

*Environmental Assessment/  
Finding of No Significant Impact*

**HETCH HETCHY ROAD  
AND DRAINAGE IMPROVEMENTS**

October 23, 1998

**YOSEMITE NATIONAL PARK  
OFFICE OF FLOOD RECOVERY  
CALIFORNIA**

**UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE**

OCT 26 '98



United States Department of the Interior

NATIONAL PARK SERVICE  
Pacific West Region  
600 Harrison Street, Suite 600  
San Francisco, California 94107-1372

Act	Info	Initial	Date
	Sept		
✓	Dist. Sept		
	Ch. Strategic Mgt.		
	Ch. GMP		
	Safety Officer		
	Admin. Officer		
	Ch. Conservation		
	Ch. Interpretation		
	Ch. Maintenance		
✓	Ch. Resources		
	Ch. Visitor Plan.		
✓	Recovery Mgt.		
	Critical Files		
	REPLY DATE:		

IN REPLY REFER TO:

L7617 (PGSO-PP)

OCT 22 1998

Memorandum

To: Superintendent, Yosemite National Park

From: **ACTING** Regional Director, Pacific West

Subject: Environmental Compliance for Hetch Hetchy Road and Drainage Improvements

The revised *Finding of No Significant Impact* (FONSI) for this collaborative resource protection-facility improvement initiative is approved. In future submittals, please indicate the inclusive dates of the public review period. To complete this process, the park should send notice of the decision (along with a copy of the FONSI document) to all individuals and organizations who commented on the supporting environmental assessment.

*Catrina J. Neubauer*  
John J. Reynolds  
Attachment



# United States Department of the Interior

NATIONAL PARK SERVICE

YOSEMITE NATIONAL PARK

P.O. BOX 577

YOSEMITE NATIONAL PARK, CALIFORNIA 95389

IN REPLY REFER TO:

S5831 (YOSE-R)

## Finding of No Significant Impact Hetch Hetchy Road and Drainage Improvements Yosemite National Park, California

### *I. Purpose And Need*

To maintain administrative and visitor access to O'Shaughnessy Dam, the Hetch Hetchy Reservoir and other associated areas, the National Park Service (NPS) proposes to improve 7.2 miles of the Hetch Hetchy Road in Yosemite National Park, Tuolumne County, California. This includes repairing the roadbed, resurfacing the road with asphalt concrete, regrading and paving much of the existing drainage ditch, installing 15 culverts and associated inflow and outflow structures, and repairing damaged embankments and dry-stacked retaining walls. The proposed action would stabilize the roadway, decrease annual maintenance requirements, reduce the likelihood of future road closures associated with flood events, improve the safety of the road, and help ensure a safe and reliable water supply for the City and County of San Francisco. This action is needed because during the January 1997 flood, the Hetch Hetchy Road was severely damaged by runoff that overtopped culverts and severely eroded the edge of the roadway and fill embankments. Eight areas of the road suffered structural damage. The road surface is suffering from cracking caused by shrinkage of the asphalt concrete, daily temperature cycling, poorly constructed paving lane joints, cracks beneath the surface course, vegetation, burrowing squirrels, and frost heaving.

### *II. Anticipated Environmental Effects and Mitigation*

The proposed action would not result in long-term effects to natural resources. The additional area affected by the proposed culvert placement is approximately 10,000 square feet, which includes the placement of approximately 800 square feet of rip rap for flood repair. Increasing the size and number of culverts along the roadway would allow perennial and ephemeral streams to flow more freely under the roadway. There would be a relatively small amount of vegetation permanently disturbed from the culvert replacements and the improvements to the existing drainage ditch. Some temporary indirect impacts resulting from construction noise and dust may occur to wildlife.

Survey data indicate approximately 2800 slender-stemmed (*Mimulus filicaulis*) monkeyflowers, Federal Species of Concern and Park Sensitive, and 60 Tompkin's sedge (*Carex tomkinsii*), California Rare Species, would be affected by construction activities. Construction impacts to these two special status species would be mitigated.

The proposed action minimally impacts existing road features including guardwalls, catchment basins and culvert headwalls. To maintain the park-like character of the road, culvert headwalls visible from the road would be capped or faced with granite and guardwalls would be replaced in kind with materials salvaged from the original walls. This mitigation measure was approved by the California State Historic Preservation Office and the Advisory Council on Historic Preservation in concurrence letters dated October 19 and 20, 1998. The historic Canyon Ranch Mill (a cultural resource site) would be monitored by a qualified NPS archeologist during construction.

During the construction period, park visitors, administrative staff, and city/county staff would have limited vehicular access to Hetch Hetchy Reservoir, O'Shaughnessy Dam, and park and wilderness trailheads in the area. Starting in November and continuing through the end of May, the road would typically be closed to all non-construction related vehicles at the Camp Mather Gate. Safety permitting, exceptions could include weekends, emergency access, and/or administrative use. When not working, the construction contractor would be required to leave the construction area safe for vehicular traffic and re-open the road. The park will implement a public information campaign to inform road users about available access. This campaign will include updating the parks information phone line, preparing press releases and posting access signage.

In the long term, park and reservoir operations would benefit from an improved road surface and annual maintenance costs would decrease. Due to a more sustainable design, the new Hetch Hetchy Road is anticipated to have a greater ability to survive flood events and have an extended service life with only routine maintenance. Additional culverts would greatly improve drainage and reduce the potential for road damage due to erosion from heavy rain.

**Mitigation Measures:** The following mitigation measures have been developed to reduce the anticipated environmental effects of the proposed action.

<i>Natural Resources</i>	<i>To protect resources within and beyond the construction area:</i>	<i>Responsibility</i>
	Yosemite Flood Recovery staff will make inspections to review the extent of impacts to the environment and make sure that the repair activities do not escalate beyond the scope of the EA.	NPS
	The contractor shall conduct his operations in order to minimize any impact to areas surrounding the actual construction. No equipment will be allowed to travel outside of the construction limits. Areas for equipment and vehicle storage and turnarounds would take advantage of previously disturbed areas and road alignments.	Contractor
	Construction workers and supervisors would be informed about the special sensitivity of park values, regulations, and appropriate housekeeping.	NPS
	All disturbed areas would be restored as nearly as possible to natural conditions shortly after road reconstruction activities are completed. The overall goal is to avoid interfering with biological processes and ecological communities.	Contractor
	<i>To minimize impacts to vegetation:</i>	<i>Responsibility</i>
	No trees shall be cut or destroyed without obtaining NPS permission. All work shall be accomplished in a manner that will prevent damage to existing tree growth and vegetation. This includes minimizing excavation and soil deposition within tree drip lines, and preventing unnecessary disturbance to riparian areas. Drain tile, coarse aggregate, or other proven methods may be used to assure air circulation and water drainage around tree root systems. All trees approved for removal shall be flush cut with the ground.	Contractor
	<i>To conserve resources:</i>	<i>Responsibility</i>
	Topsoil will be conserved and salvaged for use. If there is need to import topsoil from outside park boundaries, such topsoil would be certified free of noxious or alien plant species and imported from sources approved by park staff. All fill material needed beyond that produced from construction activities would be taken from park approved sources outside the park.	Contractor

	<b><i>To conserve resources:</i></b>	<b><i>Responsibility</i></b>
	Rock and other materials shall be reused to the maximum extent possible. Where possible, grading and rock placing would be done without equipment leaving the roadway.	Contractor
	<b><i>To reduce impacts to perennial streams:</i></b>	<b><i>Responsibility</i></b>
	Temporary impacts associated with road work would occur, such as soil and vegetation disturbance and the possibility of localized soil erosion. Standard erosion control measures such as silt fences, sand bags, or an equivalent control method would also be used to minimize any potential soil erosion. In an effort to avoid introduction of exotic plant species, no hay bales would be used for erosion control. On a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: rice straw, straws determined by NPS to be weed-free (e.g., Coors barley straw or Arizona winter wheat straw), cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.	Contractor
	Work at the five perennial streams would be completed in as short a time as possible to minimize disturbance. Work would be done during low flow periods in the fall and early winter when stream flows would be expected to be less than five cubic feet per second, this would minimize the sediment load introduced into the creeks. The flowing water bodies would be temporarily diverted through bypass culverts during construction. Because the creek beds in the project area are primarily coarse sand and cobbles, sedimentation would be expected to be minimal. Small amounts of soil, gravel, and debris (dust, mortar, and similar small sized material) may periodically wash into the flowing water bodies. These would be infrequent events of short duration and such pulses of material would quickly flush from the system presenting no long-term effects.	Contractor
	<b><i>To minimize temporary impacts associated with potential soil erosion:</i></b>	<b><i>Responsibility</i></b>
	All trenching restoration operations would follow guidelines approved by park staff. These guidelines would minimize disturbance to soils and roadside vegetation due to construction activities, and restore affected areas to their original form wherever possible. Excavated material would be stockpiled in the construction zone. Erosion to stockpiled soil would be minimized by placing silt fencing, as required, adjacent to the excavated soil. Excavated soil would be stockpiled only as long as it takes to dig the trench and install the culvert.	Contractor
	Any trenching operations (i.e., to reinstall culverts across the road) would use a backhoe, trencher, or some similar machine. As the trench is dug the excavated material would be set aside for storage. After trenching is complete, bedding would be placed and compacted in the bottom of the trench and the culvert installed in the bedding. Backfilling and compaction would begin immediately after the culvert is placed into the trench and the trench surface would be returned to pre-construction contours.	Contractor
	Some drainages would be recontoured and armored with rip rap to resist erosion and future undermining of the road. Spaces (joints) between the individual pieces of rip rap would not be grouted so vegetation would grow and reestablish in the joints.	Contractor
	<b><i>To reduce the risk of exotic weed spread:</i></b>	<b><i>Responsibility</i></b>
	Measures will be undertaken to control exotic plants within the project area and associated staging areas. Initially, all vehicles and equipment will be cleaned before bringing them into the construction area to limit movement of exotic seeds. Importation of any outside soils will be minimized. Attempt to limit soil import to material similar to native soils. No importation of metamorphic topsoils would be allowed.	Contractor

	<b><i>To minimize waste and pollution:</i></b>	<b><i>Responsibility</i></b>
	Vegetation and timber shall be removed from the construction site and legally dumped outside the boundary of the park. Some cut vegetation (material less than one inch in diameter) may be chipped and placed in areas approved by the Yosemite Vegetation Ecologist.	Contractor
	All construction equipment will be equipped with mufflers kept in proper operating conditions, and when possible equipment will be shut-off rather than allowed to idle.	Contractor
	To minimize the possibility of petrochemicals from construction equipment seeping into the soil, equipment would be checked frequently to identify and repair any leaks. Additionally, oil absorbent hazardous material pads would be available for small leaks, spills, and for any routine grease and oil maintenance work. Clean up kits will be on board of equipment in case of an accidental spill.	Contractor
	All mechanized construction equipment used in association with work in the flowing water bodies would be cleaned; this may include steam cleaning to remove any imported seeds and other non-native material as well as any petroleum products clinging to the equipment.	Contractor
	Fueling of all machinery would be conducted only in the equipment staging areas away from the flowing water bodies. Any spills of hazardous materials, fuel, etc., would be cleaned up immediately, and would not be washed into the flowing water bodies. Materials used for cleaning fuel spills and other hazardous materials would be available on site.	Contractor
	Portable rest room facilities would be used by construction workers.	Contractor
	<b><i>To maintain visual quality:</i></b>	<b><i>Responsibility</i></b>
	Road work would emphasize visual quality while minimizing impacts to resources. Designs and colors of construction materials would blend with the surroundings and be compatible with existing roadway features. Exposed culvert ends and flared end sections could be treated or colored to reduce visibility. Material for shoulder fill, if needed, would be from project material salvaged or park approved sources outside the park.	Contractor
	In areas where rock removal may be necessary, the rock would be removed with park approved controlled blasting. Blasting would conform with the 1991 NPS-65 (Explosives Use and Blasting Program) and FHWA FP-92, section 205 (rock blasting) specifications. All blasting would be designed to shatter, not to distribute.	Contractor
	Visible residual drill hole scars associated with this project would be removed. Residual drill hole scars associated with past construction would not be removed. Fresh rock faces would be treated with Eonite or a similar product to accelerate the weathered and natural appearance.	Contractor
<b><i>Special status species</i></b>	<b><i>To provide for amphibian protection:</i></b>	<b><i>Responsibility</i></b>
	Habitat possibilities exist for the foothill yellow-legged frog ( <i>Rana boylei</i> ), a federal and state species of concern. A fall/winter project schedule would minimize impact to any potential populations existing in the area of potential downstream construction impact.	Contractor
	<b><i>To protect the slender-stemmed monkeyflower and Tompkin's sedge:</i></b>	<b><i>Responsibility</i></b>
	Slender-stemmed monkeyflower and Tompkin's sedge were surveyed for and recorded along the entire 7.2 miles of the Hetch Hetchy Road. Detailed site by site mitigation measures are included as an appendix (p.30 of the EA).	NPS

	<b><i>To protect the slender-stemmed monkeyflower and Tompkin's sedge:</i></b>	<b><i>Responsibility</i></b>
	V-ditching, whenever possible materials excavated by grading or other soil moving activities would be retained within the same road section; otherwise excavated material may be used only as "deep fill" along other road segments. This mitigative action will help minimize the spread of slender-stemmed monkeyflower beyond current distributions. Additionally, several V-ditch areas with high concentrations of monkeyflower populations would not be paved but gravel without grouting would be used here.	Contractor
	Tompkin's sedge identified from the survey as at risk will be salvaged prior to construction activities. Resource Management staff will store and later replant the sedge following completion of construction. There are 60 individuals that will be affected by the proposed construction.	NPS
<b><i>Cultural Resources</i></b>	<b><i>To record or restore cultural resources:</i></b>	<b><i>Responsibility</i></b>
	The area of potential effect from road rehabilitation includes the existing road corridor and selected areas where necessary cut and fill actions would be required. As much as possible, work would occur within the existing road corridor. The proposed roadwork and staging areas have been designed to avoid historic properties. In addition, appropriate stop-work provisions and provisions for out of park borrow sources would be included in the project specifications to minimize potential impacts on cultural resources. Work limits would be defined.	Contractor
	To maintain the park-like character of the road, culvert headwalls visible from the road would be capped or faced with granite.	Contractor
	During construction, a qualified archeologist will monitor ground-disturbing activities at the historic Canyon Ranch Mill site.	NPS
	If unknown resources are uncovered during construction, work would be temporarily suspended in the discovery area and the NPS would follow the provisions of the February 25, 1997 Flood Recovery Protocol. Data would be recovered using the approved Yosemite Archeological Research Design, the draft plan for recording and protecting (as necessary) archeological resources. Provisions of the Native American Graves Protection and Repatriation Act of 1990 would be followed.	Contractor NPS
	Contractors would be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Contractors would also be informed of the correct procedures for reporting the discovery of artifacts or previously unknown resources, which are, uncovered during road reconstruction activities.	NPS
<b><i>Park and Reservoir Operations</i></b>	<b><i>To minimize park and reservoir access difficulties:</i></b>	<b><i>Responsibility</i></b>
	Safety permitting, during construction the road would be open on weekends in May 1999 from 5:00PM on Friday through 7:00AM on Monday. Safety permitting, during construction the road would also be open for administrative and/or emergency access.	Contractor
	In the last few years, since Hetch Hetchy spring road closures have shifted park use to Lake Eleanor and Kibbie Lake, Lake Eleanor could be staffed earlier to help accommodate visitors.	NPS

### III. Public Review

The EA was released on September 23, 1998 for public and agency comment. In addition to the proposed action, the NPS presented a no action alternative that reconstructed the road to pre-flood conditions with no drainage improvements. While preparing the EA, the NPS coordinated with the U.S. Army Corps of Engineers, the State and Regional Water Quality Control Boards, and the U.S. Fish and Wildlife Service. Yosemite distributed approximately 300 copies of the EA to the public, government agencies, and interest groups. A press release was issued to local and regional papers, agencies, and interest groups as well as national wire services. Two comments were received regarding this project. None of the comments raised significant issues or concerns not addressed in the EA. A summary of the comments and responses to comments is provided below.

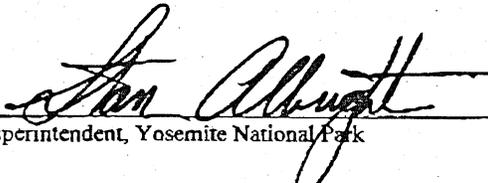
- **Comment:** A letter received from a private citizen had two concerns. The commentor would like a mitigation measure that addresses fire prevention and a mitigation measure that monitors impacts to wildlife during construction.
- **Response:** The Hetch Hetchy Road project is scheduled to begin in November and continue through the winter until the end of May. The project will occur during the low fire season. To prevent the possibility of fire, maintaining safe, operable construction equipment is a requirement of the contract specifications. Additionally, the contractor will be encouraged to set up a designated smoking area; proper cigarette disposal is mandated by park regulations. Wildlife impacts during construction will be taken into consideration by the NPS. The corridor will be regularly monitored by a biologist while construction is underway. There will be contact with the road foreman on a regular basis to convey any unusual wildlife sightings or activity.
- **Comment:** Letter from the Tuolumne County Planning Department outlined cultural concerns regarding the documentation and final appearance of the road, specifically mentioned were guardwalls and rock drainage structures.

**Response:** The NPS has conducted an extensive survey of the road and associated features and is managing it as if it were eligible for listing in the National Register of Historic Places. The NPS consulted with the California State Historic Preservation Officer and Advisory Council on Historic Preservation regarding the project. These agencies concurred with the conclusions of the EA and the cultural resource mitigation measures on October 19 and 20, 1998.

### IV. Finding

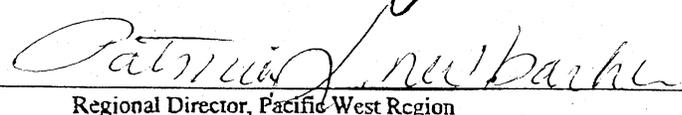
Based on the analysis in the EA, the ability of the mitigation measures to eliminate or minimize impacts, and with due consideration of public comment, the NPS has determined that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment. Neither wetlands nor floodplains are adversely effected; there are also no cumulative or indirect effects. Thus, an Environmental Impact Statement will not be prepared and the proposed action will be implemented.

Recommended:

  
Superintendent, Yosemite National Park

10/21/98  
Date

Approved:

  
Regional Director, Pacific West Region

10/23/98  
Date

acting





# United States Department of the Interior

NATIONAL PARK SERVICE

YOSEMITE NATIONAL PARK

P.O. BOX 577

YOSEMITE NATIONAL PARK, CALIFORNIA 95389

IN REPLY REFER TO:

L7617

SEP 22 1998

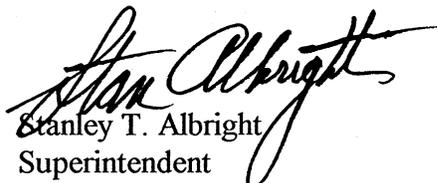
Dear Friends of Yosemite,

Enclosed is a copy of the Environmental Assessment (EA) the National Park Service, Office of Flood Recovery, has completed for the Hetch Hetchy Road Drainage Improvements project. The Hetch Hetchy Road was damaged in the January 1997 flood primarily due to poor drainage and the associated erosion problems. The work proposed in this EA will add to and/or replace culverts and headwalls at fifteen locations, improve drainage along portions of the road by recontouring and paving V-ditches, remove and replace sections of damaged asphalt concrete pavement, and repair damaged dry-stacked stone retaining walls. The City of San Francisco is providing funding for the improvements. The Office of Flood Recovery is overseeing natural and cultural compliance for the project.

Public comments will be collected until October 8, 1998. The National Park Service encourages your participation in all Yosemite National Park planning activities. A copy of the decision on this project will be distributed to those who submit comments and to those who specifically request a written copy. Please send your written comments to:

National Park Service  
Superintendent  
Attn: EA-Hetch Hetchy, Office of Flood Recovery  
PO Box 577  
Yosemite National Park, CA 95389

Sincerely,

  
Stanley T. Albright  
Superintendent

Enclosure



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## **1 PURPOSE AND NEED**

To maintain administrative and visitor access to O'Shaughnessy Dam, the Hetch Hetchy Reservoir and other associated areas, the National Park Service (NPS) proposes to improve 8.6 miles of the Hetch Hetchy Road in Yosemite National Park, Tuolumne County, California (see Project Location Map p.2). This includes:

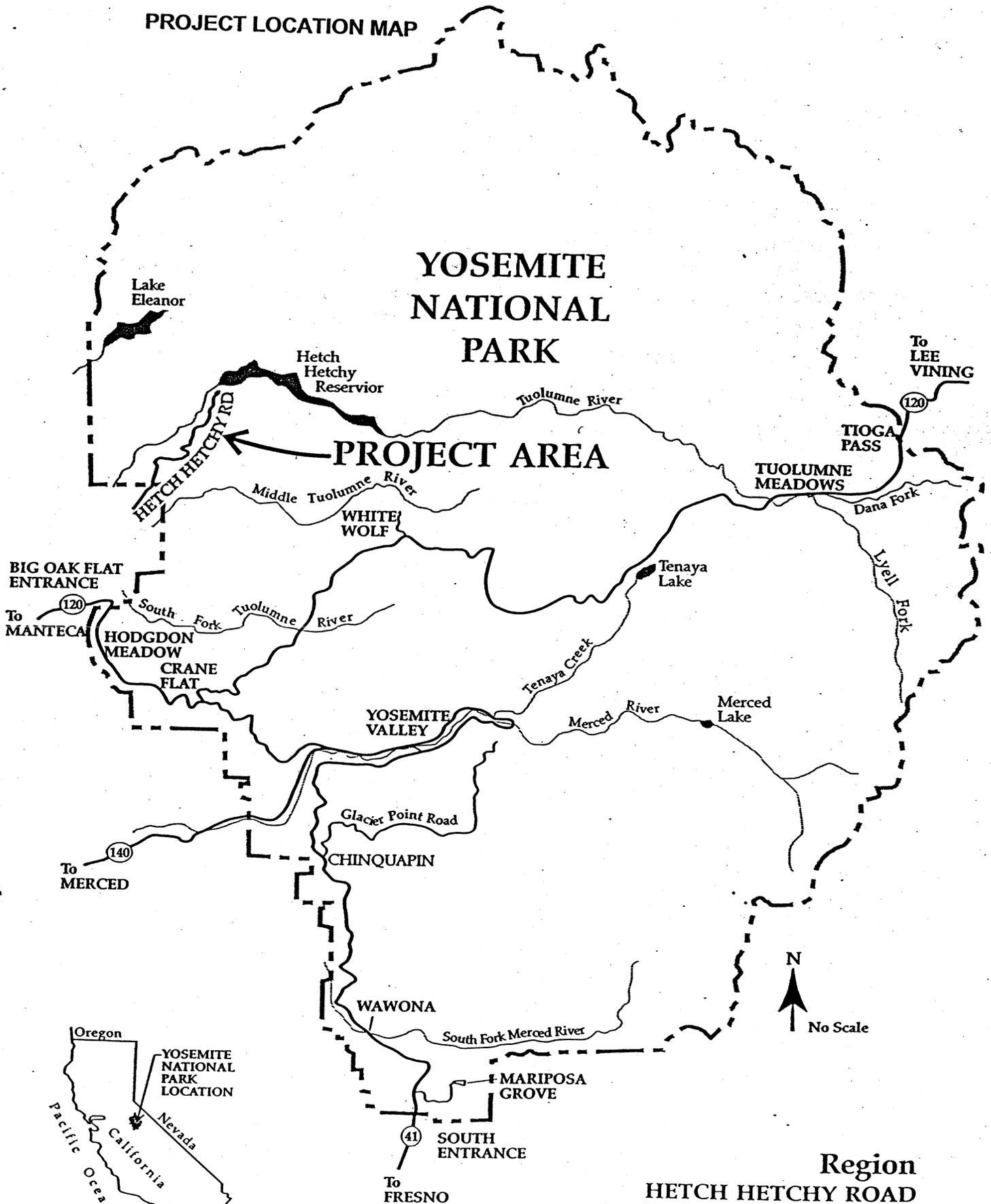
- repairing the roadbed
- resurfacing the road with asphalt concrete
- regrading and paving the existing drainage ditch
- installing 15 culverts and associated inflow and outflow structures, and
- repairing damaged embankments and stone wall.

The proposed action would stabilize the roadway, decrease annual maintenance requirements, reduce the likelihood of future road closures associated with flood events, improve the safety of the road, and help ensure a safe and reliable water supply for the City and County of San Francisco.

During the January 1997 flood, the Hetch Hetchy Road was severely damaged by runoff that overtopped culverts and severely eroded the edge of the roadway and fill embankments. Since the flood, the City and County of San Francisco, park staff and visitors have been using the road with lane restrictions and lane closures at various points. Eight areas of the road suffered structural damage. Of these eight, the road failed completely in one area and is about to fail in another. The road surface is suffering from cracking caused by shrinkage of the asphalt concrete, daily temperature cycling, poorly constructed paving lane joints, cracks beneath the surface course, vegetation and frost heaving. There are several damaged areas in the roadway related to burrowing squirrels.

The existing structure under the roadway consists of shot rock that used to have substantial air voids that permitted the flow of water. Over time, and during the heavy rains of 1996 and 1997, the voids have been silted in which has drastically cut flow carrying capacity. Existing culverts are undersized and inlet conditions are poor. Some of the corrugated metal pipe culverts are on the verge of collapse due to rust and many others are clogged with vegetation, sediment, and debris. Now, the drainage under the road is completely inadequate. Without drainage improvements road damage can be expected on an annual basis.

PROJECT LOCATION MAP



Region

HETCH HETCHY ROAD  
YOSEMITE NATIONAL PARK • CALIFORNIA

United States Department of the Interior • National Park Service  
DSC/Sept. 1998/104/20,

## **2 BACKGROUND**

### **2.1 Purpose of Park Roads**

*"Park roads are intended to enhance visitor experience while providing safe and efficient accommodation of park visitors and to serve essential management access needs. The purpose of park roads remains in sharp contrast to that of the Federal and State highway systems. Park roads are not intended to provide fast and convenient transportation."*

*- Purpose of a park road as summarized in the "Park Road Design" memorandum, February 20, 1986, from then NPS Director William Mott.*

Park roads provide the main access to most of our National Parks. The distinctive character of these roads sets the stage for visitor experience in the park. These roads are designed with extreme care and sensitivity with respect to the natural, cultural, scenic and recreational resources through which they pass. Park roads are often narrow, winding, and steep, but it is these very attributes that define the distinctive park-like character of these roadways. The character of these roadways prepares visitors for all that lies beyond.

Park roads are constructed where necessary, and as necessary, to provide access for the protection, use, and enjoyment of the natural, historical, cultural, scenic and recreational resources which constitute the National Park System. Each segment of park roads relates to the resource traversed in a meaningful way and constitutes an enjoyable and informative experience in itself. Although recent transportation trends have significantly affected the use of NPS roads, park roads cannot attempt to accommodate all types of vehicles or high speed limits.

### **2.2 Hetch Hetchy Road**

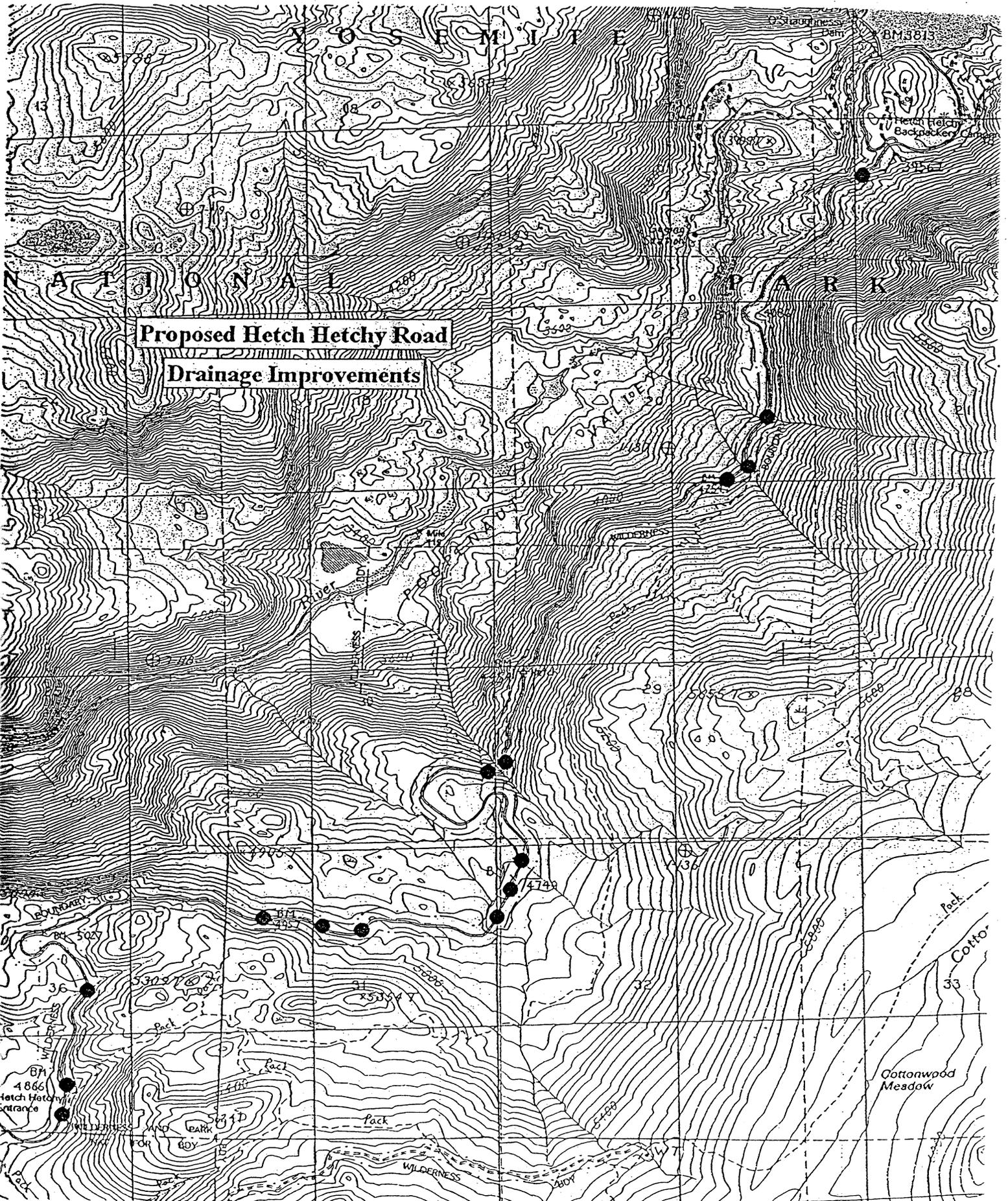
The 8.6-mile long Hetch Hetchy Road extends from the park boundary north of Camp Mather to the Hetch Hetchy Reservoir (see Project Map p.5). The road is a steep, narrow, winding road with little or no shoulders. It has a posted speed limit of 25 mph and is currently classified as a Public Use and Administrative Park Road. The road is a primary access route to wilderness and backpacking areas, but it receives little use in comparison with roads leading to Yosemite Valley. It provides the sole maintenance access to Hetch Hetchy Reservoir and O'Shaughnessy Dam (part of the San Francisco water and power-production system) located in the northwest corner of the park.

### **2.3 Hetch Hetchy Road Planning**

Yosemite National Park's 1980 General Management Plan (GMP) provides direction for use and maintenance of the Hetch Hetchy vicinity, including the popular back country and wilderness areas. Among other actions, the GMP directs the continued use of the Hetch Hetchy area for a variety of scenic, recreational, and administrative uses. Proper maintenance of the only access route, Hetch Hetchy Road, is essential to meet the goals of the GMP.

Studies, including the *1989 Road System Evaluation Parkwide Road Engineering Study*, have identified and analyzed Hetch Hetchy Road for needed road work. In 1986, the expected life span of the road surface was estimated to be 10 more years. Due to years of filling potholes and other road maintenance, the wearing surface is rough and uneven. Structural deficiencies and failures in the road include raveling edges, slumping road shoulders, and surface cracking. This project, Hetch Hetchy Road and Drainage Improvements, is consistent with approved planning documents of the NPS and other agencies and is entirely within the objectives of the overall Flood Recovery Program for Yosemite National Park.

PROJECT MAP



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### **3 SCOPE OF DOCUMENT**

In accordance with the National Environmental Policy Act (NEPA) and NPS Management Policies, this environmental assessment (EA) has been prepared to assess potential environmental impacts from the proposed improvements to the Hetch Hetchy Road corridor. This EA identifies, evaluates, and documents the potential effects of road reconstruction and drainage improvements. The existing conditions prior to January 1997 flooding constitute the baseline for the effects of the proposed action. The baseline condition reflects the restoration of a maintainable road similar to what existed prior to January 1997.

#### **3.1 Impact Topics Included in this Document**

An interdisciplinary team of planners, scientists, natural and cultural resource specialists, and park management and maintenance personnel analyzed the proposed action against pre-flood conditions and identified the relevant beneficial and adverse impacts associated with the action. In order to assess the full range of potential impacts, the following topics have been evaluated:

- **Natural Resources**
- **Sensitive Species**
- **Cultural Resources**
- **Park and Reservoir Operations**

#### **3.2 Impact Topics Dismissed from Further Analysis**

The alternatives would have little or no effect on the following topics. Justification for dismissing these topics is provided below.

##### **3.2.1 Air Quality**

Yosemite National Park was designated Class I under the 1963 Clean Air Act, as amended. Use of a concrete batch plant during roadway construction is anticipated. This plant would be located outside the park and would comply with existing federal, state, and local air pollution control laws and regulations. Local air quality would be temporarily effected by dust and construction vehicle emissions, primarily from operation of the construction equipment. These effects would last only as long as construction activities occur and the park's Class I air quality would not be effected by the proposal; therefore, air quality is dismissed as an impact topic.

### **3.2.2 Floodplains and Wetlands**

Executive Orders 11988 and 11990 require an examination of impacts to floodplains and wetlands involved with the placement of facilities. There are no floodplains or jurisdictional wetlands in the project area; therefore, they are dismissed as impact topics.

### **3.2.3 Socioeconomic Values**

Socioeconomic values consist of local and regional businesses and residents, the local and regional economy, and park concessions. The local economy and most business in and around the park are based on professional services, mostly construction and tourism. The regional economy is strongly influenced by tourist activity. If the proposed action was implemented, short-term economic benefits from construction related expenditures and employment would include economic gains for some local and regional businesses and individuals. Disturbance and inconvenience to park visitors, residents, and businesses outside the park from construction activities would be temporary and only occur during the construction period. It is not anticipated that local businesses would experience any adverse short or long-term economic impacts should the proposed action alternative be implemented. Therefore, socioeconomic values are dismissed as an impact topic. Disturbance to visitors during construction is addressed under Park and Reservoir Operations.

### **3.2.4 Wilderness**

As part of the California Wilderness Act of 1984, Congress designated 94.2% of the park (704,624 acres) as wilderness and 1.5% (927 acres) as potential wilderness additions. The wilderness boundary is located 200 feet from the centerline of both sides of the Hetch Hetchy Road (*1989 Yosemite National Park Wilderness Management Plan*). Although some construction work would be near the wilderness boundary, federally designated wilderness lands would be avoided during construction activities. There would be no adverse consequences to federally-designated wilderness lands, no long-term adverse consequences to wilderness values, and no visual changes to the landscape should the proposal be selected. Therefore, wilderness is dismissed as an impact topic.

## **4 ALTERNATIVES**

This section describes two management alternatives for Hetch Hetchy Road. These alternatives were developed to resolve visitor use and management issues.

### **4.1 NO ACTION**

No action would repair damage caused by the flood by restoring the road to pre-flood conditions. This involves the reconstruction of a roadway from the park's Hetch Hetchy Entrance Station to O'Shaughnessy Dam. There would be no improvements or upgrades made to the road's wearing surface or the road's associated drainage system.

No action reflects the restoration of a maintainable road similar to what existed prior to January 1997. It does not imply or direct discontinuing the pre-flood condition or removing existing uses, developments or facilities. No action provides a basis for comparing the management direction and environmental consequences of the alternative action.

### **4.2 PROPOSED ACTION**

The proposed action is to improve Hetch Hetchy Road from the Hetch Hetchy Entrance Station to O'Shaughnessy Dam. The proposed action would repair flood damage by reconstructing portions of the road base. Additionally, the proposed action would replace the wearing surface of the road and provide an improved drainage system.

The proposed roadway work is to:

- Add and/or replace culverts and headwalls at 15 locations and improve associated drainage. Flowing water (less than five cubic feet/second) bodies are at five of the project sites; temporary culverts with water diversion structures would be used to divert flowing water at these sites.
- Remove approximately 100 sections of damaged asphalt concrete pavement and replace with 4 inches of full-depth asphalt concrete. The total quantity of full-depth asphalt concrete would be approximately 50,000 square feet.
- Repair and grout squirrel hole damage in the roadway.
- Seal pavement cracks.
- Install pavement reinforcement fabric and 2 inches of asphalt concrete overlay for the entire length of the project, a total of 1,272,400 square feet.

- Repair of damaged roadway embankments and dry-stacked stone wall.
- Regrade and pave or gravel the existing roadside V-Ditch.

The proposed action is the NPS preferred alternative and it optimizes use of the area in terms of resource protection and management, visitor and operational use, costs, and other applicable factors.

#### **4.2.1 Staging Areas**

The primary construction staging area would be at Camp Mather, which is owned by the City of San Francisco and located outside of the park. Other areas for construction truck and equipment staging, storage, and turnarounds would include established pullouts, the parking lot area near the O'Shaughnessy backpackers camp (near the dam), and areas that are part of the roadway where construction is occurring. All staging areas would be returned to pre-construction conditions once construction is complete. The batch plant for mixing asphalt concrete would be outside the park.

#### **4.2.2 Materials Source**

Construction materials beyond those generated from construction activities (such as salvaged fill and topsoil) would be provided by the contractor from commercial sources outside the park. The exception to this is park materials located in the tunnel muck stockpile which would be used by the contractor. To reduce the risk of exotic weed spread, importation of any outside soils would be limited and no importation of metamorphic topsoils would be permitted. Stone needed for masonry work on headwalls, approach walls, and curbing would be salvaged or reused from the site. Additional stone may be obtained from existing commercial sources outside the park.

#### **4.2.3 Schedule And Cost**

Although weather delays are possible, this project is expected to begin in mid October 1998 and end by May 28, 1999. The cost is expected to be approximately \$2.5 million (gross 1998 dollars). Funding for this project would be provided by the City and County of San Francisco.

## 5 AFFECTED ENVIRONMENT

Detailed information about the resources in Yosemite National Park and the Hetch Hetchy area may be found in the 1980 GMP, the 1996 Resource Management Plan, and the Ackerson Complex Burned Area Emergency Rehabilitation Plan. A summary of the natural and cultural resources associated with this project follows.

**Project Location:** Yosemite National Park is in the central Sierra Nevada, a mountain range which stretches one-third the length of California. The 747,956-acre, 1,169-square mile park, lies 150 miles east of San Francisco. The park includes portions of Tuolumne, Mariposa and Madera counties and is surrounded by national forests: Stanislaus to the northwest; Toiyabe to the northeast; Inyo to the southeast; and Sierra to the southwest. Hetch Hetchy Road is located in the northwest corner of the park.

### 5.1 Natural Resources

The Hetch Hetchy Road passes through the through the Tuolumne River Canyon at elevations ranging between 4,000 and 5,000 feet. The physical substrate consists of granitic boulders, decomposed granitic soil and organic soil influenced by fluvial processes. These soils typically have a well-developed sandy clay loam subsoil with a sandy loam surface texture. The surface is prone to sheet and gully erosion due to the ease of detachability. Although the road is well above the 100-year floodplain of the Tuolumne River, current conditions create a public hazard during unusual storm events.

Five perennial streams cross under the road in the project area. During the period when culvert construction would occur, four of these streams flow at less than five cubic feet/second. At this time the flow of the fifth stream, which normally flows at or just below five cubic feet/second, may exceed five cubic feet/second if precipitation is significantly above average. Due to the steep nature of the terrain near the road, riparian vegetation is limited. In a couple places, however, where terrain is flatter and streams meander, riparian vegetation is more established. This riparian vegetation would not incur major impacts from construction. Additional ephemeral streams are present after rain events. About a half mile from the road, the dam controlled Tuolumne River flows through the Poopenaut Valley. The river is subject to daily water releases from the dam. Fish existing in the river include Sacramento squawfish, rainbow trout, and brown trout.

The road corridor lies within the ponderosa pine montane coniferous forest zone and is interdigitated with chaparral/foothill woodland species including interior live oak, canyon live oak and foothill pines. The major associated species are incense-cedar, Douglas-fir, white fir, sugar pine and California black oak. Shrub species include greenleaf manzanita, deerbrush, coffeeberry, chamise,

brickelbush, keckiella and poison oak. Herbaceous vegetation is sparse.

Wildlife habitat is marginal along the road corridor. The most frequently observed mammals are mule deer and coyote. Other typical mammals found within the project area include raccoon, cottontail rabbits, woodrats, and a variety of mice, squirrels, and chipmunks. Birds found within the project area include species typical of mixed-conifer and foothill woodland communities such as hawks, owls, woodpeckers, and warblers.

## **5.2 Special Status Species (Threatened, Endangered, Proposed and Species of Concern)**

In a letter dated August 27, 1997 (USFWS reference #1-1-97-SP-1981) the U.S. Fish and Wildlife Service (USFWS) listed a number of special status species that may reside in or depend on the Hetch Hetchy Road project area as critical habitat. Based on park records and the letter from the USFWS, the park has conducted a special status species survey of the project area. The foothill yellow-legged frog (*Rana boylei*) may range in habitat downstream of the proposed project area. This frog is a Federal and State of California Species of Concern. It is found in permanent streams and mountain meadows up to elevations of 6,000 feet. No frogs or evidence of frogs were found during surveys.

Two plant species of special concern, slender-stemmed monkeyflower (*Mimulus filicaulis*) and Tompkin's sedge (*Carex tomkinsii*), are located within the project area. Survey data indicate approximately 2800 monkeyflowers and 60 sedge would be affected by construction activities.

The slender-stemmed monkeyflower is Federal Species of Concern and Park Sensitive. This monkeyflower is similar to a small flowering herb. It is 1 ½ to 12 inches tall with purple flowers that have two yellow spots near their center. It occurs in ephemeral damp flats and in disturbed moist loamy soils, flowering in June and July.

Tompkin's sedge is a California Rare Species. It occurs around oaks and boulders in light shade and uncrowded areas. It is a clump of slender green grasslike leaves approximately 15 inches in length. It is green year round and ranges from 1 to 5 inches in diameter.

## **5.3 Cultural Resources**

### **5.3.1 Road History**

The passage of the Raker Act on December 13, 1913 (38 Stat. 242) authorized the City of San Francisco to construct a dam across the Tuolumne River for the purpose of establishing a domestic water supply system and generating electricity

from a collateral power plant. Passage of the Raker Act represented the culmination of one of the leading "conservation battles" of the early 20th century as conservationists, led by the Sierra Club and its most visible spokesperson John Muir, had mounted a national effort to prevent the scenic Hetch Hetchy Valley from inundation.

Passage of the Raker Act gave the City of San Francisco rights-of-way through Yosemite National Park and the adjoining Stanislaus National Forest. Further, it provided that the city build various roads/trails into the Hetch Hetchy Valley. These roads/trails would provide access to parts of the park that would be cut off when the reservoir flooded existing trails from the valley to the north end of the park.

In 1914, San Francisco city engineers let a contract to grade and prepare a road from Hog Ranch (later renamed Camp Mather after the first director of the NPS) to Hetch Hetchy Valley. The specifications called for a railway bed that would be suitable for conversion to a park road after the Hetch Hetchy project was completed. (The railroad was completed in 1917.) Construction operations for O'Shaughnessy Dam (named for the San Francisco city engineer) occurred between 1915 and 1923. In 1925, after the rails, ties, and associated hardware of the railroad were removed, the roughly-graded dirt road was formally opened to permit automobile use. Two years later, the NPS constructed an entrance gate on the road at the park boundary.

In 1931, the Hetch Hetchy Road was extensively repaired. The improvements included grading to adjust "the existing road to a uniform grade and cross section (flat or superelevated), building up of shoulders, and some excavation to widen existing cuts and fills." Construction of cement rubble (native granite) masonry and some dry lay masonry retaining walls and guard walls, as well as head walls for culverts, were built along the road "as directed by the Engineer." A 6-inch crushed rock base was applied to the road and later sprayed with a surface treatment of fuel oil and asphaltic oil. During 1937, after the road was severely damaged by heavy construction vehicles used to raise the dam, Hetch Hetchy Road was resurfaced with a bituminous asphalt treatment. Since then, periodic routine maintenance activities have been conducted on the road on an as-needed basis.

### **5.3.2 Road Resources**

In April 1998, an archeological survey of Hetch Hetchy Road conducted by Flood Recovery Archeologists identified four segments of the road and 178 features including rock retaining walls, stone parapets, stone culverts, earthen road fill, blasted bedrock throughcuts, pullouts, and brass cap benchmarks. The Hetch Hetchy Road continues to be used, and it is estimated that 95 percent of the 178 features recorded remain somewhat serviceable, virtually unchanged from their

original construction. Many of the culverts and rock retaining walls have sustained degradation due to fluvial processes. Some of the culvert headwalls and parapet guardwalls have been hit by automobiles. A few damaged stone parapet guardwalls have been replaced with modern wood and metal guard railings, and a stone retaining wall on a short section of the road has been replaced with a modern welded wire retaining wall. About five miles from O'Shaughnessy Dam, there are archeological resources adjacent to the proposed construction area. These historic resources are at the Canyon Ranch Mill site which was used during construction of the dam.

The NPS, in consultation with the California State Historic Preservation Office (SHPO), is evaluating Hetch Hetchy Road for listing on the National Register of Historic Places. Based on historical documents and cultural resource field surveys, and pending the approval of the SHPO, the NPS has determined that Hetch Hetchy Road is not eligible for listing on the National Register. Further information about the road's cultural resources is contained in the Determination of Eligibility for Hetch Hetchy Road, 1998.

#### **5.4 Park and Reservoir Operations**

Hetch Hetchy Reservoir at O'Shaughnessy Dam is a popular destination for visitors, who spend a short time viewing the dam and the valley. Wilderness hikers frequently use this area as an entry or exit point. Since the reservoir is a domestic water supply, the City of San Francisco restricts its use for water recreation and also restricts use of adjoining lands.

In 1995, approximately 23,531 vehicles used the road from April through October, weekends experiencing the heaviest visitor use. Since the entrance station is closed during the winter, traffic counts are not maintained. During certain periods of 1996, 1997, and 1998, Hetch Hetchy Road was closed to visitor use due to road failures and wildfires that burned through the area. The vehicle length restriction is 25 feet.

The 1980 GMP established provisions for recreational uses by providing quality facilities for visitor experience. The proposed road drainage and structural improvements are needed to preserve the roadway and reduce future maintenance costs and road closures (which inconvenience visitors and disrupt park and reservoir operations).

Parking areas at two trailheads along the road, Poopenaut Valley and Smith Meadows, are inadequate and create traffic hazards.

## **6 ENVIRONMENTAL CONSEQUENCES**

This section describes the environmental consequences associated with no action and the proposed action. It is organized by Impact Topics, which distill the issues and concerns into distinct topics for discussion analysis. These topics focus the presentation of environmental consequences, and allow a standardized comparison between alternatives based on the most relevant topics.

A summary table comparing the environmental consequences of each alternative is at the end of this section.

### **6.1 Alternative A - No Action**

#### **6.1.1 *Natural Resources***

No action entails repairing and maintaining the existing roadway similar to what existed prior to January 1997, a roadway suitable for two-way traffic. The current disturbed footprint of the road would increase only to allow for the repair of areas structurally damaged by the flood. Minor impacts associated with routine maintenance activities would continue such as cleaning culverts, removing rock fall, and pavement repair. Adverse impacts could happen if drastic road failure occurred, this is entirely possible due to drainage problems and structural deficiencies which would not be corrected under this alternative.

Moderate to major erosion would continue to occur during flood events. Although the contribution of this erosion to river and stream turbidity and sediment is not currently a problem, this moderate to major erosion would continue to be a significant problem to the structural integrity of the roadway.

The current conditions of the road relative to wildlife would be maintained.

#### **6.1.2 *Special Status Species***

There would be no new impacts to any special status species. Routine maintenance of the roadway includes grading the drainage ditch and keeping culverts clear. These activities disturb slender-stemmed monkeyflowers in those areas, but this is not necessarily an adverse effect because this species occurs in disturbed areas.

#### **6.1.3 *Cultural Resources***

Based on historical documents and cultural resource field surveys, and pending the approval of SHPO, the NPS has determined that Hetch Hetchy Road is not eligible for listing on the National Register of Historic Places; therefore,

implementation of this alternative would not have an effect on historic resources. This alternative has no major construction impacts. Sections of guardwall would be temporarily removed during road repairs, and then replaced in kind. Unavoidable deterioration of features associated with the road would continue. Such deterioration would be the result of continued use, maintenance, and localized repair of the road, retaining walls, parapet guardwalls, stone drainage headwalls, and related elements of the existing road corridor. Deterioration would be accelerated if drastic road failure occurred, which is entirely possible because drainage problems and structural deficiencies would not be corrected under this alternative.

#### **6.1.4 Park and Reservoir Operations**

There would be no new effects on scenic or recreation values beyond present conditions. Although routine maintenance would continue and flood damaged portions of the road would be repaired, this alternative would not appreciably extend the life of the road. Structural and safety problems would increase in future years as the existing road structure continues to age. These include the continued "overtopping" of culverts, erosion of road ditches, and failure of dry-stack retaining walls. The road would eventually deteriorate beyond the capabilities of park maintenance staff to repair.

Structural and drainage problems would continue to a point where major corrective action would be necessary. If structural and drainage improvements do not take place, the Hetch Hetchy Road could eventually be closed to all but administrative access and, perhaps administrative access would itself be deemed too perilous. Visitors may eventually not have access to Hetch Hetchy Reservoir, its scenic values or recreational opportunities.

The City and County of San Francisco (which would fund the proposed action) would not have to fund road and drainage improvements; however, as the road continues to deteriorate, this savings would eventually be negated by increasing maintenance and operational costs (which the city and county are responsible for).

## **6.2 Alternative B - Proposed Action**

### **6.2.1 Natural Resources**

The proposed action would not result in long-term effects to natural resources, individual species of wildlife, plants or any biotic communities as a whole. The construction would not extend the disturbed footprint of the road much beyond the existing footprint. The area affected by the proposed action (temporary and permanent disturbance) is approximately 10,000 square feet. This includes the placement of approximately 800 square feet of rip rap for flood repair, which would

also occur under the no action alternative. The remainder of the construction disturbance would result from the installation/replacement of culverts, their associated inflow and outflow structures and the drainage ditch.

The proposed action would improve drainage by increasing the size and number of culverts along the roadway. This would allow perennial and ephemeral streams to flow more freely under the roadway. The improved culverts along with the paved drainage V-ditch would provide improved flow capacity; thus, reducing current problems where plugged, insufficient capacity, or poor design cause water to damage the roadway. The proposed action is well above the 100-year floodplain of the Tuolumne River and would not increase the risk of flooding to persons, properties, or structures along the roadway. The improvements would reduce the risk of flood damage and eliminate many maintenance problems.

There would be a relatively small amount of vegetation permanently lost because the existing drainage ditch would be reconstructed and paved. Some temporary indirect impacts resulting from construction noise and dust may occur to wildlife. Otherwise, current conditions of the road relative to wildlife would be maintained, the same as under the no action alternative.

### **6.2.2 *Special Status Species***

Survey data indicate approximately 2800 monkeyflowers and 60 sedge would be affected by construction activities. Construction impacts to these two special status species would be mitigated. To minimize the unnatural spread of the monkeyflower, a disturbance-dependant species, surface materials excavated by grading activities would be retained within the same road section or used as "deep fill" in other areas. Sedge would be salvaged prior to project work and replanted following completion of construction.

### **6.2.3 *Cultural Resources***

Based on historical documents and cultural resource field surveys, and pending the approval of SHPO, the NPS has determined that Hetch Hetchy Road is not eligible for listing on the National Register of Historic Places; therefore, implementation of this alternative would not have an effect on historic resources. This alternative has construction impacts to some existing road features. As in no action, sections of guardwall would be temporarily removed during road repairs, and then replaced in kind. Culverts and their associated inflow and outflow structures would be removed and replaced. Archeological resources at the Canyon Ranch Mill site were recently disturbed during the 1996 Ackerson Complex Fire. This area would be monitored during construction. To maintain the park-like character of the road, culvert headwalls visible from the road would be faced with hand-laid granite. As in no action, unavoidable deterioration of

existing road features would continue. Such deterioration would be the result of continued use, maintenance, and localized repair of retaining walls, parapet guardwalls, stone drainage headwalls, and related elements of the existing road corridor.

#### **6.2.4 Park and Reservoir Operations**

In the short term, park visitors, administrative staff, and city/county staff would be affected by road closures. Typically, visitors use the area most frequently from mid March to mid June, and in September and October. During construction, from mid October 1998 until the project is scheduled to be complete on May 28, 1999, park visitors, administrative staff, and city/county staff would have limited vehicular access to Hetch Hetchy Reservoir, O'Shaughnessy Dam, and park and wilderness trailheads in the area.

Starting in mid October and continuing through the end of April, the road would typically be closed to all non-construction related vehicles at the Mather Entrance Station from Monday at 7:00AM until Friday at 5:00PM (the construction work week). Exceptions would include emergency and/or administrative access use if safety permits. The construction contractor would be required to leave the construction area safe for vehicular traffic and re-open the road on Fridays at 5:00PM until Monday at 7:00AM. The road would not be open to the public during the weekend under two exceptions:

1. If the contractor is constructing embankments and/or retaining walls that, because of the nature of the construction and the time necessary to rebuild the road embankment, would not be passable by the weekend.
2. If the contractor loses working time during the week due to bad weather, the contractor would be allowed to work during the weekend to make up time.

A winter construction shut down is anticipated. During construction shut downs (all extended absences of more than 2 days), the contractor would be required to leave the construction area in a safe and passable condition.

During May 1999, similar to the previous construction schedule, the road would be open to the public on Fridays at 5:00PM until Monday at 7:00AM. During the month of May, however, there would be no exceptions under which the contractor would not open the road.

At all times during the construction project, hiking would be allowed on the trail adjacent to the roadway and on the roadway itself where it is safe. Bicycles would be allowed on the roadway during daylight hours only.

In the long-term, the effect to visitor experience would be positive. Park and reservoir operations would also benefit from an improved road surface. The service life of Hetch Hetchy Road would be extended by several decades; the road

would have a greater ability to survive flood events. The improved road would provide a smoother ride and decrease maintenance requirements. Additional culverts, improved inlet conditions on existing culverts, and rock lining of drainage areas would improve hydraulics and help reduce the potential for road damage due to erosion from heavy rain. The vehicle length restriction (25 feet) would remain the same. Although it may not be part of the road and drainage improvements contract awarded by the City/County of San Francisco, at a later date, parking areas at the two trailheads along the road (Poopenaut Valley and Smith Meadows) may be expanded to better accommodate visitors.

<b>SUMMARY OF ENVIRONMENTAL CONSEQUENCES</b>		
<b>Impacts to</b>	<b>No Action</b>	<b>Proposed Action</b>
<b>Natural Resources</b>	The current disturbed footprint of the road would increase only to allow for the repair of two areas structurally damaged by the flood which includes the placement of approximately 800 square feet of rip rap. Adverse impacts could happen if drastic road failure occurred, this is entirely possible due to drainage problems and structural deficiencies which would not be corrected under this alternative. The current conditions of the road relative to wildlife would be maintained.	The proposed action would not result in long-term effects to natural resources, individual species of wildlife, plants or any biotic communities as a whole. The additional area affected by the proposed action is approximately 10,000 square feet, which includes the placement of approximately 800 square feet of rip rap for flood repair. Increasing the size and number of culverts along the roadway would allow perennial and ephemeral streams to flow more freely under the roadway. There would be a relatively small amount of vegetation permanently disturbed from improvements to the existing drainage ditch. Some temporary indirect impacts resulting from construction noise and dust may occur to wildlife. Current conditions of the road relative to wildlife would be maintained.
<b>Special Status Species</b>	There would be no new impacts to any special status species.	Survey data indicate approximately 2800 monkeyflowers and 60 sedge would be affected by construction activities. Construction impacts to these two special status species would be mitigated.
<b>Cultural Resources</b>	This alternative has no major construction impacts. Unavoidable deterioration of features associated with the road would continue.	This alternative has construction impacts to some existing road features. To maintain the park-like character of the road, culvert headwalls visible from the road would be faced with hand-laid granite. Unavoidable deterioration of existing road features would continue. The Canyon Ranch Mill site would be monitored during construction.

**SUMMARY OF ENVIRONMENTAL CONSEQUENCES (continued)**

<p><b>Park and Reservoir Operations</b></p>	<p>There would be no new effects on scenic or recreation values beyond present conditions. This alternative would not appreciably extend the life of the road which would eventually deteriorate beyond the capabilities of park maintenance staff to repair. Structural and drainage problems would continue to a point where major corrective action would be necessary. The Hetch Hetchy Road could eventually be closed to all but administrative access, and perhaps administrative access would itself be deemed too perilous. Maintenance costs would continue to increase.</p>	<p>During construction, from mid October 1998 until the project is scheduled to be complete on May 28, 1999, park visitors, administrative staff, and city/county staff would have limited vehicular access to Hetch Hetchy Reservoir, O'Shaughnessy Dam, and park and wilderness trailheads in the area. Starting in mid October and continuing through the end of May, the road would typically be closed to all non-construction related vehicles at the Mather Entrance Station from Monday at 7:00AM until Friday at 5:00PM. Exceptions would include emergency and/or administrative access use if safety permits. The construction contractor would be required to leave the construction area safe for vehicular traffic and re-open the road on Fridays at 5:00PM until Monday at 7:00AM. There are two exceptions under which the contractor would not have to open the road on the weekend, however, this would not occur during the month of May. In the long-term park and reservoir operations would benefit from an improved road surface. Maintenance costs would decrease. The service life of Hetch Hetchy Road would be extended by several decades; the road would have a greater ability to survive flood events. Additional culverts would improve hydraulics and reduce the potential for road damage due to erosion from heavy rain.</p>
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## 7 MITIGATION MEASURES

The following mitigation measures have been developed to reduce the anticipated environmental effects of the proposed action.

<i>Natural Resources</i>	<i>To protect resources within and beyond the construction area:</i>	<i>Responsibility:</i>
	Yosemite Flood Recovery staff will make inspections to review the extent of impacts to the environment and make sure that the repair activities do not escalate beyond the scope of the EA.	NPS
	The contractor shall conduct his operations in order to minimize any impact to areas surrounding the actual construction. No equipment will be allowed to travel outside of the construction limits. Areas for equipment and vehicle storage and turnarounds would take advantage of previously disturbed areas and road alignments.	Contractor
	Construction workers and supervisors would be informed about the special sensitivity of park values, regulations, and appropriate housekeeping.	NPS
	All disturbed areas would be restored as nearly as possible to natural conditions shortly after road reconstruction activities are completed. The overall goal is to avoid interfering with biological processes and ecological communities.	Contractor
	<i>To minimize impacts to vegetation:</i>	
	No trees shall be cut or destroyed without obtaining NPS permission. All work shall be accomplished in a manner that will prevent damage to existing tree growth and vegetation. This includes minimizing excavation and soil deposition within tree drip lines, and preventing unnecessary disturbance to riparian areas. Drain tile, coarse aggregate, or other proven methods may be used to assure air circulation and water drainage around tree root systems. All trees approved for removal shall be flush cut with the ground.	Contractor
	<i>To conserve resources:</i>	
	Topsoil will be conserved and salvaged for use. If there is need to import topsoil from outside park boundaries, such topsoil would be certified free of noxious or alien plant species and imported from sources approved by park staff. All fill material needed beyond that produced from construction activities would be taken from park approved sources outside the park.	Contractor
	Rock and other materials shall be reused to the maximum extent possible. Where possible, grading and rock placing would be done without equipment leaving the roadway.	Contractor

	<i>To reduce impacts to perennial streams:</i>	<i>Responsibility:</i>
	<p>Temporary impacts associated with road work would occur, such as soil and vegetation disturbance and the possibility of localized soil erosion. Standard erosion control measures such as silt fences, sand bags, or an equivalent control method would also be used to minimize any potential soil erosion. In an effort to avoid introduction of exotic plant species, no hay bales would be used for erosion control. On a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: rice straw, straws determined by NPS to be weed-free (e.g., Coors barley straw or Arizona winter wheat straw), cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.</p>	Contractor
	<p>Work at the five perennial streams would be completed in as short a time as possible to minimize disturbance. Work would be done during low flow periods in the fall and early winter when stream flows would be expected to be less than five cubic feet per second, this would minimize the sediment load introduced into the creeks. The flowing water bodies would be temporarily diverted through bypass culverts during construction. Because the creek beds in the project area are primarily coarse sand and cobbles, sedimentation would be expected to be minimal. Small amounts of soil, gravel, and debris (dust, mortar, and similar small sized material) may periodically wash into the flowing water bodies. These would be infrequent events of short duration and such pulses of material would quickly flush from the system presenting no long-term effects.</p>	Contractor
	<i>To minimize temporary impacts associated with potential soil erosion:</i>	
	<p>All trenching restoration operations would follow guidelines approved by park staff. These guidelines would minimize disturbance to soils and roadside vegetation due to construction activities, and restore affected areas to their original form wherever possible. Excavated material would be stockpiled in the construction zone. Erosion to stockpiled soil would be minimized by placing silt fencing, as required, adjacent to the excavated soil. Excavated soil would be stockpiled only as long as it takes to dig the trench and install the culvert.</p>	Contractor
	<p>Any trenching operations (i.e., to reinstall culverts across the road) would use a backhoe, trencher, or some similar machine. As the trench is dug the excavated material would be set aside for storage. After trenching is complete, bedding would be placed and compacted in the bottom of the trench and the culvert installed in the bedding. Backfilling and compaction would begin immediately after the culvert is placed into the trench and the trench surface would be returned to pre-construction contours.</p>	Contractor
	<p>Some drainages would be recontoured and armored with rip rap to resist erosion and future undermining of the road. Spaces (joints) between the individual pieces of rip rap would not be grouted so vegetation would grow and reestablish in the joints.</p>	Contractor

	<i>To reduce the risk of exotic weed spread:</i>	<i>Responsibility:</i>
	Measures will be undertaken to control exotic plants within the project area and associated staging areas. Initially, all vehicles and equipment will be cleaned before bringing them into the construction area to limit movement of exotic seeds. Importation of any outside soils will be minimized. Attempt to limit soil import to material similar to native soils. No importation of metamorphic topsoils would be allowed.	Contractor
	<i>To minimize waste and pollution:</i>	
	Vegetation and timber shall be removed from the construction site and legally dumped outside the boundary of the park. Some cut vegetation (material less than one inch in diameter) may be chipped and placed in areas approved by the Yosemite Vegetation Ecologist.	Contractor
	All construction equipment will be equipped with mufflers kept in proper operating conditions, and when possible equipment will be shut-off rather than allowed to idle.	Contractor
	To minimize the possibility of petrochemicals from construction equipment seeping into the soil, equipment would be checked frequently to identify and repair any leaks. Additionally, oil absorbent hazardous material pads would be available for small leaks, spills, and for any routine grease and oil maintenance work. Clean up kits will be on board of equipment in case of an accidental spill.	Contractor
	All mechanized construction equipment used in association with work in the flowing water bodies would be cleaned; this may include steam cleaning to remove any imported seeds and other non-native material as well as any petroleum products clinging to the equipment.	Contractor
	Fueling of all machinery would be conducted only in the equipment staging areas away from the flowing water bodies. Any spills of hazardous materials, fuel, etc., would be cleaned up immediately, and would not be washed into the flowing water bodies. Materials used for cleaning fuel spills and other hazardous materials would be available on site.	Contractor
	Portable rest room facilities would be used by construction workers.	Contractor

	<i>To maintain visual quality:</i>	<i>Responsibility:</i>
	Road work would emphasize visual quality while minimizing impacts to resources. Designs and colors of construction materials would blend with the surroundings and be compatible with existing roadway features. Exposed culvert ends and flared end sections could be treated or colored to reduce visibility. Material for shoulder fill, if needed, would be from project material salvaged or park approved sources outside the park.	Contractor
	In areas where rock removal may be necessary, the rock would be removed with park approved controlled blasting. Blasting would conform with the 1991 NPS-65 (Explosives Use and Blasting Program) and FHWA FP-92, section 205 (rock blasting) specifications. All blasting would be designed to shatter, not to distribute.	Contractor
	Visible residual drill hole scars associated with this project would be removed. Residual drill hole scars associated with past construction would not be removed. Fresh rock faces would be treated with Eonite or a similar product to accelerate the weathered and natural appearance.	Contractor
<i>Special status species</i>	<i>To provide for amphibian protection:</i>	
	Habitat possibilities exist for the foothill yellow-legged frog ( <i>Rana boylei</i> ), a federal and state species of concern. A fall/winter project schedule would minimize impact to any potential populations existing in the area of potential downstream construction impact.	Contractor
	<i>To protect the slender-stemmed monkeyflower and Tompkin's sedge:</i>	
	Slender-stemmed monkeyflower and Tompkin's sedge were surveyed for and recorded along the entire 8.6 miles of the Hetch Hetchy Road. Detailed site by site mitigation measures are included as an appendix (p.30).	NPS
	V-ditching, whenever possible materials excavated by grading or other soil moving activities would be retained within the same road section; otherwise excavated material may be used only as "deep fill" along other road segments. This mitigative action will help minimize the spread of slender-stemmed monkeyflower beyond current distributions. Additionally, several V-ditch areas with high concentrations of monkeyflower populations would not be paved but gravel without grouting would be used here.	Contractor
	Plant salvage Tompkin's sedge identified from the survey as at risk prior to construction activities. Resource Management staff will store and later replant the sedge following completion of construction. There are 60 individuals that will be affected by the proposed construction.	NPS

<b>Cultural Resources</b>	<b>To record or restore cultural resources:</b>	<b>Responsibility:</b>
	The area of potential effect from road rehabilitation includes the existing road corridor and selected areas where necessary cut and fill actions would be required. As much as possible, work would occur within the existing road corridor. The proposed roadwork and staging areas have been designed to avoid historic properties. In addition, appropriate stop-work provisions and provisions for out of park borrow sources would be included in the project specifications to minimize potential impacts on cultural resources. Work limits would be defined.	Contractor
	To maintain the park-like character of the road, culvert headwalls visible from the road would be faced with hand-laid granite.	Contractor
	During construction, a qualified archeologist will monitor ground disturbing activities at the Canyon Ranch Mill site.	NPS
	If unknown resources are uncovered during construction, work would be temporarily suspended in the discovery area and the NPS would follow the provisions of the February 25, 1997 Flood Recovery Protocol. Data would be recovered using the approved Yosemite Archeological Research Design, the draft plan for recording and protecting (as necessary) archeological resources. Provisions of the Native American Graves Protection and Repatriation Act of 1990 would be followed.	Contractor NPS
	Contractors would be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Contractors would also be informed of the correct procedures for reporting the discovery of artifacts or previously unknown resources which are uncovered during road reconstruction activities.	NPS
<b>Park and Reservoir Operations</b>	<b>To minimize park and reservoir access difficulties:</b>	
	Safety permitting, during construction the road would be open on weekends in May 1999 from 5:00PM on Friday through 7:00AM on Monday. Safety permitting, during construction the road would also be open for administrative and/or emergency access.	Contractor
	In the last few years, since Hetch Hetchy spring road closures have shifted park use to Lake Eleanor and Kibbie Lake, Lake Eleanor could be staffed earlier to help accommodate visitors.	NPS

## **8 CUMULATIVE IMPACTS**

Council on Environmental Quality (CEQ) regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." (40 CFR 1508.7). Cumulative impacts have been considered for each alternative.

### **8.1 No Action**

No Action would not meet ongoing and reasonably foreseeable future changes in park facilities, services, and use. The flooding of January 1997 damaged infrastructure within Yosemite National Park, including Hetch Hetchy Road. After the flood, the need to improve the road became more apparent because of the needed access to O'Shaughnessy Dam. Increases in visitation and the resulting congestion and adverse environmental impacts, especially in Yosemite Valley, also highlight the need for improvements. Road closures limit access; and thus, degrade visitor experience and concentrate impacts in other already over-crowded areas. Additionally, no action annually expends park resources (labor) which could be used to maintain and protect other park resources.

### **8.2 Proposed Action**

The proposed action would not contribute incrementally to cause an overall adverse impact on the environment of Yosemite. Nor does the proposed action reflect a precedent-setting or policy decision, several of which would have an adverse effect. Rather, the proposed action would have a positive impact to the park in the area of park operations.

The proposed action reflects the current needs of Yosemite and the City and County of San Francisco as well as recent, ongoing, and reasonably foreseeable future changes in park facilities, services, and use. The proposed action is consistent with park operational goals to provide for visitor enjoyment and improve efficiency. Reservoir operations and the visitor experience in Yosemite would benefit from an improved road less susceptible to closure. Park resources would be better allocated because an improved road would require less annual maintenance; therefore, park staff would be available to maintain and protect other park resources.

## **9 COMPLIANCE**

This EA provides disclosure of the planning and decision-making process and potential environmental consequences of the alternatives. The analysis of environmental consequences was prepared on the basis of a need to adequately analyze and understand the consequences of the impacts related to the proposed park developments and to involve the public and other agencies in the decision-making process. In implementing this proposal, the NPS would comply with all applicable laws and executive orders, including the following:

### **9.1 National Environmental Policy Act (NEPA) of 1969 (42 USC 4341 et seq.)**

NEPA was established to ensure that environmental consequences of federal actions are identified, documented and considered in the decision-making process. Regulations implementing NEPA are set forth by the Council on Environmental Quality (refer to next paragraph).

### **9.2 Council on Environmental Quality (CEQ) Regulations Implementing NEPA (40 CFR Parts 1500-1508)**

CEQ Regulations implementing NEPA establish the requirements for environmental assessments (EAs) and environmental impact statements (EISs) and the process by which federal agencies fulfill their obligations under NEPA. The Regulations also define such key terms as "cumulative impact", "mitigation" and "significantly" to ensure consistent application of these terms in environmental documents.

### **9.3 Clean Water Act (CWA) of 1977 (33 USC 1251 et seq.)**

CWA provides for the restoration and maintenance of the physical, chemical and biological integrity of the nation's waters. Section 404 of the Act prohibits the discharge of fill material into navigable water of the U.S., including wetlands, except as permitted under separate regulations by the U.S. Army Corps of Engineers (COE) and U.S. Environmental Protection Agency (EPA). An important aspect of the regulations is that discharges into waters of the U.S., and the placement of fill in wetlands in particular, should be avoided if there are practicable alternatives. The proposed action requires Section 401 and 404 compliance, which would be completed prior to construction.

#### **9.3.1 Section 401 Water Quality Certification**

Certification by the State Water Resources Control Board (SWRCB) that the project would be in compliance with established water quality standards is required

under Section 401 of the Act before a Section 404 permit can be issued by the COE.

### **9.3.2 Section 404 Permit Application**

A Section 404 permit application must be submitted to the COE and approved prior to any discharge of fill material into navigable waters of the U.S. (e.g., the Tuolumne River). A Section 404 permit was issued by the COE (Number 199800442) on September 22, 1998.

### **9.4 Clean Air Act, as amended (42 USC 7401 et seq.)**

Yosemite National Park is designated as a Class I clean air area. Maximum allowable increases (increments) of sulfur dioxide (SO<sub>2</sub>), particulate matter (TSP), and nitrogen oxides (NO<sub>x</sub>) beyond baseline concentrations established for Class I areas cannot be exceeded. Section 118 of the Clean Air Act requires all federal agencies to comply with existing federal, state, and local air pollution control laws and regulations.

### **9.5 Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.)**

ESA protects threatened and endangered species, as listed by the U.S. Fish and Wildlife Service (USFWS), from unauthorized take and directs federal agencies to ensure that their actions do not jeopardize the continued existence of such species. During the design phase (prior to construction), surveys have occurred and mitigation measures have been developed. Coordination with the USFWS has been carried out (September 23, 1998) to ensure that protected species and their habitat areas are not significantly affected.

### **9.6 National Historic Preservation Act of 1966, as amended (Public Law 89-665)**

Section 106 of the National Historic Preservation Act requires that federal agencies consider the effect of proposed actions on properties on or eligible for listing on the National Register of Historic Places (NRHP). Investigation and documentation has been conducted by the NPS and determined the Hetch Hetchy Road NRHP eligibility pursuant to the Act and related policies, including NPS Management Policies, the Cultural Resources Management Guideline (NPS 28), and the Advisory Council on Historic Preservation's (ACHP) implementing regulations regarding "Protection of Historic Properties" (36 CFR 800).

**Determination of Eligibility:** Based on historical documents and cultural resource field surveys, and pending the approval of the SHPO, the NPS has determined that Hetch Hetchy Road is not eligible for listing pursuant to the

National Historic Preservation Act and 36 CFR Part 60.

### **9.7 Executive Order 12898-Environmental Justice**

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The actions addressed in this EA are not expected to result in significant changes in the socioeconomic environment of the project area; and therefore, are expected to have no direct or indirect impacts to minority or low-income populations or communities.

### **9.8 Floodplains and Wetlands**

Executive Orders 11988-Floodplain Management and 11990-Protection of Wetlands require an examination of impacts to floodplains and wetlands of potential risk involved in placing facilities within floodplains and protecting wetlands. The 1988 NPS *Management Guidelines*, NPS-2 (*Planning Guidelines*), NPS-12 (*National Environmental Policy Act Guidelines*), and the 1980 GMP provide guidelines on developments proposed in floodplains and wetlands.

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## APPENDIX

### Site by Site Special Status Species Mitigation Measures:

#### Site 1.70 (sheet 3 of 15)

Retain all excavated materials within the same drainage (where new culvert going in) to minimize impact to existing population of slender-stemmed monkeyflower (MIFI) at headwall. Excavated material may also be used as "deep fill" material along other road segments as long as the chance of unnaturally spreading population of MIFI is reduced.

No V-ditching from 66+20L to 67+10L due to large population of MIFI, crushed aggregate base (non-grouted) will be acceptable.

#### Site 1.80 (sheet 4 of 15)

Current plan would directly impact three individuals of Tompkin's sedge (CATO) between 48" Ponderosa pine and road edge. NPS will salvage these plants before construction begins and transplant them at end of construction within site 1.80.

Relocate mound to the north so that it is between the 24" cedar and the 48" pine. This will prevent removal of the pine and protect a large population of MIFI (about 100 plants total) located to the west.

#### Site 2.20 (sheet 5 of 15)

No concerns.

#### Site 3.40 (sheet 6 of 15)

No concerns.

#### Site 3.60 (sheet 7 of 15)

No concerns.

#### Site 3.70 (sheet 8 of 15)

Retain materials excavated during grading within drainage at 46+00E. Excavated material may be used as "deep fill" material along other road segments as long as the chance of unnaturally spreading population of MIFI is reduced.

#### Site 4.12 (sheet 9 of 15)

Retain soils from excavations within drainage to receive box culvert - 17 MIFI would be affected by this plan.

#### Site 4.20 (sheet 10 of 15)

No concerns for MIFI.

Minimize the 75 feet of grading that is shown below the outlet. The minimization reduces the impacts associated with vegetative cover and soil disturbance.

**Site 4.53 (sheet 11 of 15)**

No concerns.

**Site 5.26 (sheet 11 of 15)**

No concerns.

**Site 5.34 (sheet 12 of 15)**

Large populations of MIFI (on east side of the road) from 137+20E to 138+50E. To prevent destruction and unnatural spreading of MIFI, avoid V-ditching if possible. If not possible: use blade to lightly scrap, do not remove excess material from the area, and use the excess material as berm on the V-ditch. Crushed aggregate base (non-grouted) will be acceptable.

**Site 6.75 (sheet 13 of 15)**

Large MIFI and CATO populations from 211+50E to 212+50E. To prevent destruction and unnatural spreading of MIFI, avoid V-ditching if possible. If not possible: use blade to lightly scrap, do not remove excess material from the area, and use the excess material as berm on the V-ditch. Crushed aggregate base (non-grouted) will be acceptable.

**Site 6.85 (sheet 14 of 15)**

Work with park Resource Management staff closely to avoid individual plants of CATO adjacent to mound and compact area.

Avoid transporting soil materials from this site to other areas -- this site has a dense population of Klamathweed (*Hypericum perforatum* – an exotic species) that the NPS does not want to spread.

**Site 7.05 (sheet 15 of 15)**

No V-ditching at 226+70E to 227+80E to avoid CATO, or work with resource Management staff to remove CATO prior to work, then replant.

Landslide repair needs to be completed with dam spoils if possible (this material is native to the area), otherwise the repair needs to be seeded with native species to avoid establishment of exotic species (commonly found in imported material). Additional money will needed to collect seed that is appropriate to the site if this method is selected.

**Site 8.27 (sheet 15 of 15)**

No concerns.