FINAL

ENVIRONMENTAL STATEMENT

LOST CREEK LAKE PROJECT,
ROGUE RIVER, OREGON

Prepared by

U. S. ARMY ENGINEER DISTRICT, PORTLAND, OREGON

8 May 1972

Lost Creek Lake, Rogue River Basin, Oregon

( ) Draft (X) Final Environmental Statement

Responsible Office: U. S. Army Engineer District, Portland, Oregon

1. Name of Action: (X) Administrative ( ) Legislative

2. Description of Action: Construct an embankment dam and related structures on Rogue River, Jackson County, Oregon, to provide 315,000 acre feet of usable storage for flood control and water conservation * for municipal and industrial water supply, fish enhance- * ment, water quality control, recreation, irrigation, and power generation.

3. a. Environmental Impact: Flooding of river valley behind dam used for timber production, farming, pasture, and wildlife habitat; loss of an 11-mile stretch of natural stream to be covered by the lake; reduction of flood damage downstream along Rogue River; provision of water for irrigation, municipal and industrial water supply, recreation, fish and wildlife, and water quality improvement; hatchery production to compensate for fishery losses and power production.

b. Adverse Environmental Effects: Loss of wildlife habitat and timber production on land needed for the lake, road relocation, and project construction; loss of natural stream with anadromous fish spawning and rearing areas within the proposed lake area; adverse esthetic conditions during periods of pool drawdown.

4. Alternatives: Abandon project construction; dry reservoir operation; single-purpose alternatives including flood plain evacuation, levee protection, and a combination of those; dam at another site; different dam size; a concrete dam; and the alternative to the proposed action to include fish passage facilities.

5. Comments Received:

FEDERAL

U.S. Dept. of Agriculture, Forest Service
U.S. Dept. of Comm., NOAA
U.S. Dept. of Interior
U.S. Dept. of Transportation, FHA
U.S. Environmental Protection Agency

STATE

Oregon Federal Aid Coord.
Univ. of Oregon, Museum of Nat. History

COUNTIES

Jackson County

CITIZEN GROUPS & OTHERS

Rogue Basin Flood Control & Wtr. Resources Assoc.
Oregon Environmental Council
John B. Ballard
E. H. Tennyson, Jr., M.D.
D. A. Turcke, M.D.
Jackson Soil and Water Conservation Dist.

6. Draft statement to CEQ 19 January 1972.
Final statement to CEQ 7 June 1972.
Supplement 1 to CEQ 21 July 1972.
Supplement 2 to CEQ 17 October 1972.

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COUNTY

(8) Jackson County, Oregon, Board of County Commissioners 8-42
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CONSERVATION GROUPS AND INDIVIDUALS

(10) Jackson Soil and Water Conservation District 8-44
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(13) John B. Ballard 8-65
(14) J. B. Tennyson, Jr., M.D. 8-66
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MEMBERSHIP ROSTER, ROGUE BASIN FLOOD CONTROL AND WATER RESOURCES ASSOCIATION

BASIN MAP

PROJECT MAP

SUPPLEMENT 1

SUPPLEMENT 2

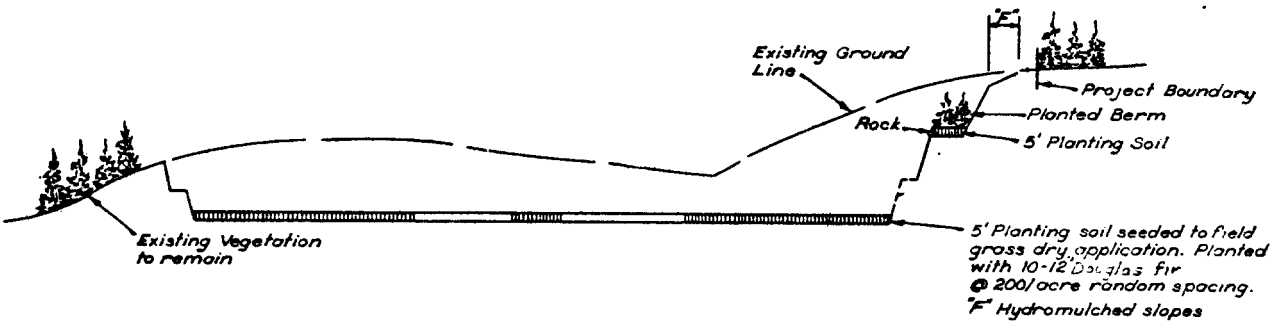
1. Project description (proposed action).

The proposed action is the construction of a multiple-purpose dam and reservoir, named Lost Creek Lake project, in Jackson County, Oregon, at river mile 154 on Rogue River. Lost Creek project along with Elk Creek at Applegate projects was authorized by the Flood Control Act of 1962 (PL 87-874, 87th Cong., 2nd Session, HD 566, approved 23 October 1962). It is about 27 miles northerly from Medford, Oregon. The project is under construction and, as of 1 December 1971, 14 percent complete. The benefit-to-cost ratio is 1.48:1 at 3 1/8% interest, based on January 1972 prices and conditions.

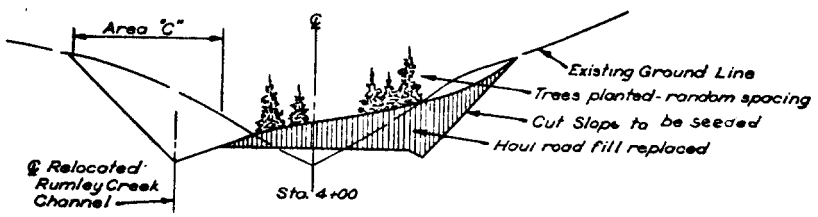
The plan provides for about an 11-million-cubic-yard rock and gravel fill embankment dam, 327 feet in height from streambed to crest with an overall length of 3,550 feet. A gated concrete spillway will be located on the left abutment and a diversion tunnel, intake works, and two-unit powerhouse with a total installed capacity of 49,000 kilowatts will be located on the right abutment. The lake created by the dam will be 10 miles long covering 3,438 acres at full pool and will provide 315,000 acre-feet of usable storage. The shoreline will be 30 miles long. It will control runoff from 674 square miles, or about 24 percent of the drainage area upstream from Grants Pass. The project also includes provision for limited downstream channel stabilization, if experience shows that such work would be necessary. Such work would be limited to the minimum found to be essential.

Rock and soil excavation and disposal is a significant part of the proposed action. Excavation for the main dam foundation, spillway regulating tunnel, and diversion tunnel amounts to 1,800,000 cubic yards. Part of that material will be used in the dam and connected features and the remainder will be disposed of in the reservoir area. The impervious material for the main embankment will be taken from within the reservoir area from stockpiled foundation excavation, and from roadway excavations. Additionally, 6,540,000 cubic yards of rock material will be removed from a quarry site above the left abutment. Excavation has been designed to minimize the esthetic impact and to effect an excavation nearly unnoticeable from roads and public use areas. The manner of excavation will be

controlled so an undisturbed berm of soil and rock will form the forward edge of the quarry. It will provide a visual screen between the reservoir and roads, and the excavation. Topsoil will be removed from the area and set aside for later use. Final quarry configuration will consist of a gently sloping bottom with drainage and sides with ledges for planting. Douglas fir, 10-12 inch size, at a rate of 200 per acre will be planted on the quarry floor in 5 feet of topsoil. Ponderosa pine, 5-6 foot size, will be planted on the ledges. The area also will receive an application of field grass seed. Special planting of fir and pine also will be made to the area. Those planting details have been worked out and are shown on several planting plan sheets of the contract drawings. A typical section of the quarry area is shown below:



Typical Section---Rock Quarry



Quarry Haul Road Restoration

Gravel material amounting to 2,100,000 cubic yards will be taken from the valley floor within the pool area. The gravel borrow sites, in the pool area, will be below minimum pool level and will not be visible, or be confining to fish, even during the lowest water level. Design emphasis has been to avoid, as much as possible, landscape scarring during all excavation rather than to rely on subsequent restorative measures. The vicinity and reservoir map in this statement shows the location of borrow areas.

Lost Creek Dam and Lake will be a multiple-purpose project with flood control a primary function. Regulation of the Lost Creek Lake is designed to provide flood regulation in the Rogue River Basin and water for use during the dry season. The seasonal stream-flow regimen of Rogue River is such that the same reservoir storage space can be scheduled to serve annually both flood regulation and water conservation. Flood regulation is provided by reserving storage space for flood control during the late fall, winter, and early spring. Beginning in February, as the flood potential decreases, the storage space reserved for winter floods will be filled gradually, by 1 May. In scheduling the regulation of Lost Creek Lake, the year is divided into three seasons as follows: (a) major flood season, 1 November-31 January; (b) conservation storage season, 1 February-30 April; (c) conservation release season, 1 May-31 October.

During the major flood season a maximum of 180,000 acre-feet of storage space will be reserved in Lost Creek Lake. During that period the reservoir will be held evacuated to minimum flood control pool elevation 1,812, msl, except as the control and regulation of floods may require use of the storage space. Immediately following each flood the reservoir will be evacuated to the minimum flood control pool elevation as rapidly as downstream conditions will permit. Evacuation normally would require 5 to 15 days.

During the conservation storage season the flood potential of Rogue River decreases, which permits a gradual storing of water for conservation purposes at the filling rate shown on following chart 2. Under normal

filling conditions, the reservoir reaches full pool, elevation 1,872, on 1 May. Filling may be delayed if a substantial snowpack exists over the basin, above the reservoir, in late spring. This would be a precautionary measure to insure adequate storage space for regulating any flood that might develop from the abnormal snowpack. The rescheduled filling would in no way jeopardize realization of a full reservoir.

In the event that the inflow is not adequate to fill the reservoir by 1 May, storing may continue after that date if there is excess stream flow after providing for minimum releases and other scheduled conservation requirements.

During the conservation release season, release of stored water from Lost Creek Lake will be scheduled to provide optimum conservation benefits. Available stored water will be shared in by all functions. The volume of water stored in Lost Creek Lake, stream flow conditions during the low-water season, and the conservation demands for stored water, will vary from year to year, a situation that requires a flexible conservation release schedule. Therefore, provisional schedules predicated on available stored water, forecasted streamflow, and current water demands, will be prepared on a year-to-year basis. Those schedules will be reviewed during each conservation release season and will be revised as necessary to meet changing conditions and water demands. The stored water during a normal water year would be released for conservation uses generally as shown below. Irrigation release would be utilized for downstream enhancement until such time Bureau of Reclamation Irrigation project is implemented.

Use	Acre feet
Municipal and Industrial	10,000
Irrigation	35,000
Fishery and Environmental Enhancement	135,000
Total	180,000

During a deficient water year such as 1941, as shown on "plate 3", carryover storage would be utilized to satisfy downstream needs. Water would be released for uses as follows:

(Water-deficient year-1941)

Use	Acre feet
Municipal and Industrial	10,000
Irrigation	31,000 1/
Fishery and Environmental Enhancement	159,000
Total	200,000 2/

1/ During this year of record Elk Creek project would provide additional irrigation water - should Elk Creek not have that capability. All uses would share in the deficiency on the basis of the stipulation in paragraph 562 of House Document 566, 87th Congress, 2nd session.

2/ Greater storage release during a water-short year than a normal year is required because of less natural summer flow in the river.

Throughout the year, releases from the reservoir to Rogue River would not fall below the flows established for fishery enhancement. The temperature of release water will be selected from between 45^{o} to 52^{o} F. depending on the requirements downstream. The releases specifically for fishery enhancement will be in amounts and at temperatures specified by the fishery agencies on the basis of cooperative studies. Under the terms of the report contained in House Document 566, as approved by the authorizing Act, stored water required for fish habitat enhancement is protected against demands for irrigation or other uses. Also, the released flows will be protected in the stream from damsite to the Pacific Ocean by the State of Oregon under water rights applied for by the Oregon Game and Fish Commissions and under programs adopted by Oregon State Water Resources Board. Table 1 shows releases and release temperatures for different times.

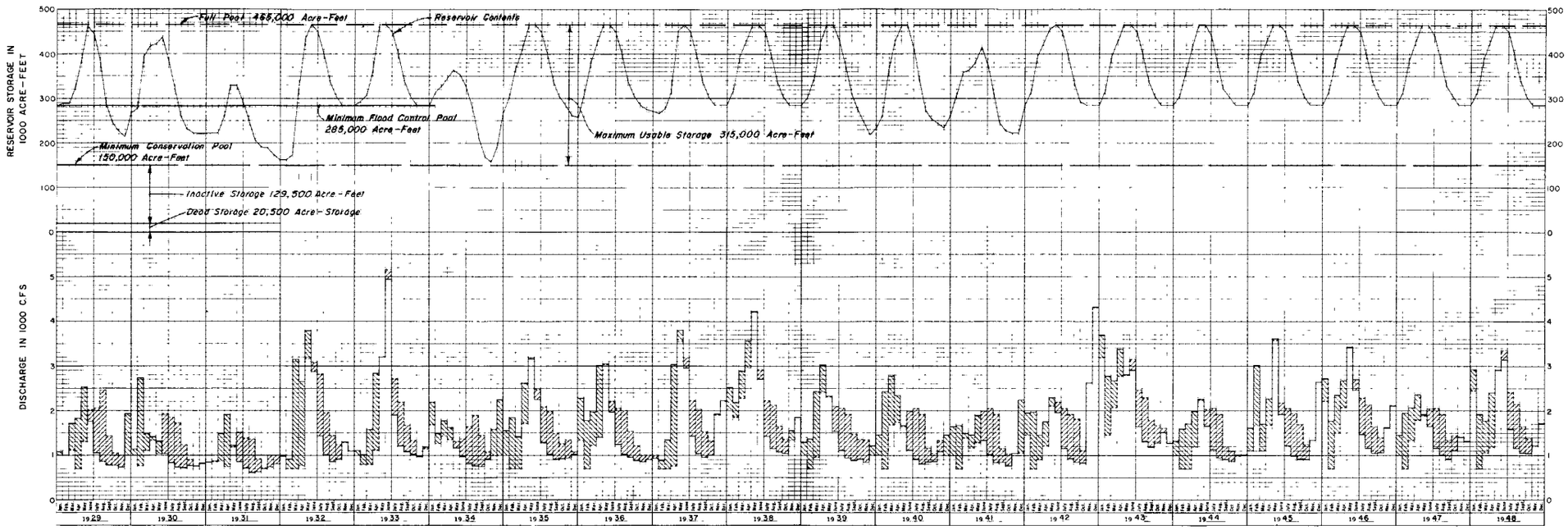
TABLE 1

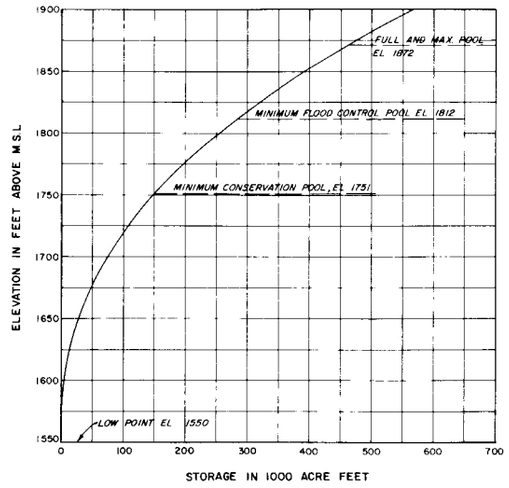
Period	Fishery releases in cfs	Maximum Water temperature (Degrees F.)
1 February-30 April	700	52
1 May-15 May	1,000	52
16 May-31 May	1,300	52
1 June-10 June	1,500	45
11 June-30 June	1,800	45
1 July-20 August	2,000	52
21 August-7 September	1,500	52
8 September-31 January	1,000	52

A reservoir regulation study for the period 1929-1961 showed that the scheduled releases could be maintained in all years except 1930 and 1931. A 38-percent shortage would be experienced in a year such as 1931, the most severe of the drought years. During years of shortage available stored water would be shared, by all users, to the same relative extent as for a full supply. Recurrence frequency of the 1931 shortages is estimated to be once in fifty years, on an average. Plate 3 following shows seasonal reservoir regulation characteristics for the years 1929-1968.

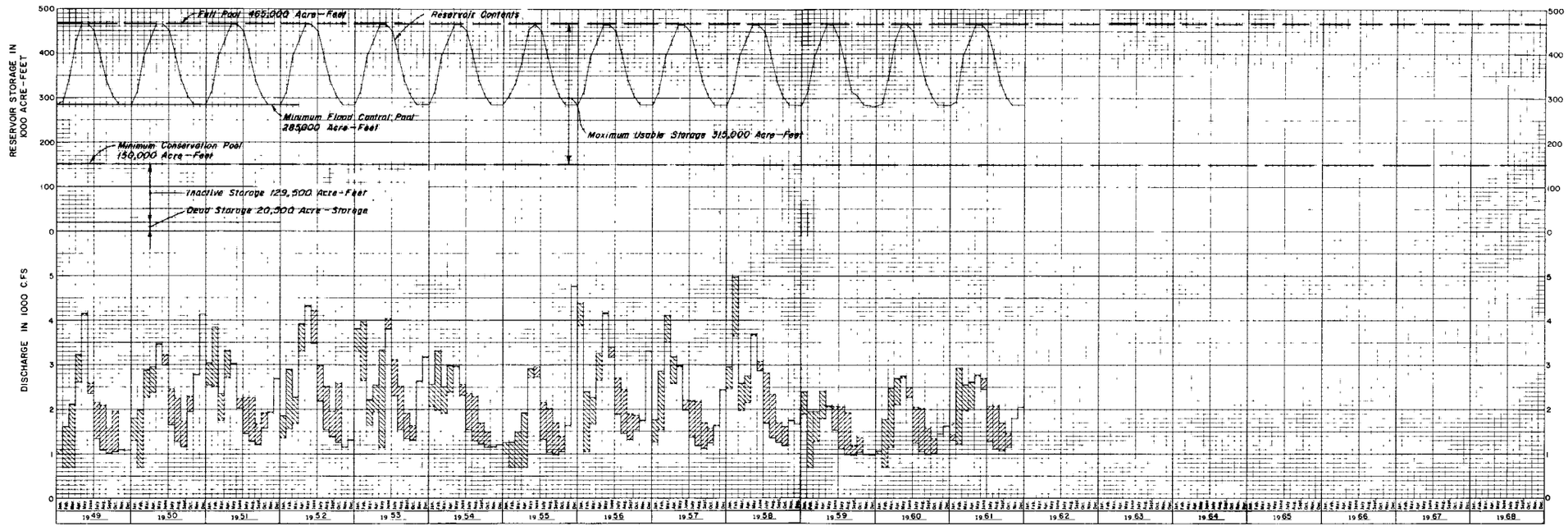
Proposed relocation action includes construction of new roads and utility lines. About 6.6 miles of State Highway No. 62 (Crater Lake Highway) will be relocated to the south side of the reservoir. That action involves construction of two major bridges. The highway will be constructed to Oregon

Project By-pass Road





STORAGE CAPACITY



LEGEND

- NATURAL INFLOW
- REGULATED OUTFLOW
- WATER STORED IN RESERVOIR
- WATER RELEASED FROM STORAGE (IN EXCESS OF NATURAL INFLOW)

NOTES

1. THIS PLATE SHOWS THE INFLOW, OUTFLOW, AND RESERVOIR CONTENTS AT LOST CREEK LAKE AS AFFECTED BY A PLAN TO DEVELOP THE ULTIMATE WATER RESOURCES OF THE ROGUE RIVER BASIN
2. LOST CREEK LAKE IS ONE UNIT IN A SYSTEM OF THREE MULTI-PURPOSE RESERVOIRS AUTHORIZED FOR THE ROGUE RIVER BASIN
3. EXAMPLES OF FLOOD CONTROL REGULATION ARE SHOWN ON PLATE 3
4. EXPLANATION OF SEASONAL RESERVOIR REGULATION IS GIVEN IN TEXT

ROGUE RIVER BASIN, OREGON
ROGUE RIVER
LOST CREEK LAKE

SEASONAL RESERVOIR REGULATION 1929-1961

U. S. ARMY ENGINEER DISTRICT, PORTLAND

PREPARED _____ CHIEF, WATER CONTROL SECTION
RECOMMENDED _____ CHIEF ENGINEERING DIVISION
SUBMITTED _____ CHIEF PLANNING BRANCH
APPROVED _____ COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

DRAWN B.V.T. D.L.
TRACED R.V.R.
CHECKED G.P.
TRANSMITTED WITH REPORT DATED _____

AUGUST 1971

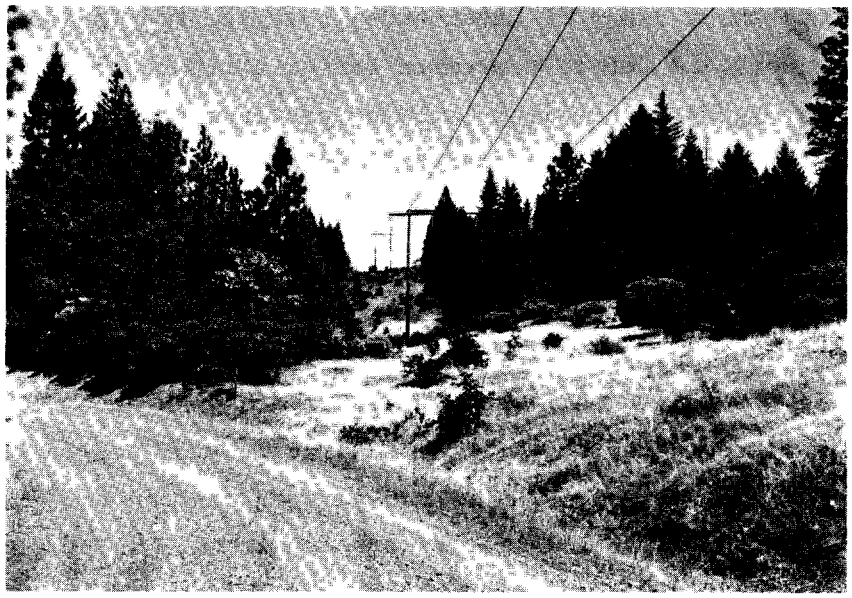
LC-20-16/9
PLATE 3

State Highway Department class "C" standards, that is, two 12-foot lanes with 8-foot shoulders. A 600-foot-or-more buffer strip south of the relocated Crater Lake Highway centerline is being provided to assure controlled scenic quality to the cooridor. A road will be constructed to provide access to the north shore of the project and adjacent lands. It will be 7.7 miles long and be constructed at county road standards with two 11-foot lanes and 4-foot shoulders. The lower 1.87 miles of the county road and a 0.62-mile by-pass road have been constructed to route traffic around the damsite. Two viewpoints have been constructed along those roads. A temporary viewpoint on the by-pass road will provide visitors with a view of the dam during construction. The permanent viewpoint on the lower county road will allow visitors a view of the dam as well as of the fish hatchery. When permanent roads are complete, the by-pass road above pool line will be obliterated and then restored to blend with surrounding landscape.

Excavated materials from the roadway prism will be utilized for construction of embankments, flattening of slopes to improve safety and eliminate guardrails, and roadway widing to provide turn outs. The topsoil will be stripped, stockpiled, and used for landscaping purposes.

Highway work has been coordinated with the Oregon State Highway Division and the Corps is proceeding with the planning, design, and construction according to the terms of a contract with the State of Oregon, "Rearrangement or Alteration of Facilities, DACW-57-70-C-0140".

Utility relocation includes the construction of 6.8 miles of electrical distribution line. It includes 69-kv and 115-kv regional lines and a local distribution line. About 5.5 miles of telephone trunk line also must be relocated outside the reservoir. A microwave system is planned to replace the trunk line.



Powerlines must be relocated

Recreation and public uses is a major project action. Set aside for that use are 750 acres of land on the south-shore and 500 acres of land on the north-shore. Initial recreation facilities (those required to accomodate expected use during the first ten years of operation) will be provided as part of the project action. Facilities planned include 325 camp units, 430 picnic units, boat-access area, nature trails, and sanitary facilities, all at the south-shore site. The north-shore areas will be utilized for low density uses such as trails and hike-in picnic areas. Those facilities are not planned during the early action period. Initial project action also provides for acquisition of lands to support future recreation facilities as needed. Downstream from the main dam, and incorporated into the downstream toe of the barrier embankment at the fish hatchery facility, will be a boat access facility to the river and parking space for cars and boat trailers. That facility is designed primarily to accommodate drift-boat fishermen.

Details for sewage disposal have not been completed. Investigation to date shows that at least three basic alternatives will be considered for the treatment of the domestic wastewater from the proposed recreation facilities. One of the many criteria used to evaluate those alternatives will be the effect that they will have upon the region's environment,

especially water quality. Any alternative that will be proposed must have the approval of the United States Environmental Protection Agency, the Oregon State Department of Environmental Quality, and other State and local agencies involved in water-pollution-control programs.

One alternative consists of a common sewage treatment facility located downstream from the dam. Pump stations, pressure lines, and gravity lines would be required to transport the domestic wastewater from the sources to that treatment facility. The facility would provide secondary treatment and the effluent would be chlorinated before disposal. Either land irrigation techniques or discharging the effluent directly to the river, subject to meeting water quality requirements, may be used.

The second alternative provides for sewage treatment and disposal sites near each source. Small pump stations, pressure lines, and gravity lines would be required to transport the sewage to each facility. In areas where large sewage flows are expected, aerated and/or facultative lagoons may be used. The chlorinated effluent may then be irrigated onto fenced lands for disposal. In isolated areas where small flows are expected, anaerobic treatment and sub-surface disposal may be utilized.

The third alternative provides for separate anaerobic treatment and sub-surface disposal systems in each area where the sewage is generated. In addition to the gravity lines needed to transport the sewage, pump stations and pressure lines may also be necessary in this alternative.

Included in the project is the construction of Cole M. Rivers Fish Hatchery. That work is in progress and will be completed January 1973. The hatchery will be capable of producing 425,100 pounds of fish per year. That capacity is based on requirements to provide restitution for loss of spawning and rearing areas at Lost Creek as well as the other authorized Rogue Basin projects, Elk Creek and Applegate. The species to be reared are spring chinook, summer and winter steelhead, coho salmon, rainbow trout,

JANUARY 5 10 15 20 25 | FEBRUARY 5 10 15 20 25 | MARCH 5 10 15 20 25 | APRIL 5 10 15 20 25 | MAY 5 10 15 20 25 | JUNE 5 10 15 20 25 | JULY 5 10 15 20 25 | AUGUST 5 10 15 20 25 | SEPTEMBER 5 10 15 20 25 | OCTOBER 5 10 15 20 25 | NOVEMBER 5 10 15 20 25 | DECEMBER 5 10 15 20 25

MAJOR FLOOD SEASON

CONSERVATION STORING SEASON

Fill reservoir for conservation purposes but not to exceed storage level indicated except as required to regulate floods during this period.

CONSERVATION RELEASE SEASON

Release stored water for conservation use. Reservoir to be evacuated to the storage level indicated by dashed line regardless of storage requirements. Should conservation requirements draw the reservoir below the dashed reservoir level on any date, release only the stored water required to meet conservation demands.

MAJOR FLOOD SEASON

Hold reservoir at minimum flood control pool for flood regulation.

STORAGE IN 1,000 ACRE-FEET

500
450
400
350
300
250
200
150
100
50
0

FULL POOL EL. 1872, 465,000 ACRE-FEET

FILLING RATE 2,020 ACRE-FEET PER DAY

STORAGE SHOULD NOT EXCEED THIS LEVEL EXCEPT AS REQUIRED FOR REGULATING A FLOOD.

MAXIMUM OF 180,000 ACRE-FEET OF SPACE RESERVED FOR FLOOD REGULATION

MINIMUM FLOOD CONTROL POOL EL. 1812, STORAGE 285,000 ACRE-FEET

MAXIMUM USABLE STORAGE 315,000 ACRE-FEET

MINIMUM CONSERVATION POOL EL. 1751, 150,000 ACRE-FEET

129,500 ACRE-FEET INACTIVE STORAGE

OUTLET INVERT, EL. 1640

20,500 ACRE-FEET DEAD STORAGE

JANUARY 5 10 15 20 25 | FEBRUARY 5 10 15 20 25 | MARCH 5 10 15 20 25 | APRIL 5 10 15 20 25 | MAY 5 10 15 20 25 | JUNE 5 10 15 20 25 | JULY 5 10 15 20 25 | AUGUST 5 10 15 20 25 | SEPTEMBER 5 10 15 20 25 | OCTOBER 5 10 15 20 25 | NOVEMBER 5 10 15 20 25 | DECEMBER 5 10 15 20 25

ROGUE RIVER BASIN, OREGON
ROGUE RIVER
LOST CREEK LAKE

STORAGE RESERVATION FOR FLOOD REGULATION

DRAINAGE AREA, 674 SQUARE MILES

U.S. ARMY ENGINEER DISTRICT, PORTLAND

WATER CONTROL SECTION
PREPARED: C.P.

DECEMBER 1965
CHECKED: J.W.H.

(Rev.)

LC-20-16/2

CHART 2

and kokanee salmon. The hatchery is located on a 40-acre site on the left bank of Rogue River approximately 1 mile downstream from Lost Creek Dam axis. The facilities to be provided consist of a barrier dam, upstream and downstream levee, a fish ladder, a collection pond, 6 holding ponds, 87 rearing ponds, 2 trout brood ponds, 26 outside starter ponds, a hatchery building complex with related facilities, a water supply and drainage system, 2 spawn houses, 4 residences, 3 trailer pads, and appurtenant utilities.

The excavation for the hatchery and support facilities amounts to about 273,000 cubic yards. Subsequent fill is 163,000 cubic yards and disposal at the site for contouring is about 55,000 cubic yards.

Cole M. Rivers Fish Hatchery, under construction

A specific plan for treatment of effluents from the hatchery has not been developed. The Portland District is presently monitoring discharges from the four Willamette Valley hatcheries which are funded by the Corps. Treatment requirements will be based on the results of that monitoring program. Water discharged from the hatchery into the Rogue will meet State and Federal water quality standards.

As a part of Lost Creek and Elk Creek projects there is a potential "exchange-of-flow" arrangement. It would be an element of the U.S. Bureau of Reclamation Medford Division Project which would use water stored in Lost Creek and Elk Creek for irrigation, fish life enhancement, and recreation purposes. USBR study of Medford Division is not yet complete, so final details are not known. The exchanges contemplated, however, would involve: (a) substitution of stored water, from Lost Creek and Elk Creek by canal, for natural flow diverted from Bear and Little Butte Creeks as an irrigation supply; and (b) consequent maintenance, in those streams, of equal amounts of natural flow now diverted for irrigation. Water quality enhancement will include all aspects of returning flows in, and conditions along, those streams to a more-nearly-original condition. Stored water for use in such exchanges would be released from Lost Creek, Elk Creek, or both, as needed and in relative amounts based on conditions (amount of water available, etc.) in each storage project at the time.

Clearing Lost Creek Reservoir area includes the removal of all trees, brush, snags, and floatable debris over 2" in diameter and 6' in length. It also includes removal of all stumps between elevations 1,875 and 1,830 in areas adjacent to bathing beaches and boat-launching areas. All other stumps down to elevation 1,751 are to be cut close to and parallel to the ground. Stumps below the 1,751 elevation would be allowed to a height of 1' above the ground. All merchantable material will be salvaged.

Non-merchantable material will be burned to the extent that it complies with local regulations. It is proposed to attempt disposal of the clearing material by air-curtain and vat-burning methods. Both of those operations are capable of eliminating most visual air pollution. At the present time they are not widely practiced but early indications are that they are environmentally more acceptable then standard pile burning. Close monitoring of the burning process will be required of the contractor for compliance with air-pollution regulations. To the extent that material can be utilized, chipping of clearing debris is planned and in progress. The chips are planned for utilization for landscaping as a dressing.

2. Environmental setting without the project.

a. Rogue River Basin - The basin covers about 5,060 square miles in southwestern Oregon. It lies between the crest of the Cascade Range to the east, the Siskiyou Mountains to the south, the Umpqua and Coquille River Basins to the north, and the Coast Range and the Pacific Ocean to the West. The river flows into Pacific Ocean at Gold Beach, Oregon, about 265 miles south of the mouth of Columbia River and about 320 miles north of the entrance to San Francisco Bay. The basin, roughly crescent-shaped with the extremeties near Crater Lake at the crest of the Cascades and Gold Beach at the coastline, includes most of Jackson and Josephine Counties, a considerable part of Curry County, and minor areas in Douglas, Klamath, and Coos Counties in Oregon, as well as about 150 square miles in Siskiyou and Del Norte Counties in California.

Rogue River rises at the extreme eastern tip of the basin near Crater Lake and flows generally westward about 210 stream miles to its mouth at Gold Beach. The upper reaches of the river, above Trail, flow through narrow, steep canyons. Developments exist only along small benches at infrequent intervals. Below Trail the valley widens into the largest arable and most highly developed section in the basin. The city of Medford is located in that section, on Bear Creek about 15 miles upstream from the confluence with Rogue River. Proceeding downstream, a short distance below Savage Rapid Dam, near the lower end of the canyon reach, the valley widens to form the second largest area of development in the basin, in which the city of Grants Pass is located. That fertile valley extends downstream from Grants Pass about 12 miles to the entrance of a narrow, deep, rocky gorge which extends through the Coast Range to the ocean and which contains the Federal and state designated wild and scenic segment of Rogue River.

Principal tributaries, in upstream to downstream order, are as follows:

Tributary stream	Entrance at river mile	Drainage area, square miles	Tributary from
South Fork Rogue River	164	245	Left bank
Big Butte Creek	152	253	Left bank
Elk Creek	148	135	Right bank
Little Butte Creek	129	374	Left bank
Bear Creek	123	341	Left bank
Evans Creek	108	218	Right bank
Applegate River	91	768	Left bank
Illinois River	23	982	Left bank

Rogue River Basin is made up of three major topographic sectors:

The eastern sector, or headwaters area, lies on the west slope of the Cascade Range. The area generally is rugged, mountainous terrain. Elevations range from less than 2,000 feet to an elevation of 4,000 to 6,000 feet along the eastern rim. Peaks at the crest of the Cascade Range rise to elevations of 7,000 to 9,500 feet.

The central sector lies between the Cascade and Coast Ranges. It contains almost all of the agricultural lands and related developments in the basin. It consists generally of relatively flat valley floors separating ranges of hills of rolling to relatively steep character. Elevations range from less than 900 feet near Grants Pass, at the western edge, to about 1,500 to 1,800 feet at the foot of the Cascade slope.

The western sector consists of areas in the Coast Range and slopes of the Siskiyous. The terrain is nearly as rugged as the eastern sector, but elevations are lower, ranging from sea level at Gold Beach to a maximum of about 5,000 feet on peaks in the Coast Range. The Siskiyous to the south are somewhat higher than the divide between the Rogue and the Coquille and Umpqua Basins to the north.

Lands flat enough for agricultural use generally are limited to the flood plain and adjacent areas along Rogue River from near Shady Cove downstream to a point below Grants Pass; along Bear Creek from about Ashland downstream to its mouth; along the lower reaches of Little Butte

and Evans Creeks; along Applegate River and the upper reaches of Illinois River; and small areas along the lower reaches of lesser tributaries generally in the central sector.

The geology of Rogue River Basin is complex. It includes rock formations ranging from the oldest to the youngest in the State. The upper river and its tributaries, east of Bear Creek Valley, originate in the high Cascades and cross the relatively narrow belt of tertiary lavas and pyroclastics of the Western Cascade geologic province. Below Bear Creek Valley, rocks are mainly pre-tertiary metamorphosed sediments and volcanic rocks, granitic intrusives, and serpentine.

A blanket of fresh pumice from the Mount Mazama (Crater Lake) eruption covers the headwaters of the main river and, with young porous lava, forms an excellent absorption field and underground reservoir.

Mining was one of the first industries in the region and has long influenced the economy of Jackson County and downstream Josephine County. The first gold mining in Oregon began in those counties in 1851-52. Gold production, mostly from placer but with some from lode deposits, was of great importance until 1942, when Government action closed many of the mines. Mineral production from the two counties was valued at $2.3 million in 1969 and at about $85 million from 1948 through 1969. Although cement, sand and gravel, and crushed stone accounted for the major portion of the value, gold, silver, copper, lead, zinc, mercury, tungsten, chromite, clay, pumice, and soapstone have been produced. Three groups of claims in which beryilium and cinnabar occur have been located west and southwest and just outside of the Lost Creek Lake project area. U.S.D.I. Bureau of Mines has no record of production in those areas.

Rogue River Basin contains several hydroelectric power plants and small steam plants. Their combined generating capability is roughly 60,000 kw. Six hydroelectric plants are owned by Pacific Power and Light Company and one by U. S. Bureau of Reclamation. Annual production from all sources

on the basin is about 450 million kw hours. Basin consumption is about 1,200 million kw hours per year, requiring the annual importation of about 750 million kw hours.

The climate of Rogue Basin is characterized by mild, wet winters and hot, dry summers. The normal annual precipitation of the Rogue River Basin has a wide geographical variation, ranging from less than 20 inches in the Medford area to about 120 inches along the Coast Range. About one-half of the annual precipitation occurs during the November through January period at which time the flow of air from the west is most dominant. By contrast, less than 5 percent of the annual precipitation occurs during the July-September period when the area is dominated by the Pacific High and there is little or no flow of air from the ocean. Precipitation occurring as snow in Rogue Basin varies widely both with respect to elevation and proximity to the ocean. At Medford, a typical inland valley station, the average annual snowfall is about 8 inches, roughly 1 inch of water equivalent or 5 percent of the annual precipitation. Snow seldom remains on the ground for more than a week and depths rarely exceed 1 foot over the valley floor. At Prospect, an inland station at elevation 2,482 feet, the annual snowfall is 68 inches, representing about 15 percent of the annual precipitation. It is estimated that about one-half and three-quarters of the annual precipitation occur as snow at the 5,000- and 7,000-foot elevations, respectively. Flood-producing storms occur chiefly during winter months but are not uncommon in late autumn and early spring months. All major storms are of Pacific origin and are associated with a strong, onshore flow of moist air. Storms vary widely with respect to duration, intensity, and geographical distribution of precipitation. Major storm depths may exceed 10 inches at Gold Beach near the coast and at Crater Lake in the Cascades whereas only 3 or 4 inches occur on the valley floor near Medford. Typical major storms are generally of 3- to 5-day duration but some may persist for about a week.

Flows in Rogue River vary considerably. During the summer, flows drop to as little as 500 cubic feet per second at Grants Pass. As a result water temperatures rise and annually reach levels in the neighborhood of

80° F., or higher in the canyon reach downstream from Grants Pass. During later winter and early spring, flows at Grants Pass reach 35,000 cubic feet per second or greater about every other year. That flow is bankfull. During those flows the water temperature is in the low 40° range. Chemical quality of the water has been considered good as reported by the U.S. Public Health Service in a report dated June 1959.

MEAN MONTHLY FLOW AND TEMPERATURE (1950)

	Lost Creek		Dodge Bridge		Raygold		Grants Pass	
	Flow	Temp	Flow	Temp.	Flow	Temp	Flow	Temp
Jun	2998	51.3	3444	56.0	3665	58.3	3712	61.0
Jul	1641	56.3	1736	62.6	1779	67.5	1595	71.5
Aug	1272	56.5	1290	62.9	1333	67.8	1094	71.9
Sep	1165	52.6	1195	57.3	1266	59.6	1068	62.3

The Rogue River flow, at Lost Creek, is shown on plate 2, in section 1, for years 1929 - 1968.

Vegetation in the area is varied. More than three-quarters of the basin area is forest or timberland. Much of the forested area contains, or is capable of producing, marketable timber. Commercial timber species include Douglas fir (about 70 percent of the total), other firs, ponderosa and sugar pine, hemlock, and red cedar. Hardwood species, such as alder, maple, and oak, make up only a small percentage of the total commercial timber volume. About 50,000 acres of semiarid foothill areas, generally the southward-facing slopes, are covered with a sparse growth of oak, madrona, and underbrush, and there are probably about 170,000 acres of rocky, mountainous land with a sparse cover of stunted fir, ponderosa pine, and lodgepole pine. Untimbered and uncultivated lands in the basin generally support a light cover of annual grasses and weeds which grow in early spring but are dry throughout most of the rest of the year. Land devoted to agriculture amounts to about 9 percent of the basin area, and more than half is utilized for grazing.

Portions of the Rogue River, Umpqua, and Siskiyou National Forests, O & C lands administered by Bureau of Land Management and privately owned timberlands occupy the greater part of the rugged and mountainous areas

surrounding the central valley. The Rogue Basin encompasses one of the largest concentrations of virgin forests remaining in the United States outside of Alaska. The Federal forest lands are managed under multiple-use principles of sustained yield, and the present cut is near the sustained-yield capacity. Harvest of forest products comprises by far the largest industry in the basin at the present time.

Major agricultural enterprises in the basin are limited generally to the irrigated lands in Jackson and Josephine Counties. The farms produce beef, poultry, hay, fruits, and vegetables. Dairy farming is also practiced. The non-irrigated lands are used principally for pasture. Grazing capacity of the forest land is limited. Only about 10,000 head of cattle are provided summer grazing on public forest lands. Pears were introduced into Rogue Basin about 1900 and the acreage in pear orchards increased rapidly during the early part of the century. About 10,000 acres are now devoted to the production of pears.

Irrigation in the basin was first practiced in 1852 in what is now the Talent Irrigation District. The earlier systems made direct diversion from the streams with no provisions for storage. There are now ten organized irrigation districts, of which four have storage facilities, and several improvement districts. About 118,000 acres were irrigated in 1970 with 50,000 acres served by organized districts. The districts without storage facilities are supplied water through individual and corporative irrigation systems. The Bureau of Reclamation has rebuilt Emigrant Dam and Reservoir, constructed Agate Dam and Reservoir, and rehabilitated other storage and diversion systems in the Basin, but has not yet provided stored water adequate to meet Basin irrigation needs.

The population of Rogue River Basin is located almost exclusively along the main streams in Jackson and Josephine Counties. Most of the remainder of the population is located in Curry County, with some in the fringe areas in Klamath County, Oregon and in northern California. The population of the principal cities, 1970 census, is Medford 28,454, Grants Pass 12,455, and Ashland 12,342. The 1960 population for those same

areas was 24,425 at Medford, 10,118 at Grants Pass, and 9,119 at Ashland.

Development of the area has been somewhat retarded by poor transportation outlets. Only one branch-line railroad, formerly the main line, of the Southern Pacific Company traverses Rogue River and Bear Creek Valleys. It enters the basin from the north and passes through Grants Pass, Medford, and Ashland and on to California points. That line provides service for freight only.

Interstate Highway No. 5 passes through the central portion of the valley in a north-south direction. U.S. Highway 101 extends along the coastline. Oregon Highway 62 provides a year-around connection to points east of the basin and U.S. 199 connects the interior valley to U.S. 101 by way of Crescent City, California. Airport facilities are provided at Medford with scheduled flight service daily.

Rogue River Basin contains an abundance of recreational resources, consisting of mountain and river scenery; outstanding geological formations; extensive forested areas; excellent hunting; and a very valuable and nationaly known salmon and steelhead fishery. Those resources, together with Crater Lake National Park in adjacent Ckamath County, and Oregon Caves National Monument, have made the area one of the best known and most popular recreational areas. According to Jackson and Josephine County Parks Departments, and figures in the Oregon State Park Division, 1971 attendance report, more than 1,880,000 recreation days were enjoyed along the Rogue River below Lost Creek Dam site in 1971.

The Rogue Basin contains 42 lakes and reservoirs of over 5 acres. Total surface area amounts to 2420 acres. Counting only those rivers or streams, 5 or more miles long. There are 720 miles of such waterways in the basin.

The sport fishery is principally for spring and fall chinook and coho salmon, resident and anadromous rainbow (steelhead) and cutthroat trout. The trout fishery, especially in Rogue River above Prospect, is largely dependent on annual plantings of hatchery-reared fish by the Oregon State

Game Commission. In the upper segment, native rainbow and cutthroat trout, as well as introduced brown and eastern brook trout are taken.

The river has received international acclaim as a sport fishing paradise. Fly fishing for summer steelhead has been publicized through the writings of such personalities as Zane Grey and Herbert Hoover, and the quality of the angling, although now reduced, still is worthy of their praise. Of equal importance in recent years has been the sport fishery for spring and fall chinook. The progress of the spring run can be observed by watching the distribution of boats along the stream as anglers follow the run. The salmon and steelhead potential of the river is not being realized because of low flows and high water temperature during the summer months. Runs of spring chinook have increased recently to a much higher level than in the 1950's.

A major portion of the sport-fishing effort is accomplished from specially-designed drift boats which have permitted angler access to portions of the river to which other means of boat access do not exist. Many fishermen own drift boats and many more accompany guides on fishing excursions.

The salmon is especially important to the sport and commercial fishery programs in Oregon. Ocean sport and commercial fish landings for the State of Oregon and Gold Beach are shown below.

Fishery	Total Oregon Catch Nos.	Total Oregon Catch Lbs.	Gold Beach Landing Nos.	Gold Beach Landing Lbs.
Commercial Troll[1/]				
Chinook	164,688	1,937,784	887	11,118
Coho	989,743	8,666,506	2,318	20,112
Ocean Sport[2/]				
Chinook	31,192		3,016	
Coho	219,988		1,707	

1/ 1970

2/ 1969

The wildlife resources of Rogue River Basin make an important contribution to the region. Those resources include the Columbian black-tailed deer, which range over most of the basin, black bear, and newly-introduced starter populations of Roosevelt elk and wild turkeys.

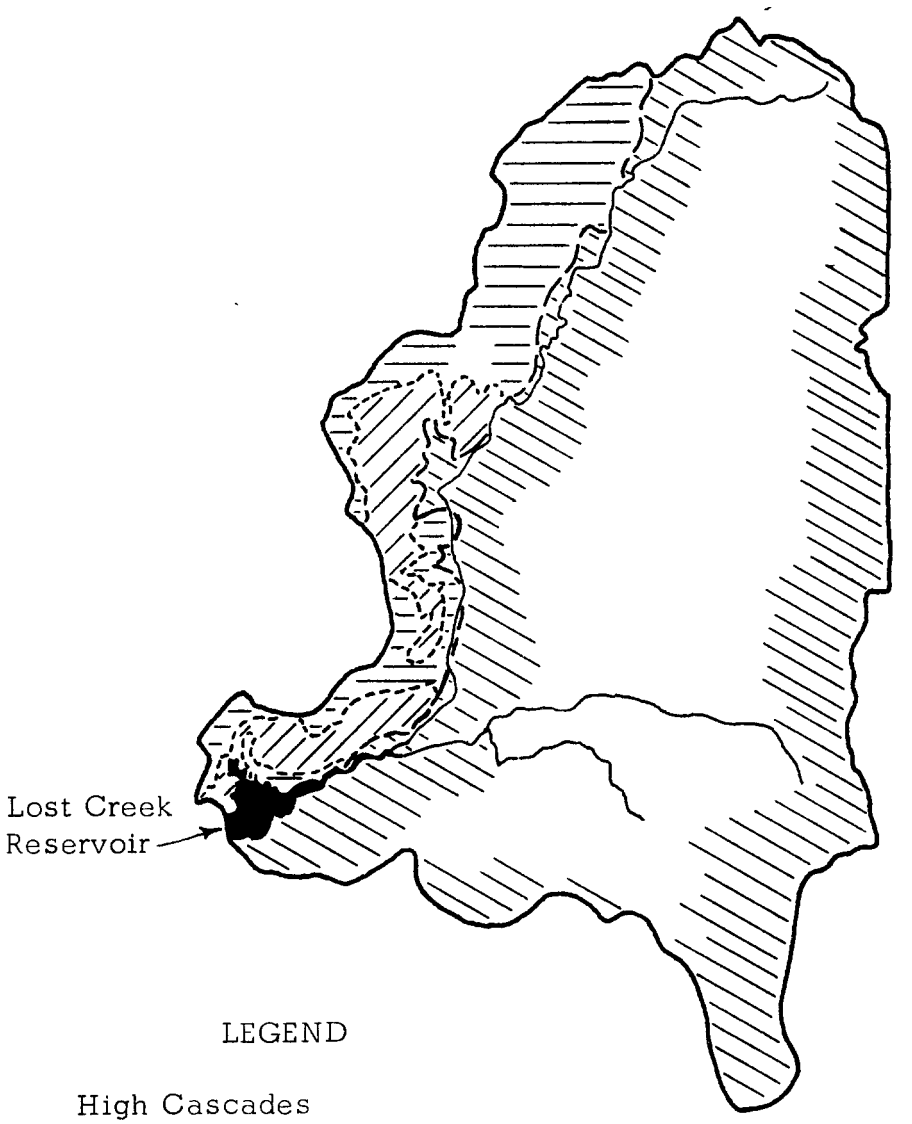
Ring-necked pheasant, valley quail, mourning doves, and bandtailed pigeons are common to the area. There also are small numbers of brush rabbits and silver-gray squirrels. The mountainous and woodland areas of the basin are occupied by mountain quail, ruffed grouse, sooty grouse, and silver-gray squirrels.

Muskrat, mink, and beaver inhabit the area and are trapped for their fur. There are also skunk, weasel, bobcat, raccoon, river otter, coyote, and reptiles. There are some 260 species of birds which frequent the area.

Rogue River and its tributaries are essentially swift streams with comparatively little aquatic food or marsh habitat for waterfowl. Most of the waterfowl utilization occurs in the middle segment of the basin, where croplands and irrigation or power reservoirs provide limited feeding and nesting areas. Nesting, mainly by mallards and a few wood ducks, occurs along the natural watercourses, in small marsh areas, and along irrigation distribution systems. Migratory flights consist principally of mallards, baldpates, pintails, green-winged teal, scaups, and wood ducks, with a few goldeneyes, redheads, buffleheads, and ruddy ducks.

b. Project site area. - Most of the basin above the dam site is mountainous and timber covered and lies mostly in Jackson County. The area tributary to the dam site is about 13 percent of the total area of Rogue River Basin. River flows at the dam site for the years 1929 through 1968 are shown on plate 2 in section 1 preceeding. Elevations range from about 1,550 feet at the dam site to a maximum of 8,356 feet.

The distribution of rock materials, the structural and stability characteristics of soil and rock, have been mapped in detail for the dam



LEGEND

High Cascades

Basalt, locally masked by pumice

Western Cascades

Basalt

Pyroclastics
(7%)

ROGUE RIVER DRAINAGE, UPSTREAM FROM DAM
REGIONAL GEOLOGY
674 Square Miles

site area; soil, gravel, and rock borrow areas; and along the route for the relocation of state highway 62. The reservoir and adjacent public use areas have been mapped showing the distribution of rock materials, geomorphology, and the present stability of surface materials. Plate 3 shows general distribution of rock types for the Lost Creek project drainage basin. Based on method of deposition, soils of the following classifications are present in the reservoir area: (1) Residual-derived from the weathering in place of the underlying rock. These soils are generally plastic with low permeability. (2) Alluvial-stream deposited. These soils are generally composed of silt, sand, and rounded gravel to boulder size rock fragments with low plasticity and high permeability. Exceptions would include older terrace deposits which have weathered in place to produce plastic fines and which may be quite impermeable, outwash deposits which may contain plastic fines and angular rock fragments. (3) Colluvial. Slope debris moved downslope by gravity. Generally composed of plastic fines with sand-to-boulder size rock fragments. Permeability is generally low but depends on composition and degree of consolidation. (4) Pyroclastic-ash and pumice from volcanic eruption. This material is generally nonplastic with high permeability and is easily eroded.

Area to be inundated by Lost Creek Lake

The climate over the area upstream from Lost Creek Dam site is dominated by maritime influences which contribute to mild, wet winters and warm dry summers. Normal annual precipitation is 60 inches, ranging from less than 40 inches at the dam site to nearly 80 inches in the headwaters area. Less than 2 percent of the annual precipitation occurs during the July - through - August period.

Temperatures vary from an average monthly temperature of 35.1° F. in January to 65.9° F. in July. Average maximum in July is 86 and minimum 46° F.

Vegetative characteristics of the site are unique in that they are extremely varied and of large size. Included are Douglas fir, white fir, madrone, sugar pine, ponderosa pine, black oak, golden chinquapin, incense cedar, bigleaf maple, and alder. The midstory is dominated by Pacific dogwood, hazel, oceanspray, Oregon grape, snowberry, and wildrose. The understory is comprised of Cascade Oregon grape, whipplevine, and Pacific serviceberry. Other low shrubs also are present. A wide variety of forbs and grasses are found in the area.

Blacktailed deer and a few black bears frequent the bottomland and hillsides adjacent to the Lost Creek Reservoir site. The reservoir area is a prime winter range for blacktailed deer which, during the summer, inhabit the upland areas of the surrounding mountain range. During summer months, deer utilize streamside habitat as well as higher elevations. Summer range is generally adequate in the area; winter range in the upper Rogue Basin is generally limiting to population size and most such habitat is fully utilized.

Upland game species occuring in the region are California and mountain quail, blue grouse, and mourning doves. A few brush rabbits are present also. The project area supports populations of beaver, mink, muskrat, raccoon, and skunk. Nesting by wood ducks and mallards occurs infrequently and waterfowl harvest is negligible. A large variety of birds, reptiles, and other non-game animals inhabit the area.

Studies by the Oregon State Game Commission and the Fish Commission of Oregon show that about 13,020 spring chinook salmon and 500 summer steelhead migrate upstream from Lost Creek dam site. Resident trout are also present in the stream.

A check of "Endangered Plants and Animals of Oregon" dated January 1966 reveals no species which rely on the project area for continued survival. The American Osprey, a national "status undetermined" bird, has been sighted and nests located at several locations in the Rogue Basin. A nest is located in the NW¼ of the NE¼ of Section 24, T33S R1E. This nest was active in 1971. It will be inundated by the reservoir.

In 1966, a study by the University of Oregon Museum of Natural History, through an agreement with National Park Service, was conducted to determine archaeological potential in the Lost Creek project area. Four sites were found and in addition two areas were mentioned where archaeological sites could be expected. In 1966 and 1967 Oregon State University, under National Parks Service contract, excavated two of the sites discovered on the 1966 survey and in addition, discovered two additional sites which were investigated. The results of that work appear in Archaeology of the Lost Creek Dam Reservoir by Wilbur A. Davis, Oregon State University, Corvallis, April 17, 1968.

In 1968 further archaeological work was conducted by Oregon State University at two additional sites. That is reported in Lost Creek Archaeology, 1968, Final Report by Wilbur A. Davis, dated March 31, 1970.

Artifacts collected to date include mortars fragments; projectile points; chipped basalt cobble; flakes of obsidian, chert, jasper, and quartz; and possible milling-stone fragments. The National Park Service has programmed funds for further investigation of the sites at the project. In all, eight sites were found within the reservoir. Two have not been investigated because of restrictions by landowners at the time of the work.

It is planned in the future excavation program that those sites and one site which has been identified downstream from the dam will be excavated. That work will be accomplished before the project begins to store water.

Two archaeological societies, the Lewis and Clark Society of Eugene, Oregon, and Siskiyou Society of Central Point, Oregon, have been interested in archaeological investigation at the Lost Creek project. They have been in contact with the Corps of Engineers in regard to a specific prehistoric Indian campsite located downstream from the Lost Creek Dam. That site is one of the sites planned for excavation by the National Park Service in the near future.

3. The environmental impact of the proposed action.

Project environmental impacts will be the reduction of downstream flooding and the provision of greatly increased low-water flows at reduced temperatures. At the project site, complete control of a 50-year recurrence interval flood would be possible. The following tabulation shows the capability of the project to control several of the larger floods. Natural and regulated stages at Dodge Bridge, Raygold, and Grants Pass are shown below:

Recurrence interval yrs.	Stage Data					
	Dodge Bridge		Raygold		Grants Pass	
	Natural	Regulated	Natural	Regulated	Natural	Regulated
5	10.3	8.0	13.8	11.7	20.6	17.5
10	11.4	9.1	16.5	13.8	24.6	21.3
25	12.7	10.1	19.9	16.4	30.0	25.2
50	13.8	11.1	22.5	18.6	34.4	28.8
100	14.7	11.9	25.3	20.9	38.3	32.5
200	15.7	13.3	27.9	22.9	42.5	36.3
Bankfull	8.0		11.5		16.5	

Flood Damage along Rogue River

Almost all streams in the Western Cascades become turbid during intense winter storms and flood conditions. That condition is temporary, and clearing takes place as soon as flood runoff ceases. The operation of a dam for flood control purposes on such a stream stores turbid water during a flood and releases it following the flood peak, thus extending the duration of turbid downstream flow. The sand and silt-size particles which are retained in the lake soon settle to the bottom, reducing the total downstream turbidity, and the lake clears. Such short-term turbidity cycle is typical for most of the multiple-purpose dam projects in the region. A long-term turbidity problem also can occur under certain conditions. Colloidal clay material, if present, settle very slowly, and can cause long-term turbidity in the reservoir.

The data now available as a result of Corps staff studies and Oregon State University research study involving Hills Creek Reservoir, the only one of eleven reservoirs in adjacent Willamette Basin which has an objectionable long-term turbidity problem, indicates that any turbidity problem which might develop can be managed in such a manner that total water quality in the reservoir and downstream will be improved as compared to that which now exists in the stream as a whole.

The studies show that the principal agents causing turbidity in Hills Creek Reservoir are inorganic, mainly clay and amorphous material. Those materials are derived principally from older pyroclastic materials. Approximately 40 percent of Hills Creek watershed surface area is of pyroclastic origin. At Lost Creek watershed, as shown on plate 2, the coverage is about 7 percent, or about 1/5 of that at Hills Creek.

The Hills Creek study indicates that a minor amount of suspended material was derived from erosion along the reservoir shoreline. Almost the entire perimeter of Hills Creek Reservoir is within the area having a high turbidity-producing potential while about one-third of the Lost Creek Reservoir shoreline area is within the area so classified.

The Hills Creek study indicates that logging and attendant road building in the watershed are major producers of sediment. Hills Creek watershed has undergone intensive clear-cut logging and associated road building; approximately 10 square miles were clear-cut in the three-year period from 1969 to 1971. The Lost Creek watershed includes considerable farm, residential, National Park, and wilderness areas not subject to logging or other extensive disturbances. Also, the Federal land-management agencies can so plan and manage logging and other activities as to minimize any possible aggravation of a potential turbidity problem as compared to the present situation at Hills Creek.

The ability of the reservoir to fill with "cleaner" spring snowmelt and baseflow inflows, after flood season, or to evacuate a large portion of its full-pool volume of possibly turbid water after each flood may be approximated by comparing the volume of water contained in the reservoir when full to the volume of water contained in the reservoir when drawdown to minimum flood control pool in anticipation of a flood. The flushing ability is the ratio of the volume of the maximum conservation pool to the volume of the minimum flood control pool. A higher value indicates better flushing ability.

Those projects with very little inactive storage have a much greater ability to flush out the turbid water stored during floods. Lost Creek will have a relatively low flushing ability. However, in considering the flushing ability, there is not a major difference between Hills Creek and other reservoirs with low flushing ability, including Lost Creek. Because of the location of the penstock and regulating outlet intakes at Hills Creek, only water from the upper 159 feet, representing 48 percent of the maximum reservoir depth or 70 percent of the storage can be withdrawn; at other projects there are lower outlets which withdraw water from below minimum pool levels. At Lost Creek, it will be possible to withdraw water from any or all of four levels within the upper 232 feet, representing 72 percent of the maximum reservoir depth or 95 percent of storage. Therefore, although Lost Creek Reservoir will have a large volume of

storage at minimum flood control pool, low-level outlets will permit release of turbid water during the evacuation period after a major flood. This is the situation at Green Peter and Detroit Reservoirs in the Willamette Basin which do not have a long-term turbidity problem.

The small percentage of the watershed covered by exposed older pyroclastics, lower incidence of road building and other disturbance, and the availability of low-level outlets indicate there will not be a long-term turbidity problem at Lost Creek.

Lands now used for timber production and wildlife habitat (about 5,500 acres), agriculture (about 1,500 acres), building sites (about 400 acres), and state parkland (about 400 acres) will be needed for the lake, road relocations, public use areas, utility relocations, beautification, and dam and fish-hatchery construction. An impact from the project will be the flooding of 3,438 acres of valley behind the dam. There is about 11 miles of Rogue River in that part of the valley. That stretch of river will be lost as natural stream habitat for fish and fish spawning. About 1,250 acres of public land have been withdrawn from their existing use for public use and recreation purposes. An additional 1,228 acres of public lands were withdrawn for other project purposes such as scenic buffer, construction, operation area, and utilities. Management of all project lands will be such that limited yield of timber would be possible and wildlife habitat would be encouraged.

A site having outstanding vegetative qualities is located within the project boundary. That site, above full pool, is part of an area set aside as a State park north of the relocated highway 62. Plans are for management and interpretation of parts of the area for educational purposes. Impact on the area by people attracted to the future park could damage or otherwise affect the vegetation. It is therefore essential to properly plan the area for use by people and animals and still preserve the quality of the existing vegetation. The resulting arboretum will be a major beneficial impact from the project. That planning and design

effort is in progress and being coordinated with Oregon State Parks Division.

During construction of the project, machinery will be located in and around water, thus causing some turbidity. Incorporated in all contracts for work will be requirements that the contractor comply with local, State and Federal water quality standards and that he implement necessary precautions to avoid creation of water and air pollution as much as possible. Solid waste material (trees, stumps, etc.) will be disposed of in a manner compatible with regulations existing at the time.

Impacts due to soil and rock excavation and disposal will be significant. About 2,400,000 cubic yards of gravel and impervious material will be borrowed from the reservoir area and about 5,940,000 cubic yards of rock and 1,877,000 cubic yards of impervious material will be removed from a 40- and 22-acre borrow site above the left abutment. Those sites will sustain adverse aesthetic impact as well as loss of timber production (242,000 bf from BLM land), wildlife habitat, and mineral resource depletion. The borrow areas will be graded, restored with top soil, and planted to vegetation. Plant species will be chosen which have wildlife habitat value and which will blend with the natural landscape. Water quality control measures in contracts for the construction are very specific. If turbidity of the river is greater than 30 JTU, no more than a 10% increase will be permitted. If turbidity of the river is below 30 JTU, no increase will be permitted.

Downstream impacts will include reduction of damage from floodwater and debris, the prevention of loss of top soil, provision of increased low-water flows, provision of municipal and industrial water supply, the provision of water for irrigation and erosion resulting from sustained flows during flood control storage release. Average annual flood damage prevention creditable to Lost Creek Lake's effect downstream along Rogue River is estimated to be about $3,583,000. Additional downstream impact is from expected construction activity in the flood plain because of

reduced flood risk. That development might include residential, industrial, and higher investment agricultural development. Jackson County, however, has an interim zoning ordinance in effect for the Upper Rogue area, and is anticipating adoption of the "Flood Plain Combining District for Jackson County." That plan is specifically for the flood plain and applies to waters inundated by overflow during the flood of 1964.

Additional downstream impacts are those of river flow and temperature change. The natural river conditions, flow and temperature, were shown in Section 2 for the year 1950. For comparative purposes, and to present the impact on summer flow as a result of the project, the regulated conditions of the river are shown for the same year.

MEAN MONTHLY FLOW AND
TEMPERATURE, 1950 (WITH LOST CREEK
DAM, REGULATION & CONSERVATION WITHDRAWALS)

	LOST CREEK		DODGE BRIDGE		RAYGOLD		GRANTS PASS	
	Flow	Temp	Flow	Temp	Flow	Temp	Flow	Temp
June	3,232	47.0	3,628	50.0	3,525	51.5	3,592	54.5
July	2,447	45.0	2,717	50.0	2,234	50.5	2,080	54.5
Aug.	2,225	47.0	2,735	50.5	2,342	52.0	2,110	55.5
Sept.	1,552	52.0	1,829	53.9	1,652	55.0	1,485	57.2

Lost Creek, operating with Elk Creek, will provide a total of about 20,000 acre-feet of water supply for the cities of Medford, Grants Pass, Shady Cove, Sams Valley, Eagle Point, and Gold Hill.

Oregon State Park-administered land withdrawn as part of the Lost Creek project, and either inundated by the reservoir or used for other project purposes, will amount to 417 acres at 5 separate locations. Included in the land is Laurelhurst State Park which provides facilities including 16 picnic units, 36 tent campsites, a flush-type comfort facility, and electric stove shelter; McLeod State Park, covering 80 acres which provides facilities including a boat-launch ramp, 1 ranger residence, 2 storage buildings, and pit-type toilets. Both of those facilities will be lost as public-use areas. The 1968-69 season attendance at Laurelhurst State Park was 22,600 and at McLeod State Park 31,500. The loss of those lands and facilities, and the undeveloped land, is to be mitigated by the development of Joseph H. Stewart State Park, a proposed facility on the left bank of the reservoir, and by the provision for future low-density-use recreation sites by acquisition of 500 acres on the north shore. Joseph H. Stewart Park would cover 750 acres and be developed for picnicking and camping use as well as boat access. It is estimated the facility would attract and provide for 460,000 visitors annually within 3 years after project operation. Based on population densities and expected tourist travel, use should increase to more than 640,000 visitors annually by the tenth year of operation. In addition to new recreation facilities resulting from the project action, type of recreation resource is considerably different.

The people attracted to the project because of recreation resource availability will have impact on transportation facilities and public services in the region. Highways scheduled for construction as part of the project are sufficient to accommodate existing usage and increased usage generated by the first 10 years of project life. Public services, such as utilities required at the project, will be provided to accommodate the visitors. It is expected merchandise and goods will be supplied by private firms in the region based on profit motives. Some outlets for those items are now existing.

Temperature control and low-flow augmentation would result in increased recreation resource potential associated with river-oriented activities downstream from the dam. This is especially true during late summer and fall when, under current conditions, stream flows become critically low and water temperature increases to encourage algae growth. The increased river fishery potential would generate demand for associated recreation uses such as boating, swimming, camping, picnicking, and hiking.

During 1971 it was estimated that more than 1,880,000 recreation days were enjoyed along the Rogue River below Lost Creek Dam site. By 1980 that use is expected to increase to over 3,300,000 visits. It is estimated that 600,000 of those 1980 visits would be a result of improved river conditions brought about by Lost Creek Project. Water-associated recreation use is being realized at Federal, state, county, and private areas. In recognition of the potential water quality improvement, local agencies are expanding their riverside park land acquisitions to provide for anticipated expanded local public-use pressure.

Operating in conjunction with a potential Bureau of Reclamation project, the Lost Creek and Elk Creek projects would add an annual average of about 70,000 acre-feet to the total supply of irrigation water available in the Rogue Valley. As a result, an additional area of about 19,000 acres could be irrigated and an area of about 6,400 acres could receive a supplemental supply of irrigation water. Total crop yields would increase accordingly. An additional function associated with planned irrigation development would be to provide needed fishlife and recreation benefits, through an exchange-of-flows arrangement in Bear Creek and Little Butte Creek drainages. That is, water in Little Butte and Bear Creeks now committed for irrigation use would be left in those creeks for recreation, and fish-habitat enhancement purposes. Lost Creek and Elk Creek projects, through the Bureau of Reclamation's potential Medford Division facilities, would supply an alternate source for the water that now is withdrawn from those creeks. With improved management techniques and close monitoring, water quality is not expected to be adversely impacted because of increased irrigation and return flows.

Installation and operation of the Lost Creek powerhouse will provide additional hydroelectric power production capability to the Pacific Northwest Regional Power System. That capability will provide 22,100 kilowatts of firm power at minimum head and 303,000,000 kilowatt-hours of average annual energy. That energy will be produced by using flows which are required to be released for fishlife and other downstream uses to generate base-load power. There will be no peaking operation because production will be held nearly constant from hour to hour.

The base load production at Lost Creek will reduce an equal amount of base-load generation at other power-generating facilities. If thermal generation is reduced, that reduction will cause a corresponding reduction in the consumption of fossil or nuclear fuel, and in the production of waste heat that accompanies thermal power generation. During the early years of Lost Creek operation, base load generation by a hydro plant capable of peaking may be reduced. Passage of water through the Lost Creek turbines will avoid discharge of that quantity of water through regulating outlets or over the spillway which could cause some nitrogen supersaturation.

Increases in dissolved nitrogen will occur when the regulating outlet is used. The flip bucket design which is planned for the outlet works has been successful at other projects in holding nitrogen supersaturation to a level that is not detrimental to fish. Supersturated water from the regulating outlet will mix with water coming out of the turbines immediately downstream from the dam and thus will be diluted immediately. Also the turbulent nature of stream downstream from the dam will cause supersaturated gas solutions to equilibrate quickly.

Downstream from Lost Creek Dam water quality and lotic habitat will be improved by controlled releases of increased quantities of cooler water from the dam, as described in Section I, proposed action. As a result, the ability of the Rogue to produce and support runs of fish will be enhanced. Present low flows and high temperatures experienced during the

summer months in the lower reaches of the Rogue are highly detrimental to sustenance of anadromous runs. Increased flows also would benefit operation of drift boats. That impact is significant since the Rogue provides one of the principal drift-boat fisheries in the State of Oregon.

It is estimated that the stretch of river from the dam upstream provides spawning area for 13,020 spring chinook and 500 summer steelhead. Production at Cole M. Rivers Hatchery will be sufficient to cover those losses. Annual production will be about 425,000 pounds which is equivalent to about 3,500,000 fingerlings. The 11-mile length of free-flowing stream to be inundated, considered to be of excellent quality for spawning, also will be lost as natural habitat for resident rainbow and cutthroat trout. Stream fishing for the resident and anadromous species along the inundated stream will be lost and replaced by a reservoir fishery and an improved downstream fishery. While the total harvest of the resources is expected, by the fishery agencies, to increase, the type of the fishing experience in the 11-mile reach will change to a lake-type fishery. The natural run of anadromous fish which utilizes the river above the dam will be blocked.

Lost Creek Lake will be stocked with rainbow trout and Kokanee salmon produced at the Cole M. Rivers Hatchery. The resident fishery supported by that program is expected to provide 120,000 angler-days of use during the first year, increasing in a straight line to 300,000 angler-days in 50 years where it is expected to remain for the final 50 years of the project economic life and indefinitely thereafter.

The 3,438 acres to be inundated is used as winter range by big game especially black tailed deer. The deer that use this area during the winter time will be lost because the surrounding habitat is already being used to capacity. Similarly populations of small furbearers, reptiles and birds will be reduced. The lentic type habitat created by the lake will favor some species. It is likely that some populations of birds, amphibians and insects will benefit. Changes in animal densities and population structure can also be expected in surrounding areas that are

affected by future irrigation programs. The inundated zone will be eliminated from use for hunting and trapping. Hunting loss involves an estimated 75 hunter-days annually for upland game.

Thirty-eight families must relocate from the project area. Involved are 40 sets of improvements which include 6 commercial units, a grange, 10 farms, and 23 residences. There will be an impact on displaced persons as well as on the remaining residents in the vicinity of the project as a result of construction and project operation. Persons who must relocate face anxiety, varying degrees of discomfort, and readjustment. The policy of the Government is to pay a fair price for real property, based on estimated fair market value. Also, relocation assistance is provided to soften adverse conditions caused by making it necessary for residents to relocate their homes, farms, and businesses. Inhabitants near the project not forced to move will be affected in varying degrees. Many will experience direct or indirect economic gain. Land values will escalate and there will be increased work opportunities, particularly during construction. One effect will be a gradual transition of some of the area to greater population density. Inhabitants accustomed to and desirous of a rural setting may be adversely affected as a result of that change.

The reservoir drawdown zone creates adverse aesthetic impact when exposed. That impact is a result of clearing the area and subsequent exposure, during part of the year, of soil and rock devoid of vegetation. When the pool is full or nearly full the area would be considered by most people to be scenic and by some as being an enhancement of the pre-reservoir scenic quality of the valley. Likewise, when the reservoir shoreline is exposed (beginning on about 1 June in a normal year) and as the drawdown zone gets larger, the scenic quality of the area would deteriorate and to many be offensive.

During infrequent, extremely water-short years, drawdown to minimum pool elevation 1,751 would be required to meet downstream needs. At that elevation (121-foot drawdown) pool area would be 1,820 acres. Based on

the period studied (1929 through 1961) the pool would be drawn down to elevation 1,751 only once in about 15 years, on an average.

The most probable annual drawdown pattern, in terms of feet of drawdown and remaining pool area and with Medford Division in operation, is as follows:

Time	Pool elevation, m.s.l.	Areas, in acres	
		Pool	Exposed
End of May	1,872 1/	3,430	0
End of June	1,868	3,380	50
End of July	1,852	3,110	320
End of August	1,832	2,820	510
End of September	1,819	2,650	780
End of October	1,812 2/	2,580	850

1/ Maximum conservation pool elevation, scheduled to be reached by 1 May.

2/ Minimum flood control pool elevation, scheduled to be reached by 15 November.

The recreation use projection previously stated for the project is based on the most probable annual drawdown pattern shown above. Recorded attendance at Corps projects in the Willamette Basin having similar drawdown characteristics as Lost Creek show that drawdown is not a serious deterrent to use. The quality of the experience, however, is lessened.

As a result of relocation of roads around the dam and lake, reduced time required to travel the distance will provide a positive impact on timber haul costs. Another impact resulting from road construction in addition to materials as previously mentioned is the probable increased wildlife kill as a result of greater speeds. Increased sight distances will have some equalizing effect, however.

According to the State Liaison Officer for Historic Preservation, no properties located within the immediate project area are currently listed in the National Register of Historic Places. The on-going Statewide

Inventory of Historic Sites and Buildings has not yet covered the subject area in detail, and, therefore, there are no properties in the area currently under consideration for nomination to the National Register.

An impact which could result if Lost Creek and Elk Creek projects were constructed and Applegate project were not, would be aggravation of an existing erosion problem on the right bank of Rogue River, opposite the mouth of Applegate River. With uncontrolled flood peaks entering Rogue River from the Applegate, there could be an increased degree of impingement of flows on the present cut bank. The impact would not be significant visually, as erosion already exists and some corrective work has been done. However, there would be some visual impact if it became necessary, on the basis of experience, to reconstruct or add to the limited channel-stabilization revetment work which has been done. In that case, the same coordination would be required, and the same environmental safeguards will be observed, as for any similar work elsewhere under the project authorization.

4. Any adverse environmental effects which cannot be avoided should the proposal be implemented.

Inundation of 3,438 acres of the valley and the resulting loss of timber-producing, residential and agricultural land is a primary adverse impact. The BLM land within the project boundary produces 242,000 bf of timber annually, that production will be lost. As reported by Bureau of Sport Fisheries and Wildlife in report dated 4 December 1961, the reduction of land area also will mean a loss of about 75 man-days of upland-game hunting annually. The reservoir and recreation areas will destroy or modify an important segment of winter range, and a reduction in deer population is anticipated. The impoundment would adversely effect fur animals such as muskrats and beaver since fluctuation would discourage their use. A small amount of mallard and wood duck nesting in the reach would be lost. The impoundment would provide a resting area for waterfowl. Included in the reservoir area is 11 miles of fish habitat and fish-spawning area. Within the project boundary, but not totally scheduled for inundation, is 517 acres of existing state owned land. Two developed recreation sites and three potential sites make up the land. The land not inundated will be used for public access to the project, road relocation, scenic right-of-way, and for project-operation area. The land and developments will be lost for future use by the state but other land is provided in lieu of that lost.

Material for construction of the embankment will be borrowed partially from the hillside above and adjacent to the left abutment to the dam. The quarry for rock will cover 40 acres and provide about 5,940,000 cubic yards of material. Impervious material amounting to 1,877,000 cubic yards will be removed from a site on the south shore. Existing timber will be removed from the sites in advance of excavation and timber productivity of the area will be curbed for many years. Restoration, including soil replacement and planting, is planned.

Thirty-eight families must relocate from the project area and will be adversely affected in varying degrees. Relocation also involves utility

lines and roads. Land scarring and adverse scenic conditions will result.

The reservoir drawdown zone will create adverse aesthetic impact when exposed. That impact will be a result of clearing the area and subsequent exposure during part of the year, of soil and rock devoid of vegetation. The dam will also create an adverse aesthetic impact to the valley.

Electric transmission lines including portions of two Pacific Power & Light Company powerlines, 69-KV and 115-KV, must be relocated. That relocation, and any new lines constructed to transmit the power generated at the authorized hydro powerhouse, will cause some unavoidable intrusion on the aesthetic values of the area. There will be some unavoidable impact on the inherent scenic quality of the area even though intensive effort at line location and relocation is made to reduce visibility of the lines, and through environmental criteria will be applied to right-of-way design and clearing.

Another unavoidable impact will be the loss of archeological information which may not be gathered under current contracts because of technological limitations. That loss may not be completed because, at some future date, the material could be excavated but its value probably would be reduced by inundation.

As a result of temperature control, downstream water temperature during the summer months will be lowered. That modification will be adverse to the comfort of bathers in the Rogue River. Jackson County Parks Department, however, projects an increase in use because water quality will be improved.

Road relocation and the resulting better grade highway will allow greater traffic speed with a resulting greater deer kill. That loss will be somewhat reduced by better sight distances, however.

5. Alternatives to the proposed action.

a. Abandon project construction. - One alternative to constructing the proposed dam would be to abandon plans for construction and the work already accomplished. With that alternative no lands in the valley would be inundated and, except for the land already disturbed, the valley area would continue to be used for timber growing, logging, and grazing. Flood control would be foregone, and irrigation water, municipal water, improved water quality, and incidental electrical power production would not be provided. Reservoir-oriented recreation opportunities which would be provided by the project would be foregone. Downstream fish enhancement would not be realized.

Leaving things as they are would also mean retaining present fish and wildlife populations and habitat. Upstream migration of anadromous fish would not be blocked, and spawning and rearing areas within the proposed lake area would not be lost. Adverse esthetic conditions during construction and during periods of pool drawdown would not occur. An amount roughly estimated to be $100 million would not be spent by the Federal Government for the remaining project construction.

The partially completed fish hatchery facilities would not be useable as presently designed because of a lack of reservoir water supply.

The fish hatchery could be utilized to some degree by the completion of the facility and the additional installation of an expensive water reuse system. Congressional authorization and funding would be required for continuance of the hatchery without the dam project. Under present administration policies, such authorization could be expected only if local-interest would agree to provide 50 percent cost sharing. Hatchery production necessarily would be altered by the loss of production for the Lost Creek Reservoir fishery. In addition, production of certain types of anadromous fish probably would be reduced because of an inadequate return of adults caused by the adverse downstream conditions that would exist without flow augmentation during the summer and fall months.

This alternative has not been selected because it would not be responsive to the human and environmental water resource needs along the Rogue River.

b. Dry-reservoir operation. - This alternative would store water only during a flood. Flood damage reduction would be provided by this alternative to the same extent as provided by the project as proposed. This alternative would have a lower project cost by virtue of reducing needs for reservoir clearing, recreational developments, and highway construction. The fish hatchery would still be required, however, since once the stream was inundated and spawning beds covered with silt during a flood control period, the future capability of the spawning beds would be considerably reduced if not destroyed. Wildlife disruption would be reduced initially with this alternative. When the project is used to store water, however, some habitat would be destroyed. Natural processes would tend to restore the area for wildlife use. With a dry reservoir alternative, anadromous fish would have the capability to pass upstream through the dam. Those fish, however, would not have enhanced downstream habitat resulting from augmented summer flows. Adverse impacts on the people in the project area would be similar to a reservoir project since they would have to relocate. Seasonal use could be made of land in the pool area for limited agricultural purposes. Water conservation needs in the basin for municipal and irrigation water would not be satisfied with this alternative. Electrical power production would not be provided. A detailed economic study of this alternative was not made. This alternative was not selected because it would not provide the water to satisfy the water needs of the people and anadromous fish of the Rogue Basin.

c. Other single-purpose flood control alternatives. - Single-purpose flood control alternatives include land-use regulation in the flood plain, flood plain evacuation, levee protection, and a combination of those

methods. Flood plain land-use regulation, through zoning and building codes, would not effect a reduction in present flood damages, but would prevent increased flood damages in the future by effectively eliminating future developments of damage-prone installations in the flood zone. While its effect would be beneficial as a basic measure for prevention of future increases, and possibly some eventual reduction of flood damage, this alternative would not provide needed water-conservation benefits. The impact of zoning would be to limit development to areas that are subject to infrequent flooding or that are flood free.

Flood plain evacuation would be extremely costly both economically and socially. It would have major adverse impact on many people by relocating their residence business and job locations.

Levee protection, except in a few isolated locations, would not be practical since the flood plain is narrow and the developments which are subject to damage are generally located on or immediately adjacent to the only practical levee alignment. Single-purpose flood control alternatives would not satisfy irrigation, power, water quality, water supply, recreation, or fish and wildlife needs.

None of the single-purpose flood control alternatives were selected because of excessive cost or limited capability to solve the flood control problem, and because the human and environmental water conservation needs along the river would not be satisfied.

d. A dam at another site. - As an alternative means to serve flood control, irrigation, power, water quality, water supply, recreation, or fish needs, another dam might be constructed at some other site in the valley. Under that alternative the general adverse environmental impacts could be expected to be comparable to those for Lost Creek. During the early planning stage, five alternative project plans were studied. Two of those plans were eliminated from consideration because of unsatisfactory foundation conditions. The remaining three choices

would have essentially the same type of embankment and materials and have essentially the same potential benefits. None of the locations had suitable topography or geologic conditions for construction of a concrete dam. Specific dam features were similar except for adaptation to particular locations. Comparative cost estimates, however, showed the chosen site as being about 10% less costly than the others. The potential environmental impacts of each alternative would have been about the same as for the authorized project.

e. Different size dam. - Economic studies using the project interest rate of 3-1/8% were made to determine the optimum size project. That evaluation indicated that a larger project would not provide enought additional benefits to justify the added costs. It also indicated that a smaller project would not be as economical.

f. A concrete dam alternative. - A concrete dam alternative was studied and found not to be economically feasible. Esthetic conditions created by gravel borrow would be similar to those for borrow areas for an embankment dam, but of lesser magnitude. Concrete mixing plant operation and gravel-washing operation would create some adverse air and water quality conditions. This alternative was not selected for construction because the cost for excavation and foundation for a concrete dam and the concrete construction process, would add about $13 million to the project cost as compared to an embankment-type dam.

g. Fish passage facilities. - The alternative of providing fish passage facilities instead of hatchery facilities was considered during the preconstruction planning stage. It was not adopted because it was the position of the Federal and State fishery agencies that provision of artificial production facilities would be the preferred alternative.

h. Other specific project actions and features including road and powerline relocations, and quarry sites were, and are, continually reviewed for alternatives which might offer less total adverse impact.

6. The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

Landscaping and refurbishing of nearly all affected areas would mitigate, or make short-term, most of the undesirable aesthetic effects incurred during construction. Areas where rock would be exposed or placed as surface material would create a short-term adverse impact to the natural appearance of the area until mellowed to a natural condition by weathering and other natural processes.

Local school programs would be affected by temporary additional enrollment from construction crew families. Long-term social impacts resulting from the project are those associated with the dissolving of long-standing neighbor relationships and the removal of structures to which the population has related for many years.

The reservoir will inundate 11 miles of a 210 mile river, 3½ miles of tributary streams, and 3,438 acres of valley presently used for timber production, farming, pasture, and wildlife habitat. The embankment will block the transport of the river's sediment load past the damsite. The reservoir will accumulate that sediment at the rate of about 135 acre-feet (one-half of one percent of the project dead storage space) per year. Access to gravel, pumice, and other minerals in the reservoir area will be lost.

The water area and related recreational facilities at the project will add to the long-term leisure opportunities of the people residing in and around the Rogue River Basin. Fifty thousand pounds of trout will be planted annually in the reservoir to develop and maintain a reservoir fishery.

Downstream, loss of some natural nourishment of flood plain areas by winter flood waters will occur. That loss may be offset by farmers using other methods of soil fertilization.

Utilization of downstream flood plain areas can be expected to increase due to reduced top soil losses, debris accumulation, and other aspects of flooding. Also, potential for residential and industrial development will

be increased because of reduced flood risk, and because of the municipal and industrial water supply provided by the project. Releases for irrigation will provide increased opportunities for agricultural production in the basin downstream from the project. Through provision of needed additional water supply, the project will serve the domestic and industrial needs of an increasing population. The project will provide improved temperature and flow conditions for fish in the river during the summer months.

The project will effectively isolate the upstream drainage area from use by anadromous fish. Maintenance of anadromous and resident fish populations will be dependent upon the fish hatchery for artificial spawning and rearing. The local uses of the environment for timber production and farming will be foregone completely in the reservoir area, and restricted on some adjacent project lands.

An effect of the project will be an increase in fish production in the Rogue River. Fifty thousand pounds of trout will be planted annually in the reservoir and the resulting yield to the sport fishery will exceed the present yield in the stretch of river that will be flooded. In conjunction with the hatchery program to mitigate loss of spawning area for salmon and steelhead, the improved temperatures and flow conditions during the summer months will enhance fish habitat and, thus, improve both the in-stream sport fishery for both species and the offshore commercial salmon fishery.

The project will produce about 303,000,000 kilowatt hours per year of electrical energy. Agricultural and timber production will be reduced by the loss of available land covered by the reservoir. It will increase by the expanded production downstream made possible by irrigation water from the project. Agriculture lands would be reduced by the conversion to municipal and industrial use to accommodate the expanding population attracted to the area in part by the water supply provided by the project.

7. Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

About 3,438 acres of land will be taken from land uses and converted to reservoir bottom or shoreline. That land is partially forested and is being used for farming and timber production. A reduction in timber and agriucltural harvest would result. Construction of the intake tower, powerhouse, spillway, fish hatchery and other project features will consume concrete, steel, and other construction materials.

There will be an irretrievable commitment of the scenic valley containing 11 miles of river excellent for salmon spawning and 3½ miles of tributary streams. That area will be changed to a reservoir scene. Spawning and rearing areas in the river and streams upstream from the damsite will be irretrievably lost to use by anadromous fish. Mineral deposits covered by the lake will not be available by conventional mining methods.

Wildlife habitat in the reservoir area and the land utilized for construction of roads and other project features will be an irretrievable habitat resource loss.

Based on the stage of the art today archeological salvage in this area as with other areas, according to the National Park Service, will result in a 5 to 10% recovery of the total knowledge contained in the project's archeological resources. Recovery of the rest of the knowledge may be irretrievably lost or at least recovery will be signifcantly inhibited.

8. Coordination with others.

a. Agency and public participation. - Planning for Lost Creek project has been accomplished in coordination with many Federal, State, and local agencies and organizations. The project plans embody elements responsive to Congressional authorization and appropriation of funds, Portland District made a coordinated and cooperative study of water and related resource needs and potentials for Rogue River Basin. In 1961, at the end of the study, the District Engineer recommended a project consisting of 3 major multiple-purpose reservoirs and associated works. Those projects are Lost Creek, Elk Creek, and Applegate.

Formal study, by the Corps, began in the Rogue Basin in 1935 (PL 74-183, 1st session) and 1936 (Sec. 6, 1936 Flood Control Act), in consideration of already-serious flood damages, and again in 1958 (Sec. 206, 1958 Flood Control Act), in consideration of the full range of water and related resource problems, the Congress authorized and directed the Corps of Engineers to make studies of Rogue River and tributaries for flood control and allied purposes. A limited amount of study was made prior to World War II, under the two early authorizations. All work was halted with the advent of the war.

As a follow-up to the December 1955 flood situation extending from northern California to the Canadian border, the Congress: (1) sent an interim committee to view flood damage areas on the West Coast as a whole; (2) held a joint committee hearing in Medford to hear local views on flood damages, project potentials, the fishery resource, and related matters (see par. 40a, HD 566, 87th 2d); and (3) appropriated, for FY 1957 funds for resumption of studies by the Corps.

In a concurrent action, immediately following the 1955 flood, local people in Jackson and Josephine Counties (upper and lower valley areas, respectively) organized the Rogue Basin Flood Control and Water Resources Association (RBFC&WRA) to represent the people of the basin. The association, supported by Jackson and Josephine Counties, represented almost all

areas, groups, and organizations in the basin, including sportsmen's groups. Exhibit 1 is a listing of Association membership.

Resumption of studies for a water resource project by the Corps was initiated by a public hearing in Grants Pass on 15 November 1956. At that hearing the emphasis of testimony was on: (1) prevention of flood damages, with associated irrigation, power generation, and recreation benefits; and (2) on the fact that any flood control plan detrimental to the fishery resource would be unacceptable, both locally and to the Federal and State fishery agencies.

By 1958, studies and progressed to the extent that it had been concluded that no more than three, or perhaps only one, potential storage projects might be economically justifiable on the basis of benefits then available, and that no potential local projects would be either economically justifiable or significantly effective in serving overall basin needs.

On that basis, it was evident that no alternative plan investigated up to 1958 would be both economically justified and assured of local and agency support. In August of 1958, however, the Congress adopted new legislation which offered an opportunity to resolve the problem.

Public Law 85-624, the Revised Fish and Wildlife Coordination Act adopted 12 August 1958, provided Federal recognition of fish and wildlife enhancement as an appropriate primary purpose of Federal water resource projects. Upon enactment of PL 85-624, with knowledge of study results to date as described above, and in concert with Federal and State fishery and water resource agencies and the local people, it was decided to explore project reformulation to include fishery enhancement as a primary project purpose. At the time that decision was made, a specific interagency team was formed to cooperate in the study and to work with RFBC&WRA and any other interested parties. Team membership, under a Corps leader, included Oregon State Water Resources Board, Fish Commission of Oregon, Oregon

State Game Commission, Bureau of Sport Fisheries and Wildlife. Throughout the study period other Federal and State agencies have participated in interagency meetings, they include Bureau of Reclamation, Forest Service, Bureau of Land Management, National Park Service, Soil Conservation Service, Public Health Service, and Oregon State Department of Environmental Quality.

As the cooperative study progressed, local meetings arranged by or through RBFC&WRA were held by the interagency team to present progress reports on study findings. Those meetings, usually held in consecutive sessions from the upper Rogue (Shady Cove area) to Grants Pass or Gold Beach, numbered about 22 from the start of study in November 1956 until the final public hearing in September 1961. In addition, there were several radio and television question-and-answer sessions, prior to the public hearing, and there have been 21 meetings of record, in addition to several team meetings with IWLA and Corps meetings with landowners, since 1961.

The extent of public participation prior to 1962 is evidenced by an attendance of more than 400, including local people; organization and group representatives; and local, State, and Federal agency representatives, at the public hearing of 25 September 1961. Almost all of those who presented oral testimony favored the plan as subsequently authorized. Also, a substantial majority of the more than 1,300 individuals whose names were on petitions, letters, and resolutions submitted for the record favored the plan. All told, the ratio between support and opposition as indicated by signatures was:

Lost Creek	130 to 1
Elk Creek	200 to 1
Applegate	11 to 1

On the basis of study findings and the record of the public hearing of 15 September 1961, the Corps prepared a report recommending authorization of Lost Creek, Elk Creek, and Applegate Reservoirs. Recommendation

was for the collective primary purposes of flood control, irrigation, power generation, fish and wildlife enhancement, recreation, water supply, and water quality control. With the active support of the Izaak Walton League of America and of the National Wildlife Federation, as well as of RBFC&WRA and the Oregon delegation, the Congress, in the 1962 Flood Control Act, authorized the three projects for the collective purposes named.

As a means of coordinating preparation of this statement a copy of the draft statement was furnished to the agencies, groups, and individuals shown below. Concurrent with the issuance of the statement, a public notice and a news release was issued to announce the coordination. A copy of the draft environmental impact statement was sent to all those individuals or groups who respond to the public notice by requesting a copy of the statement. Comments obtained during the coordination of the draft statement, were evaluated, and as appropriate, changes incorporated in the final statement. Copies of letters received and response to the comments are attached to this section of the statement.

A group of citizens (estimated membership of 100-150) called "Citizens League for Emergency Action on the Rogue" (CLEAR) has publicly questioned the appropriativeness of the proposed action especially as it might create a turbidity condition in the Rogue River. CLEAR has not corresponded directly with the Corps regarding their concerns. Because of the questions raised, RBFC&WRA invited directors of CLEAR to meet with the interagency team and Corps representatives. That meeting was held on 1 May 1972. In addition, a general meeting was held on the same day to answer questions the public might have. The public meeting attendance was estimated at 300.

b. Comments and responses:

FEDERAL

(1) U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE.

Comment: The proposed action makes no mention of the proposed highway relocation impact on timber haul costs. While this may be a minor overall benefit of the project it is a positive concern to us.

Response: We concur with the comment, a statement regarding timber haul costs has been added to the present statement.

Comment: Section 4 makes no mention of reduced winter range for wildlife. The habitat loss will likely have a direct effect on the size of the deer herd that summers on the national forest. With loss of winter range the herd will be reduced without adequate mitigation measures. A discussion of mitigation for all wildlife is noticeably missing in the statement.

Response: Section 4 of the present statement has been expanded to include additional information on habitat loss and subsequent reduction in deer populations. No mitigative measures were included in the project document for wildlife, primarily, because there were no requests for such measures at the time of project formulation.

(2) U. S. DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES SERVICE.

Comment: We note at several points in your report, including the title, that Lost Creek Reservoir is incorrectly referred to as a lake. We prefer use of the term reservoir.

(2) CONTINUATION: U.S. DEPT. OF COMMERCE, NOAA, NAT'L MARINE FISHERIES SERVICE.

Response: Use of the word lake in the name of the project is in compliance with current Corps of Engineers policy. However, when discussing the impoundment of water in the text of the present statement, the word reservoir and/or lake was used when it was advantageous for descriptive purposes to do so.

Comment: The spring chinook runs during the past ten years have reflected a significant increase. That information should be shown in section two.

Response: We concur with the comment and appropriate addition has been made to the text.

Comment: The report does not recognize that water releases into the Rogue River below Lost Creek Reservoir for fisheries would also benefit operation of drift boats. Since the Rogue provides one of the principle drift boat fisheries in the State of Oregon it would seem reasonable to recognize this point.

Response: We concur with the comment and appropriate addition to the impact section of the statement has been made.

(3) U. S. DEPARTMENT OF INTERIOR, OFFICE OF THE SECRETARY.

Comment: The Bureau of Mines was not requested to make an on sight mineral resource study of the project site during planning stages. The impact statement, therefore, only mentions mineral resources in regard to the borrow site excavations. Effects of the project on other mineral resources, even if negative, should be made part of the statement. In the context that the borrow material has specific value only to the project, we doubt that it constitutes a mineral resource depletion.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: Information provided to the Corps of Engineers by the Bureau of Mines by letter dated 1 February 1972 has been incorporated into the present environmental statement. The borrow material which would be used for project use is a use of a resource though its depletion may not be significant.

Comment: The environmental statement does not indicate that attention has been given to the possible effect of the project on historical values. The National Register of Historic Places should be consulted, also the Oregon State Highway Engineers State Liaison Officer for historic preservation should be contacted for information on sites the State has under consideration for nomination to the register.

Response: According to the Oregon State Highway Division, State Liaison Officer, there are no properties currently listed in the National Register of Historic Places located within the immediate vicinity of the project. The ongoing State-wide inventory of historic sites and buildings has not yet covered the subject area in detail and therefore there are no properties in the area currently under consideration for nomination to the national register.

Comment: There was no analysis of the potential environmental impacts of alternative courses of action. The discussion of alternatives justified the proposed project rather than adequately discuss details describing the alternatives.

Response: The alternative section of the present statement has been modified in response to the comment.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Comment: We believe the impact on esthetics of the reservoir area resulting from pool fluctuation should be discussed in section 4.

Response: The effects of reservoir drawdown on esthetics has been added to section 4 of the present statement.

Comment: Based on our review of the Senate hearings on this project, we conclude that if the Lost Creek and Elk Creek projects are built and the Applegate project is not, a serious erosion problem at the confluence of the Applegate River with the Rogue could develope. If this were to occur, it could have an adverse effect on the esthetics and recreational values of that portion of the river. We believe the environmental statement should address this issue.

Response: The impact section of the present environmental statement includes discussion regarding potential aggravated erosion at the mouth of Applegate River should Elk Creek and Lost Creek projects be constructed and Applegate project not be constructed. Should Applegate project not be constructed,and on the basis of experience with any erosion at that point, channel stabilization revetment work could be added to that which is already in existence. In that case, coordination with all agencies would be required and the same environmental safeguards would be incorporated in the design and construction as for any similar work elsewhere under the project authorization.

Comment: A temporary adverse effect will be creation of turbidity and sedimentation downstream from the project during construction. Sedimentation would have an adverse effect on anadromous fish if it occurred during the spawning season.

Response: We concur with the comment. Contract specifications regarding turbidity during construction are very specific. They permit no

measurable increase when natural turbidity is below 30 JTU and 10% increase when natural turbidity is above 30 JTU.

Comment: Suggest that the general area map and the vicinity map be introduced into section 1.

Response: Since the referenced maps are generally used during the reading of the total statement, it is easier for the reader to have it available for reference at the end of the document without interference with reading of the text.

Comment: Although planting of borrow areas to species having wildlife habitat value is proposed, the value of this measure to wildlife is largely negated because the elevation of the rock quarry places it in the summer range area. While there is more than adequate deer summer range in this area, winter range is scarce.

Response: We concur with the evaluation, however, since we are revegetating areas anyway, we feel it is desirable to plant with material having some wildlife habitat value even though utilization of that vegetation might be somewhat limited.

Comment: Is the population increasing, decreasing, or stabilizing? What is the trend since 1960?

Response: Information regarding the population trends in the Rogue Basin has been added to the present statement. The population of the basin was 85,000, 104,000, and 130,000 for 1950, 1960, and 1970, respectively. It is expected to increase to 160,000 by 1980.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Comment: The statement that the National Forest Unit encompasses the largest concentration of virgin forests remaining in the United States outside of Alaska alludes to the previously mentioned Southwest Oregon unit of the national forest. The validity of this statement is questionable. Also, no mention is made of the other Federal BLM managed timberlands in the basin.

Response: Appropriate changes to the text of the present statement has been to clarify and expand on the forest resources of the basin.

Comment: Sentence regarding agricultural pursuits in section 2 regarding categories of agricultural pursuits may be misleading.

Response: The referenced sentence has been revised in the present statement.

Comment: Bosc variety of pears is not the major variety within the 10,000 acres now devoted to that crop in the Medford area.

Response: The comment is considered valid and the present statement has been changed.

Comment: Suggest changes to the paragraph on existing irrigation districts and acres irrigated.

Response: The paragraph referenced has been changed in the present statement.

Comment: The statement regarding nationally known salmon, trout, and steelhead fishery, should be changed to read nationally known salmon, and steelhead trout fishery.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: The statement has been changed in the present report.

Comment: Suggest rewrite of sentence regarding sports fishery being principally for spring and fall chinook and coho salmon and resident and anadromous rainbow steelhead and cutthroat trout.

Response: The sentence in section 2 has been rearranged as suggested.

Comment: The paragraph referencing the Zane Grey and Herbert Hoover days of fly fishing on the Rogue River is somewhat beyond an objective description of the environment.

Response: We concur with the comment. The paragraph was provided merely to point out the international acclaim of the stream.

Comment: The sentence in section 2 regarding salmon and steelhead potential of the river should be revised.

Response: The referenced sentence, in section 2, of the present statement has been revised.

Comment: Suggest table, in section 2, regarding contribution of the Rogue River to the Oregon based Pacific Ocean sport commercial salmon catch be modified.

Response: The referenced table has been modified in accordance with the comment.

Comment: Roosevelt elk and black bear should be included as big game species found in the basin.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: Suggested addition has been made to the statement.

Comment: The sentence, regarding occurrence of wildlife as stated in section 2 should be changed.

Response: Suggested change to section 2 of the present statement has been made.

Comment: River otter should be included as an important fur animal. Wildlife resources include more than game animals and furbearers. There are some 260 species of birds which frequent this area. Animals not mentioned include the following: River otter, coyote, and reptiles.

Response: Suggested additions from the comment have been made to the present statement.

Comment: Is the Indian campsite that is below the damsite located on Corps acquired lands?

Response: We have not surveyed the exact location of the site, but it appears that it is on Corps lands, based on the description of the site relayed to us by the local archeological group interested in it.

Comment: The discussion on wildlife resources under the heading, project site area, should include a statement that a large variety of birds, reptiles, and other nongame animals inhabit the area.

Response: Suggested addition has been made to the present statement.

Comment: The words resident trout should be used in place of domestic trout.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: Suggested wording has been used.

Comment: An American osprey nest is located in the NW ¼, NE ¼, Sec. 24, T. 33 S, R 1E. That nest was active in 1971. It will be inundated by the reservoir.

Response: The information provided in the comment has been incorporated into the present statement.

Comment: Suggest the opening paragraph of section 3 be relocated elsewhere in the section. It sounds too much like a justification for the project.

Response: The referenced paragraph has been reworded.

Comment: A discharge of 146,000 cfs is shown for December 1964 peak flow at Grants Pass. Published records of the U. S. Geological Survey show this peak flow to be 152,000 cfs.

Response: The comment is valid, however, the referenced table has been deleted from the present statement and replaced by a table showing stage reductions as being more meaningful information for the reader.

Comment: Is the additional acreage mentioned in section 3 relative to withdrawal of public lands to be used for road relocations, utility relocations, and dam and fish hatchery construction? If so, the paragraph should be reworded for clarity.

Response: Part of the public lands withdrawn for project purposes will be used for public use and recreation areas and part for scenic areas, construction areas, operation area, and utility easements. The referenced paragraph of section 3 has been revised for clarity.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Comment: Shouldn't wildlife be considered in properly planning the arboretum section of the State Park? Will this area be fenced, and what is its specific location relative to the proposed highway?

Response: Additional information regarding the proposed arboretum facility at the State Park has been incorporated into the present statement. The area is north of the highway and it will take into account the wildlife of the area. No fencing is planned for at this time.

Comment: We presume grading and seeding of borrow areas will be limited to those not inundated by the reservoir.

Response: All borrow areas not scheduled for inundation will be graded, topsoiled, and seeded. Any areas eventually scheduled for inundation, that might create turbidity through erosion in advance of schedule inundation, will be seeded.

Comment: The irrigation supply for the 24,400 acres will not come entirely from Lost Creek as implied. We suggest you delete, "irrigating about 24,400 acres", and substitute, "irrigation".

Response: The comment is considered valid and appropriate changes to the paragraph has been made.

Comment: Another downstream impact expected is loss of salmon and steelhead spawning habitat below the Lost Creek Dam. Natural replenishment of gravel supply will not occur as a result of the reservoir and dam construction.

Response: As an impact from Lost Creek Dam and resulting flow augmentation and temperature control, it is expected that salmon and steelhead spawning habitat will be improved. Though replenishment of gravels in

the Rogue River downstream from the dam will be stopped, it has been the experience at other Corps projects that the naturally-occurring supply of gravels from tributaries and from natural shoreline erosion is sufficient to maintain spawning habitat.

Comment: The existing Crater Lake Highway through the project area may not be adequate to safely handle increased traffic generated by the project. The segment of this highway from the east end of the new bypass road to the Needlerock vicinity is not currently constructed to Oregon State Class "C" standards. The bypass road itself, although a much safer road than the existing Crater Lake Highway, is not quite Class "C" standard, in fact, the Crater Lake Highway from White City through the project still will become more congested and hazardous as a result of dam construction.

Response: In September 1974 traffic will be routed over the relocated Crater Lake Highway,which will be constructed to Oregon State Class "C" standards. That route will bypass project construction. We acknowledge that the existing bypass road, although a much safer road than the existing Crater Lake Highway, is not quite Class "C" standard.

Comment: Concerning the implication in section 3 that water quality in Bear Creek will be improved through an exchange-of-flows arrangement is doubtful since the water still comes from Emigrant Reservoir and combined with irrigation runoff the quality will still be poor; there will be just more of it. Little Butte Creek could be expected to improve, however, the runoff from an additional 25,400 irrigated acres will certainly have an adverse effect on water quality in the lower Rogue River. Was this adverse effect considered in determining the amount of water release that will be needed to accomplish the predicted downstream temperature and water quality improvements?

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: The water quality in Bear Creek as a result of the potential exchange-of-flow arrangement will be about the same as is in Emigrant Reservoir. It appears, however, that continuing studies by the Bureau of Reclamation will show that the net change in water quality would be an enhancement.

Comment: There are other lakes within reasonable travel distance from the Medford area. Crater Lake, Lake of the Woods, Howard Prairie Reservoir, Agate Reservoir, Emigrant Reservoir, Hyatt Reservoir, Kane Creek Reservoir, and Klamath Lake.

Response: We concur that there are other lakes in the region and have deleted the sentence which implied otherwise in the present statement.

Comment: The statement regarding irrigation in conjunction with a Bureau of Reclamation planned project should be revised to show acreage figures.

Response: The referenced paragraph in section 3 has been revised as suggested in letter comment.

Comment: We suggest using the phrase "the Bureau of Reclamations potential Medford Division facilities", in lieu of, "through existing channel systems", as shown in section 3.

Response: Suggested change has been made to the present statement.

Comment: Suggest the words, "with improved management techniques and close monitoring," be added as a prefix to the sentence, "water quality is not expected to be adversely impacted because of increased irrigation and potential return flows", in section 3 of the statement.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: Suggested change has been made in the present statement.

Comment: How much of a water temperature drop could be expected in the lower reaches of the Rogue as a result of controlled releases of cooler water from Lost Creek Lake. If it is less than 5^{o}F. the effect will be minimal.

Response: Additions to the present statement show the difference between existing water flows and temperatures and those which will be provided through augmentation by Lost Creek Lake project.

Comment: If Lost Creek follows the general pattern of major reservoir development in Oregon there will be a large buildup of trash fish within 10 years. The magnitude of this impoundment presents impossible situations for chemical rehabilitation. Fishing should be excellent in this impoundment during the first seven years and then gradually decline. At the end of fifteen years, it is doubtful that a fishery will exist within the reservoir.

Response: The possibility posed by the comment may or may not become reality. The kinds of fish that usually cause over-population problems in impoundments - fishes of the minnow and sucker families - are not known to be present upstream from the Lost Creek site. Dace are present, but have never caused a seriou over-population problem in reservoirs in the Northwest. Over-population of suckers, carp, and roach could occur through introduction or through their being present above the site. We concur that treatment would be expensive and also risky with today's technology. However, it is not unlikely that 15 years from now when the reservoir is 10 years old, rehabilitation and detoxification techniques will have improved; should it then become desirable to treat the reservoir, it quite possibly would be feasible.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Comment: What is considered as an angler day?

Response: An angler day as used in the environmental impact statement refers to fishing by an individual during any one day or parts of a day.

Comment: The acreage loss of wildlife habitat, including winter deer range, due to the water impoundment, is 3,438 acres. There is also a partial loss of wildlife habitat through other project features within the remaining 2,478 acres.

Response: We concur with the above comment it has been incorporated into the present environmental statement.

Comment: We would like included, a discussion of combined effects of the Lost Creek and Elk Creek projects on wildlife habitat. These two projects are so close together that their combined impact could be much more important than indicated when considered as two separate projects.

Response: The effects on wildlife habitat have been presented for Elk Creek project in the environmental impact statement for that project which is currently on file with CEQ. The losses to wildlife habitat presented in the Lost Creek Statement should be considered as a portion of a similar habitat loss that will result from Elk Creek Lake project. Both projects will result in a reduction of the deer population.

Comment: Recent data shows that a significant population of deer utilize this area during critical winter periods. Based on this information, a substantial reduction in deer populations can be anticipated. Under the master plan being developed for the reservoir measures are being included to develop wildlife habitat on project lands. Deer losses will be reduced by these developments but some decreases in total population

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

is anticipated. We suggest the following wording be used in section 4: "The reservoir would destroy an important segment of deer winter range, and a reduction in deer population is anticipated".

Response: The suggested change has been made to the present environmental statement.

Comment: The statement that big game will relocate should state where big game animals will relocate to, and whether lands are set aside for wildlife habitat. What lands are reserved for wildlife, etc?

Response: In view of the preceding comment, the statement that big game will relocate no longer appears in the text. As mentioned previously forage plantings are planned, such plantings should increase the animal density in planted areas but it is unlikely that such areas will be able to support all the animals displaced from the project area.

Comment: During road relocation wildlife needs must be considered, cutbanks must be minimal and not block wildlife migration or movement. Roads will create harassment and a reduction of wildlife use of land especially below the road. A high-speed road will increase the road kill of deer and other animals.

Response: Roads are designed to have minimal cutbanks for several reasons, one being not to block wildlife migration movement. We acknowledge that increased speed of highway traffic, with the relocated road, would probably increase road kill of deer and other animals. It is also anticipated that, with increased sight distances, some animals which might otherwise be killed would be saved. Since it is not possible at this point to tell exactly where road crossings by game animals might be, we must rely upon the experience in first years of operation of the new roads before signing of game crossing trails can be accomplished. The Corps will

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF SECRETARY.

cooperate fully in any signing program.

Comment: Regarding recreation and other developments, the entire shoreline must not be developed; wildlife must have access to the shoreline. Lands for wildlife need to be identified now.

Response: There is no plan to develop the total shoreline or even a major portion of the shoreline at Lost Creek Lake. Wildlife will have access to all areas except where they might be restricted for their own safety. The master plan for the project will show area for wildlife habitat and other land uses of the project.

Comment: No mention is made in section 4 regarding the timber volume which will be lost. The BLM land within the project now produces 242,000 board feet of timber annually. This production will be lost to perpetuity.

Response: The comment is considered valid and appropriate addition to the text has been made.

Comment: Electric transmission line location and relocation is not mentioned. The impact to scenic quality of the area should be mentioned in section 4 of the statement.

Response: The suggested additions to section 4 of the present environmental statement has been made.

Comment: Section 6 of the statement appears far too brief. It is suggested that the action be viewed in terms of various significant ecological and geographical consequences of the proposed action.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: Section 6 of the environmental statement has been considerably expanded to further discuss the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

Comment: Even with annual planning, (planting) long-term increase in desirable fish species production is questionable within the impoundment since the amount of trash fish will soon take all available food.

Response: The possibility posed by the above comment may or may not become reality. Refer to the previous response on trash fish taking over the reservoir.

Comment: Suggest the discussion in section 7 include any irrevocable uses of resources involved in the proposed action.

Response: Section 7 of the present statement has been revised and expanded to include additional information regarding irrevocable uses of resources.

Comment: Section 7 should include the loss of 11 miles of stream fishing and spawning area above the dam.

Response: The suggested addition to section 7 has been in the present statement.

Comment: The tailwaters of reservoirs are known to provide good fish habitat and an excellent fishery. The impact of the stream loss could probably be lessened if easements for bank fishing were obtained for several miles below the dam. This type of use would be compatible with drift boat fishing. This type of easement would have a positive environmental impact.

(3) CONTINUATION: U. S. DEPT. OF INTERIOR, OFFICE OF THE SECRETARY.

Response: The suggestion in the comment has great merit. The Corps does not have the authority, under the authorization for Lost Creek project, to make such acquisition and development.

(4) U. S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAYS ADMINISTRATION.

Comment: State Highway 62 (Crater Lake Highway) is on the Federal-aid secondary highway system and it is designated as FAS #269. Also, this same highway is on the forest highway system FH #17. This qualifies the route for Federal-aid highway trust funds, should the State of Oregon and/or Federal Highway Projects Division so desire and program accordingly for improvements on SR 62.

Response: Coordination with the Oregon State Highway Division has been carried on throughout the planning and design stages of our proposed relocation of State Highway #62. The State has made a preliminary review of our plans and given acceptance to the alignment. Our current schedule calls for advertising for the road work, including the bridge at McLeod, in July, 1972. We must have traffic on the relocated route by summer 1974. Planning and construction documents are available at the Portland District Office, for review at any time.

Comment: Relocation of State Route 62 is to be relocated south of the reservoir. This entails a major structure crossing the Rogue River downstream from McLeod. Currently the tentative forest highway program lists FH #17 from Trail to McLeod as a 1980 Fiscal Year project. Although reconnaissance studies by our Federal Highway Projects Division in Vancouver, Washington will not be completed until late 1972, preliminary indications are that it may be feasible to relocate FH #17 on the southshore of the Rogue River from Trail to McLeod. If this were the case, a major structure would be required in the vicinity of Trail but unnecessary at McLeod.

(4) CONTINUATION: U. S. DEPT. OF TRANSPORTATION, FEDERAL HIGHWAYS ADMIN.

Therefore, coordination efforts should be achieved with FHBD, Chief, John Moores, in Vancouver, Washington on this project since long-range planning by the FHWA is affected to a major degree.

Response: We are constructing the relocated highway in accordance with a relocation agreement with Oregon State Highway Division, contract number DACW-57-70-C-0140. Coordination of planning and specific highway design is suggested between the State of Oregon and FHWA at the highway division level. Planning and construction documents are available at the Portland District Office, Corps of Engineers, for review, however, at any time.

Comment: The draft statement indicates existing State owned park land will be used for public access to the project, road relocation, reservoir area, and project operation area. If Federal-aid trust funds were to be used for any relocation of Forest Highway 17 and were to require right-of-way taking from publicly-owned land from a public park, recreation area, wildlife or waterfowl refuge, or historical site of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, then a section 4 (f) statement would have to be prepared.

Response: The existing State-owned park land is almost entirely within the area to be inundated or used for project operation purposes. The Corps has coordinated the loss of the referenced lands with Oregon State Highway Division, their State parks section, and State historian. The Corps is working with the State to develop recreation facilities of a much larger scale at Stewart State Park south of the reservoir. It is our view that no section 4 (f) statement need be prepared.

(4) CONTINUATION: U. S. DEPT. OF TRANSPORTATION, FEDERAL HIGHWAYS ADMIN.

Comment: Your draft environmental statement did not specifically indicate prior coordination with the Oregon State Highway Division or State Parks Division. We understand the State Highway Division has reviewed and commented on the draft environmental statement. We are also aware of prior coordination with the State Highway Division on the road relocation work presently underway in the project vicinity of Lost Creek Lake and Reservoir project.

Response: Several sections of the present environmental statement includes reference to the Corps of Engineers coordination and contract agreements with Oregon State Highway Division.

(5) U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X.

Comment: The statement has not fully considered the full range of environmental impacts which will be a consequence of the construction of this project and contains insufficient information to allow the reader to evaluate the effectiveness of measures designed to minimize the adverse nature of these impacts.

Response: Considerable expansion has been made to the present environmental statement in response to the above comment.

Comment: The report does not mention the probable water quality degradation caused by the turbidity of the released water. If the water stored in Lost Creek Reservoir is similar in quality to that stored in Emigrant or Agate Reservoirs, the released water will have a major effect on the clarity of the Rogue River during the summer months. This possibility should be considered in evaluating the environmental impact of this facility.

(5) CONTINUATION: U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X.

Response: The Corps has not studied the condition of Emigrant or Agate Reservoirs for identification of the cause of turbidity or turbid producing conditions in the watershed. The present impact statement has been expanded to present the Corps and others interim evaluation of turbidity potential and the environmental impacts which might result therefrom. In essence, findings and data available at this time confirm the appropriateness of continuing construction.

Comment: Is the nature of the soils of the Rogue River drainage upstream of the damsite of such nature as to cause turbidity in the river and subsequently in the reservoir. Exactly what is the potential for reservoir turbidity resulting from inflows and from material entering the reservoir from the bank and from erosion due to annual reservoir heights fluctuation? We suggest that the Corps, prior to further construction activity, be requested to thoroughly research, study and test soil in the construction area and at selected points upstream to insure that the water which will flow out of the completed impoundment will be at least as clear as that which flows in.

Response: The present impact statement has been expanded to cover the points raised in the preceding comment. (See also preceding response.)

Comment: We suggest that a monitoring program be included in the project to assess the adequacy of measures to control turbidity and other adverse water quality effects.

Response: A program of sampling and testing both soil and water is in progress and will continue.

Comment: What is the nature of the turbidity which will be caused by construction activities. We note that a gravel bar area is located in the pool area immediately adjacent to the river. Will processing of this material further increase turbidity? We feel that the emphasizes should be on controlling and preventing rather than simply minimizing

(5) CONTINUATION: U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X.

the turbidity which occur during construction.

Response: Corps of Engineers contract specifications for the Lost Creek project are very specific in regard to turbidity. They say in part that no measureable increase in turbidity is allowed when natural turbidity is below 30 JTU and a 10% increase when natural turbidity is above 30 JTU.

Comment: Are algal blooms expected to be a problem in the reservoir? Does water quality data indicate that inflowing waters contain concentration of plant nutrients sufficient to stimulate algal growth?

Response: Through comparison of inflow water quality information with that of reservoirs without algal problems, we do not believe that * plant nutrients are in sufficient concentration to stimulate algal * growth to the extent that it would be a problem at Lost Creek.

Comment: Have alternate methods of disposal been considered in dealing with the solid wastes which will generated during construction of the project? Has burning been tacitly accepted as the only feasible method of disposal or have measures such as land filling of clearing material or hauling and shipping of debris been considered? In view of the potential atmospheric pollution accompanying the burning of the large amounts of debris which will be cleared from the reservoir site, we feel that adequate planning should consider less environmentally damaging measures than the sole alternative of burning.

Response: Alternate methods of disposal of solid waste have been considered for this project. Chipping of debris and of trees with no lumber value is specified in the main dam contract with chipped material being stockpiled for later use. Some burial of material within the reservoir will be specified. That material will be covered by rock and soil to prevent its flotation upon reservoir filling. Burning, however, seems to be the most feasible based on the extremely large amounts of

solid wastes which must be disposed of. Experimental burning with methods such as forced-air, pit, or vat-type burning are expected to reduce amounts of pollutants released to the atmosphere considerably.

Comment: The statement contains little information on details of the exchange-of-flows arrangements with Bear and Little Butte Creeks. How will these exchange-of-flow arrangements impact these creeks and what will be the nature of water quality enhancement to be expected?

Response: A discussion of the exchange-of-flows arrangement has been incorporated into the present statement.

Comment: How will Lost Creek Reservoir operate in conjunction with Elk Creek project relative to water supply, flood control and exchange-of flows?

Response: A discussion of the relationship between Elk Creek and Lost Creek with the water supply, flood control, and exchange-of-flows arrangements has been incorporated into the present statement.

Comment: What will be the impact of providing water to irrigate the 25,400 acres included in the U.S.B.R. project:

Response: Because the irrigation project (Medford Division) will be handled by the Bureau of Reclamation, and because their plans are not yet complete, (in the feasibility or preauthorization stage), suggested coverage cannot be provided in the Lost Creek Environmental Statement. We can at this point only say that; (1) if the Medford Division project should not be economically feasible or should prove to be environmentally unacceptable, the irrigation function of Lost Creek could be foregone without loss of economic feasibility; and (2) if the Medford Division project were to be recommended by the Bureau of Reclamation, their report would be accompanied by an environmental impact statement which could be expected to answer the above comment. If irrigation development did not materialize a change of size in Lost Creek project would not be

required since no specific or exclusive irrigation storage space is involved; also, because of the basin-wide shortage of water during the summer, any unrealized irrigation demands undoubtedly would be replaced by other demands.

Comment: What will be the quality of irrigation return waters with respect to nutrients, turbidity, dissolved solids, dissolved oxygen, and pesticide content?

Response: As stated in the preceding response the irrigation project will be handled by the Bureau of Reclamation, and because their plans are not yet complete the questions raised cannot be answered at this point. If the irrigation project, however, proves to be environmentally unacceptable, the irrigation function of Lost Creek could be foregone without loss of economic feasibility for the Lost Creek project.

Comment: It would be helpful if project description would provide additional information regarding quantities of water to be stored for particular purposes, schedules of releases, points of diversion, areas to be irrigated, quantities of return flows, exchange-of-flows arrangements, probable points of diversion for munciple and industrial water use, quantities for water quality control, and the interaction of this project with other elements of the Rogue River project.

Response: The suggested additions to the project description has been made in the present statement with the exception of specific location of areas to be irrigated; that matter was addressed in a preceding comment.

Comment: What is the total storage capacity plan for the impoundment?

Response: The total storage capacity for Lost Creek project is 465,000 acre-feet. Of that amount, 315,000 acre-feet is usable storage. Plate 3 shows elevation in relation to storage capacity.

(5) CONTINUATION: U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X.

Comment: What will the minimum conservation pool be in years of critical water supply? The statement indicates that in normal years drawdown will be 60 feet; from examining the maps, the minimum conservation pool is at elevation 1,751. The statement should indicate the frequency of occurrence expected for this minimum pool. In view of the implications for recreation demand and esthetics, it should be indicated that annual drawdown may approach 121 feet.

Response: The present statement incorporates additional information, charts, and tables in response to the above comment. It should be noted that, though annual drawdown may approach 121 feet, that drawdown would not be reached until 1 November in a normal water year.

Comment: Will multi-level outlet gates be provided to select optimum temperatures for water release for fishery purposes?

Response: Twelve gates have been provided in the outlet structure at four levels, at each of which there will be three gates. Additional information has been provided in the present statement regarding outlet works.

Comment: Will fishery releases be subject to shortages in critical water years or will such releases be protected under all circumstances?

Response: A discussion of water use during the deficient or shortage years has been added to the present statement. Specifically, in years of less than a full water supply, each of the conservation purposes will share in the available water supply to the same relative degree as in a full supply; that is, if there should be a 10% shortage of supply, each conservation purposes could expect to have 90% of a full supply, so far as stored water is concerned. Flows released to the stream for fish habitat enhancement will be protected under water rights applied for, and awaiting flows for patenting, by the State fisheries agencies, and under programs, with the force and effect of law, adopted by OSWRB.

(5) CONTINUATION: U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X.

Comment: The potential for turbidity and algae growth in the reservoir should be examined in section 2 of the statement.

Response: Suggested additions regarding turbidity and algae growth has been made to the statement.

Comment: Long-range impacts of project construction on newly irrigated areas and flood plain development must be considered.

Response: Long-range impact on areas where irrigation will be practiced will be evaluated by U.S.B.R. and discussed in appropriate EIS on their potential Medford Division project. Control of flood plain development will be a local function. The local agency has available flood plain and related information provided by, the Corps, State, U.S.G.S., and others.

Comment: Do mercury or other heavy metals occur in the project site or upstream from the area?

Response: No deposits of mercury or other metalic minerals are shown on State of Oregon mineral deposit maps for the project or upstream from the area.

Comment: Will the reservoir have the effect of raising the local ground water table?

Response: The reservoir pool will lie predominantly on pyroclastic rock formations and derived weathering products and in local areas will include pumice deposits which rest on deposits of slopewash and other soil debris. Most of those deposits are relatively wet all during the year thus change in elevation of the groundwater base level will be the primary change. The topography does not indicate that bog or swampy areas will be produced. Groundwater supply in pyroclastic areas will not be

changed appreciably. In the basaltic rock materials the groundwater supply conditions will, if anything, be improved. Plant life in the pyroclastic materials will not be changed appreciably.

Comment: What will be the impact of the project on the wild and scenic rivers portion of the Rogue River and does the wild and scenic rivers act place restriction on water resource development on the Rogue River?

Response: Impact on wild and scenic stretch of Rogue River, from mouth of Applegate downstream to Lobster Creek, will consist of a small reduction in flood peak stages, a significant increase in low-water flows, and an improvement in water quality during the low-water season because of reduced temperature. The act places specific restrictions on development of all kinds, in the reaches designated as wild and scenic, but not on developments outside those reaches.

Comment: The statement should indicate that part of the impact of this project will be to eliminate a stretch of the Rogue River as a free-flowing stream and block the natural run of anadromous fish which utilize the river.

Response: The suggested addition has been made in the present statement.

Comment: Section three of the statement should state that mud flats exposed because of annual drawdown will commence at the beginning of the recreation season.

Response: Addition to the present statement to show time of year extent of drawdown, and acreage exposed has been made to the present statement.

(5) CONTINUATION: U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X.

Comment: Many of the previously mentioned impacts may be considered adverse from an environmental viewpoint. Without the necessary detailed description of the project, it is impossible to perform an accurate environmental evaluation.

Response: The impacts referred to in the above comments have been discussed in the present statement.

Comment: Were fish-passage facilities considered? On what basis were they rejected?

Response: Fish-passage facilities were considered, but not included in the plan because it was the decision of the Federal and State fishery agencies that provision of artifical production facilities would be the preferred alternative.

STATE OF OREGON

(6) STATE OF OREGON, OFFICE OF GOVERNOR.

Comment: Copies of the responses from several State agencies are attached. They suggest points to be considered and included in your statement. You may use this letter as evidence of your compliance with section 102(2)(c) of the National Environmental Policy Act of 1969 (83 Stat. 853) and OMBA-95 (revised).

(6a) OREGON STATE HIGHWAY DIVISION.

Comment: We would like to mention that a seven-mile segment of the Crater Lake Highway (ORE 62) will be inundated as a result of the project. We have been in contact with the Corps during the development of their project to assure a reasonable replacement for the highway. This concept

(6a) CONTINUATION: OREGON STATE HIGHWAY DIVISION.

has been covered adequately in the environmental statement.

Comment: An aspect not mentioned in the environmental statement is the need for a buffer strip of undisturbed native vegetation to preserve the scenic quality of the corridor. It is our understanding that a 400-foot strip had been acquired along the southerly side of the relocated highway for this purpose.

Response: In the proposed action section of the present statement, information has been added in regards to the acquired buffer strip south of the relocated Crater Lake Highway centerline. On the referenced section of highway it should be noted that the Corps acquired 600 or more feet of buffer strip rather than the minimum 400 feet, to insure scenic quality of the corridor.

(6b) FISH COMMISSION OF OREGON.

Comment: We do not think the word lake should be used in the title of the environmental statement. People envision a lake as being a stable body of water. Since Lost Creek Reservoir will have a large drawdown, the word lake is misleading.

Response: Use of the word lake in the name of the project is in compliance with current Corps of Engineers policy. However, when discussing the impoundment of water in the text of the present statement, the word reservoir was used when it was advantageous, for descriptive purposes, to do so.

Comment: Spring chinook have increased recently to a much higher level than in the 1950's.

(6b) CONTINUATION: FISH COMMISSION OF OREGON.

Response: The comment is considered valid and has been incorporated into the statement.

Comment: Gold Beach landings have little relationship to the Rogues contribution to this fishery and therefore the tables should either be corrected or eliminated.

Response: The comment is considered valid and the table has been appropriately revised.

Comment: The Rogue River below the dam is described as cascading. The term cascading is misleading and implies a stream gradient much steeper than exists in the Rogue River. We recommend you substitute the word "turbulent".

Response: The comment is considered valid and has been incorporated into the text of the statement.

Comment: The stream section to be inundated by the dam should be described as excellent quality spawning area.

Response: The recommended addition has been made to the present statement.

Comment: As part of the discussion regarding a dry reservoir alternative, the report should say that silt settling in the reservoir during flood control operation would cause extended periods of turbidity in the Rogue below the dam during and after evacuation and disrupt fish and fish production.

Response: The comment is considered generally valid and changes have been incorporated into the alternative section of the present statement.

(6b) CONTINUATION: FISH COMMISSION OF OREGON.

Comment: The excellent salmon spawning area that will be inundated by the reservoir should be mentioned under irreversible and irretrievable commitments.

Response: The comment has been incorporated into section 7 of the present statement.

Comment: The environmental statement should discuss the potential of having a turbid reservoir and stream as a result of the project.

Response: The present statement has been expanded to present discussion of potential for turbidity in the reservoir and stream.

(6c) WATER RESOURCES BOARD, STATE OF OREGON.

Comment: The Corps of Engineers should be commended for considerable improvement over their previous endeavors in preparing particular environmental impact statements.

Comment: We recommend that the Corps include a somewhat more complete description of the interim zoning ordinance of Jackson County and more specific definition of the ordinance restrictions cited.

Response: The comment is considered valid and additional information has been provided regarding Jackson County zoning plans. The interim zoning ordinance is a temporary measure. County-wide zoning that will include a "flood plain combining district" is being drafted as a replacement. Since county-wide zoning has not yet been adopted, proposed restrictions are still tentative. However, flood plain zoning is expected to prohibit homes and other types of human dwellings, and restrict construction of other structures to those that utilize a flood-proof design.

(6c) CONTINUATION: WATER RESOURCES BOARD, STATE OF OREGON.

Comment: An additional alternative could be included in the statement composed of an effective combination of levee construction, flood plain zoning, flood proofing, and small upstream reservoirs that could serve both as fishing and recreation lakes and possibly provide flow augmentation to satisfy downstream temperature and fish flow requirements.

Response: The present statement has been expanded to present an alternative consisting of a combination of the single-purpose projects referred to in the comment.

(6d) OREGON STATE GAME COMMISSION.

Comment: A statement such as the salmon and steelhead potential is not being utilized in the river system because of low flows and high water temperatures during the summer months should be incorporated into section two of the statement.

Response: The suggested statement has been incorporated into the present statement.

Comment: The table referring to Gold Beach landings does not accurately reflect the contribution of the Rogue River to the ocean sport commercial catch. We suggest this table be deleted.

Response: The referenced table has been revised.

Comment: The use of the word, "resident" trout should be made instead of "domestic" trout.

Response: The comment is considered valid and appropriate change has been made to the text.

(6d) CONTINUATION: OREGON STATE GAME COMMISSION.

Comment: The statement that big game animals will relocate from the reservoir area with little or no reduction in total population should be deleted and a statement such as, "3,438 acres of big game winter range will be inundated. The deer using this area during the winter time will be lost because the surrounding habitat is already being used to capacity."

Response: The referenced sentence has been deleted from the statement. Suggested information has been incorporated into the statement.

Comment: "Spawning grounds for fish" should be added to the paragraph on fishery in section 7 of the statement.

Response: The comment is valid, the section has been revised and information added to the present statement.

Comment: Somewhere in the report mention should be made of the possible turbidity problem that could occur in the reservoir because of montmorillonite clay deposits in the area.

Response: The turbidity question has been addressed in the present statement.

(6e) STATE OF OREGON, LOCAL GOVERNMENT RELATIONS DIVISION.

Comment: The anticipated tourists and visitors annually generated by the project will have an impact upon county government in terms of the provision of sewer and water, and police and fire protection. This impact will be even greater when coupled with the estimated visitors at nearby Elk Creek project.

Response: The Corps alternative proposals for sewage disposal now being studied are discussed in section 1. Water would be provided by the

(6e) CONTINUATION: STATE OF OREGON, LOCAL GOVERNMENT RELATIONS DIVISION.

Corps at the recreation facilities. Police protection would be a local responsibility and Jackson County is aware of that demand. As yet, agreements for fire protection on Corps land have not been worked out.

Comment: We recommend that the Corps contact Jackson County Court to insure that the implication inherent in the project are made known to the county. This would allow the county to amend its long-range comprehensive plan and capital improvement and prepare the necessary zoning measures to provide for orderly development of the area.

Response: The Corps has coordinated project development with Jackson County and close coordination will continue through project construction and operation.

Comment: The Corps states that 33 families will be relocated. According to officials of the City of Medford, Jackson County, and the Department of Housing and Urban Development the housing market in Jackson County is extremely tight. We recommend that the Corps carefully assess the housing market and identify relocation resources before the acquisition of any properties.

Response: All of the families to be relocated except 7 have moved to new locations. The market is continuously being reviewed and adequate housing determined available to meet the needs of those families who are required to move.

(6f) STATE OF OREGON HOUSING DIVISION.

Comment: While State and local governmental agencies make every effort to obtain relocation unit from the existing housing stock, for persons displaced, this may not be enough. Very little housing is being built at the lower end of the economic scale and the proportion of low cost housing is decreasing in relation to the total. In the decade 1960-1970 housing units in Oregon costing less than $10,000 dropped from 50% to 20% of the total. I would propose that before this project is launched a survey be taken of the numberof low and moderate income housing units displaced and compare this with the number of units constructed that year in the effected market area. Further, I propose we establish a normal vacancy or fore sale rate of various categories of housing in the market area. If the net result of the capital improvement project is a decrease in the number of low and moderate income units and such a decrease causes the reduction in the vacancy rate below the norm, then we may have heightened the competition for low and moderate income units to the point where it is for all practical purposes unavailable. In such a situation I would like to propose the development of new housing to replace that demolished by the project in accord with the last resort housing provisions of the Uniform Relocation Act of 1970.

Response: Acquisition of lands and relocation of occupants has been proceeding for this project since 1968. There are two owner-occupants who have not relocated and five tenants to whom dwellings have been leased who will ultimately be required to move.

The housing market is continuously being reviewed and adequate housing which meets the needs of those families who are required to move will be determined available before families are required to relocate.

Comment: Affording displaced persons the opportunity to secure adequate replacement housing also requires a careful look at the purchasing power of the individuals concerned. It may be that replacement housing,

(6f) CONTINUATION: STATE OF OREGON HOUSING DIVISION.

while available, is beyond the means of the persons being displaced. Short-run relocation benefits will not solve the long-term housing problem of persons with incomes, particularly people with fixed incomes, such as, the elderly.

Response: The statement concerning the housing problems of displaced persons with low incomes is concurred in. Fortunately, there were few families of this type in this project.

(6g) STATE OF OREGON, GEOLOGY AND MINERAL INDUSTRIES.

Comment: The areas identified as Flounce Rock Park and Seth Bullis Park in our opinion should be investigated by the Corps of Engineers in sufficient detail to determine whether the development of the reservoir could trigger downflow movement in the incompetent rocks.

Response: The local slide problem areas referred to in the comment have been investigated during the study as discussed in the present statement. The problem areas will continue to be investigated in connection with recreation development design investigations, and right-bank road relocation design investigations. Necessary corrective work can be incorporated in the construction contracts or modification of the proposals can be made if necessary.

(6h) DEPARTMENT OF ENVIRONMENTAL QUALITY, STATE OF OREGON.

Comment: The environmental impact is adequately described.

(7) UNIVERSITY OF OREGON, MUSEUM OF NATURAL HISTORY.

Comment: The 1966 study, by the University of Oregon, Museum of Natural History, was a survey to determine archeological potential at

(7) CONTINUATION: UNIVERSITY OF OREGON, MUSEUM OF NATURAL HISTORY.

Lost Creek. Four sites were found and in addition two areas were mentioned where archeological sites could be expected. The artifacts listed on lines 4, 5, and 6 were not mentioned in the 1966 survey report as inferred from the statement.

Response: The comment is considered valid and appropriate changes to the text has been made.

Comment: In 1966 and 1967 Oregon State University, under National Park Service contract, excavated two of the sites discovered in the 1966 survey and in addition discovered two additional sites which were investigated. The result of this work appears in archeology of the Lost Creek Dam Reservoir by Wilbur A. Davis, Oregon State University, Corvallis, Oregon, April 17, 1968.

Response: Information as provided above has been incorporated into the present statement.

Comment: In 1968 further archeological work was conducted by Oregon State University at two additional sites. This is reported in Lost Creek Archeology, 1968, Final Report, by Wilbur A. Davis, dated March 31, 1970. In all, eight sites were found within the reservoir. Two have not been investigated because of restrictions by land owners at the time of field work. It is hoped that these sites plus the one downstream can be excavated.

Response: Appropriate changes to the present statement has been made to reflect the information as provided above. Further, the National Park Service has been given notification that access to all properties in the project area is available for further investigation.

Comment: It is recognized that the two hobbyists groups mentioned as reporting the downstream site are aware of its existence, however, you

(7) CONTINUATION: UNIVERSITY OF OREGON, MUSEUM OF NATURAL HISTORY.

may find that by locating a site with only that degree of accuracy, you will be inviting scores of people from hundreds of miles away to dig there. We have always found it inadvisable to mention locations of unexcavated sites through any media available to the public or unconcerned Federal and State agencies.

Response: The hobbyists groups referred to in the comment officially corresponded with the Corps of Engineers in regards to the sites mentioned. It is our obligation to present that information as a matter of public disclosure in the environmental impact statement. The referred to statement has been modified, however.

JACKSON COUNTY

(8) JACKSON COUNTY, OREGON, BOARD OF COUNTY COMMISSIONERS.

Comment: It is our considered opinion that the Corps has identified many of the basic project problems and the board concurs with your efforts to minimize the adverse environmental impact which will result from construction and operation of the project.

Comment: The Board of Commissioners suggests that the Corps give full consideration to the problem of debris removal from the water surface after impoundment and also debris situations which will occur annually after high water.

Response: Corps will take steps necessary to see that all debris will be removed from the water surface after impoundment and also for debris situation which will occur with high water after project operation. Disposal will be in accordance with the general debris disposal practices as indicated in the present statement.

(8) CONTINUATION: JACKSON COUNTY, OREGON, BOARD OF COUNTY COMMISSIONERS.

Comment: Due to controlled release of flood waters which would result in extending periods of time when the river will be maintained at bank full levels some provision should be made by the Corps for correction of downstream bank erosion.

Response: The project plan includes provision for a limited amount of bank revetment as a supplement to storage control of floods. Such work would be done following initiation of reservoir operation and to the extent determined to be necessary, on the basis of experience. Funds to cover the cost of such work as may be found necessary have been incorporated in the project cost estimate. Revetment would consist of dumped stone layed on the gravel filler on a prepared slope and extending from about 2 feet below top of bank down to a toe trench about 5 feet below river bed.

Comment: It is our understanding that there might be a problem of colloidal suspension occurring within reservoir. Some mention of this condition should be included in the final environmental statement.

Response: Appropriate addition to the present statement has been made in regards to the possible problem of colloidal suspension which might occur in the reservoir.

Comment: Other environmental impacts; such as, transmission lines, water transportation systems and other related items that may not be directly associated with the Lost Creek Lake project should also be considered.

Response: Suggested related environmental impacts were and have been incorporated into the Lost Creek Environmental Impact Statement.

Comment: Interim zoning controls along the Rogue River will be finalized by the Board of Commissioners in 1972. A flood plain planning element

(8) CONTINUATION: JACKSON COUNTY, OREGON BOARD OF COUNTY COMMISSIONERS.

is presently being prepared for application along this river reach.

(9) JACKSON COUNTY PARKS AND RECREATION COMMISSIONER, MRS. EDWARD W. SICKLES.

Comment: Form of the presentation could be greatly improved. Although little environmental information has been overlooked by the authors of the statement regarding Lost Creek, it is rather difficult to follow.

Response: The format of the present statement is in compliance with CEQ Guidelines, however, the present statement has been considerably revised to allow for easier reading.

Comment: An explanatory statement regarding the benefit cost ratio would be helpful. Additionally I believe more information should be included in this report on the cost of the project.

Response: The benefit-to-cost ratio is merely a ratio between the dollar return versus the dollar of investment, at a specific interest rate, over the economic life of the project. A complete presentation of the economic analysis of the project is presented in "Rogue River Basin Water Resource Development Report by U. S. Army Engineer District, Portland, dated December 1961". That report is available for public review. The benefit-to-cost ratio with Lost Creek project can be stated as an annual cost of $5,082,000 and annual benefits of $7,537,000; thus, a benefit-to-cost ratio of 1.48 to 1. That amount is based on an interest rate of 3-1/8% and prices and condition as of July 1971.

(10) JACKSON SOIL AND WATER CONSERVATION DISTRICT.

Comment: So far as we have been able to determine the draft statement defined the environmental impact of the project well, and clearly set forth the adverse environmental effects.

(10) CONTINUATION: JACKSON SOIL AND WATER CONSERVATION DISTRICT.

Comment: We have become especially familiar with the land costs associated with floods. Bank erosion, washed bottom lands, gravel deposition anc channel changes have been some of the land costs. As conservationists, we view these costs with regret. Conversely we are well aware of the water needs of the area during the low flow period. It seems to us that the Lost Creek Lake project will help solve the aforestated needs at a minimum cost in terms of other environmental considerations.

(11) ROGUE BASIN FLOOD CONTROL AND WATER RESOURCES ASSOCIATION.

Comment: We are aware of no elements of environmental impact or of adverse environmental effects which have been omitted from the statement.

Comment: The loss of 11 miles of free flowing stream is a cost which we have not weighed lightly. Nevertheless, it is our view that the environmental benefits of the project will far outweigh the environmental costs.

Comment: The increased summer flows of cold, high quality water will enhance the anadromous fishery, improve the quality of water for use by humans, and compliment the wild river status of the lower Rogue. Flood control will decrease environmental effects associated with high water; some of which are, washed out salmon eggs, potholed fish, eroded banks, scoured bottom lands, stream channel changes, and a piling up of spawning gravel so that it no longer is useable for fish purposes.

Response: Impacts resulting from increased summer flow, as identified in above comment, which were not in the draft environmental statement have been incorporated in the present statement.

CONSERVATION GROUPS AND INDIVIDUALS

(12) OREGON ENVIRONMENTAL COUNCIL.

Comment: Without proper substantiation, the statement that the "cost to benefit ratio is 6.1 to 1 at 3-1/8% interest" stands as a justification for the project rather than the statement of impact called for in NEPA. We reiterate our previous requests and those of other groups for substantive data and computations to support this ratio. It has been alluded that the cost-benefit formula utilized by the Corps of Engineers includes those costs and benefits incurred as a result of environmental impacts. Until such time as the Corps of Engineers provides complete documentation for the quotation of cost-benefit ratios we suggest that they be not included in future statements.

Response: The benefit-to-cost ratio in the impact statement is stated as 1.6 to 1 and not 6.1 to 1 as indicated in the above comment. The benefit-to-cost ratio in the present impact statement, however, has been changed to reflect July 1971 prices and conditions. The following summary presents the annual costs and annual benefits. The resulting benefit-to-cost ratio is 1.48 to 1.

Construction Cost	$124,000,000
Interest During Construction	8,302,000
Present Worth of Future Recreation	1,976,000
Investment Cost at 3-1/8%	$134,278,000
Annual Cost	
Interest and Amortization at 3-1/8% Rate	4,399,000
Operation and Maintenance	610,000
Replacements	73,000
Total Annual Cost	$ 5,082,000
Annual Benefits	
Flood Control	$ 3,583,000
Irrigation	65,000
Water Supply	299,000
Fish & Wildlife Enhancement	846,000
Power-at-Site	1,138,000
Recreation	737,000

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL

Annual Benefits, Cont'd

Water Quality Control	82,000
Area Redevelopment	686,000
Other	101,000 1/
Total Annual Benefits	$ 7,537,000

1/ Savings to the public due to 1.2-mile reduction in length of relocated Highway No. 62.

Comment: The statement that rock and soil excavation and disposal is a significant part of the proposed action is incorrect. The action is under way, not proposed.

Response: Rock and soil excavation constitutes a significant portion of the proposed work, it is correct that part of that work is in progress.

Comment: We wish to know when the disposal of excavation material will be made and the effects on water quality of the river should it be subject to erosion.

Response: Disposal of material will be accomplished during construction and prior to filling the reservoir. The disposal areas will be treated to prevent erosion if necessary. Contract specifications are very specific in regard to water quality control during construction. If turbidity of the river is above 30 JTU, no more than a 10% increase will be permitted. If turbidity of the river is below 30 JTU, no increase will be permitted.

Comment: "The left Bank site being used primarily to eliminate potential slide condition." Presumably, this refers to the future relocated state Highway 62. What is the necessity for relocation? The slide condition infers an unstable geologic formation. What is the composition of this formation? Its depth, its strength, its natural angle of repose, etc.?

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Response: The referenced sentence in the impact statement has been modified. Selection of a borrow area is primarily based on the following three factors listed in order of importance; (1) suitable material, (2) quantity available, (3) haul grade and distance.

The impervious borrow area contains a sufficient quantity of suitable material and is favorably located.

The deposit is colluvial in origin - a mixture of soil and rock fragments which moved downslope at sometime in the geologic past. The mass is presently stable and has been for a long time though there are some areas of local movement or slope adjustment. The mass has a maximum vertical thickness of about 120 feet and extends approximately from elev. 1700 to elev. 2100, being thickest near the base and thinning out upslope. Since it is a local, unconsolidated slope deposit it has no dip or strike. Residual strength shear tests indicated an angle of repose of about 1V to 3H.

Oregon State Highway 62 is being relocated because its present location is along what will be the bottom of the reservoir. It would be possible to obtain the required quantity of borrow below the highway. However, that would leave the highway perched on a thin sliver of colluvial material without toe support and all the material excavated for the highway would have to be wasted. Therefore, in the interest of economy, minimal environmental disruption, and to insure the stability of the relocated highway, the main dam Contractor will be required to excavate and use the colluvial material from the highway foundation. The relocation Contractor will then construct a rockfill across the excavated area using rock from required excavation along the highway alignment. The remaining required borrow will be obtained from the deposit below the highway grade.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: The statement regarding minimizing esthetic impact during excavation constitutes another justification statement for continuing the action. We find that no description of how "it has been planned to minimize." Furthermore, we find no description of the specifications or techniques used in order to minimize the impacts.

Response: Section 1 of the present statement has been expanded to present details of excavation and plan for minimizing esthetic impact.

Comment: We have been assured many times that no dam will be built if the soil and geology are found to be unsuitable. Why is it that that information has not been obtained or included in the draft statement.

Response: The present statement has been expanded to include additional geology information.

Comment: Clarification on the matter of appropriately graded borrow areas to preclude trapping of fish in small ponds during drawdown periods is necessary.

Response: The statement regarding trapping of fish in small ponds was inaccurately presented in the draft environmental statement. The surface of the gravel borrow areas range from elevation 1,600 to 1,635, well below minimum pool elevation 1,751. There is no possibility that fish would be trapped within those borrow pits.

Comment: In reference to a statement that design emphasis has been to reduce and minimize landscape scarring rather than to rely on restorative measures, there should be a description of the proposed design or contract specifications or performance criteria which would provide assurance that there has been, in fact, any design at all.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Response: The present statement incorporates additional information regarding restorative measures of material borrow areas. Grading, landscaping, seeding, tree and shrub planting of all construction areas as deemed appropriate by landscape Architects retained by the Corps for the work have been incorporated into construction plans and specifications for the project. Those plans are available for inspection at any time.

Comment: Major floods are not documented. We see no reason to accept such information, specifically, what floods, how big, when, frequency of the occurrence, etc. Also, what percentage of the Rogue flow is derived from the drainage area above the dam under construction.

Response: Plate 3 has been added to the present statement which shows the flow of record from 1929 through 1968. Approximately 50% of the Rogue River flow at Grants Pass is derived from the drainage area upstream from Lost Creek Dam.

Comment: In reference to the statement, the stored water would be used as required for conservation needs, what conservation needs, water, wildlife, vegetation, etc. Conservation needs established by whom and for what purpose?

Response: The water conservation needs as defined by the project document and the Flood Control Act of 1962 refer to water supply, irrigation, fish habitat enhancement, water quality control, and power generation. Downstream recreation was not evaluated as part of the project document. Those needs were evaluated on the basis of a multiagency-public participation effort during preauthorization period (1957-1961) and subsequent detailed planning effort. It should be noted that in addition to the conservation needs identified in the document, and for which benefits were derived, downstream recreation, scenic quality and wildlife habitat also would benefit.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: The vicinity and reservoir map at the back of the statement does not show contours below full pool, so we were unable to determine the actual extent of exposed slopes during drawdown periods.

Response: For reason of clarity to the reader, the contour lines on the subject map were removed below maximum and full pool elevation 1872 except for minimum conservation pool elevation 1751.

Comment: "Throughout the year, releases from the reservoir to the Rogue River would not fall below the minimum established for fishery enhancement"; OEC wishes to know what minimums or what kind of fisheries, established by whom, and for what purpose.

Response: As stated in the draft statement, the minimums established are for fishery enhancement. Table 1 shows those minimums for different times of the year along with maximum water temperature. Requirements downstream refer to requirements to realize planned benefits; those requirements were established by federal and state fishery agencies, on the basis of knowledge available to them, including the results of temperature studies made by the Department of Oceanography at OSU.

Comment: Construction of road relocations, bridges, and the attendant environmental disruptions, are impacts not mentioned in the statement. When, in fact, do these constitute impacts brought on by the dam project.

Response: Road relocation, powerline relocation, recreation development, and all other appurtenant construction features to the dam are considered in the general discussion regarding the project. Additional proposed action and impact information specifically for appurtenant facilities have been included in the present statement.

Comment: Recreation and public facilities are a major project action. We wish to inquire as to the criteria for siting and designing these facilities.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Response: The siting and designing of recreation facilities is based on relationship of the area to the reservoir, the topography, public access from highways and to the reservoir, the ability of the land to support people and the esthetic character of the area. Specific design of facilities is based on experience derived from operation and maintenance of other areas both by the Corps of Engineers and Oregon State Parks Department who have submitted a plan for development of Stewart Park on the south shore of the reservoir.

Comment: In view of the proximity the recreation areas are to the reservoir, we wish to know what form of sanitary facilities will be provided, where located and at what level of treatment the effluent will be disposed.

Response: The text of the present statement has been revised to present information in response to the above comment.

Comment: Where will solid waste be disposed and by what means?

Response: The details for disposal for solid waste from recreation areas have not been worked out at this time.

Comment: We anticipate the Corps will pass the responsibility for waste disposal action to the state agencies who will be responsible for operating the facilities.

Response: The action to provide sewage disposal facilities is the responsibility of the Corps of Engineers. The removal of solid waste during operation of the recreation facility will be the responsibility of the operation agency. Operation of sewage disposal facilities has not been worked out with the cooperating local agencies.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: Were disposal costs included in the cost-benefit analysis?

Response: Yes.

Comment: We feel that the description of the construction of Cole M. Rivers fish hatchery which is now under construction is uninformative insofar as it does not mention excavation, dredge, and fill.

Response: As part of construction of Cole M. Rivers fish hatchery, excavation, dredging of gravel and rock and subsequent filling took place. That construction is nearing completion and the area around the hatchery will be completely graded and landscaped. Quantity of material excavated, filled, and disposed of has been added to the present statement.

Comment: Are the general guidelines for clearing of Lost Creek reservoir included in the construction contract as performance criteria, and what assurances are there that the guidelines will be adhered to?

Response: Yes, specific requirements for clearing are specified in the construction contracts. Specific clearing limits are defined by elevation and the government will maintain continual inspection to insure that the contractor complies with the specified clearing criteria.

Comment: While we are interested to know limitations are set at elevations 1875 and 1830 specifically adjacent to bathing beaches and boat launching areas for removal of stumps, when the maximum drawdown elevation will be down to elevation 1812 feet, it would appear that considerable visual impact will occur.

Response: The stump removal requirements between elevation 1875 and 1830 constitute an upper clearing limit (1875 msl) and the normal drawdown during the recreation season (1830 msl). The visual impact of stumps

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

along the shore line will be experienced only during winter months. Additional removal to elevation 1812 would be extremely expensive. The decision to remove those stumps, however, could be made at some subsequent date.

Comment: Substantive content and demonstrated understanding of the principals of ecology and ecosystems in the environmental setting are lacking.

Response: The environmental setting of the present statement has been considerably expanded to better present existing conditions.

Comment; The geology statement in Section 2 is totally unsatisfactory. What are the physical properties of rock units and where is the description of the rock structures?

Response: The present statement has been expanded to include suggested information.

Comment: What soils are contained within the project boundary and where are the descriptions of the erodability, percolation characteristics, shrink-swell potential, etc.? What is the capability of the soil to accept sewage effluent?

Response: Based on method of deposition, soils of the following classifications are present in the reservoir area: (1) Residual-derived from the weathering in place of the underlying rock. Those soils are generally plastic with low permeability. (2) Alluvial-stream deposited. Those soils are generally composed of silt, sand and rounded gravel to boulder-size rock fragments with low plasticity and high permeability. Exceptions would include older terrace deposits which have weathered in place to produce plastic fines and which may be quite impermeable,

outwash deposits which may contain plastic fines and angular rock fragments. (3) Colluvial. Slope debris moved downslope by gravity. Generally composed of plastic fines with sand to boulder size rock fragments. Permeability is generally low but depends on composition and degree of consolidation. (4) Pyroclastic-ash and pumice from volcanic eruption. This material is generally nonplastic with high permeability and is easily eroded.

Other than the pumice, the soils discussed above will genrally have a low erosion potential. The residual and colluvial soils will have limited capacity for sewage effluent and the pumice, due to its erosion characteristics is unsuitable for ground disposal. It is probable that methods other than ground disposal, septic tanks and drain fields, will be required for heavy use areas. Any heavy use area will require surface drainage. Water from such drainage systems will go into the reservoir.

Comment: The statement that development of the area has been somewhat retarded as a result of poor transportation outlets is a value judgment. Perhaps the absence of development constitutes a greater value to the public as a whole. We wonder if the speeding up of development is included in the benefit side of the benefit-cost ratio.

Response: It is widely accepted that in order to develop industrially an area must have good transportation outlets; in that regard, the statement is a judgment. Whether the absence of development constitutes a greater value to the public as a whole is also a judgment. If "speeding up of development" as stated above, means area redevelopment, as a result of Lost Creek Project, it is included in the benefit side of the benefit-to-cost ratio of the project.

Comment: "The Rogue River and its tributaries are essentially swift streams with comparatively little aquatic food or marsh habitat for water

fowl." Consultation with any limnologist will reveal that the river, even in its broadest sense, is alive with food. As indicated by the Corps, nesting does occur in the area. Nesting cannot take place without the presence of food. Similarly, migratory flights do not rest in areas where food does not exist. We find no supportive evidence to justify the statement concerning wild fowl.

Response: The statement that comparatively little aquatic food or marsh habitat for water fowl is true when used in comparison with other drainage systems in the Northwest. The statement was not intended to imply that no aquatic food or marsh habitat existed in the drainage.

Comment: The project site area of Section 2 does not provide information on ecosystem descriptions, geology, soils, natural ground water, animal and vegetative food chains and food webs. There are no standards describing slide potential and the vulnerability or tolerance of the land to human presence.

Response: The section referred to has been expanded in response to the comment. Much of the information is also available in other sections of the impact statement.

Comment: The paragraph on wildlife habitat is inadequate to describe even superficially the complex ecosystem which exists in the Lost Creek area. The statement concerning negligible harvest constitutes another value judgment.

Response: The referenced paragraph was intended as a specific description of existing wildlife in the project area to be used in conjunction with the preceding discussion on wildlife in the same section. The statement concerning negligible harvest was used primarily to indicate the relative numbers of waterfowl since no specific surveys of numbers has

been made. If harvest were considerable, certainly that would indicate a greater number of waterfowl in the area and a different evaluation might be made.

Comment: We wish to know if the Corps is taking over responsibility for properly planning recreation areas for use by people? We wish to inquire if the arboretum referred to by the Corps is in fact an arboretum which according to Webster is "a place where trees and shrubs are cultivated for scientific or educational purposes." What scientific or educational projects will be conducted within the site? Does the Corps also take responsibility for conduct of these people?

Response: The Corps with cooperation from Oregon State Parks Division has been planning for the recreation areas at the project. The arboretum referred to will be at Stewart Park on the south shore of the reservoir which Oregon State Parks Division has agreed to operate and maintain. The aboretum area will be managed for educational purposes. As yet, details of any educational projects on the site have not been worked out. Interpretive trails through the area are planned and labeling of plant species will be accomplished.

Comment: Where will the top soil be acquired and what vegetation will be planted in the borrow areas which are to be restored? Who will conduct restoration?

Response: Topsoil from construction areas will be stock piled for utilization during restoration. Section 1 of the present statement shows the basic plan for restoration. The restoration work is incorporated in the general construction contracts.

Comment: We wish to inquire the slide potential referred to in Section 1 constituted a hazard prior to the implementation of Lost Creek Project

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

and if the elimination of this slide potential was included as a benefit within the cost-benefit ratio.

Response: The mass referred to in the comment is presently stable and has been for a long time although there are some areas of local movement or slope adjustment. No benefit for elimination of any slide potential was included in the benefit-to-cost ratio.

Comment: We would be interested to know how the Corps has arrived at flood control benefits.

Response: Hydraulic studies and data from historical floods are used to develop stage-damage and damage frequency relationships. The most recent major flood on the Rogue was that of 1964 which caused damages downstream from the Lost Creek site in excess of $13 million. Damage-frequency relationships are prepared by correlation of the discharge-damage and discharge-frequency curves. Those curves show the relationship between damage from peak annual flows and corresponding exceedance frequency. The flood damage values are related to probability. The total of all damage increments, weighed by their respective increment of probability, is the average annual damage to be expected in any year.

Comment: We wish to know the construction cost of this project and how this cost compares to the estimated savings of $3,287,000.

Response: The average annual flood control benefit reflected above has been revised to July 1971 prices and conditions and is now $3,583,000. That amount is an annual benefit for flood control alone. The total average annual benefit for the project is $7,537,000. Similarly, the total annual cost is $5,082,000 for a benefit-to-cost ratio of 1.48 to 1.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: We would be interested in knowing if the Corps is going to accept responsibility for flood damage to development which would occur in the flood plain as a result of a false sense of security based on control of a 50-year flood.

Response: Control of development on land in Jackson, Josephine and Curry Counties downstream from Lost Creek, whether within or outside any natural or reduced flood plain area, is a police power specifically reserved, under the Constitution, for state and local governments, and thus not available to the Corps. Even if local government should fail to discharge the obligations of that reservation of power, the Corps could not, under existing legislation, upsurp the local prerogatives or accept responsibility for local failure to act. The project is designed to control a 50-year frequency flood at the dam site as stated.

Comment: Should Jackson County not revise its interim flood plain zoning ordinace in spite of Lost Creek Project being completed the additional protection afforded by the dam would not constitute a beneficial impact. Was this potential condition included in the benefit-cost ratio?

Response: The comment is apparently based on the assumption that continuance of interim flood plain zoning in Jackson County would be tantamount to elimination of claimed flood control benefits attributable to storage control; that is, that such zoning would not only preclude additional flood-damage-prone development in all of the flood plain, but also eliminate, within a reasonably short period, all of the existing damage-prone development at least in the zone where control of a 50-year flood at Lost Creek would prevent inundation. That assumption is not valid, and was not included in economics. All development which preexisted the interim zoning could be expected, on the basis of experience, to remain in existence for an indefinite period. Further, although we realize it might be possible for the interim zoning to be retained after the hydrologic

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

regime had been modified by storage, such action would not be compatible with the intent of Jackson County to plan for utilization of all benefits available from the project.

Comment: We find no documentation to support the statement that through base load production at the project there will be a corresponding reduction in the consumption of fossil or nuclear fuel and the production of waste heat that accompanies thermal power generation should that form of generating facility be used.

Response: The hydro-thermal power program will utilize thermal power plants to provide base-load energy for the Pacific Northwest.

Peaking power will be provided, insofar as possible, by hydropower plants. If base-load power generation capability is adequate to meet system loads, and it is, demand would not be affected by an increase in supply capability such as Lost Creek. However, base-load power at Lost Creek would replace, or delay the need for, an equal increment of the most expensive, or marginal, base-load power; once the hydro-thermal power program is fully implemented and utilized, that increment would be produced by a thermal plant. Before that time, it could be either a thermal plant or a hydroplant capable of peaking, but operating on base load. The statement has been revised to include that information.

The Corps, in the draft statement, was not trying to compare the relative merits of thermal vs. hydro generation, but only to present what information is available to allow the reader to make that comparison. The Corps did not directly consider the increasing rate of energy consumption in analyzing the project or preparing the draft statement. It was indirectly considered during coordination with BPA and FPC to determine project feasibility, and the usability and marketability of the generated power.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: We would be interested to know in regards to showing shoaling at the mouth of the Rogue River how the Corps is able to establish a 5 to 10% reduction in maintenance dredging when they admittedly had not made any studies in that regard.

Response: It is true that no detailed study of flows versus shoaling at Rogue River entrance have been conducted. However, utilizing past experiences in dredging which include survey quantities of the Rogue River entrance, a reasonably reliable estimate of the flow effect is possible. However, in response to the comment, the impact in question has been removed from the present statement.

Comment: We wish to inquire how the Corps can reconcile the loss of an area of internationally acclaimed fishing resources against the substitution of species and fishing experience gained with a lake-type fishery.

Response: The Corps is making no attempt to balance the loss of an area with international acclaimed fishing resource against the experience gained by a lake-type fishery. The enhancement of the river fishery because of the project as a result of water quality improvements, is presented in the environmental statement. The 11-mile stretch of river will, however, be lost to that type of fishery. We would not be presenting the total impact if we did not state that the very area inundated would be covered with a reservoir which will support a lake-type fishery which we acknowledged is a completely different yet important type of experience.

Comment: We find no basis in the environmental impact statement to support the projected 120,000 angular-days during the first 3 years of the project.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Response: The estimate was provided to the Corps of Engineers by letter of 18 April 1966 by the Bureau of Sport Fisheries and Wildlife. All fishery projections that were used in the formulation of the project were based on data from, and cleared through State of Oregon and Federal fish and wildlife agencies.

Comment: We request citation of human behavior and visitors' opinion to support the contention that the reservoir drawdown zone would have an adverse esthetic impact and that when the pool is full or nearly full, the area would be considered by most people to be scenic and by some as being an enhancement of pre-reservoir scenic quality of the valley.

Response: No human behavior samplings or visitor opinions to support the referred to judgment have been made.

Comment: What will be the adverse environmental effects which result from increased visitors to the area?

Response: Surveys have not been taken regarding the social effects on the local residents; however, it can be anticipated that those people accustomed and desirous of a low density recreation area, which now exists in the Rogue, would be adversely impacted by the greater number of people.

Comment: What will be the adverse environmental effects resulting from development which is attracted to the area?

Response: Development attracted to the area cannot be treated solely as adverse environmental effects. The development primarily in the form of services would be for the benefit of visitors and residents alike.

Comment: What will be the adverse environmental effect of possible changes to the interim flood zoning ordinances in Jackson County?

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Response: The Corps responsibility in regard to Jackson County's interim flood zoning ordinances was addressed in a previous comment.

Comment: What will be the adverse environmental effects from additional roads and transportation facilities?

Response: The impact of construction of roads and transportation facilities has been covered in the present statement.

Comment: What will be the adverse environmental effects of changes to the stream water temperature regimes and the cyclical character of its flows?

Response: There may be some adverse impacts to lower forms of aquatic life in the Rogue River because of changed water temperature and flow regime. There have not been any studies by the Corps to specifically identify those impacts.

Comment: Insofar as Jackson County has an Interim Flood Plain Ordinance, flood control is not necessary in order to minimize in exposure of flood damages.

Response: Jackson County Interim Flood Plain Ordinance does not minimize exposure of present development.

Comment: Concerning irrigation water, municipal water and electrical power supply, we wish to know what proportion of the total amount will Lost Creek project supplement?

Response: Lost Creek Project will supply about 25% of total power consumption of the Rogue Basin, 40% of the M & I water, and 14% of the water for irrigation.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: Concerning recreation and fish and wildlife enhancement, this statement presupposes that the form of recreation which is substituted by the Lost Creek project is, in fact, of greater value than that which existed in the project area prior to construction of this dam.

Response: Recreation and fishery at the site and downstream, would be greater in total, after project construction than before the project. That is supported by reports from fish and wildlife agencies and recreation agencies.

Comment: "We wish to inquire if the Corps has estimated or calculated the 13% of the value of the existing facilities in the flood plains of the Rogue River which will be protected as a result of Lost Creek, and whether that calculation of saved investment justifies inundation of an additional 11-miles of the Rogue River which has received international acclaim as a sport fishing paradise."

Response: There is nothing in the existing or draft statement that indicates the project protects 13% of the value of existing facilities in the flood plain of the Rogue.

Comment: We find no information in this environmental impact statement to support the suggestion that, in fact, irrigation, power, water quality, water supply, recreation, or fish and wildlife needs do exist which cannot be met by alternatives less environmentally expensive methods.

Response: In order to satisfy single-purpose conservation needs, water storage in some form must be supplied. Providing that storage can best be accomplished in conjunction with multiple-purpose development which will serve several purposes, including flood control.

(12) CONTINUATION: OREGON ENVIRONMENTAL COUNCIL.

Comment: We find no evidence in this environmental impact statement to support the statement "the economic benefit derived from those project purposes alone amounts to over one-half of the total equivalent annual benefits for the proposed action."

Response: The statement referred to in the comment has been removed from the present statement. However, the statement is true and is reflected in the table presented as a response to a previous OEC comment.

Comment: We heartily concur with the Corps' evaluation of the alternative "dry reservoir operation."

Comment: The information contained in Section 6 of this statement is insufficient and incomplete insofar as it addresses only the immediate shore-term and conspicuous apparent impacts.

Response: Section 6 of the present statement has been expanded to better address the question of "relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity."

Comment: The greatest irreversible and irretrievable commitments on this project is the loss of an additional 11-mile stretch of this internationally acclaimed sport fishing paradise.

Response: We concur that the loss of 11 miles of free-flowing stream is an irreversible and irretrievable commitment of natural resources; to categorize that loss as the greatest loss is judgmental.

(13) JOHN B. BALLARD.

Comment: I believe this project should be called Lost Creek Reservoir, not Lost Creek Lake.

(13) CONTINUATION: JOHN B. BALLARD.

Response: Use of the word lake in the name of the project is in compliance with current Corps of Engineers policy. However, when discussing the body of water in the text of the present statement, the word reservoir was used when it was advantageous, for descriptive purposes, to do so.

Comment: The draft states that in connection with planned Bureau of Reclamation Project, Lost Creek would provide water for irrigation and for water quality enhancement in the Rogue River, Little Butte Creek, and Bear Creek. However, I believe that it is not known whether the Bureau of Reclamation Projects can be economically justified. If this is correct, the environmental statement should make it clear that the irrigation and water quality benefits may never be realized.

Response: The statement is true. If the Medford division project should not be economically justifiable, or prove to be environmentally unacceptable, the irrigation function of Lost Creek and the water quality improvements in Little Butte Creek and Bear Creek as a result of exchange of flow arrangements would be foregone without loss of economic feasibility for Lost Creek project.

(14) T. B. TENNYSON, JR., M.D.

The following comments were made by Doctor Tennyson to Mr. Larry Williams, Oregon Environmental Council. A courtesy copy of that letter was forwarded to the Corps by Mr. Tennyson. In the interest of being responsive to the comments, the letter is being used as a direct response to the draft environmental statement.

Comment: It would appear quite unlikely that this proposed dam would provide the city of Grants Pass adequate flood protection since the dam is above the major tributaries of the Rogue which have been responsible for

(14) CONTINUATION: T. B. TENNYSON, JR., M.D.

flooding conditions in years gone by. These tributaries include Big Butte Creek, Little Butte Creek, Elk Creek, and Applegate River.

Response: Incorporated into the present statement is data on stage reduction at Grants Pass for various floods of record that would result from construction of Lost Creek Dam. Applegate River has not impact on the flooding at Grants Pass; since its confluence with the Rogue is 7 miles downstream from Grants Pass.

Comment: There is no demonstrated need for further recreation areas of the type to be produced by a large impoundment of water behind a dam at Lost Creek. Adequate aquatic recreational areas nearby include Howard Prairie Lake, Agate Lake, Hyatt Lake, Willow Lake, Imigrant Lake, and the impoundment behind Savage Rapids Dam.

Response: According to Jackson County Parks and Oregon State Parks Division, additional recreational facilities are needed in Jackson County to provide for the increased demand for facilities. To develop a water resource project such as Lost Creek without providing recreational facilities would not be responsive to needs of the area.

Comment: The proposed impoundment behind Lost Creek Dam would be at best an environmental eyesore and at worst could result in year-around silting of the Rogue and eventual loss of prized anadromous fisheries resource. Certainly, the Rogue River Valley area is in no dire need of increased population and increased tourism from adjoining states.

Response: During drawdown periods, the exposed bare soil and rocks around the lake will have an adverse scenic impact. As for turbidity, we see no reason for a long-term turbidity at Lost Creek. We are confident that if any turbidity developes, the project can be managed in such a

manner that the total water quality of the reservoir and downstream will be improved as compared to that which now exists in the stream system as a whole.

Comment: It would seem that prior to construction of the dam we should learn as much as possible about changes in the river that the project will bring about.

Response: The present statement has been expanded to present study results on potential turbidity.

Comment: From the geologic standpoint, it would seem quite possible that construction of a dam at Lost Creek as is proposed would bring about an impoundment very much like Emigrant Lake with marked elevation of the water level, destruction of the natural spawning beds, and year-round siltration of the Rogue.

Response: The Corps of Engineers has not as yet made turbidity studies of Emigrant Lake or the Bear Creek watershed upstream from Emigrant; such studies will be made if found appropriate on the basis of continuing studies at Lost Creek and comparison of Lost Creek data to the data on Hills Creek and other Willamette Basin projects, as developed by OSU. The soils in the watershed area of Emigrant Dam are, however, known to be different than those in the Lost Creek Dam watershed, and the reservoir is operated for irrigation storage with different trapping and flushing characteristics than a flood control reservoir.

Comment: While the Corps of Engineers has never noted osprey in the area above Lost Creek, I certainly have on numerous occasions and the proposed dam would make the osprey an endangered species in the region of this construction.

(14) CONTINUATION: T. B. TENNYSON, JR., M.D.

Response: Documented sighting and location of one osprey nest has been brought to the attention of the Corps of Engineers. That information has been incorporated into the present statement.

Comment: The experience of most large irrigation projects is that the community at large will utilize any given amount of water present so that the amount of water available for irrigation might be increased markedly, consumption would parallel the supply and the end result would be an increase or no change in the summer temperature of the Rogue.

Response: Under the terms of the report contained in House Document 566, as approved by the authorizing Act, stored water required for fish habitat enhancement is protected against demands for irrigation or other uses. Also, those flows will be protected in the stream from dam site to the Pacific Ocean by the State of Oregon under water rights applied for by the Oregon Game and Fish Commissions and under programs adopted by Oregon State Water Resources Board.

(15) D. A. TURCKE, M.D.

Comment: Please calculate benefit-cost ratio at 7% instead of 3 1/8 interest as per latest recommendation of the Water Resources Council.

Response: We have not done a re-analysis of the project using the proposed guidelines because they are only a proposal. However, we feel that the Water Resources Council has presented them in sufficient detail for us to conclude; the procedures still need more detailed instructions to perform the required multiobjective cost allocations and further instructions are needed to determine which projects are to be evaluated using the regional development approach.

Those unknowns make re-analysis under the proposed procedures impractical. If we re-calculate project benefits and costs using current

(15) CONTINUATION: D. A. TURCKE, M.D.

evaluation criteria, existing data, and an assumed 7 percent discount rate, Lost Creek project would have a benefit-to-cost ratio of 0.5 to 1. However, if it were practical to use the Water Resource Council's proposed standards, and if the project were to be re-formulated using a 7 percent rate of interest, the result would not necessarily be a project of the same size, mix of purposes, or benefit-to-cost ratio.

Comment: There is no reference made to the large portion of the lower Rogue River system which is declared a "wild and scenic river." Is it not possible that sediment from dam construction may permanently affect the resident ecology of the lower Rogue as well as the fish migration at certain periods of the year?

Response: The impact on wild and scenic stretch of Rogue River, from mouth of Applegate downstream to Lobster Creek, will consist of a small reduction in flood peak stages, a significant increase in low-water flows, and a significant improvement in water quality during the low-water season because of reduced temperature, increased DO and reduced BOD.

Comment: The report does not mention that at least approximately 70 miles of river is obstructed by this project, approximately 35 miles on the north fork of the Rogue, 20 miles on the south fork, and approximately 15 miles on the middle fork.

Response: Lost Creek Dam will create a barrier to fish passage across the Rogue River downstream from the confluence of the Middle Fork, South Fork, and North Fork of the Rogue. It will be an obstruction to fish and other aquatic life forms desiring migration from the middle and lower Rogue River to the upper Rogue River and tributaries. It was the decision of the Federal and state fishery agencies, at the time of project formulation that provision of artificial production facilities would be preferred over fish passage facilites.

(15) CONTINUATION: D. A. TURCKE, M.D.

Comment: Please include the excerpt from Fish and Wildlife Plan, Rogue River Oregon State Game Commission, exactly as printed. "Upstream movement of adult fish will be blocked by the Lost Creek Dam. Certain other inimical effects to fish may result, which include the following: river nitrogen problems below the Lost Creek Dam; suspension of clays in the impoundment discoloring the river from the dam to the ocean; reduction of peak flows impairing the flushing of silts from the river gravels, thus reducing food production, spawning success and fry survival; release of cold water redistributing or eliminating certain salmonid species."

Response: The above quoted statement is indeed in the referenced plan; however, it goes on to say, "The Cole Rivers Hatchery will be provided to mitigate for the loss of production upstream from the Lost Creek Dam and the Corps of Engineers is reappraising design features to minimize the nitrogen problem. The Corps of Engineers will assume fish production costs in this hatchery, which should be completed by early 1973. Low, warm stream flow restricts summer rearing of anadromous fish. Cold water from the Lost Creek Reservoir should alleviate this problem. By 1980 a release of 60,000 summer steelhead smolts is planned for the Upper Recreation Section of the Corridor. The number of fish released will need to be increased to 80,000 by 1990 and 100,000 by the year 2000." The information provided by the quoted paragraphs has been incorporated in the present statement.

Comment: It would appear that numerous tributaries to the Rogue River, below the construction site of the dam, contribute to the high run-off into the river and are most likely responsible for the infrequent river flooding as noted in 1955 and 1965.

Response: The present statement contains a table showing flood stage reduction for several flood years as a result of operation of Lost Creek project.

(15) CONTINUATION: D. A. TURCKE, M.D.

Comment: There is no study made of the discharge of warm water from Gold Rey and Savage Rapids Dam areas as a result of irrigation water diversion, and this should be included in any attempt to regulate water temperature of the Rogue River.

Response: Although the Corps has not made a specific study of the discharge of warm water from the Gold Rey and Savage Rapids Dam areas as a result of irrigation water diversion, calculations of required releases and release temperatures to effect desired downstream temperature reduction as made by OSU and confirmed by OSWRB take into account those dams and impoundment areas.

c. Other recipients of the draft statement. - Statements were sent to the following listed groups and individuals, but written comments on the statement were not transmitted to the Corps.

Federal Agencies.

U. S. Soil Conservation Service

Thirteenth Coast Guard District

State Agencies and Commissions.

Oregon Association of SWCD's and State Soil and Water

Local Government.

Board of County Commissioners, Curry County

Board of County Commissioners, Josephine County

Mayor, Eagle Point

Mayor, Gold Hill

Mayor, Grants Pass

Mayor, Medford

Associations and Clubs.

Trout Unlimited

National Wildlife Federation

Northwest Environmental Defense Center

Izaak Walton League of America

Western Wood Products Association

Izaak Walton League of America, Jackson County Chapter

Talent Irrigation District

Sierra Club, Pacific Northwest Chapter

Oregon Wildlife Federation

Citizens for a Clean Environment

Southern Oregon College

Medford Irrigation District

Sams Valley Irrigation District

Port of Gold Beach

Associations and Clubs, Cont'd.

Grants Pass Irrigation District

Curry County Reporter

Rogue River Valley Irrigation District

Medford Chamber of Commerce

Pacific Power and Light Company

Eagle Point Irrigation District

Medford Mail Tribune

Grants Pass Courier

Mr. George Doney

Medford Leage of Women Voters

KMED TV

KOBI TV

Western Environmental Trade Association, Inc.

OSPIRG

Northwest Conservation Representative

Office of Research and Sponsored Programs

Individuals.

Mr. F. L. Fleetwood

General Construction Company

Mrs. Robin Wallace

Yale Sacks, M.D.

Ms. Roberta A. Macedo

Mr. Larry Latham

Mr. Ray Kessler

Acres Consulting Services Limited

Letters of Comment

Letters of comment follow and are given page numbers identical to the number which has been assigned the letter in Section 8b, Comments and Response.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Region 6
P.O. Box 3623, Portland, Oregon 97208

February 28, 1972

File No. 1940

Colonel Paul D. Triem
District Engineer
Department of the Army
Portland District, COE
Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

You requested our comments on the draft environmental statement for Lost Creek Lake Project.

This project does not directly occupy National Forest land but will have effects on our management.

We have the following comments on your statement:

1. Section 3 - the environmental impact of the proposed action - makes no mention of the proposed highway relocation. This action will have a positive impact on timber haul costs. While this may be a minor overall benefit of the project, it is of positive concern to us.

2. Section 4 - adverse environmental effects - makes no mention of the reduced winter range for wildlife. With inundation of land for the lake and loss of land that will be needed for recreation development, the effect should be considered as adverse and included on page 4-1. This loss of habitat will likely have a direct effect on the size of the deer herd that summers on the National Forest. With loss of winter range, the herd will be reduced without adequate mitigation measures. A discussion of mitigation for all wildlife is noticeably missing in the statement.

We appreciate the opportunity to have commented on the draft statement.

Sincerely,

Lloyd G. Gillmor

LLOYD G. GILLMOR
Assistant Regional Forester
Watershed Management

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
6116 Arcade Building
Seattle, Washington 98101

FEB 14 1972

NPPEN-EQ

District Engineer, Portland District
Corps of Engineers
P.O. Box 2946
Portland, Oregon 97208

Dear Sir:

In reply to Colonel Brinkley's letter of January 18, 1972, these are our comments relating to your environmental statement for the "Lost Creek Lake Project, Rogue River, Oregon." The report, from a fishery standpoint, is well written and includes many complex operations associated with the project. We note at several points in your report, including the title, that Lost Creek Reservoir is incorrectly referred to as a "lake." We prefer use of the term "reservoir."

On page 2-6, third paragraph, you comment that the salmon and steelhead runs are considerably below production of early years. This is true when one compares it with the Zane Gray fishing days of some years ago. The spring chinook runs during the past ten years have reflected a significant increase. This paragraph should be expanded to show these recent increases.

The report did not recognize that water releases into the Rogue River below Lost Creek reservoir for fisheries would also benefit operations of drift boats. Since the Rogue provides one of the principal drift boat fisheries in the state of Oregon, it would seem reasonable to recognize this point.

These comments express evaluation by the National Marine Fisheries Service scientists in this Region. Formal response to this environmental impact statement will be made by the Department of Commerce in Washington, D.C.

We appreciate the opportunity to comment on your environmental state ment.

Sincerely,

R. Johnson

Regional Director

United States Department of the Interior

OFFICE OF THE SECRETARY
PACIFIC NORTHWEST REGION
P.O. Box 3621, Portland, Oregon 97208

April 3, 1972

Your Letter: NPPEN-EQ
18 Jan 1972

Colonel Paul D. Triem
District Engineer
Portland District, CE
P.O. Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

This responds to your comments on the draft environmental statement for Lost Creek Lake Project, Rogue River, Oregon (ER 72-66). Coordinated Department of the Interior comments are enclosed for your consideration in completing the final environmental statement on this activity.

If we can provide any further assistance or clarification in relation to these comments, please let us know.

Sincerely,

Emmet E. Willard
Field Representative

Enclosure

cc:
Director, Bureau of Mines
Regional Director, Bureau of Sport Fisheries and Wildlife
District Chief, Geological Survey, Water Resources Division
Oregon State Director, Bureau of Land Management
Regional Director, Pacific Northwest Region, Bureau of Outdoor Recreation
Director, Pacific Northwest Region, National Park Service
Asst. Commissioner for Ecology, Bureau of Reclamation
Engineering & Research Center, Bureau of Reclamation
Salem Area Planning Officer
Director, Office of Environmental Project Review
Council on Environmental Quality

Comments From Field Review
by
Department of the Interior Agencies
of
Draft Environmental Statement
Lost Creek Lake Project, Rogue River, Oregon

General

Mineral Potential and Mining History.-- The Bureau of Mines was not requested to make an on-site mineral resource study of the project site during planning stages. The impact statement, therefore, only mentions mineral resources in regard to the borrow site excavations. Effects of the project on other mineral resources, even if negative, should be made part of the statement. In the context that the borrow material has specific value only to the project we doubt that it constitutes a mineral resource depletion.

As background, mining was one of the first industries in the region and has long influenced the economy of Jackson County and downstream Josephine County. The first gold mining in Oregon began in these counties in 1851-52. Gold production, mostly from placer but with some from lode deposits, was of great importance until 1942, when Government action closed many of the mines. Mineral production from the two counties was valued at $2.3 million in 1969 and at about $85 million from 1948 through 1969. Although cement, sand and gravel, and crushed stone accounted for the major portion of the value, gold, silver, copper, lead, zinc, mercury, tungsten, chromite, carbon dioxide, clay, pumice, and soapstone have been produced. Three groups of claims in which beryllium and cinnabar occur have been located west and southwest and just outside of the Lost Creek Lake Project area. We have no record of production.

Historic Site.-- The project would not adversely affect any existing or known potential units of the National Park System or sites that are eligible for registration as National Historic or Natural Landmarks.

The environmental statement does not indicate that attention has been given to the possible effect of the project on historical values. In accordance with the National Historic Preservation Act of 1966, P.L. 89-665, the National Register of Historic Places should be consulted. Also the Oregon State Highway Engineer, State Liaison Officer for

Historic Preservation should be contacted for information on sites the State has under consideration for nomination to the Register. The statement should note the adverse or beneficial effects of the project on National Register properties.

Alternatives to the Proposed Action.--There was no analysis of the potential environmental impacts of alternative courses of action. The discussion for each alternative justified the proposed project rather than adequately discussing details describing the alternatives.

Reservoir Drawdown.-- Reservoir drawdown is discussed in parts 1 and 3 of the statement. However, in part 4, "any adverse environmental effects which cannot be avoided should the proposal be implemented," no mention is made of this drawdown. We believe the impact on the aesthetics of the reservoir area resulting from pool fluctuations should also be discussed in part 4.

Interrelationship With Other Projects.--Based upon our review of the Senate hearings on this project, we conclude that if the Lost Creek and Elk Creek projects are built and the Applegate project is not, a serious erosion problem at the confluence of the Applegate River with the Rogue could develop. If this were to occur, it could have an adverse effect on the aesthetics and recreational values of portions of the river. We believe the environmental statement should address this issue.

Turbidity.--A temporary adverse effect will be the creation of turbidity and sedimentation downstream from the project during construction. Sedimentation would have an adverse effect on anadromous fish if it occurred during the spawning season.

Editorial

Page 1-1.--Suggest that the general area map and the vicinity map be introduced in this section.

Page 1-1, 1-2.-- Although planting of borrow areas to species having wildlife habitat value is proposed the value of this measure to wildlife is largely negated because the elevation of the rock quarry, 2,500 feet, places it in the summer range area. While there is more than adequate deer summer range in this area, winter range is scarce.

Page 2-4, second paragraph.-- Is the population increasing, decreasing, or stabilizing? What is the trend since 1960?

Page 2-4, third paragraph, third sentence -- "That unit encompasses the largest concentration of virgin forests remaining in the United States outside of Alaska," alludes to the previously mentioned southwest Oregon unit of the national forest. The validity of this statement is questionable. Also, no mention is made of the other Federal BLM managed timber lands in the basin.

Page 2-5, first paragraph, second sentence.--Agricultural pursuits are given here in broad and specific categories. Such a listing implies both the "main" as well as minor, "agricultural pursuits." Thus the sentence has little real meaning and may be misleading.

Page 2-5, paragraph 1, line 9.-- Rapidly misspelled.

Page 2-5, first paragaaph, last sentence.-- Should read, "About 10,000 acres are now devoted to the production of pears." Bosc variety is not the major variety within the 10,000 acres; Bartlett makes up about 40 percent with remainder split among several varieties.

Page 2-5, second paragraph, middle of second sentence.--We suggest you change paragraph to read: ". . . with no provision for storage. There are now ten organized irrigation districts, of which four have storage facilities, and several improvement districts. About 118,000 acres were irrigated in 1970 with 50,000 acres served by organized districts. The districts without storage facilities are supplied water through individual and corporative irrigation systems. The Bureau of Reclamation has rebuilt Emigrant Dam and Reservoir, constructed Agate Dam and Reservoir, and rehabilitated other storage and diversion systems in the Basin."

Page 2-6, second paragraph.-- The statement " . . . nationally known salmon, trout, and steelhead fishery." should be changed to read ". . . nationally known salmon and steelhead trout fishery."

Page 2-6, third paragraph.-- We suggest the first sentence of this paragraph be rearranged as follows: The sport fishery is principally for spring and fall chinook and coho salmon and resident and anadromous rainbow (steelhead) and cutthroat trout.

Page 2-6, penultimate paragraph.-- The first part of this paragraph may be somewhat beyond an objective description of the environment.

Page 2-6, paragraph 4, 2nd sentence.-- Substitute "Herbert" for "Hubert".

Page 2-6, fourth paragraph, last sentence.-- This sentence should be changed to read, "The salmon and steelhead potential of the river is not being realized because of low flows and high water temperature during the summer months."

Page 2-7, second paragraph and table.-- Data presented in this table does not reflect the contribution of the Rogue River to the Oregon-based Pacific Ocean sport and commercial salmon catch as indicated in the discussion. We suggest this table be omitted or the preceding paragraph be changed to read as follows:

> The salmon is especially important to the sport and commercial fishery programs in Oregon. Ocean sport and commercial fish landings for the State of Oregon and Gold Beach are shown below.

The subheading 1/ Gold Beach Landing should also be omitted if the table is used.

Page 2-7, third paragraph.-- Roosevelt elk and black bear should be included as big game species found in the basin.

Page 2-7, fourth paragraph, first sentence.-- The statement ". . . are common seasonally on some of the lands," should be changed to read, ". . . are common to the area," since most of the species listed are year-round residents of the basin.

Page 2-7, fifth paragraph.-- River otter should be included as an important fur animal. Wildlife resources include more than game animals and fur bearers. There are some 260 species of birds which frequent this area. Animals not mentioned include the following: river otter, coyote, and reptiles.

Page 2-8.-- Is the Indian campsite 2/10-mile below the damsite located on Corps' acquired lands?

Page 2-10,first full paragraph.-- The discussions on wildlife resources under the heading Project site area should include a statement that a large variety of birds, reptiles, and other nongame animals inhabit the area.

Page 2-10, second paragraph.-- The words "Resident trout" should be used in place of "Domestic trout".

Page 2-10, paragraph 3.-- An American osprey nest is located in the northwest quarter northeast quarter of Section 24, Township 33 South, Range 1 East. This nest was active in 1971. It will be inundated by the reservoir. The report indicates a negative occurrence.

Page 3-1.-- Suggest that the opening paragraph be moved to the middle part of this section. It sounds too much like a justification for the project.

A discharge of 146,000 cfs is shown for the December 1964 peak flow at Grants Pass. Published records of the U. S. Geological Survey show this peak flow to be 152,000 cfs.

Page 3-2.-- Is the additional 1,228 acres mentioned in the first paragraph to be used for road relocations, utility relocations and dam and fish hatchery construction? If so, the paragraph should be reworded for clarity. Also, in the last sentence, the meaning of the "limited yield of wildlife habitat" isn't clear.

Shouldn't wildlife be considered in properly planning the arboretum section of the state parks? Will this area be fenced? Is it on the east or west side of the proposed highway? Any areas between the highway and the lake will have limited wildlife habitat value.

Page 3-2, paragraph 2, line 7.-- arboretum misspelled.

Page 3-2, paragraph 4.-- Presume grading and seeding of borrow areas will be limited to those not inundated by the reservoir?

Page 3-3, first full paragraph, first sentence.-- The irrigation supply for the 25,400 acres will not come entirely from Lost Creek as is implied. We suggest you delete ". . . irrigating about 25,400 acres." and substitute ". . . irrigation."

Page 3-3.-- Another downstream impact expected is loss of salmon and steelhead spawning habitat below the Lost Creek Dam. Natural replenishment of gravel supply will not occur as a result of reservoir and dam construction.

Page 3-4.-- The existing Crater Lake Highway through the project area may not be adequate to safely handle increased traffic generated by the project. The segment of this highway from the east end of the new by-pass road to the Needlerock vicinity is not currently constructed to Oregon State Class C standards. The by-pass road itself, although a much

.safer road than the existing Crater Lake Highway, is not quite Class C standard. In fact, the Crater Lake Highway from White City through the project site will become more congested and hazardous as a result of dam construction.

Concerning the implication that water quality in Bear Creek will be improved, it is doubtful that this is true as this water in Bear Creek comes mainly from Emigrant Reservoir and when combined with irrigation runoff, the quality will still be poor. There will just be more of it. Little Butte Creek could be expected to improve, however. The runoff from an additional 25,400 irrigated acres will certainly have an adverse effect on water quality of the lower Rogue River. Was this adverse effect considered in determining the amount of water release that will be needed to accomplish the predicted downstream temperature and water quality improvement?

Page 3-4, first partial paragraph, last sentence.--There are other lakes within reasonable travel distance from the Medford area -- Crater Lake, Lake of the Woods, Howard Prairie Reservoir, Agate Reservoir, Emigrant Reservoir, Hyatt Reservoir, Kane Creek Reservoir, and Klamath Lake.

Page 3-4, last paragraph, first and second sentence.--Should read "Operating in conjunction with a Bureau of Reclamation planned project, the Lost Creek Project in conjunction with the authorized Elk Creek Project would provide an annual average of about 70,000 acre-feet to the total supply of irrigation water available in the Rogue Valley. As a result an additional area of about 19,000 acres could be irrigated plus about 6,400 acres could receive a supplemental supply of irrigation water."

Page 3-4, last sentence.--Should read, "Lost Creek Project, through the Bureau of Reclamation's potential Medford Division facilities, would supply . . ."

Page 3-5, top of page.--Suggest that the first sentence be prefixed by "With improved management techniques and close monitoring, water quality is . . ."

Page 3-5, 3-6.-- How much of a water temperature drop could be expected in the lower reaches of the Rogue as a result of controlled releases of cooler water from Lost Creek Lake? If it is less than 5 degrees F., the effect will be minimal.

If Lost Creek follows the general pattern of major reservoir development in Oregon, there will be a large buildup of trash fish within 10 years. The magnitude of this impoundment presents an impossible situation for chemical rehabilitation. Fishing should be excellent in this impoundment during the first 7 years then gradually decline. At the end of 15 years, it is doubtful that a fishery will exist within the reservoir.

What is considered as an "angler day"?

Loss of wildlife habitat, including winter deer range, due to water impoundment is 3,438 acres. There is also a partial loss to wildlife habitat through other project features within the remaining 2,478 acres. We would also like to see a discussion of the combined effects of the Lost Creek and Elk Creek projects on wildlife habitat. These two projects are so close together that their combined impact could be much more important than indicated when considered as two separate projects.

Page 3-7, paragraph 1.-- Last word should be change.

Page 4-1, first paragraph.--The third sentence of this paragraph indicates that big game using the reservoir area will relocate on adjacent lands with little or no reduction in total population. Recent data show that a significant population of deer utilize this area during critical winter periods. Based on this information, a substantial reduction in deer populations can be anticipated. Under the Master Plan being developed for the reservoir area, measures are being included to develop wildlife habitat on project lands. Deer losses will be reduced by these developments, but some decrease in total population is anticipated. We suggest this sentence be deleted and the following used: "The reservoir will destroy an important segment of deer winter range, and a reduction in deer population is anticipated." This would also make this section consistent with the last paragraph on page 3-6 which states that a reduction in big game will occur.

Page 4-1.-- "Big game will relocate". To where will big game animals relocate? Are lands being purchased or set aside for wildlife habitat? What lands are reserved for wildlife? Be specific -- note on a map.

(Paragraph 3) - Roads. During road relocation, wildlife needs must be considered. Cut banks must be minimal and not block wildlife migration or movement. Roads will create harrassment and a reduction of the wildlife use of lands, especially below the road. A high-speed road will increase the road kill of deer and other animals.

Recreation and Other Developments - The entire shoreline must not be developed. Wildlife must have access to the shoreline. Lands for wildlife need to be identified now.

Any adverse environmental effects which cannot be avoided should the proposal be implemented--no mention is made as to timber volume which will be lost. The BLM land within the project boundary produces 242,000 board feet of timber annually. This production will be lost to perpetuity.

Electric transmission line location and relocation is not mentioned. Portions of two Pacific Power & Light Company powerlines, 69 KV and 115 KV, will be inundated and must therefore be relocated. This relocation and any new lines constructed to transmit the power generated at the authorized hydro powerhouse will cause some unavoidable intrusion on the aesthetic values of the area. There will be some unavoidable impact on the inherent scenic quality of the area even though intensive effort at line location and relocation is made to reduce visibility of the lines and environmental criteria applied to right-of-way design and clearing.

Page 6-1 - The Relationship Between Local Short-term Uses of Man's Environment and the Maintenance and Enhancement of Long-term Productivity

This section seems far too brief. Suggest that the action be viewed in terms of the various significant ecological and geographical consequences of the proposed action.

Even with annual planning, long-term increase in desirable fish species production is questionable within the impoundment. Trash fish will soon take all available food within the reservoir.

Page 7-1 - Any Irreversible and Irretrievable Commitments of Resources Which Would be Involved in the Proposed Action Should it be Implemented - This section also seems too brief. Suggest that the discussion include any irrevocable uses of resources involved in the proposed action, including resource extraction, erosion, destruction of archeological or historic sites, elimination of endangered species habitat and significant changes in land use as related to the environmental impacts of the proposed action. No mention is made that the use of land for the dam, reservoir, and other facilities is committed beyond the life of the project. It can never be returned to its present state, although it could be available for other uses as conditions then dictate.

Eleven miles of stream fishing and spawning area above the dam would be an irretrievable loss because of project construction. Refer to the second paragraph on page 3-6 and the last two sentences of the first paragraph on page 1-5. The tailwater waters of reservoirs are known to provide good fish habitat in an excellent fishery. The impact of the stream loss could probably be lessened if easements for bank fishing were obtained for several miles below the dam. This type of use would be compatible with drift boat fishing. This type of easement would have a positive environmental impact. It would preclude stream site developments, provide for continued stream bank riparian vegetation, and, acting as a small stream bank corridor, protect aesthetic values.

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
Room 412 Mohawk Building
222 S.W. Morrison Street
Portland, Oregon 97204

March 2, 1972

IN REPLY REFER TO 10-00.36

Lieutenant Colonel Charles B. Brinkley, Jr.
Deputy District Engineer
Department of the Army
Portland District, Corps of Engineers
P. O. Box 2946
Portland, Oregon 97208

Dear Colonel Brinkley:

Thank you for your January 18, 1972 letter offering us the opportunity to review and comment on the draft environmental statement for "Lost Creek Lake Project, Rogue River, Oregon."

Our principal concern is with the Federal-aid highway routes in the project vicinity of your Lost Creek Lake reservoir and shoreline development. State Highway No. 62 (Crater Lake Highway) is on the Federal-aid secondary highway system and is designated FAS #269. Also, this same highway is on the Forest Highway system (FH #17). This qualifies the route for Federal-aid Highway Trust Funds, should the State of Oregon and our Federal Highway Projects Division so desire and program accordingly for improvements on S.R. 62.

Relocation of State Route 62 (FH #17, FAS #269) according to your draft environmental statement is to be relocated south of the reservoir. This entails a major structure crossing the Rogue River downstream from McLeod Currently, the tentative Forest Highway Program lists FH #17 from Trail to McLeod as a 1980 Fiscal Year Project. Although reconnaissance studies by our Federal Highway Projects Division (FHPD) in Vancouver, Washington will not be completed until late 1972, preliminary indications are that it may be feasible to relocate FH #17 on the south shore of the Rogue River from Trail to McLeod. If this were the case, a major structure would be required in the vicinity of Trail but unnecessary at McLeod. Therefore, coordination efforts should be achieved with FHPD Chief John Mors in Vancouver, Washington on this project, since long-range planning by the FHWA is affected to a major degree. Our FHPD office requested the opportunity to review your highway relocation plans of existing State Route 62, especially insofar as connections to existing roads and disposition of the original road (Forest Highway 17).

-more-

You may wish to consider the following comments in addition to the above:

(1) Your draft environmental statement indicates existing State-owned park land will be used for public access to the project, road relocation, reservoir area and for project operation area. If Federal-aid Highway Trust Funds were to be used for any relocation of Forest Highway 17 (also Federal-Aid Secondary Route #269) and were to require right-of-way taking from publicly-owned land from a public park, recreation area, wildlife or waterfowl refuge, or historical site of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, then a Section 4(f) statement would have to be prepared. Reference is made to 23 U.S. Code, Section 138 (Preservation of Parklands), Section 1653(f) of 49 U.S.C. and Section 4(f) of the Department of Transportation Act. The taking of right-of-way from such publicly owned lands cannot be approved by the Secretary of the Department of Transportation unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historical site resulting from such use.

(2) Your draft environmental statement did not specifically indicate prior coordination with the Oregon State Highway Division or State Parks Division. We understand the State Highway Division has reviewed and commented on the draft environmental statement. We are also aware of prior coordination with the State Highway Division on the road relocation work presently underway in the project vicinity of Lost Creek Lake and reservoir project.

We appreciate the opportunity to review and comment on this draft environmental statement and are looking forward to cooperating with your office in any way possible on the final environmental statement.

Sincerely yours,

Ralph M. Phillips

RALPH M. PHILLIPS
Regional Administrator

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

March 13, 1972

REPLY TO ATTN OF: 10A (M/S 325)

Lt. Col. Charles B. Brinkley, Jr.
Deputy District Engineer
Portland District, Corps of Engineers
P. O. Box 2946
Portland, Oregon 97208

Dear Lieutenant Colonel Brinkley:

Enclosed are the comments of the Environmental Protection Agency, Region X, regarding the Draft Environmental Impact Statement - Lost Creek Lake Project, Rogue River, Oregon.

The statement has not fully considered the full range of environmental impacts which will be a consequence of the construction of this project, and contains insufficient information to allow the reader to evaluate the effectiveness of measures designed to minimize the adverse nature of these impacts. From examining the draft statement, it is unclear to us whether environmental aspects were considered adequately in the planning process. Our concerns are outlined below.

This report states that downstream water quality will be improved by the controlled release of cooler water. The report does not mention the probable water quality degradation caused by the turbidity of the released water. If the water stored in the Lost Creek Reservoir is similar in quality to that stored in Emigrant or Agate Reservoirs, the released water will have a marked effect on the clarity of the Rogue River during the summer months. This possibility should be considered in evaluating the environmental impact of this facility.

In addition, is the nature of the soils in the Rogue River drainage upstream of the dam site of such nature as to cause turbidity in the river and subsequently in the reservoir? Exactly what is the potential for reservoir turbidity resulting from inflows and from material entering the reservoir from the bank erosion due to annual reservoir height fluctuation? We suggest that the Corps, prior to further construction activity, be requested to thoroughly research, study and test soil in the construction area and at selected points upstream to insure that the water which will flow out of the completed impoundment will be

at least as clear as that which flows in. We also suggest that a monitoring program be included to assess the adequacy of measures to control turbidity and other adverse water quality effects.

What is the nature of the turbidity which will be caused by construction activities? We note that a gravel borrow area is located in the pool area immediately adjacent to the river; will processing of this material further increase turbidity? We feel that the emphasis should be on controlling and preventing rather than simply "minimizing" the turbidity which occurs during construction.

Are algal blooms expected to be a problem in the reservoir? Does water quality data indicate that inflowing waters contain concentrations of plant nutrients sufficient to stimulate algal growth?

Have alternate methods of disposal been considered in dealing with the solid wastes which will be generated during construction of the project? Has burning been tacitly accepted as the only feasible method of disposal, or have measures such as land filling of clearing material or hauling and chipping of debris been considered? In view of the potential atmospheric pollution accompanying the burning of the large amount of debris which will be cleared from the reservoir site, we feel that adequate planning should consider less environmentally damaging measures than the sole alternative of burning.

The statement contains little information on details of the "exchange-of-flow" arrangements with Bear and Little Butte Creeks. How will these exchange-of-flow arrangements impact these creeks and what will be the nature of the water quality enhancement to be expected? How will Lost Creek Reservoir operate in conjunction with the E[illegible] Creek project relative to water supply, flood control, and the exchange of flows?

Have the long-range impacts of the project been fully considered in the environmental planning process? For instance, what will be the impact of providing water to irrigate the 25,400 acres included in the USBR project? Will flood protection of downstream areas of the Rogue River lead to increased development of the flood plain, and what types of pollution and water quality effects will accompany such changes in land use?

Although the irrigation aspects will be handled by the Bureau, this impact statement should include additional details of the irrigation plans and should consider the general impacts of such development. What will be the quality of irrigation return waters with respect to nutrients, turbidity, dissolved solids, dissolved oxygen, and pesticides content?

In addition to the above general remarks, we have comments on specific sections of the statement as follows:

1. Project Description: It would be helpful if this section provided some additional details on the project operation. We would be particularly interested in quantities of water to be stored for particular purposes, schedule of releases, points of diversion, areas to be irrigated, quantities of return flows, exchange-of-flow arrangements, probable points of diversion for municipal and industrial water use, quantities for water quality control and the interaction of this project with other elements of the Rogue River project.

What is the total storage capacity planned for the impoundment? What will be the minimum conservation pool in years of critical water supply? The statement indicates that in "normal" years drawdown will be 60 feet; from examining the attached maps, the minimum conservation pool is at elevation 1751. The statement should indicate the frequency of occurrence expected for this minimum pool. In view of the implications for recreational demand and aesthetics, it should be indicated that annual drawdown may approach 121 feet.

Will multi-level outlet gates be provided to select optimum temperatures for water released for fishery purposes? Will fishery releases be subject to shortages in critical water years, or will such releases be protected under all circumstances?

2. The Environmental Impact of the Proposed Action. The potential for turbidity and algae growths in the reservoir should be examined here. Long-range impacts of project construction on newly irrigated areas and flood plain development must be considered. Do mercury or other heavy metals occur in the project site or upstream from the area? Will the reservoir have the effect of raising the local groundwater table? What will be the impact of the project on the Wild and Scenic Rivers portion of the Rogue River and does the Wild and Scenic Rivers Act place restrictions on water resource development on the Rogue River?

The statement should indicate that part of the impact of this project will be to eliminate this stretch of the Rogue River as a free-flowing stream and block the natural run of anadromous fish which utilize the river.

The statements in the last two paragraphs of p. 3-7 should be revised to reflect the fact that the annual drawdown will commence at the beginning of the recreational season and note the aesthetically offensive mudflats which will be exposed by this height fluctuation. The allegation that a drawn-down reservoir would be preferable to a scenic valley of quiet solitude is specious reasoning at best.

3. "Any adverse environmental effects..." many of the above-mentioned impacts may be considered adverse from an environmental viewpoint. Without the necessary detailed description of the project, it is impossible to perform an accurate environmental evaluation.

4. "Alternatives..." were fish passage facilities considered? On what basis were they rejected?

Hurlon C. Ray

Hurlon C. Ray
Assistant Regional Administrator
for Management

TOM McCALL
GOVERNOR

OFFICE OF THE GOVERNOR
STATE CAPITOL
SALEM 97310

March 3, 1972

Mr. Charles B. Brinkley, Jr.
Lieutenant Colonel, CE
Deputy District Engineer
Department of the Army
P. O. Box 2946
Portland, Oregon 97208

Re: Lost Creek Lake Project
Rogue River, Oregon
PNRS #7201 4 080

Dear Col. Brinkley:

We have referred your draft Environmental Impact Statement to the appropriate state agencies. We have also published and distributed notice to all state agencies and Councils of Governments.

Copies of the responses from several state agencies are attached. They suggest points to be considered and included in your Statement.

You may use this letter as evidence of your compliance with Section 102 (2)(C) of the National Environmental Policy Act of 1969 (83 Stat. 853), and OMB A-95 (Revised).

Cordially,

Kessler R. Cannon
Assistant to the Governor
Natural Resources

Enc.

OREGON STATE
HIGHWAY DIVISION

HIGHWAY BUILDING • SALEM, OREGON • 97310

February 14, 1972

Federal Aid Coordination Unit
301 Public Service Building
Salem, Oregon 97310

Gentlemen:

Re: PNRS #72014080
Corps of Engineers
Lost Creek Lake Project
Rogue River

We have reviewed the draft environmental statement for the subject project and find that it is adequate for the purpose intended. We would like to mention that a seven-mile segment of the Crater Lake Highway (ORE62) will be inundated as a result of the project. We have been in contact with the Corps during the development of their project to assure a reasonable replacement for the highway. This concept has been covered adequately in the environmental statement.

One other aspect apparently not mentioned in the environmental statement is the need for a buffer strip of undisturbed native vegetation to preserve the scenic quality of the corridor. It is our understanding that a 400-foot strip had been acquired along the southerly side of the relocated highway for this purpose.

We appreciate the opportunity to review this environmental statement.

Very truly yours,

George M. Baldwin
Administrator of Highways

By

R. L. Schroeder
Assistant State Highway Engineer

FISH COMMISSION

OFFICE OF THE DIRECTOR

307 STATE OFFICE BLDG. • 1400 S.W. 5th AVE. • PORTLAND, OREGON • 97201

TOM McCALL
GOVERNOR

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Vice Chairman
McKEE A. SMITH
Member

February 18, 1972

Mr. William Kramer
Federal Aid Coordination Unit
301 Public Service Building
Salem, Oregon 97310

Dear Mr. Kramer:

PNRS NO. 72014080

We have reviewed the environmental impact statement for the Corps of Engineers Lost Creek Lake project, Rogue River, Oregon and have the following comments.

We do not think the word "lake" should be used in the title of the environmental statement. People envision a lake as being a stable body of water. Since Lost Creek Reservoir will have a large drawdown, the word "lake" is misleading.

On page 2-6 where runs of salmon and steelhead are discussed, a sentence should be inserted to say that spring chinook have increased recently to a much higher level than in the 1950's.

On page 2-7, the table indicates that the Rogue contribution is synonymous with Gold Beach landings. We believe landings at Gold Beach have little relationship to the Rogue's contribution to this fishery and therefore this table should either be corrected or eliminated.

On page 3-5, the Rogue River below the dam is described as cascading. This is misleading. The term "cascading" implies a stream gradient much steeper than exists in the Rogue River. Natural fish production is usually very limited in cascading streams, while this is not the case in this section of the Rogue. We recommend you substitute the word "turbulent".

On page 3-6, the stream section to be inundated by the dam should be described as excellent quality spawning area.

On page 5-2 the report discusses a dry reservoir alternate. As part of this discussion, the report should say that silt settling in the reservoir during flood control operation would cause extended periods of turbidity in the Rogue below the dam during and after evacuation and disrupt fishing and fish production.

On page 7-1, the excellent salmon spawning area that will be inundated by the reservoir should be mentioned under irreversible and irretrievable commitments.

The environmental statement should discuss the potential of having a turbid reservoir and stream as a result of the project.

We appreciate the opportunity to comment on this environmental impact statement.

Sincerely,

Lincoln S. Pearson

LINCOLN S. PEARSON
RIVER BASIN SPECIALIST

cc Bureau of Sport Fisheries and Wildlife
Corps of Army Engineers, Portland District
National Marine Fisheries Service
Oregon State Game Commission
State Water Resources Board

STATE OF OREGON • INTEROFFICE MEMO

TO: Federal Program Coordination Unit
301 Public Service Bldg.
Salem, Oregon 97310

DATE: January 24, 1972

FROM: See Signature Below

Project Title: Corps of Engineers - Lost Creek Lake Proje
Rogue River

PNRS # 72014080

SUBJECT: ENVIRONMENTAL REVIEW

Return Date: February ~~21~~ 28, 1972

We have reviewed this project and/or Environmental Impact Statement and have the following comment:

( ) This Project does not have significant Environmental Impact.

( ) The Environmental Impact is adequately described.

(X) We suggest that the following points be considered in the preparation of an Environmental Impact Statement regarding this Project.

( ) No Comment

Explanation and Comments

The Corps of Engineers should be commended for the considerable improvement over their previous endeavors in preparing this particular environmental impact statement. We have two comments; one pertains to Section 3, the Environmental Impact Of The Proposed Action. We recommend that the Corps include a somewhat more complete description of the interim zoning ordinance of Jackson County and more specific definition of the ordinance restrictions cited on page 3-3.

In the Alterantives Section it appears that an additional alternative could be included composed of an effective combination of levee construction, flood plain zoning, flood proofing, and small upstream reservoirs that could serve both as fishing and recreation lakes and possibly provide flow augmentation to satisfy downstream temperature and fish flow requirements.

Agency Water Resources Board By [signature]

TO: 301 Public Service Bldg.
Salem, Oregon 97310

DATE: January 24, 1972

FROM: See Signature Below

Project Title: Corps of Engineers - Lost Creek Lake Project Rogue River

PNRS # 72014080

SUBJECT: ENVIRONMENTAL REVIEW

Return Date: February 21, 1972

We have reviewed this project and/or Environmental Impact Statement and have the following comment:

( ) This Project does not have significant Environmental Impact.

( ) The Environmental Impact is adequately described.

⋈ We suggest that the following points be considered in the preparation of an Environmental Impact Statement regarding this Project.

( ) No Comment

Explanation and Comments

Page 2-6, fourth paragraph, the last sentence should be changed to read as follows: "The salmon and steelhead potential is not being realized in the river system because of low flows and high water temperatures during the summer months."

Page 2-7, the table on this page is incorrect because the landings at Gold Beach do not accurately reflect the contribution of the Rogue River to the ocean sport and commercial catch. We suggest this table be deleted.

Page 2-10, third paragraph, the word "domestic" on the last sentence should be deleted and the word "resident" inserted.

Page 4-1, first paragraph, the third sentence states that "Big game animls will relocate from the reservoir area with little or no reduction in total population." This sentence should be deleted and the following sentences inserted. "Three thousand four hundred and thirty-eight acres of big game winter range will be inundated. The deer using this area during the winter time will be lost because the surrounding habitat is already being used to capacity."

Page 7-1, first paragraph, the words "and spawning grounds for fish" should be added to the end of the first sentence.

(Continued on attached sheet)

Agency O.S.G.C. By Gene Herb for Bill Pitts

Somewhere in the report mention should be made of the possible turbidity problem that could occur in the reservoir because of montmorillonite clay deposits in the area.

Local Government Relations Division
February 24, 1972
Comments on:
PNRS #72014080 - Corps of Engineers, Lost Creek Lake Project, Rogue River

Recognizing that the Corps of Engineers has expended considerable effort in the preparation of the Lost Creek Lake Project, we do feel that two issues should be further explored in preparation of the final draft:

(1) Pages 3-4 - The anticipated 640,000 tourists/visitors annually will have an impact upon county government in terms of the provision of sewer, water, police, and fire protection. This impact will be even greater when coupled with the estimated 1,000,000 tourists/visitors at the nearby Elk Creek Lake Project (also a Corps project).

We recommend that the Corps contact the Jackson County Court to insure that the implications inherent in the project are made known to the county. This would allow the county to amend its long-range comprehensive plan and prepare the necessary zoning measures to provide for orderly development of the area.

(2) Pages 3-7 - The Corps states that 33 families will be relocated. According to officials of the City of Medford, Jackson County, and the Department of Housing and Urban Development, the housing market in Jackson County is extremely tight--a very small ratio of vacancies.

We recommend that the Corps carefully assess the housing market and identify relocation resources before the acquisition of any properties.

STATE OF OREG_ N • INTERC CE MEMO

TO: Federal Program Coordination Unit
301 Public Service Bldg.
Salem, Oregon 97310

DATE: January 24, 1972

FROM: See Signature Below

Project Title: Corps of Engin
Lost Creek Lake
Rogue River

PNRS # 72014080

SUBJECT: ENVIRONMENTAL REVIEW

Return Date: February 21, 1

We have reviewed this project and/or Environmental Impact Statement and have the following comment:

( ) This Project does not have significant Environmental Impact.

( ) The Environmental Impact is adequately described.

(X) We suggest that the following points be considered in the preparation of an Environmental Impact Statement regarding this Project.

( ) No Comment

Explanation and Comments

In reference to the Corps of Engineers Lost Creek Lake Project PNRS # 72014080 I would like to see two issues better addressed in the environmental impact statement.

Jackson County's housing problem for low and moderate income families is well known. Part of this may be the result of a 40 percent increase in the population over 65 between 1960 and 1970. (Elderly people tend to have lower incomes)

A major concern of our Division is capital improvement projects, such as this one, which demolish low and moderate income housing.

1. While state and local governmental agencies make every effort to obtain relocation units from the existing housing stock, for persons displaced, this may not be enough. Very little housing is being built at the lower end of the economic scale and the proportion of low-cost housing is decreasing in relation to the total. In the decade 1960-1970 housing units in Oregon costing less than $10,000 dropped from 50 percent to 20 percent of the total.

I would propose that before this project is launched a survey be taken of the number of low and moderate income housing units displaced and compare this with the number of units constructed that year in the affected market area. Further, I propose we establish a normal vacancy or for sale rate for various categories of housing in the market area. If the net result of the capital improvement project is a decrease in the number of low and moderate income units, and such a decrease causes a reduction in the vacancy rate below the norm, then we may have heightened the competition for low and moderate income units to the point where it is, for all practical purposes, unavailable. In such a situation I would like to propose the development of new housing to replace that demolished by the project in accord with the last resort housing provisions of the Uniform Relocation Act of 1970.

OVER (continued on back)

Agency HOUSING DIVISION (6f) By M. Gregg Smith

2. Affording displaced persons the opportunity to secure adequate replacement housing also requires a careful look at the purchasing power of the individuals concerned. It may be that replacement housing, while available, is beyond the means of the persons being displaced. Short-run relocation benefits will not solve the long-term housing problem of persons with low incomes, particularly people with fixed incomes such as the elderly.

STATE OF OREGON • INTEROFFICE MEMO

TO: Federal Program Coordination Unit
301 Public Service Bldg.
Salem, Oregon 97310

DATE: January 24, 1972

FROM: See Signature Below

Project Title: Corps of Engineers - Lost Creek Lake Projec
Rogue River

PNRS # 72014080

SUBJECT: ENVIRONMENTAL REVIEW

Return Date: February 21, 1972

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( ) This Project does not have significant Environmental Impact.

( ) The Environmental Impact is adequately described.

( ) We suggest that the following points be considered in the preparation of an Environmental Impact Statement regarding this Project.

( ) No Comment

Explanation and Comments

Mr. N.V. Peterson (district geologist in our Grants Pass office) has reviewed the Draft Environmental Statement concerning the Lost Creek Lake Project, Rogue River, Oregon. Mr. Peterson points out that the general topography of the areas designated below, on the north side of the reservoir, appear to be underlain by appreciable amounts of incompetent rocks that may be susceptible to landsliding:

Area 1 - parts of sec. 13 and 14 adjacent to Lost Creek that are proposed for Florence Rock Park.
Area 2 - parts of secs. 17, 18 and 19 proposed for Seth Bullis Park.

It is our opinion that these areas should be investigated by the Corps of Engineers in sufficient detail to determine whether the development of the reservoir could trigger downslope movement in the incompetent rocks.

Agency GEOLOGY & MINERAL INDUSTRIES By R. E. Corcoran

(6g) Raymond E. Corcoran, State Geologist

STATE OF OREGON • INTEROFFICE MEMO

TO: Federal Program Coordination Unit
301 Public Service Bldg.
Salem, Oregon 97310

DATE: January 24, 1972

FROM: See Signature Below

Project Title: Corps of Engineers - Lost Creek Lake Proje
Rogue River

PNRS # 72014080

SUBJECT: ENVIRONMENTAL REVIEW

Return Date: February 21, 1972

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( ) This Project does not have significant Environmental Impact.

( ) The Environmental Impact is adequately described.

( ) We suggest that the following points be considered in the preparation of an Environmental Impact Statement regarding this Project.

( ) No Comment

Explanation and Comments

Agency Dept. of Environmental Quality By L. B. Day, Director

(6h)

UNIVERSITY OF OREGON

Museum of Natural History

EUGENE, OREGON 97403

Telephone (503) 686-4236

February 25, 1972

Lt. Col. Charles B. Brinkley, Jr.
Deputy District Engineer, Portland District
U. S. Army Corps of Engineers
P.O. Box 2946
Portland, Oregon 97208

Gentlemen:

In reviewing your Draft Environmental statement of "Lost Creek Lake Project, Rogue River, Oregon" January 1972, I find that your statement of p. 2-8, para. 2, needs some modification.

The 1966 study by the University of Oregon Museum of Natural History was a survey to determine archaeological potential. Four sites were found and in addition two areas were mentioned where archaeological sites could be expected. The artifacts listed on lines 4, 5, and 6 were not mentioned in the report of the 1966 survey as inferred from the statement.

In 1966 and 1967 Oregon State University, under National Park Service contract, excavated two of the sites discovered on the 1966 survey and in addition discovered two additional sites which were investigated. The result of this work appears in Archaeology of the Lost Creek Dam Reservoir by Wilbur A. Davis. Oregon State University, Corvallis, April 17, 1968.

In 1968 further archaeological work was conducted by Oregon State University at two additional sites. This is reported in Lost Creek Archaeology, 1968, Final Report by Wilbur A. Davis, dated March 31, 1970.

In all, eight sites were found within the reservoir. Two have not been investigated because of restrictions by land owners at the time of field work. It is hoped that these sites plus the one downstream can be excavated.

It is recognized that the two hobbiest groups mentioned as reporting the downstream site are aware of its existence, however, you may find that by locating a site with only that degree of accuracy you will be inviting scores of people from hundreds of miles away to dig there. We have always found it inadvisable to mention locations of unexcavated sites through any medium available to the public or unconcerned Federal and State agencies.

Sincerely yours,

David L. Cole
Acting Director

cc: W. A. Davis, & Oregon State Parks Dept.

COUNTY COMMISSIONERS
HENRY F. PADGHAM, JR., Chairman
RODNEY KEATING, Commissioner
EARL M. MILLER, Commissioner

Jackson County Oregon

BOARD OF COUNTY COMMISSIONERS

(503) 773-6211, EXT. 240 • COUNTY COURTHOUSE • MEDFORD, OREGON • 97501

February 23, 1972

Charles B. Brinkley, Jr.
Lieutenant Colonel, CE
Deputy District Engineer
Portland District Corps of Engineers
P.O.Box 2946
Portland, Oregon 97208

Dear Mr. Brinkley:

The Board of County Commissioners has reviewed the initial Environmental Statement Draft concerning Lost Creek Lake Project.

It is our considered opinion that the Corps has identified many of the basic project problems and the Board concurs with your efforts to minimize the adverse environmental impact which will result from construction and operation of the project. While generally agreeing with your statment, the Board recommends consideration of several points. These are enumerated below.

(1) The Board of Commissioners suggest that the Corps give full consideration to the problems of debris removal from the water surface after impoundment and, also, debris situations which will occur annually after high water.

(2) Due to controlled release of flood waters which will result in extended periods of time when the river will be maintained at bank full levels, some provision should be made by the Corps for corrections of downstream bank erosion.

(3) It is our understanding that there might be a problem of colloidal suspension occurring within reservoir. Perhaps some mention of this condition should be included in the final Environmental Statement.

(4) Other environmental impacts; such as, transmission lines, water transportation systems and other related items that may not be directly associated with the Lost Creek Lake Project should also be considered.

Interim zoning controls along the Rogue River area will be finalized by the Board of Commissioners in 1972. A flood plain planning element is presently being prepared for application along this river reach.

Respectfully,

JACKSON COUNTY BOARD OF COMMISSIONERS

Henry F. Padgham, Jr., Chairman

Rodney Keating, Commissioner

Earl M. Miller, Commissioner

INTEROFFICE MEMORANDUM - JACKSON COUNTY

TO: Mr. Padgham, Board of Commissioners

FROM:

DATE: February 23, 1972

SUBJECT: Draft - Environmental Statement
Corps of Engineers

Dear Mr. Padgham:

The Department of Public Works, Planning Department, and Parks and Recreation Department have reviewed the Draft Environmental Statement from the Corps of Engineers concerning Lost Creek Lake Project.

Prepared and attached hereto are our recommendations for your endorsement.

Respectfully,

Robert Carstensen, Director
Public Works Department

Gary Scott, Director
Planning Commission

Neil J. Ledward, Director
Parks and Recreation

NJL:s
Attachment

2608 E. Jackson Drive
Medford, Oregon 97501
February 18, 1972

U. S. Army Engineer District
Portland, Oregon

Sirs,

In response to requested comments on the Draft Environmental Statement, January 1972, Lost Creek Lake Project Rogue River, Oregon, I submit the following:

1. The form of the presentation could be greatly improved. Although little environmental information has been overlooked by the authors of the statement regarding Lost Creek, it is rather difficult to follow. I would suggest that in the final draft a logical sequence of information be followed, properly titled, sub-titled and concluded by an inclusive table of contents. Unnecessary redundency of material should be deleted. At least part of the statement might include a debit and credit outline form.
2. An explanatory statement regarding the benefit-cost ratio listed on page 1-1, would be helpful. Additionally, I believe more information should be included in this report on the cost of the Project. Although this information is not directly related to "environmental impact" it is an appropriate consideration, and one that I believe, should accompany all governmental project reports. The paying public should never be obligated to delve for this information.

Sincerely,

Mrs. Edward W. Sickels

Jackson County Parks & Recreation Commissioner

Jackson Soil and Water Conservation Distric
1133 South Riverside Street
Medford, Oregon
97501

February 25, 1972

Colonel Paul D. Triem
Portland District Engineer
Corps of Engineers
Post Office Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

This letter is in reference to the Draft Environmental Statement, Lost Creek Lake Project, Rogue River, Oregon.

So far as we have been able to determine, the draft statement defined well the environmental impact of the project, and clearly set forth the adverse environmental effects of the project.

Over the years we have become especially familiar with the land costs associated with floods. Bank erosion, washed bottom lands, gravel deposition and channel changes have been some of the land costs. As conservationists, we view these costs with regret. Conversely, we are well aware of the water needs of the area during the low flow period.

It seems to us that the Lost Creek Lake Project will help solve the aforestated needs at a minimum cost in terms of other environmental considerations. In our view the Project will significantly enhance the Rogue Basin's environment.

Yours truly,

Eugene L. Kirkham
Chairman

ELK/lmt

Rogue Basin Flood Control & Water Resources Association

~~200 ERIE STREET~~
~~MEDFORD, OREGON 97501~~

Rt. 1 Box 346, Eagle Point, Oregon
97524

February 23, 1972

Colonel Paul D. Triem
Portland District Engineer
Corps of Engineers
P.O. Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

The Rogue Basin Flood Control & Water Resources Association appreciates the opportunity to comment on the Draft Environmental Statement, Lost Creek Lake Project, Rogue River, Oregon.

We are aware of no elements of environmental impact, or of adverse environmental effect, which have been omitted from the statement.

As residents of the Rogue Basin, we are quite sensitive to the environmental costs associated with the project. The loss of eleven miles of free flowing stream is a cost which we have not weighed lightly. Nevertheless, it is our view that the environmental benefits of the project will far outweigh the environmental costs. The increased summer flows of cold, high quality water will enhance the anadromous fishery, improve the quality of water for use by humans, and compliment the wild river status of the lower Rogue. Flood control will decrease environmental effects associated with high water; some of which are: washed-out salmon eggs, potholed fish, eroded banks, scoured bottom lands, stream channel changes, and a piling up of spawning gravel so that it is no longer useful for fish purposes. Other project functions will result in the production of clean energy and the creation of a lake recreation area in a timbered mountain environment. In addition, water will be provided for improving the flows of Little Butte and Bear Creeks, as well as for agricultural use.

On balance, it is our opinion that the Lost Creek Lake Project will significantly enhance the environment of the Rogue Basin.

Yours truly,

Wm. L. Jess

Wm. L. Jess,
Chairman

OREGON ENVIRONMENTAL COUNCIL

4315 S W CORBETT AVENUE, PORTLAND, OREGON 97201 / PHONE 503/222-5369

March 2, 1972

Colonel Paul Triem
District Engineer
Portland District, USACE
P. O. Box 2946
Portland, Oregon 97208

Re: Draft Environmental Impact Statement - Lost Creek Dam Project, Rogue River, Oregon

Dear Colonel Triem:

We have reviewed the above Environmental Impact Statement and offer to you the following comments with regards to this project. In contrast to our response to the Impact Statement on the Days Creek Project, we relied entirely on the contents of the Environmental Impact Statement to develop our critique.

It is the Council's feeling that the content of a Draft and Final Impact Statement must enable a person, who is not familiar with the subject area, to gain a clear understanding of the project and all its environmental ramifications. Therefore, it is inappropriate to expect us, any government agency or other members of the public, to undertake additional research through the Corps of Engineers' files in order to develop that understanding. Certainly, if the Corps complies with the guidelines developed by the Environmental Protection Agency and to the letter and the spirit of the National Environmental Policy Act this goal should be accomplished.

This position has been argued many times before the courts with regards to the adequacies of various Environmental Impact Statements across the nation. We have first hand experience with the court's position as to this issue on our case against the Department of Housing and Urban Development with regards to the Goose Hollow Highrise. Judge Goodwin concurred with the OEC that indeed the Impact Statement should provide sufficient data so that a sound judgemental decision can be reached by reading the document.

It is our feeling that the Draft Environmental Impact Statement prepared by the Corps concerning the Lost Creek Dam Project does not adequately meet this criteria.

Specifically, the project description for the most part constitutes a statement of justification for the proposed project with minimal information concerning the actual nature of the action. There are limited references to construction practices or design practices considered for this project. The environmental setting as set forth in the Draft Environmental Impact Statement is totally inadequate and fails to describe either in detail or generally, the conditions which exist either in the Rogue River Basin or within the project area.

We feel that the alternatives to the proposed action, as set forth in the Draft Statement, are not realistic alternatives. Similarly, that portion of the Statement devoted to the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity does not express an appreciation of productivity in any way. Similarly, the statement concerning irreversible or irretrievable commitments of resources does not reflect an understanding of what an irreversible or irretrievable commitment is.

Our comments follow the format of the Draft Impact Statement.

Page 1-1 Paragraph 1

Without proper substantiation, the statement that the "cost to benefit ratio is 6.1 to 1 at 3-1/8% interest" stands as a justification for the project rather than the statement of impact called for in NEPA. We reiterate our previous requests and those of other groups for substantive data and computations to support this ratio. It has been alluded that the cost-benefit formula utilized by the Corps of Engineers includes those costs and benefits incurred as a result of environmental impacts. Until such time as the Corps of Engineers provides complete documentation for the quotation of cost-benefit ratios we suggest that they be not included in future statements. We wish to draw attention to the comments on Army Corps of Engineers Environmental Statement for Cascadia Lake, Oregon prepared by Citizens for a Clean Environment, Corvallis, Oregon by John C. Ringle, dated April 16, 1971, and included in the Final Environmental Statement for Cascadia Lake in the Santiam River Basin, Oregon. We do not believe that the comments contained in the above document were adequately responded to in spirit or content.

Page 1-1 Paragraph 3

"Rock and soil excavation and disposal is a significant part of the proposed action." Incorrect. The action is underway, not proposed. "Excavation for the main dam foundation, spillway and diversion tunnel amounts to 1,800,000 cubic yards. That material will be disposed of in the reservoir area." We wish to know when this material will be disposed. Prior to completion of the reservoir? Will it be subject to spring erosion? What will be the change in water quality of the river downstream, if even temporarily?

"The left bank site being used primarily to eliminate potential slide condition..." Presumably this refers to the future relocated State Highway 62. What is the necessity for relocation? The 'slide condition' infers an unstable geologic formation. What is the composition of this formation -- its dip, its strike, its natural angle of repose, etc.?

"Method of excavation has been planned to minimize the aesthetic impact and to effect an excavation nearly unnoticeable from road and public use areas." This statement constitutes another justification for continuing the action. We find no description of how it has been planned to minimize, furthermore we find no description of the specifications or techniques to be used in order to minimize these impacts.

You should be able to expect that since this project has been funded for quite some time that the Corps of Engineers would have a very detailed understanding of the geology and suitability of this site for a dam. We have been assured many times that no dam will be built if the soil and geology are found to be unsuitable. Why is it that this information has not been obtained and included in the Draft Impact Statement?

Page 1-2

"...will be appropriately graded to preclude trapping fish in small ponds during drawdown periods." Appropriately graded is an assuring statement, but without substance. The vicinity and reservoir map included in the back of this Draft Statement does not indicate elevation of submerged topography below the level of full pool. What will be the elevation of the edges of the borrow areas after appropriate grading? Will all borrow pits be no deeper than the original stream bed (which is the lowest point in the existing canyon?). A longitudinal section of Lost Creek Lake through the existing streambed, showing elevation of pool surface at full pool and at maximum drawdown, and showing the depth and angle to which borrow pits will be constructed would somewhat clarify this matter. Concerning the 'small pools,' borrow pits providing the

2,100,000 cubic yards and 300,000 cubic yards respectively do not constitute SMALL PONDS. This is an apparent attempt to verbally minimize the magnitude of 2,400,000 cubic yards of removed material. The hole from which this material is removed is sizable.

"Design emphasis has been to reduce and minimize landscape scarring rather than to rely on restorative measures." There is no description of the proposed design, no contract specifications and no performance criteria which would provide assurance that there has been, in fact, any design at all. What design has been conducted to provide restorative measures to "scarred landscapes."

Page 1-2 Paragraph 2

"Major floods occur only during the winter months..." Major floods are not documented. We see no reason to accept such prose in lieu of hard data. Specifically what floods? How big, when, frequency of occurrence, etc., which brings up an additional topic: What percent of the Rogue flow is derived from the drainage area above the dam under construction?

"The stored water will be used as required for conservation needs..." Conservation needs - what conservation - water, wildlife, vegetation, etc.? Conservation needs established by whom and for what purpose?

"By July 1 in normal water years elevation would have been reduced to 1867 msl." 1867 Elevation. This elevation is 6 foot below full pool during July, the beginning of the major phase of tourist activity. Again, the vicinity and reservoir map at the back of the statement does now show contours below full pool, so we are unable to determine the actual extent of exposed slopes during July, August, September, October and November, if, in fact, the drawdowns anticipated by the Corps are effected.

Paragraph 3

"Throughout the year releases from the reservoir to the Rogue River would not fall below the minimums established for fishery enhancement." The OEC wishes to know what minimums or what kinds of fisheries, established by whom and for what purpose. "The temperature of released water will be selected from between 45° to 52°F. depending on the requirements downstream." Whose requirements?

Page 1-4 Paragraph 1

"That relocation involves construction of two major bridges. The road will be constructed to Oregon State Highway Department 'Class C' standards..." Construction of two major bridges and the relocation of

a State Highway in themselves constitute an environmental impact. A 30-foot roadway, the attendant clearing, disruption of drainage patterns, importation of fill material, construction debris, relocation of natural topsoil are not mentioned in the Environmental impact, when in fact these do constitute environmental impacts in themselves brought on by the dam project.

Page 1-5 Paragraph 1

"Recreation and public use is a major project action...325 camp units, 430 picnic units...sanitary facilities..." We wish to inquire as to the criteria used for siting, designing these facilities. In view of the proximity to this reservoir, we wish to know what form of sanitary facilities will be provided, where located, what level of sewage treatment, where will effluent be disposed, what is planned to prevent pollution of the impounded water by sanitary effluent? Where will solid waste be disposed? By what means? We feel that these also constitute a major project action and that failure to include detailed descriptions of the answers to the preceding questions constitutes by omission an intended justification of this project. We anticipate that the Corps will pass the responsibility for this type of action description to, we presume, the State agency who will be responsible for operating the recreation facilities. We maintain that these actions are totally interrelated and must be included within the scope of this Impact Statement. Were the answers to the preceding questions included in the cost-benefit analysis? Were the statements of the enviromental impacts related to the above action?

Page 1 -5 Paragraph 2

We feel that the description of the construction of the Cole M. Rivers Fish Hatchery which is now under construction is completely uninformative insofar as it does not mention excavation, dredge and fill, etc.

Page 1-6

"The general guidelines set forth for the clearing of Lost Creek Reservoir includes the removal of all trees, brush, snags and floatable debris over two inches in diameter and six foot in length." General Guidelines - are these guidelines specificed in the construction contract as performance criteria or as general guidelines allowing the contractor to do as he pleases? What assurance is there that the "general guidelines" will be adhered to? "It also includes removal of all stumps between elevations 1875 and at 1830 in the areas adjacent to bathing beaches and boat launching areas " While we are interested to know limitations were set at elevations 1875 and 1830 specifically adjacent to bathing beaches and boat launching areas when the maximum drawdown elevation will be down to

elevation of 1812 feet as stated before, we are unable to determine the areas extent of land exposed at maximum drawdown. It would appear that considerable visual impact will occur.

Page 2-1 Environmental Setting

We appreciate the attempt by the Corps to provide two levels of perspective (1) the Rogue River Basin as a whole, which should put the "proposed action" into the larger perspective and (2) project site area which we hoped would afford detailed understanding of the site. In terms of substantive content and demonstration of an understanding of the principles of ecology and ecosystems this Environmental Impact Statement would be embarrassed by a 5th Grade geography text.

Page 2-3 Paragraph 2

"The geology of the Rogue River Basin is complex." This geology statement is totally unsatisfactory. We assume that the Corps, prior to construction, performed a detailed geologic study of the area at the dam site as well as the area to be inundated. Where is the description of the rock structures within the area of confinement by the project boundaries? What are the physical properties of each rock unit - porosity, solubility, dip, strike, mineral content, pH of H_2O extracted from? Where are the statements describing the effect of inundation upon those rock structurs? How much "bank storage" will occur. We believe the answers to the preceding questions are essential in order to properly evaluate the environmental impact of this proposed action.

"Soils in the Western Cascades are thin to medium depth and are silty to clayey..." This paragraph is totally inadequate to describe the soils within the Rogue River Basin. What soils are contained within the project boundaries? We assume that the Corps has performed a detailed soils study prior to selection of campsites, sanitary facilities, locations, etc. Where are descriptions of erodability, percolation characteristics, shrink-swell potential, potential for compaction, etc.? What will be the effects of trampling of the 640,000 visitors annually on decreased infiltration capacity due to compaction? How much will be the resulting erosion? What is the capability of the soil to accept sewage effluent? Assuming increased erosion from compaction, where will the additional water drain? We feel that the answers to these and other questions concerning soils are essential to the proper evaluation of the total impact.

Page 2-5 Paragraph 3

"Development of the area has been somewhat retarded..." This statement

is a value judgement and constitutes additional justification for the project. Perhaps the absence of development constitutes a greater value to the public as a whole. We wonder if the speeding up of development is included in the "benefit" side of the cost-benefit ratio?

Page 2-8 Paragraph 1

"The Rogue River and its tributaries are essentially swift streams with comparatively little aquatic food or marsh habitat for waterfowl." Consultation with any limnologist will reveal that the River, even in its broadest sense, is alive with food. As indicated by the Corps, nesting does occur in the area. Nesting cannot take place without the presence of food. Similarly, migratory flights do not rest in areas where food does not exist. We find no supportive evidence to justify the statements concerning wildfowl.

Page 2-8 Paragraph 3 The Project Site Area

We find this entire section a complete whitewash. We quote in part from the NEPA Purpose, Section 2 "...to enrich the understanding of ecological systems and natural resources important to the nation;..." There is no mention whatsoever of any ecological system in this project site area. We find it interesting to note that while approximately 8 pages of narrative are devoted to the Basin area as a whole, only 25 sentences are used to describe the project site. Where are the ecosystem descriptions - the geology, soils, local hydrology, natural groundwater, animal and vegetative food chains and food webs. Where are the standards describing slide potential, vulnerability or tolerance to human presence? How does the information presented relate to the contents of the Environmental Impact Section?

Page 2-10

Insofar as forbs are herbaceous plants other than grasses we must congratulate the Corps on the totally encompassing nature of this statement. "Blacktailed deer and a few black bears frequent the bottomland and hillsides adjacent to the Lost Creek Reservoir site. Upland game species occuring in the region are California and moutain guail, blue grouse, and mourning dove. A few brush rabbits are present also. The project area supports populations of beaver, mink, muskrat, raccoon and skunk. Nesting by wood ducks and mallards occur infrequently and waterfowl harvest is negligible."

This paragraph is completely inadequate to describe, even superficially, the complex ecosystems which exist in the Lost Creek area. The statement concerning negligible harvest constitutes another value judgement - which

suggests that more harvest is a substantial value in itself, and if the harvest were considerable, a different evaluation of the area might be considered. We find it interesting to contrast this paragraph with the final three paragraphs on page 2-7 concerning the wildlife resources of the Rogue River Basin, which although addressed to the Basin as a whole, exhibit a somewhat more sophisticated understanding of the value of wildlife.

Page 3-1 The Environmental Impact of the Proposed Action.

This portion is, like the preceding portion, totally inadequate to describe the nature and magnitude of the impact at Lost Creek in the vicinity of the Lost Creek Project. Not only does this section not relate to the contents presented in Sections 1 and 2 describing the proposed project, and to the environmental setting in which that project takes place, it fails to note the magnitude and extent of the impact which will occur.

Page 3-2 Paragraph 2

"Impact on the area by people attracted to the future park could damage or otherwise affect the vegetation. It is therefore essential to properly plan the area for use by people and still preserve the quality of the existing vegetation. The resulting arboretum will be the major beneficial impact from the project." The impact presented by 640,000 visitors per year on not only the vegetation and wildlife, but also aesthetic qualities of the sites, will be enormous. We wish to know if the Corps is taking over responsibility for properly planning the area for use by people? We wish to inquire if the "arboretum" referred to by the Corps is in fact an arboretum, which according to Webster is a place where trees and shrubs are cultivated for scientific or educational purposes. What scientific or educational projects will be conducted within the site? Does the Corps also take responsibility for the conduct of these projects?

Page 3-3

"The borrow areas will be graded, restored of topsoil and planted to vegetation. Plan species will be chosen which have wildlife habitat value and will blend in with the natural landscape. The 22-acre impurvious borrow site will effect the elimination of a slide potential on the left bank." We wish to inquire from whence the topsoil will be acquired and what vegetation will be planted? Similarly, who will conduct this restoration? We have also commented on the slide potential adjacent to the left bank. We wish to inquire if the slide potential constituted any hazard prior to the implementation of the Lost Creek Project and if the elimination of this slide potential was included as a benefit within the cost-benefit ratio.

Page 3-3 Paragraph 2

"Average annual flood damage prevention creditable to Lost Creek Lake's affect downstream along the Rogue River is estimated to be about #3,287,000. We would be interested to know how the Corps has arrived at this figure. Similarly, we wish to know the construction costs of this project and how this cost compares to the estimated savings of $3,287,000.

"Additional downstream impact is from expected construction activity in the flood plain because of reduced flood risk. That development might include residential, industrial and higher investment agricultural development. Jackson County, however, has an Interim Zoning Ordinance in effect for the Upper Rogue Area. That Ordinance restricts types of development in the flood plain." Paragraph 1 of Page 3-1 states "At the project site, complete control of a 50-year frequency flood would be possible." We would be interested in knowing if the Corps is willing to accept responsibility for flood damage to development which would occur in the flood plain as a result of a false sense of security based on the control of a 50 year flood. We presume that this potential flood damage would not occur if the flood plain zoning ordinance in Jackson County were to remain in effect. This present an interesting condition that in spite of the Lost Creek Project being completed, Jackson County does not revise its Interim Flood Plain Zoning Ordinance, then the presumed additional protection afforded by the Dam would not constitute a beneficial impact. Was this potential condition included in the cost-benefit ratio?

Page 3-4 Paragraph 2

"Public services such as utilities required at the project will be provided to accomodate the visitors." Please note our previous comments concerning public facilities.

Page 3-5

"The base load production, as opposed to peaking production, will reduce the need for an equal amount of base load generation at another power generating facility. The reduction will cause a corresponding reduction in the consumption of fossil or nuclear fuel and the production of waste heat that accompanies thermal power generation should that form of generating facility be used." We find no documentation to support this statement. If the Corps wishes to compare the relative merits of reduced fossil or nuclear plant generation, we request specific figures to support this contention, including the relative benefits to the environment accruing from that power reduction. We also wish to inquire if the generally increasing rate of energy consumption was taken into consideration in this statement.

Page 3-6 Paragraph 1

"Studies have not been made regarding shoaling at different river flows in the Rogue, but it is believed that 1,000 cfs increase of minimum flow as is planned in the Rogue will result in a five to ten percent reduction in maintenance dredging requirements." We would be interested to know if, in fact, studies have not been made, then how the Corps is able to establish a five to ten percent reduction in maintenance dredging. Insofar as this is an unsubstantiatable opinion, we do not feel that it is appropriate to an Environmental Impact Statement.

Page 3-6 Paragraph 2

"The 11-mile length of stream to be inundated also will be lost as a natural habitat for rainbow and cutthroat trout. Stream fishing for the resident and anadromous species along the inundated stream will be lost and replaced by a reservoir fishery." We find it interesting to contrast this statement with that presented on page 2-6 "The river has received international acclaim as a sport fishing paradise. Fly fishing for summer steel head has been publicised through the writings of such personalities... and the quality of the angling is worthy of their praise." We wish to inquire how the Corps can reconsile the loss of an area of internationally acclaimed fishing resource against the substitution of species and fishing experience gained with a lake-type fishery.

Page 3-6 Paragraph 3

"The resident fishery supported by that program is expected to provide a 120,000 angle-days of use during the first year..." We find no basis in the Environmental Impact Statement to support 120,000 angler-days during the first year. We request that the Corps, prior to presenting statistics of this type, make sufficient statistical citations to present them in their Environmental Impact Statement in such a manner so as to permit an unbiased observed to accurately evaluate the credibility of these numbers.

Page 3-7 Paragraph 2

"The reservoir drawdown zone creates adverse aesthetic impact when exposed. That impact is a result of clearing the area and subsequent silt deposits resulting from inundation during part of the year... would be considered by most to be scenic and by some as being an enhancement over the pre-reservoir scenic quality of the valley." Again, another unsubstantiated value judgement. We request citations of human behavior and visitor opinion to support this contention.

Page 4-1 Any Adverse Environmental Effects Which Cannot be Avoided Should the Proposal be Implemented.

We believe that devoting a total of 19 sentences to the identification of adverse environmental effects which cannot be avoided is totally inadequate. What will be the adverse environmental effects which result from increased visitors? What will be the adverse environmental effects resulting from development which is attracted to the area? What will be the adverse environmental effects of the added liquid and solid waste material contributed to the environment? What will be the adverse environmental effect of possible changes to the Interim Flood Zoning Ordinance in Jackson County? What will be the adverse environmental effects which result from additional roads, transportation facilities, which will follow development? What will be the adverse environmental effects to the Rogue River itself as a result of changed cyclical character of its flows? What will be the adverse environmental effects of the changes to stream water temperature regimens. We feel the answers to these and other questions concerning the overall environmental effects which result directly and indirectly from implementation of this project have not been addressed.

Page 5-1 Alternatives to the Proposed Action

"Flood control will be foregone and irrigation water, municipal water, and electrical power supply will not be provided. Recreation and fish and wildlife enhancement would also not be realized? Insofar as Jackson County has an Interim Flood Plain Ordinance, flood control is not necessary in order to minimize human exposure to flood damage. Concerning irrigation water, municipal water and electrical power supply, we wish to know what proportion of the total amount used in the area will the Lost Creek Project supplement. Concerning recreation and fish and wildlife enhancement: This statement presupposes that the form of recreation wildlife which is ~~either~~ substituted by the Lost Creek Project is in fact of greater value than that which existed in the project area prior to construction of this dam.

Page 5-1 Paragraph 2

"Land use regulation could effectively eliminate future developments in the flood zone but damages would continue at existing facilities." We wish to inquire if the Corps has estimated or calculated the 13% of the value of existing facilities in the flood plains of the Rogue River which will be protected as a result of Lost Creek, and whether that calculation of saved investment justifies inundation of an additional 11-miles of the Rogue River which has "received international acclaim as a sport fishing paradise."

"The single-purpose flood control alternatives would not satisfy irrigation, power, water quality, water supply, recreation, or fish and wildlife needs." We find no information in this Environmental Impact Statement to support this suggestion that, in fact, irrigation, power, water quality, water supply, recreation, or fish and wildlife needs do exist which cannot be met by alternative less environmentally expensive methods.

"The economic benefit derived from those project purpose (sic) alone amounts to over one-half the total equivalent annual benefits for the proposed action." We find no evidence in this Environmental Impact Statement to support this statement of economic benefit and until such time as the component elements of benefit and cost summaries are included in Environmental Impact Statements we will continue to object to the utilization of unsubstantiated opinions within Environmental Impact Statements.

Page 5-1 "Dry Reservoir Operation..."

We heartily concur with the Corps' evaluation of this alternative.

Page 6-1 <u>The Relationship Between Local Short-Term Uses of Man's Environment and Enhancement of Long-Term Productivity</u>

As we have stated previously, the information contained in this Environmental Impact Statement is insufficient and incomplete insofar as it addresses only the immediate short-term and conspicuous apparent impacts. We believe that this Section should be devoted to a detailed investigation of the detailed peripheral impacts which will result from this project. We anticipate that the Corps will present a disclaimer of their responsibility for addressing these problems. If, in fact, the agency that initiates an action, which will result in a prolonged series of events that effect the environment, does not address the impacts which will result from that initiating action, then who in fact will?

Page 7-1 <u>Any Irreversible and Irretrievable Committments of Resources Which Would be Involved in the Proposed Action Should it be Implemented</u>.

The greatest irreversible and irretrievable commitment on this project is the loss of an additional existing 11-mile stretch of this internationally acclaimed sport fishing paradise.

We hope that the above comments and observations will result in the revision of this Impact Statement to a quality which will truly reflect the environmental impacts of the Lost Creek Dam Project.

Sincerely,

Larry Williams
Executive Director

cc: The Honorable Mark Hatfield
The Honorable Robert Packwood
The Honorable Tom McCall
The Honorable John Dellenback
Environmental Protection Agency
Department of Environmental Quality
Medford Mail Tribune
The Oregonian
The Oregon Journal
Eugene Register-Guard
Conservation Leaders

LW:jai

7375 Rapp Lane
Talent, Oregon 97540
February 14, 1972

Department of the Army
Portland District, Corps of Engineers
P. O. Box 2946
Portland, Oregon 97208

Subject: Draft Environmental Statement
Lost Creek Lake Project
Rogue River, Oregon

Gentlemen:

1. I believe that this project should be called Lost Creek Reservoir, not Lost Creek Lake. "Reservoir" precisely describes the nature and purpose of the impoundment. The choice of the name "Lake" can perhaps be justified by selecting a suitable dictionary definition. But it is less correct and clear than "Reservoir" and it gives the impression of an attempt to mislead the public. **

2. The draft states that, in connection with a planned Bureau of Reclamation project, Lost Creek would provide water for irrigation and for water quality enhancement in the Rogue River, Little Butte Creek, and Bear Creek. However, I believe that it is not now known whether the Bureau of Reclamation projects can be economically justified. If this is correct, the environmental statement should make it clear that the irrigation and water quality benefits may never be realized.

Yours very truly,

John B. Ballard

** Your descriptive brochure dated 1967 did call the project Lost Creek Reservoir.

Mario J. Campagna, M.D.

Eugene M. Tennyson, Jr., M.D.

PHYSICIANS AND SURGEONS
836 EAST MAIN STREET
MEDFORD, OREGON 97501

February 29, 1972

Mr. Larry Williams
Oregon Environmental Council
4315 S. W. Corbett Avenue
Portland, Oregon

Dear Mr. Williams:

I have reviewed the impact statement prepared by the corps of engineers with respect to the proposed Lost Creek Dam and would like to make known to you my feelings in regard to this proposed construction as well as with respect to this specific report.

(1) It would appear quite unlikely that this proposed dam would provide the City of Grants Pass adequate flood protection since the dam is above the major tributaries of the Rogue which have been responsible for flooding conditions in years gone by. These tributaries include Big Butte Creek, Little Butte Creek, Elk Creek, and the Applegate River.

(2) There is no demonstrated need for further recreational areas of the type to be produced by a large impoundment of water behind a dam at Lost Creek. Adequate aquatic recreational areas nearby include Howard Prairie Lake, Agate Lake, Hyatt Lake, Willow Lake, Emigrant Lake (which may be regarded as a recreational area or an environmental disaster depending upon one's perspective), and the impoundment behind Savage Rapids Dam. The proposed impoundment behind Lost Creek Dam would be at best an environmental eyesore, and at worst could result in year-round silting of the Rogue and eventual loss of the prized anadromous fisheries resource. Certainly the Rogue Valley area is in no dire need of increased population and increased tourism from adjoining states.

(3) To the best of my knowledge there have been no controlled or well documented studies demonstrating the effect of the Lost Creek Dam on the physical and chemical properties of the Rogue River. It would seem axiomatic that prior to the construction of this dam we should learn as much as possible about the changes in our river that this is likely to bring about. From the geologic standpoint it would seem quite possible that construction of a dam at Lost Creek as is proposed would bring about an impoundment very much like Emigrant Lake with marked elevation of the water level, destruction of the natural spawning beds, and year-round siltration of the Rogue.

(4) While the corps of engineers has never noted osprey in the area above Lost Creek, I certainly have on numerous occasions and the proposed dam would make the osprey an endangered species in the region of this constuction.

(5) The experience of most large irrigation projects is that the community at large will utilize any given amount of water present, so that while the amount of water available for irrigation might be increased markedly, consumption would parallel the supply and the end result would be an increase or no change in the summer temperature of the Rogue.

Because of the above factors and because so little is really known from a scientific standpoint about the long term effects of the Lost Creek Dam on the Rogue Valley, I would urge you to use your influence in post-poning the construction of the Lost Creek Dam until adequate scientific surveys have demonstrated the total effects of this construction.

Sincerely yours,

E. H. Tennyson, Jr., M. D.

EHT:lg

P. O. Box 1747, Medford, Oregon
March 1, 1972

Department of the Army
Portland District, Corps of Engineers
P. O. Box 2946
Portland, Oregon 97208

Gentlemen:

I have completed reading the environmental statement for the "Lost Creek Lake Project, Rogue River, Oregon", received here in February 1972.

I understand that this is a draft. However, certain subjects do not appear to be clear as presented in the statement.

#1. Please calculate benefit-cost ratio at 7% instead of 3 1/8% interest as per latest recommendation of the Water Resources Council.

#2. There is no reference made to the large portion of the lower Rogue River system, which is declared a "Wild and scenic river" as per recent legislation. Is it not possible that sediment from dam construction may permanently affect the resident ecology of the lower Rogue as well as the fish migration at certain periods of the year?

#3. The report does not mention that at least approximately 70 miles of river is obstructed by this project, approximately 35 miles on the north fork of the Rogue, 20 miles on the south fork and approximately 15 miles on the middle fork.

#4. Please include the excerpt from "Fish and Wildlife Plan, Rogue River", exactly as printed:

> "Upstream movement of adult fish will be blocked by the Lost Creek Dam. Certain other inimical affects to fish may result, which include the following: river nitrogen problems below the Lost Creek Dam; suspension of clays in the impoundment discoloring the river from the dam to the ocean; reduction of peak flows impairing the flushing of silts from the river gravels, thus reducing food production, spawning success and fry survival; release of cold water redistributing or eliminating certain salmonid species."

This does not appear to be discussed in the environmental impact

statement.

Reference to flood control, it would appear that numerous tributaries to the Rogue River, below the construction site of the dam which contribute to the high run-off into the river and are most likely responsible for the infrequent river flooding, as noted in 1955 and 1964.

There is no study made of the discharge of warm water from the Gold Rey and Savage Rapids Dam areas as a result of irrigation water diversion, and this should be included into any attempt to regulate water temperature of the Rogue River.

Very truly yours,

D. A. Turcke, M. D.

DAT:vs
CC: Oregon Environmental Council.
Environmental Defense Fund.

BIBLIOGRAPHY

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W. Bruce McAlister; Rogue River Basin Study: Part II, Prediction of Stream Temperatures Downstream From the Lost Creek Damsite, May 1961.

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Oregon State Game Commission; Fish and Wildlife Plan, Rogue River, July 1971.

Wilbur A. Davis; Archaeology of the Lost Creek Dam Reservoir, April 17, 1968.

Wilbur A. Davis; Lost Creek Archaeology 1968, Final Report, March 31, 1970.

Agriculture Experiment Station, Oregon State University; Endangered Plants and Animals of Oregon, Volume I - Fishes, January 1966.

Agriculture Experiment Station, Oregon State University; Endangered Plants and Animals of Oregon, Volume III - Birds, July 1969.

Elisabeth Walton, Park Historian, Oregon State Highway Division; Letter Report on National Register of Historic Places, February 14, 1972.

E. Hickman, U.S. Department of Agriculture Soil Conservation; Soil and Water Conservation Plan, Corps of Engineers, Weeks Property, Lost Creek Project, January 1971.

Curtis D. Weaver, Jackson County Planning Commission, Medford, Oregon; Jackson County Interim Flood Plain Combining District, April 13, 1972.

U. S. Department of Agriculture, Soil Conservation Service; Agriculture Handbook No. 339, Grasses and Legumes For Soil Conservation in the Pacific Northwest and Great Basin States, April 1968.

MEMBERSHIP ROSTER

ROGUE BASIN FLOOD CONTROL AND WATER RESOURCES ASSOCIATION

CITIES AND COUNTIES:

Central Point City Council, 415 Hazel Central Point, Oregon
City of Eagle Point, Highway 234 Eagle Point, Oregon
City of Grants Pass 128 SW H St., Grants Pass, Oregon
City of Gold Hill, Gold Hill, Oregon
Curry County Court, Gold Beach, Oregon
Jackson County Court, Medford, Oregon
Josephine County Court, Grants Pass, Ore.
Rogue River City Council, Rogue River, Oregon

CHAMBERS OF COMMERCE

Grants Pass & Josephine County Chamber of Commerce, 128 SW H St. Grants Pass, Oregon
Gold Hill Chamber of Commerce, Gold Hill, Oregon, P.O. Box 1
Illinois Valley Chamber of Commerce, Cave Junction, Oregon
Medford Chamber of Commerce, Medford, Oregon,
Rogue River Chamber of Commerce, Rogue River, Oregon

SERVICE CLUBS, SOCIAL ORGANIZATIONS AND LODGES

Evans Valley Garden Club Rogue River Ore. Rt. 1, Box 254
Gold Hill Garden Club, Gold Hill, Oregon P.O. Box 297
Gold Hill Health Unit, Gold Hill, Oregon Rt. 1, Box 182
Gold Hill Lions Club P.O. Box 364 Gold Hill, Oregon
Gold Hill Lodge No. 129, I.O.O.F., Rt. 1, Box 13, Gold Hill, Oregon
Gold Hill P. T. A., Gold Hill, Oregon
Gold Hill Rebekah Lodge No. 97, P. O. Box 97, Gold Hill, Oregon
Grants Pass Gladiolus Club, Grants Pass, Oregon, 1300 Schutzwohl Lane
Grants Pass Rotary Club, Grants Pass, Ore 1004 N.W. Hawthorne Ave.
Home Economics Unit Rt. 1, Box 53, Eagle Point, Oregon
Illinois Valley Garden Club,Cave Junction Oregon
Illinois Valley Lions Club, Cave Junction Oregon
Prospect Lions Club Rt. 3, Star Route 1475, Trail, Oregon
Jackson County Democratic Social Club, Rt 2, Box 301, Gold Hill, Oregon
Jackson County League of Women Voters
Rogue River Civic Improvement Club, P.O. Box 533, Grants Pass, Oregon
Rogue River Garden Club, Rogue River, Oregon
Rogue River Lions Club, Rogue River, Ore. P.O. Box 568
Rogue River Lions Auxiliary, P.O. Box 568 Rogue River, Oregon
Sams Valley H.E.U., Rt. 2, Box 505 Gold Hill, Oregon
Shady Cove-Trail Lions Club, Shady Cove Oregon, Star Rt., Box 442
Our Lady of Fatima Club, P.O. Box 115, Shady Cove, Oregon
Shady Cove Garden Club, Star Route, Shady Cove, Oregon Box 580
Shady Cove H.E.U., Rt. 1, Box 53, Eagle Point, Oregon
Shady Cove Rotary Club, P.O. Box 785, Shady Cove, Oregon
Shady Cove V.F.W. Auxiliary, Shady Cove Oregon Star Rt., Box 832
Shady Cove V.F.W. Box 171, Shady Cove Oregon

GRANGES

Bellview Grange No. 799, 889 Garden Way, Ashland, Oregon
Central Point Grange No.698, Rt. 1, Box, 223, Central Point, Oregon
Enterprise Grange, Rt. 1, Box 294, Rogue River, Oregon
Gold Hill Grange No. 534, Rt. 1, Box 297, Gold Hill, Oregon
Illinois Valley Grange No. 370, Cave Junction, Oregon
Jackson County Pomona Grange No. 27, 1218 Albion Medford, Oregon
Josephine Pomona Grange No. 20, 5041 Jerome Prairie Rd., Grants Pass, Ore.
Live Oak Grange No. 655, P.O. Box 31A, Rogue River, Oregon
Mt. Sexton Grange Sunny Valley, Oregon
Phoenix Grange No. 779, Rt. 4, Box 2297 Camp Baker Road, Medford, Oregon
Provolt Grange, 13605 Water Gap Road, Grants Pass, Oregon
Redwood Grange No. 760, P.O. Box 69, Grants Pass, Oregon
Rogue River Valley Grange No. 469, 1409 Florence Lane, Grants Pass, Oregon
Roxy Ann Grange #792, 1037 Terra, Ashland
Shady Cove Grange No. 931, P.O. Box 104, Shady Cove, Oregon
Sams Valley Grange #666, Rt. 2, Box 488, Gold Hill, Oregon
Sunny Valley Grange #916, Rt. 1, Box 368, Jacksonville, Oregon
Upper Rogue Grange, Star Rt. 3, Box 1245, Trail, Rt. 1, Box 640, Trail, Oregon

FARM BUREAUS

Jackson County Farm Bureau Pioneer Road, Phoenix, Oregon
Evans Valley Farm Bureau, P.O. Box 568, Rogue River, Oregon
Illinois Valley Farm Bureau, Rt. 1, Box, 294, Cave Junction, Oregon
Rogue Valley Farm Bureau Center, 3480 Lower River Road, Grants Pass, Oregon

BUSINESS GROUPS:

Grants Pass Board of Realtors, 952 S.W. 6th Street, Grants Pass, Oregon
Grants Pass Multiple Listing Service 1652 N.W. 6th Street, Grants Pass, Oregon
Jackson County Livestock Association, Rt. 4, Box 498, Grants Pass, Oregon
Josephine County Livestock Association, 2123 Riverbanks Road, Grants Pass Ore.

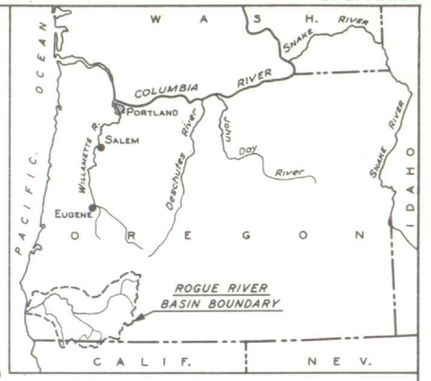
WATER & SOIL CONSERVATION GROUPS:

Dam Believers, P.O. Box 400, Rogue River, Oregon
Eagle Point Irrigation District, P.O. Box 157, Eagle Point, Oregon
Illinois Valley Rural Fire District No. 1 P.O. Box A, Cave Junction, Oregon
Illinois Valley Soil Conservation Dist. P.O. Box 352, Cave Junction, Oregon
Illinois Valley Water Resources Group, P. O. Box O, Cave Junction, Oregon
Jackson Soul Conservation District, Rt. 1 Box 346, Eagle Point, Oregon
Josephine Soil Conservation District, Sunny Valley, Oregon
Little Butte Creek Flood Protection,Eagle Point, Oregon
Merlin Irrigation District, 5080 Monument Drive, Grants Pass, Oregon
Prospect Fire District Prospect, Oregon Star Route, Box 115
Sams Valley Irrigation District 5702 Drake Ave. Central Point, Oregon
Shady Cove-Trail Rural Fire Protection District, Birch St., Shady Cove, Ore.

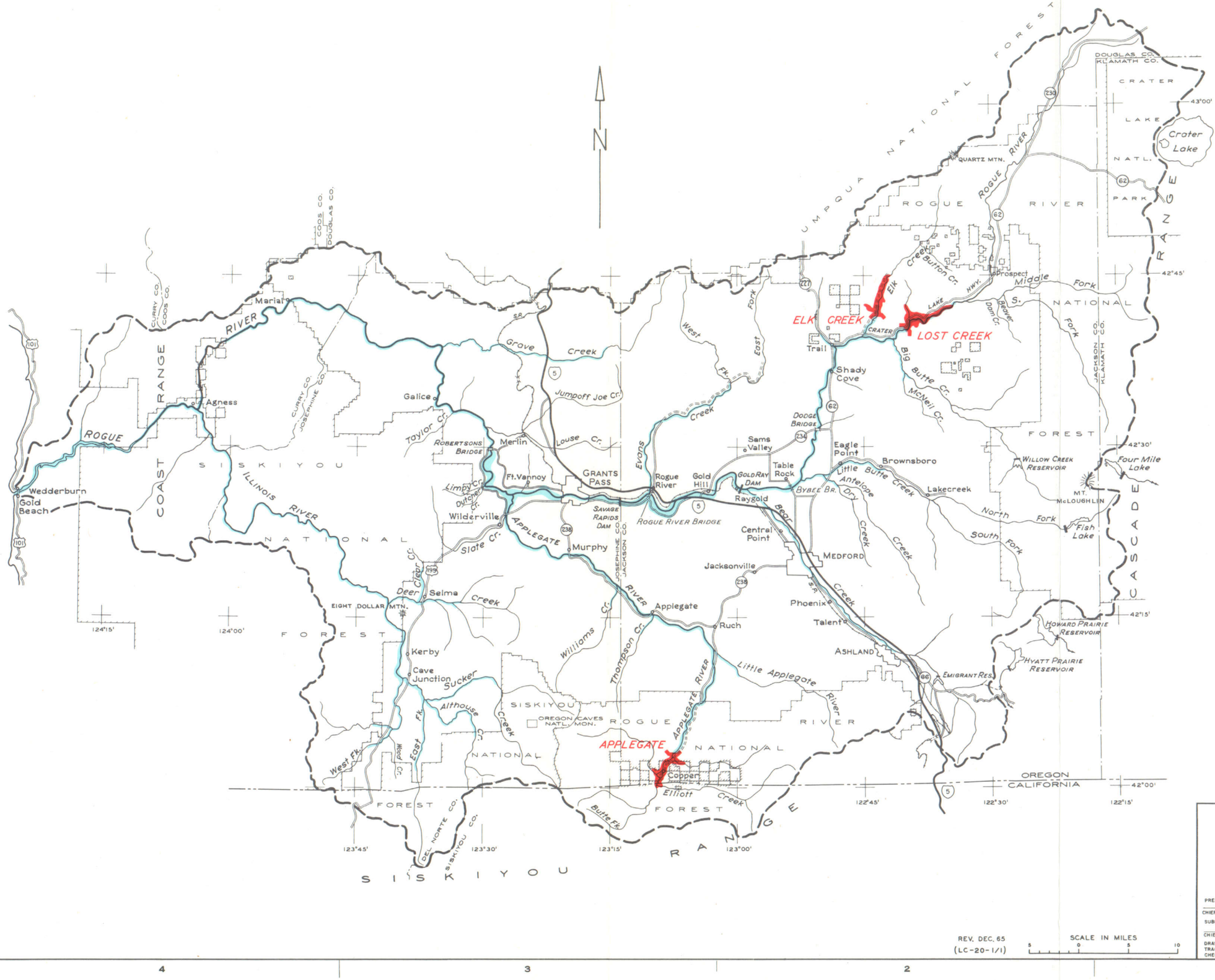
SPORTSMAN'S GROUP:

Central Point Sportsman's Club, Central Point, Oregon
Rogue River Chapter Izaak Walton League, 1390 Fish Hatchery Rd. Grants Pass,Ore
Sucker Creek Irrigation District, P. O. Box 361, Cave Junction, Oregon
Shady Cove Imp. Ass. Shady Cove, Oregon
Sams Valley Beagle Developing Assoc. Gold Hill, Oregon

CORPS OF ENGINEERS — U. S. ARMY



VICINITY MAP
SCALE IN MILES
50 0 50 100 150 200



LEGEND
- AUTHORIZED RESERVOIRS
- EXISTING RESERVOIRS
- 1964 FLOOD PLAIN

REV. DEC. 65
(LC-20-1/1)

SCALE IN MILES
5 0 5 10

ROGUE RIVER AND TRIBUTARIES
OREGON

BASIN MAP

SCALES AS SHOWN
U. S. ARMY ENGINEER DISTRICT, PORTLAND
CORPS OF ENGINEERS

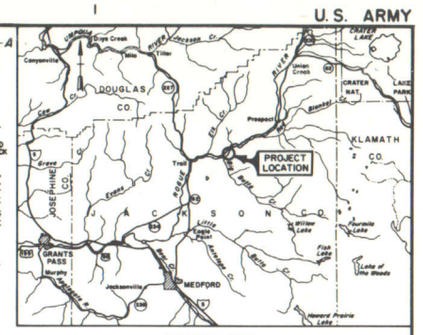
PREPARED George W. Decker
CHIEF, DAMS, RESERVOIRS AND POWER SECTION
RECOMMENDED
CHIEF, ENGINEERING DIVISION
SUBMITTED
CHIEF, PLANNING BRANCH
APPROVED
COLONEL, CORPS OF ENGINEERS
DISTRICT ENGINEER
DRAWN D.L.G.
TRACED B.J.V.-R.J.R.
CHECKED L.M.S.

RO-20-7

PLATE I

CORPS OF ENGINEERS

U.S. ARMY



VICINITY MAP
SCALE IN MILES

MAXIMUM AND FULL POOL EL. 1872

RELOCATED COUNTY ROAD

MINIMUM CONSERVATION POOL EL. 1751

ROGUE RIVER

GRAVEL BORROW

EXISTING ROAD

BYPASS ROAD

CONCRETE AGGREGATE

DAM AXIS

CONTRACTOR'S OFFICE

FISH HATCHERY

FISH HATCHERY BORROW AREA

IMPERVIOUS BORROW

ROCK QUARRY

TOP SOIL BORROW

FUTURE RELOCATED STATE HWY. 62

PROJECT BOUNDARY

PRIMARY RECREATION AREAS

R.1E., W.M. R.2E.

R.2E., W.M. R.3E.

T.33S. T.34S.

TRUE NORTH

NOTE:
Coordinates: Oregon South
Datum: M.S.L., 1947 Adj.
Control: U.S.A.E.D.

SCALE IN FEET
1000 0 1000 2000
CONTOUR INTERVAL: 20 FT.

ROGUE RIVER BASIN, OREGON
ROGUE RIVER
LOST CREEK LAKE

VICINITY AND RESERVOIR MAP

SUPPLEMENT 1

TO

ENVIRONMENTAL STATEMENT

8 MAY 1972

LOST CREEK LAKE PROJECT
ROGUE RIVER, OREGON

U.S. ARMY ENGINEER DISTRICT
PORTLAND, OREGON

SUPPLEMENT 1

LOST CREEK LAKE PROJECT
ROGUE RIVER BASIN OREGON

ENVIRONMENTAL STATEMENT 8 May 1972

8. Coordination with others.

a. Agency and public participation.

b. Comments and responses. -

FEDERAL

(1) U.S. DEPARTMENT OF COMMERCE.

Comment: It is pointed out that the salmon and steelhead resource is at a level considerably below production of earlier (Zane Grey and Herbert Hoover) years. It should be made clear, however, that spring chinook runs during the past ten years have reflected a significant increase in production.

Response: The present statement has been changed to reflect the information that recent years show an increase of spring chinook.

Comment: The statement does not recognize that water release is made into the Rogue River below Lost Creek Reservoir to benefit fisheries would also benefit operation of drift boats. Since the Rogue provides one of the principle drift boat fisheries in the State of Oregon, it would seem reasonable to recognize this point.

Response: Expanded discussion of drift boat fishing and the benefits to that activity by augmented summer flows is reflected in the present statement.

(2) U.S. DEPARTMENT OF INTERIOR, OFFICE OF THE SECRETARY, PACIFIC NORTHWEST REGION.

Comment: This letter concerns my April 3, 1972 letter to you transmitting Department of the Interior comments on the draft environmental statement for Lost Creek Project, Rogue River, Oregon. We request that you consider certain essential clarified material pertinent to our prior response.

Response: The clarifying material as reflected in the 31 May 1972 letter is accepted.

LETTERS OF COMMENT

U.S. Department of Commerce
U.S. Department of Interior

THE ASSISTANT SECRETARY OF COMMERCE
Washington, D.C. 20230

May 17, 1972

Colonel Paul D. Triem
District Engineer
U.S. Department of the Army, Corps of Engineers
Portland District
P. O. Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

The draft environmental statement for the "Lost Creek Lake Project, Rogue River, Oregon," was received by the Department of Commerce for review and comment.

The Department of Commerce has reviewed the draft environmental statement and has the following comments to offer for your consideration.

The statement appears to consider many of the environmental factors associated with implementation of this project. However, in our opinion the statement might be improved by inclusion of additional discussion concerning the following points.

On page 2-6, the third paragraph, it is pointed out that the salmon and steelhead resource is at a level considerably below production of earlier (Zane Grey and Herbert Hoover) years. It should be made clear, however, that spring chinook runs during the past ten years have reflected a significant increase in production.1/ This paragraph should be expanded to show these recent increases.

The statement does not recognize the water releases made into the Rogue River below Lost Creek reservoir to benefit fisheries would also benefit operations of drift boats. Since the Rogue provides one of the principal drift boat fisheries in the state of Oregon, it would seem reasonable to recognize this point.

1/ Oregon State Game Commission (Fishery Division)
Annual Report for 1970

We hope these comments will be of assistance to you. I apologize for the delay in responding to your request.

Sincerely,

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

United States Department of the Interior

OFFICE OF THE SECRETARY
PACIFIC NORTHWEST REGION
P.O. Box 3621, Portland, Oregon 97208

ER 72/66

May 31, 1972

Your ref.: NPPEN-EQ
18 Jan 1972

Colonel Paul D. Triem
District Engineer
Portland District, CE
P.O. Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

This concerns my April 3, 1972, letter to you, transmitting Department of the Interior comments on the draft environmental statement for Lost Creek Lake Project, Rogue River, Oregon. We have been advised by Mr. Aimonetto of your staff that comments are still being accepted. Therefore, we request that you consider certain essential clarifying material pertinent to our prior response. The requested changes, referenced by page number of our April 3 enclosure, are as follows:

Page 4, item Page 2-7, fifth paragraph. Delete that portion following "fur animal." This subject is discussed under item Page 2-10, first full paragraph of the same page.

Page 5, item Page 3-2. Delete the second paragraph since wildlife are being considered in development of the master plan for the reservoir.

Page 5, item Page 3-2, paragraph 4. Delete.

Page 5, item Page 3-3. Delete. It has been determined that the gravel supply will be recruited from tributary streams that will remain uncontrolled. The major contributor will be Big Butte Creek which enters the Rogue River a short distance downstream.

Page 6, first full paragraph. Delete. Water for Bear Creek would come from three sources - Elk Creek Reservoir, Lost Creek Reservoir, and Emigrant Reservoir. Recommended Bear Creek flows are expected to maintain a dissolved oxygen level of about 6 ppm assuming 85 percent waste treatment. Irrigation return flow was a pollutant considered in the water quality analysis. With increased sprinkler irrigation, return flows may be expected to decrease.

Page 6, item Page 3-5, 3-6. Delete. Temperature studies conducted by Dr. Wayne Burt (Oregon State University) determined that water temperatures at Mariel on the lower Rogue could be controlled to about 70° F. This would be a reduction of about 15° F. from maximums that now occur.

Page 7, first paragraph. Delete. Information provided the Bureau of Sport Fisheries and Wildlife by the Oregon State Game Commission reveals that only four species of nongame fish occur in the reservoir area. They are cottids, Pacific lamprey, dace, and bridgelip sucker - none of which is expected to become a problem. It is true that chemical rehabilitation in a reservoir of this magnitude could be a problem. However, there are years when the reservoir will be drawn down to a low level at which time rehabilitation along with detoxification to prevent downstream losses could be accomplished.

Page 7, second paragraph. Delete.

Page 7, third, fifth, and seventh paragraphs are redundant. Delete third and seventh paragraphs.

Page 8, first paragraph. Delete. Items discussed are being covered under the master plan for the reservoir.

Page 8, penultimate paragraph. Delete. This subject was clarified by changes requested for the first paragraph of page 7.

Your consideration of these comments is appreciated.

Sincerely,

Emmet E. Willard
Field Representative

cc:
Assistant Secretary--Program Policy
Council on Environmental Quality
Director, Office of Environmental Project Review
Commissioner, Bureau of Reclamation
Director, Bureau of Sport Fisheries and Wildlife
Director, Geological Survey
Director, National Park Service
Director, Bureau of Mines
Director, Bureau of Land Management
Director, Bureau of Outdoor Recreation
Regional Director, Bureau of Sport Fisheries and Wildlife
District Chief, Geological Survey, Water Resources Division
Director, Pacific Northwest Region, National Park Service
Oregon State Director, Bureau of Land Management
Regional Director, Pacific Northwest Region, Bureau of Outdoor Recreation
Engineering & Research Center, Bureau of Reclamation
Salem Area Planning Officer, Bureau of Reclamation

SUPPLEMENT 2

TO

ENVIRONMENTAL STATEMENT

8 MAY 1972

LOST CREEK LAKE PROJECT
ROGUE RIVER, OREGON

U.S. ARMY ENGINEER DISTRICT
PORTLAND, OREGON

SUPPLEMENT 2

LOST CREEK LAKE PROJECT
ROGUE RIVER BASIN OREGON

ENVIRONMENTAL STATEMENT 8 MAY 1972

8. Coordination with others.

a. Agency and public participation.

b. Comments and responses. -

FEDERAL

U.S. DEPARTMENT OF THE INTERIOR, OFFICE OF THE SECRETARY, PACIFIC NORTHWEST REGION:

(1) USDI, GEOLOGICAL SURVEY, DIRECTOR:

Comment: The geology is described in the most general terms in the draft environmental statement and consists of volcanics, metamorphic, and intrusive rocks.

Response: The description of the geology was somewhat elaborated for the final environmental statement. The following paragraphs further summarize the geology of the project area.

The drainage basin of the Rogue River upstream from the Lost Creek Dam covers parts of the Western Cascade and High Cascade Geologic Provinces. Most of Lost Creek Reservoir and the area northwest of the Rogue River in the drainage basin are within the Western Cascade Geologic Province. The intracanyon basalt and most of the area south of the Rogue River are within the High Cascade Geologic Province.

Rocks in the Western Cascade Geologic Province are early and middle tertiary geologic age and consist of andesites, basalts, rhyolite,

pyroclastics rock types, and numerous igneous intrusive dikes, which cover approximately 20 percent of the drainage basin. Folding and the subsidence of High Cascade magma chambers have resulted in rock unit dips ranging from 5 degrees to 20 degrees. Fractures and faults are common. The rock in some areas have been softened by hydrothermal alteration.

Moderate temperatures and heavy rainfall throughout a long geologic time have weathered the Western Cascade Valley walls to substantial depths. Weathering is deepest in hydrothermally altered areas. Slopes are generally subdued and are covered with a thick mantle of soil and rock debris. Altered and decomposed rock in excess of 30 feet deep are exposed along Forest Service roads west of Prospect, Oregon.

The pyroclastic rock area along the northwest side of the reservoir covers approximately 5-3/4 square miles. It is not deeply weathered even though it is apparent that huge volumes have been removed in comparatively recent geologic time. The rock weathers to form a green or gray clay or sandy clay with residual fragments composed of pyroclastic or basaltic rock. Much of the clay is apparently removed by sheet wash and stream erosion at nearly the same rate that it forms. Consequently, the soil cover is thin, and on some slopes it will not support tree growth. Streams draining the area are small and are flowing on moderately hard bedrock which is covered with residual multilithic gravels and boulders. These streams and pools, when observed in June 1972, were slightly milky. Soil deposits along the stream banks and in gullys range in depth from approximately 3 to 10 feet. Soil depths between drainages are generally less than 2 feet thick.

The only other known area containing appreciable amounts of older pyroclastics and related soil extends along the Rogue River is in the vicinity of the new Peyton Bridge and along the west side of the Rogue River from approximately three miles north of Prospect upstream to Union Creek. This is an irregularly shaped area and consists of small local deposits covered by deep soil deposits. It has a dense brush and forest cover and lies

between elevations 2800 and 4000. Much of the area is covered with snow during the winter and spring months. Streams draining the area are small and were clear when observed in April - May 1972.

Rocks of the High Cascade Geologic Province are Pliocene-Pleistocene in age and overlie the older rock of the Western Cascade Province. High Cascade materials cover over 80 percent of the drainage basin and are mostly confined to the east side of the Rogue River except in the reservoir area between Floras Creek and the dam. Rock types in this province include andesites, basalts, and related flow breccias. Large amounts of pumice overly these rocks near Crater Lake. Faults in the area are less common than in the Western Cascades, and hydrothermal alteration of large areas is not apparent. Rock units are generally less weathered. Residual soil deposits are mostly 5 to 10 feet deep. Thick slopewash and alluvial fan deposits have formed in some places. Some alluvial fans may be over 100 feet thick. Soils are dominately red-brown, sandy silts of basaltic origin.

The intracanyon basalt is part of the High Cascade Geologic Province. It has the Rogue River Canyon from its origin at Mount Mazama downstream to Trail, Oregon. Downstream from Cascade Gorge much of the intracanyon basalt has been removed by river erosion exposing Western Cascade andosites and basalts along the river from the PP&L Powerhouse at Prospect to Lost Creek Dam. Downstream from Peyton Bridge intracanyon basalt forms a rock terrace along the Southwest bank of the reservoir and effectively cover most of the older pyroclastic rock materials. On the Northwest bank of the valley the basalt has been removed exposing large areas of the older pyroclastic rocks. The intracanyon basalt above Cascade Gorge is covered with 1 to 10 feet of reworked pumice mixed with basaltic sand and soil. Below Cascade Gorge it is covered with basalt origin soils and slope deposits. Soil depths range from approximately 5 feet over most of the area to 100 feet plus at Taggarts Fan.

Pumice deposits within the drainage basin range from less than one foot to possibly as much as 300 feet thick in the large tributary valleys to the Rogue River. The pumice was formed when dacite magma was blown high into the air and fell as white pumice consisting mostly of sand and finer sizes. The total area covered by falling pumice was more than 350,000 square miles. Later pumice eruptions did not blow into the air, instead they foamed over the edges of the craters and moved down the canyons as glowing avalanches. The avalanche deposits have been carbon dated 6,600 years old.

Since original deposition much of the pumice has been removed from steep slopes and high areas and redeposited in the river valleys. This process is still continuing. The Rogue River above Union Creek periodically carries considerable amounts of pumice. Generally, pumice deposits below Union Creek are reworked, usually mixed with basaltic soil and sand. Reworked pumice deposits along Red Blanket Creek and along the Middle Fork of the Rogue River are estimated to be over 100 feet thick. Red Blanket Creek is actively widening its channel and carries considerable pumice and other debris during high water.

Comment: There is no information on reservoir slope stability, seismicity, and possible effects of earthquakes on the reservoir.

Response: A Seismic Risk Map of the United States, prepared by the U.S. Department of Commerce, has subdivided the United States into four seismic-probability zones. These zones range from zone 0 where no damage is anticipated, to zone 3 where major damage may occur. The Lost Creek Dam Site is located in an area classified as zone 1, which is the most stable zone on the West Coast. Zone 1 is defined as a zone where minor damage may occur, and corresponds to intensities V and VI of the Modified Mercalli Intensity Scale of 1931. The dam site is located in the Cascade Range Province, which seismically, is a relatively quiet area in Oregon. Standard procedure is to design structures within zone 1 for an acceleration of .05g, but Lost Creek Dam has been designed for .1g, twice the

normal design consideration. Instrumentation installed within the dam and appurtenant structures to measure the effects of any earthquake activity will include six strong motion accelerographs at various locations and twelve hydraulic pressure cells on the face of the intake tower. A record of earthquake activity in the region of the damsite is shown on the attached tables. Little data is available on the magnitude of early earthquakes since instruments for registering this aspect were not installed in the general region until 1949. Shown in the tables are details of all Oregon earthquakes since 1959.

The reservoir is to be constructed in a relatively stable seismic risk zone 1 and is not expected to have any noticeable effect upon earthquake activity within that area. Reconnaissance of adjacent slopes for possible landslides that might be triggered by an earthquake, has not located any massive or deep-seated earth and/or rock slides capable of generating destructive waves or of appreciably reducing reservoir use. Slides known to have occurred on adjacent reservoir slopes in historical times, have been relatively small, mostly slow, gradually progressive failures, and not related to earthquake activity. Slopes adjacent to the major portion of Lost Creek Reservoir are mostly low angle slopes of less than 30 degrees and the soil and rock conditions are not conducive to sudden earthquake failures. Steeper slopes ranging from 40 to 50 degrees are found along the upstream reservoir reaches. Some of these steeper slopes consist of basalts underlain by pyroclastics. Where these pyroclastics are exposed, progressive erosion and inflation of the pyroclastics can place upper basalt slopes in tension. Earthquakes with an intensity defined by Zone 1 seismic risk would produce no more than very local slope failures in these tensional areas. Material from such failures would mostly consist of free-draining basalts.

LOST CREEK DAMSITE
EARTHQUAKE ACTIVITY (1)

Date	Occur. Interval	Location	Intensity	Magnitude	Distance From Damsite
June 1886		Jackson County	--	--	20?
9 Nov 91	5 years	Ashland	IV	--	36
2 Dec 02	11 years	Kerby	III	--	63
5 Dec 02	3 days	Grants Pass	--	--	40
3 Apr 06	4 years	Ashland	IV	--	36
13 Apr 06	10 days	Ashland	--	--	36
23 Apr 06	10 days	Grants Pass	VI	--	40
15 Mar 13	7 years	Medford	III	--	27
16 Mar 13	1 day	Roseburg	IV	--	52
14 Apr 20	7 years	Crater Lake	V	--	34
17 Aug 31	11 years	Talent	V	--	32
4 Sep 31	18 days	Central Point	II	--	26
8 May 36	5 years	Roseburg	--	--	52
7 Jul 41	5 years	Medford	II	--	27
11 Oct 47	6 years	Ft. Klamath	IV	--	35
12 Oct 47	1 day	Ft. Klamath	--	--	35
14 Oct 47	2 days	Ft. Klamath	--	--	35
24 Dec 47	6 weeks	Klamath Falls	IV	--	57
22 Mar 48	3 months	Hildebrand	V	--	66
24 Mar 49	1 year	Grants Pass	III	5.9	40
3 Apr 49	10 days	Grants Pass	III	--	40
4 Apr 49	1 day	Klamath Falls	IV	--	57
22 Dec 49	8 months	Klamath Falls	IV	--	57
51	1 year	Klamath Falls	IV	--	57

Date	Location	Intensity	Magnitude	N. Lat.	W. Long.
15 Dec 53	Northwestern Oregon	VI	--	45.5	122.7
6 Jul 54	Western Nevada, felt in Oreg	IX	--	39.4	118.5
23 Aug 54	Western Nevada, felt in Oreg	IX	--	39.6	118.5
16 Dec 54	Western Nevada, felt in Oreg	X	--	39.3	118.2
21 Dec 54	California, felt in Oregon	VII	--	40.8	124.1
16 Nov 57	Northwest of Salem, Oregon	VI	--	45.3	123.8

RECENT EARTHQUAKES AT GREATER DISTANCE THAN 100 MILES
FELT AT DAMSITE WITH ESTIMATED INTENSITY OF IV OR GREATER
(Modified Mercalli Scale)

Date	Occur. Interval	Location	Intensity	Magnitude	Distance From Damsite
21 Dec 54		Eureka, California	IV	6.5	130
23 Aug 62	8 years	Crescent City, California	IV	5.6	105
5 Nov 62	12 weeks	Portland, Oregon	VI	4.75	204
29 Apr 65	3 years	Tacoma, Washington	VII	6.57	328

(1) This data from Bulletin of Seismological Society of America, Vol. 53, No. 1, pp. 95-108, January 1963.

OREGON EARTHQUAKES: 1959 THROUGH 1970[2]

Year	Month-Day	Origin Time (G.M.T)**	Location	Intensity+	Magnitude*
1959	Jan 21	07:15	Milton-Freewater	V	
	Nov 09	21:10	Heppner	IV	
1961	Aug 19	04:56:24.1	44°42'N 122°30'W	VI	4.5
	Nov 07	01:29:10	45°40'N 122°52'W	VI	
	Nov 07	21:30	Portland	V	
	Dec 15	11:35	Scappoose	III	
1962	Sep 05	05:37:06	Lebanon	IV	3.5
	Oct 17	08:33	West Linn	II	
	Nov 05	19:36:43.5	45°36.5'N 122°35.9'W	VII	5.0
1963	Mar 02	16:30	Portland	IV	
	Mar 07	22:53:25.0	44°54'N 123°30'W	V	4.6
	Dec 27	02:36:21.6	45°42'N 123°24'W	VI	4.5
1964	Oct 01	12:31:24.6	45°42'N 122°48'W	V	
1968	Jan 27	08:28:23.7	45°36.6'N 122°36.3'W	IV	3.7
	May 13	18:52:17.3	45°35.7'N 122°36.4'W	IV	3.8
	May 27	05:53:34	42°12'N 119°42'W		3.8
	May 28	00:08:48.0	42°15.0'N 119°40.1'W		4.4
	May 28	00:51:03	42°18'N 119°48'W		4.1
	May 28	12:55:42.8	42°15.0'N 119°48.6'W		4.4
	May 30	00:35:58.8	42°19.8'N 119°51.0'W	IV	5.1
	May 31	03:06:38	42°06'N 119°48'W		4.1
	Jun 03	13:27:39.7	42°15.0'N 119°48.0'W	V	5.0
	Jun 04	02:33:00	42°12'N 119°48'W		3.7
	Jun 04	02:34:14.5	42°14.4'N 119°52.2'W	VII	4.7
	Jun 04	02:38:29	42°18'N 119°48'W		4.0
	Jun 04	03:39:50	42°18'N 119°48'W		4.1
	Jun 04	05:52:22	42°18'N 119°48'W		4.0
	Jun 04	06:22:17.0	42°12.0'N 119°49.8'W		4.3
	Jun 04	10:58:22.4	42°15.6'N 119°46.2'W		4.2
	Jun 05	04:51:56.3	42°13.8'N 119°59.4'W		4.7
	Jun 05	05:12:35.4	42°18.0'N 119°46.2'W		4.4
	Jun 05	07:37:45	42°18'N 119°54'W		4.0
	Jun 05	08:04:40	42°18'N 119°48'W		3.3
	Jun 05	08:20:38	42°18'N 119°48'W		4.0
	Jun 05	14:08:40	42°18'N 119°54'W		3.8
	Jun 12	01:20:56	42°06'N 120°00'W		3.4
	Jun 12	01:46:21.9	42°07.8'N 119°47.4'W		4.3
	Jun 21	20:33:27.5	42°12.6'N 119°39.0'W		4.3
	Jun 22	09:39:52.9	42°10.8'N 119°43.2'W		4.3
	Jun 24	11:03:17.3	42°17.4'N 119°50.4'W		4.2
1969	Mar 05	11:43:07.3	45°37.8'N 122°49.0'W	III	3.5
	Aug 14	14:37:39.5	44°59'N 117°45'W	VI	3.6
1970	Feb 12	07:52:25.0	44°38.0'N 122°43.6'W	I	2.5
	Jun 25	07:48:20	W. Portland	IV	3.6

* Unified Magnitude Scale
\+ Modified Mercalli Scale (1956 Edition)
** GMT=Greenwich Mean Time (Pacific Standard + 8 hours)

Data compiled from the following sources:

U. S. Coast and Geodetic Survey (U. S. Earthquakes, 1959-1967 and Preliminary Determination of Epicenters, 1968-1970); Heinrichs and Pietrafesa (1968); Couch, Johnson, and Gallagher (1968); Couch and Johnson (1968); Couch and Whitsett (1969); Unpublished records of the Corvallis Seismograph Station and the Geophysics Group, Department of Oceanography, Oregon State University.

(2) Reference: "Earthquake and Seismic Energy Release in Oregon" by Richard W. Couch and Robert P. Lowell, The Ore Bin - State of Oregon, Department of Geology and Mineral Industries, Vol. 33, No. 4, April 1971.

(2) USDI, GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, OREGON:

Comment: On Page 3-1 a discharge of 146,000 cfs is shown for the December 1964 peak flow at Grants Pass. Published records of the U.S. Geological Survey show this peak flow to be 152,000 cfs.

Response: This comment was answered on Page 8-13 of the final environmental statement.

Comment: A temporary adverse effect will be the creation of turbidity and sedimentation downstream from the project during construction. Sedimentation would have an adverse effect on anadromous fish if it occurred during the spawning season.

Response: This comment was answered on Pages 8-8 and 8-9 of the final environmental statement.

Comment: The increased recreational facilities around the reservoir will require waste disposal facilities. If septic tanks are to serve these facilities, consideration will have to be given to any contamination of the streams or ground water in the area.

Response: Considerations for sewage disposal at the project are discussed on Pages 1-8 and 1-9 of the final environmental statement.

LETTER OF COMMENT

U.S. Department of the Interior with inclosed letters from Geological Survey and from Water Resources Division.

United States Department of the Interior

OFFICE OF THE SECRETARY
PACIFIC NORTHWEST REGION
P.O. Box 3621, Portland, Oregon 97208

ER 72/66

July 31, 1972

Your ref.: NPPEN-EQ
18 Jan 1972

Colonel Paul D. Triem
District Engineer
Portland District, CE
P.O. Box 2946
Portland, Oregon 97208

Dear Colonel Triem:

On April 3 and May 31, 1972, the Department of the Interior commented to you on the Draft Environmental Statement for Lost Creek Lake Project, Rogue River, Oregon. It has come to our attention that comments from the Director of Geological Survey were inadvertently excluded.

In our opinion, the Final Environmental Statement which is now on file with the Council on Environmental Quality should be supplemented with the above-mentioned comments, and we are therefore transmitting them with this letter. We share Geological Survey's concerns and believe you will want to consider the enclosed information with respect to Lost Creek Lake Project.

Sincerely,

Emmet E. Willard
Field Representative

Enclosure

cc:
Director, Office of Environmental
Project Review
Director, Geological Survey
Regional Director, Region 1,
Bureau of Reclamation

United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

OFFICE OF THE DIRECTOR

March 23, 1972

ER-72/66

Memorandum

To: Regional Director, Bureau of Reclamation
Boise, Idaho

From: Director, Geological Survey

Subject: Review of Corps of Engineers draft environmental statement for the Lost Creek Lake Project, Rogue River, Oregon

We have reviewed the subject draft environmental statement as requested in a memorandum of January 24 from the Director, Office of Environmental Project Review.

The District Chief of our Water Resources Division's Oregon Office sent comments on the hydrologic aspects of the draft environmental statement on March 3 (copy enclosed).

In addition to these comments, the following is submitted on the geologic aspects of the draft environmental statement:

> The geology is described in the most general terms in the draft environmental statement and consists of volcanics, metamorphic, and intrusive rocks. There is no information on reservoir slope stability, seismicity, and possible effects of earthquakes on the reservoir.

We understand, also, that the Corps of Engineers consulted our Regional Hydraulic Engineer, Conservation Division, Portland, for informal comment on the draft environmental statement. The Regional Engineer had no substantive comment.

V. E. Haldeby

Acting Director

Enclosure

WATER RESOURCES DIVISION
P. O. Box 3202
Portland, Oregon 97208

March 3, 1972

Rec'd 3/10

Memorandum

To: Regional Director, Bureau of Reclamation, Region 1
P. O. Box 8008, Boise, Idaho 83707

From: District Chief, WRD, Portland, Oregon

Subject: Environmental Statement for Lost Creek Lake Project, Rogue River, Oregon

We have reviewed the subject environmental statement by the U.S. Army, Corps of Engineers, and are transmitting our review notes to you as directed by the Director of Environmental Project Review. We have restricted our comments to those which concern the hydrology of the subject area.

On Page 3-1 a discharge of 146,000 cfs is shown for the December 1964 peak flow at Grants Pass. Published records of the U.S. Geological Survey show this peak flow to be 152,000 cfs.

A temporary adverse effect will be the creation of turbidity and sedimentation downstream from the project during construction. Sedimentation would have an adverse effect on anadromous fish if it occurred during the spawning season.

The increased recreational facilities around the reservoir (page 1-5) will require waste disposal facilities. If septic tanks are to serve these facilities, consideration will have to be given to any contamination of the streams or ground water in the area.

Stanley F. Kapustka

cc: Regional Hydrologist, PCR
George H. Davis, Washington, D.C. Code: 4300 0016