

**CHAPTER 3**

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**Affected Environment**

## CHAPTER 3

## AFFECTED ENVIRONMENT

I. GENERAL DESCRIPTION

The Bass Lake Dam is located near the headwaters of Bass Creek, within the Selway-Bitterroot Wilderness, Bitterroot National Forest (Maps, Chapter 1). The lake is approximately 100 surface acres, and it stores 3,600 acre feet of irrigation water for the owners, Bass Lake Reservoir Company. Use of National Forest land for such purposes is with an easement authorized by the Acts of 1866 and 1891. It was originally constructed between 1897 and 1903, as a log crib dam with rock and fill dirt. It was reconstructed in 1918 and 1952. A primitive road was built to the dam in 1952.

The 43-foot high earth dam impounds 3,600 acre-feet of water at the spillway crest, elevation 6,770 feet.

The downstream hazard potential of the dam is classified as "high" by the Forest Service. A high hazard dam has the potential for lost of life and destruction of property in case of failure. The Charles Waters Campground is located near the mouth of the Bass Creek canyon, creating the potential for loss of life. The recommended spillway design flood (SDF) for an intermediate-sized project with a high downstream hazard potential is the probable maximum flood (PMF). The PMF is the flood expected from the most severe combination of meteorologic and hydrologic conditions that are reasonably possible in the region.

Visual inspections by the permittee's engineer in 1989 and subsequent Forest Service inspections of the dam embankment revealed no serious cracks, irregularities, or slumps. Minor erosion had taken place on the upstream face and along the right abutment contact. Minor settlement of the crest is also evident. The dam is constructed of materials that would quickly erode and rapidly fail when overtopped by floodwaters.

The field inspections and the preliminary hydrologic analysis indicate the dam does not conform to guidelines for discharge and/or storage capacities to safely handle the PMF, leading to potential loss of life and property destruction.

The spillway discharges along the left abutment contact and sustained high flows could erode and fail the embankment. The outlet conduit is very rusty and needs to be replaced or fitted with a liner. The log boom is located within the spillway approach channel and restricts spillway discharges. A longer log boom is needed, further away from the spillway.

Seepage, estimated at 500 gpm for the entire embankment, flows primarily from the left side of the embankment on the downstream bench and the toe. The seepage is clear and probably has been flowing since construction of the dam in 1952. There is no information on how the embankment was actually constructed or strength characteristics of embankment materials; therefore, stability

A "site" includes any area of human impact, including discontinuous areas where use is likely to be by the same group, such as stock holding areas, or separate tent pads. For purposes of determining sites per square mile, this also includes dams and administrative sites, but does not infer that either will be removed. Impacts are evaluated by using standardized procedures that gauges the degree of various impact parameters including vegetation loss, soil disturbance, damage to trees, developments, cleanliness, etc.

On the five sites, two are classified as extremely impacted, two are heavily impacted, and one is moderately impacted. The Forest Plan standard for areas in Opportunity Class 4 is: 1) A maximum of four sites per square mile; and, 2) Of the sites in the area, a maximum allowable of one lightly impacted site, two moderately impacted sites and one heavily or extremely impacted site per square mile. The Bass Lake area exceeds both standards. Inventories for these sites are scheduled for 1995. Rehabilitation plans will then be completed.

General wilderness resource characteristics of this drainage include the following summary of six categories:

1. Natural Integrity- The impacts of human activity are generally light with the exception of the Bass Creek Dam and Reservoir, Bass Creek Trail #4 and the unpatented Cliff Mine. The Bass Creek Dam area is described above and those activities affecting it are regulated through a special use permit.

2. Apparent Naturalness- Human activities are primarily confined to the narrow trail corridor traversing the drainage and the area immediately adjacent to the dam and reservoir. The remainder of the area is topographically extreme and discourages human activities, therefore having a high degree of apparent naturalness. Man has had a minor impact in those extreme areas through the suppression of wildfire.

3. Remoteness- The presence of man is readily apparent when visiting the areas within Opportunity Class 4, especially near the trail, dam, and near the problem areas around the reservoir. However, remoteness is experienced due to the travel time taken to access this area, the topographic relief, and the vegetation screening.

4. Solitude- Although the drainage within the wilderness experiences a low level of use, the feeling of solitude in its purest sense is not available within the trail corridor and adjacent to the dam and reservoir. This is due to the signs of man's presence such as the trail and the dam.

5. Special Features- Notable features within this area are its spectacular scenery, air quality, wildlife, and opportunities for wilderness related activities. These attributes also relate to the category of special places and values.

6. Manageability and Boundaries- The Selway-Bitterroot Wilderness lies within the Nez Perce, Clearwater, Bitterroot, and Lolo National Forests. General Management direction for the Selway-Bitterroot is contained in a document with that title prepared by the four Forests in 1982. This document was incorporated by reference into each Forest Plan and wilderness management standards in the individual plans were based on it.

## II. PHYSICAL ENVIRONMENT

### Watershed, Soils, and Aquatic Ecosystems

Bass Lake is a glacial cirque lake that was originally about 40 acres. The dam has increased the lake to 100 acres, with a storage capacity of 3,600 acre feet of water. Stored waters provide irrigation for agricultural land. Reservoir outlet gates typically are opened from mid-July to late October. Drainage area for the lake is 1.5 square miles, with an average annual precipitation of approximately 90 inches. The majority of the streamflow is from snowmelt. About 50% of annual precipitation is yielded in average annual runoff of 45 inches.

Most of the precipitation occurs as snow from October to April. Summer months are characterized by cool, generally dry weather with occasional thunderstorms. Freezing temperatures can occur any month. Snow depths reach 20 feet at higher elevations, with accumulations of 5 to 10 feet more typical at the dam site.

The Bass Creek watershed is primarily formed of granitic type rocks which were glacially carved about 10,000 years ago. Bass Creek canyon is a glaciated trough or "U" shaped canyon, seven miles long. Maximum elevation is Saint Joseph Peak at 9,587 feet. Minimum elevation near the canyon mouth and irrigation diversion dams is 3,800 feet. Average valley bottom gradient is 8 percent.

The stream supports several species of trout. Channel conditions are stable; the morphology being controlled by relatively low sediment loads from the glaciated granitic rocks of the watershed. Water yields range from peaks during May and June snowmelt to low baseflows in late summer and fall, which are in large part sustained by slow release of stored soil moisture, especially from deposits of wind blown volcanic ash in the high basin valleys.

The majority of the stream channel is moderately entrenched and confined, with floodplain width to bankfull width. Some, but not all flood flows, are spread across the valley bottom forming a floodplain. From the National Forest boundary for 1.5 miles upstream, the valley is a few hundred feet wide, confining the stream between steep mountain slopes. For the next five miles the valley is up to 400-500 feet wide, with less channel confinement. Channel gradient is moderate, ranging from 2 to 4 percent, for these 6 1/2 miles.

Dominant channel substrate range from boulders to cobbles to gravels, classified as Rosgen stream types of B2, B3, and B4 respectively. The last half mile to Bass Lake is a steep 40 percent gradient, and channel reaches are bedrock controlled, classified as Rosgen type A1. Tributaries to Bass Lake are steep boulder and bedrock controlled channels of A1 and A2 types.

Stream sensitivity to disturbance ranges from very low on A1, A2, B1, and B2 type channels, low on B3 type, and moderate on B4 types. The smaller substrates are more easily disturbed.

The Bass Creek Trail and old road is stable with erosion control and drainage adequate to protect the stream water quality. Road stream crossings at fords are stable due to large size cobble and boulder channel substrates and stable

stream banks. Soils in the valley bottom are mostly alluvial with rock and sandy texture, and some volcanic wind blown ash in surface layers. Mountain slopes are steep, (often 70 percent) and very rocky. These are glaciated, granite exposures. Soils in the valley bottom may be several feet deep while mountain slope soils are very shallow. Avalanche paths are common on slopes.

### III. BIOLOGICAL ENVIRONMENT

#### 1. Wetlands

Aerial photographs and topographic maps were reviewed, along with data from riparian plots taken on Bass Creek in 1990, about half a mile downstream of the Selway-Bitterroot Wilderness boundary.

Habitat types and community types were classified according to Montana Riparian Association's "Classification and Management of Riparian and Wetland Sites in Montana," by Hansen, Boggs, Pfister, and Joy, School of Forestry, University of Montana, 1991. The subalpine fir/bluejoint reedgrass riparian habitat type includes a complex of bluejoint reedgrass phase at below about 5,000 feet and Labrador tea phase at higher elevations.

Wetland classification was made using US Fish and Wildlife Service's (FWS) Cowardin, Carter, Golet, and LaRoe, "Classification Wetlands and Deepwater Habitats of the United States," FWS/OBS-79/31, December, 1979. Wetlands are areas having: 1) vegetation growing in water or wet soils; 2) soils that are saturated in the upper layers; and, 3) high water tables in the soil, according to the 1989 "Federal Manual for Identifying and Delineating Jurisdictional Wetlands." The Army Corps of Engineers administers a permit system for activities affecting wetlands; thus, the term jurisdictional. Riparian areas include wetlands and transition areas to drier upland soils and vegetation.

The Watershed section of Chapter 3 discusses Bass Creek stream channels and geomorphology. Bass Creek is a U-shaped trough bottom formed by glaciers, with a valley bottom hundreds of feet wide. Soils of the wetlands and valley bottom are sandy loam on surface, and sandy gravels and cobbles below the surface. Bass Lake FWS wetland and deepwater class is lacustrine littoral-limnetic unconsolidated bottom/cobble-gravel. Bass Creek FWS class is riverine/perennial/unconsolidated bottom/cobble-gravel.

Most of Bass Creek wetlands, from the National Forest boundary to about 5,000 feet elevation, have two FWS classes: 1) palustrine/forested/needle-leaved evergreen/Engelmann spruce on terrace landforms, which are tens to hundreds of feet wide, with a riparian habitat type of subalpine fir/bluejoint reedgrass; and, 2) palustrine/scrub-shrub/broad-leaved deciduous/willow-alder on floodplain landforms, which are tens of feet wide, with riparian habitat type of willow/beaked sedge. Bass Creek wetlands above 5000 feet have Labrador tea as well as the riparian habitat type of subalpine fir/bluejoint reedgrass.

Below Bass Lake in the low gradient reaches of Bass Creek there are several alluvial basin wet meadows with avalanche path runouts. The FWS class is palustrine/scrub-shrub/broad-leaved deciduous/western huckleberry on terrace landforms, which are tens to hundreds of feet wide, with riparian habitat type of western huckleberry/water sedge.

## 2. Fisheries

### A. Area of Analysis

The analysis area for fisheries encompasses the entire Bass Creek drainage from Bass Lake Reservoir (i.e. Bass Lake) downstream to the Bitterroot National Forest (BNF) boundary located approximately 0.5 miles below the Charles Waters Memorial Campground. At full pool, Bass Lake is a 100 acre impoundment with maximum depths ranging from 120-140'. Total drainage area for this portion of Bass Creek is approximately 9,150 acres.

### B. Description and History

Pre-settlement fish populations within the Bass Creek drainage were different than those found today. Bass Creek maintained a yearlong connection to the Bitterroot River. This allowed native bull trout and westslope cutthroat trout to move throughout the system, except where blocked by natural barriers. Resident and fluvial life history forms of both species probably inhabited Bass Creek. The Bitterroot River formed a critical link between Bass Creek and other tributaries in the north end of the valley which permitted genetic exchange between otherwise isolated populations of fish and aquatic organisms. Native trout probably did not occur in the lake and streams above the first major barriers in Bass Creek.

European settlement of the Bitterroot Valley in the late 1800's dramatically altered the integrity of the Bass Creek fishery. Foremost was the development of an irrigation system which continues to this day. The cumulative effects of numerous small water withdrawals from Bass Creek produce periods of extreme low flow for much of the summer below the Forest boundary. Irrigation withdrawals have essentially eliminated native trout species from private stream reaches and created barriers to normal fish movement through losses in stream habitat. Loss of connection to the Bitterroot River has resulted in the genetic isolation of most resident trout populations in the Bass Creek watershed.

The widespread introduction of exotic trout species (brook, brown, rainbow, and Yellowstone cutthroat trout) in the early-to-mid 1900's has also adversely impacted the native trout assemblage through a complex series of ongoing interactions which are not well understood, but include hybridization (bull X brook, westslope cutthroat X rainbow, westslope cutthroat X Yellowstone cutthroat), direct competition (for forage, habitat, and spawning sites), and predation. Angling may have also contributed to the decline of native trout populations in Bass Creek. The recent implementation of restrictive angling regulations has probably prevented further significant angling mortality.

### C. Management Standards

Management standards for fisheries habitat and riparian areas on the BNF are contained in the Forest Plan, Pages III-22 to III-29.

#### D. Existing Conditions

##### 1. Fish Species Status (Threatened, Endangered, & Sensitive)

Bull trout (Salvelinus confluentus) and westslope cutthroat trout (Oncorhynchus clarki lewisi), the two native trout of the Bitterroot drainage, are listed on the Regional Forester's Sensitive Species List and are designated as "species of special concern" by the Montana Department of Fish, Wildlife, and Parks (MDFWP). The bull trout is presently designated as a Category 1 (C1) species by the U.S. Fish and Wildlife Service (USFWS), indicating that substantial biological information is on hand to support proposed listing as endangered or threatened. The westslope cutthroat trout is presently designated as a Category 2 (C2) species, meaning that proposing to list as endangered or threatened is possibly appropriate, but conclusive biological data is not on file to support an immediate ruling.

The Bitterroot Forest Plan currently specifies the westslope cutthroat trout as the Management Indicator Species (MIS) for fisheries habitat changes on the BNF. However, the possibility that bull trout are more sensitive to habitat change than cutthroat trout has raised the possibility that westslope cutthroat trout may not be an adequate MIS for bull trout. For this reason, effects on bull trout are addressed separately in this analysis, and bull trout are essentially treated as a separate MIS.

The shorthead sculpin (Cottus confusus) was added to the BNF Sensitive Species as "suspected" in June 1994 based on the possibility that its distribution might include the Bitterroot drainage. This species has not been found on the BNF, and genetic testing of sculpins captured from Forest streams in 1993 and 1994 did not identify any individuals of this species. Since its presence is speculative, it will not be discussed further in this analysis.

##### 2. Fish Populations - Bass Creek

Fish population surveys were conducted in several representative reaches in Bass Creek to determine baseline fish distribution and relative abundance levels for monitoring population changes. Field inventory techniques included: snorkel surveys (day & night), hook-and-line sampling, and population estimates using an electroshocker (backpack unit) with a standard 2-pass removal methodology. Night snorkel surveys were conducted by BNF fisheries personnel in spring and summer 1995, while hook-and-line sampling was conducted by BNF personnel in summer 1992 and 1995. In summer 1984, a daytime snorkel survey was conducted by David J. O'Dell as a part of a research study supported by Trout Unlimited (TU) and MDFWP. Results of this study can be obtained from the BNF fisheries database, BNF Supervisor's Office, Hamilton, Montana.

MDFWP personnel conducted fish population estimates in two 500' long sections of lower Bass Creek in early November 1989. Crews sampled fish populations with a Coffelt Mark-10 backpack electroshocker (pulsed DC wave) using a 2-pass removal estimation technique. These two sampling sites correspond to Bass 2.1 and 2.2, respectively (Table 3.1), as numbers refer to the distance in miles upstream from the mouth of Bass Creek. Sampling sections were located

immediately above and below an experimental irrigation diversion on BNF land in the lower portion of the Charles Waters Memorial Campground (T 10N R 20W S 32DC and 32DD).

In the Selway-Bitterroot Wilderness portion of Bass Creek, two 1000' long sections above (Bass 6.9) and below (Bass 5.9) a barrier waterfall were snorkeled at night by BNF fisheries personnel in late March 1995. Below the wilderness boundary, two 1000' sections (Bass 4.1 and 5.5) were snorkeled at night in late July 1995. Specific snorkel counts are summarized in Table 3.1.

Hook-and-line sampling was restricted to a short (approximately 350') section immediately below the dam outlet (Bass 10.5). This section was sampled in August 1992 (dam headgates open) and July 1995 (dam headgates closed) by BNF personnel. Angling results are summarized in Table 3.1.

TABLE 3.1 - FISH SPECIES DISTRIBUTION AND RELATIVE ABUNDANCE IN BASS CREEK  
(Relative abundance = # fish/1000' of stream)

| Survey Reach & Year | Method of Sampling                      | # WCTT | # BULL | # BROOK | # SS |
|---------------------|-----------------------------------------|--------|--------|---------|------|
| Bass 2.1 (1989)     | Electrofishing **<br>(backpack; 2-pass) | 9      | NF     | 27      | P    |
| Bass 2.2 (1989)     | Electrofishing **<br>(backpack; 2-pass) | 56     | NF     | 93      | P    |
| Bass 3.1 (1984)     | Day snorkeling                          | 128    | 4      | 32      | NF   |
| Bass 4.1 (1995)     | Night snorkeling                        | 180    | 7      | NF      | NF   |
| Bass 5.5 (1995)     | Night snorkeling                        | 228    | 13     | NF      | NF   |
| Bass 5.9 (1995)     | Night snorkeling                        | 100    | 1      | NF      | NF   |
| Bass 6.9 (1995)     | Night snorkeling                        | 130    | NF     | NF      | NF   |
| Bass 10.5 (1992)    | Hook-and-line<br>(bait & flies)         | P      | NF     | NF      | NF   |
| Bass 10.5 (1995)    | Hook-and-line<br>(flies)                | NF     | NF     | NF      | NF   |

WCTT = Westslope cutthroat trout; BULL = Bull trout; BROOK = Brook trout;  
SS = Slimy sculpin

NF = Species was not detected by sampling

P = Species was detected, but an exact count or estimate was not calculated

= Electrofishing abundance figures denote the estimated number of fish > 3.0" in length; Snorkeling counts denote the total number of fish observed (all sizes combined)

Westslope cutthroat trout are common in Bass Creek from the Forest boundary upstream to a low gradient reach approximately 0.5 miles below the dam outlet. Below the Forest boundary, westslope cutthroat trout are uncommon. When the dam headgates are open (mid July to October), a few westslope cutthroat trout are typically washed out of Bass Lake into a small section (350') of Bass Creek immediately downstream of the dam outlet. Fish occupancy of this section is apparently restricted to 8-10 weeks in late summer and early autumn. When the dam headgates are closed in October, surviving cutthroat in this section are usually trapped in a small series of shallow pools near the outlet flume. Fish which cannot be captured by dam maintenance personnel and returned to the lake are probably lost to predators and overwintering mortality. Suitable spawning and overwintering habitat is not available within 0.5 miles of the dam outlet. Westslope cutthroat trout densities are generally low (> 50 fish/1000') near the BNF boundary, but increase (> 100 fish/1000') upstream of the Charles Waters campground. Densities are high (> 100 fish/1000') both above and below a series of barrier waterfalls (stream mile 6.1 to 6.7). In upper Bass Creek, westslope densities probably decline somewhat due to a reduction in suitable habitat caused by high gradients (> 40%). All age classes (0-5+) are present both above and below the barrier falls, indicating that spawning is probably occurring throughout a large segment of Bass Creek. Judging from the small sizes of adult fish observed (most < 10"), westslope cutthroat trout in Bass Creek appear to be predominantly resident fish.

Bull trout were detected in 1984 (Bass 3.1) and 1995 (Bass 4.1; Bass 5.5; and Bass 5.9) in a short (2.5-3.0 miles in length) segment of Bass Creek between the western edge of the Charles Waters campground and the base of the barrier falls. Surveys failed to detect any bull trout above the barrier falls. Bull trout densities appear to be very low (< 20 fish/1000'), and the population probably consists entirely of resident fish. Observation of small juvenile fish (2-4" TL) indicates that some bull trout spawning is probably occurring within the lower reach of Bass Creek between the barrier falls and the Charles Waters campground.

Brook trout are common (> 50 fish/1000') below the Charles Waters campground, but are not distributed very far (< 0.75 miles) above the campground. High gradients (10-20%) appear to function as an effective barrier to the upstream spread of brook trout in Bass Creek.

### 3. Genetics & Fish Stocking

Results of previous genetic tests indicate that westslope cutthroat trout in Bass Creek have widely hybridized with Yellowstone cutthroat trout planted in Bass Creek and Bass Lake during the 1940-50's. The exact degree of genetic contamination has not been quantified; however, observations of cutthroat trout appear to indicate that hybridization is both extensive and widespread throughout Bass Creek. Rainbow trout were also planted in both the lake and stream between 1934 and 1978 (Table 3.2) and likely hybridized with resident cutthroat trout. Brook trout were probably planted in Bass Creek during the 1930's, although pinpointing the exact location of these plants is impossible since few records were kept. Brook trout-bull trout hybrids have not been observed in Bass Creek; however, hybridization is possibly occurring and would pose a serious threat to the viability of the bull trout population. Fish stocking records in Bass Creek and Bass Lake are summarized in Table 3.2.

TABLE 3.2 - KNOWN FISH PLANTS IN BASS CREEK &amp; BASS LAKE FROM 1930 TO PRESENT

| Date     | Stream or Lake | Exact Location | Species       | #Planted | Size |
|----------|----------------|----------------|---------------|----------|------|
| 11/12/34 | Bass Creek     | Unknown        | Rainbow       | 50,000   |      |
| 9/15/49  | Bass Creek     | Unknown        | Cutthroat *   | 20,000   |      |
| 9/12/52  | Bass Creek     | Unknown        | Cutthroat *   | 9,000    |      |
| 9/27/67  | Bass Lake      | Lake           | Rainbow       | 7,920    | 3"   |
| 8/19/78  | Bass Lake      | Lake           | Rainbow **    | 8,000    | 4"   |
| 8/17/84  | Bass Lake      | Lake           | Westslope *** | 5,000    |      |

\* = Unspecified cutthroat (most likely Yellowstone cutthroat)

\*\* = Arlee-strain rainbow, MDFWP Jocko River Trout Hatchery, Arlee, MT

\*\*\* = USFWS Creston Fish Hatchery, Creston, MT

#### 4. Fish Populations - Bass Lake

Fish species composition of Bass Lake has varied throughout the years depending on the frequency of stocking cycles and the species planted. Prior to 1984, rainbow trout were exclusively planted in the lake, and angling surveys conducted in August 1980 indicate abundant rainbow in the 6-8" class. Since 1984, however, only westslope cutthroat trout of hatchery origin have been planted. MDFWP stocking guidelines for Bass Lake (1988 edition) call for stocking to occur on a 7-year interval, with a stocking density of 50 fish per acre (5,000 total for the lake). Westslope cutthroat trout (mostly 6-12" TL) are presently the dominant fish species in Bass Lake, with smaller numbers of rainbow trout also present. Although MDFWP surveys have reported inadequate amounts of suitable spawning substrate to support wild trout reproduction (Don Peters, MDFWP fisheries biologist, personal communication), both rainbow and cutthroat trout can apparently access enough spawning habitat in several small, snowmelt-fed inlet tributaries to maintain a low level of wild trout production.

#### 5. Fish Habitat

Bass Creek drains a large wilderness watershed and is relatively unaffected by human activities above the Charles Waters Memorial Campground. Late season releases of water from Bass Lake to meet irrigation demands probably alters the natural flow regime of Bass Creek to some extent. Low flows during late autumn could reduce the amount of suitable overwintering habitat in some sections of stream as trout are unable to find pools deep enough to escape the detrimental effects of winter ice formation. In a small section of stream (approximately 350' in length) immediately below the dam outlet, the existing dam transmission pipe and inlet Y-structure is contributing significant amounts of rust residue to the stream. Stream substrates in this small section are coated with rust accumulations. This accumulation probably does not affect fish, since fish are

only seasonally present (a few westslope cutthroat trout get washed out of Bass Lake while the dam headgates are open in late summer). However, aquatic invertebrate production appears to be significantly reduced by the rust build-up. Consult the project file for photographs of the substrate and rust accumulation immediately below the dam outlet.

Quantitative stream habitat measurements have not been conducted in Bass Creek by either BNF watershed, BNF fisheries, or MDFWP personnel. Despite this lack of quantitative habitat data, fish habitat conditions in Bass Creek are assumed to be good since the majority of the stream on the BNF occurs within the Selway-Bitterroot Wilderness Area.

### 6. Fish Habitat Improvement

Although riparian areas adjacent to Bass Creek have been managed for mature and overmature trees, past practices of removing large woody debris (LWD) from the stream channel to expedite the flow of irrigation water may have produced a lack of instream LWD material. Habitat surveys are needed to quantify LWD content and determine the direction of future fish habitat improvement projects in Bass Creek.

### 3. Vegetation

#### A. Area of Analysis

The area analyzed for vegetation is located on either side of the existing Bass Lake Trail and the old road on the south side of the creek. These areas will be widened or cleared in order to walk up equipment for dam reconstruction. The base camp will be located in the small grassy area west of the dam and on the north side of the lake. Equipment will be stored on the previously disturbed site above the dam, on the south side of the creek.

Vegetation ranges from ponderosa pine at lower elevations to subalpine fir and larch and whitebark pine at higher elevations. Riparian vegetation includes Engelmann spruce and many shrubs such as dogwood, alder, and willow. Vegetation is essentially undisturbed with fire being main disturbance factor.

Vegetation along the trail is riparian and upland, depending on the location of the trail. Major species include coniferous trees, hardwood brush, and grasses. Noxious weeds are present along the lower trail and in isolated locations within the wilderness. These include spotted knapweed and sulphur cinquefoil.

#### B. Description and History

Prior to wilderness designation in 1964, the Bass Lake trail was used as 4-wheel drive road. In the late 1980's, the trail was rerouted onto the north side of the creek. The section of old road on the south side has since overgrown with alder (Alnus sp.), small conifers, and other vegetation.

The desired condition for the Bass Lake Trail is to ensure that vegetation, water, and soil resources are minimally impacted and that the intent of the Wilderness Act is followed.

#### 4. Sensitive Plants

##### A. Area of Analysis

The area analyzed for sensitive plants included the the existing trail and old roadbed, Bass Lake Dam, and slopes on the north and south sides of the dam where borrow material may be taken.

##### B. Description and History

###### 1. Introduction

The Endangered Species Act (1973) requires the Forest Service to conserve endangered and threatened species. The National Forest Management Act (1976) and Forest Service policy direct that National Forest System lands be managed to maintain populations of all existing native plant and animal species at or above minimum population levels. A viable population consists of the number of individual plants adequately distributed throughout their range necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

Water *Howellia* (*Howellia aquatilis*) is the only federally listed threatened or endangered plant species in Montana. It was listed as threatened in July of 1994, and is currently only known from one river valley in western Montana. This species is not known or suspected to occur on the Bitterroot National Forest. The Northern Region Sensitive Plant Species List (USDA Forest Service 1994) identifies a number of sensitive species for each National Forest for which population viability is a concern. Sensitive species are those the Regional Forester has determined as deserving concern for population viability. Forest Service policy requires that activities conducted on National Forest System lands be reviewed to ensure no loss in population viability for sensitive species.

The Northern Region Sensitive Plant Species List includes 176 species. Of those, 30 sensitive species are listed for the Bitterroot National Forest (USDA Forest Service, 1994 update). The sensitive species category may also include species proposed for Federal listing, or plant species being studied for Federal listing to the U.S. Fish and Wildlife threatened or endangered species list.

###### 2. Results of Preliminary Office Review

An evaluation of threatened, endangered, sensitive, and watch list plant species for the Bass Lake Dam project area was conducted. This evaluation began by reviewing the Montana Natural Heritage Program (MTNHP) database for known locations of sensitive plants within the area. The project area is also assessed for inclusion of habitat that might be suitable for other sensitive plant species by air photo interpretation and discussion with project leaders.

Based on this evaluation, a list was compiled of sensitive plant species that were either known to occur in or near the project area, or had the potential to occur in the project area. This list included the following sensitive and watch plants:

## a) Rocky Areas

|                           |                                                        |
|---------------------------|--------------------------------------------------------|
| Bitterroot bladderpod     | ( <u>Lesquerella humilus</u> )                         |
| storm saxifrage           | ( <u>Saxifraga tempestiva</u> )                        |
| sapphire rockcress        | ( <u>Arabis fecunda</u> )                              |
| Rocky Mountain paintbrush | ( <u>Castilleja covilleana</u> )                       |
| western boneset           | ( <u>Eupatorium occidentale</u> )                      |
| discoid goldenweed        | ( <u>Haplopappus macronema</u> var. <u>macronema</u> ) |

Bitterroot bladderpod is a narrow endemic only known to occur on St. Joseph, East St. Joseph, and St. Mary's Peaks in the Bitterroot Mountains. Storm saxifrage is also a regional endemic, only found in nine areas on the Beaverhead, Bitterroot, and Deerlodge National Forests. The closest location to Bass Lake is just east of East St. Joseph Peak.

Rocky Mountain paintbrush is a regional endemic, occurring only in central Idaho and western Montana. Prior to 1991, this paintbrush was known to occur in two locations in Montana along the Selway-Bitterroot Divide at timberline. In 1969 and 1974, specimens were collected near Watchtower Peak above 8,000 feet elevation and at the head of Soda Springs Creek at 6,200 feet. Since 1991, populations have been found at lower elevation sites, but the morphology of these plants shows considerable variation. Certain species in the genus Castilleja are known to hybridize, making identification to species difficult (Lackschewitz, 1991; and Hitchcock, Cronquist and Ownbey, 1959). Genetic studies are currently underway with the University of Idaho to more conclusively study this species.

Western boneset has been found in rock slides on three locations in the Bitterroot National Forest, on the Darby and West Fork Ranger Districts, to the south of Bass Lake.

Sapphire rockcress is a regional endemic that has only been found on private property in the foothills of the Sapphire Mountains and is strongly associated with calcareous soils. It is not likely to occur in the project area.

## b) Streambanks and Lake Margins

|                  |                                            |
|------------------|--------------------------------------------|
| hiker's gentian  | ( <u>Gentianopsis simplex</u> )            |
| tall swamp onion | ( <u>Allium validum</u> )                  |
| Wolf's willow    | ( <u>Salix wolfii</u> var. <u>wolfii</u> ) |

All of these species are suspected to occur on the Bitterroot National Forest, but have never been collected here. Hiker's gentian has been found in mountain bogs, meadows, and seepage areas in Beaverhead, Carbon, and Missoula Counties. Tall swamp onion is known to occur on Boise Mountain in central Idaho and Wolf's willow has been found in the Anaconda-Pintlers and Gravelly Range, well to the south of the project area.

## c) Subalpine Forests

candystick (Allotropia virgata)  
 Idaho douglasia (Douglasia idahoensis)

The two closest populations of candystick to Bass Lake are along the East St. Joseph Peak Trail and a mile to the northeast of the trail. This species is associated with mature lodgepole pine/beargrass community types.

Idaho douglasia is a regional endemic known to occur in southern and central Idaho. It is suspected to occur in the Idaho portion of the Bitterroot National Forest. This species has been found in open, gravelly sites, often in soils derived from granite or quartz.

## 3. Field Surveys

Survey work in the Bass Lake Dam project area was conducted on August 8, 28, and 29, 1992, by Linda Pietarinen, Robin Matthews, and Jackie deMontigny, Bitterroot Forest Field Botanists and Ecologist. The existing trail and the old roadbed were walked and surveyed. The dam, proposed borrow pit sites, and surrounding slopes were surveyed.

## a) Rocky Areas

Survey Results - Field work done in August, 1992, in the project area focused on two areas originally proposed for borrow material on the north and south sides of the dam. The spillway below the dam was also surveyed, since this area is proposed for additional excavation. The top of the dam was also surveyed, since this area is proposed to be covered with new material in order to raise the level of the dam. Additionally, rocky areas along the trail were surveyed.

Bitterroot bladderpod (70 plants) was found in the borrow pit on the north side of the dam. This area had been used in 1952 as a borrow area, when the dam was last raised and rebuilt. Extensive surveys found 365 more plants just above this old borrow area in an undisturbed site. No other plants were found on disturbed or undisturbed sites surveyed around the dam area.

As a result of this new plant location, the original proposal to locate the borrow pit at the 1952 site was changed in order to avoid the Bitterroot bladderpod.

## Bitterroot bladderpod.

Description and Habitat - Bitterroot bladderpod is a small, perennial with stems mostly 1-2 inches tall. The stems lie flat on the soil surface with the flower-bearing tips curved slightly upward. There are 3-6 yellow flowers produced near the end of each stem. The petals are about 0.3 inches long and the basal leaves are about 0.6 to 1 inch long. The stem leaves are smaller, usually only 0.25 inch long. Plants are usually flowering from late June to early July, but variations do occur. Fruiting usually occurs from July into early August (Shelly, 1988).

Bitterroot bladderpod occurs in sparsely vegetated areas in the upper krummholz zone and in alpine fellfield areas above the upper treeline (Shelly, 1988).

Distribution and Status - Bitterroot bladderpod is a state endemic, until this survey restricted to three sites in the Bitterroot Range. It was first discovered on St. Joseph Peak in 1966 by Klaus H. Lackschewitz and Tor Fageraas. It was later collected on St. Mary's Peak. Most of the other major peaks of the Bitterroot Range were surveyed for Bitterroot bladderpod and none was found.

Bitterroot bladderpod is listed as C2 with the U.S. Fish and Wildlife Service, indicating that proposing to list the species as threatened or endangered is possibly appropriate, but there is insufficient biological information on file to support an immediate ruling (BNF Sensitive Plant Field Guide, 1991). The species is also listed as sensitive by the U.S.D.A. Forest Service and as G1/S1 by the Montana Natural Heritage Program. A global ranking of G1 means it is critically imperiled globally owing to extreme rarity and a state ranking of S1 indicates it is critically imperiled in the state of Montana.

Response to Disturbance and Management Practices - The "Status Review of *Lesquerella humilus*" written by Steve Shelly in 1988 indicated that the most likely threat to existing populations of Bitterroot bladderpod were from trampling by off-trail hikers. Shelly also noted that little is known about the degree of disturbance that Bitterroot bladderpod can tolerate. He suggests that since it prefers a more open, alpine habitat, it could colonize disturbed areas. This hypothesis appears to hold true in the Bass Dam area, where plants have colonized a disturbed site, just below an established population on undisturbed soil.

#### b) Streambanks and Lake Margins

Survey Results - Survey work focused on the dam spillway and associated riparian vegetation. Creek crossings along the trail were also surveyed. None of the above listed riparian or lacustrine plants were found during the survey period.

#### c) Alpine Forests

Survey Results - Survey work focused on the south side of the dam, where timber was regenerating after the 1952 disturbance and above the old borrow area on the south side, where beargrass and small diameter mixed conifer occur. Suitable habitat along the trail was also surveyed. No candystick or Idaho douglasia was found during the course of the survey.

The desired condition for sensitive and watch list plants is to ensure that management of lands, water, biota, and people provide environmental conditions and trends that contribute to long-term viability of these as well as all native species.

## 5. Wildlife - Overview of Species and Habitat

The analysis area used for evaluation of effects to wildlife species is the entire Bass Creek drainage west of the Charles Waters Campground. This drainage provides habitat for wildlife species typically found in coniferous forests of western Montana. Elk, mule deer, and white-tailed deer are resident in the area. Moose occur primarily in or near the creek bottoms and adjacent thickly vegetated north aspects. Mountain goat winter and summer range is found along the steep south-facing cliffs above Bass Creek and Bass Lake, respectively. Other resident species of interest include black bear, mountain lion, coyote, furbearers, and numerous birds and small mammals.

Wildlife habitat in the drainage includes riparian vegetation along Bass Creek, large grassy or rocky openings with scattered trees on many of the south facing slopes, and extensive areas of montane forest dominated by lodgepole pine, Douglas-fir and sub-alpine fir on the north aspects. With increased elevation, the forest transitions into whitebark pine. In addition to streamside riparian zones, portions of the drainages contain seeps and wallows which provide riparian vegetation associated with high water table areas. These wet areas are extremely important as microsites providing habitat for small mammals and birds as well as big game species.

Wildlife populations are components of ecosystems within landscapes that interact in increasing hierarchies. There is little known about pre-settlement wildlife population numbers or distribution for this area. Old trapping records and historic journals provide some presence/absence information. Providing diverse habitats that represent naturally functioning ecosystems will maintain the complex of species that would occur in those systems.

Wildlife species and habitat evaluated in this analysis include: Forest Plan management indicator species (elk, pine marten and pileated woodpecker); Threatened, Endangered and Sensitive species listed for the Bitterroot National Forest (grizzly bear, gray wolf, peregrine falcon, bald eagle, boreal owl, flammulated owl, black-backed woodpecker, common loon, harlequin duck, lynx, fisher, wolverine, Townsend's big-eared bat, northern bog lemming, and Coeur d'Alene salamander); and species of special interest or with unique or limited habitat in the assessment area (mountain goat).

## 6. Elk - Management Indicator for Early Seral and Edge Species

### A. Existing Condition

A large elk herd winters on both private and National Forest lands in the Brooks Creek drainage, immediately south of the mouth of Bass Creek canyon. Montana Fish, Wildlife and Parks radio telemetry data shows that this herd summers in the Storm Creek drainage in Idaho, and migrates back and forth via Kootenai Creek (Nielsen 1992, pers. comm.). On the north side of Bass Creek, a small group of elk (10-20 animals) appears to be resident on the Larry Creek face and probably doesn't use Bass Creek canyon to any extent. There is probably scattered elk use of Bass Creek and the Bass Lake area during the summer, but this use appears to be quite limited (Nielsen 1994, pers. comm.).

### B. Forest Plan Compliance

The Bass Lake Dam Reconstruction project does not include any timber management activities. Therefore, there is no Forest Plan direction to analyze elk habitat classifications in the Bass Creek drainage. No changes to existing elk habitat ratios are anticipated as a result of this project.

The Bass Creek drainage which contains the project area is essentially unroaded. An old road which follows the drainage up to the lake now serves as the Bass Creek trail. This old road is closed to motorized vehicles year round. Since the analysis area is unroaded and no new road construction will occur, there will be no change to existing open road densities, Elk Habitat Effectiveness, or elk security areas. Therefore, there is no need to analyze road densities or Elk Habitat Effectiveness further.

#### 7. Wildlife - Management Indicator Species

The Forest Plan provides direction regarding two Management Indicator Species (MIS), pine marten and pileated woodpecker and their old growth habitat requirements:

The amount and distribution of old growth will be used to ensure sufficient habitat for the maintenance of viable populations of existing native and desirable non-native vertebrate species, including two indicator species, the pine marten and pileated woodpecker (Forest Plan pg II-19).

Sensitive species suspected to occur within the analysis area were considered for designation as MIS species for this analysis, but the two Forest Plan MIS seemed to adequately represent the habitat needs of these sensitive species. Flammulated owls and pileated woodpeckers prefer similar habitats (mature to overmature ponderosa pine/Douglas-fir forests which contain snags suitable for nesting). Fisher, lynx and boreal owls all prefer habitats similar to those preferred by marten (mid-to-upper elevation, mature to overmature forest with relatively closed canopies and abundant snags and down woody material).

There are some differences in habitat requirements between these species, and others (black-backed woodpeckers) have rather unique habitat needs. For this reason, existing habitat conditions and expected effects of the alternatives were analyzed separately for each sensitive species. Each sensitive species is thus in effect an MIS.

##### A. Pine Marten (Martes americana)

Pine marten are a Forest Plan Management Indicator Species (MIS) for those wildlife species that are associated with upper elevation mature and overmature forest, including small mammals which require down and dead woody cover. Upper elevation forests in the Bass Creek area are typically composed of lodgepole pine, sub-alpine fir and Englemann spruce.

Optimum habitat for pine marten includes forests with crown closures greater than 50%, where spruce and true firs exceed 40% of the total stand composition. At least 20% of the forest floor should be littered with downfall greater than 3 inches in diameter. Home range sizes of marten vary based on habitat quality and food availability, but average approximately 600 acres for males and 250 acres for females in Montana (Allen, 1984). To provide sufficient habitat in

scarce food years, this area may expand to as much as 1920 acres of suitable habitat in the northern Rocky Mountains.

Good pine marten habitat in the Bass Creek drainage occurs mostly in the creek bottom area and on the lower north aspects above the creek bottom. An ongoing research project conducted by Dr. Kerry Foresman, professor with the Division of Biological Sciences at the University of Montana seems to indicate that martens are relatively common in a number of the large creek bottoms in this area, including Bass Creek.

There is no need to analyze and calculate Habitat Suitability Indices for martens in this analysis since there is no vegetative manipulation contemplated which would alter the existing condition.

#### B. Pileated Woodpecker (Dryocopus pileatus)

The pileated woodpecker is a Forest Plan MIS for those wildlife species which are associated with lower elevation mature and overmature forest, including the primary and secondary cavity nesters which require snags and down woody material as a nesting and foraging component of their habitat. Lower elevation forests in the Bass Creek area are typically composed of ponderosa pine and Douglas-fir, with some western larch and black cottonwood mixed in on moister habitats.

Optimum habitat for pileated woodpeckers includes extensive areas which contain large numbers of trees and snags which exceed 20" Diameter at Breast Height (DBH), including some snags which exceed 30" DBH. Ponderosa pine, western larch, and black cottonwood are the preferred species for nesting. Numerous stumps and abundant down woody material are also important as foraging habitat. Areas above 6,500 feet are considered non-habitat on the Bitterroot National Forest, although sporadic foraging use does occur in some stands above this elevation.

Studies indicate that it would take approximately 300 acres of optimum habitat to support one pair of pileated woodpeckers. Habitat quality on the Bitterroot National Forest is generally less than optimum due both to the limited productivity of much of the area and to previous management activities. An average of approximately 500-1000 acres of lower quality habitat is required to support one nesting pair of pileated woodpeckers. Of this, 100 acres of optimal habitat should be available for nesting. Feeding habitat must also be available within the 1000 acre home range surrounding the nesting core (Warren 1990).

Pileated woodpecker transects completed annually for the past several years as part of the Forest Plan monitoring effort show highly variable results which do not seem to indicate any particular Forest-wide population trend (Forest Plan Monitoring and Evaluation Report, FY 1992). One of these transects is along the Bass Creek trail. Results from this transect show that pileated woodpeckers do occur in Bass Creek.

There is no need to analyze and calculate Habitat Suitability Indices for pileated woodpeckers in this analysis since there is no vegetative manipulation contemplated which would alter the existing condition.

## 8. Wildlife - Threatened, Endangered and Sensitive Species

The Forest Plan provides the following direction regarding Threatened, Endangered and Sensitive species:

-The habitat needs of sensitive species, as listed by the Regional Forester will be considered in all project planning (Forest Plan II-21).

-No formal recovery plan has been established for threatened and endangered species on the Bitterroot Forest. Specific population objectives will be established when sufficient biological information is available to do so. Cooperate and involve the public in any interagency effort (Forest Plan pg. II-21).

-Participate in the identification and protection of threatened and endangered species and vascular plants identified as rare, pending study and proposal as threatened and endangered (Forest Plan II-21).

### A. Sensitive Species

Sensitive wildlife species are those animal species identified by the Regional Forester for which population viability is a concern, as evidenced by:

-Significant current or predicted downward trends in population numbers or density.

-Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Management goals for sensitive species are to maintain viable populations of a species throughout its existing range within the planning area (FSM 2670.5 19, 28). The planning area is the Bitterroot National Forest, not the project area. Special management emphasis is provided to ensure sensitive species viability and preclude trends toward endangerment that would result in the need for Federal listing as Threatened or Endangered under the Endangered Species Act of 1973. A biological evaluation must be conducted to determine the effects of proposed actions on sensitive species.

Wildlife species on the Regional Forester's Sensitive Species List which have documented occurrences on the Bitterroot National Forest include: boreal owl, flammulated owl, black-backed woodpecker, lynx, fisher, wolverine, Townsend's big-eared bat, northern bog lemming and Coeur d'Alene salamander. Sensitive wildlife species suspected to occur on the BNF include the common loon and harlequin duck. Potential habitat exists in the Bass Creek area for most of these sensitive species, so they could possibly occur here. Exceptions are the northern bog lemming (no sphagnum bogs), and the common loon (no large lakes below 5,000' elevation). The Biological Evaluation (project file) documents

expected effects of the preferred alternative to sensitive wildlife species known or suspected to occur within the analysis area. Short habitat descriptions and known existing conditions for sensitive wildlife species which could potentially occur within the Bass Creek area are summarized below.

#### 1. Boreal owl (Aegolius funereous)

Boreal owls are associated with high elevation, subalpine mature and old growth spruce/fir forests. Suitable breeding habitat exists within the Bass Creek drainage above 5000 feet in elevation in forest types including lodgepole pine, subalpine fir and Englemann spruce.

Boreal owls require mature/old growth vegetation during the breeding season. They nest in tree cavities, requiring snags with 15" DBH or larger. The owls are partly dependent upon woodpeckers to create suitable nesting cavities. Typical nesting habitat includes a mix of spruce/fir and open meadows which provide prey species, especially voles. Nests are commonly located near water. Boreal owls may use younger aged tree stands for foraging during the non-breeding season. Home ranges cover as much as 2,200 acres, but can overlap extensively. Only a small area around the nest is defended during the breeding season (Reel, et al., 1989).

Boreal owls are known to occur to the south of the Bass Creek area in the upper Kootenai Creek drainage, to the north near Lolo Pass and across the Bitterroot Valley to the east near Ambrose Saddle. Habitat components suitable for boreal owl occupancy exist in the higher portions of the Bass Creek drainage, and it is likely that boreals occur here. No boreal owl surveys have been conducted in the drainage.

#### 2. Flammulated owl (Otus flammeolus)

Flammulated owls are associated with mature to old growth ponderosa pine/Douglas-fir forests in the Rocky Mountains. They are secondary cavity nesters and depend on woodpeckers for their nesting holes. This species is insectivorous and migratory, spending the winters in Mexico and Central America (Atkinson and Atkinson, 1990; Goggans, 1985).

Flammulated owls have been documented in several areas of the Forest, most of which are south of Darby. One flammulated owl was reported in the Blodgett Creek drainage in 1992, and another one was reported from the lower portion of Bass Creek canyon in 1989. Potential flammulated owl habitat occurs within the Bass Creek drainage in some of the lower elevation mature and over-mature ponderosa pine and Douglas-fir stands on the south aspects, and it seems likely that flammulated owls could reside here. A flammulated owl survey was conducted along the Bass Creek Trail in June 1994 by a University of Montana graduate student studying this species, but no owls were detected.

#### 3. Black-backed woodpecker (Picoides arctus)

Black-backed woodpeckers are opportunistic feeders typically associated with mid to high elevation coniferous forests in the northern Rocky Mountains. This species is highly mobile and tends to concentrate in areas of recent bark beetle irruptions, especially those following forest fires. Snag concentrations seem to be more critical for winter foraging than for summer

foraging. Small flocks of black-backed woodpeckers often seen in snag patches in the winter seem to disperse during the summer, probably due to territoriality associated with nesting. Declines in population numbers of this species may be due to a relative scarcity of large areas of snags as fire suppression has become effective over the past 80 years (Hutto, 1992, pers. comm.).

This species is present in low densities throughout the BNF, especially in areas where fires have recently killed large numbers of trees. There are no large areas of recently killed snags at mid to high elevations in or adjacent to the Bass Creek drainage, although numerous snags in low elevation ponderosa pine/Douglas-fir were created in 1994 by prescribed burning in the Larry Creek area. Hairy and downy woodpeckers and red-naped sapsuckers are using this area heavily for foraging, and there may be some use by black-backed woodpeckers. However, it is unlikely that there is a very large population of black-backed woodpeckers present within the analysis area at this time. Small patches of snags killed by root disease or scattered bark beetle attacks may support an occasional individual.

#### 4 Lynx (Lynx canadensis)

Lynx utilize mature and overmature spruce and subalpine fir forests which contain abundant deadfall for denning (Koehler & Brittell 1990). Lynx feed primarily on snowshoe hares which frequent dense stands of sapling-sized conifers (Quinn & Parker, 1987). Preferred lynx foraging habitat includes this sort of stand structure (Thompson, et al. 1989). Good lynx habitat contains both of these structural stages in close proximity to each other.

Lynx territories are large which results in relatively low population densities even in optimum habitat. Lynx abundance and density is partially dependent on cyclic snowshoe hare population fluctuations and on trapping pressure. Lynx appear to be quite uncommon throughout the Bitterroots. Trapping records show that no lynx have been taken in HD 240 in the recent past. Some suitable lynx habitat occurs in the upper elevation portions of the analysis area, and it is possible that lynx use the area to a limited extent.

#### 5. Fisher (Martes pennanti)

Fisher in the northern Rocky Mountain area are associated with mature and overmature coniferous forests that have relatively closed canopies. Optimal habitat conditions include crown closures greater than 50%, average tree diameter greater than 10" and 2 or more canopy layers. Fisher use interspersed cover and edges of openings for foraging and are able to utilize early seral stages of vegetation more readily than martens. Fisher show a strong affinity for forested riparian areas throughout the year (Jones 1991).

Fisher depend on down woody material to provide subnivean dens in winter. Extensive fire or clearcutting may reduce habitat values especially during winter because lack of overhead cover permits greater snow depths. Uneven age timber management may improve habitat by increasing prey density and the number of den sites (Jones 1991, Douglas and Strickland, 1987). Important prey species include snowshoe hares, voles and pine squirrels. Prey availability and trapping pressure have the most effect on fisher abundance and density.

Trapping records indicate that several fisher were taken annually through the 1980's from HD 240, but that the harvest from all of MDFWP Region 2 in the 1990's has been only one or two animals per year. This probably reflects reduced trapping pressure caused by low pelt prices rather than any downward trend in fisher populations. One fisher sighting was reported by a Forest Service wilderness ranger in Big Creek in March 1994, and Dr. Kerry Foresman photographed fisher along both Big Creek and Bear Creek during his remote camera study in December 1994. Suitable fisher habitat occurs along the entire length of Bass Creek and on many of the north aspects. The presence of suitable habitat and known fisher populations in nearby drainages makes it highly likely that fisher inhabit the Bass Creek drainage.

#### 6 Wolverine (Gulo gulo)

The US Fish and Wildlife Service (USFWS) recently received a petition to list the wolverine as Threatened or Endangered throughout its range. The USFWS review process will take at least two years. In the interim, the wolverine has no legal status under the Endangered Species Act. However, the most recent update of the Regional Forester's Sensitive Species List (1994) includes the wolverine as a Sensitive species on the Bitterroot National Forest and throughout Region One.

Wolverine are solitary animals which range widely over a considerable variety of habitats. Habitat requirements tend to include large, isolated roadless areas which support a diverse prey base. Within such areas, wolverine use appears to be concentrated in areas of medium to scattered mature timber and in ecotonal areas around natural openings such as cliffs, slides, basins and meadows. There seems to be little use in stands of dense young timber or in actual openings such as clearcuts or wet meadows (Reel, et al. 1989; Butts, 1992).

Wolverine home ranges are very large, averaging approximately 150 square miles in Montana. Wolverines feed primarily on rodents and carrion, although they are opportunists and will also consume berries, insects, fish, birds and eggs when available. Ungulate carrion seems to be particularly important in the winter, and wolverine movement to lower elevations during winter may be to take advantage of ungulate mortalities on winter ranges (Reel, et al. 1989; Butts, 1992). Ungulate carcasses attributable to wounding losses during hunting season also appear to be important food sources for wolverines during the winter at all elevations.

Montana Department of Fish, Wildlife and Parks trapping records show that a wolverine was taken from the Bass Creek drainage in 1986. Another wolverine was observed by a Forest Service crew in the Camas Creek area to the south of the analysis area in May, 1992.

Suitable summer wolverine habitat exists in the higher basins within the drainage, although heavy recreational use of the Bass Lake area probably limits the attraction of the area for wolverines. Wolverines could also utilize the lower portions of the drainage during the winter. Wolverines have obviously used the area in the recent past, and it is likely that some wolverine use still occurs in the drainage, although the entire analysis area would constitute only a small portion of the home range of one wolverine.

#### 7 Townsend's big-eared bat (Plecotus townsendii)

Townsend's big-eared bat is a non-migratory, cave dwelling species which has been found in a wide variety of habitats, from arid juniper/pine forests to high elevation mixed-coniferous forests. In winter, large aggregations of bats roost communally in caves or abandoned mine tunnels, and are essentially dormant. During the breeding season, females roost with their young in nursery colonies. Occasionally, tree cavities are used as roosts by single individuals. This species is extremely sensitive to human activities, and has been known to permanently abandon roost sites in response to disturbance (Reel, et al. 1989).

Presence of Townsend's big-eared bats has been documented in the Bitterroot Valley. The Bass Creek drainage does not contain any known caves, but the abandoned Cliff Mine high on the flanks of St. Joe Mountain does provide some potential roost habitat in several old adits. This site is probably too high and exposed to be attractive to bats, but there is some potential.

#### 8. Coeur d'Alene salamander (Plethodon vandykei idahoensis)

This small terrestrial salamander is found below 5,000 feet in elevation in seeps, spray zones and splash zones of waterfalls along streams and creeks. They occur in wet, humid and cool microhabitats containing fractured bedrock or large boulders which provide shelter and retain moisture. Dense tree canopy over cascading creek sites is an important habitat component because it moderates surface and water temperatures. These salamanders remain subsurface during the day. They hibernate underground from November to April. Removal of overstory vegetation, increases in water temperature, changes in water table and flow, and physical disturbance of talus or rock habitat can affect Coeur d'Alene salamander populations.

The southern-most extension of this salamander's range in Montana appears to be along Sweathouse Creek approximately 12 miles south of the Bass Creek drainage, where a small population was discovered by surveyors with the Montana Natural Heritage Program in 1987. These surveyors also searched a number of other sites in the Bitterroot and Sapphire Mountains which appeared to be good salamander habitat, but did not find any other populations (Montana Natural Heritage Program, 1987). This species could potentially occur within the Bass Creek drainage if suitable habitat is present.

#### 9. Harlequin duck (Histrionicus histrionicus)

Harlequin ducks are summer residents on isolated, swift mountain streams in the northern Rockies. They arrive on their breeding grounds in April and select reaches on medium-sized streams lined with dense vegetation where they feed underwater on mollusks, small fish, and aquatic insects. The presence of some quiet water (backwaters or adjacent ponds) is required for rearing habitat until ducklings are old enough to feed and travel in the fast stream currents these ducks typically inhabit. Males and unpaired females leave the interior mountains in early to mid-June and migrate to wintering areas along the north Pacific coast. Reproducing females incubate and raise their young alone until the ducklings are ready to migrate to the coast, which usually occurs in August (Reel, et al., 1989).

Harlequins are known to nest on the Selway, Lochsa, and St. Joe Rivers to the west of the Bass Creek drainage. There have been unconfirmed reports of their presence on the East Fork of the Bitterroot River. It is possible that harlequins may nest on some of the larger streams draining the east side of the Bitterroot Range, but there have been no recent confirmed sightings.

#### B. Threatened and Endangered Species

The U.S. Fish & Wildlife Service lists peregrine falcon, bald eagle, gray wolf, and grizzly bear as Threatened and Endangered wildlife species which could occur on the Bitterroot National Forest. The Biological Assessment for the Bass Lake Dam EIS will document expected effects of the preferred alternative to these Threatened and Endangered wildlife species. Short habitat descriptions and known existing conditions for these species within the Bass Creek area are summarized below.

##### 1. Peregrine Falcon (Falco peregrinus anatum) - Status Endangered

Peregrine falcons typically nest on ledges in high inaccessible cliff faces (or tall buildings when introduced in an urban setting) which dominate the surrounding area, and forage for avian prey in open habitats including prairie, tundra, open forests and over marshes and lakes (Dobkin, 1992; Reel et al., 1989). Habitat surveys for the Bitterroot National Forest identified suitable nesting sites along the west side of the valley on numerous cliffs in or adjacent to the Selway-Bitterroot Wilderness.

Peregrine falcons have been reintroduced to the Bitterroot Mountains through a series of releases of captive-bred birds between 1989 and 1993. There are now several known or suspected peregrine breeding territories established in the Bitterroot Mountains west and south of Hamilton. Reports of foraging peregrines in the Bitterroot Valley have become more common, but there have been no reports of possible nesting activity in any of the canyons north of Hamilton. Suitable nesting habitat exists in Bass Creek and adjacent drainages, and it is possible that peregrines may establish a breeding territory and/or utilize portions of Bass Creek drainage for foraging in the future.

##### 2. Bald Eagle (Haliaeetus leucocephalus) - Status Threatened

Bald eagles forage primarily on fish, and open water is a critical component of both summer and winter habitat. Nests are located in tall live trees within two miles of a body of water. Winter roost sites are in large trees with open horizontal branches. Roost trees are used communally day after day and from year to year (Reel, et al., 1989).

The Bitterroot Valley provides winter and spring/fall habitat for a small population (average 20 individuals) of bald eagles. Most of these birds usually arrive in the valley in November and leave the area in February and March for northern breeding grounds. Other eagles migrate through the area both in spring and fall. A pair of bald eagles successfully raised young on the Lee Metcalf National Wildlife Refuge near Stevensville in 1990 - 1992 and again in 1994. This pair also nested in 1993 but failed to produce any chicks. One other nesting attempt was reported near Florence in 1993. Bald eagles seem to be winter residents of the valley with these exceptions.

Winter bald eagle use seems to be restricted to the Bitterroot Valley and is concentrated along the river corridor. Wintering bald eagles forage for fish along ice-free portions of the Bitterroot River and also feed on road-killed deer within several miles of the river. Wintering birds generally roost communally in large trees near the river. There are no reports of communal roosts on BNF land outside of this corridor. Migrating birds are sometimes seen soaring over BNF land during the spring and fall, and some may use the larger lakes such as Lake Como for foraging at this time.

It is remotely possible that bald eagles could establish a winter roost site within the Bass Creek area sometime in the future, but the area is generally not considered to be bald eagle habitat. It is highly unlikely that bald eagles will ever use the area for nesting.

### 3. Gray Wolf (Canis lupus irremotus) - Status Endangered

Wolves are habitat generalists whose distribution within occupied range is determined mostly by the availability of ungulate prey and isolation from human disturbance (Reel, et al., 1989). Areas near the mouth of Bass Creek support good numbers of deer and elk, and it is possible that wolves may eventually inhabit the area.

Wolves were extirpated in Montana by 1930, but began to recolonize the state in 1986, when a pack was discovered on the west side of Glacier National Park. Wolf numbers and distribution have gradually expanded; and in 1993, there are five known packs with a total population of approximately 50 individuals in the state (Bangs and Fritts, 1993).

Unconfirmed sightings of wolves in the Bitterroot and Sapphire Mountains and surrounding areas have increased over the past several years. Recent indications of wolf activity in the Bass Creek area include probable tracks and scats in the Larry Creek drainage immediately north of Bass Creek in 1993 and 1994. It is likely that individual wolves dispersing from established packs to the north have travelled through the general area, but there have been no reports of pack activity which would indicate that wolves have taken up residence in the Bitterroot drainage.

The Selway-Bitterroot Wilderness portion of the BNF was included in the original Central Idaho Wolf Recovery Zone designated by the USFWS in the Draft EIS for the Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho (USFWS, 1993). With the recent publication of the Final EIS for The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho (USFWS, 1994), the USFWS has renamed and enlarged this wolf recovery zone. It is now called the Central Idaho Nonessential Experimental Population Area (CINEPA), and includes all of Idaho south of Interstate 90, and all of western Montana south of Interstate 90 and west of Interstate 15. The Bass Creek drainage is within this larger area.

USFWS plans call for release of 15 wild yearling and non-breeding adults per year in the CINEPA until a wild wolf population becomes established in the area, which is estimated to take three to five years. Releases will most likely occur in Idaho. These wolves will be designated as experimental

animals, which permits more flexibility in managing individual wolves than is the case with a naturally occurring population. USFWS will not designate any critical habitat within the CINEPA (USFWS, 1994), so none will exist within the Bass Creek area.

USFWS implemented the reintroduction effort by releasing 15 gray wolves in and near the Frank Church-River of No Return Wilderness in central Idaho in January 1995. Radio tracking indicates that many of these animals began to move north from the release sites. It is likely that wolf use will increase in the Bitterroot Range as a result of these releases. Wolves may eventually utilize the Bass Creek area to some extent, although it is likely that most wolf use will be centered in Idaho.

Possible dispersal routes for future populations of wolves in the Selway-Bitterroot Wilderness might include the Bitterroot Divide along the Montana/Idaho border which forms the western boundary of the Bass Creek drainage. This route could eventually connect future Selway-Bitterroot Wilderness wolf populations with other populations to the north in Montana, as well as to the south in the Greater Yellowstone Ecosystem.

#### 4. Grizzly Bear (Ursus arctos) - Status Threatened

Grizzlies are wide ranging habitat generalists that require isolation from humans and a wide variety of food availability and distribution (Reel, et al., 1989). Historical records indicate that grizzly bears were once abundant in the Bitterroot Mountains, but they did not survive the intense pressure from human activity. The last grizzly killed in the area was in 1956. Since that time, periodic sightings of grizzly bears have been reported in the Bitterroots, but none has been confirmed.

Although grizzly bears have not been confirmed as occurring in the Selway-Bitterroot in recent years, the Bitterroot Grizzly Bear Evaluation Area was studied to determine its habitat capability for grizzly bear. This evaluation area was determined to be suitable for grizzly bear and was designated as the Selway-Bitterroot Grizzly Bear Recovery Area, which is one of six ecosystems in the continental U.S. outside of Alaska which are managed for grizzly bear. The Recovery Area lies primarily within the wilderness boundary. Decisions on recovery efforts in this area have yet to be finalized. If grizzlies return to the Selway-Bitterroot, it is possible that some individuals may eventually use the Bass Creek area to a limited extent.

#### 5. Other Wildlife Species

##### a. Mountain Goat (Oreamnos americanus)

Good mountain goat habitat is widespread along the steep, rocky canyon walls in the Bass Creek drainage. A small herd of mountain goats winters in lower portions of the drainage and uses some of the high elevation basins and cliffs as summer range. The majority of goat use occurs on the open, south facing aspects. Ground-based human activity can disturb goats in hunted populations such as that in the Bitterroots, but they seem to be much more disturbed by aircraft flying low overhead (Nielsen 1995, pers. comm.).

#### IV. HUMAN ENVIRONMENT

##### 1. Cultural Resources

The area analyzed for cultural resources for this project includes all National Forest lands which may be impacted by project activities associated with any the alternatives being considered. This "area of potential effect" includes areas where direct impacts will occur such as staging areas, the dam and the rock borrow area. It also includes areas where project activities may have an indirect (visual, auditory, atmospheric) effect on significant cultural resources or their setting such as the removing trees within the viewshed of an historic trail.

Within the area of potential effect, certain geographical areas were examined (surveyed) for cultural resources more intensively than others. Areas to be surveyed were selected by a cultural resource specialist based on knowledge of the culture history of an area, previous ethnographic and/or archaeological work, and the topographic and environmental features of the area as related to the known patterns of prehistoric and historic use. This information is available in prehistoric and historic overviews of the Forest, the Forest's cultural resource files, the National Register of Historic Places, historic maps, ethnographic literature, and topographic maps. With this knowledge the specialist was able to predict prehistoric and historic site distribution. "Moderate to high probability" areas were most intensively examined; "low probability" areas received less intensive scrutiny.

The scope of the project's impacts were also considered when planning the "survey strategy." For a more detailed explanation of the archaeological survey strategy and procedure see The Prehistory of the Lolo and Bitterroot Forests, (McLeod and Melton, 1986.)

The area analyzed for potential effect to cultural resources in the proposed Bass Lake Dam reconstruction project coincides with the areas to receive ground disturbance through the proposed action. While areas of direct impact were inventoried, all areas around the lake and along the trail that were considered areas of high probability for cultural sites received intensive pedestrian survey.

The Bitterroot National Forest lies directly between three, and perhaps four, distinct cultural areas. These are the Northwestern Plains to the east, the Great Basin to the south, the Columbia Plateau to the west, and perhaps the Boreal Forest to the north. It appears this area received cultural influences from all of these areas to greater or lesser degrees throughout the prehistoric periods.

During historic times, and for probably hundreds of years before, the Bitterroot Valley and surrounding mountains were occupied by the Flathead Salish. In historic times, the area was also frequented by the Northern Shoshone, the Nez Perce, the Pend d'Oreille, the Kootenai, and the Blackfeet

Indians. Some of these groups are thought to be fairly recent arrivals into the area, that is within the last 300-500 years. The tribal affiliations of the groups that occupied the area in the thousands of years prior to the Late Prehistoric Period (approximately 500 AD to 1800 AD) are unknown to archaeologists.

Euro-American occupation of the Bitterroot Valley accelerated in the 1860's with the discovery of gold, first in Idaho, then in Montana. Most of the valley's 100 Euro-American inhabitants in 1865 were involved in growing produce to supply to regional mining districts. Agriculture continued to be the major economic activity in the valley through the 1880's and 1890's. By 1900, there were 891 farms and ranches in Ravalli County with 177,659 acres of land under cultivation.

The lumber industry began its development in the area in the 1880's. The railroad arrived in 1885 and in 1890 a lumber mill was constructed in Hamilton by Butte's "Copper King," Marcus Daly. Much of the timber harvested was cut from public lands at what was perceived as an alarming rate. In 1897, the Bitterroot Forest Reserve was established as part of a regional plan to preserve the forests of the western United States.

Remnants of prehistoric and historic activity remain as archaeological sites. Common prehistoric site types on Bitterroot National Forest lands include campsites, trails, and cambium scarred trees. Common historic sites include mining cabins/claims, homesteads, logging camps and associated sites like railroad grades, and Forest Service Administrative sites such as guard stations and fire lookouts. Traditional cultural areas exist within the Forest as well where Salish Tribal members continue to collect plants and hunt, or pursue other activities which remain important to their cultural identity.

Site types known or expected in or near the analysis area include trail #313 most probably a prehistoric and historic travel route which connects the Bitterroot Valley through the South Fork of Lolo Creek to the Lolo/Ne Mee Poo Trail along Lolo Creek. Prehistoric campsites may also be expected to occur along the trail and near the lakes or streams. Historic sites such as trappers cabins may also be located in these drainages.

Archaeological surveys of portions of the Bass Dam Reconstruction area were conducted by or under the supervision of professional cultural resource specialists as early as 1976, in conjunction with previous Forest Service management activities. Cultural resource inventories for the Bass Lake Dam Reconstruction (1976) and the Bass Lake Reconstruction Project (1993) included the major activity areas proposed for the current Bass Lake reconstruction project. These previous surveys included approximately 100% of the high probability areas in or near the area analyzed for potential effects to cultural resources. During those inventories, no sites were recorded within the area of potential effect. Two sites were recorded approximately one mile from the project area. Both are prehistoric sites, neither site has been evaluated for eligibility for inclusion to the National Register of Historic Places.

The survey in 1993 was specifically for the proposed Bass Lake Dam Reconstruction that is now under consideration. This inventory, like all surveys on the Bitterroot National Forest, complied with standards established

in the Secretary of the Interior's Guideline's for Archaeology and Historic Preservation. Before the survey was initiated, a literature search was conducted to determine what previous inventories had been conducted and what archaeological sites had been recorded within the area (see above.) The literature search revealed that the Bass Lake Dam was built in 1887 by George Brooks and T. Truxler. The dam was rebuilt in 1918 and in 1952 the entire structure was rebuilt. The reconstruction has resulted in a loss of integrity of the original structure, this makes it ineligible for nomination to the National Register of Historic Places.

Like the previous surveys, the 1993 survey was concentrated in areas of high probability near or adjacent to proposed disturbance areas and along the trail route. These moderate to high probability areas included terraces, saddles and benches, and other relatively level areas. The area around the dam was intensively surveyed for any remnants of the original dam and/or features associated with it, none were discovered. The survey included limited shovel testing in areas of high site probability and low ground visibility. One prehistoric site (24RA475) was recorded during the 1993 survey.

A cultural resource inventory report documenting the literature search, definition of area of potential effects, and survey methods and results was written and sent to the State Historic Preservation Officer (SHPO). The SHPO response is not documented in the file, but SHPO will be contacted with a request for a duplicate. Upon receipt of the SHPO response, consideration of project effects on significant cultural resources and consultation with the SHPO will have been completed per requirements of the National Historic Preservation Act.

As required by the National Historic Preservation Act, the National Environmental Policy Act, and the American Indian Religious Freedom Act, consultation with Native Americans was conducted. The Salish Culture Committee, who represents the Flathead Salish, were consulted during the planning stages of this project. In the summer of 1992, Joy Eiland and members of the Flathead Culture Committee (Germaine White, Harriet Whitworth, and Felicity McDonald) visited the project area to view the dam and more specifically, the areas which would be impacted by staging of the project and quarrying of source materials.

## 2. Social and Economic

Bass Lake Reservoir Company which built and operates the current Bass Dam was incorporated on July 16, 1918 with five shareholders. The company currently has 1785 outstanding shares which are divided among six water users. Each share is equal to approximately one acre foot of water depending on the amount of water stored each year. In normal years there is sufficient water for at least three irrigation periods, beginning in mid-to-late July and ending by September 15th.

The total amount of land irrigated by the project is currently about 2,350 acres. Agricultural uses of these lands includes livestock grazing, and the production of alfalfa hay, grass hay and small grains. Currently, the gross value of this production exceeds \$650,000 annually.

Without water supplied from Bass Dam, the irrigation season on affected lands would end prior to August 1st each year. In the absence of late season irrigation, the value of production is estimated to drop to about 30-40% of the current amount and the lands would cease to be economically viable for agricultural purposes.

### 3. Trails

The mainline trail traversing this area is the Bass Creek Trail #4 which originates on Road #1136 in the Charles Waters Memorial Campground. Approximately three miles is outside wilderness from the campground to the wilderness boundary and approximately six miles traverses the drainage bottom to the Bass Creek Reservoir. This is a well-used trail due to its point of origin and close proximity to Missoula and the Bitterroot Valley communities. Trail #4 carries fairly heavy use for its first 3-5 miles from day hikers with trail use becoming lighter as it enters deeper into the wilderness. It is maintained annually. Motorized use on the trail is prohibited by a Forest Supervisor's travel order.

This trail was constructed in the late 1800's for access to the Cliff mine which is a short distance north of Bass Creek reservoir. It was used as access in 1887 when the Bass Creek Dam was constructed and in 1952 when the dam was reconstructed. In 1952, the trail was basically turned into a road when it was widened with bulldozers to accommodate large construction equipment. Motorized use on the road ended shortly after the implementation of the Wilderness Act in 1964. Since then, the trail has been managed for hiking and horseback riding, and the old road has grown in with brush and small trees. A rock slide covered the old road for a distance of about 200 feet about 1/2 mile from the lake. The trail proceeds through the rock slide.

About two miles of the trail were reconstructed between 1988 and 1990 for the purposes of safety and resource protection. This portion does not follow the location of the old road.

### 4. Recreation

#### A. Area of Analysis

The recreation analysis includes the Bass Creek drainage and associated recreational facilities at the mouth of the canyon. The Recreational Opportunity Spectrum (ROS) ranges from Roaded Natural in the Charles Waters Campground and Bass Creek Trailhead to Primitive within the Selway-Bitterroot Wilderness (SBW).

#### B. Settings, Existing Uses, and Facilities

The recreational setting is best characterized by the magnificent scenery of the Bass Creek Canyon and the associated dispersed recreational activities occurring there. The canyon is located toward the northern end of the Bitterroot Range. The Bass Creek Trailhead is a major portal into the Wilderness with heavy trail use initiating from the Charles Waters Campground. Many people enjoy fishing the creek and lakes located in the canyon. The trail is used mainly for day hikes on the lower 2-3 miles. The trailhead for the Bass Lake Trail has been redesigned and is scheduled for construction in 1997.

Recreation activities below the trailhead are quite diverse. Hunting, fishing, berry picking, firewood gathering, scenic driving, developed camping, mountain biking, snowmobiling, cross country skiing, sledding, day hiking, and horseback riding are all common activities within the mouth and lower portions of the Bass Canyon and the adjacent Larry Creek area.

Portions of the Bass Creek and Larry Creek area is restricted to motorized travel from October 15th to May 15th to reduce motorized hunter access and to reduce impacts on elk and other wildlife species on their winter range. There is an undeveloped viewpoint at the end of Rd # 1136. The vista allows a spectacular view west up Bass Canyon, with its rocky crags and high alpine scenery.

#### 5. Visual Quality

Visual resources have been defined by the Forest Service as the composite of basic terrain, geologic features, water features, vegetative patterns and land uses that typify a land unit and influence the visual appeal the unit may have for visitors. The Bass Lake Dam reconstruction project visual analysis area consists of the "seen area" around the lake, damsite, trail, and trailhead. The entire area including the lake itself lies between the steep, forested slopes of the Bass Creek drainage. The area shows little disturbance by man except at the damsite itself and along the trail up the canyon.

This area was assigned Management Areas 3a, 6, and 7c in the Bitterroot Forest Plan, 1987. In these management areas the corresponding visual quality objectives are Partial Retention at the trailhead; Preservation in the area outside the wilderness but still under consideration; and Preservation inside the Selway-Bitterroot Wilderness. Forest Visual Quality Objectives (VQO) are minimum standards of acceptable visual alteration to an existing landscape. These goals allow for a certain degree of management activity to take place with respect to viewer frequency, distance and expectation, as described in Vol. 2, Chapter 1, of the National Forest Landscape Management System. Under the Preservation Objective, only ecological change should be apparent to the viewer. Partial Retention allows only alterations to the landscape that will remain subordinate to the natural character of the surrounding area.

The existing trail to the lake uses the original construction road built for machine access to the site in 1952. This seven mile trail has been closed to motorized travel since the area was included for wilderness study in 1964 and has mostly revegetated up to normal trail width. Views from points along the way vary from commonplace forest environments to spectacular mountain vistas untouched by the hand of man. The existing damsite and portions of the construction road that have not completely revegetated do not yet meet the strict visual standards (Preservation) established for wilderness. Inclusion of construction sites in wilderness presupposes the possibility that they will not be able to meet all scenic standards.