers, for example. They were important means of maintaining long-standing community ties. Leagues were established which divided the players into three groups: junior high school boys, young men, and older men.

During the first year, the lack of access to equipment limited participation in team sports, as there were only six baseballs and six bats available when the WRA took over administration of the camp in June 1942. Sports enthusiasts relied upon donations of equipment from individuals and organizations to provide bats, balls, basketball hoops and other sports gear.[213]

In June 1942, the Recreation Division changed its name to the Community Activities Section under the WRA administration, and organized a cooperative to finance recreational pursuits. The Community Activities Cooperative Association (CACA) collected modest membership fees from team participants, which was then pooled and distributed to fund a variety of recreational activities. Another source of revenue for the CACA were proceeds collected from concerts and movie admission fees. The CACA also maintained a half-acre cutting garden in the central firebreak near the Victory gardens to provide fresh cut flowers for funerals, weddings, parties, etc.[214]



Figure 30. Baseball was perhaps the most popular sport at Manzanar and attracted many spectators. This field was located north of the auditorium, between Blocks 19 and 25. (Courtesy of Toyo Miyatake Studio)



Figure 31. Basketball courts were laid out in the firebreaks as well as in the interior spaces of the barrack blocks. (Courtesy UCLA Special Collections)

By the spring of 1944, CACA provided funds for uniforms for eight baseball teams, and financed construction of a baseball diamond in the firebreak between Blocks 19 and 20. Double-header games were played on weekends and collections were taken at the field to purchase balls, bats and other necessary equipment. Baseball games attracted thousands of spectators on weekend afternoons. (Figure 30)

Basketball was also very popular at Manzanar, and leagues were established for both girls and boys teams. Lacking any indoor facilities, the games were played in block courts or in courts that were built in the firebreaks. (Figure 31)

In the fall of 1943, outdoor lights were installed at one of the courts with the intention of instituting a nighttime basketball program, but the lights did not provide sufficient illumination. Participation in volleyball was similarly hampered by the lack of indoor facilities and, since the playing season coincided with the baseball season, men's participation in volleyball dwindled rapidly. Women's volleyball teams continued to enjoy regular competition.[215]

Other athletic facilities included tennis courts, a golf course, and two martial

arts facilities, judo and kendo platforms. Tennis courts were constructed in Blocks 17 and 29, and four courts were built in the firebreak between Blocks 8 and 14. The courts were surfaced with clay acquired from an area near the Owens River, east of the camp. Some 150 loads of the soil were used to surface the courts, but "proved unsatisfactory." Another source of clay-like soil, of a "reddish composition" was located in the foothills of the Inyo Mountains and 50 loads were used to resurface the courts. Wire enclosures surrounded the tennis courts and internee Tom Nakagawa offered lessons and organized maintenance of the facilities.[216]

Supervised excursions into the outlying areas were often conducted in order to collect materials for a variety of purposes including rocks and native plants for landscaping projects, and rushes and grasses "useful in basket weaving" and other craft projects, as well as clay deposits "suitable for ceramic works" were acquired on one day-long outing in the late summer of 1942.[217]

Golf Course

By early spring 1943 internees finished clearing sagebrush and other vegetation from an area located west of Block 12 and north of the Bairs Creek picnic ground for a golf course. Jimmy Inouye was the golf director, and Kay Monimoto and Tokuichiro Hori organized the golf association, which, at the height of its popularity, included approximately 150 members. Originally constructed as a nine-hole course, it eventually expanded to 18 holes. Since there was no water available to irrigate the course, golfers played on fairways and greens of oiled sand.[218]

Judo Platform

A group of internee judo enthusiasts built a judo platform in the firebreak north of Block 10 in the fall of 1942. Unlike every other building within the internee housing area, the judo platform was sited at a 45-degree angle in relation to the layout of the blocks, likely to take advantage of a slab from the town era. The judo platform was originally constructed as a canvas-covered open-air platform, but as cold weather approached, the judo club collected funds to pay for the construction of walls and a roof to enclose the structure. In addition to enclosing the platform area, the funds raised by the residents also paid for the construction of an adjacent dressing and shower room. The building was completed by March 1943. Stone-lined walkways connected the shower room with the judo platform, and also led to the judo complex from 3rd Street, which formed the southern boundary of the firebreak.[219]

Kendo Dojo
Internees also practiced the ancient martial art of kendo. A kendo association formed in the spring of 1943, and internees constructed a small structure with a small dressing room at one end. The kendo *dojo* was built in the firebreak west of Block 10. Kendo was never as popular among the internees as judo, and following the segregation to Tule Lake in March of 1944, "all interest in kendo died away."[220]

Parks and Picnic Grounds

When it reached its peak population of 10,046 people, Manzanar was the largest war-time city between Los Angeles and Reno. With so many people living in a one-square-mile enclosure, overcrowding and a lack of privacy were two unpleasant realities that prevailed at the camp.

Just as the administration recognized the need for a recreation program shortly after internees began to arrive at Manzanar, so it also consented to development of public parks in order to provide residents some relief from the confines of the overcrowded blocks. Although the Public Works Section and the Community Activities Section both contributed personnel and resources to the development of the parks, during construction of the largest and most elaborate park in the camp the WRA determined that it would no longer sponsor such projects. Citing wartime scarcity of materials and a lack of funds, the WRA agreed to fund only three internee laborer positions to assist the landscape designers. While surplus government materials were available, internees were responsible for providing any new building materials not available from the administration.[221]

Merritt Park
The most extensive park in the camp was originally called Rose Park, later renamed Pleasure Park, and finally designated as Merritt Park in honor of Ralph Merritt, the WRA director of Manzanar from November 1942 until the camp closed. Construction of the park began in the fall of 1942 in the firebreak between Blocks 33 and 34. Kuichiro Nishi acquired domestic rose buds, which he grafted onto native (wild rose) root stock. In addition to the rose bushes, about 100 different species of flowers were seeded and planted in Merritt Park. Internee Tak Muto of the Community Activities Section supervised construction of the park. Muto most likely contributed to creating its overall plan, although Kuichiro Nishi and F.M. Uyematsu are generally credited with the original design of Merritt Park. The park included

two small lakes connected by a waterfall. Muto and his crew planted pines around the edges of the lakes and built a wood teahouse overlooking the water. (Figure 32) The entire park covered an area approximately 100' x 160'.[222]

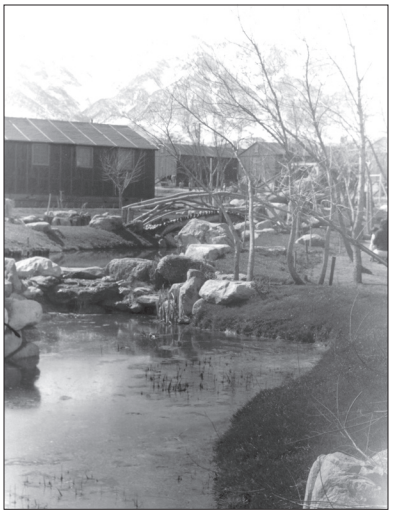


Figure 32. Merritt Park was the most elaborately landscaped area within the Relocation Center. (Courtesy of Toyo Miyatake Studio)

At the southwestern and southeastern corners of Merritt Park, two large, upright boulders were placed on rock platforms, forming focal points in the park landscape. Designed by Kuichiro Nishi, Japanese inscriptions were painted on each boulder. One of the stones dedicated the park "for the enjoyment of the people and to the memory of the time of our residence here."[223]

Cherry Park, Children's Village

The other large-scale park at Manzanar was located in the Children's Village. The park was called "Japanese Cherry Park" after the 1,000 Japanese cherry trees and wisteria vines donated by F.M. Uyematsu, owner of Star Nurseries in Montebello, California. Uyematsu acquired a military permit to travel to Montebello and bring the trees and plants to Manzanar in his own truck and supervised their planting in the Children's Village.

The Children's Village was landscaped with trees, shrubs, flowers, and



Figure 33. Manzanar's orphanage, called the Children's Village, featured a large lawn area, ornamental gardens, a tea house, and three primary buildings. The complex was surrounded by a low rustic fence. (Courtesy of Toyo Miyatake Studio)

lawn. The lawn covered 21,000 square feet and became "a beauty spot of the center, and one of the most restful to the desert-weary eye." Recreational fields included a baseball diamond that extended west of the buildings to the street, and a court for basketball and volleyball at the east end of the lawn area. A low fence constructed of tree limbs surrounded the Children's Village.[224] (Figure 33) Flowering vines were planted to grow over the fence. Smaller structures in the Children's Village included a 10-foot-square arbor that matched the fence and was built on the lawn area, which made "a pleasant retreat for small children and their attendants."[225]

Apparently some people were lured to Cherry Park for its plant material, which some residents borrowed for their own use. The camp newspaper published Uyematsu's request that residents refrain from picking the branches off the cherry trees in order to make canes and other carved objects, and to resist "picking the trees and transplanting them near their homes."[226]

Picnic Grounds

Other landscaped areas in and around the camp included both designed and informal picnic areas. In the summer of 1942 the barbed wire fence on the south side of the camp was moved 100 yards (further south) to incorporate a segment of Bairs Creek into the camp. The abundance of large shade trees along the banks of the creek made it an ideal picnic spot. In July, internees began work constructing a network of paths, rustic bridges over the creek, and rock ovens. Within a short amount of time the area became so popular that internees were required to obtain a permit to use it.

In 1943, another picnic area was developed between Block 32 and the north boundary fence. Rock ovens were built under the shade of old cottonwood trees remaining from the Shephard Ranch. This picnic area was called North Park. (Figure 34) Later, as restrictions were relaxed and internees were allowed to leave the camp during daytime hours; two additional picnic areas were established in shady areas outside the camp fence. One picnic area was established along George's Creek, about one mile from the south fence, and another about one-half mile north of the camp, near Shepherd Creek.[227] Another informal picnic area with a rock oven was established among the ruins of a ranch north of George's Creek and south of the hog farm.



Figure 34. North Park picnic ground was developed on the former site of the John Shepherd Ranch, where mature trees dating from the ranch period provided shade for picnickers. An outdoor cooking structure can be seen in the center of the photograph, at the entry to North Park. View looking west. (Courtesy of Toyo Miyatake Studio)

Cemetery

One-hundred-fifty internees died while at Manzanar. The first recorded burial at the cemetery occurred on May 16, 1942 and the last burial was December 19, 1944. At least 15 internees who died at Manzanar were buried there; others were sent to their hometowns for burial, and many more were cremated. Some urns were kept in the Buddhist Church and removed by families as they left the camp..

Manzanar's cemetery was located just outside the western edge of the camp housing area, between the Hospital Block and Block 24. The cemetery was sited within an old peach orchard that remained from the

town of Manzanar.[228] At a Block Manager's meeting at Town Hall in the spring of 1943, two representatives from the Buddhist Church presented the proposal to erect a marker at the cemetery in memory of those who had died at Manzanar.[229] The cost of construction, approximately $1,000, was paid by internee contributions. Designed by Ryozo Kado the obelisk rests on a stepped base, and is painted white. Japanese characters painted in black on the monument literally translate as "soul consoling tower" (*I Rei To*).

Shortly after the camp closed, Project Director Ralph Merritt requested that the Public Works Department construct a three-wire fence with posts four feet high to enclose the cemetery with a "small opening in the fence about two feet wide for people to enter." Merritt noted that "The little graves to the north of the cemetery are not to be included. These are the burying places only of pets."[230]

As Manzanar was closing at the end of 1945, relatives of the 15 persons who remained buried in the cemetery were contacted concerning their wishes for the deceased. As a result, nine bodies were removed from the cemetery and reburied elsewhere. Six burials remain today.

1945-Present: Closing of the Manzanar War Relocation Center

On December 17, 1944, the Secretary of War announced the lifting of the exclusion orders on the West Coast would take effect January 2, 1945, effectively ending the forced relocation of all people of Japanese ancestry from the West Coast. Although many internees had already relocated from the camp, in December 1944, 5,549 still remained at Manzanar.[231]

On July 13, 1945, WRA Director Dillon S. Myer announced that Manzanar would be closed by November 30. In July, internee workers started dismantling buildings. Block 36 recreation Hall was the first building to go. Internees used lumber from the building to construct shipping crates for moving their belongings.[232]

On August 14, 1945, the Japanese Government formally surrendered ending the War. Between August 15 and September 15, 1945 the administration closed 10 blocks at Manzanar; the remaining residents were forced to move from the blocks that were closed and were consolidated with those living in the partially-occupied blocks. Due to the impending closure, schools did not open in the fall.

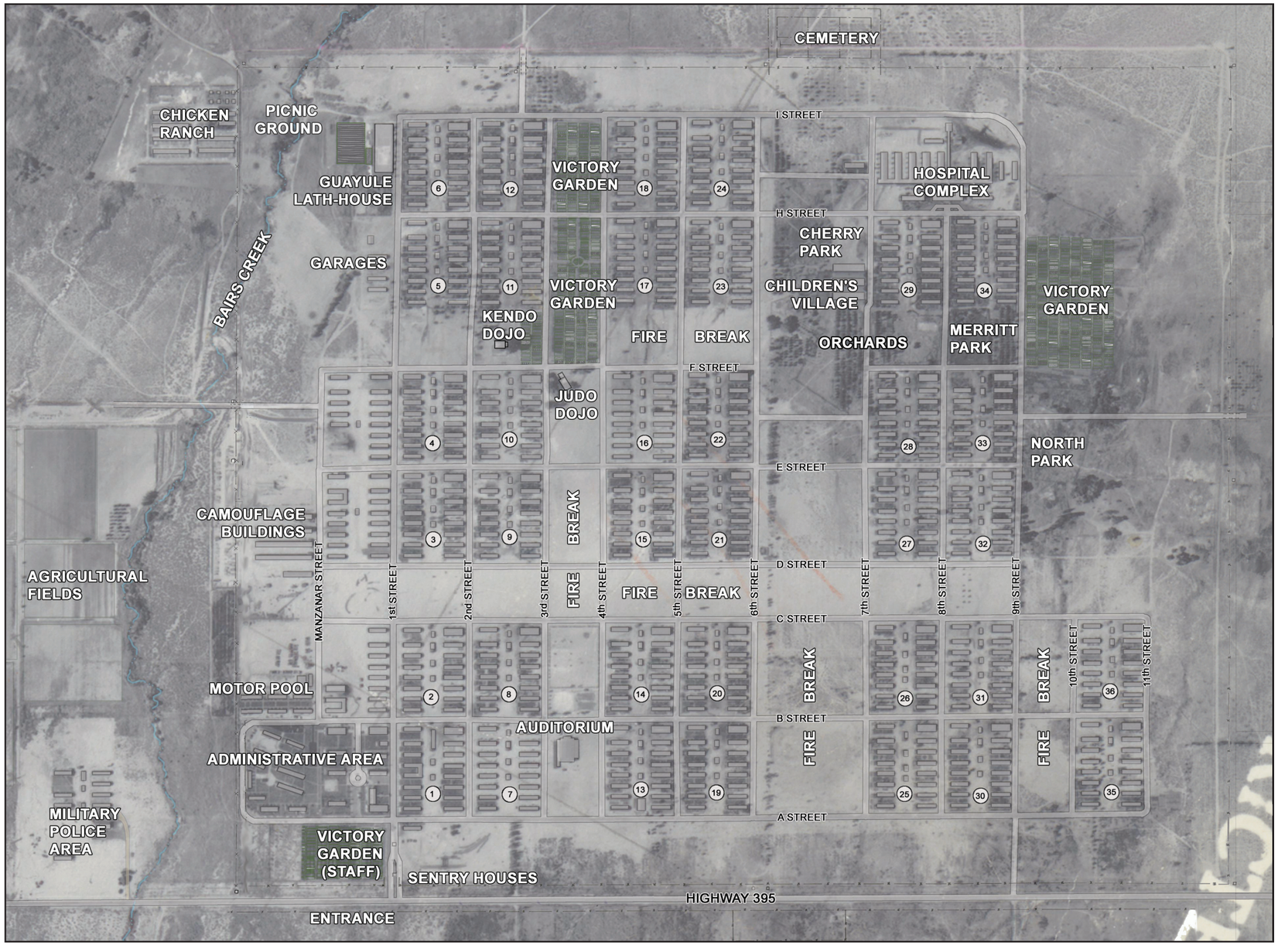


FIGURE 35

1945 Site Map

Aerial photo and site map of the core area of Manzanar in 1945.

Legend

- (21) Block Identification Numbers
- Approximate Location of Fence
- Structures

300 0 300 600

North

Sources:
Historic Photograph Collection, Manzanar National Historic Site
1945 Camp Layout Map, War Relocation Authority, on file Manzanar National Historic Site
1944 Manzanar Aerial Photograph, on file Manzanar National Historic Site
Three Farewells to Manzanar, Volumes 1-3, WACC, 1996
Field Survey, 2002

Notes:
Identification of historic features based on interpretation of aerial photographs, period maps, and historical research.
Blocks without barracks buildings were used as firebreaks, garden areas, and recreation areas.

Cultural Landscape Report
Manzanar National Historic Site 2006

National Park Service
Pacific West Region
Cultural Landscape Program

The last internees left Manzanar on November 21, 1945. The WRA administered the center until March 10, 1946, when control of the relocation center was transferred to the General Land Office. Before the transfer, the administration's Engineering and Supply Sections were in charge of clearing the barracks of remaining property and sweeping them out. Trash was removed from the area surrounding the barracks, and weeds were kept under control. Water, sewage and electric system connections were turned off; windows were nailed shut.

The General Land Office offered the Manzanar buildings for sale in June 1946, but received only 10 successful bids. Buyers were required to remove the buildings from the site by September 27 and fill in holes, cap off utilities and generally clean up after the removal. Buildings were sold in units so they could be used for small business, residences or in farming. Veterans were given priority, as were federal, state, and local governments and non-profit institutions.

Since not all of the buildings were sold, the successor of the General Land Office, the Bureau of Land Management, transferred the relocation center to the War Assets Administration (WAA) so that the remaining buildings could be demolished and their materials used for much needed post-war housing. By 1952 all buildings, except two rock sentry structures at the main entrance and the auditorium were removed.[233]

At the end of November, 1946, Ralph Merritt, who was by now the field representative for the WAA at Manzanar, set up a special sale of the remaining barracks for veterans. Veterans from Bishop, Lone Pine, Independence, Inyo-Kern, Ridgecrest, Bridgeport and Los Angeles purchased a total of 184 barracks. The former servicemen paid $333.13 for the 20' x 100' barracks, which included lumber, 22 windows, four doors, wiring and electrical outlets. A local architect and veteran developed four floor plans for homes that could be built from the barracks material.[234]

Once the camp closed, Inyo County purchased the auditorium and leased it to the Independence chapter of the Veterans of Foreign Wars. This group used the building as a community center until 1952, when the building was occupied by the Inyo County Road Department. At this time, the auditorium's wood floor was replaced with a concrete slab, the stage at the east end of the building was removed and replaced by a truck door, and the south wing was removed to Lone Pine where it still serves as the VFW

Hall.

Almost 50 years after the last internee left Manzanar, Congress passed the Civil Liberties Act of 1988, acknowledging that "a grave injustice was done to both citizens and permanent residents of Japanese ancestry by the evacuation, relocation, and internment of civilians during World War II."

In 1992, Congress recognized the importance of protecting and interpreting the historical, cultural and natural resources associated with the relocation of Japanese Americans during World War II by establishing the Manzanar National Historic Site (P.L. 102-248). Manzanar was established as a unit of the National Park Service to preserve and interpret a representative War Relocation Center as an aspect of the nation's Pacific Campaign of World War II. (Figure 35)

Endnotes

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50 "Certificate of Dissolution of Manzanar Water Corporation," Dec. 20, 1932, in "Manzanar Water Corporation 1915-1932," Articles of Incorporation (Archives,) Eastern California Museum; and Wehrey, "Report of Manzanar Pre-Camp Period," pp. 5-6
51 Daniels: Decision to Relocate, pp. 116-121; Harlan D. Unrau, The Evacuation and Relocation of Persons of Japanese Ancestry During World War II: A Historical Study of the Manzanar War Relocation Center, National Park Service, 1996: 43
52 U.S. War Department Final Report: "Japanese Evacuation from the West Coast", Government Printing Office, Washington, DC, 1943: 43 While those of Japanese ancestry are not specifically mentioned in the Executive Order, it was applied to the entire Japanese American community, and only to selected Germans and Italians.
53 Grodzins, Americans Betrayed, pp. 304-305; Unrau, p. 43
54 U.S. War Department Final Report, p. 41 ("U.S. War Department, Final Report: Japanese Evacuation From the West Coast 1942," in The Asian Experience in North America: Chinese and Japanese, Arno Press, Inc., 1978, p. 41; quoted in Unrau: 49
55 More than half of the 9,000 voluntary internees moved into the California portion of Military Area Number Two where, according to Public Proclamation Number One, no restrictions or prohibitions were contemplated. Later, Military Area Number Two was also defined as a restricted area and these people were evacuated to relocation centers as well.
56 Final Report: 44
57 Unrau: 45
58 U.S. War Department, Final Report, p. 105, quoted in Unrau: 46

59 War Dept. Final Report: 48
60 Ibid.
61 Final Report: 183
62 Unrau: 70
63 U.S. War Department, Final Report, pp. 50-51
64 Poston was originally called Parker, after the small southwestern town in Arizona located nearby
65 Final Report: 44
66 First Quarterly Report, War Relocation Authority, p. 7; Madden, "A Physical History of the Japanese Relocation Camp Located at Rivers," Arizona. Master's Thesis, History Department, University of Arizona, Tucson: 1969: 23-25; Burton: 25) The two principal sources explaining the military's decision to establish a relocation center in the Owens Valley are the "Project Director's Report" and a report written in April 1942 by San Francisco Chronicle feature writer Milton Silverman. Silverman was given a 60-day assignment by the Western Defense Command to report on the operations of the WCCA. Silverman's observations were attached as an Appendix to the Project Director's Report, compiled in 1946 by the Reports Officer and Assistant Project Director Robert L. Brown and Project Director Ralph P. Merritt. This document represents the War Relocation Authority's administrative history of the establishment, maintenance and dissolution of Manzanar War Relocation Center.
67 "Inspection Trip: Internment and Relocation of Enemy Aliens on the Pacific Coast," Memorandum, I.K. Evans, to General Lutes, March 10, 1942, reprinted in Roger Daniels, ed. American Concentration Camps: A Documentary History of the Relocation and Incarceration of Japanese Americans, 1942-1945, Volume 3, Garland Publishing Company, New York: 1989
68 Final Report: A170; U.S. War Department, Final Report, p. 151. [(Girdner and Loftis, Great Betrayal, p. 216)]
69 Robert L. Brown and Ralph P. Merritt, Project Director's Report, Feb. 1946: A-21-29; Unrau: 127-132
70 DeWitt to LADWP, 3/7/42, ECM files
71 Appendix 25, "The Silverman Report," in "Project Director's Report," Final Report, Manzanar, Vol. 1, p. A169, RG 210, Entry 4b, Box 71, File, "Manzanar Final Reports."; Unrau: 133
72 For more information on this topic, see Kahrl, Water and Power, p. 367, and Interview of Robert L. Brown by Arthur A. Hansen, in Garrett and Larson, eds., Camp and Community, p. 27
73 U.S. War Department, Final Report, p. 264
74 "Standards and Details—Construction of Japanese Evacuee Reception Centers," June 8, 1942, NARA, RG 210, Records of the War Relocation Centers 1942-1946, Subject-Classified General Files, Manzanar Relocation Center, Central Files, hereafter "Entry 48".
75 Ibid.
76 Inyo Independent, March 6, 1942; Unrau: 187
77 Robert L. Brown and Ralph P. Merritt, Final Report, Manzanar, Vol. III, P. 995, RG 21, Entry 4B, Box 72, File "Manzanar Final Reports.") (Silverman Report: p. A-174)
78 Silverman's observations were attached as an Appendix to the Project Director's Final Report, compiled in 1946 by the Reports Officer and Assistant Project Director Robert L. Brown and Project Director Ralph P. Merritt.
79 *Appendix 25, "The Silverman Report," "Project Director's Final Report," Final Report, Manzanar, Vol. 1, A172.*

80 Sandridge & Sisler, Engineering Section, Final Report: 989
81 Silverman Report: pp. A-174-175.
82 *Manzanar Free Press*, 3/20/43
83 Manzanar Free Press 3/20/43
84 Silverman Report: A-175.
85 *Manzanar Free Press* 3/20/43
86 Project Director's Report, Final Report, Manzanar, Vol. 1, p. A-9, RG 210, Entry 4b, Box 71, File, "Manzanar Final Reports, hereafter "Final Report."
87 Unrau: 191.
88 In the haste to relocate Japanese Americans, assembly centers were quickly designated and marginally developed to house the internees. The so-called "temporary" holding areas were developed at fairgrounds, exposition centers, or racetracks, where internees sometimes had to live for months in makeshift spaces before being transferred to a War Relocation Center.
89 War Dept. Final Report: 77
90 Unrau: 371
91 Japanese-American's contribution to the state's agricultural economy was considerable; in 1941, Japanese farmers produced some 35 per cent of all commercial truck crops grown in California. Unrau: 301
92 War Dept. Final Report: 77
93 Burton: 50 ["Sue Embry, personal communication, 1993"]
94 Final Report, Community Activities Section
95 Anna T. Kelly interview, in Camp and Community, p. 62.
96 "The Evacuation of Terminal Island," by a Terminal Islander, February 18, 1944, NARA, RG 210, Community Analysis Reports."
97 Unrau: 239
98 The Los Angeles Bureau of Power and Light built the pipeline and steel storage tank, while the C.J. Paradise Company of Los Angeles built the drainage culverts.
99 Project Report No. 19, July 8, 1942
100 *Manzanar Free Press*, 3/24/43
101 McConnell and Hill; Agricultural Section, Final Report, January 1946
102 see HRS, Map 2: "Manzanar Farm and Irrigation Map, April 12, 1943"
103 Dave Itami to E.R. Fryer, WRA Regional Director, "Digest of Block Reports for October, 1942," November 12, 1942) (Manzanar Free Press, 7/8/42
(see HRS Map 6: "Electrical System and Fire Alarm Telephone, April 17, 1945
104 *Manzanar Free Press*, 11/10/43
105 Final Report, Engineering Section, 19
106 see WRA Camp Layout Map in Burton, Three Farewells, Figure 4.10; p. 53
107 Sandridge & Sisler, Final Report, Engineering Section: 1946a
108 Joseph M. Fien, Fire Protection Section, Final Report, January 1946
109 *Manzanar Free Press*, 10/17/42
110 Unrau: 190-196
111 *Manzanar Free Press*, April 25, 1942
112 Documentary Report Number 32, July 23, 1942, Toyo Tanaka, JERS, Bancroft Library; Unrau: 111-112; 230
113 Documentary Report #2, June 10, 1942
114 "My Story," December 14, 1943, NARA RG 210, Headquarters subject-classified general files, "Community Analysis Reports, Manzanar (entry 16)
115 "The Evacuation of Terminal Island," by a Terminal Islander, February 18, 1944, NARA, RG 210, Community Analysis Reports
116 Documentary Report number 20, July 8, 1942; Documentary Report number 30, July 20, 1942, and Documentary Report number 75, October 15, 1942, Toyo

Tanaka, JERS, Bancroft Library
117 Farewell to Manzanar (Boston: Houton Mifflin Company, 1973: p. 70
118 Documentary Report Number 60, September 12, 1942, Toyo Tanaka, JERS, Bancroft Library and Documentary Report Number 75, October 15, 1942, Toyo Tanaka, JERS, Bancroft Library
119 Block Managers' Daily Reports, July – August 1942; UCLA Special Collections #122, Box 29; Documentary Report #14, 6/27/42; *Manzanar Free Press*, 5/12/43
120 Documentary Report #15, 6/14/42; Report #30, 7/20/42
121 *Manzanar Free Press*, 8/5/42
122 Documentary Report #5: 6/14/42
123 Mess Operations Section, Final Report, Vol. IV, pp. 1,322-44, RG 210, Entry 4b, Box 73, File, Manzanar Final Reports" in MANZ HRS, p. 397
124 Three Farewells to Manzanar, p. 26-27.
125 Commanding General, Headquarters Western Defense Command and 4th Army to Division Engineer, South Pacific Division, May 23, 1942, NARA, RG 338, Western Defense Command and 4th Army, WCCA and CAD, Central Correspondence.
126 Joseph R. Winchester, Mess Operations Section, Final Report, 1946a
127 Arthur H. Miller, Director of Housing to Roy Nash, Project Director, June 8, 1942, NARA, RG 21, entry 48); George H. Dean, Senior Information Specialist to Roy Nash, Project Director, June 1, 1942, "Conditions at Manzanar Relocation Area," NARA, RG 21, entry 48
128 Documentary Reports #30 July 20, 1942 and #55 August 26, 1942, Togo Tanaka, JERS, Bancroft Library.
129 MANZ HRS, p. 398-401 and 565
130 MANZ HRS, p. 230
131 Community Analysis Reports, "Autobiography of a Twenty-Two Year Old Nissei," November 11, 1943, NARA, RG 210
132 "The Evacuation of Terminal Island," February 18, 1944, by a Terminal Islander, NARA, RG 210, Community Analysis Reports.
133 Community Analysis Reports, "Autobiography of a Twenty-Two Year Old Nissei," November 11, 1943, NARA, RG 210
134 Houston: 22-23
135 Ikeda interview
136 *Manzanar Free Press*, 10/22/42
137 E.R. Fryer, Regional Director, WRA to Project Directors, June 16, 1942, NARA, RG 21, entry 48
138 Unrau: 230
139 The Evacuation of Terminal Island," by a Terminal Islander, February 18, 1944, NARA, RG 210, Community Analysis Reports
140 Evacuee Diary, 1942-1943, JERS, Bancroft Library
141 Documentary Reports #8, June 19, 1942; #13, June 25, 1942; #55, August 26, 1942, Togo Tanaka, JERS, Bancroft Library
142 Unrau: 222
143 Morse Little, M.D., Project Medical Officer, "Progress Report of the Manzanar Hospital," n/d, UCLA Special Collections, #122, Box 15, folder: "WRA-Hospital"
144 (Engineering Section, Final Report 1946a
145 Ibid.
146 "Engineering Section," Final Report, Manzanar, Vol. III, p. 1,021, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."
147 War Relocation Authority. "Manzanar from the Inside," by Roy Nash
148 Final Report, Engineering Section 1946A
149 WRA "Fixed Asset Inventory," November 15, 1945, Land and Fencing, Account

No. 34, p. 2
150 Documentary Report #65, 9/21/942, JERS
151 Final Report, Engineering Section 46A
152 Ibid. p. 1009
153 WRA First Quarterly Report: 23
154 See Unrau: 432-434 for a discussion of the labor problems associated with the camouflage net production facility.
155 "Industrial Section," Final Report, Manzanar, Vol. III, pp. 1065-1067, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."
156 *Manzanar Free Press*, 2/26/44
157 ***Manzanar Free Press*, 9/19/42; 9/27/44**
158 *MacNair, Motor Transport and Maintenance Section, Final Report, 1946a*
159 Some of the vehicles were purchased from internees who had driven to Manzanar in an Army-escorted caravan in March 1942, but were not allowed to drive their cars in camp
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161 *"Conditions at Manzanar Relocation Area," June 1, 1942, by George H. Dean, Senior Information Specialist, RG 210, Entry 16, Box 293, File No. 41.070 #1, "May – June 1942."*
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164 Second Quarterly Report, WRA, July 1, to September 30, 1942; WRA, p. 29
165 *Manzanar Free Press*, 3/17/43
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171 *Manzanar Free Press*, 10/10/42
172 Education Section, Final Report
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174 *Manzanar Free Press*, 5/1/42
175 Documentary Report #12, 6/24/42; WCCA-Production-"Agriculture and Industry," UCLA University Research Library, Collection 122, Box 6
176 Unrau: 227: Lawrence I. Hewes, Jr., Regional Director, Farm Security Administration, U.S. Department of Agriculture to Roy Nash, Project Director, July 13, 1942, and R.A. Petrie, Assistant to the Regional Director, WRA to Roy Nash, Project Director, July 24, 1942, RG 210, Entry 48, Box 224, File No. 43.5000, "Construction of Centers (General), Repairs—Maintenance—Wiring—Landscaping—Electrical."
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178 Final Report, Engineering Section, 1946a
179 UCLA, Collection 122, Box 6; WCCA Production, Agriculture & Industry
180 WRA Third Quarterly Report, October 1 to December 31, 1942, p. 51
181 Final Report, Agriculture Section: 1046
182 *Manzanar Free Press*, August 10, 1942
183 *Manzanar Free Press*, March 20, 1943

184 *Manzanar Free Press*, 10/15/42; 10/13/43
185 *Manzanar Free Press*, 7/27/42
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188 WCCA-Production-"Agriculture and Industry," n/d UCLA Univ. Research Library, Collection 122, Box 6; Final Report, Ralph P. Merritt, January 1946, P. A-200
189 *Manzanar Free Press*, 7/24/42; 8/21/42; Documentary Report #16, 7/1/42
190 *Manzanar Free Press*, 2/9/44
191 Agricultural Section, McConnell and Hill, Final Report, 1946a
192 Ibid.
193 *Manzanar Free Press*, 5/26/42
194 Nielsen, Community Activities Section, Final Report 1946a; Community Activities Section, Final Report, p. 882
195 *Manzanar Free Press*, 5/26/42
196 *Community Activities Section, Final Report*
197 *Manzanar Free Press*, 6/2/42
198 Interview with Yoshimi Ikeda, November 4, 1998, in Manzanar NHS files
199 Manzanar Free Press, *1/13/43; 5/8/43*
200 *Manzanar Free Press*, 9/10/42
201 Monroe C. Kidder, Director, Drug and Oil Plant Project, December 5, 1944
202 Final Report, Chapter VII, A56
203 See Confinement and Ethnicity, Table 8.1, p. 185 for a listing and description of representative ponds and gardens at Manzanar.
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205 Documentary Report #55, August 26, 1942; Documentary Number 75, October 15, 1942
206 *Manzanar Free Press*, 10/ 8/42
207 *Manzanar Free Press*, 7/27/42
208 "Manzanar Lawn Growing Boom," in *Inyo Independence*. 9/1/1942
209 Documentary Report #20, 7/8/42; #35, 7/26/42; *Manzanar Free Press*, 5/12/43
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212 Community Activities Section, Final Report, p. 4
213 Community Activities Section, Final Report
214 Community Activities Section, Final Report, p. 860
215 Ibid., 869
216 Community Activities Section, Final Report; *Manzanar Free Press*, 8/24/42; 11/14/42; 6/616/43; 9/29/43
217 *Manzanar Free Press*, 8/24/42
218 Community Activities Section: 869
219 Community Activities Section, Final Report; *Manzanar Free Press*, 11/23/42; 3/10/43
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222 *Manzanar Free Press*, 11/28/42; Community Activities Section, *Final Report*
223 "Translation from Japanese to English, Memorial Stone," RG 210, Entry 48, Box 224, File No. 43.500, "Construction of Centers (General), Repairs — Maintenance — Wiring — Landscaping — Electrical."

224 Unrau: 284
225 Eva M. Robinson, Education Section, *Final Report*, Ch. 22, "Children's Village," p. 185
226 *Manzanar Free Press*, 4/3/43
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229 *Manzanar Free Press*, 5/15/43
230 Unrau: 280
231 "Personnel Management Section," *Final Report, Manzanar,* Vol. IV, pp. 1,180-1,207, RG 210, Entry 4b, Box 71, File, "Manzanar Final Reports."
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233 Unrau: 797
234 Unrau: 799-816

Existing Conditions

Physical Setting

Manzanar is located in Inyo County, California, nine miles north of Lone Pine, and six miles south of Independence. Forming the western margin of the Great Basin, this region in east Central California is known as the Owens Valley. The topographic relief of the Owens Valley is one of extremes: within 100 miles lie the tallest peak and the lowest valley in the continental United States. The western wall of the Owens Valley is defined by the escarpment of the Sierra Nevada which averages 13,000 feet, culminating in Mt. Whitney at 14,495 feet (the tallest peak in the continental United States). The White and Inyo Mountains, which form the eastern wall of the valley, average 10,000 feet in elevation. Some 100 miles to the east is Death Valley, which includes Badwater, the lowest point in the continental United States, at approximately 280 feet below sea level. (Figure 36)



Figure 36. Manzanar War Relocation Center sign (re-fabricated) at the historic entrance. (NPS 2003)

Sited at an elevation of 4,000 feet, summers in the Owens Valley are sunny and hot and winters are cold. Because the site is located in the rain shadow of the Sierra Nevada, the region has a mean annual precipitation of only 5.5 inches. About 20% of the on-site precipitation falls as snow. The highest precipitation occurs between December and February. Temperatures range from over 100 degrees in the summer to below 0 degrees in the winter, and the growing season is only 197 days. The site is subjected to heavy winds that are typically associated with storm fronts and are strongest in late winter, spring, and fall. Because of the wind, blowing dust is a constant problem within the Owens Valley and dust storms occasionally obscure the nearby mountains.

Despite the low annual rainfall amounts, the site is well watered by Sierra streams that flow near the site: Shepherd Creek to the north and George's Creek to the south. Bairs Creek, which is intermittent, runs through the southwest corner of the site. The water table is near the surface where streams flow down the alluvial slopes of the Sierra, and in the valley trough.

The boundaries of the Manzanar cultural landscape encompass the entire 6,000 acres leased by the federal government from the City of Los Angeles for establishment of the Manzanar War Relocation Center. This 6,000-acre tract covers the full extent of the historic camp. The focus of the cultural landscape report however, is on the approximately 550 acres of the internment camp where internees were housed, and most of the day-to-day activities of the camp took place. Located outside the barbed wire fence were the various industrial and support facilities, including agricultural fields, a chicken ranch, hog farm, a sewage treatment plant, a reservoir, and picnic grounds. These areas are not generally accessible to visitors and are not addressed in the existing conditions documentation.

Land Use

Primary land use at Manzanar is focused on the preservation of historic features for the purpose of interpretation of the historic events, physical character, and life at Manzanar. The National Park Service conducts interpretive programs year around, although the majority of park visitors experience the site via the self-guided auto tour. The historic auditorium has been rehabilitated for use as an interpretive center with park offices. In addition to general visitation, the Japanese American community also



Figure 37. Ceremonies at the annual Pilgrimage, April 2002. (NPS 2002)

organizes an annual pilgrimage to the site. This event occurs the last Saturday of April, and draws 500 to 1,000 family and friends representing all 10 interment camps. Events associated with the pilgrimage include tours of the site, interpretive displays, informal gatherings throughout the site, and formal ceremonies focused in the area around the cemetery. (Figure 37)

Access and Circulation

Primary visitor access to Manzanar is off of U.S. Highway 395, between the towns of Lone Pine and Bishop, California. The entry into the camp is in the same location as it was during the historic period and has approximately the same lane dimensions, narrowing as it wraps around the two sentry posts. Historically, visitor parking was located between the two sentry posts on the northern edge of this entry drive. This parking area remains in use today.

A secondary access to the site is located off of U.S. Highway 395, near the auditorium, and provides a direct exit from the Interpretive Center parking lot. Constructed in the mid-1950s by the Inyo County Road Department, this was a primary site access when the county used the auditorium as a

maintenance shop.

Within the camp, elements of the extensive road grid laid out by the Army in 1942 remain the primary circulation network through the historic site. An auto tour route directs vehicles in a one-way loop along this road, generally following the outer perimeter of the housing area. The interpretive route has informal pullouts and signs noting key landscape features and remnants from the internment period as well as elements associated with the town of Manzanar and Shephard Ranch. The road itself is approximately 12 feet wide, slightly elevated and surfaced with gravel.

Although a remarkable amount of the historic road system remains, some segments are either obscured by vegetation, sand, and debris, or have been undermined by gully erosion—particularly sections of 1st and 7th streets. In other areas, portions of the roadbed are obscured by encroaching vegetation. For example, locust trees that once lined many of the streets have seeded and spread beyond their original locations. Other vegetation, such as tamarisk, tree of heaven, and sagebrush have spread, further obscuring many parts of the original grid. The road to the picnic area at North Park, once lined with nearly century-old Lombardy poplars dating to the Shepherd Ranch, remains as a remnant and distinctive feature of this portion of the road system at the site.

There is no formalized pedestrian trail system within the core area of the camp. Most visitors walk through the site using the historic roadways as paths and informal gathering areas. Remarkably, a number of remnant historic concrete walkways remain in several locations throughout the site, including the staff housing area, at the judo *dojo*, and the hospital area. The non-historic east entrance walkway to the auditorium is currently being enhanced to serve as the primary visitor entrance. At the historic west entrance to the auditorium, the historic footprint and configuration of the sidewalk and planting beds were reconstructed to match the historic appearance. Virtually all of the other historic pedestrian paths and trails (including paved surfaced paths) are no longer discernible.

Within the historic site there are three designated visitor parking areas. The first is the historic parking area at the camp entrance. The second parking area is east of the interpretive center. This area also serves as a drop-off and building entrance. The third parking area consists of two large unpaved areas east of the cemetery, inside and outside the historic fence line. This cemetery area is heavily used for car and tour bus parking and as a staging

and event area during the annual Manzanar Pilgrimage.

Natural Systems

Manzanar National Historic Site is located at the interface between the Sierra Nevada *bajada* and the floor of the Owens Valley.[1] The soils at the site are composed of sand, gravel, and cobble from earlier geologic deposits. The *bajada* is deeply dissected by perennial streams fed by snowmelt from the Sierra. Manzanar is sited between two of these streams: George's Creek—1 ¼ miles to the south—and Shepherd Creek which is less than a mile to the north. The water table at the camp fluctuates depending upon the season and the amount of water drawn out of the aquifer by the Los Angeles Department of Water and Power (DWP). Manzanar is located within a well field of the Los Angeles DWP. In the recent past, high flows from the spring melt have been distributed by the DWP across the *bajada* west of the site, resulting in the movement of sediment and gullying through the historic site. This practice has been stopped based on requests by the National Park Service to minimize damage to historic resources. One wetland south of Block 5 is associated with drilling that occurred after the period of significance. The presence of cottonwoods and other lush vegetation extending from the vicinity Shepherd Ranch southwest towards Blocks 5 and 6 is evidence of the high water table that remains throughout this portion of the site.

Because of the low levels of rainfall, the majority of native vegetation within Manzanar is desert scrub and part of the Shadscale Scrub plant community.[2] This plant community is named for the dominant specie, Shadscale (*Atriplex confertifolia*). Many of the shrubs associated with this plant community are similar in characteristics, including color and size, (most being less than three feet in height).

Within the scrub community, riparian corridors carry the melting snow from the Sierra Nevada down into the Owens Valley. These corridors generally have steep banks with dense vegetation (typically willows) and are important habitat for a variety of plant and animal species.

Although cleared from the camp during the historic period, the desert scrub plant community has re-established throughout the site although the density of plant materials varies. Within the barracks blocks, administrative area, and throughout the firebreaks, the scrub vegetation has obscured building foundations, roads, and important archeological features,

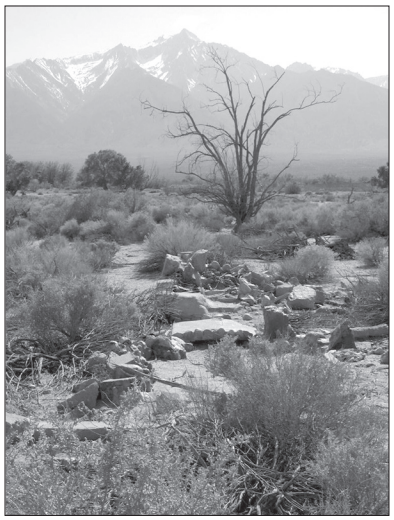


Figure 38. View of scrub vegetation spreading across a remnant rock and water garden in Block 35, barrack 2. View looking west. (NPS 2003)

particularly towards the west of the site where the water table is higher. (Figure 38) Along the eastern side of the camp, the vegetation is lower and less dense. The most sparsely vegetated sites are within the east end of the north firebreak and at the intersection of the south and east firebreaks which contain little woody material. (Table 1)

Currently Manzanar provides habitat for a wide range of fauna. Larger wildlife within the area includes mule deer, black bear, mountain lions, coyotes, pronghorn antelope, and bighorn sheep. Smaller animals include jackrabbits, cottontails, woodrats (packrats), bobcats, kit foxes, skunks, raccoons, and ground squirrels. Reintroduced species include tule elk.

Today, evidence of the impacts of the wildlife on the vegetation within the camp includes (but is not limited to):

- damage to fruit trees (broken branches, toppling of trees) particularly by bears and elk,
- browsing on historic vegetation by elk and deer (peaches, cotoneaster, etc.),
- elk and deer stripping bark on trees by rubbing antlers against the trunk (cypress trees),
- animal holes undermining the stability of historic orchard trees, and
- woodrat nests in trees which add significant weight to the branches causing breakage.

Ornamental Vegetation

Ornamental vegetation found at Manzanar is the product of a century of diverse land use. Vegetation that remains from the earlier historic eras consists largely of tree species that adapted to and were able to survive the relatively harsh environmental conditions.

Although much of the historic vegetation dates to the internment period (1942-45), some of the older trees date to the late 1800s and early 1900s and are associated with early ranching in the area, agricultural settlements in the Owens Valley, and the town of Manzanar. Today, many of the older cottonwood trees on-site mark the locations of these early homesteads (such as the trees at the judo *dojo* that date to the Campbell House, and many of the trees at North Park that were part of the Shepherd Ranch). Most of the remaining trees are located on a portion of the site that has historically had a high water table, primarily along the western half of the

Table 1: Partial List of Native Plants at Manzanar

BOTANICAL NAME	COMMON NAME
TREES	
Salix exigua	Coyote Willow (R. Stewart)
Salix lasiandra	Pacific Willow, Western Black Willow, Yellow Willow (R. Stewart)
SHRUBS	
Artemisia tridentate	Great Basin Sagebrush
Atriplex canescens	Four-wing Saltbush
Atriplex confertifolia	Shadscale
Atriplex polycarpa	Allscale Saltbush
Ceratoides lanata	Winter Fat
Chrysothamnus nauseosus	Golden Rabbitbrush
Chrysothmanus paniculatus	Sticky Rabbitbrush
Encelia farinose	Brittlebrush
Ephedera nevadensis	Mormon Tea
Grayia spinosa	Spiny Hopsage
Lupinus albifrons	Silver Lupine
Lycium Cooperi	Peach Thorn (R. Stewart)
Prunus Andersonii	Desert Peach
Purshia tridentate	Bitterbrush
Rosa Woodsii	Wild Rose
FORBS	
Asclepius speciosa	Milkweed (R. Stewart)
Amsinckia tessellate	Fiddleneck
Anemopsis californica	Yerba Mansa
Anisocoma acaulis	Scale Bud
Apocynum spp.	Dogbane (R. Stewart)
Castilleja spp.	Indian Paintbrush
Chaenactis Douglasii	Douglas Pincushion
Cryptantha nevadensis	White Forget-me-not, Cryptantha
Datura meteloides	Sacred Datura, Jimson Weed
Descurainia pinnata	Tansy Mustard
Eriogonum deflexum	Skeleton Weed
Eriogonum inflatum	Desert Trumpet
Eriogonum spp.	Buckwheat
Eriophyllum Wallacei	Desert Wooly
Gilia latifolia	Gilia
Glycyrrhiza lepidota	Wild Licorice
Layia glandulosa	White Tidy-tips
Linanthus Parryae	Sand Blossom
Linum Lewissii	Blue Flax
Malacothrix glabrata	Desert Dandelion
Mentzelia nitens	Blazing Star
Oenothera brevipes	Evening Primrose
Phacelia distans	Wild Heliotrope
Xanthium strumarium	Common Cocklebur
Xylorhiza tortifolia	Mojave Aster
GRASSES	
Cyperus esculentus	Yellow Nut Grass, Taboose, Tupu-si (R. Stewart)
Hordeum jubatum	Foxtail Barley
Juncus spp	Wire Grass (R. Stewart)
Leymus cinereus	Giant Wild Rye
Oryzopsis hymenoides	Indian Ricegrass
Phragmites australis	Common Reed

Source:
Preliminary identification of species by Patti Novak, botanist for the Los Angeles Department of Water and Power, supplemented with field observations by project team and R. Stewart. For original list, see Burton, *Three Farewells to Manzanar*, Part 1, pg. 10, 1996.

site.

Other trees that have survived include remnants of the pear and apple orchards planted in the early 1900s. Many of these trees were incorporated into the camp and used by the internees. Remnants of the orchards associated with the Wilder, Lydston, Lafon, and Hatfield ranches remain today. Although the condition of these fruit trees is typically poor after decades of neglect, many trees continue to yield fruit. Walnut, peach, plum, fig and apricot trees have also been identified at the site but it is not known when these trees were planted and whether they are remnants of the ranch, town, or camp periods.

Today, the predominant tree specie on-site is the black locust. Some of these trees, like the row of locust trees near 6th Street, date back to the Manzanar town era. Under the War Relocation Authority, additional locust trees were planted throughout the camp. Locust trees have a variety of characteristics that made them a highly desirable ornamental tree at Manzanar, such as rapid initial growth, hardiness, fragrant flowers, light shade, and disease resistance. These drought-resistant trees survive today and in some cases, provide evidence about the location of gardens, the boundaries of streets, barracks blocks, and land use areas—such as the chicken ranch. Drawn to moisture, these trees have spread throughout the site, making it difficult to determine exactly which trees date to the historic period, and which do not. Other trees remaining from the historic period include a small number of mulberry, catalpa, elm, ash, tree of heaven, and cypress trees. Other ornamental vegetation that may date to the historic period includes tamarisk, various cacti, cotoneaster, and scattered perennials such as statice, asparagus, and some patches of drought-resistant grasses.

After years of abandonment, some ornamental species, like the tree of heaven and salt-cedar/tamarisk, have spread beyond their historic boundaries into adjacent areas of the site. Less invasive ornamentals, like the locust trees, have formed thickets which often block views through the site, making it difficult to see historic features and understand the physical framework of the camp.

Building and Structures

Of the more than 800 buildings constructed at Manzanar, only three survive: two sentry posts and the auditorium building, rehabilitated for use as an interpretive center. Numerous building remnants—primarily concrete



Figure 39. Internal Police Post (foreground) and Military Police Post at the entrance after restoration work. (NPS 2001)

foundation slabs and foundation blocks, also remain throughout the camp indicating the location of original buildings. Other structures including the cemetery monument, concrete stanchions at the camp entrance and at the cemetery site, two stone masonry ovens at North Park, patio walls and sidewalks in the administrative area, and the incinerator at the chicken ranch also remain. The reservoir, located on lands managed by the Bureau of Land Management, is also considered a historically significant structure and contributing resource related to the historic site.

In 2001, a NPS preservation crew undertook restoration of several historic structures at the site, including replacing the roofs and reconstructing the windows and doors on the two sentry posts, and reconstructing the locust fence around the cemetery. (Figure 39) Their work also involved masonry stabilization of both North Park oven structures as well as conservation of simulated wood-grain finishes on concrete structures including the two stanchions at the entry, the posts at the cemetery, and structures in the administration area, hospital, and chicken ranch. A replica of the historic camp entry sign was fabricated by a contractor using historic photographs, and installed by the preservation crew. [3]

Elements of the many internee-designed gardens occur throughout the camp landscape and represent a range of types and possess varying degrees

of structural integrity. Representative garden structures include cement ponds, bridges, arbors, walkways, and rock alignments.

Although only three original buildings remain from the internment period, a wide variety of small-scale features from the historic period exist on the site. These include elements associated with the camp's infrastructure such as fire hydrants, outdoor faucets, and manholes. Additional small-scale features include concrete barracks stoops, footing blocks, and concrete slabs. Perhaps the most pervasive small-scale features remaining at the site are small rock arrangements and alignments. Occurring throughout the site and at various scales of complexity, these features delineate road edges, outline non-extant gardens, encircle trees, and mark barracks entries. (Figure 40)

Small-scale historic site features that remain at Manzanar are important remnants of the internment period and generally contribute to the character of the cultural landscape.

In summer 2005, Manzanar maintenance workers reconstructed guard tower number 8 at its historic location outside the mid-point of the east fence. In addition, a condition assessment was completed to prepare for eventual restoration of the World War II-era mess hall that was moved from Bishop Airport to Block 14 in 2002.



Figure 40. Remnant alignment of rocks defining the entry to a barrack apartment, dating from the period of significance. (NPS 2003)

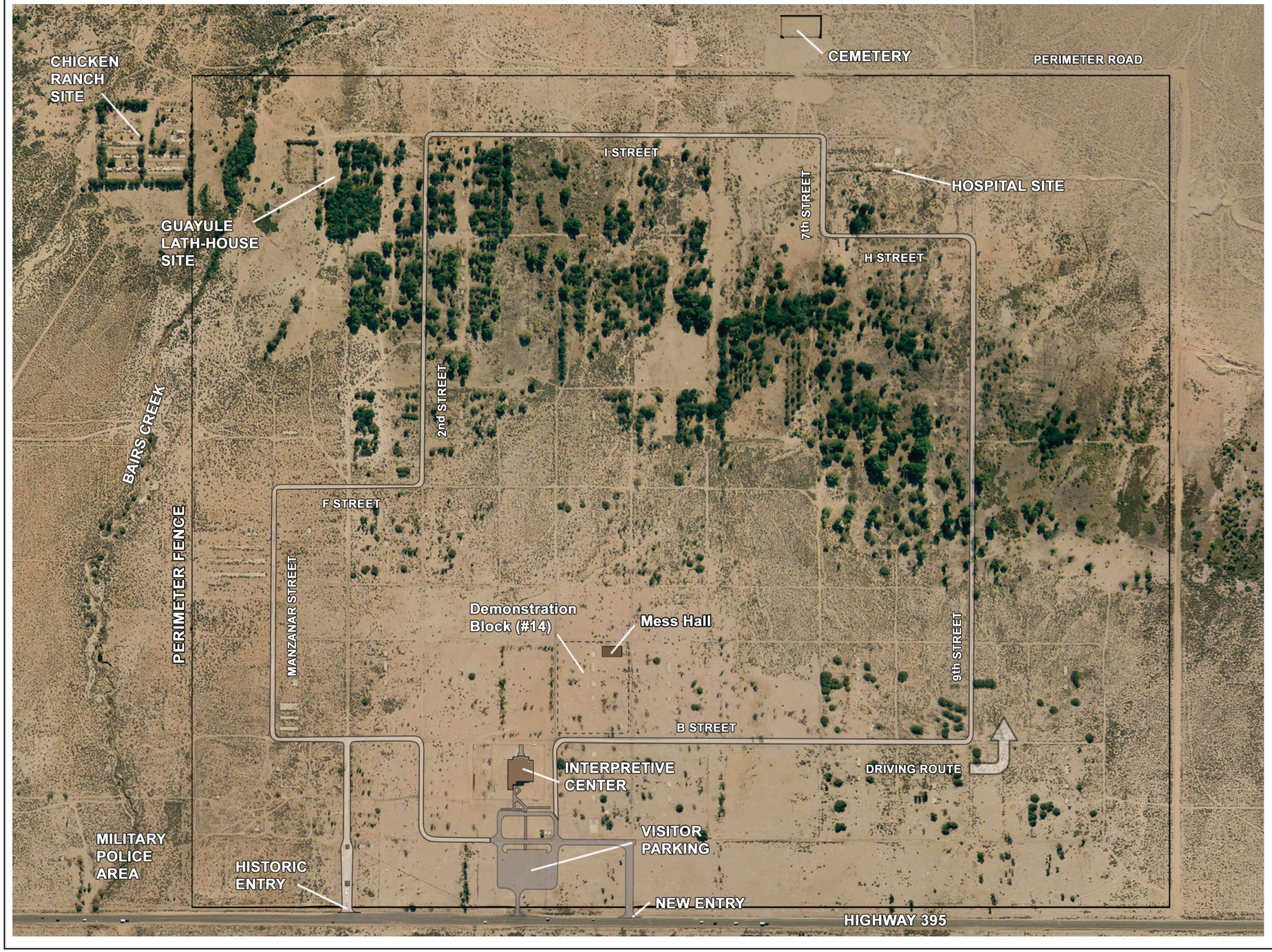


FIGURE 41

2003 Existing Conditions

Aerial photo and site map of the core area of Manzanar in 2003.

Legend

- Approximate Location of Fence
- Existing Structures

300 0 300 600

North

Sources:

Historic Photograph Collection, Manzanar National Historic Site
1945 Camp Layout Map, War Relocation Authority, on file Manzanar National Historic Site
2000 Manzanar Aerial Photograph, on file Manzanar National Historic Site
Three Farewells to Manzanar, Volumes 1-3, WACC, 1996
Field Survey, 2002

Notes:

Reconstructed Mess Hall moved to site in 2002.
Rehabilitated Visitor Center and visitor parking area completed in 2004.
Reconstructed Guard Tower to be sited along perimeter fence at new entrance.
Perimeter road provides minimal access for maintenance and special events.

Cultural Landscape Report
Manzanar National Historic Site 2006

National Park Service
Pacific West Region
Cultural Landscape Program

Archeological Resources

Recent archeological studies at Manzanar have discovered and recorded 84 archeological sites within and around the National Historic Site. Of these archeological sites, 12 were associated with American Indians; the remaining sites were associated with the town of Manzanar, earlier ranches, and the internment period. Twenty-five archeological sites relate directly to the Manzanar War Relocation Center. One of the 25 sites encompasses the entire 550-acre central portion of the camp where the housing area, administration complex, and hospital were located. In this site alone, over 800 features have been recorded (See *Analysis and Evaluation, Archeological Resources*).[4] (Figure 41)

Endnotes

Existing Conditions

1 A *bajada* is a sloping, coalescing, spreading mass of gravel and sand extending from the mountain base into the surrounding valley.
2 Munz, Philip, A California Flora and Supplement, 1968
3 See: Record of Treatment—Manzanar Historic Structures Rehabilitation Project, Volumes 1-3, Architectural Conservation Projects Program, Intermountain Support Office, Santa Fe, 2001. This work was accomplished through a Save America's Treasures Grant, through a partnership with the State of California, the National Park Foundation, and the Manzanar Committee.
4 For a full description of archeological resources related to the Manzanar site see Burton, Three Farewells to Manzanar, Vols. 1-3, NPS: 1996

Analysis and Evaluation

Introduction

The site of the former Manzanar War Relocation Center (Manzanar) is a nationally significant historic site, and a National Historic Landmark. The *Analysis and Evaluation* of landscape characteristics provides information that supplements the existing nomination and designations, and provides guidance for treatment of the cultural landscape. Although there is a continuous history of use and occupation of this area documented in the *Site History* and in several archeology reports, the focus for this analysis is on the primary period of significance for the historic site, 1942-1945. Other periods may be referenced in the *Analysis and Evaluation*, but the physical attributes associated with earlier developments are discussed primarily as they relate to the internment period.

The analysis and evaluation of cultural landscape characteristics and features at Manzanar is based on historical research, exiting site conditions, archeological investigations, and research into the cultural traditions of the Japanese American community on the west coast. The purpose of the analysis is to identify and evaluate the physical components of the landscape that reflect these cultural traditions, and remain today as tangible resources at Manzanar. Because the majority of buildings and structures at Manzanar were dismantled or removed after 1945, and the camp abandoned, the character of the landscape today is one of remnants and traces. In this regard, the analysis of the landscape documents and describes the historic structures, vegetation, cultural traditions, and physical attributes of the site during the period of significance as a tool for understanding the full extent and material character of Manzanar between 1942 and 1945. The focus of the evaluation is on the landscape elements that remain today and have a direct association with the period of significance. It is important to note that while some features such as road alignments remain, other elements are not as evident because they are obscured by vegetation, covered by soil, or are in poor condition. Moreover, because of the relatively large scale of the site—814 acres—the relationship among individual site features is

not always clear or understood. In this regard, the *Analysis and Evaluation* section documents the patterns and relationships among individual features as key to understanding the historic character of the site and cultural landscape of Manzanar.

Finally, it is important to note that other efforts/reports have addressed the complex community associations and cultural values associated with the Manzanar War Relocation Center and the entire network of War Relocation Centers in the West. This analysis borrows from those reports and documents the landscape resources that remain as the physical expression of the people who lived at Manzanar.

Natural Systems and Features

When planning for the construction of the War Relocation Centers, the Army identified specific criteria for determining the optimal location for the camps. Key among these criteria was that the site was located in a remote area, isolated from the general population, and offered land for agricultural operations. The natural setting and resources along the base of the Sierra Nevada *bajada* fulfilled all of these criteria.

When the WRA undertook development of at Manzanar, it characterized the site as a "wasteland." A significant amount of clearing and leveling of the land was required, because the landscape was "covered with brush and badly hummocked with dunes caused by hard winds." Most of the initial development at the site involved the removal of the native vegetation. Desert scrub was cleared, barracks constructed and a perimeter fence constructed around the camp.

Adjacent to the camp, the shaded streams provided a cool respite from the hot summer sun and the confinement of the camp. Located outside the perimeter fence which enclosed the barracks, these lush willow-lined streams were important recreational areas used by internees (who received passes) and some camp staff for picnicking, wading and other associated recreation activities.

Water resources were a critical element of all historic development in the Owens Valley. The average annual precipitation in the vicinity of the camp was between four to six inches, so agricultural production relied on

irrigation from wells and Sierra Nevada mountain stream runoff to support crop production. The nature of the soils on the site required extensive irrigation and fertilization of the farm fields in order for the camp to have a viable agricultural program. The streams that flow near the site historically sustained settlements in the area, from the first ranches established in the 1860s, to the farming community of Manzanar in the early decades of the 20th century, to the War Relocation Center in the 1940s. In each of these eras, the mountain streams were diverted to irrigate farm fields and orchards, and underground wells and surface water flows provided dependable sources of drinking water.

During the internment period, the location of the farm fields was determined by the location of surface water streams; thus, the south fields were established between George's Creek and Bairs Creek, and the north fields were located adjacent to Shepherd Creek. These streams were a critical factor in the location of the camp because they allowed for the development of a complex and extensive gravity-fed irrigation system. Shepherd Creek and George's Creek are perennial streams located to the north and south respectively. Bairs Creek, which crossed east to west closer to the fenced enclosure on the south side, was only seasonal in nature. The camp's primary water supply was Shepherd Creek, where an irrigation system led from the intake to the reservoir northwest of the site, and from the reservoir to underground pipelines to the residential spaces in the camp. Water was delivered to the farm fields through a combination of pipelines and surface irrigation ditches.

At the base of the alluvial slopes where streams flow out of the Sierra Nevada and into the valley, the water table is near the surface, which has sustained both native and non-native vegetation introduced to the site during each of the historic periods. At Manzanar, the most densely forested areas include a combination on native and non-native trees, many of them surviving from earlier historic periods and are located in areas where the water table is within some eight feet of the surface. These orchard and cottonwood trees are in contrast to the desert scrub and willow-lined riparian corridors that characterize the valley.

Summary

Natural systems were historically important characteristics in the initial selection and development of the Manzanar War Relocation Camp. At the largest scale, the natural landforms defining the valley—the Sierra Nevada,

White, and Inyo Mountains—were the dominant structuring features that physically and perceptually contained the valley. They provide a strong visual context for the camp and any of the views and vistas from the camp.

The topography of the valley and the low-growing vegetation allowed for expansive views of the mountain ranges on either side of the camp. Outside the core of the camp, riparian corridors—such as Shepherd, Bairs and George's Creeks—provided water for the camp as well as cool sites for picnicking and other recreational activities during the hot summers. These water systems provided essential water for the operation of the camp, infrastructure, and agricultural activities. Riparian corridors remain relatively intact today and are important natural systems associated with the site.

Today, the native vegetation and wildlife that once surrounded the site, has reclaimed most of the landscape and developed portions of the camp, and is considered a non-contributing factor to the historic character of the cultural landscape.

Spatial Organization

Historic spatial organization and design of the Manzanar War Relocation Center (Manzanar) was determined by the Army and the War Relocation Authority. Although Manzanar was constructed before standardized plans were developed for relocation centers (June 8, 1942), the final layout of Manzanar generally reflects the spatial character of other relocation centers developed during the historic period. While some of the standard components varied among the 10 relocation camps, the general spatial organization was remarkably similar both at the large scale—as reflected in the site selection, and at the site specific scale—as reflected in the layout of the core area and the outlying agricultural fields.

Large-scale Spatial Organization

Located off of U.S. Highway 395, the 6,000 acres comprising the Manzanar War Relocation Center met all of the initial design criteria for site selection of the relocation centers, including a relatively isolated

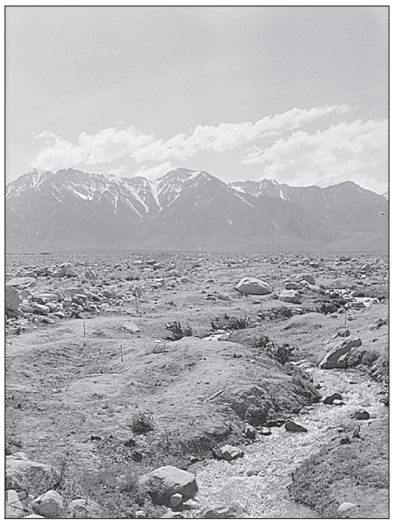


Figure 42. The gentle slope of the Sierra Nevada *bajada* provided the physical framework and environmental context for establishment of the Manzanar War Relocation Center. (Courtesy of the National Archives and Records Administration)

area for development, proximity to water and potential for infrastructure development, agricultural opportunity, and established access.

At the largest scale, spatial organization of both the core area and larger camp boundary was highly influenced by the natural topography and existing infrastructure and development remaining from the town of Manzanar. The initial layout of the core camp area following the axis along Highway 395 (earlier known as Independence Avenue) was logistically practical and emphasized the former circulation network from the town. Indeed, other roads from the town provided access during construction of the camp and later became part of the internal street grid. In addition, locating the camp toward the bottom of Sierra Nevada *bajada* provided a relatively level grade for construction, and allowed construction of a gravity-fed irrigation system for both the housing area, and the outlying agricultural fields. Ultimately, the development of the 550-acre core area in the central portion of the 6,000-acre camp boundary met all of the Army's needs, and created two spatially distinct areas. (Figure 42)

The Core Area

The core area of Manzanar including the complex of structures housing the internees and WRA staff, was constructed on 550 or about 11% of the property. Spatially, the core area was defined by the perimeter barbed wire fence with eight guard towers, and controlled access from U.S. Highway 395 in the southern end of the enclosed area.

Within the core area the camp was organized as a grid of 36 uniform blocks, with firebreaks and streets defining the spaces between. The streets defining the blocks strongly reinforced the grid and ran generally north-south and east-west. East-west streets were numbered between 1st Street at the entrance road, through 11th Street, along the north perimeter fence. Lettered streets began with A Street on the east, paralleling U.S. Highway 395, and extended to I Street along the western edge of the core area, behind the hospital.

Individual barracks blocks for the internees were also spatially uniform and patterned. Variations occurred in the organization and character of "blocks" designated for non-residential use such as the motor pool area, the administration block, the hospital, warehouses, etc. Spatially, however, these blocks remained contained within the general configuration of the grid, and land use zones within the core.

Each residential block consisted of 14 barracks buildings, a mess hall, latrines for men and women, a laundry room, an ironing room, and recreation hall. Spaces between buildings were also uniform and standardized throughout.

Firebreaks in the core area followed the street grid generally running north-south and east-west. Initially designated open space for fire safety, over time these areas became the focus for recreational use by the internees. Gardens, baseball fields, basketball, tennis, and volleyball courts were established throughout these relatively large open spaces, somewhat extending the "living" area for the internees.

On a smaller scale, many individual internees refined and articulated the spaces immediately adjacent to the barracks. This is important in terms of spatial organization as it began to create a demarcation between public and private spaces for individual families. While families had simple partitions within the barracks, the uniformity of the barracks blocks offered virtually no gradation from public space to private space in the exterior spaces. In the overall organization of spaces related to the internees, the firebreaks were used for public and community activity, the spaces around several barracks buildings became a transition zone to more private space, and then the stoop or entry into the barracks itself, became the demarcation to private space.

Also within the 550-acre core area, the primary administration zone in the southeast corner of the camp, and the warehouses along the southern end, created additional spatial transitions to other areas. For example, the administration area (including the military police area and the entry) was sited to control access to the camp for visitors and the transport of goods. In a similar way, the warehouses and associated industries along the southern end of the core area, transitioned into the agricultural operations (including the Chicken ranch and Hog Ranch) located in fields to the south. The cemetery located at the western edge of the core area, also functioned as a "threshold" or transition point to the vast desert extending west to the base of the Sierra.[1]

Agricultural Areas

Large agricultural fields north and south of the core area represent the outer limits of active development associated with Manzanar. The north

field extended approximately one mile from the perimeter fence and along Highway 395. The south field was larger, with both the hog ranch and the chicken ranch in the western portion of the field. All of the agricultural operations were fed by extensive irrigation ditches from Shepherd, George's, and Bairs creeks.

Summary

Historically, spatial organization was defined first by the natural systems that influenced site selection and initial development, and secondly, by the standardization of government plans for construction of relocation centers. Three aspects of spatial organization contributed to the historic character of the cultural landscape:

- The establishment and extent of the fenced core area in relation to the outlying agricultural operations.
- The street grid and firebreaks that reinforce the layout and organization of the barracks blocks.
- The demarcations created by internees within the blocks, creating transitions between public/community spaces, and private spaces.

Cultural Traditions

Cultural traditions are expressions of ethnicity in the physical landscape. At Manzanar, these expressions were far reaching in terms of traditional use, adaptation, and development of the landscape, reflecting the distinct cultural influence of a diverse community of Japanese Americans interned for over three years in a remote, controlled, and desolate landscape. While the WRA set the parameters for design and development of the camp, over the years of confinement the internees adapted structures and spaces to serve both personal and community-oriented cultural biases, needs, and traditional use. These adaptations occurred at several levels and influenced land use patterns, stylistic conventions to applied building forms, the use of materials, stylistic preferences in the design of gardens, and selection of crops for dietary preferences. For example, internees grew crops including *daikon* (large white radish), *gobo* (burdock root), *nappa* (cabbage), *kabu* (white turnip), *bannonegi* (green onions), *uri* (Japanese melon), *kabocha*

(Japanese pumpkin), *akakabu* (radish), *takana* (mustard greens), *goma* (sesame), *nasubi* (Japanese eggplant), bok choy, *kyuri* (Japanese cucumber) and Japanese onions—all considered traditional foods.

One of the most prevalent cultural traditions expressed at Manzanar was manifest in the activities of making and maintaining gardens in all forms and styles. Garden building at Manzanar was dependent on three interrelated factors: the professional and cultural backgrounds of the internees; availability and type of materials; and varying degrees of support and regulation by the WRA.

Pre-immigrant cultural traditions and pre-war occupations contributed to Japanese American land-related values and technical knowledge in plant propagation, agriculture, and aesthetics. The majority of Japanese immigrants came to America from rural areas, with extensive knowledge of agricultural practices, plant propagation, and in some cases, years of study or apprenticeship in aesthetics. Once in the United States, the *Issei* adapted their skills to professions in agriculture, gardening, and nursery businesses and made a significant contribution to the development of farmlands along the West Coast. In urban areas, landscape maintenance and nursery businesses were common occupations for *Issei* and *Nisei*, and increasingly, Japanese Americans dominated these land-based professions on the West Coast of the United States.

Most of the *Nikkei* (people with Japanese ancestry) who immigrated to the United States before World War II came between the 1880s and 1924. The first generation Japanese immigrants, *Issei*, were culturally Japanese and typically adapted to life in America while maintaining strong Japanese cultural characteristics. Their American-born descendants, *Nisei*, often maintained many of their parents' Japanese traditions, yet many preferred and adopted American lifestyles. The *Kibei* were born in the United States and educated in Japan; generally, they were considered more ethnically Japanese than the *Nisei*. At Manzanar, *Nisei* comprised the largest group, followed by *Issei* and then *Kibei*. Depending on each internee's background, a variety of Japanese American traditions would become impressed on Manzanar's cultural landscape.

Indeed, by the 1920s, gardening and landscape maintenance had become an "ethnic niche" for Japanese Americans in the Los Angeles area. By 1934, almost one-third of the labor force working in garden-related professions was Japanese, and by WW II, Japanese Americans were considered an "ethnic monopoly" in the profession.[2] High-end residential neighborhoods, such as Bel Air and Beverly Hills, combined with the overall suburban morphology in Los Angeles, created green spaces in need of yard care. West Los Angeles, Santa Monica, and the San Fernando Valley were areas with thriving Japanese American populations; they were also the locations of Japanese-run nurseries. Kuichiro Nishi, who designed Merritt Park at Manzanar, owned a large wholesale nursery specializing in roses in the San Fernando Valley.[3] These demographics would change forever in 1942.

With the exclusion of all Japanese Americans from the West Coast in 1942, thousands of landscape professionals were sent to the relocation centers. The majority of Japanese Americans living in Los Angeles at the time were sent to Manzanar, and as a result, Manzanar had a large concentration of

landscape professionals, landscape maintenance laborers, and highly skilled garden designers, builders, and businessmen. The gardens and landscape features at Manzanar became poignant examples and expressions of an era in Japanese American history when landscape gardening was at its apex as a profession in the United States.

The WRA administration supported several civic landscape and garden projects, including the development of Merritt Park, design and construction of the hospital gardens, establishment of the traffic circle in the administration area, and the stone ovens in North Park. The WRA also paid a select group of Japanese American landscape professionals to develop parks, gardens, orchards, and landscape structures throughout camp. Among the professionals employed were nursery owners Kuichiro Nishi and Tak Muto, landscape gardeners Buneyomen Wada and Nitaro Ogami, and stonemason Ryozo Kado.

Landscape Design

Japanese American landscape expressions were most evident within the housing areas, firebreaks, and outlying developed areas of the camp. The highest concentrations of these features existed in the housing areas, where the internees were allowed the greatest freedom to modify and personalize the landscape. Patches of available space were appropriated wherever possible: in front of apartments, between barracks, and adjacent to the mess halls. In the firebreaks, permission from the WRA was required prior to any modifications—for safety reasons and because it was considered communal space. Consequently, the activities in the firebreaks—such as parks and Victory gardens, were community-based and benefited the overall camp (See *Analysis and Evaluation: Vegetation* for a description of Victory gardens).

Japanese-style gardens were developed through an innovative fusion of traditional Japanese aesthetics, American sensibility, and creativity.[4] Gardeners at Manzanar used designs and landscape elements with Japanese antecedents, and then re-worked them using available materials to fit the Manzanar landscape. The result was a unique collection of gardens that represented a wide range of designs and styles.

Overview of the Historical and Cultural Context for Japanese Garden Design

The Japanese-style gardens at Manzanar embodied design aesthetics that were developed through centuries of practice and refinement in Japan. In the Shinto religion, places and natural features, such as time-weathered boulders or ancient trees, embody the spiritual power of ancestors. The religious beliefs developed an underlying cultural respect for nature and the constructed landscape.[5] Additionally, garden traditions were imported from China and Korea beginning in the 6th century; these traditions were based on stylized construction techniques and ornate aesthetics. The result was a fusion of native Japanese aesthetics, tending toward simplicity and naturalness, with highly stylized and regimented Chinese design.[6] In addition to fulfilling aesthetic needs, the traditional acts of designing, creating, and tending a garden were also spiritual practices.

The essential component of Japanese garden design is based on creating an ambient and scenic mood through asymmetrical balance.[7] For example, the grouping of horizontal (Earth), diagonal (Man), and vertical (Heaven) elements which was typically reflected in the selection and arrangement of rocks and the training of trees based on horizontal, diagonal, and vertical lines can be seen in selected sites and gardens.[8] (Figure 43)

In all cases, the selection of materials and the mood of a garden were meant to harmonize with the social and physical setting. For example, with large numbers of people in a concentrated area, some of the public gardens were relatively stylized using concrete and rock materials. These gardens were considered reminiscent of urban designed landscapes where bridges, paved walkways, and ponds were designed to control human movement through the gardens. The constructed water features, hardscape, and structures were the focal points in these gardens. In contrast, rough-hewn structures and bridges, large ponds, and open space joined to create a more naturalistic and tranquil feeling in the parks and picnic areas. These design concepts underlay the overall design and configuration of rocks, water, and vegetation in the Japanese-style gardens at Manzanar.

In Japan, garden design was considered an art form learned over years of apprenticeship, and experience. Gardens were created for discerning and sophisticated audiences. The garden designer was required to be highly educated in garden aesthetics as well as possess a detailed knowledge of materials and maintenance.



Figure 43. This locust tree in Block 7 was pruned into a traditional Japanese form with a horizontal trunk and three vertical branches. (NPS 2003)

In the United States, however, designing or maintaining a garden only required the patron's satisfaction and garden designers took liberty in being innovative and individualistic. In addition, the religious associations with landscape and gardening were diminished. In this way, Japanese landscape design was Americanized and the profession and products reflected this shift from Japan to the United States. The ornamental gardens at Manzanar are evocative of this liberalizing of Japanese traditions into Japanese

American styles but embody a number of Japanese stylistic preferences and design features that are directly related to traditional Japanese gardens.[9]

Landscape Materials

Landscape gardeners from Los Angeles were accustomed to buying their plants, stones, and landscape materials. In contrast, Manzanar was surrounded by natural materials that could be collected, brought to camp, and arranged into gardens. Occasionally, internees were allowed to travel outside the camp to search for landscape materials that could be used in public and private gardens. (At first, these excursions were accompanied by an armed guard.) Internees used the materials they collected to make a wide range of landscape improvements broadly expressive of Japanese American aesthetics.

Manzanar's gardens were built using an eclectic mix of materials. Stones, vegetation, and a variety of found objects from the Owens Valley vicinity were incorporated, including relics of past occupations of the area. Other important sources of garden materials included the Sears Roebuck Catalog, the Manzanar nursery, and personal nurseries left behind in the San Fernando Valley and Los Angeles area. Prized plants and seeds were often saved and transported to camp for use in the new living environment.

Cement, a critical building material that was in scarce supply during the war, was restricted to three sacks per block per month for landscaping purposes.[10] Despite this attempt to control the cement distribution, sacks often disappeared and found their way into garden projects throughout camp. Cement was used to create such features as ponds, watercourses, walkways, garden bridges, and other decorative garden elements.

Essential Elements: Stone, Plants, and Water

Stone

At Manzanar, stone was commonly used to serve aesthetic and functional purposes in the construction of gardens, structures and architectural features. The careful placement of each piece defined private and public spaces, delineated personal gardens, edged walkways, and simulated stream beds. Stone was also mortared or dry-laid to build walls, screening undesirable views.

Rocks used as garden elements were selected based on their formal qualities to depict a particular style or evoke a desired response, depending on the time period, location, and inclination of the garden designer. Depending on their form and how they were used, rocks could evoke certain responses and were bestowed with symbolic significance.

Two distinctive types of stone were available to the internees: worn granite coming from the Sierra Nevada west of the site, and jagged, volcanic rock from the Inyo Mountains, which forms the eastern horizon. In some cases, garden creators traveled as far as Yosemite to locate unique rocks for the high style Manzanar gardens.

Plants

Japanese American cultural traditions were expressed in the ornamental plantings and plant materials in the housing areas as well as the Victory gardens and agricultural projects. The method with which plants were grown, arranged, maintained, and used was part of the cultural tradition of the internees and their experience at the camp.

In traditional Japanese garden design, the use of trees was second only to stone as the most important element of a garden. Trees provided structure and living material. Often individual trees purposely and meticulously pruned over many years to appear aged, with curving trunks and unusual branching. Additional vegetation, such as shrubs and perennials, provided texture, color, and diversity. At Manzanar, plant palettes were developed based on available materials, individual internee aesthetic preferences, and adaptability of the plant material to the arid desert environment.

Garden plants came from a number of sources, including seeds and plants that were brought to the camp by the internees. Remnant vegetation, principally locust and cottonwood trees from the town of Manzanar, were easily adapted and incorporated in the new designs. Plants that came from internee-owned nurseries in Los Angeles were also prevalent in some of the Manzanar gardens. In particular, cherry trees and wisteria were provided in large numbers by F. M. Uyematsu of Star Nurseries in Montebello, California.

Water

The pond gardens at Manzanar loosely follow traditional Japanese design guidelines for the layout and aesthetic qualities of water. In traditional Japanese design, gardens were modeled after Japanese naturalistic

landscapes. As an island nation with generous amounts of precipitation and plentiful waterways, water played an essential role in traditional Japanese gardens. The majority of the pond gardens were laid out on a north to south axis, with water originating in the north, falling into a stream path, and then finally dropping into a pond in the southern portion of the garden. This style was developed over centuries, with origins in the *Sakuteiki*, the oldest garden design manual dating to the Heian Period (AD 794-1185). (Figure 44)

Manzanar Gardens

There were a variety of gardens and expressions of garden making by the internees at Manzanar, leaving a rich and culturally meaningful landscape. The following is a brief description of these gardens and features, including an inventory of associated structures and physical remains from these resources.



Figure 44. Oriented on a north-south axis with mounds and falling water, the Block 12 garden followed Japanese traditions dating to the Heian Period (AD 794-1185). (Courtesy UCLA Special Collections)

- Parks
- Block and Mess Hall Gardens
- Residential Barracks Gardens
- Other Landscape Sites and Features

Parks

Manzanar's parks were developed between 1942 and 1943, and were designed primarily for community recreation. Such recreational sites were usually located in the firebreaks and along the boundaries of the camp. The WRA supported these projects both financially and materially, allowing internees to use government vehicles to transport boulders and vegetation from the surrounding area. Internees with landscape and horticultural backgrounds were selected to design, develop and maintain these areas for the duration of the internment period. Manzanar was home to two civic parks—Merritt Park and Cherry Park.



Figure 45. The landscape crew for Merritt Park included a trained horticulturist, nursery owner, and experienced garden designers. (Courtesy of Toyo Miyatake Studio)

Merritt Park

Merritt Park was located in the western firebreak, between Blocks 33 and 34, and covered approximately three acres of land. It was a pleasure garden designed in the Japanese tradition with extensive water features, ornamental plantings, and structures. The garden was first named Rose Park, after the rose bushes that were transplanted from Kuichiro Nishi's rose business in the San Fernando Valley. It was renamed Pleasure Park, and finally, Merritt Park, in honor of Manzanar's WRA Project Director, Ralph P. Merritt.

The design of Merritt Park represented an adaptation of a Japanese-style stroll garden. Kuichiro Nishi and Tak Muto directed a crew of four gardeners in the design and construction of the park. As discussed earlier, Nishi owned a large-scale nursery business and was an expert nurseryman and landscape designer before internment. Specializing in rose propagation and cross breeding, he wholesaled rose bushes that were sold throughout the United States. Tak Muto was a university-educated floriculturist and expert in crossbreeding new varieties and seedlings. When the park project was initiated, Nishi returned to the San Fernando Valley to retrieve dozens of varieties of rose bushes for the park. (Figure 45)

The Merritt Park work group was allowed to collect rocks and plants in the surrounding area. Rocks and boulders with unique colors, shapes, and textures were carefully selected based on their aesthetic qualities and were



Figure 46. Monumental upright boulders, or stele, announced the southern entrance to Merritt Park. The instription welcomed visitors to "enjoy this quiet, peaceful place." Mr. Kuichiro Nishi is on the far left. (Courtesy of Toyo Miyatake Studio)

placed throughout the park. Two memorial steles were placed at the corners and functioned as entrance markers into the park. (A stele is an upright stone or slab with an inscribed or sculptured surface, used as a monument or as a commemorative tablet in the face of a building.) The massive stones were placed in an upright position and were similar to steles found in gardens in Japan. One of the steles was painted with Japanese characters and read "To the memory of fellow Japanese Immigrants, who, although ushered to 'this place with the breaking of friendly relations between the two countries have come to enjoy this quiet, peaceful place." The park was dedicated "for the enjoyment of the people and to the memory of the time of our residence here."[11] (Figure 46)

The park contained meandering pathways, elevated hills, lakes, islands, waterfalls, bridges, a tea house, benches, and numerous rock arrangements and small-scale features. Natural materials were used throughout and there is very little evidence of cement except in the construction of the water features. Near one of the footbridges in the park, a large waterfall spilled over rocks and fell into a meandering concrete-lined pond. An immense boulder in the shape of a turtle was placed at the top of the waterfall; the water cascaded over the back of the turtle and its head divided the stream into two waterfalls. In Japanese tradition, the turtle is a symbol of endurance,



Figure 47. Rocks were carefully selected and placed in the pond garden at Merrit Park to represent traditional Japanese symbols, such as the turtle, seen below the bridge in this photo. (Courtesy of Toyo Miyatake Studio)

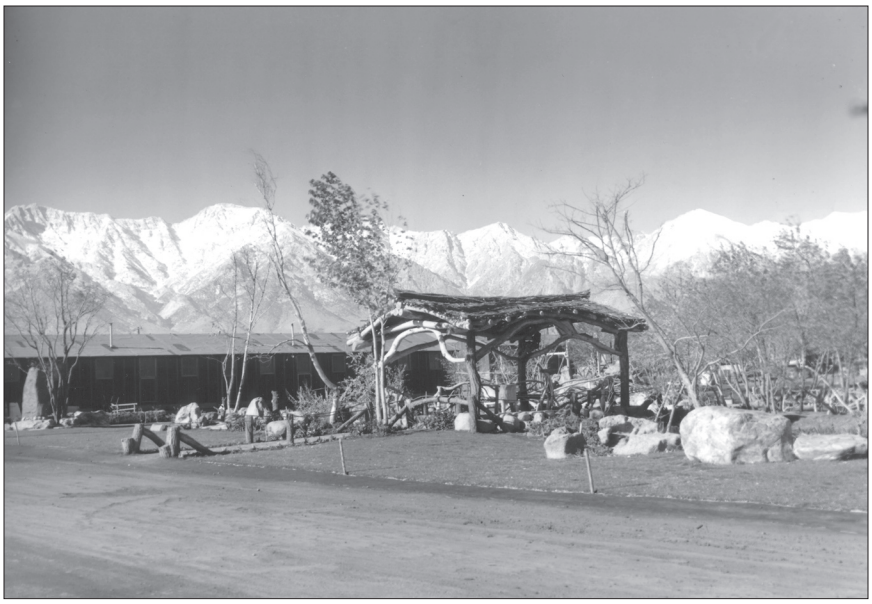


Figure 48. The tea house in Merritt Park was constructed of tree limbs and provided a focal point in the park. (Courtesy of Toyo Miyatake Studio)

long life, and reflection.[12] Beneath a rough hewn wooden bridge, another turtle-shaped stone was placed to appear as if it was swimming in the pond. (Figure 47)

The tea house located in Merritt Park was reminiscent of an important element in traditional Japanese gardens. Tea ceremony was a highly ritualized event that often took place in a secluded or unique location within a garden context. There is no written or oral record of tea ceremonies being performed in the tea house at Merritt Park. Rather, the tea house was an attractive feature at Manzanar and appreciated for its aesthetic value. The structure was built using locally gathered peeled and unpeeled logs to create a highly stylized rustic structure. Tree stumps connected by ropes defined the edge of the tea house and paths. The roof of the tea house appears to have been materials that were consistently used in structural elements located throughout the park: a combination of limbs, branches and twigs. (Figure 48)

Merritt Park appears to have contained the widest diversity of plant material in Manzanar, and it was continually maintained and improved throughout the three years of internment. The plantings were a diverse collection ranging from Japanese pine trees, to rose bushes transported from the San Fernando Valley, to locally grown shrubs and flowers from the Manzanar nursery, and to native plants from the Sierras and Inyo County. As seen in



Figure 49. This stele remains from 1942 and is located in the southwest corner of Merritt Park. (NPS 2002)

historic photos, black locust trees, pines, lavender, and water lilies were among the numerous plant species in the park.[13] Many of the larger trees and shrubs were pruned and trained into Japanese stylistic forms, in which diagonal and horizontal angles complemented vertical ones.

When completed in the autumn of 1942, the park was an innovative fusion of Japanese garden traditions with American aesthetics. It quickly became a destination point and a haven of beauty at Manzanar. It offered internees a scenic and photogenic place to mark the passage of major life events, such as birthdays, weddings, and farewells to soldiers. Teenagers, young soldiers, groups of internees, and even WRA staff were photographed on the bridges, boulders, and in the tea house at Merritt Park. It was one of the few places in camp where one could be photographed in a beautiful setting without a backdrop of barracks buildings. Jeanne Wakatsuki Houston remembered Merritt Park as a place of solace within the camp confines. She wrote, "You could face away from the barracks, look past a tiny rapids toward the darkening mountains, and for a while not be a prisoner at all. You could hang suspended in some odd, almost lovely land you could not escape from yet almost didn't want to leave."[14]

In 1943, noted photographer Ansel Adams photographed Manzanar. His photographs included extensive documentation of Merritt Park. Upon their

publication, Merritt Park became a widely-recognized image of landscape gardening at Japanese American relocation centers. After the internment period, Merritt Park was abandoned. The tea house was torn down, and the water supply was cut off. The area was repeatedly flooded by snowmelt from the Sierras, grazing cattle and elk trampled the area over many years, and native and invasive plants have taken over the area. The most discernible remnants of Merritt Park include two steles at the southwest and southeast corners of the park, boulders and rocks, a streambed, the foundation of the teahouse, and remnant trees, primarily locust. (Figure 49)

A detailed archeological survey of Merritt Park has yet to be completed.

Cherry Park

Cherry Park was a landscaped area within the Children's Village, clustered in the firebreak between Blocks 23 and 29. A rustic wood fence constructed of posts and branches used as cross members encircled the Children's Village. Cherry Park was located in the southern end of this enclosure. (Figure 50)

Like Merritt Park, Cherry Park was a large designed garden with extensive water features, ornamental plantings, structures, and approximately a



Figure 50. Garden at the Children's Village included fences and ornamental plantings. Cherry Park was located in the southern portion of the cluster. (Courtesy of Toyo Miyatake Studio)

half-acre of lawn. The garden combined elements of flowing water, three ponds, and ornamental vegetation. The park contained hundreds of cherry and wisteria trees donated by F. M. Uyematsu who was given special permission to retrieve the plants from his pre-war business, Star Nurseries, in Montebello, California. Construction of the park was supervised by a well-known landscape gardener, William Katsuki.[15]

A trellis was constructed to support the growth of wisteria over the watercourses. The combination of wisteria and water is a popular design theme in Japanese gardens. In the 15th century Japanese garden manuscript, *Illustrations*, the author writes, "It is fascinating when in bloom, if planted so that it [wisteria] extends out over the water in a marsh-pond landscape."[16]

Lawns covered about 21,000 square feet of the Children's Village compound and the camp newspaper noted that it was "a beauty spot of the center, and one of the most restful to the desert-weary eye." Recreational fields included a baseball diamond that extended west of the buildings to the street, and a court for basketball and volleyball was built at the east end of the lawn area.[17] Flowering vines were planted to grow over the fence.

Today, all that remains of Cherry Park are the depressions from the earthen ponds. The setting has changed dramatically, and the trellis along with all of the cherry trees and wisteria plants have long since disappeared. A detailed archeological survey of Cherry Park and the Children's Village has yet to be completed.

Hospital Garden

The hospital gardens at Manzanar served multiple functions; they were used by both the hospital staff and patients and provided a restful place to recuperate and relax.

The hospital complex at Manzanar comprised seven ward buildings, administrative spaces, and utility buildings. This complex of buildings was sited in the far northwest corner of the camp, on a slight rise requiring minor terracing toward the south and east. Many of the areas immediately around the hospital buildings were planted with grass. Gardens beds were established around these grass areas to address grade changes and provide shade, visual interest, and beauty.

Under the direction of the hospital grounds foreman, Nitaro Ogami, crews planted lawn areas on the front and sides of the administration building as

well as in the areas surrounding the doctors' and nurses' quarters. A variety of trees such as locust, birch, poplar, pine, and pear trees were transplanted to the hospital grounds from other locations in the camp, including the fruit orchards that remained from the town of Manzanar. Ryozo Kado, Manzanar's resident master stonemason, worked with Buneyoman Wada of the Public Works Department to design and build rock retaining walls, walkways, stone planters, a bench, plantings, and an elaborate pond garden.[18] In addition, a manhole in the hospital area was covered with cement and designed into a large tree stump in the style favored by stonemason Kado. The street was lined with painted white rock, similar to the rock-lined streets and paths in the administrative complex.

By far the most prominent garden area at the hospital was the pond garden, which contained several elements expressive of traditional Japanese-style design. Similar to other gardens at Manzanar, the hospital pond garden was designed with a traditional Japanese north-south axis and three levels. Additional Japanese garden principles included using rock work in the ponds to create diversity and hiding places for koi, as well as intricately detailed curving pathways and rustic footbridges. The pond was constructed in a traditional gourd shape; however the flat bottom was uncharacteristic of traditional ponds. The ancient Japanese technique of planting trees close together to create a sense of depth was employed along the stream's pathway. [19] For the patients, staff, and visitors, the hospital gardens provided a small refuge; its garden qualities provided comfort to the senses and its Japanese styling imparted cultural familiarity and an expression of pride.

The pond garden at the hospital was excavated and mapped by the Western Archeological and Conservation Center (WACC) in 1996. (Figure 51) The concrete-lined pond, configuration of boulders, pathways, and locust trees are relatively intact.

Block and Mess Hall Gardens

The arrangement of barracks within blocks resulted in the organization of residents into physical and social communities within Manzanar. Block residents shared latrines, laundry, recreation, and dining facilities. Oftentimes, the residents of a particular block originated in the same pre-war communities. Each block had a Block Manager who was a liaison between the block residents and the Manzanar administration, and was an advocate for the interests of the block residents. Gardens developed out of this social and spatial context; residents worked in groups to develop

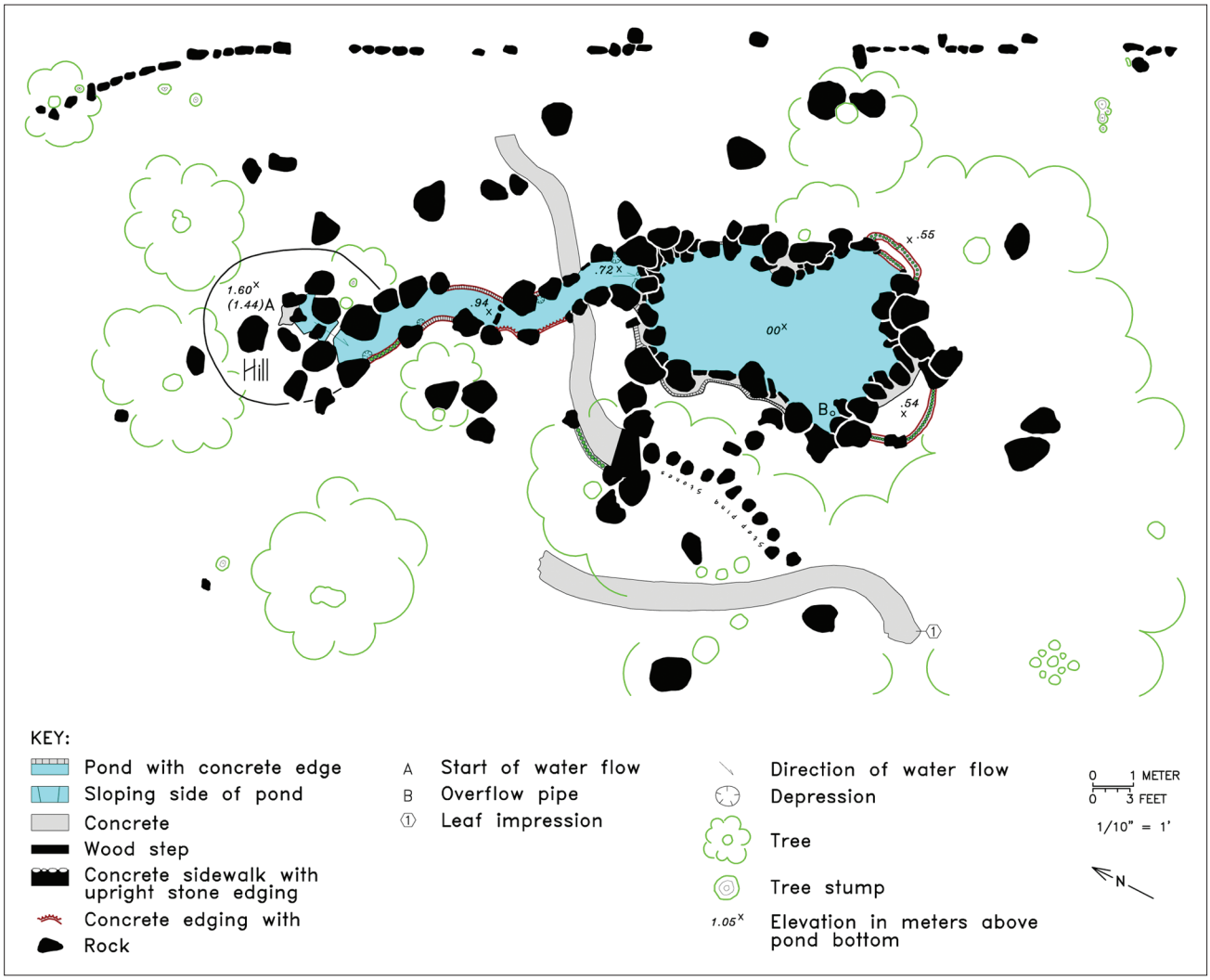


Figure 51. Archeological base map, Hospital Garden (Adapted from *Three Farewells to Manzanar*, WACC 1996. Drawing revised and updated by R. Beckwith, 1999)

gardens for the enjoyment and use of their neighbors.

Residents waited in line for meals three times daily. These repetitive visits bred familiarity, attachment, and a sense of place and community in an overall unsettling experience. Mess hall gardens provided relief from one of the more monotonous aspects of camp life and represented a unique adaptation of the Japanese-style garden to the internment experience. A certain competitiveness existed between designers of mess hall gardens, a competition that was nurtured by the camp newspaper which, in a reader poll, asked residents to vote for the most beautiful garden at Manzanar. These gardens were similar in size and location, as the standardized block layout provided limited space between the mess hall and adjacent barracks.

Five of the mess hall gardens (Blocks 6, 9, 12, 22, and 34) were designed using traditions rooted in ancient Japanese garden design. These gardens exhibited characteristics of the Momoyama Style, dating from the 16th century. Gardens designed in the Momoyama Style were organized on a north to south axis with three distinct levels; the arrangement of elements was based upon Japanese interpretations of Chinese cosmology related to energy, direction, color, and numbers.[20] The northern level was defined by a *tsukiyama* (artificial hill created with earth excavated from the pond) and water source, symbolizing a mountain and the headwaters of a stream.[21] The middle level was characteristic of a stream or river's meandering path. Finally, the water fell into an elongated pond, symbolic of a lake or ocean and traditionally in the shape of a cloud or gourd.[22]

Remains of rock patterns used in these gardens are evident at the mess halls for Blocks 4, 5, 11, 23, 35, and 36. According to the Block Managers' Daily Reports and the camp newspaper, the *Manzanar Free Press,* mess hall gardens at Block 4 and 24 also contained ponds. These gardens are presently covered by soil and would require archeological investigations to determine the configuration and design.[23]

The layout of the buildings within the housing blocks created an interior open space between the rows of barracks. In this space, block community life manifested itself through the daily routines of work and play. Activities such as washing, drying and ironing clothes, playing basketball or volleyball, and tending gardens were common. In some cases, elaborately designed or Victory gardens were built in these spaces, and in other cases the area was left open and planted with grass. In this regard, the organization and use of

these central areas took many forms and reflected the variety of interests and needs of the block residents.

Structural remnants of block and mess hall gardens remain at Block 10 between buildings 12 and 13 and at Block 14 west of the ironing room. Historical records indicate there was also a large garden complex in Block 16, although archeological excavations have not been undertaken to document this garden. Historic and archeological information related to specific block gardens follows.

Mess Hall Garden Inventory

Block 6 Mess Hall Garden

The Block 6 garden was featured in a short article in the *Manzanar Free Press*, calling it a "Unique Trout's Shangri-La."[24] The project was directed by Ryozo Kado with trees and plants donated by Miyoji Uyematsu, Munejiro Matsuyama and Moiichiro Tachibana. The garden contained mounds, streams, and ponds and were designed in the Momoyama style.

This garden has not been excavated.

Block 9 Mess Hall Garden

The Block 9 mess hall garden, another garden designed in the Momoyama style, contained a mound, stream, pond, and tinted concrete detailing.

This garden has not been excavated.

Block 12 Mess Hall Garden

The Block 12 garden contained a large concrete-lined pond, a stream with waterfalls, signature crane and turtle rock islands, a sidewalk, and rock alignments in the Momoyama style. Historic photos show the boulder-lined stream flowing out of a large earthen mound, covered primarily in grass, with a few locust trees for shade. This stream flowed around an island into the large pond.

The Japanese design elements of the Block 12 garden were analyzed in detail by Anna Noah in 1999.[25] Noah describes the northeastern entranceway as flanked by two vertical stones, which are believed to deter evil and typically

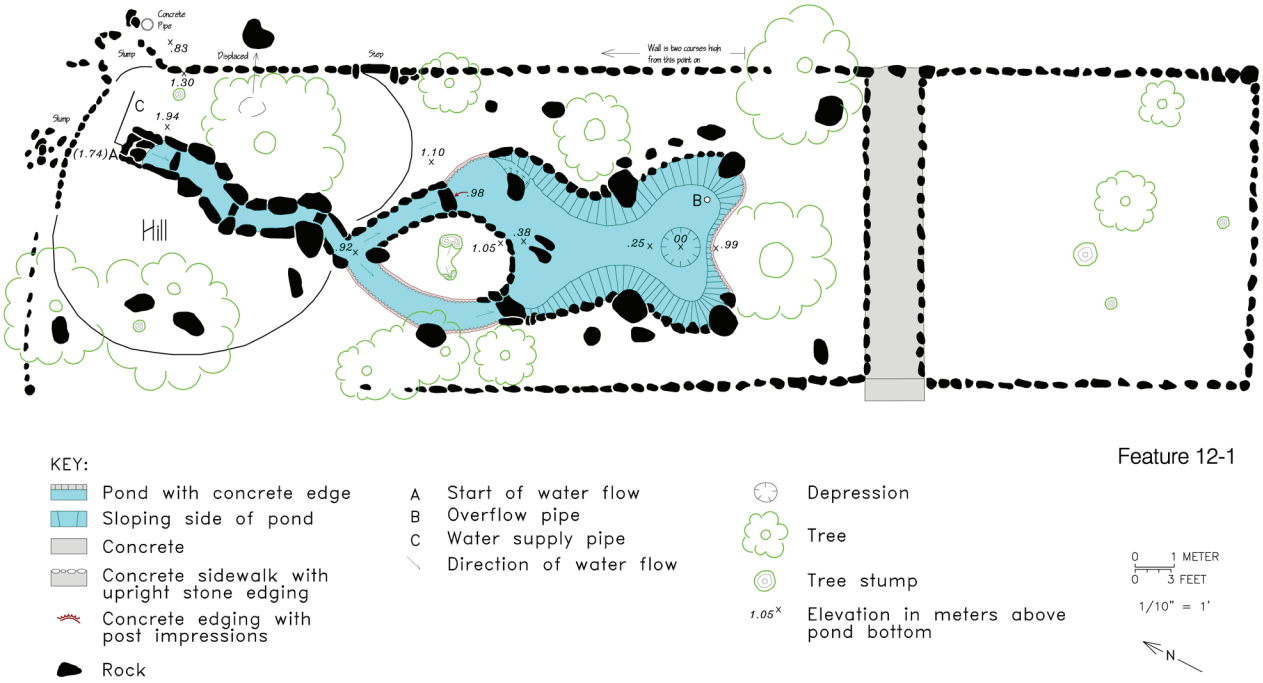


Figure 52. Archeological base map, Block 12 Garden. (Adapted from *Three Farewells to Manzanar*, WACC 1996. Drawing revised and updated by R. Beckwith, 1999)

guard the entrance to Buddhist temples. The garden is characterized by the symbolic *tsuru-kame* (crane and tortoise) rocks rising from the ponds surface, *tsuru-kame* represent long life.[26] *Tsuru-kame* are common symbols in traditional Japanese gardens. The shape of the pond is characteristic of a traditional Japanese style defined as a cloud shape.[27]

The Block 12 garden was mapped in 1995 and retains a sense of the original design, materials, workmanship and feeling of the original gardens. (Figure 52)

Block 22 Mess Hall Garden, Otaba no Ike

Kitchen worker and labor organizer Harry Ueno first conceived the idea for the mess hall garden for Block 22. Ueno invited Akira Nishi, landscape gardener and brother of Kuichiro Nishi, to draw up plans for a Japanese-style garden. Ueno collaborated with kitchen workers and men in the block to obtain the materials and to construct and maintain the garden and pond (*Ike*).[28] Stylistically and materially, the garden was an innovative fusion of ancient Japan, the frontier west, pre-war Los Angeles, and the Manzanar environment.

The Block 22 garden had two nicknames. The first name, *Otaba no Ike,* derives from *O to wa no Ike*, the source of pure and sacred water that flows to the Kiyomizu Buddhist temple in Kyoto, Japan.[29] The second name, "Three Sack Pond," was based upon the Manzanar administration's rule that landscape projects were allotted only three sacks of cement. Ironically, the creators of "Three Sack Pond" successfully erased and forged paperwork, returning 8 times, collecting 3 sacks each time, to acquire 24 sacks of cement for their mess hall garden.[30] (Figure 53)

The garden was composed of various objects and plant materials from the Owens Valley. The group collected carp and trout in garbage cans for the pool, chicken wire for reinforcing concrete, and rocks from the mountains for creating structure within the garden. The dates of completion—"AUG. 9, 1942" and "8-7 1942", are inscribed in the cement-lined pond. Ornamentation included an enormous cottonwood stump, a wagon wheel, and old barrels. Water in the garden was conveyed through a "wishing well" constructed by George S. Takemura, who had been called a "landscape artist" in Los Angeles before entering camp. Wishing wells were popular picturesque garden elements in the first Japanese-style gardens in North America in the 19th century, and their existence today is extremely rare.[31]



Figure 53. The Block 22 mess hall garden, *Otaba No Ike*, obtained its name and stylistic inspiration from *O to wa no Ike*, the sacred source of water that flows to the Kiyomizo Buddhist temple in Kyoto Japan. (Courtesy UCLA Special Collections)

The wishing wells at Manzanar illustrate the continuity of 19th century Japanese-style garden practices into mid-20th century camps. A concrete bridge crossed the pond, a lantern was positioned on the island, and sitting rocks were placed throughout.

In the autumn of 1942, a "Best Garden Contest" was initiated by the *Manzanar Free Press*. This instigated competition between blocks to create sophisticated and ingenious designs. Block 22 garden, *Otaba no Ike,* won first prize, followed by Block 34, *San-shi En*.[32]

When the Manzanar Riot broke out on December 6, 1942, Block 22 was its organizational center.[33] The garden was located at the entrance to the Block 22 mess hall and was the site of a meeting to protest the jailing of an internee.[34] The Block 22 Mess Hall garden is unique among the Manzanar gardens because of its social connection to the Manzanar riots and political conditions within the camp. The wishing well, island lantern, and wagon wheel were removed sometime after the closure of the camp in 1945 and the beginning of the archeological excavation in 1993.[35] Since the historic period, black locust trees planted along the garden's perimeter have matured, creating an isolated and shaded area. The concrete pond, original location of rocks and boulders, and much of the workmanship on the

pond remain from the historic period. Because of its historic significance and intact features—the cement ponds, configuration of boulders, stream path, sidewalks, and trees remain—the Block 22 Mess Hall garden has a high interpretive value. (Figure 54)

Block 34 Mess Hall Garden, San-shi-en

Block 34 housed internees working in the Manzanar hospital and was located adjacent to the hospital complex. The garden, begun on September 23, 1942, was constructed under the supervision of Mr. Kubota, Mr. Kayahara, and Mr. Murakomi.

San-shi-en (or "3-4 garden") was designed in the Momoyama style and in several ways, exhibited the strictest translation of traditional Japanese garden design. Constructed with jagged stones collected from the Inyo Mountains, the red-hued stones were arranged to imitate the Mountains, and became smoother and horizontal as water descended to the pond. This technique, called "the principle of geologic zones," is characterized by jagged mountain rocks placed near the beginning or highest point in the garden, followed by eroded river stones, and finally, smooth ocean cobbles near the bottom. Individual rocks mirror this effect and begin in vertical positions and slowly transition to horizontal orientation along the edge of the pond.[36] The large concrete-lined pond was built in a traditional Japanese gourd shape, and the base formed a traditional mortar elevation. Stones symbolic of the *tsuru-kame* (crane and tortoise) rose from the surface of the pond. The garden contained stepping stones, a stone bridge across the stream, and areas for water plants.

In the 1990s, some trees from this garden were cut, apparently for firewood. In 1999, the Block 34 Mess Hall garden was excavated and mapped by WACC. The cement pond, configuration of boulders, stream path, sidewalk, and a segment of the garden's perimeter fence remain and are evident today. (Figure 55)

Residential Barracks Gardens

Small personal gardens also developed in spaces around the barracks as internees began to personalize the spaces adjacent to family apartments. The residential barracks gardens were usually small rectangular areas located near the apartment stoop, between barracks buildings, or at the

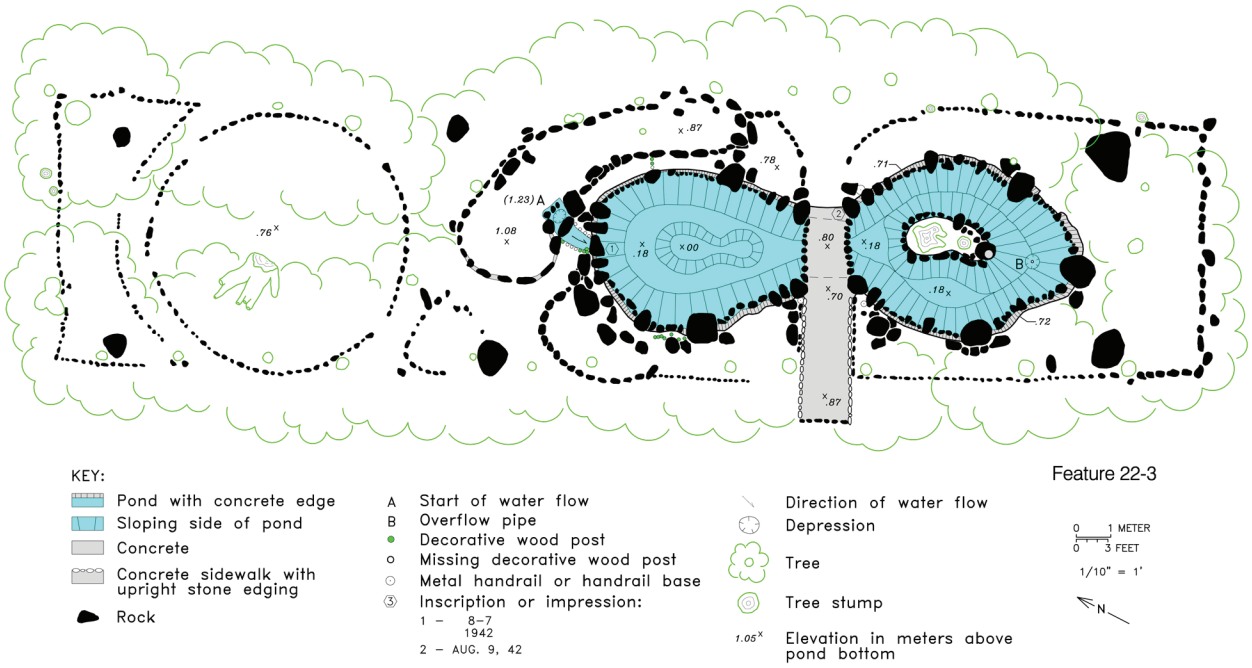


Figure 54. Archeological base map, Block 22 Garden. (Adapted from *Three Farewells to Manzanar*, WACC 1996. Drawing revised and updated by R. Beckwith, 1999)

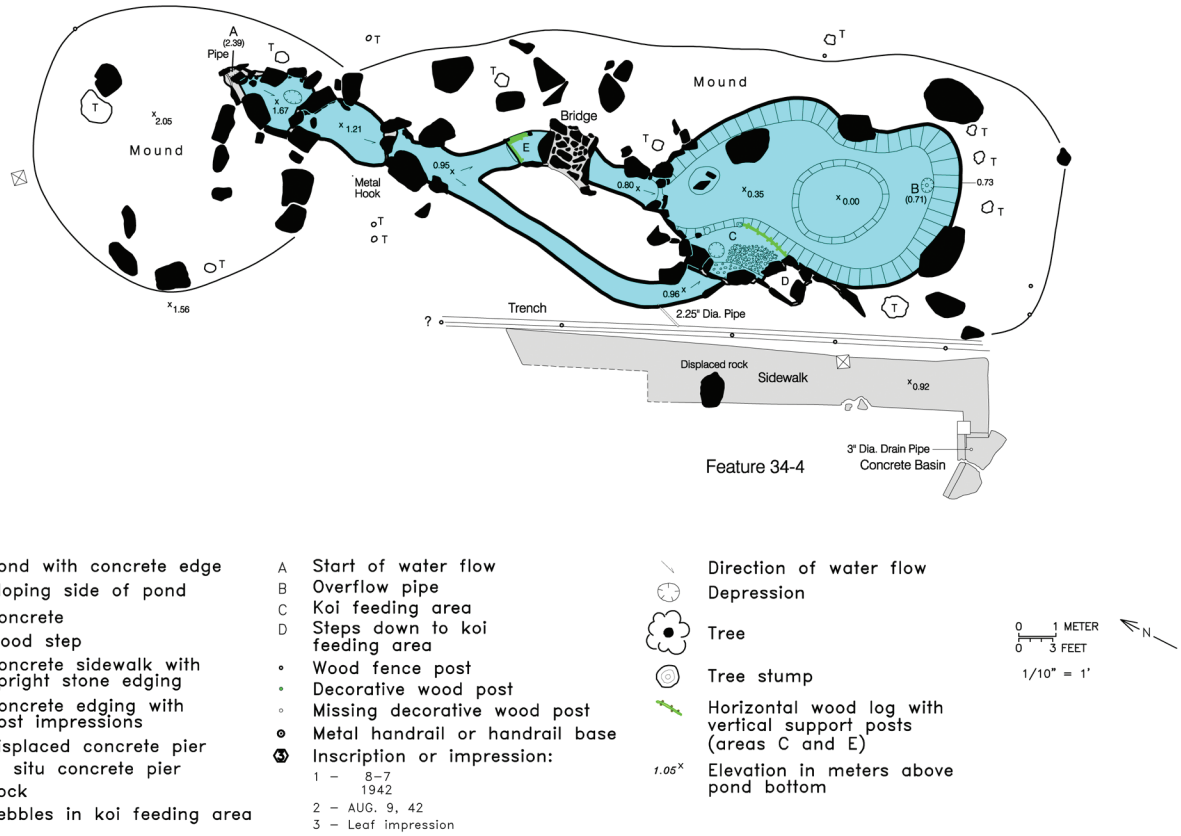


Figure 55. Archeological base map, Block 34 Garden. (Adapted from *Three Farewells to Manzanar*, WACC 1996. Drawing revised and updated by R. Beckwith, 1999)



Figure 56. Barrack gardens were planted with flowers, vegetables, and herbs. This view of a barrack in Block 20 shows a variety of gardens located at the entrances to several individual apartments. (Courtesy of the National Archives and Records Administration)

ends of the barracks buildings. They ranged in size from 2' x 4' to 20' x 40'. (Figure 56)

These small gardens are evidence of place-making on a personal scale. The style, appearance, and function of these gardens depended on individual motivations and personal preferences. General types of gardens included Japanese-style miniature rock and water gardens with associated vegetation, dry gardens with minimal plantings, flower gardens, combination vegetable and ornamental gardens, and lawns.[37]

These gardens served multiple purposes: on a practical level, they reduced dusty conditions immediately adjacent to the apartments and provided flowers, herbs, fruits and vegetables that were otherwise unavailable or difficult to acquire. They also served an important aesthetic function by providing color and softening the uniform exterior of the military-style barracks. For many of the gardeners and landscape designers interned at Manzanar, the areas adjacent to their living quarters were private places and an important means for personal expression. And for many, gardening was a pastime related to both religion and cultural traditions.[38]

By mid-June 1942, gardens were springing-up throughout the camp and

over 100 lawns had been planted in the residential blocks.[39] A survey of residential gardens noted that an average of five out of 14 barracks—or nearly every other apartment building—at Manzanar had some planting around it, usually a combination of flowers and vegetables in small plots near the apartment entries. Typical plant material used in the barracks gardens included potatoes, onions, cucumbers, Chinese cabbage, and watermelon, as well chrysanthemums, nasturtiums, carnations and roses.[40]

Within the gardens, a wide range of materials were used for structures and various design elements. Stepping stones and rock-lined pathways created unique entryways; flowers and plants helped to individualize residences and soften building exteriors. An eclectic but functional collection of garden structures such as fences, awnings, shelves, chairs, benches, tables, containers, shade structures, gates, arbors, and trellises were built with whatever materials were available or could be salvaged. Scrap lumber, limbs from trees, and tin cans were all used. Scrap lumber or rocks were often placed and used as borders along flower beds or along walkways to define space. In some gardens, a special stone was placed vertically to mark the corners of a garden or the entrances to apartments. At the base of entrances, the internee's name or camp address was often painted, inscribed, or inlaid onto a paved or rock landing. Walkways that used decorated paving and stepping stones were commonly used for high-traffic areas. Decks, stoops, and arbors were constructed from scrap lumber. Some of these gardens also included ponds.[41]

According to the camp newspaper, one of the first completed landscape projects was the work of George S. Takemura, a landscape artist from West Los Angeles who lived in Block 23, Building 9. Mr. Takemura collected logs, branches, and scrap lumber from the camp environs to build landscape furniture, such as benches, wishing wells, fences, and sun umbrellas outside his apartment. The larger tree trunks may have originated in the orchards on site, where trees were felled to accommodate barracks buildings.

William Katsuki, an Issei landscape designer from Bel Air, designed and constructed one of the more detailed ornamental residential barracks gardens in Block 24 between Buildings 5 and 6. The linear garden contained a stream, small ponds, bridges, Joshua trees, a variety of plants, and many large rocks and found objects. (Figure 57)

Although virtually every block contained individual gardens, Blocks 9, 11, 14, 15, 21, 22, 35 and 36 contain the highest concentrations of garden



Figure 57. Former Bel Air Landscape designer William Katsuki built this garden using a wide range of local materials. Katsuki lived in Block 24 at Manzanar. (Courtesy of the National Archives and Records Administration)

remnants.[42] Detailed mapping of these gardens has yet to be accomplished through archeological investigation.

Other Landscape Structures and Features

Landscape Features at the Camp Entrance

At the main entry sign to the camp, a small ornamental rock garden was created by placing selected rocks and low growing plants (cacti) on a small mound below the camp sign. Today the rocks still surround the sign but none of the plant materials remain. The south side of the entrance to the camp was lined with locust trees, of which only a few remain today.

Two sentry posts, known as the Military Police Sentry Post and the Internal Police Post, functioned as security buildings where guards checked all people entering and leaving Manzanar.

The sentry posts were constructed in a style that reflected Japanese cultural traditions. The use of battered mortared walls is indicative of architectural design and stylized stonework in Japanese palaces and fortresses, and the hipped roof with a ridge and projecting eaves evokes traditional Japanese construction techniques and roof forms. While the building forms are

based on traditional Japanese structures, ornamental features on the buildings—the tinted concrete lintels and stylized tree stumps functioning as stanchions—are characteristic of the stone work found in many structures throughout Manzanar that were built by internee Ryozo Kado. These buildings are unique examples of Japanese American architecture created from the materials found in the Owens Valley.

Landscape at the Guayule Lath House
A stylized ornamental landscape was developed along the front of the guayule lath house, which was located at the western end of 1st Street. Along this linear space, transplanted trees combined with highly sculptural tree trunks, formed a decorative and distinctive garden space. A rustic fence made of tree trunks paralleled the garden along 1st Street; the walkway to the building was flanked by a low-rising lattice work fence. Little evidence of this garden remains today.

Judo and Kendo Dojos
Internees developed spaces for the practice of traditional Japanese martial arts. Judo and kendo *dojos* (studio or hall) were constructed in the south and west firebreaks, and provided a venue for martial arts enthusiasts to practice and compete. Although judo attracted athletes from all generations in the camp, the traditional sport of kendo was most popular with the older, *Issei* population. Following segregation to Tule Lake in 1943, widespread interest in the practice of kendo at Manzanar died out.

The judo *dojo* was sited within a group of large cottonwood trees that remained on the site from the Campbell House, established during the town era at the turn of the century. Within these trees, concrete paths in and around the *dojo* were lined by rocks that led pedestrians into the *dojo* dressing room. Many of the cottonwoods, a mulberry, and evidence of the paths and the building foundation remain today.

Cemetery Monument
The cemetery monument is historically significant for its distinctive and unique Japanese American design and its association with the commemoration of the Japanese American internment experience. *I Rei To*, written in Japanese characters, translates as "soul consoling tower." On the back (West) side of the monument the Japanese characters translate as "Erected by [or for] the Japanese people at Manzanar, August 1943". Reverend Shinjo Nagatomi of the Buddhist Temple painted the Japanese calligraphy so that the Japanese phrases could be perfectly carved into

the cement. Stonemason, Ryozo Kado, directed the construction of the monument at the request of the Buddhist congregation.

Memorial markers or tombstones, called *ohaka* (family grave), are common to Buddhist and Shinto traditions in Japan. As members of a family pass, their bodies are cremated, their ashes are placed in the *ohaka*, and a visit or pilgrimage to one's *ohaka*, is called an *ohaka-mairi.* In Japan, cemeteries are collections of *ohakas* and are located in a temple complex. In Japanese Buddhist traditions, cremation is preferred over burial, and one's ashes are placed within the *ohaka*. The Manzanar memorial would have represented the *ohaka* for those who died and were cremated at Manzanar.

The style of the Manzanar cemetery monument is similar in overall composition to traditional Japanese *ohaka*, with tiered levels for placing offerings, and a prominent vertical stone emblazoned with a family name or memorial phrase. Traditionally, *ohaka* are chiseled from natural stone into a vertical rectangular shaft. The cemetery monument's obelisk shape with the pyramidal apex reflects an adaptation of Japanese design traditions to American influences. The concrete posts fashioned as tree stumps, the rope railing, and entrance stoop are adaptations of demarcating the perimeter for larger *ohaka*. In addition, the memorial is representative of the works created by Ryozo Kado in which Japanese tradition influenced but did not dictate his designs.

The memorial played an important role in the funeral ceremonies at Manzanar during the internment period. During *Obon*, (Festival of the Dead) held in July/August, the memorial played a significant role as an altar for offerings and prayers to the deceased. Today, during the annual Manzanar pilgrimages, the memorial serves a similar function; it is the centerpiece for remembering those who died at Manzanar and commemorating the internment experience. It has become one of the most identifiable symbols of the internment of 120,000 Japanese Americans during World War II.

Ofuros, *Japanese Baths*

The use of *ofuros* or soaking baths as part of a daily personal routine is an important Japanese cultural tradition that survived internment and flourished at Manzanar. Many blocks contained Japanese-style baths in the shower areas of the men's and women's latrine buildings. These baths were built by the internees, and were constructed with cement in one corner of the shower room. The construction of the *ofuros* allowed internees to continue their Japanese tradition of soaking in steaming baths.





Figure 58. The traffic circle in the administration area retains the rock arrangement designed by Buneyoman Wada. Photo shows the traffic circle ca. 1943, and as it appeared in 2004. (Top: Courtesy UCLA Special Collections. Bottom: NPS 2004)

Other Features

Similar to the entry at Manzanar, landscaping crews under the auspices of the Public Works Department beautified a variety of smaller civic areas throughout Manzanar. Many of these had roots in Japanese American cultural traditions and include the landscaped area within the traffic circle

in the Administrative Area. The circle was comprised of a mortared stone retaining wall located at the end of the cul-de-sac and was one of the first beautification projects at Manzanar. Buneyemon Wada, director of the project, transplanted Joshua trees, cacti, and rocks from the Sierra into a Japanese-style dry garden.43 The Joshua tree and cacti were transported from Death Valley. The rocks in the traffic circle have remained in place since the historic period but the vegetation is gone. (Figure 58)

In other areas of the camp, the distinctive stone work of Ryozo Kado is evident in specific structures such as the ovens in the North Park picnic area and the oven at the chicken ranch. These features were built using mortared stone, and tinted concrete with detailing in the "Kado style" which simulated wood patterning. Simulated wood patterning is also found around several storm sewer manholes.

Summary

The designed landscapes and gardens at Manzanar became an important means for the expression of Japanese American cultural values within the regimented organization of the camp. These rich cultural traditions were expressed through a wide range of sites, ranging from parks—to relatively large designed gardens, to the cemetery monument, and a rich array of individual gardens and designed personal spaces. In particular, the gardens were representative of an era in Japanese American history when landscape gardening was at its apex as a profession and hobby. Gardens at Manzanar typified the adaptability of Japanese garden design and their designers and were expressions of their cultural traditions including an affinity with nature and its representation through garden design.

Today, many of the original plantings and landscape features have disappeared. The majority of remaining features are rock associated with ornamental gardens and concrete associated with buildings and ponds. Some of these features have been buried for decades.

In addition, over 60 years of abandonment has favored the reestablishment of some natural processes, including the return of wildlife and flora, as well as a dynamic and shifting stream system, which has altered the site morphology and soil deposition since the historic period.

Despite these changes, a number of remnant landscape features remain throughout the camp. Primary discernible features include original rocks

and boulders associated with specific gardens, a scattering of ornamental vegetation, and occasional landscape structures. Five historic gardens at Manzanar—the block gardens at Blocks 12, 22 and 34, one of the hospital pond gardens, and a pond in Block 2, the design, workmanship, and materials are still evident from the original design. These gardens were excavated and mapped by the Western Archeological and Conservation Center between 1993 and 1996.[44] (Figure 59)

Vegetation

In the three-and-a-half years Manzanar functioned as a relocation center, both the WRA and the internees made extensive efforts to landscape the camp. These efforts focused on three primary needs; the need to control dust, the desire to restore production of the fruit orchards, and interest in developing gardens and parks. (Gardens and parks are discussed in the *Analysis and Evaluation: Cultural Traditions*)

After the site was abandoned in 1945, a desert/shadscale scrub plant community reclaimed the site and only the hardiest ornamental vegetation survived the effects of the harsh environment, grazing cattle, and wildlife. As a result, the character and environmental context for historic vegetation is often difficult to understand. Today, there are a few aggregations of vegetation—primarily trees— that are historically significant and represent relatively intact plantings associated with the block gardens, parks, streetscapes, and orchards. The majority of these trees are located in the western portion of the camp where the water table is higher allowing trees to survive the dry climate of the Owens Valley. Collectively, these surviving stands of trees are significant because they provide important insights into the values and needs of the camp residents as expressed in the design and development of the community landscape. Documentation of remaining trees is organized into two categories: Orchards and Ornamental Vegetation.

Orchards

In the arid environment of the Owens Valley, Manzanar War Relocation Center benefited from being sited in an area with remnants of 19th century

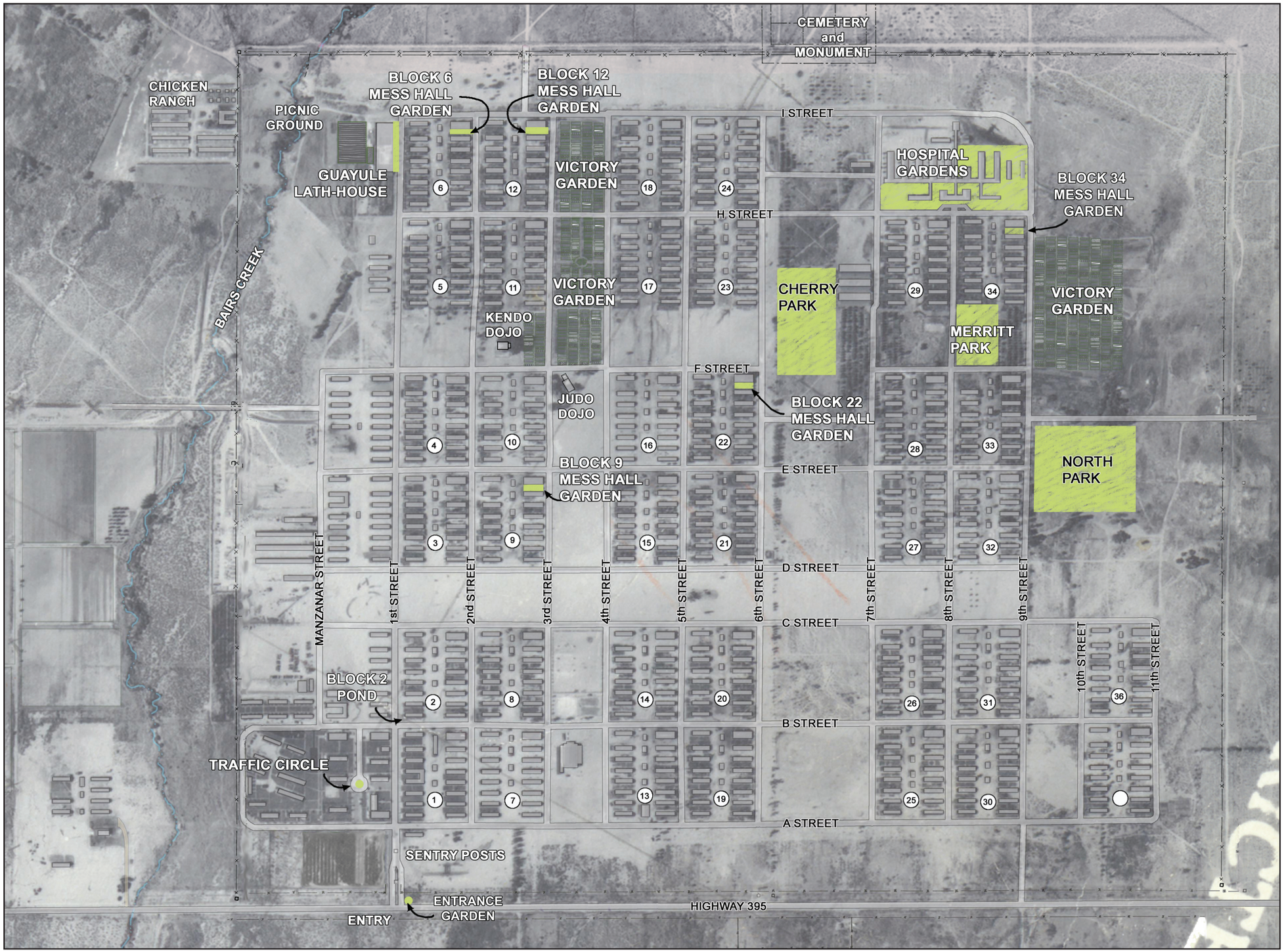


FIGURE 59

Manzanar Garden Areas

Manzanar gardens and structures reflecting cultural traditions.

Legend

- (21) Block Identification Numbers
- Structures
- Garden spaces

300 0 300 600

North

Sources

Manzanar Free Press, various editions, on file, Manzanar National Historic Site
Oral History Collection, on file Manzanar National Historic Site
1945 Camp Layout Map, War Relocation Authority, on file Manzanar National Historic Site
1945 Manzanar Aerial Photograph, on file Manzanar National Historic Site
Three Farewells to Manzanar, Volumes 1-3, by Jeff Burton et al, 1996
Field Survey, 2002

Notes

Although additional gardens were known to have existed at Manzanar, locations indicated here reflect those gardens identified in historic photos.
Boundaries for public parks are conceptual based on historic photographs.
Picnic grounds were also located on George's Creek, south of camp.

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ranching and early 20th century agricultural communities. Records indicate that early ranches, like the Shepherd Ranch, contained cottonwood, black walnut, willow, poplar, and apple trees.

Having secured the water rights to Bairs and Shepherd creeks in 1910, the Owens Valley Improvement Company (OVIC) hoped to establish an agricultural settlement on the lands that would later become the Manzanar War Relocation Center. Their plan included the production of a variety of apples including Winesaps, Spitzenbergs, Roman Beauties, Delicious, Newtown Pippins, and Arkansas Blacks. Records indicate that fruit trees grown by other valley residents at this time included pears, peaches, and grapes.

In the 1920s, with the purchase of the land by the City of Los Angeles and subsequent departure of the town's residents, the Department of Water and Power's (DWP) prime concern became the protection of the watershed and not the further development of an agricultural-based community. Accordingly, all irrigation of the orchards was stopped by 1934. Local newspaper articles documented subsequent acts of the DWP to clear the area of houses and orchards. However, not all of the orchards or other ornamental trees that had been planted around the town of Manzanar were removed. Many were still in place in the 1940s. (Figure 60)

Although the orchards had been abandoned for over 15 years at the time the camp was being built, approximately 1,000 remnant trees from this earlier settlement remained. Some of these orchards were preserved relatively intact within the firebreaks or in the perimeter areas surrounding the camp. (Figure 61)

These trees were remnants of the Wilder, Lafon, Lydston, Hatfield, Christopher, Wells, Capps, Paget, and Meyer fruit orchards. (Figure 62) Where barracks buildings were sited within the orchards, trees were incorporated as garden vegetation or street trees. (Figure 63) The organization of the camp road system appears to have paralleled many of the orchards and allowed these orchard trees to function as street trees, providing shade and visual distinctiveness to the barracks that were fortunate enough to be sited nearby. (Figure 64)

Manzanar became the home of a handful of experienced Japanese American orchardists. Upon arrival, an orchard crew was established under the supervision of Frank Cummings. Takeo Shima was the orchard

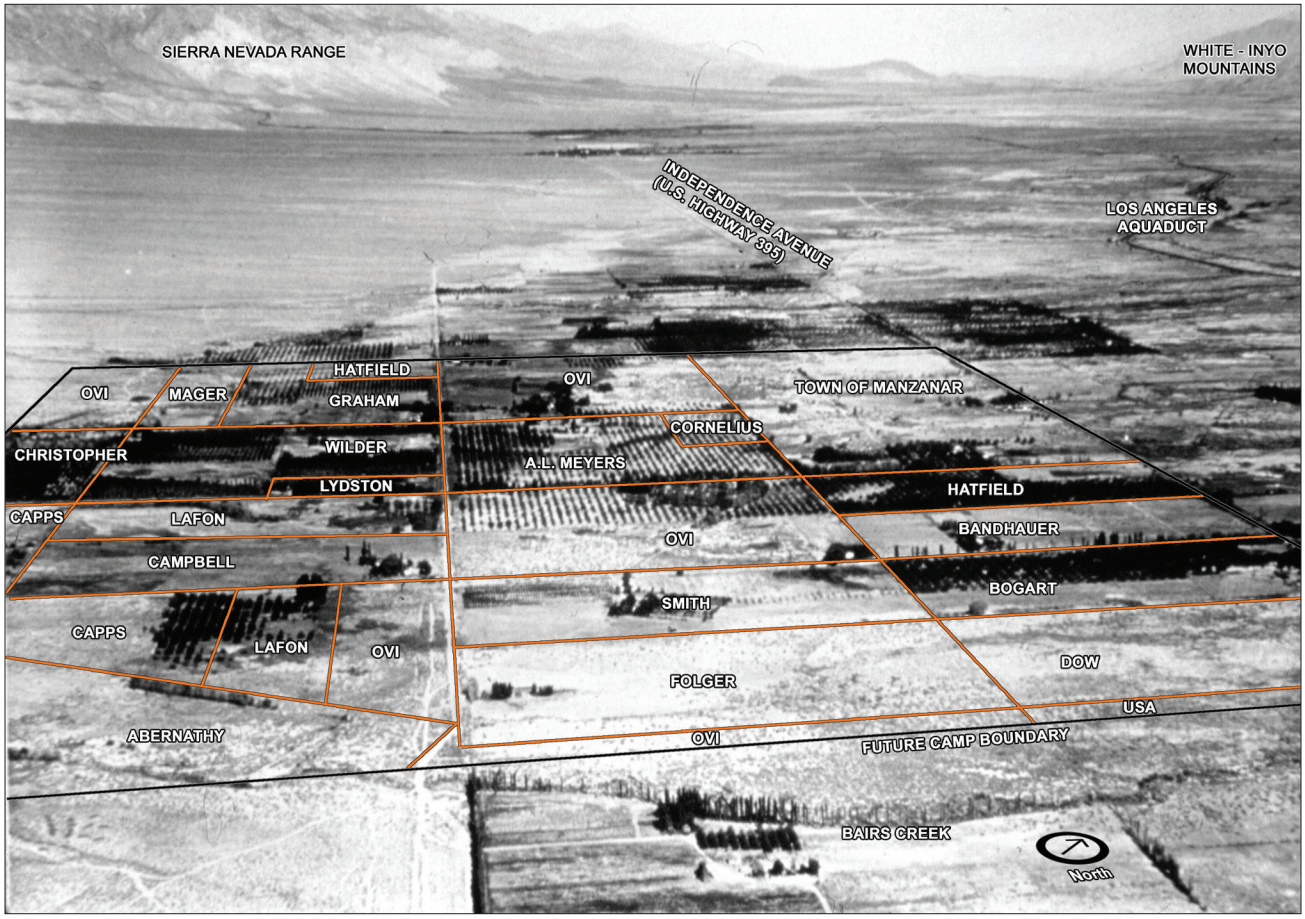


Figure 60. View of Manzanar in 1934 with an overlay of the land ownership parcels, ca. 1920. (Historic photograph collection, Manzanar National Historic Site; Owens Valley Improvement Company Subdivision No. 1, on file Eastern California Museum, 1910; Sauder Map, on file Eastern California Museum, 1915; Aerial Oblique Photograph, on file Manzanar National Historic Site, 1934.)

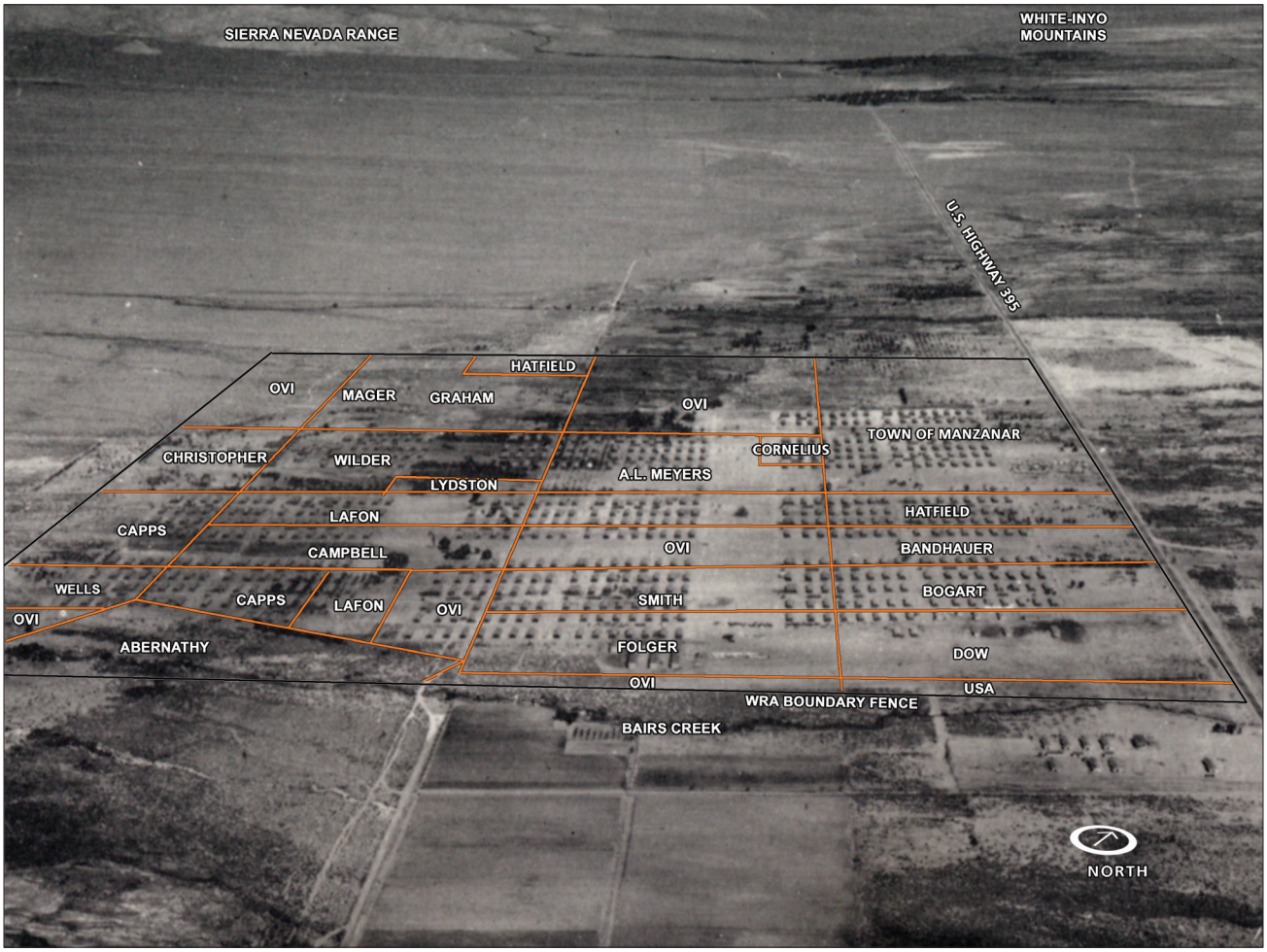
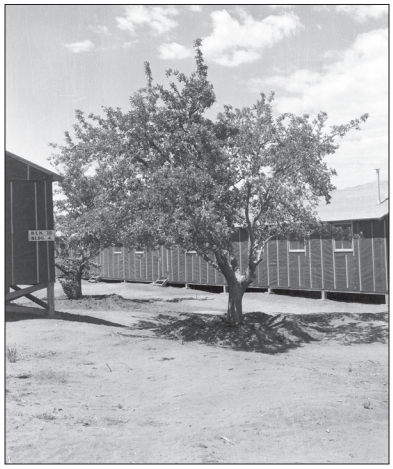


Figure 61. View of Manzanar in 1934 with an overlay of the land ownership parcels, ca. 1920. (Historic photograph collection, Manzanar National Historic Site; Owens Valley Improvement Company Subdivision No. 1, on file Eastern California Museum, 1910; Sauder Map, on file Eastern California Museum, 1915; Aerial Oblique Photograph, on file Manzanar National Historic Site, 1945; Camp Layout Map, on file Eastern California Museum, 1945.)



Figure 62. Orchards from the town period were retained within the firebreaks and perimeter areas of the camp. Apple trees in this photo are evidence of how the site - Manzanar, or "apple orchard" in Spanish - got its name. (Courtesy UCLA Special Collections)

Figure 63. Orchard trees planted during the Manzanar town period were incorporated into the barrack blocks where the layout permitted. (Courtesy UCLA Special Collections)



foreman, assisted by Hideo Marumoto and Gummi Watanabe and a crew of up to 40. Initially, the orchard crew was charged with pruning fruit trees that remained from the town of Manzanar. The crew maintained the orchards throughout the internment period and managed the harvest and distribution of the crop.

An excerpt from the Manzanar Free Press (n.d.) stated that in 1942, the neglected orchard of "600 apple and 400 pear trees" had been pruned, thinned out, sprayed and irrigated. Subsequent Manzanar Free Press articles reference the first years harvest as including Bartlett and Winter Nellis pears and Newtown Pippin, Winesap and Bellflower apples. At the time, many of the orchards contained about 40 acres of what were considered "very fine trees" and were expected to produce again, given some irrigation.

Within the boundary of the camp today are eight historic orchard remnants (ca. 1910). The Wilder, Lafon, Lydston, Hatfield, and Christopher (may be gone) orchards still contain living apple and pear trees. The Well, Capps, Paget, and Meyer orchards consist of standing snags, cut stumps and wind-thrown remnants. The orchard configuration of the Wells, Page, and Capps farms are still very much in evidence since a majority of the trees died only



Figure 64. The orchards from the town period were incorporated as street trees and garden features when they were located within the grid of the camp. Note that after having been abandoned for over fifteen years, the trees have been carefully pruned to encourage fruit production. (Courtesy National Archives and Records Administration)

within the past decade.[45]

Of the pear trees that remain today, most are from the Wilder and Lydston orchards located on the northwest side of the camp where the water table is higher, particularly in the vicinity of the intersection of the north and west firebreaks. Remnants of the Hatfield Orchard between U.S. Highway 395 and Block 13 still remain. None of the apple orchards remain intact; however, a few remnant apple trees from the Lafon Orchard are located on the south end of the west firebreak. [46] (Figure 65)

Recent stabilization efforts of the fruit trees has suggested that Asian pears may have been grafted onto existing orchard trees. Further research could verify this and possibly provide information about which species, if any, were grafted during the internment period.

Other fruit trees that may be linked to pre-interment gardens or orchards include one Walnut (just east of Block 1) and three peaches (Blocks 14 and 29). The apricot (Block 12/near 3rd Street) appears too young to have an orchard context. Three fig trees remain (Block 12) but there are no records of figs having been grown commercially in the vicinity and they may have

been planted by internees. The plum tree identified in the Los Angeles Department of Water and Power survey has not been located.

Recent management of the orchard trees including irrigation and the removal of dead limbs and sucker growth, and general pruning have significantly improved the condition of the trees. (Table 2.)

Ornamental Vegetation

Historically, ornamental vegetation was planted to address a variety of domestic, functional, aesthetic, and recreational needs. The ornamental vegetation planted during the internment period ranged from the flowering

Table 2: Historic Orchard Remnants

Orchard	Location	Types of Fruit Trees	Status
Capp Orchard	West of Block 12 in the perimeter area	Apple	No live trees: evidence of spacing from stumps
Christopher Orchard	Between 6th and 9th Sts., and between H street and the perimeter fence, taking in the northeast corner of the cemetery parking lot	Apple Pear Peach	Two live pear trees remain (poor condition with critical need for irrigation)
Hatfield Orchard	East of Block 13 between A St. and the east perimeter fence.	Pear Asian Pear (Sand Pear)	Eight live pears remain in fair to poor condition. One Asian pear One unknown, possibly an apple or pear
Lafon	Two live apples in firebreak north of Block 4 One apple in firebreak north of Block 10 Pear trees on north side of 2nd street	Apple Pear	Of the three remaining live apple trees, all are in poor condition. Two trees, one on either side of 2nd St. have recently died. Some apple and pear root are on site as well.
Lydston Orchard	West of Block 22 in the firebreak	Pear	R. Stewart documents 25 live trees.
Meyer Orchard	Blocks 27, 28, 33 and 32 north of farm access road.	Apple	No live trees: evidence of spacing from stumps
Paget Orchard	Outside the camp, immediately south of Bairs Creek in approximate southern alignment with Block 3	Apple	No live trees: evidence of spacing from stumps
Wells Orchard	West of Block 6 and 12 in perimeter area	Peach	No live trees: evidence of spacing from stumps
Wilder Orchard	Block 28 (western portion), 29 33 (western portion), 34 and adjacent firebreaks	Pear Apple	Largest remnant pear orchard. Three apples (two in north firebreak and one in Children's Village) 50 pear trees (one in Children's Village)

Source: Compiled from Landscape Stabilization Plan, 2002 and Historic Trees survey data from R. Stewart, 2001.

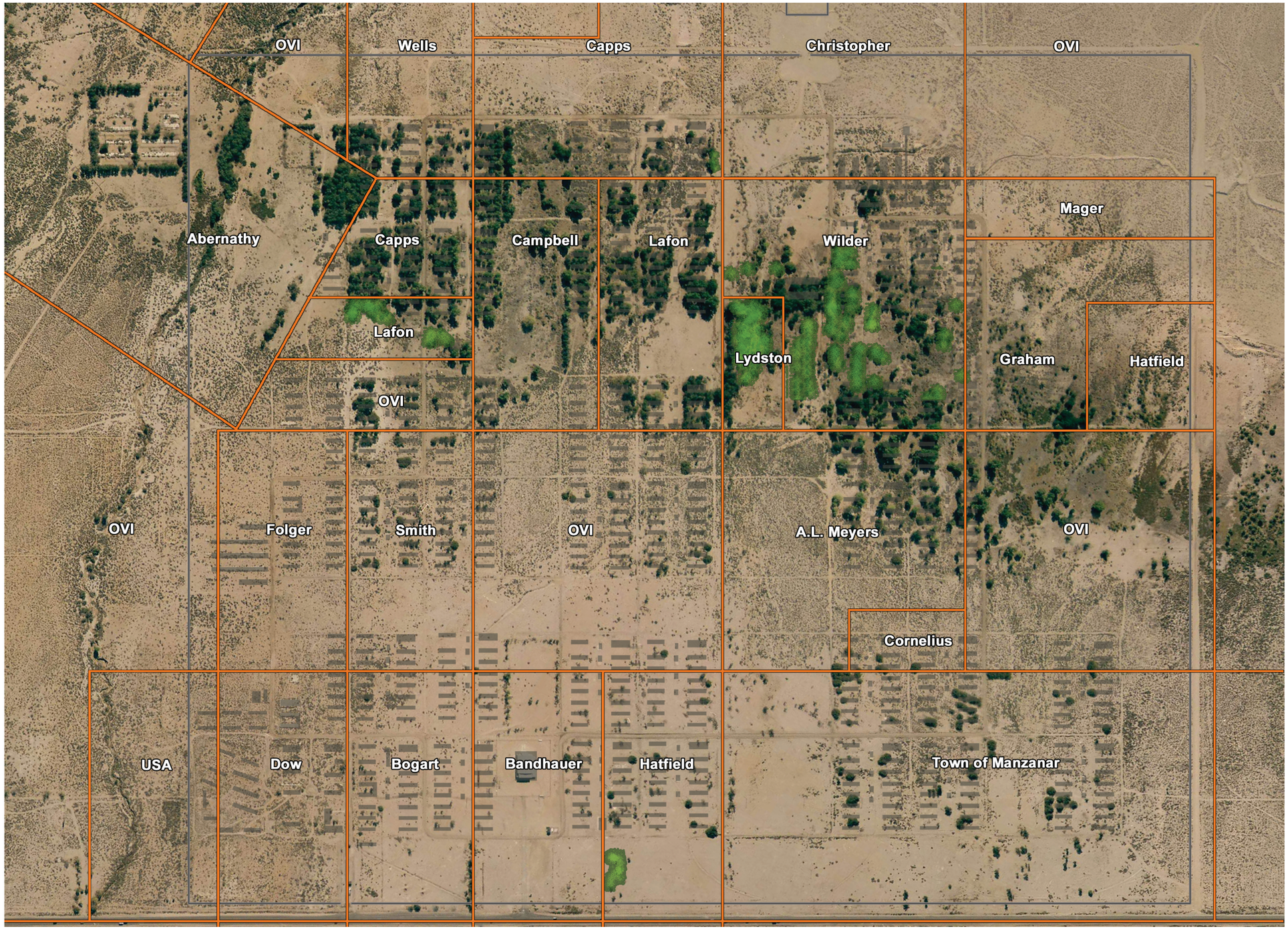


FIGURE 65

Farm Ownership and Existing Conditions

Legend

- Historic Orchard Remnants
- Historic Building Locations
- Approximate Farm Boundaries

300 0 300 600

North

Sources

Historic Photograph Collection, Manzanar National Historic Site
1910 Owens Valley Improvement Company Subdivision No. 1, on file, Eastern California Museum
1915 Sauders Map, on file, Eastern California Museum
1945 Camp Layout Map, War Relocation Authority, on file Manzanar National Historic Site
2000 Manzanar Aerial Photograph, on file Manzanar National Historic Site
Three Farewells to Manzanar, Volumes 1-3, by Burton et al, 1996
Field Survey, 2002

Notes

Farm boundary locations are interpretations of existing conditions, historic maps, and historic photographs.

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cherry trees in the Children's Village to the rose bushes in Merritt Park. Internees transported many of these ornamental plants from their pre-war homes to Manzanar, including *bonsai* (miniature trees), saplings, flowering plants, and seeds. In addition, thousands of trees and plants were propagated in the Manzanar nursery and in individual gardens. Just a few of the plants species documented in park files include locust, pine, cypress, cherries, camellias, mulberry, bamboo, wisteria, Joshua trees, desert olive, and a variety of roses, iris, chrysanthemums, and other perennials. Much of this ornamental vegetation was heavily dependent upon frequent irrigation and quickly died out after the site was abandoned.

Today, little ornamental vegetation remains at the site. However, three species—black locust, tree of heaven, and tamarisk (salt-cedar)—have spread and developed into thickets throughout the site. The tamarisk, in particular, is highly invasive and threatens both the natural vegetation and the open character of the site.

Camp Administrative Gardens

In an effort to reduce the harsh environmental conditions amplified by the construction of the camp, initial landscape efforts by the Department of Agriculture (Soil Conservation Service), called for planting of 21,000 trees, 25,000 shrubs, and lawns throughout the camp. Although the administration did not implement the plan as recommended, it did initiate propagation of 5,000 locust seedlings as well as "thirty-eight different varieties of bushes, shrubs, trees, plants, etc." [47]

Of the many town and ranch remnants that were integrated into the camp, one of the more prominent rows of trees was a row of black locust trees. (Figure 66) These trees were offset along the north side of 6th Street beginning at A Street and extended along the northern firebreak to its intersection with the western firebreak at F Street. Many of these locust trees along 6th Street remain today, although most are in fair to poor condition. Orchard trees were also used as street trees when their locations coincided with the edge of developed areas. Few of the orchard trees that were used for street trees are evident today.

In addition, the WRA authorized a basic landscaping program to improve conditions in administrative and public areas throughout the camp including the administrative block and staff housing area. Photos of these areas show fairly simple designs that included lawns with trees planted around the buildings, most likely for shade and visual interest.



Figure 66. A row of black locust trees near 6th Street planted during the town period were incorporated into the camp layout. View looking west, 1943. (Courtesy of the Library of Congress, Prints and Photographs Division, Ansel Adams photographer)

A highly visible feature in the administrative area was the landscaped space within the traffic circle. The circle was a mortared stone retaining wall located at the end of the cul-de-sac in the administrative area and was one of the first civic beautification projects at Manzanar. Other features included stone walls, which were built around the patio at the Project Director's residence to provide privacy.

The gardens in the administrative area were simple in character and usually included foundation plantings and lawns. The buildings, roads, and walkways were edged with whitewashed stones and a grid of sidewalks connected the administrative buildings. This resulted in crisply defined landscaped areas, consistent with the orderly character of the military camp design. The diversity of ornamental plant material that was evident in the homes and gardens of the internees does not appear to have been used in the administrative areas. Today, historic vegetation remaining in the administrative area is limited primarily to locust and cypress trees.

Auditorium

The primary civic building at Manzanar—the auditorium—was completed in the fall of 1944. The relatively late construction date may explain why the auditorium did not have a mature landscape at the time Manzanar closed.

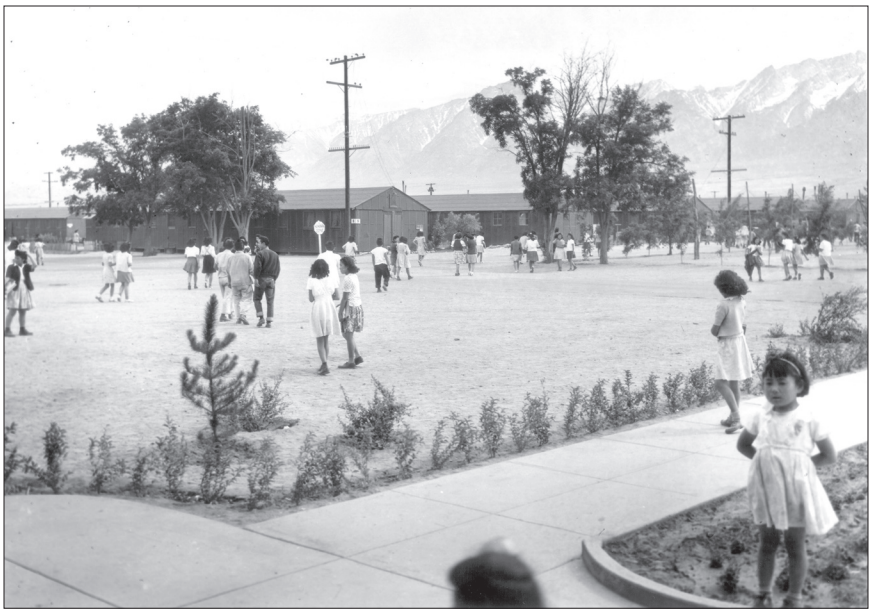


Figure 67. A hedge lined the walkway to the auditorium, with pine trees planted on either side of the entrance. Other historic photographs substantiate that the bed in the center of the entrance walk (lower right corner) was planted with annuals. (Courtesy of Toyo Miyatake Studio)

However, based on historical documentation, pine trees were established approximately 10 feet apart on each side of the entrance walkway near the plaza. The entrance walk itself was concrete and had a border of low growing (less than 2') shrubs on either side. (Figure 67) Two planting beds were added and located in the center of the main walkway with a flagpole located between the two beds.

Victory Gardens

During World War II, Americans aided in the war effort by purchasing bonds, conserving raw materials, recycling, and planting Victory gardens. Nearly 20 million Americans kept Victory gardens during World War II, producing as much as 40% of their own food. Victory gardens, also called "hobby gardens," made it possible for residents to grow what they desired, rather than rely on the crops cultivated in the camp's agricultural fields that were destined for the communal mess halls. In addition to flowers and vegetables, other ornamental plants that could be used in gardens were also grown in the Victory gardens.[48]

In May 1942, internees Tak Muto and Masao Tanaka prepared plans for a community Victory garden. Muto's original garden design included a system of gravel walks separating individual plots with a sundial located at the junction of the paths. Residents could acquire rights to a garden space for

a nominal monthly rental fee where they could grow their own "vegetables for vitamins, flowers for morale, and gardening for recreation."[49]

Manzanar's internees embraced the Victory garden concept, although the motivations to keep a vegetable garden expanded beyond the war effort. The meals served in the mess halls were based on standard American military menus, with preserved meats, vegetables, and heavy starches, and many internees, particularly the *Issei*, were not accustomed to the diet. By raising vegetables, particularly Japanese vegetables, they could supplement their diet with food reminiscent of home. In addition to crops normally grown in the Owens Valley (tomatoes, corn, and melons), internees introduced vegetables that reflected their traditional diets: *daikon* (large white radish), *gobo* (burdock root), *nappa* (cabbage), *kabu* (white turnip), *bannonegi* (green onions), *uri* (Japanese melon), *kabocha* (Japanese pumpkin), *akakabu* (radish), *takana* (mustard greens), *goma* (sesame), *nasubi* (Japanese eggplant), bok choy, and *kyuri* (Japanese cucumber).[50] (Figure 68)

Eventually, more than 120 families worked plots in the Victory garden.[51] Communal space was also available in the Victory garden area where block residents combined their efforts at gardening. Victory gardens were located



Figure 68. A wide range of plants were grown in the Victory gardens located in the firebreaks. This posed photograph, taken by the assistant camp director, Bob Brown, shows three women caring for the tomatoes. (Courtesy UCLA Special Collections)

in the south firebreak between Blocks 11/12 and 17/18. In 1943, the Victory garden program expanded, and gardens were reportedly to have been developed in the north-south firebreak between blocks 22 and 23 although there is no photographic evidence to support this. Victory gardens were also established in 1943 in the area north of Blocks 32 and 33 (the north farm fields).

The Victory garden in the south firebreak was approximately 300' x 1200' and was selected because it was one of the few to have "black soil suitable for gardening."[52] Individual garden plots ranged in size from 10' x 50' to 30' x 50'. During the summers of 1942 and 1943, internee gardeners planted the edges of the firebreak in which the Victory garden was located with a flower border; they dug and maintained all the Victory garden irrigation ditches, made out water schedules and regulated irrigation hours. (Figure 69) In 1943, the Victory garden program expanded. On January 13, 1943,



Figure 69. A system of earthen ditches and runoff from rain and snowmelt provided irrigation for the vegetables grown in the Victory gardens. The internees dug the ditches and established the watering schedules using gates to control the supply of water. (Courtesy of the National Archives and Records Administration)

the Manzanar Free Press indicated that there were ". . . plans for additional Victory gardens are in the making as a plot of ground in firebreak 22-23 has been broken." However, no historic photos have been found verifying gardens at this location.

Victory gardens were also established in the same year in the area north of Blocks 32 and 33 (near the north farm fields). These gardens were located adjacent to the irrigation line that conveyed water from the canal into camp. An irrigation system was constructed in a grid pattern with irrigation boxes, small ditches lined with tin cans to conserve water, rocks, and cement. A perimeter fence was built to combat foraging rabbits and wildlife.[53]

Although not technically a Victory garden, another communal gardening effort was instituted by the Community Activities Cooperative Association (CACA) when it established a half-acre cutting garden.[54] Many internees were accustomed to growing flowers in nursery businesses and arranging and selling flowers from florist shops throughout the Los Angeles area. At Manzanar, flowers were grown to provide fresh cut flowers for funerals, weddings, parties, etc., and for visual enjoyment, morale, and *ikebana* flower arranging classes (a "*hana matsuri*" [flower festival] commemorated the birth of Buddha annually). Photographic evidence suggests that the cutting flower garden was located to the east of the Victory garden in the south firebreak, within the convergence of the south and west firebreaks.

Today, the Victory gardens at Manzanar are virtually unrecognizable. In the gardens north of Block 34, the irrigation boxes and fence are still clearly evident, although all traces of the plant life are gone. In the central Victory garden, only a few remnant perennials have been documented including statice plants (a perennial cut flower), and asparagus.

In addition to vegetables, ornamental plants that could be used in gardens, including flowers and cacti, were grown in the Victory gardens.[55] Species identified in photographs include chrysanthemums, marigolds and zinnias. Statice, a perennial resembling purple babies breath, is one of the few remaining perennials that still survive on site; at least four plants have come up in their original row in the west firebreak. Drought tolerant grass species are also found in the vicinity, as are two asparagus plants. (Table 3.)

Table 3: Remnant Historic Vegetation

BOTANICAL NAME	COMMON NAME	LOCATION	COMMENTS
Trees			
Acer saccharinum	Silver Maple	NA	Listed on LADPW inventory but has not been located.
Ailanthus altissima	Tree of Heaven	Varies locations throughout the site	Has pre-internment associations and documented use during internment period.
Catalpa speciosa	Western Catalpa	One in Block 12, west of laundry room slab.	R. Stewart suggests it may be Common Catalpa (*Catalpa bigonioides*)
Cupressus glabra	Smooth Barked Arizona Cypress	One in Block 11	Change in ID from arizonica to glabra by R. Stewart. Form more shrubby than arizonica.
Ficus carica	Edible Fig	Three in Block 12: -near SE corner of Bldg 8 -next to Bldg 9 -common area between Bldgs. 12 & 13	Appears to have been planted by internees for household use.
Fraxinus Americana	White Ash	Five are planted in a row along 1st Street, east of the Guayule Lath House. Their close proximity to each other suggest that they were panted as a hedge or screen	Identified in LADPW inventory as Fraxinus velutina/Velvet Ash
Juglans nigra	Black Walnut	One East of Block 1	Former location of Bogart farm (Ca. 1910)
Malus pumila	Apple	See orchard table	
Morus sp.	Mulberry	One in firebreak near Block 10 near judo site (pre-camp) Blocks 3,12,15,22,28	Large specimen in firebreak near the Judo site. Appears to predate internment.
Populus Fremontii	Fremont Cottonwood	Throughout the site	Unclear whether this is native. R. Stewart indicates it is native while Burton, (3 Farewells, pg. 10, 1996) suggests it is not.
Populus nigra "Italica"	Lombardy Poplar	NA	Listed in R. Stewart's inventory at Bairs Creek, SE of guard tower #6 at south perimeter fence. (Location not verified.) Dead specimens noted between Block 11 and 17 near H street. May have lined east side of Shepherd Ranch road (see Miyatake photo).
Prunus Armeniaca	Apricot	One in Block 12 near 3rd Street	Small size: does not appear to be historic.
Prunus domestica	Plum	NA	Listed on LADPW inventory but has not been located.
Prunus persica	Peach	Two in Block 14 Two in Block 29	Block 14: Not clear if these are graft or root stock. Block 29: Not clear if these are graft or root stock.
Pyrus communis	Pear	See Table 2.	
Pyrus pyrifolia "Nakai"	Asian Pear	Block 12 See Table 2	Field identification by Joseph Postman. Corvalis OR
Robinia pseudoacacia	Black Locust	Throughout the site	Has pre-internment associations as well as use during internment period.
Tamarix chinensis	Salt Cedar, Tamarisk	Throughout the site	Has pre-interment associations as well as use during internment period.
Ulmus parvifolia	Chinese Elm	Blocks 2 , 23, 28, firebreak at Children's Village, and south side of 1st street adjacent to Block 6	

Table 3: Remnant Historic Vegetation (cont.)

BOTANICAL NAME	COMMON NAME	LOCATION	COMMENTS
Trees (Cont.)			
Ulmus pumila	Siberian Elm	Interspersed through site including Block 22 between Bldgs. 7 & 15 Firebreak and north of 6th street across from Merritt Park (Block 34)	The large specimen in Block 22 appears to predate internment
Shrubs & Vines			
Cotoneaster franchetti	Franchet Cotoneaster		Not clear if this is a historic remnant or a post historic period seedling.
Phyllostachys bambusoides	Bamboo	Remnant root clusters located in Block 9 at the north end of Bldg 2, and Block 2 on the east side of Bldg 2.	Listed on LADPW inventory but appears to have died out on-site.
Cacti			
Ferocactus acanthodes	Barrel Cactus	NA	Listed as dead on LADPW survey.
Opuntia whitneyana	Beavertail Cactus	Block 17	Listed on LADPW inventory as *Opuntia basilaris*. R. Stewart identifies it as *O. whitneyana* as per Benson, 1969.
Opuntia echinocarpa var. echinocarpa	Silver or Golden Cholla	Block 36 between mess hall and Bldg 14	Listed as dead on LADPW survey as *Opuntia bigelovii*. R. Stewart identifies it as *O. echinocarpa* as per Benson, 1969.
Other			
Asparagus spp.	Both edible and ornamental		
Limonium sp.	Statice		

Note: Some species previously documented as remaining on-site were not located during field investigations associated with this project. Information about these materials is included to provide management options for re-introduction of historic species as appropriate.

Source: Preliminary identification of species by Patti Novak, botanist for the Los Angeles Department of Water and Power. Information was supplemented with field documentation by project team and Richard Stewart. Also see Burton, *Three Farewells to Manzanar*, Part 1, pg. 10, 1996.

Circulation

Three factors influenced the establishment of historic circulation patterns at Manzanar. First, the initial layout of the camp roads, and to a large degree the camp itself, appears to be patterned on the road system associated with the town of Manzanar. Documentation indicates the WRA incorporated several of these roads into the camp plan, including Independence Avenue (now U.S. Highway 395) and Francis Street (now the Manzanar-Reward Road).

The second factor that influenced the camp layout was the overall design standards established for the construction of the camps.[56] These specifications, developed by the Army Corps of Engineers and the Army in 1942, directed that the camps be organized into a series of blocks and functional areas, defined by a regimented road grid.

The third principal factor was the operational need—as perceived by the Army and the Wartime Civil Control Administration (WCCA)—to control and monitor the movement of a resident "alien" population which, at its peak in the fall of 1942, numbered more than 10,000 internees. This, in turn, supported construction the perimeter barbed-wire fence, internal circulation system, and a single guarded public entry to the camp controlling access. Access to the north and south farm fields was by road, passing small MP posts. The road to the south field ran south of warehouse block adjacent to Block 4. The road to the north field passed North Park, north of Block 33.

General Access

Although physically remote and isolated from major transportation centers, Manzanar War Relocation Center was connected to a regional transportation network via the Southern Pacific Railroad line running between Mojave, California and the nearby town of Lone Pine. The railroad was the primary transportation system used to move Japanese Americans from areas such as Los Angeles, to the camp. The other primary access to the site was via U.S Highway 395, which cuts through the western side of the Owens Valley and connects Lone Pine and Bishop. In 1912, this road linked the town of Independence with the Town of Manzanar, and was known as Independence Avenue, which was described at the time as a "straight, broad highway."[57] In 1942, it was still a paved two-lane road when

it became the main supply route for the delivery of construction materials and people.

Initial access to Manzanar from U.S. Highway 395 was along a single lane road located approximately 650 feet north of 1st Street near Block 7. This road was in use until the fall of 1942, when the road was moved south to its present location, extending from 1st Street.[58] (Figure 70) The new entry included two, one-lane bituminous paved roads approximately 330 feet long from the edge of the highway to the police station. The northernmost road was aligned for vehicles entering the camp, and was separated and parallel to the other road, which routed vehicular traffic out of the enclosed camp area. The roads were divided by an open median, approximately 22 feet wide. Two sentry posts located in the median along these roads controlled access to the camp. Located at the east end near the highway, a sentry post manned by military police checked all visitors and directed supply carriers and goods to designated areas within the camp. Two concrete posts (fashioned to look like tree stumps) were located on either side of the Military Police (MP) sentry post and masonry stub walls flanked either side of the entry drive, narrowing the road bed and providing greater control over general access to the site.[59] Just beyond the MP sentry post the road widened slightly on the north edge to accommodate parking for visitors conducting business at the camp and needing security clearance before entering the housing area. Individual parking spaces as well as the



Figure 70. The original entry to Manzanar was located near Block 7. By August 1942, it was relocated south to its present location on 1st Street. (Courtesy of the Bancroft Library, University of California, Berkeley)

entire entry road were delineated by small rocks, painted white. The road extending one block past A Street was paved with asphalt.[60] A second, smaller stone building of similar design served as the internal police post near the police station. It was staffed by internee policeman and monitored vehicles leaving the camp.

Internal Circulation

Roads

As the principal means of defining spaces and regulating movement, the street grid was a fundamental component of the overall design and the primary circulation system of the camp. As indicated above, when the

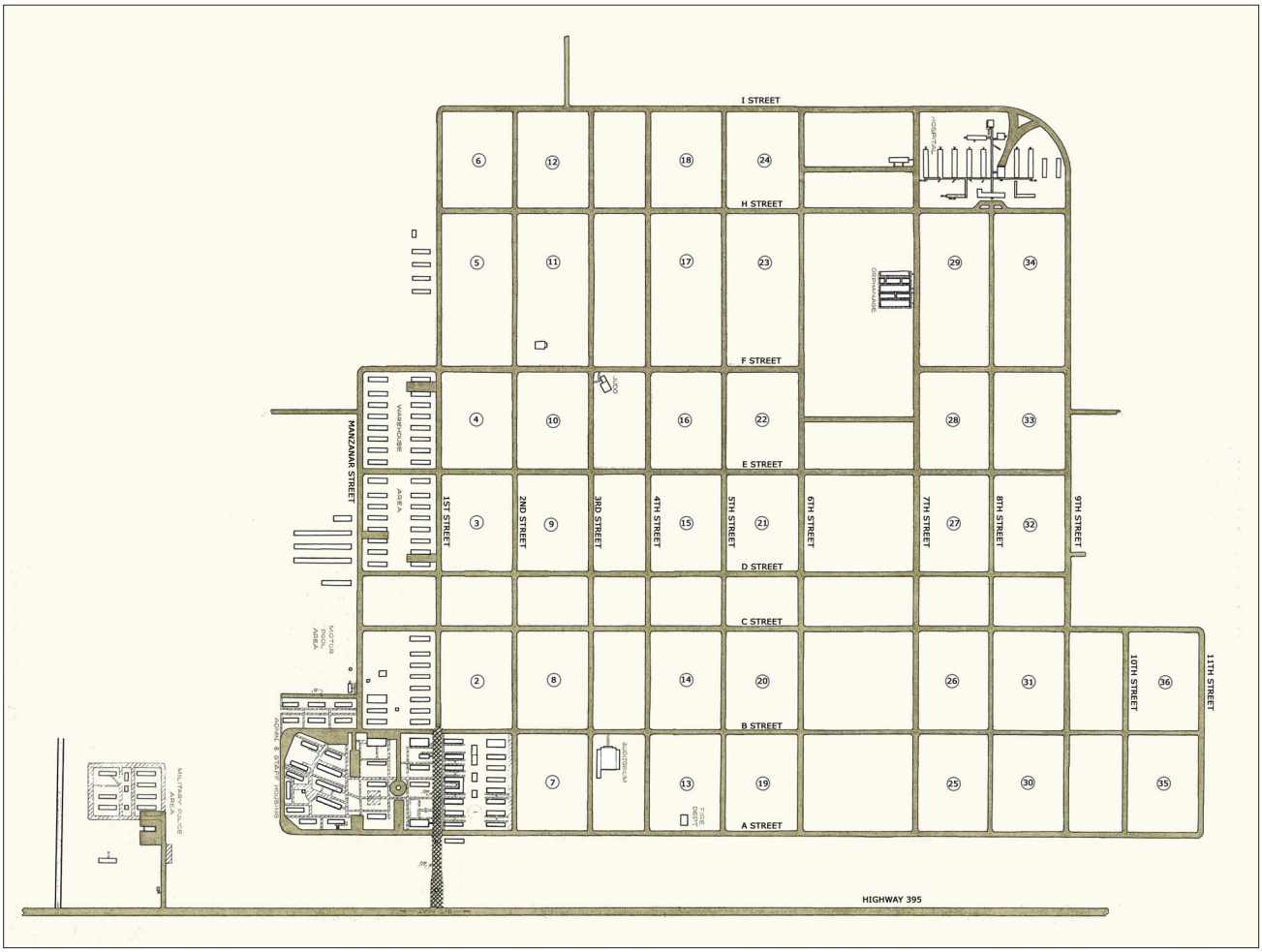


Figure 71. Camp Circulation System (Courtesy UCLA Special Collections)

Army initially constructed the road system at Manzanar, it incorporated some of the remnant road segments associated with the Town of Manzanar. Eventually, the grid was expanded and filled in, and structural components of the camp were located within that framework.[61] In combination with the firebreaks, the road grid was a fundamental structuring element of the overall layout of the camp. The road grid defined the boundaries of the residential blocks, but it also acted as a system of corridors linking blocks together as well as providing access to agricultural fields, industrial areas, warehouse zones, and recreational areas. (Figure 71)

The roads were graded only slightly above the finish grade, with minimum sloping for drainage. No additional drainage structures were built, and what run-off did occur was absorbed on the surface. The roads were designed to be 20 feet wide and were surfaced over the native soils (which were primarily decomposed granite) with a penetration of asphaltic oil.[62] Because the heaviest traffic and large freight trucks regularly used the main entry drive from U.S. Highway 395 and one block of 1st Street (leading to the warehouse blocks and motor pool area), this section of the street was wider (40 feet) and was surfaced with bituminous over compacted gravel.[63] (Figure 72)

The internee housing area was laid out entirely within this rigid grid system. The administration area, however, was characterized by some modifications to this grid, including a cul-de-sac in the administration



Figure 72. The camp roads were graded only slightly and surfaced with oil to control dust. This is a view looking west on 6th Street.

block, and a curving road alignment through the staff housing area. The post office and the town hall fronted 1st Street. Remaining buildings were clustered in the block formed by 1st Street and Manzanar Street running east-west, and A Street and B Street, running north-south. Paved parking areas were also developed in this block. Rock was placed along the edges of the roads and parking areas and concrete walkways throughout this area. First Street, which formed the north boundary of the administrative area, was a controlled public thoroughfare with access to the motor pool and warehouse group for trucks, delivery vehicles, and visiting officials.

Secondary roads and service access roads including roads into the agricultural areas were generally less formal, were aligned based on functional need and were often no more than tread tracks or compacted soil. One road leading to the south field left the camp mid-way along the westernmost warehouse block. The other access road led to the north field and left the camp from Block 33. Both of these routes were dirt roads with a relatively short portion (approximately 2,000 feet) oiled on the surface to stabilize the bed and reduce dust near the camp. Another dirt road ran parallel to the perimeter fence along the north and west sections of the camp. This road circled around and connected with the road to the south fields. On the east side of U.S. Highway 395, a service road was also constructed to provide access to the sewage treatment plant.

Although residential blocks were designed as pedestrian zones, maintenance vehicles and delivery trucks also used block interiors. In the internee housing area, there was no formalized system of roads through the blocks; however, service vehicles did access these areas. For example, oil storage platforms located on the west end of each block, opposite the mess hall building, and garbage can racks in the center area of the block were serviced by delivery and pick-up vehicles on a regular basis.

The WRA administration set speed limits on the main streets through the camp at 20 mph and at 10 mph in the service alleys. As a safety and security measure, parking was prohibited within 25 feet of any building.[64] Within a relatively short time however, it became apparent these rules were somewhat irrelevant and difficult to enforce. A report issued in June 1942, noted that "no one, either driver or pedestrian, has noticed any difference between (1) street (2) pedestrian path (3) backyards (4) alleyways (5) gardens (6) baseball diamonds."[65]

Pedestrian Systems

Although pedestrian movement through residential blocks tended to repeat certain patterns from block to block, no formal walkways linked apartments with the service buildings such as the latrines, laundry room, ironing room and mess hall within the interior area. Pedestrian paths through these areas were typically informal with residents generally using the most direct route between their apartments and service buildings. The most consistent pattern of movement within the blocks occurred at the mess hall, where, three times a day, residents gathered to line up for meals. As a result, the areas around the entry to the mess halls became informal gathering areas.

Each apartment had an entry stair or stoop of some type, and in some cases, residents constructed picket fences and border treatments adjacent to their apartments that, to a degree, controlled general access through the interior areas of the blocks, and offered some additional privacy. Some residents also constructed concrete walkways leading to apartments, and delineated other paths within the blocks with rock alignments.

Walkways within the administrative area were more formal than those designed for the internee housing area. Concrete sidewalks (leading to the administration building, the town hall, and the post office) and gravel sidewalks were common throughout this area. Walkways were also more formal in the hospital area. The wards were connected by covered walkways, reducing the amount of dust and dirt collecting in the medical buildings. In addition to the walkways, formal circulation patterns in the hospital area included a concrete sidewalk that extended approximately 90 feet between the morgue and the laundry building. In addition, the doctors' and nurses' quarters located in the firebreak south of the hospital complex had stone masonry and concrete sidewalks leading to the north end of the building from 7th Street, and two sidewalks leading from the east end of the building to the north-south street that cut through the firebreak in front of the quarters.

Informal dirt trails were used to link the camp with the agricultural fields, hog farm, chicken ranch and picnic areas outside the perimeter fence. Access to these sites from the residential blocks led through a gate in the south perimeter fence. Access to North Park, inside the perimeter fence, was along a dirt road that once led to the Shepherd Ranch.

Summary

Existing and remnant circulation systems and features from two historic periods, the Manzanar town era and the internment era, remain at Manzanar, in variable conditions. The primary circulation systems that remain include U.S. Highway 395, the entry drive, and the camp road grid, which is still largely discernible although in areas it is ill defined and, in some areas, portions are badly eroded. Francis Street, part of the original Manzanar town grid, is now called Manzanar-Reward Road and leads to the war-era airport runway east of U.S. Highway 395. The driveway to the Shepherd Ranch also remains, and large cottonwood trees continue to delineate its route.

Secondary circulation elements also remain at Manzanar. Rocks lining the edges of former roads, parking areas and walkways can be found throughout the site. Concrete stoops appear in many locations as well, and denote the location of apartment entryways. As a whole, many of the components from the historic circulation system at Manzanar remain today, and as a characteristic of the cultural landscape, contribute to the significance of the site.

Building Clusters and Structures

Introduction

Between 1942 and 1945, more than 800 individual buildings were constructed at Manzanar. While the majority of structures were simple in design and based on uniform standards, many structures were modified to accommodate specific camp operations and internee's personal preferences.

The predominant building type used at Manzanar was a wood-frame, gable-roof structure, reflecting a modified Army "Theater of Operation" style structure. These buildings were relatively inexpensive to fabricate and were designed to be assembled quickly requiring a minimum of materials. The predominant building module was the barracks building, measuring 20' x 100'. This module was used for all the internee residential barracks and recreation halls. A modified version of this building (two barracks bolted together) was used for the mess halls. Variations of the basic module

were also used for housing and staff structures at the Children's Village, the Hospital, Military Police Camp, Staff Housing Area, Administrative Area, and Warehouses. Support structures such as latrines, laundry rooms, and ironing rooms used many of the same components of the module but were of varying dimensions. Building foundations were pre-cast concrete blocks or concrete slab floors, depending on use. Most buildings at the camp were sided and roofed with building paper and wood battens. The buildings in the Military Police group and the Administration Group had painted exterior siding (with a few exceptions). The auditorium building was built to a higher standard and used better quality materials throughout.

Housing units for internees were designed to meet the minimum of providing a temporary living and working environment. They ate at mess halls and used common block latrines. Housing for WRA staff received a higher level of finish and insulation, although during the first year a number of WRA staff members lived in same barracks buildings as internees (most in Blocks 1 and 7) due to a shortage of staff housing. Eventually most staff families lived in apartments with kitchens and bathrooms. The camp staff also had a mess hall.

In addition to the wood buildings, internees built the sentry posts. Unlike the wood structures, which displayed an expedient style, these had a strong Japanese stylistic design. The battered stone walls with concrete faux wood lintels supported curved wood hipped roofs covered with cedar shingles.

Agricultural structures, warehouse structures, and maintenance buildings were also simple in design, built to accommodate utilitarian and functional purposes. Internees constructed many of the buildings beyond the original camp construction by Griffith and Company. Although most structures reflected a uniform style, modifications did occur, especially in the barracks blocks as internees added shade structures, small sheds, and awnings over windows.

A few structures were more substantial in design and construction, such as those associated with the reservoir, water and sewer systems, the hospital incinerator, and ovens at the chicken ranch and North Park. There was also one permanent monument built at the cemetery.

There were a few masonry structures at the camp, notably incinerators, outdoor ovens (also referred to in other documents as grills, barbecues, or Dutch ovens) and structures associated with utility systems.

Most of the other structures located at the camp were temporary in nature and included oil storage tanks platforms, guard towers, fences, bridges, and recreation-related structures.

In general, building and structures were organized into cohesive blocks creating functional building clusters such as internee housing and support structures, camp administration (including housing for staff), military security, industrial warehouses and agricultural structures, a hospital complex, and an orphanage (Children's Village). These functional building clusters defined daily activity and life at the camp and created segregated land use areas reflecting operations and administration of the War Relocation Center.

General Group

Cluster Arrangement (Figure 73)

The WRA called the barracks comprising the core housing area at Manzanar the *general group*. Thirty-six blocks defined the core housing area and were dimensioned based on standard plans. Each individual block contained 20 buildings, including 14 barracks buildings with four apartments in each barracks, one recreation hall, one mess hall, two latrine and shower buildings, a laundry room, and an ironing room. Residential barracks buildings were arranged in two parallel rows of seven buildings. Spacing between buildings was a uniform 40 feet, while the spacing between the rows of barracks buildings was approximately 80 feet. This arrangement of buildings created a central open area in each of the blocks where support structures were located including the men's latrine and shower room, the women's latrine and shower room, and the laundry room (regularly located between Barracks 7 and 14). A short time after initial construction was completed, ironing rooms were added between the recreation building and the mess hall in the central area of each block. [66]

Mess halls for each block were located north of the recreation halls. These buildings were the largest structures on each block, comprised of a double barracks located on the northwest corner of the block.

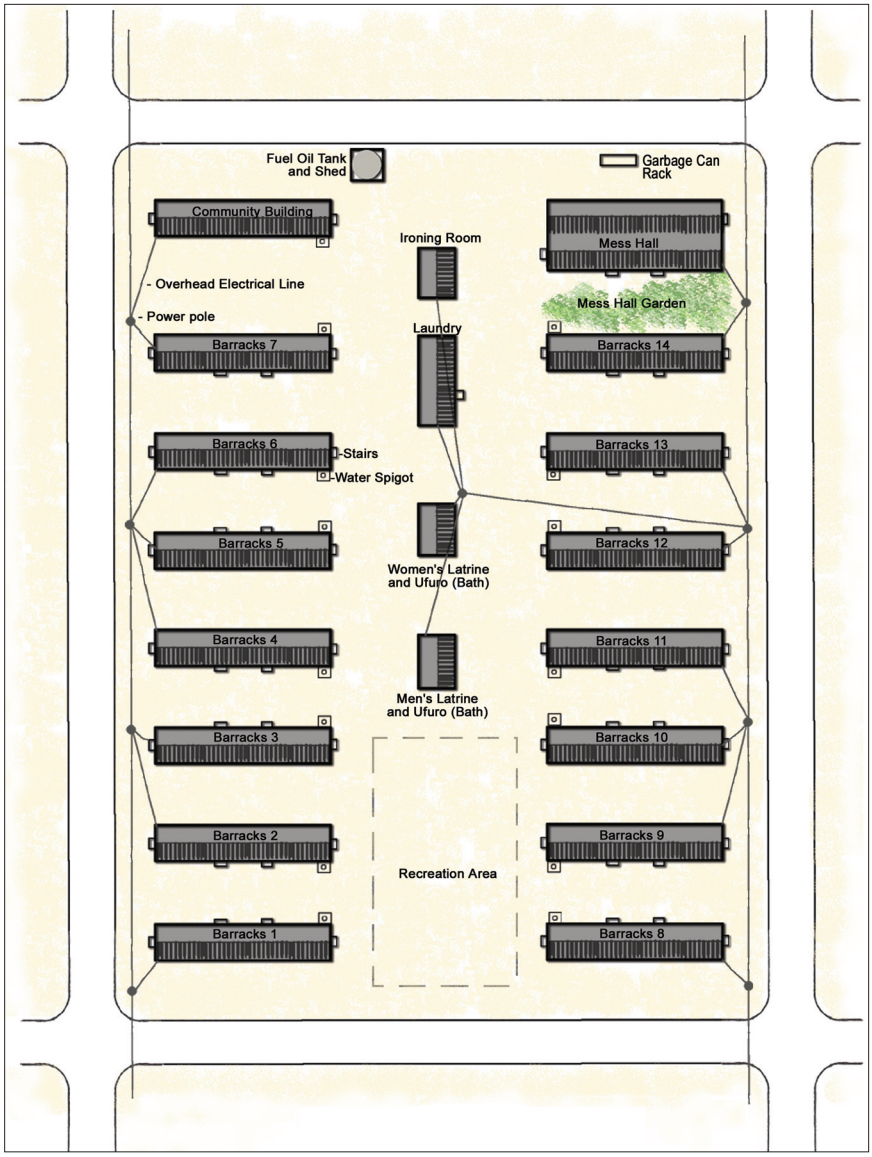


Figure 73. Typical Barrack Block (Adapted from WRA Construction Plot Plan, 1942)

Buildings

Barracks

Of the 800 buildings constructed at Manzanar between 1942 and 1945, 504 were barracks buildings used to house internees. The barracks buildings were wood-frame structures, 20' X 100' in size set on pre-cast concrete block foundations. Gable roofs were covered with sheeting and finished with roll roofing. Siding was vertical board, covered with tarpaper, and

finished with lath or batten. Each barracks had 12 sliding windows, 36"x40" in size. Each barracks was divided into four apartments with doors located at the end of the barracks building and along the sides, providing entry into individual apartments. [67] (Figure 74)

Mess Hall
The mess hall, identified as Building 16 was the largest building on each block, measuring 40' x 100' in size. Basically the mess hall consisted of two barracks buildings bolted together. Mess halls were located at the western end of each block, opposite the recreation hall.

Recreation Halls
Each block also had a recreation hall, designated as Building 15, located south of the mess hall. The recreation halls were identical to the barracks, but internal partitions varied, based on use.

Laundry Rooms
Each block contained one 20' x 50' laundry building located between Barracks 7 and 14. Like the other buildings in the residential blocks, the laundry rooms were wood-frame buildings, covered in tarpaper. Unlike the barracks buildings, however, the floors were concrete rather than wood. Each laundry room had 12 laundry tubs (one for each barracks in the block).

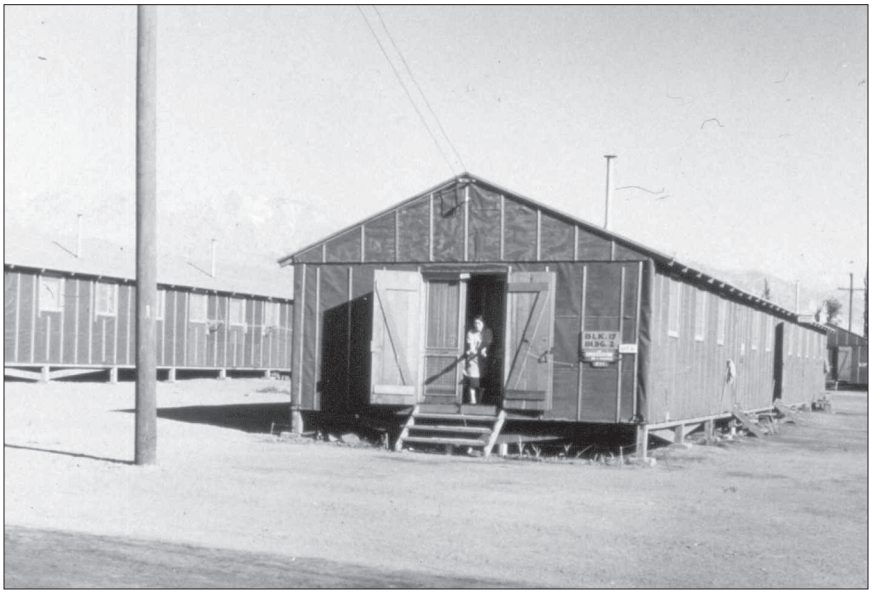


Figure 74. Historic view of residential barracks buildings. (Courtesy National Archives and Records Administration)

Latrines
The 72 latrines (one men's and one women's latrine building in each of each block) were built at Manzanar. These structures were wood-frame, gable-roofed buildings, measuring 20' X 30' in size, with concrete slab foundations. The latrines were located at the east end of the row of support buildings in each block.

Early on, internees built an *ofuro* or Japanese style bath in the men's shower room in Block 6. Built with cement rather than traditional wood, the *ofuro* could seat eight people. *Ofuros* were also built in blocks 10, 12, 17, 22, 23, and 29. By October 1942, half the blocks had Japanese-style baths.[68]

Ironing Rooms
Ironing rooms were added to each of the residential barracks blocks, beginning in June of 1942. The buildings were 20'x 28' wood-frame, gable roofed buildings with tarpaper sheeting on the exteriors.

Oil Storage Tanks and Platforms

Thirty-seven utility platforms for oil storage tanks were also constructed in each block. The oil tank platforms supporting the tanks were built on concrete piers set approximately one foot above grade. Four posts supported the platform. A gable roof, covered with roll roofing, protected the decking. Twelve galvanized tanks had a capacity of 2,450 gallons, while 25 of the tanks had a capacity of 1,250 gallons. [69]

Children's Village

Cluster Arrangement (Figure 75)

The orphanage at Manzanar, called the Children's Village, consisted of three buildings, and was located in the firebreak between Blocks 23 and 29. Two of the three buildings in Children's Village housed the orphans, while the third structure housed the kitchen, children's dining hall, social hall, offices, and living quarters of the orphanage superintendent. Like the internee barracks, these buildings were arranged in a row, perpendicular to the street. The front porches of the buildings were oriented toward 7th Street. A teahouse/gazebo was located south of (behind) these structures. A

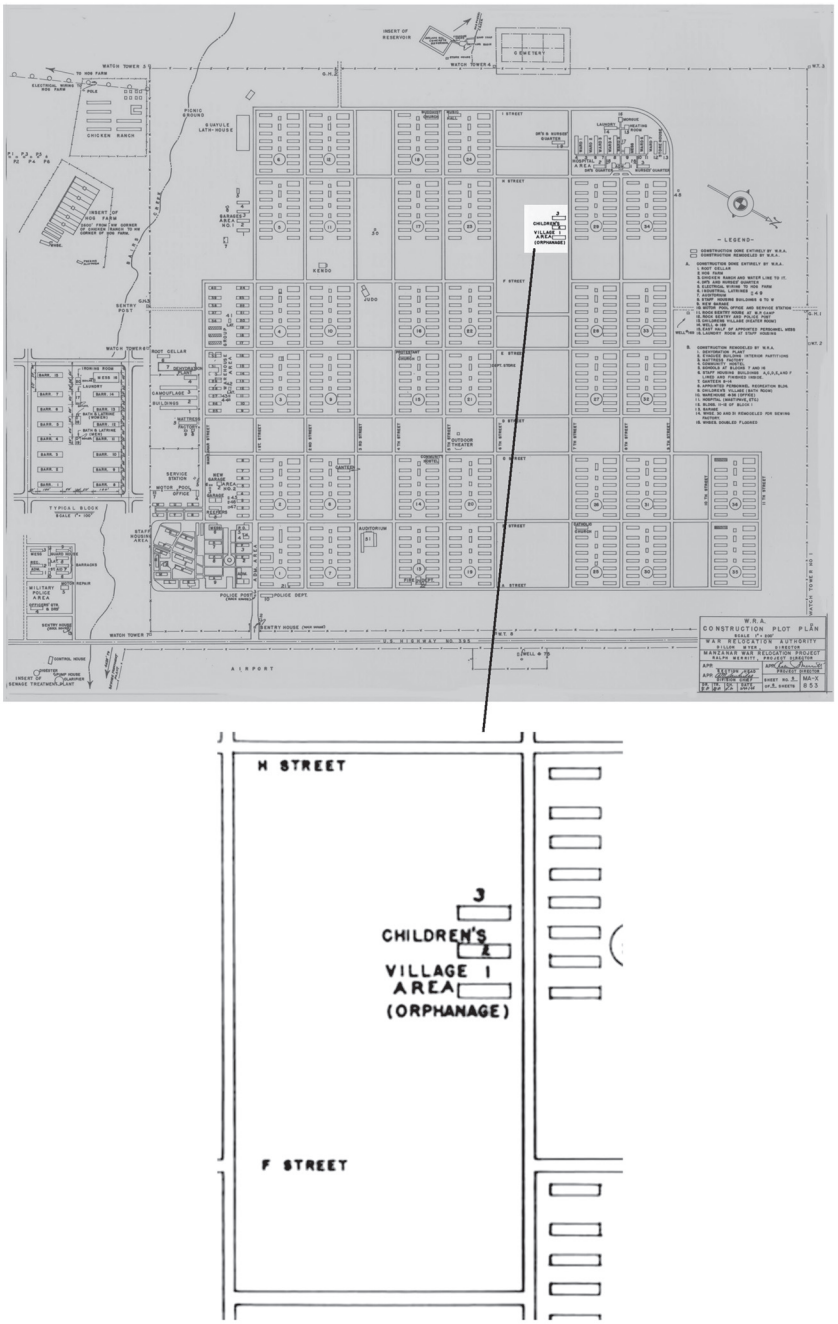


Figure 75. The Children's Village consisted of three barrack-style buildings with a large yard area. (Adapted from WRA Construction Plot Plan, 1942)

fence enclosed the complex on the southeast side of the primary buildings, creating a "backyard" for all three buildings, and enclosed garden around the teahouse.

Buildings

The buildings in this complex were constructed to a slightly higher level than the residential barracks, and were slightly more spacious. Interior details included flooring and walls of double thickness, ceilings, and running water for showers and toilet facilities. Walls were lined with plasterboard and broad lumber, painted ivory. The children's dormitories were 25' x 100' in size, and had 33 beds in each. Boys and girls lived in separate [barrack] dormitories. Rows of double-hung windows on both sides of the buildings provided ventilation. Hipped roofs extended to create shade areas at the ends of the dormitory buildings.[70]

Administration Cluster

Cluster Arrangement

Administrative functions at Manzanar were primarily clustered in two blocks located in the southeast corner of the camp, just south of the main entrance. Both in terms of design and arrangement, buildings in the administrative area were physically separate and visually distinct from the internee residential area, and the industrial areas of the camp.

The northern administration building cluster included apartment buildings for staff, a mess hall, post office, town hall, and the camp administration building. Apartment buildings were sited along secondary roads with open yards on one side. The mess hall was west of these apartments. The town hall was across the street and directly east of this structure, was the post office. The post office was constructed—like the internee mess halls—by bolting two barracks buildings together. The main building in the block was the camp administrative building. It was an L-shaped building constructed by placing two pre-existing 40' x 100' structures at right angles.

The primary housing area for staff was located south of the main administration block and consisted of 18 wood-frame buildings with accommodations for up to 250 individuals. The housing area included 14

apartment buildings, three dormitories and a laundry building. The laundry building for the staff housing area was 16' x 20' and was likely of the same construction. (Figure 76)

Although additional administrative activities occurred in Block 1, the arrangement of structures in this block was similar to other barracks blocks. Administrative functions were also carried out in blocks 7 and 16 (school), block 13 (firehouse), and at the community auditorium building between blocks 7 and 13, but do not reflect distinct cluster arrangements.[71]

Buildings

Administration Building
The Administration Building was comprised of two, pre-existing 40' x 100' structures, assembled at right angles to each other creating a single L-shaped building. The building was situated so that the two wings of the "L" met at the southwest corner, and each wing had a double gable roof that made an inverted "W". The main entry was located at the center of the east-west wing. Wood slat awnings shaded the windows from the sun. The building was constructed on concrete piers spaced 10' on center. Exteriors were sided 1" x 10" drop siding, painted white. Initially floors were 1" x 4" tongue-and-groove Douglas fir, but like other structures at Manzanar, were soon covered with Mastipave to reduce dust. The interior walls were covered with plasterboard. The building was originally divided into four offices, but it soon became necessary to divide the interior into smaller offices using plasterboard partitions.

Staff Housing
Hosing for staff was located on both administrative blocks. Five apartment buildings were located on the main (northern) administration block. Each apartment buildings measured 20' x 100'. Two of the apartment buildings (Buildings A and C) had four, one-bedroom apartments each, two (Buildings E and F—the Bachelor Quarters) had six, one-bedroom apartments each, and one (Building D) had four, one-bedroom apartments and one, two-bedroom apartment. Although space for an additional apartment building (Building B) was left between Buildings A and C, it was never constructed.[72]

Staff residential buildings were generally similar in design to the internee residences except they were constructed to a better standard. The exterior walls were covered with siding and painted white. Interiors were finished

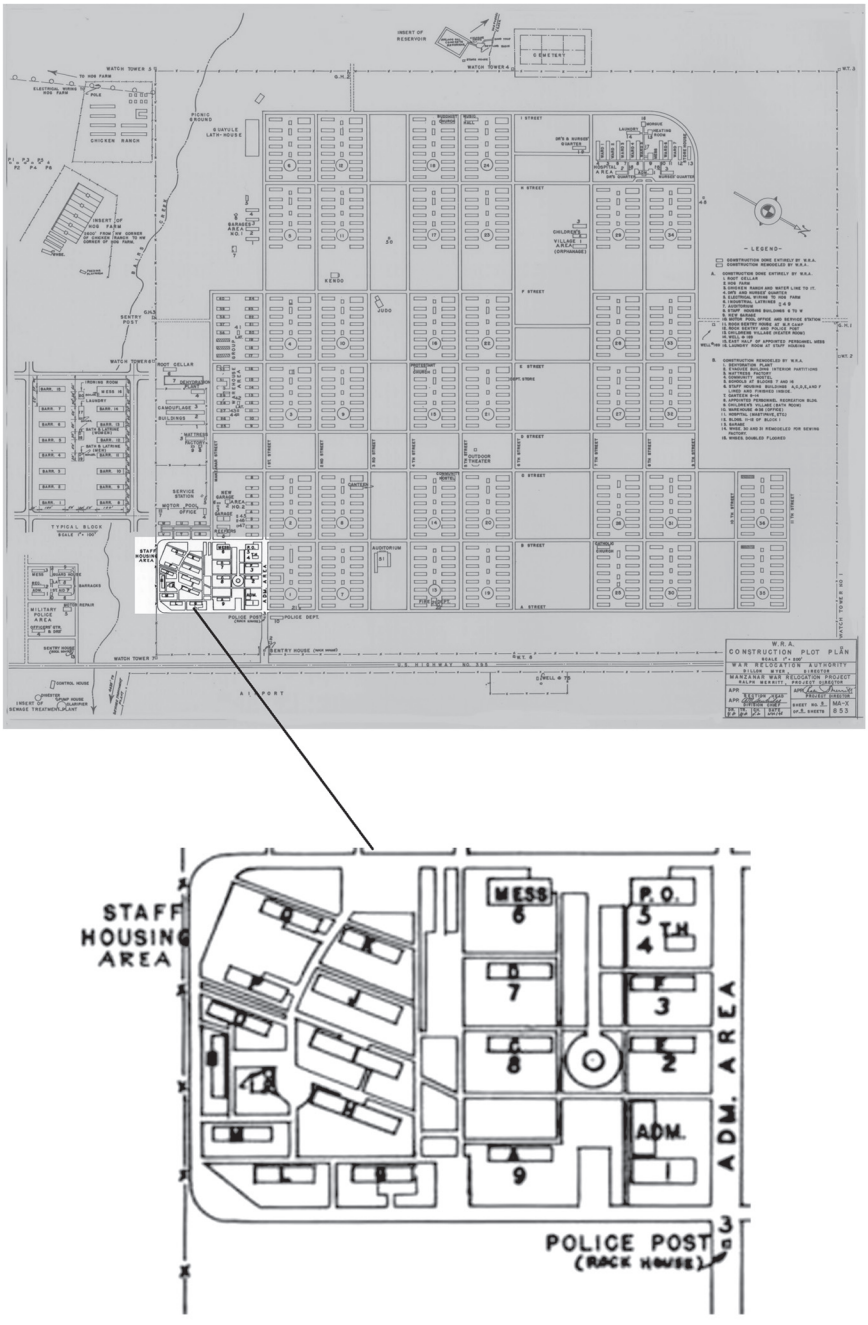


Figure 76. The administration area, located on the southeast corner of the camp , was distinctive in layout and deviated from the strict grid that dominated the site. (Adapted from WRA Construction Plot Plan, 1942)

with plasterboard. Roofing material was applied to provide a double thickness over the whole roof.[73]

In addition to these buildings, another relatively large staff housing area was located in the block south of the main administration cluster and consisted of 18 wood-frame buildings, designed to house up to 250 individuals. The housing area included 14 apartment buildings, three dormitories and a laundry building.[74]

Although temporary in nature, the staff housing was more substantial than internee barracks and included refrigerators, electric ranges and space heaters. Fourteen buildings were four-family apartment buildings, three were dormitories, and one was a central laundry. The apartment buildings were designated G through W. Each building was 20'x 94' in size, with concrete pier foundations. Exteriors were sheathed with 1" x 6" shiplap siding and painted white. A 1" x 3" sloping water table was placed around the buildings 4" below the finished floor line, and the space below was boxed in with 1" x 6" redwood sheeting. Floors were 1" x 4" tongue-and-groove Douglas fir. Interiors were plasterboard. The buildings had awning-type windows and cabinets in kitchens. Building G had three apartments: the Director's residence, a one-bedroom apartment, and a two-bedroom apartment. Buildings K-W each had four apartments; the two center apartments had one bedroom each, and the two end apartments had two bedrooms each. Buildings G, L, M, R, S, T, U, V, and W were oriented north-south. Building N was oriented east-west. Buildings H, I, J, K, Q, P and O were oriented on a SW-NE diagonal. The three dormitories (Buildings H-J) were of the same construction as the apartments, but were 24' x 140' in size. The gable roofs on these three buildings extended past the walls on the east end to form covered porches. They each had 10 double rooms, three single rooms, a lounge, a kitchen, a bathroom, a storage room, and a heater room.[75] The laundry building for the staff housing area was 16' x 20' in size.

Staff Mess Hall
The staff Mess Hall was 40' x 100' in size. In 1943, a 20' x 100' addition was constructed.

Town Hall
The town hall was 20' x 50' in size and like the other buildings in the administrative and staff housing areas, was constructed to a slightly better standard than the general group. The exterior walls were covered with wood siding and painted. Interiors were plasterboard. The main entrance

consisted of a pair of doors on the north end with a window to the right. The gable roof was sheathed with roofing paper and secured with battens. Manzanar's internal government representatives, the block managers, held their meetings in town hall and, until the auditorium was built in 1944, it was the principal public building designed for use by the internees.

Post Office

The post office, also located in the administrative block, was 40' x 100' in size. It was similar to the mess halls, comprised of two barracks buildings bolted together. As with the other structures in the administrative block, the exterior walls were covered with 1" x 10" drop siding, painted white. Interiors were finished with plasterboard. The building had double doors on the northeast gable end. There were 4-light sliding windows on the east and west elevations. The double gable roof had an inverted "W" shape, and was sheathed with roofing paper held in place with battens.

Reception Building

The reception building, located near the camp entrance, was typical of the barracks construction. It was a wood-frame structure, 100' X 20' in size with a concrete block foundation. The floors were 1" x 6" tongue-and-groove. Like the typical barracks buildings, the reception building had sliding sash windows, 36" x 40" in size, with 12 windows on each side of the building. This building was converted to the Police Station very early on, and a concrete floor and jail cell were added. (See security structures below.)

Fire Station

The fire station for Manzanar was located in the east-central portion of Block 13. No descriptions of the fire station have been found.[76]

Other Administration Buildings

Schools and Classrooms

Temporary elementary schools opened on September 15, 1942 in un-partitioned recreational halls in Blocks 1 and 7. In 1944, after some internees had relocated, or were moved to Tule Lake, or had left for military service, additional recreational halls were available to convert to classroom use. Elementary classrooms were set up in Block 16. The recreation hall in Block 7 was remodeled for a high school. Remodeling consisted of adding extra windows and doors in the barracks buildings, constructing partitions, and adding light fixtures, flooring, insulation, and heating stoves.

In addition to remodeling available recreation halls to function as

elementary and high schools, facilities were provided for preschool classes in several locations at Manzanar. These included: Block I, Building 14; half of Building 15 in Blocks 9, 20, 23, and 32; one-third of Building 15 in Blocks 17, 30, and 31; and Block 2, Building 15.

Auditorium
The auditorium was the largest wood-frame structure built at Manzanar measuring 118' X 119' in size. The building was classified by the WRA as "gymnasium type A". The main auditorium floor was 80' x 96' in size. The stage at the east end was approximately 4 feet high and 22 feet deep, with an overall width of 30 feet. On each side and adjacent to the stage were dressing and storage rooms on several levels. One-story, shed-type sections were constructed along the full length of the main section on the north and south side and housed toilets, dressing rooms and offices. The shed–type section on the south side of the building extended 40'-9" beyond the east end of the building. The building was constructed on concrete piers. The finished floor was 1" x 4" tongue-and-groove Douglas fir sanded and varnished. There was a shed-type roof built over the stage and the projection room. There was a concrete porch on the west front for a recessed entrance to three sets of double doors. Above the porch, was a projection booth (consisting of two rooms) lined with fireproof asbestos board. Two inside stairways led from the main floor to the booth. The exterior wall finish was 1" x 6" V-groove shiplap, painted. The interior wall finish was tongue-and-groove. The auditorium ceiling was finished with fiberboard. During the 1950s, the stage was demolished to create a truck ramp into the building which was being used as an Inyo County Highway Department maintenance shop, and the south wing was detached and moved to Lone Pine to serve as the VFW Hall. (Figure 77)

Hospital Complex

Cluster Arrangement

The hospital complex was designed to accommodate 250 patients and was comprised 17 structures, located in the far northwest corner of the reception center. The hospital cluster included a central administration building, general wards, a pediatric ward, quarters for doctors and nurses, a hostel, a surgery building, a morgue, a laundry building, storehouses for supplies, and a boiler house.[77] Individual buildings within the hospital complex were spaced a minimum of 50 feet apart and, with the exception



Figure 77. Photograph of the auditorium, completed in 1944, prior to rehabilitation. This structure now serves as the Interpretive Center for the historic site. (Courtesy of Toyo Miyatake Studio)

of the storehouses, were connected by wooden walkways. Space between the building was landscaped, typically consisting of lawns and flower beds, as well as benches, terraces and rock walls.

Fronting H Street, the administration building was the reception point for visitors and patients, and created a somewhat formal entry. The administration building was a shallow U-shaped structure oriented north to south with projections on the northwest and southwest.

The doctors' quarters, located south of the Administration Building, and the nurses' quarters, located north of the Administration Building, were oriented north to south with entry doors at each end.

Individual buildings within the hospital complex were connected by covered walkways, arranged in parallel rows perpendicular to H Street. Walkways connecting the administration building with the wards, the mess hall, and the morgue were enclosed. Walkways linking the doctors' and nurses' quarters to the wards were not enclosed. Seven wards including one obstetrical ward, four general wards, and two isolation wards were located behind the administration building, generally orientated east to west. An extended walkway ran along the north side of the buildings, linking all seven wards. (Figure 78)

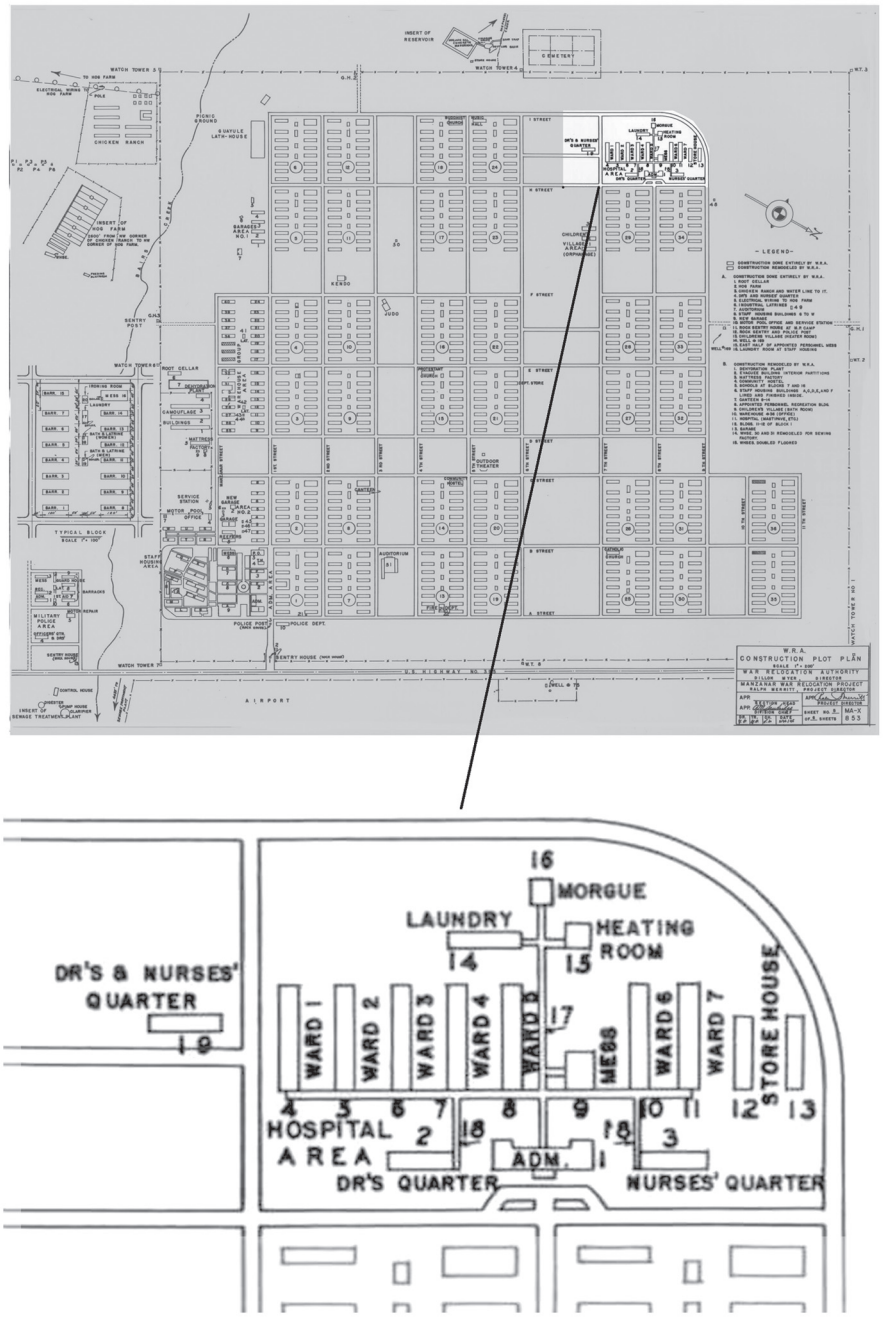


Figure 78. The hospital complex included seventeen structures. (Adapted from WRA Construction Plot Plan, 1942)

Service and support structures were clustered near the wards and included two storehouses on the north end of the complex and a laundry, a morgue, and a heating plant sited west of the wards. A mess hall was located between the wards behind the administration building.

Other buildings and structures associated with the hospital were located nearby including the community hostel located in Block 34, Building 15. This building was used for the treatment and care of patients who did not require hospitalization, but nonetheless needed some medical attention.

Buildings (Figure 79)

Hospital Administration Building
The Hospital Administration building was relatively large structure measuring 255' x 147' with projections on the northwest and southwest giving it a shallow "U"-shape.

Doctors and Nurses Quarters
The doctors' quarters, located south of the administration building and the nurses quarters, located north of the administration building, were each 20' x 100' in size with gable roofs. The buildings were oriented north to



Figure 79. View towards the hospital looking northwest. (Courtesy National Archives and Records Administration)

south with double doors at each end. A covered walkway connected the north end of the doctors' quarters to the wards. Another covered walkway connected the south end of the nurses' quarters to the wards.

Wards
The hospital group included of seven wards: one obstetrical ward, four general wards, and two isolation wards. All were 25' x 150'-6" in size. The wards were oriented east to west with a north–south running enclosed walkway at the east ends.

Storehouses
The two storehouses were 20' x 100' in size. They were wood-frame structures on concrete block foundation footings.

Hospital Mess Hall
The mess hall was 40' x 60' in size and was oriented east-west. It connected to the enclosed walkway on the east and south sides of the building.

Hospital Laundry
The Laundry building was 20' x 100' in size with a concrete foundation and slab floor.

Morgue
The morgue building was 23' x 33'-6" in size. It had a concrete foundation and slab floor. The interior was divided into four rooms.[78]

Heating Plant
The heating plant was 40' x 38' in size and sheathed in galvanized corrugated sheeting.

Hospital Housing
When the hospital opened, the two blocks immediately east of the hospital complex—Blocks 29 and 34—which had been recently completed, became the temporary home to hospital employees and their families.[79] When Caucasian doctors replaced internee doctors, the quarters were remodeled. Later, south of the hospital block, an apartment building for Caucasian members of the hospital staff was built. It was a four-family unit identical to those in the staff housing area, constructed using internee labor in the firebreak south of the hospital and north of Block 24.[80]

Hospital Incinerator

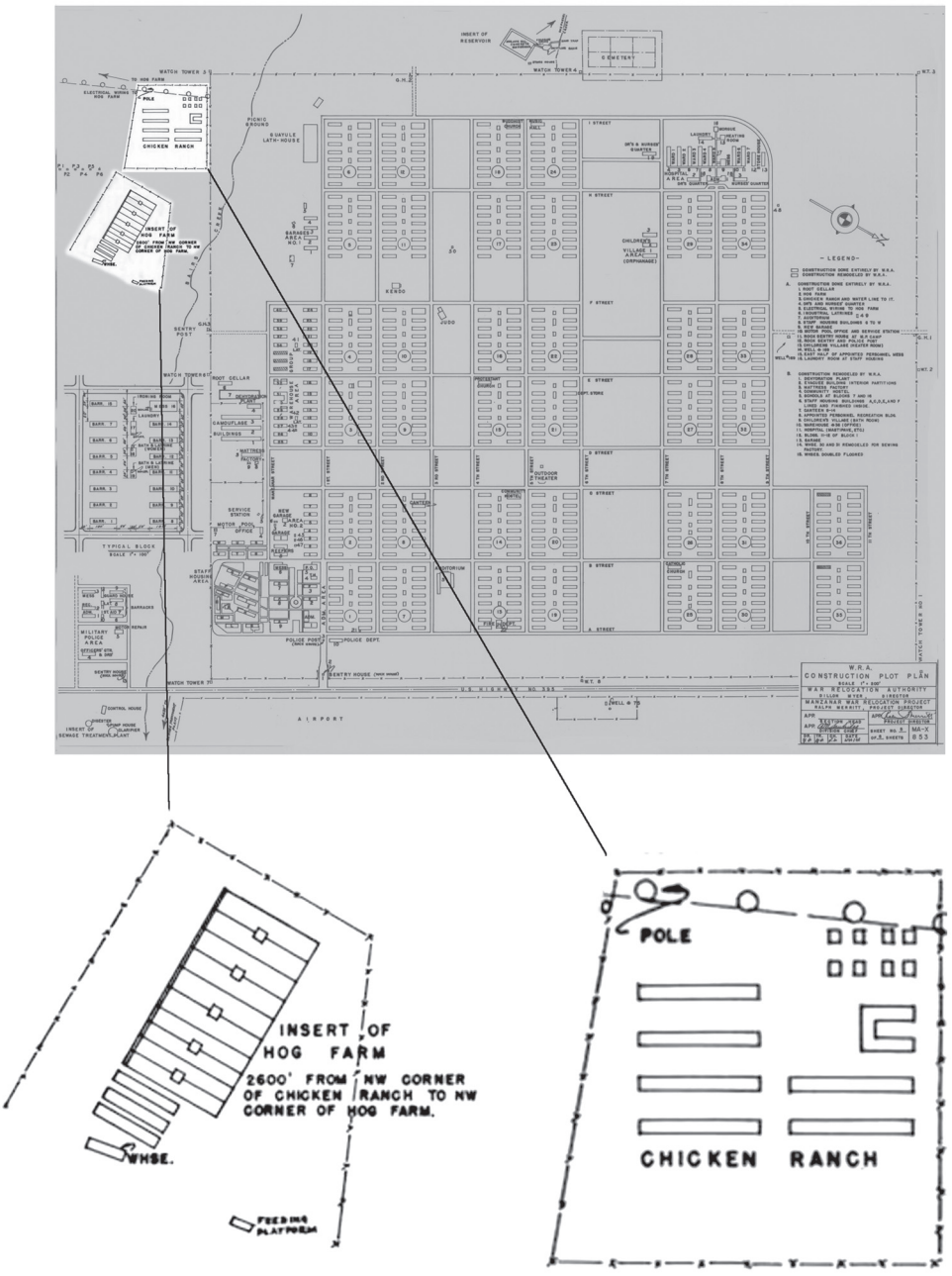


Figure 80. Agricultural buildings were located outside of the perimeter fence and included both a chicken ranch and hog farm. (Adapted from WRA Construction Plot Plan, 1942)

The hospital incinerator was constructed of local stone with outside dimensions of 8' x 8' x 6' and a stack 12 feet high. A cement slab extended 4 feet on each side of the incinerator and 10 feet in front.[81]

Community Hostel
Constructed in Block 34, building 15, this structure provided for outpatient treatment and care of patients whose illnesses, including psychological problems, did not require hospitalization.

Agricultural Clusters

Agricultural operations at Manzanar included field crops, nursery works, a chicken ranch, hog farm and, for a short period, cattle. Although various small-scale structures may have been associated with these activities only the primary building clusters are addressed here including the chicken ranch, hog farm, and guayule lath house all of which were clustered in the southeastern portion of the camp.

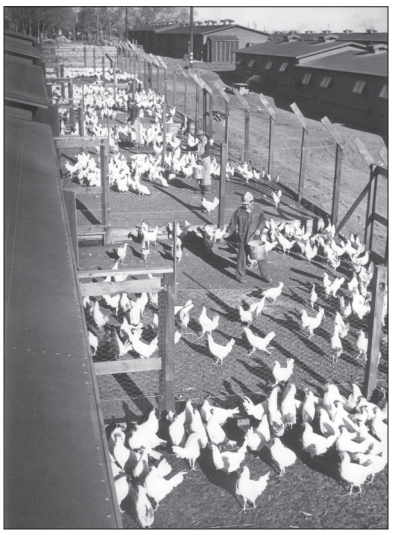
Chicken Ranch (Figure 80)

The chicken ranch covered approximately five acres just beyond the south boundary fence. Following WRA plans, the facility had 48 hen houses (in six individual structures), 16 brooder houses (in eight structures), a processing plant, an office, and an incinerator.

Hen Houses
The six hen houses were aligned in two rows on the eastern side of the cluster. Individual buildings were 20' x 192' in size and stepped down the gently sloping site. Each house was divided into eight units, with each unit measuring 20'x 24', providing room for 175 hens. Each section had a roof vent. Outside each section were 20' x 24' runs enclosed by 2" mesh chicken wire on wood posts. The floors and foundations were concrete. (Figure 81)

Brooder Houses
The eight brooder houses located on the west side of the complex were 14 x 24 feet in size and divided into two equal sized rooms, each large enough to brood 500 chicks. Construction was the same as for the other buildings except for the following variations. The rear walls of the buildings were 6'-6" high and the front walls were 7'-6" high. The brooder houses had shed

Figure 81. The Chicken farm was located outside the perimeter fence on the south side of Bair's Creek, 1943. (Courtesy of the Library of Congress, Prints and Photographs Division, Ansel Adams photograph)



roofs, and the exterior walls were 1" x 6" shiplap, painted white.

Office and Processing Plant
The office and processing plant building was located between the hen houses and the brooder houses. The relatively large structure had an overall area of nearly 3800 square feet. A U-shaped building it consisted of two 20' x 80' sections oriented north-south which were connected on the south end by a 20' x 30' section. The feed storage space, office, and egg-storage rooms were located in the arms of the "U" and the dressing and packing room was located in the connection.

Incinerator
The incinerator at the chicken ranch was located just south of the processing plant, and based on archeological evidence, may have been surrounded by a garden area. Internees constructed the large rock and concrete incinerator[82] The main portion of the structure was a stone masonry oven approximately 6' x 5' in plan and approximately 10 feet tall. The top of the grill was concrete, scored to resemble flagstone and painted a reddish-brown. The chimney was also stone masonry, topped with a 32-inch-high by 19-inch-diameter concrete tube coated with a layer of concrete painted reddish-brown.

Hog Farm

The hog farm consisted of a small cluster of structures covering approximately six acres located about one-half mile south of the chicken ranch. The building cluster at the hog farm included two buildings—depicted on blueprints as an office and a warehouse. Other structures included hog pens, windbreaks and shelters, garbage feeders, a brooder house, and a loading chute.

Warehouse and Office
The warehouse was a wood-frame structure, measuring 20' x 80' with a concrete foundation and slab floor. Walls were 8 feet high. There were double doors at each end of the building. Siding was comprised of fir sheeting covered with building paper held in place with battens. The gable roof was sheathed with fir and covered with mineral-surfaced roofing material. The peak of the gable was vented.

No description remains of the office but a historic photograph shows a small wood frame gable roof structure with what appears to be horizontal

siding and roll roofing. It was likely moved to the site from somewhere else as it does not resemble other Manzanar buildings. [83]

Sheds and pens
Farrowing pens and brooder houses were constructed as single units. Each unit was four feet high at the back and six feet high at the front with a shed roof. Each structure was divided into six, 8' x 5' sections; each with doors at the front and rear connecting to outside pens. The pens on one side had cement floors for feeding. A concrete trough, 12 inches wide and four inches deep, extended the full length of the feeding platforms.

Guayule Lath House

The guayule lath house (a special propagating nursery) was constructed south of Block 6, between the edge of the central developed area and Bairs Creek. The lath house was 104' x 136' in size and was a simple wood frame structure with lath on walls and roof. (Figure 82)

Industrial Facilities, Warehouses, and Maintenance Clusters

Industrial structures and storage warehouses were clustered on the southern



Figure 82. Interior view of the lath house, where guayule plants were sprouted from seeds. (Courtesy of the National Archives and Records Administration)

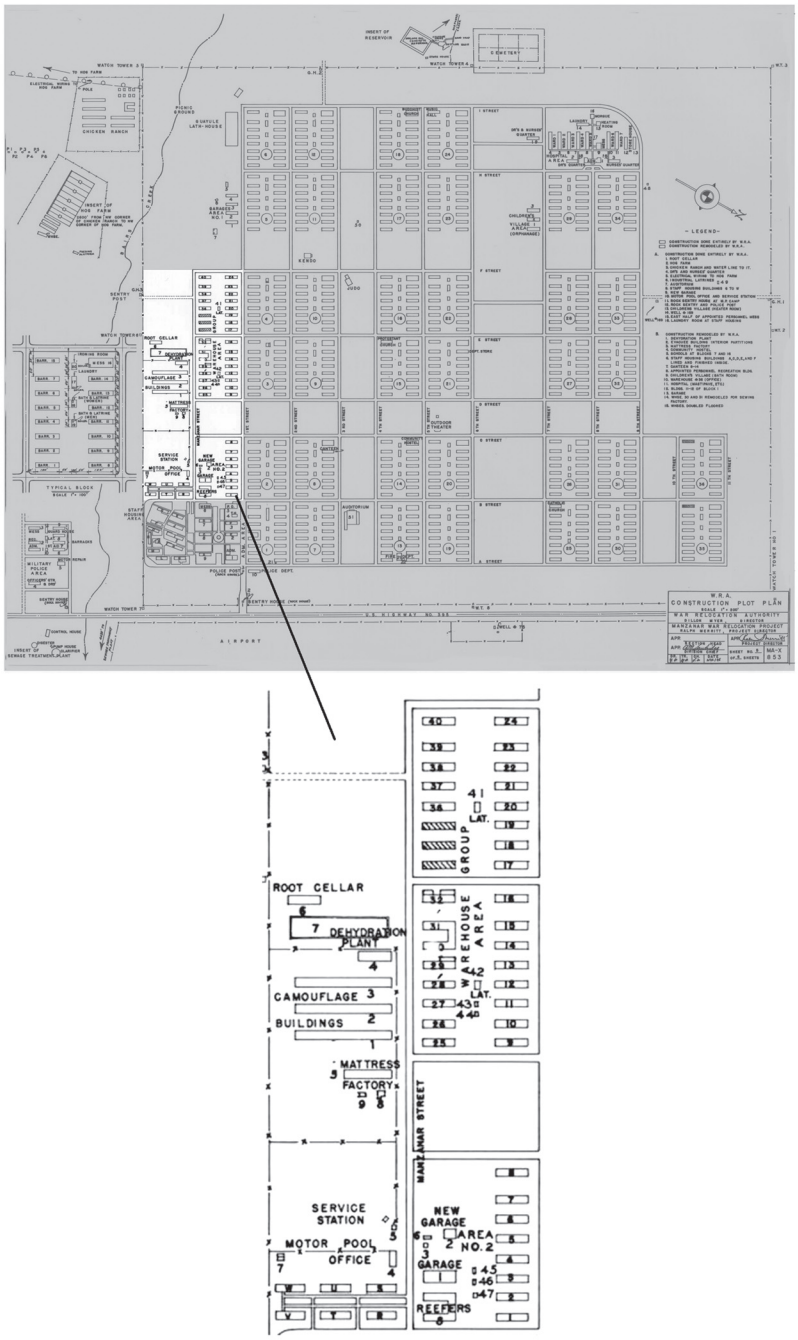


Figure 83. Industrial facilities included warehouses, maintenance buildings, and garages. (Adapted from WRA Construction Plot Plan, 1942)

portion of the camp, south of 1st Street. This location was physically separate from the residential areas of the camp, and provided direct access, (via 1st Street) for delivery vehicles and heavy equipment. Industrial buildings, warehouses, and maintenance structures were arranged and sited to facilitate functional efficiency. Industrial clusters within this group included the motor pool area, warehouses, a garage group, and a separate cluster of factory buildings. (Figure 83)

Industry

Camouflage Net Buildings

The camouflage net production factory consisted of five buildings grouped together in the industrial area of the camp, west of the administration block and south of the warehouse buildings. The factory buildings were designed for the production of camouflage nets for Army use, and were built using heavy-duty construction techniques.

Three buildings, measuring 300' x 24' and 18 feet tall, were constructed to accommodate net production. They were built with 6" x 12" posts, set on 10-foot centers which supported a double set of 2" x 6" rafters bolted to each side of the posts. The roofs were covered with random-width sheeting laid diagonally and covered with 90-pound roll roofing. The exterior walls were covered with 10-inch drop siding extending between the floor to 10 feet above. The ends of the buildings were covered from floor to ridge. The floors were concrete. Two of the buildings had 12' x 20' additions with shed roofs that served as offices. (Figure 84)

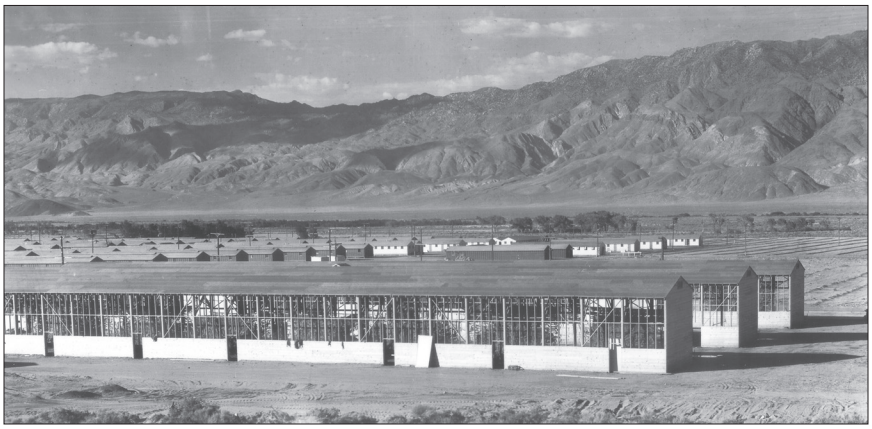


Figure 84. Camouflage nets were made by internees at Manzanar in three buildings located south of 1st Street. Warehouses were also located in this area. (Courtesy of the National Archives and Records Administration)

The fourth building was 24' x 100' in size. It had one enclosed shed with an attached 60' x 100' open shed used for net cutting and net garnishing. The enclosed shed had 18-foot-high walls and a concrete slab floor. The open shed had eight-foot high walls and was open on one side and covered on one side and one end with 10-inch drop siding.

The fifth structure was the cutting shed, measuring 150' x 24'-6". All the materials necessary for the fabrication of the nets were processed in this building. It had 2" x 4" floor joists with 1" x 6" shiplap flooring. One long side of the building was open while the other had sheeting from floor to plate line with 10-inch drop siding. The ends were sheeted from floor to ridge with the same material.[84]

After the camouflage net factory ceased operation in December 1942, the WRA remodeled the cutting shed (the easternmost building of the net factory complex) for use as a mattress factory; a fire destroyed the building in 1943, but not before evacuee laborers had produced some 4,000 mattresses for Manzanar residents.[85] The other 24' x 100' shed was reused as a food dehydration plant after the net factory closed. The three partially open 24' x 300' concrete-floored sheds were converted into carpenter, plumbing and electrical shops. [86]

Root Cellar
Storage of root vegetables and other foods produced by the agricultural project were stored in a 100' x 26' root cellar. Constructed between July and October of 1943, it was located west of the former camouflage net factory complex. It was a wood-frame building with a concrete foundation. Three-fourths of the structure was below grade, and the gable roof was covered with dirt. (Figure 85)

Rice Malt Room
A rice malt room was constructed in the north end of camouflage net building number four and was 12-foot square with 7-foot ceilings, framed with 2 x 4 material and sheathed inside and out with 1 x 4 tongue-and-groove flooring.

Garment Factory
The garment factory, in which 100 sewing machines were used to produce mattress covers, curtains, hospital uniforms, police uniforms and men's and women's apparel, was temporarily located in Warehouse 31. Plans were made to move this facility to a new location west of the camouflage

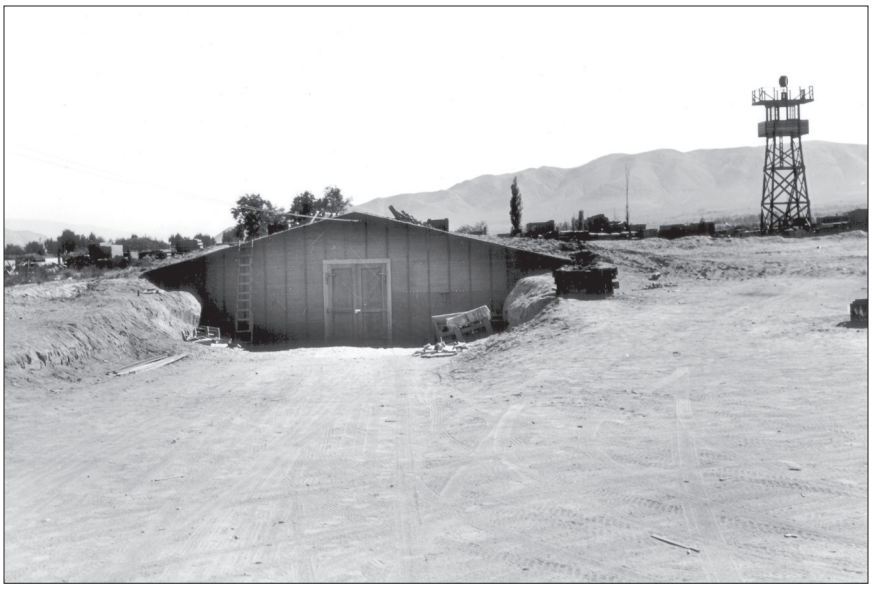


Figure 85. Historic view of the root cellar and guard tower. (Courtesy of Toyo Miyatake Studio)

factory in early 1943, but only the foundation and slab for this building were constructed. Smaller-scale industrial projects carried out in this structure included a furniture shop, a sewing machine repair shop, and a typewriter shop.

Motor Pool

The WRA established a motor pool area west of the staff housing block and south of the first warehouse block. The motor pool office was constructed in this area that commanded a view of the entrance. It was a 20' x 50' building originally used by the Corps of Engineers. By June 1942, the motor pool consisted of a fleet of 64 vehicles, a combination of sedans, Army pickup trucks, and dump trucks. The complex also included facilities for auto repairs and service. A small gas service station was also a component of the Motor Pool area.

Another cluster of garages was located in this industrial zone south of 1st Street. Some six buildings comprised this cluster of garages, located opposite Block 5. It appears that these garages were planned to store impounded vehicles that internees had driven to Manzanar.

Motor Pool Office
The WRA established a controlled motor pool area west of the staff housing

block and south of the first warehouse block. It was a 20' x 50' building originally used by the Corps of Engineers during initial site construction. When it was moved to this location, two partitions in the building were rearranged and one partition was added, floors were patched, and walls and ceilings were whitewashed. Rotary hand pumps were attached to 50-gallon drums, which served to dispense gasoline.[87]

Automotive Repair Shop
Located just north of the motor pool office, the automotive repair shop was a wood frame structure with a concrete slab floor, and measured 40' x 100'.

Automobile Service Shop
Located to the west of the repair shop, the automotive service shop was a wood-frame building, measuring 48' x 30'. It had concrete foundation footings and floors. It had three stalls of equal size, one for lube, one for washing, and one for painting. Each stall had a 12' x 12' door opening equipped with accordion folding doors of four sections on an overhead track.

Gas Service Station
A small service station was constructed in late 1942. It was a 10' x 16' structure with a concrete floor that projected four feet beyond the front of the building. It was a wood-frame building covered with tarpaper. It had a shed-type roof that also extended four feet beyond the front wall to form a canopy or shade. The walls were seven feet high on low side and eight feet high on the high side or front. The building had casement type sash windows in the back wall and on each side of the door which was in the center of the front wall.

Warehouses

Twenty-nine warehouses were built as part of the initial construction of the center (on WRA Camp Layout map dated 4/20/1945 they are numbered 9 – 40). These warehouses were built in the two adjacent blocks south of 1st Street between C and F streets. Arranged in rows similar to the residential barracks, the warehouses were 20' by 100' in size, barrack-type buildings with 5' x 7' double doors in each end. Warehouses 31 and 37 reportedly had concrete floors.[88] Each warehouse block also included a latrine designed and constructed by Ryozo F. Kado. Each latrine was a wood-frame structure, 16' x 24' with a center partition separating the men's side from

the women's. The foundation and floors were concrete.

Garage Block Warehouses
A single row of eight, 20' x 100' warehouse buildings was built in the block immediately east of the two warehouse blocks; and two refrigerated warehouses were also erected along the south side of this block.

Refrigerated Warehouses
Refrigerated warehouses were constructed as two 20' x 100' barrack-type buildings, connected by a 40-foot annex, to form a U-shaped building. In this annex, meat was cut and fruit was sorted. The refrigerated warehouses were insulated with "Palco" a wool-type material, which was installed on the sides, ceilings, and floors in 6-inch-thick sheets.

Military Police Cluster and Internal Security Structures

The military police cluster was comprised of 13 buildings located southeast of the camp, just south of the boundary fence and Bairs Creek. The large block that contained the complex was divided into three areas defined by short access roads. Eight of the 13 buildings in the cluster were basic barracks-style structures, with some modifications to the interior spaces. The western end of the compound contained the majority of structures. Enlisted soldiers were housed along the north side of the cluster, in four of the standard 20' x 100' barracks. These quarters were designed to accommodate 50 soldiers in each. South of the barracks were the administration building and storeroom, a mess hall, and a recreation building. A latrine, the guardhouse, and a first aid station were located between barracks and administration building. The middle area of the compound contained another barracks-style building providing seven quarters for officers and doctors. East of this building was the garage or motor repair building, with a shed for eight vehicles. Access to the complex was from the main highway, passing a rock sentry house located east of the building cluster along the access road to the military police compound. In this regard, general access to the military police area was highly controlled and physically separate from the main camp. (Figure 86)

Internal Security Structures
In addition to this primary complex of structures, other buildings associated with the military police were clustered near the camp entrance. One of these buildings, the internal police station and jail, was located in a remodeled barracks building located in the administrative area. In addition, there

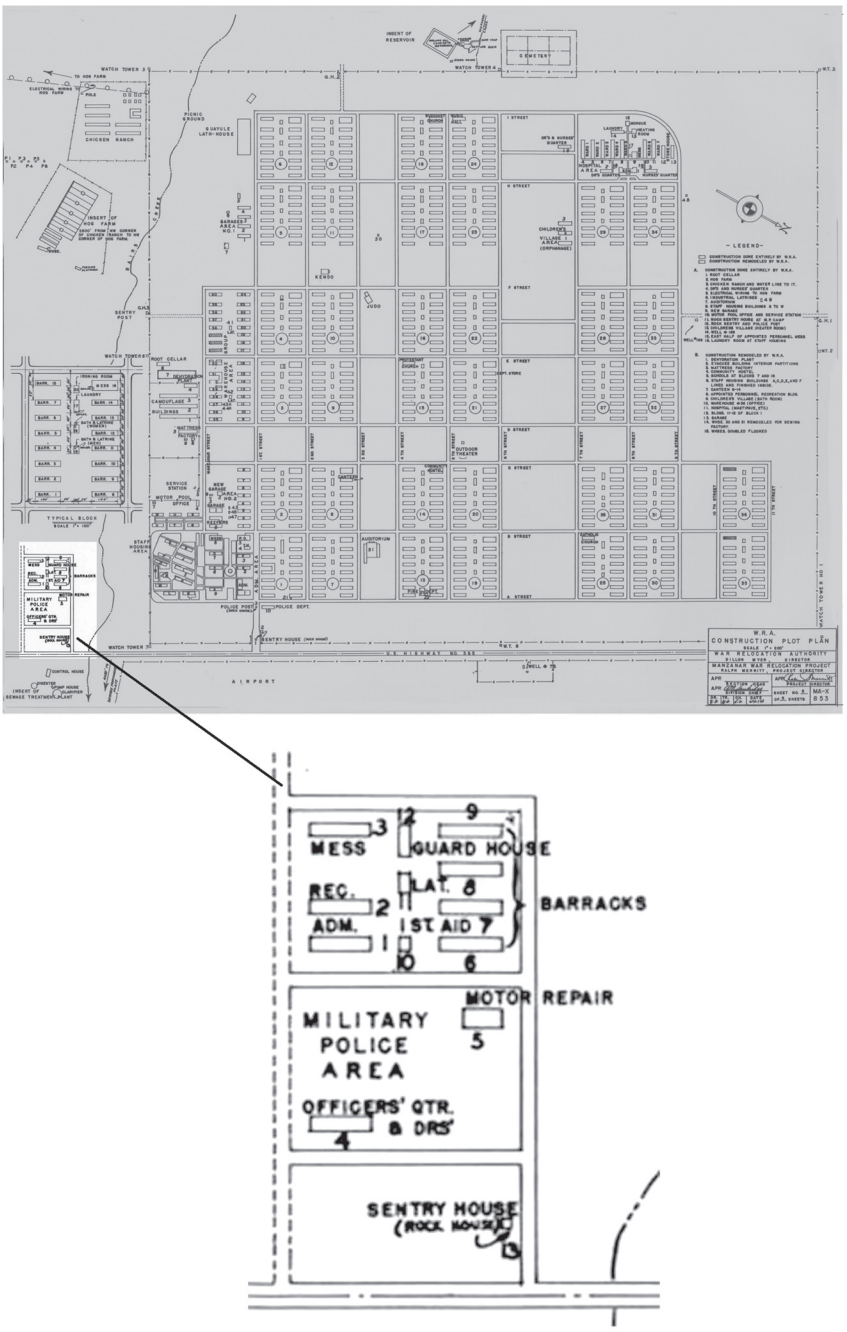


Figure 86. The military police complex included thirteen buildings located southeast of the main camp, outside of the perimeter fence. (Adapted from WRA Construction Plot Plan, 1942)

were two sentry posts at the park entrance that served to control vehicles and individuals leaving and entering the camp.

Police Station and Jail
The original reception building located in the administrative area was remodeled by the WRA for use as a police station. Unlike the other buildings in the administrative area, it was constructed like the general group of buildings. As part of the remodeling effort, a concrete floor was constructed, and a jail cell and three partitions were installed. The Manzanar internal police department occupied the new station in July 1942.

Sentry Posts
At the entrance to the camp, two sentry posts served as control checkpoints for visitors entering and leaving the camp. Both buildings were designed and constructed by internee stonemason Ryozo F. Kado in 1942.[89] Although similarly styled, they were constructed to different dimensions and fulfilled slightly different functions. The larger of the two buildings, shown on blueprints as the rock sentry house and known today as the military sentry post, was built in the middle of the entry drive, near U.S. 395. This building was used by the military police to control vehicles and individuals leaving and entering the camp. The smaller structure, shown on blueprints as the rock house and known today as the internal police post, was located east of the rock sentry house in the center of 1st Street, opposite the police station.

Both buildings feature curving wood-shingled roofs projecting over battered walls of rock masonry, creating a very distinct building profile that evoked traditional Japanese architecture. The rock used in their construction was obtained from the surrounding mountains. The stones were hand cut and set in cement mortar.

The sentry post was roughly 12'-4" x 14'-4" with a pair of windows flanking a central door on both the north and south sides. Windows were also centered on both the east and west sides. Located just off the northeast and southeast corners of the building were two concrete stanchions, or bollards, designed to resemble tree stumps with scored wood and applied concrete "bark" painted reddish-brown. Iron rings in each of the stanchions were used to secure a chain across the road. The far ends of the chains were attached to two 5' x 4' stone masonry pylons, located to the north and south of the sentry post. The tops of the pylons step down toward the building.

The internal police post was approximately 10' x 8' in size with a central

door on the east side and a single window centered on the north, south and west sides.

A third, similar sentry house, was erected at the entrance to the military police post, south of the camp. The military sentry post measured 5' x 7' x 7' high, making it the smallest of the three rock-walled sentry buildings.

The sentry posts had electricity and interior lights as well as canopied exterior lights which allowed the police to "identify persons entering or leaving the Center or Military Post at night." [90]

Guard Towers
Eight guard towers were built at Manzanar. All were supported on 24" x 24" concrete piers with anchor straps for the 6" x 6" corner posts.[91] The corner posts were 10 feet on center and rose at a slight diagonal to the observation platform located about 26 feet above the ground. The observation platform was roughly a square space, with an external observation area on the east and west sides. The structure had 1"x 8" shiplap siding. Two sliding windows were located on the north and south sides of the structure; one window and a multi-light sliding door were located on both the east and west sides. The sliding doors provided access to the external observation area. Above the observation platform, at about 34 feet above grade, was the searchlight platform. The searchlight platform was roughly 8' x 13' and had a three-foot wood railing. Access to the searchlight platform was from a ladder platform, located approximately 17 feet above the ground. A 2000-candle power searchlight was mounted on each tower.

Guard Houses
Guard Houses were located at roads leading to fields and the relocation center landfill. It is not known what these looked like but they were most likely small wood structures.

Fencing

The fence system consisted of a five-stranded, double-barbed wire fence on fir (redwood) posts. It extended for nearly four miles, enclosing the central housing area of the camp. A four-stranded, double-barbed fence enclosed the motor pool area; and a five-stranded, double-barbed wire fence surrounded the camouflage net factory area. The fences around the motor pool and camouflage building areas had many rough posts made of locust wood. Double-barbed wire fences with four to seven strands of wire

also enclosed the chicken ranch and hog farm. Internees cut most of the posts for the fences. The barbed wire was attached to five-foot-high posts, which had an average diameter width of three to six inches.[92]

Other Manzanar Structures

Judo Dojo
The judo *dojo* (platform) was located in the firebreak north of Block 10. The structure measured 45' x 60' and was originally constructed as an open-air platform with a wood floor covered with sawdust. As cold weather approached, the structure was enclosed with walls and a roof, and a dressing and shower room added. The building was completed by March 1943.

Kendo Dojo
The kendo arena measured 35' x 60' in size and had a small dressing room.

Cemetery Monument
Designed as an obelisk on a stepped base, the cemetery monument was painted white. Japanese characters painted in black on the front of the monument translate as (I Rei To) or "Monument to console the souls of the dead." Characters on the back (west) translate to "Erected by the Manzanar Japanese August 1943".[93]

The monument was surrounded by nine concrete stanchions. The stanchions, which varied in size from 40 to 42 inches high, had an 8-to-10-inch diameter at the top and a 20-to-24-inch diameter at the bottom. The stanchions were concrete, wrapped with chicken wire as reinforcement, with a concrete veneer, sculpted and painted to resemble upright tree stumps.

A locust branch fence was also built around the cemetery.[94]

Utility Structures

Water Collection and Distribution System

Components of the camp's water system included a number of dams, settling basins, a large reservoir, a storage tank, and an extensive system of

irrigation works. Because the town of Manzanar had also relied on Shepherd Creek for both drinking water and agricultural irrigation, much of the early water distribution system already existed when Manzanar was built. This system was then adapted and used by the reception center. Components of the early water system from the town that were reused included the upper and lower dams on Shepherd Creek, a system of underground pipelines, and several concrete-lined and unlined surface ditches.[95]

Domestic Water Systems

Shepherd Creek provided the main source of domestic water for the camp, with an auxiliary supply from several storage wells constructed by the Los Angeles Department of Water and Power—well #75 located opposite the north firebreak on the east side of U.S. Highway 395, and well #169, approximately 100 feet north of Block 33.[96]

From the source at Shephard Creek, water was diverted through an open, unlined ditch to a 75' x 80' concrete-lined settling basin. Water was then routed from the settling basin through an open, cement-lined ditch to the earthen reservoir located approximately 3,250 feet upslope and northwest of the north camp boundary. The reservoir measured 120' x 180' with a capacity of 540,000 gallons. Internee work crews expanded the capacity of the reservoir by building up the banks with concrete and rockwork; by the time the expansion was completed the storage capacity of the reservoir was approximately 800,000 gallons.[97] Ornamental details of the rockwork included vertical rocks laid in wet cement and topped with flat stones at the intake and outflow channels of the reservoir, creating profiles suggestive of Japanese-style lanterns. Two gates regulated the outflow from the reservoir. One gate opened into a spillway, and the other gate channeled water into a 14-inch-diameter steel pipe. The pipe, which was 4,650 feet long, carried the water to the 98,000-gallon steel tank located outside the camp perimeter, approximately 1,000 feet west of the northern firebreak. Water in the storage tank was treated with chlorine (delivered from an adjacent chlorination house) and conveyed to the camp through a utility network of 12-inch-diameter pipes. A back-up reserve of water was held in a 10,000 gallon redwood tank located east of U.S. Highway 395, opposite the north firebreak.[98]

The water delivery system in the camp relied on gravity for distribution, using the slight west-to-east slope of the site to move the water through underground pipes. Within the camp, water was distributed in pipelines that extended down the center of each block, following a west-to-east course,

except for the eastern edge of the housing area, where a main extended in a north-south direction along the camp boundary. Internee barracks were not equipped with running water. Only the community buildings in the residential blocks—the mess halls, laundry rooms and latrines—were supplied with water. The staff housing area, the hospital, and the buildings in the Children's Village were also equipped with running water, and the hospital had a sprinkler system. Within the residential blocks, outdoor spigots were located at the east and west ends of each block.

In addition to the potable water system, a network of 84 fire hydrants, located at intervals throughout the camp, were components of the overall water system developed during construction of the camp.

Irrigation Structures

Internee laborers maintained an extensive irrigation system of both reconditioned and hand dug irrigation ditches trough approximately 400 acres of agricultural lands.[99] Ultimately, approximately 12.3 miles of irrigation ditches and pipelines were constructed for agricultural purposes.

Irrigating water was carried from a stream source through a system of concrete and steel pipelines, and open ditches lined with rock and concrete. The ditches were approximately six inches wide at the top, three inches wide at the bottom, and three inches deep, and a system of wood flumes were constructed over coulees in the ditches. (Figure 87) Within the farm fields, the irrigation system consisted of open ditches, approximately three inches wide at the top and one inch wide at the bottom. The ditches were lined with rubble and concrete and wood gates were installed to regulate the flow of water to the fields.

Sewage System

The sewage system at Manzanar consisted of a collection and outfall system, and a sewage treatment plant. A siphon, constructed of two 12-inch cast iron pipes encased in concrete, carried the outfall line under the Los Angeles aqueduct, east of the camp.

The treatment plant was located 1½ miles southeast of the camp and consisted of head works, clarifier, control house, digester, chlorine contact tank, and sludge beds. The head works consisted of a series of five concrete tanks of variable proportions connected by an 18-inch diameter concrete pipe. From west (inflow) to east (outflow) the concrete tanks included a bar rack and bypass channel, a grit chamber, a flow meter, a scum diversion



Figure 87. An extensive system of open ditches supplemented with pipes carried water to irrigate fields. (Courtesy of the National Archives and Records Administration)

box, and a small unidentified box. The clarifier, a partially buried, open-topped tank, approximately 65 feet in diameter, had an interior depth of about 11 feet. The control house was a three-room structure used for an office, laboratory, metering, chlorine control, and equipment storage. The anaerobic sludge digester was an enclosed concrete tank, 42-½ feet in diameter and 19-½ feet high, extending below ground another 3-½'. The chlorine contact tank was used for disinfection prior to effluent discharge.

The pump house was a 7' x 7' square by seven-foot-high concrete box. Four 50' x 100' settling ponds were constructed with 3½-foot-high dikes or berms. The ponds were never used as settling ponds due to LADWP concerns that ducks landing on the ponds would spread disease. Instead, the ponds were used as sludge drying beds. The sludge was carried to these beds through a six-inch cast iron pipeline.[100] (See Table 4.)

Table 4: Summary of Historic Buildings and Remnant Structures

Although only three original buildings remain from the reception center era, there are remnants of structural elements located throughout the site that date to the historic period. Many of these features are described in *Three Farewells to Manzanar*, by Burton, et al., and in Appendix D. which contains updated tables listing archeological features relating to all historic eras at the camp. Also see Appendix F for individual structure numbers and the *List of Classified Structures* for Manzanar National Historic Site. The following table includes and summarizes information form both of these sources and was supplemented with information collected in 2003 using field survey and reconnaissance.

The table is organized by building cluster, with more detailed descriptions of remnant features within clusters aggregated for management purposes.

REMNANT HISTORIC STRUCTURES	NOTES
Auditorium	The auditorium is the largest of only three buildings to remain on site from the historic period. It was rehabilitated in 2003 to serve as the Manzanar Interpretive Center and park headquarters. The south shed-roofed wing that had been removed from the site is being reconstructed as part of the rehabilitation. The stage is also being reconstructed.
Military Police Sentry Post	Both the Internal Police Post and the Military Police Post remain, as do the stone gateway pylons. The two buildings were re-roofed, the masonry repaired and the windows and doors reconstructed in 2002. At that time, a plinth holding the California Landmark Plaque located on the east side of the Military Sentry Post was removed and moved to the side of the entrance area. The two faux stump stanchions removed after the War, were donated back to the NPS and restored to their original locations.
Internal Police Post	
GENERAL GROUP	
Residential Barracks	Although no residential barracks remain on the site today, there are concrete foundation blocks for many of the barracks buildings scattered throughout the site. In addition, there are scattered concrete or stone walkways and remnants of small gardens at barracks building locations.
Ironing Rooms	Historically there were 36 concrete slabs (one building per block). Nos. 1, 18, and 24 are in poor condition; No. 7 is gone; Nos. 4, 15, 23, 25, 30, 31, & 34 are buried; Nos. 28, 35, &36 are mostly buried; and Nos. 2, 3, 5, 6, 8-14, 16, 17 , 19-22, 26, 27, 29, 32, & 33 are visible and considered to be in fair condition, although that has not been confirmed.
Recreation Halls	No recreation halls remain, although some features, such as concrete foundation blocks, sidewalks and rock alignments, do remain at some sites.

REMNANT HISTORIC STRUCTURES	NOTES
GENERAL GROUP (Cont.)	
Mess Halls	No Mess Halls remained at Manzanar when the NPS assumed management. Remnants associated with mess halls did remain such as scattered foundation blocks, rock alignments associated with entries, and in some cases, elaborate, remnant gardens. In December 2002, a period mess hall building was identified in Bishop, California and moved to Manzanar. Sited in Block 14, the building is approximately 40' x 135' long with a double gable roof. [101] The north, double gable end of the building is approximately 40 feet wide and has two doors and two windows. A door to the west of the façade is missing steps. The doors are single doors, however the remaining steps and historic photographs indicate that the doors were originally double. There is a four-light, original window near the center of the façade, and a one-light window to the west of it.[102] The west side of the mess hall is approximately 100 feet long. There is one set of double doors, about 70 feet from the north end. North of the doors there were originally eight evenly spaced four-light sliding windows. At some point a stone fireplace was added (now removed) and some windows removed. South of the doors there are two more windows. The spacing seems to indicate that one window is missing. The east side of the structure is approximately 130 feet long. It also has a pair of double doors about 70 feet from the north end and retains all eight evenly spaced four-light sliding windows north of the doors. South of the doors are three windows, spaced further apart than the others. Steps that once led to the double doors are missing. The original entrance on the north [or through double doors on the east and west sides] led to a large open room. Today, the interior is partitioned into rooms that were added when the building served as a house, although a large portion of the main room is intact. When the camp was first opened, as evidenced by historic photos, the mess halls were constructed of bare wood. Later historic photos show plasterboard on the walls and ceiling and curtains on the windows. In the mess hall, the south end of the structure has a partition with pass-through windows that separated the eating area from the food preparation area, which appears typical. On the eastern side, there are built-in refrigerated cabinets and other storage areas. The western side houses a large iron range. The interior walls are plasterboard above a wood wainscot that runs up to the window sills. The wainscot does not appear to be original. There is no plasterboard at the ceiling, which is open to the underside of the roof above. The plasterboard on the walls is water stained and missing in many places. Currently the building is set on cribbing at the location of the Mess Hall in Block 14. The building is fenced to prevent additional damage prior to restoration.
Latrines	Historically there were 72 concrete slab floors for the latrines, two per block. The slabs in Blocks 1 and 7 are missing. The slab to the men's latrine in Block 8 is in poor condition. Slabs in Blocks 4, 6, 15, 17, 23, 25, 26, 27, 28, 31, 33 and 34 are completely or partially buried. Slabs in Blocks 2, 3, 4, 5, 6, and 8 (women's), 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 22, 24, 29, 30, 32, 35 and 36 are in fair to good condition.[103]

REMNANT HISTORIC STRUCTURES	NOTES
GENERAL GROUP (Cont.)	
Laundry Rooms	Concrete slabs remain for many of the laundry rooms. These slabs contain drains that were for the laundry tubs and in some cases, grease traps with and without wood covers. Of the original 36 laundry room slabs No. 7 is gone; Nos. 1 and 18 are in poor condition; No.14 is in fair condition with drains and grease trap existing, but it is cracking and subsiding at its edges; and Nos. 4, 25, 27, 28, 33, and 34 are partly or completely buried. The rest were not all assessed but are assumed to be in fair condition.[104]
Oil Tank Platforms	It is not known if any features remain from the oil tank platforms.
CHILDREN'S VILLAGE	
Boys' dormitory Girls' dormitory Offices/kitchen	There are 19 concrete foundation blocks remaining from the boys' dormitory and nine foundation blocks and a concrete stoop at the location of the girls' dormitory. There are fourteen foundation blocks at the location of the third building. These footing blocks are approximately 16-inch square, which is larger than the typical foundation block.[105]
ADMINISTRATION BLOCK	
Apartment Buildings (A,C,D,E, & F)	Remains of Apartment building C include a concrete walkway and steps, and a concrete and rock pedestal on the east side. The pedestal, 30 inches high with a simulated wood grain top, may have once held a sign. Other remains include three small concrete slabs that would have been within the building, a concrete water heater slab on the east side of the building, and six concrete footing blocks. At Apartment building A there is a short concrete walkway with two concrete steps. At the south end of building A, there are the remains of a flagstone stoop and patio. An upright terra cotta sewer pipe is located on each side of the flagstone stoop, most likely used for planters. Apartment Building D has a large concrete and rock wall enclosing a concrete slab patio at the south end of the building, concrete walkways and rock alignments on its west side, a concrete water heater slab on the east side, and three concrete footing blocks. Remains at Apartment Building E consist of a concrete water heater slab and two concrete footing blocks. Remains at the Staff Mess Hall consist of seven concrete footing blocks, and an 8' x 22' concrete slab at the north end of the building. [106]
Staff Housing	The most prominent feature remaining is a patio at Building G. It consists of a 3' x 6' high granite boulder and concrete wall surrounding a concrete slab on the east side of the Director's Residence. The wall, similar in workmanship to one in the Administration Block, was built by Japanese Americans hired by the Project Director. Also at the building site are three concrete sidewalks (entries) on the west side, a small water heater slab on the east side, and 11 concrete footing blocks. There is a rock outlined asphalt parking area to the north.[107] Small concrete slabs for water heaters are also adjacent to each of the remaining thirteen apartment buildings and concrete footing blocks remain at Buildings G, O, P, R, and W. There are rock alignments and concrete steps at Buildings N and Q, a rock alignment at Building J and four sets of concrete steps and a cobblestone entryway at Building K. A concrete and rock ditch and rock alignment encircles Buildings R through W. The laundry room consists of a 16' x 20' concrete slab with a 1½-inch square central floor drain. Other features include a concrete slab and brick-lined hole (possibly a pit barbecue) at Building K, a pole and wire clothesline north of Building J Dormitory, rock alignments along roads and around buildings.[108]
Town Hall	A rock alignment remains at the north end and a concrete sidewalk that led to the main entrance also remains.
Post Office	There is a rock alignment that originally ran from the north east corner of the building to the street

REMNANT HISTORIC STRUCTURES (cont.)	NOTES
ADMINISTRATION BLOCK (Cont.)	
Fire Station	The foundation of the fire station consists of a central 20′ x 40′ concrete slab; around its perimeter there are imbedded bolts to anchor wood-frame walls. There is a 7′ x 11′ concrete entry ramp to A Street on the east side. Adjacent to the building along the north and south sides, two inches below the level of the central slab, are 7½′ x 38′ concrete slabs, possibly foundations for additions. North and south of the entry ramp there are 7′ x 16′ slab additions of a different texture and composition. The entry ramp has a few shoe imprints in the concrete and the additions have several inscriptions. The Block managers Daily Report mentions that on 8/11/42 an addition was made to the Fire Station to make room for another vehicle.[109]
Administration Building	An L-shaped rock alignment indicates the location of the Administration Building. Within the alignment there are four concrete footing blocks and a concrete foundation that apparently once held a safe. On the building's northern exterior there are two circular planters and a sidewalk incorporating a diamond-shaped planter with a metal flagpole near the location of the main entrance. [110]
HOSPITAL COMPLEX	
Hospital Block	There are a significant number of remaining features at the hospital block. Concrete footing blocks remain at the administration building, doctors quarters, nurses quarters, mess hall, Wards 1, 2, 3, 4, 5, 6, 7, and Storerooms 1 and 2. Other formal features include three intact manholes, a destroyed manhole, and a pulled manhole with an intact brick and concrete lining. The most significant remains in this block are those built by the internees. These include a large rock and concrete retaining wall located between the administration building and the wards, and the ornamental garden structure in the southeast portion of the block (See Analysis and Evaluation: Cultural Traditions). The three-foot high rock and concrete retaining wall is partially buried and has been cut in two areas by gullies. The wall incorporates a concrete bench with a simulated wood finish located in front of and between Wards 4 and 5 and curving rock and concrete steps to each of the wards. The steps to two of the wards (6 and 7) have been destroyed.
Doctor and Nurses Quarters	South of the hospital block in the location of the doctors and nurses quarters, there is an 18′ x 4′ sidewalk and a stoop on its east side, a 7′ square concrete entry on its west side, and a 5′ x 8′ concrete slab entry on its south side
Hospital Laundry	The hospital laundry foundation consists of a 20′ x 100′ concrete slab. It has remnants of two of the original three entries, drain troughs, a fat trap, equipment mounts and stains, and protruding bolts. A drainage groove carved into the slab and a brick holding tank appear to be later additions. The laundry slab is enclosed on three sides by a 1½-foot high rock and concrete retaining wall. There is a cobblestone entryway with step centered on the east side and a concrete entry ramp on the south side.
Morgue	The morgue foundation is 28′ x 38′ and divided into four rooms by low concrete walls. Three of the rooms have at least one floor drain, two rooms have embedded equipment mounts, and two had toilets. The toilets have evident waste pipes and bolts, and adjacent to one of these is a wood frame partition wall. A 90-foot long sidewalk, attached to the south and east sides of the morgue, lead toward the hospital laundry room. It measures from four feet to seven-and-a-half feet wide and has six inscriptions, including one in Japanese. The garbage can washing rack foundation consists of a 20′ x 35′ concrete slab foundation with two concrete rings (to support garbage cans), a drainage trough, and a large grease trap.

REMNANT HISTORIC STRUCTURES (cont.)	NOTES
Hospital Heating Plant	Remains of the hospital heating plant consist of a 36′ x 38′ concrete slab that incorporates two rooms divided by low concrete walls, and an attached 4′ x 8½′ bathroom. There is a concrete entry ramp on the north side. The large central room has the remains of three brick-lined boiler fireboxes, concrete equipment mounts, protruding bolts, and floor drawings. The smaller room has equipment mounts, protruding bolts, and a floor drain. Although heavily damaged the bathroom still has a toilet waste pipe and other floor features.
MOTOR POOL	
Motor Pool Office	A concrete building pad measuring 20′ X 50′ remains with stoops on the north and west sides and a surrounding rock alignment.
Automotive Repair Shop	The concrete slab remains in the location of the automotive repair shop, along with a dirt and asphalt ramp at the north end.
Automobile Service Shop	The automotive service garage consists of a 30′ x 48′ concrete slab divided into three equal sized rooms that open to the east. One of the rooms had two large floor drains, one has the remains of a truck lift, and one has no floor features. Attached to the rear of the building is a small slab, possibly for a bathroom.[111]
Gas Service Station	A 10′ x 16′concrete slab with an asphalt ramp on the east side remains. Initials and a date were found inscribed in one corner of the concrete foundation. Nearby is a 3′ x 10′ concrete slab with a circular pit, one-foot deep in the center, extruding pipes and wires, and a seven-foot-tall steel post that likely supported a gas pump.[112]
WAREHOUSES AND FACTORIES	
Camouflage Net Factory	Concrete slab foundations, 24′ x 300′ in size remain. One has an attached concrete slab that is 2′ x 3′ on its west side which may have been an entry. The Mattress Factory location is indicated by rock and concrete alignments at the north end. The Dehydration Plant foundation consists of a 24′ x 100′ concrete slab. Southwest of the camouflage factory are two U-shaped concrete foundations, possibly tank supports.
Root Cellar	All that remains of the root cellar is a dirt mound and a small depression and sinkholes.
Warehouse Complex	The foundation of Warehouse 37 consists of a 20′ x 100′ concrete floor of five contiguous 20′ x 20′ slabs. The slabs incorporate seven concrete footing blocks along the perimeter indicating it was a later addition. There is a mostly buried concrete driveway on the south end. A concrete slab at Warehouse 31 was not found, but may be buried. Some concrete footing blocks remain at the locations of Warehouses 9, 10, 11, 12, 13, 14, 18, 21, 25, 26, 27, 28, 29, 30, 32, 36, 37, 38, and 39. Other features noted in this block include three asphalt driveways between Warehouses 27 and 28, 9 and 10, and 23 and 24. Also, there are some indistinct rock alignments and two manholes.[113]
Refrigerated Warehouses	Remains of the refrigerated warehouse consist of two parallel 20′ x 100′ foundations. Both are perimeter foundations into which a concrete slab was later poured. The refrigeration equipment was apparently located on the north end of each slab where there is a waste pipe, floor drain, remnant dividing wall, and other pipes. Some concrete footing blocks remain for Warehouses 1, 2, 5, 6, 7, and 8.
MILITARY POLICE CLUSTER	
Building Cluster	The locations for all of the buildings are visible. Barracks can be defined by level areas, some with a few concrete footing blocks. The guard house (military personnel jail), latrine, and first aid buildings are evident from structural debris. The location of the motor repair shop is evidenced by a terraced area with six substantial concrete foundation blocks with embedded iron bars. There is a 20′ x 25′ concrete slab located in an area that shows no building on the blueprints – use unknown.

REMNANT HISTORIC STRUCTURES (Cont.)	NOTES
MILITARY POLICE CLUSTER (Cont.)	
Police Station and Jail	A 20" x 100" concrete slab with rock alignments and trees on the west side and a large area of buried asphalt on the east side.
Guard towers	Concrete footings remain in the location of guard towers 4 through 8. The foundations consist of four 1½' x 1½' concrete footing blocks with steel straps 10 ft apart. A graded road runs along the line of guard towers 1 to 3. The footings for guard tower 1 are gone; those for guard towers 2 and 3 were pulled out of the road and are lying to the side.[114]
Boundary Fences	Some of the original, central area redwood posts remained on site when the NPS assumed management. The redwood post and barbed-wire fence around the core area was restored using existing fence posts and newly constructed posts. This project was completed in 1999-2000.
AGRICULTURAL STRUCTURES	
Chicken Ranch Incinerator	The incinerator remains on the site and is in good condition.
Office and Processing Plant	The remains of the office and processing plant consist of a large 80' x 80' U-shaped concrete slab with a raised edge. The slab is divided into three rooms connected by doorways. One room has a floor drain and the remains of a red brick enclosure, possibly the remains of a storage locker. On the east side of the slab there is an attached 10'x 20' concrete slab with four bolts (machine mounts).
Hen Houses	There are six laying house foundations, each a 20'x 200' concrete slab with raised portions along the edges and at the dividing walls. Each slab is divided lengthwise into eight 20' x 25' rooms, each room with an apparent doorway on its east and west side. On the east side of each slab there is a small outside enclosure (chicken yard) indicated by rock alignments and retaining walls.
Brooder Houses	There are eight brooder house foundations located in the northwest portion of the site. The foundations consists of 14' x 24' concrete slabs with raised edges and low walls that divide each slab into two 14' x 12' rooms. All have at least two doorways and four have an additional interconnecting doorway.
Hog Farm	Features remaining on site from the hog farm include a 250' x 10' concrete slab with four feeding troughs and a gutter and curb that run along the south edge of the slab. Offset from the west end of the slab there is a smaller square slab with a ramp on the south side. There is a concrete slab 150' x 10' with two feeder troughs and ramps at the north and south ends. A gutter and curb run along the west edge of the slab. Just south of this slab is a small 3' x 2' concrete trough. There is a 10' x 10' x 15' rectangular rock alignment and a concentration of wire nails. This may be the remains of the office. There is a partially buried concrete slab with a lipped edge, indicating a wall 20' wide. It is likely that this is the foundation of the warehouse.
Other Structures	
Judo Dojo	Decorative rock alignments delineate both the Judo House and storage room and there is a circle of rocks to the northeast. At the Judo House itself there are remnants of a concrete edge around its outside perimeter and a 2' x 45' concrete slab at its north end. To the south are three contiguous concrete slabs from a pre-relocation center building that were reused in place as the foundation for the attached storage room. Concrete stoops were added to the east and north sides of the slabs, and two elaborate rock-lined cobble and concrete walkways lead to the storage room.[115]

REMNANT HISTORIC STRUCTURES (Cont.)	NOTES
Other Structures (Cont.)	
North Park Ovens	Two rock and mortar ovens/griddles remain in North Park. They are different in style, craftsmanship, and in the rock used. One is a concrete and meta- sedimentary rock and concrete barbecue with a chimney, 7′-6″ x 5′-2″ in plan; the front is 3′-8″ high, and the back is presently 5′-4″ high. There is an inscription in the concrete: Ray Kobota August 1943. The chimney was a concrete cylinder with a coating of concrete dyed and scored to resemble wood. The chimney is broken and has fallen into the barbecue. The metal plate on which food was cooked, is missing. The second is a 4′ x 6′-3″ stone flattop oven, 33″ high that is made of granite boulders and concrete. The metal rack is missing. There is a concrete pad in front for ash cleanout.
Water System	Remnant features of the water system used by the reception center, but located outside the perimeter boundary fence include elements such as the camp reservoir and its associated spillway, underground pipelines, and diversion ditches. Within the historic boundary of the camp, an extensive array of features survive that were constructed as components of the water delivery system. The most numerous of these are the barracks spigots, which remain in many residential blocks.[116]
Sewage System	All that remains of the control house is a three-foot high concrete foundation of the three room control house measuring 30′ x 60′. There are entry steps on the west side. Most of the concrete features remain on site, with some damaged areas.

Archeological Resources

Prior to 1993, three archeological surveys had been undertaken in the area around Manzanar. One focused on approximately 40 acres northwest of the Historic Site (on Bureau of Land Management land). One survey covered an area of proposed modifications to U.S. Highway 395, where the highway was widened to facilitate access to the Historic Site. The third survey followed the west edge of the highway right-of-way for a fiber optics line. Eight archeological sites in the vicinity of Manzanar were identified from these investigations, including the remains of the relocation center itself.

The most extensive archeological work at Manzanar occurred between 1993 and 1995, when the National Park Service completed four archeological projects at the newly established National Historic Site. The work included archival research, intensive survey of over 1,200 acres, mapping, repeat photography, controlled surface collection, and subsurface testing.[117] Based on these investigations, 53 archeological sites were recorded within the National Historic Site. Some of the archaeological sites were in prime locations that were reused throughout the centuries, and so show evidence of more than one period of use. Thirteen sites have artifacts and features related to American Indian occupation, 34 sites have components related to the Town of Manzanar or earlier ranching activities, 15 sites are related to the Manzanar War Relocation Center, and portions of three sites exhibit post-relocation center use.

Since 1995, archeological work has focused on more intensive investigations at some of the sites. The relocation center landfill, the cemetery, security features, administration and entrance areas, and Blocks 8 and 14 were investigated to provide more detailed information for their interpretation and management.[118] Town-era sites along Highway 395 were excavated as part of the proposed widening of that road.[119] The Shepherd Ranch, the first Euro-American settlement in the area, was tested to provide information that could be used in public interpretation.[120] Excavations were conducted at several of the Native American sites to learn more about the earlier use of the region.[121]

While the focus of the cultural landscape report is on the Manzanar War Relocation Center and the historic period 1942-1945, discussion of ethnographic information and archeological features related to the earlier

eras is summarized below to the degree it provides a framework for the environmental history and use of the area prior to establishment of the relocation center.

The First Inhabitants

According to the archeological record, humans first entered Owens Valley at least 12,000 years ago. "Paleoindian" sites in Owens Valley proper are limited to a few potential early sites at Owens Lake and isolated Clovis projectile points lost by passing hunters.[122] By 3500 B.C., the Owens Valley inhabitants were still highly mobile, establishing camps adjacent to riparian areas and making short-term use of camp sites in the desert scrub vegetation zones. High elevations were used for hunting and plant gathering. The first archaeological evidence within the Manzanar Historic Site dates to this period: a Little Lake projectile point, which dates to between 3500 and 1200 B.C., was found on the ground surface in the north-central portion of the National Historic Site.

Archeologists posit that sometime after about 1200 B.C. the people of Owens Valley shifted their focus from lowland plant resources in riparian settings to the small game and plants of the desert scrub. Elko projectile points, which are considered to date to between 1200 B.C. and A.D. 600, were found at one site within the boundaries of Manzanar National Historic Site. A wide array of artifact types and the presence of at least two burials indicate intensive use of the Manzanar area during this time period.

Additional changes in settlements and technology occurred around A.D. 600, with an increase in centralized settlement, and a shift towards intensive land use focused on an increased reliance on small animals and plants. At Manzanar, there are three sites that date to this period. One site covers over 45 acres in the central portion of the Historic Site. A possible house floor, midden soil, and a varied and abundant artifact assemblage indicate intensive prehistoric use. The site appears to have been a base camp or "village" where subsistence and maintenance tasks took place. The most intensive use of the site was between A.D. 600 and 1300. The second site is located in the southwestern portion of the Historic Site, along the north side of Bairs Creek. The types and styles of artifacts present indicate this site was first used sometime around A.D. 600. From the artifact evidence, it is also likely that this site was a base camp, occupied much of the year.[123]

The third site tested from this time period may have been occupied during

an important transition in technology. Tools found with the burial of an adult male included two types of projectile points. One type, used with a dart and throwing stick, is usually considered to date to the period between 1200 B.C. and A.D. 600. The other type of point was used with a bow and arrow; archeologists have found evidence that this more efficient and longer-ranging hunting technology replaced the dart and throwing stick sometime around A.D. 600. Perhaps the man buried here was skilled in both hunting methods; it may indicate that new technology like the bow and arrow was adopted gradually, and parts of a familiar tool kit would be retained, for some time, for whatever reason. Just how long the transition lasted is impossible to determine without additional data.

Most of the changes made by the inhabitants of Owens Valley during centuries of occupation involved a gradual shift from using easy-to-acquire but widely dispersed plant and animal resources to more local foods. In other words, they traveled less, but spent more time gathering and processing their food, with some villages in the region occupied essentially year-round. Archeologists theorize that increased population, growing territorial restrictions, climatic change, or environmental degradation forced these shifts. It has also been suggested that the shift from riparian to desert scrub resource utilization could indicate social changes that occurred when the ancestors of the Owens Valley Paiute entered the region, about a thousand years ago.[124]

The Owens Valley Paiute

Euro Americans entering the Owens Valley in the 1850s encountered the Owens Valley Paiute residing in permanent, year-round villages located along streams flowing from the Sierra Nevada. Their territory stretched from the Sierra Nevada crest on the west to the Inyo Mountains on the east, from Owens Lake on the south to the pine forests of Long Valley to the north[125]. In the 1930s an ethnographer talking with elders of the Owens Valley Paiute recorded three villages as having been in the area between Shepherd and George's Creeks, which includes the area of the Historic Site.[126] Other historical accounts mention a village above the Shepherd Ranch, which may refer to the same or a nearby settlement.[127] The Paiute population in the Owens Valley as a whole during this period has been estimated at about 2,000.[128]

Manzanar National Historic Site is situated between two sub-groups of the Owens Valley Paiute: the *Tunuhuwitu*, centered on Oak Creek north of

the present town of Independence, and the *Pakwazinatu*, placed along the southern margin of Owens Lake.[129] Many of the archeological sites found at Manzanar include the pottery, projectile points, and other technology associated with the Owens Valley Paiute, suggesting that parts of these ethnographically documented villages may have been located within the Historic Site.

The Owens Valley Paiute were accomplished horticulturalists, constructing and maintaining systems of ditches and diversion dams to tap Sierran streams to flood areas of wild plants for later harvesting. The principle crops that were irrigated were yellow nut-grass (*Cyperus esculentus*) and wild hyacinth (*Dichelostemma pulchella*), but other food plants were encouraged as well[130]. Although no ditches were recorded in the Manzanar vicinity, irrigation was likely practiced there also, with the Paiute ditches obscured by later development.

Although the Owens Valley Paiute were more settled into their year-round villages than most Great Basin groups, they also traveled to temporary camps in other parts of their territory. In the spring they would camp near the river for communal fishing, collecting roots and greens, trapping small game, and collecting freshwater mussels. Summer and fall were geared toward stockpiling food for winter. Rice grass, chia, small game and fish, and seeds from rushes along creeks were early summer resources, and a variety of seeds, gathered with seed beaters and collecting trays, became available in mid-summer on the valley floor. In late summer small groups would establish camps north of Owens Valley to collect Pandora moth larvae (*Coloradia pandora*), and temporary camps at Owens Lake were used to collect brine-fly larvae and pupae (*Hydropyrus hians*). In the fall, small groups of two or three families would establish temporary camps in upland pinyon groves to harvest pinyon (*Pinus monophylla*) nuts. Food stored over the summer and fall supplied most of the winter meals. In the summer and fall some of the Owens Valley Paiute traveled across the Sierra Nevada, expanding the range for food gathering. The major trans-sierran trade routes closest to the Manzanar area are Kearsarge Pass, west of Independence, and Cottonwood Pass, west of Lone Pine.

When substantial numbers of European Americans began entering the Owens Valley in the 1860s, cattle grazing and collecting wood for fuel significantly reduced the Paiute food supply. The winter of 1862 was especially severe, and in order to survive the Paiute began killing cattle for food. Conflicts over critical resources led to several battles. By the end of

1863, over 200 Paiute had been killed and nearly a thousand had been force-marched to a reservation at Ft. Tejon, 175 miles south.

Within Manzanar National Historic Site, there are six archeological sites that appear to reflect use of the area by the Owens Valley Paiute. Two sites covering approximately 12 acres along the western boundary of the camp contain several features such as midden deposits, milling slicks, a bedrock mortar, and at least one burial. Another site covers approximately 13 acres southwest of the Manzanar cemetery and contains a large midden deposit and shellfish remains. A fourth site north of Bairs Creek contains ceramics and some features dating to an earlier period. Two remaining sites are in the central portion of the Historic Site, and contain features reflecting a relatively intensive occupation dating after 1300 A.D.[131]

The Shepherd Ranch

In 1864, after the Paiutes were removed from the Owens Valley, John Shepherd built a small adobe cabin in what is now the Historic Site. The Shepherd Ranch, in the "North Park" area adjacent to the park tour road, was one of the earliest Euro American settlements in the southern Owens Valley. After the 1872 Owens Valley earthquake, Shepherd built a nine-room, two-story, Victorian-style ranch house, in which he and his wife Margaret raised eight children. Shepherd quickly rose to prominence in the area's political and social circles, and by the late 1800s the Shepherd ranch had grown to some 2,000 acres. Archeological work begun in 2003 uncovered some of the features of the ranch, including a building foundation, a privy, and trash dumps.

Some of the artifacts recovered reflect the ethnic diversity at the ranch. Asian artifacts, including Chinese and Japanese ceramics probably belonged to a Chinese cook who lived at the Shepherd Ranch.[132] Hundreds of glass beads found in what would have been the yard of Shepherd's house may have belonged to the Paiutes who worked for him. Within a few years of their removal to Fort Tejon, most of the Paiutes had returned to the Owens Valley. Dispossessed of their land, they sought new ways to make a living. By 1874 Shepherd employed more than 30 Paiutes on his ranch, paying them 75 cents a day and providing land for their camps. The women winnowed grain and performed domestic tasks on the ranch. The Paiute men, many of whom had been successful farmers before their removal, performed irrigation work and other chores on the ranch. In fact, it is possible that Shepherd and his crews reused Paiute irrigation ditches that had been

developed over centuries.

Town of Manzanar

Thirty-four archeological sites related to the Town of Manzanar are within the designated boundaries of the Historic Site. These sites fall into three general categories: residential and commercial (including farms and downtown areas), utilities (irrigation and water works), and trash deposits. Other features in the vicinity of the town site, such as road traces, orchards and other vegetation, and isolated pipes did not receive individual site designations. Components and features recorded from these sites reflect the agricultural foundation of the town with many features associated with cattle ranching and orchard production. Both archeological and historical records indicate that the 5,000 acres surrounding the Town of Manzanar contained relatively extensive orchards of apple and pear trees, as well as alfalfa fields, and other crops. All of this land was irrigated drawing on natural sources to channel water first in unlined ditches and then, as the town grew, water was conveyed in concrete pipes. The early home sites were located near these water sources. As the community grew, it expanded based on the expansion of the water supply. Today, a significant portion of the remnant vegetation within the historic site survives from the Manzanar town orchards.

Some of the other features related to the town of Manzanar recorded during the archeological survey include building foundations, fence remnants, underground utilities, irrigation pipes, a small dam, building hardware, personal artifacts, farm tools, orchard-related artifacts, ceramics and glass fragments, and numerous trash deposit sites.[133] Many of these town-era sites and features were investigated during archeological testing conducted along US Highway 395 and during monitoring of fence construction.[134]

Manzanar War Relocation Center

Archeological investigations conducted since 1993 have encompassed a wide range of features that remain from the Manzanar War Relocation Center, such as building sites, roads, and infrastructure as designed and constructed under the War Relocation Authority, as well as significant artifacts that portray the daily life and cultural traditions of the internees. The archeological record, combined with the personal accounts and remnant landscape, enhance our understanding of the value and meaning

of the cultural landscape of Manzanar.[135]

Twenty-five archeological sites related to the relocation center have been documented; 10 are outside the historic site boundaries. Some of the sites are outside of the core area and cover the military police compound, the chicken ranch, hog farm, the agricultural lands and domestic water systems, a sewage treatment plant, trash disposal areas, and recreational facilities.[136] The most significant archeological investigations have been conducted at the landfill and the cemetery, and have documented the locations of guard towers and the perimeter security fence.[137] One of the 25 sites (MANZ 1992 A-30) encompasses the entire 540-acre central portion of the camp where the residential area, administration complex, and hospital were located. In this site alone, over 800 archeological features were recorded. Some of the features recorded in this site include three standing buildings (see the *Structures* section), concrete and rock walls, building foundations, concrete steps and stoops, manholes, sewer and water lines, ponds and gardens, historic vegetation, ditches, and artifact concentrations.[138] Within this core area, five residential blocks—Blocks 8, 12, 13, 14, and 21—and the administration and staff housing areas were the focus of more intense survey, surface collection, and study. Artifacts from these include a variety of structural materials (nails, window glass, building hardware), food storage containers, ceramics, furnishings, and personal items. Archeological testing revealed a well-constructed basement under one of the barracks of Block 8, with a concrete floor and wooden walls.[139] The staff housing area alone contained more than 5,000 artifacts, mostly consisting of structural materials, domestic items, pharmaceutical, and automobile-related items.

Post-Relocation Center Sites

After the War Relocation Center was closed, the auditorium and administrative area continued in use. Several sites and features from this period have been documented. Those within the National Historic Site include two trash dumps, a small can dump, and artifact scatters around the auditorium and in the former staff housing area.[140]

Summary

Archeological resources in the vicinity of Manzanar National Historic Site include elements and features from several significant historic periods, including the first settlement of the area, use by the Owens Valley Paiute,

early ranching and farming, developments associated with the Town of Manzanar, remains from the Manzanar Relocation Center, and post relocation center use. The archeological remains reflect the use of resources, occupation, and adaptation to the physical setting, and modification of the landscape as settlement and communities developed. Archeological features and artifacts related directly to the Manzanar War Relocation Center provide an extraordinary and relatively intact record of the camp design and structure, daily life within that structure, and the personal and ethnic expressions of the people who were interned there between 1942 and 1945. In addition, the aggregate of archeological site features such as road traces, vegetation, fences, ruins and artifacts associated with infrastructure (such as waterworks, irrigation ditches, utility structures, and pipes), and the isolated remains of significant garden structures throughout the enclosed living area collectively comprise the underlying footprint of the camp during the historic period. In this regard, archeological resources are considered contributing to the significance of the cultural landscape.

Endnotes

Analysis and Evaluation

1 The cemetery, by its nature has various meanings and symbolism for many people. The assessment of the cemetery in terms of physical location and physical space does not factor-in additional values. For additional information on the cemetery see I REI TO, by Jeffery Burton, Jeremy Haines, Mary Farrell. Publications in Anthropology 79. NPS, 2001
2 (Tsuchida 1984; Tsukashima 1991; Tsukashima 2000).
3 Henry Nishi, 2002.
4 Tamura 2002.
5 Harada 1985: 46
6 Harada 1985: 46
7 Slawson 1987: 70, and Oster 1993: 42
8 Slawson 1987: 97
9 Tamura 2002.
10 Description of Photograph #12, "Block 22 garden (Otoba-no-ike)." "Personal Responsibility: The Camp Photographs of Toyo Miyatake" by Richard Stewart. Eastern California Museum, 2001.
11 Unrau, The Evacuation and Relocation of Persons of Japanese Ancestry During World War II: A Historical Study of the Manzanar War Relocation Center. p. 278.
12 Baird, Merrily C. Symbols of Japan: Thematic Motifs in Art and Design
13 Plants identified in Miyatake photograph 677C.
14 Jeanne Wakatsuki Houston and James D. Houston. Farewell to Manzanar. San Francisco, CA: Houghton Mifflin Company. 1973. p. 99.
15 Manzanar Free Press 1/13/43:1, Press 4/3/43:4.
16 Zoen. Illustrations for Designing Mountain, Water, and Hillside Field

Landscapes #40 IN Slawson, David A. Japanese Gardens: Design Principles Aesthetic Values. Kodansha International Ltd: New York. 1987.
17 Unrau: 284
18 Manzanar Free Press 6/5/34
19 Richard Stewart. Slawson 1987:208-209.
20 Noah 1999 and Slawson 1987.
21 Slawson 1987: 62.
22 Slawson 1987. (Need to locate diagram of the cloud and gourd shaped ponds.)
23 Block 4 - Block Manager's Daily Reports, 10/19/43, Manzanar Free Press 6/26/43:3. Block 15- Manzanar Free Press, 8/12/42. Block 16-Block Manager's Daily Reports, 8/5/42. Archeological documentation see Burton, p. 250-292.
24 Manzanar Free Press, 9/30/42.
25 Noah 1999. 15-20.
26 Takei and Keane 2001: 193.
27 Slawson 1987.
28 "Manzanar Interviews: Harry Ueno." Manzanar National Historic Site Library.
29 Sue Kunitomi Embrey, Arthur A. Hansen, and Betty Kulberg Mitson. Manzanar Martyr: An Interview with Harry Ueno. Fullerton, CA: The Oral History Program, California State University, Fullerton. 1986.
30 "Manzanar Interviews: Harry Ueno." Manzanar National Historic Site Library.
31 Brown, Japanese Style Gardens of the Pacific West Coast. p. 59. The "wishing well" was a rendition of wells in traditional Japanese gardens and temples that provided water for irrigation and necessary uses.
32 Manzanar Free Press 10/8/42:1
33 For a complete description of the Manzanar riots see: Unrau, The Evacuation and Relocation of Persons of Japanese Ancestry During World War II: A Historical Study of the Manzanar War Relocation Center p. 477-521.
34 Manzanar internee Harry Ueno had been accused of beating a fellow internee. See Unrau, pp. 477-521.
35 The garden was mapped by WACC in 1993 (MANZ 1993 A-30, Feature 22-3).
36 Slawson 1987. p. 68.
37 Burton 1996.
38 Tamura 2002, correspondence with Henry Nishi and Arthur Ogami.
39 Documentary Report #15, 6/14/42; Report #30, 7/20/42
40 Documentary Report #5: 6/14/42
41 Several of these ponds have been documented through archeological investigations at Block 2, Building 2; Block 24 between Buildings 5 and 6; Block 24 between Buildings 8 and 9; Block 26 between Buildings 13 and 14; Block 35, Building 8; and Block 36, Building 12.
42 Burton 1996.
43 Manzanar Free Press 6/27/42:3
44 The pond garden in Block 2 was exposed through archeological work in 2000 by WACC.
45 Manzanar historic tree site report, Richard Stewart, 2001
46 The most likely cause of mortality to the apple orchards is the lack of irrigation for over sixty years in the harsh desert environment.
47 Documentary Report #12, 6/24/42; WCCA Production-"Agriculture and Industry." UCLA Special Collections 122, Box 6
48 Manzanar Free Press, 6/2/42
49 Manzanar Free Press, 5/26/42

50 Manzanar Free Press 8/10/42:2 , 9/19/42: 1. Additionally, vegetables identified in photographs RG210-Francis Stewart G-10 D512 r.33 "Ben Iguchi of Saugus, CA thins young plants in two acre field of white radishes" 6/2/42 and Francis Stewart. RG210-G-10 C686 7/2/42.
51 Community Activities Section, Final Report
52 Nielsen, Community Activities Section, Final Report 1946a; Community Activities Section, Final Report, p. 882
53 Manzanar Free Press, 1/13/43; 5/8/43
54 Community Activities Section, Final Report, p. 860
55 Manzanar Free Press, 6/2/42
56 Final standards for construction were not officially issued until after construction of Manzanar
57 "Report to the President and Board of Directors, Owens Valley Improvement Company," May 16, 1912 [incomplete, author unknown], in "Manzanar Town," Subject History, Vertical Reference Files, Eastern California Museum.
58 The decision to move the road was as based on a request by Manzanar Director Roy Nash to the District Engineer of the California Division of Highways. Nash requested that the road be moved so that the entrance to the camp could be controlled. In this way, all vehicles would pass through military police checkpoints and administrative areas rather than being routed directly into the housing area as was the case with the initial entry. Roy Nash, Project directory to Harry Brown Jr., Senior Engineer, June 15, 1942, and Roy Nash, Project director to S.W. Lowden, district Engineer, California Division of Highways, August 14, 1942, RG 210, Entry 48, Box 224, File No. 43.500, "Construction of Centers (general), Repairs—Maintenance—Wiring—Landscaping—Electrical")
59 See Cultural Traditions for a description of Faux Bois, a technique used by some of the internees to fashion concrete into "natural appearing" decorative features and structures for the ornamental gardens.
60 Map --"Layout of Center: Streets, Parking Areas, Sidewalks"
61 Historically, roads in the Town of Manzanar were laid-out in an east-west alignment, at one-mile intervals; the north-south streets paralleled Independence Avenue.
62 This process in the 1940s was typically referred to as "oiling a road". As a note, "cutback asphaltics" were composed of volatile oil that adversely effect air quality and cannot be used today. As per interview with Dave Kruse, NPS, Pacific West Region, FHLP Coordinator, 2003.
63 Engineering Section Final Report
64 Block Managers Reports, June-December 1942, UCLA Special Collections, Box 9, Community Government.
65 Documentary Report #11, June 22, 1942.
66 Documentary Reports #8, June 19, 1942; #13, June 25, 1942; #55, August 26, 1942, Togo Tanaka, JERS, Bancroft Library
67 There were only 10 windows on the sides of the building where the doors were located.
68 Manzanar Free Press, 10/22/42
69 "Engineering Section," Final Report, Manzanar, Vol. III, pp. 1002-03, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."
70 Documentary Report #8, June 28, 1942
71 According to WRA blueprints, Barracks 1 was used by the Manzanar Free Press, Barracks 2 was used by Public Works and Public Relations, Barracks 3 was used by Adult Education, Barracks 4 was used by Education, Barracks 5 was used by Personnel and Statistics, Barracks 7 was used by Housing and 8 was used by Mail

Delivery. Most of the remaining barracks were used for bachelor's apartments. The Laundry and Ironing buildings were connected by an addition and converted to a shoyu factory.

72 Burton, Three Farewells to Manzanar, pp 209-210

73 "Engineering Section," Final Report, Manzanar, Vol. III, pp. 1,005-08, RG 210, Entry 4b, Box 72, File "Manzanar Final Reports," and Memorandum, A. M. Sandridge, Sr. Engineer to Ralph P. Merritt, Project Director, February 17, 1944, Box 13, Folder, "WRA Engineering," Coll. 122, Department of Special Collections, UCLA.

74 "Engineering Section," Final Report, Manzanar, Vol. II, pp. 1,009

75 Burton, Three Farewells to Manzanar, 240-241

76 Given the information included in the general design and construction standards it can be assumed that the fire building was the "Modified Theater of Operation" style structure with wood-frame construction on a concrete foundation with a slab floor.

77 This cluster of buildings replaced the earlier medical care facility at Manzanar, initially housed in an apartment located in Block 1, Building 2, and moved to an entire barracks building in Block 7, before building the larger hospital building complex for medical services.

78 The WRA Camp Layout plan dated 4/20/1945 indicates the building housed the morgue and the sterilization room.

79 Final Report: Sandridge and Sisler, Engineering Section, 2/15/46; Manzanar Free Press Vol. II, #1, 7/22/42: 1

80 Confinement and Ethnicity: 166-167

81 "Engineering Section," Final Report, Manzanar, Vol. III, p. 1,026, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."

82 This work may have been done under the supervision of stonemason Ryozo F. Kado, but evidence is inconclusive.

83 Armor, John and Peter Wright, Manzanar, Photographs by Ansel Adams, Commentary by John Hersey, page 93.

84 "Engineering Section," Final Report, Manzanar, Vol. III, pp. 1002-03, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."

85 "Industrial Section," Final Report, Manzanar, Vol. III, pp. 1065-1067, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."

86 Ralph P. Merritt, Project Director to Dillon S. Myer, Director, WRA, January 16, 1943, and Dillon S. Myer, Director, WRA to R. B. Cozzens, Field Assistant director, WRA, February 24, 1943, RG 210, Entry 16, Box 315, File 433.503, "Construction and Maintenance of Centers — Manzanar."

87 MacNair, Motor Transport and Maintenance Section, Final Report, 1946a

88 Burton, Three Farewells to Manzanar, page 246

89 Kado applied his skill and artistry to several other features in the camp, including block gardens, such as the block garden and pond near his residence in Block 6. He also contributed to the development of landscaped areas in the administrative block, designed a rock garden at the camp entry, built outdoor fireplaces and barbecue structures, and also designed and constructed Manzanar's Buddhist-style cemetery monument.

90 "Engineering Section," Final Report, Manzanar, Vol. III, p. 1,021, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."

91 Final Report, Engineering Section 46A

92 WRA "Fixed Asset Inventory, "November 15, 1945, Land and Fencing, Account No. 34, p.2

93 Burton, Three Farewells to Manzanar, page 332.

94 The fence was gone when the National Park Service took over management of the site. It was reconstructed based on historic photographs and archeological evidence in 2001.
95 Archeological investigations have been inconclusive in attributing dates or specific origins to certain individual components of the water collection and distribution system, however, the system of delivering water from the nearby Sierra streams to the camp housing area and its outlying agricultural fields, initially constructed at the turn of the century for the Town of Manzanar, was significantly expanded by the WRA and internees (Burton: 530-531). Also see Land Improvements map, WRA (5/6/45)
96 The city of Los Angeles had constructed these wells—part of an extensive system in the area—to increase groundwater storage on their property east of the Owens River. See HRS, Map 2: "Manzanar Farm and Irrigation Map, April 12, 1943"
97 "Project Report No. 19," July 8, 1942
98 The reserve was needed to provide an auxiliary supply water in the event of a fire, or to supplement irrigation of crops during low rainfall periods.
99 McConnell and Hill; Agricultural Section, Final Report, January 1946
100 "Project Report No. 23," July 16, 1942, and "Project Report No. 63," October 30, 1942, RG 210, Entry 4b, Box 70, File, "Manzanar Project Reports;" Manzanar Free Press, 6/27/42
101 Originally the building would have had tarpaper with 3/8" x 2" battens as an exterior covering on the walls and roof over the 1" vertical random width siding. The roof has several layers of various roofing materials. The asbestos was removed by Inyo County prior to the park accepting the building. There are a number of stove pipes and vent stacks penetrating the roof.
102 It is an odd location for the four-light window, which may have been moved here from another location. The one-light window is not like any of the others on the building and likely is not original.
103 Burton, Three Farewells to Manzanar
104 Ibid
105 Ibid, p. 217
106 Ibid, p.210
107 Ibid, p 241
108 Ibid.
109 Ibid, page 265.
110 Ibid, page 210.
111 Ibid, p 219.
112 Ibid, 239 , and "Engineering Section," Final Report, Manzanar, Vol. III, pp. 1001-02, RG 210, Entry 4b, Box 72, File, "Manzanar Final Reports."
113 Burton, Three Farewells to Manzanar, page 246
114 Ibid, pg. 300. The locations for guard towers 1-3 were found through archeological excavations in 2002. The concrete foundations were replaced in their original holes but since they were located in the current road bed, they had to be buried.
115 Ibid, pgs 233, 237
116 A detailed inventory of remnant water systems features that were developed during the internment period is recorded in the archeological study, Three Farewells to Manzanar, Chapter 9.
117 Burton 1996, Three Farewells to Manzanar, Vol.1, pg 177
118 Burton 2001, I Rei To; Burton 1998, landfill testing trip report; Burton 1999, security features testing trip report, Burton 2002, Block 8 trip report

119 Burton 1998, The Archeology of Somewhere; Burton and Baird 2000, fence monitoring trip report
120 Burton 2003, Shepherd Ranch testing trip report
121 Burton 1998, Boundary sites testing trip report; Burton 2000, flood-control ditch testing trip report
122 Antevs 1952; Amsden 1937; Campbell 1949; Davis 1963
123 The chronometric data now available are not precise enough to say whether both sites were occupied at the same time or hundreds of years apart.
124 Bettinger and Baumhoff 1982:197; 495-503
125 Steward 1933, 1938
126 The place names suggest important, or perhaps distinctive, plants at each location: Tanova witü (salt brush place), Tüpüzi witü (a type of seed plant [probably Brodiaea capitata] place), and Tsagapü witü (black willow place). All of these plants occurred in the vicinity of the historic site, and Tsagapü witü may even have been within the Historic Site boundaries.
127 Eastern California Museum files
128 Based on information from the 1859 Davidson expedition.
129 Steward 1933:map 1
130 Lawton et al. 1976
131 For additional information see California Historical Record Inventory System (CHRIS), and Three Farewells to Manzanar, pgs. 644-650, and pgs. 1016-1018.
132 1900 census information.
133 See Burton, Three Farewells to Manzanar, pgs. 140-145, and pg 639-644. Also see Burton, 2998, The Archeology of Somewhere.
134 Burton 1998, The Archeology of Somewhere, Burton and Baird 2000, fence monitoring trip report.
135 For a full discussion of these issues and themes see Burton, Three Farewells to Manzanar, Vol.1, pg 178-179, and Confinement and Ethnicity: An Overview of World War II Japanese American Relocation Sites, by Jeff Burton, et al.. Publications in Anthropology, No.74, Western Archeological Center, National Park Service, U.S. Department of the Interior, 1999, pgs. 161-202.
136 For a complete inventory of features associated with the Manzanar War Relocation Camp compiled from these archeological investigations, see Burton, 1996. Also see Appendix D, for Summary Tables of Archeological Features, complied 2005.
137 Burton 1998, I Rei To; Burton 2002 Block 8 trip report, Burton n.d., landfill testing report in preparation
138 See Three Farewells to Manzanar, pg. 634
139 Burton 2002, Block 8 Trip report
140 See Three Farewells to Manzanar, pgs. 319-331 and Burton and Bonstead 2001, Feature P-34 testing trip report.

Treatment

Introduction

The primary document outlining and describing treatment of cultural landscape resources at Manzanar National Historic Site is the *Manzanar General Management Plan Final and Environmental Impact Statement* (GMP, 1997). Because of the fragmented nature of many of the cultural resources remaining at Manzanar, the GMP calls for a wide range of strategies for preservation and interpretation of the historic site. *Preservation* is the primary treatment applied to the site and includes both preservation and stabilization of remaining historic features—such as the stone garden structures. ***Restoration*** is applied to remaining but deteriorated historic features—such as the historic Lafon apple orchard, with the goal to enhance the condition of the resource. ***Rehabilitation*** is applied to the compatible adaptive reuse of historic structures—such as the rehabilitation of the auditorium for an Interpretive Center. And finally, ***reconstruction*** which involves reestablishing elements no longer present is used as a treatment only when missing features have been identified as essential for telling the story of camp life—such as the proposed reconstruction of guard tower number 8. In this regard, the GMP provides the overall framework for the more specific treatment guidelines and schematic design concepts for the cultural landscape described in this report. Where the GMP calls for a specific treatment of cultural landscape features, references from the GMP are excerpted and annotated in the treatment guidelines as sidebars to the text.

The GMP also identifies the need for the NPS to develop partnerships and agreements with other agencies for the management of cultural resources located outside the boundary of the historic site. These resources include the natural setting and open views, and a variety of significant historic structures including the camp reservoir, extensive agricultural irrigation structures, remnants of the hog farm, outlying wells, the sewage treatment plant, and several structures at George's Creek such as the road, bridge, dams, building foundation and corrals. Because these resources are

GUIDANCE FROM THE GMP

…the site [Manzanar] would be managed as a cultural landscape relating to the internment camp era. To achieve this, the existing features remaining from the camp period, such as the road system, structural remains, and landscape plantings would be preserved. (GMP/FEIS pg. 10)

The role of restoration and reconstruction at the site needs to be considered, considering the availability of information to allow accurate restoration/reconstruction and the need for such features to support the interpretive program. (GMP/FEIS pg. 5).

…one or more rock gardens identified as interpretative sites would be rehabilitated. (GMP/FEIS, pg.11)

outside the study boundary for this report they are not addressed in detail. However, both individually and collectively, these resources do contribute to the significance of the cultural landscape at Manzanar, and the report does support and advocate the need to work with adjacent land managers to provide access, interpret, and maintain the structural integrity of these historic structures, assuring preservation in the context of the cultural landscape as a whole.

Other plans and management documents related to treatment of the historic site were reviewed to ensure consistency in the development of treatment goals and objectives for the landscape. Key among these was the *Fire Management Plan*, the *Landscape Stabilization Plan, 2005*, the *Historic Structures Report*, conservation reports and the various archeological reports. In most cases, management goals among planning documents were consolidated to direct comprehensive treatment of the cultural landscape. For example, guidelines related to vegetation management at Manzanar were developed in collaboration with the regional fire program coordinator and an archeologist to assure recommendations for reducing fuel loads and fuel ladders protect both below ground and above ground cultural resources. (See Appendix E).

Because this report focuses on the Internment era, treatment of remnants related to other historic eras is not directly addressed. However as additional research is undertaken, and as the park develops priorities for interpreting the full range of site resources through the Comprehensive

THE SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measure to protect and stabilize the property, generally focuses on the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties function is appropriate within a preservation project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions of features which convey its historical, cultural or architectural values.

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing system and other code-required work to make properties functions is appropriate within a restoration project.

Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Interpretive Plan (CIP), these features may be stabilized and interpreted as appropriate.

Finally, all landscape treatment guidelines and schematic design concepts for Manzanar are predicated on and are consistent with the guidance provided in National Park Service *Director's Order 28: Management of Cultural Resources*, and with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.

Within this planning and administrative framework, and based on findings in the analysis and evaluation, treatment for the cultural landscape is organized into two sections. The first section provides *overall treatment guidelines* that are based on direction given in the GMP. Overall treatment guidelines are prioritized to first stabilize and preserve significant resources before they are lost; second, remove any intrusions that impair the physical integrity of the landscape or present safety concerns; and third, enhance the interpretive environment and rehabilitate the landscape to accommodate contemporary use. The guidelines are intended as general preservation principles that address appropriate treatment of cultural landscape resources throughout the site such as circulation, buildings and structures, archeology, vegetation, firebreaks, soil conservation and small-scale features. In some cases, additional detail is provided to address the use of materials or provide specific direction for implementation.

The second section provides *schematic design concepts* for seven areas within the historic site, including:

- The Auto Tour Road
- Highway 395

- Guard Tower No. 8
- The Historic Entrance
- The Interpretive Center (Auditorium)
- The Demonstration Block
- The Cemetery

These design concepts address specific site treatments established in the GMP—such as the demonstration block, and/or design issues and needs identified by park staff, such as the auto tour road. For some of the areas, a range of concepts may be presented as alternative strategies or options for appropriate treatment, allowing a degree of flexibility for park management while assuring compliance with the *General Management Plan* and preservation of the specific area in the context of the cultural landscape as a whole.

Treatment Guidelines

Circulation

Much the original road system constructed at Manzanar survives from the historic period and is a key interpretive component for enhancing visitor understanding of the historic site. Maintenance of the exposed road system also supports fire management objectives and adaptive reuse of the historic circulation system for emergency vehicles and pedestrian ways.

Treatment guidelines for roads focus on preservation and stabilization of exposed and remaining portions of the historic road grid, and a phased approach for exposing those portions of the road currently obscured by vegetation or buried by top soil. Guidelines also address the addition of new roads and parking areas as needed for operations and visitor use.

GUIDANCE FROM THE GMP:

The camp's road system, still apparent throughout much of the area, would be rehabilitated to the extent required to retain this network as a visual element of the cultural landscape, and to allow for foot and emergency vehicle traffic. Roads, except as noted below, would not be paved and rehabilitation would not extend to making all the roads usable for motor vehicles. (GMP/FEIS, pg. 11)

Selective thinning or clearing of plant growth and tree cover would be undertaken for the purpose of revealing the defining road gridwork, and the conspicuous "firebreaks" strategically located throughout the camp. (GMP/FEIS, pg. 11)

All roads improved for vehicle use would follow historic routes, and would conform to the historic width… A one-way paved system would be developed to carry traffic between the historic entrance and the auditorium and would be improved with turning radii suitable for most vehicles, including buses and towed vehicles. Other one-way roads accessing the camp area would either be paved or would be treated with a dust palliative. Due to the narrowness of these historic roadways, and the limited turning radii, buses, large RV's and vehicles towing trailers would not be permitted on these roads. (GMP/FEIS, pg. 31)

Roads



Figure 88. Native vegetation and exotic vegetation encroaching on historic road. (NPS, 2002)

Overall Treatment Guidelines

1. Maintain the design attributes and character of remaining historic roads including width, alignment, paving material, and drainage structures.

2. Clean roads, remove vegetation from within the historic road corridors, and selectively stabilize, patch, and repair damaged pavement on exposed segments of the historic road system within the camp to ensure preservation of the original paving material. (Figure 88)

- Consideration should be given to the use of a slurry coat augmented with local soil to help protect historic material and provide a surface that, when it wears down, will be compatible in appearance with the bituminous paving that was used historically.

3. Remove or manage vegetation on road segments that have been



Figure 89. Portions of the historic road grid system are currently buried under alluvial deposits. (NPS, 2002)

covered by soil so that the road corridor is visually distinctive from the surrounding vegetation, permits use by visitors and NPS maintenance vehicles, and provides a visual connection with other exposed portions of the road system. The clearing of vegetation from the road corridors also supports fire management objectives for the site. (Figure 89)

- Minimize potential adverse effect on archeological resources by using manual techniques. The clearing of vegetation within the road bed shall be done in consultation with an archeologist.

- Where the historic roads paving is buried or missing, consideration should be give to the use of a dust palliative or, where necessary, the native soil should be compacted on the exposed portions of the road bed to control blowing dust (to maintain regional air quality standards).

4. Work with a historical archeologist to excavate and expose buried portions of the historic road in areas that are readily uncovered (approx. 12 inches or less) to ensure protection of historic features located in the road bed or adjacent to it. Roads that are buried more than 12 inches will need to be reviewed on a case-by-case basis to ensure feasibility and address





Figure 90. (above) Many features, like this stone curb, are obscured by accumulated soil along historic roads throughout the site. (NPS 2002)

Figure 91. (left) Non-historic mounds of dirt, such as this berm along one of the historic roads, impact the integrity of the historic setting. (NPS, 2002)



Figure 92. This historic mortared rock embankment along George's Creek is outside the NPS boundary. The NPS will work with other land owners and agencies to identify, inventory, and assess resources to ensure protection. (NPS, 2002)

maintenance requirements. (Figure 90)

5. Remove non-historic roads, except as called for in the GMP, and revegetate disturbed areas with native vegetation (e.g. remove the paved CALTRANS entrance to the Interpretive Center after opening the new 6th Street entrance).

6. Remove non-historic mounds of stockpiled soil along the road. (Figure 91)

- Consideration should be given to the use of stockpiled soil for fill material in washouts throughout the site (See the Soil Conservation and Grading section.)

7. Work in partnership with other land management agencies to document, evaluate, and manage historic dirt and gravel roads. These roads provide access and link historic sites and features related to Manzanar such as the camp reservoir and embankment structures at George's Creek. (Figure 92)

- Consideration should be given to the use of dust palliatives on all unpaved roads managed by the NPS in support of local air

Figure 93. Non-historic roads, like this loop road at the Military Police compound, impact the integrity of the historic setting. (NPS, 2002)



quality standards.

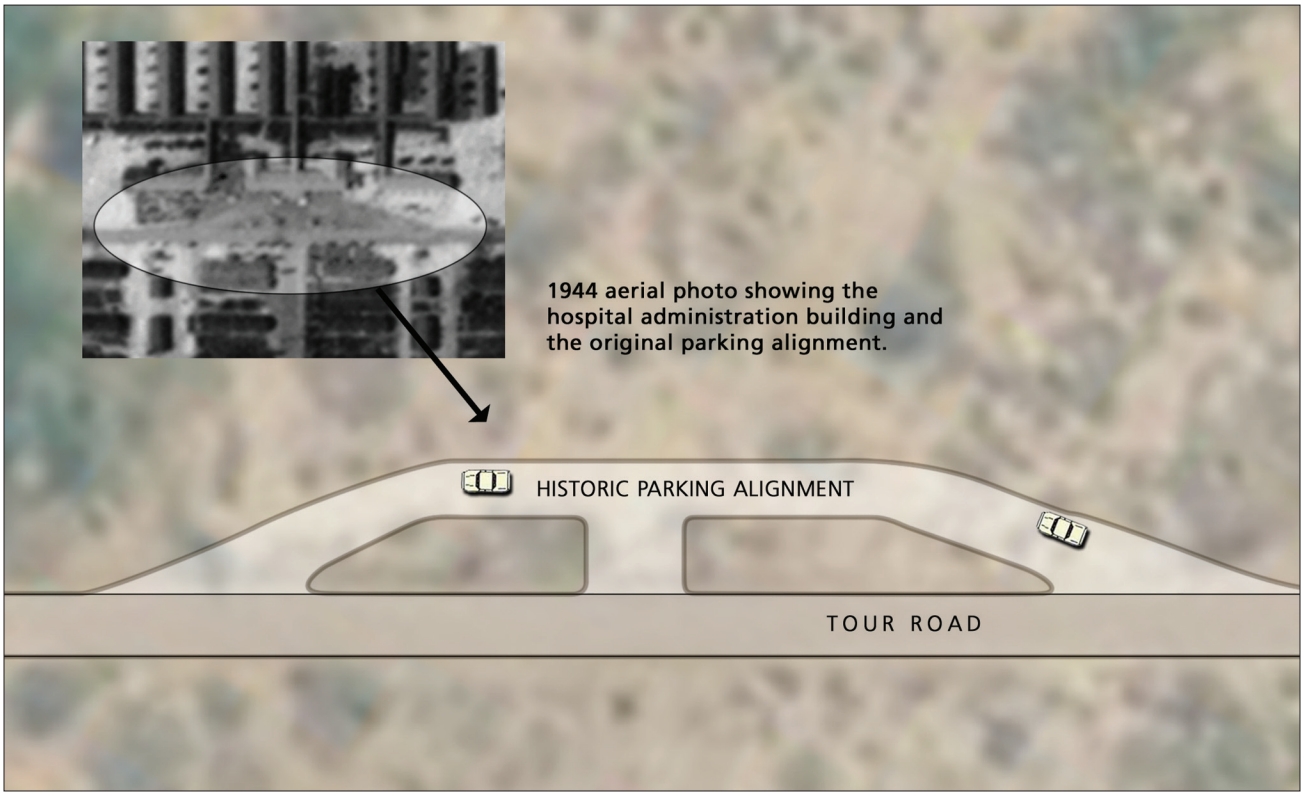
8. Restore the historic circulation pattern throughout the Military Police compound. Eliminate non-historic loop by clearing the historic parking area in the compound for use as the turn-around. (Figure 93)

9. Discourage the addition of new roads within the historic site, unless specified in the GMP. If new roads are required they should be designed to be compatible with the character of historic roads (e.g. width, shoulder treatment, crowning, appearance, etc.).

Parking

The GMP recognizes that parking will be required for visitors throughout the historic site and calls for the establishment of four additional parking areas in addition to the large parking lot at the Interpretive Center. The following guidelines address the location and character of new parking

Figure 94. Hospital site parking. (NPS, 2005)

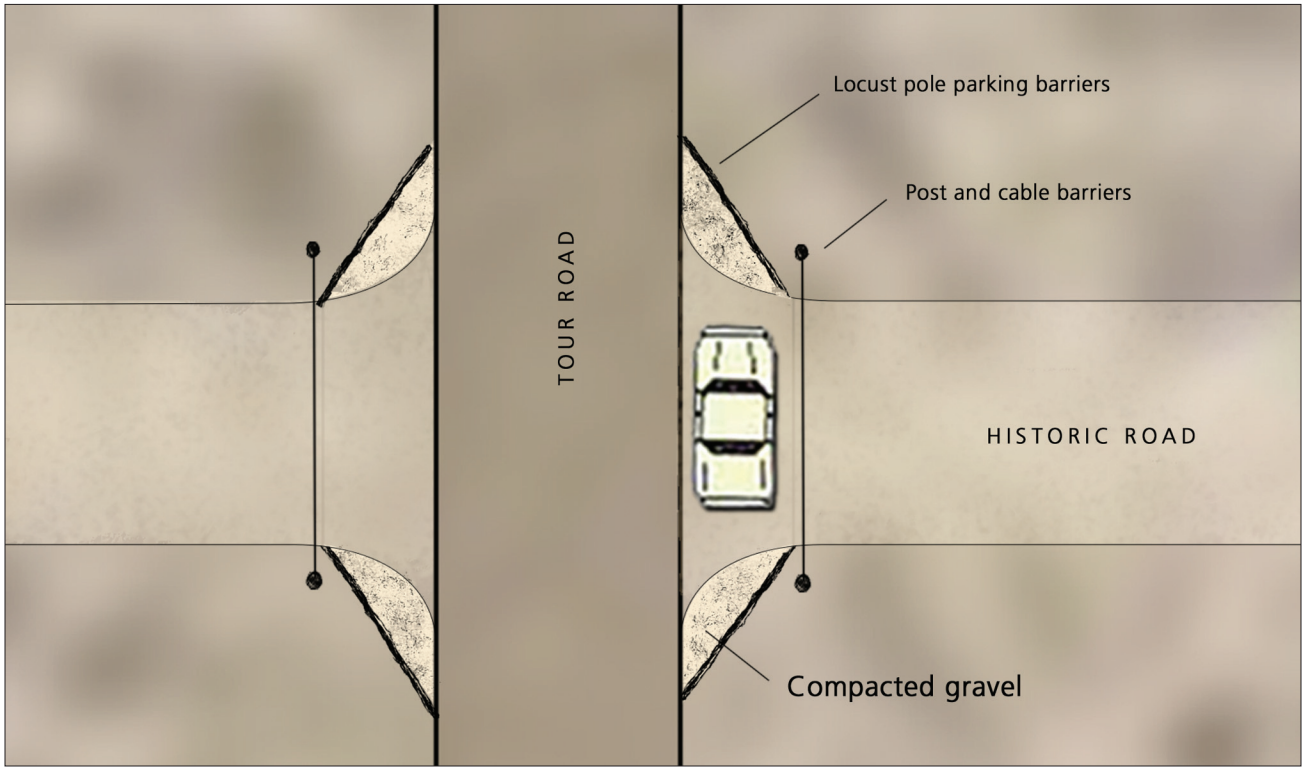


areas in a manner that is compatible with the historic setting.

1. Carefully site and develop any new parking areas in existing (historic) paved areas to minimize potential visual and physical impacts to the cultural landscape. Examples of existing paved areas include road intersections, the entrance to the hospital complex, the camp entrance, and the parking lot in the administrative housing area. (Figure 94)

- Historic paving material should be rehabilitated to ensure safety, and resurfaced with a material that is visually differentiated along the auto tour route. After those portions of the historic roads to be used for parking are patched, a slurry coat using decomposed granite—similar in color and size to the historic material, should be applied over the entire parking area. This technique will make these areas visually distinctive from the auto tour road and stabilize and preserve what remains of the historic surface material.

Figure 95. Parking at historic intersections. (NPS, 2005)



2. Modify and use historic road intersections along the auto tour route as designated areas for parking. This would minimize impacts on the cultural landscape and would allow visitors access to specific sites. Delineation of parking areas located at road intersections should be undertaken in collaboration with an archeologist in order to verify the original road configuration, and to ensure protection of historic features. (Figure 95)

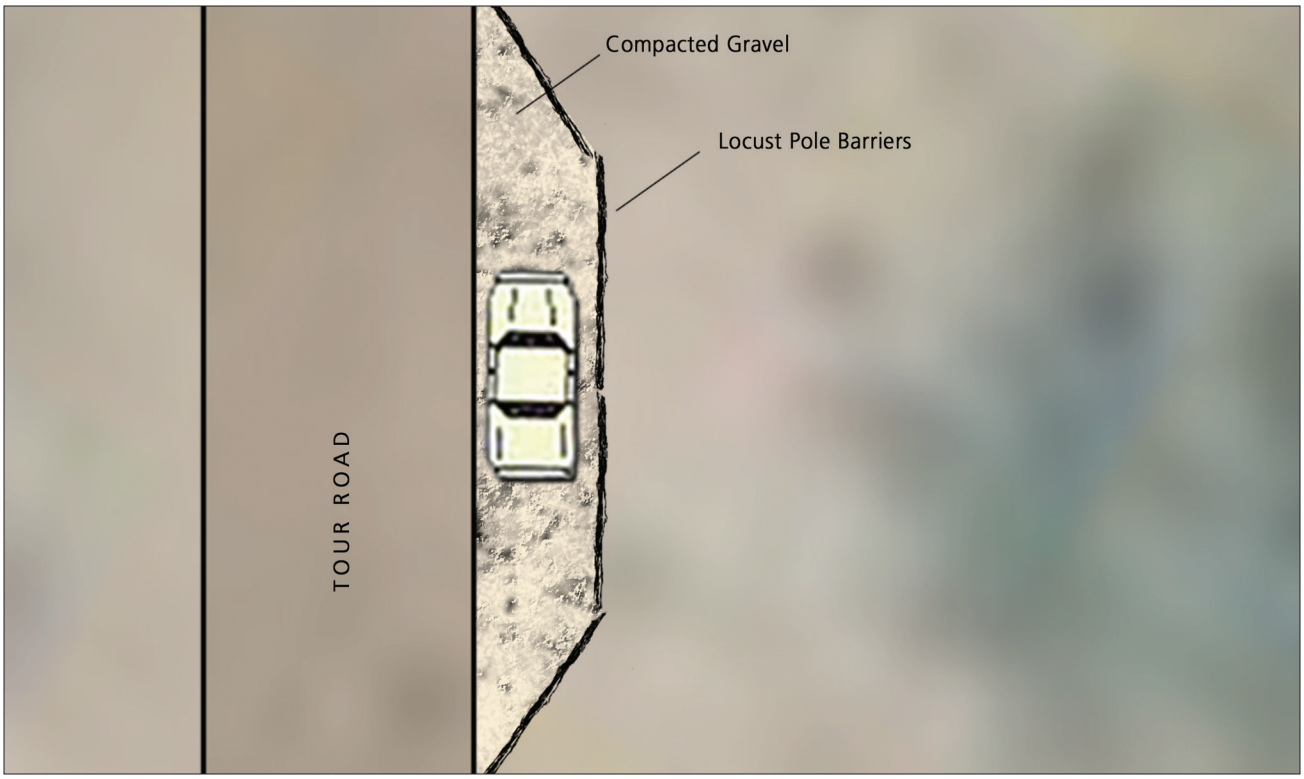
GUIDANCE FROM THE GMP
Unpaved pullouts for vehicles at various points along the primary tour route may also be needed for safety and access. (GMP/FEIS, pg. 17)

3. Development of parking areas and pullouts required for a (future) site shuttle system should use the same design guidelines outlined above.

4. Development of new parking areas in non-historic locations is discouraged. If it is determined that additional parking is required for accessibility or emergency access, and no additional paved sites are available to meet the specific need, it is recommended that the following criteria for design and development be used:

- All parking areas are small in scale and designed to meet normal

Figure 96. Gravel pullout. (NPS, 2005)



(not peak use) parking needs,
- Parking areas are designed to minimize the need for grading and potential impacts to historic artifacts, and
- All parking areas are located and surfaced to minimize visual impacts to the historic scene.

5. Based on site carrying capacity and interpretive priorities, a limited number of unpaved vehicular pullouts may be developed along road shoulders when historically paved areas cannot be adapted for parking (e.g. along 9th Street at North Park). If unpaved road shoulders are developed for vehicle pullouts the following design criteria applies:

- Ensure the location for new pullout is selected in consultation with an archeologist to minimize potential impacts to cultural resources.
- Minimize grading to reduce potential impacts to archeological resources. (Figure 96)
- Stabilize gravel shoulders by using binding agents (such as soil cement).

6. Clear vegetation from designated parking areas to minimize the threat

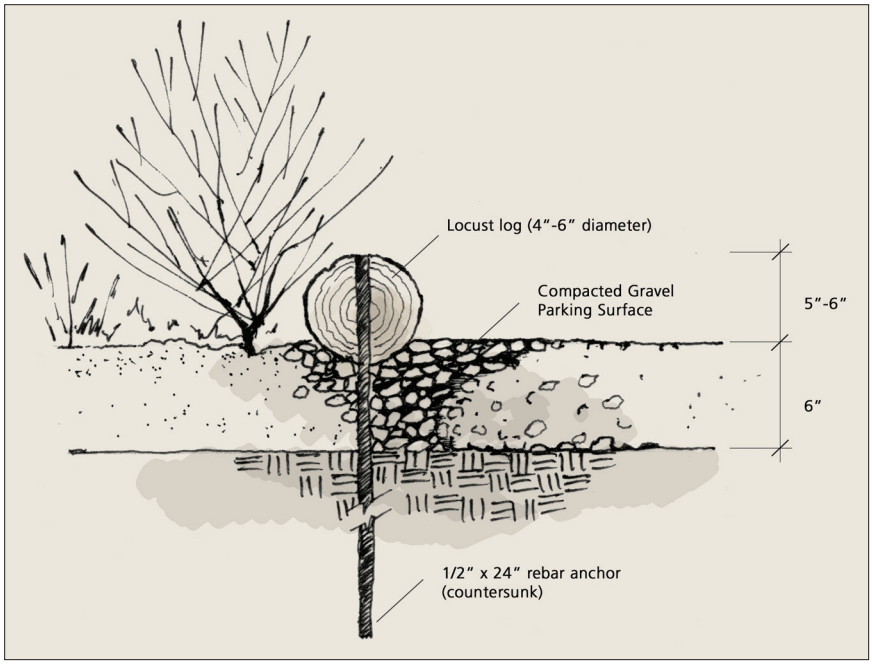


Figure 97. Log parking barrier. (NPS, 2005)

Table 5: Summary Treatments for Roads and Parking Areas

(Priorities are ranked between 1 and 3 with "1" being the most immediate priority)

STABILIZE, PATCH AND PRESERVE		
LOCATION	PRIORITY	COMMENTS
Park entrance road from Hwy 395 to B Street.	3 (Work completed in 2003)	Patch and repair existing road and apply slurry coast to preserve historic fabric.
Historic road grid (where it exists in reasonable condition) including Francis Street to the camp boundary fence.	2	Patch and repair existing road and apply slurry coast to preserve historic fabric.
Historic parking areas, roads and pullouts that are to be used for onsite parking	1	Patch and repair existing road and apply slurry coast to preserve historic fabric.
Historic gravel roads outside the camp boundary	3	Maintain gravel roads at current width and materials that provide access to outlying associated resources.
RESTORE		
LOCATION	PRIORITY	COMMENTS
Missing segments of the historic road grid	3	These are a result of post-historic period washouts from storm events.
Buried segments of the historic road grid	2	These are a result of post-historic period washouts from storm events.
Highway 395	3	Should the NPS acquire management responsibility for the highway in front of the site, the highway should be restored to a more historic appearance.
REHABILITATE		
LOCATION	PRIORITY	COMMENTS
Auto Tour Road	1	Based on the GMP, the historic road is to be rehabilitated for visitor access. Surface treatment for modern use should be compatible with historic segments, yet should also be distinguishable from historic segments of the road (as per the Secretary's Standards for Rehabilitation).
Road Shoulders for Parking	3	Road shoulders can be used for parking in designated areas only. However, on-site soil should be hardened/stabilized and differentiated from normal shoulder/soil conditions using materials like soil cement to make them appear similar to the roads. These areas need to be visually differentiated from normal road shoulders where parking is discouraged.
NON-CONTRIBUTING		
LOCATION	PRIORITY	COMMENTS
Cemetery Parking	1	Parking should minimize impact to historic scene. GMP calls for use of hardened surfacing for year-round-visitor parking.
New Entrance Road and Interpretive Center Parking area	3 (Work completed in 2003)	Minimize visual impact to historic scene by limiting striping, width and other visual impacts to the historic site.
Interpretive Center Parking Lot Connector to Highway 395	3	Remove after opening of the new 6th Street entrance.

of wildfires ignited by parked vehicles and to visually differentiate pullouts from road shoulders where parking is not allowed.

7. Delineate and differentiate unpaved pullouts from the auto tour road to help ensure that no unauthorized off-road parking occurs on the site. Additional signage or delineation of parking areas may be required.

- Consideration should be given to the use of limbed locust trees

to delineate pullouts and parking areas on road shoulders. Stone or raised timbers (e.g. 6"x6") could also be used, but the goal should be to keep the parking areas informal in appearance (e.g. use of concrete or asphalt curbing should be avoided). (Figure 97)

8. Use of non-motorized vehicles (bicycles, mountain bikes, etc.) will be confined to the historic road grid. Routes may only be designated for bicycle use based on a written determination that such use is consistent with the protection of a park area's natural, scenic and aesthetic values, safety considerations and management objectives and will not disturb wildlife or park resources. (See Table 5.)

Historic Buildings and Structures

There are three buildings remaining from the historic period, the two sentry posts and the auditorium building. A Manzanar-era mess hall building was moved to the site in 2003. There are also numerous masonry structures on the site including remnant building slabs and foundations, oven/griddles (barbecues), an incinerator, planters, walls, and garden features. In 2001, an assessment was made of many of the masonry structures of the site, and conservation work was performed on many of the historic features.[1]

Treatment guidelines for historic buildings and structures are organized by individual structure (e.g. sentry post) or grouped by type (e.g. exposed slabs, steps and foundations). The treatment guidelines for three buildings—the auditorium, the mess hall in Block 14, and the cemetery monument—are addressed under the schematic design concept for that area because there are larger design concepts presented. In addition, treatment guidelines for some landscape structures such as sidewalks, garden remnants, and roads can be found under other headings in the treatment section of this document. Overall treatment guidelines for historic buildings and structures that apply to all structures are followed by specific guidelines for each structure.

Overall Treatment Guidelines

1. Rehabilitation, preservation, or restoration of remaining historic structures should be based on the *Secretary of the Interior's Standards for*



Figure 98. If feasible, non-historic utility lines at the military police compound should be relocated. (NPS, 2002)



Figure 99. Historic photograph showing utility poles along Highway 395. (Courtesy of Toyo Miyatake Studio)

Archeology and Historic Preservation (as amended and annotated).

2. Once ultimate treatment of historic structures is completed, preservation maintenance plans should be prepared and followed. For most of the structures, refer to the information included in the 2001 Historic Preservation Report.[2]

GUIDANCE FROM THE GMP
To the extent that reconstruction occurs on the site, it would be limited to camp-era structures, which can be accurately reconstructed based on historic data. (GMP/FEIS pg. 10)

There are a number of other intact structures on the site, including stone barbecues, stone planters, rock garden structures, etc., and many structural remnants such as walls, steps, etc… A number of these structures and structural remnants, especially those located at interpretive sites throughout the camp area, would be preserved through regular maintenance. (GMP/FEIS, pg. 10)

3. All features should be closely inspected every year to identify any immediate maintenance needs related to vandalism, vegetation, concrete, stone or mortar deterioration, drainage, or wind erosion problems.

4. Significant preservation work should be undertaken by preservation masons or conservators (as appropriate) working under the direction of a historical architect.

5. Development of a new centralized maintenance facility or vehicle storage area within the historic site boundaries is strongly discouraged.

6. Considerations should be given to working with the utility company to remove non-historic utility lines within the historic site including the transformer structures (in military police area). Utility lines should be relocated in historic locations along Highway 395 or if that is not feasible, outside the historic site boundaries. (Figure 98, Figure 99)

Specific Buildings and Structures

Sentry Posts (See CLR Part 2, Treatment: Schematic Design Concepts for additional guidance on the treatment of the historic entrance)

GUIDANCE FROM THE GMP
Rental space would be obtained in local communities as needed to provide a modest work space for shop activities, storage for supplies and materials, and storage for park vehicles. (GMP/EIS, pg 19)

The exteriors of the two historic sentry posts were restored in 2001. Preservation treatments for these structures are outlined in the Historic Preservation Report and summarized here to provide general guidance.[3]

1. Clean and inspect buildings annually to identify any immediate maintenance needs such as rodent infestations, broken glass, roof leaks, vandalism, wood deterioration, stone or mortar deterioration, drainage problems, and failure of the faux wood concrete finishes on the thresholds and lintels of both structures.

2. Work with a conservator familiar with faux wood concrete finishes to correct any failure or pending failure of the finishes on thresholds and lintels.

3. Prioritize all treatments based on the condition and the threat to the physical integrity of the structures.

4. Replace broken glass as required with laminated safety glass.

5. Reapply stain and paint to the cleaned surfaces of both structures every five years.

6. Use the specific recommendations for the preservation of the faux wood concrete finishes of the lintels and thresholds are found in the Preservation Report, 2001[4]

7. Inspect the faux wood concrete finishes on the lintels and sill of the Sentry Posts approximately every five years and treat as necessary.

Exposed Slabs, Walkways, Steps and Foundations, Irrigation Works (Site-Wide)

1. Annually clean and inspect exposed slabs and building foundations for damage caused by vegetation, soil build-up, or eroding soil undermining footings and foundations. Any soil removal should be done in consultation with an archeologist.

2. Remove non-historic vegetation from the edges and cracks of structural features. Removal of historic vegetation to protect buildings and structures should be done in consultation with the parks Cultural Resource



Figure 100. Non-historic vegetation obscures the historic foundations and can damage garden features if left unmanaged. (NPS, 2002)



Figure 101. Building foundations and walkways cleared of vegetation allows visitors to better understand the physical character of the site. (NPS, 2002)

Management (CRM) advisors. (Figure 100, Figure 101)

3. Inspect edges for structural problems such as undermining caused by animal activity, water, and wind erosion. (In most cases, slabs and foundations are stable and existing cracks and minor edge loss are not a problem.)

4. Work with a preservation mason and/or conservator to make repairs as necessary to prevent further deterioration. Basic mitigation measures may include:

- Fill animal holes and eroded areas around exposed edges of concrete features with parent soil from a park approved location that closely matches the parent soil (color, texture, etc.) and has minimal organic materials. Shore up or stabilize as necessary.
- Improve drainage around structures where necessary to minimize potential for erosion.
- Use care when removing non-historic vegetation from edges and cracks to protect concrete features.

5. The stone masonry structure in the administration area (believed to be a sign holder), received preservation/conservation treatment in 2001.[5] As

with the other masonry features, it should be inspected yearly for impacts from vegetation and soil, and the decorative mortar inspected on a five-year schedule by a conservator to check for further cracking, detachment, and loss, and treated as necessary. The 2001 repairs should be checked at the same time to see if those repair techniques are holding up.

6. Consideration may be give to the adaptive use of historic irrigation works—such as earthen ditches and pipes, for contemporary site irrigation *on a limited basis*. In all cases, adaptive use of these structures should be undertaken in a manner that does not adversely affect the physical integrity of the historic system, is visually and functionally compatible with the historic structure and setting, and meets the Secretary of the Interior Standards for Rehabilitation.

North Park Oven

1. Inspect the structures approximately every five years for signs of masonry deterioration. Loose stones should be reset and missing mortar should be replaced in-kind based on an analysis of the existing mortar by a park-approved historic materials conservator.

Chicken Ranch

The chicken ranch incinerator received preservation and conservation treatment in 2001. Specific treatments are detailed in that report and summarized here to give general guidance.[6]

1. Work with a building conservator to inspect the incinerator approximately every five years to check for cracking, detachment, and loss. Treat structure as necessary. Assess the 2001 repairs and verify those repairs are holding up.

2. Assess the condition of all masonry features including the building foundations at the chicken ranch.

3. Remove non-historic vegetation causing damage to the chicken ranch slabs and foundations and stabilize.

4. Regrade as necessary to create positive drainage away from the all structural features.

5. Inspect for damage to structural features from vegetation and erosion annually.

6. Coordinate stabilization of masonry features with preservation masons.

Other Structures

See *Treatment: Schematic Design Concepts* for additional guidance on the treatment of the following sites and structures:

- Guard Tower No. 8
- Block 14 Mess Hall
- Interpretive Center (Auditorium)
- Cemetery

Archeology

A number of archeological studies and research projects have been conducted at Manzanar and are the basis of many of the treatment recommendations for the cultural landscape. Future archeological work at Manzanar based on a research design is beyond the scope of the Cultural Landscape Report. However, future archeological projects will involve coordination among interpretive staff, maintenance, and cultural resource staff to both prioritize site investigations and implement appropriate preservation strategies for historic features excavated in the future. These strategies include a range of treatments from exposure and reburial, stabilization *in situ*, rehabilitation of a feature for interpretive purposes, and restoration of missing features. Future research and archeological investigations may also provide information about resources associated with other historic eras. These features may be integrated into a larger interpretive program and preservation strategy.

In all cases, treatment of archeological resources should first ensure protection of the feature, and then, based on the significance of the feature in the context of the cultural landscape, determine treatment. In general the following guidelines apply to the treatment of archeological resources.

1. Conduct archeological investigations prior to stabilization efforts on structures when the preservation treatment may cause ground disturbance.



Figure 102. Accumulation of woody debris increases fuel loads, which threaten historic resources. (NPS, 2002)

2. Minimize impacts of new construction and rehabilitation actions on historic and prehistoric archeological resources. Avoid disturbance of known archeological sites, when feasible. If avoidance of known archaeological sites is not feasible, conduct data recovery prior to ground disturbance.

3. Secure archeological clearances prior to removal of alluvial deposits from historic features (e.g. roads, building foundations, garden features) to ensure protection of historic and prehistoric resources.

4. Minimize disturbance of subsurface deposits and top soil related to the removal of vegetation. Mechanical removal of scrub in areas like the firebreaks or orchards should ensure protection or archeological resources and minimize disturbances to surface features.

5. Assess fuel threat to archeological resources, and where appropriate, eliminate non-historic trees and large shrubs with fuel concentrations that threaten historic or prehistoric archeological resources. (Figure 102)

6. Prioritize additional archeological investigations based on development of research design to address important landscape areas such as Merritt Park, Block 9 (Terminal Island internees), Children's Village, and other sites

where information that may result from archeological investigation have been determined important by park staff. The Comprehensive Interpretive Plan (CIP) will inform the archeological research design.

7. Preservation of both historic and prehistoric archeological resources should be consistent with the GMP, the park CIP and the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Vegetation

Treatment guidelines for vegetation are organized into three broad categories:

I) ***Historic vegetation***, including all materials that are either in their historic location or are contextually associated with the Manzanar War Relocation Camp. Ornamental gardens and historic orchards are addressed in the treatment guidelines as an expanded sub-category of historic vegetation because they individually contribute to the significance of the cultural landscape and require specific horticultural practices for preservation and restoration.

II) ***Native vegetation*** including both endemic and naturalized materials found at the site today.

III) ***Invasive/exotic vegetation*** including both historic materials that have spread beyond their original extent and vegetation that is not historic and is considered invasive.

These categories are not mutually exclusive, and in some cases, such as with tamarisk, historic material may have spread to the degree that it is considered invasive, in which case treatment guidelines target control or removal. In this regard, treatment guidelines for vegetation provide general principles that may be applied differently based on the location of the vegetation in the context of other site resources and fire management goals.

I) Historic Vegetation: Overall Guidelines

1. Stabilize, and where feasible, enhance longevity of remnant historic vegetation using guidelines established in the *Landscape Stabilization Plan, 2005*. Priority for stabilization of historic vegetation should be based on the following criteria:



Figure 103. Where feasible, the historic character and form of trees in remnant gardens should be preserved. (NPS, 2002)

- Significance of the vegetation related to a specific site or event, such as the garden trees in the Hospital or Block 22 Mess Hall gardens. (Figure 103)
- Plants with important horticultural value (e.g. pear varietals).
- Interpretive value of the vegetation, such as remnant plants from historic Victory gardens.
- Significance of specific vegetation related to historic land use at the site, such as the orchards.
- Use of the historic vegetation to mark or delineate non-extant features at the site, such as a rows of trees along the road.

2. Develop a Vegetation Management Plan for the detailed management of on-site historic vegetation based on guidance and recommendations provided in the GMP, the CIP, the CLR and the Landscape Stabilization Plan.

3. Establish a cyclic Preservation Maintenance Plan that preserves historic trees, shrubs and other historic vegetation, including the pruning of historic trees and shrubs in order to maintain health and structure.

4. Remove dead and diseased wood from historic vegetation to reduce

fuel loads and ensure other safety and resource protection objectives.



Figure 104. Active control of some non-historic invasive species, such as tamarisk, is required. (NPS, 2002)

5. Support development of an Integrated Pest Management Plan to support and enhance the longevity of historic plant materials.

6. Manage individual historic trees to retain historic character including tree structure, form, and spacing established during the Manzanar Town period and actively managed during the Camp period.

7. Map all historic vegetation that is removed using GPS equipment and enter information into the site's GIS database. Priorities for mapping should include any historic vegetation (live or dead) located within areas that have been designated for preservation or restoration of the cultural landscape.

8. Develop and maintain off-site a plant nursery for historic plant materials of high value to ensure the ability to replace these species in-kind (e.g., one-of-a-kind pear or walnut varieties).

9. Restoration of historic vegetation as called for in the CLR will require an assessment of the potential invasiveness of the material within the larger landscape at Manzanar. Emphasis should be placed on the use of locally available and acclimated plant material that is known to date to the historic period.



Figure 105. Replacement of unique historic vegetation, such as the dead cypress on the right side of the photo, can be considered as historic trees decline and die. (NPS, 2002)



Figure 106. Historic features, such as this stone marker at Merritt Park shown ca. 1943, should be assessed to determine appropriate treatment. (Courtesy of Toyo Miyatake Studio)

10. Control the spread of historic invasive exotic vegetation such as alianthus (Tree of Heaven) and tamarisk beyond their historic plantings by such means as cyclic pruning/stump sprouting of historic materials and the removal of non-historic shoots. Preserve only those specimens that were obviously important features (e.g,. a clearly delineated row) or part of a period design (e.g., block garden). (Figure 104)

11. Where feasible and supported by recommendations made in the CLR, replace in-kind unique historic vegetation that is damaged or destroyed (e.g., maintain historic cypress trees in the historic administration area and replace the one that was recently blown over using the same the specie). (Figure 105)

Figure 107. The stone marker at Merritt Park as it appears today. (NPS, 2002)



Ornamental Gardens and Landscaped Areas

The GMP calls for rehabilitation of representative gardens for interpretive purposes. However, based on historic documentation and current site staffing and funding, treatment guidelines for preservation of the gardens at Manzanar emphasizes stabilization of existing historic material (e.g., plants and garden features) rather than conjectural restoration or reconstruction. Before any additional rehabilitation of individual gardens occurs, the park

should pursue additional research on the gardens, including detailed photographic analysis and oral interviews with any internees who might have designed, planted, or gardened in any of the landscaped gardens. This research will be critical for the rehabilitation of any of the gardens and would need to be done in consultation with historical landscape architects, archeologists, horticultural specialists and gardeners to ensure appropriate treatment of the historic resources. (Figure 106 and Figure 107)

In addition, wildlife—including elk, deer, rabbits, raccoons, packrats and bears—frequent or live at the site. Paradoxically, stabilization of historic vegetation may result in additional damage to the plants if stabilization efforts enhance animal habitat (e.g., removing dead wood that has been protecting a tree trunk from elk). Stabilization, irrigation, and restoration of any features will need to address the impact of wildlife on the vegetation and any implications these efforts may have on both long- and short-term maintenance.

Further, reestablishing functioning ponds associated with specific gardens as suggested in the GMP is not recommended at this time because of:

- Potential safety issues associate with pools without additional on-site management.
- Extensive repair that would be required to initiate operation.
- High maintenance required to keep them clean and functioning.
- Numerous wildlife and pest management issues related to having an on-site source of water.

GUIDANCE FROM THE GMP

Landscape Features- Historic plant specimens at interpretive sites and major extant orchards, dating from pre-camp days, would be preserved and perpetuated through cuttings or seed propagation. Irrigation would be provided as needed. (GMP/FEIS, pg. 11)

In spite of these apparent limitations, the gardens at Manzanar and the other landscape areas of the site offer exceptional interpretive value and possess extraordinary symbolic meaning in the context of the cultural landscape of the relocation camp. In addition, stabilization does not preclude the future reconstruction of specific gardens based on additional historical documentation, further archeological investigations, and changes in site staffing.

General treatment of extant gardens should focus on the following:

- Stabilization and repair of existing historic material including historic vegetation, concrete garden structures, walkways, walls, and plumbing elements (associated with garden features like waterfalls), to ensure preservation (e.g. Blocks 12 and 22).



Figure 108. Stabilize eroding historic features, such as the berms and watercourse in the block 34 mess hall garden. (NPS, 2002)

- Restoration of features based on historical records, that are essential to understanding the garden and are easily maintained.
- Use of local soil to stabilize and restore eroded areas and protect threatened features as needed (e.g., to reestablish the top of the waterfall at Block 34).
- Use of soil stabilizers to retain historic grades and stabilize topographic features (e.g., the berm at Block 34). (Figure 108)
- Cyclic activities such as raking, clearing, weeding and vegetation management (e.g., removal of weeds from walks and paths). (Figure 109)

Figure 109. Cyclic maintenance practices, such as raking, weeding, and cleaning garden features, helps protect historic resources. (NPS, 2002)



1. Treatment of historic features, including plant materials, should be based on historical documentation. Replacement or restoration is only appropriate when the exact nature of the feature is known. For example, reestablishment of the Joshua tree and cacti plantings in the traffic circle at the administration area is appropriate based on the use of historic photographs that can be used to establish historically accurate replacement of the features. (Figure 110)

2. Rehabilitation efforts involving the replacement of historic plants must take into consideration the changed conditions of the site since



Figure 110. Restoration of missing vegetation, like the Joshua tree in this traffic circle, should be based on careful examination of historic documents. (Top: Courtesy UCLA Special Collections; bottom: NPS, 2002)

internment. The presence of wildlife, ranging from elk to rabbits, will have an effect on establishment and management of vegetation and other site features.

- Consider use of native drought-tolerant native perennial grasses

like Elymus sp. where reestablishment of grass or stabilization of soil with moderately low plant material is important.

3. Pruning trees associated with internee-designed block and barracks gardens should be undertaken in consultation with specialists familiar with Japanese American garden styles who can recommend strategies for stabilization to ensure the health and restore the appropriate form of the tree.

- Non-historic trees and shrubs should be removed from historic gardens with a priority on those that undermine structures and archeological resources, impact historic vegetation, are invasive, or confuse the original design of the garden.
- Manage historic tamarisk trees to control their invasive nature, restore their historic character and reduce fuel hazards. Periodic stump pruning may be required to control size.

4. Design and installation of an irrigation system to sustain historic vegetation should emphasize water conservation, be designed to minimize visual impacts to the historic scene, and recognize the potential impacts of wildlife to the system.

5. Priority for the stabilization and rehabilitation of gardens should be based on their interpretive value and capacity to reflect the range of experiences surrounding life in the camp.

6. The use of non-historic fencing in historic garden areas is discouraged because of the potential visual intrusion to the historic scene. If new fencing is required, it should be temporary in nature and used strictly for the reestablishment of trees and shrubs.

Block 12 & 22 Mess Hall Gardens, and Hospital Garden

1. Restore limited irrigation of historic plantings where needed to ensure survival and improve general health and vigor.

2. Stabilize soils and visually differentiate planted areas from historic paths by establishing native grass under trees located near the ponds. Irrigation volume and frequency should be determined in consultation with horticulturalist or landscape architect to assure the health of the trees.

Table 6: SUMMARY TREATMENTS FOR GARDEN AND OTHER DESIGNED LANDSCAPE
(Priorities are ranked between 1 and 3 with "1" being the most immediate priority)

PROPOSED TREATMENT: Restoration Based on Adequate Historic Site Documentation		
SITE	PRIORITY	COMMENTS
Auditorium	1	Pertains to west side; Restoration of pine trees and hedge
Camp Entrance	1	Maintain and replace cacti plantings as needed
Cemetery	1	Restoration of historic trees in vicinity of graves and monument
Traffic Circle	2	Restoration of Joshua tree, cacti and rock garden
PROPOSED TREATMENT: Stabilization and Replacement Of Vegetation in Kind		
SITE	PRIORITY	COMMENTS
6th Street: Row of Trees Within Firebreak	3	Priority on stabilization and health of trees. Replacement where historic locations are known
9th Street: Cottonwoods Along Road	2	Priority on stabilization and health of trees. Replacement where historic locations are known
Administration Complex Cypress Trees	3	Replace recently fallen cypress in-kind
Block 12 Mess Hall Garden	1	Priority on stabilization and health of trees because of number of extant features
Block 22 Mess Hall Garden	1	Priority on stabilization and health of trees because of number of extant features
Block 34 Mess Hall Garden	1	Priority on stabilization of site features including paths, erosion at water feature and non-native vegetation control.
Campbell Ranch Site/Judo *Dojo*	3	Priority on stabilization and health of trees
Chicken Ranch	3	Priority on stabilization and health of trees
Hospital Garden	1	Priority on stabilization and health of trees because of number of extant features
Trees surrounding the block west of the Auditorium (Between B & C streets and 3rd & 4th)	2	Priority on stabilization and health of trees. Replacement where historic locations are known. Restoration along 4th street in support of the Demonstration Block
WCCA Entrance Other individual site gardens	2 TBD	Priority on stabilization and health of trees Based on a site-wide inventory of gardens, develop management alternatives based on interpretive need. Unique resources (e.g. a unique specie or method of pruning) should be a priority for management.
PROPOSED TREATMENT: Management for Overall Site Character and Preservation of Extant Features		
SITE	PRIORITY	COMMENTS
Merritt Park	1	Little historic vegetation remains. The site should be cleared of non-contributing trees and large shrubs, kept open and managed for its interpretive value.
North Park	2	Site characterized by large trees (primarily cottonwoods) that provide an open shady environment. Replacement of individual trees on a case-by-case basis is not appropriate but should be managed for the overall open/shaded character provided by cottonwoods.

NOTE: *Recommendations for Orchard Management are listed in the Treatment Guidelines, Vegetation.*

3. The pruning of trees to control growth, restore historic structure and form, and replace dead or dying historic plant materials should be done in consultation with recognized garden experts specializing in Japanese American garden style to assure the historic character of the trees in these designed gardens are preserved.

4. Prune any historic tamarisk trees to restore historic character and encourage growth through stump pruning. (See Table 6)

Orchards

The orchard trees remaining at Manzanar are associated with several historic periods, including early agricultural development in the Owens Valley, the Manzanar Town Era, and the Relocation Camp period when many of the orchard trees were incorporated and maintained as part of the landscape. Because of this, the remaining orchards at Manzanar have unique interpretive value. Treatment guidelines target the stabilization, maintenance, and limited restoration of portions of the five historic orchards remaining at the site. Appendix C contains supplemental information about the form and character of fruit trees grown during the early 1900s which is consistent with orchards established at Manzanar.

General Guidelines For All Orchards

1. Stabilize and where feasible, enhance longevity of remnant orchard trees using guidelines established in the *Landscape Stabilization Plan, 2005*.

2. Manage orchards to retain historic character including tree structure, form, spacing, and type established during the Manzanar Town period and actively managed during the Internment Camp period. General descriptions of the character of orchards typical to this time period are provided in Appendix C.

3. Replace missing trees using historic root stock and scion wood, where known. If unknown, use extant material from on-site dating to the historic period.

4. Replace historic orchards stock on a priority basis as recommended in the *Landscape Stabilization Plan, 2005* until a *Vegetation Management Plan* can be completed.

5. Eliminate any fuel ladder conditions around historic orchard trees by cutting low-growing vegetation (e.g., grasses and shrubs) and removing fallen dead wood in orchard areas. Pruning of root sprouts should be consistent with recommendations made in the *Landscape Stabilization Plan, 2005*.

GUIDANCE FROM THE GMP
One or more rock gardens identified as interpretive sites would be **rehabilitated**. Selection of gardens for rehabilitation would be based on the availability of accurate historic documentation and the recommendations of a committee to include former Manzanar internees, landscape design professionals, and cultural resource specialists. (GMP/FEIS, pg. 11)

6. As part of an Integrated Pest Management Plan, consider use of chemical repellents, or other non-permanent means, to protect historic vegetation from animals and other pest and as a means to avoid the construction of permanent non-historic fencing, particularly in areas visible from the tour route. See *Landscape Stabilization Plan, 2005* for additional guidance.

7. Use temporary fencing (e.g., metal stakes and chicken wire) around new plantings or threatened trees until such time that the trees are tall or strong enough to withstand impacts from wildlife (rubbing, clawing, bruising, breaking branches, burrowing, etc.). See *Landscape Stabilization Plan, 2005* for additional guidance.

8. Where protection of unique historic fruit trees from further damage by wildlife or visitors is important for their survival, consider practices like the use of sprays to reduce fruit set, early fruit harvest, or removal of fruit that have fallen on the ground before installing fences.

Treatment Guidelines for Specific Orchards

Christopher Orchard Remnants within the Cemetery

In order to reestablish the historic setting of the cemetery, which included remnant fruit trees from this orchard, the park should consider replanting the few fruit trees that were located in the cemetery during the internment period. Historic photographs of the monument should be used to locate the trees and meet overall site restoration and interpretive objectives.

Hatfield Orchard (9th Street, between F and H streets)

A number of trees remain in this historic pear orchard but are generally

in poor condition. An emphasis should be placed on stabilizing existing material, replacing dead or dying stock in kind, and eventually reestablishing the portion of the orchard between 8th and 9th streets when staffing and funding permits. This orchard is considered a good candidate for rehabilitation to meet interpretive needs because of its close proximity to the auto tour route and to other interpretive sites including Merritt Park and the Block 32 garden. Rehabilitation should be undertaken based on guidance from the CIP.

Lafon Orchard (2nd St, between F and H streets)

This is the last of the historic apple orchards that was located in the immediate vicinity of the town of Manzanar. Of the original Lafon Orchard, only a few live trees remain (along with a number of stumps). (Figure 111) Permanent fencing is not recommended because of the high visibility of the Lafon orchard from the auto tour route and the impact that large scale protective fencing would have on the historic scene. Temporary fencing should be used until the new trees are mature enough to withstand the impact of the wildlife. The highest priority treatment should be on managing the few trees that remain, protecting graft root stock sprouts for restoration efforts, and the development of historic graft and scion replacement stock. After initial stabilization is achieved, efforts should focus on the replacement of dead trees using existing stumps to establish location. Pending development of 1) the Vegetation Management Plan, 2) the Comprehensive Interpretive



Figure 111. Careful attention should be given to managing the few remaining apple trees that date to the town era for interpretive purposes. (NPS, 2002)

Plan, and 3) an adequate water distribution network, the full extend of the orchard within the context of the camp should be reestablished.

Lydston Orchard

This orchard is the most intact historic pear orchard on the site. Initial efforts should focus on stabilizing and preserving existing stock in this orchard. Because it is located away from the auto tour route and is not easily seen by visitors, the Lydston Orchard has more options for protection from wildlife including use of both temporary fencing around newly planted trees, and/or permanent fencing around the entire orchard. Establishment of a permanent fence should be used as a last resort for protection of the trees, but if constructed, should be designed so as not to appear historic in character and should blend in with its setting (e.g., open mesh/coated metal). (See Table 7.)

II) Native Vegetation

With the exception of vegetation in the Natural Zone as defined in the GMP

Table 7: Summary Treatment Recommendations for Orchards

(Priorities are ranked between 1 and 3 with "1" being the most immediate priority within that specific treatment category)

	STABILIZE/ PRESERVE EXISTING TREES	REPLACE DYING TREES IN-KIND	RESTORE MISSING ORCHARD TREES	
ORCHARD	Priority	Priority	Priority	NOTES
Hatfied West (Pear)	1	1	1	Rehabilitate/restore for interpretive purposes
Hatfield East (Pear)	1	1	3	Priority on stabilization of sand pear
Lafon (Apple/pear)	1	1	1	Priority on preventing loss of three remaining trees. Rehabilitate/restore extent of orchard for interpretive purposes
Lydston (Pear)	1	2	3	Emphasis on preservation of existing trees
Wilder (Pear)	1	2	3	Emphasis on preservation of existing trees, particularly the Winter Nellice pear
Christopher (Peach)	NA	NA	1	Rehabilitate form and character of only those portions of the orchard contained within the cemetery enclosure (see Schematic Design for Cemetery)
Others	1	2	3	Emphasis on preservation of any unique stock and trees with high interpretive value



Figure 112. Removing dead wood from historic trees will help improve tree health and reduce fuel loads and hazards. (NPS, 2002)

(Bair's Creek), management of the native vegetation on the site is primarily focused on treatments that are compatible with the historic setting and support fire management objectives.

1. Management of native vegetation should be consistent with fire management objectives for the historic site (see Appendix E).

2. Native vegetation removal should not occur where it could potentially disturb archeological resources or significantly denude an area creating dust conditions.

3. Remove large accumulations of fallen and/or diseased trees to reduce fuel loads in support of fire management objectives for the historic site.

4. Replace historic native trees—primarily cottonwoods—that were incorporated into the barracks block landscapes as they die out or are removed as hazard trees. (Figure 112)

5. Remove non-historic native trees (young willow trees and cottonwood seedlings) from within barracks block areas to enhance views and protect historic resources. However, seedlings of any of these historic native trees that are growing in the immediate vicinity of a dead, dying, or missing trees of the same specie, should be considered for the replacement of that historic tree.

6. Control and manage non-historic native trees and large shrubs that:
- Grow in building footprints or around historic building foundations
- Grow in the historic road grid
- Grow in firebreaks, historic gardens, and orchards
- Create hazard fuel conditions
- Threaten important historic vegetation
- Threaten important archeological resources
- Block historic views or obscure the ability to discern important historic resources within the camp

GUIDANCE FROM THE GMP

The orchards are recognized as major landscape features linking two principal stages in the site's history. (GMP/FEIS, pg. 11)

…and major extant orchards, dating from pre-camp days, would be preserved and perpetuated through cuttings or seed propagation. Irrigation would be provided as needed. (GMP/FEIS, pg. 11)

7. Protect cultural resources and control the spread of desert scrub species (e.g., Atriplex) consistent with fire management objectives.

8. Retain and manage the riparian corridor at Bair's Creek as a natural system.

9. Ensure that restoration of native vegetation in natural areas is undertaken using materials that are collected locally and/or would have no adverse impact on the genotypes of existing on-site native vegetation.

10. Mitigate artificially wet conditions in the area around the well at Bair's Creek by capping the structure and preventing leakage.

11. Work in partnership with other land management agencies to retain the open character of the areas historically used as agricultural fields for interpretative and resource protection goals (e.g., Town- and Camp-era irrigation features) when feasible.

III) Invasive Exotic Vegetation

Many historic tree and shrub species are spreading beyond their historic locations. Species such as tree of heaven and tamarisk should be carefully

controlled. Preservation of these materials should be limited to those specimens that meet cultural resource preservation goals.

1. Removal of non-historic exotic vegetation should be encouraged, particularly where this vegetation:

- Grows in building footprints or around historic building foundations
- Grows in the historic road grid
- Grows in firebreaks, historic gardens, and orchards
- Undermines important archeological resources
- Spreads throughout the site and/or into adjacent properties
- Contributes to fuel loading conditions, particularly along the boundary fence or around other important historic resources

Firebreaks

1. Restore the historic function of the camp's firebreaks to ensure protection of resources and reinforce the visual distinction between the firebreak corridors and the surrounding blocks.

2. Manage vegetation located within historic firebreaks in conjunction with the Fire Management Plan.

3. Prune historic trees and orchards located within the firebreak to remove accumulations of dead wood and reduce fuel ladder conditions.

4. Protect archeological resources by using manual techniques to remove or maintain vegetation located in the firebreaks. The use of mechanical mowers to control annual grasses is discouraged and should only be considered in consultation with an archeologist to ensure protection of archeological features throughout the area.

5. Clear non-historic vegetation from walkways, foundations, and other features located in the firebreaks (e.g., Judo *Dojo*).

6. Preserve and interpret as appropriate and needed, areas historically used for recreation. Many of these areas supported activities such as basketball, baseball, volleyball, golf, and tennis and have interpretive value for understanding the physical and social history of the camp.



Figure 113. Stabilize eroding soil that threatens site features. (NPS, 2002)

Soil Conservation and Grading

After the camp was abandoned in 1945, a series of flood events significantly altered the natural topography creating gullies, displacement and deposition, and slope failures. Surface runoff associated with these events also altered historic grades throughout the site, creating threats to structural resources. General treatment guidelines address stabilization of natural topography, restoration of historic grades, and retention of soils throughout the site and are based on NPS Water Resources Division recommendations.

1. Reestablish historic site conditions that have been impacted by flooding, unnatural channeling of drainage and runoff, washouts, and soil deposition. Some of the most significant damage is evident in the west end of the site in the vicinity of the hospital and some of the historic orchards. (Figure 113)

- Consider the use of stockpiled soil accumulated during this clearing process as fill material for the gullied areas.

2. When needed, revegetate denuded areas (resulting from flood and washout) with native species or sterile annual grasses to reduce blowing dust.

3. Stabilize eroding historic walls and features in gullied areas to prevent further loss of historic fabric.

4. Where non-historic drainage issues have been resolved, remove non-historic water diversion devices that were added to the site in response to site flooding (e.g., new culverts and berms).

5. Remove non-historic stockpiled soil throughout site, including berms located in the cemetery and along historic roads. Consider using this material to fill in washouts throughout the site.

6. Working with natural resources staff, consideration should be given to rehabilitation of historic ditches and berms located west of the camp as a means of controlling flood and/or storm water recharge.



Figure 114. Developing an overall sign plan for Manzanar will improve consistency in the use of material and can clarify the appropriate design style for various types of signs used in the historic site. (NPS, 2002)

Small-scale Features

Most small-scale features at Manzanar are contemporary NPS additions. Treatment guidelines for small-scale features address the general character, type, location, and appropriate materials for new site features that meet operational needs and are compatible with the Secretary of Interior's Standards and Guidelines. Treatment guidelines are also provided for small-scale historic features that remain at the site (also see *Treatment Guidelines, Structures*).

1. The use of new signs at the historic site is generally discouraged with the exception of safety, wayfinding, and interpretive signs.

2. New signs should use contemporary materials that are compatible with the historic site. Exact replicas of historic signs are not appropriate unless a specific historic feature is being restored (e.g., building identification signs on barracks block buildings).

3. The location of new wayside exhibits should be factored into existing and proposed pull-outs along the auto tour route to provide focused, accessible interpretation and minimize potential impacts to site. (Figure 114)



Figure 115. Contemporary signs like these in the administration block use compatible materials to reduce visual impacts to the landscape. (NPS, 2002)



Figure 116. Relocation of displaced features to their historic locations, such as this concrete manhole cover made to look like a tree stump, can increase visitor understanding of the historic character of the site. (NPS, 2002)

4. Interpretive signs and wayside exhibits should not try to appear to be historic signs but should use contemporary materials compatible with the historic scene. (Figure 115)

5. Reduce the potential adverse effect of placing additional structures in the cultural landscape by limiting the number and siting of new site furniture (such as benches) to areas of concentrated visitor services or interpretive staging areas. If new site furniture is required it should be durable, low maintenance, and compatible with the character of the cultural landscape. Informal use of the site for gathering or picnicking could be accommodated in areas historically used for that purpose, (e.g. North Park, Shepherd Ranch) but should be consistent with recommendations in the GMP and should not require the addition of permanent non-contributing features to the site.

6. Cover or cap all open and exposed manholes without contemporary covers to ensure visitor safety, but continue using historic covers in their original locations.

7. Historic utility poles, such as the one south of the administration building, should be retained in place and used as a model for the restoration of any additional utility poles at the Demonstration Block.

8. Replacement of the flagpole in the historic administration area is appropriate if and when additional information can be found to permit the accurate restoration of the feature.

9. Relocate displaced manhole structure to its historic location across the street from the Doctors and Nurses quarters. Bury to historic level leaving the faux-wood grain exposed. Confirm accuracy of the relocation site with an archeologist before moving. (Figure 116)

Endnotes

Treatment Guidelines

1 Simpson, Glenn D. and Robert Hartzler. Manzanar National Historic Site: Preservation Report, Vol. 1-3. NPS, 2001.
2 Ibid.
3 Simpson, Glenn D. and Robert Hartzler. Manzanar National Historic Site: Preservation Report, Vol. 1-3. NPS, 2001.
4 Ibid, Vol. 1, page 28.
5 Ibid, Vol. III pages 63-65.
6 Ibid, Vol. III, pages 69 -76.

Schematic Design Concepts

In addition to broad treatment guidelines for the cultural landscape, seven areas of the historic site have been identified by the park and through the GMP for additional design development. In some cases, and when possible, design concepts for these developed areas include multiple options for preservation treatment, and in a few cases, landscape design concepts build off of designs already implemented (e.g., the Interpretive Center and new site entrance). All design concepts for the cultural landscape meet the Secretary of the Interior Standards for preservation, meet interpretive and operational goals defined by park staff, and provide flexibility for site management to consider changes in funding and staffing. Eight areas are addressed:

- Auto Tour Route
- Highway 395
- Guard Tower No. 8
- Historic Entrance
- Interpretive Center (Auditorium)
- Demonstration Block
- Cemetery

GUIDANCE FROM THE GMP

A paved two-lane road would be provided from Highway 395 to the auditorium. All other vehicle roads, as indicated on Map 4, would follow historic routes, and would conform to the historic width…. (GMP/FEIS, pg. 16)

Due to the narrowness of the historic roadways, and the limited turning radii, buses, large RV's, vehicles towing trailers, and other oversized vehicles would not be permitted on the one-way road system. (GMP/FEIS, pg. 17)

Auto Tour Route

The GMP calls for establishing a paved interpretive auto tour route that uses the historic road grid system in the camp. Today, only limited segments of the road along the tour route retain historic materials. Design concepts provide general guidance for alignment, surfacing, and pull-outs associated design of the route. All proposals are predicated on interpretive goals and applicable safety standards in the context of the Secretary of the Interior Standards.

1. Retain and repair as needed, all intact portions of the historic road used for the auto tour route (such as those segments at the camp entrance

between Highway 395 and B Street).

- Consider use of a slurry coat using local soil to stabilize and maintain the historic road base. Use of a slurry coat will help protect historic material and will provide a surface that, when it wears down, will be compatible in appearance with the original bituminous paved surface.

3. Resurface other portions of the auto tour road, which have little or no historic fabric remaining, as called for in the GMP. There should be an emphasis on restoring the overall character of the historic road including the historic width of 20 feet.

- Because of air quality concerns, techniques used historically for surfacing the road (e.g. oiling) are no longer appropriate. In lieu of these techniques, and in order to make the new asphalt surface compatible with the appearance of the historic camp roads, it is recommended that soil cement be used to retain a compatible appearance, where appropriate, until such time that the decision is made to surface the road with asphalt. Should asphalt be used on the tour route, a chip-and-seal layer of gravel (color compatible with the local materials) should be applied to the asphalt-paved portion of the auto tour road within a year after the construction of the asphalt road. Although this bituminous coating will require some time to wear down, the gravel should make it appear more compatible with the character of the original road surfacing. Use of gravel on these portions of the road, in lieu of local soil will differentiate them from those sections of the road system that retain their historic surfacing (e.g., the historic entrance between Highway 395 and B Street)

4. Widening the road bed or enlarging the curve radius along the auto tour route (beyond the historic alignments and widths) is discouraged. Exceptions for widening the road should be based on requirements to meet the minimum turning radius for the maximum sized vehicles called for in the GMP or where FHWA guidelines are required to meet safety standards. (Figure 117)

5. Limit lane striping to painted center lines on the two-way portions of the auto tour road. Avoid road striping along the one-way portions of the road. Painting fog lines should be avoided.



Figure 117. Minimize widening of the roadbeds along the auto tour route to preserve potential archeological resources and retain historic road character. (NPS, 2002)

6. Design the road to minimize the need for additional drainage features such as curb-and-gutter or paved drainage ditches. If new drainage features such as ditches and culverts are required they should be used only where they are essential to preserving the integrity of the road structure or adjacent historic features and should be as unobtrusive as possible.

7. Remove and/or re-contour non-historic berms, ditches and washouts to reestablish historic character of road prism. (Figure 118)

Figure 118. Remove non-historic berms to restore the historic character along the tour road. (NPS, 2002)



8. Provide visually compatible road blocks to prevent public vehicular use of historic roads other than the auto tour route and designated parking areas. (Figure 119)

Highway 395

Consistent with recommendations made in the GMP, plans for the site include possible construction of a Highway 395 bypass east of the camp. Should this occur, and should the road come under the control of the National Park Service, it is recommended that site staff work with CALTRANS to restore the road to its historic alignment and size. Although

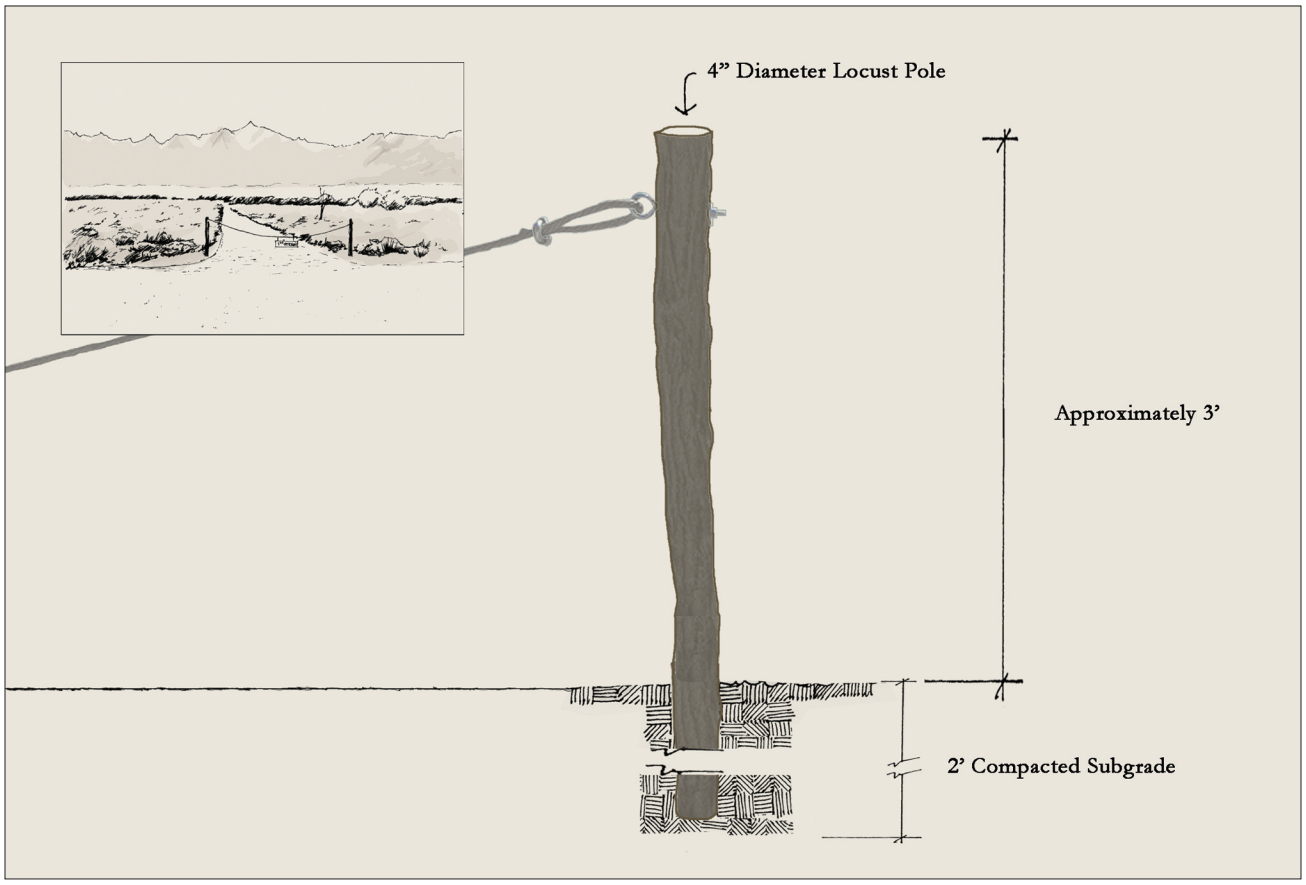


Figure 119. Circulation barriers. (NPS, 2005)

further research is needed to determine the exact design of the road, historic photos show the road being graded at a slight elevation and narrower than the current road. Alternative treatments address the attributes of the restored road.

1. Consideration should be given to restoring the historic width of the road to allow for the development of pullouts that can be used for visitor access and interpretation of both the Military Police Area and the reconstructed guard tower.

2. Work with the utility company to relocate the non-historic power lines near the Interpretive Center to their historic location along the highway.

3. New parking areas and pullouts along the restored road should be designed using the criteria established for the auto tour route and be

compatible with the historic character of the site.

4. Relocate the NPS boundary fence to the east side of the highway to remove this non-contributing structure from the historic camp scene.

Guard Tower No. 8

As called for in the GMP, Guard Tower No. 8 will be reconstructed and sited in its historic location at the middle of the east perimeter fence. This structure will not be open to the public and will only be used occasionally by park staff for maintenance purposes. Schematic Design Concepts address treatment of this structure and limited public access.

GUIDANCE FROM THE GMP

… single watchtower would be reconstructed based on original construction drawings and placed at the historic location for such a structure…, at another historic watchtower site on the camp perimeter easily seen by visitors. (GMP/FEIS, pgs. 11)

1. A Preservation Maintenance Plan should be prepared to guide the routine maintenance work on the reconstructed guard tower.

2. Prepare a site bulletin or add interpretive signing to provide visitor information about the reconstructed structure and clarify the limitations or restrictions for public access.

- If the NPS assumes jurisdiction of Highway 395 in front of the camp, consideration should be given to the development of a pullout along the road to interpret and provide access to the guard tower.

Historic Entrance

GUIDANCE FROM THE GMP

In order to restore the historic scene at the entrance, and provide for their improved protection, all memorial plaques now placed at the historic camp entrance, including the National Landmark Plaque, the State historical marker, and the Blue Star Memorial Highway marker, would be relocated to the vicinity of the Interpretive Center. (GMP/FEIS,pg. 16)

The historic entrance to Manzanar remains and is comprised of two primary historic structures and several small-scale features dating to the period of significance. In this regard, the historic entrance should be treated as an aggregate of features that collectively define the original design and arrival experience. Because a new entrance has been developed between Highway 395 and B Street to the Interpretive Center, the historic entrance area may serve as a secondary arrival point for visitors. Schematic design concepts focus on the repair, and in some cases, restoration of historic features to assure preservation and enhance visitor understanding of the cultural landscape. (Figure 120)

1. Repair and restore features associated with the historic entrance using archeological and photographic evidence to ensure accurate restoration.

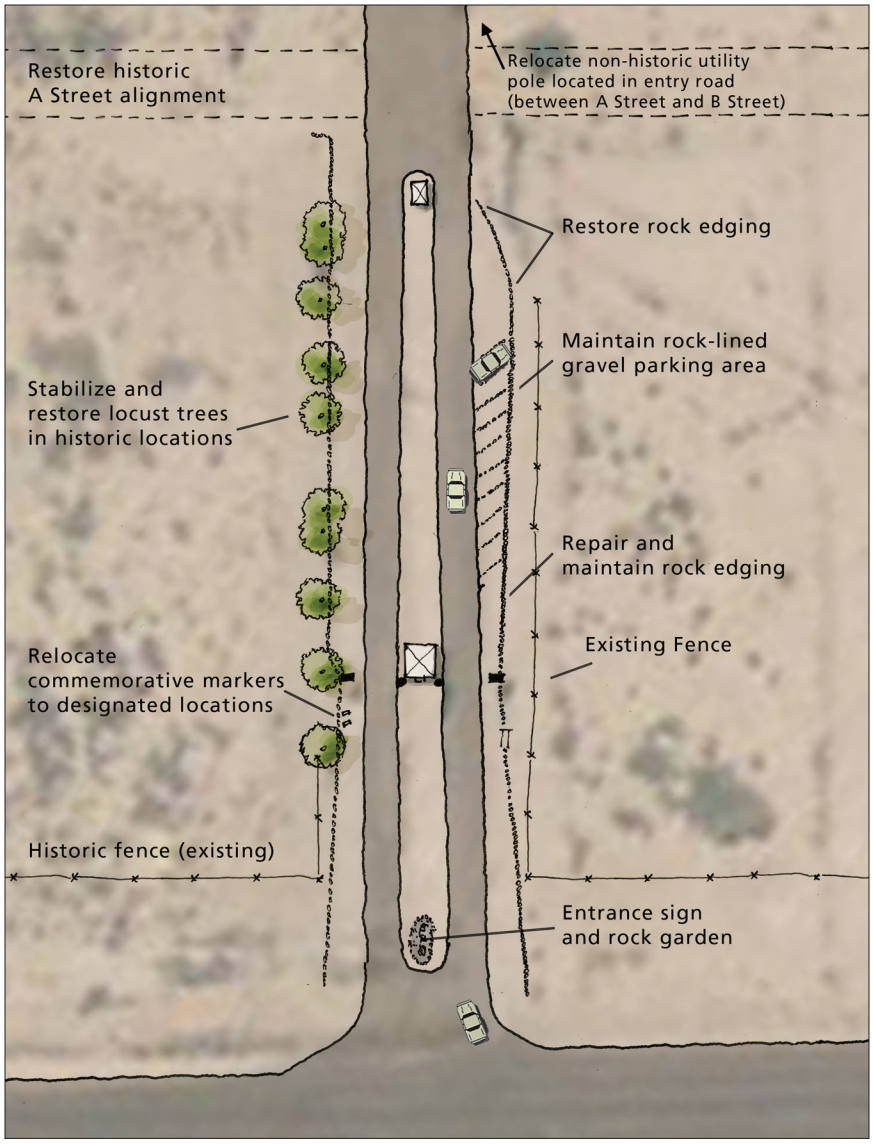


Figure 120. Historic entrance. (NPS, 2005)

Treatments include:

- Repair the rock-lined gravel parking area
- Repair the stone curb along the road edge
- Maintain the gravel median between the two paved entry roads,
- Maintain the historically-paved road between Highway 395 and B Street
- Restore the rock garden with cacti in the planting area beneath

the entrance sign
- Restore row of locust trees along the south side of the entrance road
- Relocate non-historic features (e.g., utility pole, NPS fence, commemorative markers, etc.)

2. The gravel parking and median areas should be stabilized with a binding agent (such as soil cement) to define and control the extent of existing parking and minimize blowing dust.

3. Relocate memorial markers remaining at the historic entrance to the vicinity of the Visitor Center. Should the NPS acquire control of the portion of Highway 395 in front of the Interpretive Center, the Blue Star Memorial Highway sign should be located in the vicinity of one of the recommended proposed pullout areas.

4. When the NPS acquires the rights to Highway 395, relocate the non-historic NPS boundary fence to the east side of Highway 395. This would more accurately depict the historic appearance of the historic site by eliminating a non-historic element.

Interpretive Center (Auditorium)

The auditorium building has been rehabilitated to serve as the Interpretive Center for the site. Recommendations for treatment of the cultural landscape address restoring the historic character of the landscape to circa 1944. All preservation treatment for the building is documented in the *Historic Structure Report*, 1999.[1] A few historic photographs show the landscape on the west side of the building as it was being developed prior to closure of the camp, however, no documentation has been located illustrating full implementation of the landscape design. Schematic design concepts address compatible design based on available photographs, and the need to accommodate the rehabilitation and use of the structure as the Interpretive Center for the historic site.

GUIDANCE FROM THE GMP

Existing facilities and structures incompatible with the historic scene, including outbuildings located near the auditorium and non-historic fences, would be removed. (GMP/FEIS, pg. 11.)

The auditorium would be adaptively used as an Interpretive Center. This in general terms would entail the restoration of the exterior of the structure to its camp era appearance, including replacement of the south wing… (GMP/FEIS, pg. 14)

1. Reestablish historic road grid around the building that was impacted during rehabilitation.

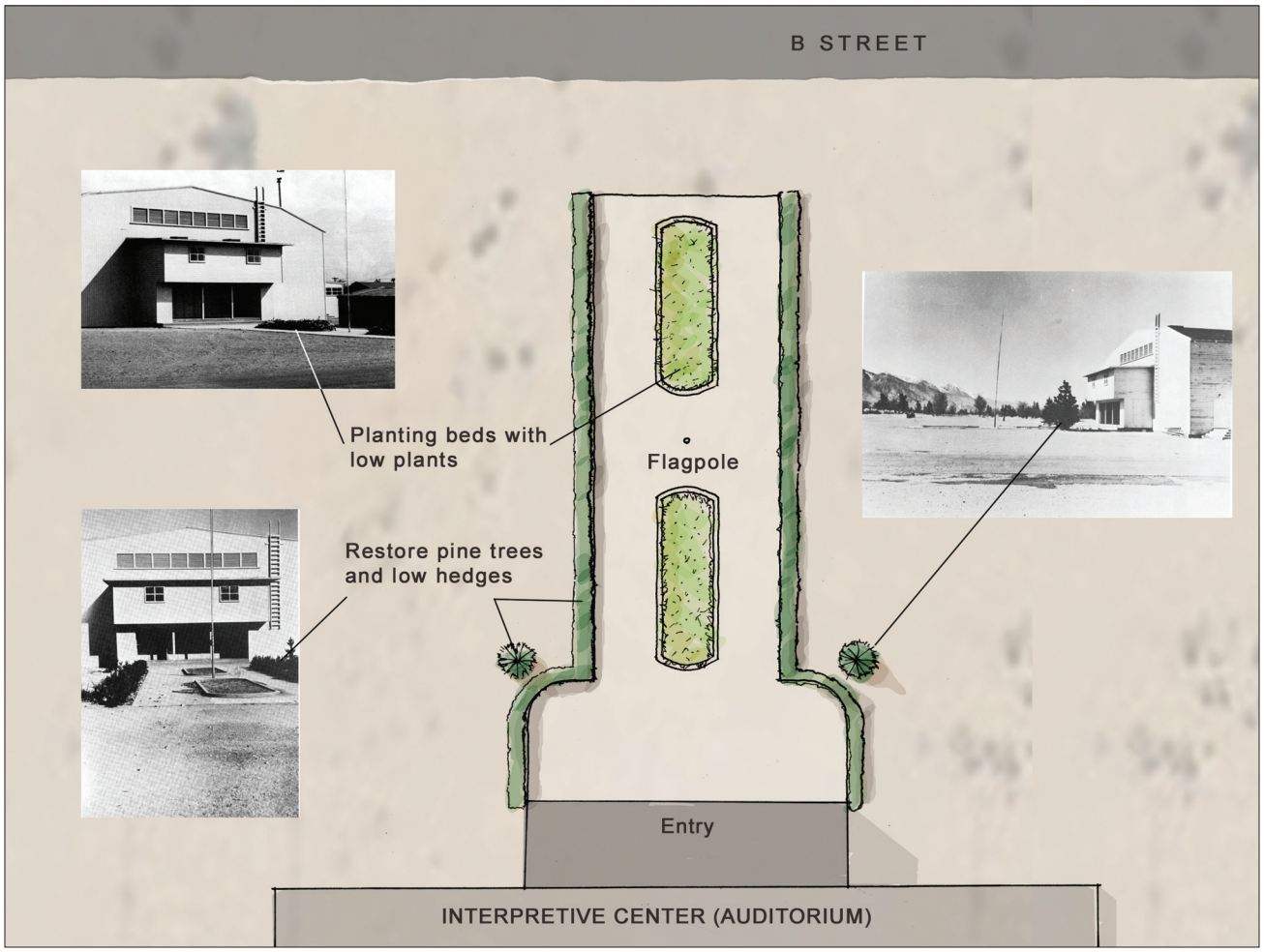
2. Retain the historically open character surrounding the Auditorium

building and stabilize exposed soil to reduce the problem of blowing dust.

3. Replace dead, dying or missing historic trees along 3rd Street, between A and B Streets (high school side of street).

4. Reduce the visual impacts by locating informational signs and commemorative monuments away from the historic structure and closer to the drop-off area, or along the existing concrete sidewalks. Design and placement of any new Interpretive Center sign should be compatible with 1) the historic setting, 2) the existing design of the area, and 3) the placement of other signs and relocated monuments (from historic camp entrance

Figure 121. Auditorium entry. (NPS, 2005)



area).

West Side of the Building

Based on photographic records, treatment recommendations include restoring the site to reflect the design of the grounds circa 1944 after initial plantings were installed. (Figure 121)

1. Reestablish the two pine trees and low hedges on both sides of the walkway, based on spacing depicted in the photograph.

2. The planting bed down the middle of the entrance walkway should be planted with low growing annuals or perennials consistent with the character established in the historic photographs. Pest resistance and low water needs should be factored into plant choices. Historically used annuals (e.g., guayule) or perennials that still remain on-site (e.g., statice) could be considered for use in this area for both resource and interpretive purposes.

East Side of the Building

The east side of the auditorium has been rehabilitated to provide visitor parking and serve as the primary entrance to the new Interpretive Center. This design concept significantly alters the historic character of the east side of the building. Because the landscape in this area has been designed and implemented as part of the building rehabilitation, additional schematic design for the landscape focuses on the use of appropriate plant materials, small-scale features, and maintaining to the degree possible, the historic character of the landscape.

1. Retain the historically open character of this area. No additional elevated planting beds, or other structural elements such as curbing, should be added to the site. As needed, the use of soil stabilizers should be employed to reduce dust around the building.

2. Revegetate exposed soil with low native vegetation consistent with the materials and character of native vegetation in the immediate area. Exotic species control will be important until the area has stabilized.

3. The location and placement of informational signs and commemorative

monuments should be pulled away from the historic structure and located closer to the drop-off area and along the existing concrete sidewalks. Design and placement of any new Interpretive Center sign should be compatible with 1) the historic setting, 2) the existing design of the area, and 3) the placement of other signs and relocated monuments (from historic camp entrance area). The design should also account for the large number of visitors who are likely to leave the sidewalks to be photographed in the vicinity of the sign. The two beds created by the construction of the entrance walkways should be considered as areas for the placement of this sign, or other relocated signs.

4. The recent construction of stairs and ramp leading to the Interpretive Center has created a planting bed that requires stabilization to prevent erosion. Consideration should be given to using this bed to meet interpretive needs related to establishing a permanent location for recently acquired guayule plants (an experimental rubber substitute grown at the camp during the internment period). Because the appearance of guayule is similar to that of desert scrub, introduction in this disturbed area is not considered obtrusive and is consistent with the rehabilitation of the site for interpretive purposes.

GUIDANCE FROM THE GMP
The historic status of the power line crossing the site from north to south would be researched and, if the line is found to be non-historic, options for relocation, undergrounding, or identification as non-historic would be considered. (GMP/FEIS, pg. 11)

5. Work with the LDWP to relocate the non-historic pump house, when and if feasible, to a less visually obtrusive location. Until then, paint the structure to minimize the visual impact to the historic setting of the auditorium. No attempt should be made to make the building appear historic or call attention to it through attempts to screen it with additional non-historic fencing or vegetation. Minimize storage of equipment or vehicles outside the existing fenced area.

6. Work with the utility company to relocate the non-historic power lines near the Interpretive Center to their historic location along Highway 395.

Demonstration Block

As called for in the GMP, the purpose of developing a demonstration block is to provide an interpretive environment for visitors to understand the historic site. In December of 2002, a Manzanar era mess hall was moved from the Bishop Airport and stabilized onsite in Block 14, at the location of the Block 14 Mess Hall. Pending completion of a Historic Structure Report and planning documents, this building will be restored to the historic

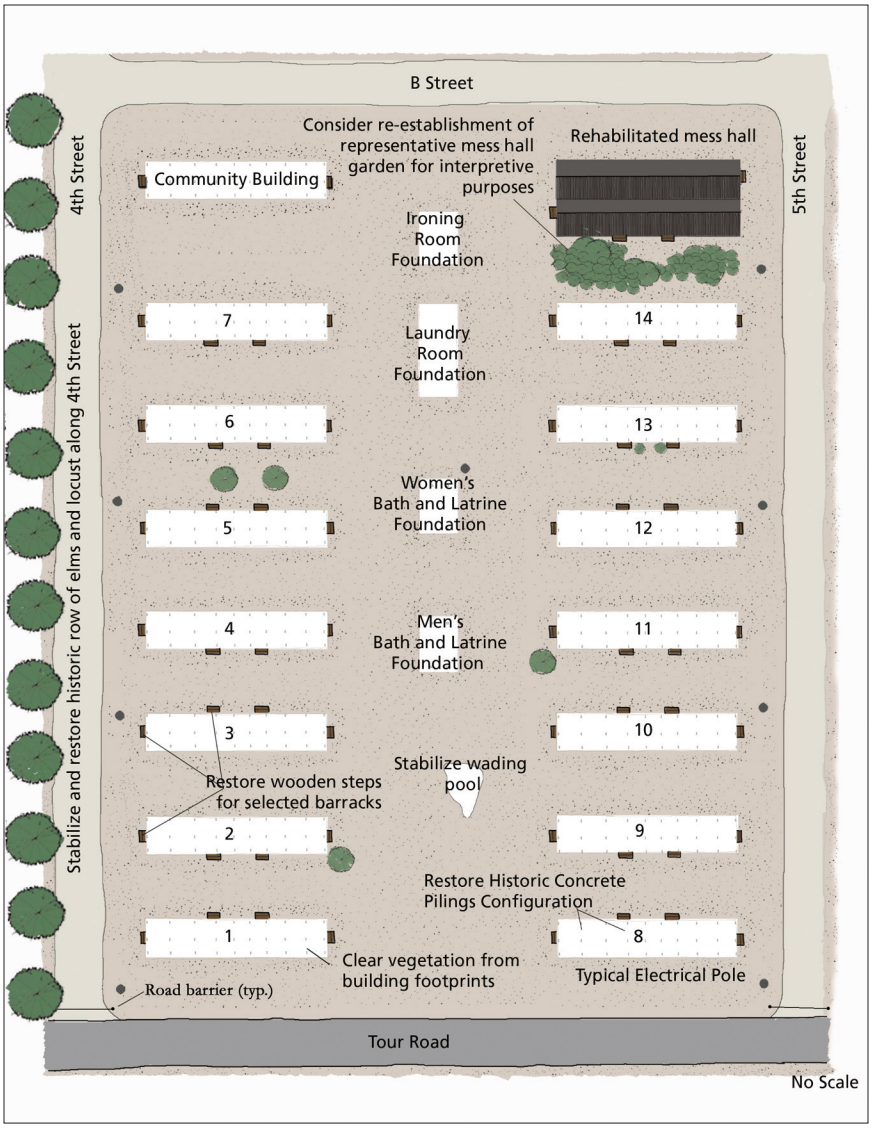


Figure 122. Demonstration block. (NPS, 2005)

period. Once restored, it will require routine preservation maintenance to keep it in good condition and a Preservation Maintenance Plan will need to be prepared. The same will apply to any other structures reconstructed on, or moved to, the demonstration block.[2]

The following recommendations represent a minimal and sustainable level of preservation and enhancement of extant landscape features in Block 14. Identification of landscape features is based on field reconnaissance, historic documentation, and a review of available archeology reports. Key



Figure 123. Stabilize and interpret unique historic features like the wading pool in the demonstration block. (NPS, 2002)

to the landscape treatment are the primary goals of interpretation, the stabilization of significant historic features, and creation and support for any other management objectives for the demonstration block.

It is important to note that the following recommendations, like other treatment concepts are based on current site staffing and funding allocations. In this regard, the design concepts may be considered the first phase of what may become a more extensive approach to development of the demonstration block based on the new Comprehensive Interpretive Plan (CIP). The following design concepts are consistent with the GMP and are compatible with the overall preservation philosophy and character of the cultural landscape. (Figure 122)

1. Stabilize, in consultation with historical archeologist and historical architect as needed, exposed remnant landscape features remaining in Block 14.

2. Restore as feasible, and based on archeological information, landscape elements that remain from the historic period but are ill-defined or obscured by vegetation or soils. These elements include but are not limited to the road system, concrete foundations, the wading pool, building entry features, and internal circulation. (Figure 123)

3. If the park chooses to recreate a representative mess hall garden for interpretive purposes it should be done in close collaboration with interested citizens, using historical information to replicate to the degree possible, the design, materials, and character of a period mess hall garden. For sustainability purposes, priority should be given to using plant historic materials that still exist and have a proven ability to survive existing site conditions.

4. Until additional documentation of the barracks gardens in Block 14 is located, restoration is not considered feasible. The extensive presence of wildlife on the site also precludes effective reestablishment of gardens and pools. The gardens are best understood through interpretive media.

5. Enhance the visibility of existing historic site features within the demonstration block by maintaining a low profile for vegetation (12 inches or less).

6. Non-historic exotic trees and shrubs should be removed to encourage the growth of native grasses and annuals whenever possible.

7. Stabilize remaining historic trees and restore missing trees (where accurate replacements can be established) in the row along the south side

GUIDANCE FROM THE GMP

One or more barracks would be placed in a demonstration bock as further discussed below under interpretation. The barracks would either be original structures relocated to the site, or reconstructions based on the original construction drawings. Support structures such as a latrine, mess hall, and laundry building might also be added. (GMP/FEIS, pg. 11)

Blocks 8 and 14, located immediately to the west of the auditorium, would be designated as "demonstration" blocks. The corners of all structures in these blocks would be marked, and waysides would explain the design, function and family-living implications of each of the structures, including barracks, mess halls, latrines, laundry rooms, etc… One or more of the barracks would be relocated or reconstructed in this area. (GMP/FEIS, pg. 15)

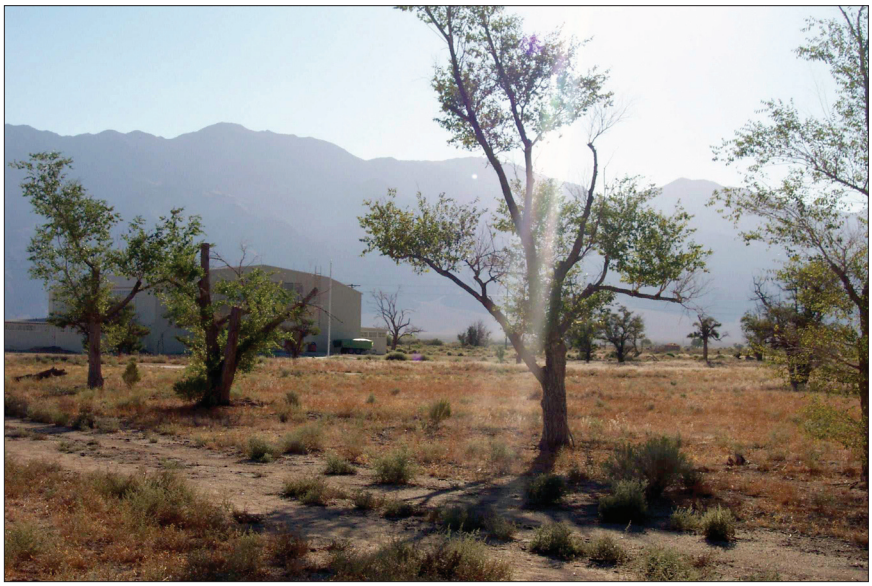


Figure 124. Stabilization and careful pruning of historic trees such as the row along the demonstration block, will promote the trees' longevity. (NPS, 2002)

of 4th Street between B and C streets. Along with the stabilization of 4th Street, this will help define the edge of the Demonstration Block. This work should be done in connection with the stabilization of the trees around the entire block in the firebreak located in front of the Auditorium building. (Figure 124)

8. If electricity is needed for any of the reconstructed barracks buildings or other interpretive areas, consideration should be given to restoring the utility poles that historically provided electrical service to those buildings.

GUIDANCE FROM THE GMP

An auxiliary entrance, for park administrative use and to provide access during the annual pilgrimage, would be established in the vicinity of the camp cemetery. The existing unpaved road adjacent to the west boundary would be gated at the site boundary, and the limited traffic using this road outside the park would be rerouted on existing unpaved roads to the west of the site. (GMP/FEIS, pg.16)

The annual Manzanar pilgrimage, or similar annual event, would continue at Manzanar, and would continue to be conducted in the cemetery vicinity. (GMP/FEIS, pg.17)

The parking area located at the cemetery area would be designed with an overflow area to accommodate the large number of cars and buses at the pilgrimage. Only the main parking area at the auditorium would be paved; other areas would be compacted earth, treated with a dust palliative. Layout, design, and the location of the parking areas would recognize the potential need for current overflow parking, as well as the possible need for future permanent expansion. (GMP/FEIS, pg.17)

Public restrooms would be provided in the interpretive center and at the parking lot near the cemetery. (GMP/FEIS, pg. 18)

Marking non-extant barracks buildings in the Demonstration Block

As a tool for enhancing visitor understanding of the layout and character of the Barracks Block, marking the location of non-extant structures is considered essential. Three options for marking and delineating the location and size of these buildings are presented. While implementation of any single technique will help define the resource, the intent is to use all options for maximizing the readability of the landscape without impairing extant cultural resources.

Option 1: Restore the four wooden stoops on selected barracks buildings to delineate the historic entrances to the barracks and emphasize the location and mass of the buildings. In addition, the concrete block foundation piers could also be restored based on historic specifications. This would emphasize the scale of the building within these ghosted spaces.

Option 2: Using historic base maps and archeological investigations, clear vegetation from the footprints of non-extant barracks building. Cleared areas can be maintained through such means as the use of pre-emergents and soil stabilizers (e.g., soil cement), which will discourage reestablishment of vegetation and act as a dust palliative.

Option 3: The reconstruction of additional barracks buildings (and the recovery of other historic era buildings for placement in Block 14) should be undertaken only in compliance with the GMP and with NPS policy. If reconstructions are undertaken, the new buildings should be sited in the footprints of non-extant historic structures. In locating individual structures within the block, preferential consideration should be given to the building sites at the corners of Block 14, as well as at the site of Barracks 14, east of the mess hall. Locating corner buildings will convey the scale of the block, while the reconstruction of Barracks 14 will demonstrate the

proximity of the structures to each other.

The Cemetery

Specific guidelines for development at the Cemetery are provided in the GMP and call for parking, a new restroom structure, staging during the Pilgrimage, preservation of structures, and fencing. The cemetery comprises several significant features that taken together create a distinct design in the context of the cultural landscape as a whole. Schematic design concepts for the cemetery focus on configurations for parking areas, restoration of historic features, and preservation of the monument.

Cemetery and Monument

The cemetery and monument are enclosed by a restored locust post fence. The cemetery monument, which includes the concrete and stone obelisk, concrete apron, and nine masonry faux stump stanchions, should be inspected yearly for signs of cracking, spalling, vandalism, and repaired as necessary. Soil and vegetation should not be allowed to accumulate at the edges of the apron or around the bases of stanchions and the rocks around and between the stanchions. The stanchions received preservation treatment in 2001. They should be inspected approximately every five years by a conservator to check for cracking, detachment, and loss and treated as necessary. Specific information on the repair of the masonry stanchions can be found in the *Historic Preservation Report* (2001).[3]

The cemetery is comprised of several significant features that together create a distinct design. The schematic design concepts for the cemetery focus on the configuration for the parking area, restoration of historic features, and preservation of the monument. Recommendations include:

1. Maintain open character by removing invasive brush as needed.

2. Reestablish the dead/missing locust and peach trees within the cemetery boundary that can be documented from historic photos as part of the historic setting for the site (see guidance in "*I Rei To*", Burton et al). Emphasis should be on restoring the historic character of the peach trees, not fruit production. An emphasis should be placed on using stock that minimizes the need for pest and irrigation management. Use of existing on-site peach tree stock should be considered because of their ability to

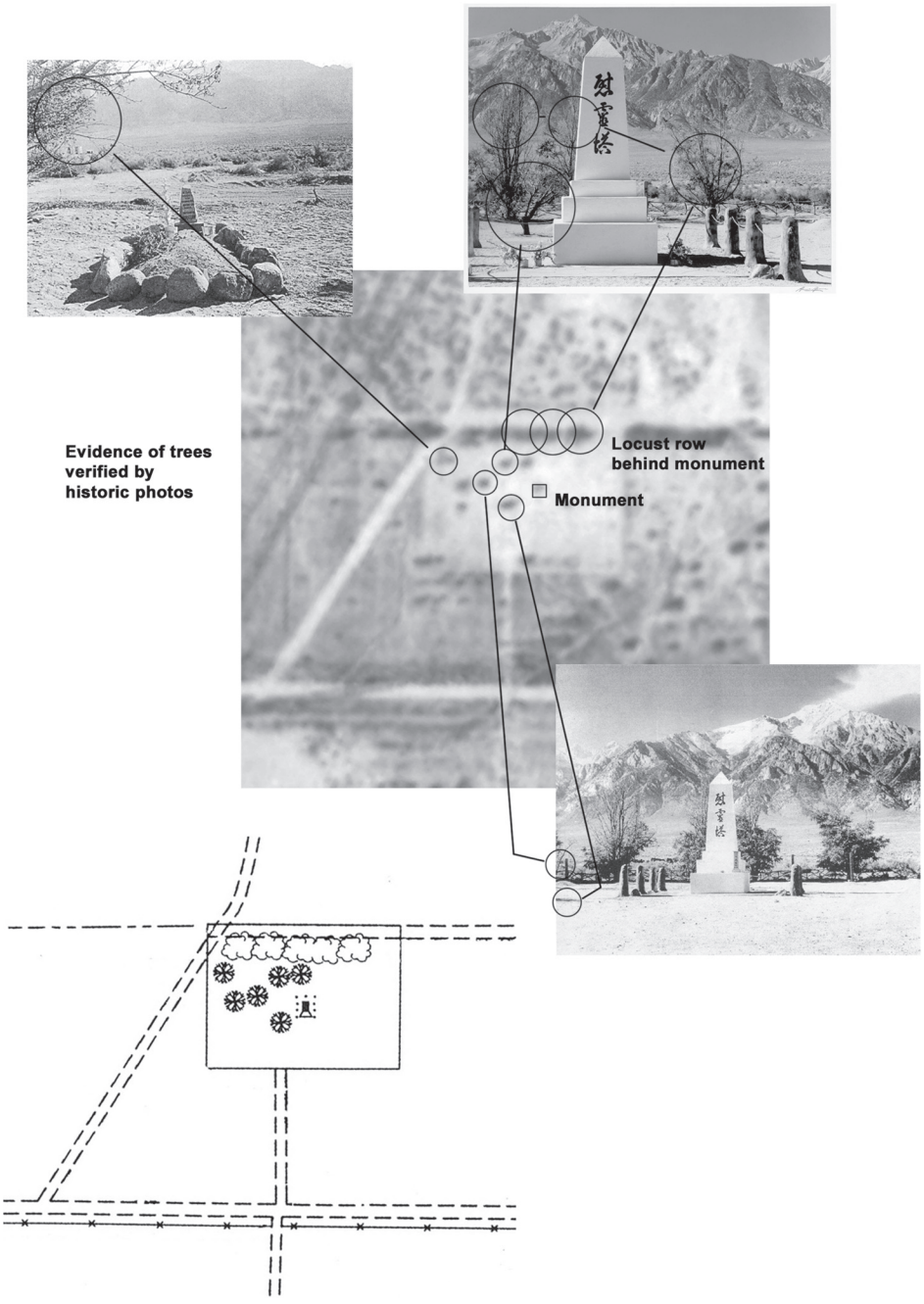


Figure 125. Cemetery vegetation. (Clockwise from top left: Dorothea Lange photograph, 1942; Ansel Adams photograph, 1943; Toyo Miyatake photograph, ca. 1944; WAAC, 2001; 1944 aerial photo)

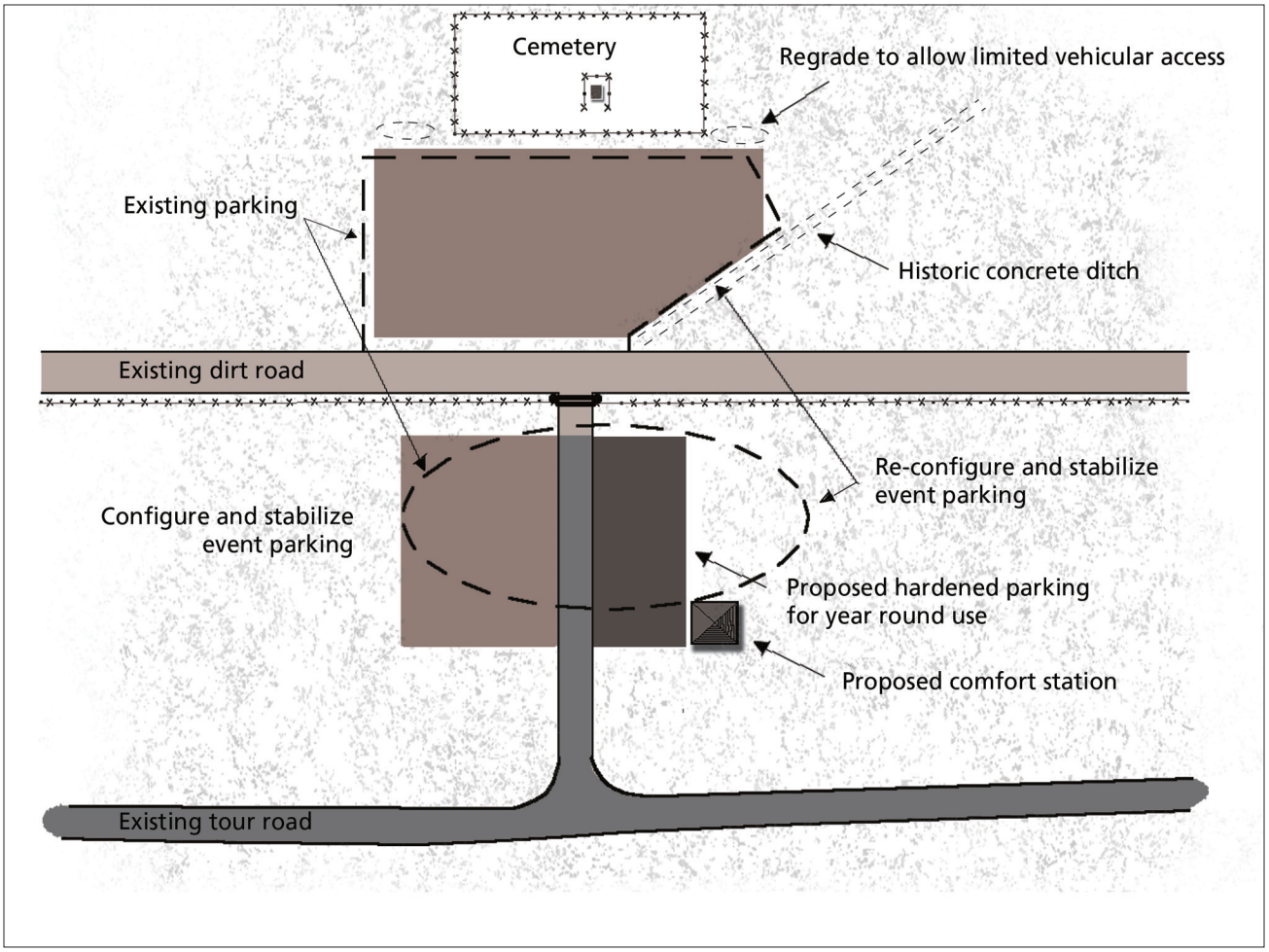


Figure 126. Cemetery Parking. (NPS, 2005)

survive under duress. Any fencing installed to protect these trees while young should be temporary in nature until the trees are of sufficient height and stature to survive without the protection from wildlife. (Figure 125)

3. Remove non-historic piles of soil from around the site in consultation with an archeologist.

Parking and Staging

During the annual pilgrimage areas adjacent to the cemetery are used by the community and the public for a variety of purposes including staging areas for large crowds, exhibit space, and parking. The control of parking in this

area is critical because of the visual impact it has on the historic scene and because of the physical impact undifferentiated parking can have on fragile soils and vegetation. Minimizing those visual and physical impacts is highly desirable. (Figure 126)

1. Restrict use of the parking area west of the boundary fence to meet accessibility needs, act as turnaround and drop-off for tour/school buses, and to meet staging requirement for the annual pilgrimage. Use of this area for day-to-day parking should be minimized out of respect for the physical context of the resource in addition to protecting associated cultural resources including the historic setting for the cemetery.

2. Encourage visitors to park in a designated parking pullout area east of the boundary fence and north of the auto tour route (about five cars and a bus, or approx. 2,000 square feet or less). Per the GMP, the parking area should be hardened (consider use of soil cement). Delineate edge to control unintended expansion, as needed, using shoulder pullout and parking recommendations outlined elsewhere in this document.

3. Designate and control use of an overflow parking area on the south side of the tour road (7th Street) as it approaches the boundary fence and cemetery. Use of this area should be limited to overflow parking for special events and/or as a year-round large vehicle turnaround area only (buses and RVs).

4. Remove non-historic piles of soil from around the site in consultation with an archeologist. Restore desert vegetation to edge of parking area.

5. Use signs to clearly delineate the year-around parking area, and limit access to the area west of the boundary fence. It is recognized that the success of this strategy will require careful signage/education, a clearly delineated permanent parking area, the goodwill of the public and self-policing.

6. Keep permanent interpretive features, trash receptacles and other non-contributing structures restricted to the vicinity of the parking area and boundary fence to maintain the historic setting of the cemetery.

Comfort Station

Based on the GMP, a new comfort station is to be located near the parking lot on the east side of the boundary fence. To minimize the impact to historic

scene, the preferred location is in the northeast corner of the proposed parking lot, providing maximum visual and physical separation between the cemetery and the new structure. Design guidelines for this structure include:

- An accessible vault toilet.
- If prefabricated structures are used, consideration should be given to the use of two smaller structures to reduce the mass of a single, larger building. Reduce impact to the historic scene by choosing structure(s) with a low profile roof, minimal mass.

Materials should be compatible with surrounding landscape in color and structure and should not attempt to appear historic.

Endnotes

1 Robert L. Carper, et al. *The History and Preservation of the Community Auditorium-Gymnasium, Historic Structure Report: Manzanar National Historic Site, California*. NPS, 1999.

2 Some further background on the demonstration block. As per NPS Director's Order #2, the park needed approval by the Director, National Park Service for reconstruction of any structures. In 2000 the Pacific West Regional Director requested approval to reconstruct Guard Tower No. 8 and Barracks Block 14 as a "demonstration block" as per the GMP. The Director responded:

> "The 'Justification' provided by your staff is very thorough and does an excellent job of outlining the evidence that exists to support these proposed reconstructions. By this memorandum, I am approving the reconstruction of Watchtower #8 and Barracks Block #14, as proposed in the Manzanar General Management Plan. I am mindful, however, of the Manzanar Advisory Commission's resolution stating that the reconstructions would be limited to Watchtower #8 and the 'demonstration block', including one 'raw' barracks, one War Relocation Authority 'improved' barracks, and four support buildings (laundry room, ironing room, women's latrine, and men's latrine). I expect future managers to respect those limits on reconstructions."

The main point is that building reconstructions will be limited to the 7 structures listed in the Director's Memorandum – although any number of Manzanar Buildings could be moved to the site – should any be located. Harper's Ferry Center has been working on a Historic Furnishing Plan for the demonstration block and the draft indicates that there will be one reconstructed barracks building – one end of which would be "raw" and the other end "improved".

3 Ibid, Vol. III.

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Appendix A
Manzanar Site Bulletin: Glossary

Manzanar

National Park Service
U.S. Department of the Interior

Glossary


INSTRUCTIONS TO ALL PERSONS OF JAPANESE ANCESTRY

442nd Regimental Combat Team - a segregated U.S. Army regiment of primarily Japanese American soldiers. The 442nd fought in Italy, France, and Germany.

Assembly Centers - temporary detention camps maintained by the Army that held Japanese Americans who had been removed from their West Coast homes. Most assembly centers were located at fairgrounds, racetracks, or former CCC camps. By mid-1942, Japanese Americans were transferred to more permanent War Relocation Centers. Assembly centers are also known as "temporary incarceration camps" and "temporary prison camps."

Commission on Wartime Relocation and Internment of Civilians (CWRIC) - a Congressional commission established in 1980 to "review the facts and circumstances surrounding Executive Order 9066" and to "recommend appropriate remedies."

Evacuation - the term used by the Army during World War II to describe the process of removing Japanese Americans from their West Coast homes located within exclusion zones. The terms "exclusion" and "removal" are more commonly used today.

Exclusion Zones - areas described in each Civilian Exclusion Order from which all Japanese Americans were excluded. Civilian Exclusion Orders were issued by the Western Defense Command and Fourth Army to implement the provisions of Executive Order 9066.

Executive Order 9066 - authorized the War Department to establish military areas from which "any and all persons may be excluded." This order was signed by President Franklin D. Roosevelt on February 19, 1942 and was the basis for the removal of anyone with 1/16 Japanese ancestry from the West Coast.

Family Number - a WCCA number assigned to each family unit or individual living alone during registration for evacuation. The numbers were used for administrative and property identification purposes.

Hoshi Dan - short for *Sokuji Kikoku Hoshi Dan*, a pro-Japanese group in Tule Lake Segregation Center. *Sokuji Kikoku Hoshi Dan* translates as "Organization to Return Immediately to the Homeland to Serve."

Immigration Act of 1924 - banned further immigration from Japan and restricted overall immigration.

Immigration and Nationality Act of 1952 - also known as the Walter-McCarran Act, the statute gave immigrants from Japan the right to become naturalized U.S. citizens.

Internment Camps - administered by the Department of Justice for the detention of enemy aliens (non-citizens from countries with which the United States is at war) considered dangerous and a threat to national security during World War II. Also referred to as "concentration camps."

Issei - the first generation of immigrants from Japan, most of whom came to the United States between 1885 and 1924. Issei were not allowed to become U.S. citizens until 1952.

Japanese American Citizen League (JACL) - the largest Japanese American political organization in the United States. The JACL was formed in 1928 and emphasized assimilation and Americanization during World War II.

Kibei - a Japanese American born in the United States who received some or all of their formal education in Japan, then returned to the U.S.

Loyalty Questionnaire - administered in February 1943 to all Japanese Americans, aged seventeen years and older, in relocation centers. Despite serious problems with the wording of questions 27 and 28 of the questionnaire, those who refused to answer or who answered "no" to one or both of the controversial questions were considered "disloyal" to the United States. Those who answered "yes" became eligible for service in the U.S. Army and for release and resettlement to the Midwest and eastern U.S.

Military Intelligence Service (MIS) - a branch of the United States Army in which many Japanese Americans served during World War II, using their language skills in the Pacific War to translate enemy documents, interrogate Japanese prisoners of war, and persuade enemy units to surrender.

Nisei - second generation Japanese Americans, children of Japanese immigrants who were U.S. citizens by birth.

No-no boys - a term used for Japanese Americans who refused to answer the loyalty questionnaire or who answered "no" to questions 27 and 28.

Non-alien - a term used by the Army during World War II to describe a U.S. citizen of Japanese ancestry. The U.S. government often referred to Japanese Americans as aliens and non-aliens rather than as citizens and non-citizens.

Reception Centers - temporary areas established and maintained by the WCCA, intended to house Japanese Americans after evacuation. While the WCCA planned many reception centers, only one was established, Owens Valley, and it ultimately became Manzanar War Relocation Center.

Redress and reparations - terms used to refer to compensation made by the U.S. government to Japanese Americans for their wartime detention in War Relocation Centers. Reparations refer to monetary compensation, while redress also includes the official apology from the United States government.

Relocation - term used during World War II to describe the settlement of Japanese Americans who had been removed from their homes into War Relocation Centers. "Relocation" also referred to the process of leaving relocation centers and settling in the Midwest and East before the evacuation orders for the West Coast were lifted by the War Department.

Renunciation - the process by which more than 5,500 Japanese Americans surrendered their American citizenship during World War II. Citizens of the United States were permitted to renounce their citizenship under Public Law 405, signed by President Roosevelt on July 1, 1944.

Repatriation - the process by which Japanese Americans returned to Japan during World War II. Repatriation was also used to refer to Japanese Americans who were exchanged for Americans held in Japan.

Resettlement - the term used by the WRA to describe the process for Japanese Americans to migrate from relocation centers to the Midwest and East before the evacuation orders were lifted on the West Coast in January 1945. The term was also used to refer to the return of Japanese Americans to the West Coast after the evacuation orders were lifted

Sansei - third generation Japanese Americans; the grandchildren of Japanese immigrants.

Segregation - the removal of Japanese Americans considered "disloyal" because of their answers to the loyalty questionnaire from the relocation centers to Tule Lake, California which became a "segregation center" on July 31, 1943.

Voluntary Resettlement - the "voluntary" moving and resettlement of Japanese Americans from designated West Coast military areas. Voluntary resettlement occurred for a three-week period after the exclusion of Japanese Americans from the West Coast and before the creation of War Relocation Centers.

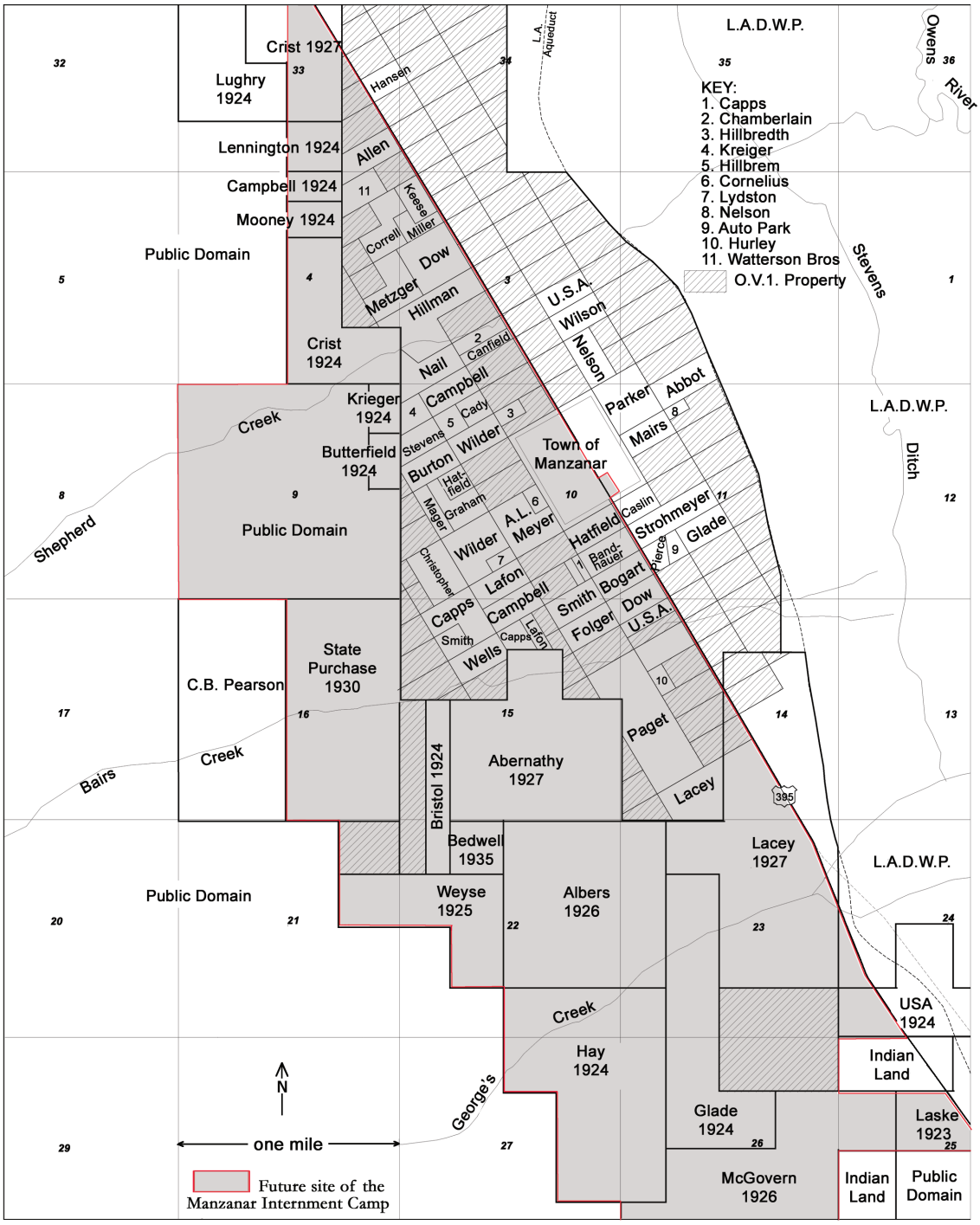
War Relocation Authority (WRA) - the government agency responsible for the administration of the War Relocation Centers where Japanese Americans were held during World War II. The WRA was created by Executive Order 9102 on March 18, 1942.

War Relocation Centers - the term used by the WRA to describe the camps in which Japanese Americans were held during World War II. The WRA administered ten centers, most surrounded by barbed wire and guarded by military police. Relocation centers are also referred to as "incarceration camps," "prison camps," "internment camps," and "concentration camps."

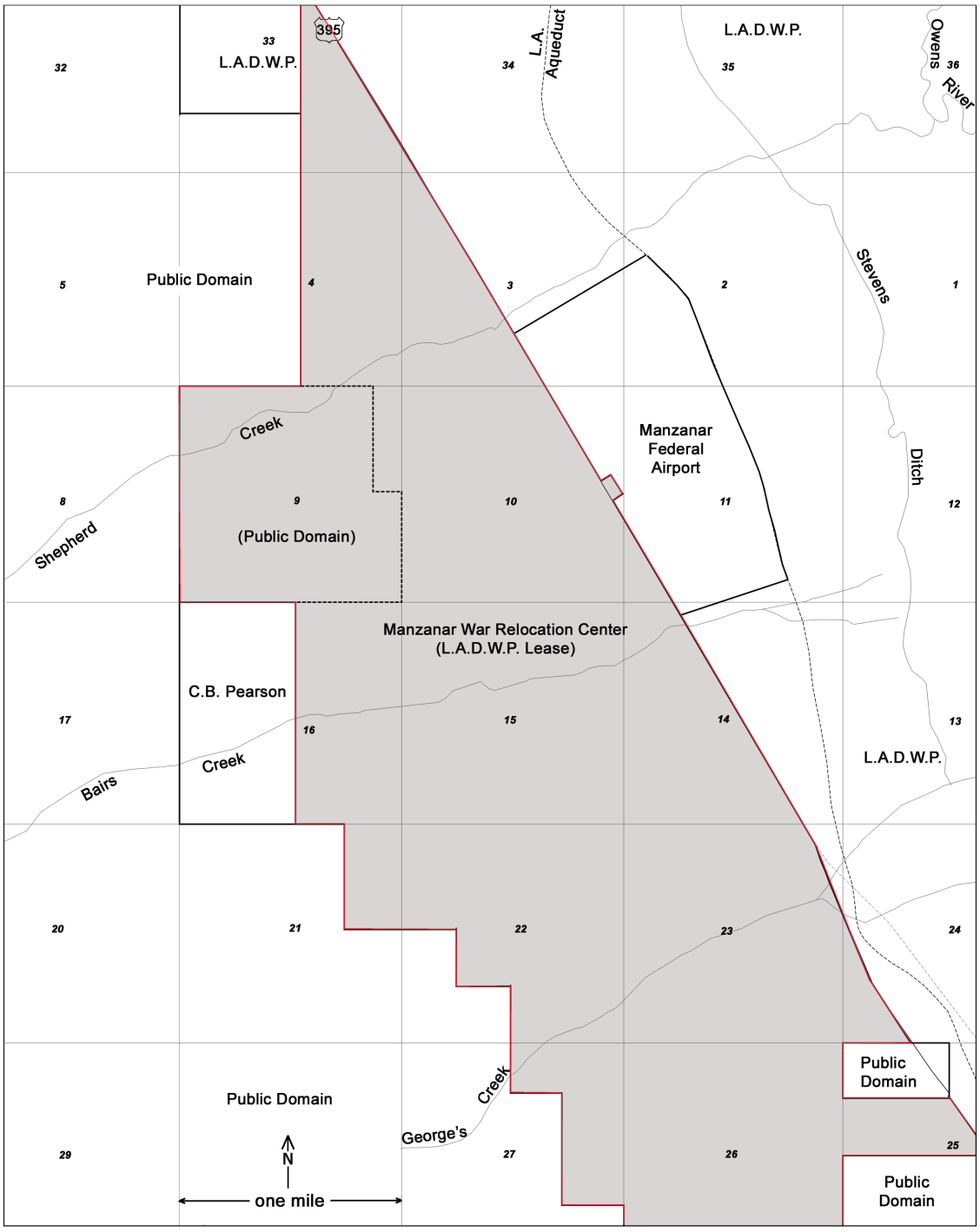
Wartime Civilian Control Administration (WCCA) - a "civilian affairs" branch of the Western Defense Command (part of the War Department established to oversee the defense of the U.S. West Coast). Established on March 11, 1942 by General Order No. 34, the WCCA supervised the removal of Japanese Americans from the West Coast as part of their responsibilities for the "formulation of policies, plans and directives" pertaining to "control and exclusion of civilians" during World War II.

For more information, please visit our website at www.nps.gov/manz.

Appendix B
Land Ownership Overlays: 1927 and 1945



Land Ownership, Town period, 1920s. (Source: Figure 6.20, *Three Farewells to Manzanar*, Volume 1, Page 147)



Manzanar Internment Camp, 1942. (Figure 4.2, *Three Farewells to Manzanar,* Vol 1, Page 47)

Appendix C
"Historic Orchard Character"
By Susan Dolan

From 2006 Draft *Fruitful Legacy: A Historic Context of Fruit Trees and Orchards in the United States, from 1600 to the Present.*

Summary of Chapter 3:

Fruit Specialization and Industrialization: 1880-1945

The evolution of orchards during the 1880 to 1945 period was fueled by technological and scientific discovery, and led to the professional and commercial development of the orchard industry. The most important changes from a cultural resource management perspective were transformations in the form, shape and layout of orchard trees, and a dramatic reduction in the number of varieties grown. These transformations were influenced by the involvement of the Federal government in horticultural development through the creation of the United States Department of Agriculture and the establishment of agricultural experiment stations in every state.

Orchard tree form was changed from a five-feet tall trunk to a less than three-feet tall trunk; tree shape was changed from an unpruned, natural state to either a pyramidal or an open bowl pruning style; and orchard layout was expanded to greater spacing. The layout of apple and pear orchards was changed from 30 feet by 30 feet spacing to 40-50 feet by 40-50 feet, and for tighter-spaced fruits such as peach, plum and cherry, the layout was changed from a square to a rectangular arrangement. The layout changes were made for greater access for new machinery and equipment, and to increase the yield from mature trees.

The dramatic decrease in the number of varieties grown was due to a process of selection for commercial fitness. Criteria for commercial fitness were refined during the period to incorporate all factors promoting high yields and durability of harvested fruit. As a result, the number of varieties of all orchard fruits grown was pared from many hundreds to tens. At the end of the period, most orchard fruit species were represented by just 10 widely grown commercial varieties. For most fruit species, the top 10 varieties were dominated by one variety with the greatest commercial value and most widespread planting. For apple, Baldwin and Ben Davis were the most important commercial varieties in the early 20th-century, but were rapidly superseded by McIntosh for Baldwin and Red Delicious for Ben Davis.

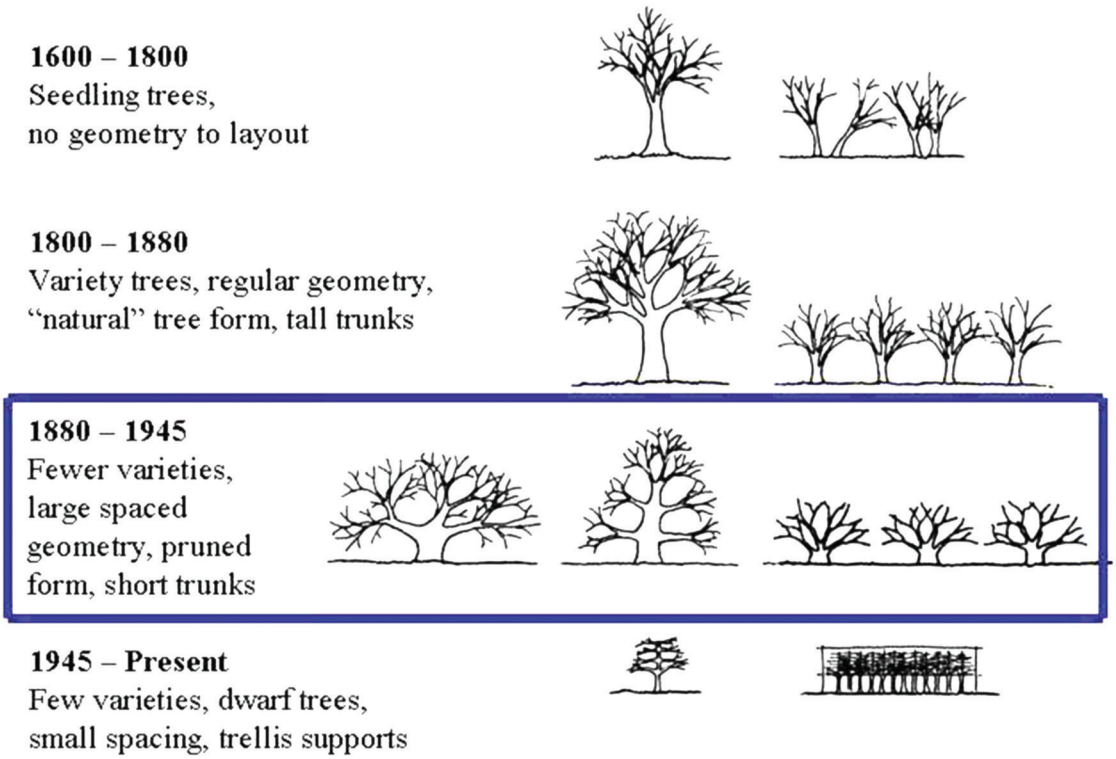
The development of Red Delicious during this period had an enormous impact on apple growing, resulting in greater profitability for the industry, great fashionability of red apples, greater ubiquity of a single variety and further obsolescence of superseded varieties. For pear, the industry became dominated by Bartlett, and pear growing was intensified regionally, with New York and California becoming the greatest producers, and a significant growing region developing in the Pacific Northwest for Anjou and Bosc varieties.

Peach growing was ubiquitous with many local varieties remaining important, though Elberta became the most dominant and widely-grown variety. For cherry and plum, commercial growing became regionalized rather like pear. Sour cherry production became centered in the Upper Midwest, where Montmorency was the dominant variety, and sweet cherry production was taken over by the Pacific Northwest, where Bing was the most important variety. Plum growing was not dominated by a single variety, but specialization by certain regions occurred. The growing of Japanese and European plums became centered in the Pacific States, American variety plums were grown in the Midwest and South, and European variety plums were grown to a smaller extent in the eastern states.

Citrus and nut species were the only orchard fruits to have a net increase in number of varieties during this period. Both industries were born and established during the period as a result of the development of American varieties and breakthroughs in the horticultural techniques of propagation and transplanting. The citrus and nut industries also became highly regionalized, with citrus becoming centered in Florida and California, and nut growing becoming centered in Texas for pecans, California for almonds and English walnuts, and the Pacific Northwest states for European filberts.

The number of fruit trees and orchards fell dramatically during the period, with all but the Pacific States losing orchards to increasing urbanization. Approximately 50% of the fruit trees that had existed in 1880 were gone by 1930, though the paring down of orchards was paralleled by a rise in specialized, commercial orchards, managed by growers rather than farmers. Technologies that buoyed the development of commercial orchards included a nationwide network of railroads and then later a nationwide network of roads, growth in canning technology and irrigation systems, and the discovery of mechanical refrigeration and cold storage. Scientific breakthroughs included the discovery of disease organisms and the development of the first pesticides for orchard pest control.

Orchard management became more elaborate with the standard practice of pruning, spraying, fertilizing and cultivation. Packing sheds were added to western orchards, and packing containers and advertising were designed to increase profitability. The Progressive era brought regulatory challenges for growers and the Great Depression brought economic hardship, both resulting in greater cooperation between growers through the development of growers' cooperatives and marketing commissions. Packing sheds were lost from western orchards as centralized fruit handling facilities were created, and still more orchards were abandoned during the Depression years, when almost no growers turned a profit. The Civilian Conservation Corps contributed to the



removal of orchards between 1933 and 1941 through reclamation efforts, but also served to create orchards, by replanting commemorative orchards at national historic sites.

At the end of the period, the apple variety Golden Delicious was steadily gaining popularity with growers, as a potentially lucrative new yellow apple, and as a good pollenizer for the dominant, self-sterile Red Delicious variety. Dwarf fruit trees were becoming popular with urban and suburban homeowners with fruit and vegetable gardens, and intense research was underway to move the industry towards smaller trees and more intensive orchard management. Full size, standard trees remained the norm for all commercial orchard fruits, however, the need for greater labor savings through more accessible orchard trees was becoming highly evident.

The majority of old fruit trees and orchards within the national park system belong to this period in the history of orchards and fruit development. For many parks, the period corresponds to the time when the land was in agricultural use before the designation of the park, and the period is sufficiently recent that it captures fruit trees with the greatest longevity, such as apple, pear, orange and cherry. As the period contained the greatest loss in the both the number of orchards and fruit varieties in the country's history, orchards and fruit trees that remain from this period are potentially significant as archaic forms of orchard horticulture, or for the presence of rare fruit varieties or strains of varieties, that are otherwise non-extant.

Appendix D

Summary Tables of Archeological Resources, compiled by Jeff Burton, Western Archeological and Conservation Center, National Park Service, Summer 2005.

Table D.1. Archeological Sites Recorded within Manzanar National Historic Site.

Site Number		Component*				Description	Tested?	Signif-icant?
NPS	State Trinomial	NAI	Town	WRA	Post			
MANZ 1993 A-1	CA-INY-4861	X				Midden, Artifact Scatter	1993	Yes
MANZ 1993 A-2	CA-INY-4862	X				Midden, Artifact Scatter	1993	Yes
MANZ 1993 A-3	CA-INY-4863	X				Artifact Scatter	1993, 2000	Yes
MANZ 1993 A-4	CA-INY-4864/H	X	X			Midden, Artifact Scatter, Burial	1993	Yes
MANZ 1993 A-5	CA-INY-4865H		X			Pipeline		
MANZ 1993 A-6	CA-INY-4866H		X			Farm		
MANZ 1993 A-7	CA-INY-4867H		X			Dump	1993	Yes
MANZ 1993 A-8	CA-INY-4868H			X		Buried Fuel Tank	1996	No?
MANZ 1993 A-9	CA-INY-4869H		X			Wilder House		
MANZ 1993 A-10	CA-INY-4870H		X			Mager House		
MANZ 1993 A-11	CA-INY-4871H		X			Dump		
MANZ 1993 A-12	CA-INY-4872H		X	X		Well 169		
MANZ 1993 A-13	CA-INY-4873H		X			Shepherd Ranch/OVI Headquarters	1993, 2003	Yes
MANZ 1993 A-14	CA-INY-4874H				X	Dump		
MANZ 1993 A-15	CA-INY-4875H		X			Hawthorne House	1993, 1997	Yes
MANZ 1993 A-16	CA-INY-4876H		X			Downtown Manzanar	1993, 1997, 2000	Yes
MANZ 1993 A-17	CA-INY-4877H		X			Artifact Scatter	1997	No
MANZ 1993 A-19	CA-INY-4879/H	X	X			Artifact Scatter		
MANZ 1993 A-20	CA-INY-4880H		X			Lembek House		

Table D.1. Archeological Sites Recorded within Manzanar National Historic Site.								
Site Number		Component*				Description	Tested?	Signif-icant?
NPS	State Trinomial	NAI	Town	WRA	Post			
MANZ 1993 A-21	CA-INY-4881H		X			Artifact Scatter	1997	No
MANZ 1993 A-22	CA-INY-4882H		X			Isolated Feature	1997	No
MANZ 1993 A-23	CA-INY-4883H	X	X			Bogart House	1997	Yes
MANZ 1993 A-24	CA-INY-4884H		X			Artifact Scatter		
MANZ 1993 A-26	CA-INY-4886H		?			Artifact Scatter		
MANZ 1993 A-27	CA-INY-4887H		X	?		Artifact Scatter		
MANZ 1993 A-28	CA-INY-4888H		X			Campbell/Ed Shepherd House	1993	
MANZ 1993 A-29	CA-INY-4889H		X			Pipeline		
MANZ 1993 A-30	CA-INY-4802H			X	X	Relocation Center Central Area	1993-2004	Yes
MANZ 1993 A-31	CA-INY-4890H			X		Relocation Center Chicken Ranch		
MANZ 1993 A-32	CA-INY-4947H		X	X		Relocation Center MP Compound	1999	Yes
MANZ 1993 A-33	CA-INY-4893H			X		Relocation Center Cemetery	1999-2001	Yes
MANZ 1993 A-34	CA-INY-4894H			X		Pipeline		
MANZ 1993 A-35	CA-INY-4895H			X		Dump		
MANZ 1993 A-36	CA-INY-4896H			X		Artifact Scatter		
MANZ 1993 A-37	CA-INY-4897H			X	X	Dump	1993	Yes
MANZ 1993 B-1	CA-INY-4898/H	X	X			Midden, Artifact Scatter, Burial	1998	Yes
MANZ 1993 B-2	CA-INY-4899/H	X	X			Midden, Artifact Scatter, Burial	1998	Yes
MANZ 1993 B-3	CA-INY-4900/H	X	X			Midden, Artifact Scatter	1998	Yes

Table D.1. Archeological Sites Recorded within Manzanar National Historic Site.								
Site Number		Component*				Description	Tested?	Signif-icant?
NPS	State Trinomial	NAI	Town	WRA	Post			
MANZ 1993 B-4	CA-INY-4901/H	X	X			Artifact Scatter	1998	No
MANZ 1993 B-6	CA-INY-4903	X				Midden, Artifact Scatter, Burials	1998	Yes
MANZ 1993 B-7	CA-INY-4904H		X			Dump	1998	Yes
MANZ 1993 B-8	CA-INY-4905H			X		Dump	1998	Yes
MANZ 1993 B-9	CA-INY-4906H			X		Disposal Pits	1998	Yes
MANZ 1993 B-10	CA-INY-4907/H	X	X			Artifact Scatter	1998	No
MANZ 1993 B-11	CA-INY-4936H		X	X		Pipeline		
MANZ 1993 B-15	CA-INY-4938H		?	X		Farm Fields, Ditches, Pipeline		
MANZ 1993 B-16	CA-INY-4910H		X			Paget Farm		
MANZ 1993 B-26	CA-INY-4942H		X			Ditch		
MANZ 1993 B-30	CA-INY-4945H			X		Ditch		
MANZ 1993 B-31	CA-INY-4946H		X			Pipeline		
MANZ 1994 A-4	CA-INY-4928H		X			Artifact Scatter	1997	No
MANZ 1995 A-3	CA-INY-4860	X				Artifact Scatter	1997	Yes?
MANZ 2000 E-1	CA-INY-5885H		X			Homesite		

* Components: NAI = Native American Indian (pre-1910), Town = ranch and town-era (ca. 1865-1935), WRA = Manzanar relocation center (1942-1945), Post = post-relocation center (1945+)

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
MANZ 1993 A-1	**Native American Indian Site (artifact scatter)**
MANZ 1993 A-2	**Native American Indian Site**
Locus A	midden and artifact concentration
Locus B	midden and artifact scatter
Locus C	artifact scatter
MANZ 1993 A-3	**Native American Indian Site**
Locus A	artifact concentration
MANZ 1993 A-4	**Native American Indian Site/ Parker House**
Locus A	midden and prehistoric artifact concentration with historical artifact scatter
Locus B	midden and prehistoric artifact concentration
Locus C	midden and prehistoric artifact concentration, burial
Locus D	midden and prehistoric artifact concentration
Locus E	prehistoric artifact scatter
Locus F	historical artifact concentration
Locus G	historical artifact concentration
Locus H	historical artifact concentration
MANZ 1993 A-5	**Manzanar Town-era Pipeline**
MANZ 1993 A-6	**Gilmer Farm**
Feature 1	basement
Feature 2	well
Feature 3	historical artifact concentration
MANZ 1993 A-7	**Manzanar Town-era Dump**
Locus A	artifact concentration
Locus B	artifact concentration
Locus C	artifact concentration
Locus D	artifact concentration
Locus E	artifact concentration
Locus F	artifact concentration
Locus G	artifact concentration

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Locus H	artifact concentration
Locus I	artifact concentration
Locus J	artifact concentration
MANZ 1993 A-8	**Relocation Center Buried Fuel Tank**
MANZ 1993 A-9	**Wilder Farm (foundation)**
MANZ 1993 A-10	**John Meyers Farm (artifact scatter)**
MANZ 1993 A-11	**Graham Farm (dump)**
MANZ 1993 A-12	**Well No. 169**
Feature 1	buried concrete diversion box
Feature 2	well
Feature 3	well
MANZ 1993 A-13	**John Shepherd Ranch - OVI Headquarters**
Feature 1	rock lined road
Feature 2	ditch and fence post alignment
Feature 3	earthen ditches
Feature 4	foundation posts, leveled area
Feature 5	concrete water trough
Feature 6	concrete water trough
Feature 7	fence post alignment
Feature 8	rock alignment
Feature 9	buried fuel tank
Feature 10	water pipe
Feature 11	water pipe
Feature 12	water pipe
Feature 13	water pipe
Feature 14	water pipe
Feature 15	water pipe
Feature 16	building foundation
Feature 17	buried culvert

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Feature 18	trash pit
Feature 19	compact surface
Feature 20	water pipe
Feature 21	trash deposit
Feature 22	water pipe
Feature 23	water pipe
Feature 24	privy pit
Feature 25	modern fire ring
Feature 26	modern fire ring
Feature 27	modern fire ring
Feature 28	rock alignment
Feature 29	rock alignment
Locus A	historical artifact concentration
Locus B	historical artifact concentration
Locus C	historical artifact concentration
Locus D	historical artifact concentration
Locus E	historical artifact concentration
Locus F	historical artifact scatter
Locus G	historical artifact concentration
Locus H	historical artifact scatter
Locus I	historical artifact concentration
Locus J	historical artifact concentration
MANZ 1993 A-14	**Historical Artifact Concentration**
MANZ 1993 A-15	**Wicks Place/Hawthorne Property**
Feature 1	basement depression
Feature 2	rock alignment
Locus A	historical artifact concentration
Locus B	historical artifact concentration
MANZ 1993 A-16	**Downtown Manzanar and Lacey Home**
Feature 1	community hall foundation
Feature 2	store basement
Feature 3	garage remains

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Feature 4	depression/seepage pit
Feature 5	concrete septic tank
Locus A	historical artifact scatter, leveled area
Locus B	burned historical artifacts, leveled area
Locus C	historical artifact scatter
Locus D	burned historical artifacts, leveled area
Locus E	historical artifact scatter
Locus F	historical artifact scatter
MANZ 1993 A-17	**Meyer Lumber (artifact scatter)**
MANZ 1993 A-19	**Bevis Place/Briggs Property, prehistoric artifact scatter**
Feature 1	concrete pipeline
Feature 2	posts cut flush to ground
Feature 3	depression
Locus A	historical artifact scatter
Locus B	historical artifact scatter
MANZ 1993 A-20	**Lenbek and Kemp Homesites**
Locus A	artifact scatter
Locus B	artifact scatter
Locus C	artifact scatter and leveled area
Locus D	artifact scatter and depression
Locus E	artifact scatter and leveled area
Locus F	artifact scatter
MANZ 1993 A-21	**Historical Artifact Scatter**
MANZ 1993 A-22	**Hatfield Property**
Feature 1	structural remains
MANZ 1993 A-23	**Bogart Homesite and Sparse Prehistoric Artifact Scatter**
Feature 1	concrete septic tank
Feature 2	WRA-era manhole

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
MANZ 1993 A-24	**Bogart Homesite (trash dump)**
MANZ 1993 A-26	**Capps Homesite (artifact scatter and level area)**
MANZ 1993 A-27	**Historical Artifact Concentration**
MANZ 1993 A-28	**Campbell/Ed Shepherd House**
Feature 1	concrete slabs
Feature 2	can dump
MANZ 1993 A-29	**Manzanar Town-era Pipeline**
MANZ 1993 A-30	**Manzanar Relocation Center Central Area**
see Table D.3	
MANZ 1993 A-31	**Relocation Center Chicken Ranch**
Feature 1	office and processing building concrete slab with inscriptions
Feature 2	coop concrete slab foundation and yard
Feature 3	coop concrete slab foundation and yard with inscriptions
Feature 4	coop concrete slab foundation and yard with inscriptions
Feature 5	coop concrete slab foundation and yard with inscriptions
Feature 6	coop concrete slab foundation and yard
Feature 7	coop concrete slab foundation and yard
Feature 8	breeder coop concrete slab foundations
Feature 9	concrete and rock incinerator
Feature 10	rock alignments and walkways
MANZ 1993 A-32	**Relocation Center Military Police Compound**
Feature 1	rock alignment
Feature 2	rock alignment
Feature 3	footing blocks
Feature 4	concrete slab
Feature 5	rock alignment
Feature 6	concrete perimeter foundation
Feature 7	buried town-era concrete debris and trash

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Feature 8	sentry post foundation
Locus A	historical artifact scatter
Locus B	recent trash dump
Locus C	recent trash dump
MANZ 1993 A-33	**Relocation Center Cemetery**
Feature 1	rock alignment (removed 2001)
Feature 2	rock alignment (tree stump)
Feature 3	rock alignment (grave)
Feature 4	rock alignment (grave)
Feature 5	rock alignment (grave)
Feature 6	rock alignment (grave)
Feature 7	rock alignment (grave)
Feature 8	rock alignment (grave)
Feature 9	rock alignment (grave)
Feature 10	rock alignment (removed 2001)
Feature 11	rock alignment (tree stump)
Feature 12	rock alignment (tree stump)
Feature 13	rock alignment (Harry Ueno memorial)
Feature 14	rock alignment (tree stump)
Feature 15	small rock circle
Feature 16	small rock circle
Feature 17	small rock circle
Feature 18	rock alignment
Feature 19	rock alignment
Feature 20	rock alignment (pet grave)
Feature 21	rock alignment (pet grave)
Feature 22	rock alignment (pet grave)
MANZ 1993 A-34	**Bairs Creek Irrigation System, Bairs Creek Lower Dam**
Feature 1	dam
Feature 2	settling pond
Feature 3	concrete diversion box
Feature 4	concrete diversion box with inscriptions
Feature 5	concrete diversion box

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Locus A	historical artifact concentration
MANZ 1993 A-35	**Relocation Center Factory Area Trash Deposits**
Locus A	historical artifact concentration
Locus B	historical artifact concentration
MANZ 1993 A-36	**Administration Area Trash Scatter**
Locus A	artifact scatter
Locus B	mound
MANZ 1993 A-37	**Relocation Center Hospital Landfill**
Locus A	hospital landfill
Locus B	stoves
Locus C	post-relocation center dump
Locus D	artifact scatter
MANZ 1993 B-1	**Native American Indian Site with Historical Component**
Locus A	midden deposit and artifact scatter, burial
Locus B	artifact scatter
Locus C	artifact scatter
Locus D	prehistoric artifact scatter
MANZ 1993 B-2	**Native American Indian Site with Historical Component**
Locus B	broken concrete slabs and prehistoric artifact scatter, burial
MANZ 1993 B-3	**Native American Indian Site**
Feature 1	bedrock mortar/threshing rock
Feature 2	milling slick
Locus A	prehistoric artifact concentration
Locus C	prehistoric artifact concentration
Locus D	prehistoric artifact concentration
MANZ 1993 B-4	**Native American Indian Site with Historical Component (artifact scatters)**
MANZ 1993 B-6	**Native American Indian Site**

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Locus A	artifact concentration, burials
Locus B	artifact concentration
Locus C	artifact concentration
Locus D	artifact scatter
MANZ 1993 B-7	**Manzanar Town-era Dump**
Feature 1	artifact concentration
Feature 2	artifact concentration
Feature 3	artifact concentration
Feature 4	artifact concentration
Feature 5	artifact concentration
Feature 6	artifact concentration
Feature 7	artifact concentration
MANZ 1993 B-8	**Relocation Center Dump**
Feature 1	trash pit (capped 1998)
Feature 2	two buried trash-filled trenches
Feature 3	buried trash-filled trench
Feature 4	mound and artifact concentration
Feature 5	mound and artifact scatter
Feature 6	asphalt and artifact scatter
Feature 7	mound and artifact concentration
Feature 8	artifact concentration
Feature 9	mound with town-era artifacts
Feature 10	artifact concentration
Feature 11	broken concrete slabs and artifacts
Feature 12	mound and artifact scatter
Feature 13	mound and artifact scatter
Feature 14	mound and artifact scatter
Feature 15	artifact scatter
Feature 16	artifact concentration
Feature 17	artifact concentration
Feature 18	artifact concentration
Feature 19	artifact scatter
Feature 20	debris piles

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Feature 21	artifact concentration
Feature 22	debris
Feature 23	eroding buried artifact concentration
Feature 24	mound and artifact concentration
Feature 25	depression and artifact concentration
Feature 26	eroding buried artifact concentration
Feature 27	depression
Feature 28	collector's hole (refilled 1998)
Feature 29	eroding buried artifact concentration
Feature 30	depression and mound
Feature 31	depression and artifact scatter
Feature 32	mound
Feature 33	artifact scatter (removed 1998)
Feature 34	artifact concentration
Feature 35	artifact scatter (removed 1998)
Feature 36	artifact scatter (removed 1998)
Feature 37	artifact scatter (removed 1998)
MANZ 1993 B-9	**Relocation Center Disposal Pits**
Feature 1	depression with ceramics (buried 1998)
Feature 2	buried vehicles
Feature 3	artifact scatter
Feature 4	trench filled with concrete debris
Feature 5	artifact scatter
Feature 6	artifact scatter and buried vehicles
Feature 7	artifact scatter and buried vehicles
Feature 8	artifact scatter
MANZ 1993 B-10	**Native American Indian and Manzanar Town-era Site**
Locus A	historical artifact scatter
Locus B	historical artifact scatter
Locus C	prehistoric artifact scatter
MANZ 1993 B-11	**Relocation Center Water Delivery System**
Feature 2	concrete and rock-lined irrigation ditch

Table D.2. Designated Archeological Features and Loci at Manzanar National Historic Site.	
NPS Site Number	Description
Feature 3	ditch
Feature 4	town-era concrete pipeline
Feature 6	chlorination tank slab
MANZ 1993 B-15	**Irrigation System, Bairs Creek Pipeline, Georges Creek Upper Dam**
Feature 2	pipeline and inscriptions
Feature 3	concrete ditches and weirs with inscriptions
Feature 4	three concrete weir boxes
Locus A	artifact concentration
Locus B	artifact concentration
Locus C	artifact concentration
MANZ 1993 B-16	**Paget Farm**
Feature 1	alignment of dead trees
Feature 2	concrete cellar
Feature 3	dead trees (orchard)
Feature 4	artifact concentration
MANZ 1993 B-26	**Shepherd Creek Ditch**
MANZ 1993 B-30	**Georges Creek Ditch**
Feature 1	ditch
Feature 2	concrete and rock headwall with inscriptions
MANZ 1993 B-31	**Bairs Creek Pipeline (Manzanar town-era)**
Feature 1	concrete pipeline
Feature 2	concrete weir box
Feature 3	concrete weir box
MANZ 1994 A-4	**Historical Artifact Scatter**
MANZ 1995 A-3	**Native American Indian Site (artifact scatter)**
MANZ 2001 E-1	**Homesite (artifact concentrations)**

Appendix E

Trip Report, October 9, 2003: Fire Management Recommendations, Manzanar National Historic Site, Nelson Siefkin, Archeologist, Fire Management, PWR, June 18, 2003.

Review of Cultural Resources and Fire Management Issues at Manzanar National Historic Site, California

October 2003

Nelson Siefkin, Archeologist, Division of Fire Management, Pacific West Region, National Park Service

The following document is the revised version of a trip report (dated September 10, 2003) prepared following a visit by the author to Manzanar National Historic Site (MANZ), with unit staff and the Pacific West Region Cultural Landscape Report (CLR) Team, on June 23, 2003. It is intended to serve as an attachment for the MANZ CLR, providing an overview of Fire Management issues at MANZ and very general recommendations for mitigating potential impacts to cultural resources. Since the trip report from which this document derived was not prepared specifically to address all topics identified in the CLR, issues and recommendations are not treated exhaustively. More specific management recommendations will be found in the MANZ Fire Management Plan (FMP), which will be completed by fall of 2004.

Fire at MANZ

It is immediately apparent from the native vegetation that MANZ is a highly flammable landscape where fire has played a long-term role. Compared with the rest of the Great Basin, the Owens Valley was relatively densely populated, and the Owens Valley Paiute probably applied fire with some frequency to improve plant yields and browse for ungulates. Early ranchers likely burned to promote grasses at the expense of sagebrush and other shrubs. Perhaps recognizing the proclivity of fire in the area, the Manzanar Interment Camp was designed with internal fuel breaks partitioning the camp into discrete blocks.

Historical fire data are lacking for MANZ, although the area surrounding the unit have burned with some frequency in historic times (regional fire history data should be readily available from the California Department of Forestry and Fire Protection [CDF]). It is presumed that sources of natural ignition (i.e., lightening) are not common at MANZ. The absence of formalized pullouts and parking spaces in many portions of the unit creates potential fire hazards when vehicles park off-road (e.g., catalytic converter fires). External sources of fire are abundant at MANZ, especially U.S. Highway 395. Several off-road vehicles were observed traversing dirt roads to the south and east of the unit, and these comprise another potential ignition source. The lands surrounding MANZ are similarly flammable, and fuel breaks separating NPS lands from those of other agencies are restricted to a few dirt roads. Finally, stiff winds that perpetually blow in the Owens Valley provide an effective driving force for fire.

As is the case with most desert areas of western North America, exotic grasses and forbs have infiltrated the flora at MANZ. Locally dense patches of cheatgrass and mustard were noted. An

interesting aspect of the site is the presence of culturally significant vegetation such as locust, cypress and various orchard trees. Many of these are related to the Japanese occupation period, and thus are desirable to retain and manage. However, years of neglect and a dropping water table have taken a toll on these trees, resulting in heavy mortality. As such, patches of dense fuel accumulations occur in various portions of the unit.

Most fire managers would classify vegetation at MANZ into three fuel models (following Anderson 1982). Fuel models 1 and 2 are the most recognizable. Fuel model 1 is a grass model that encompasses areas dominated by annual grasses, such as the eastern third of the park, in particular. Fire behavior in Fuel model 1 is characterized low intensity, fast moving fires.

Fuel model 2 is a shrub model that includes areas dominated by sagebrush. The best examples of Fuel model 2 appear to be found in the southern portion of the park. With the exception of a patch near the Chicken Ranch and Bairs Creek, the vast majority of the sagebrush at MANZ appeared to be quite young in age and widely spaced. Presumably, this relates to the intensity of past land-use. Fire intensity and rate of spread in sagebrush range from slow, fairly cool fires to rapidly spreading, high intensity burns.

Adequately classifying the timbered areas of MANZ is a more difficult task. PWR Lead Fire Ecologist Robin Wills suggested a combination of Fuel models 4 and 8 might yield a good preliminary description. Fuel model 4 is a shrub group that might account for the smaller live and dead native, ornamental and orchard trees that are found in the north-south trending band of timber located in the western half of the park. Fire intensity can be quite high in Fuel model 4 when significant amounts of dead woody fuel are present. Fuel model 8 is a timber group that encompasses stands of larger cottonwood trees. Fire intensity in this model is generally low to moderate and rate of spread is low. Higher intensity fires can occur in heavy concentrations of jackpot fuels, several of which we observed in the northwestern portion of the park (e.g., Blocks 29 and 34). One of the difficulties of assessing fire behavior in timbered portions of MANZ is uncertainty of fire behavior in trees such as locust, apple, pear, etc.

MANZ has no Fire Management staff. The Independence Volunteer Fire Department and a CDF crew dispatched out of Independence provide initial attack for the park, and response time is quite slow. Lack of accessible water is seen as a major impediment to fire suppression.

Fire and Cultural Resources at MANZ

Prior to embarking on a discussion of fire and cultural resources at MANZ, it is necessary to briefly review general information on fire effects.

Summary of Impacts

It is useful to divide impacts of fire management actions on cultural resources into three types: *direct*, *operational* and *indirect* effects. Direct effects occur when heat from fire impacts a cultural resource, operational effects when Fire Management operations such as line construction and staging impacts a cultural resource, and indirect effects when direct and/or operational impacts alter a cultural resource or the context in which it is found to the point where that resource is further impacted.

Direct effects are related to fire intensity; generally speaking, the hotter a fire, the greater the probability of impacts. All cultural resources are not equally susceptible to direct fire effects, however. For example, window glass typically melts at about 540°C, cast iron at 1,350 to 1,400°C, while dimensional lumber ignites at 350°C. Variations exist even within a single artifact class. For example, the hydration rind on a piece of obsidian debitage will be compromised at a temperature of about 150°C, whereas temperatures in excess of 700°C are needed to alter the physical integrity of the specimen. Duration of heat exposure is also an important factor, which is related to rate of fire spread. In some cases, damage will occur only if both a critical fire temperature is reached *and* the length of exposure is sufficient. For example, a hot fire that moves very quickly may not damage a particular artifact or feature, but a cooler, but slower moving, fire can impact the same object.

It is important to note that it is those resources located on or above the ground surface that are the most susceptible to direct effects. Soil has excellent insulating properties, and it is only with extreme fuel loads such as downed logs that high temperatures extend more than a few centimeters below the ground surface. Experiments in Fuel models 1 and 2 reveal that very little heat penetrates into the ground.

Fire behavior is a very complex phenomenon influenced by weather, fuel moisture, slope and a myriad of other variables. While common sense tells us that a surface obsidian scatter will be more heavily impacted by a hot, fast moving crown fire, very little heat actually reaches the ground surface during such events. By contrast, ground and running surface fires, which may occur during more benign weather conditions, will probably be more threatening to the same resource.

Operational effects could occur during prescribed burns, mechanical thinning projects and wildfires. Examples of operational activities that can impact cultural resources include fireline construction, staging equipment and people, fire retardants, mop-up and rehabilitation, and looting. It is during wildfires that these impacts are often most pronounced. Ground disturbance is the most obvious form of operational effect, and it is archeological sites that are usually the most threatened by such actions.

Finally, indirect effects of concern include erosion and sedimentation, tree mortality, increased burrowing rodent populations, looting and carbon contamination.

Direct Fire Effects at MANZ

Prehistoric Resources

Surface and subsurface archeological investigations at MANZ have revealed a variety of extant cultural materials of prehistoric and historical vintage. Prehistoric materials are dominated by flaked stone tools and debitage (obsidian, in particular), groundstone (variety of raw materials), ceramics, bone (human and faunal), and shell.

Obsidian hydration rinds are quite vulnerable to direct fire effects (the rind diffuses or disappears altogether), which is considered problematic in that readings are used to establish site chronology, assess site integrity, etc. Hydration rinds are damaged at low temperatures (>150°C) and would certainly be impacted by fires in the fuels at MANZ. Some people

downplay the effects of fire on hydration rinds (and other prehistoric materials), citing the fact that since fire was more common in the pre-settlement period (due to native burning, absence of suppression, etc.), artifacts and ecofacts *must* have been previously exposed to one or more fires.

As noted above, those artifacts located on the ground surface are most susceptible to damage from fire. Due to a variety of factors, including rodent burrowing and erosion and sedimentation, cultural materials are constantly being exposed and reburied. Therefore, an artifact located on the surface today may not have been there a week ago, a year ago, or one thousand years ago. As such, it is probably naïve to assume that most of the artifacts exposed on the surface of a given site surface were exposed to past fires. That archeologists rely heavily on surface collected obsidian artifacts in the Owens Valley, and most have readable rinds, is perhaps a testament to the fact that turbation plays a big role in structuring the archeological record in area. It is interesting to note that relatively few diffuse hydration rinds are reported from the Owens Valley. This might indicate that obsidian hydration rinds impacted by fire re-hydrate. This indeed seems to be the case, and some have suggested that the rind will return to its original state at some point after the fire event. Unfortunately, we do not yet know whether this is true, or if re-hydration does occur, whether the rate is the same as that under "natural" conditions.

It is also important to emphasize that fire is but one impact that can damage hydration rinds. Mechanical weathering caused by sheetwash on abrasive soils and sandblasting can also be detrimental. In many cases, apparent single component archeological sites have hydration readings that span wide time periods. While this may suggest a multi-component site, artifact scavenging or other phenomenon, it could also reflect hydration rinds variously impacted by heat and weathering. As such, fire is another factor that can act to muddle an already compromised archeological record.

Skeptics often assert that if a site contains a subsurface component, only a very small percentage of the total material is realistically subject to direct fire effects during a fire event. This could be true, although as indicated above, the material on the ground surface during one fire event may be below it during the next fire event. Theoretically, given enough fire events, a large percentage of the obsidian in a given site could be affected. While re-hydration may ultimately prove to be viable phenomenon that will allow fire-effected obsidian rinds to be accurately reconstructed, not knowing the timeframe for recovery may present interpretive problems. The typical obsidian analysis (hydration rind and chemical sourcing) costs between $20 and $30. If one were to submit 20 surface and/or shallowly buried obsidian samples 10 years after a fire event, would a significant percentage of those exhibit compromised hydration rinds? If so, it could be an expensive proposition without useful return.

It is appropriate to compare burning over an obsidian scatter to digging a posthole in the same site. It does not do much damage, but one would never consider allowing it to happen without first checking the area, doing a test excavation and/or monitoring construction. Until proven otherwise, the direct impacts of burning on obsidian rinds should be taken seriously.

All of that said, the Owens Valley is one of the most intensively studied areas of the Great Basin. There have been hundreds of archeological studies that have amassed thousands of obsidian hydration readings, and many more will be collected in the future. As such, MANZ is a small fish in a very large pond, and the prehistoric chronology is not critical for reconstructing lifeways throughout the rest of the Owens Valley. This does not imply that the prehistoric archeology at

MANZ is not important or worthy of study and preservation. Rather, it can be suggested, given previous investigations by WACC, that a good understanding of chronology from MANZ prehistoric sites has been gained, and that extraordinary protection measures are not warranted, especially if monetary or human resources are limited. More information is provided in the *Recommendations* section below.

Compared to obsidian flaked stone tools and debitage, other prehistoric cultural resources at MANZ are relatively rare. Other flaked stone raw materials include cryptocrystalline silicates (e.g., chert, jasper) and various fine to course-grained igneous rocks (e.g., basalt). Experiments have demonstrated that cryptocrystalline silicates vary greatly in their susceptibility to direct fire effects. In a recent study on the nearby Toiyabe National Forest, all 90 chert artifacts exposed to temperatures as low as 100°C were severely damaged. It would be interesting to see if cryptocrystalline silicates commonly found on archeological sites in the Owens Valley are similarly impacted. Generally speaking, fine to course-grained igneous rocks are quite durable when exposed to heat.

Groundstone artifacts, such as handstones and millingstones, and Native American ceramics are also found with some frequency on the surface of prehistoric archeological sites at MANZ. Being made of hard igneous rocks, groundstone artifacts are presumably quite resistant to low and moderate intensity fire. The study of protein, blood and other residues on groundstone (and flaked stone and ceramic) artifacts has become a popular topic of study in recent years. The impact of heat on these residues is poorly understood, although some studies suggest that damage will only occur at moderate to high temperatures.

Impacts to Native American ceramics have gained a lot of attention due to large wildfires in the American Southwest. The ceramics found at MANZ are a non-descript, utilitarian ware regionally known as Owens Valley Brownware. It does not seem likely that impacts to artifact appearance (sooting, oxidation, spalling) would be a major concern with prehistoric ceramics at MANZ, and most of those effects tend to manifest at temperatures in excess of 600°C. Thermoluminesence (TL) dating has been applied to ceramics from the Owens Valley. Studies suggest that TL dating on ceramics is compromised above 400°C. Most TL dating specialists will not utilize ceramics collected from surface or shallowly buried contexts, although the post-depositional phenomena affecting artifact distribution are worth remembering. It seems unlikely that TL dating will see wide application in the Owens Valley anytime soon, especially since ceramic chronology is fairly well understood, and ceramics are often found in association with obsidian and other datable materials.

Finally, other prehistoric cultural materials that are commonly found at MANZ such as bone and shell tend to be restricted to subsurface contexts, or at least in the greatest quantities. Bone that is exposed on the ground surface will tend to degrade quite rapidly.

Historical Resources

A variety of historical cultural resources are found at MANZ. Materials represented include rock, cement/concrete, glass, earth, metal, historical ceramics, wood, vegetation, leather, shell, bone, and rubber.

Generally speaking, the large percentage of historical resources have low susceptibility to direct fire impacts. Although many buildings were once present in the park footprint, very few exist now, and rather than collapsing in place, most were demolished and removed. With the exception of vegetation, very few wooden features or artifacts remain. Direct fire effects on historical vegetation probably varies depending on several factors. First, some species are more likely to suffer mortality from fire. Second, fuel loads affect susceptibility; a tree surrounded by heavy concentrations of ladder fuels is more likely to catch fire than one located in scattered grasses. Third, the health and condition of the vegetation are important. Dead and stressed vegetation is more likely to catch fire than healthy vegetation. The former conditions can result from advanced age and/or environmental degradation (e.g., drought, low water table).

Many extant features at MANZ are constructed of rock and/or cement/concrete, such as ornamental gardens, foundation pads and footings, and sewage and irrigation infrastructure. Many of these are buried beneath alluvium and colluvium, and some have been exposed through archeological excavation. Most of the rock incorporated in gardens appears to be durable igneous material that can withstand high temperatures. A recent experiment documented little damage to cement mortar exposed to moderate temperature (650°C), although spalling and cracking has occurred on cement and concrete exposed to high temperature wildfires. Most of the exposed rock and cement/concrete features that were observed at MANZ contained very little vegetation, and would probably not be threatened by direct effects. The feature shown below, however, is located in an area of thick fuels, and could be impacted by a high intensity fire.

Earthen features such as roads, cleared areas and ditches traverse the park. These are not threatened by direct fire effects per se, but can be impacted by erosion following fires. This is addressed in greater detail under indirect effects.

Metal, glass, ceramic, leather, shell, bone and rubber artifacts are scattered throughout MANZ. The heaviest concentrations of artifacts, such as the interment camp dumps, were generally buried. Sheet scatters of glass, cans, ceramics, buttons and other artifacts are found in association with former homesteads and interment camp features. Glass, metal and ceramic artifacts tend to have high damage threshold temperatures, and must be exposed to heat for a fairly long duration. Seemingly, fuel loads across much of MANZ are not sufficient to cause extensive damage to these artifacts. In cases where heavy fuel is present, such as jackpot fuels lying on or adjacent to foundation pads, damage could potentially occur.

In general, one can be less concerned with direct fire effects on historical resources than prehistoric resources at MANZ. This is largely due to the relatively sparse nature of fuels at the park, as well as the relatively greater durability of extant materials.



Operational Fire Effects at MANZ

A combination of expected fire behavior (i.e., fast-moving fires) and suppression resources that serve MANZ (i.e., off-site, non-NPS resources with varied training and backgrounds) raises the issue of operational fire effects. It is often the case that the more volatile the fuels and disparate the backgrounds of those providing initial attack, the higher the likelihood that suppression effects will be given little

consideration. It is not that suppression personal do not care about such impacts, but rather fast moving fires often inspire an adrenaline-fueled rush for direct control.

Fireline construction is probably the greatest threat for operational effects to cultural resources at MANZ. Existing dirt roads are the most logical firelines at MANZ, although heavy equipment will often be mobilized to improve holding capability by blading roadside vegetation. Also, if fire behavior is not too severe, an attempt might be made to achieve direct control by constructing new line with a bulldozer. In either case, severe resource damage could occur. For example, bulldozers can displace a large quantity of sediment, along with any associated cultural remains. Foundation pads scattered throughout MANZ could be broken or crushed. Significant vegetation could also be destroyed by heavy equipment and chainsaws during fireline construction.

Operational looting and vandalism at MANZ are also threats given the widespread presence of cultural resources and the diversity of fire personnel likely to arrive during initial attack. Firefighters might engage in inappropriate behavior around significant features such as the MANZ cemetery and gardens.

Given the relatively light fuels, mop-up will probably not be a significant activity within MANZ. However, rehabilitation in conjunction with landform and feature stabilization could pose a significant threat.

Indirect Fire Effects at MANZ

A variety of indirect fire effects pose threats to the cultural resources at MANZ. Of these, erosion and increased runoff are considered the greatest threat. Non-fire related erosion has already taken a noticeable toll on the cultural resources at MANZ. Intense fires have been known to cause a condition called hydrophobicity, where the uppermost layer of soil becomes impervious to water percolation. The result is increased surface runoff and thus erosion. While hydrophobicity is probably not an issue at MANZ due to low fire intensity, the soils in the area are inherently unstable. The light fuels dominating the landscape at MANZ are likely to burn off during a wildfire, and the exposed ground will be even more prone to erosion. All types of cultural resources, prehistoric and historical, could be vulnerable to erosion.

In some cases, erosion will be confined largely to the ground surface (i.e., sheetwash), while in others the creation and expansion of existing rills and gullies can impact more deeply buried cultural deposits. It is important to note that erosion is a threat not only from fires that burn on MANZ proper, but also in upslope areas. Several drainages traverse the park, and these will be effective conduits for both water and sediment.

It can be expected that trees will be killed during fires at MANZ. Some of these will fall over during or soon after the event. If located on or near cultural resources, a falling tree can impact surface and subsurface materials. Cultural materials can also be carried up in the root wad. In addition to the effects above, fallen and standing timber provides a heavy fuel load for subsequent fire events.

The problems of looting have already been recognized at MANZ. Burned areas are often attractive to collectors due to improved ground visibility. Increased erosion following fires can expose more cultural resources, and become even more attractive.

Studies have demonstrated that burrowing rodent populations tend to expand following fires. While the effects of this might not be immediately obvious, burrowing rodents can have major impacts on the integrity of subsurface cultural remains. For example, given enough time, rodents can thoroughly homogenize distinct cultural strata, and more rodents mean more burrowing activity.

Finally, fires tend to produce a huge amount of charcoal. Carbonized remains are important to archeologists for radiocarbon dating, environmental reconstruction and other studies. If recent carbon becomes incorporated within cultural deposits, it can influence the effectiveness of scientific inquiries. For example, charcoal from a wildfire that finds its way into a prehistoric fire hearth could effect the proper dating of that feature (i.e., yield a date that is too young). Post-wildfire studies have suggested that it is quite easy to differentiate recent charcoal from actual archeological specimens due to color and textural variations. However, archeologists have recently become more interested in a technique called Accelerator Mass Spectrometry (AMS) dating as opposed to conventional radiocarbon dating. One advantage of the former is that extremely miniscule pieces of organic material can be submitted for dating, rather than several grams as needed in conventional dating. In many cases, suitable carbon for conventional dating requires that the archeologist collect material from large pieces of wood (e.g., limbs from trees). Large trees can remain on the forest floor for a considerable time, and firewood collected from dead trees can yield a radiocarbon date that exceeds that of the actual episode of occupation; archeologists have referred to this as the "Old Wood Problem." The advent of AMS dating allowed archeologists to select much smaller pieces of vegetation, such as shrubs, that would be far less likely to survive for long periods of time, and thus yield a more accurate radiocarbon determination. It is bits and pieces of shrubs and other small vegetation that are particularly abundant following fires, and these could, with the help of disturbance phenomenon such as increased rodent burrowing, make their way into cultural deposits.

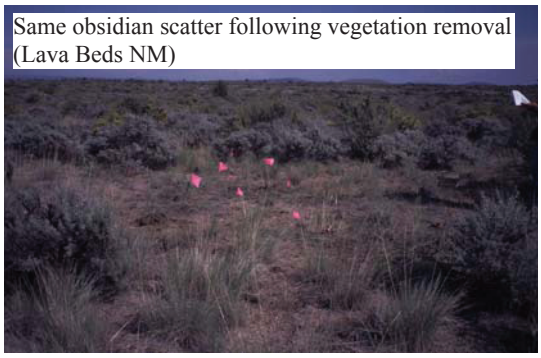
Recommendations

Mitigation recommendations to account for direct, operational and indirect effects on cultural resources at MANZ are provided below.

Mitigating Direct Effects

Mitigating direct fire effects at MANZ relates strongly to disrupting fuel continuity and, under certain circumstances, manually reducing fuel loads. The former is accomplished by creating breaks in the fuel comprising the primary fire carrier. In the case of Fuel Models 1 and 2, this will usually be grasses. The commitment to restore the historic "firebreaks" and road system (CLR Team 2003: 4-5, 12) will lend itself to creating just such discontinuities. While the MANZ landscape remains very flammable, a highly partitioned landscape such as this will resist the spread of large fires through the park, whether igniting within or originating from outside the boundary. The mowing of firebreaks each spring/early summer is recommended to reduce the likelihood of fire spread, and the same should be considered for road margins and parking areas.


Obsidian scatter prior to vegetation removal (Lava Beds NM)


Same obsidian scatter following vegetation removal (Lava Beds NM)

Manual fuel removal is a sound method of reducing on-site fuel loads at MANZ. This approach is consistent with the management directive to clear native/non-native and historic/non-historic vegetation from various areas of the park (CLR Team 2003: 10-13). Hand tools (pruning sheers, bow saws, string trimmers, chainsaws, etc.) can be successfully employed on the vegetation at MANZ. The philosophy behind manually removing fuels is grounded in both fuel load reduction and breaking fuel continuity. In other words, emphasis is placed on both eliminating the fuels that will cause detrimental fire temperatures and breaking continuity in heavier fuels such that fire will have difficulty spreading.

Manual fuel removal can be used directly on cultural resources as well as near critical holding areas such as margins of roads and firebreaks. Based on the discussion above, archeological sites containing surface obsidian artifacts and historic vegetation are the most vulnerable to direct fire effects. Obviously, removing every piece of flammable vegetation on a cultural resource will render it pretty safe from direct fire effects. However, other considerations must come into play. For example, MANZ is a cultural landscape and indiscriminant vegetation removal could be an adverse impact. Furthermore, total vegetation removal can create a conspicuous "hole" that could prove attractive to looters (see figure below). Generally, one strives to achieve a balance between a "safe" amount of fuel removal and maintaining a relatively "natural" appearance (see figures below). With regard to archeological sites containing surface obsidian, shrubs and trees are the fuels most likely to result in detrimental fire temperatures. As such, try to remove those materials on or in close proximity to surface artifacts, with particular emphasis on areas with a lot of artifacts (i.e., loci) and/or dense concentrations of fuels. An isolated sagebrush amongst a thin veneer of surface artifacts is probably not worth removing. This approach begs the question of how well the distribution of surface materials at one given time reflects the site as a whole (given post-depositional disturbances, etc.). In the absence of archeological excavations or other investigations, it is probably wisest to manage for those resources that one can see, and worry about other developments as they arise.


Example of obsidian scatter with excessive vegetation removal (Lava Beds NM)

It was suggested above that protection measures on sites with surface obsidian artifacts may not be warranted at this time. This is based on a combination of previous research and sparseness of

vegetation on the sites observed. Given that not every prehistoric site, however, it might be worth performing a fuels assessment at each to determine the nature and extent of fuel loads. This would include documenting the density and condition of shrub and tree cover, presence of snags, etc., followed by fuel removal if warranted. Even if fuels are not removed, mapping the location of heavier fuel concentrations will allow the resource manager to account for variable fire behavior when sites burn over.

Protecting historic trees from direct fire effects can be accomplished through a combination of improving tree health and manual fuel reduction. The proposal to initiate irrigation and prune vegetation will greatly benefit tree health (CLR Team 2003: 11). The eradication of ladder fuels from the understory (shrubs, small trees, lowest limbs) of historic trees will reduce the likelihood of ground fires extending into crowns and causing mortality. Very high tree density occurs in certain areas (e.g., gardens and parks) that could produce extreme fire behavior (e.g., continuous crowns). Assuming this density conforms to the historic, and thus desired, scene, measures should be entertained to prevent fire spread and reduce fire intensity in these areas. First, stand and/or crown density could be reduced. If this will yield undesirable results, emphasis should be placed on fireproofing the margins of these areas including the removal of ladder fuels and perhaps the creation of subtle firebreaks that are devoid of vegetation.

Manual fuel reduction should also be considered in proximity to historical archeological resources. The MANZ General Management Plan (GMP) advocates the removal of fuels from features such as building footprints. This protection should be extended to trash concentrations, with particular emphasis on heavier fuels (e.g., logs, snags). Irrigation features and scattered trash were observed along Bairs Creek, which has been designated as a natural area (CLR Team 2003: 13). As stands of decadent sagebrush occur in this area, selective manual fuel reduction should be considered.

While internal ignitions threaten the cultural resources at MANZ, fires that start outside the park are also of concern. The realignment of Highway 395 will reduce threats from the east, but thick fuels to the north, south and west are problematic. MANZ staff should promote short and long-term hazard fuels reduction solutions, such as thinning along roads and larger scale prescribed fire and mechanical treatments. Along these lines, it will be useful to gain a better understanding of the historic role of fire in the area. For example, a fire history for the park should be constructed with data from adjacent agencies. Along with any spatial information, data on ignition date, cause, fire behavior, etc. should be obtained. If possible, it would be valuable to know those areas in or adjacent to the park where ignitions have traditionally occurred and locations where fire crossed into the park. Any patterns in these data should be an indication to improve fire protection in those areas, both along and within the park boundary.

Finally, no treatments should be implemented without first performing the necessary field investigations and compliance paperwork (thinning projects are undertakings as defined in Section 106 of the National Historic Preservation Act). Although currently limited, compliance funds can be requested through NFPORS.

Recommendation(s)
▪ As outlined in the MANZ GMP, manually remove non-historic vegetation from feature footprints (e.g., buildings, gardens, roads, firebreaks), with particular emphasis on heavier fuels. Also remove and thin trees and snags from the margins of historic roads and firebreaks. Discard cut vegetation away from cultural resources (haul off heavier fuels, scatter lighter fuels).
▪ Perform fuels assessment at each prehistoric archeological site. Document the distribution and nature of fuels on archeological site and feature maps. Initiate manual fuel reduction as necessary. Establish periodic monitoring program to assess fuel conditions over time.
▪ Initiate irrigation and pruning program for historic vegetation. Remove understory and surrounding vegetation as necessary.
▪ Promote and support hazard fuel reduction projects on Federal and non-Federal lands surrounding MANZ, including prescribed burning and mechanical thinning, to discourage the spread of fires into the park.
▪ Gather historical fire data for MANZ and the surrounding region.
▪ Complete appropriate compliance prior to implementing *any* fuels treatments.

Mitigating Operational Effects

Several actions can be taken to reduce the possibility operational effects on cultural resources at MANZ. First, implementing the fuel reduction strategies outlined in the section above will provide for less severe fire behavior and promote more controlled suppression actions. For example, mechanical fuel load reduction will promote less extreme fire behavior (e.g., lower rate of spread, smaller flame lengths), while the highly partitioned landscape (into roads and firebreaks) will hopefully prevent massive fire spread, as well as encouraging the use of roads and firebreaks by suppression equipment.

It is important for MANZ staff to familiarize those likely to provide initial attack with resources concerns and the nature of the landscape at MANZ. This is best accomplished by annually or semi-annually inviting the Independence Volunteer Fire Department and CDF crew to the park. During this visit, agreements are reviewed, maps depicting the road and firebreak network and general location of cultural resources distributed, MIST outlined, and laws against resource collecting reviewed. Ideally, such meetings will strengthen the relationship between the park and its cooperators, as well as provide on-the-ground familiarity with terrain and resources. Steps taken by the park to reduce fire severity and spread will also enhance firefighter safety, and will increase the likelihood that MIST will be followed during an incident.

The presence of a trained Resource Advisor/Agency Representative at the park will also be of great benefit. This individual can serve as the person of contact for external resources during incidents, organize pertinent resource data, coordinate rehabilitation efforts, etc. Regarding rehabilitation, Erv Gasser strongly recommends that parks develop specifications in advance so that the best and most appropriate treatments are implemented (see the BAER Manual and Technical Reference [http://fire.r9.fws.gov/ifcc/esr/handbook/] for details). These should be included as an appendix in the FMP.

Recommendation(s)
▪ Meet with crews from the CDF and Independence Volunteer Fire Department on an annual or semi-annual basis to review agreements, the MANZ fire landscape, resources of concern, and MIST.
▪ Train a Resource Advisor/Agency Representative for the park. Provide this individual with the time and resources to assemble spatial data, develop relationships with cooperators, etc.

Mitigating Indirect Effects

Erosion, tree mortality, looting, rodent burrowing and carbon contamination are seen as the most pervasive indirect effects threatening cultural resources at MANZ. Erosion has already been recognized as a problem at the park, and the MANZ GMP identified creation of a water resource management plan with Los Angeles Department of Water and Power (LADWP) as a priority. Ideally, this document should also address erosion issues associated with vegetation loss following wildfires, and provide appropriate treatment measures.

Tree mortality is an important phenomenon to track following wildfires, and it is recommended that post-burn surveys be conducted on resources found within burned areas. This would be facilitated by incorporating information gathered in a fuels assessment (discussed under *Mitigating Direct Effects* above) or using extant archeological site and feature maps. Standing dead trees can be removed before they fall and logs before they burn during the next wildfire.

An increased law enforcement presence may be required to deter looting following fires at MANZ. This should include not only NPS staff, but also employees of other Federal and non-Federal agencies. The Resource Advisor/Agency Representative can be invaluable for keeping other agencies appraised of such issues. California has a very active Archeological Site Stewardship Program (http://www.cassp.org/), and it seems likely that a program could be developed for MANZ. Remote surveillance equipment has been successfully used to monitor sensitive cultural resources at other parks.

Obviously, accounting for rodent burrowing carbon contamination can be difficult (it would take a lot of rodent traps to solve the problem). Removing shrubs and trees within site boundaries can be effective at preventing fire from burning on sites, but high winds in the Owens Valley probably moves carbon long distances. Post-burn site assessments, combined with burn area maps (described below), can be useful for assessing sources of carbon and contamination potential. If contamination is a major concern on know or suspected features, excavation can be employed soon after the incident, a strategy that has been successfully used in the American Southwest.

The ability to anticipate and account for indirect fire effects, ranging from erosion to carbon contamination, is greatly improved through the production of burned area maps. Given the flat terrain and relatively sparse vegetation, it would be simple for one individual with a GPS unit to map a fire perimeter. In addition to the area burned, fire severity/intensity maps can also be very useful for the resource manager. While remote sensing technology is being employed on larger fires, objective methods have been created to document fire severity/intensity based on such attributes as consumption, ash color, etc. (e.g., Ryan and Noste 1985). Even these simple observations can provide valuable information on effects that are not easily recognizable or do not manifest immediately.

Recommendation(s)
▪ Ensure that the water resource management plan prepared in conjunction with LADWP addresses erosion issues associated with vegetation loss following wildfires.
▪ Perform post-burn assessments on all cultural resources to identify potential threats from tree mortality, looting, rodent burrowing and carbon contamination. Resource Advisor/Agency Representative coordinate with MANZ and other agencies to ensure increased vigilance for looting.
▪ Map and gather fire severity/intensity data for all wildfires that occur in MANZ.

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Appendix F
List of Classified Structures, Manzanar National Historic Site

Description: Park = MANZ

	LCS ID	Preferred Structure Name	Structure State	Structure County	Significance Level	Park
1.	058658	Bairs Creek Picnic Area Oven/Griddle	California	Inyo	Contributing	Manzanar National Historical Park
2.	058666	Auditorium	California	Inyo	National	Manzanar National Historical Park
3.	058667	Police Post	California	Inyo	National	Manzanar National Historical Park
4.	058668	Military Sentry Post	California	Inyo	National	Manzanar National Historical Park
5.	058669	Main Entrance Gateway	California	Inyo	Contributing	Manzanar National Historical Park
6.	058670	Main Entrance Sign Posts	California	Inyo	Contributing	Manzanar National Historical Park
7.	058671	National Historic Landmark Plaque Monument	California	Inyo	Not Significant	Manzanar National Historical Park
8.	058672	Block 1 Storm Drain	California	Inyo	Contributing	Manzanar National Historical Park
9.	058673	Administration Building Landscape Features	California	Inyo	Contributing	Manzanar National Historical Park
10.	058674	Stone Traffic Circle	California	Inyo	Contributing	Manzanar National Historical Park
11.	058675	Admin Block Building C Stone Masonry Pedestal	California	Inyo	Contributing	Manzanar National Historical Park
12.	058676	Admin Block Building C Entrance Features	California	Inyo	Contributing	Manzanar National Historical Park
13.	058677	Admin Block Building D Patio Wall	California	Inyo	Contributing	Manzanar National Historical Park
14.	058678	Admin Block Director's Residence Patio Walls	California	Inyo	Contributing	Manzanar National Historical Park
15.	058679	Stone-Lined Sidewalks	California	Inyo	Contributing	Manzanar National Historical Park
16.	058680	Block 9 Garden Structures	California	Inyo	Contributing	Manzanar National Historical Park
17.	058681	Block 22 Garden Structures	California	Inyo	Contributing	Manzanar National Historical Park
18.	058682	Block 34 Garden Structures	California	Inyo	Contributing	Manzanar National Historical Park
19.	058683	Merritt Park Structures	California	Inyo	National	Manzanar National Historical Park

	LCS ID	Preferred Structure Name	Structure State	Structure County	Significance Level	Park
20.	058684	North Park Oven/Griddle with Chimney	California	Inyo	Contributing	Manzanar National Historical Park
21.	058685	North Park Road	California	Inyo	Contributing	Manzanar National Historical Park
22.	058686	Hospital Garden Structures	California	Inyo	Contributing	Manzanar National Historical Park
23.	058687	Hospital Area Features	California	Inyo	Contributing	Manzanar National Historical Park
24.	058688	Cemetery Monument and Plots	California	Inyo	National	Manzanar National Historical Park
25.	058689	Chicken Farm Incinerator	California	Inyo	Contributing	Manzanar National Historical Park
26.	058690	Chicken Coop Foundations	California	Inyo	Contributing	Manzanar National Historical Park
27.	058692	Main Entry Parking Area	California	Inyo	Contributing	Manzanar National Historical Park
28.	059696	Hospital Laundry Steps & Retaining Wall	California	Inyo	Contributing	Manzanar National Historical Park
29.	059697	Block 12 Garden Structures	California	Inyo	Contributing	Manzanar National Historical Park
30.	059698	Block 35 Garden Structures	California	Inyo	Contributing	Manzanar National Historical Park
31.	211463	Security Fence	California	Inyo	Contributing	Manzanar National Historical Park
32.	232259	Cemetery Fence	California	Inyo	Not Significant	Manzanar National Historical Park
33.	234197	Admin Block Water Heater Slabs	California	Inyo	Contributing	Manzanar National Historical Park
34.	234938	Administration Block Bldg A Entry Walk and Steps	California	Inyo	Contributing	Manzanar National Historical Park
35.	234955	Town Hall Entry Sidewalk	California	Inyo	Contributing	Manzanar National Historical Park
36.	234960	Admin Block Stone Wall at Post Office	California	Inyo	Contributing	Manzanar National Historical Park
37.	234963	Block 20, Barracks 10 Wood Arbor	California	Inyo	Contributing	Manzanar National Historical Park
38.	234968	Judo House Remains	California	Inyo	Contributing	Manzanar National Historical Park
39.	235867	Administration Block Building Q Entry Steps	California	Inyo	Contributing	Manzanar National Historical Park

	LCS ID	Preferred Structure Name	Structure State	Structure County	Significance Level	Park
40.	253054	Block 14, Barracks 5 Stone Path	California	Inyo	Contributing	Manzanar National Historical Park
41.	253078	California State Landmark Plaque Monument	California	Inyo	Not Significant	Manzanar National Historical Park
42.	253158	Administration Block Building K Entry Steps	California	Inyo	Contributing	Manzanar National Historical Park
43.	253189	Administration Block Mess Hall Foundation	California	Inyo	Contributing	Manzanar National Historical Park
44.	253304	Administration Block Building C Concrete Slabs	California	Inyo	Contributing	Manzanar National Historical Park
45.	253347	Administration Block Building K Slab	California	Inyo	Contributing	Manzanar National Historical Park
46.	253361	Block 2 Small Pool	California	Inyo	Contributing	Manzanar National Historical Park
47.	253381	North Park Oven/Griddle	California	Inyo	Contributing	Manzanar National Historical Park
48.	253415	Staff Laundry Room Foundation	California	Inyo	Contributing	Manzanar National Historical Park
49.	253439	Service Station / Motor Pool features	California	Inyo	Contributing	Manzanar National Historical Park
50.	254416	Chicken Ranch & Processing Plant and Office	California	Inyo	Contributing	Manzanar National Historical Park