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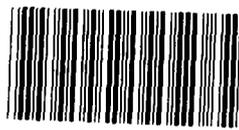
General Accounting Office

The National Park Service Has Improved Facilities At 12 Park Service Areas

In October 1980 GAO reported on 172 facilities--lodges, employee dormitories, water and sewer systems, bridges, and tunnels--in 12 National Park Service areas that did not comply with all Federal or State health or safety standards.

The Park Service has corrected or started correcting about 80 percent of the deficient lodges and employee dormitories, about 60 percent of the deficient water and sewer systems, and about 26 percent of the deficient bridges and tunnels identified in the 1980 report.

The Park Service plans to correct most of the remaining facilities by the end of fiscal year 1987.



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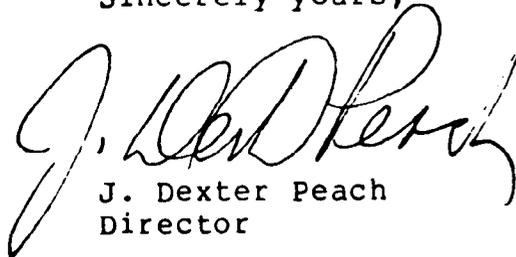
The Honorable Malcolm Wallop
Chairman, Subcommittee on
Public Lands and Reserved Water
Committee on Energy and Natural
Resources
United States Senate

Dear Mr. Chairman:

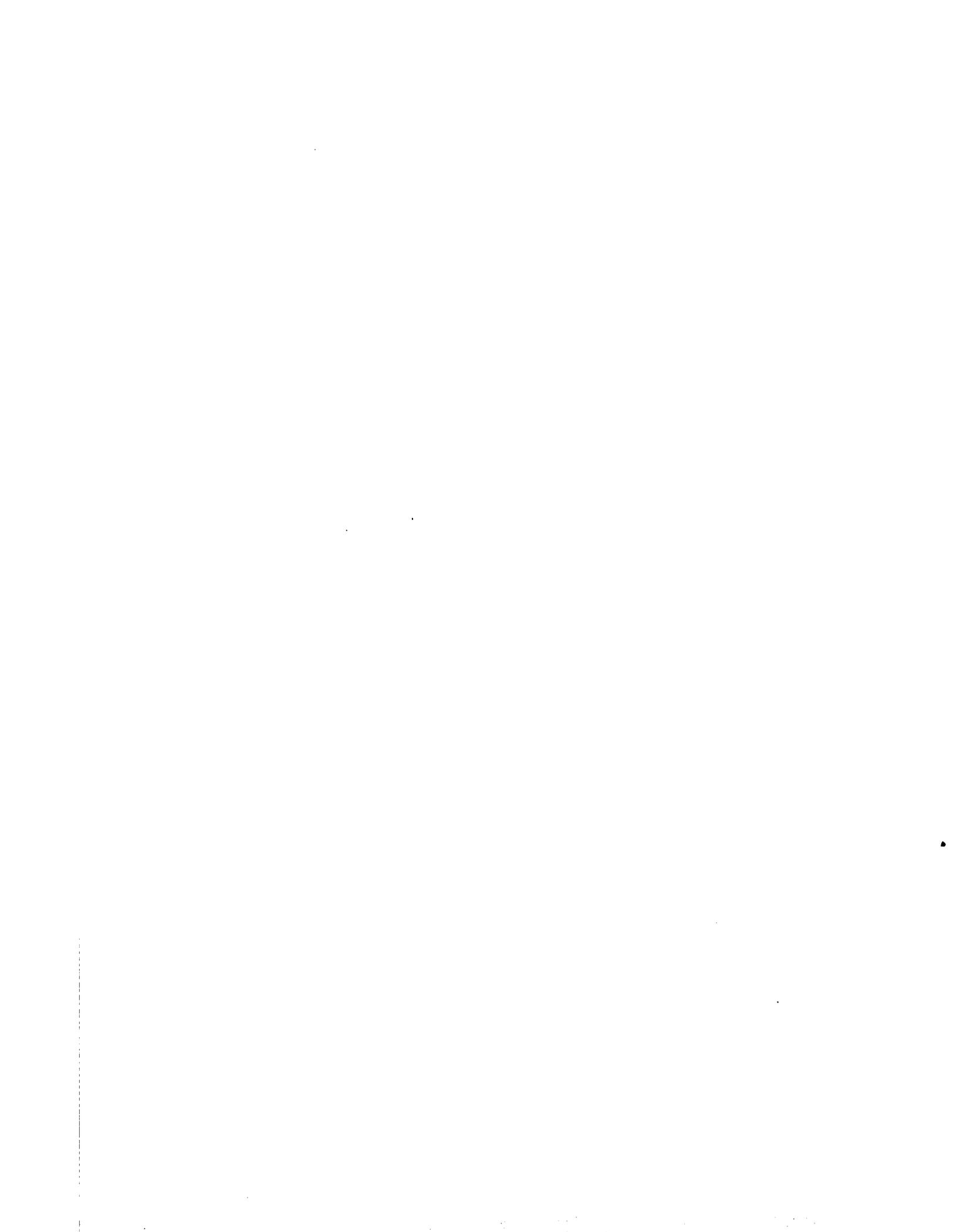
As requested in your November 24, 1981, letter, this report discusses the actions taken by the National Park Service to correct deficient facilities which we identified in our 1980 report entitled, "Facilities in Many National Parks and Forests Do Not Meet Health and Safety Standards" (CED-80-115).

We are sending copies of the report to the Director, Office of Management and Budget; the Secretary of the Interior; the Director, National Park Service; and other interested parties.

Sincerely yours,



J. Dexter Peach
Director



D I G E S T

Following an October 1980 GAO report identifying 172 facilities at 12 Park Service areas which failed to meet health and safety standards, the Congress, the National Park Service, and park concessioners placed high priority on correcting the deficiencies. As of July 1982, nearly all of the deficient facilities had been improved or were scheduled to be improved by the end of fiscal year 1987.

GAO's report--"Facilities in Many National Parks and Forests Do Not Meet Health and Safety Standards" (CED-80-115, Oct. 10, 1980)--identified 85 hazardous lodges and dormitories, 60 substandard water and sewer systems, and 27 substandard bridges and tunnels at 12 National Park Service areas. The facilities needed to be repaired or upgraded or to have their use restricted to protect visitors' and employees' health and safety. The deficient facilities were in the following areas:

- Blue Ridge Parkway (North Carolina and Virginia).
- Crater Lake National Park (Oregon).
- Everglades National Park (Florida).
- Glacier National Park (Montana).
- Grand Canyon National Park (Arizona).
- Isle Royale National Park (Michigan).
- Denali (formerly Mount McKinley) National Park (Alaska).
- Mount Rainier National Park (Washington).
- Rocky Mountain National Park (Colorado).
- Voyageurs National Park (Minnesota).
- Yellowstone National Park (Wyoming, Montana, and Idaho).
- Yosemite National Park (California).

In fiscal year 1981 the Congress appropriated \$16.5 million to correct critical health and

safety deficiencies in the 333-unit National Park System, including some deficiencies at the 12 areas on which GAO had reported. For example, fire walls, doors, and ceilings were installed in Yellowstone National Park's Old Faithful Inn and Lake Hotel and a bridge was replaced in Denali National Park. In fiscal year 1982 the Service began a special program to rehabilitate or replace unsafe park facilities, spending \$23 million to meet health and safety needs. (See p. 5.)

The Service has negotiated contracts with Park concessioners requiring them to correct unsafe conditions, primarily in lodges and employee housing. For example, the Service's 1979 contract with the Everglades National Park concessioner required improvements to be made to a motel and other facilities over a 15-year period. After GAO's 1980 report was issued, the contract was changed to require that battery-operated smoke detectors be installed by December 31, 1981, instead of December 1984. In other cases concessioners improved facilities even when not required by their contracts. For example, the concessioner at Yosemite National Park had spent \$425,000 for fire safety improvements to the Ahwahnee Hotel that the Service contract had not required. (See p. 6.)

The Service has corrected or plans to correct by the end of fiscal year 1987 the 85 hazardous lodges and dormitories GAO identified in its October 1980 report. (See p. 8.)

GAO's 1980 report described 53 drinking water systems that did not meet State or Federal standards. As of July 1982 the Service had corrected or was correcting 33 of these systems and planned to correct 19 additional systems before fiscal year 1988. Correction of the remaining system is planned for fiscal year 1990. (See pp. 11 to 13.)

According to the 1980 report, seven sewer systems were poorly designed, overused, or malfunctioning and did not comply with Environmental Protection Agency or State standards. As of July 30, 1982, three of these systems had been or were being corrected. The Service plans to correct two of the other systems by fiscal year 1988 and the remaining two by fiscal year 1991. (See pp. 13 and 14.)



The 1980 report described 27 bridges and tunnels that needed repairs. The Service had made the needed repairs to 7 bridges and tunnels and planned to repair 17 more by fiscal year 1988. The Service plans to correct one bridge in fiscal year 1997 and two others when final inspection results are obtained from the Federal Highway Administration. The Service plans to monitor closely the condition of the bridges and tunnels and has restricted or will restrict their use when warranted. (See pp. 14 and 15.)

AGENCY COMMENTS

Interior said that the report was very constructive and agreed with its findings and conclusions. The National Park Service expects continued and substantial progress toward full correction of health and safety problems in its facilities. (See p. 16.)

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The Chairman, Subcommittee on Public Lands and Reserved Water, Senate Committee on Energy and Natural Resources, asked GAO to follow up on its October 1980 report.

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ABBREVIATIONS

EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
GAO	General Accounting Office

CHAPTER 1

INTRODUCTION

In our October 10, 1980, report, 1/ we said that lodges, employee dormitories, water and sewer systems, bridges, and tunnels in 12 National Park Service areas did not comply with Federal and/or State health and safety standards. The 12 areas were:

Blue Ridge Parkway (North Carolina and Virginia).
Crater Lake National Park (Oregon).
Denali (formerly Mount McKinley) National Park (Alaska).
Everglades National Park (Florida).
Glacier National Park (Montana).
Grand Canyon National Park (Arizona).
Isle Royale National Park (Michigan).
Mount Rainier National Park (Washington).
Rocky Mountain National Park (Colorado).
Voyageurs National Park (Minnesota).
Yellowstone National Park (Wyoming, Montana, and Idaho).
Yosemite National Park (California).

Our 1980 report described many park facilities that did not meet standards established to protect the health and safety of visitors and employees. The Chairman of the Subcommittee on Public Lands and Reserved Water, Senate Committee on Energy and Natural Resources, asked us to report on what the Department of the Interior's National Park Service had done to correct deficient facilities described in our report or to restrict their use. 2/

1/"Facilities in Many National Parks and Forests Do Not Meet Health and Safety Standards" (CED-80-115).

2/The chairman also asked us to report on what the Forest Service and other agencies have done in response to our 1980 report; to verify the backlog of health and safety deficiencies needing correction; and to look at the processes leading to budget requests for funds needed to keep facilities at, or bring them to, acceptable public health and safety standards. We agreed to review (1) the Park Service's actions to resolve the health and safety deficiencies previously reported, (2) the Park Service's estimate of its current health and safety backlog and its systems for identifying, setting priorities for, and funding health and safety projects, and (3) the total construction backlog for Federal recreation areas managed by the Park Service, Forest Service, Corps of Engineers, Bureau of Reclamation, and Fish and Wildlife Service. This report presents the results of the first review. The results of the other two reviews will be reported separately.

HEALTH AND SAFETY REQUIREMENTS AND STANDARDS

As discussed in our 1980 report, many laws and standards apply to Park Service facilities, including the following:

- The Safe Drinking Water Act (Public Law 93-523), enacted December 16, 1974, requires Federal agencies that own or operate drinking water systems to comply with Environmental Protection Agency (EPA) standards. Amendments to the act in 1977 require Federal agencies to comply with State standards in States having an EPA-approved program.
- The Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), as amended in 1977, set standards and minimum requirements for controlling and abating water pollution and require Federal agencies to comply with all State, local, and regional requirements in the States having EPA-approved programs.
- The Solid Waste Disposal Act of 1976 (Public Law 94-580) requires Federal agencies to dispose of solid waste, including sewage and sewage sludge, according to EPA and State standards.
- The National Fire Protection Association standards and the Uniform Building Code provide guidance to Service and non-Federal inspectors in evaluating Service lodges and employee housing.

Following enactment of the Surface Transportation Assistance Act of 1978 (Public Law 95-599), which requires inspection of all publicly used bridges, the Service contracted with the Federal Highway Administration (FHWA), Department of Transportation, for a bridge inspection program. As part of this program, FHWA inspects Service tunnels.

OBJECTIVE, SCOPE, AND METHODOLOGY

As the chairman requested, we reviewed the actions taken at the 12 Service areas to correct the deficient facilities we referred to in our 1980 report. The 12 areas, although composing only a small portion of the 333 units in the National Park System, are geographically dispersed and include some of the largest and most frequently visited areas. Although our review covered all 12 areas, we did not attempt to review all deficient facilities in each area.

For all 12 areas we corresponded with park superintendents and a Service regional director to determine what corrections had been made at the facilities. As agreed with the chairman's office, we visited Denali, Glacier, Mount Rainier, and Yellowstone National Parks to observe and verify the corrections made.

We discussed corrections made with park and concessioner officials at the four areas and reviewed applicable documentation.

We followed up on reported corrections with Park Service and concessioner officials at the other eight areas through telephone discussions and correspondence and obtained from them additional documentation where we judged it necessary. For example, to determine the corrections made to Grand Canyon National Park lodges, employee housing, and sewer systems, we corresponded with the park superintendent, safety officer, chief of maintenance, and concessioner staff. We analyzed inspection reports, contracts, development plans, and budget proposals.

To corroborate information provided by the Service and concessioner officials at the areas, we interviewed officials and obtained additional documentation as necessary at the Service's regional offices, Denver Service Center, and headquarters. For example, to verify information pertaining to Grand Canyon National Park, we

- had numerous telephone conversations with the regional safety officer, budget officer, and concessions specialist;
- obtained and analyzed development plans, inspection reports, and concessioner contracts; and
- discussed corrections made to facilities with the Service's headquarters and Denver Service Center staffs and analyzed pertinent funding requests and budgetary planning documents.

We were able to obtain cost data for some corrections made to park facilities when provided by Service officials. However, we were unable to establish cost data for corrections made to most facilities because of the numerous and complex funding sources.

We made several judgments to categorize the deficient facilities as (1) substantially corrected, (2) being corrected, or (3) correction planned before September 30, 1987.

- We categorized a facility as substantially corrected if (1) nearly all its deficiencies had been corrected and (2) the corrections were operational. For example, we categorized lodges as substantially corrected if the Service or concessioners had corrected most deficiencies, such as a lack of or inadequate smoke detection systems, fire alarm systems, and emergency exits, and if only one or two remaining items were planned for correction. In such a case most deficiencies had been corrected and visitors and employees received immediate benefit from the added protection.
- If the Service had made nearly all the improvements to a water system but the system was not operational pending electrical hookups, we categorized the facility as being

corrected because visitors and employees were not yet receiving benefits from the corrections.

--We categorized a deficient facility as planned for correction if a project to correct the deficiency or deficiencies appeared in the Service's 5-year Service-wide development plan. We selected the September 30, 1987, cutoff date for the "planned for correction" category to coincide with the 5-year planning process.

We made our review in accordance with generally accepted government auditing standards.

--replacing unsanitary surface source water systems at Grand Canyon National Park (\$170,000), and

--replacing unsafe bridges at the Wild Basin area in Rocky Mountain National Park (\$111,000).

Park Service contracts have required park concessioners to correct deficient lodges and employee housing. For example, in 1979 the Service entered into a 15-year contract with a concessioner to manage the motel and other facilities at the Flamingo area in Everglades National Park. The contract required the concessioner to make improvements costing \$1,679,000 during the life of the contract. After GAO's 1980 report was issued, the Service renegotiated the contract to require, among other things, that battery-operated smoke detectors be installed in all motel rooms and cottage units by December 31, 1981, instead of December 1984 as the original contract required. This work has been completed. At Glacier National Park, the Service entered into a 25-year contract beginning January 1, 1981, that requires the concessioner to make \$1,750,000 of life safety and other improvements by December 31, 1985. As of July 30, 1982, improvements made by the concessioner at the 221-room Many Glacier Lodge included installation of a new fire alarm system, installation of additional pipe and sprinkler heads for the sprinkler system, rebuilding 5 fire escape exit doors and hallways, and hanging 120 new fire-rated doors.

Although not required by their contracts, some concessioners, concerned about fire safety, have corrected deficient facilities on their own. The concessioner manager at Yosemite National Park told us that after the 1980 MGM Grand Hotel fire in Las Vegas, Nevada, the concessioner at Yosemite's Ahwahnee Hotel spent \$425,000 to correct the hotel's fire safety deficiencies.

RESTRICTING USE OF FACILITIES

In our 1980 report we recommended that the Secretary of the Interior take immediate action to correct health and safety problems or restrict the use of facilities that do not meet health and safety standards. In addition to taking action to correct many of the problems we had reported, the Service has closed or restricted the use of some facilities to protect visitors and employees. For example, the superintendent at Yosemite National Park has prohibited the use of two water systems at Lake Eleanor and Miguel Meadows until improvements are made or the systems are dismantled. The Quartz Creek campground and its deficient water system at Glacier National Park were closed to visitors. Also, in the spring of 1981, all the bridges in Denali National Park were posted with load limits recommended by FHWA.

FACILITY IMPROVEMENTS HAVE BEEN MADE OR PLANNED

The Service has corrected many of the deficient facilities referred to in our 1980 report. However, the rate of progress

CHAPTER 2

NATIONAL PARK SERVICE HAS SUBSTANTIALLY

IMPROVED SUBSTANDARD FACILITIES AT THE 12 AREAS

The Service made substantial progress in fiscal years 1981 and 1982 in improving the 172 deficient facilities at the 12 areas included in our October 1980 report. These deficient facilities included 85 hazardous lodges and employee dormitories, 60 substandard drinking water or sewer systems, and 27 substandard bridges and tunnels.

As of July 1982 the Service had completed or started corrections on about 80 percent of the deficient lodges and employee dormitories, about 60 percent of the deficient water and sewer systems, and about 26 percent of the deficient bridges and tunnels. The Service plans to correct by the end of fiscal year 1987 all remaining lodges and employee housing deficiencies, most of the remaining water and sewer systems, and most bridges and tunnels. Although several of the deficiencies we identified (primarily bridges) are not scheduled or expected to be corrected until after fiscal year 1988, the Service has restricted or will restrict the use of these and other facilities to protect visitors' and employees' health and safety.

The progress in improving facilities is a direct result of the special emphasis that the Congress, the Service, and park concessioners have given to correcting deficiencies. In fiscal year 1981 the Congress appropriated special funds of \$16.5 million to correct critical health and safety deficiencies, including some of those at the 12 areas covered in our 1980 report. Also in 1981, the Service requested funds for a park restoration and improvement program. The Service programed about \$22.7 million of the fiscal year 1982 funds for this program for health and safety projects. The Service also negotiated new contracts with concessioners requiring them to correct facility deficiencies. In some cases concessioners made improvements not required by their contracts.

FUNDING TO CORRECT HEALTH AND SAFETY DEFICIENCIES

The \$16.5 million the Congress appropriated in 1981 was intended to correct the most critical deficiencies. For example, the Service installed fire walls, doors, and ceilings in Yellowstone National Park's Old Faithful Inn and Lake Hotel and replaced a bridge in Denali National Park. The \$22.7 million in park restoration and improvement funds for 1982 went for such projects as

--rewiring unsafe buildings and trailer courts in Yellowstone National Park (\$40,000),

- Enclosed stairwells with fire-resistant materials.
- Installed emergency lighting in corridors and stairwells.
- Replaced electrical wiring systems.
- Replaced rotted firehoses.

The following table shows the status of the lodge and employee housing corrections as of July 30, 1982, at the areas we reviewed. As the table indicates, deficiencies in most of these facilities had been or were being corrected.

Status of Lodge and Dormitory Corrections
as of July 30, 1982

National Park Service area	Substan- tially corrected	Being corrected	Correction planned before 9/30/87	Correction not planned before 9/30/87	Total
Blue Ridge Parkway	2	0	0	0	2
Crater Lake National Park	0	1	0	0	1
Everglades National Park	0	24	0	0	24
Glacier National Park	27	0	0	0	27
Grand Canyon National Park	7	0	16	0	23
Denali National Park (note a)	1	0	0	0	1
Mount Rainier National Park	1	0	0	0	1
Voyageurs National Park	0	0	1	0	1
Yellowstone National Park	3	0	0	0	3
Yosemite National Park	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
Total	<u>43</u>	<u>25</u>	<u>17</u>	<u>0</u>	<u>85</u>

a/Since our 1980 report was issued, the Congress changed the name of Mount McKinley National Park to Denali National Park and Preserve.

has differed by type of facility. The Service's associate director for management and operations told us that the lodges and employee housing had been the most hazardous and thus received the highest priority for improvement. The following table shows the status of corrections at the 12 areas.

Status of Facility Corrections
as of July 30, 1982

<u>Type of deficient facility</u>	<u>Substantially corrected</u>	<u>Being corrected</u>	<u>Correction planned before 9/30/87</u>	<u>Correction not planned before 9/30/87</u>	<u>Total</u>
Lodges and employee housing	43	25	17	0	85
Water systems	19	14	19	1	53
Sewer systems	2	1	2	2	7
Bridges and tunnels	1	6	17	3	27

Lodges and employee housing

The Service has many old wood-frame lodges and employee dormitories, some over 50 years old, that had multiple fire safety deficiencies but were still in use when we made our previous review. Although the structures may have been considered safe when built, they do not meet more current safety codes. For example, the Uniform Building and National Fire Protection Association codes now require smoke alarms, fire alarms, sprinkler systems, multiple exits, fire-retardant material in hallways and stairwells, and emergency lighting in stairwells. Our 1980 report disclosed that 85 lodges and employee dormitories in 10 of the 12 areas we visited had fire safety or structural deficiencies.

As of July 1982, when we completed our followup review, the Service had made substantial efforts to correct the deficiencies, particularly in the lodge-type structures that house large numbers of people. The Service and concessioners had made the following types of corrections:

- Installed corridor and room smoke detection systems.
- Installed sprinkler systems or repaired existing ones.
- Added exits.
- Added fire-resistant surfaces to walls and installed fire-rated doors.

Corrections made or planned at Yellowstone, Mount Rainier, and Grand Canyon National Parks are discussed in the following sections.

Yellowstone National Park

Yellowstone National Park is located in the northwestern corner of Wyoming and portions of eastern Idaho and southern Montana. We reviewed the conditions of three of the park's major wood-frame lodges. Old Faithful Inn is a 360-room structure that can accommodate about 1,045 overnight guests. The inn was built in 1904, with additions in 1913 and 1927. Mammoth Motor Inn is a 4-story, 104-room structure that can accommodate about 365 overnight guests. It was built in 1913 and extensively remodeled in 1935. Lake Hotel, a 4-story, 201-room structure built in 1889, can accommodate about 600 overnight guests.

Our 1980 report disclosed that these lodges had many fire safety deficiencies, including inadequate fire detection, fire alarm, and fire suppression systems; too few and poorly designed fire escapes; flammable interior surfaces; and electrical system hazards. According to the park contracting officer, the Service has spent or plans to spend about \$5.6 million and a new concessioner has spent about \$1.2 million to correct the deficiencies. At Old Faithful Inn, for example, corrections have included

- eliminating dead-end corridors by installing new fire exits and exterior stairwells,
- adding fire-resistive materials to corridors and enclosing transoms,
- installing new ventilation hoods as part of a kitchen rehabilitation, and
- installing a large water storage reservoir and improving the distribution system to provide enough volume and pressure for fire protection.

The Service safety engineer said that when additional modifications underway or planned for fiscal years 1982 and 1983 were completed, the three lodges would meet current National Fire Protection Association standards. At Old Faithful Inn these modifications were to include (1) adding wire glass to the windows near one of the exterior fire exits, (2) treating the roof shingles with a fire-resistive material, (3) enclosing two interior stairwells, and (4) installing a fire-warning system to six guest-rooms on the lodge atrium.

Mount Rainier National Park

Mount Rainier National Park, which is about 80 miles southeast of Seattle, Washington, has a large wood-frame lodge that can accommodate about 280 overnight guests. The 116-room, 4-story Paradise Inn was completed in 1917 with an adjacent annex built in 1922. Our 1980 report disclosed that the inn (1) was highly combustible, (2) did not have a sprinkler system, (3) did not have fire separation walls and fire doors, (4) needed exit and corridor improvements, and (5) had electrical wiring that was a direct invitation to a fire. Heavy snows had also altered the inn structurally, causing the building to lean significantly.

The Service has substantially rehabilitated the structure at a cost of about \$3.3 million. As of July 1982 the Service had

- added fire-protective materials to walls and stairwells;
- added a new fire-sprinkler system throughout;
- installed fire-rated doors, walls, and mechanical devices;
- added new exit stairs where needed;
- installed new stair railings and various window protection devices; and
- replaced the electrical wiring in the entire structure and installed new transformers.

The Service corrected the inn structurally by straightening the lobby and dining wing, installing steel support braces on one side of the inn, and adding cement pods under the building to support vertical beams.

According to the park superintendent, the inn will comply with fire protection and uniform building codes once fire-protective material is added to the inside walls of guestrooms, which is planned for fiscal year 1986.

Grand Canyon National Park

Grand Canyon National Park, located in the northwestern corner of Arizona, includes the entire Grand Canyon, which stretches 227 miles along the Colorado River. Our 1980 report discussed deficiencies in 4 visitor and 19 employee accommodations located on the canyon's north and south rims. For example, the El Tovar Hotel on the south rim is a 4-story, wood-frame structure built in 1905. This concessioner-owned hotel has 77 rooms and can accommodate 249 overnight guests. We reported that the hotel (1) was very flammable, (2) had unprotected interior stairs, (3) lacked adequate fire escapes from the top floor, and (4) had an inadequate water supply to properly operate the sprinkler system.

At the time of our followup, the concessioner had corrected or planned to correct all deficiencies except the water supply system, which is a Service responsibility. The concessioner had spent about \$2.7 million to replace the old wood exterior, insulate exterior walls with a fire retardant, renovate the fire-sprinkler system, install a complete smoke detection system in all rooms and corridors, install smoke-activated door closure devices, install exit signs and emergency lights, and enclose interior stairs with fire-rated materials. In addition, the concessioner plans in fiscal year 1983 to modify a service stairway to allow an additional fire escape route from the lodge's top floor.

To improve water distribution on the south rim, the Service has a \$12.9 million project scheduled for fiscal year 1985. According to the park's chief of maintenance, this project will solve the water supply problems at the El Tovar Hotel.

The 19 employee accommodations all had similar types of safety deficiencies. For example, the eight employee buildings on the north rim had (1) open stairwells, (2) inadequate fire exits, (3) deteriorated firehoses, (4) inadequate fire detection and alarm systems, (5) hazardous electrical wiring, and (6) inadequate emergency lighting in corridors and stairwells.

In July 1982 the Service completed a comprehensive design plan for north rim development, which calls for the existing concessioner housing and most of the Service employee housing to be replaced with new structures. According to the park's assistant superintendent, in fiscal year 1983 the park will be advertising a new contract for concessioner operations on the north rim. He said that the contract will require the concessioner to provide new housing for its employees in place of three existing housing units. The cost of the construction had not been determined, but the Service expects the housing to be completed by the end of 1985.

Park officials have corrected deficiencies in existing employee housing on the north rim or have restricted its use. The park's safety officer told us that, except for the entrance station, smoke detectors and fire extinguishers were added to all units and those units now meet minimum National Fire Protection Association standards. He said that the entrance station is restricted from overnight use until smoke detectors and fire extinguishers are added to meet the standards.

Water systems

In 1980 we reported that 53 drinking water systems in five parks did not meet State or Federal standards. In several cases park visitors and employees had become ill by drinking water from substandard systems. As of July 1982 the Service had corrected or was correcting most drinking water system deficiencies, as the following table shows.

Status of Water System Corrections
as of July 30, 1982

<u>National Park Service area</u>	<u>Substan- tially corrected</u>	<u>Being corrected</u>	<u>Correction planned before 9/30/87</u>	<u>Correction not planned before 9/30/87</u>	<u>Total</u>
Glacier National Park	9	0	7	0	16
Isle Royale National Park	1	3	2	0	6
Rocky Mountain National Park	1	2	1	0	4
Yellowstone National Park	5	2	1	0	8
Yosemite National Park	<u>3</u>	<u>7</u>	<u>8</u>	<u>1</u>	<u>19</u>
Total	<u>19</u>	<u>14</u>	<u>19</u>	<u>1</u>	<u>53</u>

The corrections made or planned at Glacier and Yosemite National Parks are discussed in the following sections.

Glacier National Park

Glacier National Park is located in northwestern Montana along the crest of the Continental Divide. The park encompasses more than a million acres of active glaciers, alpine meadows, deep river valleys, and rocky mountain peaks. Our 1980 report said that 16 drinking water systems in Glacier National Park did not meet EPA, Public Health Service, and Montana State drinking water standards.

As of July 30, 1982, 8 of those 16 water systems had been repaired or replaced and met all standards. The Park Service had closed one system and the campground it served. The park's civil engineer said that the other seven drinking water systems are scheduled for rehabilitation in 1984.

Yosemite National Park

Yosemite National Park, located about 200 miles east of San Francisco, California, encompasses about 760,000 acres of wilderness back country and deep, glacially carved valleys. In our 1980 report we discussed 19 drinking water systems in the park that did not meet California State drinking water standards. Deficiencies included using surface water without proper treatment which, according to a California health service official, will not protect users

from contracting such diseases as giardiasis. The Service estimated that the total cost of bringing the 19 water systems into compliance with California drinking water standards would be about \$7.8 million.

As of July 1982, 10 of the water systems either met California standards, were closed to public use, or were being corrected. Corrections included installing treatment plants and drilling wells to eliminate surface water intakes. Two additional systems were recently closed to use, and one system will either be corrected or closed by fiscal year 1988. Five other water systems, including the large Yosemite Valley system, are scheduled to be corrected before fiscal year 1988. Corrections to the remaining water system, Tuolumne Meadows, are planned for fiscal year 1990.

Sewer systems

Our 1980 report showed that seven sewer systems in three national parks were poorly designed, overused, or malfunctioning and did not comply with EPA and applicable State standards. The following table shows the progress the Service has made to correct the substandard sewer systems.

Status of Sewer System Corrections
as of July 30, 1982

National Park Service area	<u>Substan- tially corrected</u>	<u>Being corrected</u>	Correction planned before <u>9/30/87</u>	Correction not planned before <u>9/30/87</u>	<u>Total</u>
Glacier National Park	0	1	2	0	3
Grand Canyon National Park	1	0	0	2	3
Voyageurs National Park	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
Total	<u>2</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>7</u>

As the table indicates the Service has substantially corrected the sewer system at Voyageurs National Park. At Glacier National Park the Service was correcting one of the three substandard sewer systems and was completing preliminary plans to correct the other two systems in fiscal year 1984. At Grand Canyon National Park, the Service had corrected one of the sewer systems but did not plan to correct the other two systems until fiscal years 1990 and 1991.

Some sewer systems at Grand Canyon National Park have existed for over 20 years. Our 1980 report said that the sewer systems serving overnight accommodations at Phantom Ranch, Indian Gardens,

and Grand Canyon Village did not comply with Arizona State and Public Health Service standards. The Phantom Ranch and Indian Gardens systems had saturated leach fields and human waste was being discharged above ground. The Grand Canyon Village system had deteriorated sewer lines laid in common trenches with water lines, posing a danger of contaminating the drinking water.

The Service had installed a new treatment plant and collection system at Phantom Ranch in June 1982 at a cost of about \$2.9 million. According to the park's chief of maintenance, this system now meets Arizona State and Public Health Service standards. The sewer projects for Indian Gardens and Grand Canyon Village, estimated to cost a total of \$4 million, have relatively low funding priorities and are not scheduled to be funded until fiscal years 1990 and 1991. According to the Service's chief of design, however, part of the hazard at Grand Canyon Village will be eliminated when a new water distribution system, planned for fiscal year 1985, will place the water lines in separate trenches from the sewer lines.

Bridges and tunnels

In 1980 we reported that 27 bridges and tunnels in 3 of the 12 areas were structurally deficient or were hazardous because of unlined tunnel ceilings. The following table shows the status of these bridges and tunnels at the time of our followup.

Status of Bridge and Tunnel Corrections
as of July 30, 1982

<u>National Park Service area</u>	<u>Substan- tially corrected</u>	<u>Being corrected</u>	<u>Correction planned before 9/30/87</u>	<u>Correction not planned before 9/30/87</u>	<u>Total</u>
Blue Ridge Parkway	0	0	8	0	8
Glacier National Park	0	5	1	2	8
Denali National Park	<u>1</u>	<u>1</u>	<u>8</u>	<u>1</u>	<u>11</u>
Total	<u>1</u>	<u>6</u>	<u>17</u>	<u>3</u>	<u>27</u>

The Service's associate director for management and operations told us that the Service plans to monitor closely the condition of the bridges and tunnels that have not been corrected and has posted load limits on bridges to restrict heavy vehicles from using them until they can be repaired or replaced. For three bridges for which correction is not planned before fiscal year 1988 the Service

plans to correct one bridge in fiscal year 1997 and the other two when final inspection results are obtained from FHWA.

Of the bridges and tunnels identified in our 1980 report as not complying with FHWA standards, more than 70 percent were in the Blue Ridge Parkway and Denali National Park areas. The status of the corrective actions in these two areas is discussed in the following sections.

Blue Ridge Parkway

The Blue Ridge Parkway extends 469 miles over the southern Appalachians in western Virginia and North Carolina, between the Shenandoah and Great Smoky Mountains National Parks. The parkway's primary role is to provide a scenic route for leisure travel and recreational experiences.

In our 1980 report we described eight unlined or partially lined tunnels in the Blue Ridge Parkway. FHWA reports listed these eight tunnels as safety hazards. Our 1980 report described how water seepage in the tunnels could freeze on the roadway in the winter, forming ice. In addition, the freeze-thaw cycles in the winter months tend to loosen rocks from the unlined tunnel sections, subjecting motorists to the hazards of falling rocks. The superintendent who had recognized these hazardous conditions proposed rehabilitating and upgrading the eight tunnels in March 1977. The August 13, 1981, 5-year construction program for the Service's southeast region provides for lining and portal work on all eight tunnels for the 1985-87 period. The cost estimate for this work is about \$5.7 million.

Denali National Park

Denali National Park is located 255 miles north of Anchorage, Alaska. The park encompasses about 2 million acres of mountain scenery, dominated by Mount McKinley, North America's highest peak. Our 1980 report said that 11 bridges in Denali National Park did not meet FHWA standards and were structurally deficient.

As of July 30, 1982, one bridge had been replaced with a culvert and construction had begun on a new bridge to replace another. Repair or replacement of eight of the other nine bridges was scheduled for late 1982-85. The Service plans to correct the remaining bridge when final inspection results are received from FHWA.

CONCLUSIONS

The Congress and the Service have placed a high priority on the funding necessary to correct health and safety deficiencies in lodges and employee dormitories, water and sewer systems, and bridges and tunnels, including those at the 12 Service areas we reported on in October 1980. The Park Service has also required

concessioners to correct deficiencies or has limited the use of deficient facilities. In addition, concessioners have repaired lodges and dormitories, not required by their contracts, at several parks.

These actions have resulted in the correction or planned correction of nearly all the facilities with health and safety deficiencies identified in our 1980 report.

AGENCY COMMENTS

Interior said that the report was very constructive and agreed with its findings and conclusions. The National Park Service expects continued and substantial progress toward full correction of health and safety problems in its facilities. Interior stated that methods have been developed to inventory, inspect, and report major preventive maintenance and rehabilitation needs. Interior believes that these methods will ensure that urgent health and safety projects are quickly identified, priority assigned, and resources allocated for corrective action.

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