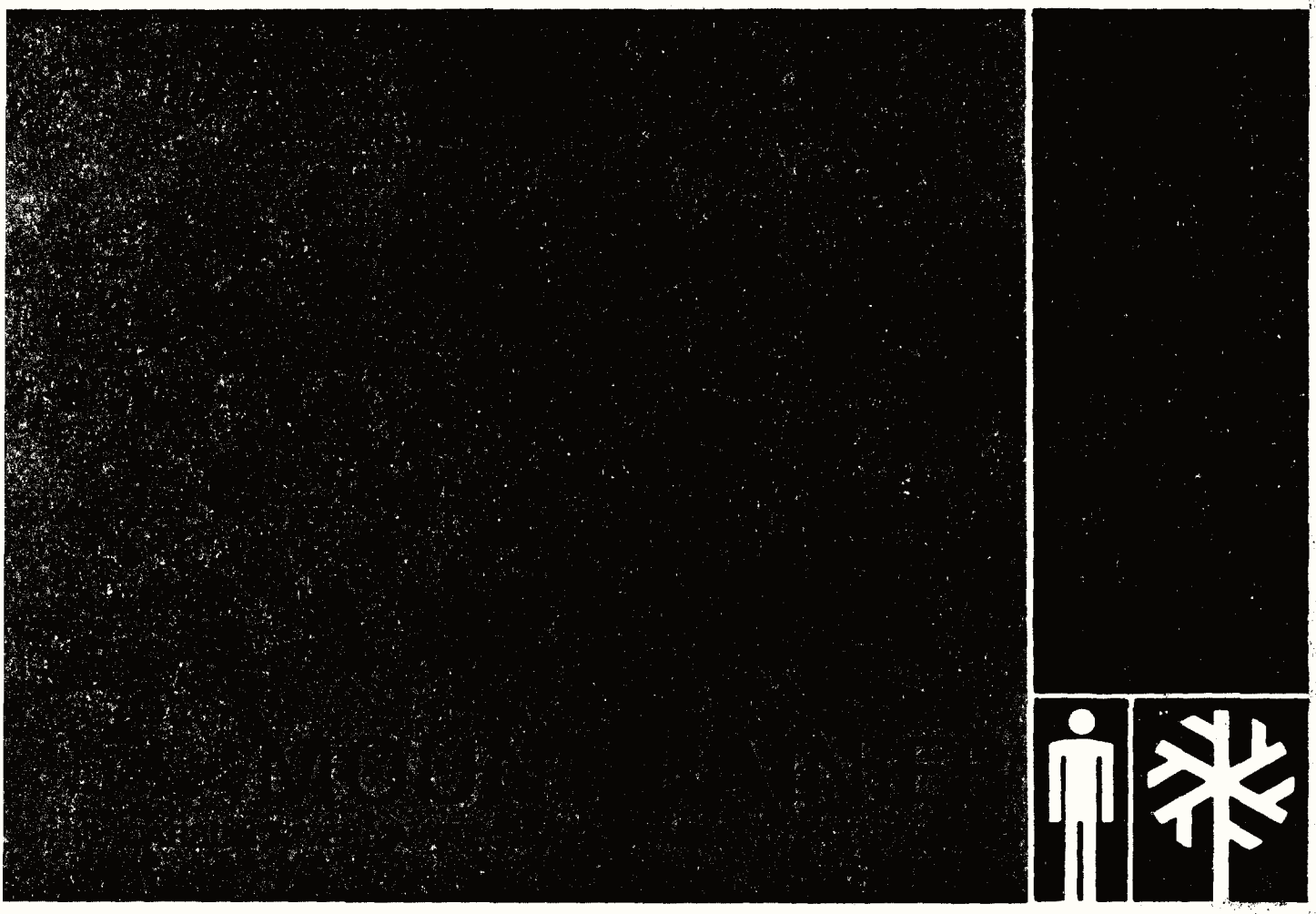
D-1487

development concept plans

september 1979



NATIONAL PARK / WASHINGTON

D E V E L O P M E N T C O N C E P T P L A N S

for

CARBON RIVER

WHITE RIVER

SUNRISE

TIPSOO LAKES

M O U N T R A I N I E R N A T I O N A L P A R K

SEPTEMBER 1979

C O N T E N T S

APPENDIXES

GRAPHICS

Following page

I N T R O D U C T I O N

The Development Concept Plans (DCP's) for Carbon River, White River, Sunrise, and Tipsoo Lake areas are based on an Assessment of Alternatives which explore feasible ways to solve management problems in these areas. With many years of use and lack of periodic improvement, these four developed areas now experience problems with facilities which are outmoded and uses which have seriously impacted park resources.

These areas, furthermore, can no longer continue to serve the public's future demands without optimal captial improvements. These improvements include such issues as visitor use, facility development, park operations, interpretation, resource management and transportation. Every effort has been made to seek a balance between adaptive use and new construction as well as visitor use and park resources.

PURPOSE OF THE PARK

Congress established Mount Rainier National Park on March 2, 1899 (30 Stat. 993). The purpose of the park is to protect, preserve, and interpret the natural, scenic, and historical resources in Mount Rainier National Park. These include Mount Rainier, a classic example of a dormant composite valcano, with the largest single peak glacial system in the contiguous United States. The park also contains outstanding examples of the native flora and fauna of the Cascade Mountains.

PLANNING OBJECTIVES

To improve the quality of the visitior's experience.

To improve overall environmental quality and reduce or eliminate environmental health and safety problems of water pollution and potential flood and fire hazards.

To improve resource management and protection; to reduce impacts on the parks resources.

To provide better management of heavy visitor use and vehicle traffic.

To improve the operation and maintenance capability of the park and reduce overall energy requirements.

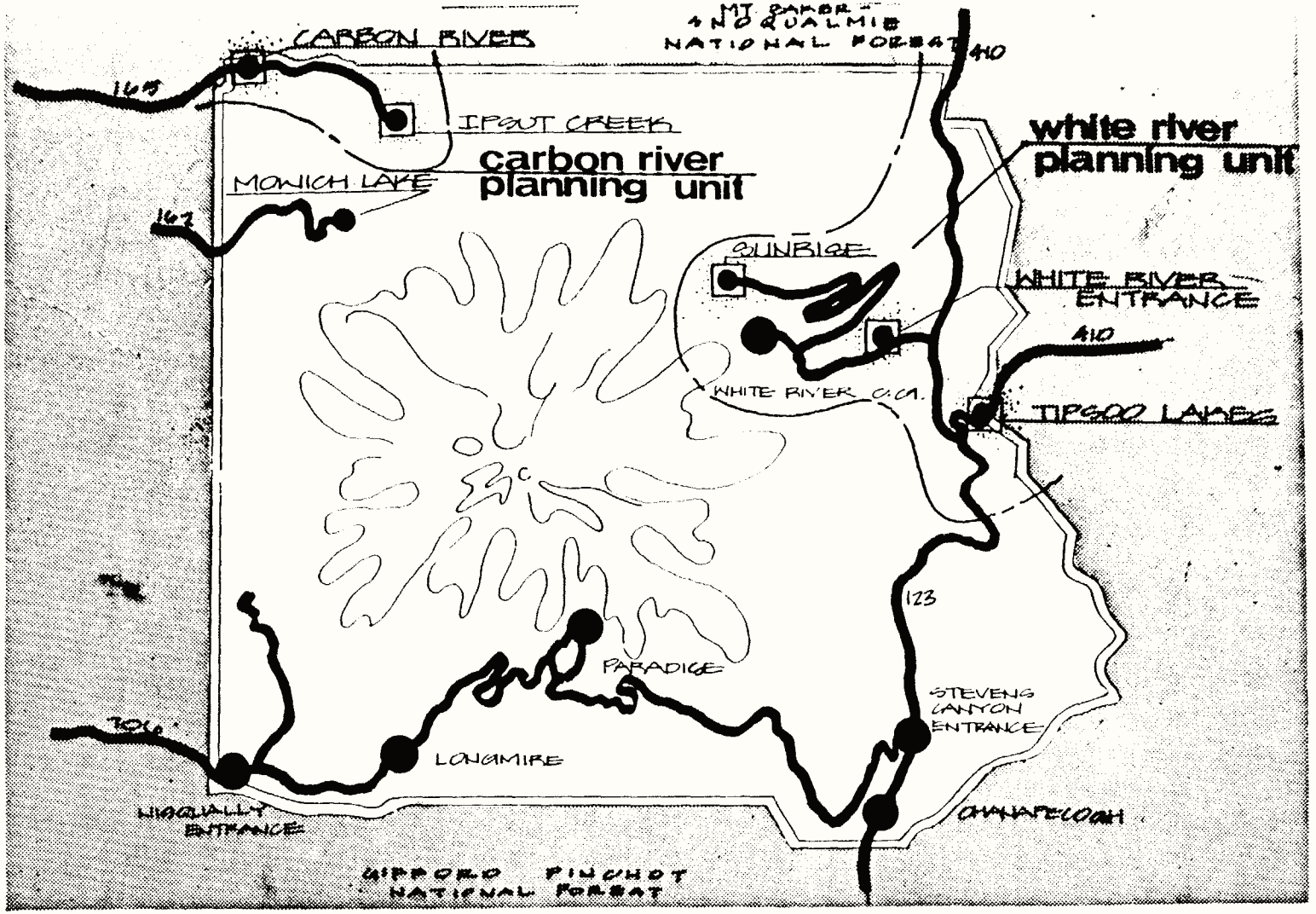
To make adaptive use of outmoded structures where possible through rehabilitation, restoration, and stabilization.

To improve the employees working and living environment.

PLANNING UNIT CONCEPT

To facilitate better planning, the concept of Planning Units was applied for the purpose of organizing the four developed areas into logical geographic units. These two units, the Carbon River and White River, group the developed areas so that their interrelationships are viewed together. The two developed areas located within the Carbon River Planning Unit include the Carbon River entrance and the Ipsut Creek campground areas. The White River Planning Unit include the developed areas of White River Entrance, Sunrise, and Tipsoo Lakes.

The alternatives considered were formulated and designed at a site planning level of detail. The detail presented provided the means to make decisions on specific actions of development and management including the physical layout of facilities and related resource management



LEGEND

- DCP STUDY AREAS
- MAJOR DEVELOPED AREAS
- PLANNING UNITS
- PARK ROADS
- PARK BOUNDARY

THE DCP STUDY AREAS

MT. RAINIER NATIONAL PARK

6 3 1½ 0

MILES

activities. The final plans are composed of elements from the various alternatives, selected to meet planning objectives and to provide a realistic sequence of actions which can be implemented in phases.

PUBLIC INVOLVEMENT

Extensive public involvement in the preparation of the master plan and wilderness proposal precluded the need for an extensive program in this DCP planning effort. Accordingly, public involvement consisted of consultations with various Federal and State agencies, key interest groups and park visitors. On several occasions evening planning talks were held to obtain input from park visitors on their concerns and ideas for solving the many issues.

DESCRIPTION OF THE ENVIRONMENTS

SIGNIFICANCE OF PARK RESOURCES

The topography of the park is rugged and precipitous, consisting mainly of peaks and valleys. The Cascade Range on the east, the Tatoosh Range on the south, and mountains on all sides tower from 2,000 to 4,000 feet above the valleys. They are spectacular mountains but are dwarfed by the mass of Mount Rainier.

From the 2,000-foot elevation at the park boundaries to 4,000 feet, dense forest of Douglas-fir, western redcedar, and western hemlock clothe the valleys and hillsides. Between 4,000 feet and 6,500 feet, western hemlock, Alaska cedar, and subalpine fir grow in increasingly open stands. Above 7,000 feet, rock, snow, and ice prevail.

The slopes of Mount Rainier provide suitable habitat for approximately 130 species of birds and 50 species of mammals. Some animals, such as deer and elk, make seasonal migrations, following receding snows up the mountain in spring and decending at the approach of winter. Beginning in 1913, there have been six elk transplants close to Mount Rainier National Park. These animals have prospered, and they are extending their range within the park. Evidence is available that overbrowsing and competition for forage occur in some areas.

Weather is a highly significant factor in the existence of glaciers, forest, and other natural features. As moisture-laden westerly winds move inland, the first barrier they meet is rain and snow. There is a significant variation in climatic conditions within the Park. For example, Paradise (5,400 feet) receives an average of 106 inches of moisture per year, and Longmire (2,700 feet) receives an average of 81 inches. Longmire has twenty percent less precipitation, one-fourth as much snow, and nearly twice as long a snow-free season as Paradise. Some clear, warm weather may be expected in July and August and again in late winter, although clouds and fog often obscure the mountain. There is an average of 110 cloudless days per year. The snowpack of from 10 to 30 feet at the 5,000-foot level usually disappears in early July, only to begin to accumulate again in October.

The hydrology of the park is complicated by several factors. Glacial streams change their channel rapidly and constantly, resulting in damage to roads and trails. Fall floods, resulting from warm winds and rain melting early snowpacks, also wipe out trails and bridges and, at times, other facilities. Debris flows may accompany fall floods or may result from glacier outburst floods, generally in late summer. These, too, have been extremely destructive. The snowpack that stores over half of each year's precipitation prevents the use of some of the most scenic trails and roads until July.

REGIONAL INFLUENCES

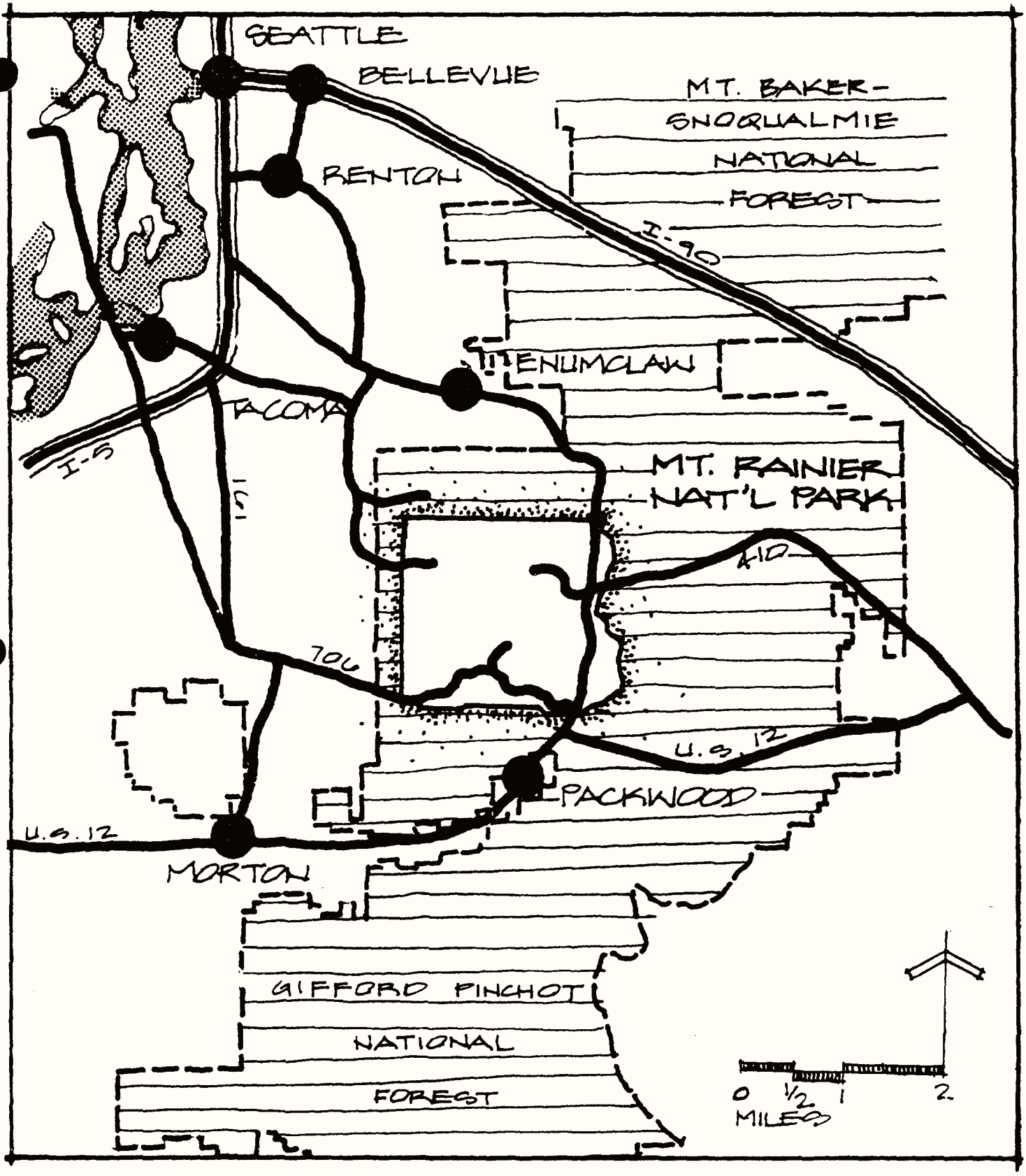
The region is rich in all types of recreational opportunities. The park is surrounded by national forests and timber company lands offering big game hunting (deer, elk, goat, and bear), in addition to fishing, hiking, camping, and similar activities. More opportunities exist for development of campgrounds outside the park than within, due to lower elevations, more suitable topography, and longer season of use. There are presently 120 campgrounds and picnic areas within a 65-mile radius of Mount Rainier and room for development of many more. The Forest Service administers two national forests, Mount Baker/Snoqualmie and Gifford Pinchot, which almost completely surround Mount Rainier National Park.

There are four metropolitan areas located within a 65-mile radius of the park: Seattle, population 590,000; Tacoma, 188,000; Yakima, 46,000; and Olympia, 21,000. The major portion of visitation to Mount Rainier comes from these urban areas.

Yearly visitation origins are as follows:

Washington State	- 72% (King county 48%, Pierce County 31%, Thurston County 12%, Other Counties 9%)
Other States	- 27%
Foreign	- 1%

There are six access roads into the park. The State Highway Commission has furnished use estimates for 1990 based upon trends during the past four years. Generally, their estimates run from three to four times the present average daily volume.



MT. RAINIER NATIONAL PARK

THE REGION

WITHIN PARK INFLUENCE

Approximately 70 percent of the park visitors come during June, July, August, and September, and only 8 percent during December, January, February, and March. Regardless of the time of year, 54 percent of all visitation occurs on weekends. Mount Rainier is primarily a summer-and weekend-use area. About 90 percent of the park visitations is on a day-use basis. Most visitors view the features from within or near their automobiles.

Overnight use in the campgrounds and lodges comprises less than 10 percent of the total visitation. There is a strong local feeling that Mount Rainier belongs to Tacoma and Seattle, since over 50 percent of the visitors are from these cities. The people of Puget Sound area were instrumental in the park's establishment. They have influenced its development over the years and continue to be the major users.

Less than ten percent of the visitors to Mount Rainier camp, but they number about 135,000 each year. While campers come from many walks of life, this is one activity that is within the financial means of most segments of society. In this sense, it is one of the most democratic aspects of park use.

More than 200,000 people use the park trails each year. This is slightly more than 10 percent of the total park visitation. There are presently less than 500 horse users per year due, in part, to steep terrain and lack of facilities.

Fishing, boating, and swimming activities are very limited, due, mainly, to cold water in high-elevation lakes and glacial streams. Less than 200 boats are used in the park each year.

An average of 16,000 skiers use the park each winter. Other snowplay use, however, amounted to more than twice that figure. Snowmobile use is almost nil; from 50 to 60 vehicles are recorded annually.

Mount Rainier has the potential for mud flow, floods, and pyroclastic flow due to the fact that it is an ice-covered volcano. These disasters cannot be predicted but are a consideration in park management.

The high flower meadows of the park are least able to stand heavy visitor use, yet these fragile alpine meadows are prime attractions for visitors. Management must preserve and protect them. Special management techniques are required in the Paradise flower fields which receive the brunt of visitor impact.

CARBON RIVER PLANNING UNIT

The Carbon River District offers visitors a unique, relatively undeveloped, rustic outdoor recreation experience. People frequently visit this area to avoid the more heavily used areas in the park.

In 1977 approximately 52,000 persons visited the Carbon River area of which 6176 were recorded as overnight visitors. If trends continue, visitation could increase by 55% by the year 2000 as shown in the following table:

	Total	Day Use	Overnight
1980	53154	33487	19667
1990	65531	41285	24246
2000	80789	50897	29892

This equates to approximately 404 vehicles per day on a peak day or approximately 176 vehicles every four hours (the average length of stay).

Rugged preciptious topography surrounds this rainforested valley. Significant features include:

-Carbon River
-Ipsut Creek
-Chenuis Falls
-Inland Rain Forest (extending approximately 3 miles up the valley from the entrance and about one quarter mile in width)
-Carbon Glacier

This district characteristically has cool and damp weather. A heavy, canopied forest limits most sunlight from entering the forest understory.

Access to the Carbon River Valley is limited during the winter because of the heavy snowfall (typical visitor season is May-September).

The Carbon River Valley is frequently subject to flooding, especially during the summer and winter months. The valley, where all National Park Service (NPS) development is located, has a high water table which contributes to poor drainage and seepage complications.

As directed by E.O. 11988 (Floodplain Management) the NPS contacted several other agencies for information on the base (100 year) floodplain in the Carbon River area. The following agencies were contacted:

Department of Agriculture, Forest Service and Soil Conservation Service; Department of the Army, Corps of Engineers; Department of Interior, United States Geological Surveys (USGS). The only information available was a series of flood plain maps prepared by the USGS for the Federal Insurance Administration, Department of Housing and Urban Development. These maps delineated the 100 year floodplain for areas near Mount Rainier National Park, but unfortunately did not cover any areas within the park boundaries.

Additional information of flooding within the Carbon River unit was discussed with park employees who had been in the area for a number of years or who had previously worked in the Park. Information from these employees covers a period of about 10 years, during which there has been significant damage to structures. The most destructive floods generally occur between November and January with the most destructive flood occurring in December of 1977. Peak average rainfall occurs during these winters months. Generally a cycle of a heavy wet snow early in the season followed by a warming period with heavy rain at higher elevations increases the runoff rate which often manifests itself in extreme flooding conditions. Such conditions were responsible for the December 1977 flood, which eroded away a portion of the housing area.

Although average rainfall is not as high in the summer months, flooding may still occur since glacial melt is an important factor contributing to high streamflow rates. The combination of a very warm period followed by heavy rains could cause extreme flooding during these months. The effect of Glacial melt on streamflow can be easily observed on exceptionally

hot days where the river may be 20-30 feet wide in the morning (running its normal course) and from the heat of the day that same afternoon it will be flooding in its full course (1/4 mile across). Generally such summer floods are responsible for minor property damage such as washouts of footbridges. Flash floods are generally not a problem in the area. However, in 1972, an ice dam built up at the foot of the carbon glacier, blocking flow of the Carbon River. When it broke in midsummer it created a flash flood which took serveral bridges. This was, however, a rare event; generally the floods that occur are not flash floods and the threat to life is fairly low. Most floods flow in a manner which allows people to get to higher ground - people may be trapped in the Carbon River area for a while but not seriously threatened. Mudslides resulting from the flooding of the Carbon River are a significant seasonal occurrence. These slides affect sections of the stream and outlying area.

It is not difficult to specifically identify sites where avalanches could be active because of the unpredictable nature of this activity.

Hazard treefall potential is increased in this unit because of the weak soil stability resulting from the extreme amount of wet soil and the inability of tree root systems to anchor themselves in this damp ground.

Landslide and rock slough problems have been identified as hazards and constraints in the vicinity of Carbon River and Ipsut Creek. However, they are not identified on the site specific level.

Information related to geological hazards of the Carbon River districts is limited. A geological hazard map indicates the entire valley (extending from the Carbon Glacier to the town of Fairfax) is classified as high risk mudflow and flooding areas. The map also projects that this district is in no immediate danger from volcanic outfall.

On-site observation indicates that the soil is primarily volcanic in origin. The river valleys have water born materials which are constantly mobile. There is great diversity and variation in these qualities which creates difficulty when attempting to develop on these unstable soils.

Although consideration was given to relocating some facilities outside the park, there are no suitable development sites within a reasonable distance that are not also subject to flooding.

Because of the rain forest which is the only true inland rain forest in the United States, the falls, and relatively easy access to the glacier, the Carbon River area is a popular day-use destination. Facilities include an entrance station-information kiosk and toilets at the park entrance. A self-guiding trail through the rain forest also begins here. There is a ranger residence at the entrance.

A maintenance/residential area is located a short distance from the entrance station. Although close to the road, the site is well screened by the rain forest vegetation. The facilities are obsolete and there is

no room for expansion. Protective barriers are necessary to prevent the Carbon River from washing out the development. Both the maintenance/residential area and the entrance area have inadequate sewage treatment systems which result in occasional pollutants entering the river bed. The water supply from June Creek does not meet current standards.

At times, visitor parking is inadequate and fee collection creates traffic jams at the entrance. Frequently, because of poor signing, visitors arrive at the Carbon River entrance believing they are on the road to Paradise. Turning around is not easy when the area is congested.

The road from the entrance to Ipsut Creek is narrow and subject to annual flooding and washouts. Dense vegetation and old growth trees extend to the shoulder of the road. Parking is very limited, particularly at the popular trailheads and scenic points.

The Ipsut Creek Campground is on a small peninsula between the Carbon River and Ipsut Creek. Since it also serves as a major trailhead and day-use area, it becomes quite congested; parking and turn-around space is inadequate. A ranger residence is located across the creek from the campground. Sewage treatment is adequate except during flooding. The water supply from Ipsut Creek does not meet current standards.

Erosion of the campground due to floods is a problem and heavy snows make the area inaccessible in the winter when flooding is likely to occur. Although facilities may be lost, visitors are considered safe

since flash flooding is rare and there is generally adequate warning. Specific management problems such as utilities, fuel storage, saftey hazards, etc. were addressed in the environmental assessment.

WHITE RIVER PLANNING UNIT

The White River Planning Unit includes several major componants including the highway corridor (route 410), the White River entrance station developed area, the road corridor to Sunrise, the White River Campground, and the popular Sunrise area. Tipsoo Lake on the highway corridor at the eastern entrance to the park is also a popular destination point. While the interrelationships of all these components were considered in the planning effort, emphasis was placed on the major problem areas at the White River Entrance, Sunrise, and Tipsoo Lake.

White River Entrance

This developed area serves as the major base of NPS operations for the subdistrict, the entrance point to the Sunrise area of the park, and a back country permit issuance station . A large campground is located further up the road toward Sunrise. The highways on the east side of the park are not subject to fee collection, however, all visitors going to Sunrise or the campground must stop at the White River Entrance to pay their fees. Those planning to hike in the backcountry must obtain their permits here if they have not already obtained them elsewhere in the park. On peak

visitor use days traffic backs up at the entrance station, parking is difficult for those seeking information or permits, and it is difficult for employees to leave the developed area because of the traffic congestion.

Development includes numerous maintenance structures and employee housing intermingled in the same area, the entrance station, and combination residence/ranger station, public parking and restrooms, and utility systems including water, sewage treatment, and power generation.

The area suffers from poor design which results in poor vehicle circulation lack of parking, and inadequate water, sewer, and electrical systems. The location of the entrance road intersection with highway 410 creates a "Y" shaped intersection and creates potential traffic hazards.

The low quality housing makes it difficult to retain qualified permanent employees and, due to the seasonal operation, employees are subject to several moves a year. In addition there is potential for vandalism during the winter months when no one is living there to provide necessary security. In addition the area lacks adequate winter patrol to monitor and regulate backcountry winter use.

The close proximity of buildings to one another makes snow removal difficult and the old structures and trailers represent a fire hazard. The location of propane tanks next to the trailers further complicates the fire hazard. Gasoline and diesel pumps and storage tanks are outmoded, under capacity,

located too close to the maintenance/housing area, and are in violation of OSHA standards. The maintenance facility lacks adequate winterized vehicle storage and washrooms for employees working there.

The utility services are limiting constraints effecting the employees residing in the area. The water supply, piped from a stream to a 3,500 gal. tank with 1/2 hour fire fighting capability does not meet State Standards and the electrical generator creates noise which intrudes on the area impacting living conditions.

Significant features at White River include:

-the White River
-old growth trees (over 500 years)
-significant views of Mt. Rainier (along roadway)
-scenic road corridor along White River road
-access to major trails and day hikes
-the White River Campground

Access is directly related to the condition of the narrow White River road, which is subject to seven to nine foot snow depths and related avalanche hazards during the winter months.

The entire White River District is subject to tree fall hazard, has characteristically steep topography, and is limited by a flood plain below the

development. These factors present a development constraint and a saftey hazard (rock fall and unstable soils which occur along the entire roadway to Sunrise).

Sunrise

The Sunrise developed area is situated on the end of the White River road at approximately 6,400 feet elevation. This area offers a wide variety of opportunities for a diverse number of visitors. The unit primarily serves as a day use area yet provides limited overnight camping in a walk-in campground and serves as backcountry and mountain climbing staging area.

The road to Sunrise is subject to avalanche and mud slide hazards. A high potential for traffic accidents exist due to narrow road conditions, no shoulders and steep embankments, including tight hair pin turns. The steep road grade makes it difficult for oversized vehicles and vehicles with trailers to negotiate, creating traffic safety problems.

The Sunrise area has an extremely "open" view providing significant panoramic views of Mt. Rainier's eastern and northern flanks and surrounding mountain peaks. Within a days hike from the developed area, one can view subalpine forests, wildlife, meadowlands (often with wildflower displays), and an alpine tundra environment.

There are a series of established day hikes as the Wonderland Trail which circles Mount Rainier. Interpretive functions include, an interpretive nature trail, trail and meadowland restoration interpretation, and museum displays.

Peak visitation to Sunrise occurred in 1976 with 227,175 visitors recorded. Visitation is projected to reach 475,900 by the year 2000 with a peak day of 1525 vehicles. The average visitor spend 3 hours at Sunrise and it is estimated that slightly over 500 parking spaces would be needed to accommodate this level of visitation.

The visitor use season, regulated by the extreme snowdepth and snow melt rates, is generally 2-3 months long. Even when the snow is gone, weather is a limiting factor due to fog and unseasonable snow, hail and high winds.

Natural hazards to visitors include; rockfall along defined trail, unexpected change of weather, volcanic eruption potentials, moderate risk from airborne rock debris, and an unestimated risk from windflow and flooding.

The Sunrise parking area (capacity 370-410 vehicles) is presently the limiting factor of visitor capacity in this area. On peak use days all parking areas on the road to Sunrise and at Sunrise are full, resulting in congestion as visitors seek a place to park. Occasionally, the visitor parking area is used as a helicopter landing pad for emergency search and rescue efforts.

The Sunrise development and surrounding environs must often support a significant number of visitors. It is evident that this level of visitation has an affect on the extremely sensitive subalpine vegetation. Social

trails have been created throughout the area from visitors not using designated trails; a loss of native vegatation and soil erosion has occured. The net result is that the area is now crisscrossed in a network of trails which create a visual intrusion by altering the natural appearance of the meadow. Such nondesignated social trails are difficult to restore since vegetation and soils recover slowly at this altitude and are subject to repeat erosion action. If use continues as is or increases, the natural beauty of this subalpine environment will continue to degrade.

Use of the area is minimally controlled through definition of the trail system to reduce the impact of traffic on fragile meadows and provision of information on resource sensitivity through trail signing and rangers visitor contact. The major development consists of the following:

-paved parking area (370-410 car capacity).
-concessions facility and employee housing.
-gas station.
-flush comfort stations.
-frontier-style blockhouses and museum/visitor center.
-picnic facilities in former campground (30-35 sites).
-ranger station/seasonal housing/first aid station.
-trails with wayside exhibits

The concessions facility, blockhouse complex, expansive parking area, picnic area, numerous trails, and fencing around Frozen Lake present visual intrusions to the natural setting. The existing concessions facility is poorly equipped to provide adequate food service, and is a break-even operation currently operating in violation of several public health regulations. Employee housing, curio sales, and food service are in the same building. The structure represents a potential fire hazard and annually requires extensive repair and improvement.

The picnic area which is located in the former campground suffers from overcrowding on peak use days. The public water supply taken from the surface of Frozen Lake may be subject to pollution and the NPS water storage facility lacks adequate fire suppression capabilities. The electrical generators create extensive noise, an intrusion throughout the immediate area and portions of the backcountry.

A short lead time and lack of manpower necessary to open the area creates problems for employees getting settled in the area.

A low quality visitor experience occurs when there are conflicts between employees living in the blockhouses and the public using the visitor center and at the visitor center which lacks facilities for audio visual interpretive programs resulting in a poor NPS image.

Most of the problems at Sunrise are due to the lack of a long-range plan for visitor use and related development. Without such a plan, maintenance and needed rehabilitation have had low priority with only minimal funds expended to maintain a marginal level of services. Although many facilities have deteriorated, codes and regulations have changed requiring major improvements to the water supply and renovation of facilities to meet current health, fire, and safety standards.

Tipsoo Lakes

The area provides the first panoramic view of Mr. Rainier and other surrounding mountains and valleys for those visitors entering the park through Chinook Pass. The environment is classified (in the master plan) as a "developed area."

The area consists of subalpine meadows and two lakes, situated at an elevation of 5300 feet, south of Chinook Pass near the eastern boundary of Mount Rainier National Park.

Tipsoo Lakes serve as a destination point for local users and a stopover for visitors passing through enroute to other destinations. There are no records for visitation but all available parking is full on weekends when the weather is good.

Facilities provided at this unit include:

-picnic area with 18 picnic tables.
-comfort station with non-potable water.
-240-260 undefined parking spaces and roadside parking along west and east bound traffic lanes.
-scenic overlooks affording outstanding photographic possibilities.
-undefined system of social trails around lower Tipsoo Lake.
-Pacific Crest Trail (designated as a national trail route)
-entrance archway to park
-Mather Plaque and memorial parkway.

Significant natural features include:

-Naches Peak (6226')
-Yakima Peak (6452')
-Tipsoo Lakes and surrounding fragile subalpine meadow vegetation and wildflowers.
-magnificent panoramic view of Mt. Rainier.

The snow fall is a major consideration in accessibility to the area. Typical snowfall begins in the early fall and is characteristically heavy (15-20 feet). Snow may remain on the ground into July, covering parking areas and trails. During the winter, the surrounding environs are subject to snow and rockfall avalanche which are potential visitor hazards.

Volcanic hazards to the unit include a moderate risk from airborne rock debris (areas where there could be moderate degreee of danger to property from airborne fragments but a low degree of danger to human life). There is no probable mudflow and flood hazard.

Forest Service land bordering the park may have some affect on park visitation, as it is a popular hunting area. The Tipsoo Lakes area is overused and often times crowded, as more people use the area than the resource and facilities can handle. The area lacks interpretation, National Park Service visitor contact and park information/orientation. Limited signage and information exist on the fragility of the resource.

Heavy visitor use and traffic creates potential vehicular and pedestrian safety hazards. Inadequate and undefined parking along the roadside and at Chinook Pass creates parking conflicts between Tipsoo Lake day users and NPS/USFS backcountry users, Coordination with the USFS to implement solutions to common problems of inadequate parking facilities and heavy visitor use is difficult because of lack of serious NPS and USFS direction. The Washington State Department of transportation policy of ditch cleaning and dumping of materials along the opposite road bank creates additional

undefined roadside parking and results in visual impacts and erosion. Lack of adequate surface drainage across the parking area and roadside parking creates problems after snowmelt.

There is a demand for parking and picnic facilities which outweighs the existing supply. Poor design and organization of picnic facilities result in serving less visitors than the areas' potential. Currently no facilities exist for the handicapped.

The Tipsoo Lakes area lacks a potable water system and suffers from an inadequate septic system. The comfort station is sited in an obscure location, is outmoded and has serious drainage problems. Water pollution of Chinook Creek results when the septic tank and leach field drain directly into the creek at full capacity. Currently no access exists to pump the septic tank and eliminate the problem.

Winter access is dependant upon state department of transportation snow removal policies. The highway is not maintained as an all year road, but when funds allow, the road is plowed sufficiently to allow access to the lakes on snowshoes or cross country skis. The comfort station, trash receptacles, and other facilities are inaccessible and unsuitable for winter use.

Snow removal, trash pick-up, and road maintenance are the responsibility of the state department of transportation and coordination is difficult because of differing priorities of that agency and the National Park Service.

The Tipsoo Lakes area will remain a popular visitor use area. There are no effective means to regulate visitation short of closing the highway so the National Park Service must seek ways to minimize the environmental and visual impacts which occur.

THE PLANS FOR VISITOR USE AND GENERAL DEVELOPMENT

CARBON RIVER PLANNING UNIT

The development concept plan for the Carbon River area emphasizes retention of the remote, rustic character of the rain forest/river valley. Services and facilities will be reduced to the minimum considered adequate to manage and protect the area. National Park Service staff living at Carbon River will be reduced with additional employees seeking housing outside the park and/or hired from nearby communities.

Park Entrance

To reduce visitor confusion, the cooperation of the State and County Highway Departments will be sought to improve signage along the approach roads.

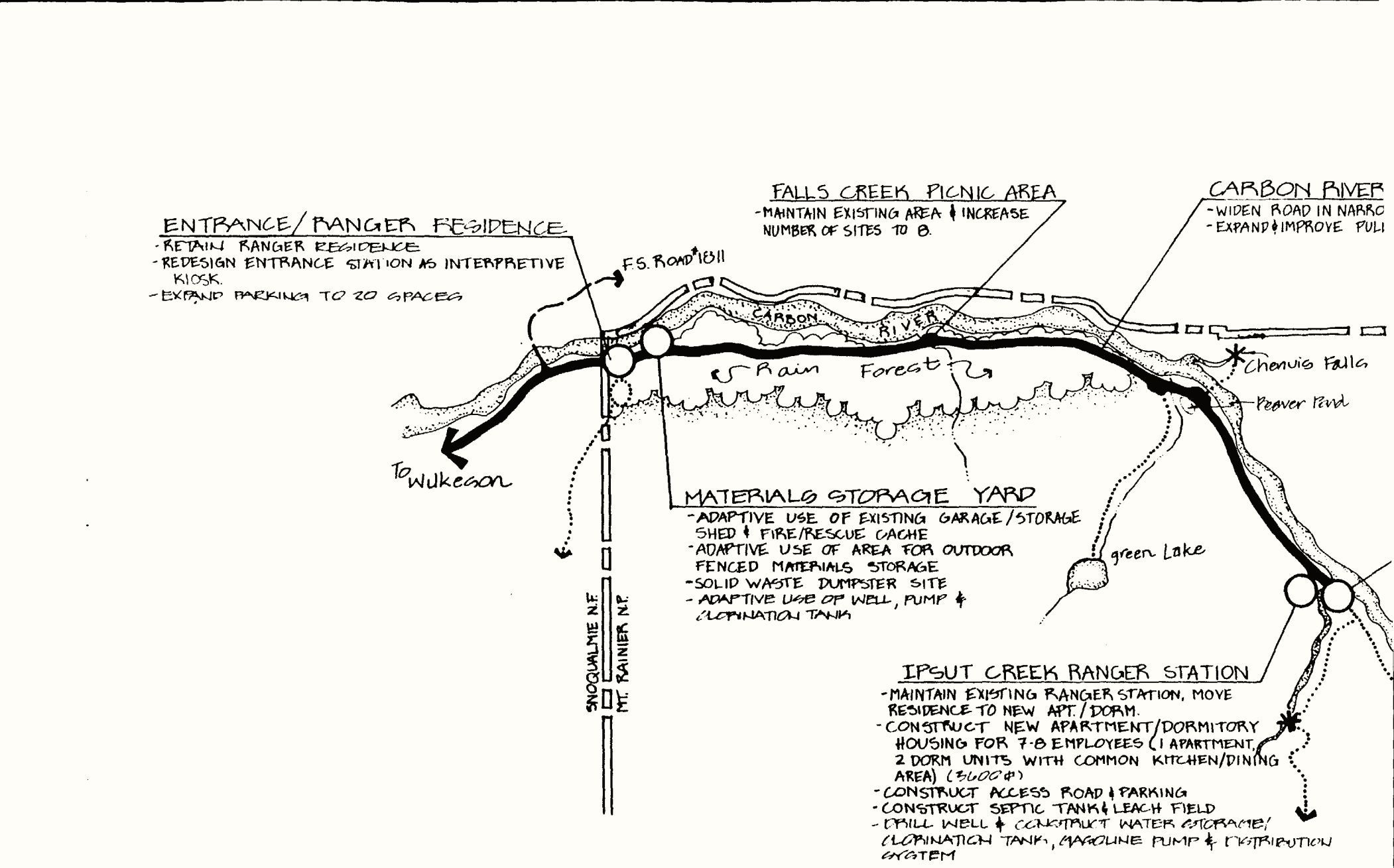
At the park entrance additional parking will be provided and fee collection will be eliminated. Due to the primitive level of facilities and services provided at Carbon River, it is not considered appropriate to collect visitor use fees at this location. Elimination of fee collection will reduce traffic backup at the entrance, allowing visitors to enjoy the interpretive wayside exhibits and the self-guiding rain forest trail in a less congested setting. The former entrance station will be converted to an information/orientation kiosk and the adjacent pit toilets will be replaced with vault toilets.

The ranger residence will remain but the present septic tank/leach field will be replaced with a vault system. Ultimately, the residence (a temporary structure) should be replaced with a permanent, energy efficient structure. The resident ranger will provide year-round visitor contact as well as security for the area.

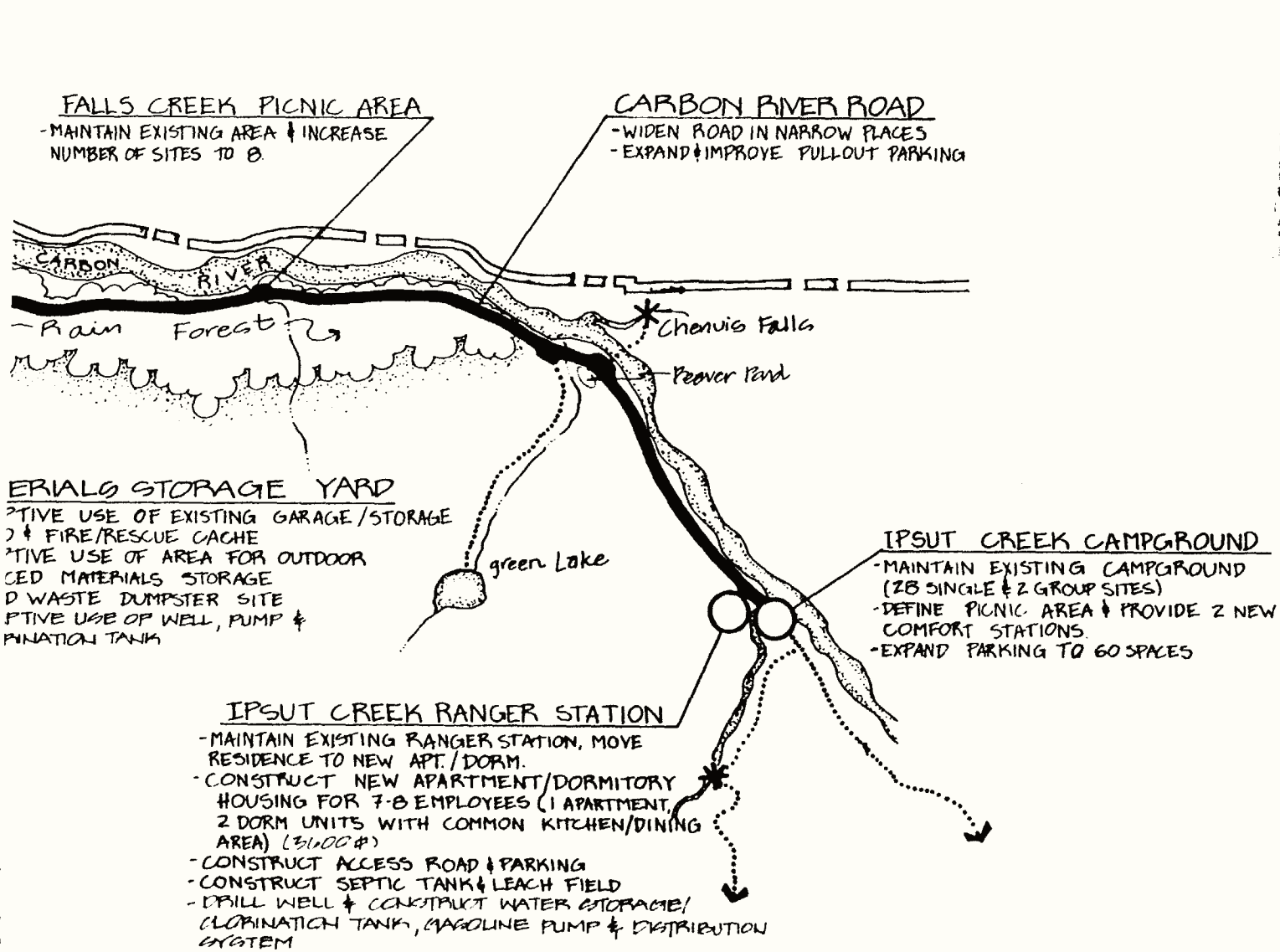
Maintenance Area

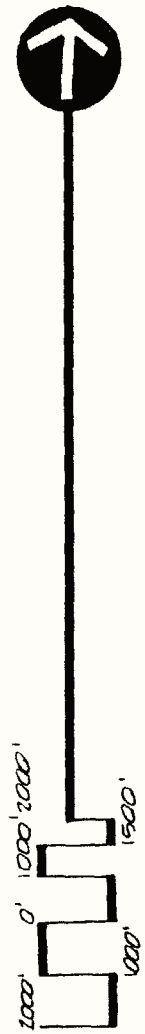
The residential/maintenance area will be converted to a maintenance/storage facility with all residential functions removed. A vault system will replace the existing septic tank/leach field system and the existing well will be used for the water supply for the maintenance and entrance area. The existing pump, chlorination tank and structure will be relocated from the June Creek water source to the maintenance area and the former water treatment site and access road will be obliterated and restored. The maintenance area will be fenced to reduce instances of vandalism.

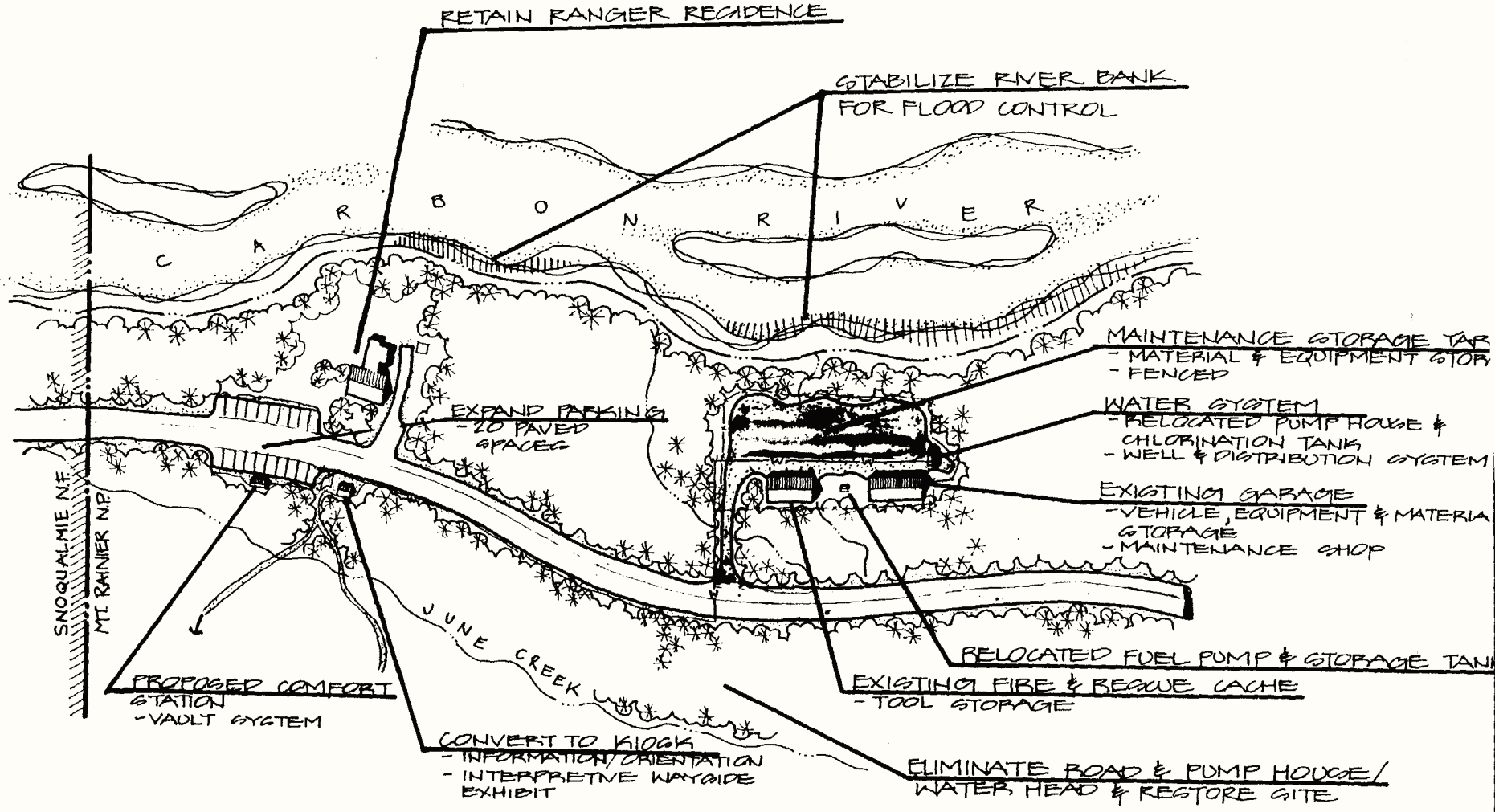
The stream bank at both the entrance and maintenance area, severely eroded in the 1977 flood, will be stabilized to reduce further intrusion of the Carbon River into the developed area.


ENTRANCE/RANGER RESIDENCE
- RETAIN RANGER RESIDENCE
- REDESIGN ENTRANCE STATION AS INTERPRETIVE KIOSK.
- EXPAND PARKING TO 20 SPACES
F.S. ROAD #1811
FALLS CREEK PICNIC AREA
- MAINTAIN EXISTING AREA & INCREASE NUMBER OF SITES TO 8.
CARBON RIVER
- WIDEN ROAD IN NARRO
- EXPAND & IMPROVE PULI
CARBON RIVER
Rain Forest
Chenuis Falls
Beaver Pond
To Wilkeson
MATERIALS STORAGE YARD
- ADAPTIVE USE OF EXISTING GARAGE/STORAGE SHED & FIRE/RESCUE CACHE
- ADAPTIVE USE OF AREA FOR OUTDOOR FENCED MATERIALS STORAGE
- SOLID WASTE DUMPSTER SITE
- ADAPTIVE USE OF WELL, PUMP & CLORINATION TANK
green Lake
SNOQUALMIE N.F.
MT. RAINIER N.P.
IPSUT CREEK RANGER STATION
- MAINTAIN EXISTING RANGER STATION, MOVE RESIDENCE TO NEW APT./DORM.
- CONSTRUCT NEW APARTMENT/DORMITORY HOUSING FOR 7-8 EMPLOYEES (1 APARTMENT, 2 DORM UNITS WITH COMMON KITCHEN/DINING AREA) (3600 ft²)
- CONSTRUCT ACCESS ROAD & PARKING
- CONSTRUCT SEPTIC TANK & LEACH FIELD
- DRILL WELL & CONSTRUCT WATER STORAGE/ CLORINATION TANK, GASOLINE PUMP & DISTRIBUTION SYSTEM

PREFERRED ALTERNATIVE
CARBON RIVER AREA DEVELOPMENT CONCEPT PLAN
MT. RAINIER NATIONAL PARK






RETAIN RANGER RESIDENCE
STABILIZE RIVER BANK FOR FLOOD CONTROL
CARBON RIVER
MAINTENANCE STORAGE TAR
- MATERIAL & EQUIPMENT STOR
- FENCED
WATER SYSTEM
- RELOCATED PUMP HOUSE & CHLORINATION TANK
- WELL & DISTRIBUTION SYSTEM
EXISTING GARAGE
-VEHICLE, EQUIPMENT & MATERIA STORAGE
- MAINTENANCE SHOP
EXPAND PARKING
- 20 PAVED SPACES
SNOQUALMIE N.F.
MT. RAINIER N.P.
JUNE CREEK
PROPOSED COMFORT STATION
-VAULT SYSTEM
CONVERT TO KIOSK
- INFORMATION/ORIENTATION
- INTERPRETIVE WAYSIDE EXHIBIT
RELOCATED FUEL PUMP & STORAGE TAN
EXISTING FIRE & RESCUE CACHE
- TOOL STORAGE
ELIMINATE ROAD & PUMP HOUSE/ WATER HEAD & RESTORE SITE

PREFERRED ALTERNATIVE

CARBON RIVER ENTRANCE DEVELOPMENT CONCEPT PLAN MT. RAINIER NATIONAL PARK

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DSC | SEPT 79

These improvements will provide a more efficient maintenance operation, bring utility systems up to code, and eliminate the inadequate and unsafe employee housing.

Carbon River Road

The road from the entrance to Ipsut Creek will be retained as a low standard, rural drive. Some widening at very narrow stretches will allow two-way traffic to flow more easily and drainage will be improved as part of the continuing maintenance program. At some locations, where the road is close to the river, bank stabilization will reduce seasonal maintenance requirements and minimize losses to flooding.

Parking will be improved at the Ranger Creek and Chenuis Falls pullouts and picnic facilities will be expanded to eight sites at the Falls Creek area.

While these improvements are minimal, they will reduce congestion, improve safety, and increase recreation opportunities.

Ipsut Creek

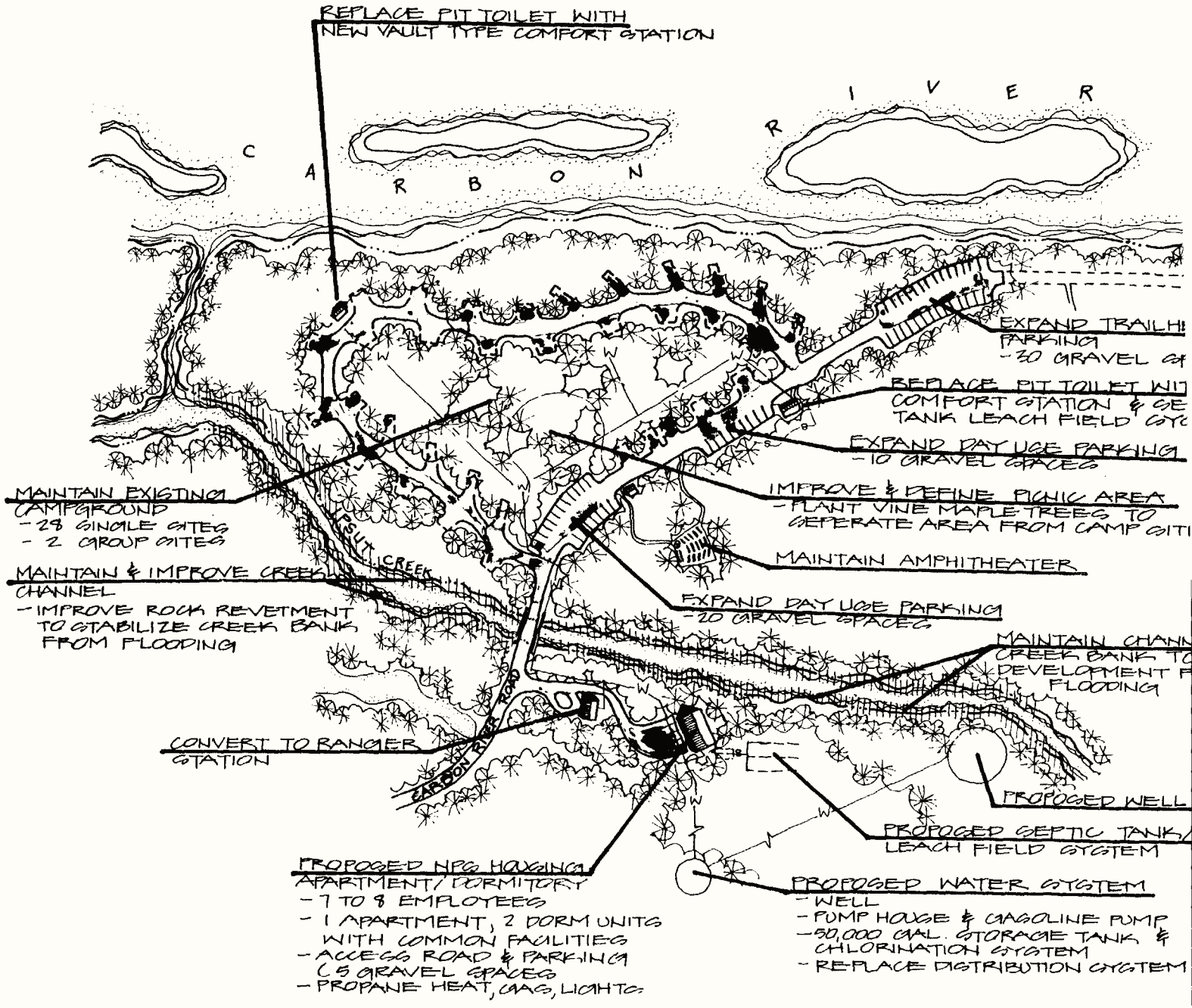
The developed area at Ipsut Creek provides a small campground, picnic area, and trailhead parking. Space does not allow maximum expansion to meet projected visitation levels but minimal improvements will help on all but peak visitation days.

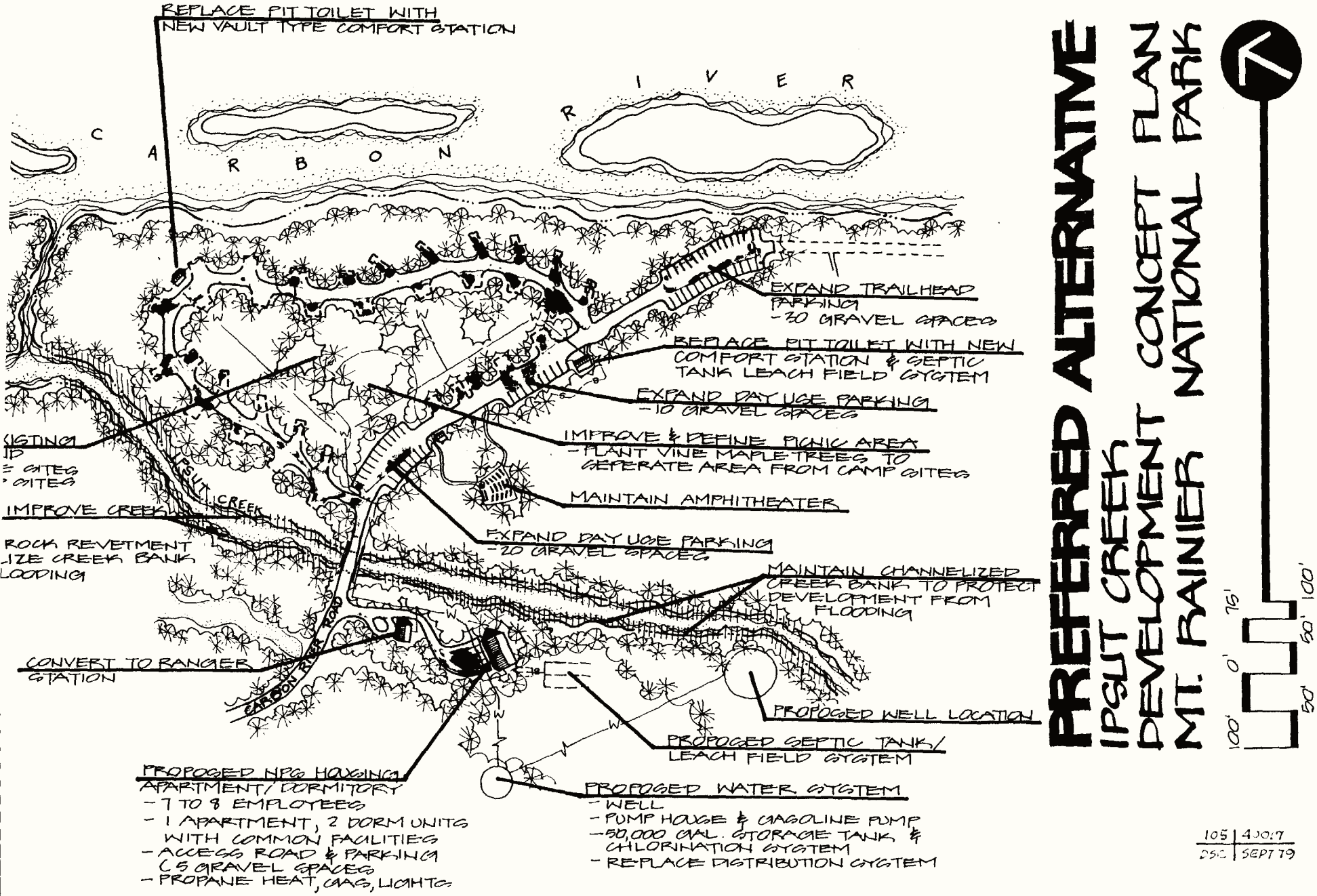
Picnic, day-use, and trailhead parking will be expanded from the present 25 spaces to 60 spaces. The picnic area will be better defined and new landscaping (vine maples) will improve separation between the picnic area and the campground. The existing amphitheater and 30 site (including 2 group sites) campground will be retained.

Pit toilets in the campground/day-use area will be replaced with either vault type or septic tank/leach field systems depending on their location. A new water system with well, pump house, storage tank, chlorination system, and distribution system will replace the obsolete water supply.

Stabilization and chanelization of Ipsut Creek will be maintained and improved to protect the developed area from flooding and erosion. Although this will not be 100% effective it will reduce damage from all but the most severe occurrences.

The residence functions at the present ranger station will be eliminated and the building will serve only as a ranger station/office/visitor contact facility. Housing for 7 or 8 employees with an apartment and two dormitory units will be constructed near the present ranger residence. Propane will be used to supply heating, cooking, and lighting needs but the feasibility of utilizing hydroelectric power will be given further consideration during design of the facility. A septic tank/leach field system will be used for sewage treatment. Removal of hazard trees and some thinning will open the tree canopy to provide more sunlight in the employee housing area.


REPLACE PIT TOILET WITH NEW VAULT TYPE COMFORT STATION
C A R B O N
R I V E R
EXPAND TRAILH
PARKING
- 30 GRAVEL SP
REPLACE PIT TOILET WIT
COMFORT STATION & SE
TANK LEACH FIELD SYS
EXPAND DAY USE PARKING
- 10 GRAVEL SPACES
IMPROVE & DEFINE PICNIC AREA
- PLANT VINE MAPLE TREES TO
SEPERATE AREA FROM CAMP SITI
MAINTAIN AMPHITHEATER
MAINTAIN EXISTING CAMPGROUND
- 29 SINGLE SITES
- 2 GROUP SITES
MAINTAIN & IMPROVE CREEK CHANNEL
- IMPROVE ROCK REVETMENT TO STABILIZE CREEK BANK FROM FLOODING
RESULT CREEK
EXPAND DAY USE PARKING
- 20 GRAVEL SPACES
MAINTAIN CHANN
CREEK BANK TO
DEVELOPMENT F
FLOODING
CONVERT TO RANGER STATION
CARBON RIVER ROAD
PROPOSED WELL
PROPOSED SEPTIC TANK/
LEACH FIELD SYSTEM
PROPOSED NPS HOUSING
APARTMENT/ DORMITORY
- 7 TO 8 EMPLOYEES
- 1 APARTMENT, 2 DORM UNITS WITH COMMON FACILITIES
- ACCESS ROAD & PARKING (5 GRAVEL SPACES
- PROPANE HEAT, GAS, LIGHTS
PROPOSED WATER SYSTEM
- WELL
- PUMP HOUSE & GASOLINE PUMP
- 50,000 GAL. STORAGE TANK & CHLORINATION SYSTEM
- REPLACE DISTRIBUTION SYSTEM



PREFERRED ALTERNATIVE

IPSUT CREEK DEVELOPMENT CONCEPT PLAN

MT. RAINIER NATIONAL PARK

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DSC | SEPT 79

Relocating employee housing to the Ipsut Creek area eliminates the hazard from potential flooding at the maintenance area site, improves employee/visitor contact, and places employees closer to their work areas.

Under this concept for the Carbon River Unit the National Park Service will contract for some services now provided by park employees. These services include trail maintenance, trash removal, and sewage waste disposal.

With the proposed improvements, management, operation, and maintenance costs are expected to be reduced while, at the same time, visitor facilities and services will be improved without losing the primitive character of the area.

WHITE RIVER PLANNING UNIT

The development concept plan for the White River Planning Unit covers three separate areas; the White River Entrance, Sunrise, and Tipsoo Lakes. The plan proposes both short-term and long-range actions aimed at solving immediate safety, health, and congestion problems and significantly improving the quality of the visitor experience along with improved living and working conditions for park and concession employees.

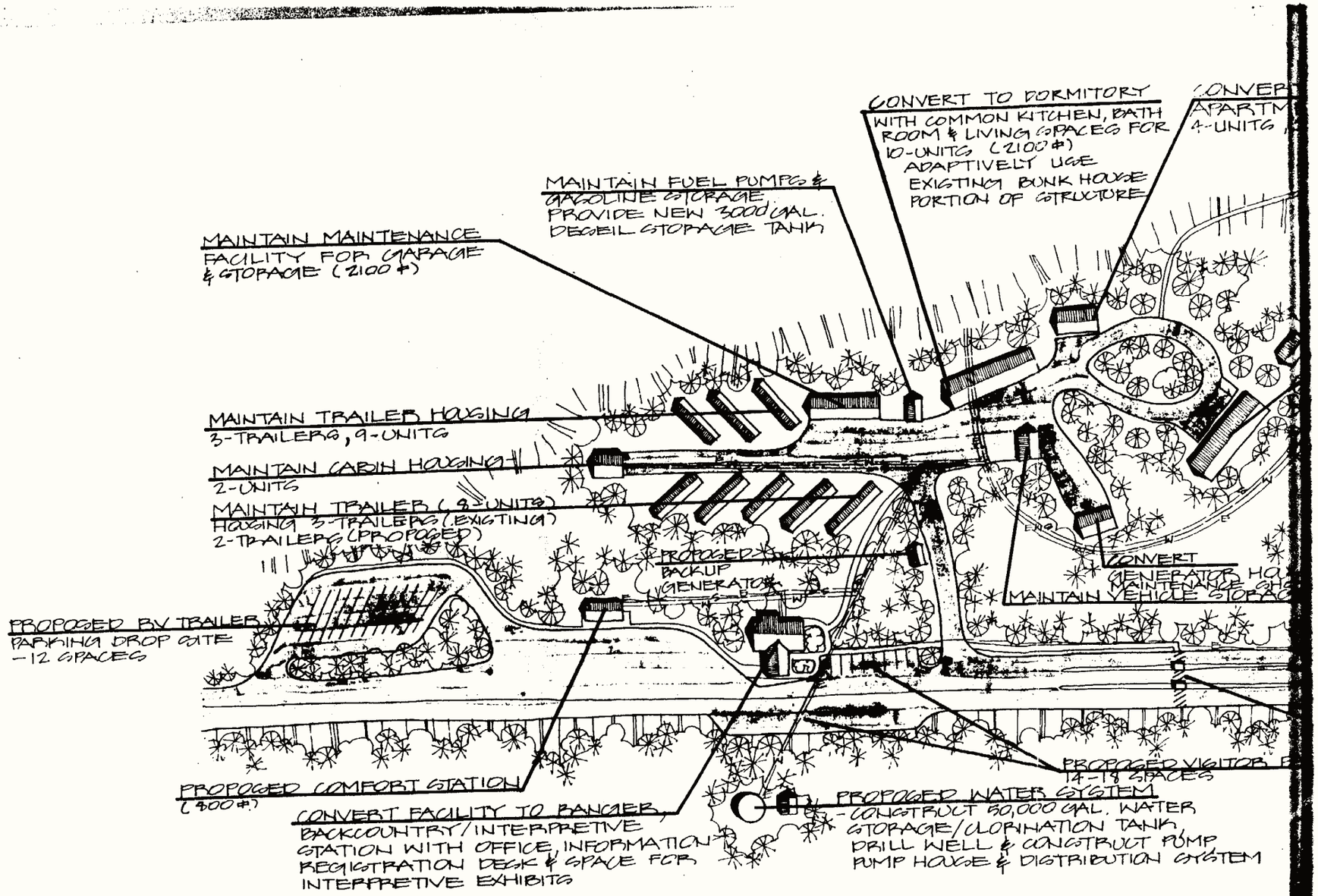
White River Entrance - Short-Term Plan

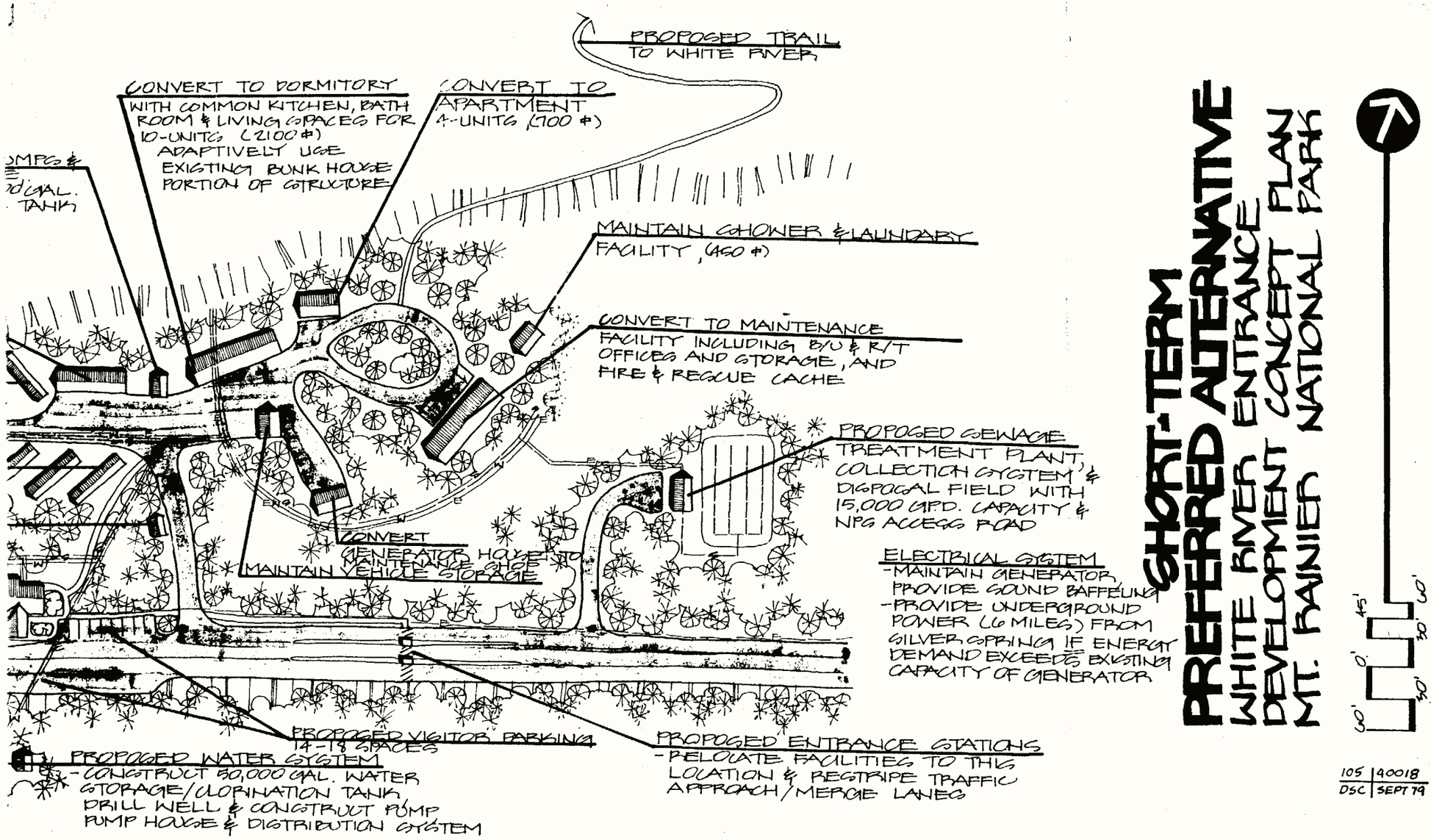
Entrance Station: The relocation of the entrance station east of the National Park Service maintenance access road is required to eliminate the blocking of this road by private vehicles during peak use periods and to eliminate the congestion which occurs at the dual purpose entrance station/information station. The new location of the entrance station facilities

will be east on White River Road approximately 200 feet before the existing access road to the National Park Service maintenance/residential area. The existing entrance station/residence will be converted to a ranger station with office and interpretive facilities. Exhibits on backcountry use and climbing regulations, safety, and conditions will be provided along with publications sales. An information/registration desk will be provided for issuance of permits and other related services. The structure will require nearby visitor parking for approximately 26 vehicles. Separation of the entrance station and ranger station functions will allow more efficient service for the visitors and will reduce congestion at the entrance.

A new comfort station to replace two separate out-moded facilities will be located next to the existing visitor parking area. An additional parking area located approximately 200 feet west of the proposed comfort station will act as a dropsite for 16 trailers. The parking area will be designed for one-way circulation and angle pull-in parking. This will eliminate the need for visitors to pull trailers up the road to Sunrise.

A system of pedestrian walks for visitors will be developed to connect the visitor parking areas to the ranger/interpretive station. A small, paved pedestrian plaza area is proposed at the entrance to the ranger/interpretive facility.


CONVERT TO DORMITORY
WITH COMMON KITCHEN, BATH ROOM & LIVING SPACES FOR 10-UNITS (2100 ft²)
ADAPTIVELY USE EXISTING BUNK HOUSE PORTION OF STRUCTURE
MAINTAIN FUEL PUMPS & GASOLINE STORAGE
PROVIDE NEW 3000 GAL. DIESEL STORAGE TANK
MAINTAIN MAINTENANCE FACILITY FOR GARAGE & STORAGE (2100 ft²)
MAINTAIN TRAILER HOUSING
3-TRAILERS, 9-UNITS
MAINTAIN CABIN HOUSING
2-UNITS
MAINTAIN TRAILER (9-UNITS) HOUSING 3-TRAILERS (EXISTING) 2-TRAILERS (PROPOSED)
PROPOSED BACKUP GENERATOR
PROPOSED RV TRAILER PARKING DROP SITE - 12 SPACES
MAINTAIN VEHICLE STORAGE
PROPOSED COMFORT STATION (400 ft²)
CONVERT FACILITY TO RANGER, BACKCOUNTRY/INTERPRETIVE STATION WITH OFFICE, INFORMATION REGISTRATION DESK & SPACE FOR INTERPRETIVE EXHIBITS
PROPOSED WATER SYSTEM
- CONSTRUCT 50,000 GAL. WATER STORAGE/CHLORINATION TANK, DRILL WELL & CONSTRUCT PUMP PUMP HOUSE & DISTRIBUTION SYSTEM



Maintenance/Residential Area: The maintenance office function of the present dormitory building will be relocated to the CCC/mess hall structure. The dormitory building will then be used exclusively for housing 10 National Park Service employees. Rehabilitation of this structure including the interior, foundations, and roof will be required. The former ranger station/fire cache will be converted to housing for 4 employees and the present functions relocated to the CCC/mess hall structure and the entrance ranger station.

Additional housing includes seven trailers (one new) with snow sheds (16 employees) and a cabin for 2 employees. The existing shower and laundry facility will be retained with the only improvement being the connection to the new sewer and water systems. A trail to the White River will be developed for employee recreational use.

The maintenance storage/garage functions will remain with minor improvements to the structure. The CCC/mess hall building will be converted to a maintenance facility including offices, storage, and fire/rescue cache, and the present generator building will be converted to a shop.

While these actions will not relieve the congestion and mix of residential/maintenance functions throughout the area some incompatible dual uses of structures will be eliminated and housing quality will be somewhat improved.

Utility Systems: Electrical service will be provided by commercial power requiring construction of 7 miles of 3 phase, underground power to the developed area, and replacement of portions of the distribution system. The installation will be designed to accommodate facilities proposed for future development. Commercial power will provide a less expensive and more reliable source of power, however, a stand-by generator will still be required to maintain a minimum level of service during power outages. A new generator building will be constructed and the old generator building will be adapted for use as a maintenance shop and storage space.

To eliminate the many separate septic tank/leach field systems and their related maintenance and environmental problems, a 15,000 gallon biological sewage treatment plant with effluent percolation disposal field and gravity fed collection system will be constructed, the system will be designed to serve both short-term and long-range needs.

The obsolete water system will be replaced with a new well, 50,000 gallon storage/chlorination tank, and distribution system designed to serve both the short-term and long-range needs. The existing surface water intake and wooden storage tank will be removed.

Fuel dispensing operations (gas and diesel) will be relocated to a site adjacent to the garage facility. A new pumphouse and two 2000 gallon storage tanks will be constructed and the existing pumps relocated.

These utility system improvements will bring all systems into compliance with applicable codes while reducing long-term maintenance and operational costs.

White River Entrance - Long-range Plan

Entrance Station: No additional improvements will be required since the short-term changes are anticipated to meet future visitor and operational needs.

Utility Systems: Utility system improvements proposed under the short-term plan will meet future needs. Some modifications, primarily new or relocated taps for water, sewer, power, etc., will be required as new structures are completed. New fuel lines will be required to serve the new maintenance facility from the storage tanks installed under the short-range plan. The pumps will be relocated to the new site.

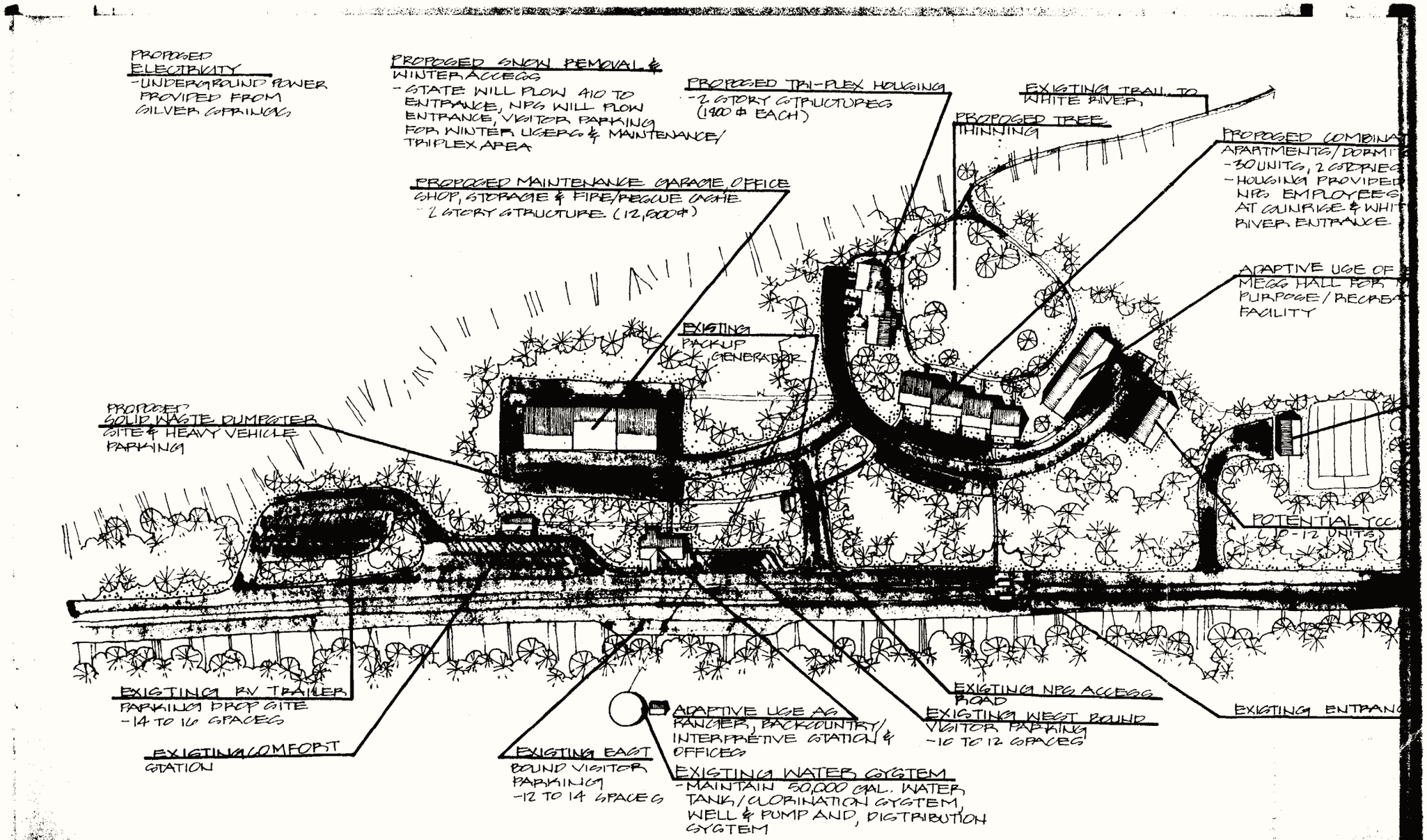
Employee Housing: Housing for 33 to 36 National Park Service employees will be provided at the White River Entrance area. Facilities which were renovated under the short-term improvements will be removed when their useful-life has been reached. A new, clustered housing area will be constructed in phases. A triplex dwelling will house 3 permanent employees and their families. A dormitory/apartment building with five 2 bedroom apartments and seven 4 bedroom dormitory units will house 33 seasonal employees. The dormitory units will have separate bathroom, kitchen and lounge space for each 4 bedroom cluster. The former CCC/mess hall building will be converted to a multi-purpose recreation facility with provisions for emergency housing.

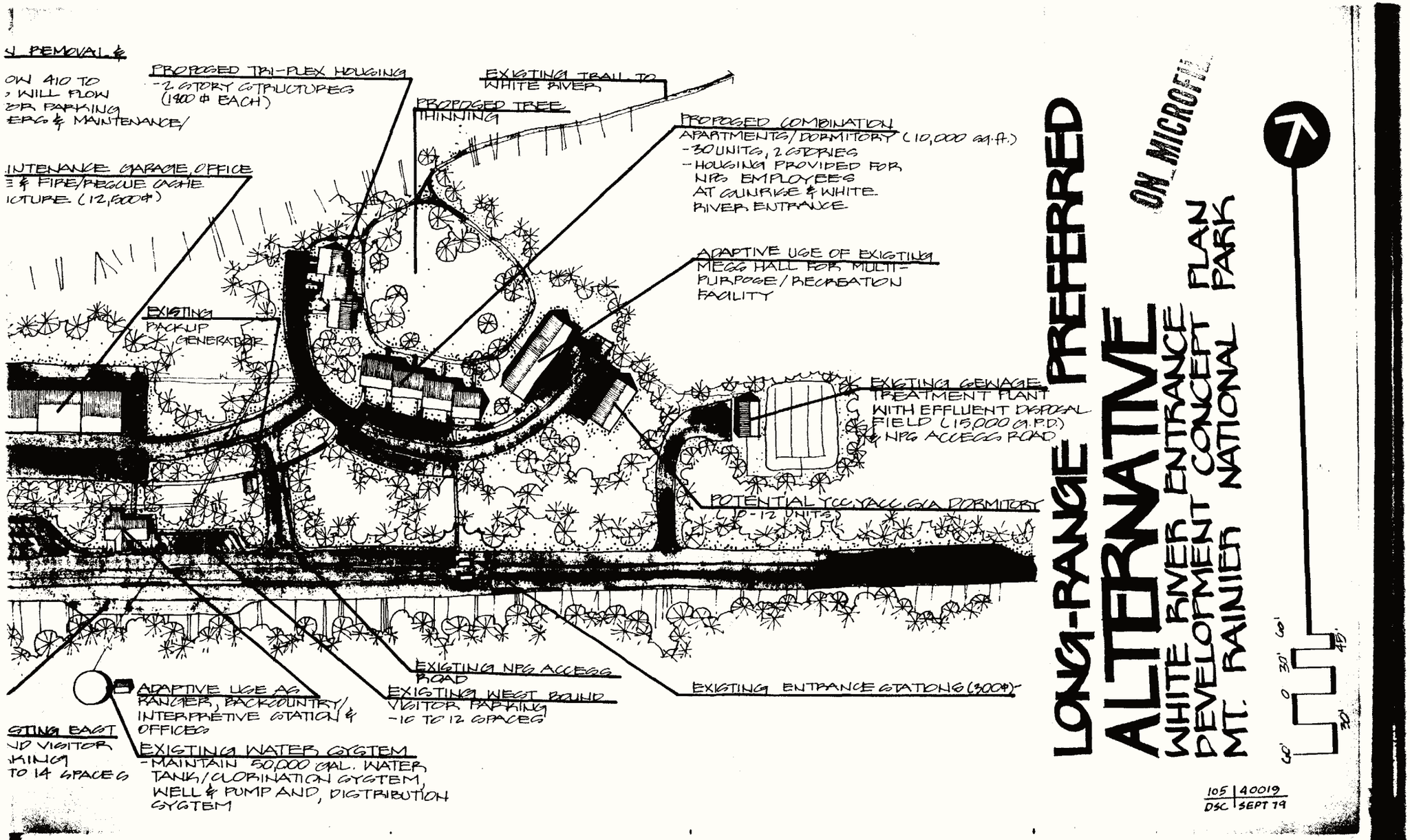
Roads, parking, walkways, etc. will be redesigned and some tree thinning will open up the dense canopy to allow increased sun exposure. Provision has been made for an additional dormitory for 10-14 YCC, YACC, or SCA employees.

A pedestrian circulation system for National Park Service employees and residents living at White River will serve the interior of the clustered housing complex with a connection to the trail leading to the White River. Trails will also connect the residential area to the maintenance area, entrance station, and ranger station/interpretive facility.

Maintenance Facilities: Maintenance functions now scattered in five separate structures will be consolidated in a single 12,500 square foot facility located approximately 200 feet west of the proposed housing area. This new structure will provide space for the maintenance office, shop, storage, garage, and fire/rescue cache. A paved parking and storage area will also provide space for a solid waste dumpster site and a fuel pump/ storage facility.

Demolition/Restoration: Extensive obliteration or salvage will be required to accomplish the long-range plan and this must be phased to assure minimal disruption to park operations during the construction of replacement facilities. Structures which can be salvaged will be disposed of through proper channels. Excess roads, paving and other development sites will be obliterated and the landscape restored.


PROPOSED ELECTRICITY
-UNDERGROUND POWER PROVIDED FROM SILVER SPRINGS
PROPOSED SNOW REMOVAL & WINTER ACCESS
- STATE WILL PLOW 410 TO ENTRANCE, NPS WILL PLOW ENTRANCE, VISITOR PARKING FOR WINTER USERS & MAINTENANCE/ TRIPLEX AREA
PROPOSED TRI-PLEX HOUSING
-2 STORY STRUCTURES (1900 ± EACH)
EXISTING TRAIL TO WHITE RIVER
PROPOSED TREE THINNING
PROPOSED COMBINAT
APARTMENTS/ DORMIT
-30 UNITS, 2 STORIES
-HOUSING PROVIDED NPS EMPLOYEES AT SUNRISE & WHIT RIVER ENTRANCE
PROPOSED MAINTENANCE GARAGE, OFFICE SHOP, STORAGE & FIRE/RESCUE CACHE
- 2 STORY STRUCTURE. (12,500 ±)
ADAPTIVE USE OF MESS HALL FOR PURPOSE / RECREA FACILITY
EXISTING BACKUP GENERATOR
PROPOSED SOLID WASTE DUMPSTER SITE & HEAVY VEHICLE PARKING
POTENTIAL TEC (UP-12 UNITS)
EXISTING RV TRAILER PARKING DROP SITE -14 TO 16 SPACES
EXISTING COMFORT STATION
EXISTING EAST BOUND VISITOR PARKING -12 TO 14 SPACES
ADAPTIVE USE AS RANGER, BACKCOUNTRY/ INTERPRETIVE STATION & OFFICES
EXISTING WATER SYSTEM
-MAINTAIN 50,000 GAL. WATER TANK/ CHLORINATION SYSTEM, WELL & PUMP AND, DISTRIBUTION SYSTEM
EXISTING NPS ACCESS ROAD
EXISTING WEST BOUND VISITOR PARKING -10 TO 12 SPACES
EXISTING ENTRANC


N REMOVAL &
OW 410 TO
WILL FLOW
FOR PARKING
ERS & MAINTENANCE/
PROPOSED TRI-PLEX HOUSING
-2 STORY STRUCTURES
(1900 ± EACH)
EXISTING TRAIL TO
WHITE RIVER
PROPOSED TREE
THINNING
PROPOSED COMBINATION
APARTMENTS/DORMITORY (10,000 sq.ft.)
-30 UNITS, 2 STORIES
-HOUSING PROVIDED FOR
NPS EMPLOYEES
AT SUNRISE & WHITE
RIVER ENTRANCE
INTENANCE GARAGE, OFFICE
E & FIRE/RESCUE CACHE
ICTURE (12,600±)
ADAPTIVE USE OF EXISTING
MESS HALL FOR MULTI-
PURPOSE/RECREATION
FACILITY
EXISTING
BACKUP
GENERATOR
EXISTING SEWAGE
TREATMENT PLANT
WITH EFFLUENT DISPOSAL
FIELD (15,000 G.P.D.)
& NPS ACCESS ROAD
POTENTIAL YCC/YACC/GSA DORMITORY
(10-12 UNITS)
EXISTING NPS ACCESS
ROAD
EXISTING WEST BOUND
VISITOR PARKING
-10 TO 12 SPACES
EXISTING ENTRANCE STATION (300±)
STING EAST
ID VISITOR
KING
TO 14 SPACES
ADAPTIVE USE AS
RANGER, BACKCOUNTRY/
INTERPRETIVE STATION &
OFFICES
EXISTING WATER SYSTEM
-MAINTAIN 50,000 GAL. WATER
TANK/CHLORINATION SYSTEM,
WELL & PUMP AND, DISTRIBUTION
SYSTEM
LONG-RANGE PREFERRED
ALTERNATIVE
WHITE RIVER ENTRANCE
DEVELOPMENT CONCEPT PLAN
MT. RAINIER NATIONAL PARK
ON MICROFI
0 30' 60' 120'
105 | 40019
DSC | SEPT 79

The long-range plan for the White River Entrance Area will resolve problems which have evolved through years of uncontrolled growth due primarily to increasing visitation and associated management needs. While the complete replacement of facilities will be expensive, maintenance and operational costs will be reduced and employee morale and efficiency will improve. The changes in visitor facilities and services hardly will be noticed by the average visitor but their visit will be improved through the reduction of congestion and more convenient visitor services.

Sunrise -- Short-term Plan

Initial redevelopment at Sunrise will retain the basic visitor facilities and services at this popular summer day-use area. Functions will be consolidated in a more efficient manner and facilities will be renovated to meet applicable health and safety standards.

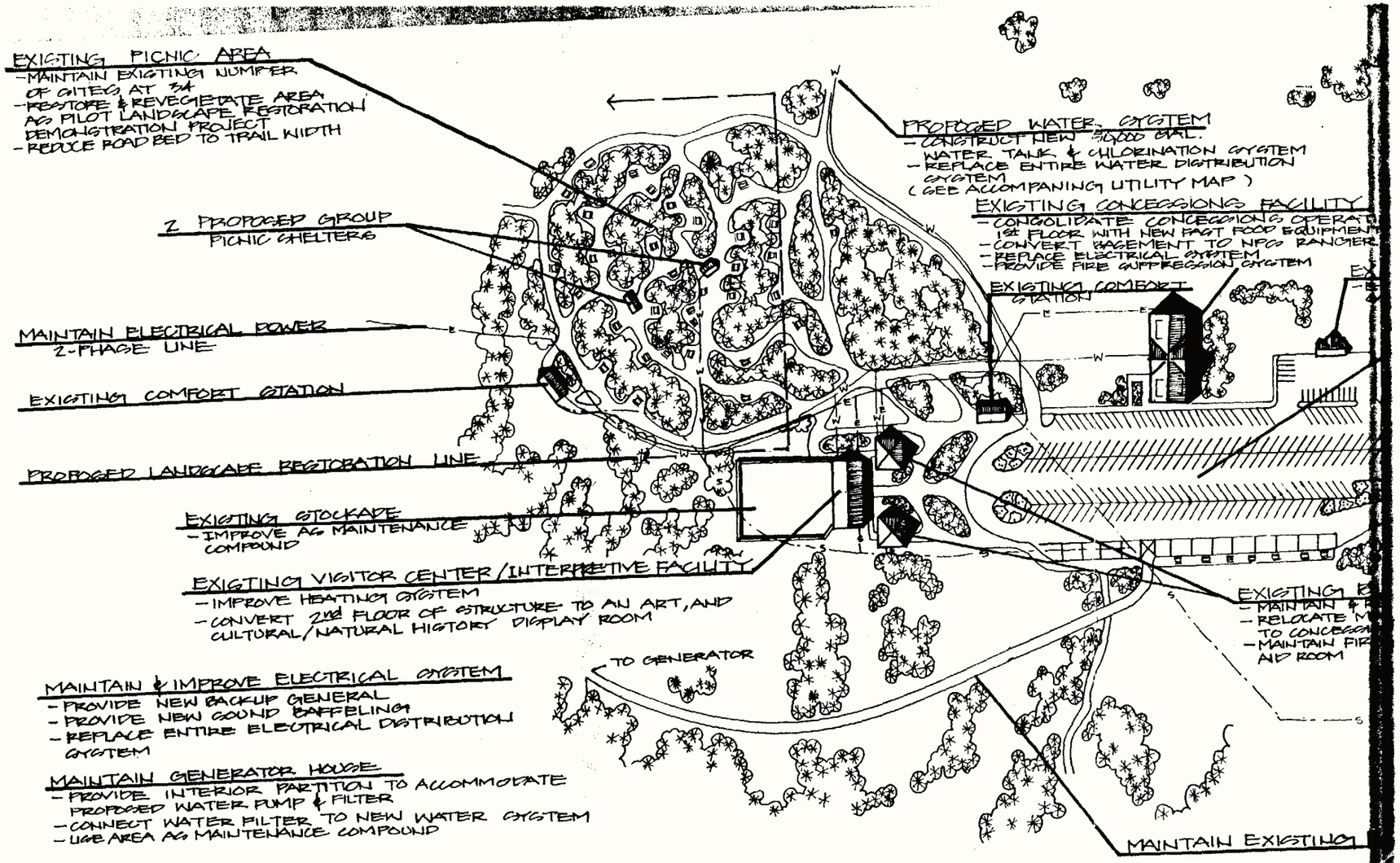
Visitor Use Facilities: The existing visitor center/museum will remain the focal point for interpretation. Minor interior improvements will include a new heating system, and a revised layout to improve circulation. Handicapped access will also be improved. New exhibits were installed in the summer of 1979.

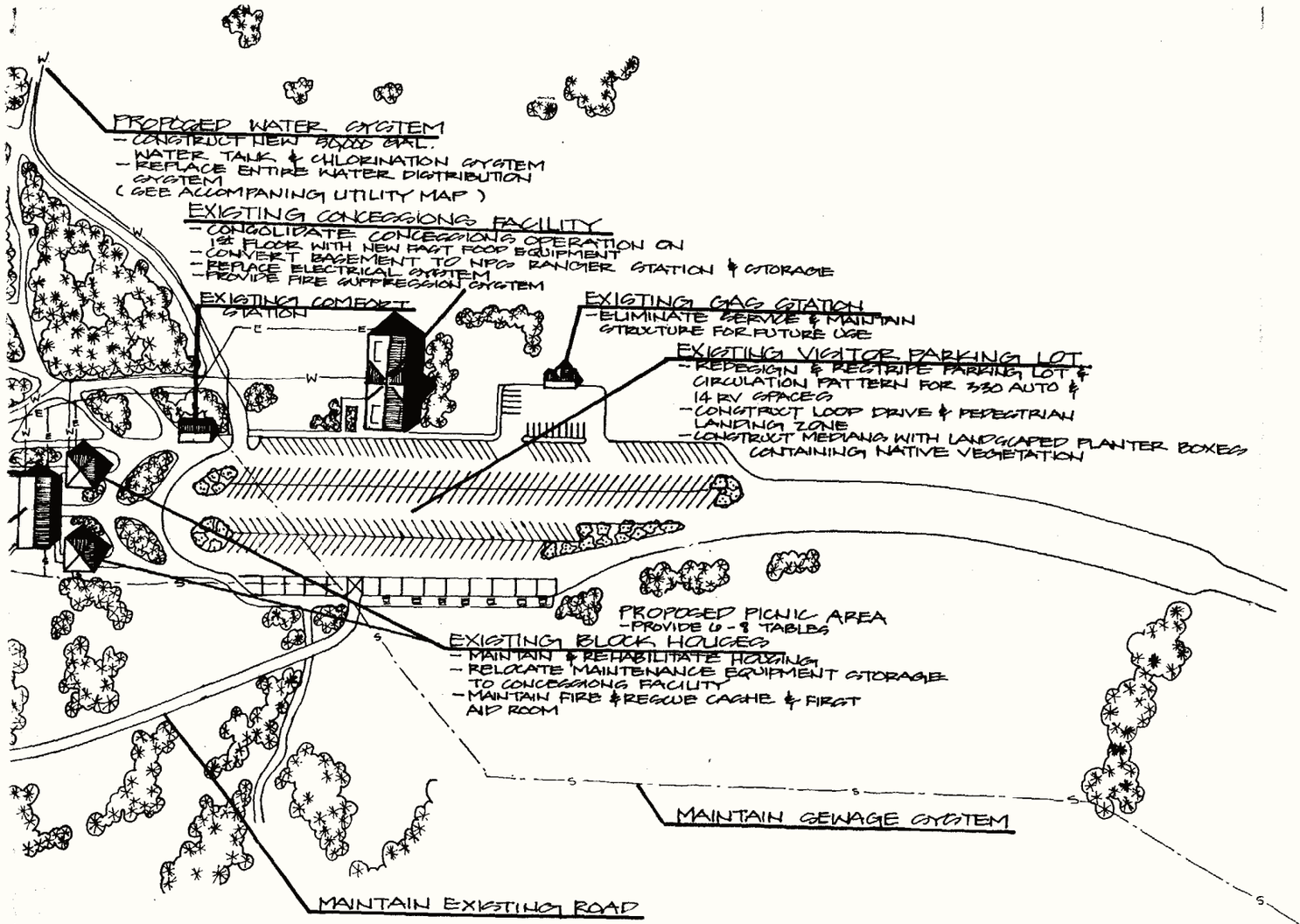
Concession food and curio sales will be consolidated on the main floor of the lodge to provide a more efficient operation and improved service. The sale of gasoline and related automotive supplies will be discontinued but gas will remain available on an emergency basis.

The existing picnic area will remain providing 30 sites. Two shelters for groups will be constructed and extensive landscape restoration will better define pedestrian circulation patterns, reduce erosion, and generally enhance the area. The present comfort station, a structure of historic and architectural significance, will receive minimal interior renovation.

The visitor parking area will be modified to improve traffic circulation. A one-way loop will be established with a pedestrian drop-off zone near the visitor center and comfort station. Parking will be provided for 300 cars and 14 to 18 larger vehicles (buses and campers). When the parking area at Sunrise and those at Sunrise Point and other areas along the road to Sunrise are filled to capacity, visitors will be informed at the White River Entrance that they may be turned back or have to wait at the intersection of the Sunrise/White River Campground roads. This proposal is designed to reduce the congestion and illegal off-pavement parking in the Sunrise area.

Major trails throughout the Sunrise area will be retained and better defined. Social trails, which have developed from visitors not using


EXISTING PICNIC AREA
-MAINTAIN EXISTING NUMBER OF SITES AT 34
-RESTORE & REVEGETATE AREA AS PILOT LANDSCAPE RESTORATION DEMONSTRATION PROJECT
-REDUCE ROAD BED TO TRAIL WIDTH
2 PROPOSED GROUP PICNIC SHELTERS
MAINTAIN ELECTRICAL POWER 2-PHASE LINE
EXISTING COMFORT STATION
PROPOSED LANDSCAPE RESTORATION LINE
EXISTING STOCKADE
-IMPROVE AG MAINTENANCE COMPOUND
EXISTING VISITOR CENTER/INTERPRETIVE FACILITY
-IMPROVE HEATING SYSTEM
-CONVERT 2nd FLOOR OF STRUCTURE TO AN ART, AND CULTURAL/NATURAL HISTORY DISPLAY ROOM
MAINTAIN & IMPROVE ELECTRICAL SYSTEM
-PROVIDE NEW BACKUP GENERAL
-PROVIDE NEW SOUND BAFFELING
-REPLACE ENTIRE ELECTRICAL DISTRIBUTION SYSTEM
MAINTAIN GENERATOR HOUSE
-PROVIDE INTERIOR PARTITION TO ACCOMMODATE PROPOSED WATER PUMP & FILTER
-CONNECT WATER FILTER TO NEW WATER SYSTEM
-USE AREA AS MAINTENANCE COMPOUND
PROPOSED WATER SYSTEM
-CONSTRUCT NEW 50,000 GAL. WATER TANK & CHLORINATION SYSTEM
-REPLACE ENTIRE WATER DISTRIBUTION SYSTEM
(SEE ACCOMPANING UTILITY MAP)
EXISTING CONCESSIONS FACILITY
-CONSOLIDATE CONCESSIONS OPERATI
1st FLOOR WITH NEW FAST FOOD EQUIPMENT
-CONVERT BASEMENT TO NPS RANGER
-REPLACE ELECTRICAL SYSTEM
-PROVIDE FIRE SUPPRESSION SYSTEM
EXISTING COMFORT STATION
TO GENERATOR
MAINTAIN EXISTING



SHORT RANGE PREFERRED ALTERNATIVE

SUNRISE DEVELOPMENT CONCEPT PLAN

MT. RAINIER NATIONAL PARK

100' 0' 15' 50' 100'

ON MICROFILM

105 | 40020
DSC | SEPT 79

designated trails, now crisscross the landscape causing severe damage to the extremely sensitive subalpine vegetation as well as a visual intrusion on the landscape. Landscape restoration efforts will be intensified to reduce erosion and restore native vegetation in the areas around buildings, the picnic area, along old road and utility scars, adjacent to primary access trails, and along the closed social trails.

The walk-in campground will remain and be rehabilitated. Old foundations will be removed, road scars restored, and campsites reorganized and better defined. A new vault toilet will replace the present flush-type comfort station. Water will continue to be provided at the campground.

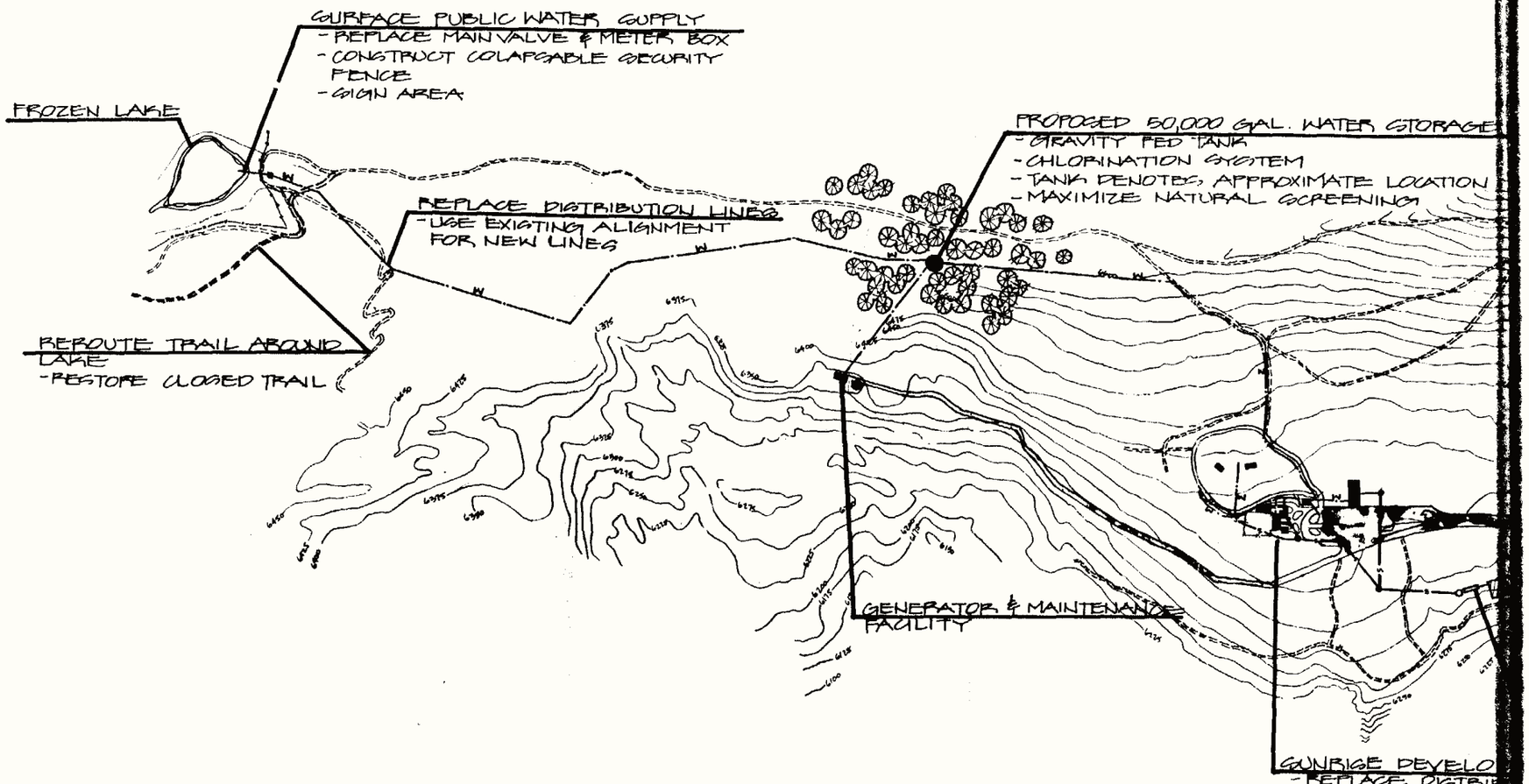
Management Facilities: The north and south blockhouses will be remodeled to house 6-8 National Park Service employees and 8-10 concessioner employees. This remodeling will be carefully designed to minimize future costs when the blockhouses are converted to other uses under the long-range plan. Existing non-residential functions located in the blockhouses will be relocated to the lodge.

The lodge will require extensive rehabilitation to meet fire, safety, and health codes. In the short-term, the use of the upper floors for employee housing will be discontinued and rehabilitation efforts will be concentrated on the main floor and lower floor/basement areas. The upper floors may be used for some storage. The ranger station, first aid facility, and maintenance work room and storage will be relocated from

the blockhouses to the lower floor and back portion of the main floor of the lodge. Some maintenance functions will be moved to the generator building. This plan eliminates conflicting occupancies in the various structures. Relocation of the ranger station will make it more accessible to visitors and will also provide visitor contact at the concession facility.

Utilities: The electrical distribution system will be replaced with the existing generator retained as the source of power. Additional sound proofing will be added to the generator building. The present sewage treatment system meets applicable codes and will be retained except for the replacement of the walk-in campground toilets with a vault toilet system.

Frozen Lake will continue to be used as the source of water with improvements to prevent contamination of the lake. The lake will be fenced with a collapsible fence (necessary because of snow creep), trails in the area will be removed or relocated, and signs will be posted to notify visitors that the area is closed. The distribution system will be replaced along existing utility line scars and a 50,000 gallon storage tank and chlorination system will be installed. These improvements will bring the water system into compliance with applicable State and Federal regulations.


SURFACE PUBLIC WATER SUPPLY
- REPLACE MAIN VALVE & METER BOX
- CONSTRUCT COLAPSABLE SECURITY FENCE
- SIGN AREA
FROZEN LAKE
REPLACE DISTRIBUTION LINES
- USE EXISTING ALIGNMENT FOR NEW LINES
REROUTE TRAIL AROUND LAKE
- RESTORE CLOSED TRAIL
PROPOSED 50,000 GAL. WATER STORAGE
- GRAVITY FED TANK
- CHLORINATION SYSTEM
- TANK DENOTES APPROXIMATE LOCATION
- MAXIMIZE NATURAL SCREENING
GENERATOR & MAINTENANCE FACILITY
SUNRISE DEVELO
- REPLACE DISTRIB

WATER SYSTEM PLAN

SUNRISE DEVELOPMENT CONCEPT PLAN

MT. RAINIER NATIONAL PARK

105 | 40021
DSC | SEPT 79

GH MICROFILM

Sunrise - Long-range Plan

The long-range plan will provide improved visitor facilities concentrated in the vicinity of the present visitor center. A much needed auditorium will be provided, concessioner services will be located close to the visitor center and picnic area, and a hostel will provide an opportunity for a limited number of visitors to stay overnight at Sunrise.

Visitor Use Facilities: The present visitor center will become the focal point for all visitor activities. The north blockhouse will be converted to a 100 seat audio-visual-multipurpose room with additional space for historical exhibits. The south blockhouse will house the ranger station/ office, information counter, backcountry and climbing registration space, first aid room, and a research-curatorial laboratory (open to the public on a special interest basis) where botany, plant propagation and landscape restoration studies will be conducted.

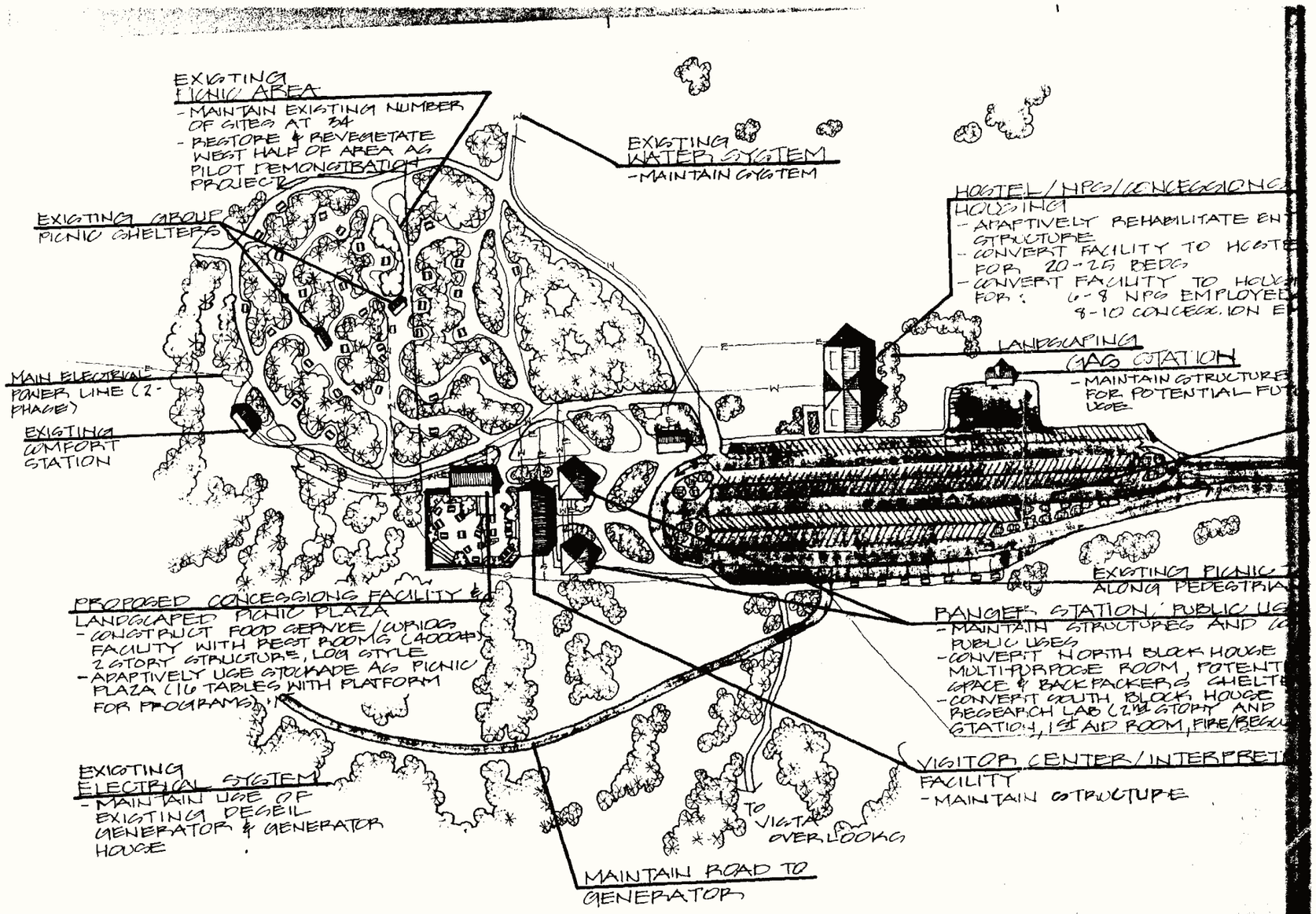
A new concession facility will be constructed on the north side of the stockade behind the visitor center and the stockade area will be converted to a landscaped picnic plaza with tables and planted areas of indiginous shrubs, grasses, and perennial flowers. The stockade (fence) will be retained and a sheltered platform for outdoor interpretive talks and programs will be incorporated into the design. The concession facility will be a 4,000 square foot, split level structure identical in style to the visitor center. Pedestrian access will be provided from the visitor center. Public restrooms would also be provided in the new concession facility.

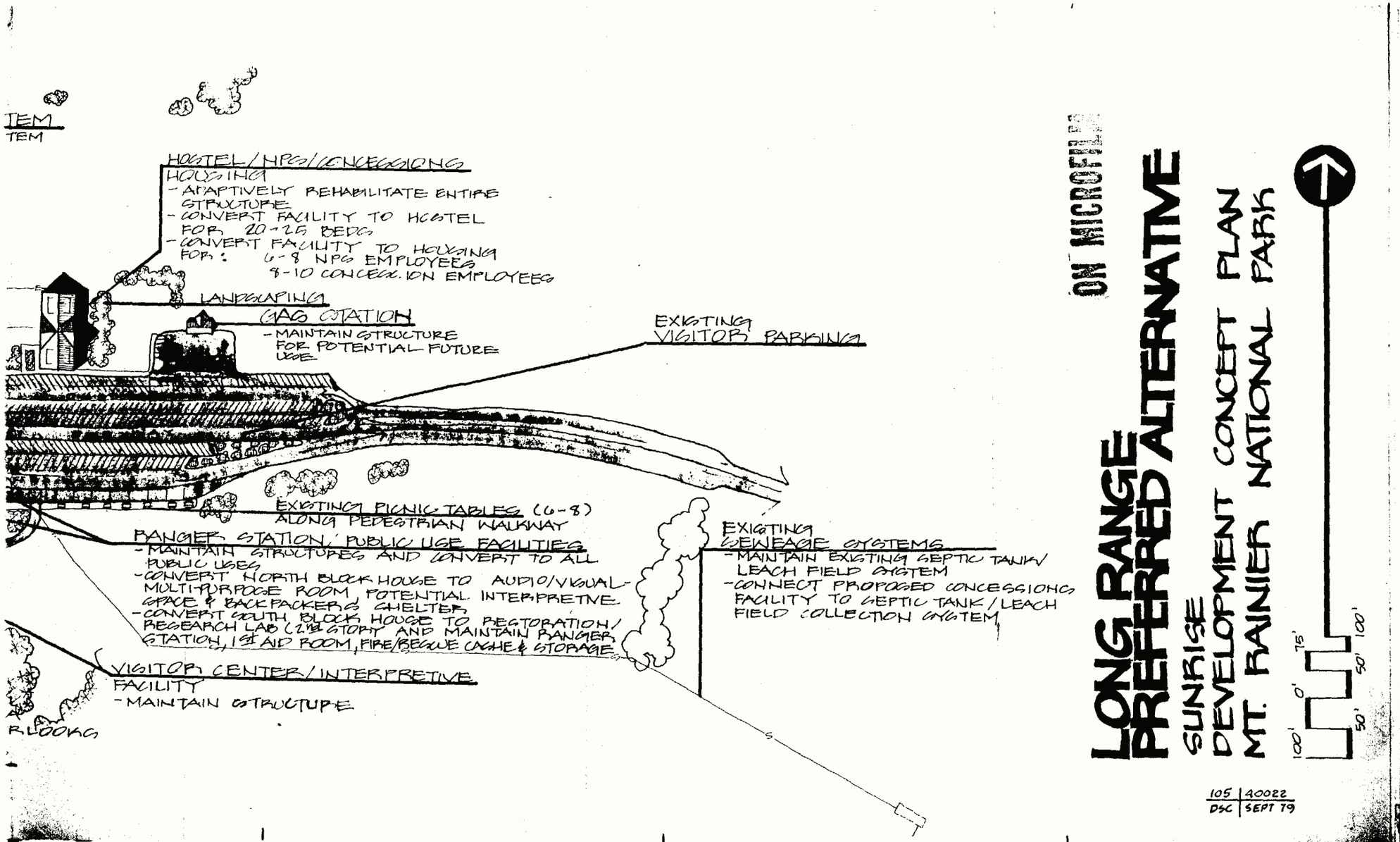
Other visitor facilities will remain as described in the short-term plan except that a hostel with 20-25 beds will be developed in the former concession lodge building. This will be a dormitory type hostel with common lounge area, bathrooms, and kitchen-dining area. There will also be a manager apartment and registration desk.

Management Facilities: Most functions (ranger station, first aid, etc.) located in the lower floor of the lodge will be returned to the blockhouses. The blockhouses will also provide space for storage and fire and rescue equipment. Major maintenance functions will be handled out of the White River Entrance facility although some work space will be provided in the generator building and the lower floor of the lodge.

Even though the lodge facility will receive improvements in the short-term phase, the structure will require extensive renovation to serve as living quarters. Mechanical systems, wiring, plumbing and roofing all need to be improved or replaced. New windows probably will be needed to provide light to living quarters on the upper floors.

The 18,000 square foot interior will be remodeled to accommodate four 4-bedroom dormitory units each with common bathroom, lounge, kitchen, and dining space, and two 2-bedroom apartment units in addition to the hostel development. This development will provide housing for both National Park Service and concessioner employees. Of the average 14


EXISTING PICNIC AREA
- MAINTAIN EXISTING NUMBER OF SITES AT 54
- RESTORE & REVEGETATE WEST HALF OF AREA AS PILOT DEMONSTRATION PROJECT
EXISTING WATER SYSTEM
- MAINTAIN SYSTEM
EXISTING ADOBE PICNIC SHELTERS
MAIN ELECTRICAL POWER LINE (2-PHASE)
EXISTING COMFORT STATION
HOSTEL / NPS / CONCESSIONS HOUSING
- ADAPTIVELY REHABILITATE EN STRUCTURE
- CONVERT FACILITY TO HOSTE FOR 20-25 BEDS
- CONVERT FACILITY TO HOUS FOR: 6-8 NPS EMPLOYEE 8-10 CONCESS. ION E
LANDSCAPING
GAS STATION
- MAINTAIN STRUCTURE FOR POTENTIAL FUT USE
EXISTING PICNIC ALONG PEDESTRIA
RANGER STATION, PUBLIC US
- MAINTAIN STRUCTURES AND PUBLIC USES
- CONVERT NORTH BLOCK HOUSE MULTI-PURPOSE ROOM, POTENT SPACE & BACKPACKERS SHELTE
- CONVERT SOUTH BLOCK HOUSE RESEARCH LAB (2ND STORY AND STATION, 1ST AID ROOM, FIRE/RESCU
PROPOSED CONCESSIONS FACILITY & LANDSCAPED PICNIC PLAZA
- CONSTRUCT FOOD SERVICE/SUPPLIES FACILITY WITH REST ROOMS (4000 SF) 2 STORY STRUCTURE, LOG STYLE
- ADAPTIVELY USE STOCKADE AS PICNIC PLAZA (16 TABLES WITH PLATFORM FOR PROGRAMS)
EXISTING ELECTRICAL SYSTEM
- MAINTAIN USE OF EXISTING DIESEL GENERATOR & GENERATOR HOUSE
VISITOR CENTER / INTERPRETI FACILITY
- MAINTAIN STRUCTURE
TO VISTA OVERLOOKS
MAINTAIN ROAD TO GENERATOR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TEM
HOSTEL/NPS/CONCESSIONS HOUSING
- ADAPTIVELY REHABILITATE ENTIRE STRUCTURE
- CONVERT FACILITY TO HOSTEL FOR 20-25 BEDS
- CONVERT FACILITY TO HOUSING FOR: 6-8 NPS EMPLOYEES
8-10 CONCESSION EMPLOYEES
LANDSCAPING
GAS STATION
- MAINTAIN STRUCTURE FOR POTENTIAL FUTURE USE
EXISTING VISITOR PARKING
EXISTING PICNIC TABLES (6-8) ALONG PEDESTRIAN WALKWAY
RANGER STATION/PUBLIC USE FACILITIES
- MAINTAIN STRUCTURES AND CONVERT TO ALL PUBLIC USES
- CONVERT NORTH BLOCK HOUSE TO AUDIO/VISUAL MULTIPURPOSE ROOM, POTENTIAL INTERPRETIVE SPACE & BACKPACKERS SHELTER
- CONVERT SOUTH BLOCK HOUSE TO RESTORATION/RESEARCH LAB (2ND STORY) AND MAINTAIN RANGER STATION, 1ST AID ROOM, FIRE/RESCUE CACHE & STORAGE
EXISTING SEWERAGE SYSTEMS
- MAINTAIN EXISTING SEPTIC TANK/LEACH FIELD SYSTEM
- CONNECT PROPOSED CONCESSIONS FACILITY TO SEPTIC TANK/LEACH FIELD COLLECTION SYSTEM
VISITOR CENTER/INTERPRETIVE FACILITY
- MAINTAIN STRUCTURE
R. LOOKS
ON MICROFILM
LONG RANGE PREFERRED ALTERNATIVE
SUNRISE DEVELOPMENT CONCEPT PLAN
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National Park Service employees living at Sunrise, 6 will be relocated to new accommodations at White River, leaving 8 employees to provide security and visitor protection. It is also anticipated that the number of concessioner employees can be reduced when a more efficient operation has been developed.

Utilities: The improvements provided in the short-term plan will serve the long-range plan with the addition of utility lines to serve the new concession facility and, possibly, the renovated lodge/dormitory.

The long-range plan for Sunrise will require coordination with the development at the White River Entrance to assure adequate employee housing. As detailed plans for both of these areas are prepared, phasing of development will be given careful consideration to assure minimal disruption to visitor services and management functions.

Tipsoo Lakes

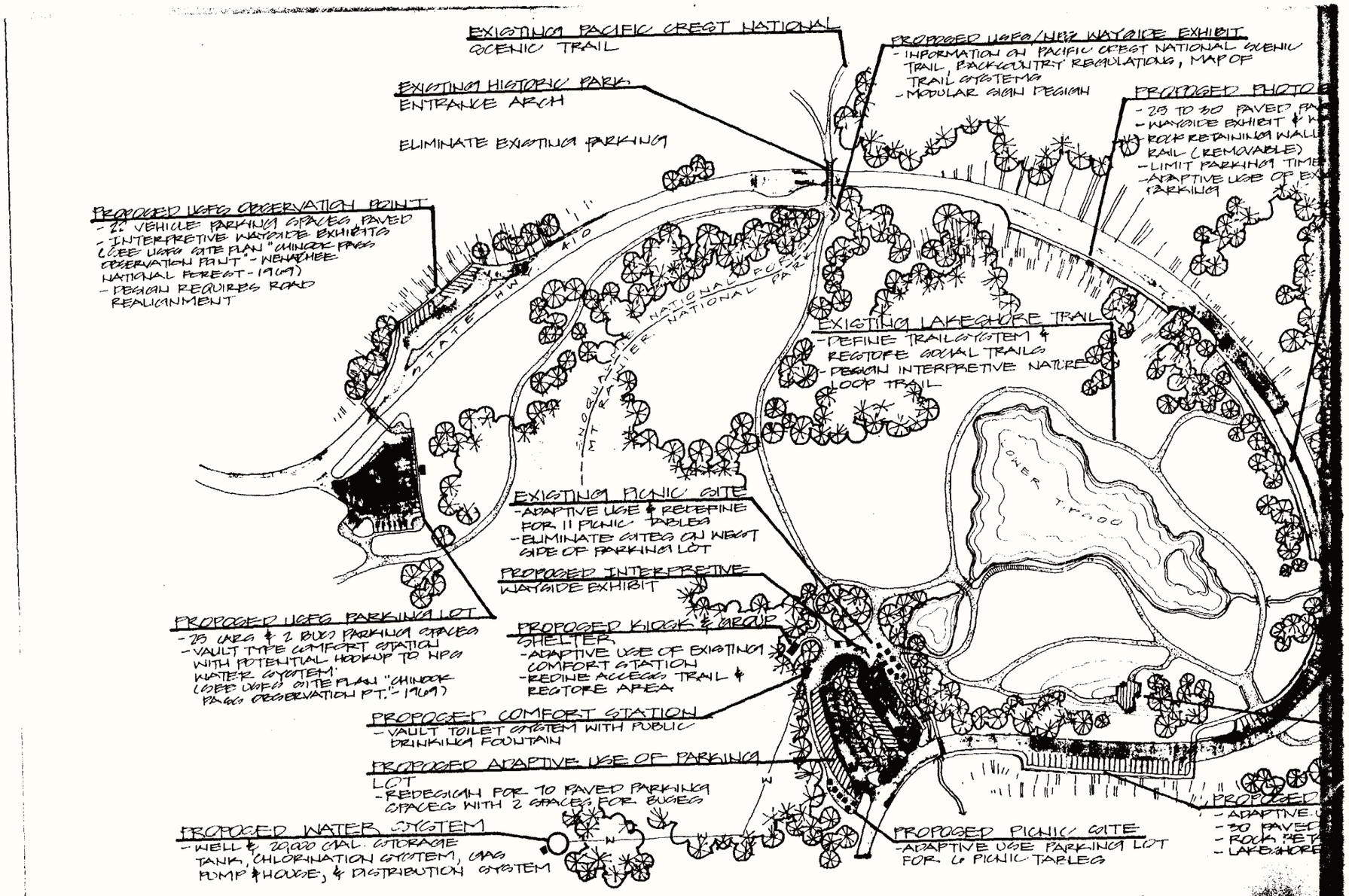
The development concept plan for the Tipsoo Lakes area recognizes that this area will remain a popular visitor destination point. The plan proposes modifications which will channel visitor use onto established trails and reduce the severe impact of ever increasing social trails. Road, trail, and facilities improvements will reduce resource impacts while improving the quality of the visitor experience.

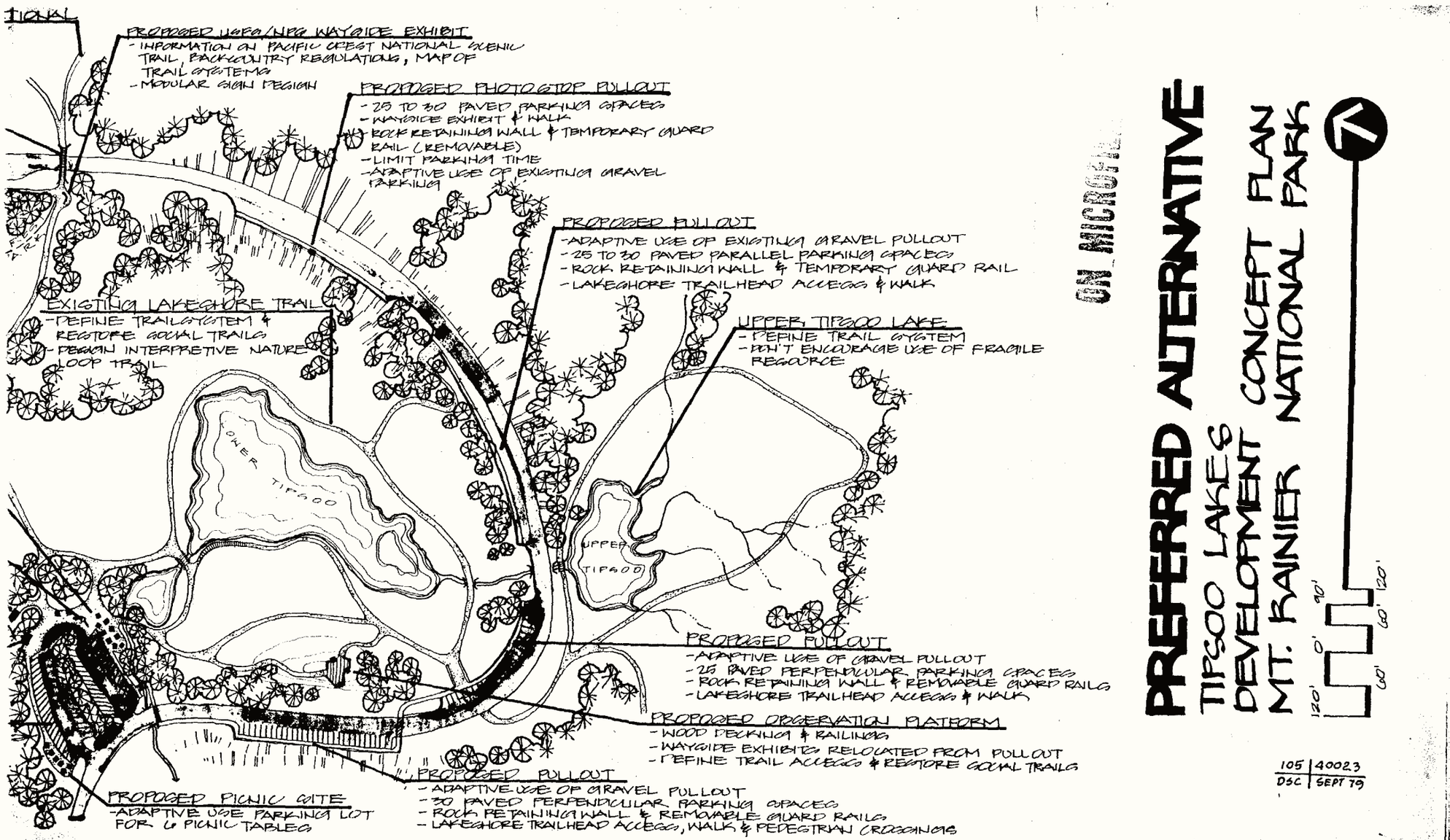
When staffing limitations permit, a seasonal interpreter will be stationed at Tipsoo Lakes to provide visitor contact, conduct interpretive walks and programs and to gently remind the visitors that the fragile sub-alpine environment suffers when they wander off trails. Wayside exhibits will reinforce this message and will provide interpretation during those times when personal services are not available.

Parking/Picnic Area: As a practical means of managing the heavy traffic congestion which occurs during peak visitor use periods redesign and re-surfacing is recommended for the parking area. The parking area will be redesigned to improve vehicle circulation and definition of parking spaces. Seventy (70) parking spaces will be provided in 2 areas separated by a landscaped median and connected by a one-way loop road. The existing median will be enlarged and the total area of paving reduced as a result of these actions.

Redefinition and reorganization of the picnic area is required to provide a better environment, to improve the visitor experience, and, at the same time, to reduce the use and impact near the stream outlet. Six picnic tables will be relocated to an area on the west side of the parking area. The remaining twelve sites will be better defined and re-organized.

A new comfort station is required to replace the existing outmoded facility with one which is fully accessible and offers better quality.


EXISTING PACIFIC CREST NATIONAL SCENIC TRAIL
EXISTING HISTORIC PARK ENTRANCE ARCH
ELIMINATE EXISTING PARKING
PROPOSED USES/NEW WAYSIDE EXHIBIT
- INFORMATION ON PACIFIC CREST NATIONAL SCENIC TRAIL, BACKCOUNTRY REGULATIONS, MAP OF TRAIL SYSTEMS
- MODULAR SIGN DESIGN
PROPOSED PHOTO
- 25 TO 30 PAVED PA
- WAYSIDE EXHIBIT &
ROCK RETAINING WALL
RAIL (REMOVABLE)
- LIMIT PARKING TIME
- ADAPTIVE USE OF EX
PARKING
PROPOSED USES OBSERVATION POINT
- 2± VEHICLE PARKING SPACES PAVED
- INTERPRETIVE WAYSIDE EXHIBITS
(SEE USES SITE PLAN "CHINOOK PASS OBSERVATION POINT" - WENATCHEE NATIONAL FOREST - 1969)
- DESIGN REQUIRES ROAD REALIGNMENT
STATE HWY 410
NORTH CASCADES NATIONAL PARK
SNOQUALMIE NATIONAL FOREST
EXISTING LAKESHORE TRAIL
- REFINE TRAIL SYSTEM & RESTORE SOCIAL TRAILS
- DESIGN INTERPRETIVE NATURE LOOP TRAIL
LOWER TIPSOO
EXISTING PICNIC SITE
- ADAPTIVE USE & REFINE FOR 11 PICNIC TABLES
- ELIMINATE SITES ON WEST SIDE OF PARKING LOT
PROPOSED INTERPRETIVE WAYSIDE EXHIBIT
PROPOSED USES PARKING LOT
- 25 CARS & 2 BUS PARKING SPACES
- VAULT TYPE COMFORT STATION WITH POTENTIAL HOOKUP TO HPG WATER SYSTEM
(SEE USES SITE PLAN "CHINOOK PASS OBSERVATION PT." - 1969)
PROPOSED KIOSK & GROUP SHELTER
- ADAPTIVE USE OF EXISTING COMFORT STATION
- REFINE ACCESS TRAIL & RESTORE AREA
PROPOSED COMFORT STATION
- VAULT TOILET SYSTEM WITH PUBLIC DRINKING FOUNTAIN
PROPOSED ADAPTIVE USE OF PARKING LOT
- REDESIGN FOR 10 PAVED PARKING SPACES WITH 2 SPACES FOR BUSES
PROPOSED WATER SYSTEM
- WELL &, 20,000 GAL. STORAGE TANK, CHLORINATION SYSTEM, GAS PUMP & HOUSE, & DISTRIBUTION SYSTEM
PROPOSED PICNIC SITE
- ADAPTIVE USE PARKING LOT FOR 6 PICNIC TABLES
PROPOSED
- ADAPTIVE
- 30 PAVED
- ROCK RET
- LAKESHORE


TIONAL
PROPOSED USFS/NPS WAYSIDE EXHIBIT
- INFORMATION ON PACIFIC CREST NATIONAL SCENIC TRAIL, BACKCOUNTRY REGULATIONS, MAP OF TRAIL SYSTEMS
- MODULAR SIGN DESIGN
PROPOSED PHOTOSTOP PULLOUT
- 25 TO 30 PAVED PARKING SPACES
- WAYSIDE EXHIBIT & WALK
- ROCK RETAINING WALL & TEMPORARY GUARD RAIL (REMOVABLE)
- LIMIT PARKING TIME
- ADAPTIVE USE OF EXISTING GRAVEL PARKING
PROPOSED PULLOUT
- ADAPTIVE USE OF EXISTING GRAVEL PULLOUT
- 25 TO 30 PAVED PARALLEL PARKING SPACES
- ROCK RETAINING WALL & TEMPORARY GUARD RAIL
- LAKESHORE TRAILHEAD ACCESS & WALK
EXISTING LAKESHORE TRAIL
- REFINE TRAIL SYSTEM & RESTORE SOCIAL TRAILS
- DESIGN INTERPRETIVE NATURE LOOP TRAIL
UPPER TIPSOO LAKE
- REFINE TRAIL SYSTEM
- DON'T ENCOURAGE USE OF FRAGILE RESOURCE
OWER TIPSOO
UPPER TIPSOO
PROPOSED PULLOUT
- ADAPTIVE USE OF GRAVEL PULLOUT
- 25 PAVED PERPENDICULAR PARKING SPACES
- ROCK RETAINING WALL & REMOVABLE GUARD RAILS
- LAKESHORE TRAILHEAD ACCESS & WALK
PROPOSED OBSERVATION PLATFORM
- WOOD DECKING & RAILINGS
- WAYSIDE EXHIBITS RELOCATED FROM PULLOUT
- REFINE TRAIL ACCESS & RESTORE SOCIAL TRAILS
PROPOSED PULLOUT
- ADAPTIVE USE OF GRAVEL PULLOUT
- 30 PAVED PERPENDICULAR PARKING SPACES
- ROCK RETAINING WALL & REMOVABLE GUARD RAILS
- LAKESHORE TRAILHEAD ACCESS, WALK & PEDESTRIAN CROSSINGS
PROPOSED PICNIC SITE
-ADAPTIVE USE PARKING LOT FOR 6 PICNIC TABLES
ON MICROFILM
PREFERRED ALTERNATIVE
TIPSOO LAKES
DEVELOPMENT CONCEPT PLAN
MT. RAINIER NATIONAL PARK
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The new comfort station will be an oil recirculating vault toilet system. The former comfort station will be converted to a shelter for group picnics and interpretation and could serve as a ranger/visitor contact point.

A wayside exhibit emphasizing the fragile nature of the area, will be located along the main approach from the parking area to the lake. The main trail access for all visitors, including the handicapped, will be redefined and directed with signage; other existing access trails will be closed and restored.

Lakeshore Trails: The present lakeshore trail system around both lakes is well defined and established. Attempts will be made to further define this system and to eliminate and restore social trails leading to this system. The main trails will be marked with metal wire buried underground to aid in locating the trail system in late spring/early summer. A self guiding nature loop around the lake will be provided to interpret the subalpine lakeshore and meadow environment.

At the top of a natural knoll, exceptional views of both Lower Tipsoo Lake to the east and Mount Rainier to the west are found. As a result, this spot is naturally a popular destination and is accessible by numerous social trails. In order to better accommodate this traditional use area while minimizing the impacts associated with the area's social trails, a wood overlook platform will be constructed and a well defined trail leading to the facility will be established. The Mather Memorial Plaque will be relocated to this overlook.

Roadside Parking/Pullouts: As a better means of managing the heavy vehicle traffic and congestion along the highway during peak visitor use periods, the four major parking areas will be better defined and paved. One of these will be a photo stop with a parking time limit and two will provide major points of lakeshore trail access. A total of 115 defined and paved parking spaces will be provided.

To eliminate the unsightly slopes along the parking areas, rock retaining walls will be constructed and new drainage culverts will be installed to channel runoff. The rock retaining walls will be topped with removable railings to facilitate snow removal. The two lakeshore trail access points will require the construction of rock stairs in steep portions of the road bank and improvements to existing social trails to define specific trails for the visitor to follow.

The historic entrance arch at the park boundary will be retained and preserved.

Problems on the Forest Service side of Chinook Pass are directly related to the problems at Tipsoo Lake. Mount Baker/Snoqualmie National Forest will be encouraged to improve roadside pullouts and trail head parking facilities. Wayside exhibits proposed on Forest Service property could be prepared by the National Park Service in cooperation with the Forest Service. This would assure a unified interpretive theme for the entire area.

Utilities: A new water system is required to replace the obsolete surface water collection and storage system. A well will be drilled and a 20,000 gallon storage tank, chlorination system, and distribution system will be installed. The well will be served by a water pump located in a small pumphouse approximately 400 feet west of the parking area. A fuel tank for the pump will also be located in this area. Water for the proposed Forest Service trailhead development could be supplied from this system but would require a larger pump and the installation of a pipeline in the road shoulder.

The above actions will result in visual enhancement through elimination of scarred road banks and excessive social trails, while retaining the features which attract visitors to this beautiful area. The plan can be implemented in two phases with improvements at the parking/picnic area and around the lakeshores being accomplished in a relatively short time. Improvement along the highway corridor can be accomplished in a second phase.

APPENDIXES

CONSULTATION/COORDINATION

Washington State Department of Social and Health Services;

- Mr. Moe Batra (district engineer).
- Subject: Compliance with State water quality regulations.

USFS, Mt. Baker and Snoqualmie N.F.;

- Don Cambell, Forest Supervisor.
- Jim Montegue, Deputy Forest Supervisor.
- Jan Siles, District Ranger.
- Subject: Development Concepts for Carbon River and Chinook Packs.

U.S.F.S., Wenatchee N.F.;

- Dick Buscher, Deputy Forest Supervisor.
- Cal Dunnel, Recreation Staff.
- Dick Simmons, Resource Assistant, Naches District.
- Bob Cole, District Ranger, Natches District.
- Subject: Development Concepts for Chinook Pass and Tipsoo Lakes.

Washington State Department of Ecology;

- Tom Cook, R.S., Solid Waste Management, Division.
- Subject: Solid Waste Disposal, Flood Plain Regulations

USGS - Water Resources Division;

- Contact: Herb Person.
- Subject: Floodplain Data.

Enumclaw Sewage Treatment Plant;

- Contact: Ken Nordby
- Subject: Capacity of Enumclaw Sewage Treatment Facility to Handle Effluent from White River Entrance.

Government Services Inc., Sunrise Concessions Facility;

- Contacts: Al Shramm, General Manager
  Rick Giles, Facility Manager
- Subject: Development Concepts for the Sunrise Concessions Facility.

SUMMARY OF ESTIMATED CAPITAL COSTS

Figures are construction costs in 1979 dollars; planning, design, supervision, and other costs are not included.

Carbon River/Ipsut Creek	642,900
White River Entrance - Short-term	1,264,900
- long-range	1,439,100
Sunrise -- Short-term	819,600
-- Long-range	1,311,400
Tipsoo Lakes	441,500
TOTAL	$5,919,400

SUMMARY OF COSTS BY PROJECT TYPES AND AREAS

There will be additional costs which are not reflected in this estimate. Signs, wayside exhibits and other related items will be considered when specific project programming documents (10-238's) are prepared.

CARBON RIVER UNIT

Carbon River Entrance:

- 20 paved parking spaces	20,000
- Vault toilet	35,000
- Riverbank stabilization	5,000
- Remodel entrance kiosk	1,000
	61,000

Maintenance Area:

- Remove 4 structures/fence maintenance area	5,400
- Riverbank Stabilization	30,000
- Four stall vault toilet	25,000
	60,400

Water System:

- Relocate pumphouse & storage tank, connect to well, provide for fire protection	8,000
- Improve water distribution system	6,500
- Landscape restoration (old pump house site)	1,000
	15,500

Road Improvements:

- Widen 500 to 1000 L.F. of road	10,000
- Stabilize 100 to 200 L.F. of riverbank	5,000
- Provide gravel surfacing	35,000
	50,000

Ipsut Creek:

Ranger Station/Dormitory/Apartment	
- Construct 2 dorm units & 1 apartment - 3600S.F.	180,000
- Access road (gravel) - 200 L.F.	2,000
- Parking area - 5 vehicles	2,500
- 1000 gal. propane tank and fence	7,500
- Riverbank Stabilization	15,000
	207,000
Picnic Area/Trailhead Parking	
- Site clearing and grading	6,000
- 20 gravel parking spaces	8,000
	14,000
Water System	
- Drill ± 40' well with casing	3,000
- Construct pumphouse-install pump	6,000
- Install 50,000 gal. storage/chlorination tank	125,000
- Install 1300 to 1500 L.F. 2" & 6" PVC pipe	20,000
	154,000
Sewage system	
- Construct 2 comfort stations	75,000
- Install septic tank and leach field	6,000
	81,000
TOTAL-CARBON RIVER UNIT	$642,900

WHITE RIVER ENTRANCE -- SHORT-TERM

Entrance Area:

- Construct 2 entrance kiosks	20,000
- Remodel ranger station	16,000
- Provide 18 visitor parking spaces	18,000
- Lane striping	2,000
- Replace comfort station	35,000
- Construct 16 paved trailer spaces and access road (13,000 S.F. paved area)	45,000
- 200 L.F. 18" culvert	6,000
- 2000 L.F. dirt/gravel trail	1,400
- 840 L.F. paved walks	1,900
	145,300

Employee Housing:

- Relocate maintenance office and remodel structure for housing	60,000
- Install trailer with snowshed	40,000
- Remodel ranger station to apartment	20,000
- Six parking spaces	6,000
- Connect laundry/shower to utility systems	2,000
	128,000

Maintenance Facilities:

- Convert CCC/Mess hall to maintenance office - fire/rescue cache	25,000
- Convert generator building to maintenance shop/ storage	5,000
- Install restroom/wash facilities	3,000
	33,000

Utilities:

Electrical System	
- 7 miles 3 phase underground line	369,600
- Distribution system replacement	40,000
- One 150 KVA transformer	3,500
- Construct new generator house and relocate generator for standby power	15,000
	428,100

Sewage Treatment System	
- Sewage plant (15,000 gal. capacity and disposal field	265,000
- 180 L.F. access road	8,500
- 600 S.F. Lab/control building	21,000
- 1860 L.F. 4" PVC sewer pipe	36,000
	330,500
Water System	
- Drill 40 to 60 foot well w/casing	5,000
- Pump, chlorination system, pumphouse	15,000
- 50,000 gal. storage tank	125,000
- 1990 L.F. 6" PVC water pipe	25,000
- 6 fire hydrants	10,000
	180,000
Fuel System	
- New pumps, pumphouse and two 2,000 gal. tanks	20,000
TOTAL SHORT-TERM	$1,264,900

WHITE RIVER ENTRANCE -- LONG-RANGE

Employee Housing:

- Triplex housing unit w/utilities	122,200
- Apartment/dormitory housing w/utilities	702,000
- 580 L.F. paved access road	27,300
- 42 parking spaces	35,000
- Convert CCC building to community building/emergency bunkhouse	30,000
- 1765 L.F. paved trails & walks with handicapped curbs and ramps	10,000
	926,500

Maintenance Facility:

- 12,500 S.F. part two-story maintenance building with offices, shops, vehicle storage, and utility connections	439,500
- Access road, paved parking and storage	38,000
- 600 L.F. fencing and gates	2,000
- Relocate fuel pumps	5,000
	484,500

Demolition/Restoration:

- Road obliteration - 1115 S.Y.	3,400
- Scarify/restore excess roads	5,000
- Building demolition	17,200
- Building site restoration	2,500
	28,100

TOTAL -- LONG-RANGE $1,439,100

TOTAL -- WHITE RIVER ENTRANCE $2,704,000

SUNRISE -- SHORT-TERM

Visitor Center:

- Heating system	32,000
	32,000

Blockhouses:

- Conversion to living quarters	150,000

Concession Lodge:

- Repair/replace electrical system	50,000
- Fire detection/suppression system	82,700
- Interior renovation - fast food, curios, offices, storage	100,000
	232,700

Picnic Area:

- Landscape restoration - 2.58 acres	10,500
- Two group picnic shelters	8,000
	18,500

Walk-in Campground:

- One vault toilet	10,000
- Remove comfort station, foundations, and restore 5 acres	20,000
	30,000

Visitor Parking Area:

- Re striping (probable annual cost)	5,200
- Loop drive and pedestrian landing with curbing & landscaped medians	10,000
- 24 planter boxes and plants	7,200
	$22,400

Utilities:

Electrical System	
- Replace 1,450 LF underground distribution line 36" deep	35.000
- 7 transformer vaults	7,000
- Sound proof generator building	10,000
- Remodel generator building for maintenance storage and repair roof	30,000
- Install 75 KVA transformer	2,000
	84,000
Water System	
- Replace 3,940 L.F. lines w/6" PVC pipe	60,000
- Install 1,300 L.F. collapsible fencing	20,000
- Install 50,000 gal. water tank	160,000
- 9 water connections with meters & backflow preventers at lodge	10,000
	250,000
TOTAL -- SHORT-RANGE	$819,600

Note: Landscape restoration is a continuing project in the Sunrise area - separate funds have not been identified in this estimate.

SUNRISE -- LONG RANGE

Concession Facility -- Picnic/Interpretive Plaza:

- Log style concession building ± 4,000 S.F.	400,000
- Utility connections	3,000
- 16 picnic tables	2,400
- 8,580 S.F. paved and terraced plaza	35,000
- 5,720 S.F. landscaping	5,600
- 750 S.F. interpretive shelter/platform	18,000
	464,000

Blockhouse Conversion:

- North blockhouse conversion to auditorium/multipurpose room and exhibit/storage space (AV equipment not included)	30,000
- South blockhouse conversion to first aid, offices, and lab	25,000
	$55,000*

Total assumes that short-term remodeling to living quarters was done in a manner that would allow easy conversion to long-range proposals.

Hostel/Employee Housing:

- Convert lodge to hostel and employee dormitories and apartments - 18,000 S.F.	792,400
TOTAL LONG-RANGE	$1,311,400
TOTAL SUNRISE	$2,131,000

TIPSOO LAKES

Parking/Picnic Area

- 70 parking space & landscaped median	50,000
- Comfort station-recirculating vault	50,000
- Convert former comfort station to group picnic/interpretative shelter with trail improvement and landscape restoration	13,500
- 1200 S.F. landscape restoration in picnic area	5,000
	118,500

Lakeshore Trail System:

- 500 L.F. trail restoration	3,000
- 3500 L.F. underground locator wire	2,000
- Viewing platform - 1600 S.F. wood deck and rails	27,000
- 800 L.F. defined trails to platform	8.000
	40,000

Roadside Pullout/Parking Areas

- 1800 L.F. rock retaining walls and two rock stairways, removable guard rails	50,000
- 2800 S.Y. parking surfacing	23,000
- 8330 S.Y. road resurfacing	67,000
- 1650 L.F. 12" culverts	24,000
	164,000

Water System:

- 40 foot well with casing	3,000
- 20,000 tank and chlorination system	100,000
- Pump, pumphouse and fuel tank	6,000
- 550 L.F. 2" PVC water pipe	10,000
	119,000
TOTAL TIPSOO LAKES	$441,500

(Approximately $20,000 in improvements on Forest Service property are not included in this estimate.)

PLANNING TEAM

Denver Service Center

Benjamin Brant - Team Captain
Douglas Cornell, Jr. - Project Manager
Robert Ryan - Landscape Architect
Don Tiernan - Environmental Scientist
Julie Phillips - Student Environmental Scientist
David Kruse - Student Landscape Architect
Felton Brunson - Engineer

Mount Rainier National Park

Bill Briggle - Superintendent
Larry Henderson - Management Assistant

Pacific Northwest Regional Office

Steve Crabtree - Concessions Specialist
Don Barret - Hydrologist

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, and parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration. NPS ~~1487~~ 1487