

# Indian Garden • Grand Canyon National Park

Grand Canyon, Arizona



## Cultural Landscape Report

Contract No. 1443-C2000020300  
June 2005

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# Indian Garden • Grand Canyon National Park

## Cultural Landscape Report

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## Chapter I • Introduction





# Chapter I • Introduction

## Management Summary

The following constitutes a Cultural Landscape Report (CLR) that has been prepared by John Milner Associates, Inc. (JMA) for the Grand Canyon National Park's Indian Garden, a rest stop and campground along the Bright Angel Trail and approximately 3,200 feet below the South Rim. The site has been continually used as a stopping point for hikers, campers, and mule riders for over 100 years, although the fertile landscape of water-bearing creeks, springs, and seeps was used by American Indians and miners for many years prior to the beginning of tourism. Although prior studies and reports have evaluated Indian Garden as part of the Bright Angel Trail, this CLR focuses specifically on the Indian Garden landscape, whose study boundary is described later in this chapter.

Included in this CLR are descriptions of the physical development of the Indian Garden landscape—from the time of American Indian involvement to contemporary changes to the site—and of the existing conditions of the project area as observed in 2002. Also provided is a preliminary statement of significance; a comparative analysis of existing and historic conditions; an evaluation of the landscape's integrity; and treatment recommendations and guidelines that propose management strategies for the project area's cultural, historic, and natural resources.

The need for this CLR arose from the identification of management issues and proposed projects that could affect the existing landscape and its associated cultural and natural resources. The Grand Canyon National Park's (GRCA) 1995 General Management Plan (GMP) addressed the need for interpretative programs, enhanced visitor services, and building rehabilitation projects in Indian Garden. The information contained within this report is intended to be used by the National Park Service (NPS) in the development of appropriate proposed actions for Indian Garden, during NEPA/NHPA compliance processes, and to aid with the determination of the effects of alterations to the cultural landscape.

This CLR was developed by JMA and its consultants, Rivanna Archaeology and History Matters, LLC, and in conjunction with SWCA, Inc., under the guidance of NPS park and regional personnel. Numerous individuals from the NPS and GRCA were involved in the development of this report by supplying critical information, documents requested by JMA, and detailed reviews of draft versions of this report. These persons include Denver Service Center AE Manager/Contracting Officer's Representative Karen Vaage, LA/RLA; Fee Demo Program Manager Victoria Stinson; Inter-Mountain Region Historical Landscape Architect Jill Cowley; GRCA Chief of Cultural Resources Jan Balsom; Cultural Resource Specialists Susan Weaver, Norah Martinez, and Michael Anderson; Denver Service Center Project Manager Paul Cloyd, PE/RA; GRCA Project Manager Michael Leary, RLA; and GRCA Museum Technician Colleen Hyde.

## Historical Overview

Because of its reliable supply of water from Garden Creek, Indian Garden has attracted people for hundreds of years. American Indians, such as the Havasupai, Ancestral Puebloan, and Cohonina people, occupied the area to take advantage of Garden Creek. Miners discovered the region in the late 1800s, beginning an era of consistent and permanent white occupation. In the late 1880s, Ralph Cameron and his colleagues filed mining claims in the Grand Canyon, including Indian Garden, and began to erect buildings and structures to protect these claims. Cameron and his group built the Bright Angel Trail by improving an American Indian route. Cameron operated the trail as a toll road after 1903 to allow tourists a more accessible means of reaching Indian Garden than was afforded by the earlier, aboriginal trail.

Between 1901 and 1903, Cameron began a tourist camp at Indian Garden consisting of tent cabins, meal service, and a telephone line to the rim. He also planted cottonwood trees and dammed Garden Creek to irrigate a garden and orchard. Over the next decade, Cameron performed little maintenance at the camp and reports written in 1916 referred to Indian Garden as filthy and disgraceful. The Fred Harvey Company prepared plans to create a more substantial camp with permanent buildings, livestock, gardens, and other facilities to serve up to sixty guests per day. Mary Colter contributed architectural renderings of potential buildings for the project. These plans were never implemented, however, due to Ralph Cameron's influence in the region and resistance to the project.

After numerous and prominent legal battles, Ralph Cameron was relieved of his claims to Indian Garden and Bright Angel Trail by the Federal government. In 1927, the NPS took legal possession of Indian Garden and began to revitalize the site. NPS crews improved trails, built buildings, erected a trans-canyon telephone line, and made several other improvements.

To take advantage of the prodigious supply of water in Indian Garden, the Santa Fe Railway built a water pumping system in 1932 that included a pipeline, two pump houses, and a water reservoir. Concurrently, Civilian Conservation Corps (CCC) crews were stationed in the Grand Canyon and Indian Garden, beginning in 1933. The crews planted vegetation and implemented new construction during their tenure at Indian Garden. The CCC left Grand Canyon National Park in 1942 when the Corps was officially disbanded due to the onset of World War II. Over the next two decades, Indian Garden's landscape changed very little.

The 1960s saw a number of improvements that catered to the increasing number of park visitors and day-trippers. In the late 1980s, the NPS carried out plans for extensive rehabilitation of Indian Garden that were prompted by the need to control heavy flooding in the site and prevent flood damage, and for increased amenities for visitors and personnel. The plans created new use areas and relocated or demolished certain existing buildings and structures. Much of the work, however, was done using Rustic Revival design principles that were compatible with the aesthetic character of the site and inner canyon. Indian Garden appears today much as it did after the 1989 rehabilitation efforts.

# Scope of Work and Methodology

## Project Scope

In April of 2002, the NPS developed a scope of work for the Indian Garden CLR that delineated the following tasks:

### Administrative Data

- preparation of an administrative data report section in consultation with the NPS.

### Landscape History

- conducting historical research of primary source materials relating to all cultural landscape elements within the project area;
- studying the evolution of the landscape, including a review of historic maps, photographs, oral history transcripts, site records, and written records with an emphasis on known resources;
- review of all secondary source materials relating to the study area including natural and cultural resource documents;
- preparation of an annotated cultural landscape chronology outlining notable periods of the landscape development and key characteristics and components of the landscapes during the historic period(s) and preparation of a narrative physical history; and
- preparation of graphic landscape chronology maps with one graphic for each notable period of landscape development. Key characteristics and components of the landscapes present during the historic period(s) will be identified on the maps.

### Existing Conditions Documentation

- conducting field surveys to inventory and document existing conditions in the project area;
- where existing base maps are inadequate, conducting additional fieldwork in the study area and preparation of an accurate planning-level base map indicating existing topography and all built and natural features including, but not limited to, key landscape features such as property lines, structures, vegetation, walks, drives, views, and viewsheds;
- photographic documentation of the site including representative features. Incorporate selected existing conditions photographs into the report;
- undertaking, when practicable, existing conditions photography in locations of historic ground photographs for the purpose of comparative analysis;

- preparation of an existing conditions photographic station point map documenting the location and orientation of photographs.

### **Landscape Analysis and Evaluation**

- identification of characteristics that are significant and contribute to the integrity of the cultural landscape; identification of characteristics that contribute to the cultural landscape and why they are contributing; identification of characteristics and elements that are supporting and non-contributing; and location and labeling of contributing, supporting, and non-contributing features on a site plan;
- analysis and evaluation using landscape characteristics identified by the National Register of Historic Places and in the *Guide to Cultural Landscape Reports*;
- preparation of graphic analyses to clearly identify these elements.

### **Landscape Significance, Integrity, and Condition Assessment**

- completion of a draft integrity assessment of the resource, using National Register criteria and guidance in the *Guide to Cultural Landscape Reports*;
- assessment of the condition of the landscape as a whole and of each subsection of the landscape;
- identification and description of existing and potential threats to the integrity of the cultural landscape;
- identification of the historical context of the cultural landscape, preparation of a statement of significance, and identification of periods of significance using National Register and National Historic Landmark criteria.

### **Landscape Treatment Recommendations and Design Criteria**

- development of suggestions for management goals based on the park's GMP and objectives to meet these goals, including goals for an interpretive program;
- determination of an overall treatment for Indian Garden, using the *Guidelines for the Treatment of Cultural Landscapes* for guidance;
- preparation of more detailed recommendations beyond overall recommendations that address surviving historic landscape features and systems;
- development of specific landscape treatments for component landscape areas within Indian Garden while providing justifications for recommended treatments;
- preparation of a landscape treatment plan that outlines any recommended seasonal/annual/periodic landscape treatments to direct future site maintenance;

- preparation of design criteria recommendations that identify the types and degree of changes that can occur without adversely affecting the landscape's physical and visual character-defining features;
- development of specific project recommendations that will support park projects, specifically those features within proposed project areas and those mentioned in the GMP; and
- preparation of Class C cost estimates for specific project recommended treatments.

## **Project Methodology**

The JMA team provided all necessary services and supporting activities in the fields of landscape architecture, historical landscape architecture, historical research, historic architecture, archeology, ethnography, and natural resources to prepare this CLR. The primary standard for this effort was *A Guide to Cultural Landscape Reports: Contents, Process and Technologies* published in 1998 by the NPS. This document detailed the content, format, and methodologies appropriate for a CLR. Recommendations arising from this CLR comply with pertinent Federal standards, policies, and regulations, as well as all applicable state, local and national building and life safety codes including, but not limited to, the following:

1. NPS Management Policies (2001)
2. NPS Director's Order #28, Chapter 7
3. *Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (1998)
4. *The Secretary of the Interior's Standards for Treatment of Historic Properties, with Guidelines for the Treatment of Cultural Landscapes* (1996)
5. *The Secretary of the Interior's Guidelines and Standards for Archeology and Historic Preservation*

Other documents used include National Register of Historic Places Bulletin #15: *How to Apply the National Register Criteria for Evaluation* and *The Chicago Manual of Style*, 14<sup>th</sup> edition.

## **Background Research and Data Collection**

A substantial amount of information and resources were provided to JMA by the NPS prior to the initiation of research. This information included a base map for Indian Garden prepared by the Denver Service Center, the 1992 draft Bright Angel Trail National Register Nomination form, a list of existing buildings, and the 1995 General Management Plan for Grand Canyon National Park. Additional materials, including information on archeological sites and prehistory of the Grand Canyon region, were collected by SWCA, Inc. and distributed to other team members. The methodology for all directed research was based on review of this preliminary body of collected primary and secondary data sources.

Directed research was conducted in three stages. The first stage involved a review of the material received from the NPS, SWCA, Inc., and secondary sources relating to the history of GRCA.

The result of this review was the construction of a draft chronology for the project area and the creation of a short list of sources to request or locate.

The second stage of research involved visiting selected regional repositories in northern Arizona. Several research trips were made by SWCA, Inc. in the late summer and early fall of 2002 to gather and copy primary and secondary sources relevant to the project area and its regional and national contexts. Three repositories were visited during this trip: the Cline Library at Northern Arizona University in Flagstaff, the Museum of Northern Arizona in Flagstaff, and the Grand Canyon National Park Museum Collection at Grand Canyon Village on the South Rim. Historic maps and photographs, books, reports, documents, subject and clippings files, and microfilm records were reviewed and copied where possible. Digitized historic photographs of Indian Garden were requested and received from Northern Arizona University's Cline Library and the Grand Canyon National Park Museum Collection.

During a visit to the project area to document existing conditions in September of 2002, team historians examined subject files kept in a filing cabinet in the Storage/Laundry/First Aid building in Indian Garden. Copies of important documents from these files were made on site.

Additional research trips to the University of Virginia Library were conducted by Rivanna Archaeology to investigate appropriate local, state, and national contexts related to Arizona and the Grand Canyon. Records reviewed during these trips included early twentieth-century guide books for the Grand Canyon and Southwest regional and early twentieth-century Congressional Records.

### **Field Investigation**

A fieldwork trip was conducted in September 2002 by JMA, Rivanna Archaeology, History Matters, LLC, and SWCA, Inc. The focus of the field investigation included ground-level reconnaissance of the Indian Garden project area and documentation of existing landscape conditions and features. Prior to fieldwork, NPS Ranger Chuck Sypher provided the team with a general overview and walking tour of the site.

Fieldwork efforts included ground-truthing base map data and photographic documentation of landscape features. JMA, with the assistance of Rivanna Archaeology, completed general existing conditions fieldwork and condition assessments. An architectural historian from History Matters, LLC conducted on-site investigations and condition assessments of existing buildings and structures within the project area. SWCA, Inc. completed a vegetation analysis of Indian Garden as well as identification of archeological sites.

### **Site Physical History**

The site physical history (Chapter II of this CLR) was organized chronologically within two sections: a non-European History of the Grand Canyon and a history of human occupation from a European viewpoint. These sections are further divided into separate periods. Each period is introduced by a narrative summary outlining the physical landscape developments known to have occurred during that period; these narratives are followed by an annotated chronology of

events organized by landscape characteristic. Graphic illustrations are interleaved within the text and depict important events or concepts.

Graphic chronologies were prepared to illustrate change over time in the Indian Garden landscape. These period plans were based on review, evaluation, and comparison of primary resources including photographs, historic maps, historic narratives, and information provided in the narrative history text. All maps were hand-drawn and imported into AutoCAD, then overlaid onto digital topography from existing base map data. Features appearing over multiple periods were consistently located. Vegetative change over time is only representative and incorporates educated assumptions.

### **Evaluation of Significance**

Preliminary significance evaluations were undertaken using data from the site physical history chapter of this report; National Register of Historic Places nominations; Teri Cleeland's thesis "The Cross Canyon Corridor Historic District in Grand Canyon National Park: A Model for Historic Preservation;" and guidance from National Register Bulletins #15 and #18. The evaluation of significance included a review of the physical history to determine potential significance associated with all National Register criteria, an identification of potential historic contexts associated with the site, and identification of periods of significance.

### **Comparative Analysis of Historic and Existing Conditions**

The comparative analysis in Chapter IV was completed for the entire project area and then for each landscape characteristic. The analysis was based on information gathered during existing conditions fieldwork and mapping, from the physical history prepared by Rivanna Archaeology, and from numerous historic images, maps, and plans. Comparative photograph pairs illustrated the changes that occurred over time in Indian Garden.

### **Integrity Assessment**

The integrity assessment was based on the findings of the significance evaluation, the comparative analysis, and the seven aspects of historic integrity as defined by the National Register of Historic Places (location, design, setting, materials, workmanship, feeling, and association). Integrity was assessed for the Ralph Cameron sub-period of significance (1903-1927) and for the NPS sub-period of significance (1927-1943). Threats to integrity were also identified by determining which factors that influence the Indian Garden landscape could diminish its integrity.

## Identification of Contributing, Non-Contributing, Supporting, and Missing Resources

After the completion of the comparative analysis, landscape features were placed into one of four categories:

- Contributing features (surviving from the period of significance)
- Non-contributing features (post-dating the period of significance, or without integrity)
- Supporting features (post-dating the period of significance, yet constructed with the same or similar design intent)
- Missing features (features from the period of significance that are no longer extant)

Each existing categorized feature was listed in Chapter IV, labeled on the corresponding existing conditions map in Chapter III, and listed in Appendix A. Missing features were identified on a map in Chapter IV.

## Treatment Recommendations and Guidelines

JMA followed the guidance presented in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* when preparing treatment recommendations and guidelines for this CLR. The treatment chapter was written using the findings of existing conditions and condition assessment documentation, the assessment of integrity from Chapter IV, and were based on actions proposed by GRCA managers.

The treatment chapter includes a recommended treatment approach, an overarching treatment concept that provides the philosophical basis for the guidance offered in the chapter, recommendations and guidelines for the treatment of Indian Garden's cultural landscape, and recommendations for specific projects selected by the park. The chapter parses the six landscape character areas into two sections: historic (Bright Angel Trail Corridor, Day Use Area, Pump Station and Corral Area, and North Indian Garden Area) and non-historic (Administration Area and Campground Area). Guidelines for new development and compatibility of new features are offered for all six character areas, while more directed recommendations for mitigation of condition issues, maintenance, and repair are offered only for the four historic areas.

## Description of Study Boundaries

Indian Garden is located within Grand Canyon National Park in northern Arizona (*Figure 1*). It is north of Grand Canyon Village and within the inner canyon, resting 3,200 feet below the edge of the South Rim and approximately 3,700 feet above sea level (*Figure 2*). Indian Garden lies approximately one and one-half miles south of Plateau Point and is part of the Tonto Platform, a geomorphological feature of the Grand Canyon.

The scope of work for this CLR states that the project boundary should be based on the boundary in Section 10 of the draft 1992 Bright Angel Trail National Register nomination form. The boundary in this nomination was based on Teri Cleeland's 1986 thesis, "The Cross Canyon

Corridor Historic District in Grand Canyon National Park,” which was delineated prior to the extensive 1989 rehabilitation. The 1989 rehabilitation created additional use areas to the south of Indian Garden’s historic core, as well as relocating or demolishing other features. This CLR uses a boundary for the Indian Garden project area that differs from existing documents by including all historic and non-historic cultural and archeological landscape features present in 2002. The revised CLR boundary was accepted by NPS and GRCA staff in September of 2002 and is described in the following paragraph.

Indian Garden is located nearly four and one-half miles along the Bright Angel Trail and can also be accessed by the Tonto Trail. The CLR project area boundary begins approximately 170 feet south of the Bunkhouse and includes the southern helispot. The boundary runs along the western edge of the Indian Garden development and floodplain; roughly paralleling the Bright Angel Trail, and between 150 and 225 feet west of the trail corridor. The boundary turns south at the site of the Kolb Studio ruin to form Indian Garden’s northern edge. This northern edge is approximately 3,400 feet north of the southern helispot. The eastern edge boundary of the project area parallels the Bright Angel Trail, and includes the Pump Station and northern helispot as well as the Cameron-era ruins located in the far northern portion of the boundary. The width of the linear corridor created by the project boundary ranges from 250 feet to 420 feet.

This CLR study area also includes part of the trans-canyon telephone line, which is listed on the National Register of Historic Places. The remnants of this system in this location include three telephone poles located east of, but in close proximity to, Indian Garden. The poles are included with the project area as a discontinuous boundary.

## Recommendations for Future Research

The preparation of this CLR raised questions that merit further investigation. Resolution of these issues may potentially yield information that will aid interpretation activities and future management efforts.

### *Archeological Surveys*

Additional archeological surveys and research should be undertaken to uncover any remaining unknown information relating to Ralph Cameron’s occupation and use of Indian Garden. Any new information uncovered may enhance interpretation efforts along with the visitors’ understanding of the evolution of Indian Garden.

### *Water Pumping System and Engineering Significance*

At present, it is not known how the design and complexity of the historic 1930s water system—that pumped water from Indian Garden to the South Rim—compares to other systems built during the same era. Additional engineering-related research and comparison should be done to determine whether the pipeline embodies the distinctive characteristics of a type, period, or method of construction; in other words, whether the water pumping system was innovative or unusual for its time, or if its method of construction was once widely practiced but is now

represented in only a few locations. Research must also be done to assess the integrity of the water system and whether it exists much as it did during the period of significance or if it has undergone enough changes so that few historic aspects remain.

Additionally, a water supply improvement project was undertaken in 1985 that may eventually be eligible for the National Register of Historic Places. The directional drill hole project allowed a new water line to run up the south face of the canyon, underneath the rock. This project made use of pioneering oil field technology in order to combat the extremely challenging technical and aesthetic requirements inherent to construction of the water line. The project has already received recognition of its technical significance. In the future, the water line project may be considered for inclusion on the National Register under Criterion C after fifty years have passed, or Under Criterion Consideration G, for properties that achieve significance before they have reached fifty years of age. The project may also be considered for Historic American Engineering Record (HAER) documentation.

### ***Addition of Indian Garden to Management Documents***

During the process of preparing this CLR, JMA recognized a lack of management information and data directly related to Indian Garden and its resources. Within the GMP, for example, Indian Garden was treated as part of the Corridor Trails Area, rather than an individual entity. JMA recommends that future management documents identify and treat Indian Garden as an individual resource. Future documents should create goals and objectives, plans, drawings, and recommendations specifically concerning Indian Garden in order to protect the site's remaining historic fabric and prevent incompatible design from occurring.

### ***Mission 66 Development***

A number of features were constructed in Indian Garden during the Mission 66 era, which extended from 1956 until 1966. These features include an addition to the NPS Caretaker's Residence in the 1960s; a 1963 comfort station; a 1965 bunkhouse; retaining walls; a sewage pump station; a campground and picnic area around 1963; and a footbridge. Plans from the 1950s also show that the 1967 North Pump House was conceived during Mission 66, although it was constructed shortly after the end of the Mission 66 program. Of these features, only the NPS Caretaker's Residence, the North Pump House, and possibly portions of the old campground are still extant.

With an understanding that landscape architectural context for Mission 66 design and planning efforts in the National Park system is pending, the CLR team determined that an evaluation of any Mission 66 planning, design, and construction was not warranted as part of the CLR scope of work. The CLR team recommends that after a Mission 66 planning and design context has been written and approved, the extant Mission 66 features within Indian Garden should be re-evaluated regarding their eligibility to the National Register of Historic Places. If these resources are found to be significant and eligible, they should be included on the Bright Angel Trail National Register of Historic Places nomination form. Additionally, the end-date of the period of significance, now ending at 1943, would need to be reconsidered and possibly revised to reflect the inclusion of Mission 66 features.

The CLR team recommends that all surviving Mission 66 features, thought assessed as non-contributing in this CLR, should be retained and maintained until they can be evaluated within a completed national planning and design context for the Mission 66 program.

### *Niobrara ambersnail*

Protection of the Niobrara ambersnail, which inhabits much of the Day Use Area, must be mitigated with the need to reclaim overgrown and waterlogged facilities in the same area. Although the snail deserves adequate protection, additional research must be undertaken that will find a balance between creating an acceptable habitat for the snail while allowing visitors and staff to use and manage the Day Use Area.

## Summary of Findings

Indian Garden is a palimpsest whose earlier traces of history are still faintly visible in today's multi-layered landscape. Whether ensuing generations of management and design were based on hand-over of legal control, the need to rebuild due to flood damage, or the necessity of enhancing facilities for an ever-growing number of visitors, Indian Garden has been a model of how to keep pace with change. The issues that face Indian Garden most often are those that involve mitigation of water—this element is both welcome as a source of cool and refreshment, yet is also a source of apprehension when flash floods rush through the landscape. Throughout history, it is water that has both drawn people to this site and shaped the form and appearance of the cultural landscape we see today.

The CLR team identified the period of significance for Indian Garden to be from 1903 until 1943. The earlier date marks the year when Ralph Cameron began his tourism facilities at Indian Garden in earnest. The latter year marks the end of CCC involvement in Indian Garden and the final implementation of NPS Rustic-style design aesthetics within the landscape. Within this overall period of significance exist two sub-periods: from 1903 until 1927, marking the years of Ralph Cameron's influence upon the site, and 1927 until 1943, marking the years of NPS and CCC influence on Indian Garden.

After evaluating the Indian Garden landscape according to the National Register of Historic Places' seven aspects of historic integrity, the CLR team found that Indian Garden does not retain integrity for the period of significance. This finding was based on the fact that Indian Garden has undergone considerable alterations since the period of significance—changes that have impeded Indian Garden's ability to convey its historical significance and importance within American history. For this reason, Indian Garden is not individually eligible to the National Register of Historic Places as a district or a site. Portions of the landscape, however, including all contributing resources, should be included in the Bright Angel Trail National Register nomination and should be preserved and protected as part of the park's management plans. These portions are the historic character areas within the CLR project boundary and consist of the Bright Angel Trail Corridor, Day Use Area, Pump Station and Corral Area, and North Indian Garden Area. The remaining non-historic character areas—the Administration and Campground Areas—should not be included in the Bright Angel Trail nomination at this time.

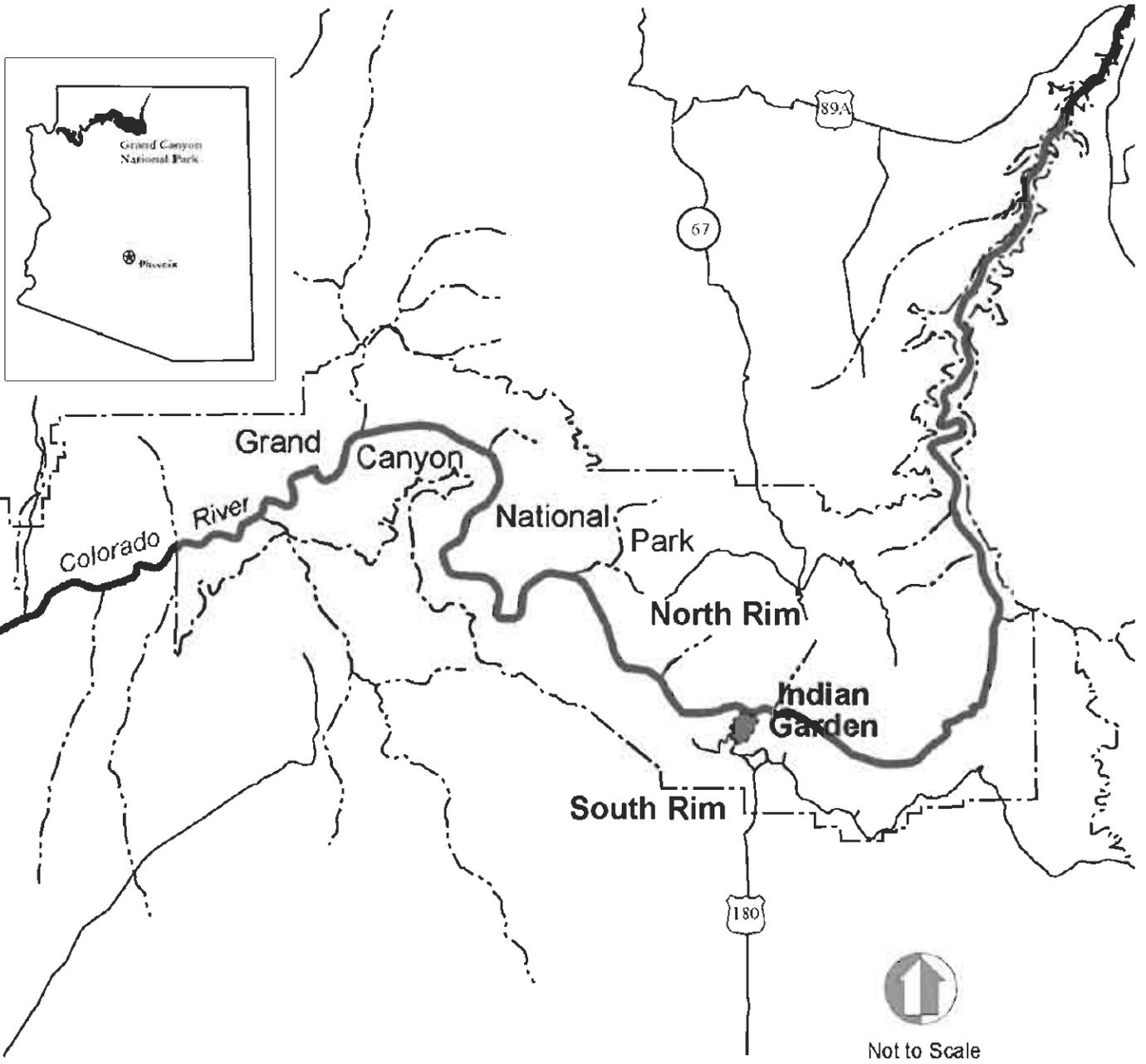
Although Indian Garden does not retain integrity, it is still a significant historic landscape. According to guidelines provided by the National Register of Historic Places, Indian Garden is important within American history under Criteria A, C, and possibly D. Under Criterion A, Indian Garden is significant within the areas of Recreation, for the landscape's association with tourism-related activities, and Politics/Government, for the landscape's association with the CCC. Under Criterion C, Indian Garden is significant within the area of Architecture, for its collection of Rustic-style buildings. Under Criterion D, Indian Garden may be significant within the area of Ethnic Heritage for the landscape's potential to yield important information about American Indian groups that historically and prehistorically used and inhabited the site. Indian Garden may also be significant under this criterion within the area of Recreation, for the site's potential to yield information about Cameron-era activities.

Because Indian Garden does not retain integrity as an individual entity, and park managers have outlined plans to make alterations and upgrades to the landscape, rehabilitation is the recommended overall treatment approach for the four historic character areas. Treatment for the non-historic Administration and Campground Areas consists of adequate maintenance of existing features and the acceptance of necessary new development. 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 or features [of the landscape] which convey its historical, cultural, or architectural values.”<sup>1</sup> As described in the definition, an emphasis must be placed on the preservation of contributing historic resources. The CLR team feels that this approach will allow park managers and personnel to protect significant cultural resources while implementing necessary new features and services.

Treatment recommendations and guidelines in Chapter V of this report focus primarily on the need for continual maintenance of all features, the necessity of preserving remaining contributing features, the need to control flooding and excess water in Indian Garden, and the compatibility and proper placement of new features.

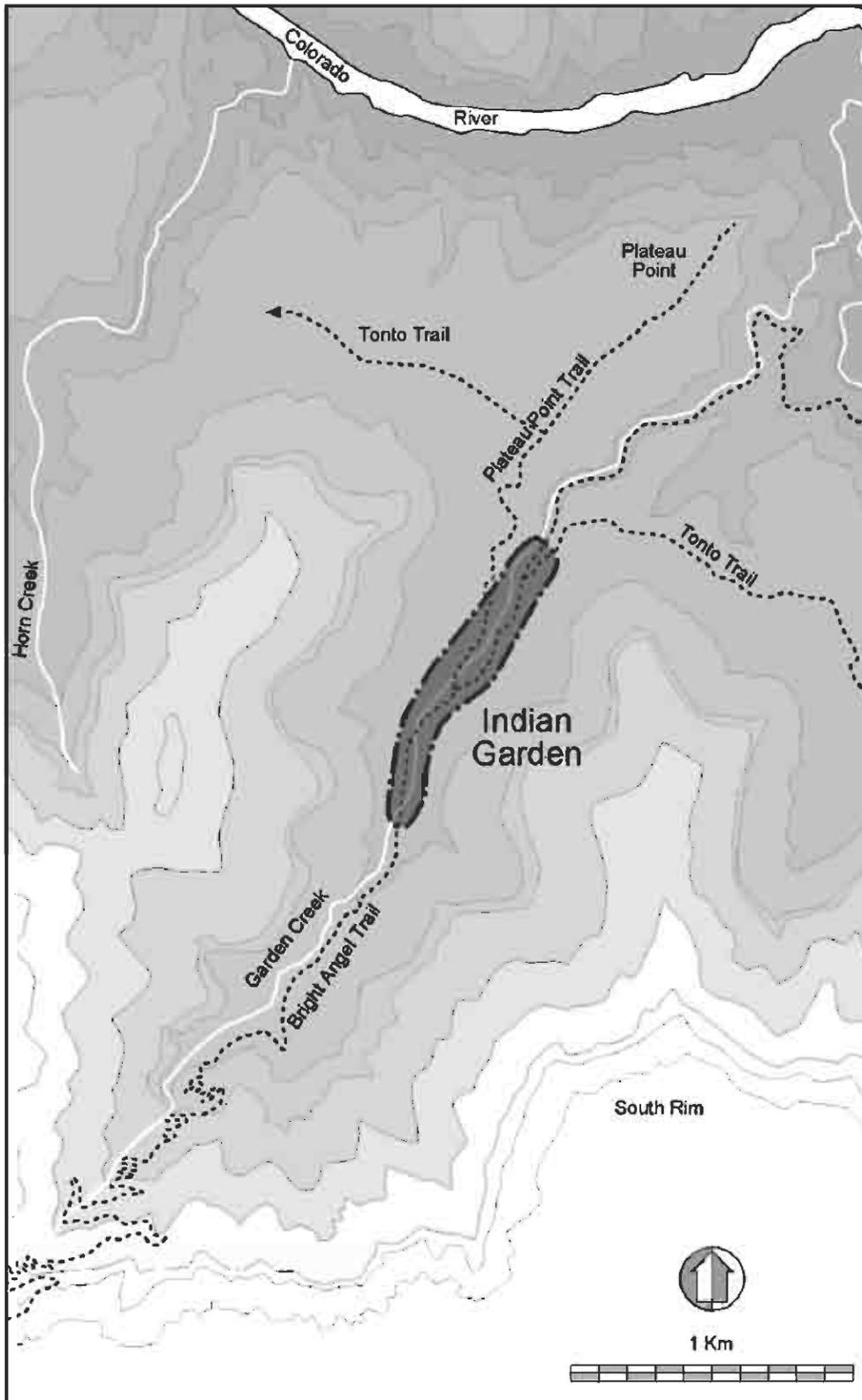
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<sup>1</sup> U.S. Department of the Interior, National Park Service, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (Washington, D.C.: Heritage Preservation Services, 1996), 48.



**Indian Garden  
Cultural Landscape Report  
Location Map**

Figure 1



**Indian Garden  
Cultural Landscape Report  
Context Map**

Figure 2

## Chapter II • Landscape Physical History





# Chapter II • Landscape Physical History

## Introduction

This Site Physical History chapter is divided into two sections: a non-European history of the Grand Canyon and a history of human occupation from a European viewpoint. The non-European section includes a brief summary of the beliefs as to the creation and human history of the area for six of the seven American Indian groups that claim association with the Grand Canyon. The European historical narrative is broken down into twelve separate chronological periods. These periods are defined both by documented changes to the landscape and the cultural contexts of their occupation. Each period is preceded by a brief introduction. The periods are as follows:

- Paleo-Indian Period: 11,500-8,500 BP;
- Archaic Period: 8,500-1,700 BP;
- Formative Period: 1,700-700 BP;
- Protohistoric Period: 700-460 BP;
- Spanish Colonization and European Exploration of the Grand Canyon Vicinity: 1540-1821 AD;
- Mexican Independence and Administration: 1821-1848;
- Early American Exploration and the Territory of Arizona: 1848-1880;
- Early Anglo Settlement, Mining Claims, and Pioneer Tourist Development on the South Rim: 1880-1901;
- Arrival of the Railroad and Private Development of Indian Garden: 1901-1928;
- National Park Service Tenure and the Civilian Conservation Corps Era: 1928-1945;
- Post-War Indian Garden: Mission 66 and the Development of a New Water System: 1945-1970; and
- Late Twentieth-Century and Early Twenty-First-Century Improvements: 1970-2002.

For this Cultural Landscape Report (CLR), the chronological periods referring to non-European, prehistoric cultures are referred to in “years before present,” or BP. European occupation and settlement periods are referred to as AD, or “anno domini.” Beginning with the section entitled “Spanish Colonization and European Exploration of the Grand Canyon Vicinity, 1540-1821” and all subsequent chapters, the given dates should be treated as AD, although they will not be labeled as such. Photographs and graphic chronology drawings, used to illustrate historical concepts and landscape evolution within Indian Garden, are located within the chapter. The illustrations are located at the end of each historical period to which they correspond.

# Non-European History of the Grand Canyon

## Introduction

The Grand Canyon plays a tremendous role in the traditions, religions, myths, and legends of American Indians that inhabit the region. Ten American Indian groups—the Kaibab Band of Paiute Indians, the Paiute Indian Tribe of Utah, the San Juan Southern Paiute, the Hualapai, the Havasupai, the Navajo, the Hopi, the Pueblo of Zuni, the Yavapai Apache and the White Mountain Apache—claim traditional use of the Grand Canyon and/or have religious beliefs about the canyon and the Colorado River.<sup>1</sup> This section discusses American Indian views, human history, and occupation of the Grand Canyon region. It is important to note that most American Indian narratives of the Grand Canyon have no time scale that can be compared with a European understanding of time. Wherever possible in this CLR, American Indian histories were obtained from tribal authored or authorized oral histories and ethnographic accounts.

## Southern Paiute<sup>2</sup>

During Protohistoric times (700-460 BP) sixteen subgroups of Southern Paiute occupied a large area north and west of the Colorado River, extending from northwestern Arizona and southwestern Utah to southeastern Nevada and southern California. Of the Southern Paiute subgroups, the Kaibab Band of Paiute Indians, the Paiute Indian Tribe of Utah, and the San Juan Southern Paiute occupied lands in and near the Grand Canyon from the fourteenth century to the late 1800s, when they were moved to reservations.

According to oral tradition, Southern Paiute peoples were created by supernatural forces at a site called *Nuvagantu*, near Charleston Peak in the Spring Mountains. This site is the singular creation place for the Southern Paiute peoples and, as such, is their most sacred place. Religious knowledge states that all of Southern Paiute traditional ethnic territory is sacred.

Southern Paiute peoples believe that, as a result of their creation, they are charged with a special responsibility to protect and manage the land and its cultural, mineral, floral and faunal resources within their traditional ethnic territory. This relationship is engendered in a philosophy of how to live with and act towards the land, animals, plants, artifacts, and human interment. For example, a prayer requesting that medicinal or nutritional needs are met is said before picking a plant. Likewise, similar prayers are said before embarking on a hunt or taking an animal's life. Water

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<sup>1</sup> The Yavapai and White Mountain Apache have recently claimed ties to the Grand Canyon and the nature and extent of the ties are currently being reviewed by the National Park Service. Their histories are not included in this section.

<sup>2</sup> General information contained in this section is derived from Richard B. Stoffle et al., "Pia 'Paxa 'Huipi (Big River Canyon): Ethnographic Resource Inventory and Assessment for the Colorado River Corridor, Glen Canyon National Recreation Area, Utah and Arizona, GRCA, Arizona, Second Preliminary Draft" (Bureau of Applied Research in Anthropology, University of Arizona, Tucson, July 15, 1993, photocopy); and Isabel T. Kelly and Catherine S. Fowler, "Southern Paiute," in *Handbook of North American Indians*, Vol. 11 Great Basin, ed. Warren L. D'Azevedo (Washington, D.C.: Smithsonian Institution, 1986), 368-397.

resources are honored and respected because of their life sustaining importance while rocks and minerals are considered to have special powers.

Human burial sites are the most sensitive of traditional cultural resources to the Southern Paiute. Burial is an important cultural and ceremonial event in traditional Southern Paiute culture; burial sites contain “power” and have the potential to harm people who disturb them or even go near them. Southern Paiute consider material culture on archeological sites to be the property of the people who left them there. Consequently, they believe that archeological sites and the material culture they contain should be left undisturbed wherever found. Material culture is also considered a political resource with the potential to tie the Southern Paiute peoples to a specific site or region.

Although there is no documentary or archeological evidence to support that Southern Paiute groups specifically used Indian Garden, they did use the land, plants, and animals of the greater Grand Canyon region for subsistence purposes through hunting, gathering, and farming.<sup>3</sup> Furthermore, a Paiute legend about the Grand Canyon clearly indicates its importance in their belief system:

...the canyon came into existence when Umbah, a chieftain, grieved at the door of his house over the loss of his wife. Taavotz, a god, appeared to him and told Umbah that his wife was in another land and he would lead him there. Before taking him, the god made Umbah promise that he would never mourn again after his return. Umbah agreed and Taavotz led him as he cut a trail through the mountain that guarded the western spirit land. Umbah saw his wife and was happy. After they returned through the great gorge cut by Taavotz, the god told the chief to tell no one of the spirit land or its great beauty. Then Taavotz rolled the river into the gorge which he had made, and that is the raging torrent which flows through the Grand Canyon today. It is believed by the Paiutes to swallow anyone who attempts to follow it west.<sup>4</sup>

## Hualapai<sup>5</sup>

The Hualapai Reservation adjoins the Grand Canyon National Park for 108 miles along the Colorado River. Hualapai ancestral lands originally extended from the Colorado River on the north and west, south to the Bill Williams and Santa Maria Mountains, and east to the San Francisco Peaks.

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<sup>3</sup> Richard V.N. Ahlstrom, David E. Purcell, M. Zyniecki, Dennis A. Gilpin, and Virginia L. Newton, “An Archaeological Overview of Grand Canyon National Park” (Flagstaff: SWCA, Inc., 1993), 82.

<sup>4</sup> Richard Van Valkenburg, “Diné Bikéyah,” (Window Rock, Arizona: United States Department of the Interior, Office of Indian Affairs, Navajo Service, 1941), 67.

<sup>5</sup> The information contained in this section is derived from Hualapai Cultural Resources Division, Hualapai Wildlife Management Department, “Hualapai Tribe Ethnographic and Oral History Survey for Glen Canyon Environmental Studies and the Glen Canyon Dam Environmental Impact Statement” (Hualapai Tribe, Peach Springs, Arizona, 1993, photocopy); NPS, “Draft General Management Plan and Environmental Impact Statement: Grand Canyon National Park” (Grand Canyon National Park, Arizona, 1995, photocopy), 143; Thomas R. McGuire, “Walapai,” in *Handbook of North American Indian*, Vol. 10 Southwest, ed. Alfonso Ortiz (Washington, D.C.: Smithsonian Institution, 1983), 25-26.

The Hualapai peoples have a particularly strong tie to the Grand Canyon and the Colorado River because it is where the original Hualapai tribes emerged into the world. According to oral traditions, god made the land and the Colorado River for the Hualapai tribes, and the Hualapai peoples were created from the mud and sand of the Colorado River. Because of this intimate connection to the Grand Canyon, traditional Hualapai lifeways require stewardship of all natural resources within their ancestral territory.

In one origin story, Turcupa, an older twin, was directed by the Great Spirit to a place on the west bank of the Colorado River where a bed of canes grew. The canes were cut and laid to the east. During the night, the Great Spirit created humans from the canes. Turcupa showed the humans how to live and led them to Meriwhitica Canyon, the territory of the historic Hualapai. They were taught to hunt, gather, and farm by irrigation. Out of these original peoples, the Mohave, Paiutes, Navajos, Hopi and Havasupai eventually left the Hualapai and migrated to the areas they now occupy.

The Hualapai engaged in extensive trade, social, and ceremonial interactions with other American Indian groups—both before and during the period of European contact. This interaction occurred both along the south rim and across the Colorado River in the Diamond Creek, Granite Park, Lava Falls, Parashant Wash, Quarter Master Canyon, Separation Canyon, and Spencer Canyon areas. Although there is no specific evidence that the Hualapai occupied the CLR project area or its vicinity, it is possible that they had contact with groups like the Havasupai at Indian Garden.

## **Havasupai**<sup>6</sup>

The Havasupai Reservation consists of 185,000 acres in Havasu Canyon and the surrounding uplands and are the only American Indians that actually live in the Grand Canyon today. An additional 95,300 acres of GRCA has been designated as Havasupai Traditional Use Lands. Havasupai ancestral lands originally extended from the Colorado River south to the Bill Williams Mountains and San Francisco Peaks, west to the Aubrey Cliffs, and east to the Little Colorado River gorge.

The Havasupai believe that Red Butte, located outside of GRCA, is the birthplace of the Havasupai peoples, and that the Grand Canyon was created by the receding waters of a flood. According to oral traditions, the daughter of a Havasupai god survived the flood and came to rest on the south rim of the Grand Canyon. Her children were the ancestors of the Havasupai, Apache, Hualapai, Hopi, Paiute and Navajo peoples. These people were told that the land was theirs for the rest of time. The Havasupai were given particular responsibility to protect and guard the south rim and the Grand Canyon.

Havasupai traditional cultural ties to the Grand Canyon are well documented. Many Havasupai myths and beliefs include stories about the Grand Canyon. There is documentation of subsistence use of the canyon country for grazing, hunting, and gathering of edible plants (especially agave).

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<sup>6</sup> General information contained in this section is derived from NPS, “Draft General Management Plan,” 142-143; Douglas W. Schwartz, “Havasupai,” in *Handbook of North American Indians*, Vol. 10 Southwest, ed. Alfonso Ortiz (Washington, D.C.: Smithsonian Institution, 1983), 13-24.

Pictographs are located along the Bright Angel Trail below the south rim that have been attributed to the Havasupai.<sup>7</sup> Furthermore, Indian Garden was given its name because of the Havasupai horticulturalists documented by Spier and other ethnographers as living in the vicinity around the turn of the nineteenth century.<sup>8</sup> The Havasupai continued to use the Indian Garden vicinity well into the twentieth century. Havasupai habitation sites were still present at Indian Garden in 1916, although beginning in 1924, the National Park Service (NPS) removed Havasupai cultural remains from Indian Garden.<sup>9</sup>

## Navajo<sup>10</sup>

The Navajo Nation is another American Indian group that shares a boundary with GRCA. Traditionally, Navajo ancestral lands stretched between four sacred mountains: Blanca Peak near Alamosa, Colorado; Mount Taylor near Grants, New Mexico; the San Francisco Peaks near Flagstaff, Arizona; and the La Plata Mountains near Durango, Colorado. Archeological evidence indicates that the Navajo came to the Grand Canyon/Coconino Plateau region by at least the late 1600s.

The Navajo believe that they emerged from a previous world into this, the fifth world, and were given a mandate to take care of it through ceremonial practices and stewardship of the land. The Navajo also believe that they were present during the creation of the Grand Canyon and Colorado River. The Colorado River is considered sacred and to possess a life force. The river is also viewed as a protector of the Navajo peoples and, as such, it is prayed to and given offerings. The Grand Canyon and other minor canyons are also home to many Navajo deities and are affiliated with clan origins and migrations.

Salt, and the mines it is obtained from, are considered particularly sacred to the Navajo peoples. The Grand Canyon and its floral, faunal and mineral resources cannot be visited without a specific purpose, and special ceremonies must be conducted before sacred sites in the canyon are visited. Many sacred places pre-date European contact, but several are also tied to specific events that occurred between 100 and 200 years ago, many of which were the result of hostile interactions.

Although Navajo traditional cultural ties to the Grand Canyon and Colorado River exist, there is little documented Navajo use of GRCA, and information on Navajo sacred places within the park

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<sup>7</sup> Carma Lee Smithson and Robert C. Euler, *Havasupai Legends: Religion and Mythology of the Havasupai Indians of the Grand Canyon* (Salt Lake: University of Utah, Press, 1994), vii-viii, 2; Ahlstrom et al., "Archaeological Overview," 80; Teri A. Cleeland, "The Cross Canyon Corridor Historic District in GRCA: A Model for Historic Preservation" (Masters Thesis, Northern Arizona University, Flagstaff, 1986), 13.

<sup>8</sup> Leslie Spier, *Havasupai Ethnography*, (New York: American Museum of Natural History, 1928), 83-392.

<sup>9</sup> Cleeland, "Cross Canyon Corridor," 27; NPS, "Superintendent's Annual Report [SAR], Grand Canyon National Park, 1925," 6. Grand Canyon Museum Collection; Nancy J. Coulam, "An Archeological Survey of Indian Gardens, Grand Canyon National Park, Arizona" (MS on file at Grand Canyon National Park, 1986), 4.

<sup>10</sup> General information contained in this section is derived from Alexa Roberts, Richard M. Begay, and Klara B. Kelley, "Bits'iis Nineezi (The River of Neverending Life): Navajo History and Cultural Resources of the Grand Canyon and the Colorado River" (Window Rock, Arizona: Navajo Nation Historic Preservation Department, 1995); NPS, "Draft General Management Plan," 144.

is scarce.<sup>11</sup> Nevertheless, there is some evidence that a few Navajo families were living in the vicinity of what is now GRCA during the late 1800s.<sup>12</sup>

## Hopi<sup>13</sup>

The Hopi have occupied the lands now recognized as the Hopi Reservation for about a thousand years, and most Hopi still live in pueblo villages scattered over the three Hopi Mesas which comprise the center of the reservation. At least one of the villages, Oraibi, has been occupied continuously since AD 1150.<sup>14</sup>

Ethnographic and archeological evidence indicates that the Hopi and their Puebloan ancestors utilized the Grand Canyon and its resources for hundreds of years (evidence of Ancestral Puebloan occupation is present near Indian Garden). In addition, the Grand Canyon has profound sacred importance to the Hopi. Sipapuni, the Hopi place of origin, is located five miles south of the confluence of the Colorado and Little Colorado Rivers. Geologically speaking, Sipapuni is a travertine cone produced by an artesian spring. From Sipapuni, the Hopi spread to all parts of the Grand Canyon vicinity including both rims and the inner canyon until their eventual congregation at the Hopi Mesas. Devout Hopis believe that when they die, they return to the place of origin. Consequently, the Grand Canyon is a common reference in the daily prayers of many Hopi. It is also said that the Kohnina (or Cohonino) Kachina, who is believed to represent the Havasupai peoples, lives in the Grand Canyon during the winter months.<sup>15</sup> Historically, a strong trade network existed between the Hopi and Havasupai.<sup>16</sup>

One of the best documented religious pilgrimages of any American Indian group is the Hopi salt pilgrimage to the Grand Canyon, which follows a sacred trail marked by important religious shrines.<sup>17</sup> In addition to salt, other mineral resources and all archeological sites, including residential and religious structures, caves, and rock art, are significant to the Hopi. Each of these sites serves as a cultural marker of Hopi ancestral presence within the landscape. Furthermore, the Hopi consider Ancestral Puebloan archeological sites within the Grand Canyon vicinity sacred and spiritually active.

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<sup>11</sup> Ahlstrom et al., "Archaeological Overview," 83.

<sup>12</sup> Sallie Pierce Brewer, "The Long Walk to Bosque Redondo, as told by Peshlakai Etsedi," *Museum Notes* Vol. 9, No. 11 (1937): 55-62.

<sup>13</sup> The information contained in this section is derived primarily from NPS, "Draft General Management Plan," 143; Ahlstrom et al., "Archaeological Overview," 82-83.

<sup>14</sup> P. Whiteley, *Deliberate Acts: Changing Hopi Culture through the Oraibi Split* (Tucson: University of Arizona Press, 1988), 13.

<sup>15</sup> Teri A. Cleeland, John A. Hanson, Lawrence M. Lesko, and Neil S. Weintraub, "American Indian Use of the South Kaibab National Forest: An Ethnographic Overview" (MS on file at Kaibab National Forest, Williams, Arizona, 1992), 34-35, 40-41.

<sup>16</sup> Frank H. Cushing, *The Nation of the Willows* (Flagstaff: Northland Press, 1965), 362-374, 541-549; Spier, *Havasupai Ethnography*, 83-392.

<sup>17</sup> Mary Russell Colton and Harold S. Colton, "Petroglyphs: The Record of a Great Adventure," *American Anthropologist* Vol. 33, No. 1 (1931): 32-37; Thomas G. Orr, "The Romance of Common Salt," *Science Monthly* Vol. 39 (Nov. 1934): 449-454; Helen Virginia Hunter, "Ethnography of Salt in North America" (Masters Thesis, University of Pennsylvania, Philadelphia, 1940), 10-17; Harold Courlander, *The Fourth World of the Hopis* (New York: Crown Publishers, 1971), 116-117; Merwin Kooyahoema, "Pilgrimage to Shrines Returns" *Uqa'Toqti* (Oct. 19, 1978): 1.

## Zuni<sup>18</sup>

The Zuni live on a small reservation in western New Mexico and eastern Arizona. Their traditional lands, however, extend northwest from the present-day Zuni, New Mexico to the San Francisco Peaks. Although their reservation and traditional lands are a fair distance from the Grand Canyon, the Zuni peoples believe that they entered this world through the Grand Canyon at the “origin place” before settling the city of Zuni. According to Zuni origin and migration narratives, the ultimate origin point of the Zuni peoples was at a place called *Chimik’yana’kya dey’a*—also known as Ribbon Falls on Bright Angel Creek, a major tributary of the Colorado River.<sup>19</sup> As they migrated to New Mexico, they lived at sites along the Colorado and Little Colorado Rivers. Consequently, the Grand Canyon and Colorado River are sacred to the Zuni peoples. In addition, the Zuni peoples consider all archeological sites to be traditional cultural properties, and other sacred sites to be significant. The Zuni still utilize historic trails from Zuni, New Mexico to the Grand Canyon.

## European Narrative History of the Indian Garden Region: 11,500 BP to 2002<sup>20</sup>

Archeologists generally divide the 11,500 years of pre-European human history in the American Southwest into four broad periods: Paleo-Indian, Archaic, Formative, and Protohistoric, all of which are represented at the Grand Canyon. The text describing the remaining eight periods discusses European human history at the Grand Canyon and in Indian Garden up until 2002.

### **Paleo-Indian Period: 11,500-8,500 BP**

#### *Introduction*

Although Paleo-Indian sites are rare, archeological evidence suggests that humans first occupied the Grand Canyon region approximately 10,500 years BP. Evidence of Paleo-Indian occupation of the Grand Canyon consists of a single pre-form Folsom point.

#### *Brief Historical Context*

The earliest period recognized in the Southwest is the Paleo-Indian, generally accepted as lasting from at least 11,500 to 8,500 BP<sup>21</sup>

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<sup>18</sup> The information contained in this section is derived primarily from NPS, “Draft General Management Plan,” 145; Ahlstrom et al., “Archaeological Overview,” 83.

<sup>19</sup> T. J. Ferguson and E. Richard Hart, *A Zuni Atlas* (Norman: University of Oklahoma Press, 1985), 51.

<sup>20</sup> Throughout this text, BP will refer to “years before present.”

<sup>21</sup> Within the specific project area there is no material evidence for Paleo-Indian occupation. However within the larger Colorado Plateau region including the Grand Canyon itself, material evidence suggests that Paleo-Indians were present and thrived on the rich megafauna. Because of this, the discussion of the Paleo-Indian Period will necessarily focus on the larger region as it speaks to the specific project area

Towards the end of the Pleistocene, a general global warming took place as glaciers retreated northward and melting of the expansive ice sheets created a wetter and cooler climate.<sup>22</sup> As a result, water became plentiful and numerous lakes were created. Lush vegetation proliferated with the moist environment. Coniferous forests, composed of Douglas Fir, Rocky Mountain Juniper, Limber Pine and later the Ponderosa Pine, became more widespread and grew at much lower elevations. Valleys contained a rich mix of woodlands and savannas. The woodlands were dominated by pinyon and juniper, with shortgrass and sagebrush characterizing the savannas.

The lush environment supported a diverse population of megafauna including mammoth, mastadon, giant sloth, and camel. Following the seasonal migrations of the megafauna were highly nomadic bands of humans that relied heavily on the mammals for subsistence. Distinctive, fluted, lanceolate projectile points (such as Clovis and Folsom points) often associated with kill and butchering sites indicate that the Paleo-Indian peoples were efficient big-game hunters.

Although fluted projectile points are a continent-wide archeological phenomenon, Paleo-Indian sites are extremely rare, and evidence for the presence of these people in the Grand Canyon environs is limited to a single pre-form Folsom-style spear point found in Marble Canyon. The point, made from a chert source in the Little Colorado River Gorge, was apparently broken during manufacture.<sup>23</sup> Elsewhere, Folsom points were used to kill long-horned bison in the period from about 10,800 to 10,000 BP.<sup>24</sup>

Towards the end of the Paleo-Indian Period, the region slowly became both warmer and dryer. Lake beds and rivers began to dry up. Native flora and fauna responded accordingly to this climatic change. As the region became drier, the variety of native flora diminished as the ranges of species moved upward and northward. This in turn drove some native fauna east towards the grassy savannas of the Plains, or in some cases, led to extinction.<sup>25</sup> The changing environment and loss of the megafauna prompted people to become more efficient in utilizing specific ecological niches.

***Chronology by Landscape Characteristic: 11,500-8,500 BP:***

**Land Use and Activities**

Hunting

Paleo-Indians relied heavily on megafauna, including mammoth, mastodon, long-horned bison, giant sloth, camel and horse.

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<sup>22</sup> The Pleistocene, commonly referred to as the Ice Age, began approximately two million years ago and gave way to the Holocene around 10,000 years BP; while glaciers did not formally extend as far south as the American Southwest and the Grand Canyon region, their presence directly impacted the entire Colorado Plateau region.

<sup>23</sup> Ahlstrom et al., "Archaeological Overview," 69.

<sup>24</sup> Lynn A. Neal, Dennis Gilpin, Lilian Jonas, and Jean H. Ballagh, "Cultural Resources Data Synthesis within the Colorado River Corridor, Grand Canyon National Park and Glen Canyon National Recreation Area, Arizona" (Flagstaff: SWCA, Inc., 2000), xix.

<sup>25</sup> William W. Dunmire and Gail D. Tierney, *Wild Plants and Native Peoples of the Four Corners* (Santa Fe: Museum of New Mexico Press, 1997), 11- 14; Rose Houk, *An Introduction to Grand Canyon Ecology* (Grand Canyon: Grand Canyon Association, 1996), 14-15; J. Greer Price, *An Introduction to Grand Canyon Geology* (Grand Canyon: Grand Canyon Association, 1999), 41-43.

Gathering

While regional evidence for the utilization of plant resources is not abundant, plants became an increasingly important resource towards the end of the Paleo-Indian Period.

**Response to Natural Environment**

Nomadic Practices

Paleo-Indians were necessarily nomadic, following the migrations and habitat of native fauna and harvesting seasonally selected flora in a dramatically changing environment.

Resource Identification

Paleo-Indians appear to have targeted fauna at diminishing regional water sources such as springs and creeks.

Shelter

Paleo-Indian peoples camped in the open or temporarily occupied convenient caves and rock shelters.

**Circulation Networks**

Routes/Trails

The pre-form Folsom point found in Marble Canyon indicates that early inhabitants of the area likely traveled from the canyon rim to the inner canyon and may have followed informal routes or trails tied to local topography.

**Boundary Demarcations**

Colorado River

The Grand Canyon portion of the Colorado River may have served as a natural boundary during the Paleo-Indian Period.

**Vegetation**

Native Flora

Towards the end of the Paleo-Indian Period and the extinction and migration of megafauna, humans came to depend more upon local vegetation.

## Archaic Period: 8,500-1,700 BP

### *Introduction*

Humans began to intensively utilize all areas of the Grand Canyon, including the inner canyon, during the Archaic Period. Archaic occupation of the Grand Canyon region is characterized by an increase in the quantity and diversity of flaked-stone tools, the use of processing tools such as milling stones to grind seeds and other vegetal matter, and the manufacture of woven implements such as baskets, mats, and sandals. Art and/or ritual beliefs also became more elaborate during the Archaic Period, as evidenced by the presence of petroglyphs, pictographs, and split-twig willow figurines.

### *Brief Historical Context*

The Archaic Period is the next prehistoric cultural period recognized in the Southwest. The Archaic Period extended from the end of the Paleo-Indian Period around 8,500 BP to approximately 1,700 BP.

By the beginning of the Holocene, the environment of the greater Southwest had begun to stabilize, resembling the semi-arid or desert-like conditions present in the region today. Within this stable environment, however, short and long-term fluctuations in precipitation occurred.<sup>26</sup> For example, between 7,500 and 6,500 BP, a long-term dry spell began within the greater Southwest that lasted nearly 2,000 years.

The relatively stable environment enabled the Archaic peoples to pursue a different lifeway than their Paleo-Indian predecessors. Subsistence activities shifted from hunting megafauna to hunting smaller game such as deer, antelope, and rabbits. In addition, Archaic peoples placed greater reliance on plant foods. Many Archaic camps throughout the Southwest are found near springs, ponds, or other water sources that supported a great diversity of flora and fauna. Some of these camps indicated that they were used for intermittent periods, suggesting a semi-sedentary lifestyle. This greater reliance on plant foods may have led Archaic peoples to adopt a more structured seasonal migration between spring-summer and winter camps, utilizing a variety of flora in different environments.

To more effectively exploit the range of resources, Archaic peoples adopted new material culture not seen during the Paleo-Indian Period. Milling stones (*manos* and *metates*) were used to grind seeds and spear throwers (*atlatls*) were developed to hunt game. Projectile points generally became smaller in a direct relationship with the game that was being hunted. Woven baskets, mats, and sandals also became more prevalent during the Archaic Period.

Archaic Period sites that were identified in GRCA reflect this subsistence shift, and typically consist of fire pits, fire-cracked rock, grinding stones, dart points and other flaked stone tools, waste flakes from making tools, animal bones, and charred plant remains.<sup>27</sup> Perhaps most interesting are those sites where the apparently rich intellectual and spiritual lives of the Archaic

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<sup>26</sup> Dunmire and Tierney, *Wild Plants and Native Peoples*, 14.

<sup>27</sup> Ahlstrom et al., "Archaeological Overview," 69-72.

people are evident. For example, in ten caves within the Grand Canyon—where Archaic peoples found bones of then-extinct Ice Age bighorn sheep—they left offerings of split-twig figurines twisted into the shape of the animal.<sup>28</sup> Elaborate pictographs known as the Shaman’s Gallery (Site AZ B:9:201), which is located north of the Colorado River below the Kanab Plateau, further attests to the artistic and spiritual sophistication of the canyon’s Archaic inhabitants.<sup>29</sup>

Although Archaic peoples appear to be the first humans to have inhabited the region encompassed by GRCA to any degree, this did not occur until approximately 4,000 BP. While many of the inner canyon Archaic Period sites identified are characterized by figurines and pictographs, several pre-ceramic Archaic Period site components have also been identified along the Colorado River corridor.<sup>30</sup> None of the prehistoric sites that have been recorded in the vicinity of Indian Garden have been definitively attributed to Archaic Period occupation.

Beginning at about 4,000 BP, and continuing for nearly 2,500 years to about 1,500 BP, there occurred another major subsistence change in which people began widely experimenting with maize agriculture while continuing to rely heavily on hunting game and gathering wild plants.<sup>31</sup> On the Colorado Plateau, the adoption of agriculture is usually considered a diagnostic of Basketmaker II. Whether classified as a late Archaic or Basketmaker II trait, however, the practice of agriculture is a prerequisite for the development of a Formative lifeway in the American Southwest.<sup>32</sup>

### ***Chronology by Landscape Characteristic, 8,500-1,700 BP:***

#### **Land Use and Activities**

Hunting	Archaic peoples hunted bighorn sheep, elk, deer, rabbit, turkey, and other local fauna.
Gathering	Archaic peoples began to focus more intensively on utilizing local flora for diet, medicine, functional, and ceremonial uses.

#### **Patterns of Spatial Organization**

Semi-sedentism	The location of sites adjacent to specific ecological resources and evidence for their reuse suggests that a semi-sedentary lifestyle may have been adopted towards the Late Archaic Period.
Site Location	Camp sites are frequently associated with a

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<sup>28</sup> Steven D. Emslie, Robert C. Euler, and Jim I. Mead, “A Desert Culture Shrine in Grand Canyon, Arizona, and the Role of Split-twig Figurines” *National Geographic Research* Vol. 3, No. 4 (1987): Table 1.

<sup>29</sup> NPS, “Draft General Management Plan,” 140; Christopher M. Coder, *An Introduction to Grand Canyon Prehistory* (Grand Canyon: Grand Canyon Association, 2000), 17-21.

<sup>30</sup> Ahlstrom et al., “Archaeological Overview,” 71-72; Fairley, et al. .

<sup>31</sup> Neal et al., “Cultural Resources Data Synthesis,” xix.

<sup>32</sup> Ahlstrom et al., “Archaeological Overview,” 71.

seasonal or permanent water source.

## **Response to Natural Environment**

Shelter	Archaic peoples often utilized caves and rock shelters within and throughout the Grand Canyon as camp sites.
Ceremonial	The presence of split-twig figurines in some canyon sites suggests that caves may have also served as a location for certain ceremonial functions.

## **Cultural Traditions**

Ritual Figurines	Split-twig figurines have been found in caves within the inner canyon. These small figurines represent animals that were most likely hunted such as bighorn sheep or mountain goats. They may represent pre-hunt ritual practices carried out in sacred places.
Rock Art	The “Shaman’s Gallery” mural and other similar depictions may represent hundreds or thousands of years of anthropomorphic figures, and other designs and symbols including bighorn sheep, deer, carnivores, and snakes. Petroglyphs are abundant within the larger Grand Canyon region. In addition, a recent re-examination of images from Mallery’s Gallery, a grotto along the Bright Angel Trail below the south rim, suggests that several images may date to the Archaic Period.

## **Circulation Networks**

Trails/Routes	The location of Archaic Period sites within the Grand Canyon and along the Colorado River basin strongly suggests the presence of informal trails/routes along the canyon rim and down to the Colorado River. The presence of non-local trade goods at Late Archaic sites also suggests inter-regional trade and trails/routes to peoples outside of the larger Grand Canyon region.
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## Vegetation (Related to Land Use)

### New Cultivars

Although not widespread, botanical evidence from the Colorado Plateau suggests that maize, a cultivar from ancient Mexican cultures, may have been introduced into the Four Corners region around 4,000 BP.

## Formative Period: 1,700-700 BP

### *Introduction*

In the Grand Canyon region, the Formative Period is characterized by Ancestral Puebloan and Cohonina occupation. The Grand Canyon region experienced a dramatic increase in population during the Formative Period, and numerous Formative Period archeological sites contain extensive domestic complexes and technologically sophisticated agricultural features. Like their predecessors, the Ancestral Puebloan and Cohonina peoples utilized all areas of the Grand Canyon and exploited a wide variety of canyon resources.

### *Brief Historical Context*

The Formative Period in the western hemisphere is marked by the transition from a hunting and gathering economy to an economy based primarily on agriculture, the development of permanent villages, and the production of ceramics.<sup>33</sup> Willey and Phillips define the Formative Period “by the presence of agriculture, or any other subsistence economy of comparable effectiveness, and by the successful integration of such an economy into well-established, sedentary village life.”<sup>34</sup> In the Grand Canyon region, archeologists recognize two Formative cultures: the Cohonina and the Ancestral Puebloan or Anasazi. The Formative Period lasted from approximately 1,500 to 700 BP.

Ancestral Puebloan territory extended across much of the Colorado Plateau and included portions of southern Nevada, southern Utah, northern Arizona, southwestern Colorado, and northwestern New Mexico. Within this area, archeologists have recognized a number of distinct traditions or branches that are distinguished based on pottery technology and design styles, and on architecture.

Between 1,300 and 950 BP, Ancestral Puebloan use of the Grand Canyon was apparently sparse and intermittent, focusing primarily on hunting game and wild plant gathering.<sup>35</sup> By 1,000 BP, however, the climate became wetter due to increased precipitation, favoring an increase in the ability to expand cultivation in a greater range of places. By 950 BP, Ancestral Puebloan

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<sup>33</sup> James A. Ford. *A Comparison of Formative Cultures in the Americas: Diffusion of the Psychic Unity of Man*, Smithsonian Contributions to Anthropology, Vol. 11 (Washington, D.C.: Smithsonian Institution Press, 1969), 4-5.

<sup>34</sup> Gordon R. Willey and Philip Phillips. *Method and Theory in Archaeology*, (Chicago: University of Chicago Press, 1958), 146.

<sup>35</sup> Douglas W. Schwartz, *On the Edge of Splendor: Exploring Grand Canyon's Human Past* (Santa Fe: Annual Bulletin of the School of American Research, 1989), 53.

occupation had expanded to the Kaibab Plateau and along the Colorado River basin. Agriculture was now being practiced within the canyon and along the canyon rim.<sup>36</sup> Agricultural features associated with Ancestral Puebloan farming in the Grand Canyon vicinity include terraces, ditches, shallow clay-lined depressions, check dams, and garden plots with borders. Many of these features were constructed to channel and store water as well as to decrease the potential of erosion. Rock walls served as passive solar devices that prevented frost damage and allowed better retention of moisture.<sup>37</sup>

The change in the size and complexity of habitation structures further attests to the increase of Ancestral Puebloan use of the region. Prior to 925 BP, residential structures consisted of small pithouses; surface masonry structures with multiple rooms and agricultural storage features became more prevalent after that date.<sup>38</sup> The Ancestral Puebloans also began building kivas indicating a commitment to year-round communal occupation.<sup>39</sup> Kivas have been recorded on the south rim—such as at Tusayan Ruin—and in the inner canyon on Unkar Delta and at Bright Angel Ruin. Conversely, kivas have not been identified on the north rim and appear to be absent in other areas with prehistoric pueblo sites, indicating that the extent of sedentism varied considerably across the canyon.<sup>40</sup>

Archeological evidence indicates that the Cohonina inhabited the Coconino Plateau and the Grand Canyon vicinity from the 1,300 to 900 BP.<sup>41</sup> Like their Ancestral Puebloan neighbors, the Cohonina practiced agriculture. However, the extent to which the Cohonina relied on agriculture for subsistence is debatable. Most researchers believe that the Cohonina relied on agriculture to some degree, but much less than the Ancestral Puebloans. Instead, the Cohonina obtained a fair amount of their subsistence from hunting and gathering.<sup>42</sup> Furthermore, the Cohonina did not strictly follow a “sedentary village life,” but practiced a lifeway characterized more by seasonal movement among different sites.<sup>43</sup> They established residential complexes along the canyon rim and foraged in the inner canyon and Colorado River basin on seasonal rounds.<sup>44</sup>

Because Cohonina occupation overlapped with the Puebloan peoples, it is believed that they interacted peacefully and pursued active trading. The Cohonina possessed unique ceramics and lithic technology that distinguished them from the neighboring Puebloans. Cohonina residential sites typically include features such as pithouses, masonry block rooms, walled compounds, interior hearths, and storage areas.<sup>45</sup>

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<sup>36</sup> Ahlstrom et al., “Archaeological Overview,” 74-76.

<sup>37</sup> Coder, *Grand Canyon Prehistory*, 41.

<sup>38</sup> Ahlstrom et al., “Archaeological Overview,” 74.

<sup>39</sup> Schwartz, *On the Edge of Splendor*, 56.

<sup>40</sup> Ahlstrom et al., “Archaeological Overview,” 74.

<sup>41</sup> See Richard V. N. Ahlstrom, “Tree-Ring Dating the Cohonina,” (MS on file, Department of Anthropology, University of Arizona, Tucson, 1986); Thomas R. Cartledge, “Cohonina Adaptation to the Coconino Plateau: A Re-evaluation,” *The Kiva* Vol. 44, No. 4 (1979): 297-317; John C. McGregor, *The Cohonina Culture of Northwestern Arizona*, (Urbana: The University of Illinois Press, 1951), 20.

<sup>42</sup> Ahlstrom et al., “Archaeological Overview,” 73 ; McGregor, *Cohonina Culture*, 145-146.

<sup>43</sup> Willey and Phillips, *Method and Theory*, 146.

<sup>44</sup> Ahlstrom et al., “Archaeological Overview,” 73.

<sup>45</sup> NPS, “Draft Environmental Assessment, Desert View Improvements,” (Grand Canyon National Park, Arizona, n.d. [2000?], photocopy), 22-23. ; NPS, “Draft General Management Plan,” 140; Coder, *Grand Canyon Prehistory*, 24-29.

During the Formative Period, inhabitants living within the vicinity of the Grand Canyon utilized transportation routes that led down to natural resources within the inner canyon and between each rim. Trails and footpaths followed along the rims and utilized canyons that led down to the Colorado River. Remains of footbridges and ladders spanning gaps in canyon walls are still seen today. Non-local trade items including ceramic vessels from the east, shell bracelets and slate beads from the south, and shell beads from the Pacific Coast suggest intra-regional trade and continued contact with neighboring peoples.<sup>46</sup>

The Formative Period was the most populous period of occupation within the Grand Canyon vicinity prior to European contact. Of more than 4,300 known archeological sites in GRCA, over 70 percent were occupied between 950 and 850 BP.<sup>47</sup> By 850 BP, however, the environment within the Grand Canyon region changed again and became increasingly drier. Over time, less rainfall occurred and erosion of alluvial terraces used for farming along the Colorado River increased. As a result, formerly dependable resources became scarce and the total amount of arable land decreased. While some Cohonina and Puebloan groups maintained their agriculturally dependent settlements, a majority of the occupants of the larger Grand Canyon region eventually abandoned the rims and moved east to the Hopi Mesas. Archeological evidence from some villages, such as Tusayan Ruins, suggests that the residents of the canyon rim may have remained until around 770 BP.<sup>48</sup>

### ***Chronology by Landscape Characteristic, 1,700-700 BP:***

#### **Land Uses and Activities**

Hunting	During the Formative Period, inhabitants of the Grand Canyon area continued to hunt bighorn sheep, deer, bear, bobcat, mountain lion, rabbits, rock squirrel, mice, packrats, woodrats, eagles, hawks, waterfowl, and other local fauna.
Gathering	People who lived during the Formative Period continued to utilize and rely upon the local flora for diet, medicine, and functional use.
Mining	People who lived during the Formative Period mined mineral resources such as pigments and salt from within the inner canyon.
Seasonal Migration	The Cohonina practiced a lifeway characterized by seasonal movement among different locales, with residential complexes along the canyon rim and foraging sites in the inner canyon and Colorado

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<sup>46</sup> Coder, *Grand Canyon Prehistory*, 42-43.

<sup>47</sup> GRCA site files; NPS, "Draft Environmental Assessment," 22-23; NPS, "Draft General Management Plan," 140; Coder, *Grand Canyon Prehistory*, 24-29.

<sup>48</sup> Coder, *Grand Canyon Prehistory*, 44-47; NPS, "Draft General Management Plan," 140.

River basin. Ancestral Puebloans also took advantage of seasonal resources, but led a more sedentary lifeway than the Cohonina.

#### Agriculture

Puebloan peoples began to practice widespread agriculture, cultivating maize, squash and beans. Agricultural practices intensified and withdrew with the changing climate. The Cohonina practiced agriculture but to lesser extent than their Puebloan neighbors.

### **Patterns of Spatial Organization**

#### Sedentism

Archeological sites during this period reflect the transition from semi-sedentism to sedentary villages with a significant increase in population during the period ca. 1,000 to 800 BP. The Cohonina are considered less sedentary than the Ancestral Puebloans.

#### Site Location

Archeological sites for this period are located throughout the Grand Canyon vicinity, along both rims, within the inner canyon, and Colorado River basin. Permanent and seasonal sites were frequently located adjacent to springs and/or other water resources, and arable lands. At Indian Garden, Formative Period sites are clustered on the terraces above Garden Creek.

### **Response to Natural Environment**

#### Exploitation of Colorado River

During milder, wetter years, Puebloan Basin peoples expanded to alluvial terraces along the Colorado River to take advantage of rich alluvial soils.

#### Expansion and Contraction

During milder, wetter years, the expansion of agriculture resulted in the exploitation of all habitable niches from the canyon rim to the Colorado River basin. However during periods of harsher, drier climates characterized by diminishing resources and a shrinking amount of arable land, the population contracted to canyon rim settlements and eventually left the region.

## Cultural Traditions

### Rock Art

Rock art is abundant within the larger Grand Canyon region. Furthermore, rock art styles indicative of Archaic through Protohistoric occupations are represented. Ancestral Puebloan motifs with anthropomorphic and zoomorphic figures tend to be most common.<sup>49</sup>

### Ceramics

Both Cohonina and Ancestral Puebloan peoples produced distinctive ceramic vessels. Some of the vessels were plain and intended exclusively for utilitarian use. Other vessels, however, were highly decorated and indicative of artistic expression.

## Circulation Networks

### Trails/Routes

The presence of Formative Period sites within the inner canyon and along the Colorado River basin suggest that formal trails/routes or drainages were utilized to link the canyon rims and Colorado River. The presence of non-local trade goods at these sites points to intra-regional trade and continuous interaction with peoples outside of the Grand Canyon region.

## Vegetation (Related to Land Use)

### New Cultivars

Archeological evidence from Formative sites documents the presence of and reliance upon three main cultivars: maize, squash, and beans. Cotton was also grown along the Colorado River basin.

## Buildings and Structures

### Pithouses

Pithouses are circular structures constructed of brush and mud, and entered through a hole in the roof. The Cohonina built pithouses and, prior to 925 BP, Ancestral Puebloans constructed residential structures composed of small pithouses. No pithouse features have been identified in the Indian Garden project area, however.

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<sup>49</sup> Peter W. Bungart, "Rock Art," in *The Grand Canyon River Corridor Survey Project: Archaeological Survey along the Colorado River between Glen Canyon Dam and Separation Canyon*, Helen C. Fairly, Peter W. Bungart, Christopher M. Coder, Jim Huffman, Terry L. Samples, and Janet R. Balsom, eds., (NPS, prepared in cooperation with the Glen Canyon Environmental Studies, 1994), 91-94.

## Pueblos

After 925 BP, Puebloan peoples began building masonry structures of local stone. Often these small pueblos contained a kiva or circular ceremonial structure. Puebloan villages were located along the canyon rims and within the inner canyon. In canyons and drainages and where land was arable, Puebloan villages were located adjacent to agricultural fields. However, no pueblo structures have been identified within the Indian Garden project area.

## Temporary Camps

Seasonal habitation structures typically consisted of a pole-and-brush superstructure supported by a dry-laid masonry foundation. Ten of the fifteen prehistoric sites that have been identified in the Indian Garden vicinity have surface structures that likely served as seasonal habitation structures; they are all located on terraces and promontories overlooking Garden Creek. The expedient construction of these structures and the proximity to arable land and dependable water sources indicate that the structures were summer farm sites occupied by people that lived the remainder of the year on the canyon rim or down near the river. The simple structures at Indian Garden appear to have been constructed by Ancestral Puebloan peoples, as they are similar to Puebloan structures from the San Juan River area.<sup>50</sup> However, the structures are not definitive of Puebloan construction, and could have been built by Cohonina or subsequent inhabitants.<sup>51</sup> Ceramics tend to be most supportive of Puebloan occupation.

## Small-scale Features

### Granaries

Puebloan and Cohonina peoples built masonry, wood and mud storage structures. These structures were utilized exclusively as storage units for surplus grain. They were either attached to residences or located on isolated canyon precipices. Two sites in the vicinity of Indian Garden possess granary

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<sup>50</sup> William Y. Adams and Nettie K. Adams, "An Inventory of Prehistoric Sites on the Lower San Juan River, Utah," *Museum of Northern Arizona Bulletin* 31, Glen Canyon Series No. 1, (Flagstaff: Museum of Northern Arizona, 1959), 12; Coulam, "Archeological Survey," 16.

<sup>51</sup> Coulam, "Archeological Survey," 16.

	features. At both sites the granaries are tucked under ledges of canyon walls.
Terraces	Puebloan peoples constructed artificial terraces out of stone and soil to create productive agricultural fields reducing the potential for erosion and increasing agricultural yields.
Check Dams	Puebloan peoples constructed small rock walls out of stone. These stone walls served as check dams to control the erosion of soils in canyons and drainages. The rock walls also may have served as passive solar devices by storing heat and preventing frost damage to spring seedlings. A few of the habitation sites near Indian Garden are associated with small rock walls that may have served as check dams.
Irrigation Ditches	Puebloan peoples constructed shallow, clay-lined depressions or canals to funnel water to agricultural fields and garden plots.
Garden Plots	The construction of low rock walls defined garden plots within canyons and drainages. The size of garden plots was based on the topography and drainage of the land

## **Protohistoric Period: 700-460 BP**

### ***Introduction***

During the Protohistoric Period, Pai and Paiute peoples moved into the Grand Canyon region. They occupied the north and south rims, sometimes utilizing pueblos abandoned by Ancestral Puebloan and Cohonina groups, and the inner canyon where springs and agriculturally suitable lands were located. In addition, groups like the Hopi used the Grand Canyon and surrounding area intermittently during the late Protohistoric Period, maintaining trade relationships with the Pai and Paiute.

### ***Brief Historical Context***

At about the same time the Ancestral Puebloan and Cohonina were abandoning the Grand Canyon vicinity, the Pai and Paiute were starting to move into northern and western Arizona. The Pai, a Yuman-speaking group represented prehistorically by the Cerbat tradition, came from the Mojave Desert and occupied the western end of the Grand Canyon, primarily along the south rim. The Paiute entered the Grand Canyon region from the Great Basin of Nevada and Utah to the north, the southern most bands originally occupying the Kaibab Plateau along the north rim.

Some of the earliest radiocarbon-dated Pai and Paiute sites in Arizona are those obtained in the Grand Canyon, which indicate that the Pai and Paiute probably began moving into the Grand Canyon region around 700 BP.<sup>52</sup> In contrast to Formative Period cultural trajectories, in which increasing dependence on agriculture apparently led to colonization and ultimately abandonment of the Grand Canyon, the Pai and Paiute practiced a subsistence strategy less reliant on agriculture and apparently far more stable, as evidenced by Pai and Paiute use of the Grand Canyon lasting from circa 700 BP into the twentieth century.<sup>53</sup> They sometimes used abandoned Formative Period sites on the north and south rims, but eventually moved to the inner canyon where springs and agriculturally suitable lands were located.

The Pai began to reoccupy much of the lower canyon by 675 BP, crossing the Colorado River to the north rim when necessary. They practiced a form of seasonal migration, wintering in the uplands and migrating to the canyon bottom for planting and harvesting in the spring. Pai occupation of archeological sites in the Grand Canyon vicinity are distinguished from earlier periods by the presence of characteristic Tizon Brownware ceramics. Archeological evidence suggests that the Pai hunted deer, bighorn sheep, and other local game, as well as gathered mesquite, prickly pear, and agave.

The Pai constructed less permanent shelters than their Puebloan predecessors, living in rock shelters and brush wickiups. In addition, they practiced a limited horticulture. Because of this, the material culture remains of their occupation are somewhat more ephemeral than earlier Puebloan and Cohonina sites.<sup>54</sup>

The Havasupai and Hualapai tribes are two of fourteen Pai groups that share a similar cultural heritage and language. Schwartz hypothesized that between 1,000 and 900 BP, population pressures forced some of the Cohonina to move from the canyon rim and establish defensive locations along the cliffs around Havasu Canyon. After about 200 years, the people abandoned the cliffs and began occupying the canyon bottom, apparently because the need for defensive postures no longer existed. By 700 BP, these people—who may now be called the Havasupai—also found it safe to live on the plateau. However, the increased aridity made farming on the plateau difficult. As a result, a pattern of seasonal residence was established where winters were spent on the plateau of the south rim hunting and gathering, and spring and summer months were spent in Havasu Canyon growing crops using the perennial water sources along Cataract Creek.<sup>55</sup>

Within the last ten years, however, Schwartz reversed his position on the Cohonina-Havasupai relationship, stating that "...after a century or more when there were no settlements in the region, the Cohonina were replaced by a new people, the Cerbat, who moved into the area from the west,

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<sup>52</sup> Neal et al., "Cultural Resources Data Synthesis," xxi; Robert L. Bettinger and Martin A. Baumhoff, "The Numic Spread: Great Basin Cultures in Competition," *American Antiquity* Vol. 47, No. 3 (1982): 485-503; Robert C. Euler, "Walapai Culture History," (Ph.D. Dissertation, Department of Anthropology, University of New Mexico, Albuquerque, 1958), 71.

<sup>53</sup> Neal et al., "Cultural Resources Data Synthesis," xxi.

<sup>54</sup> NPS, "Draft General Management Plan," 140; Coder, *Grand Canyon Prehistory*, 49-50.

<sup>55</sup> Schwartz, "Havasupai," 13-14; Richard A. Brooks and Peter J. Pilles, Jr., "Final Report for the Cultural Resources of the Grand Canyon Cross Canyon Corridor Survey" (Flagstaff: Museum of Northern Arizona, Department of Anthropology, 1974), 16-17.

and it was they who eventually became the Havasupais.”<sup>56</sup> Schwartz's latest position is more in line with Euler, who suggests that between 850 and 800 BP the Cohonina population declined and the plateau area was abandoned. Concurrent with this period of abandonment, the Pai began moving into the area. The Pai lifestyle of hunting and gathering, supplemented by farming near permanent springs and streams, was similar to that proposed for the Cohonino. However, Pai pottery, grinding stones, and projectile points are different from those of the Cohonino and Ancestral Puebloans. Consequently, it is Euler's belief that some of the early Pai inhabitants became the historic Havasupai and Hualapai.<sup>57</sup>

Like the Pai along the south rim, the Southern Paiute led a semi-sedentary lifestyle characterized by hunting and gathering. The Paiute occasionally occupied abandoned pueblos and also constructed temporary camps near subsistence resources. As agricultural lands in canyon bottoms were farmed, more permanent camps were established. The Paiute interacted peacefully with the Hopi to the east, with trade being the major stimulus for contact.<sup>58</sup> Southern Paiute occupation of archeological sites within the Grand Canyon vicinity is distinguished from earlier periods by the presence of characteristic Brownware ceramics and twined basketry.<sup>59</sup>

In addition to the Pai and Paiute, the Hopi and Zuni used the Grand Canyon intermittently during the late Protohistoric Period and early historic times. Archeological and ethnographic data indicate that the Hopi and their ancestors have utilized Grand Canyon resources for hundreds of years.<sup>60</sup> A strong trade network existed between the Hopi and Havasupai as early as the 1300s.<sup>61</sup> The Hopi utilized the salt deposits found along the Colorado River near its confluence with the Little Colorado River as recently as the 1960s.<sup>62</sup> The salt mines are sacred to the Hopi and the trail to the salt-gathering place is marked by shrines that are of religious importance.<sup>63</sup> The Grand Canyon is sacred to the Hopi in other ways as well. To the Hopi, the Grand Canyon is where humans and animals emerged from the underworld and it is where the dead return. The Sipapu, or place of origin, is located within the Grand Canyon. According to Hopi belief, the Hopi lived in a number of worlds below this one. They emerged from the Sipapu into this world and spread to all parts of the Grand Canyon vicinity including both rims, the inner canyon, and the larger Southwestern United States, until their eventual congregation at the Hopi Mesas.<sup>64</sup>

Opinions vary as to when the Navajo migrated to the Grand Canyon/Coconino Plateau region; the earliest suggested dates are around 1000 AD and later dates are around 1525 AD.<sup>65</sup>

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<sup>56</sup> Schwartz, *On the Edge of Splendor*, 38; Euler, “Walapai Culture History”, 1958; Robert C. Euler, “Archaeological Problems in Western and Northwestern Arizona, 1962,” *Plateau*, Vol. 35, No. 3 (1963): 78-85.

<sup>57</sup> Euler, “Walapai Culture History”, 1958; Euler, “Archaeological Problems,” 78-85.

<sup>58</sup> Bertha P. Dutton, *American Indians of the Southwest* (Albuquerque: University of New Mexico Press, 1983), 157-161.

<sup>59</sup> Kelly and Fowler, “Southern Paiute,” 386.

<sup>60</sup> Ahlstrom et al., “Archaeological Overview,” 82; Janet R. Balsom, “Native Americans of the Grand Canyon” in *Hiking the Grand Canyon*, ed. John Annerino (San Francisco: Sierra Club Books, 1993), 12.

<sup>61</sup> Balsom, “Native Americans of the Grand Canyon,” 13; Cushing, “The Nation of the Willows,” 362-374, 541-549; Spier, “Havasupai Ethnography,” 83-392.

<sup>62</sup> Balsom, “Native Americans of the Grand Canyon,” 12.

<sup>63</sup> Ahlstrom et al., “Archaeological Overview,” 82; Balsom, “Native Americans of the Grand Canyon,” 12.

<sup>64</sup> Balsom, “Native Americans of the Grand Canyon,” 12; Cushing, *The Nation of the Willows*, 362-374, 541-549; Spier, *Havasupai Ethnography*, 83-392.

<sup>65</sup> Balsom, “Native Americans of the Grand Canyon,” 12.

However, historical evidence indicates that the Navajo were well established in the region by at least 1680 AD.<sup>66</sup> Although there is little documented Navajo use of the Grand Canyon during the Protohistoric Period, there is evidence that the Navajo gathered pinyon nuts near the Grand Canyon during historic times, and a few Navajo families were living in the vicinity of GRCA during the late 1800s.<sup>67</sup> Nevertheless, Navajo traditional cultural ties to the Grand Canyon and Colorado River are strong. For example, the Navajo believe that they were present during the creation of the Grand Canyon and Colorado River, and the Grand Canyon and other minor canyons are home to many Navajo deities affiliated with clan origins and migrations.<sup>68</sup>

Although their reservation and traditional lands are far from the Grand Canyon, the Zuni believe that they too entered this world through the Grand Canyon. The origin point of the Zuni was at a place called *Chimik'yana'kya dey'a*, also known as Ribbon Falls on Bright Angel Creek, a major tributary of the Colorado River, west of the mouth of the Little Colorado River in the Grand Canyon.<sup>69</sup> As they migrated to Zuni, they lived at sites along the Colorado and Little Colorado Rivers.

### ***Chronology by Landscape Characteristic, 700- 460 BP:***

#### **Land Use and Activities**

Hunting	Protohistoric peoples hunted both large and small fauna, utilizing the resources from both canyon and rim habitats.
Gathering	Protohistoric inhabitants of the region gathered a wide variety of local flora, utilizing the resources unique to mountain, rim, and inner canyon habitats.
Mining	Protohistoric peoples mined mineral resources such as pigments and salt from within the inner canyon.
Seasonal Migration	The historic Havasupai, and to a lesser degree the Hualapai and Southern Paiute, practiced semi-sedentism, wintering at more permanent sites on or adjacent to the rim and spending planting and harvesting seasons within the Grand Canyon and tributary canyon bottomlands.
Agriculture	The Pai and Paiute depended on agricultural fields generally located in canyon bottoms adjacent to water resources.

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<sup>66</sup> Balsom, "Native Americans of the Grand Canyon," 12.

<sup>67</sup> Brewer, "Long Walk," 55-62; Cleeland et al., "American Indian Use," 34-35, 40-41.

<sup>68</sup> Roberts et al., "Bits'iis Nineezi," 144.

<sup>69</sup> Ferguson and Hart, *A Zuni Atlas*, 51.

## Patterns of Spatial Organization

Semi-Sedentism	Pai and Paiute archeological sites are more ephemeral, reflecting their practice of seasonal migration patterns tuned to the utilization of regional resources.
Site Location	Archeological sites dating to the early Protohistoric indicate that Pai and Paiute occupation of the Grand Canyon vicinity focused primarily on the north and south rims. After adopting the agricultural practices of their predecessors, Pai and Paiute peoples began to seasonally occupy the canyon bottomlands adjacent to water resources.

## Response to Natural Environment

Exploitation of Colorado River	After adopting the agricultural practices of their predecessors, the Pai and Paiute peoples began to exploit the tributary canyon bottoms adjacent to springs.
Shelter	Protohistoric inhabitants utilized caves and rock shelters within and throughout the Grand Canyon as temporary camp sites.
Salt mines	Because of its value for subsistence and trade, Protohistoric peoples continued to utilize important salt mines within the inner canyon. Despite their distance from the Grand Canyon, the Hopi and Zuni also continued to make regular trips to the salt mines within the inner canyon.

## Cultural Traditions

Rock Art	Mallery's Gallery, a grotto along the Bright Angel Trail below the south rim, contains pictographs representing successful hunting activities. Near the two mile point of the Bright Angel Trail, south of Indian Garden, is another set of pictographs. Both of these pictograph panels have been attributed to the Havasupai however a recent re-examination of Mallery's Gallery suggests that several images may also date to the Archaic Period. <sup>70</sup>
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<sup>70</sup> Cleeland, "Cross Canyon Corridor," 13; Mark Sinclair to Inner Canyon Personnel. "Euler's Visit to Indian Gardens," May 16, 1978 (Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park), 1.

## **Circulation Networks**

### Trails/Routes

Protohistoric inhabitants of the Grand Canyon region used formal routes and trails that linked the canyon rims with the Colorado River. For example, the Havasupai, and possibly earlier inhabitants, used the route availed by the Bright Angel Fault to access the Indian Garden area. The trails and routes led to natural resources and to irrigated gardens and fields in minor canyons. The trails also enabled different groups to interact regularly with one another. For example, the Hopi maintained active trade relationships with both the Paiute and Havasupai.

## **Boundary Demarcations**

### Colorado River

The Colorado River was a porous boundary that served to generally delineate the Pai on the south from the Paiute on the north. However, the Colorado River was frequently crossed and trade and interaction was actively pursued from both sides. In addition, native fauna and flora resources on both sides of the Colorado River were utilized by all groups.

## **Vegetation (Related to Land Use)**

### Cultivars

Pai and Paiute peoples adopted some of the cultivars and agricultural practices of their Puebloan and Cohonina predecessors through trade and interaction with the Hopi and Zuni to the east.

## **Buildings and Structures**

### Pueblo Reoccupation

Both Pai and Paiute peoples often reoccupied earlier pueblo sites.

### Wickiups

Wickiups were temporary conical shelters constructed from locally available resources. A circular framework of poles was weaved with willow branches and leafy bushes. These shelters served as temporary camps and seasonal respite from the sun. The Havasupai are known to have lived intermittently at Indian Garden into the twentieth century, and their habitation structures

were still present at Indian Garden when GRCA was established. However, beginning in 1924, the NPS removed Havasupai cultural remains from Indian Garden.

Sweathouse

Pai frequently constructed wood and earth saunas or sweathouses.

### **Small-scale Features**

Terraces

Pai and Paiute peoples constructed artificial terraces out of stone and soil to create productive agricultural fields, reducing the potential for erosion and increasing agricultural yields.

Check Dams

Pai and Paiute peoples increased their agricultural yields with the construction of check dams to control flooding and erosional processes.

Irrigation Ditches

Pai and Paiute peoples artificially irrigated their agricultural fields where possible by constructing ditches to control the course and direction of water flow.

Roasting Pits

Pai peoples constructed pits to roast pinyon nuts and agave (*mescal*). The pits usually consisted of a shallow circular hole lined with stone, which was constructed close to the resources harvested. Two such roasting pits have been identified along the Bright Angel Trail, south of Indian Garden. Both of these pits were apparently used to roast agave.<sup>71</sup>

## **Spanish Colonization and European Exploration of the Grand Canyon Vicinity: 1540-1821 AD**

### ***Introduction***

As historian Stephen Pyne has noted, the Grand Canyon, despite its monumentality and vastness, remained largely unexplored by European military expeditions and settlers until the nineteenth century. Of those parties that saw the Grand Canyon and recorded their experiences, many perceived it as an obstacle of vast barrenness. Only one documented party ever attempted to descend to the Colorado River. Maps produced during this nearly three hundred year period

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<sup>71</sup> Sinclair, "Euler's Visit," 1.

focus exclusively on the larger Southwest region, further documenting the peripheral nature ascribed to the Grand Canyon and its inhabitants.<sup>72</sup>

### ***Brief Historic Context***

In 1540, Francisco Vasquez de Coronado led an exploration party north from Mexico to locate the fabled Seven Cities of Cibola, most likely the villages of the Zuni peoples. Coronado eventually reached Zuni Pueblo, but found no riches. A contingent led by Pedro de Tovar was led to the Hopi pueblos which were again found to contain no gold or mineral wealth. The Hopis led a detachment headed by Garcia Lopez de Cardenas to the Grand Canyon. In September of 1540, Cardenas' party approached the south rim—likely in the area between present day Desert View and Moran Point—becoming the first Europeans to see the canyon. Other sixteenth-century Spanish explorers to travel through the region included Marcos Farfan in 1578 and Fray Esteban de Perea in 1598. Although disappointed at the lack of riches, the Spanish decided to establish missionaries at the Hopi and Zuni Pueblos, leaving behind several Franciscan friars. Throughout the seventeenth and eighteenth centuries, missionary work and religious conversion was actively pursued in northern New Spain.<sup>73</sup>

Early Spanish description of the Grand Canyon was not very detailed. The Grand Canyon environment was described as arid and covered with low-growing pinyon and juniper. The Spaniards' only view of the Colorado River was from far above on the south rim. A small party from Garcia Lopez de Cardenas' contingent attempted to descend to the river but failed. In doing so, however, they realized that the Colorado River was broader than they had originally thought and contained large boulders. Once the Grand Canyon was perceived as an impenetrable barrier, the Spanish avoided it for nearly 250 years.<sup>74</sup>

Between 1598 and 1760, the mission system was promoted by individuals under license from the Spanish Crown. By 1610, the town of Santa Fe was settled as the new capital for the province of New Mexico. Slowly, Spanish missions moved northward from Santa Fe, eventually reaching the Hopi pueblos by 1629. Part of the Spanish-Puebloan interaction included forced relationships such as the *encomienda*, or annual tribute, and the *repartimiento*, or forced labor system. The *encomienda* was officially extended to favored individuals of the colonial administration. Those individuals in turn collected an annual tribute from the Pueblos in the form of maize and cotton blankets. The *repartimiento* used conscripted labor to work government farms and build both public and private structures. Lastly, disease introduced by Europeans devastated the Puebloan peoples.<sup>75</sup>

During the 1760s, New Spain initiated a general rehabilitation of its northern frontier as threats from Britain and Russia, troubles with the Apache, and problems with colonial administration persisted. As a result, new routes of communication were proposed and a stronger cordon of

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<sup>72</sup> Stephen J. Pyne, *How the Canyon Became Grand: A Short History* (New York: Penguin Group, 1998), 6.

<sup>73</sup> "Draft General Management Plan," 145; Marc Simmons, "History of Pueblo-Spanish Relations to 1821," in *Handbook of North American Indians*, Vol. 9 Southwest, ed. Alfonso Ortiz (Washington, D.C.: Smithsonian Institution Press, 1979), 178.

<sup>74</sup> Pyne, *How the Canyon Became Grand*, 6.

<sup>75</sup> Simmons, "Pueblo-Spanish Relations," 179-183.

*presidios* recommended. A direct result of the rehabilitation effort was a second period of exploration and survey during the early fourth quarter of the eighteenth century.<sup>76</sup>

The following decade saw a number of the provincial proposals carried out. In 1776, the Jesuit priest Francisco Tomas Garces traveled north from the Tucson vicinity to visit the Hualapais, Havasupais, and Hopi. He followed the Colorado north to the “Rio Jabesua,” or Havasu Canyon, and then traveled east to visit the Hopi Pueblos. Garces was “astonished at the roughness of this country and at the barrier which nature had fixed,” literally “a prison of cliffs and canyon.” He noted that the lush environment of Havasu Canyon and Havasupai irrigation system of dams and ditches yielded trees, grass, and crops. They also possessed both horses and cattle that they had received in trade with the Hopi. Also in the same year, the Franciscan fathers Silvestre Velez de Escalante and Francisco Atanasio Dominguez traveled through present-day northern Arizona to seek a route between Santa Fe and Monterey (what would become the Old Spanish Trail). They traveled through House Rock Valley and crossed the Colorado River at a spot they named El Vado de los Padres, the Crossing of the Fathers, in present-day Glen Canyon. The Escalante and Dominguez party passed just to the north of the Grand Canyon but made no attempt to view or inspect it. As they traveled along the north rim of the Grand Canyon, they reported on the character of the tribes and the natural environment. They encountered what appeared to be a group of Paiutes in the vicinity of the Kaibab Plateau in October of 1777. The exploration party was told that the Paiutes did not plant corn, but noted that their food consisted of gathering prickly pear, seeds, and pine nuts, and hunting rabbits and goats. Other Paiute peoples, most likely in southern Utah, were noted to cultivate corn and squash and use irrigation ditches. Few additional explorations were made to the Grand Canyon vicinity by the Spanish after 1777.<sup>77</sup>

In late 1660, a well-coordinated Puebloan revolt led by several individuals evicted the Spanish and culminated with the capture of Santa Fe. The Spanish reconquest of the Puebloan peoples began in 1692 and was led by the new governor, Diego de Vargas. Five years later, the Puebloan peoples were mostly subsumed within the colonial administration.<sup>78</sup>

Historic accounts document ancestral Navajo interactions with the Havasupai by the late 1600s. By the mid-nineteenth century, the Navajo made extensive use of canyon resources for subsistence and religious purposes, and continued to graze sheep, goats and horses in the vicinity into the 1930s and 1940s. The Hopi and Zuni have also at various times either occupied the Grand Canyon, procured and utilized canyon resources, and/or traded with the Havasupai and other groups.<sup>79</sup> Between 1810 and 1821, Mexico and much of New Spain was in revolt from the Spanish Crown. As a result, formal state sponsored exploration and activity in the province of New Mexico ceased.

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<sup>76</sup> Pyne, *How the Canyon Became Grand*, 16.

<sup>77</sup> NPS, “Draft General Management Plan,” 145; Pyne, *How the Canyon Became Grand*, 17-18; J. Donald Hughes, *In the House of Stone and Light: An Introduction to the Human History of Grand Canyon* (Denver: University of Denver, 1978), 17-22; Douglas W. Schwartz, “A Historical Analysis and Synthesis of Grand Canyon Archaeology,” *American Antiquity* Vol. 31, No. 4 (April 1966): 471; Kelly and Fowler, “Southern Paiute,” 368-397.

<sup>78</sup> The Hopi pueblos, due to their isolation, remained independent for nearly a century after the revolt.

<sup>79</sup> NPS, “Draft Environmental Assessment,” 22-23.

Unlike the Hopi and Zuni peoples, many of the Hualapai, Havasupai and Southern Paiute peoples occupying the Grand Canyon vicinity escaped direct control and administration under Spanish colonization. The Spanish presence, however, indirectly impacted the Grand Canyon region: during the late eighteenth and early nineteenth centuries, Spanish slave traders abducted American Indians living within the Colorado Plateau to work in Mexican mines and regional ranches. Where Spanish slave traders could not venture, neighboring tribes conducted slave raids in exchange for trade items. The Shivwits band of Southern Paiute were devastated by slave traders.<sup>80</sup>

Due to nearly 300 years of Spanish interaction and trade within the northern Arizona region, many new cultivars and plant and animal species were introduced to the Grand Canyon vicinity. These included wheat, figs, lima beans, chile peppers, domestic onions, watermelons, and peach trees. Animal husbandry was also introduced to the region, a practice that required extensive rangeland and one that dramatically impacted the natural environment and agricultural production. Cattle was the common domesticated within the Grand Canyon vicinity. In particular, the introduction of the horse impacted trade and the ability of neighboring cultures such as the Apache and Navajo to conduct long-reaching raids into the Grand Canyon region.<sup>81</sup>

***Chronology by Landscape Characteristic, 1540-1821:***

**Land Uses and Activities**

Hunting	Hualapai, Havasupai, Southern Paiute, and Navajo peoples hunted both large and small fauna, utilizing the resources from both canyon and rim habitats. The Kaibab Paiutes also fished from the Colorado River.
Gathering	Hualapai, Havasupai, Southern Paiute, and Navajo peoples gathered a wide variety of local flora utilizing the resources unique to the rim and inner canyon habitats.
Seasonal Migration	The Havasupai, and to a lesser degree, the Hualapai and Southern Paiute peoples practiced a semi-sedentism, wintering at more permanent sites on or adjacent to the rim and spending planting and harvesting seasons within the canyon bottomlands.
Agriculture	Hualapai, Havasupai, and Southern Paiute

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<sup>80</sup> Carling I. Malouf and John M. Findlay, "Euro-American Impact Before 1870," in *Handbook of North American Indians*, Vol. 11 Great Basin, ed. Warren L. D'Azevedo (Washington, D.C.: Smithsonian Institution, 1986), 501, 503; Simmons, "Pueblo-Spanish relations," 184.

<sup>81</sup> Simmons, "Pueblo-Spanish relations," 181; Demitri B. Shimkin, "The Introduction of the Horse," in *Handbook of North American Indians*, Vol. 11 Great Basin, ed. Warren L. D'Azevedo (Washington, D.C.: Smithsonian Institution, 1986), 519.

peoples depended upon agricultural fields generally located in canyon bottoms adjacent to water resources.

Animal Husbandry

The introduction of domestic animals throughout the seventeenth, eighteenth, and early nineteenth centuries led to the practice of animal husbandry, particularly focusing on cattle.

Mining

Red ochre, a mineral used for painting and adornment of the body, was mined from sites within the inner canyon. Copper and rock salt were also mined from sites within the inner canyon. Red ochre, copper and salt were important trade items for the Hualapai, Havasupai, Southern Paiute, Hopi, Zuni and Navajo peoples.

**Patterns of Spatial Organization**

Semi-Sedentism

Hualapai, Havasupai, Southern Paiute and Navajo practiced seasonal migration patterns that were attuned to the availability of regional flora and fauna resources.

Site Location

Hualapai, Havasupai, Southern Paiute and Navajo occupation of the Grand Canyon region are generally divided into winter camps or settlements along the rim, and seasonal camps and settlements along the inner canyon during planting and harvesting season adjacent to water resources.

**Response to Natural Environment**

Exploitation of Colorado River

Hualapai, Havasupai, Southern Paiute and Navajo peoples continued to agriculturally exploit the minor canyon bottoms adjacent to springs.

Shelter

Hualapai, Havasupai, Southern Paiute and Navajo peoples utilized caves and rock shelters within and throughout the Grand Canyon as temporary camp sites.

Range Land

Hualapai, Havasupai, Southern Paiute and Navajo peoples utilized prime range land for grazing cattle, sheep and goats.

## **Cultural Traditions**

### Taboos

Fish, lizards, and reptiles were avoided by the Havasupai.

## **Circulation Networks**

### Trails/Routes

Formal routes and trails that linked the canyon rims with the Colorado River continued to be utilized. These trails led to natural resources and to irrigated gardens and fields in minor canyons. The Havasupai and Hualapai traded and interacted regularly with one another, with the Hopi, and eventually with the Navajo. The Southern Paiute also traded and interacted with the Hopi and Navajo.

## **Boundary Demarcations**

### Colorado River

The Colorado River was a porous boundary that served to generally delineate the Hualapai and Havasupai on the south from the Southern Paiute on the north. It must be understood that the Colorado River was frequently crossed and that trade and interaction was actively pursued from both sides. In addition, native fauna and flora resources on both sides of the Colorado River were utilized by all groups.

## **Vegetation (Related to Land Use)**

### Maize, Squash, and Beans

Hualapai, Havasupai, and Southern Paiute peoples continued to plant and rely upon the triumvirate staples of maize, squash, and beans.

### Peach Trees

By the eighteenth century, peach trees, originally introduced by the Spanish and obtained through trade with the Hopi, were growing within the inner canyon agricultural fields.

### Lima Beans

By the eighteenth century, lima beans were regularly planted by the Hualapai and Havasupai and later Southern Paiute peoples.

## Buildings and Structures

Wickiups	Wickiups, or brush wickiups, were temporary conical shelters constructed of locally abundant resources. A circular framework of poles was woven with willow branches and leafy bushes. These shelters served as temporary camps and seasonal respite from the sun.
Granaries	Stone granaries were constructed within the inner canyon and sealed for long-term preservation of stores.
Sweathouse	Hualapai and Havasupai frequently constructed wood and earth saunas or sweathouses.
Terraces	Hualapai, Havasupai, and Southern Paiute peoples constructed artificial terraces out of stone and soil to create productive agricultural fields, reducing the potential for erosion and increasing agricultural yields.
Check Dams	Hualapai, Havasupai, and Southern Paiute peoples increased their agricultural yields with the construction of check dams to control flooding and erosion processes.
Irrigation Ditches	Hualapai, Havasupai, and Southern Paiute peoples artificially irrigated their agricultural fields where possible by constructing ditches to control the course and direction of water flow.

## Small-scale Features

Bridges/Ladders	Hualapai, Havasupai, and Southern Paiute peoples constructed new—and used existing—wooden footbridges and ladders to aid in crossing chasms and accessing ledges and benches ultimately increasing transportation efficiency.
Roasting Pits	Hualapai, Havasupai, and Southern Paiute peoples constructed pits for roasting pinyon nuts and agave, usually shallow subterranean holes frequently lined with stone and close to the resources harvested.

## Mexican Independence and Administration: 1821-1848

### *Introduction*

Historians have characterized the Mexican administration of the Southwest as one of liberalized contact and trade with the United States. During their brief administration of the territory, no formal exploration of the New Mexico territory was initiated. Rather, the nearly thirty year period is characterized by increased contact between American Indians and Anglo-Americans as fur trappers rapidly moved into the Colorado Plateau and Grand Canyon region.

### *Brief Historic Context*

The road to independence for New Spain began early in the nineteenth century with the Napoleonic political crisis of 1808 and the abdication of the Spanish crown. This single event initiated a movement towards political autonomy and self-governance throughout the Spanish empire. As colonial forces in New Spain began to consolidate and reinforce military rule, those in support of autonomy participated in armed resistance movements. By 1815, the insurgency had been effectively put down. In 1820, constitutional order was restored in New Spain and formalized plans for rebellion from Spain were initiated. By 1821, under the leadership of Augustin de Iturbide, Mexico declared its independence from Spain.<sup>82</sup>

With Mexican independence, the New Mexican territory ceased to be administered and regulated with the enthusiasm characterized under Spanish colonization. Compared with their predecessors, Mexican authorities instituted a more liberal policy of trade with the United States. By the mid-1820s, the earliest Anglo-American fur trappers and traders had begun to enter the Great Basin and Colorado Plateau. As a result, contact with American Indians in the larger Grand Canyon region began to increase. Ultimately this increased contact led to violence as disputes proliferated. Slave trading, which had begun during the end of Spanish Colonial administration, continued unabated and increased as new transportation routes to land in California were opened during this period. Ute and Navajo slave raiders captured Southern Paiute and, less frequently, members of other groups. They would sell these captives to Mexican traders and, on occasion, Mormon settlers and American fur traders. During this period, the Old Spanish Trail and the Santa Fe Trail became major thoroughfares between Missouri and California.<sup>83</sup>

Although they passed through the region, fur trappers did not regularly visit the Grand Canyon nor descend to the Colorado River. Of those that did, few recorded their impressions. One trapper who claimed to have spent time in the Grand Canyon was James Ohio Pattie. His personal narrative was later recorded by Timothy Flint, a writer renowned for biographies of western American heroes. Pattie claimed to have ascended the Colorado River in 1825 to a place where “horrid mountains” shut the river in for nearly 300 miles and prevented any descent.<sup>84</sup>

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<sup>82</sup> Virginia Guedea, “The Old Colonialism Ends, the New Colonialism Begins,” in *The Oxford History of Mexico* eds. Michael C. Meyer and William H. Beezley (New York: Oxford University Press, 2000), 277-300.

<sup>83</sup> Pyne, *How the Canyon Became Grand*, 23; Malouf and Findlay, “Euro-American Impact,” 499-506; Kelly and Fowler, “Southern Paiute,” 368-370, 386.

<sup>84</sup> Pyne, *How the Canyon Became Grand*, 24-25.

Jedediah Smith first traveled from the Great Salt Lake to the Grand Canyon region between 1826 and 1827. In 1830, William Wolfskill and George Yount attempted to follow Smith's route from the Sevier to the Colorado River. In the late 1820s, Ewing Young and his band of trappers moved up the Colorado River to the Bill Williams Fork but then left the river and proceeded along the south rim of the canyon until reaching Navajo country south of the San Juan River.<sup>85</sup>

Due to the Mexican government's anti-slavery stance, hostilities between Mexican and Anglo-Texan colonists gradually began to increase. By the mid-1830s many Texans began to seriously consider political autonomy or annexation by the United States. In 1845, the U.S. Congress approved the annexation of Texas. A year later, the first United States troops had entered Mexican territory. After two years of humiliating defeats, the Mexican government was forced to sign the treaty of Guadalupe Hidalgo which ceded most of their northern territory to the United States in 1848. In 1850, the territory of New Mexico, which included Arizona and the Grand Canyon, was created by the United States.<sup>86</sup>

Modification to the natural environment occurred relatively quickly after Americans entered the Grand Canyon vicinity. From about 1825 onward, the quest for natural resources and subsequent settlement dramatically altered the type and availability of native flora and fauna. Throughout the region, trapping, mining, grazing and logging created greater competition for resources and, as a result, increased hostilities. Plant and animal species traditionally utilized were adversely impacted and could no longer be depended upon. Over time, Hualapai, Havasupai, and Southern Paiute peoples were driven from their traditional lands and forced to occupy areas with a substantially decreased carrying capacity.<sup>87</sup>

### ***Chronology by Landscape Characteristic, 1821-1848:***

#### **Land Uses and Activities**

##### **Hunting**

Hualapai, Havasupai, Southern Paiute and Navajo peoples hunted both large and small fauna, utilizing the resources from both canyon and rim habitats. Small game was the most predominant meat source and included rabbits, rats, mice, gophers, squirrels, chipmunks, birds, and occasionally lizards and snakes. The Kaibab Paiutes also fished from the Colorado River.

##### **Gathering**

Hualapai, Havasupai, Southern Paiute, and Navajo peoples gathered a wide variety of local flora, utilizing the resources unique to mountain, rim, and inner canyon habitats. Pine nuts and agave appear to

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<sup>85</sup> Stoffle et al., "Big River Canyon," 71-72.

<sup>86</sup> Josefina Zoraida Vazquez, "War and Peace with the United States," in *The Oxford History of Mexico*, eds. Michael C. Meyer and William H. Beezley (New York: Oxford University Press, 2000), 339-370.

<sup>87</sup> Kimball T. Harper, "Historical Environments," in *Handbook of North American Indians*, Vol. 11 Great Basin, ed. Warren D'Azevedo (Washington, D.C.: Smithsonian Institution, 1986), 60-63.

have been universally exploited within the larger Grand Canyon region.

Seasonal Migration

The Havasupai and Southern Paiute, and to a lesser degree, the Hualapai practiced semi-sedentism, wintering at more permanent sites on or adjacent to the rim or near the mountains and spending planting and harvesting seasons within the canyon bottomlands. The Southern Paiute were the most mobile.

Agriculture

Hualapai, Havasupai, and to a lesser degree Southern Paiute peoples, depended upon agricultural fields and gardens located in canyon bottoms or adjacent to water resources. Small one-acre gardens could be tended by an individual. Larger gardens were tended by extended family.

Animal Husbandry

The introduction of domestic animals throughout the seventeenth, eighteenth and early nineteenth centuries led to the practice of animal husbandry, particularly cattle herding.

Burning

Great Basin peoples, including Southern Paiute, occasionally burned native vegetation to increase natural yields and plant production, to increase fodder for native fauna, and to hunt both small and larger game.

Mining

Red ochre, a mineral used for painting and adornment of the body, was mined from sites within the inner canyon. Rock salt was also mined from sites within the inner canyon. Red ochre and salt were important trade items for the Hualapai, Havasupai, Southern Paiute, Hopi and Navajo peoples.

**Patterns of Spatial Organization**

Semi-sedentism

Hualapai, Havasupai, Southern Paiute, and Navajo peoples practiced seasonal migration patterns attuned to the utilization of regional flora and fauna resources, and timed with planting and harvest seasons.

Site Location

Hualapai, Havasupai, Southern Paiute, and Navajo

occupation of the Grand Canyon region are generally divided into winter camps or settlements along the rim or adjacent to mountains, and warm weather camps along the inner canyon during planting and harvesting season and adjacent to water resources.

## **Response to Natural Environment**

Exploitation of Colorado River	Hualapai, Havasupai, and Southern Paiute peoples continued to agriculturally exploit the minor canyon bottoms adjacent to springs.
Shelter	Hualapai, Havasupai, and Southern Paiute peoples utilized caves and rock shelters within and throughout the Grand Canyon as temporary camp sites.
Range Land	Hualapai, Havasupai, Southern Paiute, and later Navajo, peoples utilized prime range land for grazing cattle, and to a lesser degree sheep and goats.

## **Cultural Traditions**

Taboos	Fish, lizards, and reptiles were avoided by the Havasupai peoples.
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## **Circulation Networks**

Trails/Routes	Formal routes and trails that linked the canyon rims with the Colorado River continued to be utilized. These trails led to natural resources and to irrigated gardens and fields in lesser side canyons. The Havasupai and Hualapai peoples traded and interacted regularly with one another and eventually with the Navajo. The Southern Paiute traded and interacted with the Hopi and Navajo.
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## **Boundary Demarcations**

Colorado River	The Colorado River was a porous boundary that served to generally delineate the Hualapai and Havasupai peoples living on the south side of the river from the Southern Paiute peoples living on the north side of the river. It must be understood that
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the Colorado River was frequently crossed and that trade and interaction was actively pursued from both sides. In addition, native fauna and flora resources on both sides of the Colorado River were utilized by all groups.

### **Vegetation (Related to Land Use)**

Maize, Squash, and Beans

Hualapai, Havasupai, and Southern Paiute peoples continued to plant and rely upon the triumvirate staples of maize, squash and beans. The Southern Paiute were dependent to a greater degree on hunting and gathering.

Peach, Apricot, and Fig Trees

By the eighteenth century peach, apricot and fig trees, originally introduced by the Spanish and obtained through trade with the Hopi, were growing within the inner canyon agricultural fields.

Melons and Watermelons

Melons were obtained through trade and eventually incorporated into the mélange of cultivated plants. Melons were planted predominantly by Hualapai and Havasupai peoples.

Lima Beans

By the eighteenth century, lima beans were regularly planted by the Hualapai and Havasupai and later Southern Paiute peoples.

### **Buildings and Structures**

Wickiups

Wickiups, or brush wickiups, were temporary conical shelters constructed of locally abundant resources. A circular framework of poles was woven with willow branches and leafy bushes. These shelters served as temporary camps and provided seasonal respite from the sun.

Granaries

Stone granaries were constructed within the inner canyon and sealed for long-term preservation of stores.

Sweathouse

Hualapai and Havasupai peoples frequently constructed wood and earth saunas or sweathouses.

Terraces

Hualapai, Havasupai, and Southern Paiute

peoples constructed artificial terraces out of stone and soil to create productive agricultural fields reducing the potential for erosion and increasing agricultural yields.

Check Dams

Hualapai, Havasupai, and Southern Paiute peoples increased their agricultural yields by constructing check dams to control flooding and erosional processes.

Irrigation Ditches

Hualapai, Havasupai, and Southern Paiute peoples manually irrigated their agricultural fields where possible by constructing ditches to control the course and direction of water flow.

**Small-scale Features**

Bridges/Ladders

Hualapai, Havasupai, and Southern Paiute peoples used both new and existing wooden footbridges and ladders to aid in crossing chasms and accessing ledges and benches which ultimately increased transportation efficiency.

Roasting Pits

Hualapai, Havasupai, and Southern Paiute peoples constructed pinyon nut and agave roasting pits, which typically consisted of shallow subterranean holes.

**Early American Exploration and the Territory of Arizona: 1848-1880**

*Introduction*

The earliest period of United States administration of the Southwest is characterized by the systematic subjugation of native peoples, Federally-funded exploration of the Colorado River and search for travel routes, and the initiation of individual and corporate mining efforts on public lands.

*Brief Historical Context*

The formal accession of the northern Mexican territories set in motion the Federally-driven incorporation of the new Southwest according to national interests. As Anderson notes, this forty-year phase included “warfare, negotiations, treaties and purchase to secure land and subdue native residents; creation of orderly territorial and state governments...; and construction of

wagon roads followed by railroads to facilitate settlement by U.S. citizens and eastern capitalists' efficient extraction of western resources.”<sup>88</sup>

The first Federally-funded exploration of lands in the Southwest occurred prior to formal acquisition of the northern Mexican territories. In 1846, Lt. William H. Emory, accompanying Gen. Stephen Watts Kearney on his military trip to California, studied the geology, botany, and zoology of the larger Southwest. He then produced what is regarded as the first accurate map of the region. Only five years later, Capt. Lorenzo Sitgreaves explored a route west of Zuni, New Mexico to the Colorado River that he believed would be an adequate wagon road. Sitgreaves was accompanied on his trip by Dr. S.W. Woodhouse, a physician and naturalist. The Sitgreaves expedition was followed in 1853-54 by a second road survey along the same route led by Capt. Amiel W. Whipple. Accompanying Whipple were geologist Dr. Jules Marcou and artist and naturalist Balduin Mollhausen. The road west of Zuni, New Mexico was subsequently built in 1857-59, and eventually known as present-day Route 66.<sup>89</sup>

Arizona became a formal U.S. Territory in 1863. While the decade of the United States' Civil War saw thousands of gold seekers pass through the Arizona Territory, few remained to settle there. The Grand Canyon and the Colorado River did not become a permanent image in the American imagination until the late 1860s and 1870s when the area was intimately explored by geologists and naturalists. The first Federal exploration of the lower Colorado River occurred in 1858. Lt. Joseph C. Ives captained a U.S. Army steamboat; the Ives expedition reached as far as Black Canyon. The well-known geologist John Wesley Powell conducted two trips down the Colorado River through the Grand Canyon, one in 1869 and another in 1871-72. It was on his 1869 trip that Powell first saw and named Bright Angel Creek, describing it as “a clear, beautiful creek, coming down through a gorgeous red canyon.” Powell's report on his Colorado River trip was eventually published in 1875. George Montague Wheeler also led a river survey up the Colorado River as far as Diamond Creek in 1871. Despite their focus on the potential for valuable natural resources in the area, the published reports of the Powell and Wheeler expeditions were widely read in the eastern U.S. and, as a result, the Grand Canyon became popularized in the minds of the American public.<sup>90</sup>

Passed in 1866 and revised in 1870 and 1872, the Lode Law—or Federal Mining Act—allowed anyone to recover at their own expense “all valuable mineral deposits in lands belonging to the United States, both surveyed or unsurveyed, and the lands in which they are found to occupy and purchase.” If minerals of value were discovered, patents were eventually granted for a small fee. Also notable is the fact that miners could retain control of mineral-barren land without patent if modest annual improvements to the claim were made. The Federal Mining Act also allowed anyone to claim water sources for placer mining and ore milling purposes. Claims were subject to local mining practices and generally limited to twenty acres or less. The law was intended to settle and develop the western frontier, and to that extent it was enormously successful.<sup>91</sup>

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<sup>88</sup> Anderson, *Polishing the Jewel*, 50-51.

<sup>89</sup> Anderson, *Polishing the Jewel*, 51, 53.

<sup>90</sup> Anderson, *Polishing the Jewel*, 73-74; Cleland, “The Cross Canyon Corridor Historic District,” 14. During the early 1870s, the first photographs of the Grand Canyon were published by Timothy O'Sullivan. These photographs provided stunning images and accompanied the textual narratives of Powell and Wheeler.

<sup>91</sup> *United States Code*, Title 30, Chapter 3, Section 22; Michael F. Anderson, *Living at the Edge: Explorers, Exploiters and Settlers of the Grand Canyon Region* (Grand Canyon: Grand Canyon Association, 1998), 6.

Other late nineteenth century Federal actions also stimulated research within the Grand Canyon vicinity. Upon his return from the 1871-72 expedition, Powell began to campaign for Federal funding and a continuation of research in the Southwest. His lobbying efforts in Congress resulted in the creation of the U.S. Geological Survey in 1879. Powell was chosen as an early director. In 1880, the U.S. Geological Survey funded Clarence Dutton's geological expedition to the Grand Canyon. Dutton's report on his Grand Canyon explorations was published in 1882.

Within Indian Garden proper, it is likely that one or more Havasupai families were seasonally residing there during the second half of the nineteenth century.<sup>92</sup> George W. James, a popular promoter of the Grand Canyon, noted that "a certain family of the Havasupais used to farm in a crude way on this spot" and that the remains of their irrigation ditches, terraces, and dams could be seen on the site as late as 1890. In his popular 1935 publication, the superintendent of the park, M.R. Tillotson, identified this family as "Big Jim's." According to Tillotson, "Big Jim was born at Indian Garden, on the present Bright Angel Trail." Big Jim reportedly remembered his family's occupation of Indian Garden as far back as the 1860s. Like the larger Havasu Canyon settlement, the Havasupai families at Indian Garden occupied it on a seasonal basis, planting the fertile bottom lands adjacent to the Garden Creek drainage. It is not known what Havasupai structures, if any, were located at Indian Garden prior to European arrival.<sup>93</sup>

### ***Chronology by Landscape Characteristic, 1848- 1880:***

#### **Land Use and Activities**

Hunting	Havasupai peoples at Indian Garden and other American Indian peoples along the rims continued to hunt native fauna for subsistence and cultural needs.
Gathering	Havasupai peoples at Indian Garden and other American Indian peoples along the rims continued to gather native flora for subsistence and cultural needs.
Agriculture	Havasupai peoples at Indian Garden and other American Indian peoples along the canyon rims continued to seasonally plant native and non-native cultivars within the numerous micro-climates available. According to a miner who worked at Indian Garden in the last quarter of the nineteenth

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<sup>92</sup> A NPS memo issued in 1988 refers to the U.S. Bureau of Geographic Names publication (1988) that establishes that the proper name for the project area under study is *Indian Garden*, **not** *Indian Gardens*. This document will refer to the project area as Indian Garden (singular) except when citing sources that have Indian Gardens (plural) in their title. The name Indian Garden was likely given to the area in the last quarter of the nineteenth century when the first European miners and cattlemen ventured down the old Havasupai trail. See "Geographic Names: Grand Canyon National Park," December 20, 1988. Indian Garden Ranger Station files, Grand Canyon National Park.

<sup>93</sup> NPS, "Bright Angel Trail." National Register of Historic Places Registration Form, 8-16; M.R. Tillotson and Horace M. Albright, *Grand Canyon Country* (Stanford: Stanford University Press, 1935), 63-64.

century, evidence of intentional burning by earlier non-Anglo peoples was present in the CLR project area vicinity.

Trade

Havasupai peoples at Indian Garden continued to trade with the Hopi and other American Indian peoples and intermittently with Euro-Americans.

Exploration and Survey

Several Euro-American expeditions explore and map the Colorado River and Grand Canyon region.

Prospecting

A secondary goal of many of the late nineteenth century Euro-American expeditions is to note the potential for natural resources, particularly valuable minerals, within the Grand Canyon region.

### **Patterns of Spatial Organization**

Seasonal settlement

Havasupai peoples seasonally occupied and tended their gardens in the Indian Garden vicinity, wintering on the south rim.

### **Response to Natural Environment**

Site location

Like their predecessors, Havasupai peoples chose to seasonally occupy and cultivate the Indian Garden area due to the lush riparian environment caused by the presence of numerous springs. The springs and lush environment also supported a wide variety of native flora and fauna. Havasupai peoples likely re-occupied earlier Puebloan Period habitation sites or constructed their own along the prominent ridge slopes above the Indian Garden project area.

### **Cultural Traditions**

Architecture

Havasupai continued to build masonry, pole, and brush structures used as temporary camps—a practice that was likely adopted from their Puebloan predecessors.

### **Circulation Networks**

Trail/Route

The old Havasupai Trail that was subsequently improved by American prospectors and claim

holders provided one of several access routes into the inner canyon in the larger south rim.

## **Boundary Demarcations**

### **South Rim**

With the exception of the earliest prospectors and cattlemen, the south rim may have been a formidable boundary for many Americans who visited the Grand Canyon during this period. Not until the improvement and marketing of inner canyon trails did the popularity of venturing down into the Grand Canyon increase.

## **Vegetation (Related to Land Use)**

### **Cultivars**

Havasupai peoples living seasonally at Indian Garden planted traditional cultivars including maize, squash, and beans and possibly then recently-introduced fruits such as peaches, apricots, figs, and melons.

## **Buildings and Structures**

### **Temporary Camps**

Seasonal habitation structures typically consisted of a pole-and-brush superstructure supported by a dry-laid masonry foundation. Ten of the fifteen prehistoric sites that have been identified in the vicinity of Indian Garden have surface structures that likely served as seasonal habitation structures. They are all located on terraces and promontories overlooking Garden Creek. The expedient construction of these structures and the proximity to arable land and dependable water indicate that the structures were summer farm sites occupied by people that lived the remainder of the year on the canyon rim or down near the river. The simple structures at Indian Garden appear to have been constructed by Ancestral Puebloan peoples, as they are similar to Puebloan structures from the San Juan River area.<sup>94</sup> However, the structures are not absolutely definitive of Puebloan construction, and could have been built or subsequently used by Cohonina or later inhabitants.<sup>95</sup>

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<sup>94</sup> Adams and Adams, "Inventory of Prehistoric Sites," 12; Coulam, "Archeological Survey of Indian Gardens," 16.

<sup>95</sup> Coulam, "Archeological Survey of Indian Gardens," 16.

## Granaries

Puebloan and Cohonina peoples built masonry, wood, and mud storage structures. These structures were utilized exclusively as storage units for grain. They were either attached to residences or located on isolated canyon precipices. Two sites in the vicinity of Indian Garden possess granary features. At both sites, the granaries are tucked under ledges of canyon walls. It is likely that these structures may have been used by subsequent peoples such as the Havasupai.

## Small-scale Features

### Terraces

Puebloan peoples and subsequent Havasupai occupants constructed artificial terraces out of stone and soil to create productive agricultural fields, reducing the potential for erosion and increasing agricultural yields.

### Check Dams

Puebloan peoples and subsequent Havasupai occupants constructed small rock walls out of stone. These stone walls served as check dams to control the erosion of soils in canyons and drainages. The rock walls also served as passive solar devices. A few of the habitation sites in the Indian Garden area are associated with small rock walls that may have served as check dams.

### Irrigation Ditches

Puebloan peoples and subsequent Havasupai occupants constructed shallow, clay-lined depressions or canals to funnel water to agricultural fields and garden plots.

### Garden Plots

Puebloan peoples and subsequent Havasupai occupants constructed low rock walls that defined garden plots within canyons and drainages. The size of garden plots was based on the topography and drainage of the land.

## Early Anglo Settlement, Mining Claims, and Pioneer Tourist Development on the South Rim: 1880-1901

### *Introduction*

In the 1880s, the arrival of the railroad within the larger region and subsequent tourist promotion led directly to increased private development within the Grand Canyon. During this period, development within Indian Garden proper—along an old Havasupai trail that followed Bright Angel Fault—was initiated by Ralph Cameron. Cameron and a partner initially “developed” and operated a toll road that followed the Bright Angel Fault and led to the canyon interior.

### *Brief Historical Context*

Shortly after the Civil War, large corporate railroads began to extend their lines westward. The Atlantic and Pacific Railroad was chartered by Congress in 1866; by 1882, its northern Arizona line had reached Flagstaff. A wagon road to the south rim was built in 1885 and stage services to Grandview Point were initiated in 1892. The arrival of the railroad at Flagstaff increased regional settlement and property values in Mohave, Yavapai, and Coconino counties; encouraged continued prospecting for natural resources; connected the new western settlements with goods and supplies; and linked the emerging lumber and cattle industries to markets in the Midwestern and Eastern United States.<sup>96</sup>

Initial development of the Grand Canyon during the last quarter of the nineteenth century was largely instigated by individual entrepreneurs. Prospectors, miners, cattlemen, and eventually an incipient tourist industry soon developed along the south rim and inner canyon. “Captain” John Hance is the first recorded Anglo-American permanent resident at the Grand Canyon. Hance settled near what would become Grandview Point and subsequently repaired an old Havasupai route on the south rim to facilitate his mineral prospecting. This trail came to be known as the “old trail” and was the primary access to the inner canyon throughout the early 1880s. The “old trail” was obliterated by rock slides in spring of 1894. A new trail was subsequently constructed down Red Canyon to the Colorado River two miles to the east of the old trailhead. Hance eventually leased his rights to his homestead and new trail to J. W. Thurber and J. H. Tolfree in 1895. While Hance was clearly one of the first permanent residents, prospectors flocked to the Grand Canyon in great numbers over the next decade. This migration was due in large part to the publication of Robert Brewster Stanton’s survey and mineral report of the Grand Canyon in 1889.<sup>97</sup>

During the last twenty-five years of the nineteenth century, the first Euro-Americans “discovered” Indian Garden. During the 1880s, William H. Ashurst and John Marshall, early mining prospectors, began exploring the inner canyon area, eventually wintering there. In 1880,

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<sup>96</sup> Anderson, *Polishing the Jewel*, 79; Ethan Carr, *Wilderness by Design: Landscape Architecture and the NPS* (Lincoln: University of Nebraska Press, 1998), 115.

<sup>97</sup> Debra L. Sutphen, “Sinews of Dirt and Stone: Grand Canyon’s Backcountry Trails System, an Historic Summary” (Historic Resource Study, Grand Canyon National Park, 1992), 29, 58-59; Douglas H. Strong, “Ralph H. Cameron and the Grand Canyon (Part 1),” *Arizona and the West*, Vol. 21 (Spring 1978): 43.

Ashurst is recorded to have driven his horses and other livestock down to Indian Garden for pasturage.<sup>98</sup>

Although the evidence is clear that Havasupai families used the Indian Garden environs during the third quarter of the nineteenth century, by the time Ashurst and other early prospectors began to explore the inner canyon vicinity, only traces of the Havasupai occupation were seen. During his stint making improvements to the Cameron Trail in 1890-91, Curtis H. McClure noted that “there were evidences in existence at the Indian Garden showing that at some time previous, some cultivation of the ground had been carried on by someone [and] it apparently had been burned off two or three times...” The fact that late nineteenth-century prospectors did not see much evidence of Havasupai occupation at Indian Garden may be accounted for by the seasonal nature of its use or perhaps their material presence went unrecognized. The disappearance of the Havasupai peoples from Indian Garden also coincided with the U.S. Government action in 1880 that formally reduced traditional Havasupai lands to a sixty square mile reservation in Havasu Canyon.<sup>99</sup>

In 1883, Ralph H. Cameron arrived in Flagstaff from Maine and made his first trip to Grand Canyon. Between 1889 and 1890, he reportedly spent two months wintering in the vicinity of Indian Garden prospecting. Only a year later, Cameron and other partners including Pete Berry, and his brother Niles began filing mining claims within the Grand Canyon. During this period, the first permanent Anglo structure was reported to be built at Indian Garden. In 1890, Daniel L. Hogan, Jeffrey Sykes, and Charles McLane transported prospecting supplies to Indian Garden and built a “stacked stone cabin with canvas roof to serve as a winter home.”<sup>100</sup>

Access to Indian Garden was obtained via an old Havasupai trail from the south rim through the Bright Angel Fault. Ashurst and Marshall were the first to file a claim with Mohave County in April of 1890 to build a trail along the Bright Angel Fault to the springs at Indian Garden. A few months later they transferred their rights to a group headed by Ralph Cameron and Pete Berry. During the ensuing decade, the Bright Angel Trail was heavily used as a convenient access to the inner canyon’s natural resources by a diverse group that included miners, cattlemen and eventually tourists (*Figure 3*). During the early 1890s, cattleman George T. Campbell, William Ashurst, and others used it to drive livestock down to pasturage.<sup>101</sup>

In 1890, Pete Berry recorded the old Havasupai trail leading to Indian Garden with Yavapai County and obtained a franchise to operate it as the Bright Angel “toll road.” Between 1890 and 1891, Berry, Niles Cameron, Robert A. Ferguson, Curtis H. McClure, and Millard G. Love improved the Bright Angel toll road. During this period they spent approximately \$500 on improvements.<sup>102</sup>

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<sup>98</sup> Anderson, *Living at the Edge*, 56; Sutphen, “Sinews of Dirt and Stone,” 31. Ashurst is the only prospector to have discovered “promising ore deposits” at Indian Garden by the late 1890s. See NPS, “Bright Angel Trail,” 8-16.

<sup>99</sup> Anderson, *Living at the Edge*, 60; NPS, “Bright Angel Trail,” 8-16..

<sup>100</sup> Strong, “Ralph H. Cameron,” 43, 47; Sutphen, “Sinews of Dirt and Stone,” 30; George H. Billingsly, Earle E. Spamer and Dove Menkes, *Quest for the Pillar of Gold: The Mines and Miners of the Grand Canyon* (Grand Canyon: Grand Canyon Association, 1997), 64; Anderson, *Living at the Edge*, 77. Hogan et al.’s ‘stacked stone cabin’ may be the roofless structure pictured in several early photographs of Indian Garden (See Figure 5-8).

<sup>101</sup> Sutphen, “Sinews of Dirt and Stone,” 31; Anderson, *Living at the Edge*, 86.

<sup>102</sup> Anderson, *Living at the Edge*, 86; NPS, “Bright Angel Trail,” 7-2; Billingsly et al., *Quest*, 64.

Coconino County was formed out of Yavapai County largely with the aid of Ralph Cameron. Cameron was subsequently appointed Coconino County's first sheriff. His influence in County politics and the course and direction of development at the Grand Canyon would greatly increase in the coming years.<sup>103</sup>

Even though there were no railroad lines leading directly to the Grand Canyon, national promotion of the site by railroads increased during the 1890s. In 1892, the Santa Fe Railroad published its first promotional booklet on the Grand Canyon. During the same year, Sanford H. Rowe negotiated a deal with Ralph Cameron to allow tourists to travel down his Bright Angel toll road in exchange for access to water from Rowe's Well, a sinkhole near Hermit Basin. Rowe's arrangement was the first documented tourist operation at the central south rim and the first person to use the Bright Angel Trail as a tourist attraction.<sup>104</sup>

In 1896, the Santa Fe Railroad purchased the rights to Thomas Moran's painting, entitled *Grand Canyon*. Color reproductions of the painting were subsequently made and hung in railroad terminals throughout the United States. Moran was later hired by the Santa Fe Railroad to produce additional paintings of the Southwest. The Fred Harvey Company, a partner of the Santa Fe Railroad, and the Santa Fe Railroad subsequently contracted with a number of artists, including Moran, Louis Akin, Frank P. Sauerwein, E.A. Burbank, E. Irving Course, Ernest L. Blumenschein, William R. Leigh, Bert Geer Phillips, and E. Martin Hennings to paint pictures of the Southwest. These images were prominently featured in promoting the Santa Fe line and Fred Harvey Company facilities. Color picture postcards become particularly popular during the early 1900s.<sup>105</sup>

By the 1880s, prominent conservationists had begun to gather national support for the conservation of the Grand Canyon and its resources. In 1893, President Benjamin Harrison established the Grand Canyon Forest Reserve, an area encompassing approximately 2,900 square miles. The Forest Reserve placed all land in and around the Grand Canyon under the management of the Federal Government. In 1897, the management of Grand Canyon Forest Reserve was given to the Department of the Interior and the General Land Office.<sup>106</sup>

During the late 1890s, the trip to the Grand Canyon from Flagstaff was made easier and a direct result was an increase in the number of annual visitors to the region. In 1900, the Santa Fe and Grand Canyon Railroad, funded by the New York firm of Lombard, Goode and Co. and operating as the Tusayan Development Company, began rail service from Flagstaff to their Anita mine, only fifteen miles from the Grand Canyon. Visitors made the remainder of the trip to the Grand Canyon by stagecoach. A prominent destination for visitors was J.M. Thurber's Bright Angel Hotel, built adjacent to the Bright Angel Trail trailhead in 1896. The Anita mine

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<sup>103</sup> NPS, "Bright Angel Trail," 8-2.

<sup>104</sup> Kathleen L. Howard and Diana F. Pardue, *Inventing the Southwest: The Fred Harvey Company and Native American Art* (Flagstaff:Northland Publishing Co., 1996), 90; Carr, *Wilderness by Design*, 115; Anderson, *Living at the Edge*, 80.

<sup>105</sup> Howard and Pardue, *Inventing the Southwest*, 95-97.

<sup>106</sup> Anderson, *Living at the Edge*, 87.

eventually proved unprofitable and the spur line from Flagstaff passed into receivership. It was subsequently sold to the Santa Fe Railway in 1900.<sup>107</sup>

Ralph Cameron was one of several entrepreneurs present at the Grand Canyon who was quick to recognize the potential revenue that tourism could generate and the role the quickly-approaching railroad lines would play in stimulating tourism. In the late 1890s, Cameron reached an agreement with the Santa Fe and Grand Canyon Railway that their line spur would eventually end at the head of the Bright Angel Trail. Almost immediately, Cameron and the firm of Lombard, Goode, and Co. began to plan for the future by making the first substantial improvements to the Bright Angel Trail since its establishment as a toll road. In 1898, Buckey O'Neill, as agent of Lombard, Goode and Co., hired men to improve the Cameron Trail "as part of the company's overall plan to develop tourism and mineral deposits." During the same period, Buckey O'Neill built a cabin adjacent to head of the Bright Angel Trail. Improvements totaling \$200 were carried out during this period including a change to the trailhead and first few hundred feet of trail. Berry and Cameron hired several men between 1898 and 1899, including Curtis McClure, John R. Holford, D. W. Barter and Niles Cameron, to extend the Bright Angel Trail from Indian Garden to the Colorado River. Substantial financial investment in trail improvement and extension continued through 1903.<sup>108</sup>

### ***Chronology by Landscape Characteristic, 1880-1901:***

#### **Land Use and Activities**

Prospecting	Early regional prospectors searched for valuable minerals in the Indian Garden vicinity.
Mining	Early regional prospectors mined claims within Indian Garden and the surrounding Tonto platform.
Grazing	In 1880, prospector and miner William Ashurst is recorded to have driven his horses and other livestock down to Indian Garden for pasturage.
Trail Establishment/ Improvement	Between 1890 and 1891, the old Havasupai trail leading down to Indian Garden was documented by Ashurst and subsequently acquired and improved by Berry and Cameron. The improvement process included clearing, widening, stabilizing and rerouting the existing pedestrian trail to safely accommodate pack animals and mining supplies and equipment.

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<sup>107</sup> Anderson, *Polishing the Jewel*, 87-88, 90; Strong, "Ralph H. Cameron," 45. The Santa Fe Railroad purchased the Grand Canyon Railway and quickly finished the line to the South rim in 1901.

<sup>108</sup> Anderson, *Living at the Edge*, 86, 89-91; NPS, "Bright Angel Trail," 7-3, 7-4, 8-4.

Trail extension

During the years 1898 and 1899, Berry and Cameron hired several laborers to extend the Bright Angel toll road further north from Indian Garden to the Colorado River.

### **Patterns of Spatial Organization**

Site Location (South Rim)

The presence of miner camps, early pioneer hotels and stores, and accessible routes to the inner canyon along the south rim established the area east and west of the current Grand Canyon Village as the focus of subsequent early twentieth century settlement and development.

### **Response to Natural Environment**

Trail alignment/  
Improvement

The improvement and realignment of the Bright Angel toll road generally followed the pre-established Havasupai route that conformed to the descent of the Bright Angel Fault from the south rim to Indian Garden.

Site Location (Indian Garden)

Due to its lush riparian environment and the presence of numerous continuous springs, the Indian Garden vicinity became a convenient rest area and campsite for early prospectors, miners, and cattlemen.

Water supply (South Rim)

Due to the extremely arid conditions and general lack of water sources along the south rim, settlements had to obtain their water from sources within or south of the Grand Canyon. Early on, water was brought to the south rim from larger settlements to the south like Flagstaff.

### **Cultural Traditions**

Land claims

Beginning in 1890, and lasting into the first quarter of the twentieth century, early explorers and miners of the inner canyon laid claim to public lands through the 1866 Federal Mining Act (revised 1870 and 1872). This act allowed anyone to claim mineral deposits on surveyed or unsurveyed public land and maintain control of such land with minimal improvements. At Indian Garden, several mining

and water power claims were filed by Ralph Cameron. This cultural tradition contributed to the private development and commercial exploitation of the Grand Canyon.

### **Circulation Networks**

Ashurst and Marshall trail

By 1890, William Ashurst and John Marshall had claimed the trail along Bright Angel Fault leading from the south rim to Indian Garden.

Bright Angel toll road

By 1890, Pete Berry and Ralph Cameron purchased Ashurst's trail claim and recorded the Bright Angel toll road with Yavapai County.

### **Boundary Demarcations**

South Rim

With the exception of the earliest prospectors and cattlemen, the south rim may have been a formidable boundary for many Americans who visited the Grand Canyon during this period. Not until the improvement and marketing of inner canyon trails near the turn of the century did the popularity of venturing down into the Grand Canyon increase.

Claim establishment

As part of the prospect and mining process, potential claims had to be surveyed and/or marked or located on the ground before a claim could be filed with the County authorities. Claim markers were essentially posted notices that established porous boundaries for trail and/or mining sites.

### **Buildings and Structures**

Ashurst and Marshall shelter

It is likely that William Ashurst and John Marshall built a small shelter for themselves or occupied a pre-existing one within the Indian Garden vicinity during the winter of 1880.

Cameron shelter

It is likely that Ralph Cameron built a small shelter for himself or occupied a pre-existing one within the Indian Garden vicinity during the winter of 1889-90.

Hogan, Sykes, and  
McLane Stone Cabin

Daniel Hogan, Jeffrey Sykes, and Charles McLane are recorded to have constructed a “stacked stone cabin with canvas roof to serve as a winter home” for themselves within the Indian Garden vicinity during 1890.

### **Small-scale Features**

Prospecting

As a result of extensive prospecting in the Indian Garden vicinity, numerous adits and tunnels were excavated in an attempt to find valuable minerals and demonstrate proof that claims were being worked.



**Figure 3.** “Prospecting for Gold, Indian Gardens, Grand Canyon of Arizona,” ca.1901. (NAU-Cline Library Collection, #NAU.PH.99.48)

## **Arrival of the Railroad and Private Development of Indian Garden: 1901-1928**

### *Introduction*

In 1901, the Santa Fe Railroad directly linked Williams, Arizona with the south rim of the Grand Canyon. In 1903, Ralph Cameron had opened Cameron's Hotel and Camps on the rim at the head of the Bright Angel Trail, and Cameron's Indian Garden Camp surrounding the springs at Indian Garden to cater to the increasing number of Grand Canyon visitors. Over the course of the first quarter of the twentieth century, increasing individual and corporate commercial interests and a growing Federal concern over the conservation of and public access to the Grand Canyon led to a prolonged legal dispute over the ownership of the Bright Angel Trail and Indian Garden.

### *Brief Historical Context*

With the Santa Fe Railroad's purchase of the defunct Santa Fe and Grand Canyon Railway line, the arrival of a direct rail link to the Grand Canyon was only a matter of time. In 1901, the Atchison, Topeka, and Santa Fe Railroad completed the sixty-five-mile spur line from Williams, Arizona to Cameron's Hotel and Camps at the Bright Angel trailhead. The first Santa Fe passenger train arrived at the Grand Canyon in September of that year. As Ethan Carr has noted, the completion of the railroad line essentially designated this area of the south rim as the principal point of arrival for all visitors to the Grand Canyon. The Santa Fe Railroad subsequently built a station cabin and adjoining tent accommodations that became known as Bright Angel Camp. During the same year, the Bright Angel toll road franchise was renewed for an additional five years by Coconino County in Pete Berry's name. With permission from the Department of the Interior in 1903, Berry and Cameron erected a gate at the head of the Bright Angel Trail allowing them to charge all visitors to the Grand Canyon one dollar for its use. Prior to 1903, Berry and Cameron had not charged the public for use of their trail.<sup>109</sup>

The early years of the twentieth century saw the emergence of a growing competition between Cameron, the Santa Fe Railroad, and subsequently the U.S. Forest Service and NPS. The feud may have been initiated when the Santa Fe Railway decided to extend its tracks to the east and to Martin Buggeln's Bright Angel Hotel. The Santa Fe Railway established a twenty-acre depot east of the Bright Angel trailhead and hired Charles F. Whittlesey to design a new hotel at the emerging Grand Canyon Village. The El Tovar Hotel opened in January of 1905. Colter's Hopi House adjacent to the El Tovar Hotel opened two months later. In response, Cameron began to expand his interests and holdings along the Bright Angel Trail and south rim between 1902 and 1904. During this period he filed a substantial number of additional mining and milling claims along the Bright Angel Trail and trailhead, including the Alder and Willow mill site claims at Indian Garden surrounding the permanent spring there. Mill sites were frequently placed adjacent to potential water power and generally supported placer and shaft claims, particularly the processing of ores recovered from them. By 1903, Cameron had also constructed and opened Cameron's Hotel and Camps near the Bright Angel trailhead in an effort to compete with the

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<sup>109</sup> Anderson, *Polishing the Jewel*, 87-88, 93; Billingsly et al., *Quest*, 64; Sutphen, "Sinews of Dirt and Stone," 72; Tillotson and Albright, *Grand Canyon Country*, 63; Carr, *Wilderness by Design*, 115; Anderson, *Living at the Edge*, 86.

adjacent Santa Fe/Martin Buggeln Bright Angel Hotel operation. Cameron also solidified his local political support by being elected to the Coconino County Board of Supervisors. A year later he was elected as its chairman. The multi-dimensional competition between individual and corporate interests at the south rim became very personal and was to define the development and operation of the GRCA into the second quarter of the twentieth century.<sup>110</sup>

Late nineteenth-century descriptions of Indian Garden are not known to exist, although by the first visitor descriptions began to appear by the early 1900s. In 1900, George W. James, an avid promoter of the Grand Canyon, described Indian Garden as “made green and fertile by the flowing of a large spring of water.” Two years later, a Santa Fe Railroad publication noted that “the famous guide, John Hance, is now located at Bright Angel. Eight hours are required for going down and coming back, allowing two hours for lunch, rest and sight-seeing. Those wishing to reach the river leave the main trail at Indian Garden spring and follow the downward course of Willow Creek.” In 1902, P. C. Bicknell provided an extensive description of Indian Garden:

...now we wind easily along the boulder-strewn channel of a dry mountain torrent, the bottom land widening out as we advance, with verdant slopes curving up on either side. Crystal springs burst from the low, encircling terraces, uniting their waters in a noisy little brook that prattles through the flat, converting it into a miniature tangled wilderness of prolific vegetation. This is the ‘Indian Garden’: so named because a few families of Hava-Supai Indians once dwelt here and cultivated the land. They departed a generation ago; but traces of their occupation can still be seen in furrows left by old irrigation ditches with which they flooded the bottom land. But ages before the Hava-Supai planted his corn here, the little valley was occupied by a prehistoric race. On every commanding point above the stream, ruins of their rock houses remain, and fragments of pottery—far superior to that of the modern aborigine – are very abundant; indicating a lengthy occupation of the land. Beyond the projecting wings of the red-wall that, with a vertical height of eight hundred feet encloses the Garden on three sides, the narrow valley opens out on to the broad Esplanade, or plateau, that forms the highway of the Canyon; while the stream (known as Willow Creek) cuts its way to the right through a tortuous little ravine to a level some two hundred feet lower, where it again broadens out into a much smaller basin known as the ‘Lower Garden.’<sup>111</sup>

Cameron eventually formalized his intentions to control the Indian Garden vicinity and the springs located there. In 1903, he bought certain mining claims and water rights at Indian Garden from other prospectors and began operating a camp beside the Bright Angel Trail on the edge of the Tonto Platform (*Figure 4*). Cameron may have used other earlier inner canyon camps, such as Bass or Rowe Well, as an example when constructing his own tourist accommodations at Indian Garden. The initial development of Cameron’s Indian Garden camp consisted of “seven

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<sup>110</sup> Strong, “Ralph H. Cameron,” 49; Anderson, *Living at the Edge*, 90; Anderson, *Polishing the Jewel*, 91; Hughes, *House of Stone and Light*, 68-69.

<sup>111</sup> George W. James, *In and Around the Grand Canyon: The Grand Canyon of the Colorado River in Arizona* (Boston: Little, Brown and Co., 1905), 135; Passenger Department of the Santa Fe Railroad, *The Grand Canyon of Arizona* (Chicago: Poole Brothers, 1902), 121; P. C. Bicknell, *Guide Book of the Grand Canyon of Arizona*, (Kansas City: Fred Harvey Company, 1902), 47-49.

tent cabins, meals, and a phone line to the south rim.” Cameron also planted cottonwood trees and dammed the creek to irrigate a garden and orchard below camp in the next few years. Over the next few years Cameron also constructed several additional buildings and structures including a kitchen, root cellar, rain gauge, incinerator, tool shed, laundry, toilets and a water supply (*Figures 5 through 10*).

A mid-twentieth-century text recalled the early Cameron development at Indian Garden:

[The] Camerons planted the cottonwood trees at the Gardens, bringing shoots over the Tonto from Cottonwood Canyon to the east as there were only willows [that] grew in the creek bed. They had a double row of tents for tourists, with trees planted between them approximately where the Ranger Station is located now. Below and east of them a rock lodge was started but never completed, with a large vegetable garden, irrigated by ditches. They planted strawberries, raspberries and blackberries, of which only the latter still thrive having taken over the lower swamp thickets along the creek.

Louis Boucher—the “Hermit”—may have been one of Cameron’s early part-time managers at Indian Garden. By 1908, Cameron had hired his brother Niles and Clarence C. Spaulding as managers of the Indian Garden Camp.<sup>112</sup>

In 1906, Emory and Ellsworth Kolb constructed a stone and frame photo studio at lower Indian Garden. The photo studio provided them with a darkroom and allowed unlimited access to the springs there. Running water was essential for the development process, a commodity that they could not count on at their south rim studio (*Figures 11 through 14*).<sup>113</sup>

President Theodore Roosevelt visited the Grand Canyon in 1903. In 1905, management of the Grand Canyon Forest Reserve was transferred to the U.S. Forest Service. A year later, Roosevelt enlarged the existing Grand Canyon Forest Reserve and provided additional protection by designating it a game preserve under an act of Congress. In 1907, the Grand Canyon Forest Reserve was renamed the Grand Canyon National Forest. In 1908, President Roosevelt designated 958 square miles of the Grand Canyon National Forest as a National Monument; monument status prohibited any private citizens from making future claims.<sup>114</sup>

Continuing his battle with corporate and Federal interests, Cameron applied for a patent and outright ownership on his two claims at Indian Garden in 1905: the Alder and Willow mill sites. The applications were denied and the claims were declared invalid and cancelled. In 1906, Pete Berry’s franchise to operate the Bright Angel Trail as a toll road expired. Control reverted to Coconino County. However the County eventually awarded the Bright Angel Trail franchise to Lannes L. Ferrall, a Cameron brother-in-law and manager of his south rim hotel. A year later

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<sup>112</sup> NPS, “Bright Angel Trail,” 7-6, 7-7, 8-14; Cleeland, “Cross Canyon Corridor Historic District,” 28; Anonymous, “Details of Trail Data – South Rim at G.C. Village,” (Manuscript at Indian Garden Ranger Quarters, n.d.) 2; Anderson, *Living at the Edge*, 77, 95.

<sup>113</sup> William C. Suran, *The Kolb Brothers of Grand Canyon* (Grand Canyon: Grand Canyon Natural History Association, 1991), 9.

<sup>114</sup> Sutphen, “Sinews of Dirt and Stone,” 52; Anderson, *Polishing the Jewel*, 98.

Coconino County awarded the Bright Angel Trail franchise to Ralph Cameron. He maintained control of the trail and charged a toll for its use through 1912, when its administration reverted to Coconino County.<sup>115</sup>

Cameron furthered his political career by winning election as the Arizona territorial delegate to the U.S. Congress in 1908. He held this position until 1912 when he ran for senator, but lost. Despite his obligations in the nation's capitol, Cameron continued to make sporadic repairs and improvements to the Bright Angel Trail. In 1908, he rerouted part of the upper trail to reduce its grade and bored the lower tunnel just below the south rim. Sometime prior to 1913, the upper tunnel was constructed by Cameron to allow tourists to view Mallery's Gallery, an area of Ancestral Puebloan paintings just below the south rim. In 1909, the U.S. Forest Service developed a management document entitled, "A Working Plan for Grand Canyon National Monument" authored by Forest Examiner W. R. Mattoon. As a testament to Cameron's improvements, Mattoon stated that "out of a total of five trails descending from the rim to the river, the Bright Angel Trail alone is kept in good repair...A toll of \$1 per head on each saddle or pack animal is collected by Mr. Ralph Cameron, to whom the trail is leased by the county."<sup>116</sup>

Throughout the 1900s, corporate entities and the U.S. Forest Service attempted to remove Cameron from the Grand Canyon National Monument. In 1908, at the request of the U.S. Forest Service, mining officials inspected many of Cameron's claims along the Bright Angel Trail and found them to be "farcical." In 1909, the Department of the Interior ruled that Cameron had not improved his mining and milling claims along the Bright Angel Trail as required and that they therefore would revert to the Grand Canyon National Monument. After failing to acquire the Bright Angel Trail, in 1909 the Santa Fe Railroad announced that they had received permission from the U.S. Forest Service to begin construction on the Hermit project, a new trail and inner-canyon development. They hoped that the Hermit project would become overwhelming competition to Cameron's Bright Angel Trail and Indian Garden Camp, eventually convincing him to abandon his interests. Despite their best intentions, construction on the "Hermit Project" did not begin until between 1911 and 1913.<sup>117</sup>

In 1909, the Santa Fe Railroad moved their Grand Canyon terminal further east from the Bright Angel Hotel to the newly constructed El Tovar Hotel. This eventually precipitated the closing of Cameron's Hotel and Camps at the south rim by 1910. Niles Cameron, C. C. Spaulding, and Lannes Ferrall however continued to collect tolls on the Bright Angel Trail and perform regular trail maintenance and assessment work at Cameron's mining claims.<sup>118</sup>

During the late 1900s, Indian Garden was still a popular destination for travelers to the inner-canyon. In 1909, John T. McCutcheon described Indian Garden as:

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<sup>115</sup> *Congressional Record, Proceedings and Debates of the First Session of the 68<sup>th</sup> Congress of the United States of America*. Volume LXV – Part 4. February 26 to March 14, 1924, (Washington D.C.: Government Printing Office, 1924), 3495; Anderson, *Living at the Edge*, 90-91; NPS, "Bright Angel Trail," 8-8.

<sup>116</sup> Sutphen, "Sinews of Dirt and Stone," 52; Anderson, *Living at the Edge*, 73; NPS, "Bright Angel Trail," 7-4; W. R. Mattoon, "A Working Plan for Grand Canyon National Monument," Prepared for U.S. Department of Agriculture, Forest Service, June 28, 1909 (Grand Canyon National Park Museum Collection #04560), 6.

<sup>117</sup> NPS, "Bright Angel Trail," 8-9; Anderson, *Living at the Edge*, 102; Carr, *Wilderness by Design*, 116-117; W. R. Mattoon, "A Working Plan for Grand Canyon National Monument," 6, 40.

<sup>118</sup> Anderson, *Polishing the Jewel*, 102; Anderson, *Living at the Edge*, 105; NPS, "Bright Angel Trail," 8-9.

...a beautiful broad plateau on which is situated the little collection of tent cottages called the Indian Gardens. A good spring, a little patch of cultivated garden land, and a sort of a halfway house where cool drinks may be purchased, constitute the settlement. Many people come down and spend the night in the tents, thereby getting an experience which enables them to say afterwards, 'When I was roughing it out in Arizona.'

In the early 1910s, Emory Kolb described Cameron's Indian Garden Camp.

When 1,300 feet above the river, our little workshop beside a stream on the plateau—only used at intervals when no water can be had on top, and closed for three months past—gave us our first cheerless greeting. Cameron's Indian Garden Camp was also closed for the day, and we were disappointed in a hope that we could telephone to our home, 3,200 feet above. But the tents, under rows of waving cottonwoods, and surrounded by beds of blooming roses and glorious chrysanthemums, gave us a more cheerful welcome than our little building [photo studio] below. We only stopped to quench our thirst in the bubbling spring then began the four mile climb that would put us on top of the towering cliff.

Similar positive descriptions of the inviting nature and potential of Indian Garden appeared in 1918. "The spring at Indian Garden is large enough to irrigate a small tract of ground. Experience has demonstrated that not only can vegetables of every kind be grown here, but all kinds of fruits, even oranges, lemons and grapefruit." Peaches and other fruits were apparently a marketable commodity in the larger region during this period. Supai peaches sold well in both Williams and Flagstaff.<sup>119</sup>

In 1916, the Santa Fe Land Improvement Company acquired several Cameron land claims from John Daniel, acting as an agent for Cameron. Water rights and the Alder and Willow mill claims at Indian Garden were acquired in June. Cameron, however, retained the platinum mining and hydroelectric development rights on all his claims, essentially blocking future development at Indian Garden. This partial acquisition stimulated the proposal of corporate development at Indian Garden. Plans for the immediate development of Indian Garden were drawn up by Mary Jane Colter for the Fred Harvey Company. The proposals submitted to the U.S. Forest Service included building tourist cabins at Indian Garden Camp and called for various-sized guest houses accommodating two to twelve persons. The plans were never adopted by Forest Service or the NPS due to Cameron's continued presence at Indian Garden (*Figures 15 through 19*).<sup>120</sup>

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<sup>119</sup> John T. McCutcheon, "Doing the Grand Canyon," in Paul Schullery, ed. *The Grand Canyon: Early Impressions* (Boulder: Colorado Associated University Press, 1981), 118; E. L. Kolb, *Through the Grand Canyon from Wyoming to Mexico* (New York: The Macmillan Company, 1953), 217; George W. James, *The Grand Canyon and How to See It* (Boston: Little, Brown and Co., 1918) 62; J. Donald Hughes, *House of Stone and Light*, 77.

<sup>120</sup> Billingsly et al., *Quest*, 65; Strong, "Ralph H. Cameron," 58; Virginia L. Grattan, *Mary Colter: Builder Upon the Red Earth* (Grand Canyon: Grand Canyon Natural History Association, 1992), 32; Anderson, *Living at the Edge*, 88; Mary Jane Colter, "Floor Plans of Stone Cottages, Proposed for Indian Gardens [No. 7]," Nov. 1916. Grand Canyon Museum Collection, #16713; Mary Jane Colter, "Cabin Accomodating 2 Persons, Kitchen Elevation facing Road, Slab Construction, [No. 10]" n.d. Grand Canyon Museum Collection, #16712; Mary Jane Colter, "Typical Stone Cottage (Accomodating 12 Persons), Proposed for Indian Gardens [No. 8]," ca. 1916. Grand Canyon Museum Collection, #16682.

The Fred Harvey Company map produced in 1916 shows the existing structures and features at Indian Garden. These included eight tents, a stone house, a kitchen, a stable area, a laundry, a former garden, a former alfalfa patch in the upper garden area, two trail maintainer's tents, the Kolb "cottage" or photo studio, and two unidentified structures/tents in the lower garden area (See Figure 15).<sup>121</sup>

In 1917, Don P. Johnston and Aldo Leopold issued a revised document entitled "Grand Canyon Working Plan." This document called for a detailed topographic survey of the Grand Canyon National Monument with the purpose of designating development use zones and mitigating conflicting land uses. A direct result of the document was the production of a U.S. Forest Service map of Indian Garden (Figure 20). Produced in 1917, this map shows similar existing structures and features as the Fred Harvey Company map. They include the Kolb Brothers photo studio, an "old toilet," a trail keeper's tent, an "oil float box" and adjacent tent, an old alfalfa field and a pond in the lower Indian Garden area, two unidentified structures adjacent to a vegetable garden, a former laundry tent, a kitchen, a root cellar, a stone house, a tool shed, a toilet, hitch racks, eight tents, an incinerator, and two unidentified structures adjacent to the upper Indian Garden area—most likely a mule shed and corral.<sup>122</sup>

After a decade of heavy use and only meager funds allotted by Cameron for its maintenance, the appearance of the Indian Garden camp began to suffer. In 1916, the Indian Garden Camp was described less than favorably by the U.S. Forest Service.

The Indian Gardens constitute the more or less level stretches on the first mesa on the Bright Angel Trail at an elevation of 3,800 feet above sea level or 3,288 feet below the rim at the head of the trail. The water at this point has made it a desirable stopping point for trail parties to lunch. Due to mineral claims, however, there has been no authority to keep the place clean, and it is in a filthy and disgraceful condition. Piles of decayed remnants of lunch were found within a few yards of the trail at several points. Lunch boxes with the cards furnished by the Forest Service requesting care with refuse are found scattered from one end of the Gardens to the other. One of the Coconino County Trail caretakers lives here. The surroundings about his living quarters are as filthy as other parts of the Garden. Tourists who pass up and down the trail probably [--] get the impression that this man is an employee of the Government. There are four springs at the Gardens capable of supplying water to extensive hotel and living quarters. The surplus may some day be pumped to the top of the rim unless other arrangements are made. It is the plan of the [Fred Harvey] Company to develop these gardens as a stopping place for tourists who wish to remain in the Canyon over night or longer. A wax model has been made of the proposed development. It is the plan to have a number of individual cottages, some supplied with baths and others not. The plan is to fix a rate for the cheaper quarters so low as to be within reach of people of limited means. The prices of the more pretentious quarters are to be

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<sup>121</sup> Fred Harvey Company, "Plat 'A' Showing Present Plan of Indian Gardens," 1916. Grand Canyon National Park, Museum Collection.

<sup>122</sup> U.S. Forest Service, "Working Plan Map, Grand Canyon, Tusayan National Forest, Indian Garden Area," 1917. Grand Canyon National Park, Museum Collection; Carr, *Wilderness by Design*, 118.

fixed high enough to help bear the costs of operation for the others. There is to be a central dining hall and a large lounging room with large fireplace. Corrals for stock would be placed below. It is the idea to have chickens and cows so as to furnish fresh eggs, milk and cream for the patrons. In order to do this there must be poultry pens and small pastures. For this purpose it is proposed to develop the lower Indian Gardens where there is not to exceed ten acres of land which may have value for these purposes. It cannot be hoped to grow enough feed for these cows; and of course, the remainder must be packed down the trail. The company's landscape gardener desires to leave natural conditions undisturbed as much as possible. Cottages are to be built against or partially on top of boulders. Existing trees and shrubs are not to be disturbed. There is practically no wood supply, and the introduction of eucalyptus has been proposed. The whole idea of developing Indian Gardens is based upon the principle of making it appear, at least, as being independent within itself. The cliffs near by have cave houses and dugouts as living quarters for the Supai Indians, which tribe formerly inhabited [sic] this spot. These Indians will care for the garden spots. Fresh vegetables could be raised during at least eight months of the year. The effect should be pleasing. The project is stupendous after one considers that building material must be packed from the top on mule back. This tract can hardly be put to any higher use than the one proposed. The expenditure, which will be distributed over five to ten years, will probably be \$100,000. The mules which transport these supplies will be taxed the \$1. toll unless special concessions are made by the County authorities, or the present arrangement is permanently altered. It is planned to be able to take care of 60 guests per day by the end of next season, future developments to depend upon the demand. The right of way along the Bright Angel Trail is claimed to be 40 feet in width. It practically ruins the upper Indian Gardens. It is essential that the trail be moved slightly in one or two instances. Even so, buildings will be within 20 feet of it. Several years ago Kolb Brothers built a cabin at the lower end of the Upper Gardens. It was used for making of enlargements, since a fresh water supply was at hand. The building probably cost \$700 including packing the material. The County's employee who lives nearby states that it is used an average of three times a year. Mr. Emory Kolb claims to use it three times a month. The building has an abandoned appearance. There is no objection to the continued use of this building and site provided it is maintained in good order and the premises kept clean. However any permit should be issued for an extremely small area surrounding that house and should clearly stipulate that it will not interfere with higher use.<sup>123</sup>

Throughout the 1910s, Cameron actively investigated selling many of his claims along the Bright Angel Trail and adjacent to Indian Garden to large corporations in the eastern U.S. In 1912, Cameron claimed that a Philadelphia syndicate had an option to purchase thirty-five of his mining claims, some near Indian Garden, to "build a reservoir and hydroelectric plant within Garden Creek's narrows." The claims were never sold and the plans were never developed. Cameron also continued to pursue his rising political career. In 1914, he was defeated in a bid for

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<sup>123</sup> Don P. Johnston and Aldo Leopold, "Grand Canyon Uses Working Plan," December 1916 (Grand Canyon Museum Collection #28343), 7-9.

Governor of Arizona. Six years later Cameron was swept into Congress on the Republican ticket. He served his constituents in this capacity until early 1927.<sup>124</sup>

Under county administration since 1912, the Bright Angel Trail continued to remain a popular destination. During 1915, the fact that the Grand Canyon happened to be along the route to the San Francisco World's Fair to the Grand Canyon greatly increased tourism along the south rim. Tolls for the Bright Angel Trail during that year amounted to \$20,000. Several attempts were made to connect the Bright Angel Trail to Bright Angel Creek and the north rim. In 1907, David Rust constructed a cable system at the terminus of the Bright Angel Trail formally connecting the trails on either side of the Colorado River. In 1921, the NPS constructed a suspension bridge across the Colorado River at the northern terminus of the Bright Angel Trail. These efforts only increased the popularity of the Grand Canyon and its inner-canyon trails. The suspension bridge was eventually rebuilt in 1927.<sup>125</sup>

In 1916 the NPS was created. Three years later, President Woodrow Wilson signed legislation creating the GRCA. Despite the United States' entry into World War I in 1917, the NPS wasted little time initiating improvements within their new park. By January of 1922, GRCA's first cross-canyon telephone line was completed by a contractor. The single wire line was connected to trees and rocks along the Bright Angel Trail. A telephone station was located at Indian Garden.<sup>126</sup>

Over time, the Federal government increased its attempts to remove Cameron from the Bright Angel Trail and Indian Garden. In June of 1916, a suit was initiated against Cameron and his Alder and Willow mill sites at Indian Garden. Five years later in February 1921, a decree was entered against Cameron that forbid his use of "said sites and required within 60 days to remove therefrom all buildings, structures and improvements." In an attempt to stall his eviction from Indian Garden, Cameron alleged that he had a pre-existing agreement with Coconino County to use the buildings there. Likewise he also believed that the buildings he owned were in the Bright Angel Trail right-of-way and therefore under the jurisdiction of the County.<sup>127</sup>

The NPS was well aware of the administrative problems it faced when it took over the GRCA. The Superintendent's Annual Report for the years 1920-25 notes "probably the greatest problem confronting the Service upon its taking over the administration of the park was the existence of the many claims of alleged mineral value. Among these were the claims located by Ralph H. Cameron which have been in litigation for several years." During the early 1920s, Assistant Director of NPS, Horace Albright, inspected the GRCA and reported that "the situation at Indian Gardens is a disgrace to the park and an insult to the nation that owns the park" (*Figures 21 through 23*). By the mid-1920s, the NPS was finally able to drive Cameron out of Indian Garden but did not obtain control of the Bright Angel Trail until late in the decade. In 1920, the U.S. Supreme Court invalidated all of Cameron's mining claims and labeled him a trespasser within

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<sup>124</sup> Anderson, *Living at the Edge*, 106; NPS, "Bright Angel Trail," 8-2, 8-11; Strong, "Ralph H. Cameron," 58.

<sup>125</sup> Anderson, *Living at the Edge*, 106; Carr, *Wilderness by Design*, 116; NPS, "Bright Angel Trail," 8-16.

<sup>126</sup> NPS, "Trans Canyon Telephone Line, Grand Canyon National Park" (National Register of Historic Places Inventory – Nomination Form, 1986), 8-2; NPS, Superintendent's Annual Report [SAR], Grand Canyon National Park, 1922," 7. Grand Canyon Museum Collection.

<sup>127</sup> *Congressional Record*, 3495; Anderson, *Living at the Edge*, 106.

NPS lands. Three years later, suits were again filed against Cameron in Federal court for his refusal to vacate his invalid claims and for his failure to remove the structures and his employees from Indian Garden. Cameron was legally evicted from Indian Garden in 1924, formally ending his presence there. In September of that same year, when Cameron refused to leave Indian Garden, park rangers acted by storming the Indian Garden camp. Cameron's caretakers ran away just before they arrived. The park rangers found an illegal distilling operation in one of the store houses. The facilities present at Indian Garden within Cameron's Alder and Willow Mill claims in 1924 were noted by Hubert Work of the NPS as "a long storehouse occupied by a caretaker of the Bright Angel Trail, ownership of which is now in Coconino County; the stone shell of a two-story structure; and ten to twelve frames for small shelter cabins for campers."<sup>128</sup>

In 1924, Louis Crampton, a Congressional representative from Michigan and long time political opponent of Cameron's, took the opportunity to put on record the extensive lengths to which Cameron and his associates went to keep the U.S. Forest Service and NPS out of the Bright Angel Trail and Indian Garden vicinity. In particular, he noted that in February of 1924, Santa Fe Railroad engineers constructed a stone weir with a gauge below the Kolb Brothers studio to measure the flow of Garden Creek. The Indian Garden Coconino County caretaker said that he would destroy the weir and gauge. Later the weir was found to have been destroyed by explosion. In the same year, samples of water taken at the "lunching station" at Indian Garden were analyzed by the Santa Fe Railroad hospital and found to contain typhoid. Samples taken from two springs approximately one quarter mile above the lunching station were found to be pure. Contamination of Garden Creek was thought to have come from old pit toilets "built by Clarence Spaulding about 1909 for use of Cameron's tent colony. These toilets were also used by the public until about two years ago [1922], when the caretaker destroyed them, but we are informed, did not fill the pits." Lastly, an NPS sign placed at Indian Garden warning against the danger of contaminated water at the lunch station was torn down by the Coconino County caretaker.<sup>129</sup>

National periodicals also picked up the story of the long standing conflict and the NPS raid that detailed the abhorrent physical conditions at Indian Garden.

Their actions [Cameron] were especially obnoxious at Indian Gardens, the oasis on the bottom of the canyon by way of the Bright Angel Trail. They prevented the erection of a public comfort station for travelers and eventually the water upon which the visitors depended for drinking at Indian Gardens became polluted with typhoid-fever germs which came, so officials of the NPS stated, from unsanitary conditions permitted by the Cameron employees. When the park officials put up signs warning travelers against drinking the water the placards were torn down...The forest rangers found the Cameron employees decamped, their property left behind in great disorder. In one deserted shack the park superintendent reported that he found 'a large vessel containing about six or eight

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<sup>128</sup> NPS, "SAR," 1920-1925. Grand Canyon Museum Collection; Anderson, *Living at the Edge*, 106; Strong, "Ralph H. Cameron," 161; Hughes, *House of Stone and Light*, 88, 90; Billingsly, et al., *Quest*, 65; *Congressional Record*, 3497.

<sup>129</sup> *Congressional Record*, 3498-3499.

gallons of mash, ready for the still. There was evidently a hooch factory in embryo.<sup>130</sup>

Only a month after the NPS raid, the Santa Fe Railroad announced plans to build a hotel “similar to the El Tovar” at Indian Garden. For whatever reason, the plans were never seriously considered by the NPS.<sup>131</sup>

After the NPS confiscated the Indian Garden facilities formerly owned by Cameron, the formal process of acquiring Indian Garden and the Bright Angel Trail accelerated. In 1926, Cameron lost his bid for another term as congressional representative to Carl Hayden and subsequently retired to the east coast, leaving the future of the Bright Angel Trail to Coconino County. Despite convincing Coconino County to reject a NPS offer to buy the Bright Angel Trail in 1924, the County eventually agreed to sell the trail to the NPS in 1927 in exchange for \$100,000 spent on construction of a new approach road from U.S. Route 66 to the south rim. The NPS gained full control of Indian Garden in September of 1927. A year later they received the title to the Bright Angel Trail.<sup>132</sup>

In 1926, the NPS contacted a Mr. Wood to become the Federal government-employed caretaker and trail manager at Indian Garden. The Wood family lived at Indian Garden. Their home consisted of two “tent houses, one of which was used for living, and the other for a cook house...The floors had wide cracks in them, but we managed to get linoleum to cover them and I made curtains for the windows and it began to look like home...Indian Garden was a beautiful spot and we were surrounded on three sides by sheer cliffs, several large shade trees and a few fruit trees.” At the end of their one-year term, the Wood family left Indian Garden.<sup>133</sup>

Improvements made at Indian Garden in the first few years of NPS tenure, but prior to formal ownership of Bright Angel Trail and Indian Garden in 1927, included a general cleaning up of the grounds, and the removal of trash and debris between 1924 and 1925. In 1925, old pit toilets were treated with quick lime and covered, new chemical pit toilets and watering troughs were constructed, and portions of the trail were rerouted out of the Garden Creek in an effort to clean up the water.<sup>134</sup> Just before the formal acquisition of the Bright Angel Trail, the Santa Fe Railroad completed initial development work at various springs at Indian Garden in 1927 “so that the flow of the springs was increased to approximately 576,000 gallons per day. After observing the output of these springs for a sufficient period it is the ultimate plan to pump water from this source to the south rim for the supply of fresh water which is at present provided by a one-hundred-mile haul by rail in tank cars.”<sup>135</sup>

By 1925, the NPS was completing major construction projects that would have a direct impact on visitorship to the park. In 1925, Bureau of Public Roads engineers surveyed the “Williams

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<sup>130</sup> Arthur Warner, “Canyons and Camerons: A United States Senator Defies the Government” *The Nation*, Vol. 121, No. 3147 (October 28, 1925): 481-482.

<sup>131</sup> Cleeland, “Cross Canyon Corridor Historic District,” 34.

<sup>132</sup> NPS, “Bright Angel Trail,” 8-12; Billingsly et al., *Quest*, 65; Cleeland, “Cross Canyon Corridor Historic District,” 34. Ralph Cameron died and was buried in the cemetery at Grand Canyon Village in 1953.

<sup>133</sup> Hazel Wood, “Aunt Hazel and Indian Garden” *The Ol' Pioneer*, Vol. 10, No. 2 (April / June 1999): 5-6.

<sup>134</sup> “SAR,” 1925, 6. Grand Canyon Museum Collection.

<sup>135</sup> “SAR,” 1927, 7. Grand Canyon Museum Collection.

approach road” to the Grand Canyon Village. The road arrived at the south rim at the head of Bright Angel Trail. Construction was subsequently completed by the end of 1928. Also in 1928, the Navajo Bridge at Marble Canyon was constructed.

***Chronology by Landscape Characteristic, 1901-1928:***

**Land Use and Activities**

Prospecting	Prospecting for valuable minerals in the Indian Garden vicinity was continued by Ralph Cameron and others.
Mining	Mining for valuable minerals in the Indian Garden vicinity was continued by Ralph Cameron.
Tourism	Throughout the first three decades of the twentieth century, Indian Garden became one of the more popular destinations for inner canyon travelers.
Photographic developing	With the construction of the Kolb Brothers photo studio in 1906, the development of early photographs was carried on at Indian Garden.
Alcohol distilling	After a 1924 raid on Cameron’s Indian Garden, NPS rangers discovered an illegal distillery in one of the structures.
Cultivation	Extensive vegetable and fruit gardens were established and cultivated for the support of Indian Garden personnel and possibly for sale as well.
Water development	In 1927, the Santa Fe Railroad accomplished “minor development” of the springs at Indian Garden to monitor their water flow.

**Patterns of Spatial Organization**

Development of water sources	Within the larger Grand Canyon area, convenient water sources within the inner canyon, usually located along well-established trails, were initially developed by and for miners, and subsequently to serve the incipient tourist industry.
Linear settlement pattern	Following the general north-south orientation of the

Garden Creek springs at Indian Garden, Ralph Cameron built his Indian Garden camp along the lush relatively flat floodplain corridor.

## **Response to Natural Environment**

### Trail alignment

The Bright Angel toll road generally followed the pre-established Havasupai route that conformed to the descent of the Bright Angel Fault from the south rim to Indian Garden.

## **Cultural Traditions**

### Land claims

Beginning in 1890, and lasting into the first quarter of the twentieth century, early explorers and miners of the inner canyon laid claim to public lands through the 1866 Federal Mining Act (revised 1870 and 1872). This act allowed anyone to claim mineral deposits on surveyed or unsurveyed public land and maintain control of such land with minimal improvements. At Indian Garden, several mining and water power claims were filed by Ralph Cameron. This cultural tradition contributed to the private development and commercial exploitation of the Grand Canyon.

## **Cluster Arrangement**

### Alder and Willow Mill sites

Much of the development at Indian Garden clustered within two small water power claims established by Ralph Cameron. Administrative buildings and gardens were located in the northern or Willow Mill site, and the tent cabins and other features were generally located in the southern or Alder Mill site.

## **Circulation Networks**

### Bright Angel Trail

The Bright Angel Trail emerged as the most popular inner canyon trail due to its location adjacent to the railroad and the fact that it was a relatively well-maintained system.

### Bright Angel Trail rerouted

In 1925, the NPS rerouted part of the Bright Angel Creek out of Garden Creek at Indian Garden.

## Boundary Demarcations

Mining Claim located	As part of the prospect and mining process, potential claims had to be surveyed and/or marked or located on the ground before a claim could be filed with county authorities. Claim markers were essentially posted notices that established porous boundaries for trail and/or mining and milling sites.
Enclosure fenced	A 1916 map of the Indian Garden vicinity indicates that an area just south of the Alder Mill claim and surrounding two unidentified structures, most likely mule shelters, was fenced as a corral.
Enclosure fenced	A 1916 map of the Indian Garden vicinity indicates that an area labeled as Vegetable Garden was surrounded by a fenced enclosure.
Enclosure fenced	A 1916 map of the Indian Garden vicinity indicates that an area labeled as “Alfalfa field” was surrounded by a fenced enclosure.

## Vegetation (Related to Land Use)

Trees planted	Ralph Cameron planted an unknown number of cottonwood trees in at least three linear rows within the Garden Creek floodplain to provide shade for visitors to his Indian Garden Camp.
Vegetable and Fruit cultivated	Prior to 1916, at least two separate cultivated areas were initiated in the Indian Garden floodplain: an alfalfa field and a vegetable garden.

## Buildings and Structures

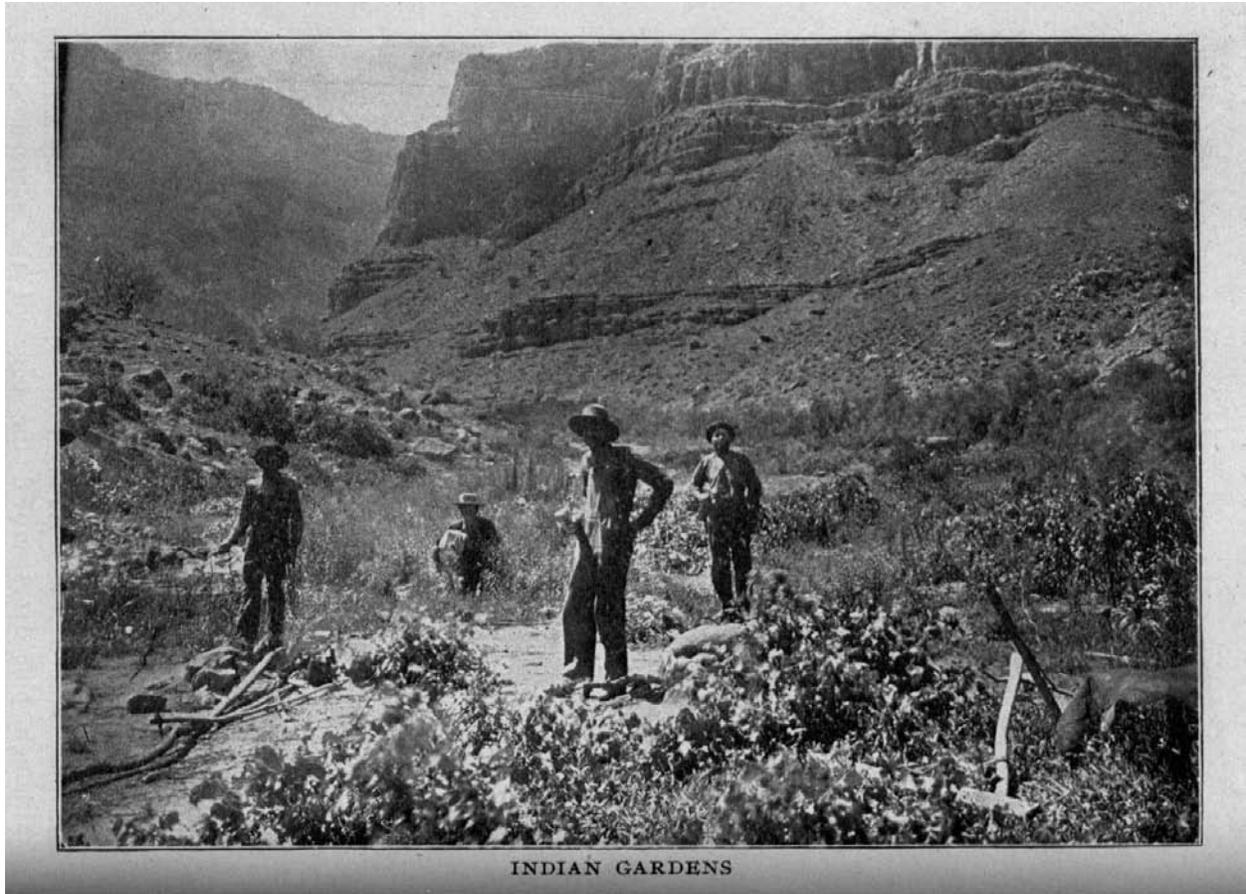
Kitchen and Root Cellar	A part frame and part tent structure was built by Ralph Cameron prior to 1916 at Indian Garden. Photographs document that this structure may have had two construction phases.
Laundry Tent constructed	A laundry tent, similar to the frame and canvas camp tents, was constructed by Ralph Cameron prior to 1916 at Indian Garden.

Frame and canvas tents constructed	At least seven, possibly eight, frame and canvas tents were constructed for overnight guests at Indian Garden prior to 1916 by Ralph Cameron. The frame tents were covered by a canvas shell that included a roof and sides. Each tent had a door and at least two windows.
Tool shed constructed	A tool shed was constructed at Indian Garden prior to 1916 by Ralph Cameron. It is not known what the structure looked like.
Trail maintainer's tents constructed	Two frame and canvas tents were constructed at Indian Garden prior to 1916 by Ralph Cameron. The tents were used by the trail maintainer and were located below Indian Garden proper, on an eastern slope above the Kolb Brothers studio.
Unidentified tent constructed	An unidentified tent located just south of the Trail Maintainer's tent on a ridge east of Garden Creek was constructed prior to 1916 by Ralph Cameron.
Kolb Brothers photo studio built	A two-story stone and frame building was constructed in 1906 adjacent to the Garden Creek drainage by Emory Kolb. The structure had a porch on its eastern side.
[Mule shelter] constructed	Two unidentified structures that formed the southern or upper end of Indian Garden were constructed at Indian Garden just prior to 1916 by Ralph Cameron. Because of the adjacent fence enclosure, the structures likely served as mule shelters.

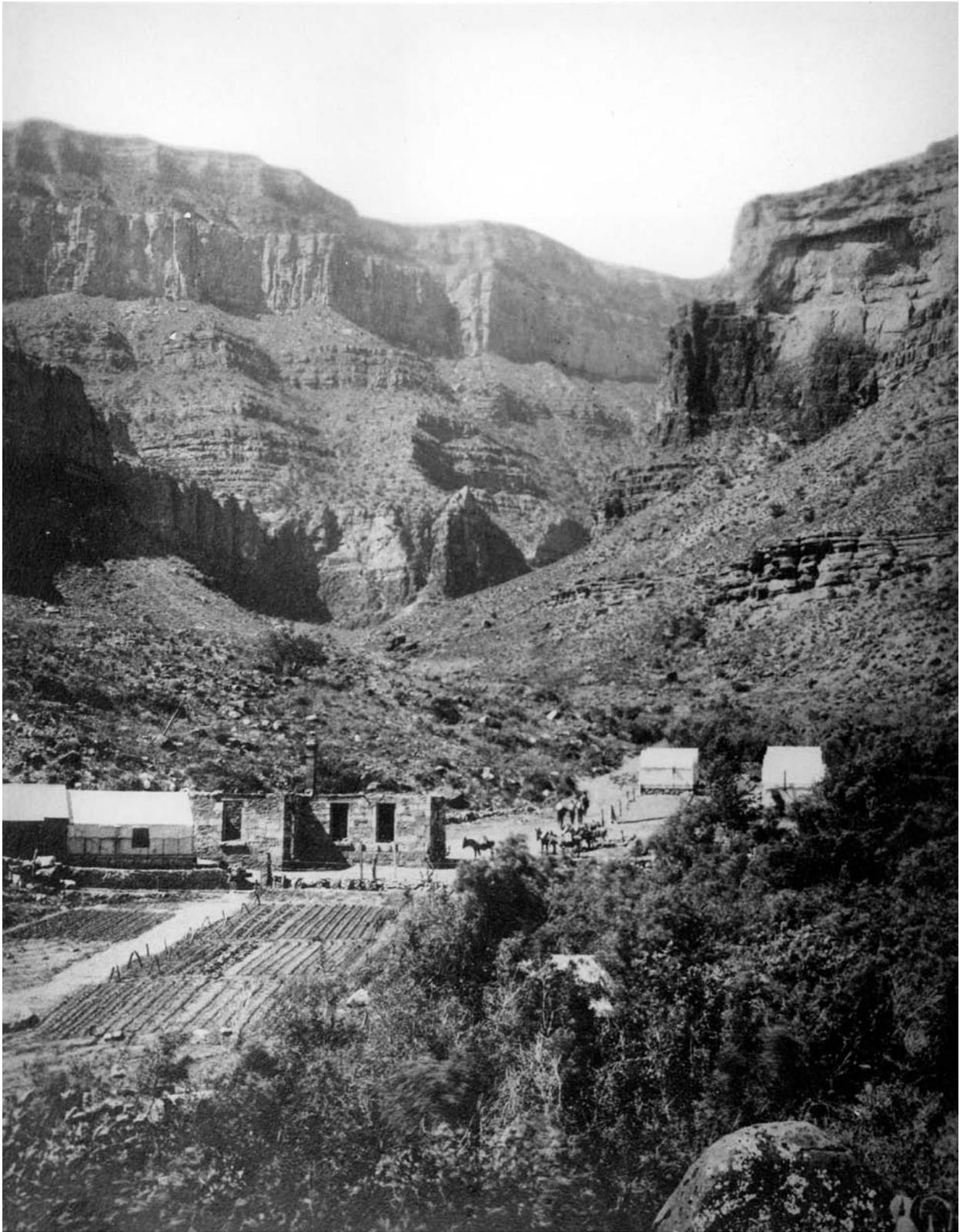
### **Small-scale Features**

Trail maintainer's platform constructed	A platform where the Trail Maintainer's tents were located was leveled out of a ridge just east of Garden Creek.
Signage placed	In 1924, the NPS posted signs calling attention to the contaminated water at Indian Garden.
Pit toilets constructed	At least one pit toilet was erected just west of the tent camp and cottonwood tree area for use by

	visitors. The toilet was erected prior to 1916 by Ralph Cameron.
Chemical toilets constructed	In 1925, the NPS installed chemical toilets at Indian Garden to replace the old Cameron-era pit toilet. It is not known where these toilets were located or what materials were used in their construction.
Watering troughs constructed	In 1925, the NPS erected new watering troughs at Indian Garden for the use of mule trains.
Hitching posts constructed	Several mule hitching posts were erected throughout the Indian Garden area prior to 1916 by Ralph Cameron. It is presumed that the hitching posts were constructed of wood.
Stone weir and gauge constructed	In 1924, engineers for the Santa Fe Railroad constructed a stone weir and gauge in Garden Creek below the Kolb Brothers photo studio.
Prospecting	As a result of extensive prospecting in the Indian Garden vicinity, numerous adits and tunnels were excavated in an attempt to find valuable minerals and demonstrate proof that claims were being worked.
Pond established	A “pond” west of and adjacent to the alfalfa field was constructed prior to 1916 by Ralph Cameron. The pond may have served as a watering hole for the mules or as a catchment basin to water the alfalfa field.



**Figure 4.** "Indian Gardens," showing workers clearing vegetation, ca. 1902. (P.C. Bicknell, *Guide Book of the Grand Canyon of Arizona*, 47)



**Figure 5.** Cameron's Indian Garden, view to south, 1906. (Grand Canyon National Park Museum Collection #3611a)



**Figure 6.** View of Indian Garden, ca.1906. (Grand Canyon National Park Museum Collection #3611b)



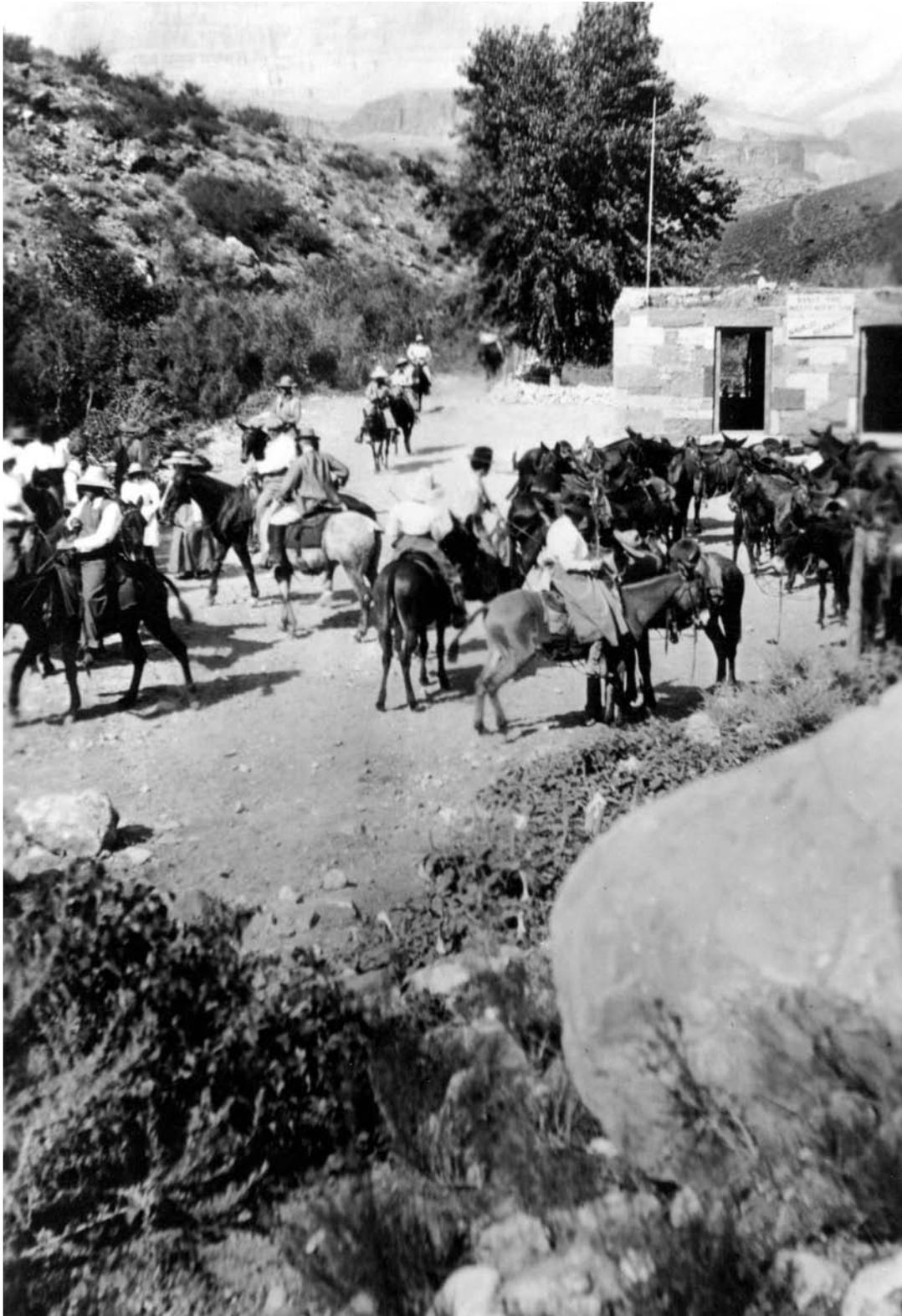
**Figure 7.** Close-up view of Indian Garden, ca.1906. (Grand Canyon National Park Museum Collection #3611c)



**Figure 8.** Burro trains packing provisions at Indian Garden, ca.1906. (Grand Canyon National Park Museum Collection #9836)



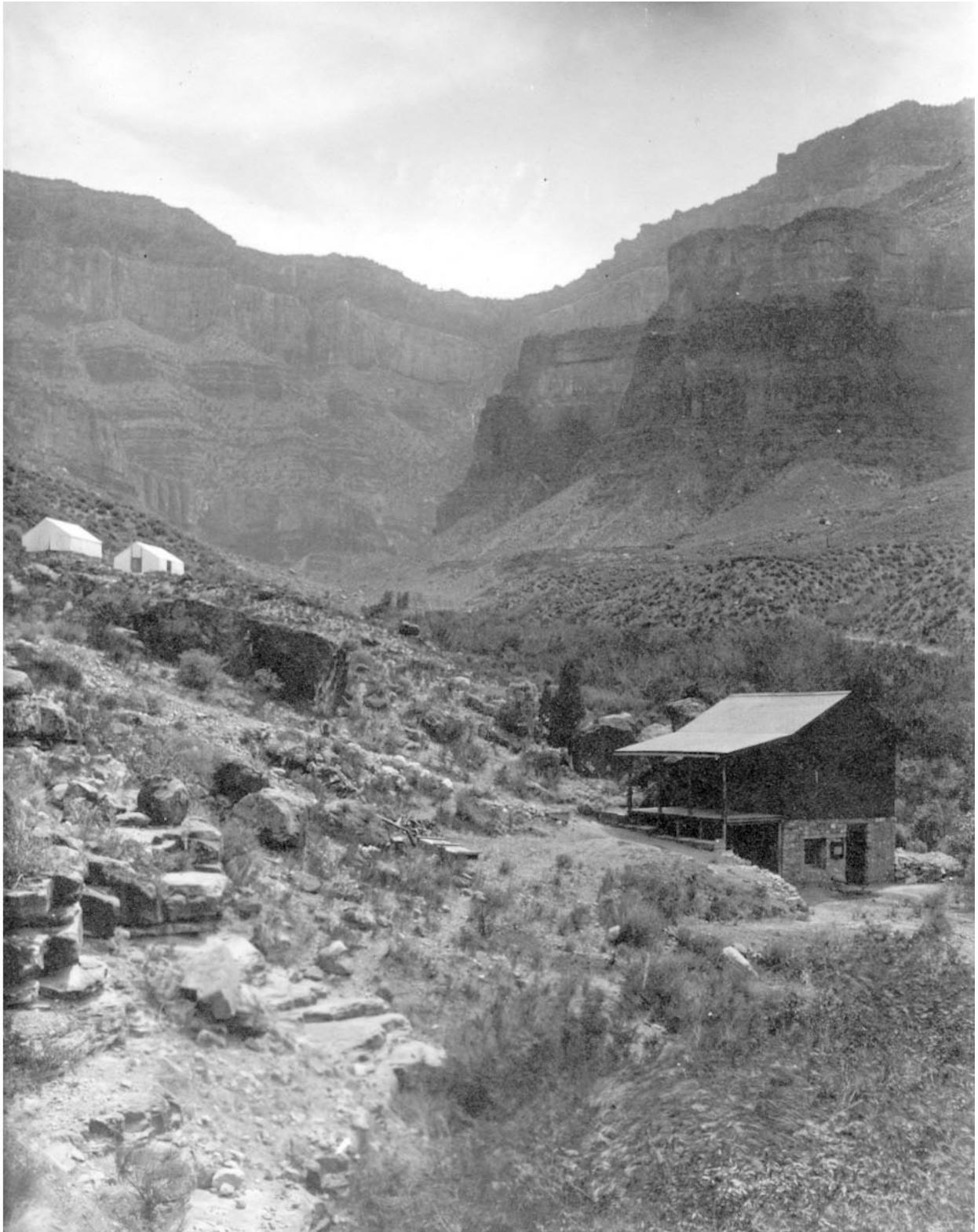
**Figure 9.** Tourist camp at Indian Garden, ca.1907. Note row of cottonwood trees in background. (Grand Canyon National Park Museum Collection #12065)



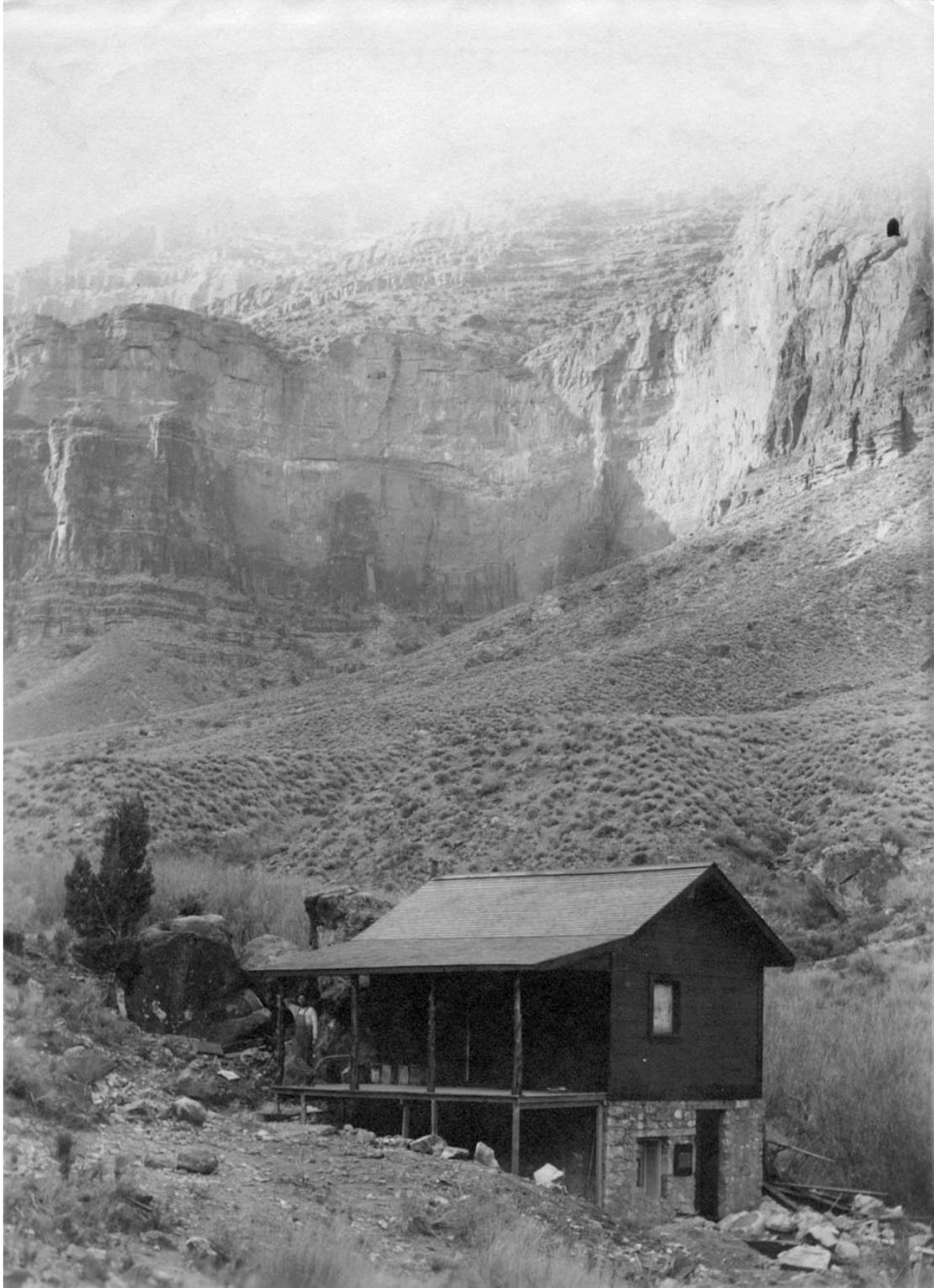
**Figure 10.** Mule train at Indian Garden, ca.1910. (Grand Canyon National Park Museum Collection #11412)



**Figure 11.** Indian Garden ca.1916, looking southwest, showing Kolb Studio, Trail Keeper's tents and platform, lush environment of Garden Creek area, and canyon background. (NAU - Cline Library Collection, 568-1216)



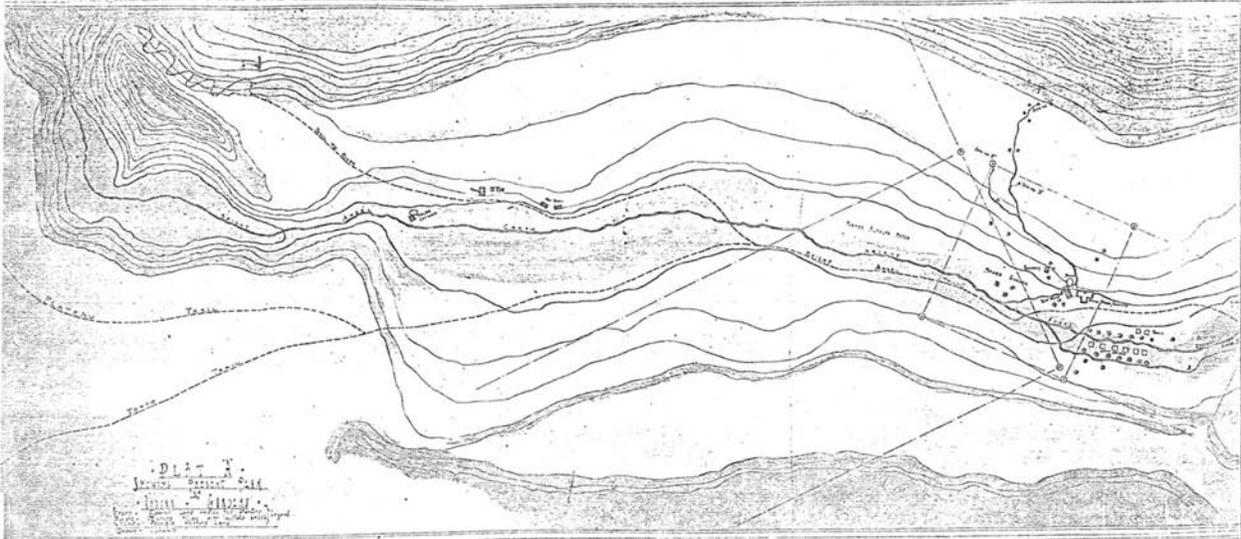
**Figure 12.** Indian Garden ca.1916, looking south and showing Kolb Studio and Trail Keeper's tents and platform. (NAU-Cline Library Collection, 568-1213)



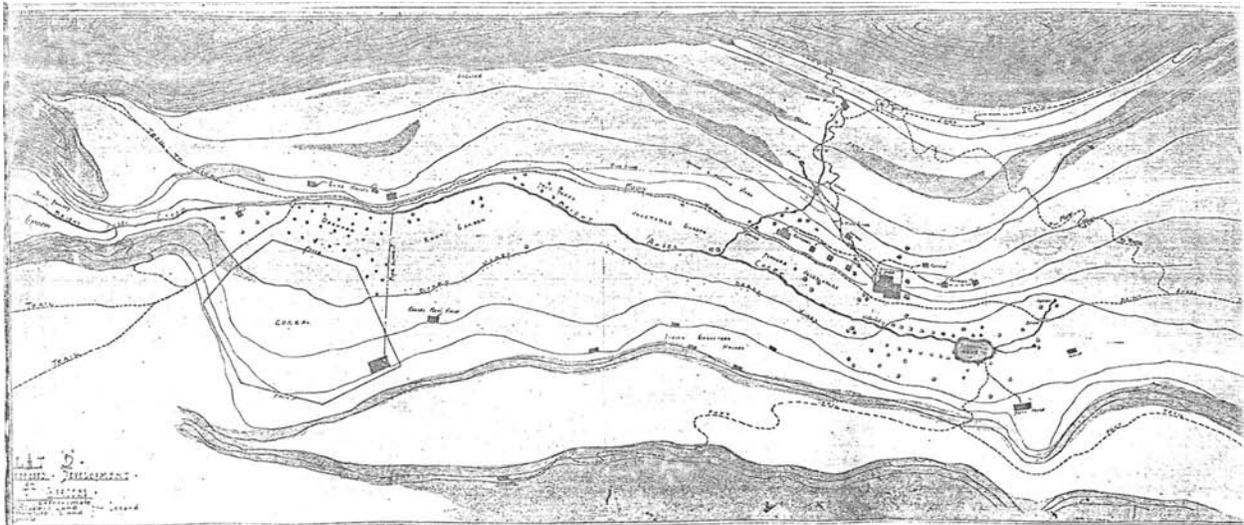
**Figure 13.** Indian Garden ca.1916, looking southwest at Kolb Studio and canyon wall in background. (NAU - Cline Library Collection, 568-1214)



**Figure 14.** Indian Garden ca.1916, looking west at Kolb Studio with mule, dog, and two individuals. (NAU-Cline Library Collection, 568-1215)

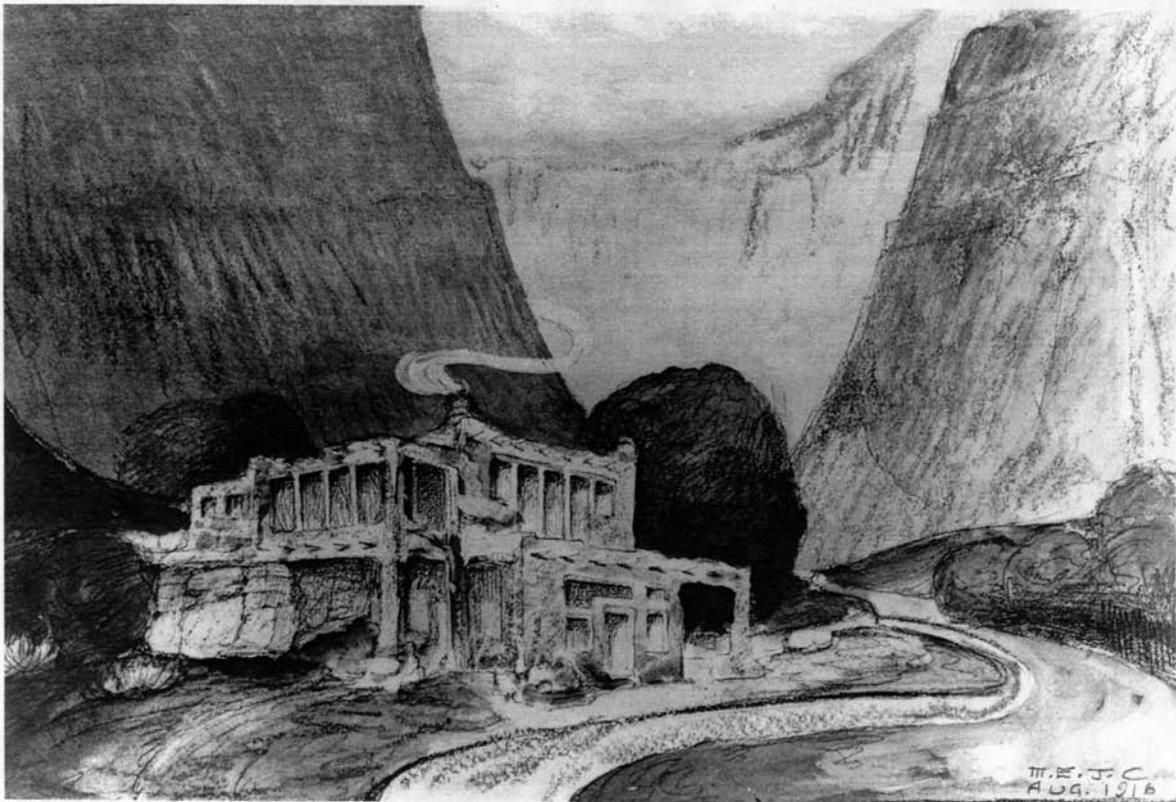


“Plat A Showing Present Plan of Indian Gardens”

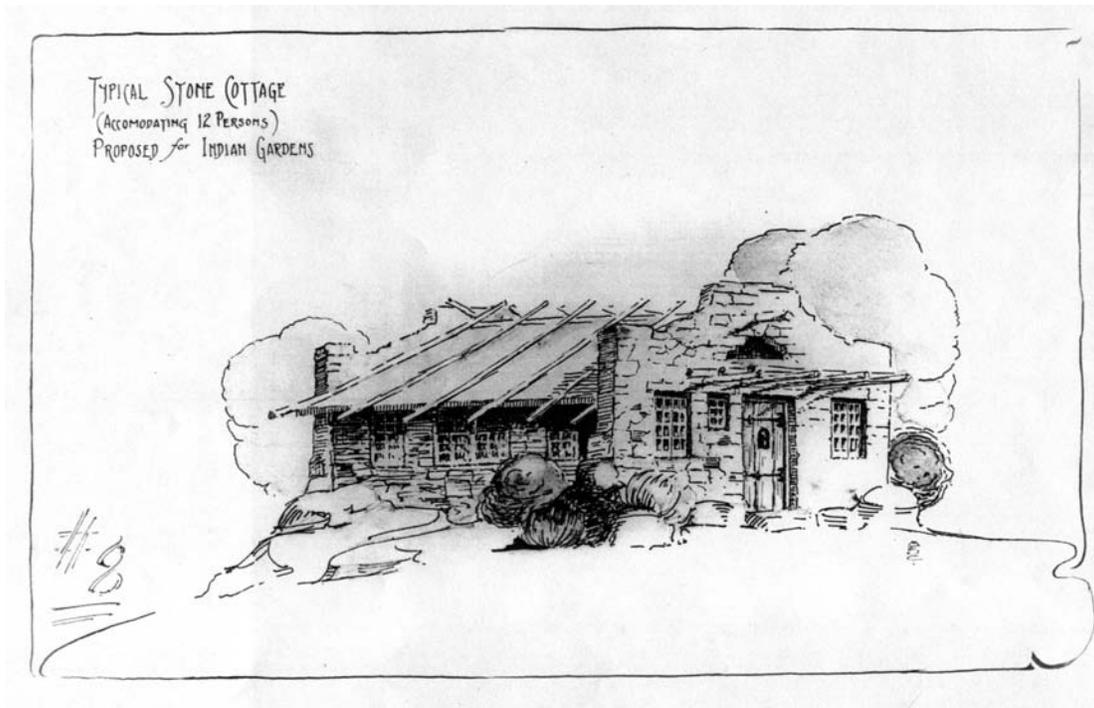


“Plat B Showing Proposed Development of Indian Gardens”

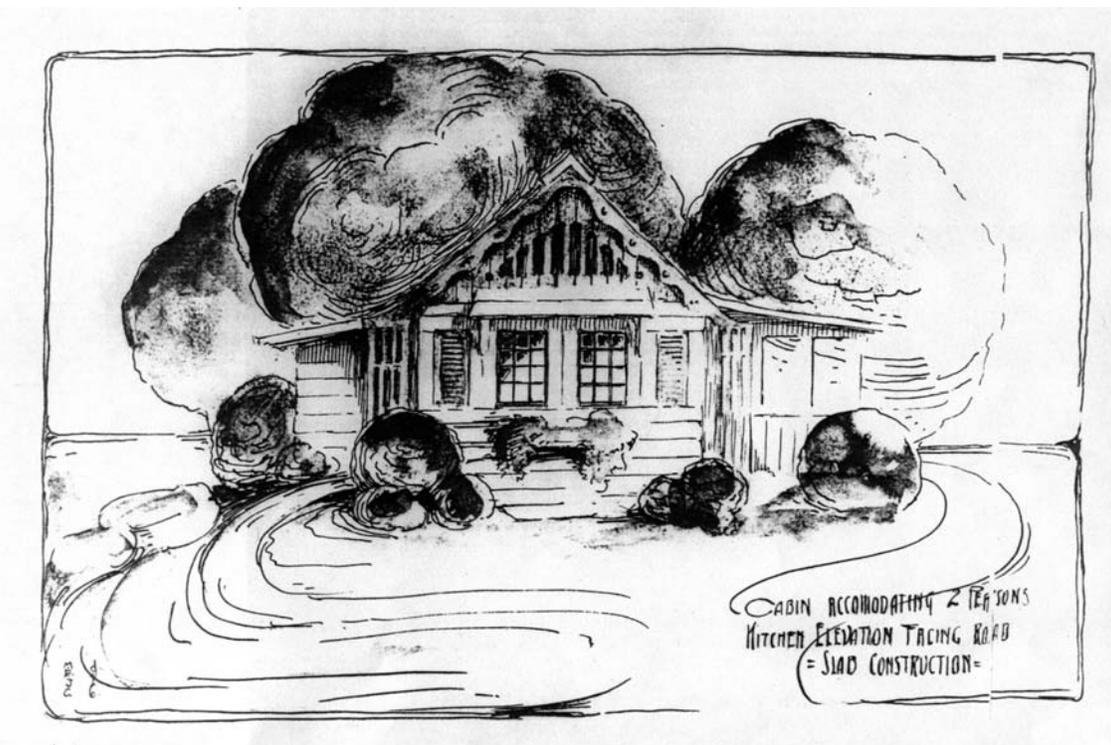
**Figures 15.** Conceptual site plan for Indian Garden (never constructed), 1916. (Grand Canyon National Park Museum Collection, call number unknown)



**Figure 16.** Mary Colter's conceptual drawing of guest house at Indian Garden, August 1916 (never constructed).  
(Grand Canyon National Park Museum Collection #16683)



**Figure 17.** Mary Colter’s conceptual drawing of proposed “typical stone cottage” at Indian Garden, August 1916 (never constructed). (Grand Canyon National Park Museum Collection #16682)



**Figure 18.** Mary Colter’s conceptual drawing of proposed two-person cabin at Indian Garden, August 1916 (never constructed). (Grand Canyon National Park Museum Collection #16712)

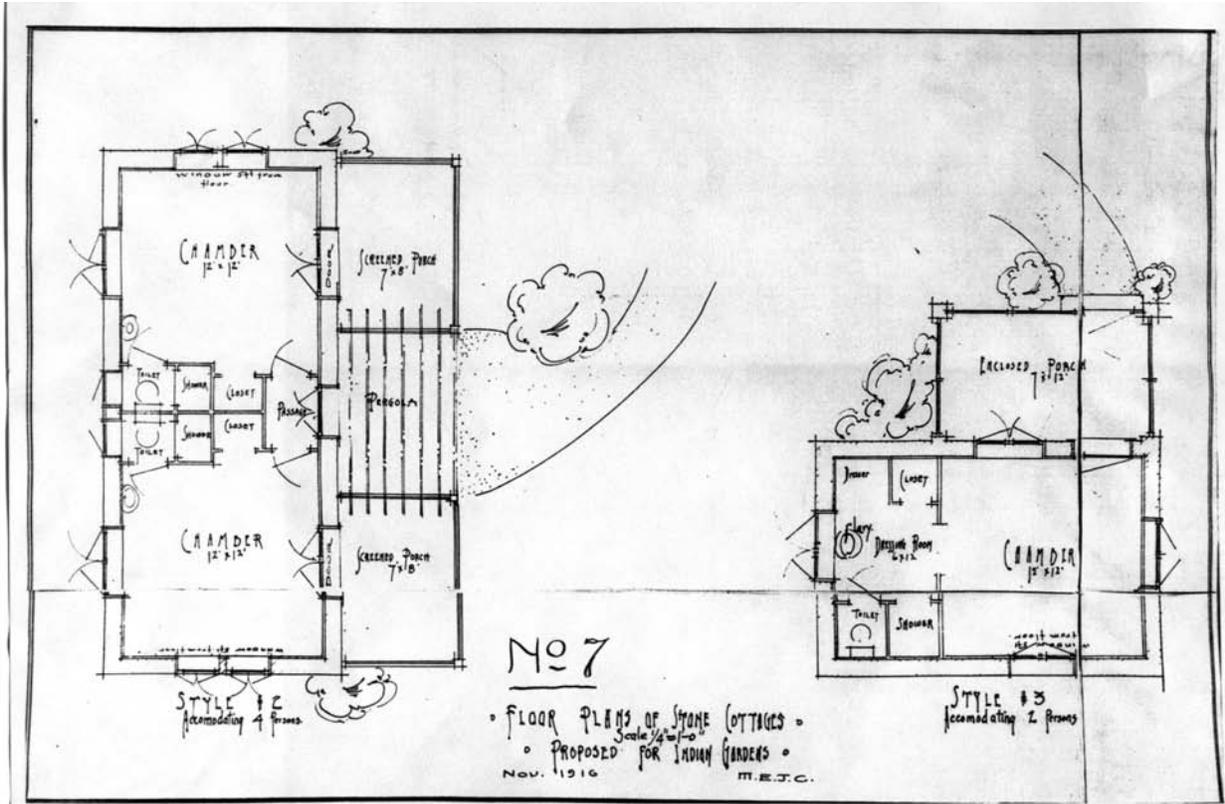


Figure 19. Mary Colter's conceptual "Floor Plans for Stone Cottages," for Indian Garden, November 1916 (never constructed). (Grand Canyon National Park Museum Collection #16713)

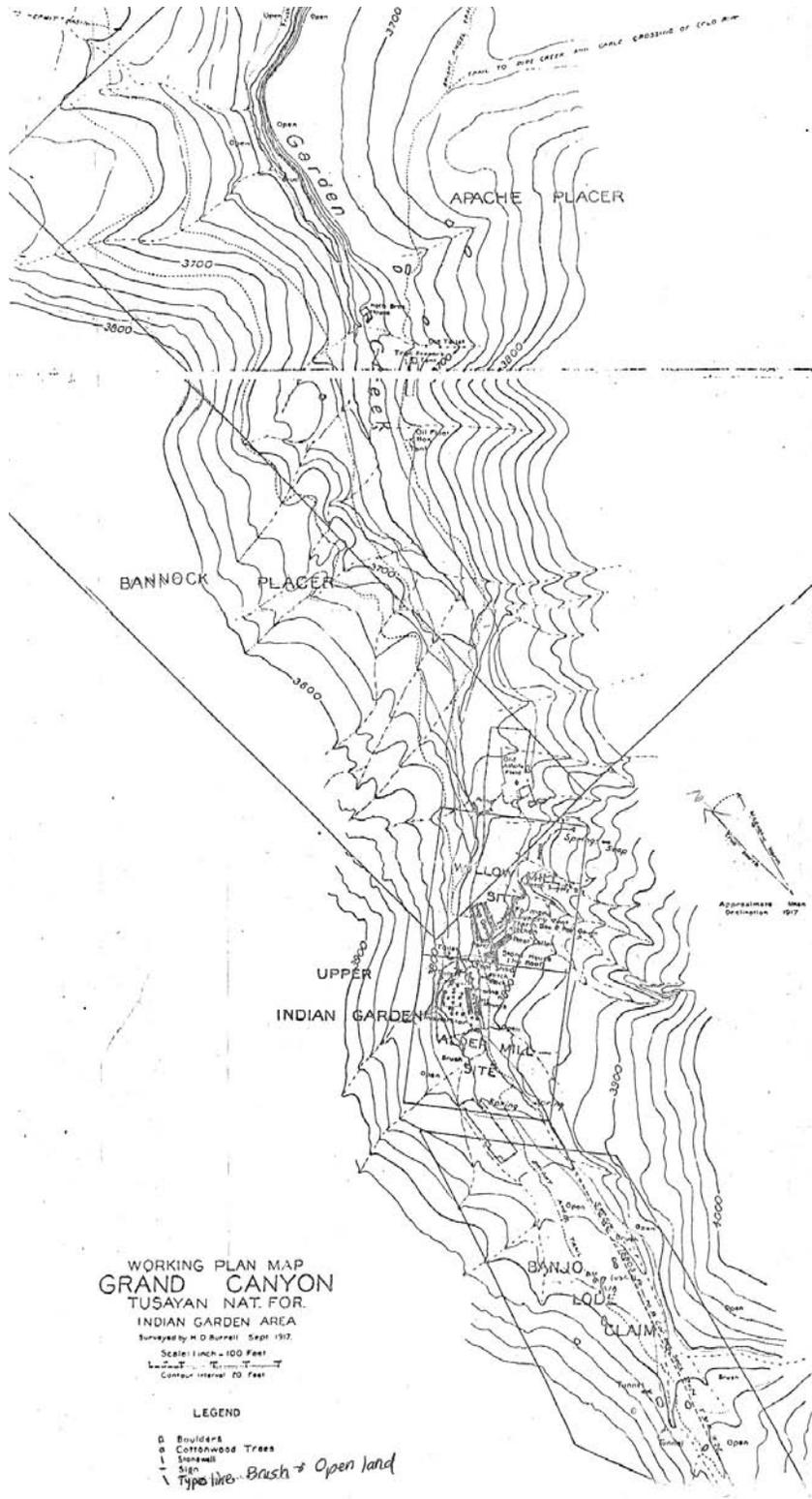


Figure 20. Detail of "Working Plan Map, Grand Canyon, Tusayan National Forest, Indian Garden Area," Surveyed 1917. (Grand Canyon National Park Museum Collection, number unknown)



**Figure 21.** Ruins of Daniel L. Hogan's winter cabin at Indian Garden, 1921. (Grand Canyon National Park Museum Collection #10063)

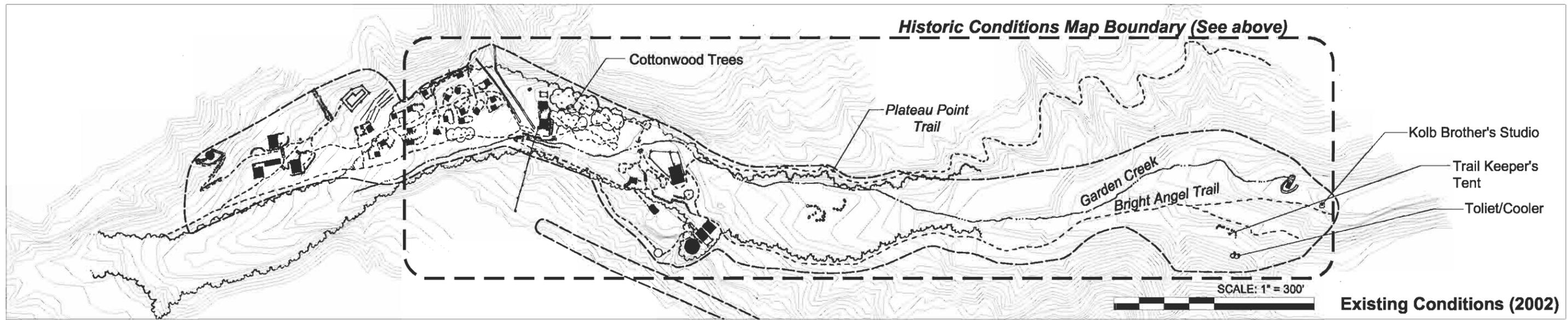
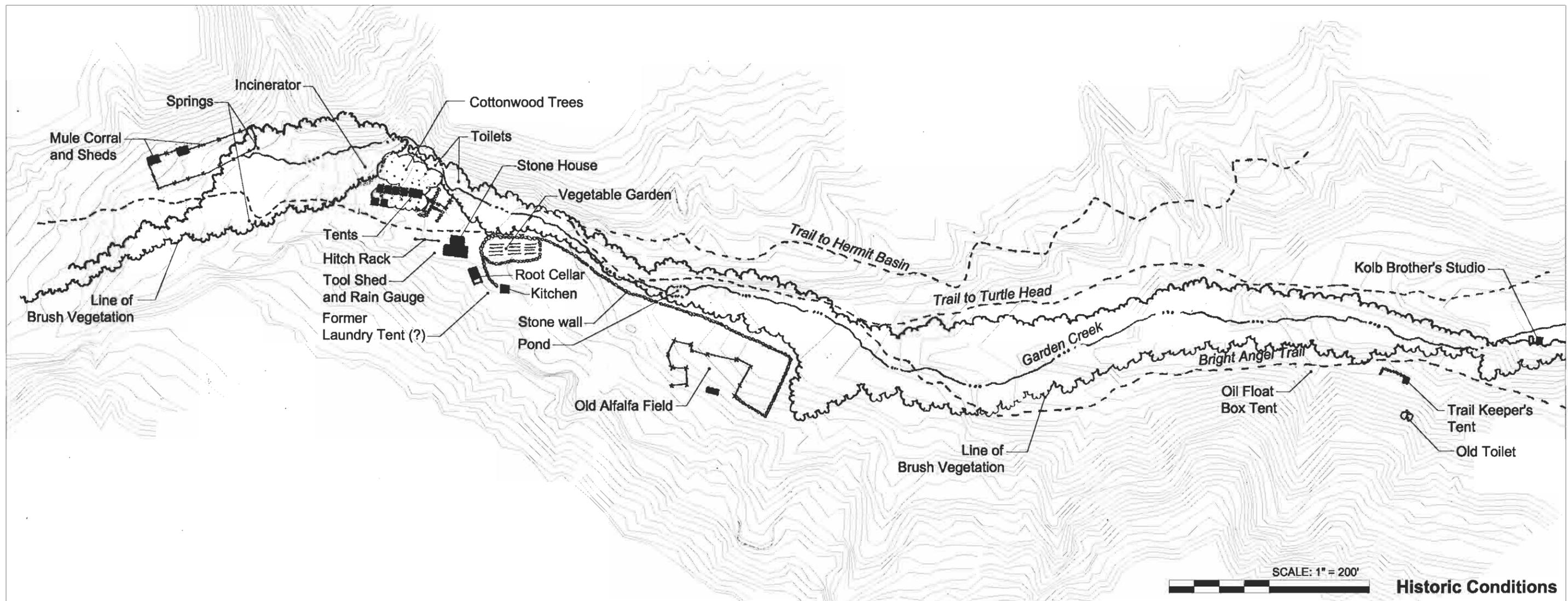


**Figure 22.** Ruins of Cameron tent cabins, 1921. (Grand Canyon National Park Museum Collection #10061)



**Figure 23.** Ruins of Cameron tent cabins, 1921. (Grand Canyon National Park Museum Collection #10060)





Map Sources: Historic Conditions map is a compilation of the NPS, *Working Plan Map Grand Canyon, 1917* and Fred Harvey Co., *Plat A Showing Present Plan of Indian Gardens, ca. 1916*.



A/E FIRM  
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VAN DIJK WESTLAKE REED LESKOSKY  
PHOENIX, AZ

SUBCONTRACTOR:  
JOHN MILNER ASSOCIATES, INC.  
CHARLOTTESVILLE, VA

DESIGNED:

DRAWN:  
JLB  
TECH. REVIEW:  
RMM  
DATE:  
JUNE 2005

SUB SHEET NO.

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**LANDSCAPE FEATURES**  
circa 1916

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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## National Park Service Tenure and the Civilian Conservation Corps Era: 1928-1945

### *Introduction*

By 1928, the NPS had acquired both the Bright Angel Trail and Indian Garden. Soon thereafter, the Civilian Conservation Corps (CCC) undertook development and improvement efforts, including construction of trail shelters and flood control measures, along Bright Angel Trail and within Indian Garden.

### *Brief Historical Context*

The 1930s saw the initiation of a substantial amount of construction and improvement to the Bright Angel Trail and facilities at Indian Garden. Between 1929 and 1939, the NPS completed an almost total realignment of the Bright Angel Trail and constructed trail shelters at various points along its length. The trail construction project was divided up into three segments, the middle segment (from Pipe Creek up to Indian Garden) was accomplished between 1929 and 1930, the upper segment (from Indian Garden to the south rim) was accomplished between 1930 and 1931, and the lower segment (from the Colorado to Pipe Creek) was accomplished between 1938 and 1939. A mess hall and camp were established as a base camp just below Indian Garden and the Tonto Platform in 1929. Local crews of NPS laborers, including Havasupai workers, were hired to accomplish the major work between 1929 and 1931.<sup>136</sup>

In 1931, the NPS awarded the Santa Fe Railroad a contract to build a new water system for the park that would supply water to the south rim. Construction of a cable tramway to transport materials and labor into the inner canyon was begun immediately (*Figure 24*). A cable tramway support was built just east of Garden Creek at Indian Garden. Two and one-half miles of six-inch water pipe were subsequently laid. At Indian Garden, a two-unit pump and reservoir system was built. Facilities consisted of a lower, smaller Rehandling Pump House and reservoir adjacent to the Kolb Brothers photo studio. This pump and reservoir unit collected water from two springs and sent it to a 70,000 gallon circular reservoir built into a slope just east of the Bright Angel Trail. Adjacent to the upper reservoir was a larger pump house that forced the water up to the rim. The entire system was controlled from a power house on the south rim. Both pump houses and the reservoir at Indian Garden were built of locally native stone. A year later, when the water system was working, the cable and tramway was dismantled. The water pumped up from Indian Garden was chlorinated due to its frequent *E. coli* content.<sup>137</sup>

In 1925, the NPS, working jointly with the U.S. Biological Survey, introduced twelve pronghorn antelope to the Tonto Platform. The antelope were meant to serve as tourist attractions and help restore the platform's native flora. The herd, however, adapted to and reproduced slowly in their new habitat; the new total of twenty-four animals were eventually "enticed to Indian Garden by 1933 following the closure of Hermit Camp." In 1934, it was noted that "the semi-tame antelope

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<sup>136</sup> NPS, "Bright Angel Trail," 7-4, 7-5.

<sup>137</sup> Hughes, *House of Stone and Light*, 94; NPS, "Bright Angel Trail," 7-7; Adrian Harbin, "Water now is pumped to the Rim of Grand Canyon" *The Santa Fe Magazine*, Vol. 25, No. 10 (September 1932): 43-44; "SAR," 1932, 21. Grand Canyon Museum Collection.

herd at Indian Gardens has shown practically no increase. Although a number of kids were born, all but one were killed by bobcats or coyotes.”<sup>138</sup> The NPS ended their artificial feeding program which both fed the antelope and kept them within the Indian Garden vicinity. Ending the feeding program resulted in the antelope scattering across the Inner Canyon in search of food; only one animal remained in Indian Garden by 1944.<sup>139</sup>

With the arrival of the first CCC labor units in 1933, the NPS turned their attention to the facilities at Indian Garden. During the early 1930s, the former Cameron era structures, including tent frames, stone and frame houses (*Figure 25*), the Kolb Brother’s studio, and other support structures were demolished and removed. In October of 1932, a two-room stone and frame Caretaker’s Residence was constructed for the use of the NPS caretaker at Indian Garden. Some of the stones from Cameron’s stone house may have been used in its construction. Approximately 350 feet of electrical line was extended from the Santa Fe Pump House—now called the South Pump House—and reservoir to the new caretaker’s quarters.<sup>140</sup>

In preparation for the construction of a new telephone line, the CCC built a “side camp” for phone line workers at Indian Garden in December 1934. Throughout 1935, the CCC constructed a single circuit trans-canyon phone line. Poles were painted “complimentary to the surrounding rock formations.” The phone line was subsequently modified by the CCC between 1938 and 1939.<sup>141</sup>

Between 1932 and 1937, the NPS experimentally oiled portions of the Bright Angel Trail from the south rim to Indian Garden in an attempt to dustproof it. The experiment, while somewhat successful, was never repeated.<sup>142</sup>

Four NPS maps of the Indian Garden vicinity produced in the mid-1930s document the structures present prior to the substantial improvements made to the facilities in 1937. A 1935 NPS map of a proposed sewer line shows existing structures and features at Indian Garden, including the NPS Caretaker’s Residence, three dry-laid stone walls, and a chemical toilet (*Figure 26*). A 1935 NPS erosion control and planting map shows the existing structures and features at Indian Garden, including the “two open irrigation ditches—one below trail—one above channel slope—gate at top,” “present erosion channel—line to be maintained—channel rip-rapped with stone,” an “open ditch to irrigate new planting,” the “existing Caretaker’s Cabin,” “new cottonwood plantings,” “old existing cottonwoods,” the proposed trailside shelter site, and a “picnic area.” The rip-rapping of Garden Creek channel was to begin above the NPS Caretaker’s Residence where the

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<sup>138</sup> “SAR,” 1934, 1. Grand Canyon Museum Collection.

<sup>139</sup> Anderson, *Polishing the Jewel*, 71.

<sup>140</sup> NPS, “Bright Angel Trail,” 7-7, 7-8; Cleeland, “Cross Canyon Corridor Historic District,” 34, 36; “Grand Canyon National Park, Caretaker’s Cabin, Indian Gardens,” March 29, 1932. Grand Canyon Museum Collection, Drawing No. 3211; “SAR,” 1933, 24-25. Grand Canyon Museum Collection; Architectural Resources Group, “Indian Garden Trail Caretaker’s Residence: Historic Structure Report,” 10-12. Prepared for the NPS. MS in possession of John Milner Associates, Inc., April, 2001.

<sup>141</sup> NPS, “Trans Canyon Telephone Line,” 8-3; Patricia Mott, “Memorandum to Division Chief, Res. Mgmt.; Historic Architect; Cultural Resources Manager; Res. Mgmt. Files on Historic Structures, Regarding CCC Work Projects in Grand Canyon National Park,” November 28, 1983 (Grand Canyon Museum Collection, #58700), n.p.

<sup>142</sup> NPS, “Bright Angel Trail,” 7-6; Cleeland, “Cross Canyon Corridor Historic District,” 24; “SAR,” 1933, 23. Grand Canyon Museum Collection.

Bright Angel Trail crossed from the west to the east side of Garden Creek, down to just below the picnic area. In a text accompanying the map, the notes on plantings directed that “1) areas on each side of the channel to be planted to native willows, grapes, blackberry, raspberry, burro brush, cottonwood, redbud; 2) tops of all riprap slopes to be planted; 3) new plantings to be irrigated by open ditches supplied by west spring; 4) new cottonwoods to be planted thruout [sic] entire area to eventually replace old plantings” (*Figure 27*). A January 1936 topographic map of Indian Garden shows the existing structures and features there, including a water trench, an unidentified structure and fenced-in corral, the NPS Caretaker’s Residence, historic cottonwood trees from the Cameron era, terraces and stone retaining walls, two latrines and a latrine pump and sludge trench on the west side of the Indian Garden floodplain, a “garden area,” a water trough, the upper pump and reservoir unit consisting of a concrete valve box, a pump house, a 70,000 gallon concrete circular reservoir, and a mine tunnel dug for the east spring (*Figure 28*). Lastly, a February 1936 map of the Santa Fe Water System at Indian Garden documents the specific details of the upper and lower pump and reservoir units. At the Rehandling Pump House, the existing structures and features included a pump house and sump, a concrete dam spanning Garden Creek, rock paving and rubble masonry walls just upstream from the dam, a perforated intake pipe, a concrete box with water meter, and a sediment trap (*Figure 29*).<sup>143</sup>

In 1936, a second new structure was constructed at Indian Garden. The Fred Harvey Company built a Pump Caretaker’s Residence—presently known as the “Rock House”—adjacent to and west of the NPS Caretaker’s Residence. This structure eventually burned in 1942 but was rebuilt in 1943 on the same spot. Plans for the structure, drawn in February 1936, detail that it was to be a frame structure with shingle roof sitting on a stone foundation. The plan also documents the location of the “Gov’t Caretaker” structure and the “New Cabin” in relation to the Bright Angel Trail. Also noted is an eighteen-inch-high stone wall that created the level terrace upon which the two structures were built.<sup>144</sup>

Throughout the mid-1930s, the CCC also constructed trail shelters at prominent points along the Bright Angel Trail. The three-mile shelter was constructed in 1935; the one and one-half-mile shelter and Colorado River shelter were constructed in 1936; and a shelter was constructed at Indian Garden in 1937. All of the shelters were constructed of timber and native stone and were designed to fit into the surrounding landscape. At Indian Garden, the trail shelter was built adjacent to and incorporated two large boulders, one each on its northeast and southeast corners (*Figure 30*). Each of the original shelters were open on all four sides, had a covered bark roof over a flagstone floor, benches along its sides, and a drinking fountain on the interior.<sup>145</sup>

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<sup>143</sup> “Grand Canyon National Park, Sewer at Indian Gardens,” Feb. 9, 1935. Grand Canyon Museum Collection, Drawing No. GC #8135; “Grand Canyon National Park, Erosion Control and Planting, Indian Gardens,” April 2, 1935. Grand Canyon Museum Collection, Drawing No. GC #3109; “Grand Canyon National Park, Topographical Map, Indian Gardens Area,” Jan. 1936. Grand Canyon Museum Collection, Drawing No. 5081-1; “Details of Santa Fe Water System at Indian Gardens, Grand Canyon, Arizona,” Feb. 20, 1936. Grand Canyon Museum Collection, Drawing No. 70208.

<sup>144</sup> NPS, “Bright Angel Trail,” 7-7; “Cabin for Pump Caretaker, Indian Gardens, Grand Canyon, Arizona in the Grand Canyon National Park,” February 17, 1936, Sheet 1 of 2. Grand Canyon Museum Collection, Map #70156.

<sup>145</sup> NPS, “Bright Angel Trail,” 7-6; “Grand Canyon National Park, Trailside Shelter, Indian Garden,” ca. 1935. Grand Canyon Museum Collection, Drawing No. GC #3142.

Throughout the 1930s, visitation at the Grand Canyon increased and the Bright Angel Trail continued to be a popular destination for many park visitors. According to NPS figures, trail usage increased dramatically in the mid-1930s from 12,725 visitors in 1935 to over 20,000 visitors in 1936. The first “good” paved road leading to the south rim facilities was begun in 1932 and completed in 1937. M. R. Tillotson, the park’s first superintendent, authored a popular book on the Grand Canyon in 1935. “Halfway down [the Bright Angel Trail] are the cool and shaded Indian Gardens, where the Havasupais cultivated their little farms in early days.”<sup>146</sup>

In 1937, several new NPS structures at Indian Garden were built by the CCC. In addition to the trail shelter, a mule barn and corral and “trail-side exhibit” were constructed. The CCC also relocated 400 feet of the Bright Angel Trail at Indian Garden. The mule barn was a two-part structure composed of an open stable and storage room constructed of native stone and timber. Historic photographs of the mule barn and corral document that it had a frame and thatched bark roof (*Figures 31 through 34*). The corral extended to the structure’s west and was built of native stone piers and wood rails. A stone watering trough was placed in the center of the corral. No information on the trailside exhibit could be found.<sup>147</sup>

The NPS had recognized that intermittent flooding was a problem at inner canyon sites. In 1936, a substantial rainy season caused major flooding at Indian Garden. Throughout the late 1930s, the NPS worked on attempting to control the flood waters by limiting their impact on the built environment and directing their course through the Garden Creek floodplain. Erosion control in the form of rip-rapping the main Garden Creek channel and planting the banks with native species was carried out.<sup>148</sup>

In 1938, the Santa Fe Railroad Company initiated improvements to its lower pump and reservoir unit at Indian Garden. The following year, the CCC completed necessary improvements to the trans-canyon telephone line, installing an additional set of cross-arms for a second circuit.<sup>149</sup>

Little work was carried out at Indian Garden during World War II, due in part to the disbanding of the CCC to provide more men for the war effort. In 1942, however, the wood-frame Fred Harvey Company pump caretaker’s structure burned to the ground. The following year, a new pump caretaker’s structure was built in the same location by the Fred Harvey Company. The new structure was built entirely of stone, perhaps reflecting the increased need for fire protection in the inner canyon. The Fred Harvey Company also updated the water collection facilities at Indian Garden. Also in 1942, a new well and tunnel were excavated approximately forty feet

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<sup>146</sup> NPS, “Bright Angel Trail,” 8-15; Hughes, *House of Stone and Light*, 87; Tillotson and Albright, *Grand Canyon Country*, 66.

<sup>147</sup> NPS, “Bright Angel Trail,” 7-7; Mott, “Memorandum”, n.p.; “Grand Canyon National Park, Mule Shelter, Indian Gardens,” ca. 1935. Grand Canyon Museum Collection, Drawing No. 3134.

<sup>148</sup> Mott, “Memorandum,” n.p.; “Grand Canyon National Park, Erosion Control and Planting, Indian Gardens,” April 2, 1935. Grand Canyon Museum Collection, Drawing No. GC #3109.

<sup>149</sup> “Silt removal at Lower Indian Gardens Pumping Plant, Grand Canyon, Arizona in the Grand Canyon National Park,” June 2, 1938. Grand Canyon Museum Collection, #70211; “The A. T. & S. F. RY. Co. Coast Lines, Silt Removal, Indian Gardens at Grand Canyon, Arizona,” October 4, 1938. Grand Canyon Museum Collection, #70210; NPS, “Trans Canyon Telephone Line,” 8-4.

north of the Rehandling Pump House facility. The tunnel connected the well to the Garden Creek drainage.<sup>150</sup>

***Chronology by Landscape Characteristic, 1928-1945:***

**Land Use and Activities**

Tourism	Mule trains continued to bring tourists down to Indian Garden and beyond to see the Grand Canyon.
Recreation	The Bright Angel Trail, one of the more popular inner canyon trails, continued to attract thousands of day and overnight hikers.
Water pumping station	By 1932, the water pumping system at Indian Garden filled an 812,000 gallon storage tank on the south rim with water obtained from two springs.
Camping	The campground at Indian Garden provided a designated area for those hikers using the Bright Angel Trail.
Camp for laborers	Indian Garden served as a “side camp” for laborers who were installing the trans-canyon phone line in 1935.

**Patterns of Spatial Organization**

Linear settlement pattern	Following the general north-south orientation of the Garden Creek springs at Indian Garden, the NPS continued to develop the area along the lush, relatively flat, floodplain corridor.
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**Response to Natural Environment**

Erosion control	In an effort to control damage stemming from periodic flooding of Garden Creek, the NPS constructed rip-rap walls and reinforced existing tent platforms with rock.
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<sup>150</sup> “Cabin for Pump Caretaker, Indian Gardens, Grand Canyon, Arizona,” Sheet 2 of 2, Jan. 6, 1943. Grand Canyon Museum Collection, #70156; “Well, Tunnel and Pump at Lower Indian Gardens, Grand Canyon Arizona, in the Grand Canyon National Park,” ca. 1942. Grand Canyon Museum Collection, #8722.

## **Circulation Networks**

Bright Angel Trail	The Bright Angel Trail, now under the management of the NPS, continued to be one of the more popular day and overnight hiking trails within GRCA.
Bright Angel Trail rerouted	Above and below Indian Garden, nearly the entire route of the Bright Angel Trail was rerouted between 1929 and 1939.
Cable tramway constructed	A cable tramway was constructed in 1931 from the south rim to Indian Garden to bring labor and materials down for the construction of a new water system. The cable tramway was located adjacent to Indian Garden on an eastern slope; it is not known if any of the cable system was located within the project area.
Cable tramway removed	Shortly after the completion of the new water system at Indian Garden in 1932, the cable tramway was removed.
Bright Angel Trail oiled	Between 1932 and 1937, portions of the Bright Angel Trail were oiled by both machine and hand in an attempt to reduce dust levels. It is not known if the portion of the Bright Angel Trail that ran through Indian Garden was oiled.
Bright Angel Trail relocated	In 1937, 400 feet of the Bright Angel Trail at Indian Garden were relocated.

## **Boundary Demarcations**

Enclosure fenced	In 1937, a stone and wood corral was constructed adjacent to the Mule Barn.
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## **Vegetation (Related to Land Use)**

Vegetation planted	After creating a stabilized channel in 1935, CCC landscape architects planted what they believed to be native vegetation including “willows, grapes,
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blackberry, raspberry, burro bush, and redbud” along the banks of Garden Creek.<sup>151</sup>

Cottonwood trees planted

In 1935, new cottonwood trees were planted “thruout [sic] entire area” of Indian Garden to supplement and eventually replace old cottonwood trees.”

Garden Area

A 1936 map denotes a “Garden Area” surrounded by stone walls. It is not known if this was an area meant to produce edible crops, or if the term was meant to convey a vegetated seating or picnic area. Later plans created in the 1950s and 1960s show a campground and picnic area in this location. The 1936 map shows the garden area to be surrounded by a stone wall and entered using a set of steps.

Native vegetation planted

After major flooding caused damage at Indian Garden in 1936, new plantings of native vegetation continued in 1937 in conjunction with channel rip-rapping.

### **Buildings and Structures**

Cameron era structures razed

During the early 1930s, the Cameron era structures at Indian Garden including the stone house, tent frames, and Kolb Brothers photo studio were razed.

Rehandling Pump House and reservoir constructed

In 1932, the Santa Fe Railroad constructed a Rehandling Pump House within the Garden Creek drainage adjacent to the Kolb Brothers photo studio. The pump house and reservoir, constructed out of native stone, served to collect water and pump it to the upper pump house.

Upper pump house and reservoir

In 1932, the Santa Fe Railroad constructed an upper pump house to the east of the Garden Creek. The pump house and 70,000 gallon reservoir, constructed out of native stone, served to collect water and pump it up to the south rim.

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<sup>151</sup> Willow, burro bush, Arizona grapes, and redbud are considered native to the Grand Canyon region. Blackberry and raspberry bushes are not native to the United States.

NPS Caretaker's Residence constructed	In 1932, the NPS built a two-room stone and frame cabin for their caretaker at Indian Garden.
Latrines constructed	Two latrines located just north of and downstream from the NPS Caretaker's Residence were constructed in 1932 for the use of visitors to Indian Garden. The latrines were connected to a latrine pump and sludge trench.
Telephone line constructed	In 1935, a the CCC erected a single circuit trans-canyon telephone line.
Pump Caretaker's Residence built	The Santa Fe Railway constructed a frame cabin for the pump caretaker in 1936. The cabin was located west of and adjacent to the NPS Caretaker's Residence.
Trail shelter constructed	A stone, frame, and bark trail shelter with benches and a water fountain was constructed in 1937 adjacent to and west of the Bright Angel Trail at Indian Garden.
Mule barn constructed	A stone, frame, and thatch mule barn was constructed in 1937 at Indian Garden south and upstream from of the NPS Caretaker's Residence.
Telephone line modified	Between 1938 and 1939, the existing phone poles were modified by the addition of a new cross-arm and a second circuit.
Pump Caretaker's Residence burns	The Santa Fe Pump Caretaker's Residence was destroyed by fire in 1942.
Pump Caretaker's Residence (Rock House) rebuilt	The Santa Fe Railroad rebuilt the pump Caretaker's Residence in the same location in 1943. The new structure was built completely out of native stone.

### **Small-scale Features**

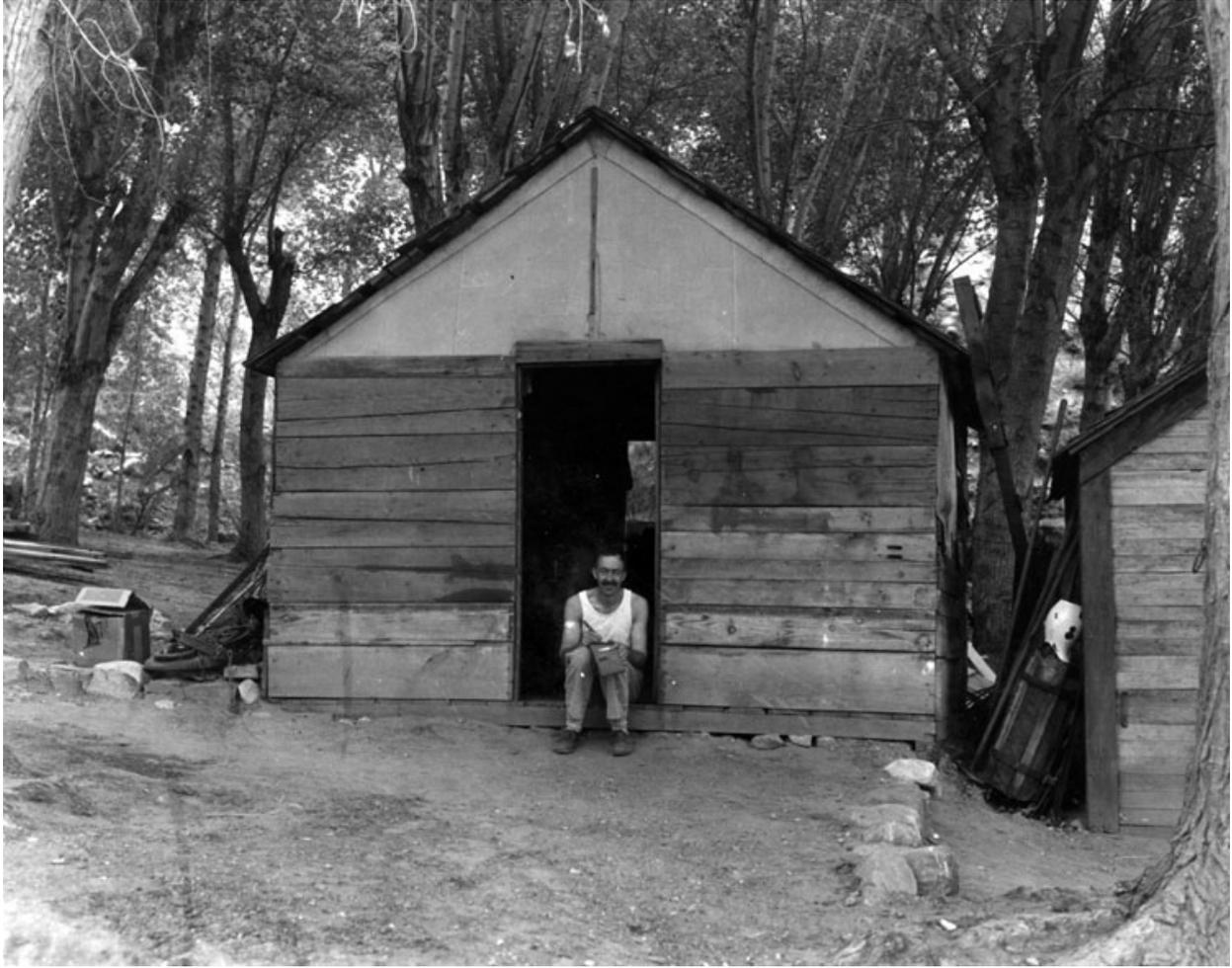
Water pipe laid	Two and one-half miles of six-inch water pipe were laid from Indian Garden to the south rim between 1931 and 1932.
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Electrical line laid	350 feet of electrical line were laid from the new NPS Caretaker's Residence to the new Santa Fe pump station in 1932.
Latrine pump constructed	A 1935 NPS map indicates that a latrine pump was present at Indian Garden in between the two latrines. The latrine pumped the sewage upslope to a sludge trench.
Water pipe laid	A 1935 NPS map identifies that a water pipe was laid connecting the two latrines to the latrine pump, and connecting the latrine pump to the sludge trench.
Sludge trench excavated	A 1935 NPS map indicates that a sludge trench was excavated at Indian Garden on a slope west of Garden Creek and above the two latrines and latrine pump.
Barrel spring excavated	A 1935 NPS map indicates that a barrel spring was present at Indian Garden just south of the mule barn and corral.
Watering trough placed	A 1935 NPS map indicates a water trough was present at Indian Garden, just north of the barrel spring.
Terraces constructed	A 1932 NPS map suggests there were three earthen terraces present near the NPS's Caretaker's Residence. The earth was retained by an eighteen-inch high stone wall on its northern or downslope side. It is not known whether these terraces were Cameron-era features or whether they were constructed by the NPS.
Irrigation ditches excavated	Two open irrigation ditches for watering new plantings were excavated within the Garden Creek floodplain at Indian Garden in 1935.
Erosion channel rip-rapped	The main erosion channel within Garden Creek was stabilized with rip-rapping for the purposes of controlling the flooding at Indian Garden in 1935.
Electrical line laid	Electrical line was laid from the new Santa Fe Railroad Pump Caretaker's Residence (Rock House) to the new Santa Fe Pump Station in 1936.

“Trail-side Exhibit” erected	An unidentified “trail-side exhibit” is erected in 1937 at an unknown location within Indian Garden.
Erosion channel rip-rapped	Rip-rapping of the main erosion channel for Garden Creek continued in 1937 after a major flood damaged Indian Garden in 1936.
Rehandling Pump House improved	In 1938, the Santa Fe Railroad initiated improvements to the facilities and equipment in its Rehandling Pump House and reservoir unit.
Rehandling Pump House improved	In 1942, the Santa Fe Railroad improved its facilities at the Rehandling Pump House and reservoir unit again, this time excavating a new well and tunnel approximately forty feet north of the existing facility.



**Figure 24.** Pipeline tram gondola with ten people near Indian Garden, ca.1931. Photograph by Hubert R. Lauzon. (Grand Canyon National Park Museum Collection #17687)



**Figure 25.** Ian Campbell in front of cabin at Indian Garden, ca.1933. (NAU-Cline Library Collection, #NAU.PH. 95.48.808)

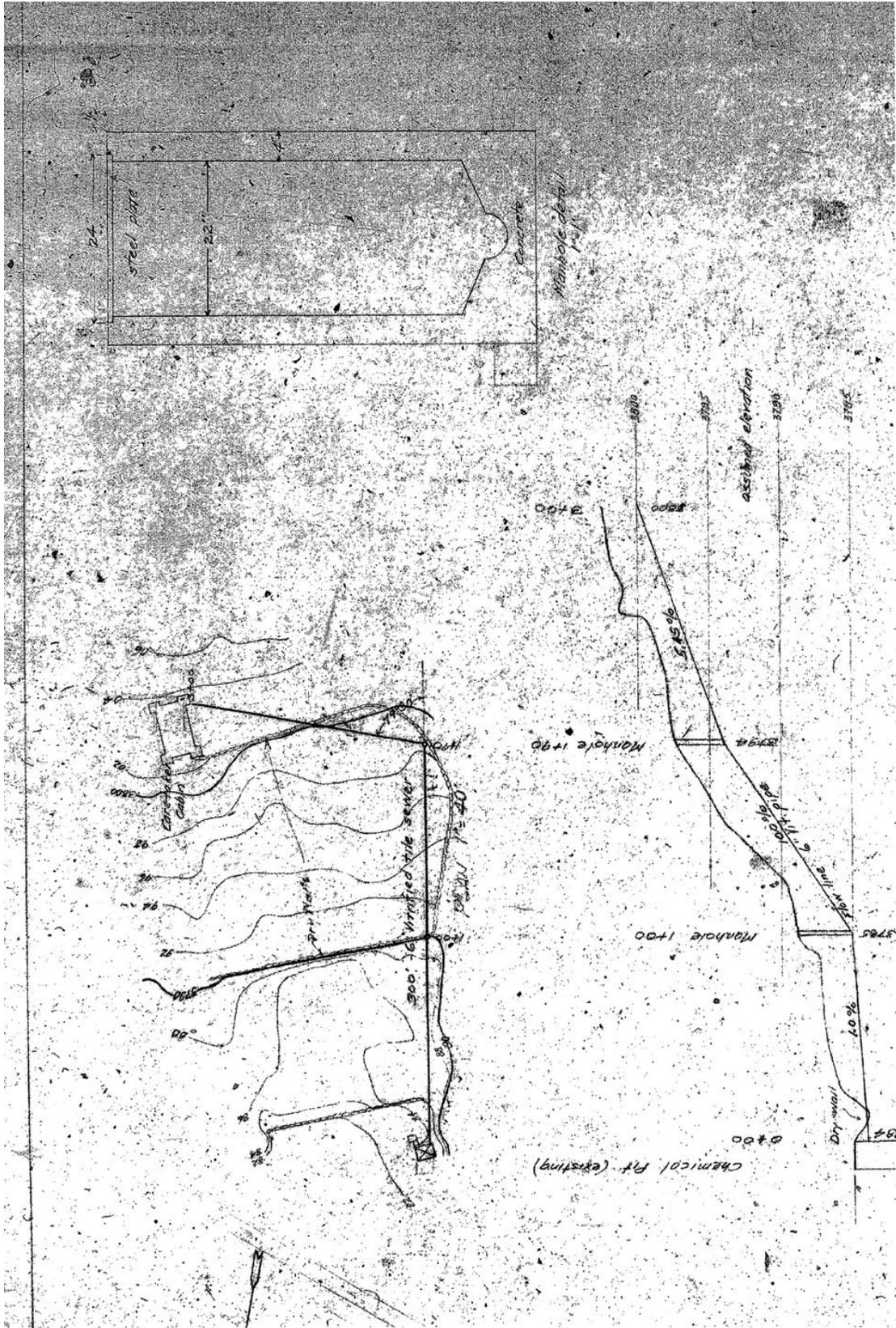


Figure 26. ca. 1935 partial plan of Indian Garden sewer improvements. (Grand Canyon National Park Museum Collection #8153)



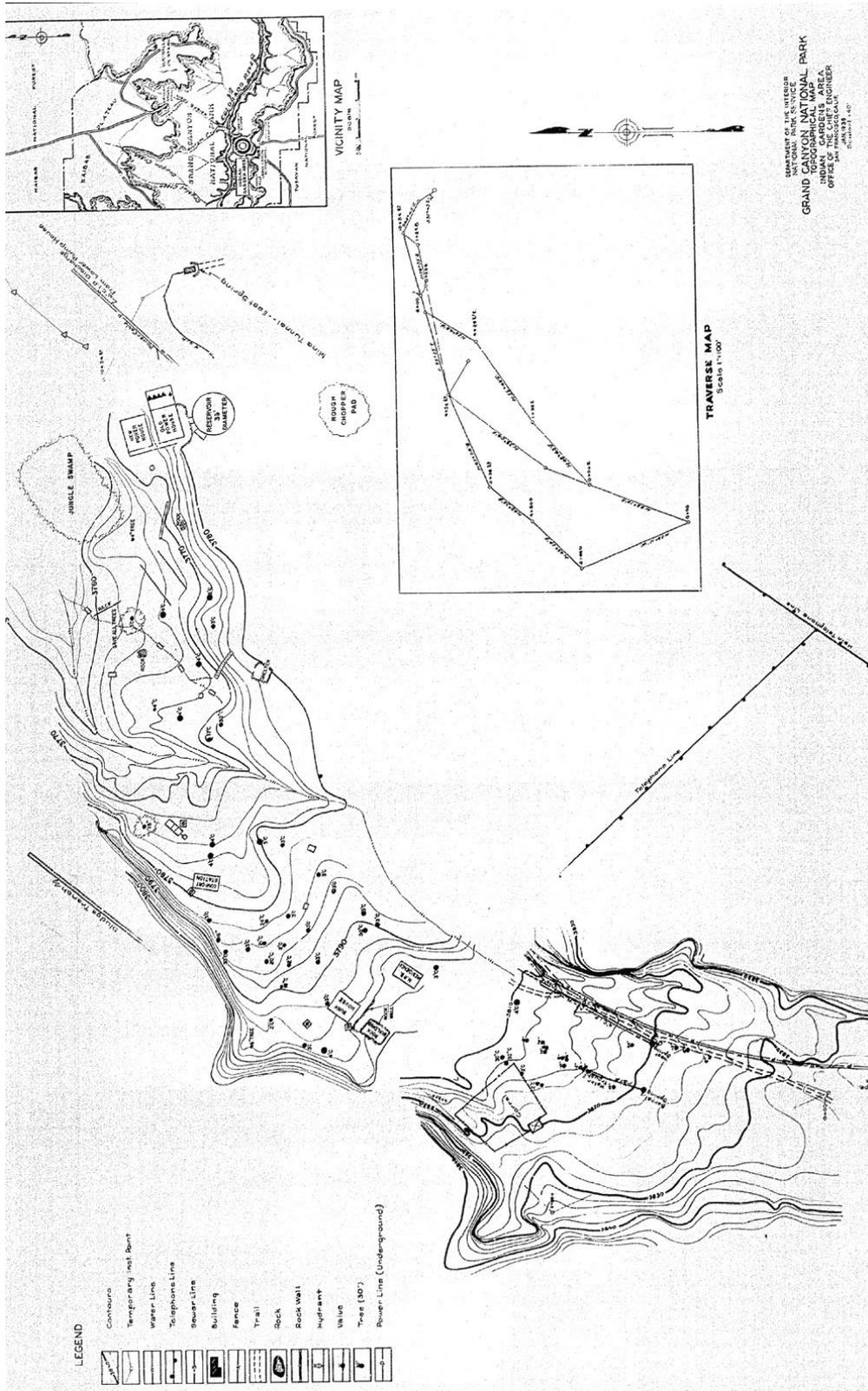


Figure 28. "Topographical Map of Indian Gardens Area," January 1936. (Grand Canyon National Park Museum Collection #5081A)

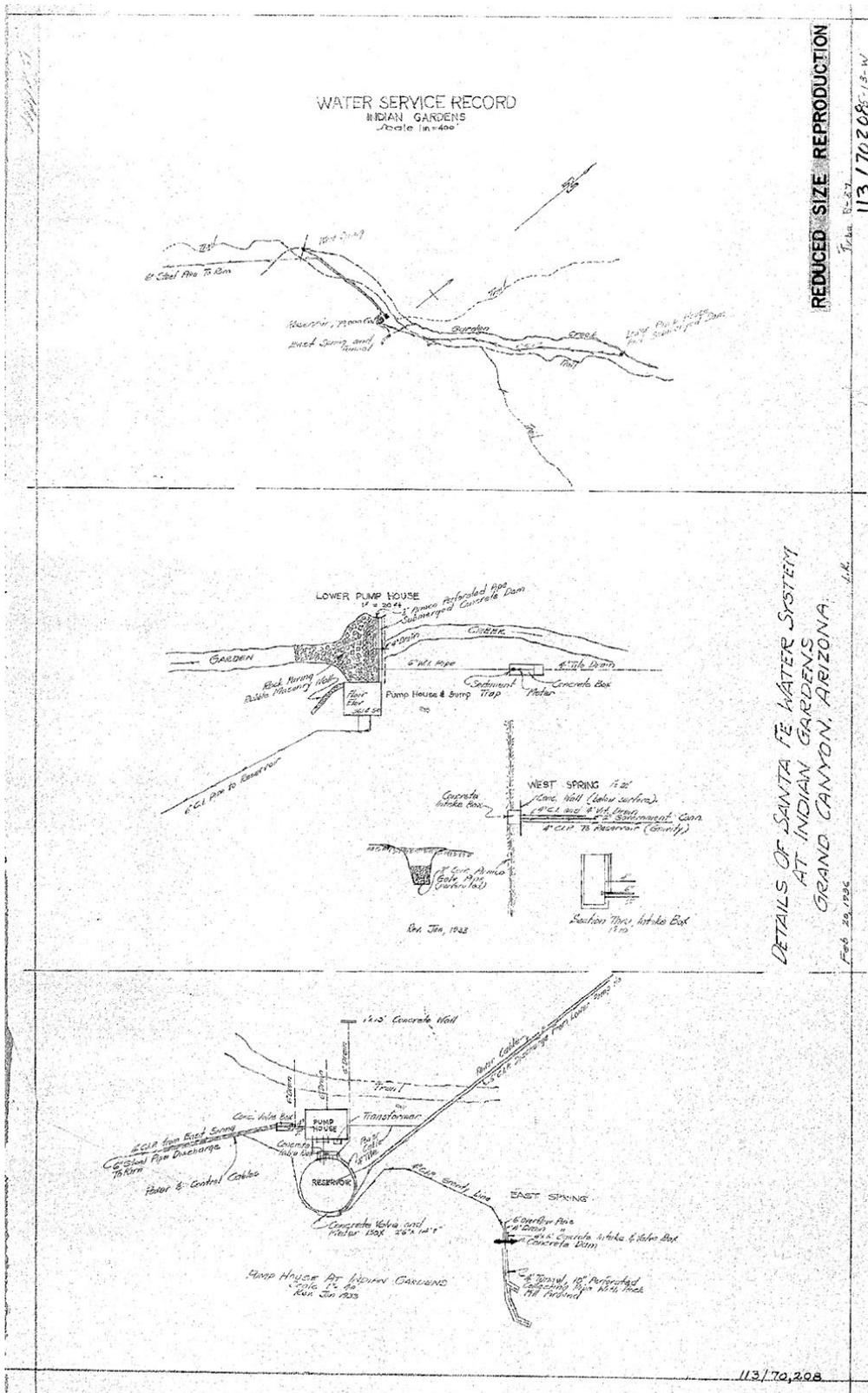


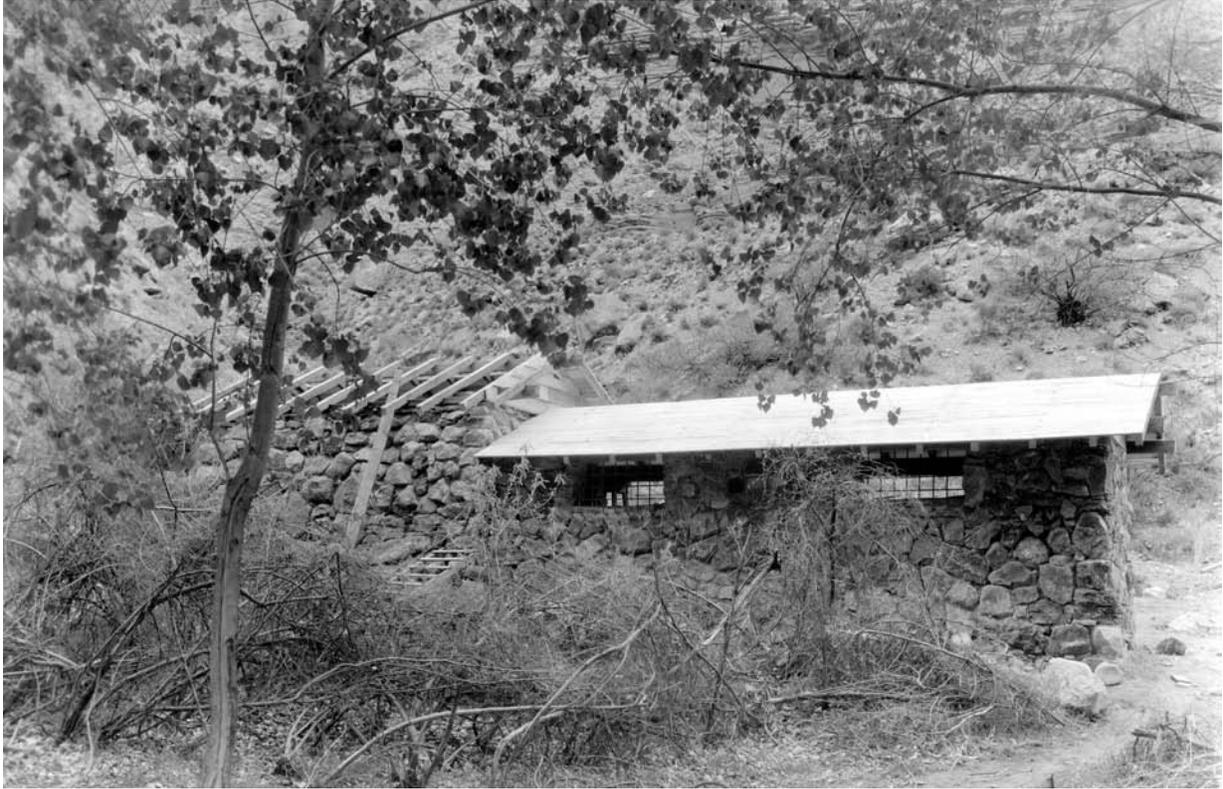
Figure 29. "Details of Santa Fe Water System at Indian Gardens, Grand Canyon, Arizona," September 1936. (Grand Canyon National Park Museum Collection #100208)



**Figure 30.** Building #143, Trail Shelter at Indian Garden, ca.1936. (Grand Canyon National Park Museum Collection #7584)



**Figure 31.** NP-4 unit of CCC constructing Indian Garden Mule Barn, March 25, 1936. (Grand Canyon National Park Museum Collection #10056)



**Figure 32.** NP-4 unit of CCC constructing Indian Garden Mule Barn, March 25, 1936. (Grand Canyon National Park Museum Collection #10055)

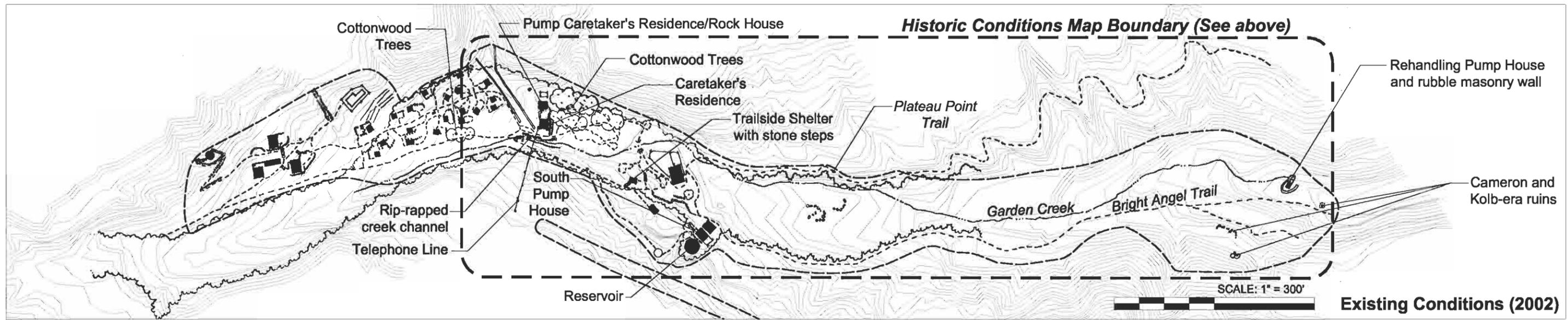
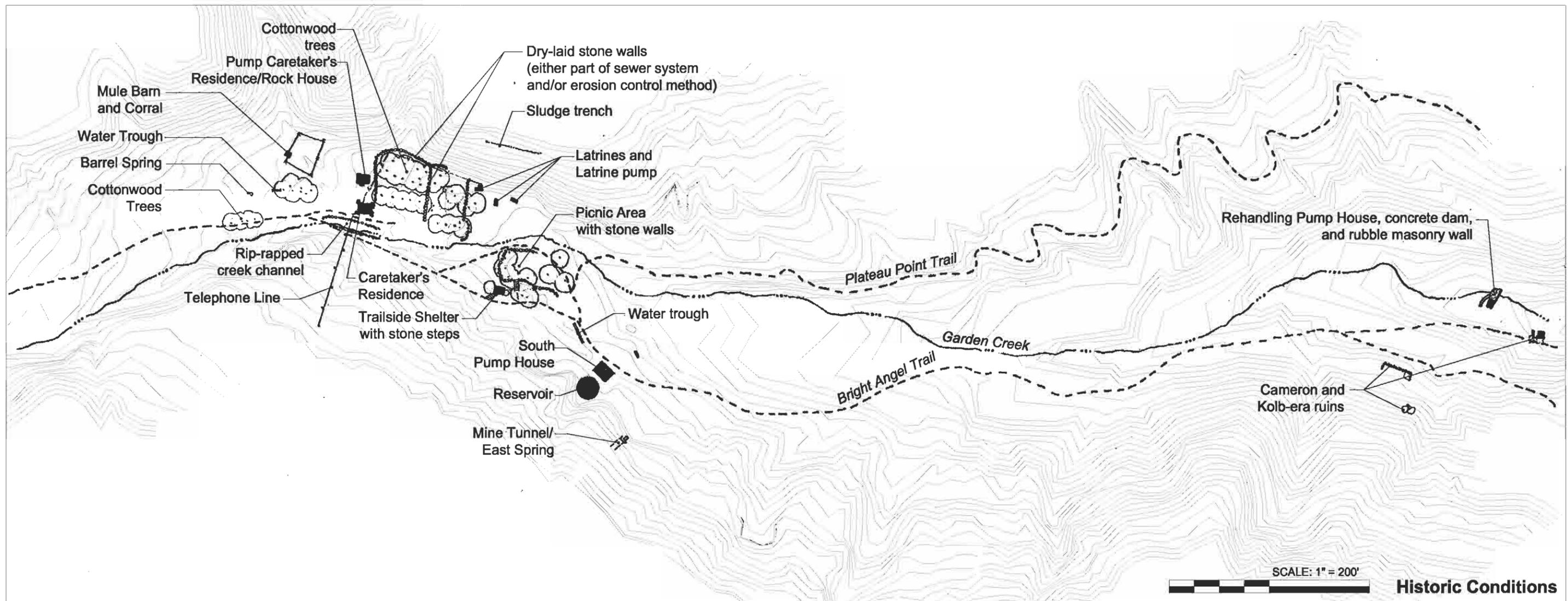


**Figure 33.** West view of Mule Barn at Indian Garden, ca.1936. (Grand Canyon National Park Museum Collection #10054)



**Figure 34.** Northwest view of Indian Garden mule barn, corral fence, ranger station, ca. 1936. (Grand Canyon National Park Museum Collection #10053)





Map Sources: Historic Conditions map is a compilation of NPS, *Topographical Map Indian Gardens Area*, 1936; NPS, *Erosion Control and Planting*, 1935; NPS, *Details of Santa Fe Water System*, 1936; NPS, *Trailside Shelter Indian Gardens*, 1935; and the Draft Bright Angel Trail Nomination, 1992.



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 PHOENIX, AZ

SUBCONTRACTOR:  
 JOHN MILNER ASSOCIATES, INC.  
 CHARLOTTESVILLE, VA

DESIGNED:

DRAWN:  
 JLB  
 TECH. REVIEW:  
 RMM  
 DATE:  
 JUNE 2005

SUB SHEET NO.

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LANDSCAPE FEATURES  
 circa 1943

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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## Post-War Indian Garden: Mission 66 and the Development of a New Water System: 1945-1970

### *Introduction*

Significant development of Indian Garden occurred in the 1960s, during the Mission 66 era of park funding and development, when the NPS constructed a campground, picnic area, and comfort stations. After important pumping facilities were donated to the NPS in the mid-1960s, a new water system was constructed that conveyed water from Roaring Springs to the south rim via Indian Garden.

### *Brief Historical Context*

During the post-war era, visitation to National Parks increased dramatically. At the Grand Canyon, day-trip travel to the inner canyon became more and more popular. By the late 1940s, the NPS stationed permanent personnel on most inner corridor trails to maintain and protect them. On the Bright Angel Trail, “a man stationed at Indian Gardens maintains the Bright Angel Trail to the Colorado River and also up from Indian Gardens toward the south rim for approximately one mile.”<sup>152</sup> In 1947, a fire started in Indian Garden; the damage it caused was not noted.<sup>153</sup>

A 1952 NPS map showing the “Inner Canyon Developed Areas” documents the existing structures and features present at Indian Garden, including the mule shelter and corral, barrel spring and trough, dike, rip-rap ditch, the NPS Caretaker’s Residence, Santa Fe Railroad’s Pump Caretaker’s Residence/Rock House, an unidentified tent frame, two comfort stations, pump house, sludge pit, leaching field, trail shelter, campground and picnic area, hitch racks and trough, power house and water tank, the east spring, and buried water and power lines (*Figure 35*).<sup>154</sup>

In 1954, at the end of their twenty-year lease of facilities that began in 1933, the Santa Fe Railroad “transferred all interests in its water, power, road and trail systems” within GRCA to the NPS. While the NPS searched for a contractor to operate the electrical service, it took on the maintenance and operation of the water system itself. Shortly thereafter, a new power line to Indian Garden was erected with the aid of helicopters.<sup>155</sup>

Based on deteriorating facilities at existing parks and their inability to accommodate anticipated increases in visitation due to increased leisure time and automobile travel, NPS Director Conrad Wirth implemented a ten-year development program designed to upgrade and enhance the nation’s park system in 1956, called “Mission 66.” Much of the development proposed and carried out under this program addressed the need to improve and add physical facilities of parks

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<sup>152</sup> “SAR,” 1947, 2. Grand Canyon Museum Collection.

<sup>153</sup> “SAR,” 1947, 2. Grand Canyon Museum Collection.

<sup>154</sup> “Inner Canyon Developed Areas, Part of the Master Plan, Grand Canyon National Park,” May, 1952. Grand Canyon Museum Collection, #2118-B; “Inner Canyon Developed Areas, Part of the Master Plan, Grand Canyon National Park,” May, 1952. Grand Canyon Museum Collection, #2118-A.

<sup>155</sup> Anderson, *Polishing the Jewel*, 259-260; Hughes, *House of Stone and Light*, 108.

including road construction, improvement and expansion of camping and picnic areas, and construction of sanitary facilities, housing, and visitor centers. Mission 66 development was targeted to be completed in 1966, the fiftieth anniversary of the NPS. Within Indian Garden, Mission 66 development plans included improving the picnic and campground facilities, constructing comfort stations, and upgrading utilities. Although these projects were implemented during Mission 66, a direct link between Mission 66 funding and design aesthetic has yet to be substantiated for Indian Garden, as the development seems to have taken place as either a reaction to flood damage or in a vernacular design style that more closely approximated existing Rustic Style features, rather than “modern” Mission 66 principles. The original exterior aesthetics of the 1967 North Pump House, however, may provide one link to Mission 66. The original finish was meant to be simple stucco, rather than the ubiquitous stone cladding of many earlier NPS buildings, and may have more closely followed Mission 66 design principles. The stone cladding was added in 1986 to mitigate the noise of the pumps inside.

A 1959 NPS topographic map of the Indian Garden vicinity documents that very little had changed at Indian Garden despite the Mission 66-era boom in development throughout the rest of the park and NPS system. Existing structures and features noted on this map include a water catchment, a mule barn and corral, retaining walls that channel a western drainage into Garden Creek, the NPS Caretaker’s Residence, the Santa Fe Railroad’s Pump Caretaker’s Residence, a tool shed, two comfort stations, a pump house, a sewage ditch, the trail shelter, a picnic area, mule hitching posts, a water trough, a blackberry thicket, and a pump house and reservoir (*Figure 36*).<sup>156</sup>

During the early 1960s, construction initially focused on the development of a campground and picnic area and a new sewage disposal system (*Figures 37 and 38*). During 1961, construction began on a twenty-site campground complete with picnic tables and fireplaces—no plans were located during the preparation of this CLR, however, that delineated the physical appearance of the campground. In addition, a new, larger comfort station west of and adjacent to the campground was also built. A new sewage pumping unit carried the waste upslope to a renovated leaching field. A 1963 NPS topographic map of the Indian Garden vicinity documents the new development in this area. The existing structures and features shown included a water catchment, mule barn and corral, existing retaining walls, rip-rap channel, NPS Caretaker’s Residence, old Santa Fe Pump Caretaker’s Residence, tool shed, new and larger comfort station, pump house, sewage ditch, bridge over garden creek, trail shelter, picnic area, mule hitching posts and water trough, berry thicket, and upper pump house and reservoir (*Figure 39*). After completion of the new comfort station, pump unit, sewage lines, and leaching field, an existing sludge trench was abandoned and two earlier comfort stations were demolished. Additional development included the construction of a bunkhouse adjacent to, and north of, the Santa Fe Pump Caretaker’s Residence in 1965. An old tool shed was torn down to make room for the new bunkhouse.<sup>157</sup>

Since the beginning of NPS tenure at Indian Garden, flash floods and control of runoff in the Garden Creek channel had been a major concern. In August and September of 1963, a flash flood

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<sup>156</sup> “Indian Gardens Topo, Inner Canyon, Grand Canyon National Park,” September 1959. Grand Canyon Museum Collection, #3444.

<sup>157</sup> “Indian Gardens Topo, Grand Canyon National Park,” ca. 1963. Grand Canyon Museum Collection #60577; “SAR,” 1961. Grand Canyon Museum Collection.

destroyed a number of facilities at Indian Garden (*Figure 40*). General clean-up and facilities repair, including repair of the Rehandling Pump House, the Garden Creek channel and banks, and utility lines, took place over the subsequent two years. At the Rehandling Pump House, a masonry rock wall was constructed around the upstream part of the complex to protect it. The catchment basin was dug out and reconstructed with a new reinforced concrete inlet and cover. A new ten-horsepower motor and two electrical starting units were replaced in the pump house. Elsewhere in Indian Garden, the Garden Creek channel was cleaned of debris, including 8,800 cubic yards of rock and earth. This debris was used to fill in eroded areas of the campground and to build up the creek banks. A 100-foot-long and 4-foot-wide masonry rock protection wall was also constructed to keep future flood waters within the channel and to protect the Indian Garden site. The footbridge over Garden Creek that had been washed away was replaced with a timbered structure. Additionally, 210 feet of 2-inch underground waterlines and valves were replaced and soils were re-graded to cover seventy feet of a four-inch sanitary sewer line that had been exposed by the flood.<sup>158</sup>

With the acquisition of a new water supply infrastructure in 1954, an assessment of needs and capacity was undertaken. In 1960, the water supply to the south rim from Roaring Springs (via Indian Garden) was deemed inadequate. Water usage had increased dramatically and often had to be shipped into the south rim by train. With the donation of the North Rim water facilities to the NPS by the Union Pacific in 1965, plans for a new water supply system were initiated, perhaps as part of the Mission 66 improvement plans. During the same year, the NPS hired a contractor to begin building a new twelve and one-half mile water system that would carry water from Roaring Springs to the south rim through the Indian Garden water pumping system. In December 1966, only a year after construction was initiated, a devastating flood destroyed the nearly completed water system. Subsequent clean-up and re-engineering of the system to withstand future floods pushed back the date for new construction to begin. In association with the water system improvements, a second pump house—now called the North Pump House—was also constructed adjacent to the original 1930s Santa Fe Pump House and reservoir during the same year. By 1970, the new water system that could deliver up to 190 million gallons per year to the south rim was up and running.<sup>159</sup>

Late-1960s development at Indian Garden also included the construction of flood mitigation features and a new mule barn and corral. In an effort to protect the existing ranger station buildings at Indian Garden, the NPS constructed rock gabion walls lining both banks of a drainage, just south of the NPS Caretaker's Residence and Pump Caretaker's Residence (Rock House). The rocks were contained within a square wire frame and stacked two levels high. A new mule barn was built in 1970. Oriented in a northeast to southwest direction, the mule barn was a frame rectangular structure with two covered mule shelters over a dirt floor, with an enclosed tack and feed room. The corral was expanded in size and abutted the existing rock gabion walls to the north. The fence, consisting of wooden posts connected by wire strands, was arranged to

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<sup>158</sup> "Narrative Statement – Project B-39 – Indian Gardens: Repair Storm Damage to Buildings and Utilities." Ca. January 1965. Grand Canyon Museum Collection, #4750.

<sup>159</sup> Anderson, *Polishing the Jewel*, 314-316.

allow entrance to the tack and feed rooms without entering the corral. A metal trough and concrete spring box were located within the corral.<sup>160</sup>

The NPS Caretaker's Residence was renovated and a two-room addition added to the western side in 1960—the addition doubled the size of the structure. Two original stone piers from the western side were taken down during the renovation, and the stone was subsequently used to build a new porch on the same side (*Figure 41*).<sup>161</sup>

### ***Chronology by Landscape Characteristic, 1945-1970:***

#### **Land Use and Activities**

Tourism	Mule trains continued to bring tourists down to Indian Garden to see the Grand Canyon.
Recreation	The Bright Angel Trail, one of the more popular inner canyon trails, continued to attract thousands of day and overnight hikers.
Water pumping station	Indian Garden continued to be an important water pumping station providing thousands of gallons of water per day to the south rim.
Camping	The campground at Indian Garden provided a designated area for those hikers using the Bright Angel Trail.

#### **Patterns of Spatial Organization**

Linear settlement pattern	Following the general north-south orientation of the Garden Creek springs at Indian Garden, the NPS continued to develop the area along the lush, relatively flat floodplain corridor.
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#### **Response to Natural Environment**

Erosion control	In an effort to control damage stemming from periodic flooding of Garden Creek, the NPS continued to practice erosion control by erecting a gabion wall in the late 1960s.
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<sup>160</sup> Mark Sinclair to Chief Ranger and Inner Canyon Supervisor. "Flood Damage at Indian Garden Campground," September 18, 1980. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park; "Mule Barn, Indian Gardens, Grand Canyon National Park," 1970. Grand Canyon Museum Collection, #80003.

<sup>161</sup> Architectural Resources Group, "Indian Garden Trail Caretaker's Residence: Historic Structure Report," 18, 21.

## **Circulation Networks**

### Bright Angel Trail

The Bright Angel Trail and spur to Plateau Point, one of the more popular inner canyon trails, continued to attract thousands of day and overnight hikers as recreational hiking increased during the 1960s and 1970s.

## **Boundary Demarcations**

### Enclosure fenced

In association with the construction of a new mule barn in 1970, a new corral was also erected. The new corral was enclosed by a wood post and wire fence. The new corral was erected in the same location as the old one.

## **Vegetation (Related to Land Use)**

### Cactus planting

A 1959 NPS map notes that cacti were planted adjacent to and east of the Bright Angel Trail between the NPS Caretaker's Residence and the trail shelter.

### Lawn planted

A 1959 NPS map identifies a "lawn" area located east of and adjacent to the NPS Caretaker's Residence.

### Blackberry thicket

A 1959 NPS map identifies a blackberry thicket located at Indian Garden just north of the picnic area and mule hitching posts. The thicket was likely impenetrable and therefore deserving of mapping.

## **Buildings and Structures**

### Tent frame constructed

A 1952 NPS map indicates that a tent frame was present just north of the rebuilt Santa Fe Railroad Pump Caretaker's Residence (Rock House).

### Power line erected

During the mid-1950s, a new power line is erected at Indian Garden.

### Tool shed constructed

A 1959 NPS map identifies a "tool shed" constructed at Indian Garden just north of and adjacent to the rebuilt Santa Fe Railroad Pump Caretaker's Residence (Rock House). The tool shed

	<p>was located in an identical location as a tent frame seven years earlier.</p>
Caretaker's Residence addition constructed	<p>In 1960, a two-room addition to the western side of the NPS Caretaker's residence was built. In the process, two original stone columns were removed and a stone porch built.</p>
Comfort station constructed	<p>A 1963 NPS map identifies that a new, larger comfort station was built at Indian Garden. The comfort station was connected to a new pump station and replaced the two earlier latrines.</p>
Pump station constructed	<p>A 1963 NPS map indicates that a new sewage pump station was constructed at Indian Garden. The new pump station was connected to the leaching field upslope and replaced an earlier pump station.</p>
Latrines razed	<p>After construction of the new, larger comfort station and pump house in 1963, two older latrines were razed.</p>
Rehandling Pump House repaired	<p>After a major flood damaged it, the Rehandling Pump House was repaired and installed with new machinery in 1963.</p>
Tool shed razed	<p>Between 1963 and 1965, the tool shed was torn down to make room for a new bunkhouse.</p>
Bunkhouse constructed	<p>In 1965, a bunkhouse in the location of the tool shed was constructed at Indian Garden.</p>
Pump House constructed	<p>In association with the construction of a new water system to supply water from Roaring Springs to the south rim via Indian Garden, a second pump house was built in 1967, west of and adjacent to the earlier upper pump house and reservoir.</p>
Mule barn razed	<p>Just before the construction of a new mule barn, the earlier CCC-era mule barn was razed. It is not known why the structure was torn down.</p>
Mule barn constructed	<p>In 1970, a new mule barn was built to replace the old mule barn. The new mule barn was constructed in the same location as the old one.</p>

Gabion walls constructed

In association with the construction of the new mule barn, gabion walls were constructed to replace the old retaining walls in order to control floodwaters from a western drainage leading into Garden Creek. It is likely that these walls were built ca. 1969-1970.

**Small-scale Features**

Leaching field excavated

A 1952 NPS map identifies that a leaching field was excavated west of and upslope from the sludge trench. The leaching field was connected to the sludge trench; it is not known when this feature was constructed.

Dike excavated

A 1952 NPS map identifies that a “dike” was built at Indian Garden to channel a western drainage into Garden Creek. The dike was constructed between 1936 and 1952 and was located between the mule barn and corral and the NPS Caretaker’s Residence.

Water catchment constructed

A 1959 NPS map identifies that a “water catchment” was located at Indian Garden southeast of the mule barn and corral. This may be the old barrel spring from the former period.

Retaining walls built

A 1959 NPS map identifies that two retaining walls were located at Indian Garden to channel a western drainage into Garden Creek. The retaining walls were built between 1952 and 1959 and located between the mule barn and corral and the NPS Caretaker’s Residence. The retaining walls likely replaced the dike.

Campground and picnic area

In 1961, a new campground and picnic area was established in the Cameron-era cottonwood grove. The area was graded and a new twenty-site campground was established complete with picnic tables, fireplaces and drinking fountains.

Foot bridge constructed

A 1963 NPS map indicates that a footbridge was placed at Indian Garden. The footbridge spanned Garden Creek and led from the picnic area to the new comfort station.

Leaching field renovated

The leaching field located above the old sludge trench was renovated in the early 1960s.

Sludge trench abandoned

With the construction of the new comfort station, the old sludge trench was abandoned.

Protection wall built

After a damaging flood in 1963, a one-hundred-foot long, four-foot-wide masonry rock wall was constructed along the bank of Garden Creek through the campground area in 1964.

Protection wall built

After a damaging flood in 1963, a masonry rock wall was constructed around the Rehandling Pump House unit in 1964.

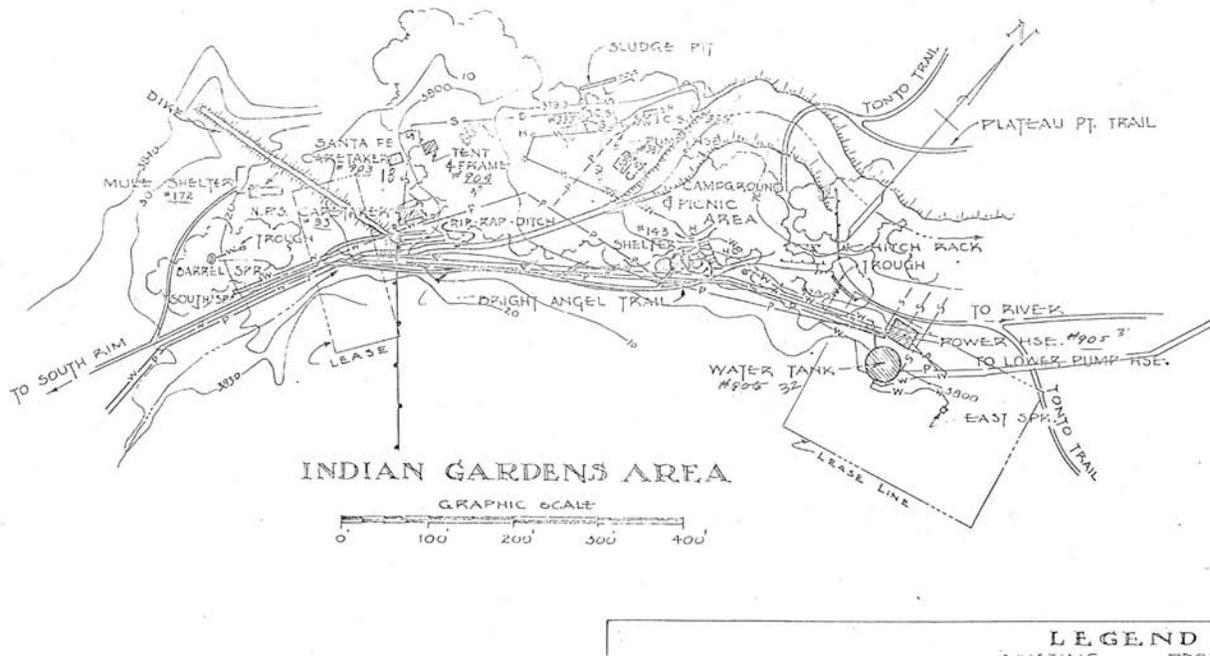


Figure 35. "Detail, Inner Canyon Developed Areas, Region 3," May 1952. (Grand Canyon National Park Museum Collection #2118A)

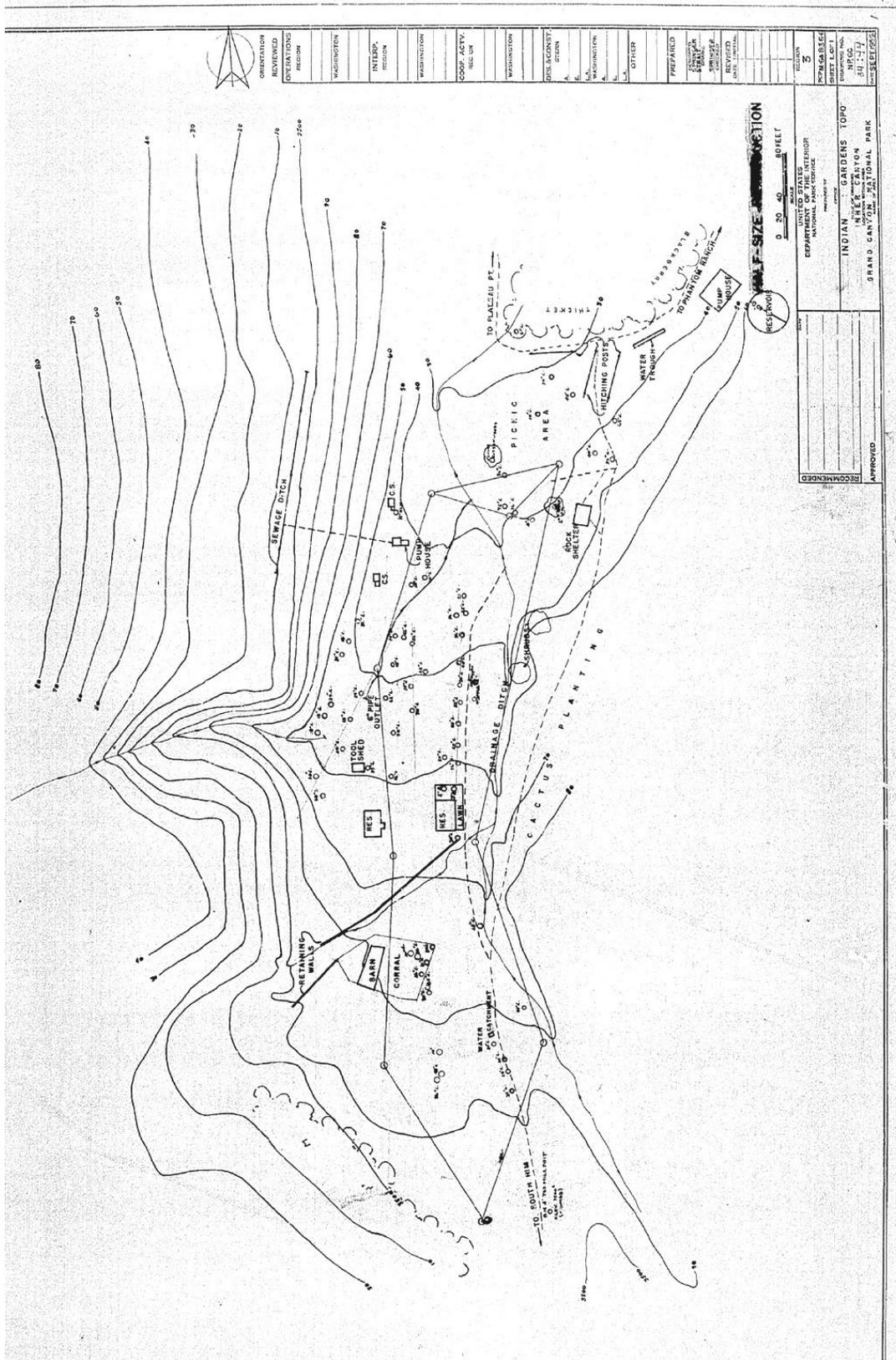


Figure 36. "Indian Gardens Topo," 1959. (Grand Canyon National Park Museum Collection #3444)





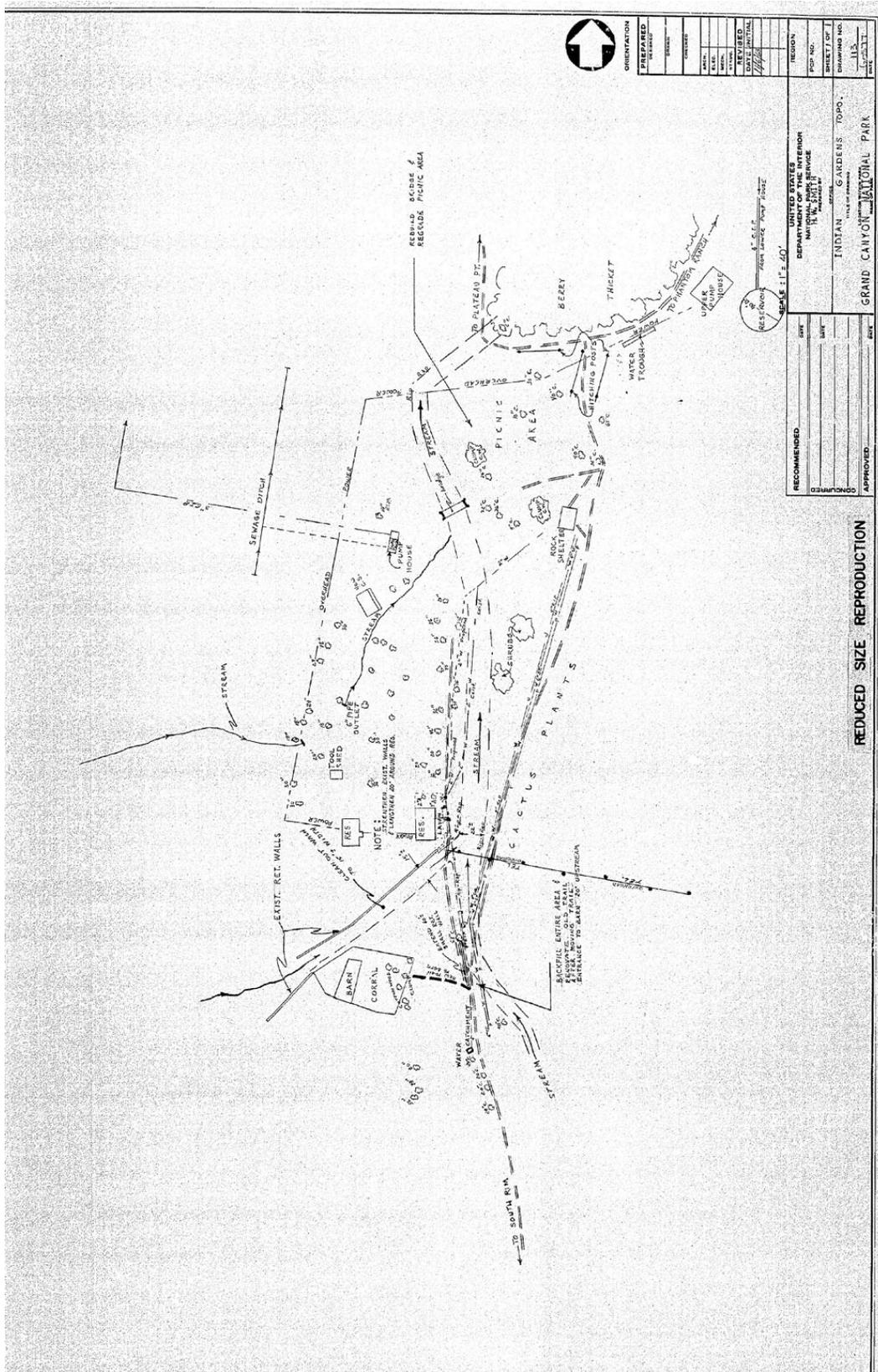


Figure 39. "Indian Gardens Topo," 1963. (Grand Canyon National Park Museum Collection #60577)

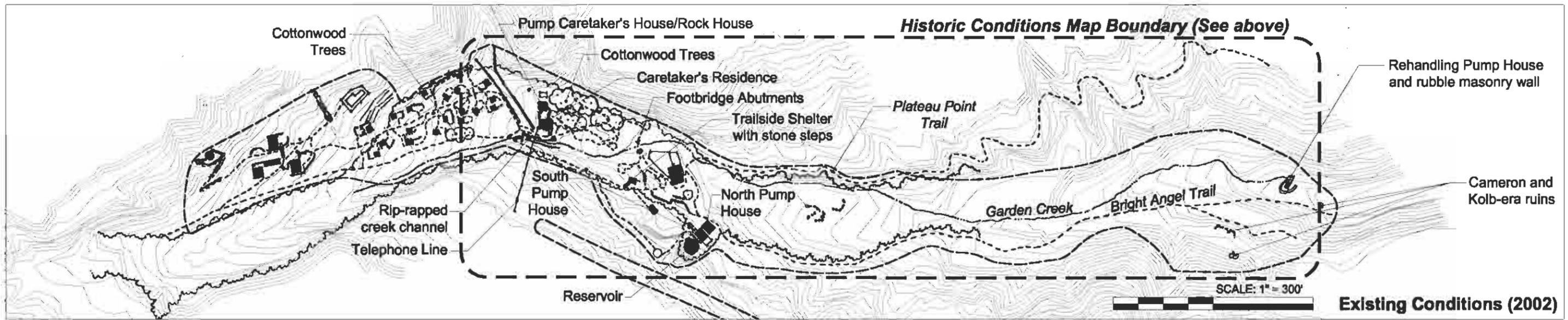
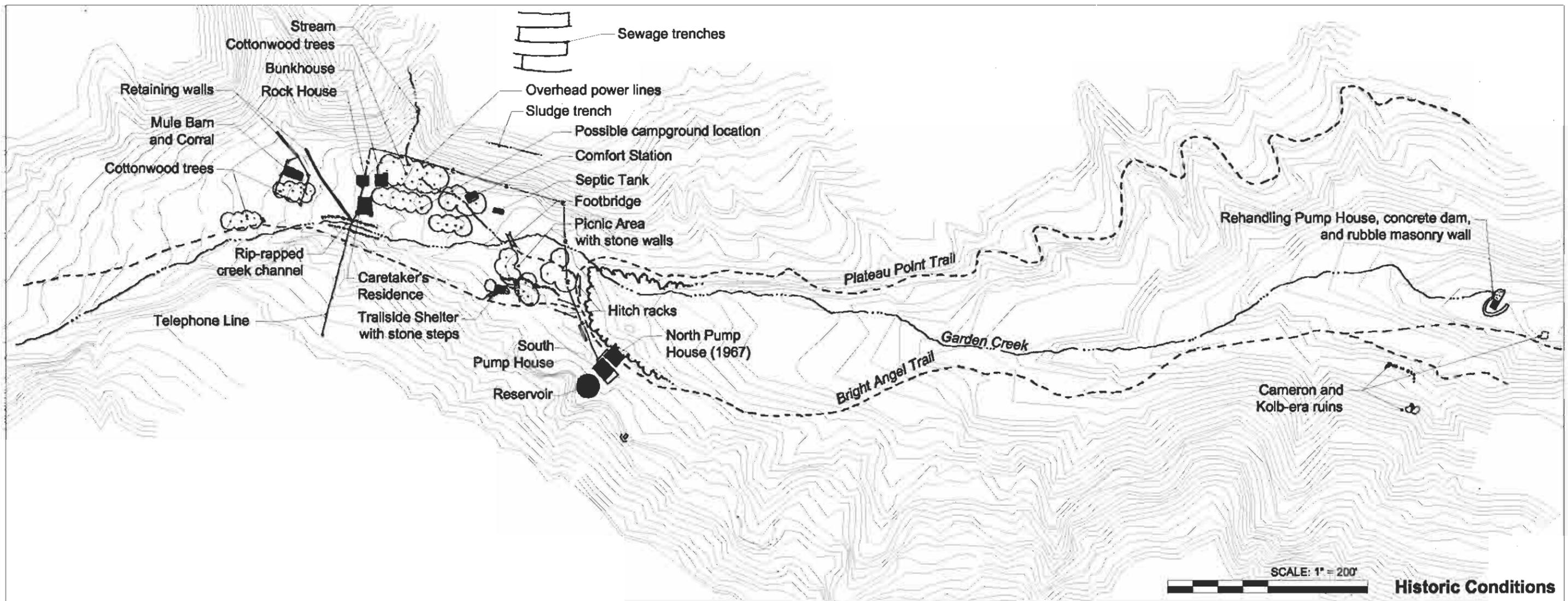


**Figure 40.** Scene after flash flood below Indian Garden, 1963. (Grand Canyon National Park Museum Collection #4477)



**Figure 41.** Former ranger station and NPS Caretaker's Residence (now SAR Cache) at Indian Garden (Bldg. #93), 1978. (Grand Canyon National Park Museum Collection #10964)





Map Sources: Historic Conditions map is a compilation of NPS, *Project B-39 Narrative Statement: Indian Gardens: Repair Storm Damage to Buildings & Utilities*, 1965; NPS, *Sewage Disposal System*, 1960; NPS, *Indian Gardens Topo.*, 1963; NPS, *Campground/Picnic Area*, 1959; and NPS, *Indian Gardens Topo*, 1959.



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LANDSCAPE FEATURES  
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## Late Twentieth-Century and Early Twenty-First-Century Improvements: 1970-2002

### *Introduction*

NPS efforts at Indian Garden during the last quarter of the twentieth century focused on the control and removal of invasive plant species and the removal of all facilities from the 100-year floodplain. As a result of several studies, construction and demolition efforts enacted between 1988 and 1989 resulted in the razing of several existing buildings and features and the construction of a new campground and several new operational, administration, and residential structures.

### *Brief Historical Context*

A 1971 NPS topographic map of Indian Garden documents the existing structures and features at the beginning of the last quarter of the twentieth century. They included the Rock House (1943 Santa Fe Pump Caretaker's Residence); NPS Caretaker's Residence; bunkhouse; comfort station; sewage pump station; trail shelter; mule racks and trough; "jungle swamp;" the North Pump House; the South Pump House; the water reservoir; and the new "rough chopper pad" upslope of the reservoir (*Figure 42*).<sup>162</sup>

In mid-1974, the Museum of Northern Arizona conducted an archeological corridor survey of the Bright Angel, South Kaibab and North Kaibab trails. The purpose of the survey was to "appraise the probable impact of potential development along these trails" and to identify sites and analyze their significance. Of thirty-four identified sites, twelve were located along the Bright Angel Trail—all of which were overlooking Garden Creek and many of which were in the general vicinity of Indian Garden. In the late winter of 1978, Robert C. Euler visited the Indian Garden vicinity as part of a survey of prehistoric sites. During this period he located Ancestral Puebloan and other Indian sites within and adjacent to the CLR project area.<sup>163</sup>

During the late 1970s, a floodplain study of the Indian Garden area was initiated. One of the recommendations of the 1979 study was to move the entire campground and picnic area out of the perennial floodplain. The following year, Garden Creek floods again eroded the channel and parts of the trail and campground, damaged the footbridge, and deposited sedimentation in the irrigation ditches.<sup>164</sup>

In spring of 1981, the NPS initiated a trial reseeding project at Indian Garden in an attempt to stabilize soils and stem the loss of vegetation due to soil compaction. Using native grass seed—such as Arizona brome (*Bromus arizonicus*), Arizona fescue (*Festuca arizonica*), Indian rice grass (*Oryzopsis hymenoides*), and Galleta (*Hilaria jamesii*) purchased from Native Plants, Inc. of Salt Lake City—small trampled areas alongside the trail and adjacent to facilities totaling

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<sup>162</sup> "Grand Canyon National Park, Indian Gardens," September 1971. Grand Canyon Museum Collection #41029.

<sup>163</sup> Brook et al, "Cross Canyon Corridor Survey," 2, 28-31; Mark Sinclair to Inner Canyon Unit Personnel. "Euler's visit to Indian Gardens," May 16, 1978. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park.

<sup>164</sup> Sinclair to Chief Ranger and Inner Canyon Supervisor. "Flood Damage," n.p.

approximately one-third of an acre were seeded. Soil in designated areas was scarified by hand, reseeded, and roped off.<sup>165</sup>

In 1985, improvements to the existing water supply facilities and line from Indian Garden to the south rim were initiated. The old six-inch water supply line dating to 1932 was replaced with eight-inch steel pipes. As water and sewer service was terminated to Indian Garden facilities as a result of the pipeline replacement, new Clivus Multrum composting toilets were constructed north of and adjacent to the comfort station. As part of an acoustical treatment to isolate noise from the 900 horsepower pumps within, the North Pump House received a stone veneer and the windows of the South Pump House were closed off with board siding.<sup>166</sup>

A January 1985 NPS sewage system map shows existing structures and features in the Indian Garden vicinity. They include a four-unit composting Clivus Multrum toilet (noted as “not in service”), the mule barn and corral, maintenance residence, bunkhouse and ranger quarters, campground and picnic area, old comfort station (noted as “not in service”), lift stations, new chemical toilets, lift station for the chemical toilets, trail shelter and mule watering area, North and South Pump Houses, and reservoir (*Figure 43*).<sup>167</sup>

By the mid-1980s, the NPS initiated a Development Concept Plan for the GRCA. The 1985 Development Concept Plan proposed several alternatives that incorporated the recommendations of the 1979 floodplain study for moving the Indian Garden campground and picnic area upslope and out of the 100-year floodplain. By early 1986, an alternative was selected that moved the new ranger station, maintenance building, residence and bunkhouse, campground and picnic area up stream to the west of Garden Creek (*Figure 44*).<sup>168</sup>

Sometime between 1986 and 1988, several new structures were built. A second bunkhouse was constructed west of and adjacent to the 1943 Santa Fe Pump Caretaker’s Residence (stone house). This bunkhouse was of frame construction. In addition, three new Clivus Multrum composting toilets were constructed; one toilet placed on a slope east of the Trail Shelter and two toilets in the new campground area—one on the northern end of the west slope and one on the southern end of the west slope.<sup>169</sup>

Throughout the 1980s, the NPS had become concerned with the aging cottonwood trees that dominated the campground and picnic area. Most had been planted in the first decade of the twentieth century by Ralph Cameron but some additional planting had also taken place in the

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<sup>165</sup> Richard W. Marks to Files. “Categorical Exclusion Designation for Indian Gardens Reseeding Project,” May 13, 1981. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park.

<sup>166</sup> NPS, “Work begins on waterline improvements at Grand Canyon,” July 31, 1985. News Release. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park; acoustical improvement information is courtesy of Paul Cloyd of the NPS Denver Service Center.

<sup>167</sup> “Indian Gardens Sewage System, Grand Canyon National Park,” January 1985. Grand Canyon Museum Collection, #40083.

<sup>168</sup> McLaughlin Water Engineers, EDAW, Inc., “Indian Gardens Development Concept Plan,” February 1986. Grand Canyon Museum Collection #40104.

<sup>169</sup> “Modify Wastewater Treatment Facilities, Indian Gardens,” [As Constructed Drawings] June 1988. See “Demolition Plan,” Sheet 7 of 98. Grand Canyon Museum Collection #41137c; See “Mule Corral Layout Plan,” Sheet 20 of 98. Grand Canyon Museum Collection #41137c; See “Campground Layout Plan,” Sheet 14 of 98. Grand Canyon Museum Collection #41137c.

mid-1930s during the CCC era. A 1982 site visit and study of hazardous trees at Indian Garden by a Forest Pest Management plant pathologist identified a total of twenty-six Fremont cottonwoods (*Populus fremontii*) that were potential threats to life and property due to their poor condition and proximity to cultural resources and visitor use areas. It was recommended that six cottonwoods of high risk be removed immediately and that twelve others receive immediate attention. The six trees identified as high risk were removed in October of 1987. The majority of the resultant tree slash was moved or burned on-site in a fire pit at the north end of the former mule corral.<sup>170</sup>

Based on the recommendations of the *Floodplain Study and Development Concept Plan*, contracts were initiated to begin moving the campground out of the 100-year floodplain and to undertake new construction projects. Prior to development, a study for potential sources of rock to be used in the construction of new buildings was made in the Indian Garden vicinity. The final development plan, carried out between 1988 and 1989, called for demolishing some structures, building new structures, and relocating others.<sup>171</sup>

The buildings demolished include the 1970 mule barn and corral, although the associated feeding troughs were saved for the new corral; the older bunkhouse; the old comfort station; and the pedestrian wood bridge whose concrete abutments were retained for a new bridge. In addition, all signage, drinking fountains, and other small-scale features were removed from the Day Use Area, the hitching posts and backpack racks were taken out of the old hitching area, and the old lift station and septic tank associated with the comfort station were removed.<sup>172</sup>

A great deal of new development occurred in 1989, when the NPS undertook a large-scale rehabilitation project in Indian Garden. Much of the landscape that had been altered since the period of significance was changed again when numerous existing features were demolished, relocated, or added (*Figure 45*). Rehabilitation efforts included the grading and construction of a new Storage/Laundry/First Aid building (Building B), new Ranger Residence (Building C), new Pump Operator's Residence (Building D), and a new Mule Barn and Corral (Building J) (*Figures 46 through 48*). These facilities were located west of the Bright Angel Trail and south of the old mule barn and corral. Stairs and pathways connecting the new facilities to each other, the Bright Angel Trail, and the new campground were also constructed.

New plantings and an irrigation system were installed near the Ranger and Pump Operator's Residences (*Figure 49*). In addition, a new helispot and trail leading to it were constructed south of and upslope from the new ranger housing area. Immediately to the north of the new residential area, grading and construction was carried out for a new sludge drying bed and sand filter system. The area surrounding the sand filter system was also planted and irrigated. A new drain field was constructed in conjunction with the sand filter system and located east of, and downslope from, the filter beds.

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<sup>170</sup> Douglas L. Parker, Director of Forest Pest Management to Superintendent, Grand Canyon National Park. "Hazard Tree Evaluation, Indian Gardens and Phantom Ranch," August 1982. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park.

<sup>171</sup> Ken Phillips to Dan. "Area stone survey for upcoming construction," March 1988. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park.

<sup>172</sup> "Modify Wastewater Treatment Facilities, Indian Gardens," [As Constructed Drawings] June 1988. Grand Canyon Museum Collection, #41137c.

The new campground was placed on the west side of the Bright Angel Trail, just north of the new ranger housing area. A total of sixteen new camping sites, complete with shade structures, picnic tables, and pack racks were installed. An area central to the campground was created to house an information kiosk, water fountain, and benches. Each individual site was connected by short paths leading to a central north-south path through the campground. The campground was planted and irrigated (*Figure 50*). New plants included the netleaf hackberry (*Celtis reticulata*), catclaw acacia (*Acacia greggii* var. *arizonica*), datil yucca (*Yucca baccata*), bear grass (*Nolina microcarpa*), prickly pear cactus (*Opuntia spp.*), Colorado four-o'clock (*Mirabilis multiflora*), and a velvet ash (*Fraxinus velutina*). New grass seed mix was also placed in the northeast corner of the campground area. The old campground was designated a day use area.

At the north end of Indian Garden, ground for a new mule barn and corral was graded. The new mule barn was a stone and frame structure and contained a covered but open shelter for mules. The eastern end of the building contained a closed tack room and feed storage area. The corral extended to the west of the mule barn. Two watering troughs were placed in the western end of the corral. Adjacent to and east of the mule barn and corral, a hitching post and trough area was graded and constructed. Benches were placed around a shade tree in this area. A new information and rest area was also located between the mule barn and corral and the Clivus Multrum composting toilets. The rest area included an information kiosk, a drinking fountain, and nine benches. The area surrounding the mule barn and corral was also planted and irrigated. Appropriate electrical, water, and sewer facilities were dug to connect all of the new structures and areas.<sup>173</sup>

The bunkhouse (Building A), located west of the 1943 Santa Fe Pump Caretaker's Residence, was moved upslope and to the south of the new Storage/Laundry/First Aid building in the new administration area. Stone from the Indian Garden vicinity was used to construct a stone veneer, making the old structure fit in more appropriately with the new construction. The two structures remaining in the 100-year floodplain—the Caretaker's Residence and Pump Caretaker's Residence/Rock House—were stabilized. In addition, logs in the former picnic grounds were moved to the new mule hitching area.<sup>174</sup>

Rock and debris carried down by a flash flood in 1993 caused extensive damage to the foot bridge crossing Garden Creek. The foot bridge was subsequently razed, although the concrete abutments on either side were left.

In 1997, attempting to combat the growing problem of containing and controlling non-native, exotic vegetation, the NPS issued an action plan to eradicate the species in some areas and contain it in others. The blackberry thrived in the riparian habitat and dominated the area to the exclusion of other native species. A 1992 survey reported that the Himalaya Blackberry had colonized about four acres of riparian habitat, or one and one-half miles along Garden Creek. The Himalaya Blackberry, along with other exotic fruits and berries, was planted at Indian Garden during the Cameron-era occupation (1903-1927) as an ornamental or horticultural

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<sup>173</sup> "Modify Wastewater Treatment Facilities, Indian Gardens," [As Constructed Drawings] June 1988. Grand Canyon Museum Collection, #41137c.

<sup>174</sup> "Modify Wastewater Treatment Facilities, Indian Gardens," [As Constructed Drawings] June 1988. Grand Canyon Museum Collection, #41137c.

plant.<sup>175</sup> The eradication plan called for the pruning of the blackberry canes at their roots followed by selective chemical treatment with an herbicide. This eradication plan continues along Garden Creek to this day.<sup>176</sup>

***Chronology by Landscape Characteristic, ca. 1970-2002:***

**Land Use and Activities**

Tourism	Mule trains continued to bring tourists down to Indian Garden to see the Grand Canyon.
Recreation	The Bright Angel Trail, one of the more popular inner canyon trails, continued to attract thousands of day and overnight hikers.
Water pumping station	Indian Garden continued to be an important water pumping station, providing thousands of gallons of water per day to the south rim.
Camping	The campground at Indian Garden provided a designated area for hikers using the Bright Angel Trail.

**Patterns of Spatial Organization**

Linear settlement pattern	Following the general north-south orientation of the Garden Creek springs at Indian Garden, the NPS continued to develop the area along the lush relatively flat riparian corridor.
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**Response to Natural Environment**

Floodplain study	On the recommendations of a floodplain study and Development Concept Plan, the campground was moved upstream and out of Garden Creek due to persistent and damaging flooding.
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<sup>175</sup> Lori Makarick, et al., "Himalaya Blackberry Removal Project," *Canyon Views* Vol. 8, No. 1 (Spring 2002): 8.

<sup>176</sup> Nancy Brian, "Action Plan: 1997 Himalaya Blackberry Control at Garden Creek, Grand Canyon National Park, Arizona," Revised October 8, 1996. Indian Garden Ranger Station files, Indian Garden, Grand Canyon National Park.

### **Circulation Networks**

Bright Angel Trail	The Bright Angel Trail, one of the more popular inner canyon trails, continued to attract thousands of day and overnight hikers.
Rough chopper pad	By the early 1970s, formal landing areas for helicopters allowed supplies and personnel to be safely hauled down to, and out of, Indian Garden.

### **Boundary Demarcations**

Enclosure fenced	A new corral was constructed at the north end of Indian Garden just south of the blackberry thicket.
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### **Vegetation (Related to Land Use)**

Reseeding initiated	In 1981, native grass seed was sown in trampled areas alongside the Bright Angel Trail and adjacent to facilities. Approximately one-third of an acre was reseeded.
Hazardous trees removed	In 1987, six hazardous Fremont cottonwood trees ( <i>Populus fremontii</i> ) were removed from the Cameron-era cottonwood grove. The remains of the trees were left or burned on-site.
New plantings and irrigation	In 1989-90, new plantings and irrigation systems were placed in and around the new ranger complex and adjacent sand filter system and sludge drying bed, as well as in the new campground and around the new mule barn and corral. Plantings included netleaf hackberry, cat claw acacia, datil yucca, bear grass, prickly pear cactus, Colorado four-o'clock, and velvet ash.
New grass seeding	New grass seed mix was planted in the northeast corner of the new campground in 1989-90.
Blackberry infestation controlled	In 1997, the NPS initiated plans to eradicate and control the spread of the Himalaya Blackberry at Indian Garden. Plants were pruned at their base and then sprayed with a chemical herbicide.

## Buildings and Structures

Clivus Multrum toilets built	In association with the water system improvements initiated in 1985, water service was terminated to Indian Garden facilities. A new Clivus Multrum composting toilet was placed north of, and adjacent to, the existing comfort station.
North Pump House renovated	As part of the improvements made to the water service system between 1985-1986, the North Pump House received a new stone veneer as part of an acoustical treatment to isolate noise.
South Pump House renovated	As part of the improvements made to the water service system between 1985-1986, the windows of the South Pump House were closed off with board siding as part of an acoustical treatment to isolate noise.
Bunkhouse constructed	Sometime between 1986 and 1988, a second bunkhouse was constructed west of and adjacent to the 1943 Santa Fe Railroad Pump Caretaker's Residence (Rock House).
Clivus Multrum toilets constructed	Three new Clivus Multrum composting toilets were constructed at Indian Garden; one on a slope east of the Indian Garden trail shelter, and two in the area out of the 100-year floodplain proposed for the new campground.
Storage/Laundry/First Aid building constructed	A new Storage/Laundry/First Aid building was constructed in 1988 as part of the new administration complex.
Ranger Residence constructed	A new Ranger Residence was constructed in 1988 as part of the new administration complex upstream and out of the 100-year floodplain.
Pump Operator's Residence constructed	A new Pump Operator's Residence was constructed in 1988 as part of the new administration complex.
Bunkhouse moved	In 1988, a bunkhouse was moved from its former location west of the Rump Caretaker's Residence/Rock House to the new administration

	complex upstream. A native stone veneer was added to the structure.
Mule barn constructed	A new mule barn was constructed in 1988 west of the Pump Houses.
Mule barn razed	In 1989, the 1970 mule barn was razed after the construction of the new mule barn.
Bunkhouse razed	In 1989, the old 1965 bunkhouse was razed.
Comfort station razed	In 1989, the old 1961 comfort station was razed.
Caretaker's Residence stabilized	In 1989, the Caretaker's Residence (the old NPS ranger station) was stabilized.
Rock House stabilized	In 1989, the 1943 Santa Fe Railroad Pump Caretaker's Residence (Rock House) was stabilized.

### **Small-scale Features**

Rough helicopter pad constructed	A 1971 NPS map of Indian Garden identifies a rough "chopper pad" adjacent to, south of, and upslope from the 70,000 gallon upper reservoir.
Water system improved	In 1985 the old six-inch water supply pipe at Indian Garden, dating to 1932, was replaced with a new eight-inch steel pipe.
Stairs and pathways constructed	New stairs and pathways connecting the facilities in the new ranger station complex were constructed in 1988.
Sand filter system constructed	A new sand filter system and sludge drying bed was constructed north of and adjacent to the new ranger complex in 1988.
Drain field excavated	A new drain field was constructed east of and adjacent to the new sand filter system in 1988.
New campground established	A new campground was established upstream and out of the 100-year floodplain in 1989. A total of sixteen new camping sites complete with shade structures, picnic tables, and backpack racks were installed. An area central to the campground

	contained an information stand, a water fountain and benches. Each individual site was connected by short paths leading to a central north-south path through the area.
Signage removed	All signage associated with the old campground and picnic area within the 100-year floodplain was removed in 1989. Four new signs identifying the space's new use as a Day Use Area were installed.
Signage installed	Four new signs were installed in the old campground designating it for day use only.
Drinking fountains razed	All drinking fountains located in the old campground and picnic area within the 100-year floodplain were removed in 1989.
Pump station and septic tank razed	The old pump station and septic tank located in the old campground and picnic area within the 100-year floodplain were removed in 1989.
Helispot constructed	A new helicopter landing pad was constructed in 1988 south of and adjacent to the new ranger complex.
Information and rest area constructed	A new information and rest area east of and adjacent to the new mule barn was constructed in 1989. The rest area included an information kiosk, a drinking fountain, and nine benches.
Footbridge razed	After a flash flood in 1993, the footbridge was razed, while the concrete abutments on either side of Garden Creek were left <i>in situ</i> .

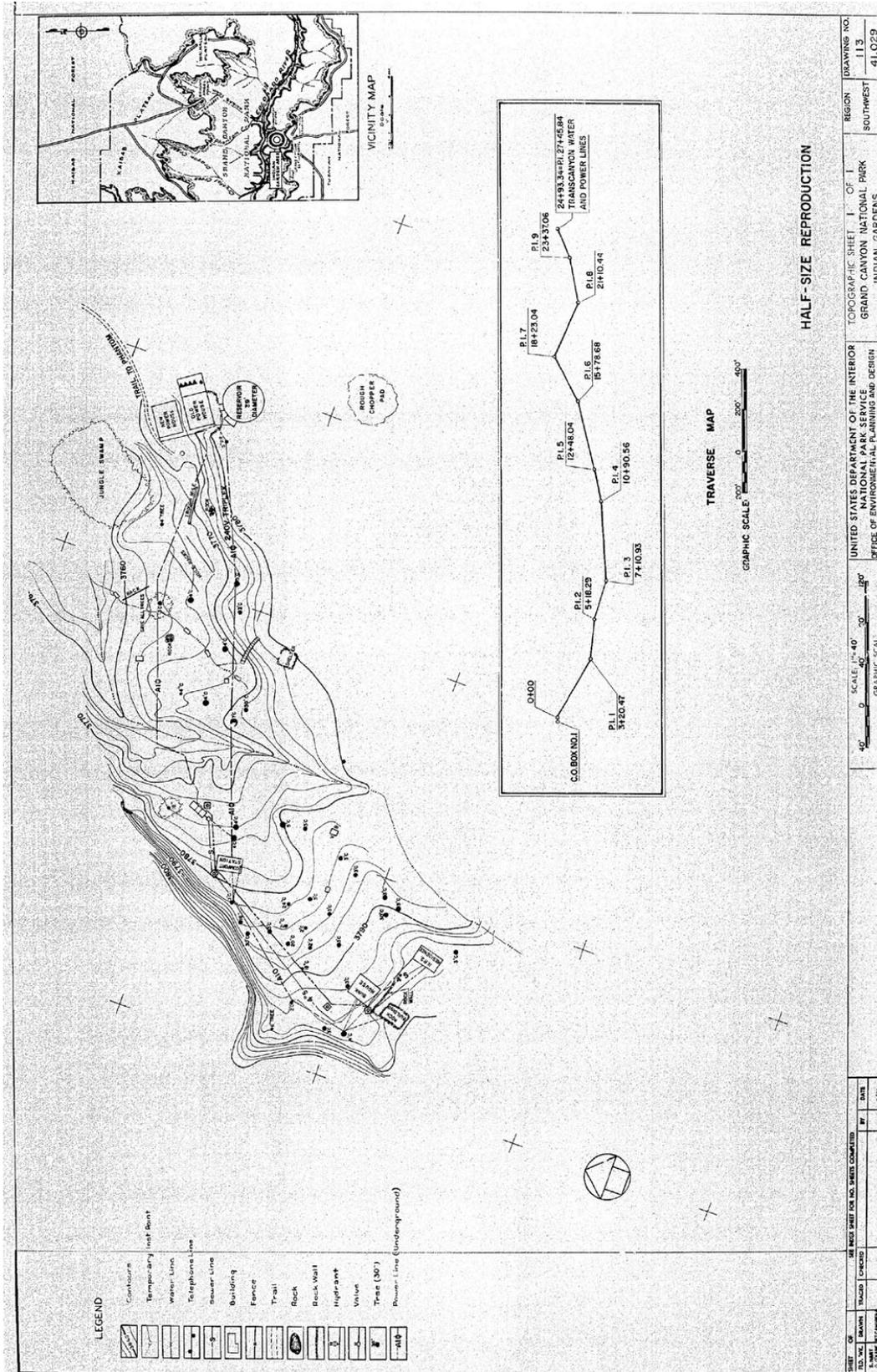


Figure 42. Topographic map of Indian Garden, September 1971. (Grand Canyon National Park Museum Collection #41029)

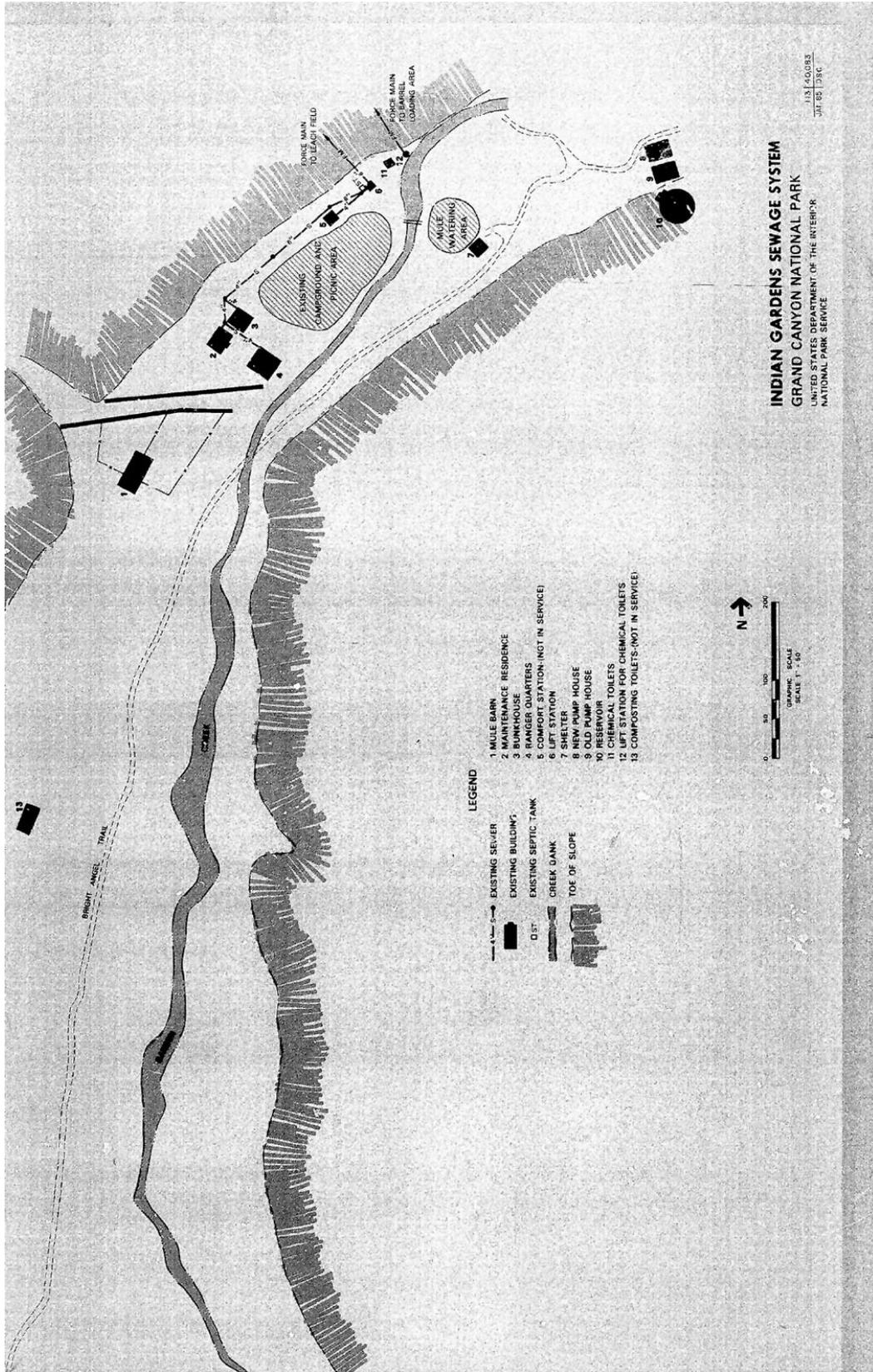


Figure 43. "Indian Gardens Sewage System," January 1985. (Grand Canyon Museum Collection Accession #40083)

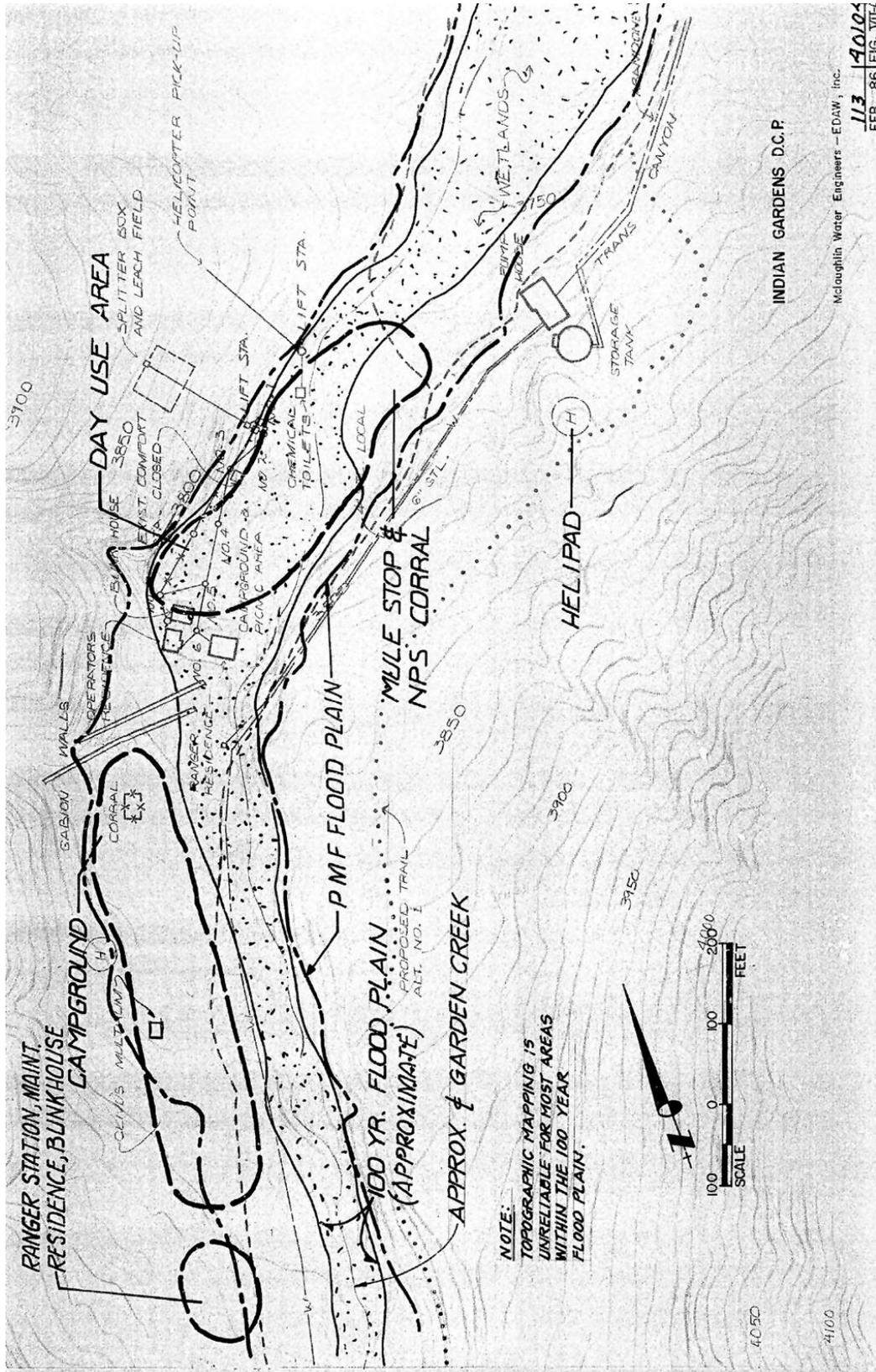


Figure 44. Indian Garden floodplain map, September 1986. (Grand Canyon National Park Museum Collection #40104)

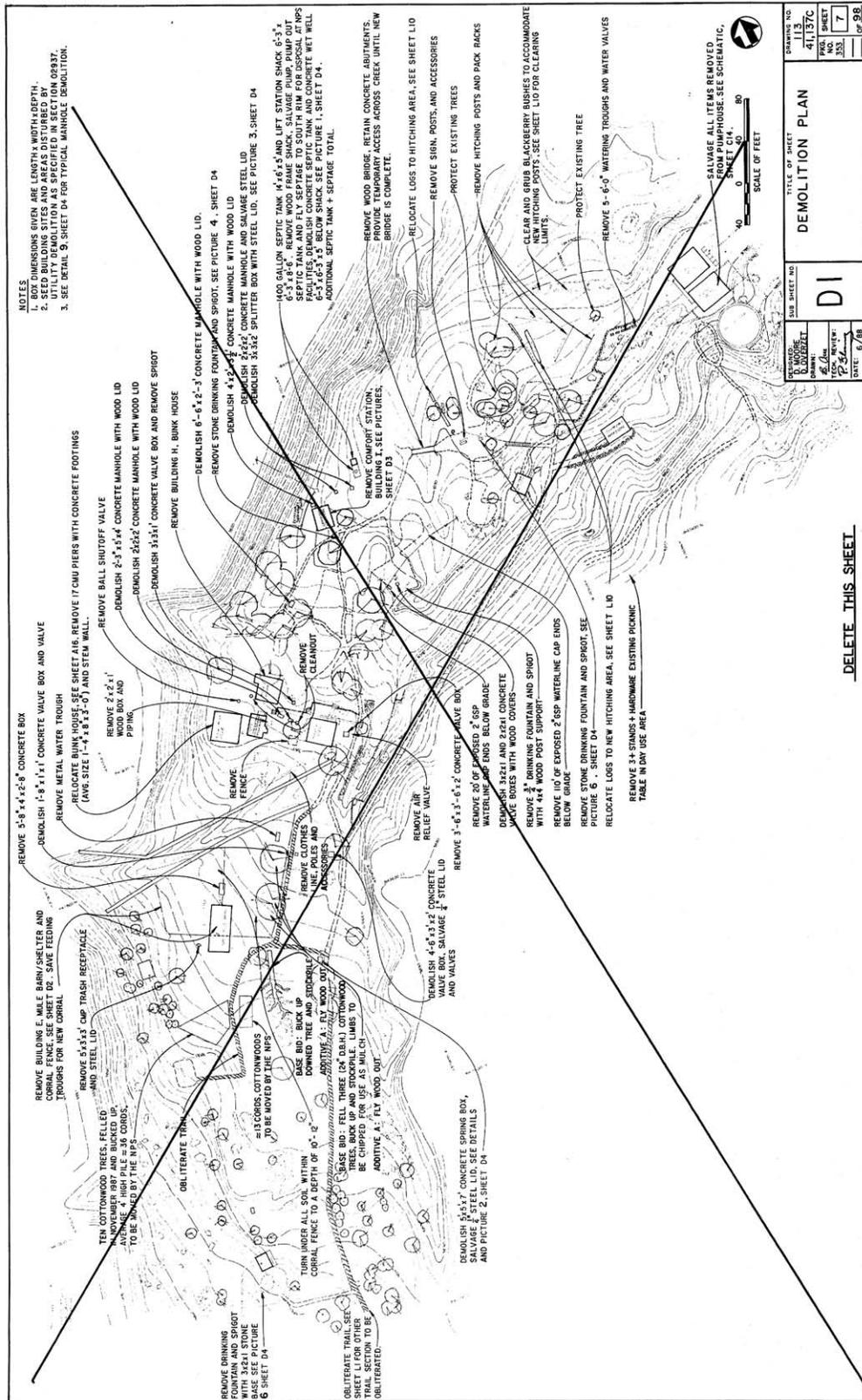


Figure 45 “Demolition Plan,” Sheet D-1 of as-constructed drawings for “Modify Wastewater Treatment Facilities” project, 1989. Demo plan shows Indian Garden existing conditions prior to 1989 rehabilitation. (Grand Canyon National Park Museum Collection #41137C)

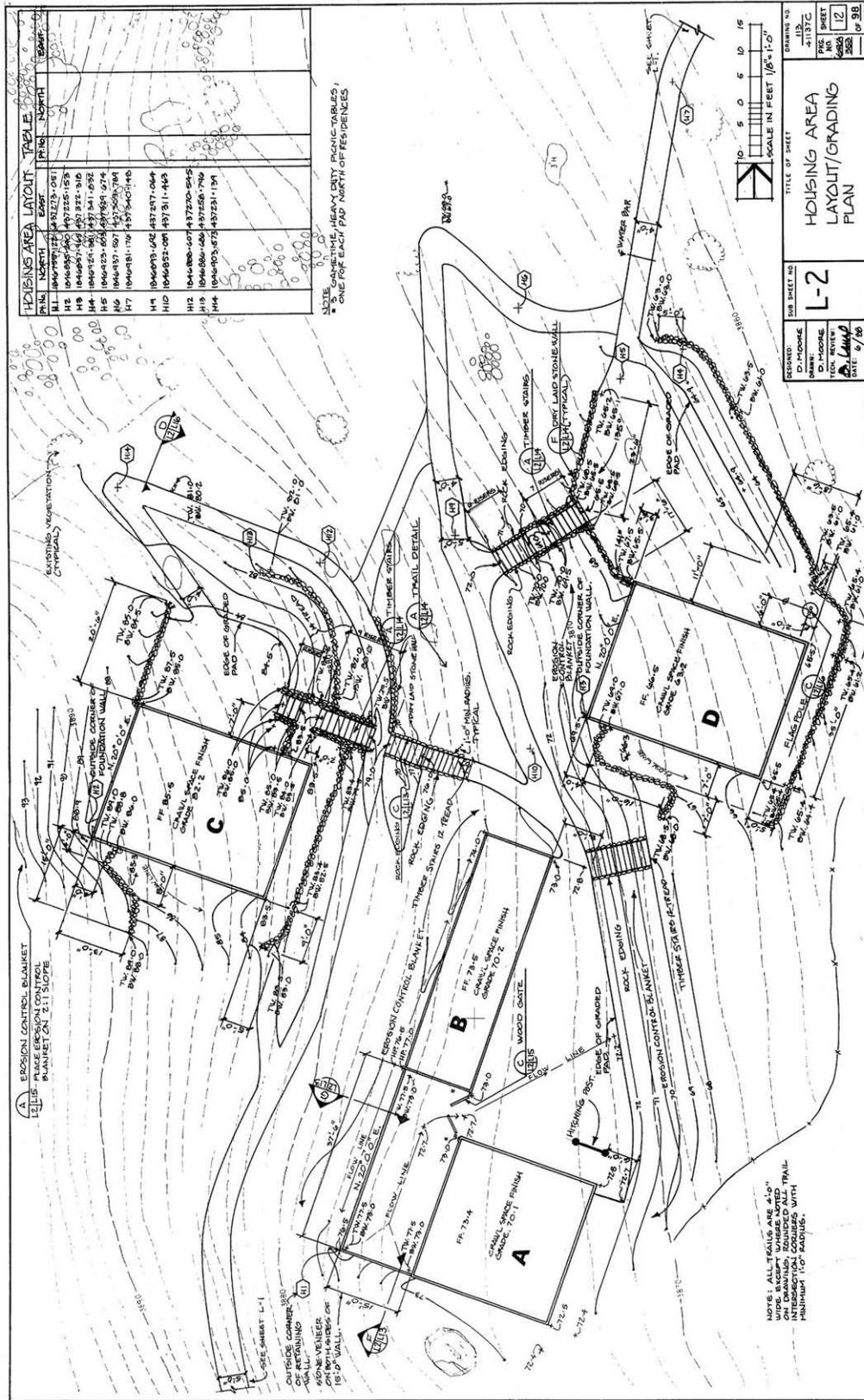


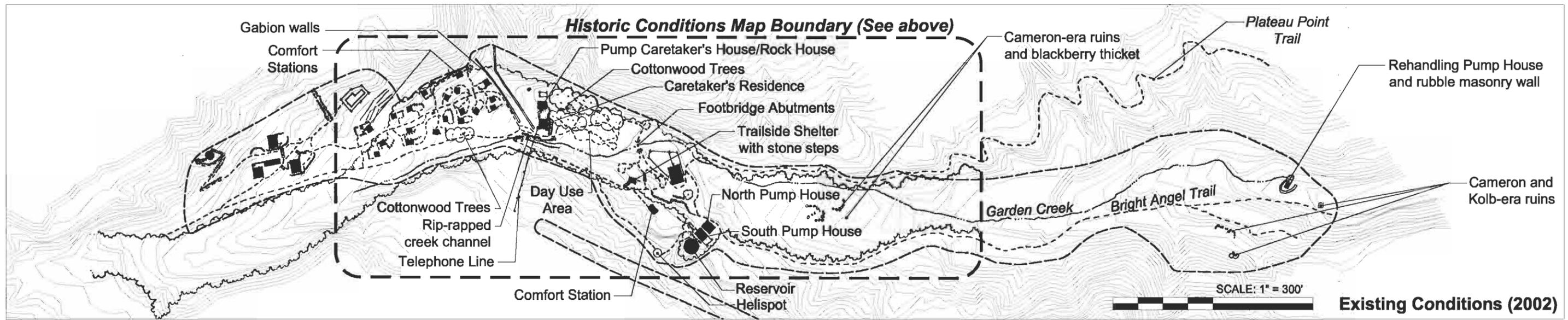
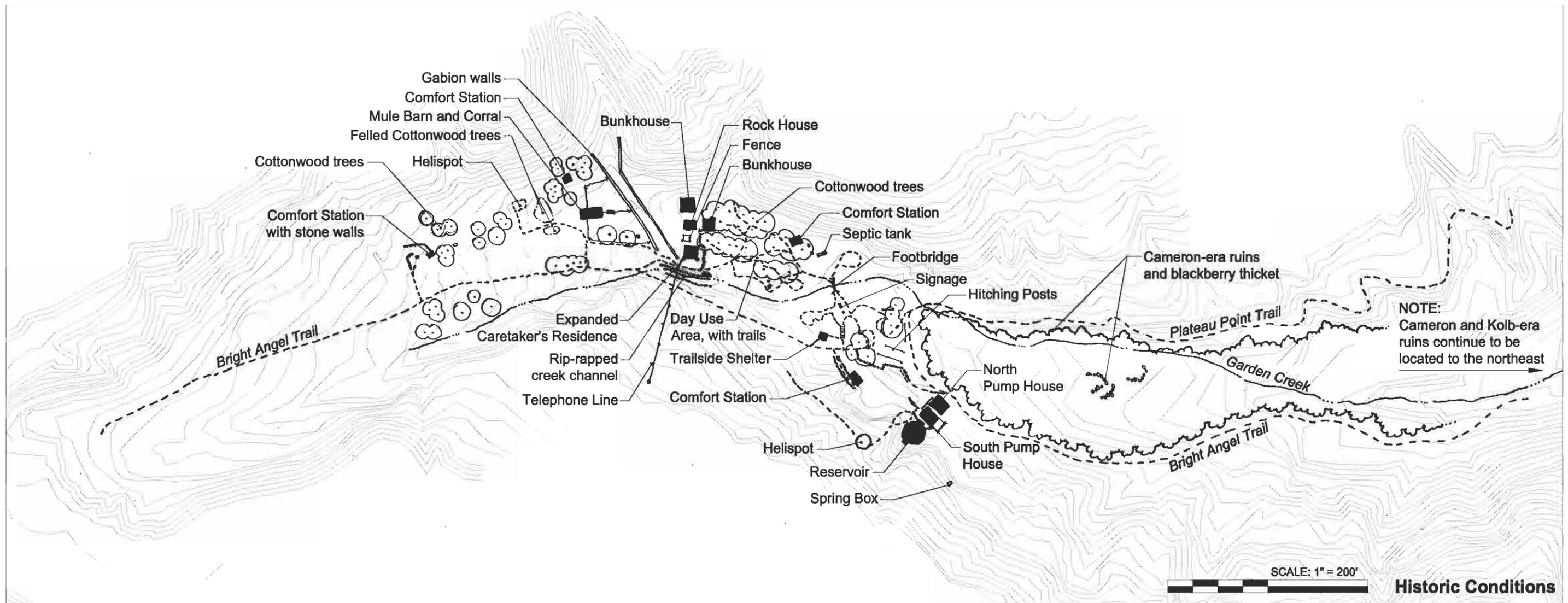
Figure 46 "Housing Area Layout/Grading Plan," Sheet L-2 of as-constructed drawings for "Modify Wastewater Treatment Facilities" project, 1989. (Grand Canyon National Park Museum Collection #41137C)











Map Sources: Historic Conditions map is a compilation of NPS, *Modify Wastewater Treatment Facilities: Demolition Plan*, 1988; NPS, *Ranger Station Pipeline Crossing*, 1985; and NPS, *Topographic Sheet 1 of 1*, 1971.



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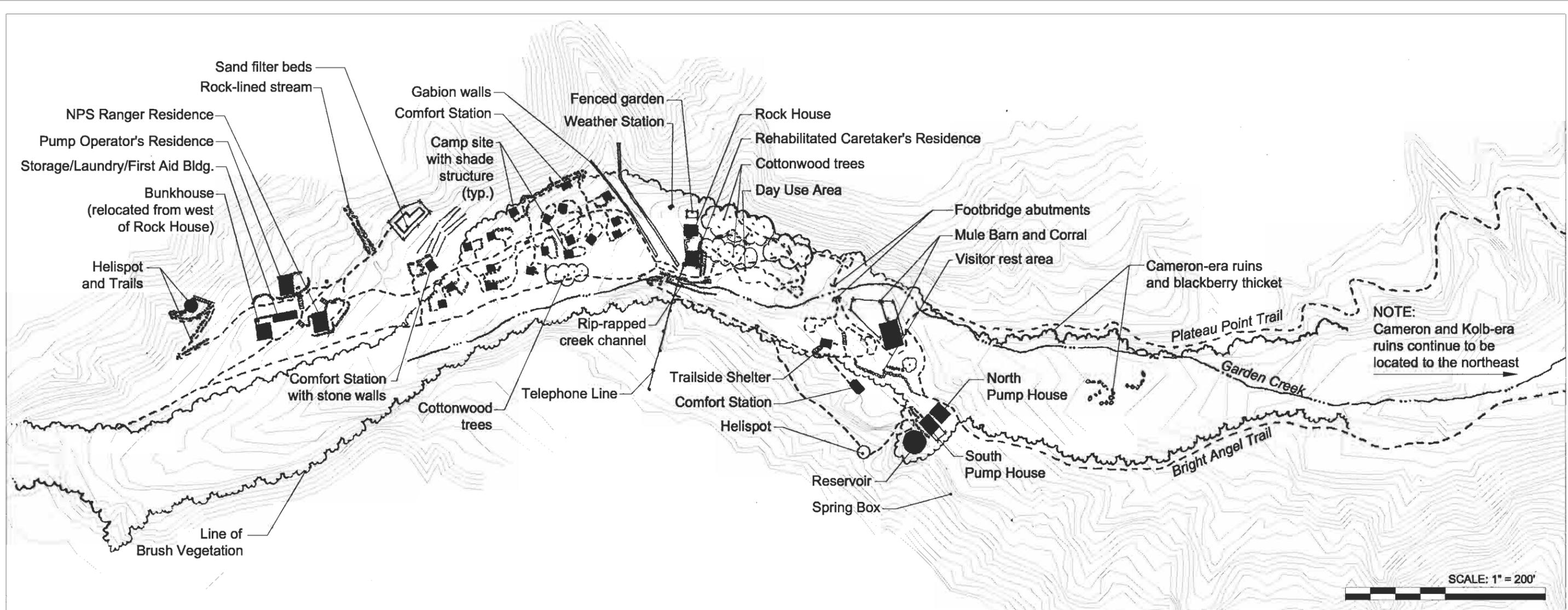
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LANDSCAPE FEATURES  
circa 1988

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Map Sources: NPS base map received from the Denver Service Center in August 2002 and base map derived from field work by John Milner Associates, Inc. in September 2002.



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	OF 36



## Chapter III • Landscape Existing Conditions Documentation





# Chapter III • Landscape Existing Conditions Documentation

## Introduction

This chapter includes written, graphic, and photographic documentation of existing landscape conditions at Indian Garden and its associated landscape character areas. This documentation is based upon review of available documentation, base mapping, and fieldwork conducted in Indian Garden by John Milner Associates, Inc. (JMA) and its consultants.

JMA mapped existing conditions data for Indian Garden using an electronic CAD survey provided by the Denver Service Center of the National Park Service and through field observations, which were translated into CAD to obtain a complete base map of the site. The resultant base map provided the basis for the diagrams and maps appearing in this report.

Existing conditions documentation in this report provides an overview of landscape features and systems for the entire project area and then is organized, along with the accompanying inventory, by landscape character areas within Indian Garden. Each of the following six character areas exhibits a coherent identity and land use within the park:

- Bright Angel Trail Corridor (North and South);
- Administration Area;
- Campground Area;
- Day Use Area;
- Pump Station and Corral Area; and
- North Indian Garden Area.

Existing conditions for Indian Garden and the six character areas are addressed later in this chapter through narrative descriptions, existing conditions photographs, and illustrative maps. The following landscape characteristics were used to organize existing conditions information:

- Natural Systems and Features;
- Spatial Organization;
- Land Use;
- Circulation;
- Vegetation;
- Buildings and Structures;
- Views and Vistas; and
- Small-scale Features.

Additionally, archeological site identification information and an over-arching vegetative analysis are presented in the Indian Garden Overview section of this chapter.

All photographs used to illustrate written information in this chapter are numbered sequentially in the text and located at the end of each character area section. The photographs are coordinated

with photographic station-point maps located at the end of this chapter. The photographic station-point maps are useful in determining where and in which direction any particular photo was taken.

Each individual feature is highlighted once in bold text and listed in the Inventory of landscape Features located in Appendix A of this report. The inventory identifies each feature's contributing or non-contributing status, condition assessment, Cultural Landscape Report (CLR)-assigned inventory number, and any additional pertinent information. Each feature is located, using its CLR number, on the relevant existing condition inventory map; the maps are found at the end of each character area section. All attempts were made to accurately locate each feature on the maps, although the locations should be considered representative and approximate. The feature list legend on the maps includes each inventoried feature and its associated CLR number, as well as each feature's contributing status as determined in Chapter IV, Analysis and Evaluation. The contributing status is listed on each map in order to aid cross-referencing between the two chapters.

To aid, again, in the location and cross-referencing of buildings and structures, building identification numbers are placed in parentheses behind building or structure names in the text. Identification numbers for historic buildings were derived from the park's List of Classified Structures—an official inventory of historic buildings and structures. Non-historic building and structure numbers were taken from a Building Numbers Database obtained from the Denver Service Center's Technical Information Center; these numbers were created by the park's maintenance division. All building and structure names were derived from this database, which offered the most contemporary and commonly-used nomenclature for historic and non-historic Indian Garden features.

## Overview of the Grand Canyon National Park Landscape

The Grand Canyon National Park is an immense, complex ecosystem encompassing over one million acres of land and 278 miles of the Colorado River in northern Arizona. Situated on the southern end of the Colorado plateau, the park is internationally known for views into the canyon created by the Colorado River and its tributaries. Approximately 8,000 vertical feet of exposed geologic strata, from an elevation of 9,200 feet at the canyon's highest point at the North Rim to 1,200 feet near Lake Mead, provide one of the most complete records of geologic history. This geologic diversity is visible to the four to five million visitors who arrive at the park every year. Surrounding the park are vast lands comprising Navajo, Havasupai, and Hualapai Indian reservations, and the Kaibab National Forest.

Thousands of linear miles of exposed cliff faces, often broken by plateaus, plunge to the canyon base from either rim. Smaller side canyons incise the mesas, buttes, and pinnacles of the upper portions of the canyon, exposing the multiple layers of rock including Kaibab Limestone, Toroweap Formation, Coconino Sandstone, Hermit Shale, Supai Formation, Redwall Limestone, Muav Limestone and Dolomite, Bright Angel Shale, Tapeats Sandstone, and the Precambrian rock below.

The varying levels of sunlight, temperature, and precipitation in the canyon have created multiple ecosystems that include: boreal forest community, ponderosa pine community, pinyon-juniper woodland, inner canyon scrub communities, and riparian communities. The boreal forest community is usually found in the colder, higher elevations along the North Rim of the canyon, and includes a mix of conifers such as fir, spruce, and aspen interspersed with meadows. The ponderosa pine community is found on both rims of the canyon. It is a community shaped by fire and the activity of the tassel-eared squirrel. The pinyon-juniper woodland occurs on or below the rims and includes extremely drought-resistant evergreens such as the pinyon pine that produces nuts for the multiple bird and animal species. The Tonto Platform is the primary home of the inner canyon desertscrub community characterized by low-growing shrubs such as blackbrush, Mormon tea, turpentine broom, and prickly pear cactus. Riparian communities surround the Colorado River and other water sources in low areas of the canyon, such as Thunder Spring, Roaring Spring, Bright Angel Creek, and Clear Creek. Plants and animals requiring constant access to water, such as mosses, ferns, and canyon tree frogs, thrive in this environment.

Sites of active human occupation and visitation are scattered throughout this vast and complex natural system. The main areas of development, as outlined in the 1995 GRCA General Management Plan (GMP), are the South Rim, the North Rim, and Tuweep. South Rim development is concentrated at Grand Canyon Village, but also includes Desert View and many other overlooks such as Grandview Point, Yaki Point, and Hermit's Rest. Easy access to the South Rim draws visitors from around the world to view the enormous panoramas at the canyon. Trails and roads provide access to the park's developed and wild areas. The East Rim Drive (Desert View), West Rim Drive (Hermit Rim Road), the South Entrance Road, Tonto Trail, Bright Angel Trail, and Hermit Trail, for example, are all part of a complex circulation system available along or from the South Rim. Because it is more difficult to reach, the North Rim is minimally developed and includes Bright Angel Point and trails such as the North Kaibab Trail

and the Clear Creek Trail. Trails from both rims connect at Phantom Ranch along the Colorado River. Tuweep is the most remote of the developed areas and is located in the northwestern section of the park, not far from its border.

## Overview of Indian Garden

### *Site Description*

Indian Garden is an oasis of water and lush vegetation within a generally arid environment (*Sheets 6 and 7*). This sliver of greenery created by the perennially-wet Garden Creek is located four and one-half miles down the Bright Angel Trail and 3,000 feet below the South Rim of the Grand Canyon. The shady spot rests upon the Tonto Platform of the inner canyon and between two steep cliffs. Indian Garden is currently used, as it was historically, as a rest stop for tourists and campers traversing the Bright Angel Trail.

Indian Garden was once a treeless spot that appeared very similar to the surrounding desertscrub community. American Indians used the perennial flow Garden Creek as a water source for their daily activities. The dense vegetation that appears at present began to grow when Garden Creek was dammed by Ralph Cameron in the early 1900s to create a water supply for his Indian Garden tourism operations. Cameron also planted cottonwood trees to increase opportunities for shade. The existing vegetation is made possible by irrigation as well as flash flooding, NPS dams, and irrigation ditches that detain water in the area. Water overflow from the trans-canyon water line also contributes to the thick vegetation of Indian Garden.

### *Natural Systems and Features*

Indian Garden is part of the Tonto Platform geomorphological unit—a generally hot, dry, treeless expanse of desertscrub vegetation.<sup>1</sup> The Tonto Platform, stretching from the base of the Redwall Cliff to the edge of the Inner Gorge, exists because of the thick exposures of Bright Angel Shale, which outcrop at that point and are eroded back to reveal Tapeats Sandstone.<sup>2</sup> As a hiker travels up from Indian Garden, he or she will witness millions of years of deposition and several different types of rock exposed over time by erosion. As one ascends from Indian Garden, up the Bright Angel Trail to the Village, Muav Limestone, the Temple Butte Formation of dolomite, Redwall Limestone, the Supai Group of shale and sandstone, Hermit Shale, Coconino Sandstone, the Toroweap Formation of sandstone and limestone, and finally the Kaibab Formation of sandstone, limestone, and shale are visible.

Indian Garden is part of the Upper Sonoran life zone located between 3,500 and 7,500 feet above sea level.<sup>3</sup> This life zone is characterized by plants such as blackbrush scrub, sagebrush scrub,

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<sup>1</sup> Rose Houk, *An Introduction to Grand Canyon Ecology* (Grand Canyon, Arizona: Grand Canyon Association, 1996), 35.

<sup>2</sup> L. Greer Price, *An Introduction to Grand Canyon Geology* (Grand Canyon, Arizona: Grand Canyon Association, 1999), 51.

<sup>3</sup> Stephen R. Whitney, *A Field Guide to the Grand Canyon* (Seattle: The Mountaineers, 1996), 63-64.

and pinyon-juniper woodland. Within Indian Garden, however, the presence of Garden Creek affords a small corridor of riparian vegetation along its banks (*Photograph 1*). A more detailed description of vegetation and plant communities is found later in this overview, under the heading “Vegetation.”

Garden Creek is a perennial water source within the inner Grand Canyon. It begins on the south side of the canyon—approximately 3,800 feet above sea level—and runs down the canyon wall and over the Tonto Platform before emptying into the Colorado River. Garden Creek is subject to flooding, both from natural occurrences and overflow from the trans-canyon water pipeline. These floods have scoured and eroded the banks and bed of Garden Creek. Other unnamed springs and seeps feed into Garden Creek from the side slopes edging Indian Garden.

A variety of wildlife lives on the Tonto Platform. The Grand Canyon “pink” rattlesnake (*Crotalus viridis abyssus*), for example, is only found in the inner canyon and nowhere else on earth.<sup>4</sup> The Niobrara ambersnail (*Oxyloma haydeni haydeni*) also exists in Indian Garden. Originally thought to be a Kanab ambersnail, an endangered species, a small enclave of Niobrara ambersnail exists in Indian Garden’s Day Use Area landscape character area. The Niobrara ambersnail—closely related to the Kanab species—is not endangered although its habitat is threatened by increased development in Indian Garden.<sup>5</sup>

Other species living on the Tonto Platform include Scrub Jay, Mourning Dove, Loggerhead Shrike, Red-tailed Hawk, Ringtail, Canyon Mouse, Cactus Mouse, Desert Woodrat, and the Western Collared Lizard.<sup>6</sup>

### ***Topography***

Indian Garden occupies a relatively level area between two cliffs, and gently slopes from higher to lower elevation from south to north. The northern portion of the site has level floodplain topography created by the flooding actions of Garden Creek. The land originally occupied by Ralph Cameron’s tourism operations were located on a broader section of this floodplain. Over time, development grew to the south of this character area, as well as higher on the surrounding slopes and more rolling sections of Indian Garden to avoid the frequent floods. The current Administration Area buildings sit on a gentle slope above Bright Angel Trail and Garden Creek. The Campground Area landscape character area is situated at a slightly lower elevation, while the Day Use Area lies within the Garden Creek floodplain; the Day Use Area is subject to frequent flooding as a result.

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<sup>4</sup> Jeremy Schmidt, *A Natural History Guide: Grand Canyon* (New York: Houghton Mifflin, 1993), 106.

<sup>5</sup> United States Dept. of the Interior, National Park Service, *Environmental Assessment-Upgrade Corridor Area Fire Protection* (Grand Canyon: Grand Canyon National Park, 2003), 51.

<sup>6</sup> Schmidt, 106.

### ***Spatial Organization***

Indian Garden is a long, narrow, linear space defined by its vegetation and topography; the corridor edges and width are defined by the relatively thick mass of trees and shrubs fed by Garden Creek and the level topography that is enclosed by steep side slopes. The developed areas within the overall project area follow this linear arrangement and are arranged around, and along, Garden Creek and the Bright Angel Trail.

Over time, the linear length of Indian Garden development has increased. Cameron-era resources are located in the northern part of Indian Garden, north of the intersection of Plateau Point Trail and Bright Angel Trail. During the 1920s and 1930s, buildings, structures, and other features were constructed south of this intersection. Excessive flooding in this location pushed campground and administrative facilities even further south and upslope in the 1980s.

At present, Bright Angel Trail and Garden Creek edge the Administration Area and campground to the east. Garden Creek crosses the trail east of the SAR Cache/Caretaker's Residence and heads northwest into the North Indian Garden Area to run between Bright Angel Trail and Plateau Point Trail. The Administration Area, consisting of the ranger residence and maintenance facilities, is located in the southernmost portion of Indian Garden. The Campground Area is located north of the Administration Area and consists of camp sites and comfort stations. North of this area is the Day Use Area consisting of the SAR Cache, Rock House, and groups of picnic tables. Visitor use and park maintenance of this area has been limited due to excessively wet conditions and potential endangerment of the Niobrara ambersnail habitat. The Pump Station and Corral Area contains mule facilities and pump station buildings and is located north of the Day Use Area. The North Indian Garden Area occupies the northern half of Indian Garden and contains dense vegetation, the Kolb Studio ruin, the Rehandling Pump House, and other Cameron-era resources.

### ***Land Use***

Land uses in Indian Garden primarily support visitor services and include administrative, recreational, and operational uses. Administrative and operational facilities offer housing to rangers, pump operators, and trail crews and include a medical clinic, laundry room, carpentry shop, and helicopter landing pads. Campground facilities offer camp sites, backpack bars, and comfort stations. Mule concessionaire facilities include shelters, and hitching bars, as well as seating for mule riders. The pump station facility pumps and treats water for Indian Garden and the South Rim including Grand Canyon Village. Recreational uses are associated with Bright Angel Trail and Plateau Point Trail.

### ***Circulation***

The primary forms of circulation in Indian Garden are pedestrian and equestrian, although helicopters occasionally provide air transport. Bright Angel Trail is the main route through Indian Garden for both hikers and mule riders, leading from the Grand Canyon Village at the South Rim, down to the Colorado River, and up to the North Rim on the opposite side of the Canyon.

Within the Indian Garden developed areas, pedestrian circulation takes the form of earthen trails, often edged in stone. Circulation patterns vary from hierarchical, in the Campground Area, to undefined and loose, in the Pump Station and Corral Area. The site is connected to the rest of the Grand Canyon by three trails: Plateau Point Trail—which connects Indian Garden to the Tonto West Trail, Bright Angel Trail, and Tonto East Trail.

### ***Vegetation***

Two vegetation communities exist in and around Indian Garden (*Sheet 8*). The relatively level floodplain along Garden Creek is dominated by a diverse riparian community (*Photograph 2*), while the xeric slopes above the floodplain are inhabited by desertscrub vegetation (*Photograph 3*). Scientific and common names used to document and describe vegetation in this CLR follow *The Annotated Checklist of Vascular Plants of GRCA*.<sup>7</sup> A plant species list compiled during a field visit in September 2002 was compared to a list compiled by Brian and Rowlands (1994), and the composite list is presented here.

### **Riparian Community**

The **riparian community** has changed significantly in the last hundred years. Photos taken during the Cameron era show very little vegetation in the Indian Garden area (*Figure 6 – Chapter II*). Cameron planted numerous Fremont cottonwood trees, which are now producing additional offspring. Vegetation diversity and density increased further in the 1960s when the National Park Service (NPS) began planting redbud and ash trees in an attempt to create shade, making the area more hospitable to hikers. In the 1980s, the NPS constructed four irrigation systems to bring water to the current overnight use area, up-canyon from the natural springs. That development project resulted in the current proliferation of plants in the Indian Garden CLR project area.

Although the density and diversity of vegetation in Indian Garden has increased significantly within the last hundred years, most of the plants encountered here are native to the Grand Canyon region and can be found in other side canyons with sufficient water supply. Native tree species currently growing in the Indian Garden riparian community include:

Fremont cottonwood	<i>Populus fremontii</i>
Fragrant ash	<i>Fraxinus cuspidata</i> var. <i>macropetala</i>
Single-leaf ash	<i>Fraxinus anomala</i>
Catclaw acacia	<i>Acacia greggii</i> var. <i>arizonica</i>
Netleaf hackberry	<i>Celtis reticulata</i>
Redbud	<i>Cercis occidentalis</i> var. <i>orbiculata</i>
Boxelder	<i>Acer negundo</i>
Shrub live oak	<i>Quercus turbinella</i>

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<sup>7</sup> Barbara G. Phillips, Arthur M. Phillips III, and Marilyn Ann Schmidt Bernzott, *Annotated Checklist of Vascular Plants of Grand Canyon National Park (Monograph No. 7)* (Grand Canyon, AZ: Grand Canyon Natural History Association, 1987).

Native shrubs and herbs growing in the Indian Garden riparian community include:

Arizona grape	<i>Vitis arizonica</i>
Coyote willow	<i>Salix exigua</i>
Seep willow	<i>Baccharis salicifolia</i>
Emory baccharis	<i>Baccharis emoryi</i>
Squaw bush	<i>Rhus trilobata</i>
Apache plume	<i>Fallugia paradoxa</i>
Century plant (Utah agave)	<i>Agave utahensis</i>
Datil yucca	<i>Yucca baccata</i>
Mormon tea	<i>Ephedra viridis</i>
Beargrass	<i>Nolina microcarpa</i>
Englemann prickly pear	<i>Opuntia phaeacantha</i>
Four-wing saltbush	<i>Atriplex canescens</i>
Colorado four o'clock	<i>Mirabilis multiflora</i>
Trailing four o'clock	<i>Allionia incarnata</i>
Long-leaf brickellia	<i>Brickellia longifolia</i>
Goldenrod	<i>Solidago</i> spp.
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Globe mallow	<i>Sphaeralcea</i> spp.
Rayless encelia	<i>Encelia frutescens</i>
Rabbitbrush	<i>Chrysothamnus</i> spp.
Sacred datura	<i>Datura meteloides</i>
Hemp-dogbane	<i>Apocynum cannabinum</i>
Artemisia (no common name)	<i>Artemisia ludoviciana</i>
Broom snakeweed	<i>Gutierrezia sarothrae</i>
Fleabane	<i>Erigeron</i> spp.
Antelope horns	<i>Asclepias asperula</i> ssp. <i>capricornu</i>
Bernardia (no common name)	<i>Bernardia incana</i>
Cattail	<i>Typha domingensis</i>
Horsetail	<i>Equisetum</i> x <i>ferrissii</i>
Water speedwell	<i>Veronica anagallis-aquatica</i>
Giant common reed	<i>Phragmites australis</i>
Bulrush	<i>Scirpus americanus</i> or <i>validus</i>

Only one native grass was noted in the riparian community of Indian Garden:

Foxtail barley	<i>Hordeum jubatum</i>
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In addition to the native plant species named above, several invasive species listed on the GRCA exotic species inventory currently grow in Indian Garden. No invasive tree species were noted. Invasive shrubs and herbs growing in the Indian Garden riparian community area include:

Horehound	<i>Marrubium vulgare</i>
Russian thistle	<i>Salsola tragus</i>
Common mullein	<i>Verbascum thapsus</i>
Goatsbeard	<i>Tragapogon dubius</i>

Yellow sweet clover	<i>Melilotus officinalis</i>
Himalaya blackberry	<i>Rubus procerus</i> syn. <i>R. discolor</i>
Watercress	<i>Nasturtium officinale</i>

Invasive grasses growing in the riparian community of the Indian Garden include:

Ripgut brome	<i>Bromus rigidus</i>
Crabgrass	<i>Digitaria spicata</i> ssp. <i>stricta</i>
Rabbitfoot grass	<i>Polypogon monspeliensis</i>

According to a 2002 NPS *Nature Notes* newsletter, Himalaya blackberry, an extremely pervasive exotic within Indian Garden, was intentionally introduced into GRCA as an ornamental plant in the early 1900s. Because of its ability to quickly take root and proliferate, blackberries soon escaped cultivation and became a persistent and exotic vegetative presence along Garden Creek, whose consistent flooding encouraged blackberry growth. The NPS has undertaken measures to control Himalaya blackberry because the plant has dominated the riparian zone along the creek to the exclusion of native species. It has dramatically altered the ecosystem function and structure of Garden Creek and prevents visitors from experiencing the area by impeding access to Garden Creek.<sup>8</sup> Himalaya blackberry is being removed from the Day Use Area, southwest of the Trailside Shelter, and north of the pump house and helispot in the Pump Station and Corral Area.

### Desertscrub Community

The **desertscrub community** is dominated by blackbrush, which is also common in both the Great Basin and the Mojave Desert (*Photograph 3*).<sup>9</sup> Desertscrub vegetation in this section of the Grand Canyon is difficult to characterize as either the Great Basin or Mojave Desert assemblage since other indicator species are rare.<sup>10</sup> No invasive species or grasses were noted in the desertscrub community occupying the slopes above Indian Garden. Only one native tree species was noted in the desertscrub community above Indian Garden:

Catclaw acacia	<i>Acacia greggii</i> var. <i>arizonica</i>
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Native shrubs, herbs, and succulents growing in the desertscrub above Indian Garden include:

Blackbrush	<i>Coleogyne ramosissima</i>
Century plant (Utah agave)	<i>Agave utahensis</i>
Mormon tea	<i>Ephedra viridis</i>
Englemann prickly pear	<i>Opuntia phaeacantha</i>
Fetid marigold	<i>Dyssodia papposa</i>

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<sup>8</sup> Lori Makarick and Emily King, *Canyon Views: Nature Notes: Himalaya Blackberry Removal Project*. (GRCA: NPS, 2002) vol. VII no. 1, Spring 2002, viii.

<sup>9</sup> David E. Brown, ed. *Biotic Communities: Southwestern United States and Northern Mexico* (Provo, UT: University of Utah, 1982).

<sup>10</sup> Phillips, Phillips, and Bernzott, 1987.

Many-headed barrel	<i>Echinocactus polycephalus</i> var. <i>xeranthemoides</i>
Grizzly bear cactus	<i>Opuntia erinacea</i>
Arizona fishhook cactus	<i>Mammillaria microcarpa</i>

### ***Buildings and Structures***

Buildings and structures in Indian Garden are limited in number (*Sheet 9*). Many buildings are of relatively new construction or have been moved from their original location. Few of the buildings qualify as historic or retain their original use or purpose. Certain buildings and structures are in ruins and may be classified as archeological sites. These include the Kolb Studio ruin and Rehandling Pump House. The predominant architectural style of the project area is NPS Rustic Revival, circa 1980, and primarily of wood and stone construction. This style is “characterized by the extensive use of timbers and wood siding with modest stone foundations.”<sup>11</sup> Earlier buildings and structures feature stonework façades presented in the original NPS Rustic style, which employed sawn timber and log construction, rock foundations and corner piers, and steeply pitched, overhanging roofs.<sup>12</sup>

The greatest density of buildings is in the Administration Area and include the Bunkhouse, a clinic building, the Pump Operator’s Residence, and the Ranger Residence. The Campground Area has two comfort stations and a number of shade structures used by campers. The Day Use Area contains two historic buildings and an historic trailside shelter. The Pump Station and Corral Area contains livestock buildings and the pump houses as well as a heliport. The North Indian Garden Area contains the Kolb Studio ruin and Rehandling Pump House.

Within the project area, three **telephone poles**—remnants of the trans-canyon telephone line built in 1935—are located on the slope east of, and above, the Pump Station (*Photograph 4*). The telephone line and its associated features were listed on the National Register of Historic Places in 1986.

The telephone poles are made from standard two-inch galvanized pipe manufactured by the Jones and Laughlin Company. The pipe is in four- and eight-foot sections, which could be screwed together depending on desired pole height. The poles are fitted with cross-arms to hold the circuit lines. Installation of a second circuit in 1938-39 required modification of the cross-arms. On the southern section of the line [and in Indian Garden], another cross-arm was added to the tops of the poles, which raised their height from between twelve and eighteen inches... The poles vary in overall height from about two to twelve feet, depending on the nature of the rugged terrain, but most are about eight to ten feet

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<sup>11</sup> U.S. Department of the Interior, National Park Service, *Grand Canyon National Park Architectural Character Guidelines* (Grand Canyon, AZ: National Park Service, 1994), 14.

<sup>12</sup> *Ibid.*, 16-17.

high. The telephone line itself is an open-wire copper-weld line with porcelain and glass insulators.<sup>13</sup>

The poles still retain their glass insulators, cross-arms, and other defining features. According to Michael Anderson of GRCA, the associated telephone system no longer functions as a rim-to-rim system, as significant gaps occur where the telephone wire is down. Portions of the system, however, continue to be in service.<sup>14</sup>

### ***Views and Vistas***

Because Indian Garden is located within the Grand Canyon, all views to surrounding areas are spectacular and breath-taking, as Indian Garden is surrounded by multi-colored cliffs on three sides and the greater Grand Canyon to the north.

Views within Indian Garden are of little significance due to the surrounding context. Indian Garden contains no designed or purposeful vistas, and buildings and other features were not sited with the creation of internal views in mind.

### ***Small-scale Features***

Small-scale features in Indian Garden support visitor services, residential uses, and operations. Features such as backpack bars, benches, picnic tables, and drinking fountains increase the comfort of campers and hikers as well as their enjoyment of their Indian Garden stay. Features such as fencing, signage, stone edging, and stone walls increase hiker/camper awareness and safety as well as protecting the surrounding environment. Mule hitching bars, utility structures, and other utilitarian features described within each character area aid in the day-to-day operations of Indian Garden.

### ***Archeological Sites***

A total of twenty-one archeological sites have been previously recorded in the vicinity of Indian Garden. Five of the twenty-one sites are within the boundary of the Indian Garden cultural landscape as defined by this report. The five sites, which are discussed below, consist of one prehistoric and four historic sites (*Sheet 9*).

#### ***Site No. Ariz. B:16:140***

This site was recorded in 1983 by GRCA personnel Doug Brown and Ann Nolan. It is composed of two crudely constructed, dry-laid, stone masonry structures on a small, man-made terrace that has been cut into the western and northern sides of a talus slope east of Garden Creek, approximately 485 feet south-southeast of the junction of the Bright Angel and Tonto Trails

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<sup>13</sup> Teri A. Cleeland, *National Register of Historic Places Nomination: Trans-Canyon Telephone Line* (Washington D.C.: U.S. Department of the Interior, 1986) Section 7, 1-2.

<sup>14</sup> Michael Anderson, "Help with CLR-Indian Garden Phone Line," 30 April 2003, office communication (1 May 2003).

(*Photograph 5*). One structure consists of two low walls joined at the ends to form a right angle. The walls have between ten and twelve courses that rise to a height of approximately three to four feet and measure two to three feet thick. The wall that parallels the terrace cut is approximately eighteen feet long, whereas the wall that runs perpendicular to the terrace is approximately six feet long. The second structure, located around the talus slope to the northeast of the first structure, was likely of similar construction but has collapsed into a pile of rubble.

This site is likely associated with Ralph Cameron's mining activities around the turn of the twentieth century. Mine waste rock from the terrace cut is present downslope to the west and north of the masonry structures. The purpose of the structures is unclear, however. Their expedient construction suggests that they may have served no other purpose except to "prove up" the mine claim. No artifacts are associated with the terrace cut or structures.

*Site No. Ariz. B:16:152*

This site was originally recorded in 1983 and re-recorded in 1984 by GRCA Archeologists J. Balsom, H. Fairley, and N. Coulam. The site is a single, dry-laid, stone masonry room partially built into the northeast-facing slope directly below the Plateau Point Trail, overlooking the Garden Creek floodplain to the east. The structure has a square footprint with each associated wall measuring ten feet in length. The walls are a maximum of five to six courses high (creating walls approximately twenty inches in height), with the stones shaped into rectangular blocks.

No artifacts are visible in the immediate area to indicate the age of the structure. However, the structure is probably associated with Cameron's occupation of Indian Garden. Supporting evidence includes the shaped rectangular block construction, the presence of an obvious doorway, the height of the walls and placement of the structure on the slope, and the absence of prehistoric artifacts.

*Site No. Ariz. B:16:164*

This site was originally recorded in 1984 by GRCA Archeologists J. Balsom, H. Fairley, and N. Coulam. The site is located on a slight bench/terrace approximately sixty-five feet (twenty meters) east of the Bright Angel Trail and approximately 160 feet (fifty meters) east of Garden Creek. Note that this site is not labeled on the associated existing condition map due to the sensitive nature of this feature.

The site represents the remains of an ancestral Puebloan habitation structure composed of several rock alignments, rubble cobbles and slabs, and a fairly dense artifact scatter. The structure appears to have had three rooms. Overall, the room block measures approximately eighteen feet by seven feet (5.5 by 2.2 meters) in plan. There is some evidence that there were other rock alignments to the southwest of the room block, but these potential alignments are too disturbed for a positive assessment.

No specific evidence of a midden is visible. However, shallow rills that bisect the site and extend down slope to the north contain numerous ceramic sherds and flaked stone debitage. Despite the erosion, this site possesses one of the densest artifact scatters at Indian Garden, and illustrates the impacts that illegal artifact collection has had on other sites in the area.

*Site No. Ariz. B:16:165*

This site was originally recorded in 1974 by the Museum of Northern Arizona during the Cross Canyon Corridor Survey and subsequently re-recorded in 1984 by GRCA Archeologists J. Balsom, H. Fairley, and N. Coulam.<sup>15</sup> The site is located on a talus slope approximately 480 feet northeast of the junction of the Bright Angel and Tonto Trails.

The site consists of a dry-laid stone masonry wall built between two large boulders to form a small enclosure, a large man-made terrace/platform with a low rock foundation or retaining wall, and a drill hole (*Photographs 6 and 7*). The Museum of Northern Arizona identified the site as being associated with mining in the region. J. Balsom, H. Fairley, and N. Coulam suggest, however, that the site may represent part of the old tram system built in the early 1930s during the construction of the trans-canyon water line. The CLR team's examination of historic photographs of the area and the 1917 Working Plan Map of Indian Garden seems to indicate that the man-made terrace was actually a tent platform for the Trail Keeper's tent and the rock enclosure served as a latrine (*Figures 11, 12, and 20 – Chapter II*). Given the presence of the drill hole, it is possible that the site was subsequently used for tramway placement and/or mining activity. However, the historic photographs and maps clearly illustrate the original use of the platform and rock enclosure.

*Site No. Ariz. B:16:252*

This site was originally identified and recorded in 1989 by GRCA personnel Jamie Lepinsky and Jim Dryer while monitoring construction activities associated with the Indian Garden campground relocation project. While trenching for a new pipeline in the vicinity of the 1989 mule barn, park archeologists monitoring the trenching activity observed historic artifacts buried to a depth of up to twenty inches (fifty centimeters) below the ground surface. The artifacts included several enamel vessels, a porcelain bowl, a glass bottle, a seed drill, and stove parts. The artifacts date between 1900 and 1923, and are likely associated with Cameron's occupation of Indian Garden.

The depth of the artifacts illustrates the relatively rapid rate at which cultural remains can become buried in areas near or adjacent to Garden Creek, likely due to frequent flooding and the resultant deposition of sediment. Furthermore, the areal extent of the historic phenomena was not ascertained and it is likely that other buried cultural remains are present at Indian Garden within the Garden Creek floodplain.

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<sup>15</sup> Richard A. Brook, "Final Report for the Cultural Resources of The Grand Canyon Cross Canyon Corridor Survey, 1974." Ms. on file Museum of Northern Arizona. Flagstaff, AZ.

**Photograph 1.** Linear oasis of riparian vegetation growing along Garden Creek, surrounded by the desertscrub vegetation community. (SWCA 2002)



**Photograph 2.** Riparian vegetation, showing cottonwood and seep willow. Note mule deer in background. (SWCA 2002)





**Photograph 3.** The desert scrub community above Indian Garden, dominated by blackbrush.  
(JMA 2002)



**Photograph 4.** Historic telephone pole, part of the trans-canyon telephone line.  
(JMA 2002)



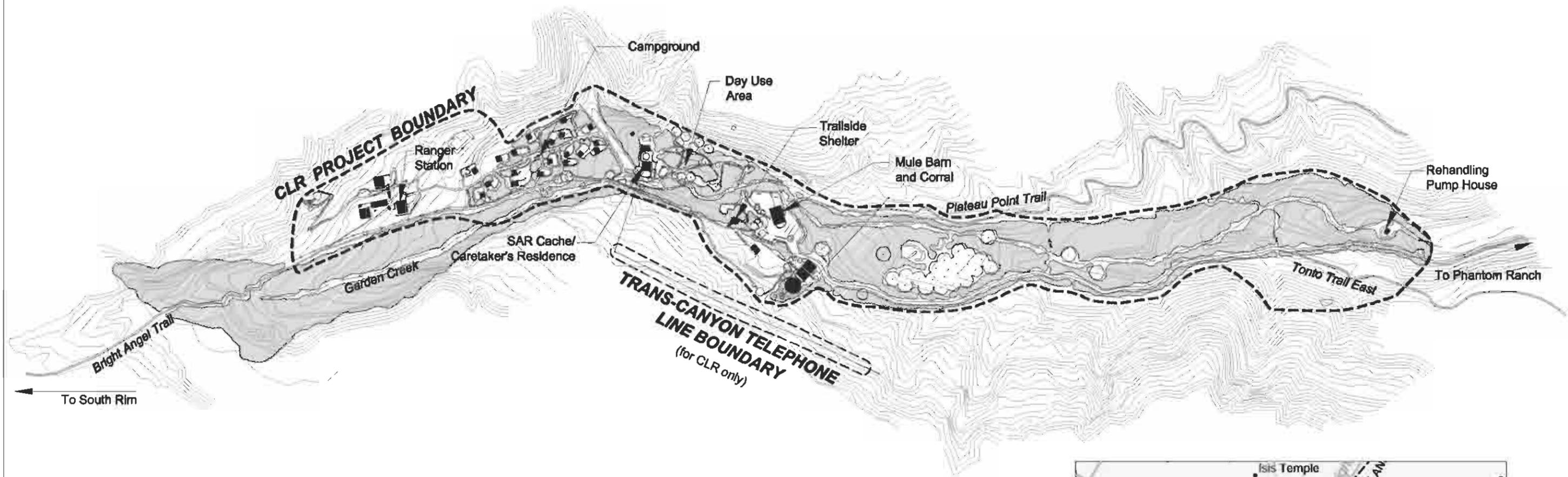
**Photograph 5.** Site No. Ariz. B:16:140, dry-laid stone masonry structures.  
(JMA 2002)

**Photograph 6.** Site No. Ariz. B:16:165, “Cooler” or latrine comprised of masonry wall between two boulders. (JMA 2002)



**Photograph 7.** Site. No. Ariz. B:16:165, Tent platform with stone retaining wall. (JMA 2002)





**LEGEND FOR ALL EXISTING CONDITIONS MAPS**

	Project Area boundary		Stone walls
	Garden Creek		Benches
	Buildings/Structures		Fence
	Trails		
	Vegetation mass		
	Trees		
	Topography		
	Drinking fountain		

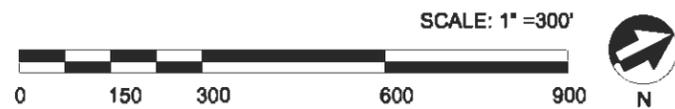
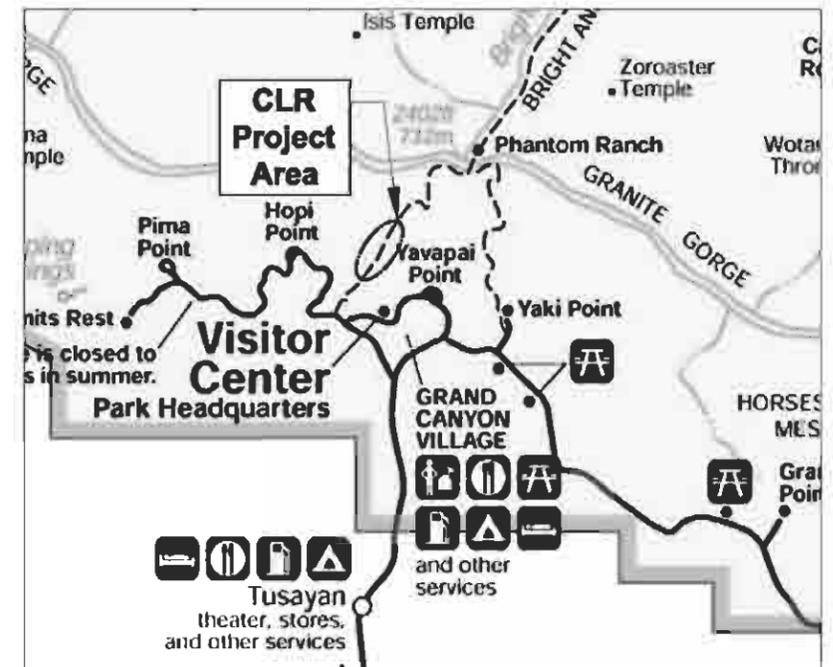
**Legend for Landscape Characteristics**

- N - Natural Systems and Features
- SO - Spatial Organization
- C - Circulation
- Ve - Vegetation
- B - Building
- S - Structure
- V - Views and Vistas
- SS - Small-scale Features

**Legend for Contributing Status**

- C - Contributing Feature
- NC - Non-contributing Feature
- S - Supporting Feature
- U - Undetermined Feature

Note: These classifications are presented to aid cross-referencing between Chapter IV (Analysis and Evaluation) and the existing conditions in this chapter. Refer to Chapter IV for more information.



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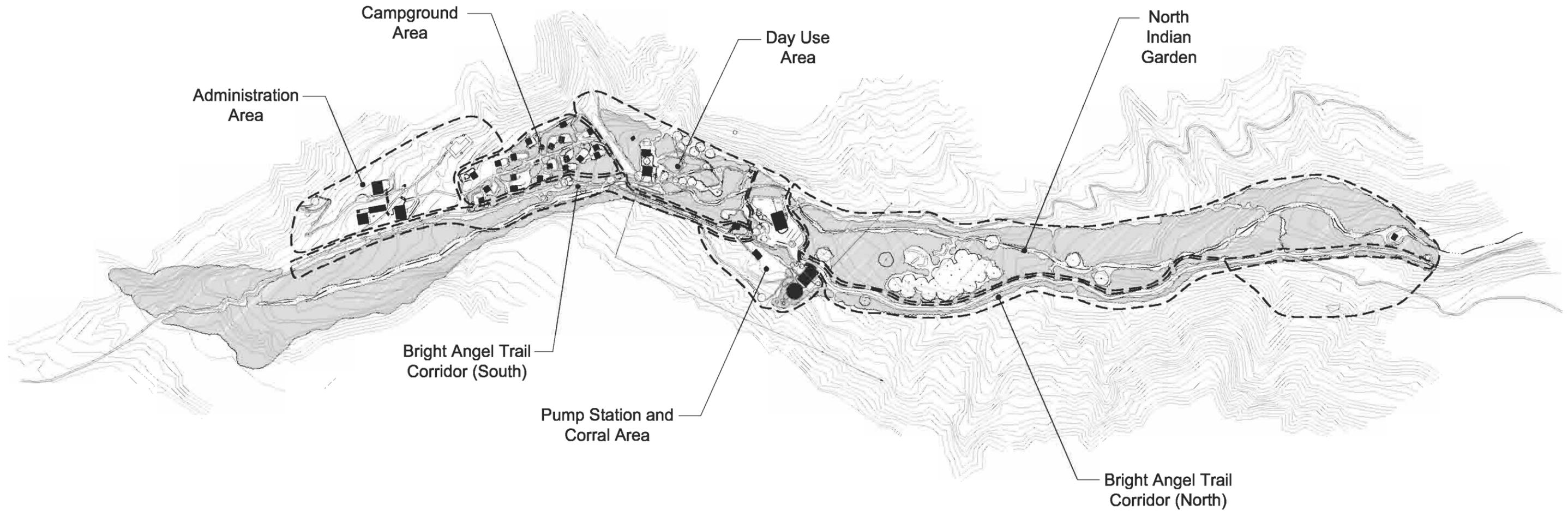
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**LOCATION AND PROJECT AREA MAPS**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
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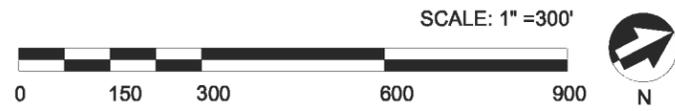
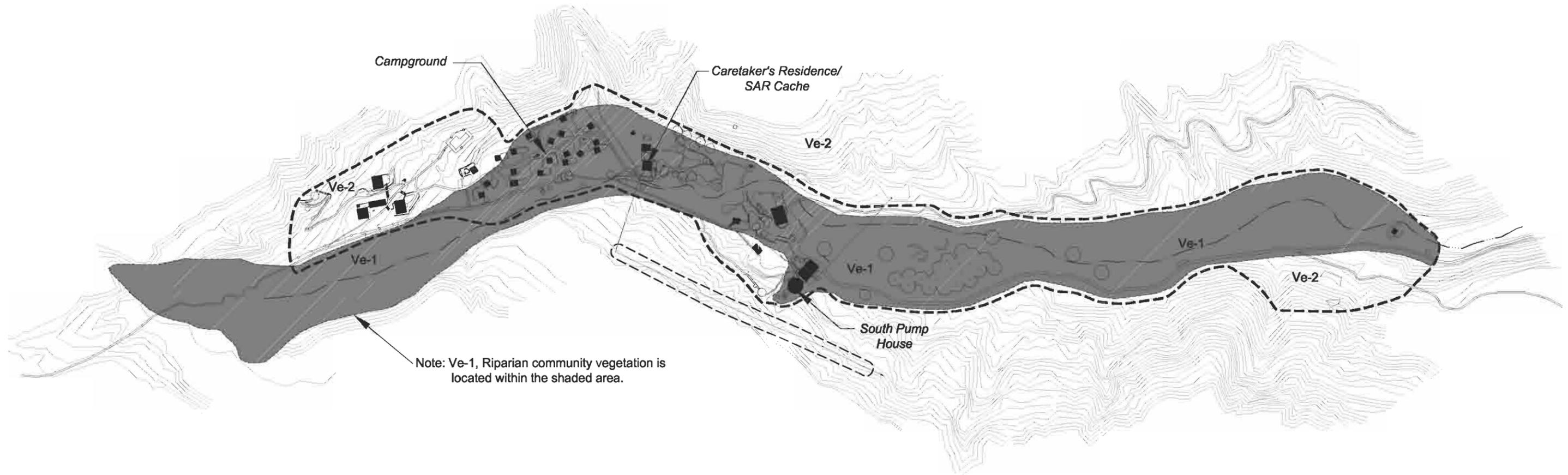
**LANDSCAPE  
 CHARACTER AREAS**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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 113  
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**Feature List:**

- Ve-1 Riparian community vegetation (C)
- Ve-2 Desertscrub community vegetation (C)

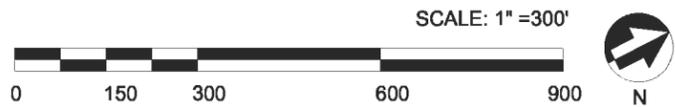
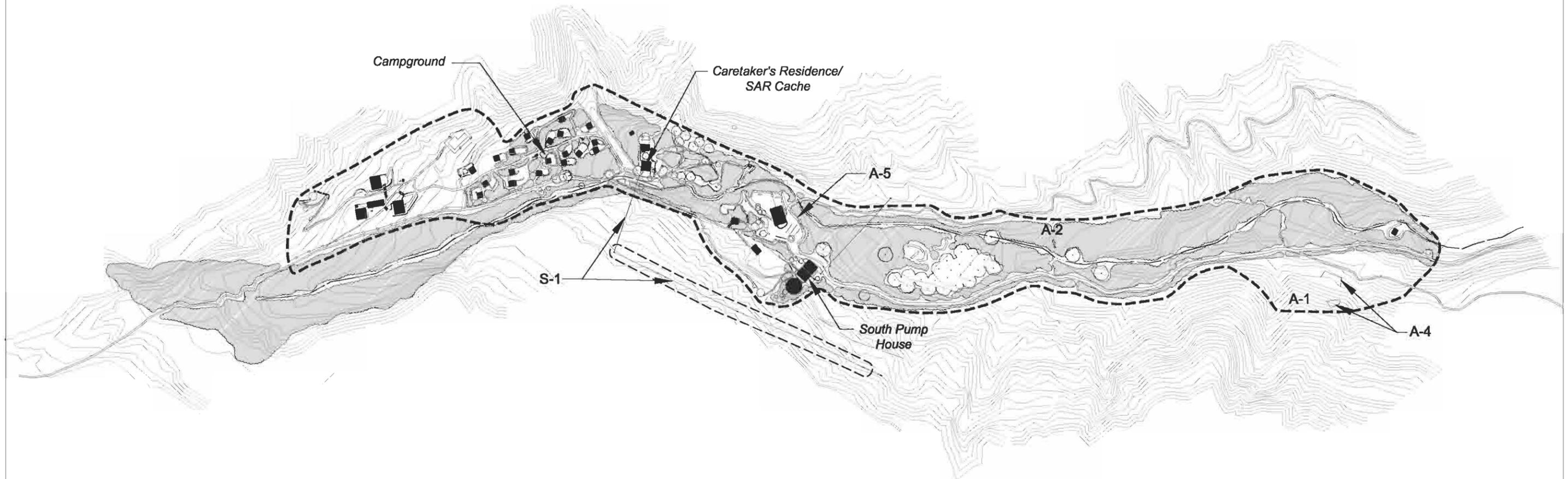


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	DRAWN: JLB		VEGETATION		
	TECH. REVIEW: RMM		GRAND CANYON NATIONAL PARK - INDIAN GARDEN		
	DATE: JUNE 2005				



**Feature List:**

- S-1 Telephone poles (C)
- A-1 Arizona B:16:140 (C)
- A-2 Arizona B:16:152 (C)
- A-4 Arizona B:16:165 (C)
- A-5 Arizona B:16:252 (C)



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SUB SHEET NO.  
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OVERVIEW  
**BUILDINGS & STRUCTURES  
 ARCHEOLOGICAL SITES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
 20228  
 PKG. NO.  
 SHEET  
**9**  
 OF 36



## Description of Existing Conditions by Landscape Character Area

### Bright Angel Trail Corridor

*Refer to Sheets 10 through 13 at the end of this section.*

The Bright Angel Trail Corridor, as it runs through Indian Garden, consists of the earthen trail, adjacent vegetation, fencing, and small-scale features. In this report, the corridor is broken into two portions: north and south Bright Angel Trail Corridor, divided by the Pump Station and Corral Area landscape character area. Both portions are discussed within this section. The northern portion begins north of the Mule Barn, while the southern portion begins south of the Mule Barn. Each portion exhibits a different character: the northern trail has a more enclosed feeling due to a greater amount of and density of mature vegetation, while the southern trail is open and exposed with a larger ratio of lower and younger plants. Both sections, however, run along the eastern edge of Indian Garden.

#### *Natural Systems and Features*

**Garden Creek** meets the Bright Angel Trail in the southern portion of the corridor, just south of the SAR Cache. The creek is heavily eroded in this area and has washed away much of the trail.

#### *Spatial Organization*

The Bright Angel Trail Corridor consists of a **linear path** delineated along its length by varying combinations of steep slopes, vegetative barriers, wood fencing, and stone edging (*Photographs 8 and 9*). Rarely more than three or four feet in width, the trail runs along the eastern edge of the developed character areas and Indian Garden project area boundary. The corridor varies in width depending on the width of vegetation on either side of the trail, the proximity of steep slopes along the eastern edge, and the location of Garden Creek in relation to the corridor.

A spatial node, or a distinct location that is a center of activity, is located near the **junction of Bright Angel Trail and Garden Creek**, east of the gabion walls (*Photograph 10*). The node of space consists of a widened section of the trail corridor which has been heavily eroded and washed out by flooding. Tall cottonwood trees shade the area while several small-scale features, such as benches and hitching bars, create the appearance of a gathering space.

A second **node** is created by the Trailside Shelter. The shelter stairs create a corridor that leads to an interior, covered space defined by the shelter roof and pillars.

#### *Land Use*

The Bright Angel Trail Corridor is used solely for transportation of pedestrians and mule riders.

## *Circulation*

**Bright Angel Trail** (*Photographs 8 and 9*) is a narrow, packed-sand and earthen path that runs from the South Rim, beginning below the Kolb Studio, down the cliff, along the eastern edge of Indian Garden, and to the Colorado River. The trail terminates at the mouth of Pipe Creek at the Colorado River.

Spur trails, both formal and informal, branch off the Bright Angel Trail through Indian Garden. The **formal spur trails**, created by the NPS, are typically edged with stones and marked with signage. The **informal spur trails** are narrow and poorly defined (*Photograph 11*). These social trails lead to undeveloped locations such as eastern Garden Creek before it enters Indian Garden.

A flight of stone steps leads from the trail down into the Trailside Shelter, south of the mule corral. The steps are described below, under Buildings and Structures. A formal **spur trail** leads from Bright Angel Trail up to the comfort station located in the Pump Station and Corral Area. The steep, upslope path is edged with stones (*Photograph 12*).

The trail is filled with mule-worn depressions which collect water (*Photograph 13*). Log and stone water bars have been placed perpendicular to the trail to prevent trail wash-out. At present, the earth surrounding them is eroding (*Photograph 14*).

## *Vegetation*

**Edge-defining vegetation** is one of the primary features of both the northern and southern portions of the trail. Vegetation within the corridor varies from low shrubs to tall, mature cottonwood trees. The southern portion of the trail is edged with prickly-pear cactus, grasses, and shrubs (*Photograph 15*). Near the northeast corner of the Campground Area, several tall **cottonwood trees** edge the trail (*Photograph 10*). The northern portion of the trail has fewer cacti, but is edged with low shrubs, small trees, and cottonwoods (*Photograph 16*). A row of cottonwoods is located along the trail as it passes east of the Day Use Area (*Photograph 17*).

One particularly large **redbud** grows out from under a large boulder along the Bright Angel Trail, north of the Pump Station, and arches gracefully over the trail (*Photograph 18*).

## *Buildings and Structures*

One building is located within the Bright Angel Trail Corridor. Civilian Conservation Corps (CCC) crews built the 1937 **Trailside Shelter** (Bldg. #BCB0143) that still stands close to where the Bright Angel Trail and the Plateau Point Trail split at Indian Garden (*Photograph 19*). The shelter is an excellent example of the Rustic style of architecture employed by the NPS during the CCC period. The shelter stands on the northwest side of the Bright Angel Trail in a natural depression. Built between two large stone outcroppings, the building incorporates the natural, *in situ* stone into its corner piers. The structure is an open pavilion that consists of four tapered, stone piers that support a low-pitched, gable roof. Originally clad in thatch, the roof is now covered with green asphalt shingles, and features wide eaves, exposed rafter tails, and projecting purlins on its gable ends. The random-rubble stone posts form massive piers at the corners. Low,

rubble walls enclose the southwest and northwest sides of the pavilion. The shelter can be entered from the Bright Angel Trail via a set of rustic stone stairs that were built into the natural slope or from a pathway on the northeast.

The **stone steps** leading to the Trailside Shelter consist of thick stone slabs for treads with rock cheek walls (*Photograph 20*).

A **mortared stone protective wall** is visible south of the Rehandling Pump House, near the northern segment of the Bright Angel Trail (*Photograph 21*). This wall covers, and reinforces against erosion, an underground pipeline that runs along the Bright Angel Trail.

### *Views and Vistas*

Views from the trail and corridor **to the surrounding Canyon** are spectacular. The surrounding multi-colored cliffs and views into the distance of the greater Grand Canyon provide a dramatic backdrop to the area.

Within the corridor, views tend to be narrow and foreshortened due to frequently-occurring dense vegetation along the trail corridor edges. The corridor passes by each of the remaining five landscape character areas which are clearly visible from the trail.

### *Small-scale Features*

Small-scale features in Indian Garden support visitor services and attempt to protect natural features.

**Wood fencing** runs along the western edge of the trail, in the southern portion of the corridor and south of the gabion walls. The fence is approximately three feet in height and consists of round wood posts supporting long, thin wood rails (*Photograph 22*). The fencing acts to define the trail edge and also to keep hikers from damaging surrounding vegetation.

**Stone edging**, consisting of small, multi-colored rocks, defines both sides of the trail for most of the length of the corridor, although it is more consistent along the southern half of the trail (*Photograph 8*).

**Log risers and stone water bars** are located throughout the corridor (*Photograph 23*). Log risers placed perpendicularly to the trail tread take up the grade along portions of the trail that may otherwise be too steep to traverse. Stone waterbars, also placed perpendicularly to the trail, divert water flow across the trail rather than down its length and help prevent erosion.

Throughout the corridor, signage helps to direct and warn hikers (*Photograph 22*). **Typical signage** consists of a dark wood post—either milled or rough—supporting rectangular, light-colored, wood signs with routed letters. A **contemporary illustrative sign**, depicting the dangers of heat exhaustion and overexertion during hiking, is located near the North Indian Garden Area and along the northern portion of the trail (*Photograph 9*).

South of the Pump Station comfort station, a **thermometer** is located in the eastern edge of the trail (*Photograph 24*). The feature consists of a round, white thermometer attached to a typical metal sign-post.

**“Rustic” benches** located in the corridor are constructed of wood and have one long plank for a seat and another plank for a seat-back (*Photograph 25*). The planks are supported by two round wood posts. A typical bench is located at the junction of the Bright Angel Trail and Garden Creek. A **hitching bar**, consisting of metal pipes and elbow joints, is also located at this junction and is used for private, non-NPS livestock (*Photograph 26*). Along the Bright Angel Trail near the Trailside Shelter are broad **cottonwood stumps** from trees that have been cut down. These stumps have been left along the trail; some are used as seating (*Photograph 17*).



**Photograph 8.** Bright Angel Trail Corridor with fencing, vegetation, and stone edging. (JMA 2002)



**Photograph 9.** Bright Angel Trail Corridor with stone waterbar and signage. (JMA 2002)



**Photograph 10.** Node at junction of Bright Angel Trail and Garden Creek. (JMA 2002)

**Photograph 11.** Informal spur/social trail.  
(JMA 2002)



**Photograph 12.** Formal spur trail to Comfort Station.  
(JMA 2002)





**Photograph 13.** Mule-worn depressions in Bright Angel Trail.  
(JMA 2002)



**Photograph 14.** Erosion around Bright Angel Trail log risers.  
(JMA 2002)

**Photograph 15.** Trail-edge vegetation.  
(JMA 2002)



**Photograph 16.** Northern portion of  
Bright Angel Trail, edged in low shrubs,  
small trees, and cottonwoods.  
(JMA 2002)



**Photograph 17.** Row of cottonwoods,  
with stumps of former trees on left.  
(JMA 2002)





**Photograph 18.** Large redbud tree along trail.  
(JMA 2002)



**Photograph 19.** Trailside Shelter, built in 1937.  
(JMA 2002)

**Photograph 20.** Stone steps to Trailside Shelter.  
(JMA 2002)



**Photograph 21.** Mortared stone protective wall, south of the Rehandling Pump House.  
(JMA 2002)



**Photograph 22.** Wood post-and-rail fencing and wooden signage along southern portion of Bright Angel Trail  
(JMA 2002)





**Photograph 23.** Log risers and stone waterbars.  
(JMA 2002)



**Photograph 24.** Thermometer.  
(JMA 2002)

**Photograph 25.** Bench (in back right),  
with cottonwood stumps in foreground.  
(JMA 2002)

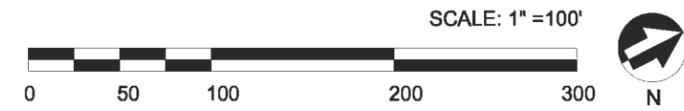
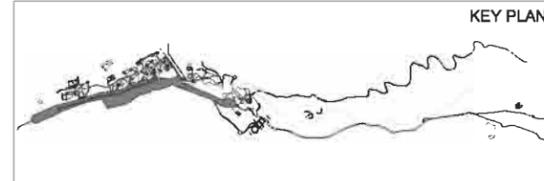
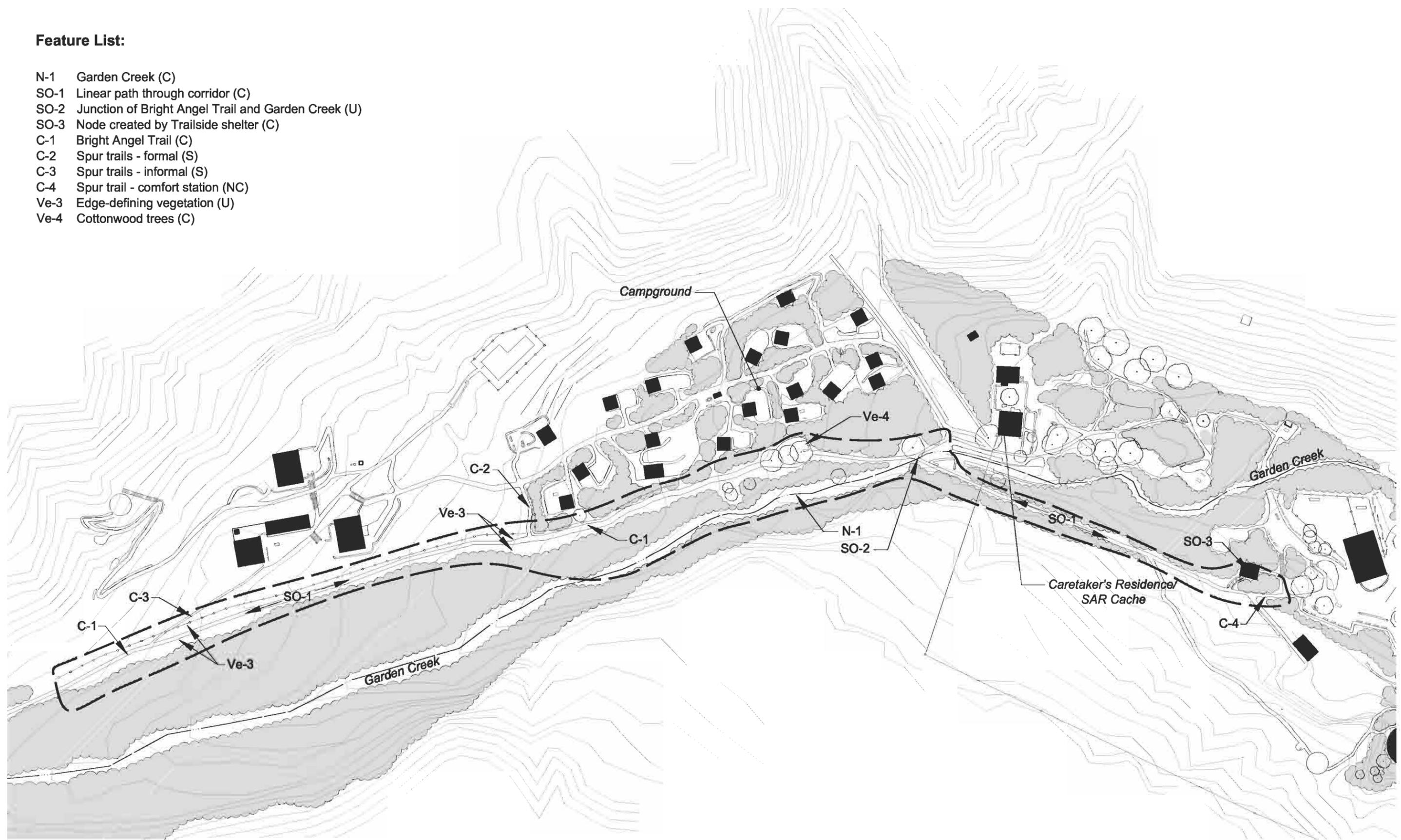


**Photograph 26.** Hitching bar.  
(JMA 2002)



**Feature List:**

- N-1 Garden Creek (C)
- SO-1 Linear path through corridor (C)
- SO-2 Junction of Bright Angel Trail and Garden Creek (U)
- SO-3 Node created by Trailside shelter (C)
- C-1 Bright Angel Trail (C)
- C-2 Spur trails - formal (S)
- C-3 Spur trails - informal (S)
- C-4 Spur trail - comfort station (NC)
- Ve-3 Edge-defining vegetation (U)
- Ve-4 Cottonwood trees (C)

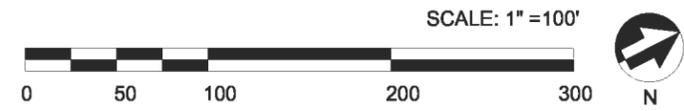
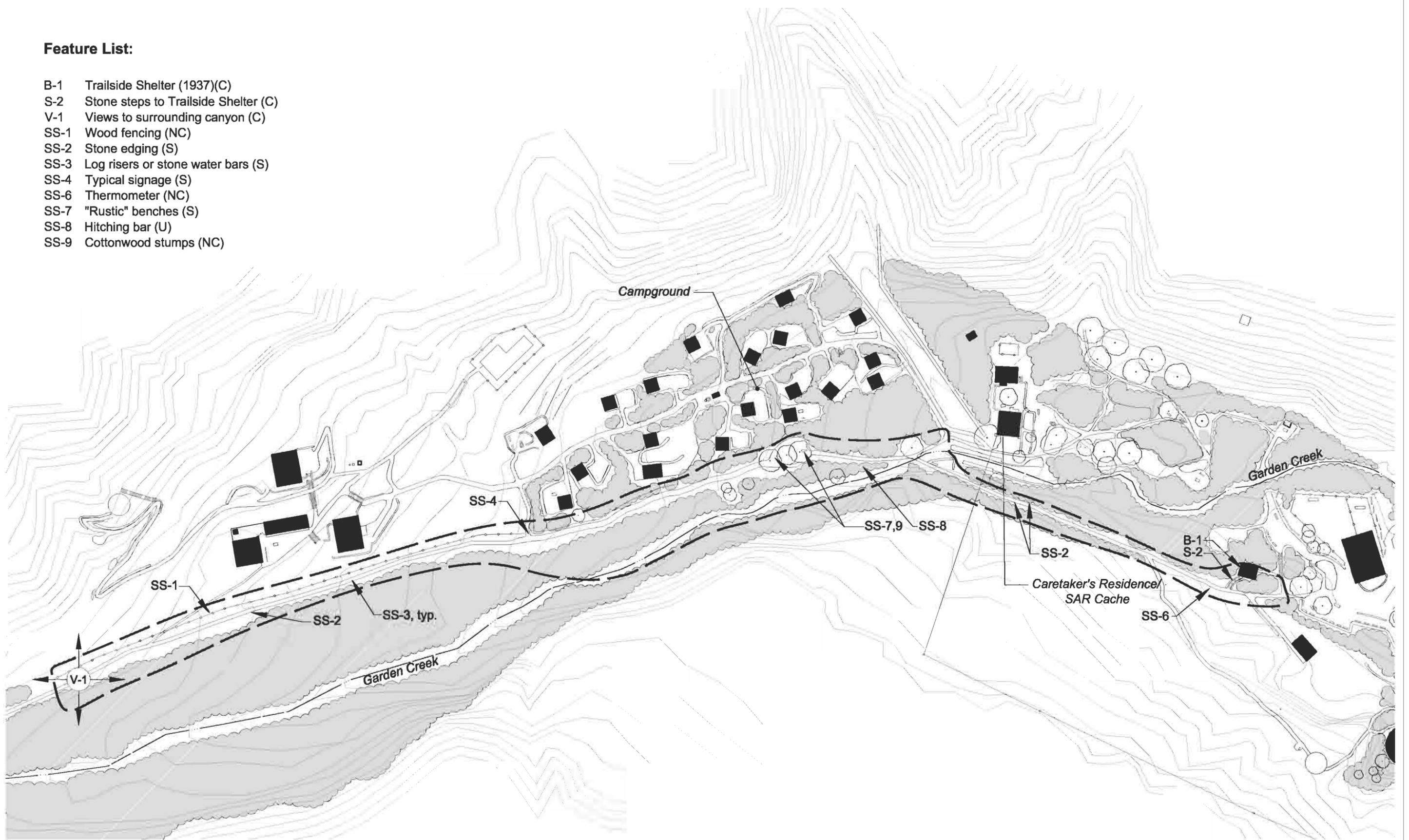


<p>A/E FIRM PRIME: VAN DIJK WESTLAKE REED LESKOSKY PHOENIX, AZ</p> <p>SUBCONTRACTOR: JOHN MILNER ASSOCIATES, INC. CHARLOTTESVILLE, VA</p>	<p>DESIGNED:</p> <p>DRAWN: JLB</p> <p>TECH. REVIEW: RMM</p> <p>DATE: JUNE 2005</p>	<p>SUB SHEET NO.</p> <p style="text-align: center; font-size: 2em;">1</p>	<p>BRIGHT ANGEL TRAIL CORRIDOR (SOUTH)</p> <p><b>NATURAL SYSTEMS &amp; FEATURES</b></p> <p><b>SPATIAL ORGANIZATION</b></p> <p><b>CIRCULATION</b></p> <p><b>VEGETATION</b></p> <p>GRAND CANYON NATIONAL PARK - INDIAN GARDEN</p>	<p>DRAWING NO. 113 20228</p> <p>PKG. NO. SHEET 10 OF 36</p>
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**Feature List:**

- B-1 Trailside Shelter (1937)(C)
- S-2 Stone steps to Trailside Shelter (C)
- V-1 Views to surrounding canyon (C)
- SS-1 Wood fencing (NC)
- SS-2 Stone edging (S)
- SS-3 Log risers or stone water bars (S)
- SS-4 Typical signage (S)
- SS-6 Thermometer (NC)
- SS-7 "Rustic" benches (S)
- SS-8 Hitching bar (U)
- SS-9 Cottonwood stumps (NC)



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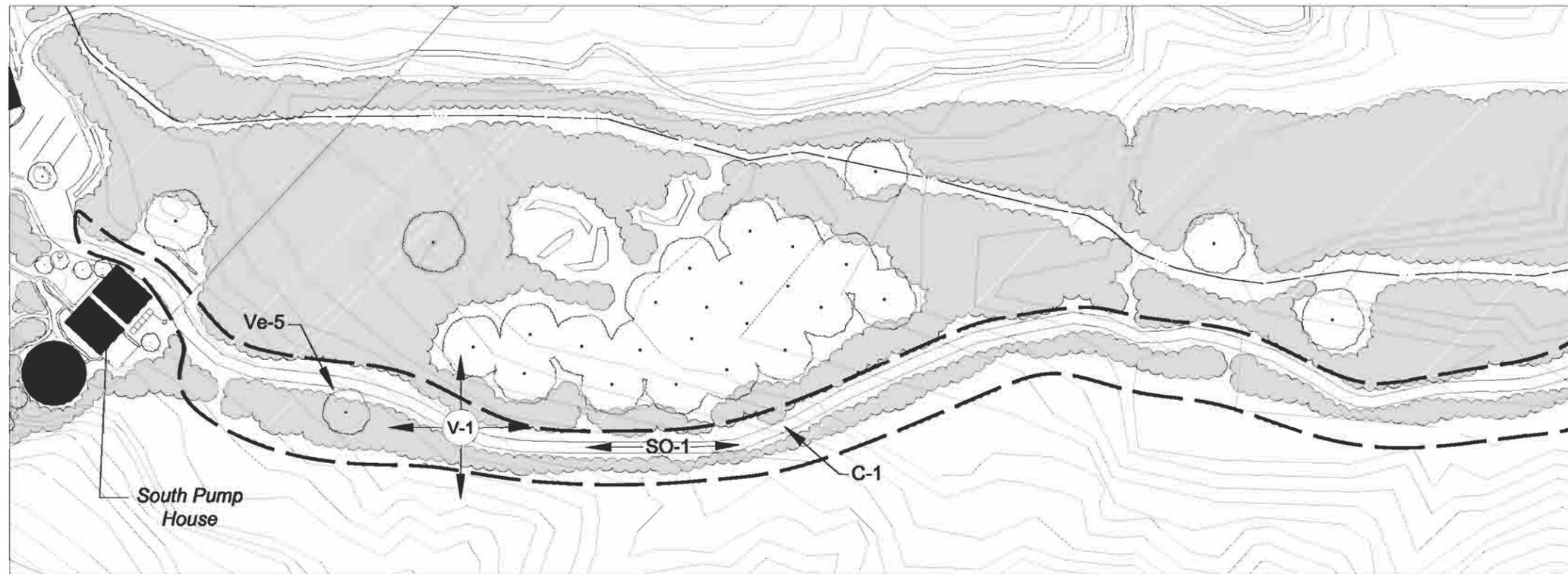
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BRIGHT ANGEL TRAIL CORRIDOR (SOUTH)  
**BUILDINGS & STRUCTURES  
 VIEWS & VISTAS  
 SMALL-SCALE FEATURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
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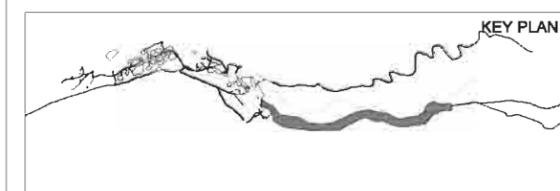


- Feature List:**
- SO-1 Linear path through corridor (C)
  - C-1 Bright Angel Trail (C)
  - Ve-5 Redbud tree (C)
  - S-3 Mortared stone protective wall (U)
  - V-1 Views to surrounding canyon (C)

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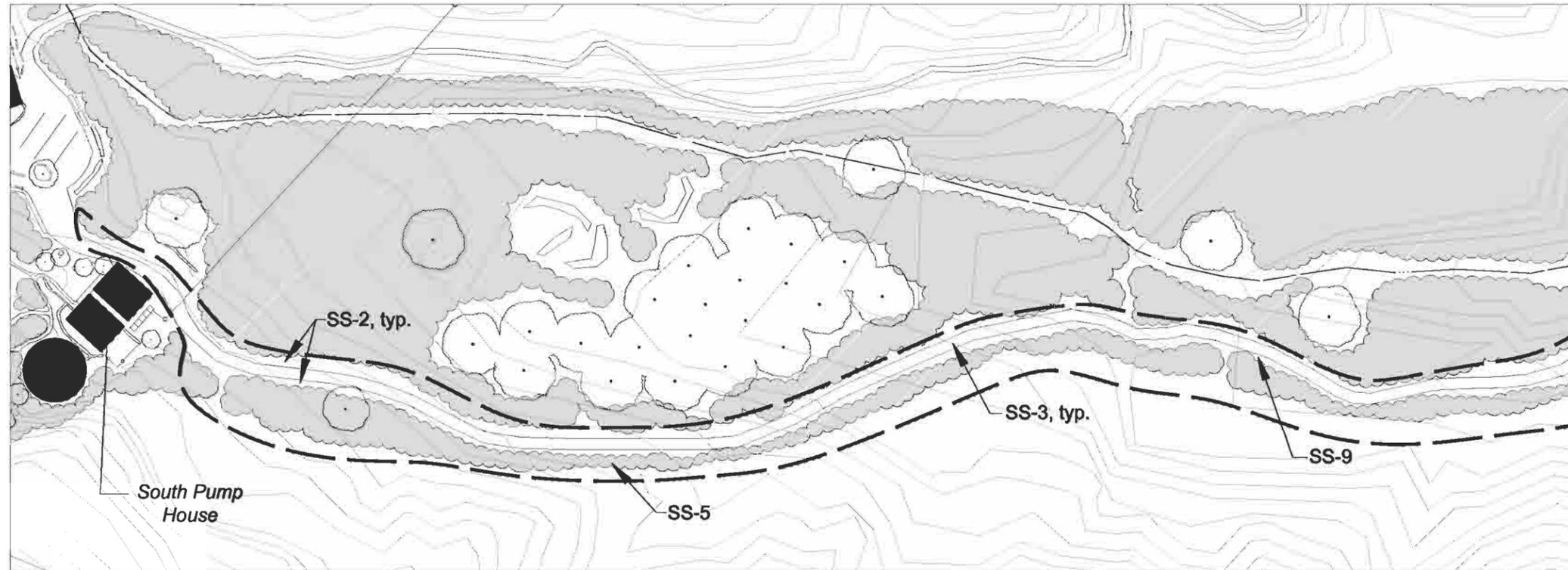
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BRIGHT ANGEL TRAIL CORRIDOR (NORTH)  
**ALL FEATURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
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 OF 36

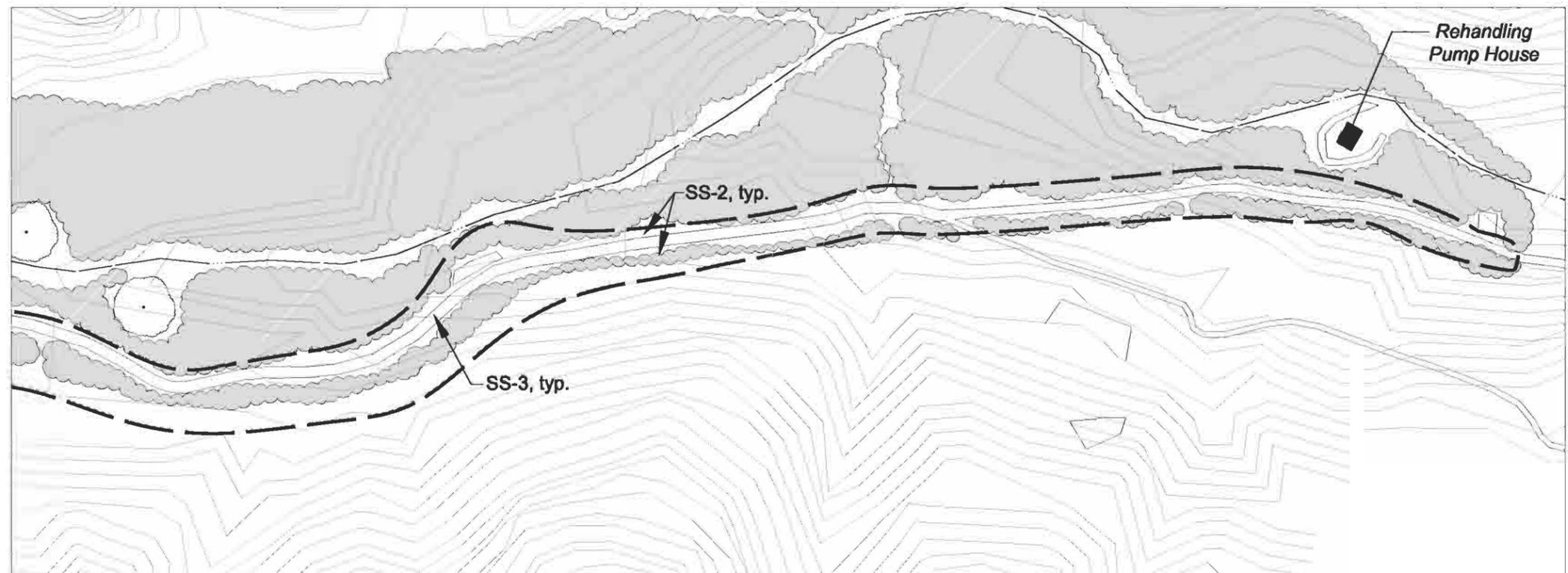




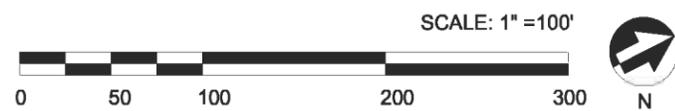
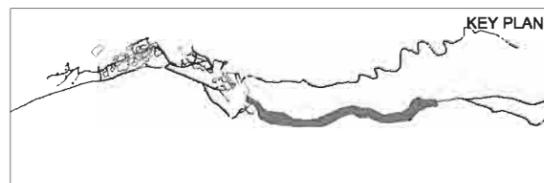
**Feature List:**

- SS-2 Stone edging (S)
- SS-3 Log risers or stone water bars (S)
- SS-5 Contemporary illustrative sign (NC)
- SS-9 Cottonwood stumps (NC)

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BRIGHT ANGEL TRAIL CORRIDOR (NORTH)  
 SMALL-SCALE FEATURES  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
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 20228  
 PKG. NO.  
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## Administration Area

*Refer to Sheets 14 through 16 at the end of this section.*

The Administration Area consists of buildings, structures, and other features used by NPS personnel and staff, such as rangers and trail crews. This area contains the Ranger Residence, Pump Operator's Residence, laundry room, a clinic, repair shop, a bunkhouse, helispot, and sand filter wastewater treatment system. The public typically visits this character area only in time of emergency. The Administration Area was constructed in 1989 as part of NPS rehabilitation efforts.

### *Natural Systems and Features*

There are very few noteworthy natural features or systems associated solely with this character area. Please refer to the Indian Garden Overview above for a more in-depth discussion about project area-wide features. However, two **intermittent streams** flow west to east in this area. These streams are located between the Pump Operator's Residence and sand filter beds. The larger of the two streams is lined with rocks.

### *Spatial Organization*

Within this character area, three main clusters of buildings and structures define space: the helispot, the central building complex, and the sand filter beds. These clusters are divided by vegetation, yet reached by a system of interconnected trails.

The cluster of buildings in the central portion of the character area creates both communal and private spaces. An intimate **gathering space**—used solely by the pump operator—is located around the Pump Operator's Residence and is defined by a wood deck and stone walls north of the building (*Photograph 27*). A **corridor of space** is created between the Pump Operator's Residence and the Storage/Laundry/First Aid Building and Bunkhouse complex. This corridor forms a sort of alley that leads to the helispot.

A **courtyard** is formed by the eastern elevation of the Storage/Laundry/First Aid Building and northern elevation of the Bunkhouse (*Photograph 28*). The courtyard has seating and a mule hitching bar. A retaining wall to the south of the Ranger Residence creates a small **backyard space** and private space for the ranger (*Photograph 29*). To the north of the Ranger Residence, an open front porch and picnic table create a **public space** where the ranger greets hikers and visitors (*Photograph 30*).

The **sand filter beds** are located in the northern portion of the character area and are reached by an informal path. The beds are enclosed within a fence and rest on top of graded, level ground. The **helispot** is located in the southern portion of the character area and is also reached by a trail. The circular helispot space is defined by the round, level area upon which helicopters land.

### ***Land Use***

The Administration Area is used for visitor services, housing, and maintenance operations. Visitor services include medical facilities and use of the Ranger Residence during emergencies. The Bunkhouse, Pump Operator's Residence, and Ranger Residence are all used to house NPS personnel, such as trail crews, during their stay in Indian Garden. The Storage/Laundry/First Aid Building, or Building B, has a laundry, first aid clinic, storage space, and repair shop.

### ***Circulation***

Circulation in this area is solely pedestrian and is formed by a network of stone-edged trails. The primary entrance to the area is a short, formal, **stone-edged trail**, accessed by a short spur trail leading west from Bright Angel Trail (*Photograph 31*). The trail runs north-south between the Ranger Residence and Campground, where it forms the central spine of the Campground Area circulation pattern, and terminates into a flight of wooden steps that head west to the Pump Operator's Residence. The steps lead to the **secondary trail** which provides access to the sand filter beds, Pump Operator's Residence, and helispot.

Numerous spur trails, most edged in stone, weave through the area and access the Ranger Residence front entrance and backyard, Bunkhouse, Storage/Laundry/First Aid Building, as well as creating shortcuts between the primary and secondary trails. Flights of wooden stairs are located in some places to make these side trails more accessible.

To expedite access to the helispot and Administration Area, an informal, loosely-defined **spur trail**, narrow in width, leads from Bright Angel Trail to the helispot (*Photograph 32*). This trail is intended for NPS personnel only and not for hikers. Another informal **spur trail**, intended only for NPS personnel, begins at Bright Angel Trail and heads up the slope to the Bunkhouse (*Photograph 22*). The trail is blocked by the length of wood fence that runs along Bright Angel Trail. A **concrete sidewalk** is located along the eastern elevation of the Storage/Laundry/First Aid Building (*Photograph 28*).

The helispot is used for air transportation. Helicopters are used to drop off and pick up supplies and for emergency evacuations.

### ***Vegetation***

The majority of vegetation in this character area is part of the native **desertscrub community** which comprises much of the Indian Garden project area and surrounding region. During the 1989 rehabilitation of the character area, **additional native vegetation** was either transplanted from another source in the Canyon or nursery-grown, and used for ornamentation and erosion control. Planting beds, created by stone retaining walls, contain native vegetation in front of the Ranger Residence (*Photograph 33*) and Pump Operator's Residence. This "infill" vegetation was installed according to a 1989 planting plan whose plant list called for netleaf hackberry, rubber rabbitbrush, fourwing saltbush, apache plume, and datil yucca. Prickly pear cactus, redbud trees,

and various grasses were also observed during fieldwork, although it is unknown if these were intentionally planted or native to the site.

The slope between the Bright Angel Trail and the stone-edged trail to the Ranger Residence has been marked as a **re-vegetation area**. A small wooden placard placed on the fence along the Bright Angel Trail reads “Reveg Area, Keep Out.” This area was created, likely during the 1989 rehabilitation, as a way to allow new vegetation to gain a foothold in the landscape and to prevent visitors from trampling the plantings.

Many of the younger, less established trees currently in the character area are protected with cylindrical tree cages. In addition to the planting plan and schedule, an irrigation system was detailed and built in accordance with the 1989 plans. For more detailed information about vegetation throughout the project area, refer to the Indian Garden Overview section earlier within this chapter.

### ***Buildings and Structures***

Buildings and structures in this character area have been recently constructed or relocated from elsewhere within Indian Garden. The helispot, sand filter beds, Storage/Laundry/First Aid Building, Pump Operator’s Residence, and Ranger Residence were built around 1989. One bunkhouse, built in 1986, was relocated from its former site near the SAR Cache/Caretaker’s Residence in the Day Use Area, also in 1989.

The singular cluster of buildings in the character area is the central building complex which includes the Ranger Residence, Pump Operator’s Residence, Storage/Laundry/First Aid Building, and Bunkhouse.

The **NPS Ranger Residence** (Bldg. #1460) (*Photograph 30*) and **Pump Operator’s Residence** (Bldg. #1459) (*Photograph 34*) are two of four buildings that comprise the central building cluster. Built in 1989, the Ranger and Pump Operator’s Residences are identical in design. Utilizing the NPS Rustic Revival style, they consist of twenty-eight-feet by thirty-six-feet, rectangular-plan structures covered by side-gable, asphalt-shingled roofs. The frame walls are clad in board-and-batten siding with partial random-rubble, stone façades accentuating the corners and base of the buildings. Other distinguishing features include the paired, exposed rafter tails; gable-end eave brackets; ganged, eight-light, wood casement windows; and single-leaf, panel-and-light metal doors.

The **NPS Storage/Laundry/First Aid Building** (Bldg. #1462) was built in 1989 and consists of a forty-eight-feet-long by fourteen-feet-deep, rectangular, frame structure that is covered by an asphalt-shingled, side-gable roof (*Photograph 35*). Like the Ranger and Pump Operator’s Residences, the Storage/Laundry/First Aid building’s frame walls are clad in board-and-batten siding and partial random-rubble, stone façades that accentuate the corners and base of the building. The building features paired, exposed rafter tails; gable-end eave brackets; paired, eight-light, wood casement windows; and two single-leaf, panel-and-light metal doors.

In 1989, the NPS relocated a 1986 **Bunkhouse** (Bldg. #473/1429) that stood just north of the historic Pump Operator's Residence/Rock House (*Photograph 28*). The original structure comprised a one-story, frame, gable-roofed building clad in board-and-batten siding. In 1989, the structure was dismantled and reconstructed on a new concrete block foundation and remodeled on the exterior and interior to match the three new buildings in the NPS housing cluster. The frame walls are clad in board-and-batten siding and a partial random-rubble stone veneer that accentuates the corners and the base of the building. The building features exposed rafter tails; gable-end, eave brackets; paired, eight-light, wood casement windows; and single-leaf, panel-and-light metal doors. At present, the Bunkhouse provides temporary accommodations for NPS staff.

A six-foot by eight-foot **Trash Compactor Shed** (Bldg. #1501), built in 1991, stands directly west of the NPS Bunkhouse (*Photograph 36*). The shed occupies the corner of an enclosed courtyard that is formed by the west wall of the Bunkhouse, the south wall of the Storage/Laundry/First Aid building, and a four-foot-tall, L-shaped stone wall that connects the two buildings. A wooden gate provides access to the courtyard and the shed. The shed itself consists of a one-story, frame structure clad in "T-111" paneling and covered by an asphalt-shingled, front gable roof that extends beyond the front wall of the structure to provide a canopy above the door. One enters the shed through a centered, gable-end, panel-and-light metal door.

In 1989, the NPS constructed a **sand filter bed** structure to provide intermittent treatment for the waste water produced by the new NPS housing area at the south end of Indian Garden (*Photograph 37*). The structure consists of an eight-foot by twenty-six-foot sludge-drying bed and a thirteen-foot by fifty-five-foot sand filter bed—both set into the west side of the new public campground. Both structures are built using embedded timber walls set into the ground. The sand filter structure is six feet deep, filled with layers of gravel and sand, and host to volunteer vegetation. The sludge bed is three and one-half-feet deep with a bottom layer of sand. A six-foot-tall, log and wire fence structure surrounds both of the beds. On the south end of the fence enclosure, a metal pipe gate provides access to the sand filtration and sludge drying beds.

The **helispot** is located south of the central building cluster and consists of a circular gravel clearing approximately thirty feet in diameter (*Photograph 38*).

Throughout the character area, **wooden stairs** provide access to buildings and structures and between trails (*Photograph 39*). The stair treads are constructed of six-inch by eight-inch square pressure-treated timbers placed two to a tread.

**Stone walls** and **stone retaining walls** are also located throughout the character area. The majority of the walls are located around the Pump Operator's Residence and Ranger Residence, while some are used to support the helispot slope. The walls are constructed of dry-laid rock and stone.

A simple **horseshoes court** is located just south of the sand filter beds and actually is part of the trail that leads to the beds from the central building cluster (*Photograph 40*). The court consists

of two metal stakes secured in concrete footings and set the proper distance apart for playing the game.

A **hose house**, north of the Pump Operator's Residence, consists of a gabled roof and wood walls resting on a concrete slab (*Photograph 41*). The brown shed measures two-feet-one inch by one-foot-nine inches and is two-feet-six inches in height.

The **drainfield**, part of the underground wastewater treatment system, is located south of the sand filter beds on the slope above the campground (*Photograph 42*). It consists of two groups of four trenches each. The trenches are lined with synthetic drainage fabric and filled with gravel which supports a perforated PVC drain pipe.

### *Views and Vistas*

Views from the Administration Area **to the surrounding canyon** are spectacular (*Photograph 43*). The surrounding multi-colored cliffs and views into the distance of the greater Grand Canyon provide a beautiful backdrop to the area. **Views from the helispot** are particularly good due to its higher elevation (*Photograph 44*).

Internal views are of little importance in comparison to distant views of the Canyon. Views within, and adjacent to, the area consist of vegetation and buildings as well as the Bright Angel Trail and Campground Area.

### *Small-scale Features*

**Signage** in this character area is typical of Indian Garden, consisting of rough dark wood posts supporting rectangular, light-colored, wood signs with routed letters (*Photograph 31*).

Most trails and paths in the area have multi-colored **stone edging** that defines the trail edge (*Photograph 45*).

Two **hitching bars** are located within the central building complex. The first is found south of the Pump Operator's Residence and on the upper secondary trail. It consists of six narrow metal pipe posts supporting horizontal metal pipes (*Photograph 46*). The second hitching post is found in the courtyard in front of the Bunkhouse and consists of thick metal pipes and elbow joints (*Photograph 28*). A wood and metal **picnic table** is also located in this courtyard. A red **windsock**, on a metal pipe post, is attached to the stone wall adjacent to the Bunkhouse (*Photograph 47*).

Features in front and to the north of the Ranger Residence include a metal **flagpole** with American flag, a wood and metal picnic table, and cylindrical wire mesh **tree cages** (*Photograph 30*).

Various types of **utility structures** are located throughout the area; some are above ground while others are flush with the ground. The sand filter beds are protected by a **wire mesh fence**

*(Photograph 37)*. The wire mesh is stretched between rough wood posts and a horizontal metal pipe attached to the top of the posts. A metal gate at the southwest corner of the fence provides access to the filter beds.



**Photograph 27.** Wood deck and stone walls defining a gathering space around Pump Operator's Residence. (JMA 2002)



**Photograph 28.** Courtyard with concrete sidewalk, hitching bar. Relocated Bunkhouse is in background. (JMA 2002)



**Photograph 29.** Backyard space south of Ranger Residence. (JMA 2002)

**Photograph 30.** Ranger Residence and public front porch, flagpole, and picnic table. Tree cage is at right. (JMA 2002)



**Photograph 31.** Formal spur trail to buildings and Campground. Note wood signage and fencing, as well as erosion and drainage problems. (JMA 2002)



**Photograph 32.** Informal spur trail to helispot. (JMA 2002)





**Photograph 33.** Native vegetation in planting beds.  
(JMA 2002)



**Photograph 34.** Pump Operator's Residence.  
(History Matters 2002)



**Photograph 35.** Storage/Laundry/First Aid Building.  
(History Matters 2002)

**Photograph 36.** Trash Compactor Shed.  
(JMA 2002)



**Photograph 37.** Sand filter bed.  
(History Matters 2002)



**Photograph 38.** Helispot.  
(JMA 2002)





**Photograph 39.** Wooden stairs (typical).  
(JMA 2002)



**Photograph 40.** Horseshoes court.  
(JMA 2002)



**Photograph 41.** Hose house, at right.  
(JMA 2002)

**Photograph 42.** Drainfield (structure underground).  
(JMA 2002)



**Photograph 43.** View from Administration Area to surrounding canyon.  
(JMA 2002)



**Photograph 44.** View to north from helispot, with buildings of Administration Area below.  
(JMA 2002)





**Photograph 45.** Stone edging, stone walls, and wire mesh tree cages.  
(JMA 2002)



**Photograph 46.** Hitching bar and stone wall.  
(JMA 2002)

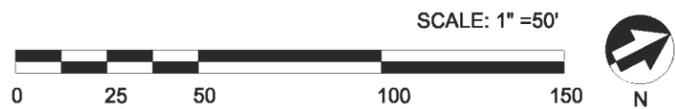
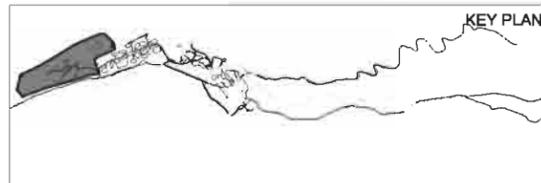
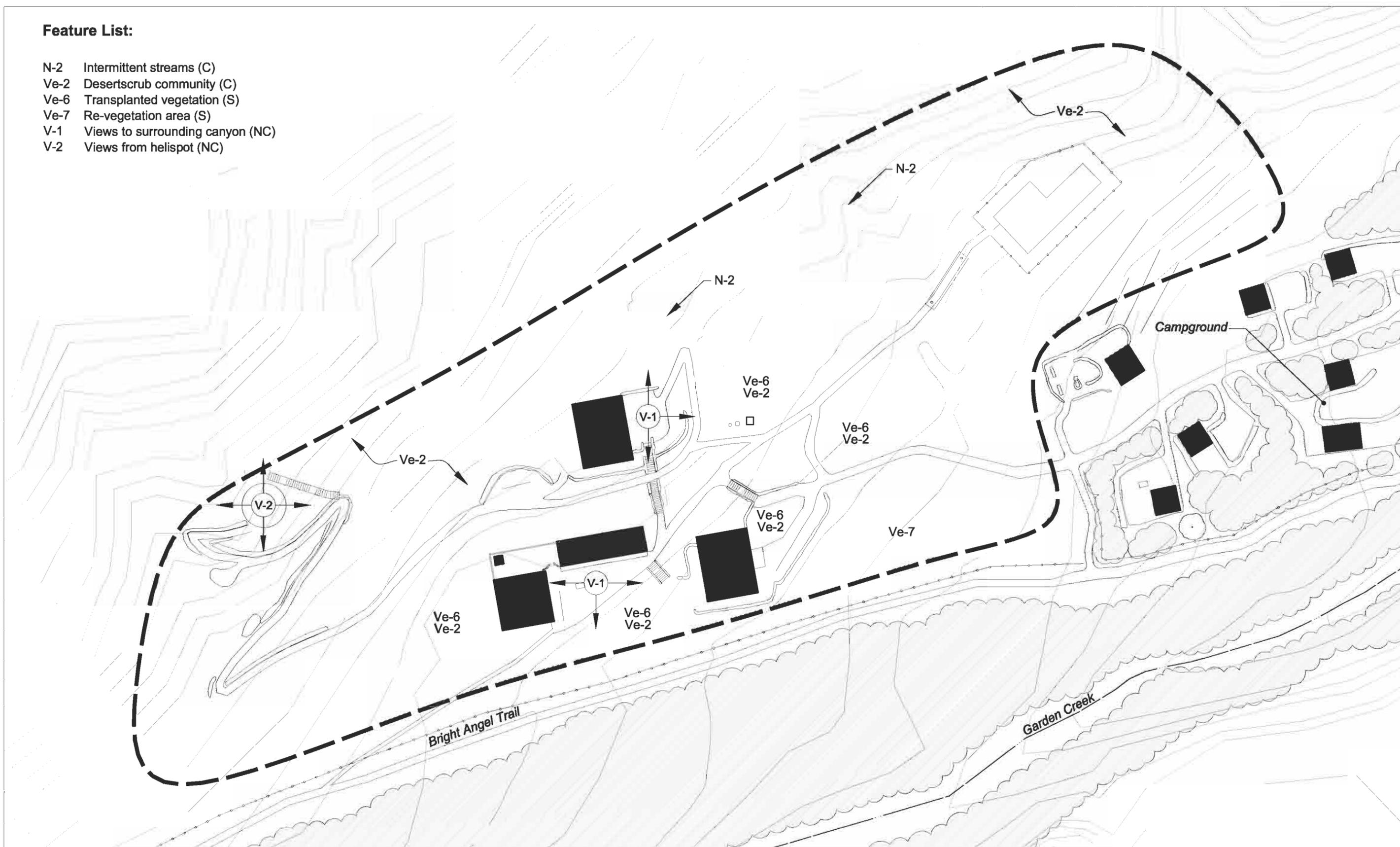


**Photograph 47.** Windsock to rear of Bunkhouse.  
(JMA 2002)



**Feature List:**

- N-2 Intermittent streams (C)
- Ve-2 Desertscrub community (C)
- Ve-6 Transplanted vegetation (S)
- Ve-7 Re-vegetation area (S)
- V-1 Views to surrounding canyon (NC)
- V-2 Views from helispot (NC)



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ADMINISTRATION AREA  
**NATURAL SYSTEMS & FEATURES  
 VEGETATION  
 VIEWS AND VISTAS**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

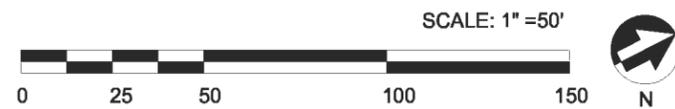
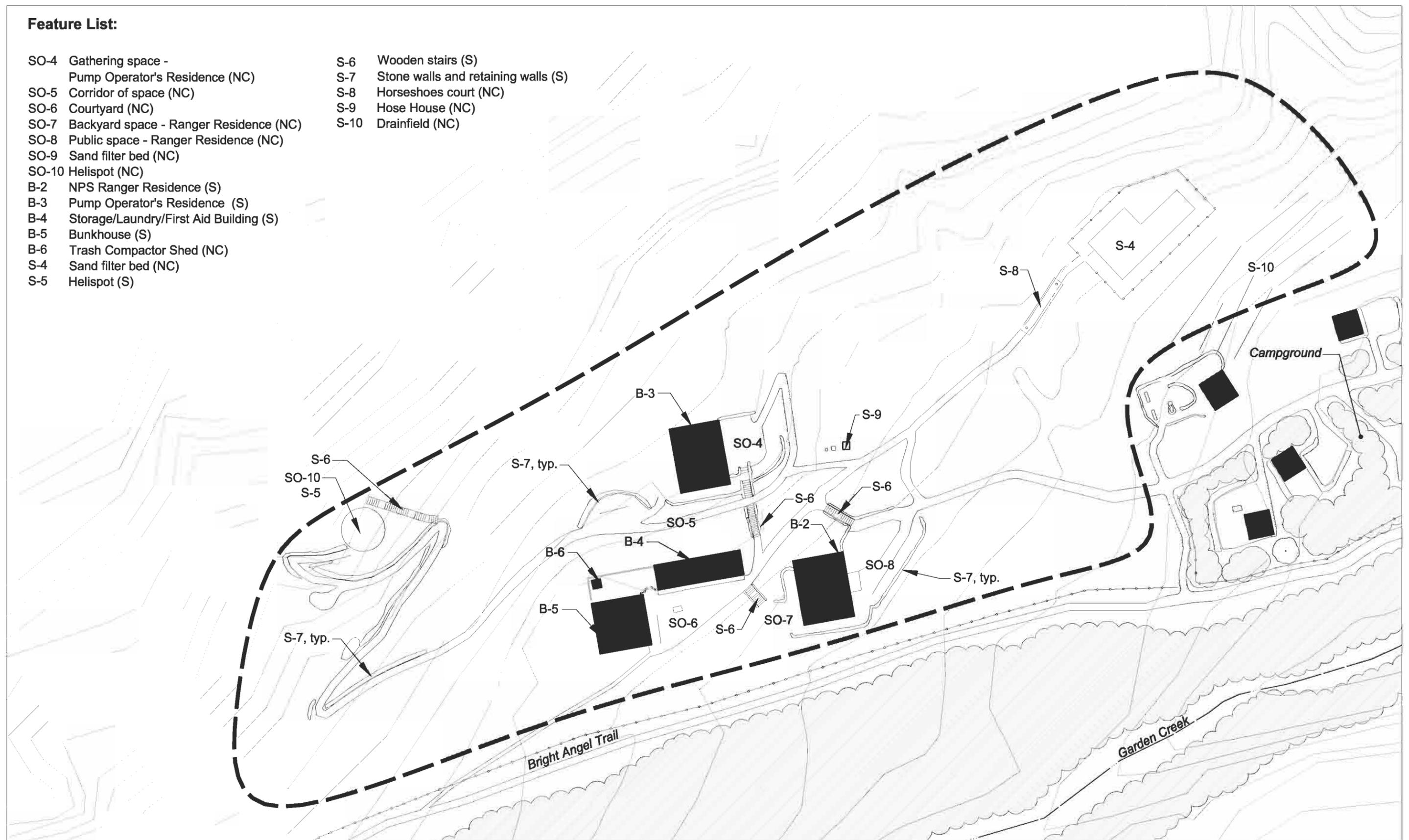
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**Feature List:**

- SO-4 Gathering space - Pump Operator's Residence (NC)
- SO-5 Corridor of space (NC)
- SO-6 Courtyard (NC)
- SO-7 Backyard space - Ranger Residence (NC)
- SO-8 Public space - Ranger Residence (NC)
- SO-9 Sand filter bed (NC)
- SO-10 Helispot (NC)
- B-2 NPS Ranger Residence (S)
- B-3 Pump Operator's Residence (S)
- B-4 Storage/Laundry/First Aid Building (S)
- B-5 Bunkhouse (S)
- B-6 Trash Compactor Shed (NC)
- S-4 Sand filter bed (NC)
- S-5 Helispot (S)

- S-6 Wooden stairs (S)
- S-7 Stone walls and retaining walls (S)
- S-8 Horseshoes court (NC)
- S-9 Hose House (NC)
- S-10 Drainfield (NC)



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ADMINISTRATION AREA

**SPATIAL ORGANIZATION  
 BUILDINGS & STRUCTURES**

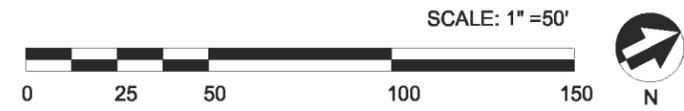
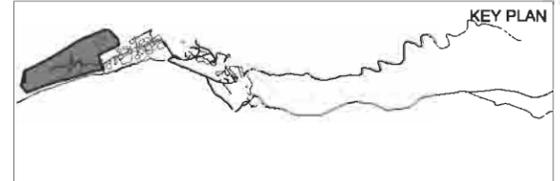
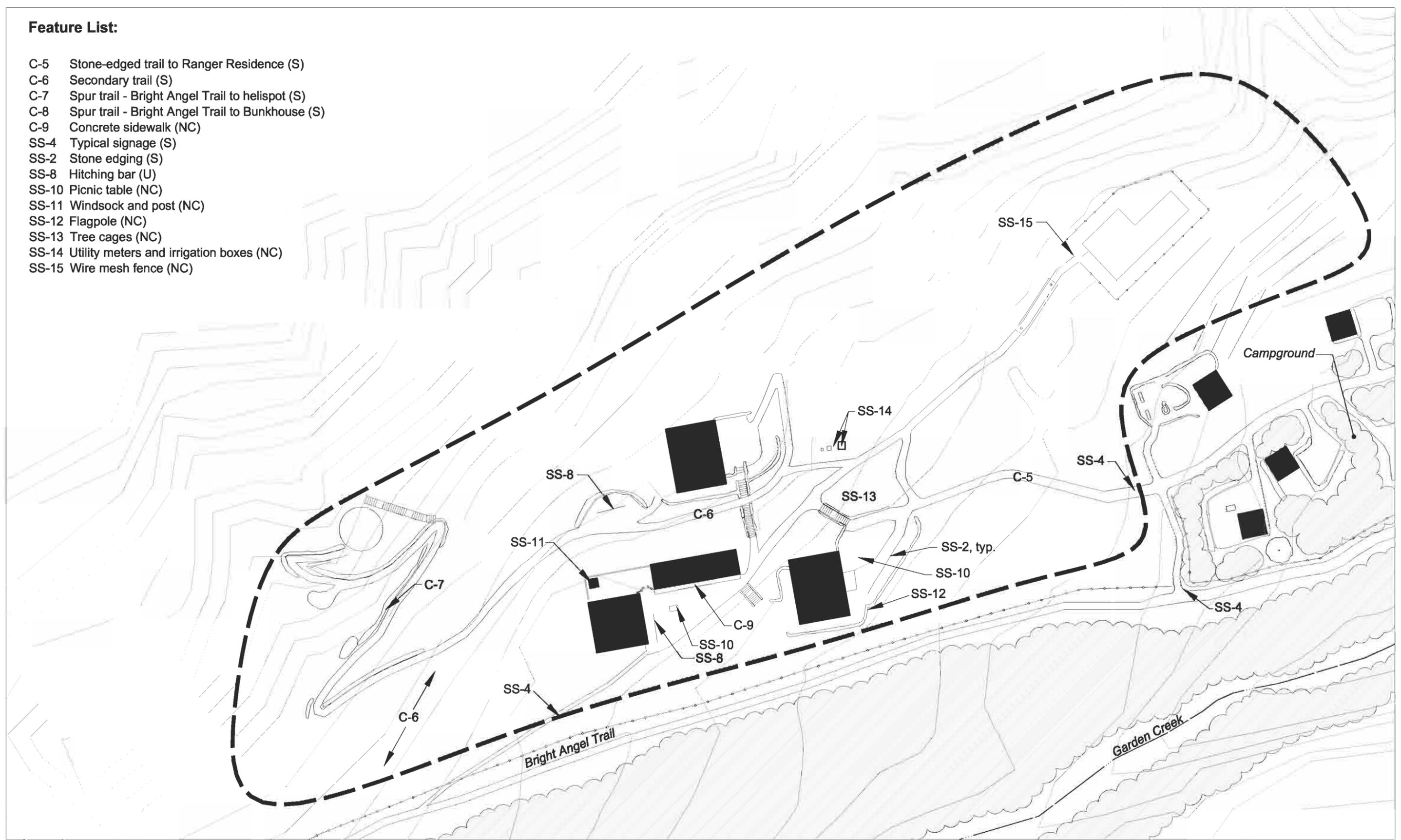
GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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**Feature List:**

- C-5 Stone-edged trail to Ranger Residence (S)
- C-6 Secondary trail (S)
- C-7 Spur trail - Bright Angel Trail to helispot (S)
- C-8 Spur trail - Bright Angel Trail to Bunkhouse (S)
- C-9 Concrete sidewalk (NC)
- SS-4 Typical signage (S)
- SS-2 Stone edging (S)
- SS-8 Hitching bar (U)
- SS-10 Picnic table (NC)
- SS-11 Windsock and post (NC)
- SS-12 Flagpole (NC)
- SS-13 Tree cages (NC)
- SS-14 Utility meters and irrigation boxes (NC)
- SS-15 Wire mesh fence (NC)



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ADMINISTRATION AREA  
**CIRCULATION  
 SMALL-SCALE FEATURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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## Campground Area

*Refer to Sheets 17 through 19 at the end of this section.*

Historically, the Campground Area was located north of the gabion walls and SAR Cache. Due to heavy flooding and safety reasons, the campground was moved to its current location after 1989. The existing campground is used to accommodate overnight campers who bring their own tents and equipment.

### *Natural Systems and Features*

In 1989, the Campground Area was sited on relatively level ground located above the floodplain and south of the gabion walls. The camp sites were relocated from the Day Use Area due to flooding. For a more complete discussion of natural systems and features for Indian Garden as a whole, please refer to the Indian Garden Overview section of this chapter.

### *Spatial Organization*

The Campground Area consists of clusters of public and semi-private areas centered around a public space. The area is defined by gabion walls to the north, increasingly steep slopes to the west, the entrance trail to the Administration and Campground Area to the south, and the Bright Angel Trail to the east.

The semi-private **camping areas** are arranged along the linear, central spine of the campground trail (*Photograph 48*). Along this access trail, short spur trails lead east and west into the camping areas. These places of cleared earth are defined and separated by vegetation and stone edging or walls. Within the camping areas, seventeen shade shelters further divide spaces into individual camp sites.

A **central public space** exists at the center of the Campground Area (*Photograph 49*). This gathering area consists of a bump-out along the eastern edge of the access trail. The space features seating, a kiosk, and a drinking fountain. A **secondary public space**, much smaller in size, contains a drinking fountain and is located near the northern edge of the Campground Area. Other **public spaces** exist around the comfort stations. The comfort stations are located upslope of the camping areas, one each on the north and south edges of the Campground Area. Each comfort station has a sort of “waiting area” for persons waiting to use the facilities. The south comfort station has a much more developed public space than the northern comfort station, composed of a curving stone wall and benches for seating as well as a stone water fountain and stone-edged planting beds (*Photograph 50*).

### *Land Use*

The Campground Area and its associated facilities are used solely for visitor services. These services include recreation opportunities and accommodations for overnight campers.

## *Circulation*

In accordance with the spatial relationships discussed above, pedestrian circulation exists in a hierarchical form: a central trail forms the spine of the area while smaller spur trails head to camping areas and public spaces.

The **central trail**, approximately four feet wide and edged with stone, is accessed from two locations (*Photograph 51*). The first entrance is a spur trail at the southern end of the Campground Area. This trail serves as the entry for both the Administration Area and the Campground Area, as well as leading to the south comfort station. The second entrance, actually part of the central trail, is located at the north end of the Campground Area and adjacent to the southern gabion wall. It is a less formal, somewhat obscure entry to the campground due to its narrow width and lack of stone-edge definition.

Other **spur trails**, mostly edged with small stones and rocks, lead to the comfort stations and into camping areas (*Photograph 52*). Circulation within the camping sites is informal and undefined as the camp sites act more as gathering spaces than passageways.

## *Vegetation*

Dense vegetation, consisting of trees, shrubs, and groundcover, pervades the area creating a shady character more like a forest than the surrounding desert environment. It is in this character area where riparian community vegetation begins to supersede the desertscrub community of the Administration Area.

According to a planting plan in the 1989 “As Constructed Drawings for Indian Garden” (*Figure 50 – Chapter II*), **transplanted native vegetation**, such as netleaf hackberry, catclaw acacia, datil yucca, bear grass, prickly pear cactus, Colorado four-o’clock, and velvet ash, was installed in the character area. The plant schedule also specified that a seed mix be used over the northern portion of the site. It is not known what type of seed mix was specified or if it was used. The 1989 plans also called for an irrigation system, which was constructed. The system provides water to the plants and likely encourages the dense vegetation growth and resultant shady character of the area.

## *Buildings and Structures*

Buildings and structures within the Campground Area consist of two comfort stations, seventeen shade structures, and a wayside.

A four-stall **comfort station** (Bldg. #1413) stands at the crest of a rise on the south end of the campground (*Photograph 50*). Surrounded on three sides by wooden decking, the building exhibits a square footprint and a prow-front, gable roof form. The walls consist of plywood panels secured by wooden battens. Textured plastic windows line the north and south elevations, while three metal doors occupy the west wall. The 1980s comfort station, and its adjacent public space pre-date the 1989 development of the new public campground, although the exact construction date of the building is not currently known.

The 1987, frame **comfort station** (Bldg. #1440) is similar in design to the comfort station in the Pump Station and Corral Area (*Photograph 53*). The one-story, three-stall restroom building contains Clivus Multrum composting toilets and features a side gable, wood-shingled roof, plywood wall panels, and flush metal doors that open onto a ground-level, wood deck. Set into the hillside, the building also includes a lower-level shed extension and three exhaust stacks on the roof.

The campground contains sixteen camp sites. Each site includes a single, metal-frame, rectangular **shade structure** (Bldgs. #1463-1480) that measures twelve and one-half feet by fourteen feet (*Photograph 54*). Each shade structure consists of four square metal posts that support a conventional, wood-rafter, gable roof that is clad with asphalt shingles. Camp site #3 contains two shade structures, one in the design described above and the second in a larger size with six support beams measuring twelve and one-half feet by twenty feet. These shade structures were originally built to temporarily provide shade to campers until the vegetation grew large enough to perform the same task. Because they proved popular with campers, the structures have remained in place beyond their intended use.

An **information kiosk** is located in the central node and consists of an asphalt-shingled gable roof supported by two sets of round posts at either end. Two glass cases, filled with educational and safety information, are suspended between the posts and below the roof (*Photograph 49*).

**Stone walls** of various heights are located throughout the Campground Area (*Photograph 55*). A two to three-foot high dry-laid stone retaining wall is located around the public space of the south comfort station. Another dry-laid stone retaining wall, varying in height, is located along the western edge of the character area—stretching between camp site #14 and the north comfort station. The third dry-laid stone retaining wall in the character area is found along the west edge of camp site #15.

Shorter **stone retaining walls**, approximately twelve to eighteen inches in height, edge many of the camp sites in the character area. These walls help to take up the grade of the sloping site and create level camp site floors.

### *Views and Vistas*

As with most other areas in Indian Garden, **views to surrounding canyon walls** are spectacular. However, because of the dense vegetation in the Campground Area, internal views are foreshortened. This has the effect of increasing privacy between camping areas. Views into the area from Bright Angel Trail are also screened by dense vegetation.

### *Small-scale Features*

Each camp site in the Campground Area contains its own set of similar small-scale features: picnic tables, camp site markers, ammunition boxes, and backpack bars (*Photograph 54*). Metal and wood **picnic tables** are located beneath each shade structure. The 1989 construction drawings identify these tables as a “Gametime No. 1337” and “No. MD766.” **Camp site markers** are short, round posts with beveled tops and white, routed numbers placed in the bevel

(*Photograph 52*). Each camp site also comes equipped with an **ammunition box** used for storing food or other items that may attract wildlife. The dark green boxes appear to be military issue. Finally, a **backpack bar** is located at each site. These brown, metal, T-shaped bars have cross-bar supports and squirrel baffles. The bars allow campers to hang backpacks in order to keep them dry and out of reach of wildlife.

Two types of benches are located in the character area. The first is the “**rustic**” **bench** consisting of a simple horizontal plank supported by two shorter vertical planks. These benches are located near the south comfort station. The “**contemporary**” **bench** is located in the central space east of the information kiosk. These benches resemble typical wood-slat benches and have a wood seat and seatback attached to a metal frame.

**Stone edging** consists of multi-colored canyon stone and defines trail edges and planting beds. **Drinking fountains** are located in the central public space and in the smaller public space (*Photograph 56*). They consist of a three-foot, three-inch tall square stone and mortar drinking fountain with an attached stone and mortar basin measuring three-feet-square. The basin is meant to catch excess water from the jug filler faucet attached to the fountain wall.

Various **utility and irrigation boxes** are located throughout the area. **Signage** consists of log posts with finished and stained signs, similar to those located in other character areas throughout Indian Garden.



**Photograph 48.** Semi-private camp sites.  
(JMA 2002)



**Photograph 49.** Central public space in  
campground, with information kiosk,  
bench, and drinking fountain.  
(JMA 2002)



**Photograph 50.** Public space at south  
comfort station.  
(History Matters 2002)

**Photograph 51.** Central campground trail.  
(JMA 2002)



**Photograph 52.** Formal spur trail to camping area (typical), with camp site marker (visible in lower left corner).  
(JMA 2002)



**Photograph 53.** Northern comfort station.  
(History Matters 2002)





**Photograph 54.** Typical camp site with shade structure and small-scale features including picnic table, backpack bars, and ammunition box.  
(JMA 2002)



**Photograph 55.** Stone walls west of north comfort station.  
(JMA 2002)

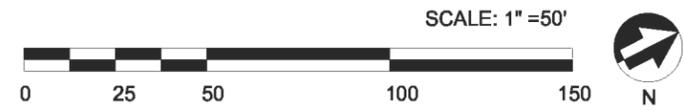
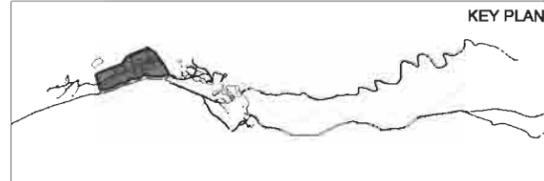


**Photograph 56.** Drinking fountain.  
(JMA 2002)



**Feature List:**

- SO-11 Camping areas (NC)
- SO-12 Central public space (NC)
- SO-13 Secondary public space (NC)
- SO-14 Comfort station spaces (NC)
- C-10 Central trail (S)
- C-11 Spur trails - to comfort stations (S) and camping areas



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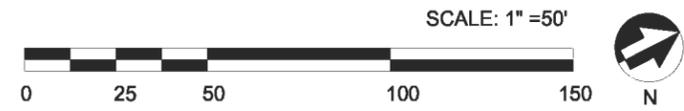
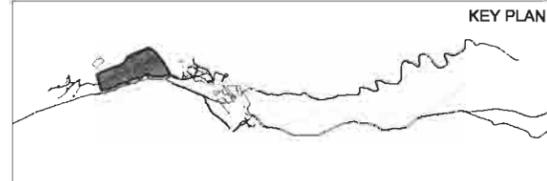
CAMPGROUND AREA  
**SPATIAL ORGANIZATION  
 CIRCULATION**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
 20228  
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**Feature List:**

- Ve-1 Riparian community vegetation (S)
- Ve-6 Transplanted native vegetation (S)
- B-7 Comfort station - south (NC)
- B-8 Comfort station - north (NC)
- S-11 Shade structures (NC)
- S-12 Information kiosk (S)
- S-7 Stone walls (S)
- S-13 Stone camp site retaining walls (S)



A/E FIRM  
 PRIME:  
 VAN DIJK WESTLAKE REED LESKOSKY  
 PHOENIX, AZ

SUBCONTRACTOR:  
 JOHN MILNER ASSOCIATES, INC.  
 CHARLOTTESVILLE, VA

DESIGNED:  
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 DATE:

SUB SHEET NO.  
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CAMPGROUND AREA

**VEGETATION  
 BUILDINGS & STRUCTURES**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

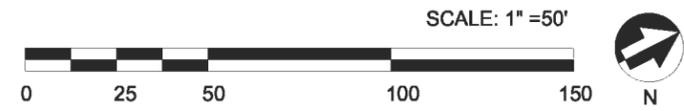
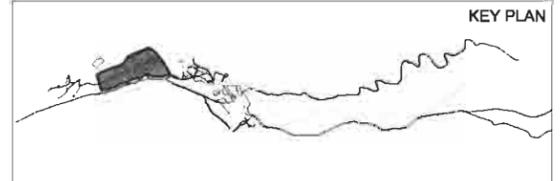
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 20228

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 SHEET  
 18  
 OF 36



**Feature List:**

- V-1 Views to surrounding canyon (NC)
- SS-1 Picnic tables (NC)
- SS-16 Camp site markers (NC)
- SS-17 Ammunition box (NC)
- SS-18 Backpack bar (NC)
- SS-7 "Rustic" benches (S)
- SS-19 "Contemporary" benches (NC)
- SS-2 Stone edging (S)
- SS-20 Drinking fountains (S)
- SS-14 Utility and irrigation boxes (NC)
- SS-4 Typical signage (S)



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 PRIME:  
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CAMPGROUND AREA  
**VIEWS & VISTAS  
 SMALL-SCALE FEATURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
 20228  
 PKG. NO.  
 SHEET  
**19**  
 OF 36



## Day Use Area

*Refer to Sheets 20 through 22 at the end of this section.*

The Day Use Area includes the gabion walls, SAR Cache and Rock House, and the portion of land north of the SAR Cache and Rock House in the 100-year floodplain of Garden Creek. This character area includes riparian vegetation interspersed with clusters of small-scale features such as picnic tables, benches, drinking fountains, and stone edging. These clusters are connected across the dense, swampy patches of vegetation via narrow, informal paths, some of which are elevated within the wet areas by a single line of large stones and logs.

### *Natural Systems and Features*

In the Day Use Area, **Garden Creek's 100-year floodplain** begins just north of the gabion walls. Here, vegetation growth has formed a **wet area** in the landscape between the Caretaker's Residence and Mule Barn and Corral. At one time, narrow canals were dug throughout the area to collect water and keep the seating areas dry. Currently, the canals have not been maintained in order to preserve a wet habitat for the ambersnail.

### *Spatial Organization*

The largest portion of the Day Use Area is comprised of overgrown **picnic grounds**, forming a dense and relatively uniform space that was open at one time (*Photograph 57*). A **cleared area** below the Trailside Shelter, east of Garden Creek, is one of the few open spaces in the Day Use Area. A **level terrace** of cleared, hard-packed earth, constructed between the SAR Cache and Rock House, sets these buildings apart from the picnic grounds to their north.

### *Land Use*

The Day Use Area has been used for recreation, but its use is currently limited for two reasons: to protect what was once thought to be a Kanab ambersnail habitat and due to inadequate site maintenance. Active uses include emergency services provided at the SAR Cache and storage provided at the Rock House.

### *Circulation*

An informal **spur trail** forks north from the Bright Angel Trail at its junction with Garden Creek to run east of the SAR Cache (*Photograph 58*). This trail leads into the former picnic grounds. Once in the picnic grounds, this trail splits into different directions, forming a **network of trails** that weave throughout the grounds and terminate near the Mule Barn. These earthen, un-edged trails frequently pass through locations that are inundated with water in wet weather. In some places, stones and logs have been laid along the path as stepping stones. **Concrete sidewalks** access the SAR Cache entrances (*Photograph 59*).

## *Vegetation*

**Riparian community vegetation**, including reeds, grasses, and other species that thrive in the wet environment, dominates the Day Use Area. This vegetation is very dense and overgrown, with some plants reaching heights of six to ten feet, and impedes use of the picnic grounds by visitors (*Photograph 60*). Please refer to the Indian Garden Overview for a more detailed discussion of riparian community vegetation.

Rows of large **cottonwood trees** are present within the Day Use Area. Some of these are in decline—displaying dieback and missing limbs (*Photograph 61*). Stumps appear where trees have been cut down in recent years. A large cottonwood tree is growing out of the terrace between the SAR Cache and Rock House. A single **peach tree** of unknown origin grows just north of the SAR Cache.

## *Buildings and Structures*

Built by the NPS in 1932, the **SAR Cache/Caretaker's Residence** (Bldg. #0093) is the oldest standing NPS building at Indian Garden (*Photograph 62*). The one-story, frame and stone residence displays characteristic design features of the NPS Rustic style. Distinguishing features include tapered, random-rubble stone piers that adorn the northeast and southeast corners of the building. The northwest and southwest corner piers were removed around 1960 when a two-room addition was built. The stone piers support an external-frame structure with inset vertical board walls. The exposed frame consists of vertical supports and diagonal braces at the corners. Set atop a continuous, random-rubble stone foundation, the building also features an interior stone chimney, cut-stone stairs that lead to the main entrance, and a front gable, asphalt-shingled roof. The distinctive roofline features exposed rafter tails in its wide, overhanging eaves and chamfered roof purlin ends that project at the front and rear gables. The main entrance occupies the north façade of the Residence and contains a single-leaf, vertical board door with a panel-and-screen outer door. The windows on the original residence consist of four-light, wood awning-type sash grouped together in sets of three.

In 1960, according to a 2001 Historic Structures Report, the NPS remodeled the Caretaker's Residence by adding a one-story, board-and-batten clad, frame addition to the west elevation of the original residence. The addition sits on a continuous, random-rubble, stone foundation, and is sheltered by a gable roof. The windows consist of both paired and single, three-light, wood casements. A single-leaf, paneled wood door, and a wooden, louvered gable vent occupies the west façade of the addition.

In 1943, the Fred Harvey Company constructed the **Pump Caretaker's Residence** (Bldg. #0018), also known as the Rock House, at Indian Garden as part of their development of Garden Creek as a water source for their tourist facilities on the South Rim (*Photograph 63*). The residence replaced a 1936 residence—a one-story, external frame structure set on a raised stone foundation which burned in 1942. The next year, the current residence was built in stone at the same location. The 1943 masonry building reused portions of the original foundation and steps. The one-story, front gable residence displays a rectangular plan with a small projecting bay on its east elevation. The front gable roof features wide, overhanging eaves, exposed rafters, and

diamond-shaped, asbestos-shingle cladding. The building's entrance occupies the north gable end and consists of a single-leaf, paneled, wood door with an outer screened door. The windows have been replaced with paired, one-light metal casement windows.

A frame shed structure, located approximately fifty feet southwest of the Rock House, contains an NPS **Air Quality Monitoring Station** (*Photograph 64*). It is a simple, post-and-beam wood frame structure covered by an asphalt-shingled, gable roof. The southern elevation of the structure is enclosed with plywood, while the northern elevation is open. Equipment boxes line the interior and four antennae extend above the roof. A hinged plywood door covers the east gable end of the structure. The construction date for the weather station is not known. However, 1988 plans indicate that the station was formerly located directly behind the Pump Caretaker's Residence. The structure was relocated and rebuilt around 1995.

Two long, parallel, **gabion walls** are located to the south of the SAR Cache and Rock House buildings (*Photograph 65*). These walls, thought to be built by the Army Corps of Engineers in the late 1960s, consist of metal mesh gabion baskets filled with canyon stone and stacked two high to reach a height of six feet and a width of three feet. The walls help to channel flash floods down the wash and prevent flooding in the Day Use and Campground Areas.

Just north of the junction of Garden Creek and Bright Angel Trail, and east of the SAR Cache, Garden Creek has been **channelized** with rocks set into mortar (*Photograph 66*). The result is a more stable creek bed that resists wash-outs and can therefore prevent flood damage.

A concrete **footbridge abutment**, part of the former footbridge used to cross Garden Creek, is located in the Day Use Area—to the west of the creek (*Photograph 67*). A small **concrete foundation** of unknown origin is located in the small clearing in the northwestern corner of the Day Use Area (*Photograph 68*).

North of the SAR Cache/Caretaker's Residence and Pump Caretaker's Residence/Rock House is a three feet high, rubble **stone retaining wall** separating the terrace from the former picnic grounds (*Photograph 69*). **Stone steps** lead up from the picnic grounds to the buildings (*Photograph 59*). A **utility pole** is located west of the Rock House (*Photograph 70*). The pole was intended for the installation of a public pay phone, which was never installed due to the limitations of the old phone system.

### ***Views and Vistas***

Scenic views, near or distant, are not available from within the Day Use Area due to the abundance of riparian vegetation.

### ***Small-scale Features***

**Rock edging** occurs in the Day Use Area, where groupings of picnic tables on level ground are surrounded by stones. The stones appear to have been originally set on a linear alignment, but have shifted and/or are overgrown (*Photograph 71*). Similar stone edging is also used on the

terrace between the SAR Cache/Caretaker's Residence and Pump Caretaker's Residence/Rock House to define planting beds.

**Signage** in the area is typical of that found throughout Indian Garden, having rough wood posts with milled and stained signs displaying routed letters.

**Stepping stones**, spaced two to three feet apart, are placed along the alignment of a frequently flooded path near the former bridge site. They may have been introduced recently and allow access to the Day Use Area when the surrounding ground is too wet to walk upon.

Many wooden benches are scattered throughout the Day Use Area (*Photograph 72*). Just below the SAR Cache/Caretaker's Residence and Pump Caretaker's Residence/Rock House are two wooden benches of varying construction. The contemporary-styled "**contemporary**" bench consists of long, square wood posts whose seat back and seat are joined by two thick metal brackets. The "**rustic**" bench, possibly of earlier construction date, is constructed of two flat, wood planks forming the seat back and seat and attached to round wood post frame. **Continuous bench seating** is located on the terrace (*Photograph 73*). It consists of one continuous bench running the length of the terrace between the SAR Cache/Caretaker's Residence and Pump Caretaker's Residence/Rock House. The wood bench is supported by at least eight short, square, stone pillars at a height of approximately eighteen inches.

Located at the west edge of the Day Use Area, on the edge of the hillside, is an **electrical distribution box**, six feet tall by four feet wide by two feet deep of gray-painted metal (*Photograph 74*).

**Drinking fountains** in the Day Use Area are typical of those throughout the entire site: they are of stone construction with metal fixtures, including a lower spigot for filling bottles and an upper spigot for drinking. Two drinking fountains exist in this character area: one just north of the SAR Cache/Caretaker's Residence, and a second within the overgrown portion of the Day Use Area (*Photograph 72*). Many **picnic tables** are scattered throughout the Day Use Area (*Photographs 68 and 71*).

To the west of the Rock House/Pump Caretaker's Residence, a rectangular garden plot is enclosed by a **wood and wire mesh fence** (*Photograph 75*). The wood post-and-rail fence has an attached wire mesh component to prevent wildlife from damaging the garden. A section of **PVC pipe** juts out of the trail to the SAR Cache/Caretaker's Residence from Bright Angel Trail (*Photograph 76*).<sup>16</sup> The pipe was installed in 1987 as part of the campground irrigation system.

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<sup>16</sup> The pipe was removed in 2004 after a flash flood severely damaged the dirt bank covering the pipe, as well as an adjacent section of trail. The pipe was uncovered, removed, and the dirt bank and trail replaced.



**Photograph 57.** View of picnic areas within wet area. Note cottonwood trees in background and cleared area in foreground. (JMA 2002)



**Photograph 58.** Spur trail east of Caretaker's Residence/SAR Cache. (JMA 2002)



**Photograph 59.** Stone steps, concrete sidewalk at Caretaker's Residence/SAR Cache. (JMA 2002)

**Photograph 60.** Cottonwoods with dieback. Dense groundcover of riparian vegetation below. (JMA 2002)



**Photograph 61.** Remains of large cottonwood near Caretaker's Residence/SAR Cache. (JMA 2002)



**Photograph 62.** Caretaker's Residence/SAR Cache, 1932. (History Matters 2002)





**Photograph 63.** Rock House (former Pump Caretaker's Residence), 1943, with seating bench area in foreground. (History Matters 2002)



**Photograph 64.** Air Quality Monitoring Station. (History Matters 2002)

**Photograph 65.** Gabion walls.  
(JMA 2002)



**Photograph 66.** Channelized section of  
Garden Creek.  
(JMA 2002)



**Photograph 67.** Concrete footbridge  
abutment on trail in picnic area.  
(JMA 2002)





**Photograph 68.** Concrete foundation and picnic table.  
(JMA 2002)



**Photograph 69.** Stone retaining wall.  
(JMA 2002)



**Photograph 70.** Utility pole west of Rock House/Pump Caretaker's Residence, center.  
(JMA 2002)

**Photograph 71.** Rough stone edging, picnic tables, and bench in picnic area. (JMA 2002)



**Photograph 72.** Benches and drinking fountain on edge of picnic area, just north of Caretaker's Residence/SAR Cache. Contemporary bench is shown front left and rustic bench is shown rear left. (JMA 2002)



**Photograph 73.** Wood bench seating on terrace. (JMA 2002)





**Photograph 74.** Electrical distribution utility box.  
(JMA 2002)



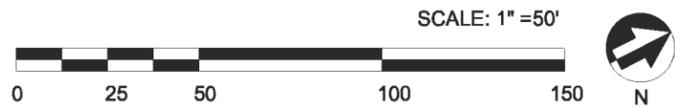
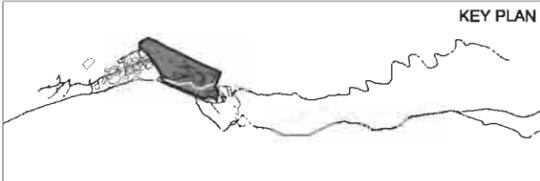
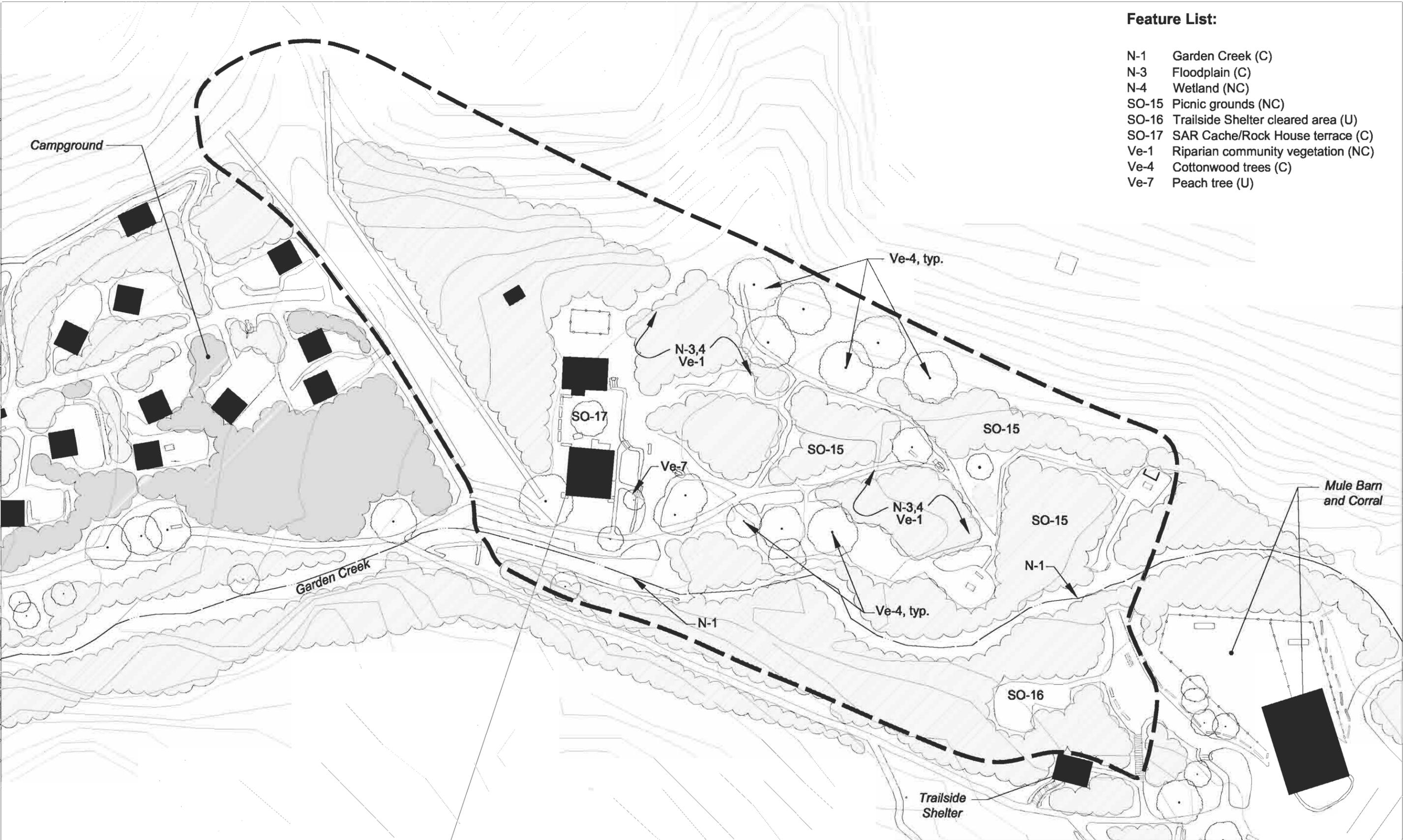
**Photograph 75.** Wood and wire mesh fence west of Rock House/Pump Caretaker's Residence.  
(JMA 2002)

**Photograph 76.** PVC pipe along trail.  
The pipe was removed in 2004.  
(JMA 2002)



**Feature List:**

- N-1 Garden Creek (C)
- N-3 Floodplain (C)
- N-4 Wetland (NC)
- SO-15 Picnic grounds (NC)
- SO-16 Trailside Shelter cleared area (U)
- SO-17 SAR Cache/Rock House terrace (C)
- Ve-1 Riparian community vegetation (NC)
- Ve-4 Cottonwood trees (C)
- Ve-7 Peach tree (U)



A/E FIRM  
 PRIME:  
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 PHOENIX, AZ  
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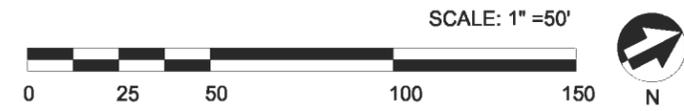
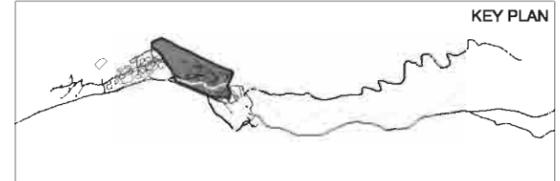
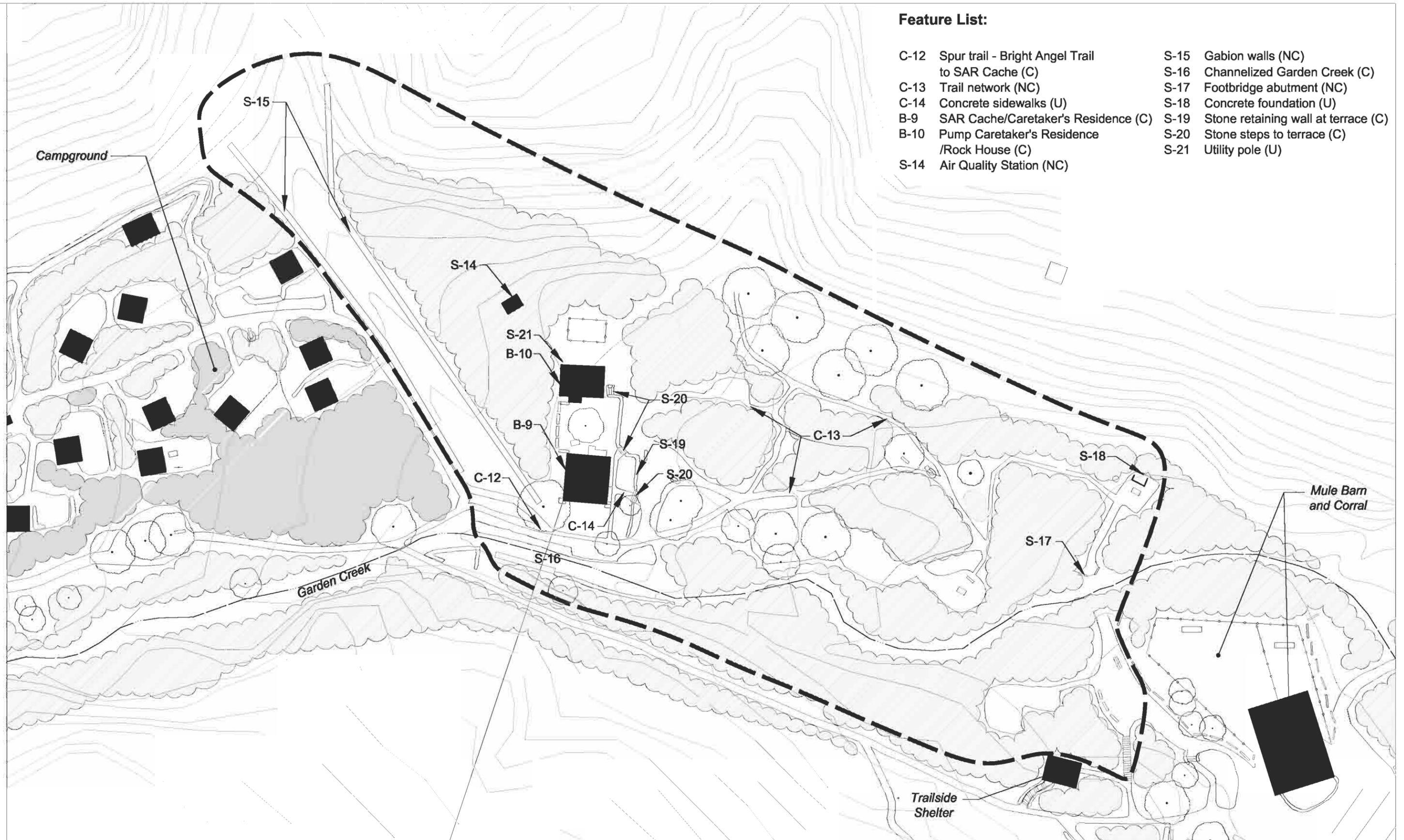
DAY USE AREA  
**NATURAL SYSTEMS & FEATURES  
 SPATIAL ORGANIZATION  
 VEGETATION**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
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 20228  
 PKG. NO.  
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**20**  
 OF 36



**Feature List:**

- |      |  |      |                                     |
|------|--|------|-------------------------------------|
| C-12 | Spur trail - Bright Angel Trail to SAR Cache (C) | S-15 | Gabion walls (NC)                   |
| C-13 | Trail network (NC)                               | S-16 | Channelized Garden Creek (C)        |
| C-14 | Concrete sidewalks (U)                           | S-17 | Footbridge abutment (NC)            |
| B-9  | SAR Cache/Caretaker's Residence (C)              | S-18 | Concrete foundation (U)             |
| B-10 | Pump Caretaker's Residence /Rock House (C)       | S-19 | Stone retaining wall at terrace (C) |
| S-14 | Air Quality Station (NC)                         | S-20 | Stone steps to terrace (C)          |
|      |  | S-21 | Utility pole (U)                    |



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DAY USE AREA

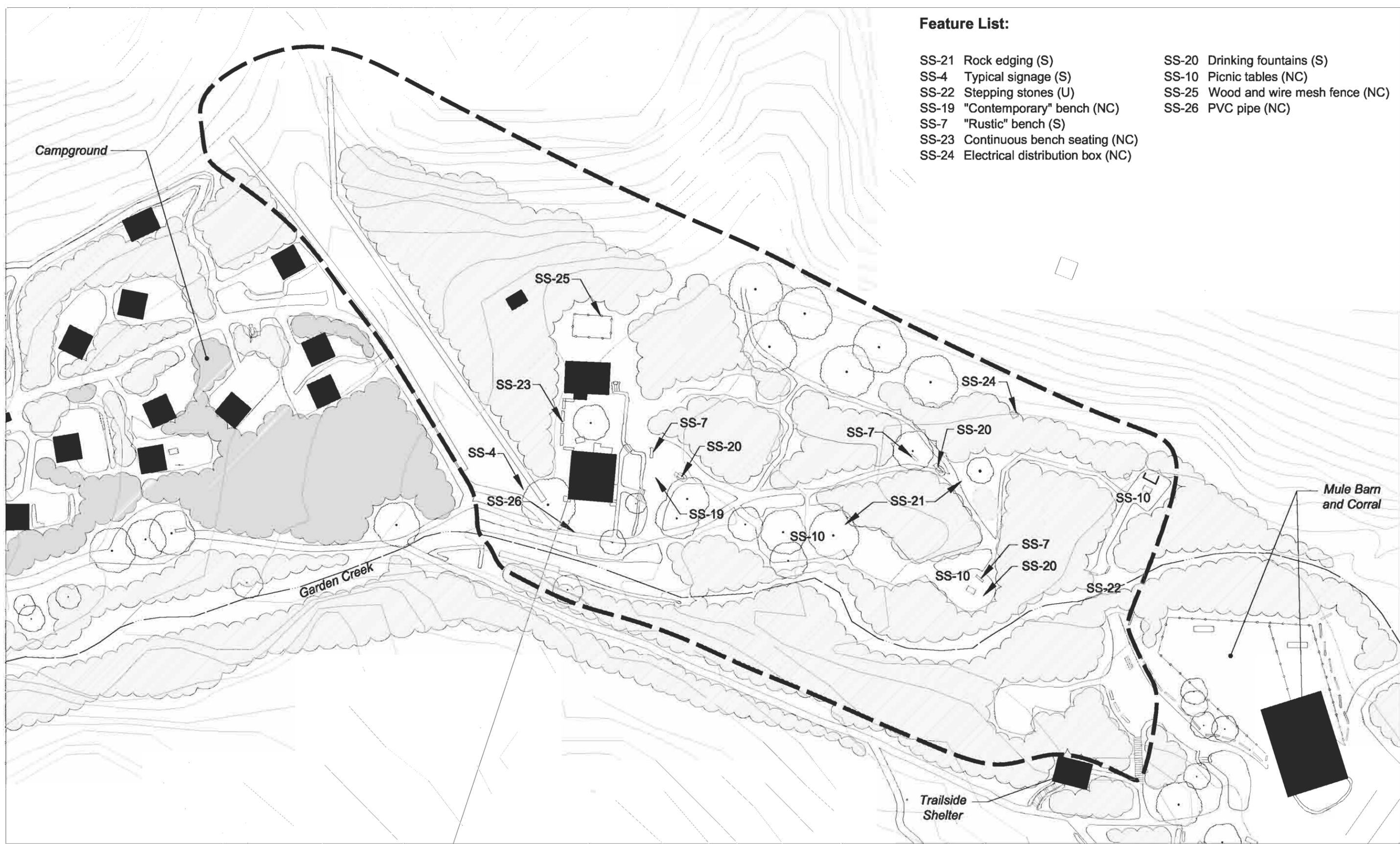
**CIRCULATION  
 BUILDINGS & STRUCTURES**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
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 20228

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 21  
 OF 36





**Feature List:**

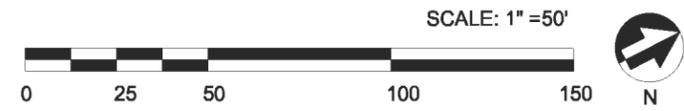
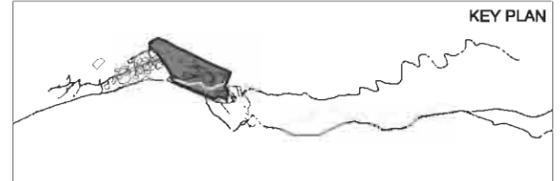
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|--|-------------------------------------|
| SS-21 Rock edging (S)                  | SS-20 Drinking fountains (S)        |
| SS-4 Typical signage (S)               | SS-10 Picnic tables (NC)            |
| SS-22 Stepping stones (U)              | SS-25 Wood and wire mesh fence (NC) |
| SS-19 "Contemporary" bench (NC)        | SS-26 PVC pipe (NC)                 |
| SS-7 "Rustic" bench (S)                |                                     |
| SS-23 Continuous bench seating (NC)    |                                     |
| SS-24 Electrical distribution box (NC) |                                     |

Campground

Garden Creek

Mule Barn and Corral

Trailside Shelter



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 PRIME:  
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 PHOENIX, AZ  
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DAY USE AREA  
**SMALL-SCALE FEATURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
 20228  
 PKG. NO.  
 SHEET  
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 OF 36



## Pump Station and Corral Area

*Refer to Sheets 23 through 26 at the end of this section.*

The Pump Station and Corral Area includes the North and South Pump Houses, Reservoir, associated trails, paths and walls, as well as the adjacent electrical substation. A spring and a helispot are located on the hill just above—south and east of—the South Pump Station. To the west, the character area also includes the Mule Barn and Corral, hitching area, nearby benches and visitor rest area.

### *Natural Systems and Features*

A **perennial spring** is located on the hillside above the Pump Station, marked by a clump of cottonwood trees in a small declivity (*Photograph 77*).

**Garden Creek** passes to the west of the Mule Barn in this character area. Typical of the surrounding landscape, stormwater runoff has formed rocky **dry washes** on the steep slope that forms the southern boundary of the character area.

### *Spatial Organization*

A **visitor rest area** with benches, a kiosk, and drinking fountain is a major space within the Pump Station and Corral Area (*Photograph 78*). Defined on one side by a retaining wall, the rest area is edged on the east and north by the Mule Barn facilities. The **Mule Barn facility** includes the barn, corrals, and clearing with hitching bars and water troughs. North of these spaces, the **Pump Station node** includes the two pump houses, the open hillside and circulation leading to the reservoir tank above, and the substation adjacent to the buildings (*Photograph 79*). On the hillside above, the circular **helispot** and its trail corridor form a fourth space within the character area (*Photograph 80*).

### *Land Use*

This character area fulfills numerous land uses in Indian Garden, including recreation, visitor services, utilities, and livestock care.

### *Circulation*

Circulation in this character area is comprised of formal trails defined with stone edging, informal spur trails of narrow width and no edging, and open circulation patterns where no distinct routes exist.

A formal **stone-edged trail** leads from the Bright Angel Trail up to the helispot. It becomes much more simple as it picks up again east of the helispot to continue north to the South Pump House (*Photograph 81*). To the north of this trail, a **ramp-like trail**, also with a packed-earth tread and lined with stone, leads from Bright Angel Trail to a comfort station west of the pump houses (*Photograph 82*). Another packed-earth, **stone-edged trail** passes to the south of the

Mule Barn from Bright Angel Trail. A short stretch of poured **concrete sidewalk** runs along the western edge of the pump house complex (*Photograph 83*).

Informal **spur trails** weave through the character area, around the Mule Barn, and head west into the Day Use Area. These trails are not edged with stone. The remainder of the circulation patterns in the character area are loose and informal, particularly in the visitor rest area, where hikers and mule riders are free to choose their own path between destinations.

### ***Vegetation***

Vegetation in the Pump Station and Corral Area is similar to that found elsewhere in Indian Garden, with **riparian community vegetation** occurring in the lower elevations, particularly along Garden Creek, and **desertscrub vegetation** growing on the slopes rising up to the south and east. Refer to the Indian Garden Overview section at the beginning of this chapter for a more complete discussion of these two vegetation communities as they relate to Indian Garden.

**Cottonwood trees**, possibly remnants of Ralph Cameron-era occupation, are located in the character area. Most notable are three large cottonwoods that line the trail and shade the southern portion of the visitor rest area (*Photograph 84*).

A **redbud** tree is located adjacent to the mule hitching area. The tree is surrounded by fencing and benches, which afford the tree some level of protection from damage by mules and visitors (*Photograph 85*).

### ***Buildings and Structures***

Completed in 1967, although not operating until 1970, the **North Pump House** (Bldg. #484) was built as part of the trans-canyon water line that brought water from Roaring Springs, below the North Rim, to supply the South Rim's Grand Canyon Village (*Photograph 83*). The original 1967 design resulted in the building being clad in a stucco finish; stone veneer was added in the 1980s to isolate noise from the pumps.

The one-story stone North Pump House displays the same box-like form as the earlier pump house with a low-sloped roof concealed by a stone and concrete parapet, and a double-leaf, flush metal door on its south façade. While the North Pump House now features exterior stone cladding, the character of the stone differs significantly from that of the earlier pump house, due to the contractor's inability to match the 1932 craftsmanship that was required in the project bid documents. The stone veneer of the North Pump House was applied so that the rubble formed a flat, almost uniform surface that is visually distinct from the deep shadow lines of the 1932 South Pump House. Additionally, only three sides of the North Pump House are fully clad in stone. The east elevation is clad in the original 1967 beige stucco.

Erected in 1932 by the Fred Harvey Company and the Atcheson, Topeka, and Santa Fe Railroad Company (Santa Fe Railroad), the **South Pump House** (Bldg. #IGB0031) pumped water from Garden Creek to supply the Grand Canyon Village on the South Rim (*Photograph 86*). This was the South Rim's first inner canyon water source. The stone pump house displays features of the

Rustic style. Its random-rubble, stone walls help to blend the building into its surroundings. Located at the base of a slope, the one-story building features a box form, a three-bay south elevation, and a low-sloping roof that is protected by a stone parapet. Several large mechanical units occupy the roof. A single-leaf, flush metal door occupies the south façade. A transom—in-filled with shiplapped boards—crowns the entry. In-filled, single window openings flank the entrance.

Located adjacent to and just above the South Pump House, the 1932 **Pump House Reservoir** (Bldg. #0032)—also known as the Water Storage Tank and the Sedimentation Tank—is a circular, stone structure with a diameter of approximately thirty-three feet (*Photographs 87*). The reservoir is set into the slope, so that its north end consists of a twelve-foot tall, random-rubble retaining wall. At its south end, where the structure meets the hill, the structure is only one foot tall. The tank has a slightly-domed concrete cap protected by a stone parapet.

The 1989 stone-clad **Mule Barn** (Building #1461) stands in an earthen clearing at the intersection of the Bright Angel and Plateau Point Trails (*Photograph 88*). Designed in the NPS Rustic Revival architectural style, the building features random-rubble, stone cladding, board-and-batten wall sections, wide overhanging eaves, and wooden roof brackets. Brown asphalt shingles clad the gable roof. The Mule Barn is divided into two sections; one-third of the building consists of an enclosed, stone-clad office and storage area. The office is entered through a single-leaf, panel-and-light, metal door. The gable-end windows consist of grouped, eight-light wood casements. The remaining two-thirds of the building consists of an open-sided livestock shelter with feeding troughs. The open section is supported on rustic tapered stone piers. A fenced corral extends off the west end of the building (*Photograph 89*).

A six-stall **comfort station** (Building #1439) stands on a hill east of the Bright Angel Trail, near the visitor rest area (*Photograph 90*). Built in 1987, the simple frame structure consists of a one-story, side gable building set into the hillside. Six flush metal doors open off the building's south façade onto a four-foot wide, ground-level, wood deck. With its wood shingle roof and plywood-battened walls, the design uses natural materials to integrate the building into the landscape. The comfort station is equipped with six Clivus Multrum-type composting toilets. A one-story, lower-level, shed extension provides storage. Five exhaust stacks extend above the roof.

An **electrical substation** enclosed by chain-link fencing stands behind the south pump house on its north elevation. This area is generally out of the view of visitors; the high-voltage transformer area is surrounded by a ten-foot-high chain-link fence topped with razor wire. The footing of the fence is a low stone wall.

A wooden, roofed **information kiosk** is located in the visitor rest area (*Photograph 78*). It is similar to the kiosk found in the Campground Area. A small **concrete cistern** structure is located at the perennial spring site above the Pump Station (*Photograph 91*).

Modification to the landform is particularly visible in the visitor rest area. This area is comprised of shallow, **leveled terraces** that are edged to the east by retaining walls, reflecting a cut into the natural slope of the hillside (*Photograph 78*).

A **stone retaining wall** runs along the path to the comfort station. Another, double-height, terraced stone retaining wall runs along the uphill (west) side of the adjacent visitor rest area. It is comprised of two three to four-foot-high walls, one on top of another, with a narrow level step between them (*Photograph 92*). **Stone-edged steps** with earthen treads lead from the Bright Angel Trail to the ramp-like comfort station trail.

### *Views and Vistas*

Views **to the surrounding scenery** and to the larger Grand Canyon are available (*Photograph 93*). Internal views are of little significance in comparison to distant views of the Canyon and canyon walls. Views within and adjacent to the area consist of vegetation, buildings, and structures.

### *Small-scale Features*

The helispot above the Pump Station complex is comprised of leveled ground with **stone edging**. **Boulder and log edging** are utilized as edging along the north side of the mule hitching area, blocking access to the low-lying floodplain (*Photograph 93*).

At the helispot, a small **wooden cabinet** on two posts contains helicopter landing equipment, such as earphones and directing wands (*Photograph 94*). A windsock and a radar dish are adjacent. A standing **electrical hookup** and a “**No Hiking**” sign are also located along the path to the helispot.

Several types of fence are located in this character area. Brown-painted **metal pipe rail fencing** forms the two mule corrals. In addition, **wooden post-and-rail fencing** surrounds part of the corral and edges the paths around the Mule Barn, as well as encircling part of a tree near the hitching bars. **Chain-link fencing**, topped with razor wire and woven with plastic strips for screening purposes, surrounds the substation. A **wooden gate** blocks access to storage between the pump houses (*Photograph 95*).

In the corral are two **wooden troughs with metal edging**, which, according to Ranger Chuck Sypher, were salvaged from the original mule barn site (*Photograph 89*). A third, metal trough appears to hold water. **Large metal water troughs** on stone piers with a hose connection (*Photograph 96*) and three metal pipe **hitching bars** are located outside the corral, in a clearing east of the Mule Barn (*Photograph 97*).

There are many wooden benches in this character area. Numerous wooden “**contemporary**” **benches** with backs line the edge of the visitor rest area (*Photograph 92*). Near the hitching bars, three backless “**rustic**” **wooden benches** are arranged in a semicircle around the trunk of a redbud tree (*Photograph 85*).

The **drinking fountain** in the Pump Station and Corral Area is typical of those found throughout the project area. It is of stone construction with metal fixtures, including a lower spigot for filling bottles and an upper spigot for drinking (*Photograph 92*). This fountain is found among the level ground in the visitor rest area and is not fully functional, missing its drinking spigot.

The sole **interpretive wayside** at Indian Garden is located along the Bright Angel Trail, at the corner of the North Pump Station (*Photograph 98*). Framed by two small redbud trees, the wayside explains the function of the trans-canyon water system and the role of the Indian Garden Pump Station.

**Signage** is present throughout the Day Use Area, particularly along the trails (*Photograph 84*). As with other signage typical of Indian Garden, small wooden placards with engraved directional or regulatory messages are affixed to rough wooden posts about three feet tall.

**Utility structures** are located in several places within the Day Use Area, indicating the presence of electrical, telephone, and water systems. Several such structures are visible near the Pump Station (*Photograph 99*).

**Photograph 77.** Spring, surrounded by vegetation, with cottonwood trees in background.  
(JMA 2002)



**Photograph 78.** Visitor rest area.  
(JMA 2002)



**Photograph 79.** Pump Station node, viewed from above.  
(JMA 2002)





**Photograph 80.** Helispot.  
(JMA 2002)



**Photograph 81.** Informal earthen path to  
top of reservoir.  
(JMA 2002)

**Photograph 82.** Ramp-like trail to comfort station, with stone retaining wall and edging.  
(JMA 2002)



**Photograph 83.** North Pump House, 1967, with concrete sidewalk.  
(History Matters 2002)





**Photograph 84.** Cottonwood trees near visitor rest area along log-edged earthen steps in trail. Note wood directional sign on right.  
(JMA 2002)



**Photograph 85.** Redbud shade tree with benches at mule hitching area.  
(JMA 2002)

**Photograph 86.** South Pump House,  
1932.  
(History Matters 2002)



**Photograph 87.** Pump House Reservoir,  
1932.  
(History Matters 2002)





**Photograph 88.** Mule Barn, 1989.  
(History Matters 2002)



**Photograph 89.** Corral with wooden troughs.  
(JMA 2002)

**Photograph 90.** Comfort station, 1987.  
(JMA 2002)



**Photograph 91.** Concrete cistern located  
at site of perennial spring.  
(JMA 2002)



**Photograph 92.** Stone retaining wall in  
background, with benches and drinking  
fountain.  
(JMA 2002)





**Photograph 93.** Boulder and log edging, at right, at hitching area. (JMA 2002)



**Photograph 94.** Wooden cabinet and stone edging near helispot. (JMA 2002)

**Photograph 95.** Wood gate between pump houses.  
(JMA 2002)



**Photograph 96.** Water trough at mule hitching area.  
(History Matters 2002)



**Photograph 97.** Mule hitching bars.  
(JMA 2002)



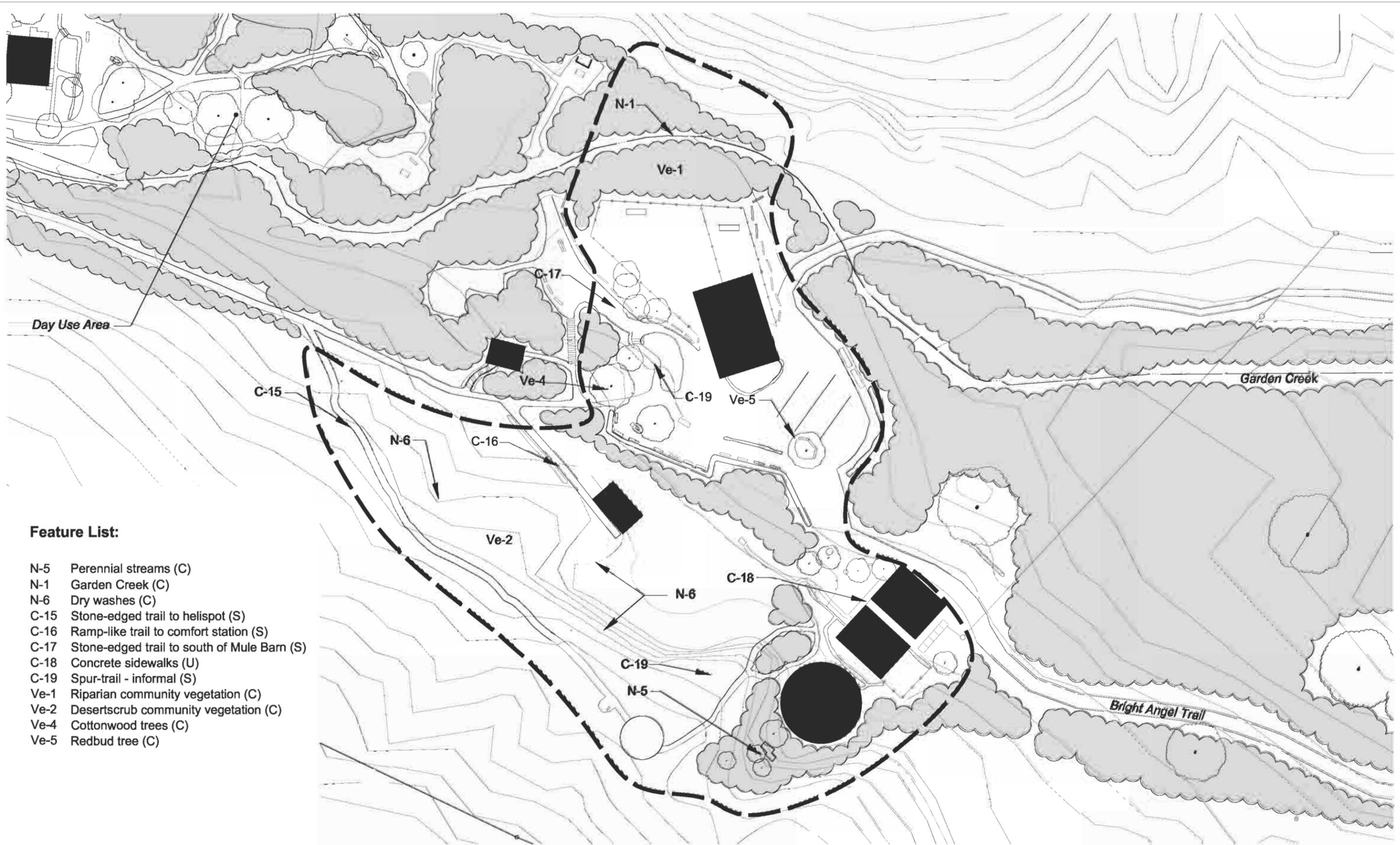


**Photograph 98.** Interpretive wayside at North Pump House.  
(JMA 2002)



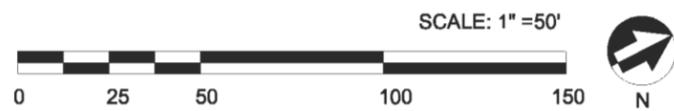
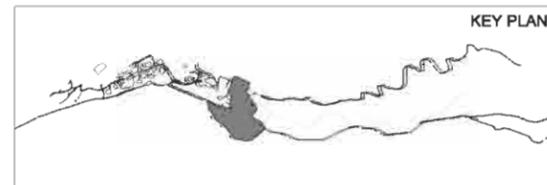
**Photograph 99.** Utility structures.  
(JMA 2002)





**Feature List:**

- N-5 Perennial streams (C)
- N-1 Garden Creek (C)
- N-6 Dry washes (C)
- C-15 Stone-edged trail to helispot (S)
- C-16 Ramp-like trail to comfort station (S)
- C-17 Stone-edged trail to south of Mule Barn (S)
- C-18 Concrete sidewalks (U)
- C-19 Spur-trail - informal (S)
- Ve-1 Riparian community vegetation (C)
- Ve-2 Desertscrub community vegetation (C)
- Ve-4 Cottonwood trees (C)
- Ve-5 Redbud tree (C)



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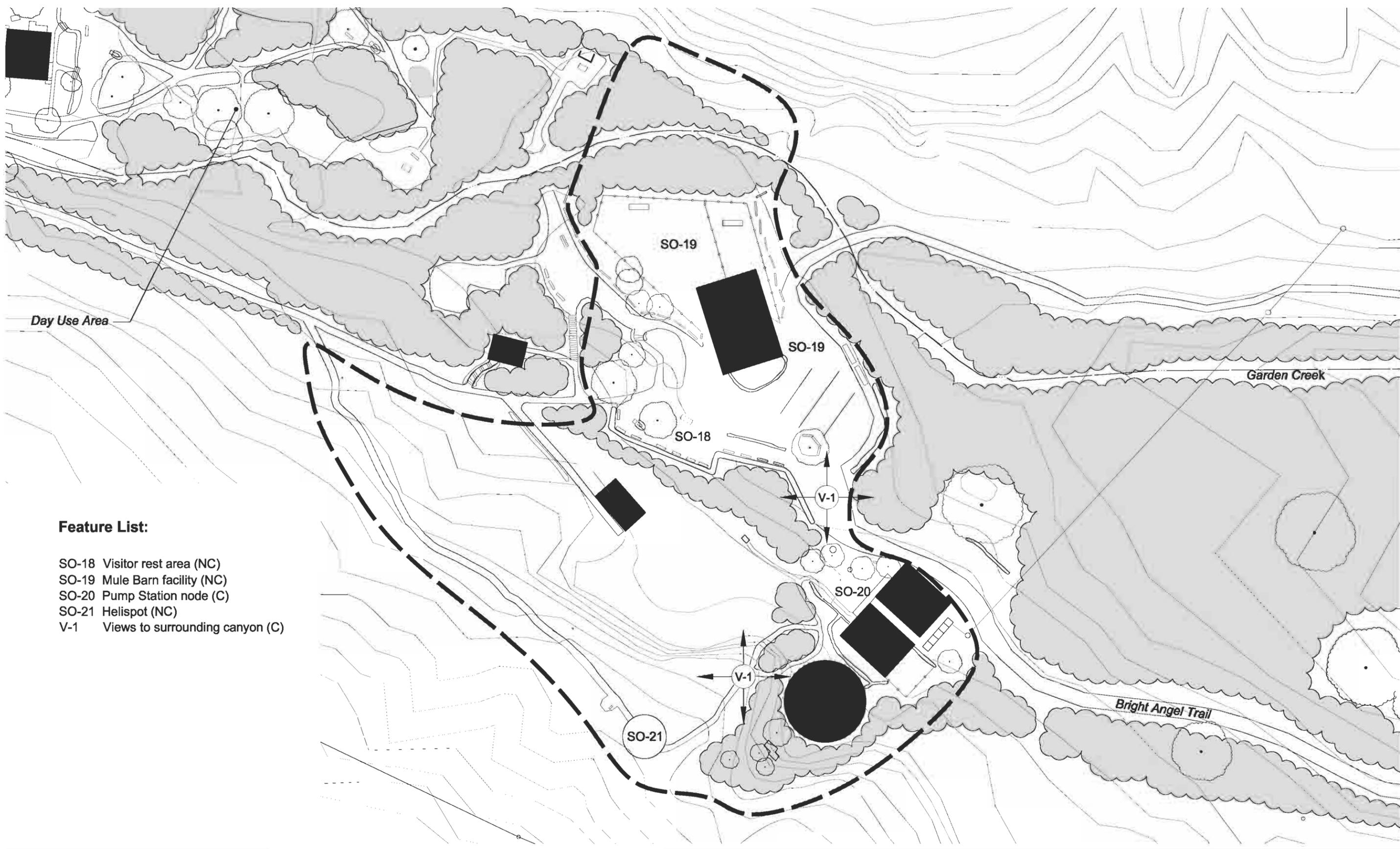
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PUMP STATION AND CORRAL AREA  
**NATURAL SYSTEMS & FEATURES  
 CIRCULATION  
 VEGETATION**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

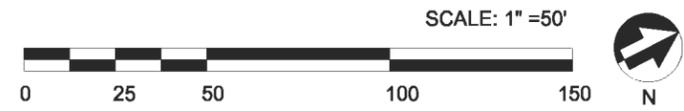
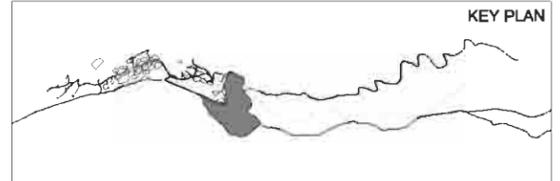
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**Feature List:**

- SO-18 Visitor rest area (NC)
- SO-19 Mule Barn facility (NC)
- SO-20 Pump Station node (C)
- SO-21 Helispot (NC)
- V-1 Views to surrounding canyon (C)



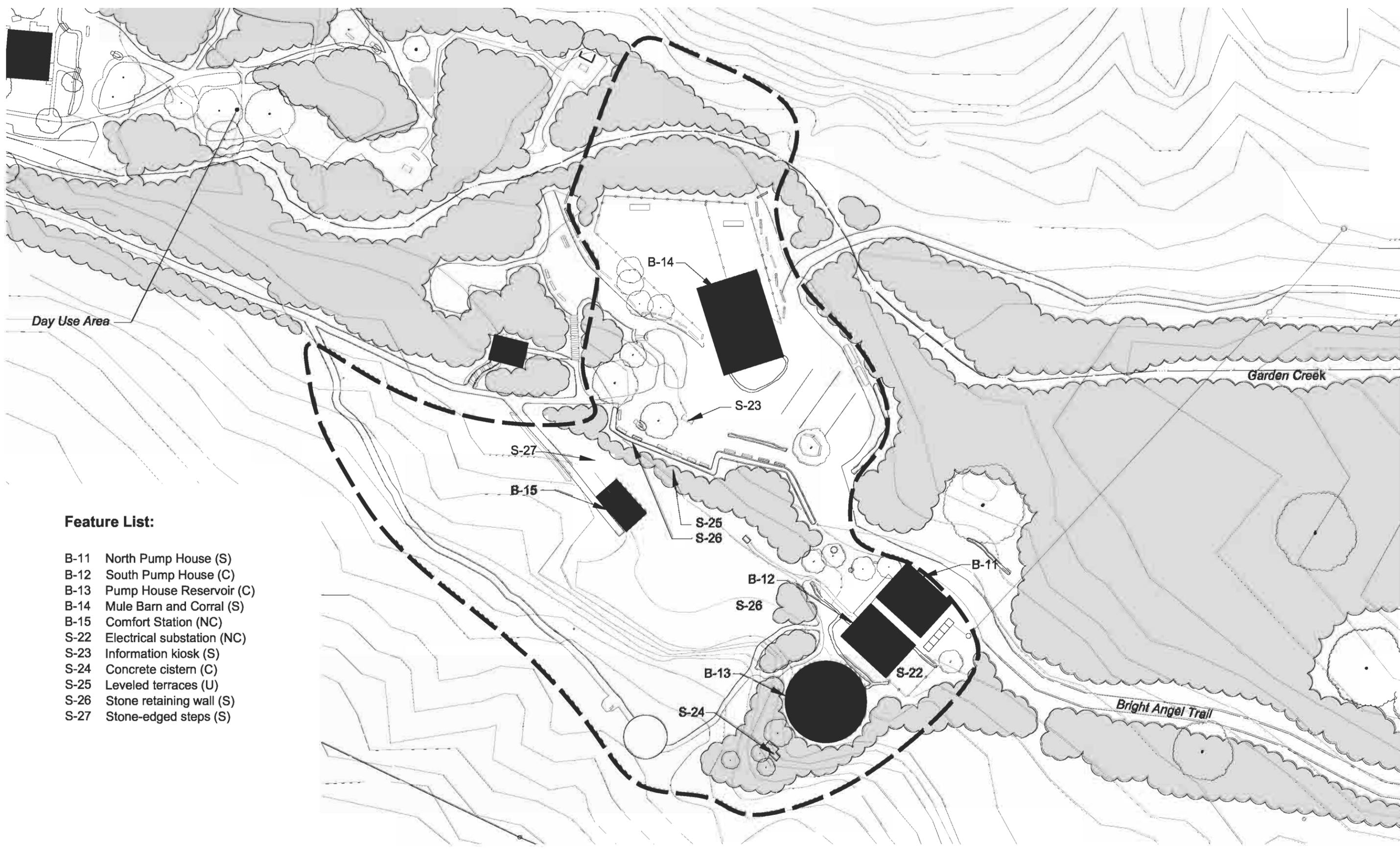
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PUMP STATION AND CORRAL AREA  
**SPATIAL ORGANIZATION  
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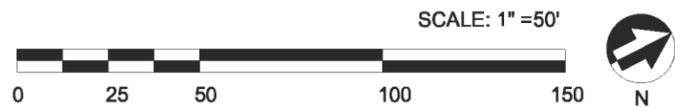
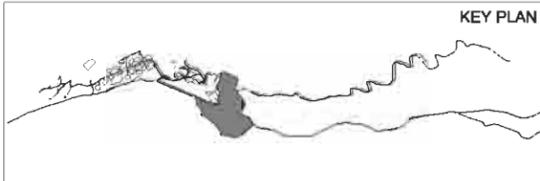
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**Feature List:**

- B-11 North Pump House (S)
- B-12 South Pump House (C)
- B-13 Pump House Reservoir (C)
- B-14 Mule Barn and Corral (S)
- B-15 Comfort Station (NC)
- S-22 Electrical substation (NC)
- S-23 Information kiosk (S)
- S-24 Concrete cistern (C)
- S-25 Leveled terraces (U)
- S-26 Stone retaining wall (S)
- S-27 Stone-edged steps (S)



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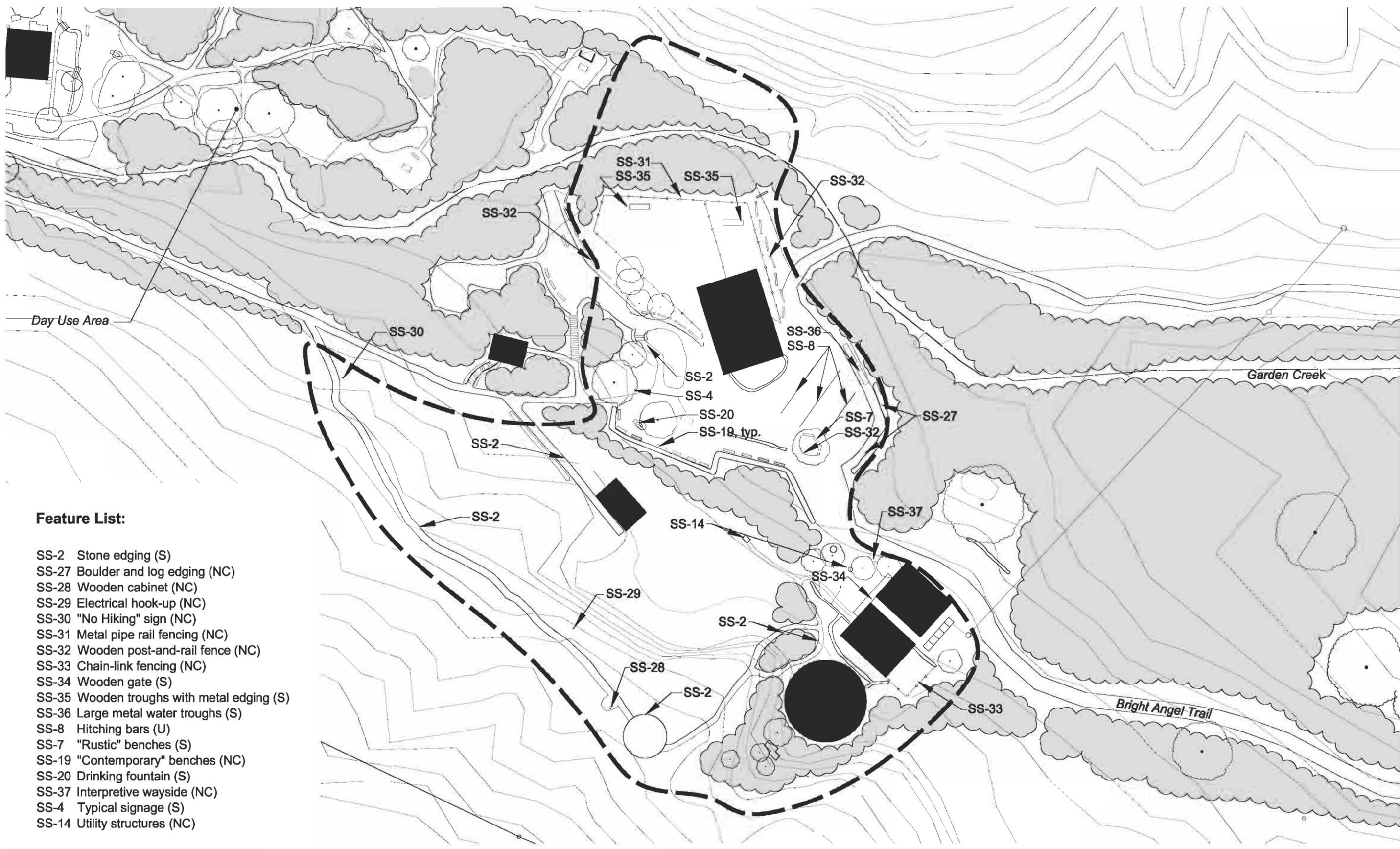
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PUMP STATION AND CORRAL AREA  
**BUILDINGS & STRUCTURES**  
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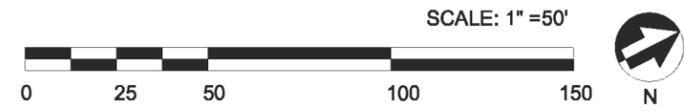
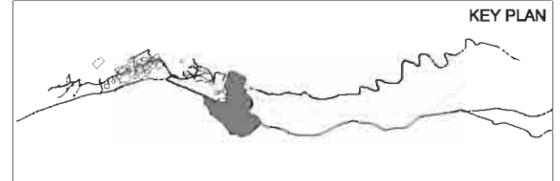
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**Feature List:**

- SS-2 Stone edging (S)
- SS-27 Boulder and log edging (NC)
- SS-28 Wooden cabinet (NC)
- SS-29 Electrical hook-up (NC)
- SS-30 "No Hiking" sign (NC)
- SS-31 Metal pipe rail fencing (NC)
- SS-32 Wooden post-and-rail fence (NC)
- SS-33 Chain-link fencing (NC)
- SS-34 Wooden gate (S)
- SS-35 Wooden troughs with metal edging (S)
- SS-36 Large metal water troughs (S)
- SS-8 Hitching bars (U)
- SS-7 "Rustic" benches (S)
- SS-19 "Contemporary" benches (NC)
- SS-20 Drinking fountain (S)
- SS-37 Interpretive wayside (NC)
- SS-4 Typical signage (S)
- SS-14 Utility structures (NC)



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PUMP STATION AND CORRAL AREA  
**SMALL-SCALE FEATURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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## North Indian Garden Area

*Refer to Sheets 27 and 28 at the end of this section.*

This character area, as defined by this report, was once the site of Ralph Cameron's tourism facilities, between 1903 and 1924. According to historic photos, Cameron and his staff built tents, irrigated gardens, constructed a pond, and developed other features within this section of Indian Garden (*See Figures 5 through 10 – Chapter II*). Development moved southward when the NPS took over the land from Cameron in the mid-1920s.

North of the current Indian Garden developed areas are outlying sites comprised of remnants and ruins from the Ralph Cameron era. These include the rock cache (or Cooler) and tent platform sites; the 1932 Rehandling Pump House and protective walls; the Kolb Studio site; and the level plinth with possible Cameron-era stone and debris in the Garden Creek floodplain north of the North Pump House.

### *Natural Systems and Features*

Much of the North Indian Garden Area rests within the **floodplain** of Garden Creek. Particularly along the northern portion of **Garden Creek** throughout the North Indian Garden Area, the banks of the creek appear scoured and eroded in places, with deep cuts into previously deposited sediment. In this character area, Garden Creek is somewhat broader and deeper than in the areas upstream to the south (*Photograph 100 and 101*). Dry, stony **washes** exist where runoff rushes down the steep eastern and western slopes into Garden Creek during storms.

### *Spatial Organization*

A **central space** is formed by a section of floodplain that has been cleared of vegetation; remnants of stone structures are visible along Garden Creek in this space (*Photograph 102*). Rising to the east is a **steep hillside** with an open vegetative character and several ruined structures described in the Indian Garden Overview located earlier in this chapter, under the heading "Archeological Sites." A **cleared space** surrounded by dense vegetation is located near the deteriorated Rehandling Pump House.

### *Land Use*

Currently, most of this character area is not in use. The sole features that are actively in use are the trails described in the Circulation section below, providing transportation and recreation opportunities for hikers.

### *Circulation*

The Bright Angel Trail Corridor overlaps with the North Indian Garden Area in the northernmost portion of Indian Garden. This northern segment of the Bright Angel Trail, as described in a previous section, runs between the tent platform and rock cache ruins and the majority of the character area. This trail continues past the Indian Garden boundary, as defined by this report, to

continue down to the Colorado River. Please refer to the Bright Angel Trail Corridor character area description for a more complete discussion regarding the Bright Angel Trail and its associated features.

The **Tonto East Trail** forks off to the east from the northern segment of the Bright Angel Trail (*Photograph 103*). Marked by a small wooden sign, the trail is a two-foot-wide backcountry trail without water bars, major grading, or steps within the Indian Garden project area boundary. The Tonto East Trail continues past the boundary and connects to the South Kaibab Trail.

The **Plateau Point Trail** is a three to five-foot-wide earthen trail with water bars and minimal grading, as it runs on relatively level ground to the west and north of Indian Garden. North of the project area, the Tonto Trail West splits from the trail. The Plateau Point Trail originates at the edge of the current developed area, just to the north and west of the Mule Barn.

### ***Vegetation***

Vegetation in the North Indian Garden Area is similar to that found elsewhere in Indian Garden, with riparian species occurring in the lower areas and blackbrush vegetation on the slopes rising up to the east. A more complete discussion regarding vegetation is located in the Indian Garden Overview section earlier in this chapter.

**Rows of cottonwood trees** in the Day Use Area form discernible rows in the floodplain where Ralph Cameron-era cabins may once have stood (*Photograph 104*).

**Himalaya blackberry**, an invasive species described in the Indian Garden Overview at the beginning of this chapter, is present in this character area. A large cleared space, where the blackberry was removed in recent years, encompasses visible stone remnants and debris piles in the North Indian Garden Area (*Photograph 102*). Blackberry shoots have begun to sprout again in this location.

### ***Buildings and Structures***

Located approximately one quarter mile north of the existing Pump Station, on Garden Creek, the 1932 **Rehandling Pump House** was built as part of the Santa Fe Railroad and the Fred Harvey Company's Indian Garden Water Pumping Station (*Photograph 105*). The system originally operated on a two-stage pumping process, whereby water was pumped out of Garden Creek from this building and sent through underground pipes up to the South Pump House Reservoir, located east of the current Mule Barn.

The one-story, stone Rehandling Pump House building once stood on the west bank of Garden Creek, but due to seasonal flooding and erosion, the building now sits within the stream bed. At an unknown date, a series of substantial stone-and-concrete walls were erected to protect the pump house from flood damage. The building is now in a deteriorated, abandoned state and silt has begun to fill the interior. Although significant damage has occurred, at present, the external walls and roof structure of the building appear to be stable. The date of abandonment is

unknown, but likely coincides with the construction of the trans-canyon water system between 1967 and 1970.

The Rehandling Pump House consists of a one-story, random-rubble stone building that measures approximately twelve feet on each side. The building features a flat, parapeted roof; factory-style, pivoting, metal windows on the north and east elevations; and a badly deteriorated, flush, metal door topped by a six-light transom. The building retains its historic hardware and electrical connection on the west elevation. The interior is stuccoed and remnants of the pumping equipment remain buried in the four-foot-deep sediment that now fills the building.

The surrounding stone-and-concrete **flood walls** form a semi-circle around the pump house (*Photograph 106*). They measure approximately five to six feet thick, and range from two feet to eight feet in height.

Remnants of Cameron-era structures are located in this character area. The rock cache (or Cooler) (*Photograph 6*), drill hole, and tent platform (*Photograph 7*) are considered archeological sites, as well as structures, and have been previously described in the Indian Garden Overview section located in the beginning of this chapter.

### *Views and Vistas*

In this character area, the Bright Angel Fault begins to open into the larger canyon, providing more encompassing and broader **views to the surrounding canyon**. Although these views are not available from the more vegetated areas along the creek, they are afforded at the open, upland areas such as the slope by the tent platform and rock cache; the Tonto East and Plateau Point Trails; and along some portions of the Bright Angel Trail (*Photograph 107*).

### *Small-scale Features*

No small-scale features were observed in this character area.

### *Archeological Sites*

Possible Cameron-era remnants include **stone edging** around level ground (*Photograph 108*). **Debris piles**, including metal cans, a wheelbarrow, and other discarded items, are also found within the Garden Creek floodplain (*Photograph 109*).

The site of the **former Kolb Studio** at Indian Garden is located at the northern end of the project area along Garden Creek just below the Bright Angel Trail (*Photograph 110*). While no structural remnants are evident on the surface, the site is marked by a densely vegetated depression on the north side of a boulder.

**Photograph 100.** Garden Creek with eroded bank and seep willows. (JMA 2002)



**Photograph 101.** Garden Creek through North Indian Garden Area. (JMA 2002)



**Photograph 102.** Cleared area of floodplain, with piles of stone and Himalaya blackberry slash. (JMA 2002)





**Photograph 103.** Tonto East Trail forking off to right (east) from Bright Angel Trail.  
(JMA 2002)



**Photograph 104.** Cottonwood trees in rows.  
(JMA 2002)



**Photograph 105.** Rehandling Pump House, 1932.  
(History Matters 2002)

**Photograph 106.** Flood walls around Rehandling Pump House. (JMA 2002)



**Photograph 107.** View to south and surrounding canyon walls from North Indian Garden Area. (JMA 2002)





**Photograph 108.** Stone edging around level ground.  
(JMA 2002)

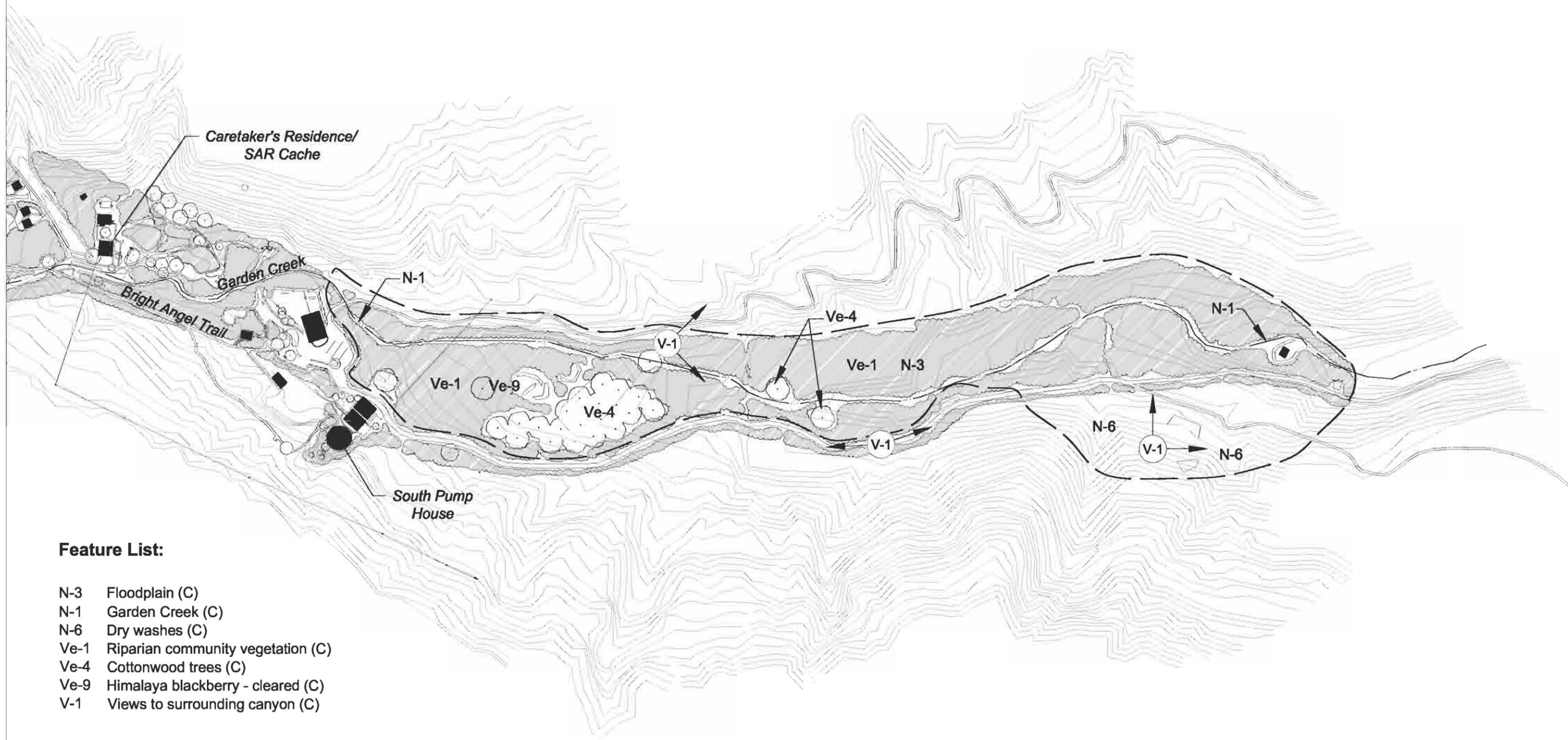


**Photograph 109.** Debris pile with wheelbarrow.  
(JMA 2002)



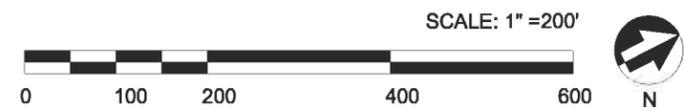
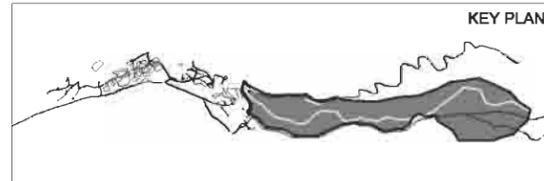
**Photograph 110.** Site of former Kolb Studio.  
(JMA 2002)





**Feature List:**

- N-3 Floodplain (C)
- N-1 Garden Creek (C)
- N-6 Dry washes (C)
- Ve-1 Riparian community vegetation (C)
- Ve-4 Cottonwood trees (C)
- Ve-9 Himalaya blackberry - cleared (C)
- V-1 Views to surrounding canyon (C)



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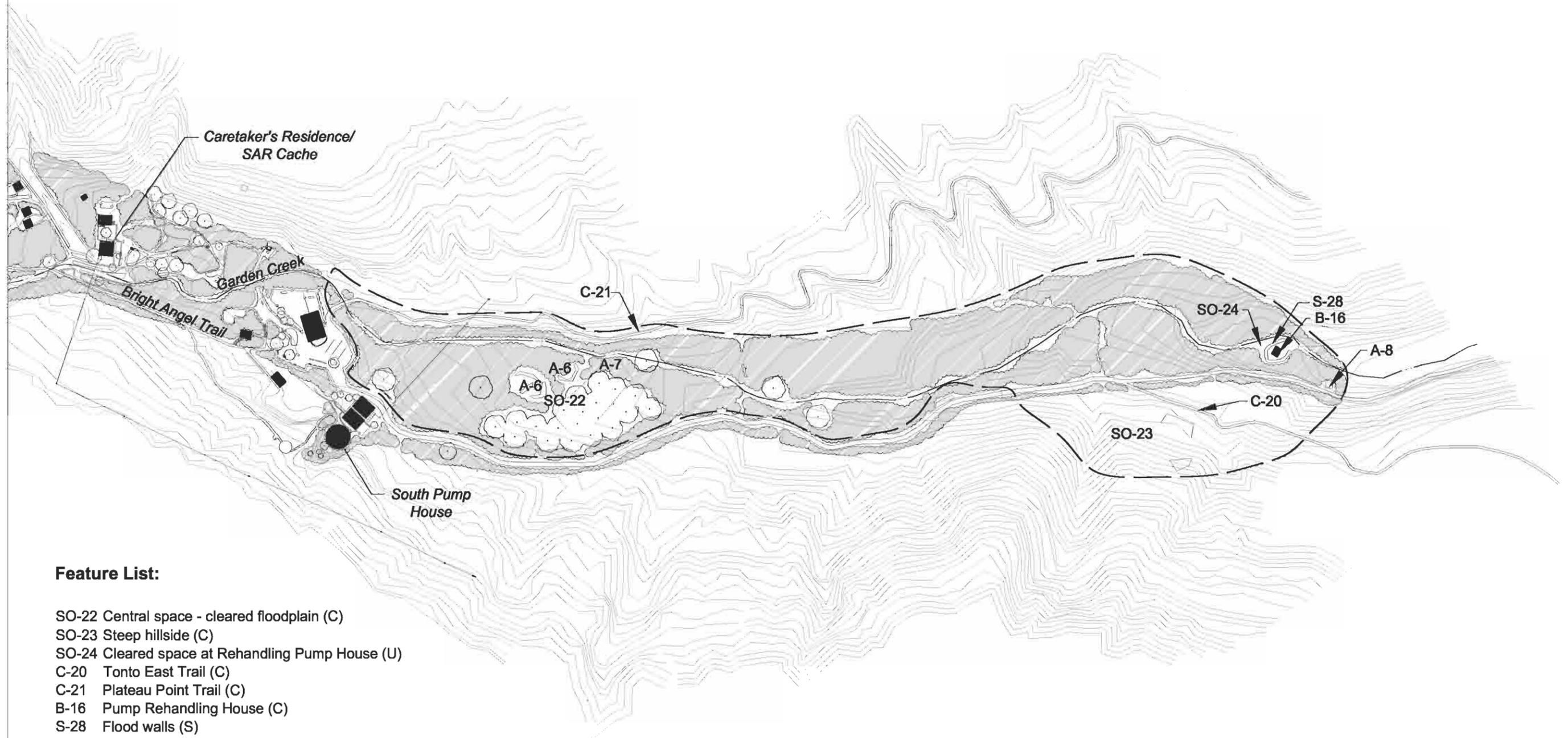
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NORTH INDIAN GARDEN AREA  
**NATURAL SYSTEMS & FEATURES  
 VEGETATION  
 VIEWS & VISTAS**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

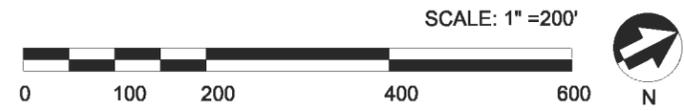
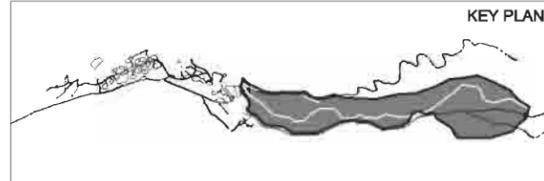
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**Feature List:**

- SO-22 Central space - cleared floodplain (C)
- SO-23 Steep hillside (C)
- SO-24 Cleared space at Rehandling Pump House (U)
- C-20 Tonto East Trail (C)
- C-21 Plateau Point Trail (C)
- B-16 Pump Rehandling House (C)
- S-28 Flood walls (S)
- A-6 Stone edging (C)
- A-7 Debris piles (C)
- A-8 Former Kolb Studio (S)



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NORTH INDIAN GARDEN AREA  
**SPATIAL ORGANIZATION  
 CIRCULATION  
 BUILDINGS & STRUCTURES**  
 GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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## Condition Assessments

### Introduction

This condition assessment describes the physical condition of landscape features within Indian Garden using standards established by the NPS in such texts as the *Resources Management Plan Guideline* and *A Guide To Cultural Landscape Reports*. These texts establish four standards for defining the condition of cultural landscape features: Good, Fair, Poor, and Unknown. These standards are described as follows:

**Good** – indicates the cultural landscape shows no clear evidence of major negative disturbances and deterioration by natural and/or human forces. The cultural landscape’s historical and natural values are as well preserved as can be expected under the given environmental conditions. No immediate action is required.

**Fair** – indicates the cultural landscape shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within three to five years to prevent further harm. If the current condition is not corrected, the landscape will deteriorate into a poor condition.

**Poor** – indicates the cultural landscape shows clear evidence of major disturbance and rapid deterioration by natural and/or human forces. Immediate corrective action is required to protect and preserve the remaining historical and natural areas.

**Unknown** – indicates that not enough information is available to make an evaluation.

This section of the Cultural Landscape Report (CLR) discusses character areas and inventoried features which have a Fair, Poor, or Unknown assessment. For each area or feature, a rationale is given for its rating. Features that are assessed in good condition are not described in detail because they require no immediate attention. A complete listing of inventoried features and their condition is located in the appendix to this report.

### Project Area-wide Condition Assessment

As a whole, the portions of Indian Garden that were rehabilitated or developed in 1989 are in good condition. This assessment applies to the Bright Angel Trail Corridor, the Administration Area, and the Pump Station and Corral Area, where development is relatively new and somewhat protected from flooding. Individual features within these character areas, however, show evidence of minor disturbances and deterioration, such as malfunctioning drinking fountains, eroded trail surfaces, stone edging that is becoming covered with earth, and similar occurrences that require some degree of corrective action.

The remaining landscape, comprised of the Day Use Area and North Indian Garden Area, is in poor condition. These two character areas exhibit clear evidence of major disturbances and rapid deterioration, including flood damage to Garden Creek and the surrounding landscape, declining and potentially hazardous cottonwood trees, unprotected historic ruins, and spaces obscured by overgrown riparian vegetation. In these character areas—and throughout the project area—all efforts should be made to repair, protect, or stabilize features assessed in poor condition to prevent further decline or loss of historic, cultural, and natural resources.

## **Bright Angel Trail Corridor**

The Bright Angel Trail Corridor is generally in fair condition, although certain features can be classified as poor. Features that are in fair and poor condition are described below. During fieldwork in September of 2003, the CLR team observed that the Corridor was primarily in fair condition owing to several minor disturbances related to frequent mule and pedestrian traffic and erosion of the trail tread, trampling and vandalism of surrounding vegetation by visitors, and general “wear-and-tear” of features over time. In general, however, these disturbances and evidences of deterioration do not require immediate attention to avoid loss or destruction of important resources.

Features that are considered to be in poor condition are the junction of the Bright Angel Trail and Garden Creek, which has experienced much flood-related damage, and the cottonwood trees which may be nearing the end of their life cycles—typically no more than 130 years—and are exhibiting decay and decline.<sup>17</sup>

### ***Fair Condition***

#### **Garden Creek**

- Flooding is eroding away the creek banks and under-cutting the side slopes.

#### **Bright Angel Trail**

- Erosion and heavy usage by pedestrians and mule trains results in a rocky and rutted trail surface. During wet weather, excessive puddling occurs on the trail and behind the water bars.

#### **Spur trails – informal**

- Pedestrian use of these unauthorized trails is causing cumulative, but not immediate, damage to the surrounding vegetation. Because they are unofficial trails, not edged in stone, visitors are more apt to wander off the path, trampling vegetation and surrounding resources.

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<sup>17</sup> United States Department of Agriculture, “Fire Effects Information System,” U.S. Forest Service Homepage: [http://www.fs.fed.us/database/feis/plants/tree/popfre/botanical\\_and\\_ecological\\_characteristics.html](http://www.fs.fed.us/database/feis/plants/tree/popfre/botanical_and_ecological_characteristics.html) (accessed 3 October 2003).

#### Edge-defining vegetation

- Visitors accidentally come into contact with the plantings or intentionally vandalize the border vegetation. During fieldwork, the CLR team observed prickly pear cactus that was etched with initials or purposely torn.

#### Redbud tree

- The redbud tree shows dieback in the tree crown. The CLR team was also unable to determine how well the tree was rooted into the boulder.

#### Stone steps to Trailside Shelter

- The step surfaces are fractured and stone rubble has accumulated on the treads.

#### Stone edging

- Throughout the character area, sections of stone edging along the trail are partially covered with earth, giving the appearance that they have sunken below the trail tread. Stones have also rolled into the middle of the trail or are missing from the edging alignment.

#### Log risers and stone water bars

- The water bars along the trail are being undercut by erosion, both from behind and beneath; many have become obstacles or trip hazards in the trail, rather than erosion-controlling devices.

### ***Poor Condition***

#### Junction of Bright Angel Trail and Garden Creek

- At this intersection, the trail is heavily eroded, due to frequent flooding of Garden Creek. An undercut slope may be hazardous to visitors, as rocks may fall upon pedestrians or mule riders, or the slope could eventually collapse. The condition of the space gives it a somewhat abandoned feeling; it is also unclear if visitors continue to use this space for any activity such as gathering or mule-hitching.

#### Cottonwood trees

- Many cottonwood trees have reached maturity and are in decline. Most trees exhibit heavy crown dieback, where sections of the upper limbs and leafy material have died.

## **Administration Area**

The Administration Area is primarily in good condition, overall, with few features in need of corrective action and most showing no clear evidence of negative disturbances or deterioration. The character area's "good" assessment is likely due to its relatively new construction, its limited use by the public, its protection from flooding, and its almost full-time occupation by NPS personnel such as rangers and trail crews. Although this area is considered to be in good condition overall, the few features in deteriorated or unknown conditions are described below.

### ***Fair Condition***

#### Stone edging

- Throughout the character area, vegetation is growing over and between individual stones thus obscuring the edging from view.

#### Horseshoes court

- The court is poorly demarcated, while the upright stakes pose a tripping hazard. Vegetation is encroaching upon the court's edges.

### ***Unknown Condition***

#### Sand filter beds and drainfield

- It is beyond the expertise and scope of the CLR team to determine the condition of these features. Qualified personnel, familiar with the design and construction of septic and sewage treatment facilities, should thoroughly check the status of the sand filter beds and drainfield.

## **Campground Area**

The Campground Area is considered to be in good condition, with no evidence of major disturbances and few features requiring corrective action. Individual features in fair condition within this character area have deteriorated due to heavy use by visitors and overgrowth of vegetation.

### ***Fair Condition***

#### Spur trails to comfort stations and camping areas

- Vegetation is encroaching upon, and growing over, trails within the character area.

#### Stone edging

- Typical of edging found throughout Indian Garden, sections of stone are sinking into the ground or are becoming obscured by overgrown vegetation.

### ***Unknown Condition***

#### Utility and irrigation boxes

- It is beyond the expertise and scope of the CLR team to determine the condition of these features. Qualified personnel, familiar with the design and construction of Indian Garden's utility and irrigation systems, should thoroughly check the status of these features.

## Day Use Area

The Day Use Area is assessed in poor condition due to the proliferation of overgrown and uncontrolled vegetation, obscured spatial and circulation patterns, and abandoned, worn, or dysfunctional structures and small-scale features. Due to its poor condition, this character area is no longer used as originally intended: as a public picnic grounds and gathering space.

### *Fair Condition*

#### Spur trail from Bright Angel Trail to SAR Cache

- The stone edging is deteriorating and the trail tread is both eroded and littered with loose rocks and smaller stones.

#### Caretaker's Residence

- This building has been assessed by the NPS in fair condition due to inappropriate and inadequate preservation and rehabilitation techniques and for weather-related deterioration.

#### Footbridge abutment

- The abutment is no longer in use. During wet weather, the concrete abutment sits in pooled water giving the appearance that it is sinking into the ground.

#### Stone retaining wall at terrace

- The eastern portion of the wall is failing, while vegetation is beginning to grow through all portions of the wall.

#### Rock edging

- The rocks retain a linear alignment, although some are partially covered with sediment and overgrown vegetation.

#### Stepping stones

- The stones are overgrown with vegetation and are loosely seated in the ground, creating a slip hazard. It is not known if the stones are a temporary or permanent measure.

#### Drinking fountains

- The drinking fountain in the northern, overgrown portion of the Day Use Area was turned off and abandoned in 2004.

#### Picnic tables

- The wood elements of the tables are weathered and warped.

#### Wood and wire mesh fence

- The gate is warped and vegetation is growing through and over the mesh.

### ***Poor Condition***

#### Picnic grounds

- The spatial and circulation organization is barely visible through the prolific vegetation, while the ground is often wet.

#### Trail network

- The trails are overgrown, have eroded surfaces which are littered with rock and vegetative debris, and are often indiscernible.

#### Concrete sidewalks

- The concrete slabs forming the sidewalks are cracked and uplifted; vegetation is growing over the edges, threatening to obscure the sidewalks.

#### Cottonwood trees

- As in other portions of the project area, the cottonwoods are over-mature and show dieback, are missing limbs, and are growing water sprouts.

#### Peach tree

- Wildlife is eating the bark leaving the peach tree in poor condition.

#### Concrete foundation

- The foundation is no longer in use and its original purpose is unclear. A large piece of the corner is missing, having broken off at an unknown date.

#### Stone steps at terrace

- Use and flood damage has eroded soil from underneath the steps, which have also shifted.

### ***Unknown Condition***

#### Floodplain and wet areas

- It is beyond the expertise and scope of the CLR team to determine the condition of these features. Qualified personnel, familiar with the assessment of floodplain and wetland environments, should thoroughly check the status of these features.

#### Trailside Shelter cleared area

- The original and intended purpose of this space is not known, and therefore the existing condition is difficult to assess.

#### Canals

- Little is known about the original location or condition of the canals. They are currently indiscernible in this character area because they have not been maintained in order to provide a wet habitat for the ambersnails.

## **Pump Station and Corral Area**

The Pump Station and Corral Area is in good condition, requiring little corrective action to preserve and maintain the existing natural and cultural resources. Individual features in fair and poor condition have resulted from flood damage, overly-mature vegetation, and general intensive use by visitors over time.

### ***Fair Condition***

#### Garden Creek

- The banks of Garden Creek are eroded and possibly unstable, while the creek bed is filled with stone and vegetative debris.

#### Spur trail – informal

- The undefined edges of the trail allow visitors to stray off the path, while surrounding vegetation is encroaching on the trail tread.

#### Chain-link fencing

- The plastic strips interwoven into the chain-link fence are cracked, broken, or missing.

#### Drinking fountain

- The drinking spigot is missing from the fountain top.

#### Interpretive wayside

- The paint is rubbing off of the metal wayside frame.

### ***Poor Condition***

#### Cottonwood trees

- As in other portions of the project area, the cottonwoods are over-mature and exhibit dieback, missing limbs, and suckers.

### ***Unknown Condition***

#### Perennial streams and dry washes

- It is beyond the expertise and scope of the this CLR to determine the condition of these features. Qualified personnel, familiar with the assessment of Inner Canyon and Indian Garden hydrology, should thoroughly check the status of these features.

#### Utility structures

- It is beyond the expertise and scope of the this CLR to determine the condition of these features. Qualified personnel, familiar with the design and construction of Indian Garden's utility systems, should thoroughly check the status of this feature.

## North Indian Garden Area

The North Indian Garden Area is in poor condition due to flood damage, lack of maintenance, overgrown vegetation, and deteriorating buildings and archeological sites. Without immediate and appropriate corrective action, historic and natural resources may be damaged or lost.

### *Fair Condition*

#### Garden Creek

- In this character area, the banks of Garden Creek are eroded, while the creek bed is filled with rock and vegetative debris.

#### Tonto East Trail

- The trail tread is eroded, having been flooded numerous times, while vegetation is encroaching along the trail edges.

#### Plateau Point Trail

- The stone edging that lines the trail is partially buried with sediment, giving it the appearance that it has sunken into the ground. Excessive mule traffic has created deep indentations in the trail surface; these indentations gather water and become puddles in wet weather.

### *Poor Condition*

#### Central space

- If this space was once related to Ralph Cameron-era use, no historic spatial organization remains. The space is currently filled with rock piles, Himalaya blackberry slash, and overgrown vegetation.

#### Cottonwood trees

- As in other portions of the project area, the cottonwoods are over-mature and exhibit dieback, missing limbs, and suckers.

#### Himalaya blackberry

- Piles of Himalaya blackberry debris, created by efforts to clear the invasive exotic shrub, lay around this character area. Blackberry shoots are sprouting again within the cleared areas.

#### Rehandling Pump House

- This abandoned building is in a deteriorated state; the window glass is broken or missing, silt from flood events has built up upon the floor, and the door is damaged. In 2004, a large flash flood collapsed metal window frames and filled the structure with rock and debris.

#### Flood walls

- The flood walls surrounding the building are crumbling due to deteriorating mortar.

#### Stone edging

- Stone edging in the character area barely retains its original alignment, is often found in piles, and does not serve its original purpose as a demarcation and directional device.

#### Debris piles

- Piles of brush, stone, and possible historic detritus are located throughout the character area. If certain debris piles contain historically and culturally important items, they will soon be lost to flood damage or general decay.

#### *Unknown Condition*

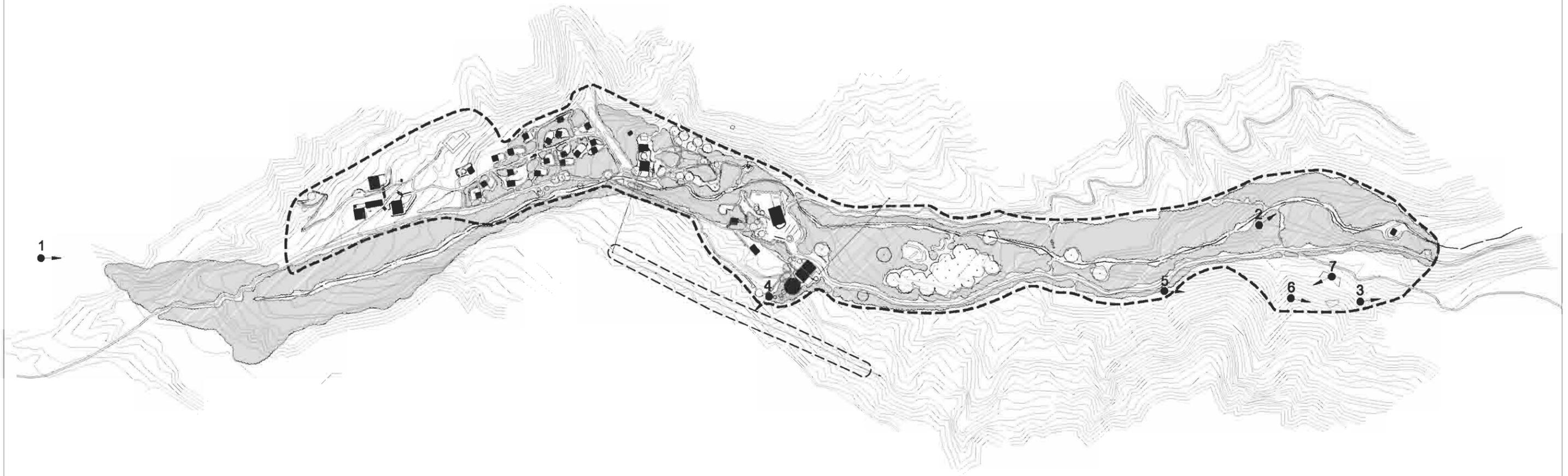
#### Floodplain and dry washes

- It is beyond the expertise and scope of the CLR team to determine the condition of these features. Qualified personnel, familiar with the assessment of Inner Canyon and Indian Garden hydrology, should thoroughly check the status of these features

#### Former Kolb Studio

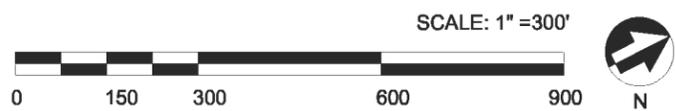
- The ruined Kolb Studio remnant is barely discernible through overgrown vegetation. It is not known if the ruin is stable, in need of repairs, or requires substantial preservation efforts.





**LEGEND FOR ALL PHOTOGRAPHIC STATION-POINT MAPS**

-  Project Area and Character Area boundaries
-  Direction in which photo was taken
-  Photograph number in text
-  Drawing matchline



A/E FIRM  
 PRIME:  
 VAN DIJK WESTLAKE REED LESKOSKY  
 PHOENIX, AZ  
 SUBCONTRACTOR:  
 JOHN MILNER ASSOCIATES, INC.  
 CHARLOTTESVILLE, VA

DESIGNED:  
 DRAWN:  
 TECH. REVIEW:  
 DATE:

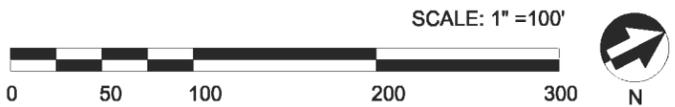
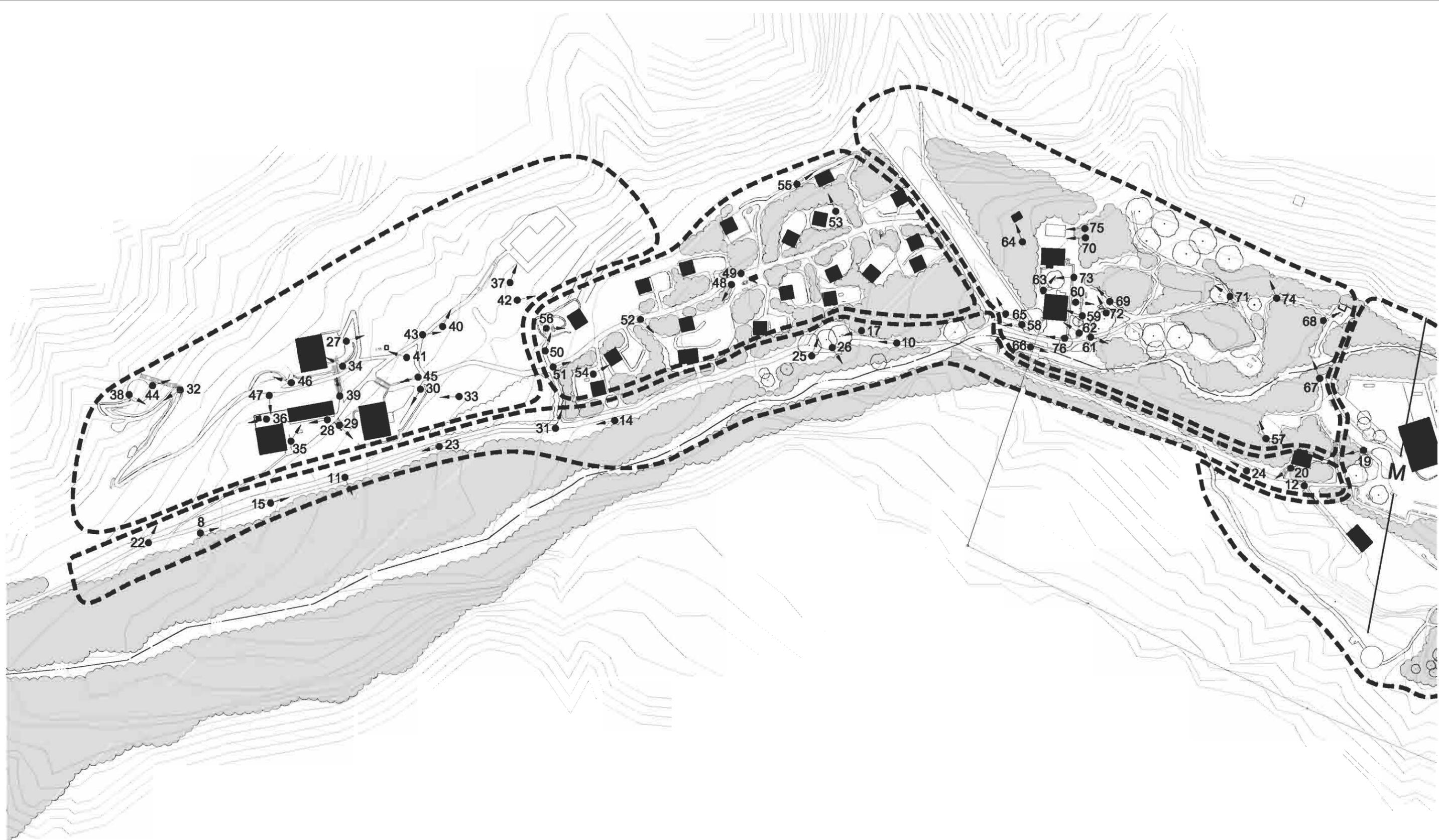
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**PHOTOGRAPHIC STATION-POINTS**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
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 PKG. NO. SHEET  
 29  
 OF 36





SCALE: 1" = 100'

A/E FIRM  
 PRIME:  
 VAN DIJK WESTLAKE REED LESKOSKY  
 PHOENIX, AZ  
 SUBCONTRACTOR:  
 JOHN MILNER ASSOCIATES, INC.  
 CHARLOTTESVILLE, VA

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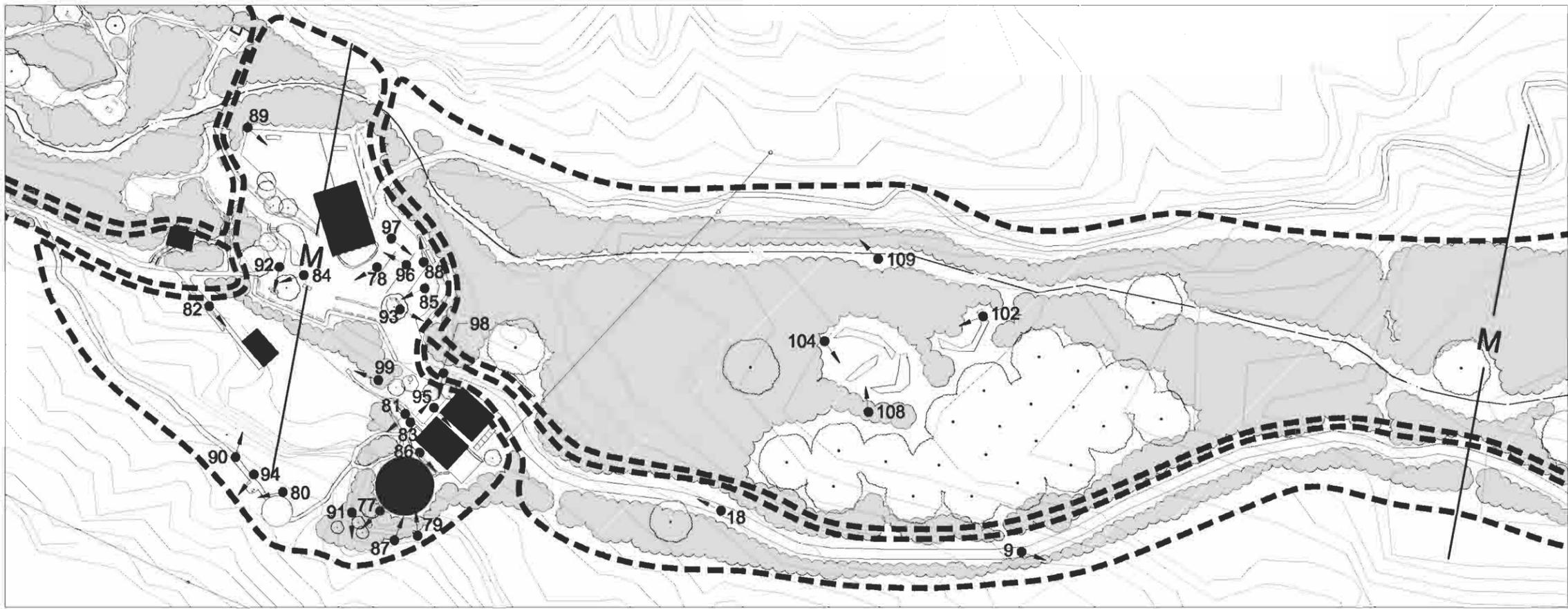
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**PHOTOGRAPHIC  
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GRAND CANYON NATIONAL PARK - INDIAN GARDEN

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 PKG. NO. SHEET  
 NO. **30**  
 OF 36

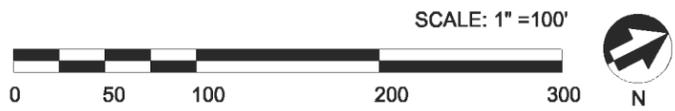




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SCALE: 1" = 100'

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 VAN DIJK WESTLAKE REED LESKOSKY  
 PHOENIX, AZ  
 SUBCONTRACTOR:  
 JOHN MILNER ASSOCIATES, INC.  
 CHARLOTTESVILLE, VA

DESIGNED:  
 DRAWN:  
 TECH. REVIEW:  
 DATE:

SUB SHEET NO.  
**P**  
 JLB  
 RMM  
 JUNE2005

**PHOTOGRAPHIC  
 STATION-POINTS**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
 20228  
 PKG. NO. SHEET  
 NO. **31**  
 OF **36**



## Chapter IV • Landscape Analysis and Evaluation





# Chapter IV • Landscape Analysis and Evaluation

## Introduction

*A Guide to Cultural Landscape Reports: Contents, Process, and Techniques* maintains that “defining the significance of a landscape involves relating findings from the site history and existing conditions to the historic context associated with the landscape.”<sup>1</sup> As part of this process, individual landscape characteristics and features are defined within the context of the landscape as a whole. Each Cultural Landscape Report (CLR) contains a statement of significance that details the relationship between the cultural landscape, its specific historic contexts, the criteria set forth within the National Register of Historic Places, and period(s) of significance.

To be eligible for the National Register of Historic Places, a cultural landscape must be significant to American history, architecture, archeology, engineering, or culture, and must exhibit this significance as a site or district that retains integrity of location, design, setting, materials, workmanship, feeling, and association. Additionally, a cultural landscape must exhibit one or more of the following criteria:

- A. Association with events that have made a significant contribution to the broad patterns of our history; or
- B. Association with the lives of persons significant in our past; or
- C. Embodiment of the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. Have yielded, or may likely yield, information important in prehistory and history.

The landscape must also continue to exhibit most or all of the physical features and characteristics that convey its significance within one or more of the four criteria mentioned above. The ability to physically convey significance is referred to as historic integrity. Integrity is determined by assessing landscape characteristics, associated features, and spatial qualities that shaped the landscape during the historic period to determine if they are present in much the same way as they were historically. As landscapes typically change and evolve over time, this assessment of integrity can be complex. Therefore, the extent to which the general character of the historic period is evident, and the degree to which intrusive or incompatible elements can be removed or reversed, is considered as part of the assessment.

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<sup>1</sup> Robert R. Page, Cathy Gilbert, and Susan Dolan, *A Guide To Cultural Landscape Reports: Contents, Process, and Techniques* (Washington, D.C.: National Park Service, 1998) 71.

The statement of significance included in this chapter discusses the ways in which Indian Garden meets any of the four National Register criteria and identifies the historical contexts, or broad patterns of history that are associated with the Indian Garden landscape. A comparative analysis of historic and existing features helps to identify contributing, non-contributing, supporting, and missing features and provides the basis for an integrity assessment. The integrity assessment establishes whether the landscape retains the features that are necessary for it to convey its historical significance. This chapter also discusses existing international and national recognition of the Grand Canyon to give an overview of how Indian Garden fits within the larger, significant park landscape.

## Existing International and National Recognition

GRCA is recognized nationally and globally as a site important to our collective heritage. First protected as a forest preserve in 1893 and then as a game preserve in 1906, the Grand Canyon was established as a national monument in 1908. Eleven years later, in 1919, the Grand Canyon was declared a national park, and by 1979 the site was added to the World Heritage List.

These numerous accolades illuminate the rich cultural and natural heritage embodied in the Grand Canyon. Indian Garden is but a part of this resource recognized for its “exceptional value or quality in illustrating and interpreting the heritage of the United States.”<sup>2</sup> The following text examines Indian Garden within the context of the Grand Canyon as a World Heritage Site and in terms of its individually significant and National Register-listed resources.

## World Heritage Site

Nominated in October of 1979 as a World Heritage Site, the Grand Canyon is “recognized as a place of universal value, containing superlative natural and cultural features that should be preserved as part of the heritage of all people.”<sup>3</sup> As stated in the World Heritage List nomination, GRCA is exceptional in meeting both natural and cultural resource criteria for designation as a world heritage site.

According to the 1995 General Management Plan (GMP), several facets of the Grand Canyon help to reinforce this designation. The Grand Canyon has exceptionally diverse biology and multiple life zones, serves as an ecological refuge, and displays rich and diverse geologic and fossil records. American Indian groups have close and sacred ties to the Grand Canyon, which has been occupied by humans for over 4,500 years. The natural scenery, quiet, and solitude offered in the park is remarkable. Unsurpassed and unique recreational opportunities, including hiking, wilderness experiences, and whitewater rafting on the Colorado River are also available.<sup>4</sup> These are just a few of the qualities that make GRCA an international treasure. As part of the Grand Canyon World Heritage Site, Indian Garden contributes to these qualities and helps to promote and sustain the traits that both educate and inspire visitors.

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<sup>2</sup> U.S. Department of the Interior, National Park Service, *National Historic Landmarks Program*, <http://www.cr.nps.gov/nhl/> (accessed 18 April 2003).

<sup>3</sup> United States, Department of the Interior, National Park Service, *Draft Grand Canyon National Park General Management Plan* (Grand Canyon, AZ: Grand Canyon National Park, March 1995), 4.

<sup>4</sup> *Ibid.*, 7-8.

## National Register Nominations

Neither Indian Garden nor its resources have been individually nominated to the National Register of Historic Places. Although this CLR focuses on Indian Garden as an individual site, certain National Register nominations have included portions of Indian Garden within their boundaries, or are located in close proximity to the CLR project area.

### Bright Angel Trail National Register of Historic Places Nomination

A 1992 draft nomination for the Bright Angel Trail was prepared by Michael Anderson and Debra Sutphen, although it has not yet been approved.<sup>5</sup> The nomination draws heavily from Teri Cleeland's 1986 thesis, "The Cross Canyon Corridor Historic District In Grand Canyon National Park: A Model For Historic Preservation"—written prior to the extensive 1989 alterations which removed some of the buildings listed in Cleeland's thesis and added additional features and use areas. Both the Bright Angel Trail nomination and Cleeland's thesis consider Indian Garden to be a site that contributes to the significance of the trail. Several of the buildings within Indian Garden are also considered to be contributing, while features developed after 1943 are classified as non-contributing. In addition to the Indian Garden site itself, the following buildings and structures are considered to be contributing in this nomination:

1. Caretaker's Residence/SAR Cache (Bldg. #93) (1932)
2. Rock House (Bldg. #18) (1943)
3. South Pumphouse (Bldg. #31) (1932)
4. Reservoir/Water Tank (Bldg. #32) (1932)
5. Rehandling Pumphouse (Bldg. #20) (1932)
6. Trail Maintainer's Tent Foundation (ca. 1905)
7. Trailside Shelter (Bldg. #143) (1937)

### Trans-Canyon Telephone Line National Register of Historic Places Nomination

A National Register nomination was written for the telephone line by Teri Cleeland and approved in 1986. Although the mid-1930s trans-canyon telephone line is not located within the Indian Garden CLR project area, it runs near the eastern edge of the Indian Garden boundary. Three telephone poles are included in this CLR as part of a discontiguous unit. The telephone line serviced Indian Garden, Phantom Ranch, and the Rest Houses along the Bright Angel Trail. According to the nomination and 2002 field observations, the telephone poles retain a high level of integrity. A description of the existing poles is located in the Indian Garden Overview section of Chapter III.

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<sup>5</sup> In August 1997, the Bright Angel Trail nomination was submitted to the Arizona State Historic Preservation Office and was determined eligible as part of a multiple property nomination for Grand Canyon Roads and Trails.

## Preliminary Statement of Significance

Due to its role in the development of tourism in the Grand Canyon and the efforts of CCC crews who built and maintained many features with Indian Garden, portions of Indian Garden are significant under **Criterion A**. Under Criterion A, Indian Garden is significant within the area of *Recreation* for its association with tourism-related activities begun by Ralph Cameron and continued as part of the Grand Canyon National Park, and as one of the few developed inner-canyon sites to serve tourists. Additionally, Indian Garden is significant within the area of *Politics/Government* because of its association with Federal relief programs of the 1930s and early 1940s, including the Civilian Conservation Corps (CCC) program that brought crews of laborers to develop and maintain Indian Garden.

Indian Garden is also significant under **Criterion C**, within the area of *Architecture*, for its collection of buildings designed in the NPS Rustic architectural style. Indian Garden may also be significant under Criterion C within the area of *Engineering*, for the design and construction of the Santa Fe Railway's water pumping system. A quote from *Polishing the Jewel, An Administrative History of Grand Canyon National Park* suggests that the water system may be eligible for the National Register as an example of innovative engineering:

Completed in August 1932, the new system consisted of a pumping plant with two sets of two turbine pumps, together capable of delivering eighty-five gallons per minute (gpm) from a 70,000-gallon concrete reservoir through 12,000 feet of six-inch pipe against a static head of 3,300 vertical feet. Some of its more sophisticated features included remote operation from the village power plant, auxiliary pumps at lower springs that fed the upstream reservoir, a photoelectric cell that automatically diverted silty water before reaching the pumps, thermostats that warned plant operators to start idle pumps to keep pipes from freezing, water softeners, and chlorinators.<sup>6</sup>

At present, it is not known how the design and complexity of this historic water system compares to other systems built during the same era. Additional engineering-related research and comparison should be undertaken to determine whether the pipeline embodies the distinctive characteristics of a type, period, or method of construction; in other words, whether the water pumping system was innovative or unusual for its time or if its method of construction was once widely practiced but is now represented in only a few locations. Research must also be undertaken to assess the integrity of the water system and whether it exists much as it did during the period of significance or if it has undergone so many changes that no historic portions remain.

Indian Garden may also be significant under **Criterion D**, within the area of *Ethnic Heritage*, for its association with, and potential to yield information about, American Indian groups that historically and prehistorically utilized Indian Garden resources. Indian Garden may also be

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<sup>6</sup> Michael F. Anderson, *Polishing the Jewel; An Administrative History of Grand Canyon National Park* (Grand Canyon, AZ: Grand Canyon Association, 2000), 27.

significant under Criterion D within the area of *Recreation* for its Ralph Cameron-era resources that may yield information about early tourism and site development within the inner canyon.

## **Period of Significance**

The period of significance for Indian Garden spans from 1903, when Ralph Cameron began his tourism operations in Indian Garden, until 1943, the year that the Pump Caretaker's Residence/Rock House was rebuilt after having burned the year before. The end year of 1943 also marks the waning of Rustic-style design in Indian Garden. Within this overall period of significance, two sub-periods exist. The first sub-period extends from 1903 until 1927, reflecting the years of Ralph Cameron's control over the Bright Angel Trail and the Indian Garden landscape; this sub-period ends when the NPS officially gained control over these lands. The second sub-period spans from 1927 until 1943; the earlier date represents the first year of official NPS administration of Indian Garden, while the end-date represents the year when the Rock House was rebuilt.

## **Historical Contexts**

### **1100 BP-1860s: American Indian Use and Occupation of Indian Garden**

The presence of American Indian cultures in and near Indian Garden represents an intermittent yet continuous use and occupation of a singular area within the Grand Canyon. According to Teri Cleeland's thesis, archeological evidence from Indian Garden indicates the presence of prehistoric ancestral Puebloan and Cohonina cultures from 1100 BP.<sup>7</sup> These cultures seasonally migrated to and from Indian Garden to take advantage of Garden Creek and other surrounding resources. Garden Creek provided these peoples with water for drinking, cooking, and irrigation.

Beginning about 700 BP, the Havasupai and other Pai people began to migrate into the Grand Canyon and inner canyon. These peoples, particularly the Havasupai, spent winters on the rim and planting and harvesting seasons in the inner canyon where water was available. Havasupai seasonal use of Indian Garden continued until the late nineteenth century. "Big Jim" was one of the Havasupai who was born in the vicinity of Indian Garden and whose family seasonally occupied the site until the 1910s. The Havasupai eventually abandoned Indian Garden, likely due to the growing presence of European Americans at the Grand Canyon in the late nineteenth century.

### **1903-1927: Tourism and Early Development in Indian Garden**

Anglo-American usage of Indian Garden began largely with mining claims. Garden Creek ran through Indian Garden and provided a constant source of water for the operation of small mining facilities nearby. Tourism in Indian Garden began in earnest when a few miners and their compatriots discovered that providing mule rides into the inner canyon and refreshments brought a larger income than their earlier entrepreneurial efforts.

Expecting great returns on their investments in mining claims, and encouraged by the increasing network of railroad lines, people moved to the Grand Canyon region to exploit its potential

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<sup>7</sup> Teri Cleeland, "The Cross Canyon Corridor Historic District in Grand Canyon National Park" (Master's thesis, Northern Arizona University, 1986), 27-28.

resources. When these ventures did not produce great financial returns, and shipping ore became too expensive due to transportation limitations, some miners turned to tourism operations to recoup their losses.<sup>8</sup>

With the growing mobility provided by railroad lines and eventually the automobile, American interest in tourism grew rapidly—encouraging the new mule ride and refreshment concessions and increasing trail toll collections at the Grand Canyon. Railroads and improved automobile roads were able to bring tourists to the South Rim and Grand Canyon Village in high numbers. The Bright Angel Trail provided a recreational opportunity for these tourists, who stopped at Indian Garden on their journey along the trail. Indian Garden was one of the few tourist facilities below the rim that provided an oasis of relative comfort in a region known for its heat and aridity. The amenities, particularly drinking water and shade, provided at Indian Garden made the trip down the Bright Angel Trail more accessible for mule riders and hikers, thus increasing the number of people who were willing and able to travel into the canyon. The luxuries, however minimal, created by Ralph Cameron’s tourist camps and later continued by the NPS, likely helped increase the number of Grand Canyon visitors while opening up the inner canyon to people interested in going beyond the typical South Rim experience.

### **1927-1943: National Park Service and Concessionaire Development of Indian Garden**

In 1927, after years of legal battles with Ralph Cameron, the NPS finally gained control of Indian Garden and Bright Angel Trail. Over the next few years, the NPS—with the help of Santa Fe Railway engineers—made efforts to clean up, develop, and manage Indian Garden, because much of Ralph Cameron’s original Indian Garden was abandoned or in disrepair and Garden Creek was contaminated from visitor overuse.

Similar to the Grand Canyon Village on the south rim, development in Indian Garden was fueled by both the NPS and the Santa Fe Railway. These two entities worked together to construct and improve facilities that shaped Indian Garden. Development followed no apparent plan, except for initially being located near the boundaries of Cameron’s former camp site, along the course of the Bright Angel Trail, and partially out of the path of flooding. While Indian Garden’s development was minimal in comparison to that of the Village and Bright Angel Peninsula on the North Rim, the effort to construct facilities below the rim—in manpower, mule-power, and engineering ingenuity—was considerable.

The Santa Fe Railway began constructing its water pumping system in 1931, which included the South Pump House, the Reservoir, the Rehandling Pump House, and the Pump Caretaker’s Residence. Perhaps the most important feature of this system was the pipeline which pumped water from Indian Garden to the South Rim, providing thousands of people with a reliable water source and eliminating the need to haul water to the rim by train.

The NPS built and planned facilities to provide comfort and safety to park visitors and staff. These facilities included the Trail Shelter, Caretaker’s Residence, a mule barn and corral,

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<sup>8</sup> J. Donald Hughes, *In the House of Stone and Light* (Grand Canyon, AZ: Grand Canyon Natural History Association, 1978), 47.

comfort stations, and a picnic area. Consequently, trails and paths were built to access each feature.

NPS development also included extensive utility systems, such as underground power lines, sewer lines and sludge trenches, telephone lines, and water hydrants. Because of frequent flooding, NPS engineers also devised various methods of erosion control that were implemented throughout Indian Garden. Slope-stabilizing vegetation was also introduced into Indian Garden to help control erosion along the Garden Creek banks, while the Garden Creek channel was rip-rapped and mortared to prevent wash-outs.

By 1943, Indian Garden was one of the few developed areas along the Bright Angel Trail, providing shady spots to gather, a place to corral mules, a water pumping system, and year-round housing for NPS and Santa Fe staff, as well as the infrastructure to support these features.

### **1927-1943: National Park Service Architecture in Indian Garden**

In their post-Cameron rehabilitation of Indian Garden, the NPS implemented typical Rustic Style architectural principles seen more prominently in the Grand Canyon Village on the south rim and Bright Angel Point of the north rim. The primary intent of the Rustic Style was to subordinate or harmonize a structure to its environment.<sup>9</sup> This unique architectural style was an effort to fit human-made objects into a natural landscape with minimal intrusion or disruption in the visual experience. To this end, much of the architecture designed and constructed by the NPS in Indian Garden featured wood construction, steeply-pitched overhanging roofs, and foundations, walls, and piers built of locally-available stone. Examples of Rustic Style architecture in Indian Garden include the Caretaker's Residence/SAR Cache, the South Pump House, and the Trailside Shelter.

### **1933-1942: Role of Federal Relief Programs in the Development of Indian Garden**

Beginning in 1933, CCC crews were assigned to work in GRCA. The CCC was part of the U.S. government's effort to relieve some effects of the Great Depression by creating Federally-funded jobs for men. The result was crews of laborers who were often sent to state and national parks to undertake construction and development projects.

Indian Garden was one of the recipients of CCC attention during this era. CCC crews built the trans-canyon telephone line, improved the Indian Garden campgrounds, constructed the Trailside Shelter in Indian Garden, built the original mule barn, constructed an interpretive exhibit about trilobites, and performed erosion control work, as well as maintained the entire Bright Angel Trail.<sup>10</sup> Other work likely consisted of constructing or improving parts of the water pipeline system, irrigation systems throughout Indian Garden, wastewater treatment facilities, and trails. Without the efforts of CCC laborers, Indian Garden would not have developed in the manner and to the extent that it did.

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<sup>9</sup> U.S. Department of the Interior, National Park Service, *Grand Canyon National Park Architectural Character Guidelines* (Grand Canyon, AZ: Grand Canyon National Park, 1994), 14.

<sup>10</sup> Patricia Mott. *Memorandum to Division Chief, Res. Mgmt.; Historic Architect; Cultural Resources Manager; Res. Mgmt. Files on Historic Structures, Regarding CCC Work Projects in Grand Canyon National Park*. November 28, 1983. (Grand Canyon Museum Collection Accession #58700).

# Comparative Analysis of Historic and Existing Conditions

## Introduction

A comparative analysis of historic and existing conditions is useful in understanding the relationship between the 2002 Indian Garden landscape (documented in Chapter III) and the landscape that existed during the period of significance. In general, this analysis focused on extant features and their date of origin. Known missing features are also identified. The three primary goals for developing this comparative analysis of historic landscape features are:

- 1) to understand which features contribute to the significance of the landscapes;
- 2) to serve as the basis for an integrity evaluation; and
- 3) to provide insight into the similarities and differences between historic and existing conditions that will contribute to the development of a well-grounded treatment plan for the cultural landscape.

The comparative analysis is first organized into an overview of the Indian Garden landscape, and then according to the landscape characteristics identified in Chapter III Existing Conditions. These characteristics are Natural Systems and Features, Spatial Organization, Land Use, Circulation, Vegetation, Buildings and Structures, Views, and Small-scale Features. Comparative photograph pairs are located at the end of this section.

A detailed listing of inventoried features is located in Appendix A. Within the list, each feature has been assessed—based on the comparative analysis prepared below—as either contributing, supporting, non-contributing, or undetermined (insufficient documentation available to assess the date of origin of the feature). These assessments are discussed in more detail later in this chapter.

## Overview

Indian Garden has changed significantly over time, both during and after the period of significance. Because of frequent flood events that required reconstruction of the landscape, and the need to continually develop—and redevelop—the site to meet the needs of visitors and park personnel, the NPS has rehabilitated Indian Garden several times. The most marked changes occurred in the late 1920s and 1930s, when the NPS removed Ralph Cameron’s tent camps and tourist concession facilities and implemented their own plans in conjunction with the CCC and Santa Fe Railway; in the 1960s, when the NPS added more buildings and rearranged the spatial organization; and in the late 1980s, when the NPS created entirely new spaces, constructed and relocated several buildings and structures, and altered much of the historic character that was present between 1903 and 1943. As a credit to the designers of the 1989 rehabilitation, however, new features and work was completed in such a way to be generally compatible with the historic character, as well as the character of the surrounding inner canyon landscape. Through the use of Rustic Revival architecture, local materials such as native plants, stone, and wood, many new features can be classified as supporting rather than non-contributing, as noted later in this chapter.

The greatest difference between the landscape during the period of significance and at present is the organization of spatial patterns and the number and location of buildings and structures. These two landscape characteristics, more than any other, suggest the extent to which Indian Garden has irreversibly changed since the period of significance. The current location and complexity of circulation patterns, in comparison with the simplicity of historic patterns, also signals the large degree to which the landscape has been altered.

Features that have remained the same, or in the same location, over time are few in number and tend to be grouped together; these features include those associated with the Caretaker's Residence/ SAR Cache site and the Pump House node. These two locales remain the least changed, as the surrounding landscape has been rehabilitated and redeveloped around them. Remnants of the Cameron-era sub-period of significance are few; including not much more than building remnants and ruins and traces of his tent camp location amid the faint rows of hundred-year-old cottonwood trees.

In sum, the comparative analysis below will show that the Indian Garden landscape of today is not that of the period of significance. Although several pieces of historic landscape fabric remain, when viewed as a whole, the historic character of Indian Garden has changed to a great degree.

## **Natural Features and Systems**

Humans were first drawn to Indian Garden for its water resources—including springs, seeps, and Garden Creek. The water provided irrigation for American Indian crops, power for mining operations, and cooling refreshment for tourists. In the early part of the period of significance—during Ralph Cameron's tenure in Indian Garden—water from Garden Creek was mainly used to irrigate vegetable gardens, as an aid for developing photographs at the Kolb Brothers' studio, and likely for food preparation activities. Although a dam was placed across the flow of Garden Creek to create a pond, there was little physical manipulation to water resources, in contrast to later years.

In the middle to later portion of the period of significance—during NPS control of Indian Garden—NPS and CCC crews, along with Santa Fe Railway civil engineers, created ways to harness these water resources. The NPS and Santa Fe Railway collaborated to install pipeline and water handling facilities to carry water from Garden Creek up to the South Rim. The Garden Creek bed was channelized with riprap and mortar to prevent washouts from frequent flooding. Over time, people involved with managing Indian Garden turned from viewing water as an entirely welcome resource to attempting to control the flood events and natural creek flow.

Overall, however, Garden Creek retains much of the same course at present as it did during the period of significance. It is highly likely that the creek bed margins and floodplain have shifted over time, due to flooding and naturally-occurring erosion of the creek banks. It is not known if the amount of water flowing through the creek has increased or decreased since the period of significance. Similarly, the current versus historic condition of the springs, seeps, and dry washes is unknown. The 1995 GMP, however, states that water resource management studies will be undertaken, such as the impact of water diversion or groundwater withdrawal on seeps and

springs and an in-stream flow study for Garden Creek; the NPS's requirement of these studies suggests that water flow and management has changed over time.<sup>11</sup>

The surrounding cliffs of the South Rim and desertscrub-covered slopes appear to have changed very little. Erosion and flooding have, however, impacted some of the rocky slopes closer to the creek by undercutting the slope toe and exposing loose soil and rock.

The wildlife component of Indian Garden is not well-documented from a historical point-of-view. It is likely that any native wildlife present in Indian Garden during the period of significance still continues to reside on the site in 2002, due to lack of climactic changes. No antelope remain, however, from a herd introduced in the 1930s as part of an artificial feeding program meant to grow the herd as a tourist attraction and vegetation restoration instigator.

## **Spatial Organization**

Spatial organization in 2002 differs greatly from that present during the period of significance—particularly from the Cameron-era years. Spatial patterns have changed both in complexity and number, due to the development of the site over time.

During the Cameron years of the period of significance, from 1903 until 1927, space was organized in a fairly central location along the Bright Angel Trail (*Figures 51 and 51a*). Cameron's stone house, the tent frame grouping, the vegetable garden, and other miscellaneous buildings and structures formed a corridor of space along the trail, upon which all these features were focused. Other subordinate spaces included the corral to the south and the alfalfa field to the north.

When the NPS gained control over the site in 1927, their work crews demolished Cameron's buildings and structures and replaced them with their own development. The new NPS-era construction began in a similar location as Cameron's former camp, south and west of the Bright Angel Trail/Plateau Point Trail split. However, while these NPS-era spaces were also aligned along the Bright Angel Trail, they focused more inwardly upon themselves, creating separate spaces, rather than reinforcing the trail as both gathering space and passage corridor.

Between 1927 and 1943, NPS-constructed spaces included a picnic area, a stone wall-enclosed gathering space which is no longer extant; a space north of the Caretaker's Residence which once contained dry-laid stone erosion-control or sewage-handling channels and Cameron's remnant cottonwood tree rows; and the Pump House space, which is still extant, yet has expanded in square footage since the period of significance. Patterns of spatial organization missing from the latter period of significance are the Mule Barn and Corral space—now located approximately where a picnic area once stood, and the former sludge trenches—once located west of the current Day Use Area. The only spatial pattern that can be said to remain from the early part of the period of significance, 1903 until 1927, are the faintly distinguishable rows of trees that once helped define the rows of tent frames used by early tourists.

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<sup>11</sup> GMP, 24.

The spatial organization of Indian Garden remained fairly similar to its NPS-era period of significance incarnation until 1989, when the NPS again performed a massive rehabilitation of the site. The result was a reorganization of spaces that already existed and the addition of new patterns to the south, making the site even less centrally-focused than during the latter portion of the period of significance. Although smaller spaces, such as the terrace between the Caretaker's Residence and Rock House, the Trailside Shelter space, and the Pump House space remain from the period of significance, overall historic spatial patterns are no longer intact.

## Land Use

The essential land uses of tourism and recreation remain intact from the period of significance. Throughout and after the period of significance, land uses have been expanded to accommodate increased numbers of visitors, provide for visitor comfort and safety, and efficiently pump water to the South Rim.

Land uses that were added or expanded since the period of significance include safety facilities, such as the first aid clinic and helicopter landings spots; administrative facilities such as the formal ranger residence and laundry room; and maintenance facilities such as the repair shop, trail and maintenance crew bunkhouses, and second pump house.

Land uses that are no longer extant from the period of significance are the retail opportunities once provided by Ralph Cameron's concessions.

## Circulation

Bright Angel Trail was the primary circulation corridor through Indian Garden during the period of significance and it remains so at present. The trail alignment has shifted over time to repair trail sections due to flood damage, to lessen the grade or otherwise make the trail easier to travel upon, and to make way for the addition of new features. These adaptations, however, were few and did little to alter the overall course of the trail. The greatest change came in the late 1920s when the NPS re-routed the Cameron-era Bright Angel Trail farther east of its original position. The Plateau Point Trail, unlike the Bright Angel Trail, has apparently undergone few alignment modifications; the greatest change to the trail since was its renaming from "Trail to Hermit Basin" to "Plateau Point Trail" at an unknown date. Only vestiges of the "Trail to Turtle Head," once located between the Plateau Point and Bright Angel Trails, remain.

As with spatial organization, the circulation patterns in Indian Garden have become increasingly complex since 1903, due to new development during and after the period of significance. Between 1903 and 1927, Ralph Cameron's Indian Garden circulation was fairly simple in organization, being aligned around and along the Bright Angel Trail. Separate circulation systems likely consisted of earthen trails leading to the mule corral and sheds, within the row of tents, around the grouping of maintenance and operations facilities, and possibly to the old alfalfa field.

When the NPS took control of the site in 1927, and until the period of significance ended in 1943, their revitalization efforts simultaneously removed most of Cameron's circulation and

created new patterns of their own. Although the new NPS circulation patterns were slightly more complex and structured, they were relatively uncomplicated compared to existing patterns of circulation. The paths and trails during the latter part of the period of significance were also earthen in composition, included stone steps, and possibly stone edging.

The most significant difference between the current and historic circulation patterns in Indian Garden is the ratio of internal versus external circulation features. During the period of significance, circulation systems were relatively open and interconnected, almost forming a singular network. At present, Indian Garden has several circulation systems that are independent, yet linked together at certain points within the site. These internal systems are evident in the Administration Area, Campground Area, and Day Use Area whose circulation patterns are very internally focused, yet can be reached by connector trails. The circulation patterns within the Pump Station and Corral Area are more comparable to historic circulation systems.

## Vegetation

During the period of significance, three types of vegetation existed: native brush and riparian vegetation, vegetation that was cultivated for food, and vegetation that was introduced into the site to provide shade and stabilize slopes.

Cultivated vegetation occurred during the Cameron years in the form of vegetable plots, fruit trees, and alfalfa for mule feed. The NPS revitalization efforts removed the vegetable and alfalfa plots, although it is not known if any fruit trees existed during the latter period of significance. At present, no cultivated vegetation exists in Indian Garden.

Throughout the period of significance, historic photographs show that the density and coverage of native riparian vegetation has increased (*Figures 52 and 52a*). The NPS may have intentionally fostered the growth of native vegetation, in order to provide visitors with cooling shade. Although this CLR has determined that the density and coverage of native vegetation increased between Cameron's tenure in Indian Garden and the NPS years of the period of significance, it is not fully known to what extent native vegetation trends have altered *since* the period of significance. It is likely, however, that vegetation density continued to increase, particularly in the current Day Use Area and North Indian Garden Area landscape character areas (*Figures 53 and 53a, 54 and 54a*). This character area was once more open and not as densely vegetated than at present, and possibly irrigated with canals. However, when the Niobrara ambersnail, an endangered snail species, was thought to have been discovered in the Day Use Area in the 1990s, all use and alterations of the space were forbidden.<sup>12</sup> Rangers and maintenance personnel were not permitted to maintain the area, vegetation was allowed to grow unchecked, and this landscape character area now has qualities similar to those of a wetland.

Prior to the prohibition of exotic and invasive species in the park, certain non-native plants were installed in Indian Garden in the 1930s and possibly earlier. Himalaya blackberry (*Rubus*

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<sup>12</sup> Once thought to be Kanab ambersnails, biologists now consider the snails to be *Oxyloma haydeni haydeni* (Niobrara ambersnail). The Niobrara ambersnail, while considered a "sensitive" species, is not endangered.

*procerus* syn. *R. discolor*) and raspberry (*Rubus* sp.) were listed on a 1935 planting list for Indian Garden. At present, only the Himalaya blackberry plants were observed on-site.

Native plants were also transplanted into Indian Garden to both increase shade and provide erosion control along the frequently washed-out Garden Creek banks. In the same 1935 plant list mentioned above, redbuds (*Cercis occidentalis*), burro bush (*Ambrosia dumosa*), grapes, and willows were designated. The latter two plants may be the Arizona grape (*Vitis arizonica*) and seep willow (*Baccharis salicipholia*) that are native to the region. Many of these plants on the plant list, except the burro bush, were observed during fieldwork, although it is not known if they were installed as part of the 1935 planting effort. Additionally, Ralph Cameron planted native cottonwood trees (*Populus fremontii*) at Indian Garden to create shade for his customers. His tree rows, once located between tent frames in the early part of the period of significance, are still discernible at present—one of the few remnants of the Cameron era in Indian Garden.

Due to the lack of formal, geometric planting designs, the use of native plants, and the loosely-placed vegetation shown in a 1935 planting plan, it is likely that the NPS designers of Indian Garden followed Rustic Style design principles of the time. The vegetation in the planting plan appears to have been sited to both prevent erosion and to blend unobtrusively into the landscape. It appears that these planting design principles are still visible at present. Mature vegetation still appears to be located “naturalistically,” rather than as part of a formal design, while new plant installations from 1989 follow similar principles.

After the end-date of the period of significance, the NPS continued to transplant native vegetation into Indian Garden, particularly during the 1989 rehabilitation work.

## **Buildings and Structures**

No buildings and structures, and only a few ruins, remain from the early period of significance—during Ralph Cameron’s tenure between 1903 and 1927. This is due to the thorough job undertaken by the NPS in 1927 of removing all Cameron-related buildings and structures. At one time Cameron’s Indian Garden camp included a mule corral and shed, incinerator, tents, a tool shed, a laundry tent, toilets, a root cellar, Cameron’s stone house, a kitchen, and several lengths of stone wall (*Figures 51 and 51a, 52 and 52a*). The only building-related remnants are stone platform foundations of a trailkeeper’s tent, a compilation of rocks that served either as a toilet or food cooler, and an area once used as the Kolb Brother’s studio. Certain piles of stone and debris throughout the CLR project area may also be remnants of this time, but are not yet identifiable as such.

In contrast, many of the major buildings and structures from the NPS-era period of significance, from 1927 until 1943, remain intact. These features, built by either the NPS, Santa Fe Railway or the CCC on behalf of the NPS, include the 1932 Caretaker’s Residence (now known as the SAR Cache) and terrace (*Figures 55 and 55a*); the 1932 South Pump House; the 1932 Reservoir (or sedimentation tank); the 1932 Rehandling Pump House; the 1937 Trailside Shelter and steps (*Figures 56 and 56a*); the trans-canyon telephone line; portions of the Garden Creek riprap channelization; and the concrete intake and valve box above the Reservoir. The Rock House, which burned in 1942, was re-built in 1943 (*Figures 57 and 57a*).

It is likely, although difficult to ascertain without earth-disturbing excavations, that many of the underground utility lines from the period of significance remain in place, although in an unused state. These utilities likely include underground sewage treatment facilities, such as sludge trenches and drain fields, underground electric lines, and underground water pipelines.

Buildings and structures missing from the period of significance of 1927 until 1943 include the stone-lined ditches that were part either of the 1930s erosion control or sewage-handling system, latrines once located north of the Caretaker's Residence, stone walls around the former Picnic Area, and a mule barn and corral.

Many new features were built after the period of significance ended in 1943. A bunkhouse was built in 1965, north of the Rock House, but demolished in 1989. A second bunkhouse was built west of the Rock House in 1986 and subsequently moved to the new Administration Area landscape character area in 1989. All the remaining buildings and structures in the Administration Area and Campground Area post-date the period of significance and were built in the mid-to-late 1980s. The helispots, sand filter beds, and drain field were built as part of the 1989 rehabilitation. The gabion walls south of the Caretaker's Residence were built after 1943—likely in the 1960s. The 1970's mule barn and corral, which replaced the 1930's mule barn and corral, was replaced in a different location in 1989.

## **Views and Vistas**

During the earlier sub-period of significance, when Indian Garden was under Ralph Cameron's control and guidance, the Indian Garden landscape was much more open and exposed. Fewer mature trees and less riparian vegetation during this time allowed a full range of views through the site—the entire complex could be viewed from any one particular location in Indian Garden.

As more features began to be added to the Indian Garden landscape between 1927 and 1943, and the vegetation grew taller and more dense, views through the site to other spaces became more foreshortened. The vegetation and buildings created visual barriers between spaces, preventing all-encompassing views of Indian Garden.

Since the period of significance, views within the project area have become increasingly foreshortened and fractured. Vegetation continued to grow, both in height and density, resulting in limited viewsheds. It is now possible for a person to stand in one area and have no visual access to surrounding spaces. The spaces created during the 1989 rehabilitation, however, afford new and different view opportunities. The southern helispot, in particular, provides sweeping overhead views of the entire site due to its elevated position above Indian Garden. The only views common to both the period of significance and existing conditions are the views available to the surrounding canyon walls. These views have changed little over time, altered only by the increasing height of trees.

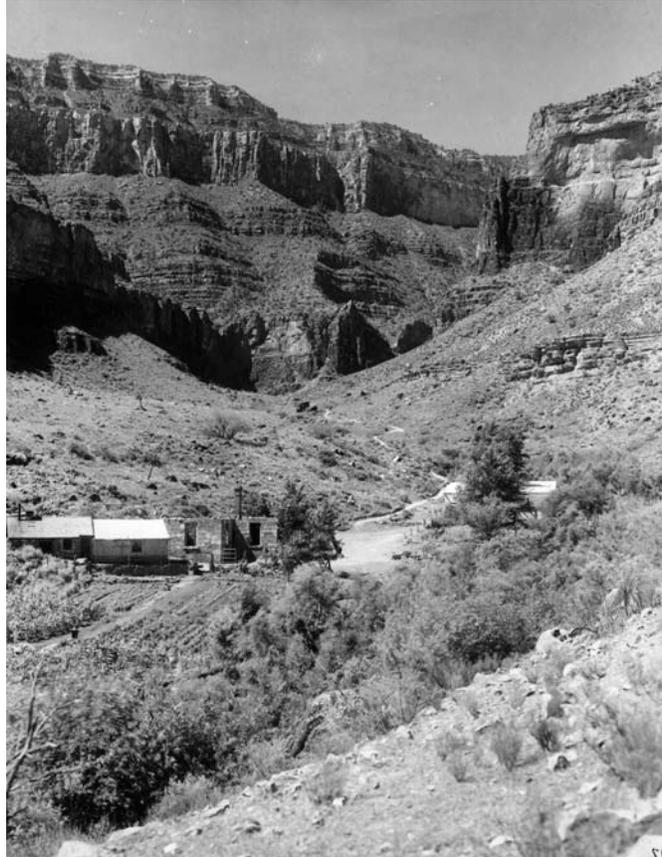
## **Small-scale Features**

No visible, intact small-scale features remain from the Cameron-era sub-period of significance, although some features may be underground. While no known features remain, existing small-

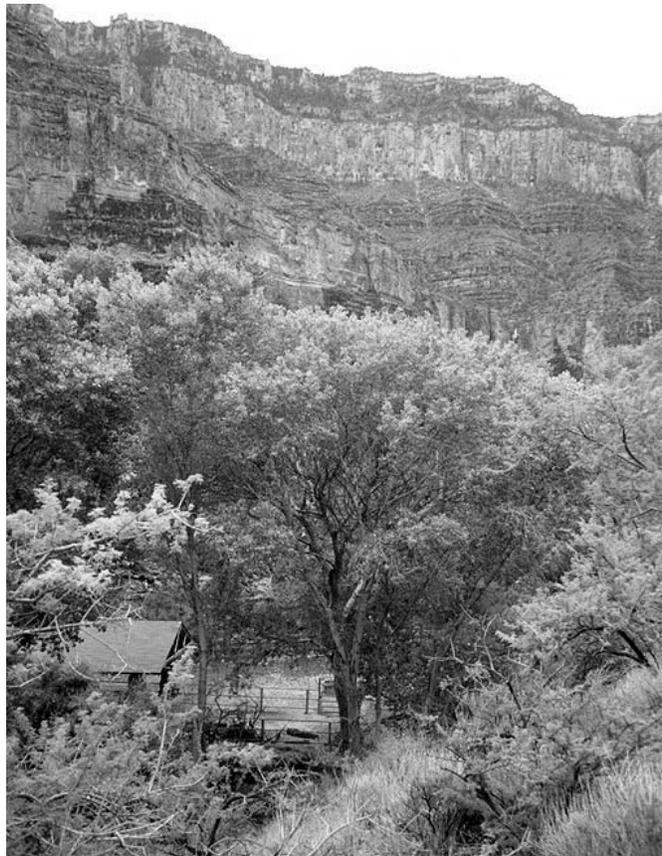
scale features perform many of the same functions; missing features such as hitch racks, signage, rain gauges, and wood fencing have been replaced over time with more contemporary materials. Features that were not updated and replaced, such as the oil float box, Kolb Studio items, and small-scale features related to Cameron's retail enterprises, were likely no longer needed.

The type and extent of small-scale features present in Indian Garden between 1927 and 1943 are difficult to assess due to lack of graphic and photographic documentation. It is likely, as with the Cameron-era sub-period of significance, that many features have been upgraded over time using contemporary materials. These features may include hitch racks, water troughs, fences, signage, and seating. Many photographs taken between 1927 and 1943 also show temporary construction-related items—including wheelbarrows, sawhorses, and pulleys.

**Figure 51.** View of Cameron's Stone House and auxiliary buildings, looking south, 1920.  
(Northern Arizona University Cline Library, Call #NAU.PH.95.44.52.2)

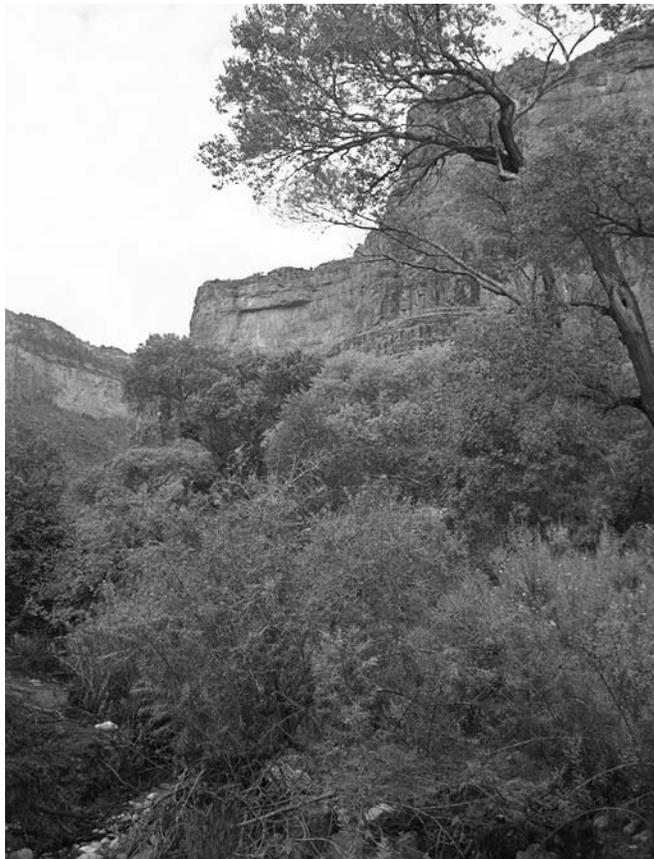


**Figure 51a.** View of 1989 Mule Barn and Corral in approximate location of Cameron's stone house, 2002. (JMA 2002)





**Figure 52.** View of Cameron's tent camp and cottonwood trees, looking south, 1907. (Grand Canyon National Park Museum Collection #12065)



**Figure 52a.** View of current Day Use Area and former location of Cameron's tent camp, looking south. Note increased vegetation density. (JMA 2002)

**Figure 53.** View showing new concrete slab cover catchment basin at lower [Rehandling] Pump House and overflow outlet, looking south, 1965. (Grand Canyon National Park Museum Collection #4705h)



**Figure 53a.** View of lower [Rehandling] Pump House and overflow outlet, looking south, 2002. Note increased vegetation density. (JMA 2002)

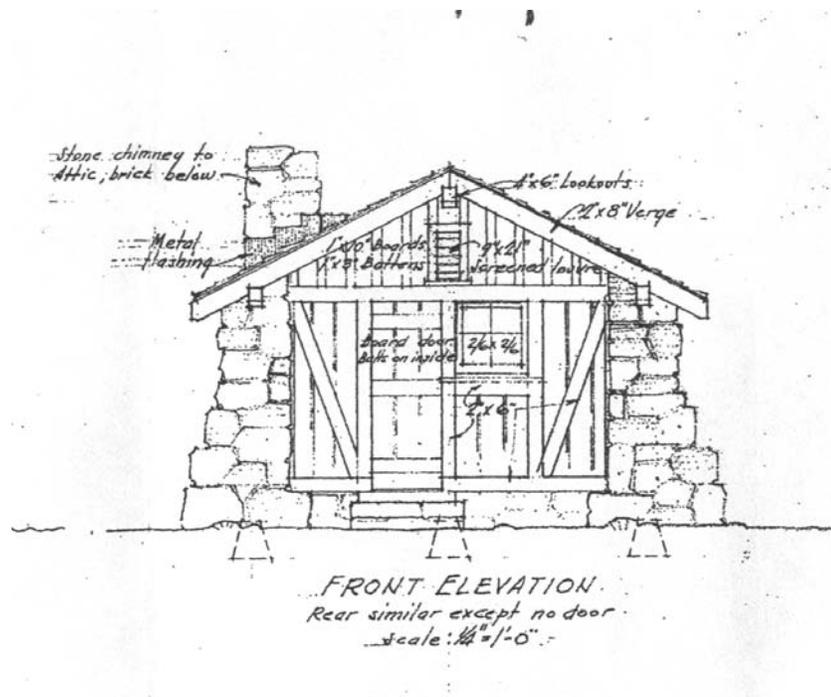




**Figure 54.** General view of rock masonry wall constructed around upstream side of the lower [Rehandling] Pump House, 1965, looking north. (Grand Canyon National Park Museum Collection #4705k)



**Figure 54a.** Same view of rock masonry wall and lower [Rehandling] Pump House, 2003, looking north. (JMA 2002)



**Figure 55.** SAR Cache/Caretaker's Residence, looking south, 1932. (GRCA Construction Drawing entitled "U.S. Department of the Interior-National Park Service Grand Canyon National Park Caretaker's Cabin-Indian Garden" Job. No. G.C.-3211-A)



**Figure 55a.** SAR Cache/Caretaker's Residence, looking southwest, 2002. Note 1960s addition to west. (JMA 2002)



**Figure 56.** Trailside Shelter, looking east, 1937. (Grand Canyon National Park Museum Collection #7584)



**Figure 56a.** Trailside Shelter, looking east, 2002. (JMA 2002)



**Figure 57.** Rock House/Pump Caretaker's Residence, looking west, circa 1970s. (Grand Canyon National Park Museum Collection Archives #16821)



**Figure 57a.** Rock House/Pump Caretaker's Residence, note increase in vegetation and more-defined terrace space with site furnishings. (JMA 2002)

## Identification of Contributing, Non-Contributing, Supporting, and Missing Resources

In order to aid the assessment of integrity and, later in making appropriate treatment decisions, all existing, inventoried landscape features are classified as contributing, non-contributing, supporting, or undetermined in this CLR. Contributing features survive from the period of significance—1903 until 1943. Non-contributing features post-date this period. Supporting resources also post-date the period of significance, but support the historic character because they have been constructed with the same or similar design intent as those features dating from the period of significance. An undetermined classification signifies that not enough information is known about a particular feature to make a judgment concerning its contributing or non-contributing status at this time.

For this CLR, one of these four classifications was assigned for each landscape feature identified in the Chapter III Existing Conditions documentation of this report. The classifications are summarized below, and can also be found in Appendix A of this report and on the existing conditions inventory maps in Chapter III. An overview map of contributing, non-contributing, and supporting features is located on a base map within this section (*Sheet 32*). The table format below also includes a column entitled “Period of Significance or Time-frame.” This column describes with which period or sub-period of significance each feature is associated, or the general time-frame if the feature post-dates the period of significance; these dates provide the reader with a better frame of reference when evaluating the information presented.

Missing features are classified as those features that were once present within Indian Garden but are no longer extant. A list of these features is identified at the end of this section, organized by landscape characteristic and keyed to the accompanying map. Features whose historic locations are unknown—or are found throughout the entire Indian Garden landscape—are not mapped. Many of these features are also identified on the graphic chronology maps located in Chapter II, Landscape Physical History of this CLR.

### Contributing, Non-Contributing, and Supporting Resources

#### *Contributing Features*

The majority of contributing resources in the Indian Garden landscape remain from the latter, NPS sub-period of significance (1927 until 1943). Contributing resources that span the full forty-year period of significance (1903-1943) tend to be natural features that typically take decades, or even centuries, to change—such as geologic features, streams, and vegetative communities—and features that are part of the larger Grand Canyon circulation system, such as the primary trails running into the canyon and between the rims. All contributing resources dating to the Cameron-era sub-period of significance (1903-1927) are ruins, remnants, or archeological sites that are considered contributing due to their potential to yield information about that sub-period. Contributing resources remaining from the NPS sub-period of significance are primarily buildings, structures, and vegetation.

<b>Landscape Feature</b>	<b>CLR #</b>	<b>Location within Indian Garden</b>	<b>Period of Significance or Time-frame</b>
Riparian community	Ve-1	<i>Indian Garden, North Indian Garden Area, Pump Station and Corral Area</i>	1903-1943
Desertscrub community	Ve-2	<i>Indian Garden, Pump Station and Corral Area</i>	1903-1943
Garden Creek	N-1	<i>Indian Garden</i>	1903-1943
Linear path through corridor	SO-1	<i>Bright Angel Trail Corridor</i>	1903-1943
Bright Angel Trail	C-1	<i>Bright Angel Trail Corridor</i>	1903-1943
Cottonwood trees	Ve-4	<i>Bright Angel Trail Corridor, Day Use Area, North Indian Garden Area</i>	1903-1943
Views to surrounding canyon	V-1	<i>Bright Angel Trail Corridor, North Indian Garden Area, Pump Station and Corral Area</i>	1903-1943
Intermittent streams	N-2	<i>Administration Area</i>	1903-1943
Perennial streams	N-5	<i>Pump Station and Corral Area</i>	1903-1943
Tonto East Trail	C-20	<i>North Indian Garden Area</i>	1903-1943
Plateau Point Trail	C-21	<i>North Indian Garden Area</i>	1903-1943
Dry washes	N-6	<i>Pump Station and Corral Area, North Indian Garden Area</i>	1903-1943
Floodplain	N-3	<i>Day Use Area, North Indian Garden Area</i>	1903-1943
Arizona B:16:140 (Mining remnants)	A-1	<i>Indian Garden</i>	1903-1927
Arizona B:16:152 (possible Cameron bldg.)	A-2	<i>Indian Garden</i>	1903-1927
Arizona B:16:165 (Tent platform and cooler/latrine)	A-4	<i>Indian Garden</i>	1903-1927
Arizona B:16:252 (Cameron artifacts)	A-5	<i>Indian Garden</i>	1903-1927
Central space – cleared floodplain	SO-22	<i>North Indian Garden Area</i>	1903-1927
Steep hillside	SO-23	<i>Pump Station and Corral Area</i>	1903-1927
Cottonwood trees	Ve-4	<i>Pump Station and Corral Area, North Indian Garden Area</i>	1903-1927
Stone edging remnants	A-6	<i>North Indian Garden Area</i>	1903-1927
Debris piles	A-7	<i>North Indian Garden Area</i>	1903-1927
Telephone poles	S-1	<i>Indian Garden</i>	1927-1943
Node created by Trailside Shelter	SO-3	<i>Bright Angel Trail Corridor</i>	1927-1943
Redbud tree	Ve-5	<i>Bright Angel Trail Corridor</i>	1927-1943
Trailside Shelter	B-1	<i>Bright Angel Trail Corridor</i>	1927-1943
Stone steps to Trailside Shelter	S-2	<i>Bright Angel Trail Corridor</i>	1927-1943
SAR Cache/Rock House terrace	SO-17	<i>Day Use Area</i>	1927-1943
Spur trail – Bright Angel Trail to SAR Cache	C-12	<i>Day Use Area</i>	1927-1943

SAR Cache/Caretaker's Residence	B-9	<i>Day Use Area</i>	1927-1943
Pump Caretaker's Residence/Rock House (1943)	B-10	<i>Day Use Area</i>	1927-1943
Channelized Garden Creek	S-16	<i>Day Use Area</i>	1927-1943
Stone retaining wall at terrace	S-19	<i>Day Use Area</i>	1927-1943
Stone steps to terrace	S-20	<i>Day Use Area</i>	1927-1943
Pump Station node	SO-20	<i>Pump Station and Corral Area</i>	1927-1943
Redbud tree	Ve-5	<i>Pump Station and Corral Area</i>	1927-1943
South Pump House	B-12	<i>Pump Station and Corral Area</i>	1927-1943
Pump House Reservoir	B-13	<i>Pump Station and Corral Area</i>	1927-1943
Concrete cistern	S-24	<i>Pump Station and Corral Area</i>	1927-1943
Himalaya blackberry – cleared	Ve-9	<i>North Indian Garden Area</i>	1927-1943
Rehandling Pump House	B-16	<i>North Indian Garden Area</i>	1927-1943
Arizona B:16:164 (Puebloan ruins)	A-3	<i>Indian Garden</i>	?

### ***Non-Contributing Features***

In this report, non-contributing features are features that were not present during the period of significance, no longer possess integrity, and/or are not capable of yielding important information about the period of significance. The majority of non-contributing features within Indian Garden are from the 1989 rehabilitation project that resulted in the construction of new spaces and buildings, the expansion of the site's boundaries, and the installation of many other new features. Other non-contributing features appear to have accumulated over time, beginning around the 1960s. The exception is the former Kolb Studio site which is considered non-contributing because it retains no integrity and possesses no remaining elements that are capable of yielding important information about the period of significance.

<b>Landscape Feature</b>	<b>CLR #</b>	<b>Location within Indian Garden</b>	<b>Period of Significance or Time-frame</b>
Former Kolb Studio	A-8	<i>North Indian Garden Area</i>	1903-1927
Picnic grounds	SO-15	<i>Day Use Area</i>	1960s
Trail network	C-13	<i>Day Use Area</i>	1960s
Footbridge abutment	S-17	<i>Day Use Area</i>	1960s
Electrical substation	S-22	<i>Pump Station and Corral Area</i>	1960s
Chain-link fencing	SS-33	<i>Pump Station and Corral Area</i>	1960s
Gabion walls	S-15	<i>Day Use Area</i>	1960s or 1970s
Comfort station spaces	SO-14	<i>Campground Area</i>	1980s
Comfort Station – south	B-7	<i>Campground Area</i>	1980s

Comfort Station – north	B-8	<i>Campground Area</i>	1980s
Wood and wire mesh fencing	SS-25	<i>Day Use Area</i>	1980s
PVC pipe	SS-26	<i>Day Use Area</i>	1980s
Comfort Station – 1987	B-15	<i>Pump Station and Corral Area</i>	1980s
Wooden cabinet	SS-28	<i>Pump Station and Corral Area</i>	1980s
Electrical hook-up	SS-29	<i>Pump Station and Corral Area</i>	1980s
“No Hiking” sign	SS-30	<i>Pump Station and Corral Area</i>	1980s
Interpretive wayside	SS-37	<i>Pump Station and Corral Area</i>	1980s
Weather Station	S-14	<i>Day Use Area</i>	1980s (?)
Spur trail – comfort station	C-4	<i>Bright Angel Trail Corridor</i>	Post-1989
Wood fencing	SS-1	<i>Bright Angel Trail Corridor</i>	Post-1989
Contemporary illustrative sign	SS-5	<i>Bright Angel Trail Corridor</i>	Post-1989
Cottonwood stumps	SS-9	<i>Bright Angel Trail Corridor</i>	Post-1989
Communal space – Pump Operator’s Residence	SO-4	<i>Administration Area</i>	Post-1989
Corridor of space	SO-5	<i>Administration Area</i>	Post-1989
Courtyard	SO-6	<i>Administration Area</i>	Post-1989
Backyard space– Ranger Residence	SO-7	<i>Administration Area</i>	Post-1989
Public space – Ranger Residence	SO-8	<i>Administration Area</i>	Post-1989
Sand filter bed	SO-9	<i>Administration Area</i>	Post-1989
Helispot	SO-10	<i>Administration Area</i>	Post-1989
Concrete sidewalk	C-9	<i>Administration Area</i>	Post-1989
Trash Compactor Shed	B-6	<i>Administration Area</i>	Post-1989
Sand Filter Bed	S-4	<i>Administration Area</i>	Post-1989
Horseshoes court	S-8	<i>Administration Area</i>	Post-1989
Hose House	S-9	<i>Administration Area</i>	Post-1989
Drainfield	S-10	<i>Administration Area</i>	Post-1989
Views to surrounding canyon	V-1	<i>Administration Area, Campground Area</i>	Post-1989
Views from helispot	V-2	<i>Administration Area</i>	Post-1989
Picnic table	SS-10	<i>Administration Area, Campground Area, Day Use Area</i>	Post-1989
Windsock and post	SS-11	<i>Administration Area</i>	Post-1989
Flagpole	S-12	<i>Administration Area</i>	Post-1989
Tree cages	SS-13	<i>Administration Area</i>	Post-1989
Utility meters and irrigation boxes	SS-14	<i>Administration Area, Campground Area</i>	Post-1989
Wire mesh fence	SS-15	<i>Administration Area</i>	Post-1989

Camping areas	SO-11	<i>Campground Area</i>	Post-1989
Central public space	SO-12	<i>Campground Area</i>	Post-1989
Secondary public space	SO-13	<i>Campground Area</i>	Post-1989
Shade structures	S-11	<i>Campground Area</i>	Post-1989
Camp site markers	SS-16	<i>Campground Area</i>	Post-1989
Ammunition box	SS-17	<i>Campground Area</i>	Post-1989
Backpack bar	SS-18	<i>Campground Area</i>	Post-1989
“Contemporary” benches	SS-19	<i>Campground Area, Day Use Area, Pump Station and Corral Area</i>	Post-1989
Continuous bench seating	SS-23	<i>Day Use Area</i>	Post-1989
Electrical distribution box	SS-24	<i>Day Use Area</i>	Post-1989
Visitor rest area	SO-18	<i>Pump Station and Corral Area</i>	Post-1989
Mule Barn facility	SO-19	<i>Pump Station and Corral Area</i>	Post-1989
Helispot	SO-21	<i>Pump Station and Corral Area</i>	Post-1989
Boulder and log edging	SS-27	<i>Pump Station and Corral Area</i>	Post-1989
Metal pipe rail fencing	SS-31	<i>Pump Station and Corral Area</i>	Post-1989
Wooden post-and-rail fencing	SS-32	<i>Pump Station and Corral Area</i>	Post-1989
Thermometer	SS-6	<i>Bright Angel Trail Corridor</i>	Post-1989 (?)
Wet area	N-4	<i>Day Use Area</i>	1990s
Riparian community vegetation	Ve-1	<i>Day Use Area</i>	1990s
Utility structures	SS-14	<i>Pump Station and Corral Area</i>	Various

### ***Supporting Features***

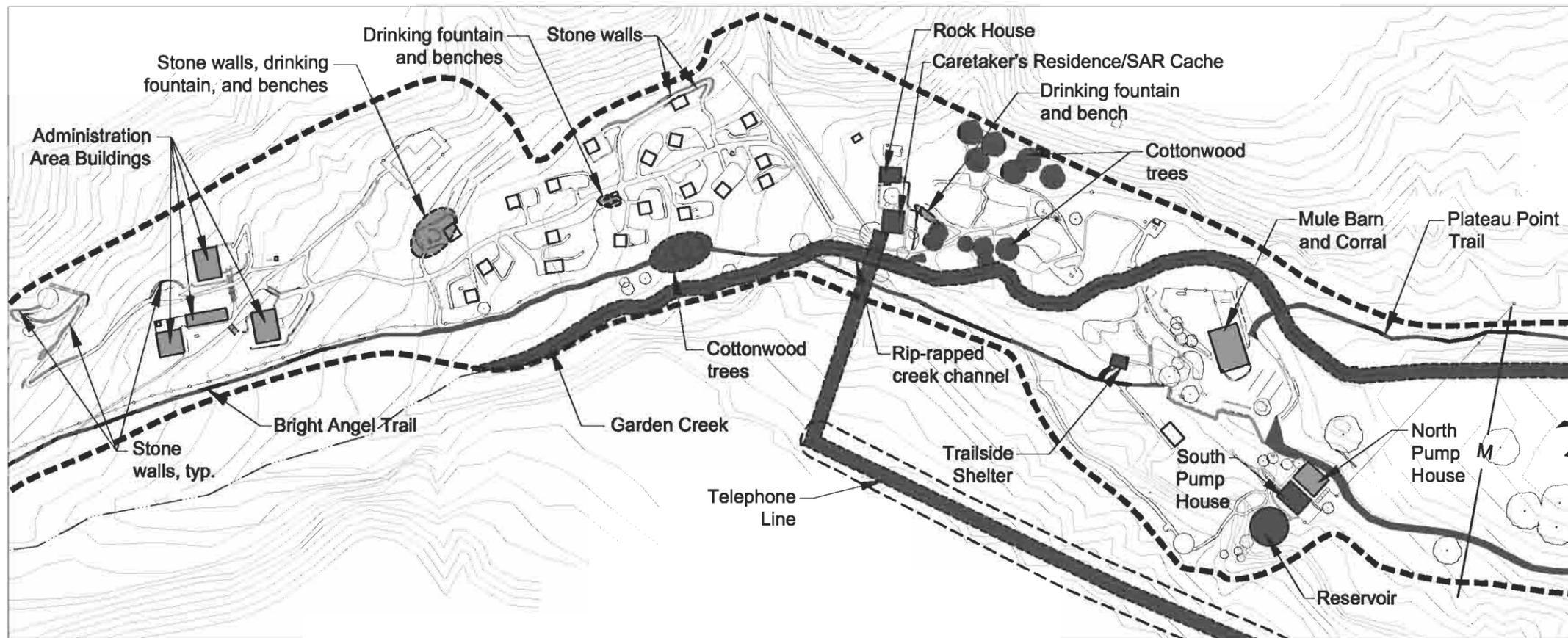
In this report, supporting features are defined as features that post-date the period of significance yet were constructed with the same or similar design intent, or in the same “spirit,” as those features dating from the period of significance. Supporting features can either remain in or be removed from the landscape without reducing integrity. Indian Garden’s supporting features are those that were designed and/or constructed after 1943, but are still compatible with the historic character of the site. Supporting features here tend to reflect Rustic Style architectural and landscape architectural principles employed by the NPS between 1927 and 1943 and are constructed primarily of wood and native stone gathered from the surrounding region. Native vegetation installed after 1943 is also considered supporting because it reflects the character and types of plants utilized during the period of significance.

<b>Landscape Feature</b>	<b>CLR #</b>	<b>Location within Indian Garden</b>	<b>Period of Significance or Time-frame</b>
Stone-edged steps	S-27	<i>Pump Station and Corral Area</i>	?
North Pump House	B-11	<i>Pump Station and Corral Area</i>	1960s

Wooden gate	SS-34	<i>Pump Station and Corral Area</i>	1960s
Wooden troughs with metal edging	SS-35	<i>Pump Station and Corral Area</i>	1960s
Flood walls	S-28	<i>North Indian Garden Area</i>	1960s
Typical signage	SS-44	<i>Bright Angel Trail, Administration Area, Campground Area, Day Use Area, Pump Station and Corral Area</i>	1980s
“Rustic” benches	SS-7	<i>Bright Angel Trail, Campground Area, Day Use Area, Pump Station and Corral Area</i>	1980s
Bunkhouse	B-5	<i>Administration Area</i>	1980s
Spur trails – to comfort stations and camping areas	C-11	<i>Campground Area</i>	1980s
Stone-edged trail to helispot	C-15	<i>Pump Station and Corral Area</i>	1980s
Ramp-like trail to Comfort Station	C-16	<i>Pump Station and Corral Area</i>	1980s
Stone retaining wall	S-26	<i>Pump Station and Corral Area</i>	1980s
Spur trails – formal	C-2	<i>Bright Angel Trail</i>	Post-1989
Spur trails – informal	C-3	<i>Bright Angel Trail</i>	Post-1989
Stone edging	SS-2	<i>Bright Angel Trail, Administration Area, Campground Area, Pump Station and Corral Area</i>	Post-1989
Log risers and stone water bars	SS-3	<i>Bright Angel Trail</i>	Post-1989
Stone-edged trail to Ranger Residence	C-5	<i>Administration Area</i>	Post-1989
Secondary trail	C-6	<i>Administration Area</i>	Post-1989
Spur trail – Bright Angel Trail to helispot	C-7	<i>Administration Area</i>	Post-1989
Spur trail – Bright Angel Trail to Bunkhouse	C-8	<i>Administration Area</i>	Post-1989
Transplanted native vegetation	Ve-6	<i>Administration Area, Campground Area</i>	Post-1989
Re-vegetation area	Ve-7	<i>Administration Area</i>	Post-1989
NPS Ranger Residence (1989)	B-2	<i>Administration Area</i>	Post-1989
Pump Operator’s Residence	B-3	<i>Administration Area</i>	Post-1989
Storage/Laundry/First Aid Building	B-4	<i>Administration Area</i>	Post-1989
Wooden stairs	S-6	<i>Administration Area</i>	Post-1989
Stone walls and retaining walls	S-7	<i>Administration Area</i>	Post-1989
Central trail	C-10	<i>Campground Area</i>	Post-1989
Riparian community vegetation	Ve-1	<i>Campground Area</i>	Post-1989
Information kiosk	S-12	<i>Campground Area</i>	Post-1989
Stone walls	S-7	<i>Campground Area</i>	Post-1989
Stone camp site retaining walls	S-13	<i>Campground Area</i>	Post-1989
Drinking fountains	SS-20	<i>Campground Area, Day Use Area,</i>	Post-1989

Rock edging	SS-21	<i>Day Use Area</i>	Post-1989
Stone-edged trail to south of Mule Barn	C-17	<i>Pump Station and Corral Area</i>	Post-1989
Spur trail – informal	C-19	<i>Pump Station and Corral Area</i>	Post-1989
Mule Barn and Corral	B-14	<i>Pump Station and Corral Area</i>	Post-1989
Information kiosk	S-23	<i>Pump Station and Corral Area</i>	Post-1989
Large metal water troughs	SS-36	<i>Pump Station and Corral Area</i>	Post-1989





**Legend:**

**1903-1943 Contributing Features**  
(Features Surviving From the Period of Significance)

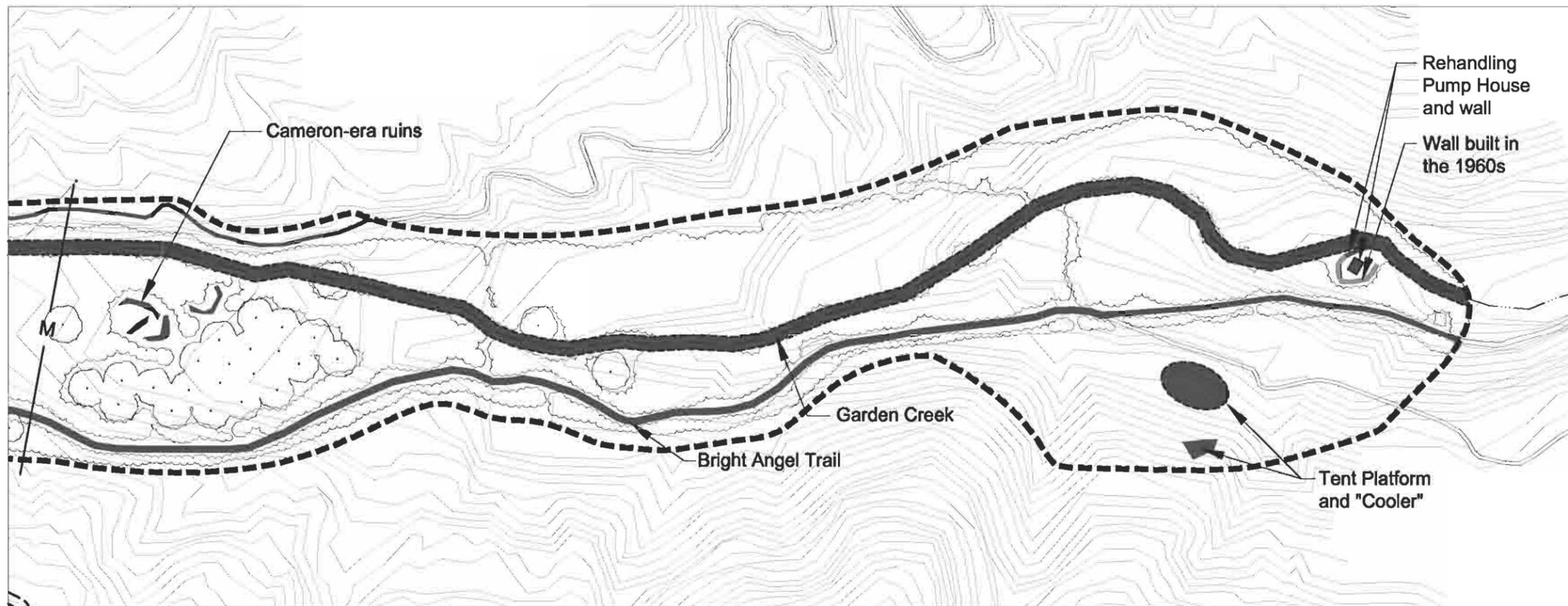
**1944-2002 Supporting Features**  
(Features That Post-Date the Period of Significance)

**General Supporting Features**

- Drinking fountains
- Stone walls and edging
- Wood fence
- Native vegetation planted after 1943
- Wood benches without metal frames

**1944-2002 Non-contributing Features**  
(Features That Post-Date the Period of Significance)

\* Note: This map illustrates the primary contributing, non-contributing, and supporting features, rather than all inventoried features. For further information regarding all contributing, non-contributing, and supporting features, refer to the text in Chapter IV, the Existing Conditions maps in Chapter III, and Appendix A at the back of this report.



A/E FIRM  
PRIME:  
VAN DIJK WESTLAKE REED LESKOSKY  
PHOENIX, AZ  
SUBCONTRACTOR:  
JOHN MILNER ASSOCIATES, INC.  
CHARLOTTESVILLE, VA

DESIGNED:  
DRAWN:  
TECH. REVIEW:  
DATE:

SUB SHEET NO.

**H**

**OVERVIEW OF CONTRIBUTING, NON-CONTRIBUTING, AND SUPPORTING FEATURES**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
113  
20228  
PKG. NO.  
SHEET  
NO. **32**  
OF **36**



## Missing Resources

The majority of features from the period of significance that are no longer extant are related to the Ralph Cameron sub-period of significance between 1903 and 1927. These include service and housing structures, agricultural fields, walls, fences, and trails. Most of these features were removed during the mid-to-late-1920s NPS revitalization endeavors.

Fewer features are missing from the latter sub-period of significance—between 1927 and 1943. Small-scale features, patterns of spatial organization such as the picnic area that was once near the Trailside Shelter and space north of the Caretaker's Residence, latrines and a mule barn and corral, and lengths of stone wall and stone-lined channels are among the missing features. Features from this period of significance were removed because they were no longer useful, were in disrepair, or were updated by a more contemporary feature.

The following map lists and locates features missing from the Indian Garden landscape that were present during the period of significance (*Sheet 33*). The dates in parentheses denote whether the missing feature was from the Cameron sub-period of significance (1903-1927) or the NPS-controlled sub-period of significance (1927-1943). The map legend also presents a list of features that are not easily located on a map, such as views and spatial organization, or exist over a broad area within Indian Garden.

Since the period of significance, Indian Garden has continued to evolve. This evolution led to the removal of certain landscape features to make room for new development. Although the following features post-date the period of significance, future researchers may appreciate the following list of items that are no longer extant in Indian Garden.

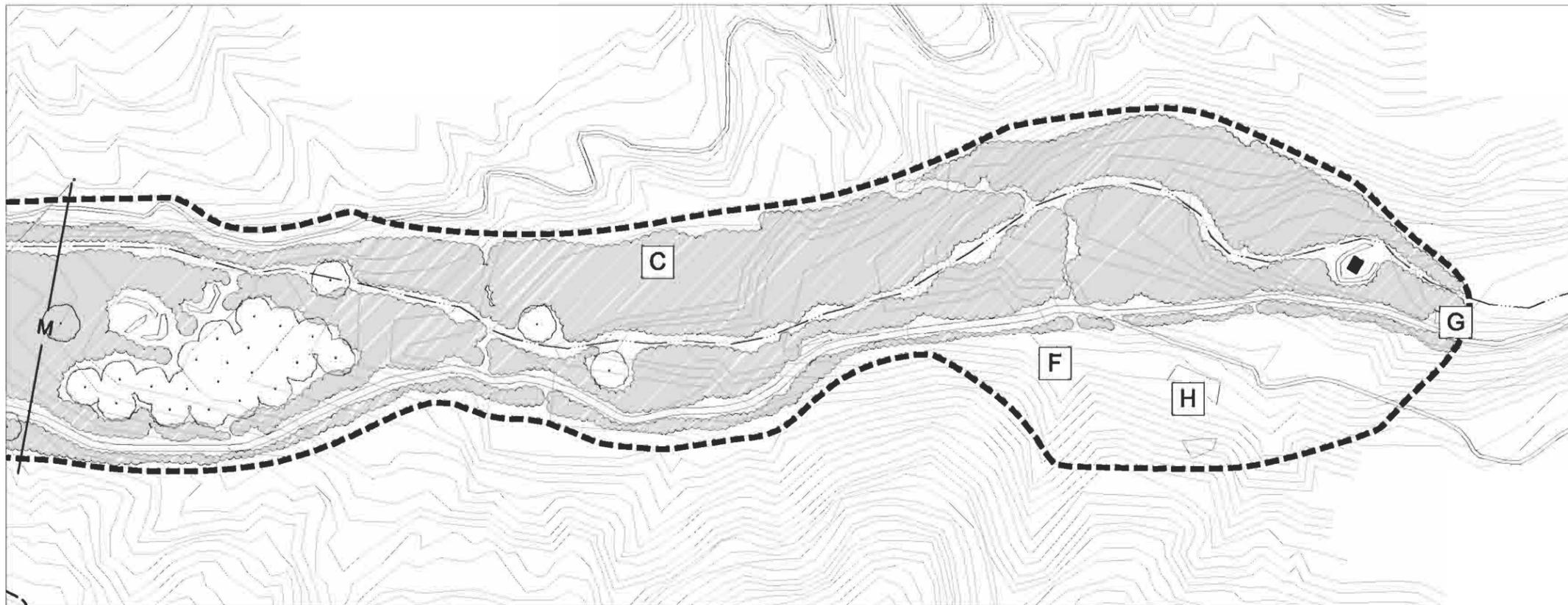
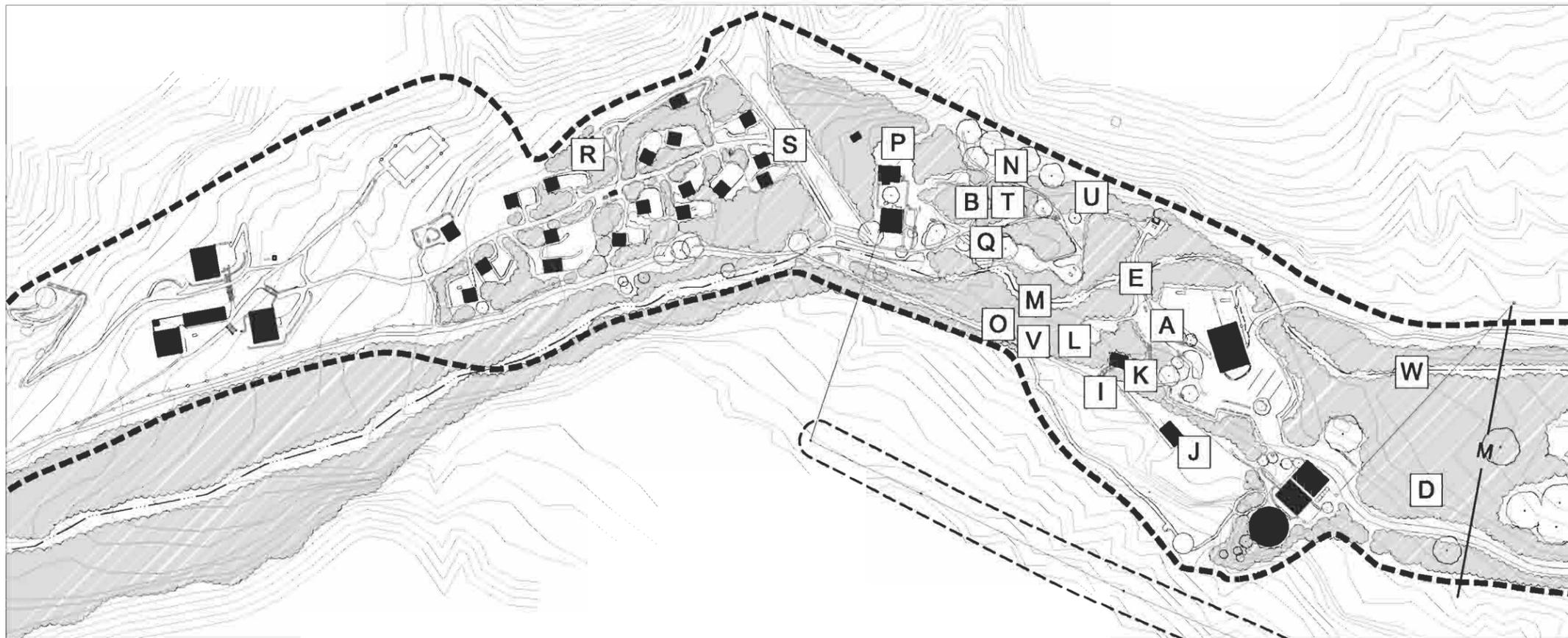
### Features Missing Since circa 1966

- Tool Shed near Rock House
- 1935 Mule Barn and Corral
- Picnic Area with Stone Walls
- Footbridge
- Septic Tank (may still be buried)
- Sludge Trench (may still be buried)
- Sewage Trenches (may still be buried)
- Comfort Station
- Overhead Power Lines
- Dike/Retaining Wall (west of Caretaker's Residence)

### Features Missing Since circa 1988

- Helispot on campground
- 1970s Mule Barn and Corral
- 1965 Bunkhouse (demolished)





**Missing Features:**

- A - Picnic area (1927-1943)
- B - Space north of Caretaker's Residence (1927-1943)
- C - Trail to Turtle Head (1903-1927)
- D - Alfalfa fields (1903-1927)
- E - Vegetable garden (1903-1927)
- F - Oil Float Box Tent (1903-1927)
- G - Kolb Brother's Studio (1903-1927)
- H - Trailkeeper's Tent (1903-1927)
- I - Laundry Tent (1903-1927)
- J - Water Supply Building (1903-1927)
- K - Kitchen (1903-1927)
- L - Root Cellar (1903-1927)
- M - Stone House (1903-1927)
- N - Toilets (1903-1927)
- O - Tool Shed (1903-1927)
- P - Incinerator (1903-1927)
- Q - Rows of tents (1903-1927)
- R - Mule Corral and sheds (1903-1927)
- S - Mule Barn and Corral (1927-1943)
- T - Dry-laid stone channels (1927-1943)
- U - Latrine and Latrine Pump (1927-1943)
- V - Rain gauge (1903-1927)
- W - Pond (1903-1927)

**Project area-wide Missing Features:**

- Open spaces replaced by vegetation
- Views through the entire site
- Possible underground utility lines
- Possible springs and seeps
- Water troughs, stone walls, and fences



NOT TO SCALE

A/E FIRM  
 PRIME:  
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 CHARLOTTESVILLE, VA

DESIGNED:  
 DRAWN:  
 TECH. REVIEW:  
 DATE:

SUB SHEET NO.

H

**OVERVIEW OF MISSING FEATURES**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.  
 113  
 20228  
 PKG. NO.  
 SHEET  
 33  
 OF 36



## Integrity Assessment

National Register Bulletin 15: *How to Apply the National Register Criteria for Evaluation* states that:

Integrity is the ability of a property to convey its significance...Historic properties either retain integrity (that is, convey their significance) or they do not. Within the concept of integrity, the National Register criteria recognizes seven aspects or qualities that, in various combinations, define integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The retention of specific aspects of integrity is paramount for a property to convey significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant.

Assessment of integrity is based on an evaluation of the existence and condition of physical features dating from a property's period of significance, and taking into consideration the degree to which the individual qualities of integrity are present. The seven aspects of integrity included in the National Register criteria are location, design, setting, materials, workmanship, feeling, and association.

**Location** is the place where the historic property was constructed or the place where the historic event occurred; **design** is the combination of elements that create the form, plan, space, structure, and style of a property; **setting** is the physical environment of a historic property; **materials** are the physical elements that were combined or deposited during a particular period of time and on a particular pattern or configuration to form a historic property; **workmanship** is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory; **feeling** is a property's expression of the aesthetic or historic sense of a particular period of time; and **association** is the direct link between an important historic event or person and a historic property.

Within this section, integrity is assessed for each sub-period of the overall 1903-1943 period of significance. Integrity is assessed, using the seven aspects listed above, for the Indian Garden project area as a whole and then, where applicable, by landscape characteristic. Threats to integrity are described after these assessments. Finally, recommendations for which portions of Indian Garden are eligible for inclusion on the National Register of Historic Places are discussed at the end of this section.

### Assessment of Integrity

#### Integrity Assessment for the Ralph Cameron Sub-Period of Significance (1903-1927)

The comparative analysis and significance evaluation concluded that too few features remained from Ralph Cameron's tenure in Indian Garden to fully portray the importance of his effect upon the landscape. Extant features included tree rows and archeological features, such as stone tent

platforms, and possibly buried artifacts. It has been determined that the landscape does not convey its significance for the Ralph Cameron sub-period of significance (1903-1927), and therefore does not retain integrity from this sub-period. This sub-period, however, is an important part of Indian Garden's evolution. Without the events occurring during these years, Indian Garden would not appear as it does today, and may not have existed at all. For this reason, despite lack of integrity and numerous missing features, the CLR team recommends that the period of significance remain from 1903 until 1943 to ensure that any Cameron-era remnants are considered contributing and are properly preserved and maintained.

As a whole, for the Ralph Cameron sub-period of significance, the Indian Garden landscape does retain integrity of *location*. The physical location of Cameron's former tent camp remains intact. The location of the natural systems and features—such as the general course of Garden Creek, geologic formations, and likely the dry washes, springs, and seeps—also remain in the same location as during the Cameron sub-period of significance. Many of the cottonwood trees extant from this sub-period also retain integrity of location, particularly the tree rows found north of the Caretaker's Residence. Although most circulation patterns from the sub-period are missing, the Bright Angel Trail and Plateau Point Trail retain similar alignments to those that existed historically. No buildings and structures, only remnant features, retain any integrity of location for this sub-period; small-scale features do not retain integrity of location from this sub-period either.

The Indian Garden landscape does not retain integrity of *design* from this sub-period of significance. The overall landscape no longer conveys the conscious decisions made during Cameron's and his colleagues' original conception and planning of the Indian Garden landscape. Their design decisions, such as how and where to locate buildings, how they organized space in the tent camp, how and where they laid out the vegetable garden, and what type of ornamental details to use, are no longer visible in the landscape to a sufficient extent. The only landscape characteristics that retain any integrity of design are circulation and vegetation; the current design and placement of Bright Angel Trail and Plateau Point were likely affected by Cameron and his contemporaries, while cottonwood trees were deliberately sited in rows that are discernable at present.

The overall Indian Garden landscape retains integrity of *setting*, due to the typically unchanging nature of the surrounding canyon walls that provide a similar backdrop at present as they did between 1903 and 1927. Within the project area, however, few landscape features are considered to retain integrity of setting, due to the numerous changes made to the landscape since 1927. In particular, the amount of vegetation has increased to such an extent that Indian Garden is no longer set in a primarily arid desertscrub environment with only a few imported trees and little shade. Rather, the current setting is one of a lush, riparian environment.

Indian Garden does not retain integrity of *materials* from the Cameron sub-period of significance. Although remnants of Cameron-era remain, such as the stone platform of the former Trailkeeper's Tent, there are too few features to provide insight into the material preferences of Cameron and his colleagues. For example, no wood or canvas remains from their tents and auxiliary structures, the exact materials chosen for fence types and stone walls are unknown, and exact species of plant material installed are also unknown. Indian Garden also

lacks integrity of materials because substantial amounts of new materials have been incorporated that have obliterated those that once existed between 1903 and 1927. It is impossible to assess materials integrity for intangible features, such as spatial organization, land use, and views and vistas; and for features that were not designed, such as natural systems. Although it is likely that circulation features retain integrity of materials, due to the possible retention of earthen treads over time, it is not known if materials such as stone edging and water bars remain, or were used between 1903 and 1927. Vegetation retains a minimal degree of integrity of materials, due to the mature cottonwoods that are known to remain from the Cameron sub-period of significance. No integrity of materials remains for building and structural features, due to the fact that no intact or reasonably representative features from this category are still extant in the Indian Garden landscape.

For many of the same reasons that the Indian Garden lacked integrity of materials from the 1903-1927 sub-period of significance, it also lacks integrity of *workmanship*. Because there are so few extant or intact features from this period of significance, there is no evidence of Cameron's worker's skill or methodology of construction—the landscape does not convey what type of detailing, finishes, technologies, or aesthetics were used, however simplistic or complicated. Although one can judge the level and type of workmanship in historic photographs, these concepts are not available to Indian Garden visitors in the landscape as a whole or through any particular landscape characteristic.

Indian Garden does not retain integrity of *feeling* from the 1903-1927 sub-period of significance. Because so much has changed since 1927 in Indian Garden—including the site's internal setting; the amount, type, and location of buildings and structures; the amount of vegetation; and spatial organization—the landscape no longer conveys the character that existed during Ralph Cameron's tenure. As mentioned in the section on integrity of setting, during Cameron's time in Indian Garden the landscape was an arid, desertscrub environment softened only by a few transplanted trees and the waters of Garden Creek. At present, Indian Garden is a lush oasis of dense and mature vegetation, shady rest areas, and far more development than Cameron likely ever imagined. Therefore, the landscape does not convey any historic feeling from between 1903 and 1927.

Indian Garden does not retain integrity of *association* because, although it is the location where Cameron set up his concession operations between 1903 and 1927, the landscape is not sufficiently intact to convey the relationship between Ralph Cameron, his tourism business, and the landscape.

### **Integrity Assessment for the NPS Sub-Period of Significance (1927-1943)**

The analysis and evaluation of the Indian Garden landscape shows that, as a whole, Indian Garden does not retain integrity to the sub-period of significance from 1927 until 1943. Although some of the seven aspects of integrity were shown to exist, the most important aspect of the site, integrity of design, is not retained. The physical characteristics of the landscape have changed to such a degree that little historic character remains that would present a holistic understanding of how the landscape appeared between 1927 and 1943. Additionally, the alterations made in 1989 are not easily reversed, again reinforcing the landscape's lack of integrity. In this landscape, the

lack of most of the tangible aspects of integrity—design, materials, and workmanship—outweigh the retention of other intangible aspects of feeling and association. For these reasons, the overall Indian Garden landscape does not retain an adequate level of integrity to be eligible for the National Register of Historic Places as an individual district. Certain extant buildings and structures, however, may be eligible for listing due to their ability to convey their significance. Additionally, although the landscape does not retain integrity to this sub-period of significance, it is still important to preserve and maintain all contributing features.

For this sub-period of significance, the Indian Garden site retains integrity of *location* because the remainder of Indian Garden development that occurred between 1927 and 1943 has not been relocated. Elements that detract from integrity of location are the fact that much of the historic spatial organization was altered since the period of significance, particularly during the 1989 rehabilitation effort. Yet, many individual landscape characteristics built or developed during this sub-period remain in their historic locations. As with the earlier sub-period, natural systems and features—such as Garden Creek, springs, seeps, floodplains, and dry washes—have maintained much the same location. Flooding and geologic events, such as rock slides, have likely slightly altered the locations of some features, yet these events have not been considerable enough to affect integrity. Circulation features retain a fair degree of integrity, although those circulation patterns once associated with relocated or demolished historic spaces are missing. The primary circulation features, however, of Bright Angel Trail and Plateau Point Trail retain their same location—although their alignments have been altered over time—as do the steps to the Trailside Shelter and the path leading from Bright Angel Trail to the Caretaker’s Residence. All the extant buildings and structures constructed between 1927 and 1943 remain in their historic locations. It is likely that any vegetation remaining from the latter sub-period of significance retains integrity of location.

As a complete entity, the Indian Garden landscape does not retain integrity of *design* due to the numerous changes the site has undergone since 1943. Alterations undertaken in the 1950s and 1960s, and in particular the 1989 rehabilitation, relocated or demolished much of the original layout and design of Indian Garden. While certain individual features, such as buildings and possibly vegetation, retain some level of integrity unto themselves, the entire landscape does not retain its historic spatial relationships. These relationships include the picnic area, the spatial patterns north of the Caretaker’s Residence, and the former mule barn and corral site; the numerous features associated with these spaces are also lost. When comparing historic documents and images of vegetation to existing vegetative conditions, the landscape characteristic of vegetation does retain integrity of design. The use of native plants and the apparent placement of vegetation to harmonize with the surrounding natural character of the site is still apparent today. The historic buildings and structures of Indian Garden retain integrity of design, as the majority of their massing, materials, ornamentation, and location are intact. These buildings and structures are the Rock House, Caretaker’s Residence, Trailside Shelter, Reservoir, South Pump House, and Rehandling Pump House. Too little information about the physical and ornamental design of circulation exists to accurately assess integrity.

The Indian Garden landscape does not retain integrity of *setting*. At a larger scale, Indian Garden appears to retain integrity because the physical setting and surroundings of Indian Garden are similar today to its character present between 1927 and 1943. During this time, Indian Garden

was a site of shade-giving vegetation running along a creek, set amongst a desertscrub environment and between three walls of the Grand Canyon. Internally, however, the alteration of spatial organization, the addition of the Campground and Administrative Areas to the south, the new Mule Barn and Corral, and the increase in vegetative density—particularly in the Day Use Area—result in a lack of integrity of setting.

The Indian Garden landscape does not retain integrity of *materials*. As a whole, most of the physical materials located in Indian Garden at present—stone, wood, and metal—post-date the period of significance. Although similar materials may have been used during the period of significance, enough of the physical fabric has been recently introduced, and introduced in new ways, that integrity of materials is not retained. National Register Bulletin #15 provides guidance on this issue by stating that “...if the property has been rehabilitated, the historic materials must have been preserved. The property must also be an actual historic resource, not a re-creation; a recent structure fabricated to look historic is not eligible.”<sup>13</sup> For example, the stone drinking fountains appear to be historic and utilize native stone, but construction details from the 1989 rehabilitation drawings show that these fountains are actually recent additions to the landscape. The 1989 construction drawings also show that other features using materials that were available during the period of significance, such as stone edging, wood risers, stone waterbars, and wood and metal water troughs, were built in 1989. Additionally, major floods during the 1960s likely washed away many historic material examples and were replaced during reconstruction efforts. Individual buildings, however, retain integrity of materials and include the Caretaker’s Residence/SAR Cache, Trailside Shelter, South Pump House, Reservoir, and Rehandling Pump House. Much of the vegetation may also retain integrity of materials because it appears that few plants have been removed since the period of significance.

For this sub-period of significance, the overall Indian Garden does not retain integrity of *workmanship* due to the general lack of extant historic features and the intrusion of new features that post-date the period of significance. What is predominantly visible in Indian Garden at present is the evidence of NPS crews’ construction labor and skill from the late 1980s. Despite this general lack of integrity, extant historic buildings retain integrity of workmanship. The Rustic-style buildings, such as the South Pump House and Trailside Shelter, continue to display the skill of NPS and CCC designers and laborers; particularly of their skill at carpentry, masonry, and fitting architecture into existing natural surroundings. The telephone line that exists to the east of Indian Garden is another example of NPS and its contractor’s workmanship.

Indian Garden retains integrity of *feeling* because it continues to represent a shady, vegetatively lush respite from the heat and aridity of hiking or mule-riding in the inner canyon. During the period of significance, NPS personnel sought to make Indian Garden a welcome rest stop on the way through the canyon. They did this through encouraging vegetation growth for its shade and cooling abilities, offering seating and picnicking opportunities, and generally creating an oasis-like atmosphere. This atmosphere and feeling continues to exist at present.

The overall Indian Garden landscape retains integrity of *association* because it conveys a direct link between the historic events that occurred there between 1927 and 1943, as well as a direct

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<sup>13</sup> U.S. Department of the Interior, National Park Service, Cultural Resources, *National Register Bulletin #15 How to Apply the National Register Criteria for Evaluation* (Washington, DC: U.S. Department of the Interior, 1997), 45.

link to the important architecture styles that were employed in the site. Although the association is not strong due to the numerous alterations made between the 1960s and 1989, the landscape conveys its link to the development of tourism and recreation in the Grand Canyon due to its continued presence along the Bright Angel Trail and the fact that the site has remained in its same location since 1927, and because its tourism-related land uses have remained the same since 1927. This link is conveyed through the South Pump House, Reservoir, and Rock House which are evidence of the cooperative efforts made between the NPS and its concessionaires to develop tourism and recreation in the Grand Canyon. Indian Garden also conveys its linkage to political and governmental events through its retention of CCC-constructed features, such as the Caretaker's Residence, Trailside Shelter, and telephone poles. These features are evidence that the CCC was involved in the development of Indian Garden and of the architectural craftsmanship they exhibited. The landscape's link to architecture-related activities between 1927 and 1943 is exhibited in the extant historic buildings built by the NPS, CCC, and Santa Fe Railway that employed Rustic-style architectural principles common during that time.

## **Threats to Integrity**

Although the Indian Garden landscape does not retain integrity from the period of significance as a complete entity, it does retain some aspects of integrity. This section addresses threats to the landscape that may diminish what integrity remains.

Threats to integrity of an historic site generally include natural forces, neglect, and improper human intervention. At present natural forces that pose a threat to Indian Garden include erosion and flooding-related damage. Flooding and erosion are constant threats in Indian Garden and have caused great damage to Indian Garden in the past. Without proper controls, flood events and erosional forces may harm contributing cultural resources. Invasive plant species are a constant threat in any landscape; a number of invasive species grow in Indian Garden that may alter the vegetative character of the site if improperly managed.

Lack of maintenance also threatens integrity in Indian Garden. If left unchecked, as is happening in the Day Use Area, vegetation will begin to obscure both historic and non-historic features ultimately altering the character and setting of Indian Garden. Dead, damaged, and dying vegetation also poses a threat to intact cultural resources as well as to visitor safety. Without proper maintenance, the remaining Cameron-era cottonwood trees will likely be lost or inappropriately replaced. The Rehandling Pump House requires stabilization and maintenance if the 1932 Rustic-style building is to remain intact.

Potential threats posed by human intervention include unmitigated mule- and pedestrian-related damage to the Bright Angel Trail. Without frequent maintenance, mule trains and hikers will have a detrimental impact to the Bright Angel Trail, including worn depressions, widening and relocating the trail tread, and damage to edge vegetation and water bars.

Additional development around the site, particularly development that is not sensitive to remaining contributing resources, would also diminish integrity and detract from the experience of being away from the rim, in an inner canyon oasis that is both small enough to feel isolated from crowds but developed enough to provide a sense of security and comfort. Removal or

relocation of any of the extant historic buildings would also diminish the level of integrity. Installation of incompatible features, such as inappropriate buildings, structures, and site furnishings, would diminish Indian Garden's level of integrity.

An additional threat is the lack of archeological investigations concerning the 1903-1927 sub-period of significance. Without appropriate archeological investigations of Cameron-era artifacts, sub-surface data that currently exists may be lost forever beneath layers of flood-related sediment deposition. If this potential information source is lost, interpretive efforts concerning the sub-period may be hindered.

## Recommendations

As a result of the analysis and evaluation undertaken in this chapter, the CLR team concludes that Indian Garden is not eligible for the National Register of Historic Places as an individual district. According to National Register Bulletin #15, "...the relationships among [a] district's components must be substantially unchanged since the period of significance." Bulletin #15 also states that a district is not eligible for listing on the National Register of Historic Places if it contains so many alterations or new intrusions that it no longer conveys its sense of historic environment.<sup>14</sup>

Indian Garden does, however, contain contributing features that should be appropriately protected and preserved. Portions of Indian Garden and some of its contributing features have already been included in the draft 1992 Bright Angel Trail nomination—a nomination for the entire 7.8 mile Bright Angel Trail system from the Kolb Studio on the South Rim to the Colorado River. Although this nomination has not yet been approved or listed on the National Register of Historic Places, the Arizona State Historic Preservation Office made a Determination of Eligibility for the entire trail in 1997. The CLR team offers that while Indian Garden may not be individually eligible as a district, it continues to be an important part of the holistic evolution and use of the Bright Angel Trail and Grand Canyon National Park.

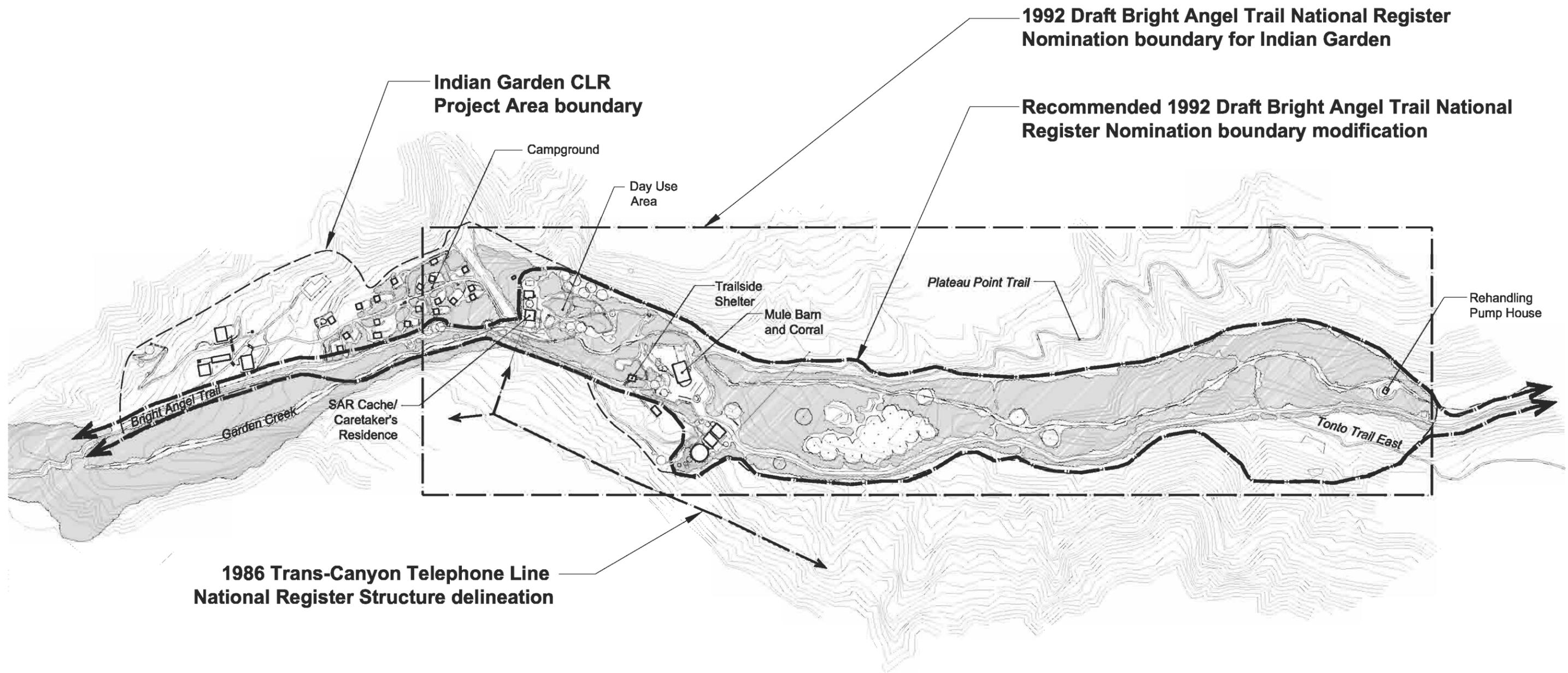
The conclusions drawn in this CLR suggest that the NPS should proceed with seeking approval of the Bright Angel Trail nomination, which should include Indian Garden's contributing features. The sections relating to Indian Garden in the existing nomination were written using information and boundaries set prior to the 1989 rehabilitation and should be updated to reflect recent changes.<sup>15</sup> For example, the Bright Angel Trail nomination boundary is still sized to include now-demolished buildings including the 1970 Mule Barn, a 1965 Bunkhouse, and a 1961 Comfort Station. The revisions should include all contributing features described in this CLR, rather than solely buildings. The following illustration depicts the proposed historic district boundary as it exists in the Bright Angel Trail nomination and the revised historic district boundary as proposed in this CLR (*Sheet 34*).

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<sup>14</sup> National Register Bulletin #15, 46.

<sup>15</sup> The Bright Angel Trail nomination draws its boundary and contributing feature information from Teri Cleeland's 1986 thesis, "The Cross Canyon Corridor Historic District in Grand Canyon National Park: A Model For Historic Preservation."





**1986 Trans-Canyon Telephone Line National Register Structure delineation**

**NOTES:**

1. The Recommended Indian Garden/Bright Angel Trail boundary shown is to be considered part of the Bright Angel Trail National Register nomination, not as an individually eligible district or site.

2. The recommended boundary continues to include all features from the 1992 Draft Bright Angel Trail Nomination that are still extant, while the physical boundary more closely approximates the limit of remaining contributing features in 2002.



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	DATE: JUNE 2005			GRAND CANYON NATIONAL PARK - INDIAN GARDEN	



## Chapter V • Landscape Treatment and Design Recommendations





# Chapter V • Landscape Treatment and Design Recommendations

## Introduction

The cultural landscape treatment recommendations and design guidelines presented in this chapter provide specific short-term assistance as well as a comprehensive vision to guide long-term management decisions. The information included in this section addresses the challenges associated with balancing cultural and natural resource protection, park operations, and interpretation within Indian Garden.

All landscape treatment recommendations and design guidelines offered in this chapter were developed in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (1996). This text provides guidance to resource managers prior to and during the planning and implementation of projects that may impact cultural landscape resources. The cultural landscape treatment recommendations and design guidelines provide an overall flexible approach to the protection, preservation, and maintenance of site resources and recommend a body of specific concepts for managing the site.

This chapter is divided into four sections:

- Management Issues, Goals, and Objectives;
- Recommended Landscape Treatment Approach;
- Treatment Recommendations and Design Guidelines; and
- Specific Project Recommendations

The Management Issues, Goals, and Objectives section provides a summary of management information found primarily within the park's 1995 General Management Plan (GMP). This section also offers additional management goals and objectives developed by the CLR team that are directed specifically toward management of the cultural landscape.

The Recommended Landscape Treatment Approach section outlines the treatment alternatives recognized by the Secretary of the Interior for treating historic landscapes and identifies the most appropriate approach for the Indian Garden project area. The selection of the appropriate approach is based on the assessment of integrity and park-identified management goals and objectives.

The Treatment Recommendations and Design Guidelines section identifies the types and degrees of change that can occur in the project area without negatively affecting the landscape's physical

and visual character-defining features. The emphasis of this section, given the project area's general lack of integrity, is the preservation and rehabilitation of remaining contributing features and the slowing of incremental changes which will further alter historic character if not properly managed. Treatment recommendations are based on the existing conditions assessments found in Chapter III Existing Conditions and focus on rehabilitating existing features that are in fair and poor condition. Design guidelines focus on managing new development within Indian Garden to ensure new features are compatible with the remaining historic character of the site.

The final section—Specific Project Recommendations—provides recommendations that support specific park projects. The CLR team evaluated planning and design options that were developed by the park. The team also developed recommendations for maintaining important landscape features affected by each specific project.

## Management Issues, Goals, and Objectives

The Grand Canyon National Park's (GRCA) 1995 GMP sets forth the basic strategy for managing park resources, visitor use, and interpretation. The GMP is the primary vehicle for determining the general treatment of all cultural resources in the park. The GMP was used to inform the CLR team with regard to the park's vision, management objectives, and planning issues that could potentially impact treatment guidelines and recommendations.

In the GMP, Indian Garden is considered a Corridor Trails facility. The GMP offers a vision statement regarding the preservation of the Corridor Trails' natural, scenic, and cultural resources and that conveys the essence of the park's qualities and desired future conditions. The vision statement, however, does not specifically mention Indian Garden.

The corridor trails are the main transportation routes for most visitors into the inner canyon. Rustic facilities have historically been provided along the trails to meet visitor needs. For over a hundred years mules have carried visitors into the canyon, hauled supplies, and helped with trail maintenance. The traditional character of the trails should be maintained, and mule use should be allowed to continue. However, crowding, visitor use conflicts, and resource impacts should be minimized. Services, such as drinking water and toilets, should continue to be provided at critical locations for visitor safety and reduced environmental impacts. Phantom Ranch should continue as a small rustic historic ranch where visitors can experience the inner canyon.<sup>1</sup>

The following is a summary of planning issues facing the Corridor Trails area from the GMP; the list has been edited to show issues that may impact Indian Garden.

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<sup>1</sup> U.S. Department of the Interior, National Park Service, *General Management Plan for Grand Canyon National Park* (Denver Service Center, 1995), 11.

### *Visitor Experience*

- Visitor information is lacking, so visitors are not always prepared for safe hiking trips.
- Trails are often overcrowded.
- Mule use on trails causes conflicts with hikers.

### *Cultural and Natural Resources*

- The historic character, cultural landscape, and archeological resources near the trails are being impacted by high visitor use.
- Intensive trail maintenance is needed due to mule use, and borrow pits in the inner canyon are used for maintenance purposes.
- Excess water from the trans-canyon waterline is released to Garden Creek, with resulting impacts on the natural habitat.

The GMP also provides management objectives for the Corridor Trails. Again, these objectives do not specifically mention Indian Garden, yet they have the ability to inform decisions concerning its landscape:<sup>2</sup>

### *Visitor Experience*

- Where livestock and visitors share the same trails and areas, minimize conflicts and resource impacts, and enhance safety.
- Provide a high level of NPS management presence to enhance the visitor experience and safety, and to protect park resources and values.
- Provide a quality backcountry experience consistent with historic uses of the cross-canyon corridor.

### *Development*

- Provide facilities only at currently developed areas within the cross-canyon corridor.
- Provide only basic services and facilities that support resource preservation and visitor safety, and that preserve an experience dominated by the natural environment and historic setting, design, and uses.
- Minimize the intrusion of the sights and sounds of facilities and developments on the visitor experience (for example, lights or generators should not be seen or heard by visitors in campgrounds). Maintain and enhance the historic setting.

### *Maintenance*

- Maintain the Bright Angel, North Kaibab, South Kaibab, and River Trails to accommodate high levels of backcountry visitor use.

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<sup>2</sup> GMP, 16.

- Minimize and mitigate the impacts of trail maintenance activities, such as borrow pits, on the environment away from the immediate trail.

To mitigate the above issues, achieve the park's goals and objectives, and implement the park's vision, the GMP offers the following actions:<sup>3</sup>

#### *Access and Trails*

- Sections of the main trails will be hardened with a natural material that blends well with the environment, that is permeable, that provides good traction, and that will significantly reduce the need to use borrow material.
- At Indian Garden visitor programs will be provided, and a small amphitheater will be added near the picnic area. A small building (the former ranger station) [SAR Cache/Caretaker's Residence], which is used for storage, will be converted to a visitor contact station.
- The campgrounds at Indian Garden... will remain the same size.
- At Indian Garden housing will remain the same, except one house [the Rock House] now used for storage will be converted back to housing for an interpreter if floodplain safety concerns can be adequately addressed.

## **Recommended Management Goals and Objectives**

In addition to the management issues and goals offered above, the CLR team developed additional goals and objectives to enhance the preservation and understanding of Indian Garden's cultural landscape. The following text offers a set of goals for each topic and then a sub-set of objectives that elucidate how to achieve each goal.

#### *Maintenance*

- Undertake frequent maintenance within Indian Garden.
  - Prepare a maintenance plan that incorporates both historic and recent features to ensure an integrated, holistic treatment and protection of the site.
  - Include trail, vegetation, and building maintenance in the overall plan.

#### *Natural Systems and Features*

- Minimize the impact of flooding and the release of excess water on cultural and natural resources in Indian Garden.
  - Understand typical flood hydrology in Indian Garden and develop techniques to mitigate the harmful effects of flooding.
  - Locate new features out of flood zones.

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<sup>3</sup> Ibid., 57.

### ***Circulation***

- Maintain the Bright Angel Trail and all interior trails within Indian Garden.
  - Prepare a section dedicated to trail maintenance in the proposed Indian Garden maintenance plan.
  - Work with mule concessionaires to share maintenance responsibilities of trails that are used for mule travel.

### ***Vegetation***

- Minimize the impacts of pedestrian and mule traffic on vegetation.
  - Create a more visible NPS staff presence to prevent vandalism.
  - Educate visitors and concessionaires on the importance of respecting vegetation.
  - Install signage and barriers to protect particularly sensitive vegetation.
- Prepare a vegetation management plan for Indian Garden.
  - Prepare a plan that includes best management practices for controlling vegetation growth, controlling invasive and exotic plants, undertaking re-vegetation efforts, installing new plants to replace those that have died or been removed, and a list of appropriate native plants to be installed when new development occurs.
- Perform frequent maintenance to control vegetation growth.
  - Undertake tasks, such as pruning, clearing, thinning, as part of the proposed site-wide maintenance plan or the proposed vegetation management plan.
  - Control excess water that promotes unwanted plant growth in certain areas.

### ***Buildings and Structures***

- Preserve and protect all historic buildings and structures within Indian Garden.
  - Enlist qualified personnel, such as architects, conservators, and structural engineers, to assess the condition of historic buildings and structures in Indian Garden, including archeological resources and the Rehandling Pump House.
  - Prepare a plan that assesses the condition of the buildings and structures, methods of stabilization and repair, and appropriate techniques for the future treatment and maintenance of each feature. This could be a stand-alone report or part of the site-wide maintenance program.

### ***Interpretation***

- Enhance interpretation efforts in Indian Garden
  - Increase the number of interpretation staff in Indian Garden.
  - Include additional interpretation themes that address all stages of landscape development in Indian Garden.

## Recommended Landscape Treatment Approach

The U.S. Department of the Interior currently recognizes four appropriate treatment alternatives for historic landscapes: preservation, rehabilitation, restoration, and reconstruction. These are defined and discussed in both *The Secretary of the Interior's Standards for Historic Preservation Projects* and Director's Order – 28: *Cultural Resource Management Guideline*. DO-28 provides the following definitions of the four treatment alternatives for cultural landscapes:

**Preservation** maintains the existing integrity and character of a cultural landscape by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity mitigating wear and deterioration of a cultural landscape by protecting its conditions. In light of the dynamic qualities of a landscape, maintenance is essential for the long-term preservation of individual features and integrity of the entire landscape. Stabilization involves re-establishing the stability of an unsafe, damaged, or deteriorated cultural landscape while maintaining its existing character.

**Rehabilitation** improves the utility or function of a cultural landscape, through repair or alteration, to make possible an efficient compatible use while preserving those portions or features that are important in defining its significance.

**Restoration** accurately depicts the form, features, and character of a cultural landscape as it appeared at a specific period or as intended by its original constructed design. It may involve the reconstruction of missing historic features, and selective removal of later features, some having cultural value in themselves.

**Reconstruction** entails depicting the form, features, and details of a non-surviving cultural landscape, or any part thereof, as it appeared at a specific period or as intended by its original constructed design. Reconstruction of an entire landscape is always a last-resort measure for addressing a management objective and will be undertaken only after policy review in the regional and Washington offices.

### ***Project Area-wide Treatment Approach***

The Indian Garden management issues, goals, and condition assessments outlined above and in Chapter III described a need for improved visitor services and interpretive opportunities, protection of the inner canyon corridor trail experience, remedies for over-crowding and mule/hiker conflicts, protection of cultural and natural resources, and the need for ongoing maintenance. These actions require both preservation of existing historic and natural resources combined with alterations or additions to the landscape. Despite the site's lack of integrity as an individual unit, the CLR team recommends **rehabilitation** as the appropriate treatment alternative for those portions of Indian Garden that will be included in a revised Bright Angel Trail National Register nomination (*Refer to Sheet 34 in Chapter IV*). The approach for the non-

historic areas—the Administration and Campground Areas—should include appropriate levels of maintenance to prevent deterioration and compatible and sensitive new development, when necessary.

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 or features which convey its historical, cultural, or architectural values.” Rehabilitation will allow site managers to sensitively incorporate new features and uses while preserving the remaining historic character of the site. In addition to the need for accommodating new elements, rehabilitation is a suitable choice because of the numerous changes already made in Indian Garden since the period of significance, and the landscape’s lack of integrity.<sup>4</sup>

### ***Treatment Approach by Landscape Character Area***

For the four historic character areas within Indian Garden that should be included in a revised Bright Angel Trail National Register nomination—Bright Angel Trail Corridor (North and South); Day Use Area; Pump Station and Corral Area; and North Indian Garden—the recommended treatment approach is ***rehabilitation***. Although individual justifications are given below, the two primary reasons for this recommendation are the diminished integrity of the character areas and the need for compatible repairs and new features. Within these character areas, the rehabilitation approach must be tempered with the implementation of preservation principles to protect historic, contributing features.

#### Administration and Campground Areas

Because these two areas are not historic, no rehabilitation or preservation efforts are required. Appropriate actions include proper maintenance of existing features and the addition of new infill development, when necessary.

#### Bright Angel Trail Corridor

Rehabilitation is recommended due to the continual need to repair and maintain the Bright Angel Trail and edge vegetation. This choice is also reinforced by the large ratio of new additions versus contributing features in the character area.

#### Day Use Area

Rehabilitation is recommended due to the high proportion of non-contributing features to contributing features in the character area, the need for maintenance to control vegetation, the need to repair deteriorated features, and the possible addition of contemporary uses such as a Visitor Contact Station and interpretive furnishings. In this character area, however, preservation efforts must also be implemented to protect extant contributing resources, such as the Cameron-era cottonwood trees and the SAR Cache/Caretaker’s Residence.

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<sup>4</sup> *The Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* states that rehabilitation is recommended when “a determination is made prior to work that a greater amount of existing historic fabric has become damaged or deteriorated over time and, as a result, more repair and replacement will be required.”

### Pump Station and Corral Area

Rehabilitation is recommended because more new additions and non-contributing features exist than historic contributing features, new and compatible uses have already been integrated into the character area, and maintenance of existing features will be required more often than preservation efforts. Preservation of contributing resources, such as the South Pump House and reservoir, must also be a high priority in this character area.

### North Indian Garden

Rehabilitation is recommended because the possibility of finding new information through archeological surveys may create an opportunity for new interpretive uses. These new uses may require the installation of features such as waysides and site furnishings. If necessary, limited new development may also be located in this character area; non-essential construction and development should be avoided. The preservation component of this rehabilitation approach is important in this character area to ensure the protection and retention of features such as the Rehandling Pump House and Trail Maintainer's tent platform, as well as any historic resources identified in the future.

### ***Standards for Rehabilitation***

In order to provide park managers and others involved with the treatment and management of the Indian Garden landscape, the Secretary of the Interior has developed standards for the rehabilitation of historic landscapes. The *Standards for Rehabilitation* are as follows:

- A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
- The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
- Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
- Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

- Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
- New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
- New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

## Treatment Concept

Indian Garden presents an unusual case because the CLR project area does not retain integrity. The key, however, to preparing recommendations and guidelines for this project area is to understand that although no integrity remains, Indian Garden continues to hold an important place in the evolution of Grand Canyon National Park. By emphasizing a well-rounded treatment approach of both rehabilitation and preservation activities, Indian Garden's story can continue to be told through its remaining contributing features and through the changes that it has incurred over time.

With this in mind, the overarching treatment concept for Indian Garden is to implement alterations and new additions in the landscape that are compatible with the both the existing character and residual historic character of the site, while preserving contributing resources. This is possible because, although the landscape has undergone considerable alterations since the period of significance, many of these changes were compatible with the Rustic Style character of the site initially developed between the 1920s and 1940s. The 1989 rehabilitation, for example, utilized native stone and wood materials, as well as Rustic Revival design principles, which fit with both the historic character of the landscape and the natural character of Indian Garden's inner canyon setting. The CLR recommends that this tradition of harmonizing built features with the landscape through appropriate and compatible design choices continue as part of the overarching treatment approach.

Treatment recommendations and guidelines also emphasize maintenance and upkeep efforts. All features—contributing, supporting, and non-contributing—must be protected and repaired when needed to avoid deterioration or damage to surrounding resources. The 1989 rehabilitation introduced numerous new additions and alterations, yet much of this was undertaken in a manner that was compatible with the existing historic character of the site, as well as the visual and material character of the inner canyon. It is important that these supporting features be maintained both for safety and aesthetic purposes, but also because this example of Rustic Revival design may be considered a significant era in NPS design in the future.

Lastly, the overarching approach regarding new development is that it must be planned in such a way that the inner canyon/corridor trail experience is not compromised, yet the needs of park

personnel and visitors are met. New development must also be sensitive to ethnographic and archeological resources within and near proposed construction or ground disturbance.

## Treatment Recommendations and Design Guidelines

One of the purposes of this CLR is to provide appropriate treatment recommendations and design guidelines for the preservation and enhancement of cultural landscape resources within the Indian Garden landscape. The recommendations and guidelines offered in this section are intended to support the NPS's planning efforts and design processes, including actions necessary to protect and preserve important cultural landscapes and landscape features and ensure that development in specific areas considers the historic landscape character and contributing features.

This section is divided into three parts: design guidelines for new development in Indian Garden for all six character areas; general treatment recommendations for the entire cultural landscape, including all six character areas; and treatment recommendations for the four historic landscape character areas. Design guidelines focus on how to sensitively implement new development into the Indian Garden landscape without negatively impacting the remaining historic character. Treatment recommendations focus primarily on existing condition issues—described in the Chapter III condition assessments—that are in need of more immediate attention.

### Design Guidelines

The guidelines described below are intended to complement the treatment recommendations that follow this section in order to establish a general, overarching approach to additions to and new development within the Indian Garden project area. The following guidelines may be applied to all current and future planning and design initiatives, as well as new construction, in both the historic and non-historic character areas of Indian Garden.

#### *New Development and Construction*

- Avoid adding new development or new construction within Indian Garden unless necessary for the safety, comfort, or education of visitors or staff. If new development or construction is required, refer to the following guidelines, as well as Sheet 35 at the end of the section:
  - Avoid expanding the developed area of Indian Garden, unless absolutely necessary. Expanding the physical boundaries of Indian Garden will not support the GMP's desired inner canyon experience of minimal development and basic facilities.
  - Avoid locating new development or construction east of the current Indian Garden CLR boundary, where development has not existed historically.
  - Attempt to locate necessary new development and construction in the contemporary Administration and Campground Areas before siting new features in the historic Day Use, Pump Station and Corral, and North Indian Garden Areas.

- If necessary, consider locating a limited number of small buildings or structures in the North Indian Garden Area, if the following requirements are met:
  - Research and archeological surveys determine that no sensitive cultural resources are located in or near the area to be developed; and
  - New development will not be negatively impacted by flood events, nor will new development increase the negative impacts of flooding.
  - If feasible, new development or construction in this character area could be located on sites of former building locations, such as in the former location of one of Cameron's structures. Again, this effort should only be undertaken if historic cultural resources will be not be damaged.
- Replace materials in-kind to the extent feasible. Although few of the materials currently in the Indian Garden landscape survive from the period of significance, many materials—such as limestone and juniper wood—were used historically. These types of native, compatible materials should continue to be used, both to replace existing materials and in designs for new features to ensure consistency with the remaining historic character as well as the natural character of the inner canyon.
- Undertake sufficient research of landscape features—to supplement the findings of the CLR—that require modification, repair, or replacement before work is performed to protect research and interpretive values.
- Avoid landscape changes or additions that create a false sense of historical development, including the addition of conjectural, typical, or representative features.
- Design and site new additions or alterations in such a way that they will not destroy historic materials, features, and spatial relationships that characterize the cultural landscape. Design all new additions and alterations to be a product of their time, yet also to be compatible with the historic resources in materials, size, scale and proportion, and massing. Differentiate new work from existing historic resources.
- Design and site new additions and alterations to the landscape in such a way that, if removed in the future, the essential form and character of the landscape would be unimpaired.

### *Natural Systems and Features*

- Limit land disturbing activities when implementing new development and construction. For example, avoid excessive grading, limit impact on floodplains and water resources, and limit the amount of cut and fill.
- Avoid re-routing or altering the course of Garden Creek, unless absolutely necessary for the safety of visitors and staff, or the protection of historic resources.

### ***Land Use***

- Maintain, where feasible, historic land uses including hiking, mule riding, water-related utilities, and camping.
- Protect elements of the less-developed inner canyon experience including scenic views, restricted views of development, natural quiet, and minimal illumination by limiting new uses and development.
- Evaluate all proposed new uses in consultation with preservation specialists, such as historical landscape architects, historical architects, archeologists, or cultural resource managers within the park.

### ***Circulation***

- If necessary, consider constructing a limited number of new trails. New trails may match, or be similar to, existing trails in design and materials. This is possible because the existing trails, while of fairly recent construction, are compatible with the natural and historic character of Indian Garden and serve as a good design model for future trails. New trails should have earthen tread and may include native stone edging, stone waterbars, and log risers where appropriate.
  - Avoid hardened surfaces such as asphalt and concrete. If a resilient surface is required, consider using a resin-based pavement prepared with local stone aggregates.

### ***Vegetation***

- New plantings should consist only of plant species that are native to Indian Garden and the inner canyon. Planting palettes could include western redbud (*Cercis occidentalis*) and cottonwood (*Populus fremontii*), which are native to the region, but were introduced into Indian Garden in the first half of the 20<sup>th</sup> century.
- Avoid any type of formal planting design during the installation of new plantings. Install new plantings at random, to mimic the manner in which they would have grown naturally. The exception to this guideline is the cyclical replacement of cottonwood trees in rows, to continue the tradition of the cottonwood rows planted during the Cameron years in Indian Garden.

### ***Buildings and Structures***

- Construct only those buildings and structures that are necessary for the safety, comfort, or education of visitors or staff.
- Design new buildings and structures to be compatible with the existing character of the site in color, style, size, and massing. Follow the *Grand Canyon National Park Architectural Character Guidelines* for additional guidance on compatible new building types.

- Consider using Rustic Revival principles when designing and constructing new buildings and structures. Consider incorporating stone work, timber beams, exposed rafters, ganged windows, and muted earth tone colors, all of which are compatible with the historical cultural landscape of the site.

### ***Views and Vistas***

- Avoid constructing or installing any type of building or development that will block or foreshorten views to the surrounding canyon features.

### ***Small-scale Features***

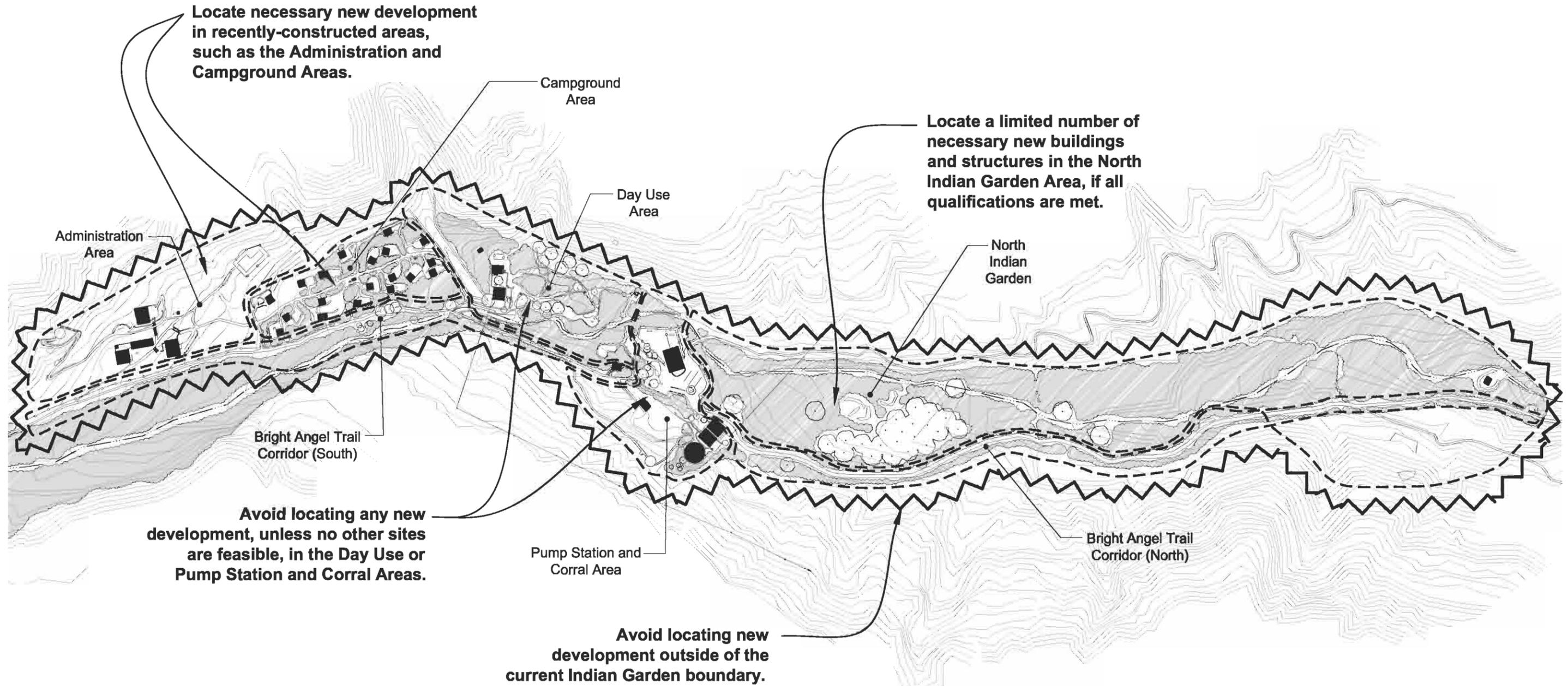
- Design all new small-scale features to be compatible with the existing character of Indian Garden.
  - Ensure that new small-scale features are differentiated from historic small-scale features in Indian Garden. This is particularly important in the Day Use and Pump Station and Corral Areas, which contain much of the site's remaining historic features.
  - Utilize native and locally-available materials—such as juniper, ponderosa pine, and ash woods, as well as limestone and sandstone—when designing and constructing new small-scale features.
  - Utilize metal sparingly. Visible metal elements should not appear shiny or reflective. Incompatible metal materials should be located inconspicuously.
  - Refer to the “Design – Process and Principles” chapter in *Grand Canyon National Park Architectural Character Guidelines* for additional information on the design of compatible site features.

### ***Interpretation and Education***

- Limit the use of destructive investigative techniques, such as archeological excavation, to provide sufficient information for research, interpretation, and management goals.
- Introduce new interpretive features in such a way as to minimize adverse impacts on the historic character and resources of the landscape.
- Introduce additional waysides and interpretive furnishings that describe the evolution of Indian Garden's cultural landscape.
  - Consider the following interpretive themes for the cultural landscape:
    - Ralph Cameron and the Early Development of Indian Garden
    - American Indian Use of the Indian Garden Landscape
    - The Use and Effects of Water in Indian Garden
    - NPS Rustic Design and Architecture in Indian Garden
    - CCC Construction in Indian Garden



\* This map should be used in conjunction with the Design Guidelines located in Chapter V.



NOT TO SCALE

A/E FIRM  
 PRIME:  
 VAN DIJK WESTLAKE REED LESKOSKY  
 PHOENIX, AZ  
 SUBCONTRACTOR:  
 JOHN MILNER ASSOCIATES, INC.  
 CHARLOTTESVILLE, VA

DESIGNED:  
 DRAWN:  
 TECH. REVIEW:  
 DATE:

SUB SHEET NO.

T

**POTENTIAL LOCATIONS FOR NEW DEVELOPMENT**

GRAND CANYON NATIONAL PARK - INDIAN GARDEN

DRAWING NO.	
113 20228	
PKG. NO.	SHEET
	35
	OF 36



## **General Treatment Recommendations**

The recommendations found on the ensuing pages apply to all six of the following historic and non-historic character areas within the Indian Garden CLR project area:

- Bright Angel Trail Corridor (North and South)
- Administration Area
- Campground Area
- Day Use Area
- Pump Station and Corral Area
- North Indian Garden Area

These recommendations should be used in conjunction with recommendations offered for each character area later in this chapter.

### *Natural Systems and Features*

One of the primary methods for ensuring that important cultural resources are protected in Indian Garden is to mitigate the impacts of flooding, erosion, and the release of excess water into the site. The landscape character areas that are most intensely impacted by these issues are the Bright Angel Trail Corridor, Day Use Area, Pump Station and Corral Area, and North Indian Garden Area.

- Enlist a natural resource specialist familiar with stream hydrology to study Garden Creek, if this task has yet to be performed.

- Findings should include the flood habits of Garden Creek, the impacts of flooding on Indian Garden and its resources, and potential mitigation methods.

- Enlist a natural resource specialist and/or civil engineer to develop stabilization methods for the banks of Garden Creek.

- Appropriate methods are those that will incorporate means of flood mitigation that blend with the surrounding colors and materials of the site, such as native limestone riprap or native vegetation for bank stabilization, and are minimally intrusive. Inappropriate methods of flood mitigation include the use of concrete structures, riprap that does not utilize local stone, and pargeing (coating mortar over rough masonry that completely covers the masonry surface, similar to the application of stucco).

- Undertake research to determine how excess water released from the trans-canyon waterline affects Indian Garden and how the negative impacts can be mitigated.

- The 1997 Resource Management Plan states that the free-flowing spring water at

Indian Garden is supplemented by surges of excess water from the trans-canyon pipeline. The surges contain a different quality of water than the springs, although the plan does not explain the variation. Although water quality issues fall outside the scope of this CLR, the impacts of the surge releases on the cultural landscape—including increased vegetation growth or possible increases in flood intensity—resulting in greater damage to the landscape—should be studied.



**Figure 58.** Examples of eroded banks and flood debris in Garden Creek.

## *Circulation*

The primary concern regarding circulation in Indian Garden is the condition of the Bright Angel Trail and interior trails. Although the CLR team observed the trails for a limited time, the condition documented during this time was fair, meaning the features showed clear evidence of minor disturbances and deterioration. All character areas are affected by these issues.

- Undertake frequent trail maintenance to prevent deterioration.

- Include such tasks as filling holes, resurfacing the trail tread, repairing waterbars and risers, and pruning vegetation along trails throughout Indian Garden.



**Figure 59.** Fill holes in trails during maintenance.



**Figure 60.** Portions of trails that puddle during wet weather should have low spots filled during trail maintenance. Assess the causes of puddling to prevent recurrence.



**Figure 61.** Eroded places around log risers should be backfilled and the trail tread resurfaced during trail maintenance. Repairs should be made so that water is diverted away from the trail tread, rather than trapped.

## Vegetation

Within Indian Garden, the majority of vegetation constraints are related to either unchecked growth or decline of vegetation. Due to wet conditions in certain areas, vegetation flourishes and grows over trails and through stone edging. Many cottonwood trees planted at the turn of the 19<sup>th</sup> century are reaching the end of their life span and are declining.

- Prepare a site-wide vegetation management plan to assess the characteristics of Indian Garden vegetation, determine the opportunities and constraints posed by the types of vegetation in the site, and determine methods for management that enhance the visitors' safety, and understanding of the role of vegetation in Indian Garden.

- Remove any vegetation that poses a hazard to people or surrounding cultural or natural resources.



**Figure 62.** Remove vegetation that is dead, dying, or hazardous to people or resources.

- Enlist a qualified arborist or natural resources specialist to determine the general ages of mature vegetation in Indian Garden. An overall understanding of the age of mature trees and shrubs in the project area will enable managers to be selective in their choice of which plants to remove during any clearing or

maintenance efforts as well as which plants should remain.

- Use least invasive techniques when determining ages before methods such as tree coring.

- Record the information as part of the site-wide vegetation management plan.

- Enlist a qualified arborist or natural resources specialist to determine the health of the remaining cottonwood trees.

- Remove any cottonwood trees that are dead, dying, or that have the potential to harm people or surrounding resources should they fall or drop limbs.

- Replace any deteriorating or dead cottonwood trees present during or before the period of significance or was likely planted by Cameron or one of his workers. These trees will be approximately one hundred years old at this time.

- Replace trees in-kind, using the same species of tree that currently exists (*Populus fremontii*). If the exact species cannot be found, use a cottonwood species that most closely matches the height, shape, character, and habit as the existing trees, such as the Black cottonwood (*Populus balsamifera* L. ssp. *trichocarpa*).

- Consider propagating existing, historic cottonwood trees using cuttings to ensure that in-kind replacements are available for trees that need to be removed.

- Continue to monitor and control invasive and exotic plant species throughout Indian Garden.

- Remove invasive/exotic plants using ecologically-sound techniques that will not cause damage to other resources. Techniques include biodegradable, systemic herbicides, and hand-removal. Refer to the park's "Parkwide Programmatic Invasive Plant Management Program" for additional guidance.

## ***Buildings and Structures***

While the many buildings and structures in Indian Garden are of recent construction, several historic features remain and should be protected from flood damage and general deterioration from lack of maintenance.

- Retain and maintain all contributing buildings and structures, including the following features:
  - Telephone poles
  - Trailside Shelter
  - SAR Cache/Caretaker's Residence
  - South Pump House
  - Pump House Reservoir
  - Rehandling Pump House
  - Pump Caretaker's Residence/Rock House
- Enlist qualified historical architects and structural engineers to assess historic buildings and structures, evaluate their condition, and prepare maintenance and rehabilitation plans.
- Include building maintenance, for all buildings and structures, in the proposed site-wide Indian Garden maintenance plan.

### ***Small-scale Features***

Very few small-scale features remain from the period of significance in Indian Garden, due to the 1989 rehabilitation that introduced numerous new features. Recommendations are offered below for the maintenance of contemporary small-scale features that are compatible with the historic character of the area and surrounding visual aesthetic of the inner canyon.

- Repair or replace missing, covered, and dislocated stone edging throughout the site.
  - Uncover stone edging that has been buried by silt from the trail tread or left by

receding flood waters. Reset the stones so that they are clearly visible to hikers and mule riders. Undertake frequent maintenance to keep edging clear of soil build-up.

- Undertake trail tread and stone edging maintenance at the same time so that additional layers of tread material do not cover or bury edging.

- Remove vegetation that grows over and between stone edging. Undertake frequent maintenance to prevent vegetation from obscuring edging, which will become a trip hazard and lose its edge-defining properties if it is not visible.

- Replace stone edging with stones of a similar shape, color, and size as those existing to present a uniform appearance. If stone edging is replaced throughout a particular character area, it is acceptable to introduce new, compatible stone edging styles.



**Figure 63.** Remove vegetation that grows over and between stone edging.

- Repair and maintain all broken or malfunctioning drinking fountains throughout Indian Garden. Although the drinking fountains are not historic, they are compatible with the remaining historic character of Indian Garden and are considered supporting features.

### ***General Maintenance***

General, holistic maintenance is much-needed within Indian Garden. The site will benefit greatly from an integrated maintenance plan which details not only which features need maintenance and how often this maintenance is undertaken, but the number and type of staff needed to perform tasks as well as the amount of funding required.

- Prepare a maintenance plan that addresses materials, budget, staffing requirements, frequency, and priorities of Indian Garden maintenance.

### ***Archeology***

Several archeological resources from the Ralph Cameron era (1903-1927) are found within the project area. These features require study and protection to ensure that they continue to exist and educate future generations of researchers and visitors.

- Protect and preserve archeological resources in place. If such resources must be disturbed, undertake mitigation measures such as documentation, recovery, and curation.
- Enlist a qualified archeologist to survey areas that may contain archeological features, such as the North Indian Garden Area.
- Retain and maintain all archeological features that have already been documented, including the Trail Maintainer's Tent Platform, the Cooler, and the dry-laid masonry room that may be associated with Ralph Cameron.



**Figure 64.** Undertake archeological surveys for sites that may contain information-yielding resources such as this site in the North Indian Garden Area.



**Figure 65.** Retain and maintain all archeological features in and around Indian Garden.

## **Recommendations by Landscape Character Area**

The recommendations found on the ensuing pages address the treatment of existing condition issues for the following four historic character areas:

- Bright Angel Trail Corridor (North and South)
- Day Use Area
- Pump Station and Corral Area
- North Indian Garden Area

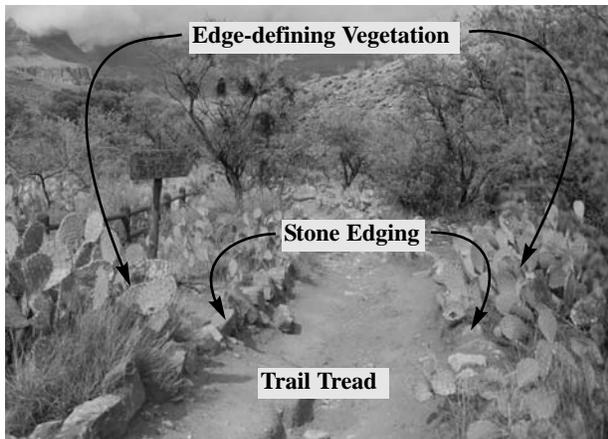
Condition issues are based on issues identified in Chapter III Existing Conditions and address features that are in fair and poor condition. Additional recommendations that address issues common to all six character areas are provided in the preceding section.

### ***Bright Angel Trail Corridor***

- Maintain the linear corridor of Bright Angel Trail through Indian Garden, including the existing width of the trail and edge-defining features such as vegetation and stone edging.

- Limited alterations to this corridor are acceptable when safety and use conflict issues will be resolved through pruning, limited clearing of edge vegetation, or limited widening of the trail tread.

- If possible, alterations should be made to the portion of the trail running adjacent to the contemporary Administration and Camp-ground Areas before those portions running through more historic character areas.



**Southern Bright Angel Trail, typical condition**



**Northern Bright Angel Trail, typical condition**

**Figure 66.** Maintain the linear corridor of Bright Angel Trail along with its edge-defining characteristics.

- Avoid perceptibly realigning the Bright Angel Trail. The trail should be minimally realigned only to improve hiker safety or to mitigate flood damage.

- Eradicate social trails and informal spur trails that have a negative impact on surrounding natural and cultural resources.

- Consider using locally-harvested or relocated boulders to block paths.

- Install regionally-native plants to re-vegetate disturbed routes.

- Consider posting additional signage requesting visitors to stay on designated trails.

- Repair and maintain the stone steps leading to the Trailside Shelter.

- Enlist a qualified masonry conservator to assess the condition of the steps and offer appropriate repair methods.

- If the steps can be repaired, distinctive historic materials, finishes, and construction techniques that define the NPS- and CCC-era craftsmanship should be preserved.

- If materials need to be replaced, new materials should match the historic steps in design, color, and materials.

- Protect vegetation along the trail corridor from damage or vandalism by hikers and mule riders.

- Increase educational programs and signage at the rim to educate hikers on the impacts of damaging inner canyon vegetation.

- Increase staff or volunteer presence along the trail to discourage intentional or unintentional damage to vegetation.

- Undertake methods to reduce mule and hiker conflicts.

- Consider creating “bump-outs” at narrow points in the trail where hikers can safely step off the main trail when mule trains pass by. This will also control damage to vegetation as hikers will not have to step onto plants.

° The bump-outs should be an informal widening of the trail tread, limited in size to hold two to four hikers, and demarcated by stone or log edging.



**Original, typical condition of Bright Angel Trail.**



**Illustrative concept of bump-out along trail.**

**Figure 67.** Undertake methods to reduce mule and hiker conflicts, such as creating small “bump-outs” in high traffic areas.

- Repair and maintain waterbars and log risers along the Bright Angel Trail.

- Undertake frequent maintenance to clear clogged, eroded, or displaced stone waterbars and backfill eroded log risers.

- Assess the effectiveness of existing waterbars and the need for additional water-controlling features on the trail.

- New waterbars can match existing materials, although they are not historic, due to the general compatibility of the wood and local stone materials with the existing character of Indian Garden.

- Enlist a qualified natural resource specialist and/or a civil engineer to assess the stability of the vertical slope at the junction of Bright Angel Trail and Garden Creek. The same personnel should prepare a stabilization and maintenance plan depending on their findings.



**Figure 68.** Assess the stability of the vertical slope on Bright Angel Trail.

## Day Use Area

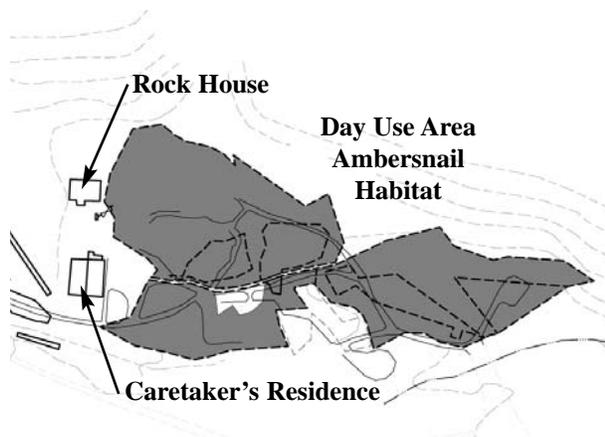
- Avoid altering the spatial organization of the Day Use Area.

- Retain the building and feature relationships around the SAR Cache/Caretaker's Residence and Rock House.

- Retain the spatial patterns of the Day Use picnic grounds until further information is gathered regarding its date or origin.

- Undertake frequent and character-area-wide maintenance to return the Day Use Area to a useful picnic grounds.

- Coordinate with GRCA natural resource managers to determine what steps can be taken to mitigate protection of the ambersnail habitat with maintenance and use of the Day Use Area.



**Figure 69.** Coordinate with natural resources staff to determine whether portions of the Day Use Area can be used by visitors. ("Indian Garden Site Plan," Sheet C-6 of Pkg. 113-41233.)

- Undertake flood mitigation efforts and activities to reduce excess water in this area. Consider, however, the role of this character area during flood events. For example, consider the necessity for this area to be protected from all flooding or whether it can become a detention area during heavy flood events, thus

protecting more sensitive cultural and natural resources elsewhere.

- Remove vegetation that is obscuring trails, picnic sites, and other seating areas. Focus on removing immature vegetation, as well as invasive and exotic plants, before clearing vegetation that is obviously mature.



**Clear, useful seating area in the Campground Area.**



**Once overgrown, unusable seating area in Day Use Area.**

**Figure 70.** Remove excess vegetation that is obscuring spaces, using other sites in Indian Garden as examples. Note that the unusable seating example above was cleared and repaired in 2004, but the general treatment concept applies to similar sites throughout this area.

- Perform trail maintenance to regain the existing circulation pattern.

◦ Install waterbars, undertake minimal re-grading, or utilize other methods to ensure that trails and seating areas drain water effectively. Waterbars should match others found in Indian Garden or be created from local stone or wood materials. Re-grading should be done as sensitively as possible and to the least extent necessary to create positive drainage.

- Remove the footbridge abutment if it will not be re-used. Retain and maintain the stepping stones if they are frequently used.

- Repair and maintain the terrace elements north of the Caretaker's Residence.

- Repair and stabilize the stone retaining wall using materials that match the existing as closely as possible in size, shape, and color.

- Remove vegetation that is growing through and encroaching upon the wall. Undertake frequent maintenance to prevent vegetation from overtaking the wall.



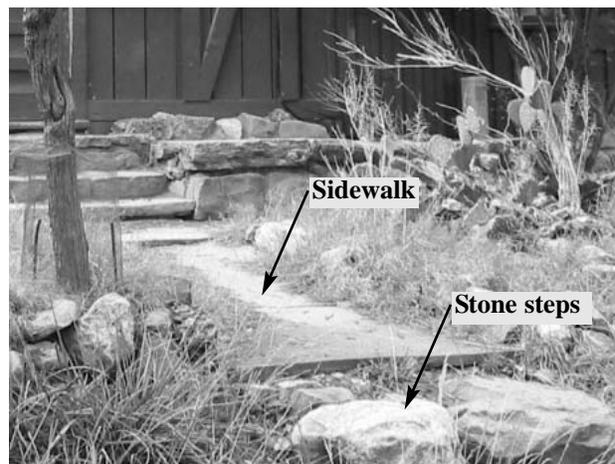
**Figure 71.** Repair the Caretaker's Residence/SAR Cache terrace by stabilizing the wall and removing unwanted vegetation growing through and over the stones. (History Matters 2002)

- Repair and maintain concrete sidewalks that are cracked and uplifted.

◦ Because the historic sidewalk or path material is not known, and concrete will withstand heavy pedestrian traffic better than bare earth, the concrete sidewalks should be replaced in-kind. Concrete materials need not match the existing, unless future research finds the sidewalks to be historic, but should be compatible with the surrounding character in color and texture. New concrete mixes should be appropriate for the climate of Indian Garden and the amount of pedestrian traffic.

- Repair and maintain the stone steps, which have shifted and have been weakened by erosion.

◦ Although it is not known if these steps are historic, they are compatible with the character of the site. All efforts should be made to repair the steps. If the steps cannot be repaired, they should be replaced by rocks of a similar size and type.



**Figure 72.** Repair and maintain the concrete sidewalk and stone steps found at the Caretaker's Residence/SAR Cache. (History Matters 2002)

- Assess the condition and utility of small-scale features within the Day Use Area to determine if they should be replaced or repaired.

- Assess features such as picnic tables, wood and wire mesh fence, and rock edging. If these features cannot be repaired, replace them with new features that are compatible with the surrounding character of the site.

- New picnic tables should be made of wood, metal, and/or stone components. Avoid bright colors in favor of muted earth tones.

- New fencing should match the existing as closely as possible because of its compatible design. Similar, yet different, fencing designs are acceptable, although they should be more traditional in design. Avoid fence types that utilize contemporary materials such as chain-link or plastic.

- Undertake additional research to determine the original purpose of the concrete foundation. If the foundation is not historic, currently serves no purpose, and will not be re-used, it should be removed, as it is in poor condition. Document the foundation through photography and base-mapping prior to removal.



**Figure 73.** Determine the original purpose of the foundation and remove it if it is not historic, serves no purpose, and will not be re-used.

### *Pump Station and Corral Area*

- Retain all contributing features in this character area.
- Avoid altering the spatial organization of the Pump Station and Corral Area.
  - Retain the building and feature relationships around the pump houses and pump house reservoir.

### *North Indian Garden Area*

- Undertake research and archeological survey to determine if any significant artifacts of the Cameron-era occupation of Indian Garden are present in this area, particularly in the central space of the character area.

- Develop interpretive themes based on the research and survey findings.

- Consider locating limited new development in this character area. Refer to the design guidelines located in the next section for guidance on new development in this character area.

- Continue Himalaya Blackberry control and eradication efforts throughout Indian Garden, and particularly in this character area.

- Continually monitor recently cleared portions of blackberry to prevent re-growth.
  - Remove slash piles as soon as possible to prevent sprouting and to avoid an unkempt appearance.

- Consider having a qualified archeologist survey sections of this character area that have never been cleared, particularly when ground-disturbing methods such as grubbing are used to remove blackberry roots.

- Retain and maintain the Rehandling Pump House and associated flood walls.

- Enlist a qualified architectural conservator or structural engineer to assess the stability of the Rehandling Pump House and flood walls and to prepare a plan for their preservation and maintenance.

- Consider incorporating these features into an interpretive theme describing the importance of water in Indian Garden.



**Figure 74.** Survey potential archeological sites, such as the rock pile on the left. Continue Himalaya Blackberry eradication efforts and remove slash piles, such as the pile on the right, as soon as possible.



**Figure 75.** Retain and maintain the Rehandling Pump House and associated flood walls. (History Matters 2002)



## Specific Project Recommendations

The recommendations made in this section support specific park projects that will directly impact Indian Garden's cultural landscape. These recommendations are intended to guide the planning and design decisions made by park personnel in an effort to preserve the remaining historic character of Indian Garden and discourage the installation of incompatible features. The ultimate goal of the guidance offered here is to prevent the loss of contributing, compatible resources by stemming incremental change in Indian Garden.

The following projects were chosen, with input from the park, to be reviewed in the CLR due to their potential to impact the physical and visual landscape resources in Indian Garden.

- Rehabilitate Historic Indian Garden Ranger Station (PMIS #53664)
- Remove Invasive Plants Along Pipe, Garden, and Bright Angel Creeks and Corridor Trails (PMIS #104714)
- Upgrade Corridor Area Fire Protection Systems (PMIS #053675)

Recommendations are based on information provided in Project Management Information System (PMIS) sheets, Environmental Assessments (EA), and drawings which JMA received from the park.

## Rehabilitate Historic Indian Garden Ranger Station

### *Project Description*

According to the PMIS project narrative, this project will rehabilitate the historic Indian Garden Ranger Station—known as the SAR Cache or Caretaker’s Residence in this CLR—for use as an interpretive visitor contact and aid station. Much of the work will be undertaken in the interior of the building, although the project also calls for upgrades to exterior visitor use areas. These upgrades include installation or improvement of benches, picnic tables, walkways, shade structures, interpretive display panels, a drinking fountain, and mule cinch-up areas. Re-vegetation of approximately .25 acres would also be necessary. This project will take place in the Day Use Area, as described in this CLR.

### *Recommendations*

While Indian Garden does not retain integrity as a complete unit, the Day Use Area contains many of the site’s remaining historic resources. With this in mind, the proposed additions and alterations to the landscape in this character area are appropriate under the previously-designated rehabilitation approach, yet must be implemented sensitively to avoid damage to important cultural resources. Refer to Sheet 36 and additional illustrations from the 1989 “As-Constructed” drawings at the end of this section for graphic depictions of the following recommendations.

- Attempt to locate new features on previously disturbed ground. For example, install new shade structures in cleared areas that currently contain picnic tables or seating areas.
- Limit the construction of new walkways and circulation patterns only to the extent necessary to achieve interpretation and safety goals.
  - Repair or replace deteriorated sidewalks. Sidewalks may be replaced in-kind, using an appropriate concrete mix, or may be replaced with a compatible material, such as native stone.
  - Avoid paving the terrace with asphalt or a monolithic pour of concrete. Consider using materials such as native stone or patterned concrete that better fit the scale and character of the area.
- Repair or replace existing sidewalks that are deteriorating. Replace concrete sidewalks in-kind, using mixtures that are compatible with the character of the Day Use Area and with the amount of traffic the sidewalk will receive. Refer to the recommendations made for the Day Use Area earlier in this chapter for additional guidance.
- Limit the number of new, built features installed in this character area to the minimum amount necessary to achieve visitor experience and safety goals.
- Consider the impacts of creating a new mule cinch-up site near the Ranger Station/Caretaker’s Residence. The increased mule traffic, along with the large amount of space needed for these users to navigate safely, may not be appropriate in the Day Use Area or near the Ranger Station/Caretaker’s Residence.

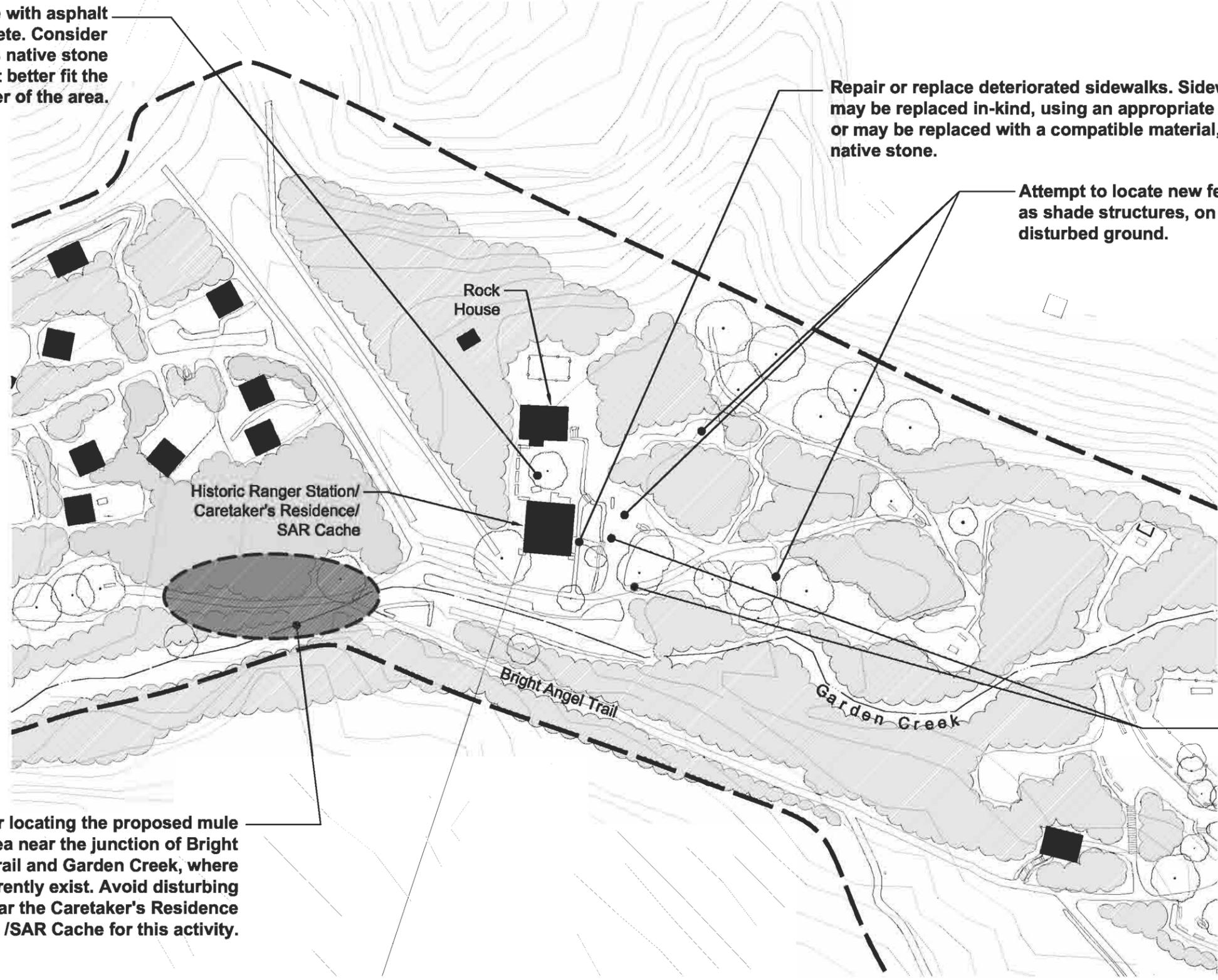
- Consider locating a new mule cinch-up area near the junction of Bright Angel Trail and Garden Creek, where space already exists for these activities.
- Consider installing shade structures that match those located in the Campground Area to present a uniform appearance and consistent visual character throughout the site. Consider using the details from the 1989 construction documents to build new shade structures (*Sub-Sheet L-20*).
- Consider installing benches and picnic tables that match those already present in Indian Garden to present a uniform appearance and consistent visual character (*Sub-Sheet L-16*).
- New drinking fountains should match the existing fountains installed in 1989, which also resemble the stone fountains seen in photographs from the 1960s. Consider using the details from the 1989 construction documents to build new fountains (*Sub-Sheet C-16*).
- Utilize only native plantings during any re-vegetation efforts. Use native plants found in the Day Use Area before using plants found in other locations within Indian Garden. Utilize measures to mitigate exotic and invasive plant encroachment on disturbed ground while re-vegetation is taking place.
- Install outdoor interpretive panels that will be noticeable to visitors, but compatible with the surrounding character of the area in size and color. Consider using muted earth tone colors in brown, green, or black for panel components. Avoid making the panels the most prominent features wherever they are located, thereby taking attention away from the contributing and supporting landscape resources.
  - Consider locating the panels where circulation patterns and development currently exist, rather than creating or clearing a new site. Consider locating panels near the SAR Cache/Caretaker's Residence and Rock House or along existing trails.



Avoid paving the terrace with asphalt or a monolithic pour of concrete. Consider using materials, such as native stone or patterned concrete, that better fit the scale and character of the area.

Repair or replace deteriorated sidewalks. Sidewalks may be replaced in-kind, using an appropriate concrete mix, or may be replaced with a compatible material, such as native stone.

Attempt to locate new features, such as shade structures, on previously disturbed ground.



Consider locating the proposed mule cinch-up area near the junction of Bright Angel Trail and Garden Creek, where some facilities currently exist. Avoid disturbing ground near the Caretaker's Residence /SAR Cache for this activity.

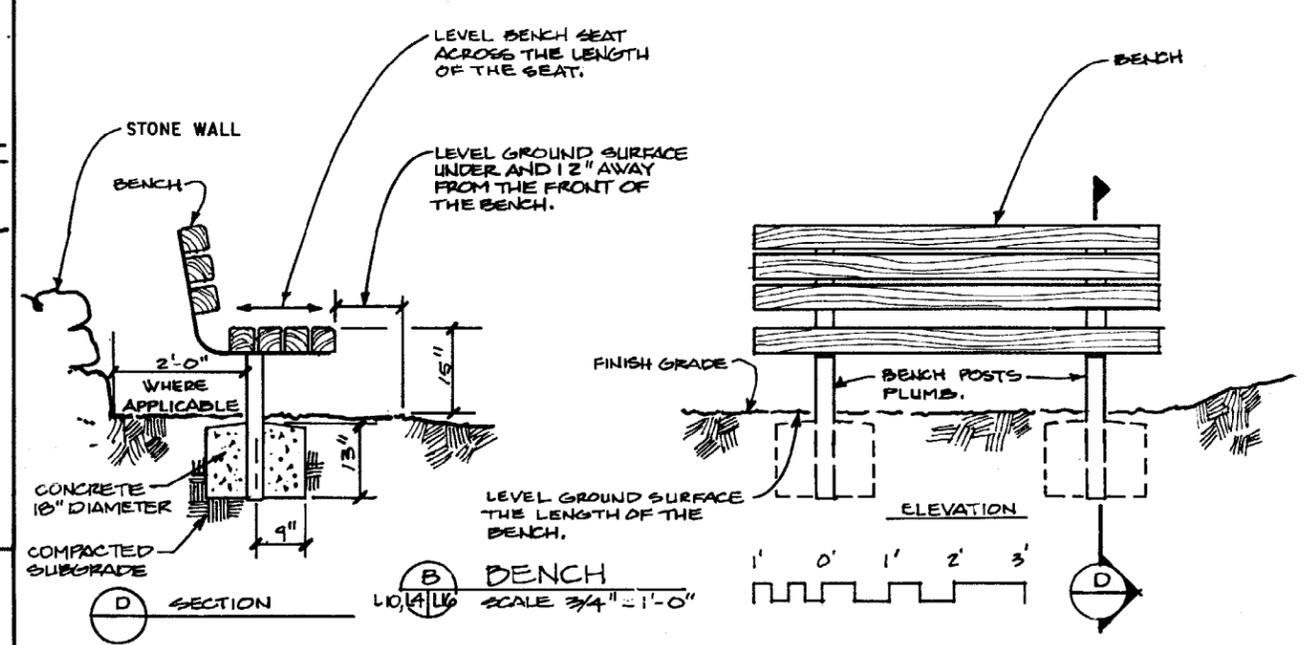
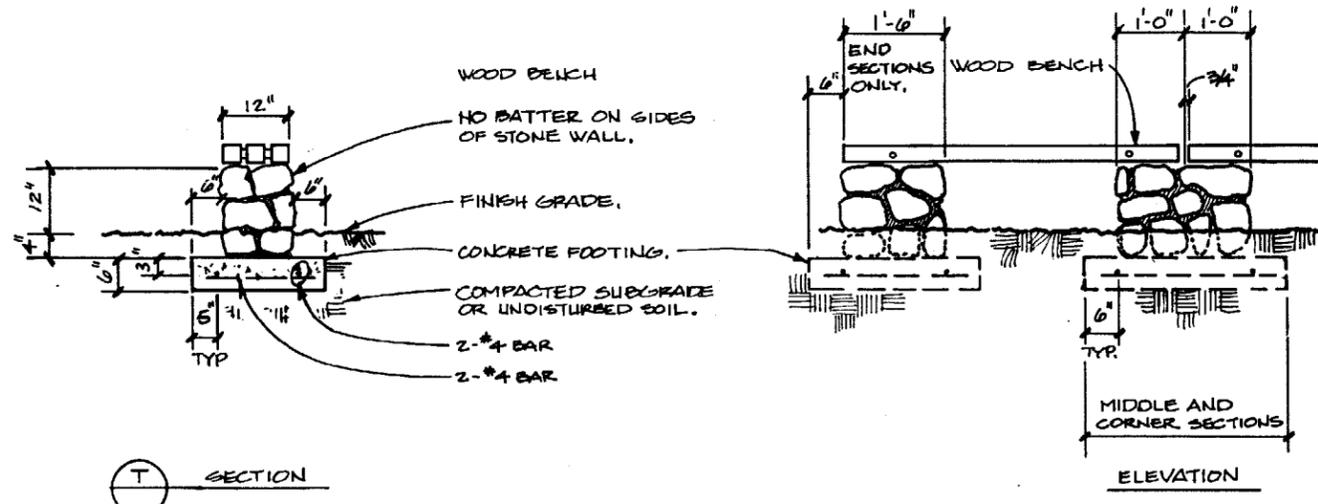
Consider locating outdoor interpretive panels where circulation patterns and development currently exist, such as near the Caretaker's Residence/SAR Cache or along existing trails.

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	DRAWN: JLB			PKG. NO.	SHEET
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GRAND CANYON NATIONAL PARK - INDIAN GARDEN					

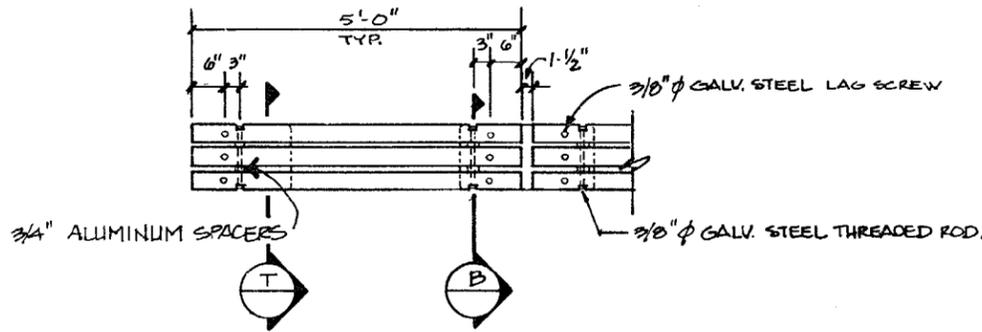




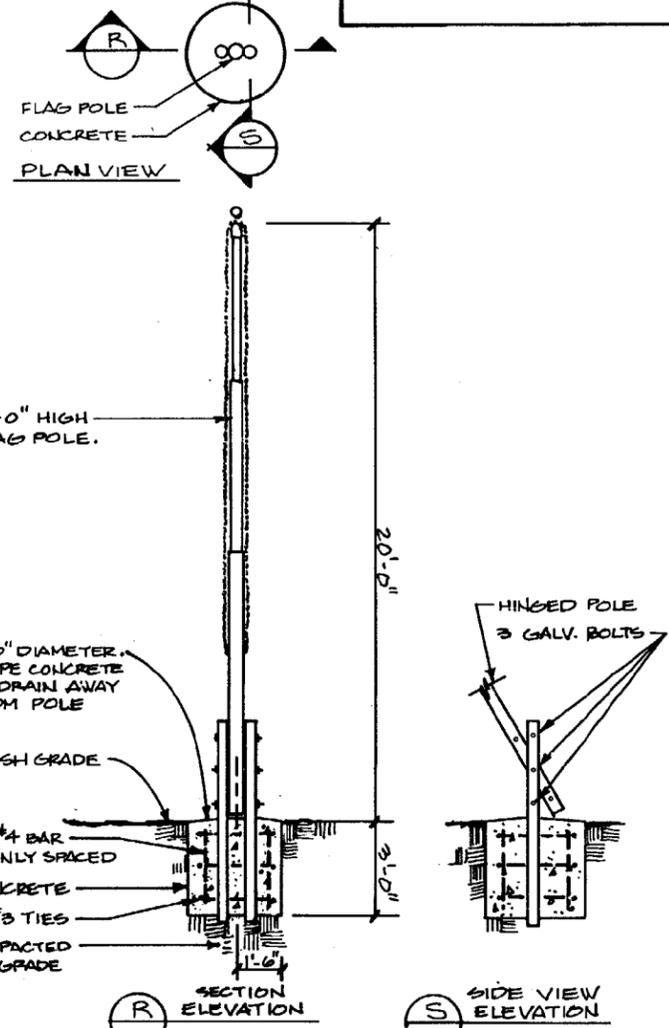




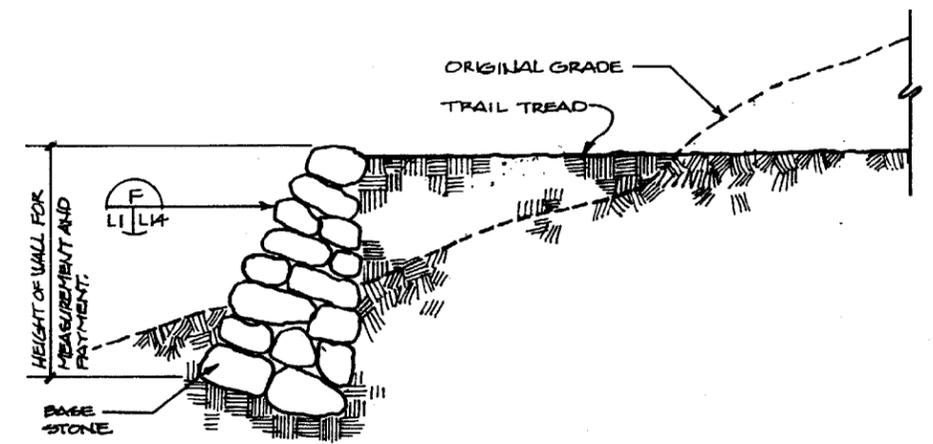
(A) SEATWALL  
SCALE 3/4" = 1'-0"



(B) SEATWALL SECTION  
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SCALE IN FEET



(C) FLAG POLE  
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(D) DRY LAID WALL ON TRAIL SWITCHBACK  
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## **Remove Invasive Plants Along Pipe, Garden, and Bright Angel Creeks and Corridor Trails**

### ***Project Description***

According to the PMIS project narrative, this project will utilize volunteers and park staff to complete a Himalaya blackberry removal, invasive plant control, and riparian restoration project along creeks and trail corridors, including Garden Creek and Bright Angel Trail through Indian Garden. Tasks include clearing blackberry thickets and debris piles, chipping and removing slash, and seeding and mulching disturbed areas.

### ***Recommendations***

Completion of this project as described in the PMIS statement will improve the appearance of the cultural landscape and the health of the vegetative communities in Indian Garden. Care must be taken, however, to educate workers on appropriate and sensitive removal techniques that will not harm archeological resources that may be near the surface of the ground or desirable plants. Additionally, although the Himalaya blackberry is now considered an invasive plant, it was planted in Indian Garden in the 1930s, making it an historic plant. While the CLR team does not recommend the retention of blackberry plants, site managers may want to consider options for replicating the character of the blackberry plants where they existed historically.

- Educate work crews on the correct methods of clearing, grubbing, and herbicide application to prevent loss of or damage to desirable vegetation.
- Educate work crews on correct removal methods to avoid damaging potential archeological resources. Work crews should also be aware of how to identify and report potential archeological artifacts.
- Consider undertaking archeological surveys in Indian Garden prior to beginning any ground disturbing activities.
- Consider enlisting a qualified archeologist to supervise clearing, grubbing, and ground disturbing work in order to limit damage to potential archeological artifacts.
- Educate work crews as to the identification of desirable vegetation to remain and undesirable plants to be removed prior to beginning work.
- Ensure that new seeds and plantings are native to the Indian Garden site or region.
- Consider replacing any remaining mature, historic blackberry thickets with native plants of similar height and shape to simulate the historic appearance.
- Remove piles of slash quickly to avoid allowing cuttings to root and reproduce, as well as an unattractive appearance.

- If vegetation to be removed is located on or near the banks of Garden Creek, assess the stability of the banks, and their ability to withstand being cleared of vegetation, prior to beginning work.
  - If vegetation will be removed from unstable banks, implement bank stabilization and erosion control methods.
- Follow recommendations and guidelines found in the “Parkwide Programmatic Invasive Plant Management Program,” completed February 2004, for information on invasive plant management.

## Upgrade Corridor Area Fire Protection Systems

### *Project Description*

The Environmental Assessment states that this project includes upgrading the existing water distribution system connected to the trans-canyon pipeline to deliver the volume and pressure needed to supply fire sprinkler and standpipe hydrant systems at four sites along the corridor trails, including Indian Garden. Exterior work that may impact the cultural landscape in Indian Garden includes the installation of new hydrants, hose boxes, and trenching required to install new water lines. Vegetation will be removed where new structures and trenching occur.

### *Recommendations*

Of primary importance during this project is the necessity to undertake trenching and the installation of new features sensitively. Trenching represents the most disruptive activity in this project, but will cause minimal ground disturbance if done correctly. With proper restoration of the disturbed earth and vegetation, trenching should not impact the cultural landscape when complete. New features must be designed to be compatible with the existing character of the site and be minimally intrusive. Overall, the CLR team agrees with the techniques and methodologies put forth in the Environmental Assessment and feels that, if these policies are implemented, the impact on the cultural landscape will be negligible. Refer to the illustrations at the end of this section for graphic depictions of the following recommendations.

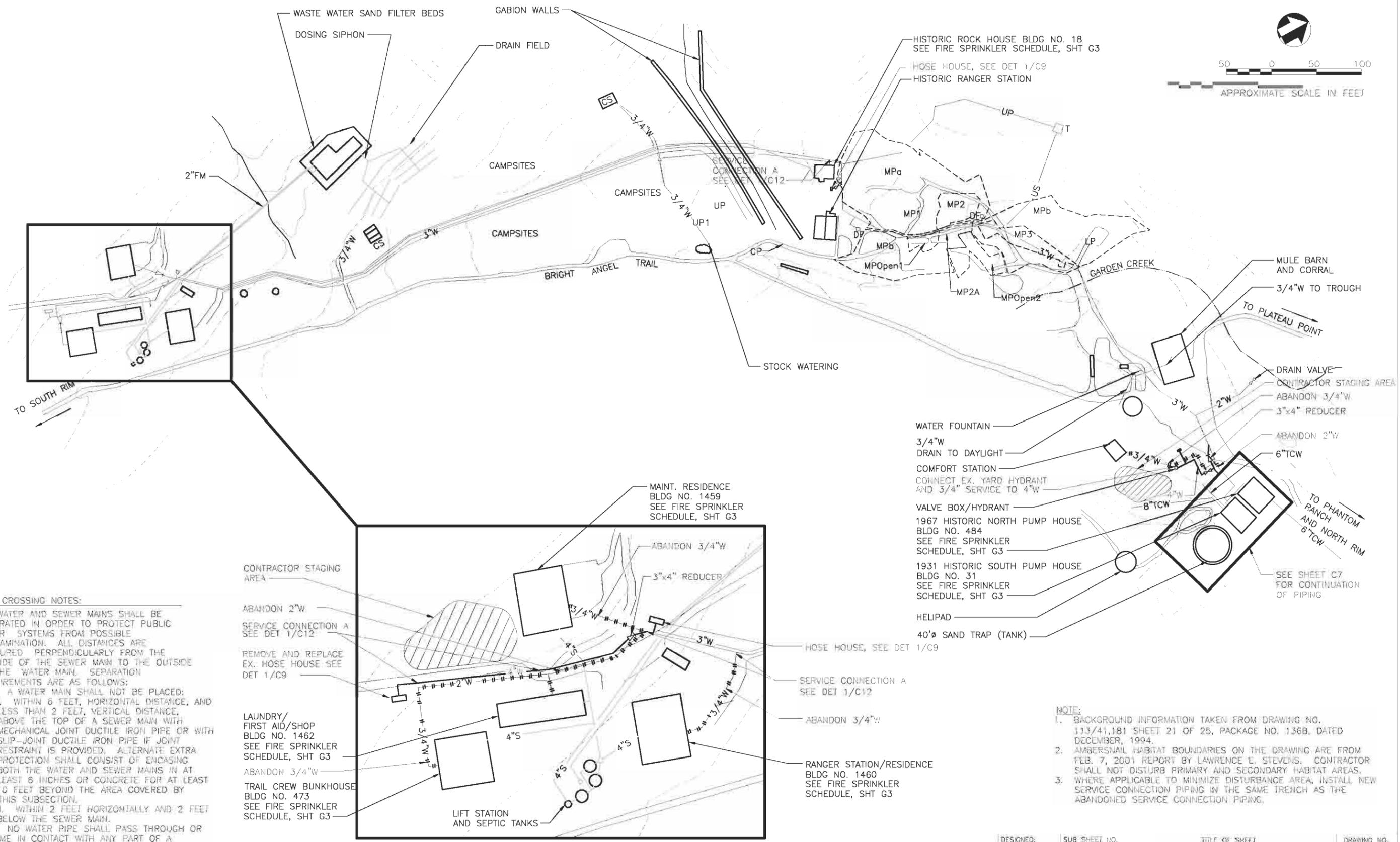
- Consider enlisting a qualified archeologist to supervise trenching and ground-disturbing activities.
- Design new features, such as hose boxes and hydrants, to be similar in appearance to the same features constructed during the 1989 rehabilitation (*Refer to Sub-Sheet C-16 above*). The 1989 features are compatible with the character of Indian Garden. In addition, a uniform appearance will result if new features are designed using the same or similar details.
- Design new features that do not have 1989 counterparts—or other existing, compatible counterparts—to be compatible with the surrounding character of the site. Utilize muted earth tone colors, wood and stone materials, and dull, brushed, or non-reflective metals. Features utilizing contemporary materials that will not be compatible with the character of Indian Garden—including plastics, concrete, non-native stone, and white or reflective materials—should be as inconspicuous as possible.
- Repair any features disturbed by trenching to their original, pre-construction appearance.
- Ensure that primary construction staging activities occur in the Administration Area and Pump Station and Corral Area, as proposed in the fire protection drawings (*Sub-Sheet C-6 of Indian Garden Site Plan*). Undertake minimal staging activities within the Day Use

Area and North Indian Garden Area. Avoid any staging activity within Indian Garden that negatively impacts any contributing or supporting resource.

- Utilize only locally or regionally-native plants during re-vegetation activities. Ensure that new plantings match the vegetation community in which they are being installed. For example, only plants native to the desertscrub vegetation community should be planted in the Administration Area, while riparian community vegetation should be planted in the Day Use Area.
- Consider undertaking the Former Ranger Station/SAR Cache/Caretaker's Residence rehabilitation concurrently with the fire protection upgrade project to minimize impact on surrounding cultural and natural resources, as well as upon the visitor's experience in Indian Garden.
- Undertake post-construction monitoring of disturbed ground to identify and eliminate opportunistic invasive and exotic plant species.
- Ensure that the items listed below, taken from the Environmental Assessment's "Mitigating Measures for Alternative B," are implemented. Note that only the measures related to the cultural landscape and visitor experience in Indian Garden are reproduced here; the original numbering is retained for ease of reference to the original document.
  1. Measures will be taken to assure that no surface disturbance or sedimentation should occur in Niobrara ambersnail habitat (Indian Garden). The park biologist will delineate Niobrara ambersnail habitat prior to commencement of construction activities.
  5. Construction workers and supervisors would be informed about special status species. Contract provisions would require the cessation of construction activities if a species were discovered in the project area, until park staff re-evaluates the project. This would allow modification of the contract for any protection measures determined necessary to protect the discovery.
  6. Installation of sprinkler systems and other appurtenances would be done in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.
  7. If dust becomes a problem during work, sprinkling with water would occur to reduce dust in the construction areas. The park's Air Quality Specialist will be notified of the dates and times of trenching at Indian Garden so air quality data collected at that site can be annotated. Power line to the air quality monitoring station at Indian Garden will be noted and avoided by construction crews.
  8. Construction equipment would not idle for long periods to reduce noise and air quality impacts on site.

9. Construction zones would be fenced with construction tape, snow fencing, or some similar material before any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.
10. To minimize soil erosion at the project site, standard erosion control measures including silt fence and sandbags would be incorporated into the action alternative. Any trenching operations would use a rock drill, small excavator, trencher, and/or hand excavation with excavated material side-cast for storage and backfilling. Backfilling and compaction would begin immediately after the lines are placed into the trench and the trench surface would be returned to pre-construction contours. All trenching restoration operations would follow guidelines approved by park staff.
11. A Revegetation Plan would be developed for the project by a landscape architect or other qualified individual, in coordination with the Park Restoration Biologist. Any revegetation efforts would use site-adapted native species and/or native seed, and Park policies regarding revegetation and site restoration would be incorporated into the plan. The plan would incorporate, among other things, the use of native species, plant salvage potential, exotic vegetation and noxious weeds, and pedestrian barriers.
12. To prevent and minimize the spread of exotic vegetation and noxious weeds, the Revegetation Plan would be followed. The following mitigation measures would be implemented, and would be incorporated into the plan
  - Existing populations of exotic vegetation at the construction site would be treated before construction activities.
  - All construction equipment brought in from outside the park would be pressure washed before transport to the construction site.
  - The location of the staging areas would be limited to existing disturbed areas.
  - All areas disturbed by construction would be revegetated using site-adapted native seed and/or plants if available.
  - Post-project exotic plant monitoring should also be conducted in the project area, as time and funding allows.
13. All workers would be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Workers would also be informed of the correct procedures if previously unknown resources were uncovered during construction activities. Data recovery excavations would be carried out to mitigate adverse affects as outlines in the section on environmental consequences.

14. The NPS has conducted archeological surveys to identify resources in the [Corridor Area Fire Protection] project area and no archeological sites were discovered. However, archeological monitoring would accompany construction (especially areas where trenching is required) as necessary to ensure avoidance or appropriate treatment of uncovered resources. A Park Cultural Resource Specialist will be on site to carry out the monitoring. Should presently unknown archeological resources be discovered during construction, work would stop in that area until the resources are properly evaluated and treatment measures are carried out as necessary in consultation with the Arizona SHPO. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, the NPS would follow provisions outlined in the Native American Graves Protection and Repatriation Act of 1990.
  
16. If helicopters are used, flights would be scheduled during the off-peak backcountry season, to minimize disturbance to visitors. The flight path selected for delivery and removal of equipment would be developed so as to minimize the time that the helicopter is in the canyon, i.e. dog-leg flight paths that stay over forested areas the longest, and using direct flights to the sites to minimize noise disturbance in the inner canyon.



**PIPE CROSSING NOTES:**

1. WATER AND SEWER MAINS SHALL BE SEPARATED IN ORDER TO PROTECT PUBLIC WATER SYSTEMS FROM POSSIBLE CONTAMINATION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE SEWER MAIN TO THE OUTSIDE OF THE WATER MAIN. SEPARATION REQUIREMENTS ARE AS FOLLOWS:
  - A. A WATER MAIN SHALL NOT BE PLACED:
    - I. WITHIN 6 FEET, HORIZONTAL DISTANCE, AND LESS THAN 2 FEET, VERTICAL DISTANCE, ABOVE THE TOP OF A SEWER MAIN WITH MECHANICAL JOINT DUCTILE IRON PIPE OR WITH SLIP-JOINT DUCTILE IRON PIPE IF JOINT RESTRAINT IS PROVIDED. ALTERNATE EXTRA PROTECTION SHALL CONSIST OF ENCASING BOTH THE WATER AND SEWER MAINS IN AT LEAST 6 INCHES OR CONCRETE FOR AT LEAST 10 FEET BEYOND THE AREA COVERED BY THIS SUBSECTION.
    - II. WITHIN 2 FEET HORIZONTALLY AND 2 FEET BELOW THE SEWER MAIN.
  - B. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER MANHOLE. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAINS AND MANHOLES SHALL BE 6 FEET, MEASURED FROM THE CENTER OF THE MANHOLE.
  - C. THE SEPARATION REQUIREMENTS DO NOT APPLY TO BUILDING, PLUMBING, OR INDIVIDUAL HOUSE SERVICE CONNECTIONS.

**NOTE:**

1. BACKGROUND INFORMATION TAKEN FROM DRAWING NO. 113/41,181 SHEET 21 OF 25, PACKAGE NO. 136B, DATED DECEMBER, 1994.
2. AMBERSNAIL HABITAT BOUNDARIES ON THE DRAWING ARE FROM FEB. 7, 2001 REPORT BY LAWRENCE E. STEVENS. CONTRACTOR SHALL NOT DISTURB PRIMARY AND SECONDARY HABITAT AREAS.
3. WHERE APPLICABLE TO MINIMIZE DISTURBANCE AREA, INSTALL NEW SERVICE CONNECTION PIPING IN THE SAME TRENCH AS THE ABANDONED SERVICE CONNECTION PIPING.

ENLARGED PLAN  
NTS

**LEGEND**

SNAIL HABITAT BOUNDARY  
 UP1,CP,MP1,MP2,MP3&LP - PRIMARY AMBERSNAIL HABITAT  
 UP,MPa&MPb - SECONDARY HABITAT (SNAILS NOT DETECTED)  
 MPOpen1&MPOpen2 - NON HABITAT

DESIGNED: MSN	SUB SHEET NO. C6	TITLE OF SHEET INDIAN GARDEN SITE PLAN	DRAWING NO. 113 41,233
DRAWN: RAS		INNER CANYON GRAND CANYON NATIONAL PARK	PKG. NO. 052
TECH. REVIEW: SMR/HMJ			SHEET 10
DATE: 08/2003			OF 27



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## Appendix A • Inventory of Landscape Features

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# Appendix A • Inventory of Landscape Features

Appendix A, Inventory of Landscape Features, contains a list of existing conditions identified through fieldwork. Conditions are arranged according to landscape character area within the CLR project boundary, and then according to landscape characteristic as described in Chapter III, Existing Conditions.

This list contains the following:

- the feature's name;
- the character area in which it is located;
- the assessment of the landscape characteristic which the feature represents;
- an assessment of the feature's condition;
- a determination of its contributing, non-contributing, supporting, or undetermined status;
- the feature's CLR-assigned inventory number; and
- any NPS-assigned building numbers.

Each feature is mapped on separate 11 x 17 existing conditions inventory maps located in Chapter III of this CLR. More detailed information about the condition assessments are also located in Chapter III. Information regarding contributing, non-contributing, supporting, and missing features is discussed in Chapter IV.

## Overview

### Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Riparian community vegetation	Indian Garden	Good	Contributing	Ve-1
Desertscrub community vegetation	Indian Garden	Good	Contributing	Ve-2

### Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Telephone poles	Indian Garden	Good	Contributing	S-1

### Archeological Sites

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Arizona B:16:140 (Mining remnants)	Indian Garden	Unknown	Contributing	A-1
Arizona B:16:152 (possible Cameron bldg.)	Indian Garden	Unknown	Contributing	A-2
Arizona B:16:164 (Puebloan ruins)	Indian Garden	Unknown	Contributing	A-3
Arizona B:16:165 (Tent platform and cooler/latrine)	Indian Garden	Unknown	Contributing	A-4
Arizona B:16:252 (Cameron artifacts)	Indian Garden	Unknown	Contributing	A-5

## Bright Angel Trail Corridor

### Natural Systems and Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Garden Creek	Bright Angel Trail Corridor	Fair	Contributing	N-1

## Spatial Organization

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Linear path through corridor	Bright Angel Trail Corridor	Good	Contributing	SO-1
Junction of Bright Angel Trail and Garden Creek	Bright Angel Trail Corridor	Poor	Undetermined	SO-2
Node created by Trailside Shelter	Bright Angel Trail Corridor	Good	Contributing	SO-3

## Circulation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Bright Angel Trail	Bright Angel Trail Corridor	Fair	Contributing	C-1
Spur trails—formal	Bright Angel Trail Corridor	Good	Supporting	C-2
Spur trails—informal	Bright Angel Trail Corridor	Fair	Supporting	C-3
Spur trail—comfort station	Bright Angel Trail Corridor	Good	Non-contributing	C-4

## Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Edge-defining vegetation	Bright Angel Trail Corridor	Fair	Undetermined	Ve-3
Cottonwood trees	Bright Angel Trail Corridor	Poor	Contributing	Ve-4
Redbud tree	Bright Angel Trail Corridor	Fair	Contributing	Ve-5

## Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Trailside Shelter (LCS #BCB00143)	Bright Angel Trail Corridor	Good	Contributing	B-1
Stone steps to Trailside Shelter	Bright Angel Trail Corridor	Fair	Contributing	S-2
Mortared stone protective wall	Bright Angel Trail Corridor	Good	Undetermined	S-3

## Views and Vistas

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Views to surrounding canyon	Bright Angel Trail Corridor	Good	Contributing	V-1

## Small-scale Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Wood fencing	Bright Angel Trail Corridor	Good	Non-contributing	SS-1
Stone edging	Bright Angel Trail Corridor	Fair	Supporting	SS-2
Log risers and stone water bars	Bright Angel Trail Corridor	Fair	Supporting	SS-3
Typical signage	Bright Angel Trail Corridor	Good	Supporting	SS-4
Contemporary illustrative sign	Bright Angel Trail Corridor	Good	Non-contributing	SS-5
Thermometer	Bright Angel Trail Corridor	Good	Non-contributing	SS-6
“Rustic” benches	Bright Angel Trail Corridor	Good	Supporting	SS-7
Hitching bar	Bright Angel Trail Corridor	Good	Undetermined	SS-8
Cottonwood stumps	Bright Angel Trail Corridor	Good	Non-contributing	SS-9

## Administration Area

### Natural Systems and Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Intermittent streams	Administration Area	Good	Contributing	N-2

### Spatial Organization

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Gathering space – Pump Operator’s Residence	Administration Area	Good	Non-contributing	SO-4
Corridor of space	Administration Area	Good	Non-contributing	SO-5

Courtyard	Administration Area	Good	Non-contributing	SO-6
Backyard space– Ranger Residence	Administration Area	Good	Non-contributing	SO-7
Public space – Ranger Residence	Administration Area	Good	Non-contributing	SO-8
Sand filter bed	Administration Area	Good	Non-contributing	SO-9
Helispot	Administration Area	Good	Non-contributing	SO-10

### Circulation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Stone-edged trail to Ranger Residence	Administration Area	Good	Supporting	C-5
Secondary trail	Administration Area	Good	Supporting	C-6
Spur trail—Bright Angel Trail to helispot	Administration Area	Good	Supporting	C-7
Spur trail—Bright Angel Trail to Bunkhouse	Administration Area	Good	Supporting	C-8
Concrete sidewalk	Administration Area	Good	Non-contributing	C-9

### Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Desertscrub community	Administration Area	Good	Contributing	Ve-2
Transplanted native vegetation	Administration Area	Good	Supporting	Ve-6
Re-vegetation area	Administration Area	Good	Supporting	Ve-7

### Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
NPS Ranger Residence (Bldg. #1460)	Administration Area	Good	Supporting	B-2
Pump Operator’s Residence (Bldg. #1459)	Administration Area	Good	Supporting	B-3
Storage/Laundry/First Aid Building (Bldg. #1462)	Administration Area	Good	Supporting	B-4
Bunkhouse (Bldg. #1429)	Administration Area	Good	Supporting	B-5

Trash Compactor Shed (Bldg. #1501)	Administration Area	Good	Non-contributing	B-6
Sand filter bed	Administration Area	Unknown	Non-contributing	S-4
Helispot	Administration Area	Good	Supporting	S-5
Wooden stairs	Administration Area	Good	Supporting	S-6
Stone walls and retaining walls	Administration Area	Good	Supporting	S-7
Horseshoes court	Administration Area	Fair	Non-contributing	S-8
Hose House	Administration Area	Good	Non-contributing	S-9
Drainfield	Administration Area	Unknown	Non-contributing	S-10

### Views and Vistas

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Views to surrounding canyon	Administration Area	Good	Non-contributing	V-1
Views from helispot	Administration Area	Good	Non-contributing	V-2

### Small-scale Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Typical signage	Administration Area	Good	Supporting	SS-4
Stone edging	Administration Area	Fair	Supporting	SS-2
Hitching bar	Administration Area	Good	Undetermined	SS-8
Picnic table	Administration Area	Good	Non-contributing	SS-10
Windsock and post	Administration Area	Good	Non-contributing	SS-11
Flagpole	Administration Area	Good	Non-contributing	SS-12
Tree cages	Administration Area	Good	Non-contributing	SS-13
Utility meters and irrigation boxes	Administration Area	Unknown	Non-contributing	SS-14
Wire mesh fence	Administration Area	Good	Non-contributing	SS-15

## Campground Area

### Natural Systems and Features

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#### Spatial Organization

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Camping areas	Campground Area	Good	Non-contributing	SO-11
Central public space	Campground Area	Good	Non-contributing	SO-12
Secondary public space	Campground Area	Good	Non-contributing	SO-13
Comfort station spaces	Campground Area	Good	Non-contributing	SO-14

#### Circulation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Central trail	Campground Area	Good	Supporting	C-10
Spur trails – to comfort stations and camping areas	Campground Area	Fair	Supporting	C-11

#### Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Riparian community vegetation	Campground Area	Good	Contributing	Ve-1
Transplanted native vegetation	Campground Area	Good	Supporting	Ve-6

#### Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Comfort station—south (Bldg. #1413)	Campground Area	Good	Non-contributing	B-7
Comfort station—north (Bldg. #1440)	Campground Area	Good	Non-contributing	B-8
Shade structures (Bldg. #s 1463-1480)	Campground Area	Good	Non-contributing	S-11
Information kiosk	Campground Area	Good	Supporting	S-12

Stone walls	Campground Area	Good	Supporting	S-7
Stone camp site retaining walls	Campground Area	Good	Supporting	S-13

## Views and Vistas

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Views to surrounding canyon	Campground Area	Good	Non-contributing	V-1

## Small-scale Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Picnic tables	Campground Area	Good	Non-contributing	SS-10
Camp site markers	Campground Area	Good	Non-contributing	SS-16
Ammunition box	Campground Area	Good	Non-contributing	SS-17
Backpack bar	Campground Area	Good	Non-contributing	SS-18
“Rustic” benches	Campground Area	Good	Supporting	SS-7
“Contemporary” benches	Campground Area	Good	Non-contributing	SS-19
Stone edging	Campground Area	Fair	Supporting	SS-2
Drinking fountains	Campground Area	Good	Supporting	SS-20
Utility and irrigation boxes	Campground Area	Unknown	Non-contributing	SS-14
Typical signage	Campground Area	Good	Supporting	SS-4

## Day Use Area

### Natural Systems and Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Garden Creek	Day Use Area	Good	Contributing	N-1
Floodplain	Day Use Area	Unknown	Contributing	N-3

Wet area	Day Use Area	Unknown	Non-contributing	N-4
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### Spatial Organization

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Picnic grounds	Day Use Area	Poor	Non-contributing	SO-15
Trailside Shelter cleared area	Day Use Area	Unknown	Undetermined	SO-16
SAR Cache/Rock House terrace	Day Use Area	Good	Contributing	SO-17

### Circulation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Spur trail – Bright Angel Trail to SAR Cache	Day Use Area	Fair	Contributing	C-12
Trail network	Day Use Area	Poor	Non-contributing	C-13
Concrete sidewalks	Day Use Area	Poor	Undetermined	C-14

### Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Riparian community vegetation	Day Use Area	Good	Non-contributing	Ve-1
Cottonwood trees	Day Use Area	Poor	Contributing	Ve-4
Peach tree	Day Use Area	Poor	Undetermined	Ve-7

### Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
SAR Cache/Caretaker's Residence (LCS #0093)	Day Use Area	Fair	Contributing	B-9
Pump Caretaker's Residence/ Rock House (LCS #IGB0018)	Day Use Area	Good	Supporting	B-10
Air Quality Monitoring Station	Day Use Area	Good	Non-contributing	S-14

Gabion walls	Day Use Area	Good	Non-contributing	S-15
Channelized Garden Creek	Day Use Area	Good	Contributing	S-16
Footbridge abutment	Day Use Area	Fair	Non-contributing	S-17
Concrete foundation	Day Use Area	Poor	Undetermined	S-18
Stone retaining wall at terrace	Day Use Area	Fair	Contributing	S-19
Stone steps to terrace	Day Use Area	Poor	Contributing	S-20
Utility pole	Day Use Area	Unknown	Undetermined	S-21

## Views and Vistas

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## Small-scale Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Rock edging	Day Use Area	Fair	Supporting	SS-21
Typical signage	Day Use Area	Good	Supporting	SS-4
Stepping stones	Day Use Area	Fair	Undetermined	SS-22
“Contemporary” bench	Day Use Area	Good	Non-contributing	SS-19
“Rustic” bench	Day Use Area	Good	Supporting	SS-7
Continuous bench seating	Day Use Area	Good	Non-contributing	SS-23
Electrical distribution box	Day Use Area	Good	Non-contributing	SS-24
Drinking fountains	Day Use Area	Fair	Supporting	SS-20
Picnic tables	Day Use Area	Fair	Non-contributing	SS-10
Wood and wire mesh fence	Day Use Area	Fair	Non-contributing	SS-25
PVC pipe	Day Use Area	Poor	Non-contributing	SS-26

## Pump Station and Corral Area

### Natural Systems and Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Perennial streams	Pump Station and Corral Area	Unknown	Contributing	N-5
Garden Creek	Pump Station and Corral Area	Fair	Contributing	N-1
Dry washes	Pump Station and Corral Area	Unknown	Contributing	N-6

### Spatial Organization

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Visitor rest area	Pump Station and Corral Area	Good	Non-contributing	SO-18
Mule Barn facility	Pump Station and Corral Area	Good	Non-contributing	SO-19
Pump Station node	Pump Station and Corral Area	Good	Contributing	SO-20
Helispot	Pump Station and Corral Area	Good	Non-contributing	SO-21

### Circulation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Stone-edged trail to helispot	Pump Station and Corral Area	Good	Supporting	C-15
Ramp-like trail to comfort station	Pump Station and Corral Area	Good	Supporting	C-16
Stone-edged trail to south of Mule Barn	Pump Station and Corral Area	Good	Supporting	C-17
Concrete sidewalks	Pump Station and Corral Area	Good	Undetermined	C-18
Spur trail – informal	Pump Station and Corral Area	Good	Supporting	C-19

### Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Riparian community vegetation	Pump Station and Corral Area	Good	Contributing	Ve-1

Desertscrub community vegetation	Pump Station and Corral Area	Good	Contributing	Ve-2
Cottonwood trees	Pump Station and Corral Area	Poor	Contributing	Ve-4
Redbud tree	Pump Station and Corral Area	Good	Contributing	Ve-5

### Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
North Pump House (Bldg. #484)	Pump Station and Corral Area	Good	Supporting	B-11
South Pump House (LCS #IGB0031)	Pump Station and Corral Area	Good	Contributing	B-12
Pump House Reservoir (LCS #IGB0032)	Pump Station and Corral Area	Good	Contributing	B-13
Mule Barn and Corral (Bldg. #1461)	Pump Station and Corral Area	Good	Supporting	B-14
Comfort Station (Bldg. #1439)	Pump Station and Corral Area	Good	Non-contributing	B-15
Electrical substation	Pump Station and Corral Area	Good	Non-contributing	S-22
Information kiosk	Pump Station and Corral Area	Good	Supporting	S-23
Concrete cistern	Pump Station and Corral Area	Good	Contributing	S-24
Leveled terraces	Pump Station and Corral Area	Good	Undetermined	S-25
Stone retaining wall	Pump Station and Corral Area	Good	Supporting	S-26
Stone-edged steps	Pump Station and Corral Area	Good	Supporting	S-27

### Views and Vistas

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Views to surrounding canyon	Pump Station and Corral Area	Good	Contributing	V-1

### Small-scale Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Stone edging	Pump Station and Corral Area	Good	Supporting	SS-2
Boulder and log edging	Pump Station and Corral Area	Good	Non-contributing	SS-27

Wooden cabinet	Pump Station and Corral Area	Good	Non-contributing	SS-28
Electrical hook-up	Pump Station and Corral Area	Good	Non-contributing	SS-29
“No Hiking” sign	Pump Station and Corral Area	Good	Non-contributing	SS-30
Metal pipe rail fencing	Pump Station and Corral Area	Good	Non-contributing	SS-31
Wooden post-and-rail fence	Pump Station and Corral Area	Good	Non-contributing	SS-32
Chain-link fencing	Pump Station and Corral Area	Fair	Non-contributing	SS-33
Wooden gate	Pump Station and Corral Area	Good	Supporting	SS-34
Wooden troughs with metal edging	Pump Station and Corral Area	Good	Supporting	SS-35
Large metal water troughs	Pump Station and Corral Area	Good	Supporting	SS-36
Hitching bars	Pump Station and Corral Area	Good	Undetermined	SS-8
“Rustic” benches	Pump Station and Corral Area	Good	Supporting	SS-7
“Contemporary” benches	Pump Station and Corral Area	Good	Non-contributing	SS-19
Drinking fountain	Pump Station and Corral Area	Fair	Supporting	SS-20
Interpretive wayside	Pump Station and Corral Area	Fair	Non-contributing	SS-37
Typical signage	Pump Station and Corral Area	Good	Supporting	SS-4
Utility structures	Pump Station and Corral Area	Unknown	Non-contributing	SS-14

## North Indian Garden Area

### Natural Systems and Features

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Floodplain	North Indian Garden Area	Unknown	Contributing	N-3
Garden Creek	North Indian Garden Area	Fair	Contributing	N-1
Dry washes	North Indian Garden Area	Unknown	Contributing	N-6

## Spatial Organization

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Central space – cleared floodplain	North Indian Garden Area	Poor	Contributing	SO-22
Steep hillside	North Indian Garden Area	Good	Contributing	SO-23
Cleared space at Rehandling Pump House	North Indian Garden Area	Poor	Undetermined	SO-24

## Circulation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Tonto East Trail	North Indian Garden Area	Fair	Contributing	C-20
Plateau Point Trail	North Indian Garden Area	Fair	Contributing	C-21

## Vegetation

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Riparian community vegetation	North Indian Garden Area	Good	Contributing	Ve-1
Cottonwood trees	North Indian Garden Area	Poor	Contributing	Ve-4
Himalaya blackberry - cleared	North Indian Garden Area	Poor	Contributing	Ve-9

## Buildings and Structures

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Rehandling Pump House (1932)	North Indian Garden Area	Poor	Contributing	B-16
Flood walls	North Indian Garden Area	Poor	Supporting	S-28

## Views and Vistas

Landscape Feature	Sub-Area	Condition Assessment	Contributing/Non-contributing	CLR #
Views to surrounding canyon	North Indian Garden Area	Good	Contributing	V-1

## Small-scale Features

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## Archeological Sites

<b>Landscape Feature</b>	<b>Sub-Area</b>	<b>Condition Assessment</b>	<b>Contributing/Non-contributing</b>	<b>CLR #</b>
Stone edging	North Indian Garden Area	Poor	Contributing	A-6
Debris piles	North Indian Garden Area	Poor	Contributing	A-7
Former Kolb Studio	North Indian Garden Area	Unknown	Supporting	A-8





As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

