

# **NORTH RIM MULTI-FAMILY HOUSING**

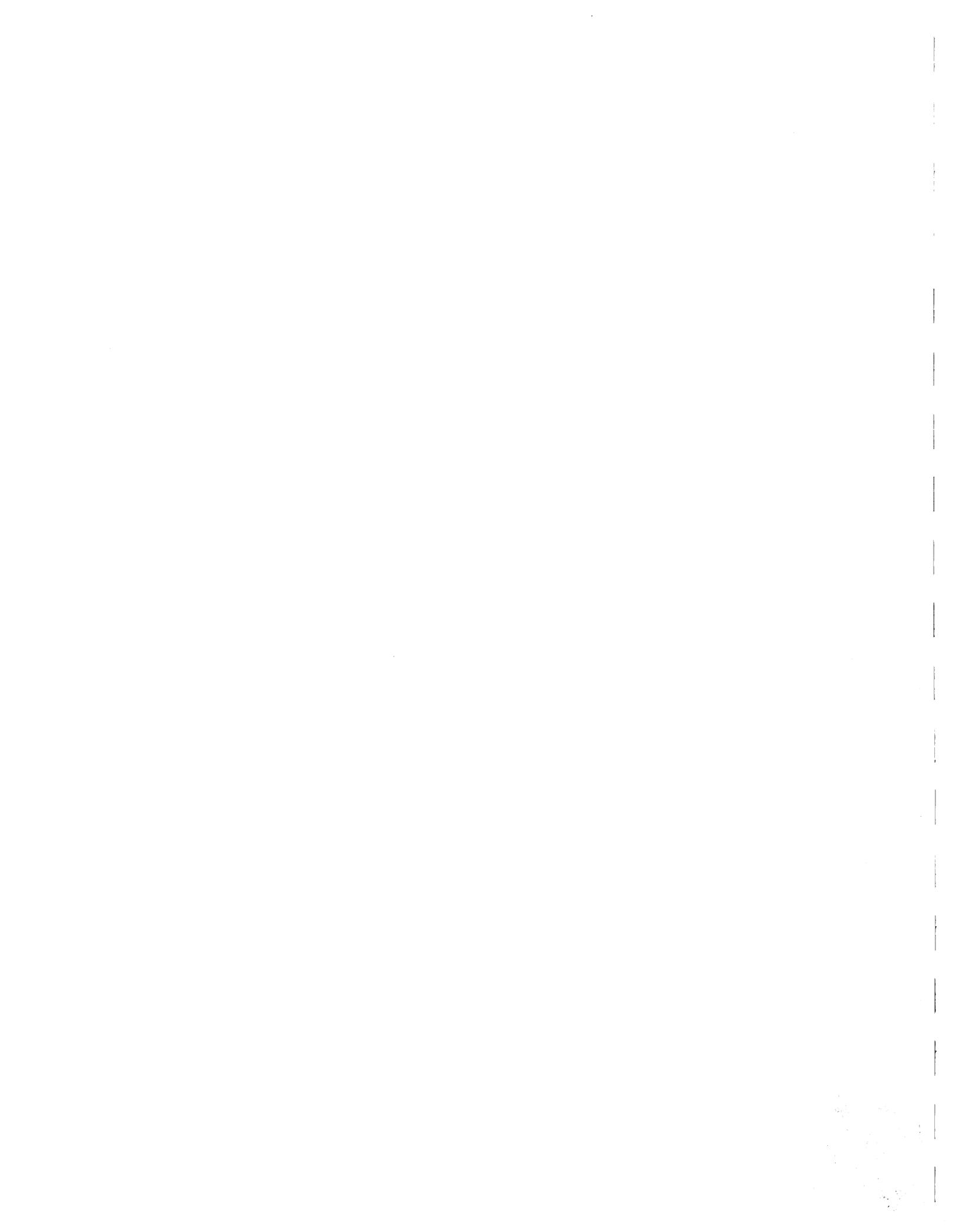
## **ENVIRONMENTAL ASSESSMENT**

# **GRAND CANYON**



**N A T I O N A L P A R K**

APRIL 1997



# ENVIRONMENTAL ASSESSMENT

## DEVELOP NORTH RIM MULTI-FAMILY HOUSING

### I. PURPOSE AND NEED

A high priority of the approved 1995 General Management Plan and Environmental Impact Statement (GMP) is the improvement of the National Park Service (NPS) employee housing situation on the North Rim. At the time of the GMP release, the park was initiating efforts to secure funding to construct three multi-family housing units; an 8-plex, a 4-plex, and a 2-plex. Since the GMP did not provide detailed plans for the intended development, the EIS portion of the plan covered only the concept of constructing replacement and additional housing in the NPS Headquarters area. The purpose of this Environmental Assessment (EA) is to address specific site and building concerns and effects that might result with construction of the multi-family housing.

Much of the housing for Grand Canyon National Park employees working on the North Rim is substandard. The units proposed to be replaced at the present time consist of seven old trailer houses in dilapidated condition. This project is part of the NPS House Trailer Replacement/Removal Initiative. In addition, three 1930s vintage temporary tar paper cabins moved to this location in the 1950s, joined together without foundations, and covered with siding, will be removed. The proposed new housing facilities are a mix of one and two bedroom units in multi-family clusters. The total number of bedrooms for the NPS staff on the North Rim will decrease as a result of this proposal, but the number of individual living units will increase. In addition to the NPS housing, the concessioner is proposing to construct a multi-family dwelling within the NPS Headquarters area for housing its winter staff. In order to logically expand the headquarters housing area, the existing North Rim Helibase must be removed from its location adjacent to the residential community. New housing units and other facilities resulting from this proposal will be designed in conformance with the Grand Canyon National Park Architectural Character Guidelines and will be sensitive to the existing architectural character of the North Rim. Figure 1 shows an overview of the developed area on the North Rim.



## **II. ALTERNATIVES**

The alternatives presented are twofold. The initial project will replace of NPS employee housing and Fred Harvey winter-over employee housing within the NPS Headquarters area on the North Rim. Tiered under expansion of the housing area is relocating the existing North Rim Helibase from the residential area.

### **A. Housing Alternatives**

#### **1. No Action - Retain the Existing Housing and Helibase**

This is the status quo alternative. Neither the seven house trailers nor the cabins would be removed. No new employee housing will be constructed. Keeping the older units repaired and serviceable, as best as possible, will continue even though the units do not meet the minimal standards of the National Park Service Housing Guideline, NPS-76. In addition, the Fred Harvey employees who winter-over will remain without water and sewer service, since the Headquarters area is the only location winterized within the North Rim development. Since the residential area is not expanding, the helibase will stay in its existing location on the southwest corner of the residential area. No new roads or utilities will be required to maintain the existing operation. See Figure 2 for existing conditions within the Headquarters area.

#### **2. Proposed Action - Construct New Multi-family Housing Units and Relocate the Helibase**

With this alternative seven old house trailers and three older cabins within the NPS Headquarters area on the North Rim will be removed. An 8-plex, a 4-plex, and a 2-plex will be constructed by the NPS. In addition, a 6-plex will be constructed by the concessioner. A site plan is shown in Figure 3, also building elevations are shown in Figures 4, 5, and 6. To accomplish this action, the North Rim helibase must be relocated, three old cabins must be removed, and 7 old house trailers will be removed from the park. The new housing sites will require a new road and utility connections. The existing infrastructure has the capacity to serve the new facilities.

Sites chosen for the housing units were picked to minimize both visual intrusion and the need to remove the existing stands of mature ponderosa pines and firs. There will be a need to provide approximately 600 feet of new 18 foot wide paved road, 180 feet of 10 foot wide driveway, and parking spaces for a minimum of 28 automobiles for the new units. Underground utility primary lines are already in place so infrastructure needs will be limited to service lines, approximately 1300 linear feet of trenching.

1,898,500 N

1,898,000 N

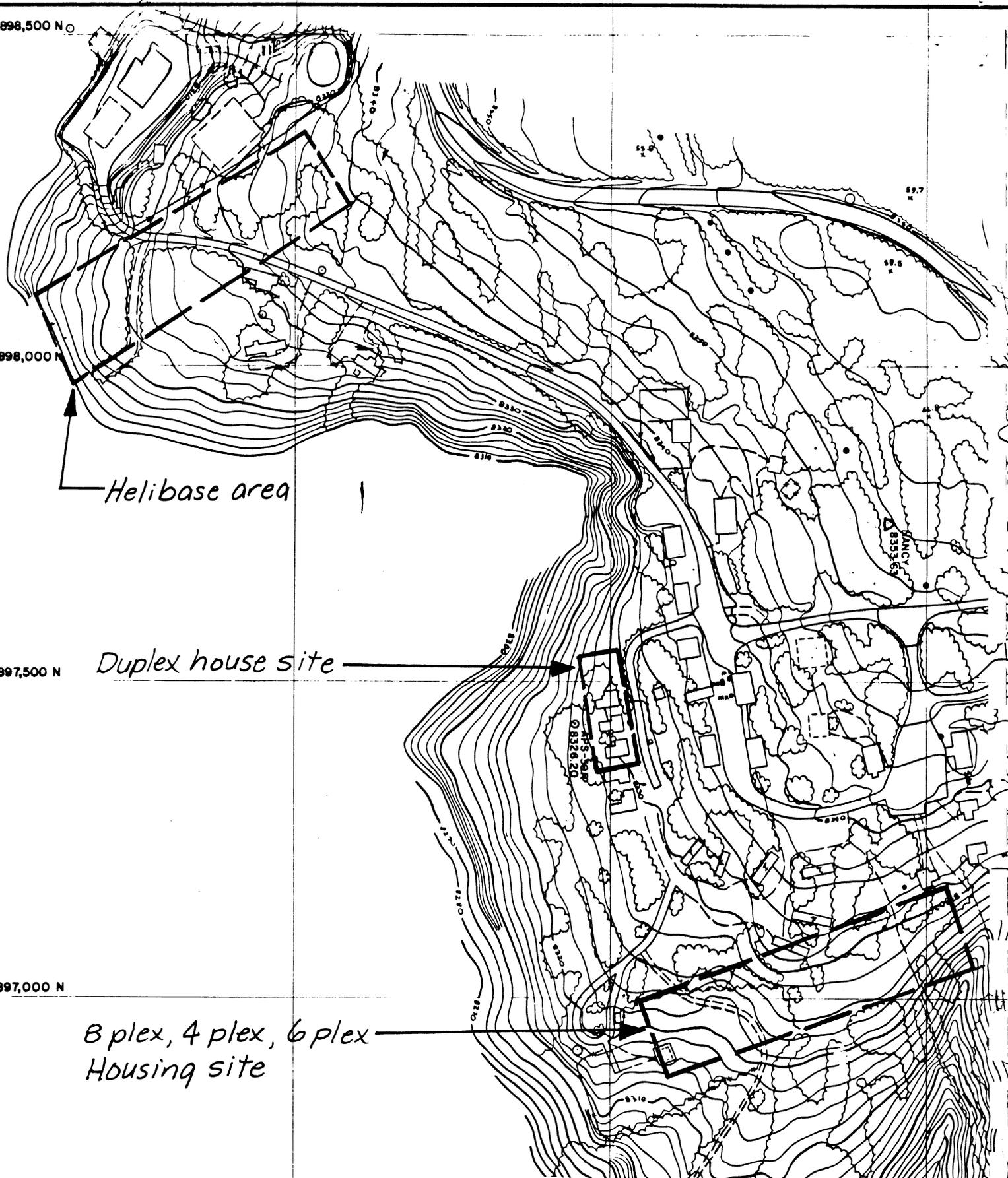
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*Helibase area*

*Duplex house site*

*3 plex, 4 plex, 6 plex  
Housing site*



*Figure 2: NPS Headquarters Area  
North Rim*







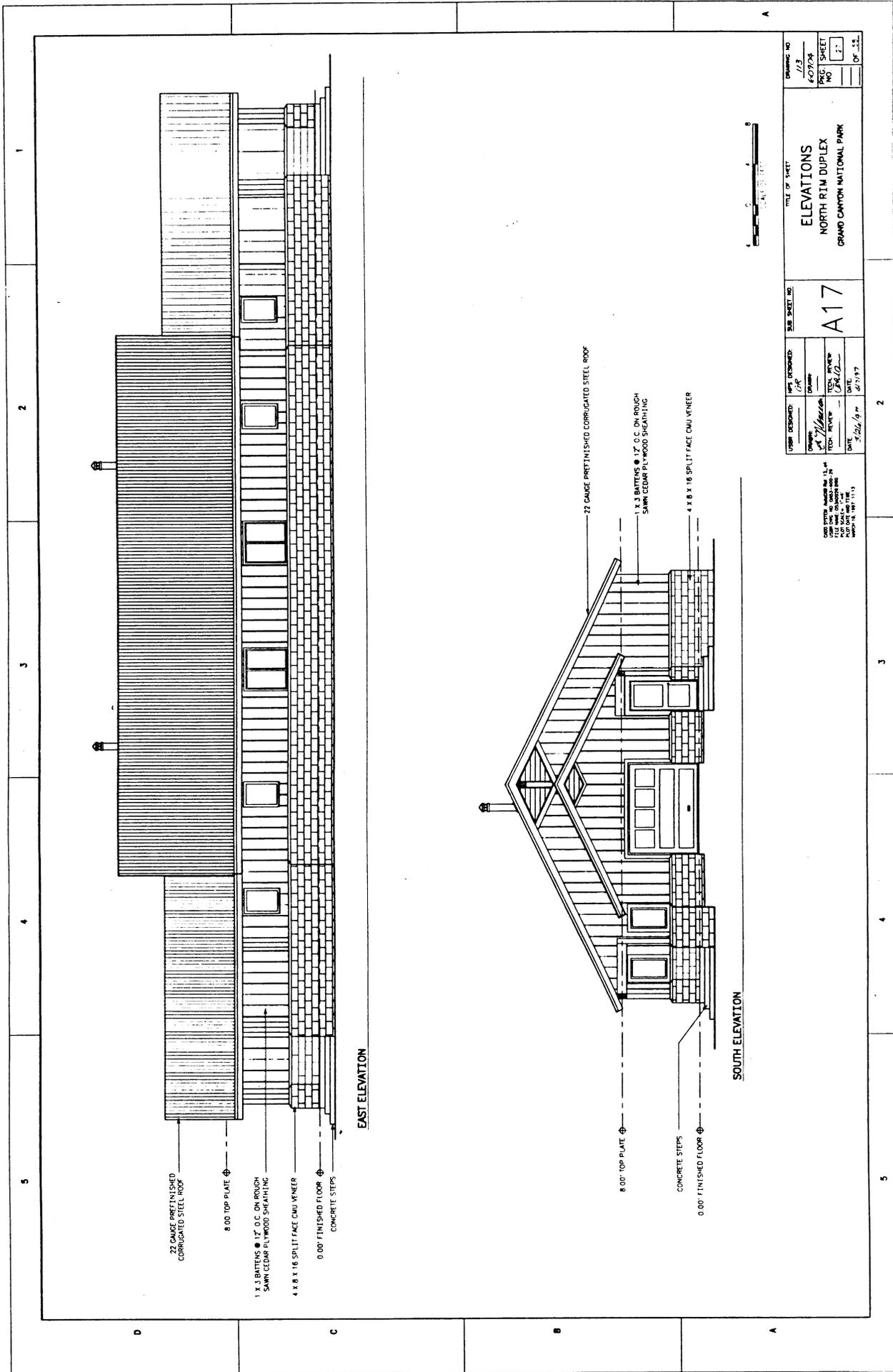


Figure 6

The new structures will be placed to minimize impacts to existing vegetation. Three of the four proposed buildings are sited in cleared and previously disturbed areas. The 6-plex site will require the removal of approximately 20-25 immature aspen and ponderosa and 2 mature ponderosa. All 6 inch plus pines and firs have been surveyed and located so they can be protected as much as possible during construction activities. As a mitigation measure, all vacated trailer sites will be revegetated with native species at the conclusion of construction.

The new structures are also sited to minimize visual intrusion. The two story design minimizes the building footprint for the available space. To compensate for the extra height, these structures are situated down slope from the other buildings in the area so the upper floor level of the new units is approximately the same as the ground floor of the existing housing. In form, scale, massing, texture, materials, and color the new units are designed to be compatible with the character of the North Rim Headquarters Historic District and comply with the Grand Canyon National Park Architectural Character Guidelines.

## **B. Helibase Alternatives**

### **Baseline Helibase Operational Requirements**

**Space** - Two separate 90 foot diameter landing sites, each with a 20 foot square concrete pad. Both the approach and departure routes need to be clear for 150 feet from the center of the pad and the area must be clear 50 feet to each side. An area 150 feet by 300 feet must be clear of ground obstructions to accommodate the helibase.

**Safety Cone** - The line of sight from the center of the pad must be a 1:2 ratio, or not more than 1 foot of rise for every 2 lineal feet away from the center.

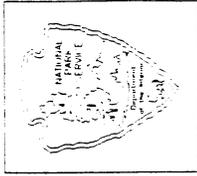
**Infra-structure** - To efficiently operate the helibase telephone and electrical service are required. A chemical toilet would be acceptable and no running water is required.

**Vehicle Access** - Ambulance and emergency response vehicle access is required. Minimum paved or all weather-surface road width will need to be 15 feet. A paved pathway to run an ambulance gurney to the helicopter is highly desirable.

#### **1. Alternative A - Proposed Action - Move the Helibase to Sewage Treatment Plant Entrance**

The Proposed Action is located along the existing paved road at the entrance to the North Rim Sewage Treatment Plant (STP), see figure 7. Both landing circles and pads are located west of the road, between the road and the rim. This area has old disturbance and is currently used as a site for tent frame cabins for fire crews in the summer. A primary concern with this site is that it is still wooded and will

STATE	PROJECT	SHEET NO.	TOTAL SHEETS
AZ	GRAND CANYON N.P.	1	1



## Site Plan

### PROPOSED NORTH RIM HELIBASE

Located in an unsurveyed portion of  
T33N, R3E, of the  
Gila & Salt River Base & Meridian  
Grand Canyon National Park  
Coconino County, Arizona

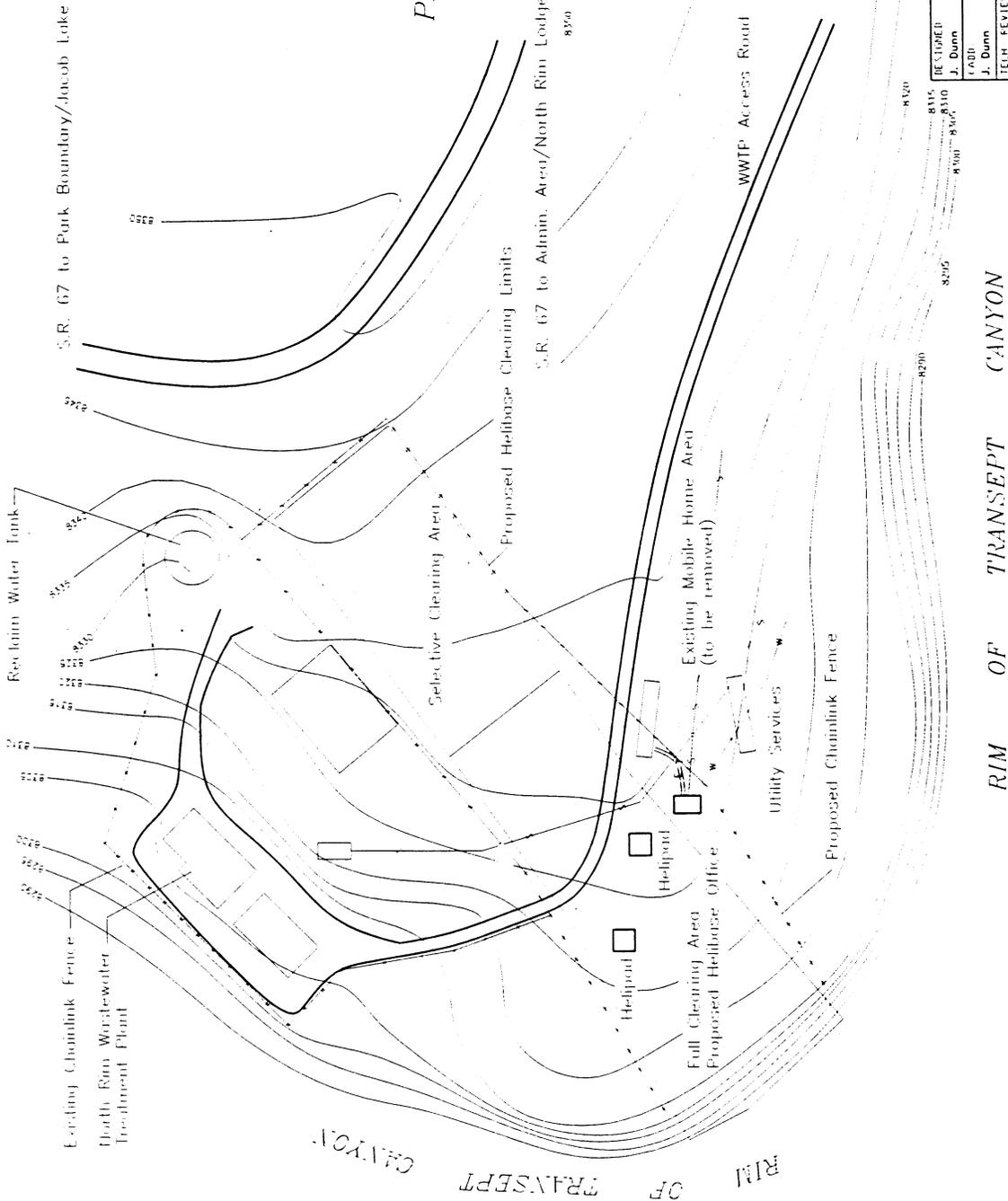
#### Basis of Buildings

Accurately from HPS, Denver Service Center  
Topographic Map of Bright Angel Point  
No reference points were used in creating  
this preliminary map.



#### LEGEND

- ADVERSE SLOPE LINE
- WATER LINE
- ELEC. LINE
- TELEPHONE LINE
- TRAIL
- SET BACK POINT
- CORNER POINT



REVISIONS	TITLE OF SHEET	DRAWING NO.								
<table border="1"> <tr> <td>NO.</td> <td>DATE</td> <td>BY</td> <td>CHKD.</td> </tr> <tr> <td>1</td> <td>3/23/97</td> <td>J. Dunn</td> <td>J. Dunn</td> </tr> </table>	NO.	DATE	BY	CHKD.	1	3/23/97	J. Dunn	J. Dunn	North Rim Helibase <b>PRELIMINARY SITE PLAN</b>	1
NO.	DATE	BY	CHKD.							
1	3/23/97	J. Dunn	J. Dunn							
DATE 3/23/97	TECH. REVIEW J. Dunn	DESIGNER J. Dunn								
GRAND CANYON NATIONAL PARK										

Figure 7

require the removal of many trees to meet OAS regulations for a safe helibase. Six trailer houses are located nearby and are scheduled for removal with the construction of the new housing units. In the GMP, this area was discussed as having the trailers and tent frame structures removed, with disturbed areas revegetated. This site is favored for the Helibase because of its closeness to the Headquarters area. Response time to get to this location from the Administrative site could be less than 5 minutes.

**Space** - The site is wooded with mixed Ponderosa pine, aspen, and fir, typical of the North Rim forest. Emplacement of the helibase would require clear cutting of up to 150 trees including selective cutting of outlying trees that intrude into the flight patterns.

**Safety Cone** - The incoming flight pattern is over an area with thin vegetation just south of the STP; departure is over Transept Canyon. For the incoming pattern it is likely that 10-15 of the taller trees will be selectively cut, these are included in the above cut total. For the departure pattern, no additional trees will be removed.

**Infrastructure** - Existing lines for the required telephone and electrical service would be within 100 feet of where an office building would be situated, figure 7. In addition, water service is about the same distance. All will require new underground trenching. Connecting to the sewer line will probably be about 150' of trenching. This site, with its Headquarters area location is the most central to infrastructure of all options considered.

**Vehicle Access** - Access will be achieved along the existing road to the STP. This road currently serves the STP, trailer residences, and the tent frame fire crew area. In this project, the trailers and the tent frames will be removed, so the road will serve only the STP and Helibase. From the main access road, an additional roadway will be prepared to each landing pad to provide access for rolling a gurney to the helicopter.

**Office Structure** - Initially, the existing small office structure (formerly the South Entrance Kiosk) will be moved on site to serve as an office. As funds become available, an office building, approximately 24 feet by 12 feet, will be constructed to replace the portable kiosk. This is sited on figure 7. This will be a gabled roof building built to conform with the Grand Canyon Architectural Guidelines and will provide office and storage space as well as toilet facilities.

## **2. Alternative B - Move the Helibase to the Marble Flats Site**

Marble Flats is the location of a closed landfill site on the North Rim. It is a large disturbed area in a valley. Vegetation at this site is only low ground cover. At this location, no trees would be cut for flight paths. Because of its situation in a small valley, maximum power from the helicopter will be needed for each take-off. The site has been closed as a landfill for several years. Using it is similar to the main

South Rim Helibase which operates on an older landfill. A bladed road [W-1] extends to the site for general access. The site is 4-5 miles from the Headquarters area. Access is gained using the paved main North Entrance Road, an all weather road through Harvey Meadow to the Widfross Trailhead, and then W-1, a bladed dirt road for approximately 2 miles to the site. Response time to get to this location from the Administration site would likely be 15 to 20 minutes.

**Space** - There is more than adequate open space on disturbed land to configure a helibase to meet the baseline operational size.

**Safety Cone** - This site meets the standards established for a safety cone.

**Infrastructure** - There are no utilities at this site. The corridor for the primary electric line to the North Rim and the telephone feeder line from the North Rim microwave site to Kaibab Lodge is approximately a quarter of a mile northeast of this location along road W-1a. Access to the corridor from the landfill is over a low ridge through undisturbed forest area. It is likely that at least 50 trees would need to be removed to provide an underground utility corridor between the helibase and the existing utility lines. Since this potential helibase location is in a valley, hard phone lines are essential for communications. Both radios and cellular telephones have very limited range and would be unacceptable for normal operations. It might be possible to provide photovoltaic panels for electrical needs if the operations and staffing for the helibase remain small.

**Vehicle Access** - The North Rim dirt road W-1 extends from the Widfross Trailhead through the landfill site and on to Point Sublime. The road surface would need to be improved to at least an all-weather surface to the helibase. From the main access road, additional hard surfaced roads will be prepared to each landing pad to provide access for rolling a gurney to the helicopter. Road W-1 provides access to Point Sublime and is the only legal public road access through the recommended Wilderness of the North Rim to that location. The occasional visitor traffic on W-1 would need to be controlled during helicopter operations.

**Office Structure** - Initially, the existing small office structure (formerly the South Entrance Kiosk) will be moved on site to serve as an office. As funds become available an office building, approximately 24 feet by 12 feet, will be constructed to replace the portable kiosk. This will be a gabled roof building built to conform with the Grand Canyon National Park Architectural Character Guidelines and will provide office and storage space. Toilet facilities will initially be chemical units which may be replaced at a future date with composting units.

### **3. Helibase Alternative Considered and Rejected**

#### **a. Move the Helibase to the Transept Area**

A large open area between the Grand Canyon Lodge and the Utility/Concession housing area, locally known as the ball field, meets the space requirements for a Helibase operation with less tree cutting than will be needed for the Proposed Action. While a landing area could be developed at this location, it is considered too close to the Grand Canyon Lodge and the Transept Trail for routine operations. Both safety concerns for Transept Trail users (closure of the trail with every flight would be required), and the noise of such flights, have led the park to discount this alternative.

**b. Move the Helibase to CCC Hill Site**

A semi-open area on top of CCC Hill was considered. It is in the area proposed for parking in the GMP so use would have been temporary, 5-10 years. It is also close to the stock ride barns and would require new road work to achieve all weather access. This site was rejected because the prevailing winds would place the primary flight path directly over the established stock operation, the winds on the hill top are frequently unpredictable due to the proximity of Roaring Springs Canyon. This location would not provide a permanent solution to a North Rim Helibase location.

**c. Move the Helibase to the Sewage Treatment Plant Leech Field**

This facility is just north of the Headquarters area. A helibase situated on top of the leech field for the Sewage Treatment Plant was considered because it is close to the residential area for quick response time and is on a clear, disturbed site. However, the lack of a large flat area for a landing pad raised safety concerns. One level area 90 feet in diameter is not available, let alone 2 as specified by OAS guidelines for helibase development.

### **III. ENVIRONMENTAL CONSEQUENCES**

#### **A. NATURAL RESOURCES**

##### **AFFECTED ENVIRONMENT AND IMPACTS**

**HOUSING** - The area proposed for housing is a Ponderosa pine forest with some fir, spruce, and aspen. The understory is mostly clear within the proposed development area. There is sparse ground cover of grasses and low shrubs. The wildlife present is habituated to grazing within an occupied area and consists mainly of deer and various squirrels. The housing units have been designed and sited to work with the existing trees on the proposed sited. Approximately 20-25 immature aspen and pine and 2 mature Ponderosa pine trees will be removed for the construction of the houses and placement of roads and infrastructure. Wildlife activity around the Headquarters area should not be affected by the construction of the proposed units. Of course no alteration of the vegetation or wildlife habitat would occur if the houses were not built.

**HELIBASE** - The two alternative sites vary greatly in their impacts on the natural environment. The Proposed Action will require clear cutting up to 150 mixed pine, aspen and fir trees, about 20% of which are mature, to provide a safe helibase. Approximately 10-15 trees will be selectively cut to provide the required safety cone. Establishment of the infrastructure, paved access, and the office building will not affect additional vegetation. At the Marble Flats site, no trees will need to be cut for the helibase; however, approximately 50 mixed pine, fir, spruce, and aspen will be removed to establish a telephone and possibly electric line. Normal North Rim wildlife is present at both alternative sites. The Proposed Action site has wildlife that has grown accustom to occasional human visitation. At the Marble Flats site wildlife is unaccustomed to frequent and extended visitation, though administrative and visitor traffic might pass through several times a day during the summer months. Neither site has been the focus of frequent helicopter landings and take-offs nor the ground traffic required to operate a helibase. The Marble Flats alternative will introduce frequent and loud human activity into an environment currently accustomed to more quite and solitude. Wildlife is more likely to be affected by long-term use than by short-term site development. The arrival and departure of helicopters at the Proposed Action alternative will be observed from the Widfross Trail, which is in the recommended Wilderness area. The site at Marble Flats is on the boundary of the recommended Wilderness area; departures and arrivals that extend west and south from the site will be flying at low levels over the recommended Wilderness area.

Access to the Proposed Action will use the existing paved road to the STP while access to the Marble Flats site will require improvement of the existing dirt road (W-1) to an all-weather surface. Currently an all season road extends from Highway 67 to the Widfross Trailhead, this all-season surface will need to be extended for approximately 2 miles at a width of 15 feet. No trees will need to be

removed for this improvement. Both sites require snow-mobile access during the winter.

Noise of the helicopter operation will have long term affects at each alternative site. The departure route for each site with the predominant wind patterns out of the southwest will take the helicopter over recommended Wilderness areas. At the STP site, the departure is over Transept Canyon (as is the present helibase site) which, below the rim, is within the recommended Wilderness. At this location there is little likelihood of continuous flights over the rim area. At Marble Flats, departure will extend over rim area recommended Wilderness and possibly the Widfross Trail, thereby adding the overflight noise to an otherwise naturally quite zone. This action would not only affect visitor experience in the Wilderness, it has potential impact to wildlife, bird nesting in particular.

At the Marble Flats site, which is a closed landfill, the release of hazard fumes has been monitored and does not present a health hazard. It is similar to the situation on the South Rim where the Helibase is located on a closed landfill also

Neither threatened or endangered species of plants or animals, floodplains or wetlands, nor air or water quality will be affected by any of the alternatives.

## **B. CULTURAL RESOURCES**

### **AFFECTED ENVIRONMENT AND IMPACT**

HOUSING - The proposed housing development is either within or just south of the Headquarters District listed on the National Register of Historic Places. The three cabins slated for removal have been evaluated for significance and are not eligible for the National Register of Historic Places. The entire area has been surveyed and no archeological or other historic resources have been located within the area of potential effect. Design of the proposed new structures was reviewed in preliminary form by the State Historic Preservation Officer (SHPO) since the buildings will be either in or visible from the Historic District. Design of the new buildings has conformed to the Grand Canyon National Park Architectural Guidelines and the new development is occurring in accord with the 1995 GMP. The park is currently in consultation with the Arizona SHPO regarding the final design and siting of the proposed new buildings.

HELIBASE - Archeological survey has been conducted at both the STP and Marble Flats locations. A survey conducted in 1995 located a trash dump, dating between 1915 and 1930, near the rim edge of the proposed STP site. No development activities are proposed for this portion of the area. Monitoring of clear cutting by an archeologist will identify the site extent and prevent disruption of the trash scatter, thereby causing no adverse effect to the resource. No other archeological resources were identified within either alternative area.

#### **IV. LIST OF PERSONS AND AGENCIES CONSULTED**

##### GRAND CANYON NATIONAL PARK STAFF

###### Maintenance Division

- John Dunn - Engineer Technician
- Tim Fields - Engineer Technician
- Mike Finken - Environmental Engineer
- Greg Robinson - Architect (former employee)

###### Fire and Aviation

- Dan Oltrogge - Fire Management Officer
- Craig Letz - Helibase Manager
- Mike Ebersole - Park Pilot
- Tom Caldwell - Park Helicopter Pilot

###### North Rim

- Dan Davis - Unit Manager
- Kevin Cochary - District Ranger

##### STATE AGENCY

###### Arizona State Parks

- Jim Garrison - State Historic Preservation Officer

#### **V. PREPARERS/BIBLIOGRAPHY**

##### PREPARERS

- Douglas R. Brown, Compliance Officer, Grand Canyon National Park

##### BIBLIOGRAPHY

- Grand Canyon National Park, General Management Plan/Environmental Impact Statement, 1995.
- Office of Aircraft Standards Handbook, Heliport Installation (351 DM 2), Office of Aircraft Services, 1989.



# United States Department of the Interior

NATIONAL PARK SERVICE  
GRAND CANYON NATIONAL PARK  
P.O. BOX 129  
GRAND CANYON, ARIZONA 86023-0129

IN REPLY REFER TO:

L7619 (GRCA 8221)

APR 23 1997

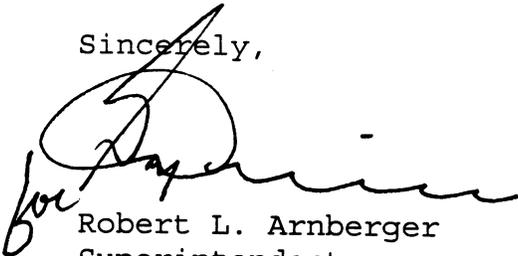
Dear Friends of Grand Canyon National Park:

Enclosed is an Environmental Assessment entitled DEVELOP NORTH RIM MULTI-FAMILY HOUSING recently prepared in the park. Action proposed in the document calls for removing NPS trailers and three NPS cabins, relocating the NPS Helibase on the North Rim, and constructing four new multi-family housing units (a duplex, a four-plex, a six-plex, and an eight-plex) in accordance with the 1995 General Management Plan. Two alternatives for housing are discussed, the No Action Alternative which provides for retaining the status quo and not taking any of the actions, and the Proposed Action which will develop the new housing and relocate the helibase. Two alternatives were looked at for helibase relocation, two discussed as alternatives.

We are providing this document for public review until May 27, 1997. **Please provide your comments to:**

Superintendent  
Attention: North Rim Housing EA  
Grand Canyon National Park  
P.O. Box 129  
Grand Canyon, Arizona 86023

Sincerely,



Robert L. Arnberger  
Superintendent

Enclosure