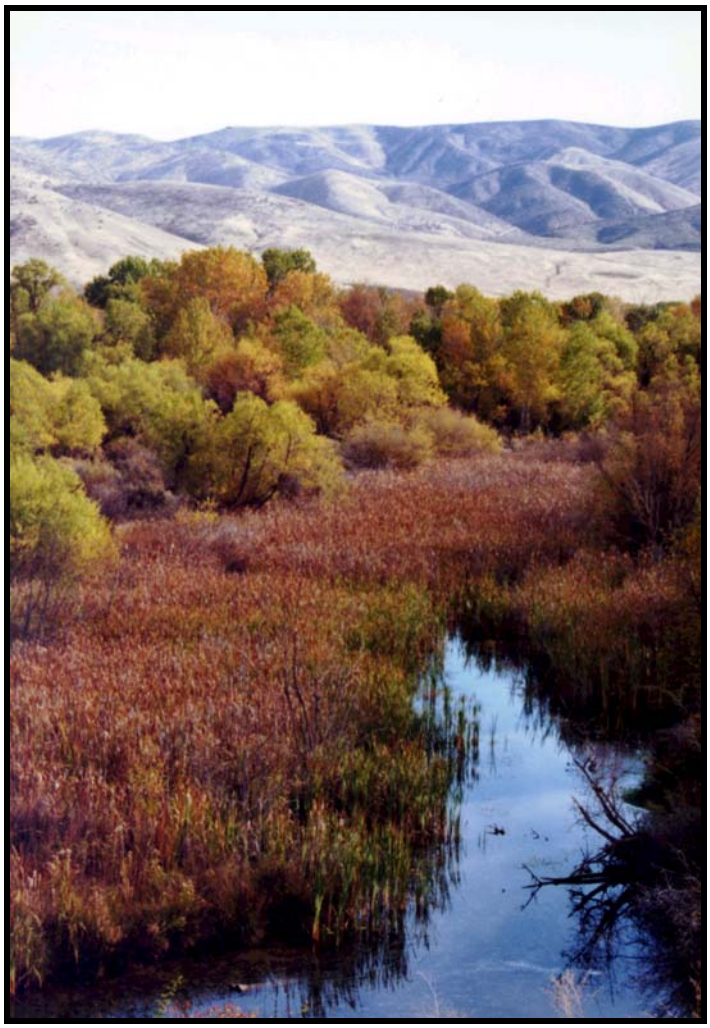

Barber Pool Conservation Area Inventory and Analysis

Submitted to:
The Friends of Barber Pool Conservation Area
Boise, Idaho

September 2002

Submitted by:
Walla Walla District
US Army Corps of Engineers

BARBER POOL CONSERVATION AREA
INVENTORY AND ANALYSIS

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BARBER POOL CONSERVATION AREA INVENTORY AND ANALYSIS

SECTION 1 – INTRODUCTION

Photo 1: View to the foothills from the Barber Pool Conservation Area.

1.1 GENERAL

1.1.1 The Barber Pool Conservation Area

The Barber Pool Conservation Area, (BPCA) located 6 miles from downtown Boise, Idaho, on the Boise River, presents a unique ecological resource to the residents of Treasure Valley. In an area that has become increasingly urbanized, it affords many wildlife viewing and educational opportunities. The area includes varied wildlife habitats, and diverse species of birds and mammals that are either resident or seasonal migrants. Research by the Boise River Bald Eagle Task Force shows that the area serves as the most important roosting, perching, and hunting habitat for bald eagles wintering on the Boise River. The grasslands and riparian vegetation offer winter browse for a resident herd of mule deer, as well as cover and nesting habitat for over 200 avian species.

The Friends of the Barber Pool Conservation Area (Friends of BPCA) formed in 1999 to raise public awareness of the area's importance, and to protect and enhance its ecological values. This report reflects collaboration between members of the Friends of the BPCA and the US Army Corps of Engineers (Corps).

For the purpose of this report, the boundary of the study area runs from Diversion Dam to Barber Dam on the Boise River, and from the New York Canal to Warm Springs Avenue (see Plate 1). The Friends of BPCA identified these geographic

locations as boundaries because: 1) they are easily identifiable; and 2) they contain the entire BPCA, as well as adjacent lands that may influence the environmental quality of the BPCA. The specific geographic references are T3N, R 3E, sections 28,29,32, and 33; and T2N, R3E, sections 3 and 4. The BPCA study area covers 712.68 acres, including water.

a. Barber Dam

Barber Dam forms the downstream boundary of the study area. The Barber Lumber Company constructed Barber Dam on the Boise River in 1904 to create a log-holding pond and power-generating facility for the Barber Lumber Mill. In 1978, the Barber Dam and powerhouse were listed on the National Register of Historic Places.

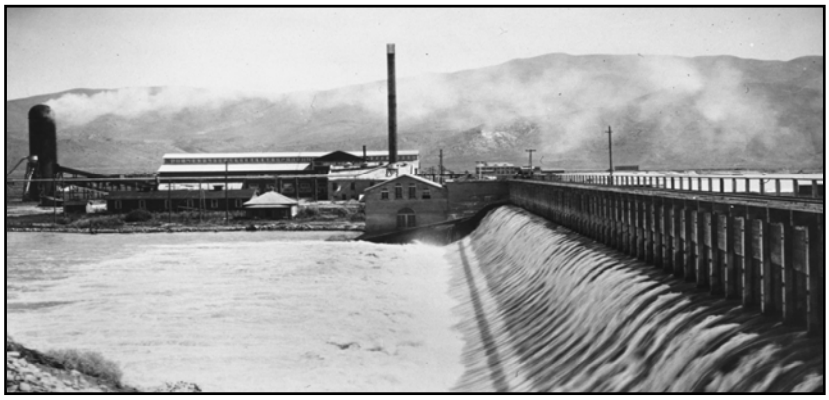

Photo 2: Barber Dam and Lumber Mill at the height of production.

Ada County acquired the dam in 1977 and currently leases it to CHI Energy of Andover, Massachusetts. The dam is capable of generating 4.14 megawatts of power. CHI Energy signed a lease agreement with Ada County in December 1986, for a term of 35 years. The Federal Energy Regulatory Commission (FERC) license (# 4881-001) for operation of the dam was granted for the period of 40 years (1983 to 2023.)

In 1978, the face of the dam, a crib and timber structure in poor condition, was sprayed with gunnite (sprayed-on concrete), and the control gates at the top of the dam were removed. This dropped the level of Barber Pool 11 feet. Ada County and Bonneville Pacific installed self-regulating flashboard gates in 1989, raising the pool elevation by 3 feet. CHI Energy sprayed the face of the dam with gunnite once again in 1997.

Photo 3: Barber Dam powerhouse, listed on the National Register of Historic Places.

b. Diversion Dam

Diversion Dam forms the upstream boundary of the study area. It is owned and operated by the US Bureau of Reclamation (BOR), and diverts water from the Boise River into New York and Penitentiary Canals as part of BOR's "Boise (irrigation) Project." Congress approved construction of Boise Diversion Dam in March 1905, and construction by the US Reclamation Service was completed in 1908. The dam went into service in February 1909 (Witherell, p. 25). A hydroelectric power plant was added in 1912 to supply electricity for the construction of Arrowrock Dam, upstream on the Boise River. The generators were removed from service in 1982 due to obsolescence and the high cost of rehabilitation.

Due to current demands on the power supply in the Pacific Northwest, BOR, in conjunction with Bonneville Power Administration (BPA), has pursued rehabilitation of the powerhouse at Diversion Dam. This would enable power generation to supplement the needs of the area's growing population.

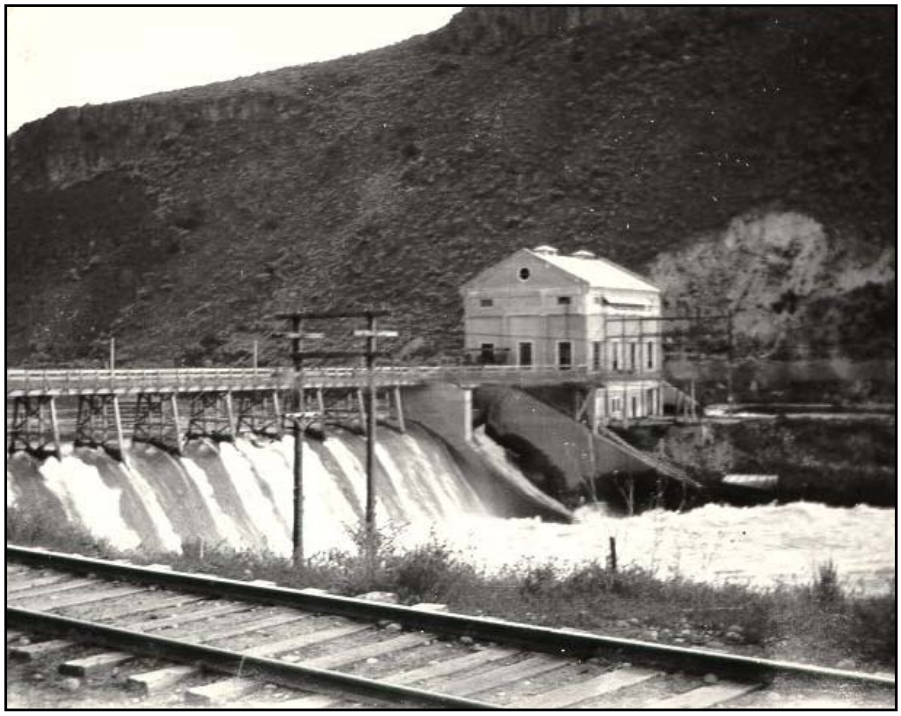

Photo 4: Boise Diversion Dam forms the upstream boundary of the BPCA study area.

The Boise Diversion Dam was added to the National Register of Historic places in 1972. The interior condition of the hydroelectric plant has remained essentially the same as when it was finished in 1912. Any rehabilitation of the facility by BOR or BPA will involve monitoring and mitigation of historical resources at the site.

c. New York Canal

The New York Canal forms the southern boundary of the study area. The Canal is operated and maintained by the Boise Project Board of Control, and is used to transport and supply irrigation water from the Boise River to 274,000 acres in southwestern Idaho. The Canal is approximately 40 miles long, and has the capacity to carry 2800 cubic feet per second (cfs). The canal terminates at Deer Flat National Wildlife Refuge, located on Lake Lowell.

The New York Canal was originally unlined when it was constructed in 1900 (Witherell, p. 25). The US Reclamation Act of 1902 formed the US Reclamation Service (later BOR) which, starting in 1904, assisted the "Boise Project" in improving canals. Portions of the New York Canal were lined with concrete to increase efficiency in the period 1905 to1909, but other portions remain unlined today. The New York Canal has been in constant operation since its construction.

d. Warm Springs Avenue

Warm Springs Avenue forms the northeastern boundary of the study area. The portion of the road that follows Barber Pool serves as a major arterial for residents of the Golden Dawn Mobile Home Park, residents of the Harris Ranch housing development, and those who travel to Idaho City and beyond on State Highway 21.

1.2 AUTHORIZATION

The BPCA Master Plan is the result of a unique partnership between public and private interests who make up the Friends of BPCA, and the Corps. Friends of BPCA includes representatives from Idaho Foundation for Parks and Lands (IFPL), Idaho Department of Parks and Recreation (IDPR), Ada County, Boise City Parks and Recreation, the Idaho Shakespeare Festival, The Nature Conservancy, the Golden Eagle Audubon Society, the Land Trust of the Treasure Valley, Idaho Department of Fish and Game, the US Bureau of Land Management, BOR, and Boise Cascade Corporation.

The Corps was invited to participate in the planning process by IDPR. The Corps joined the planning effort with funding through the Planning Assistance to States (PAS) program. The PAS program provides 50-50 cost sharing (50% Federal money to 50% non-Federal money) for planning projects. This program was instituted to assist states, local governments, and other non-Federal entities in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. The PAS program falls under Section 22 of the Water Resources Development Act of 1974.

1.2.1 Land Ownership

The total acreage of the study area, which includes the BPCA, is 712.68 acres, including water. Of these, 36.2 acres are publicly owned by Ada County. The IFPL owns 317.9 acres. The Idaho Shakespeare Festival occupies 2.6 acres, and IDPR covers the adjacent 18.1 acres. Privately held land comprises 210.7 acres. The State of Idaho holds 24.8 acres near the Hwy. 21 bridge, and 6.1 acres are held in Federal ownership near Diversion Dam. The Boise River covers approximately 96 acres within the BPCA (see Plate 2).

1.3 PURPOSE

The goals for the BPCA, as presented by the Friends of BPCA, are to protect Barber Pool as a conservation resource, utilize Barber Pool as an educational setting, and provide non-intrusive recreational opportunities for the general public.

The purpose of the Master Plan is to create a planning and management document that will support the goals of the Friends of BPCA, and guide future management actions.

1.4 BENEFITS

The BPCA provides wildlife habitat for numerous species. Over 60 species of mammals, reptiles, and amphibians; and more than 200 bird species have been documented here. The area is considered a valuable resource in the scientific and environmental communities, and is utilized for field trips and scientific studies within the local academic community. However, rapid population growth in the City of Boise, and residential development in the area of the BPCA, threaten the integrity of the area as a conservation resource. The Friends of BPCA recognize the threats to the BPCA and its status as a viable habitat area. The various groups who make up the Friends of the BPCA joined together with the goal of protecting and enhancing the ecological value of the BPCA.

1.5 MANAGEMENT

The IDPR has managed the BPCA, under an agreement with the IFPL, since 1994. The agreement expires in 2004. The BPCA was managed by IFPL from the time they acquired it, in 1978, until 1994. Before 1978, the land was utilized primarily for agriculture and grazing.

The IDPR currently employs one half-time ranger to manage the BPCA. Previous and current management actions include fencing, exotic weed control, and interpretation of wildlife habitat.

1.6 REFERENCES

Boise River Eagle Task Force
1995 *Wintering Bald Eagle Conservation Plan* Boise, Idaho

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1997 *The Central Snake River Basin: A Description of Bureau of Reclamation System Operation of the Boise and Payette Rivers* Boise, Idaho,
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2001 *Draft Environmental Assessment Boise River Diversion Dam Powerplant Rehabilitation* Boise, Idaho

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1989 *The Log Trains of Southern Idaho* Sundance Publications Limited, Denver, Colorado

SECTION 2 – INVENTORY AND ANALYSIS

2.1 GENERAL

This section contains information relating to the ecological, cultural, and aesthetic resources of the BPCA; and identifies various factors that influence or constrain land use and management practices.

2.2 MAPPING

The Base Map for this inventory was provided by Ada County, using aerial photography at 1:30 resolution. The Community Planning Association of Southwest Idaho (COMPASS) developed the aerial mapping using digital orthophotography. Controlled flights over Ada County enabled COMPASS to develop topographic maps with a 2-foot contour interval. The Geographic Information Systems (GIS) themes were added using existing information from various sources and agencies (see references for each section). The data were projected using the North American Datum of 1983 (NAD 83) Idaho West projection. All thematic information was digitized from existing maps, or from fieldwork conducted in May 2001. The area shown on the base map covers 712.6 acres.

The Corps utilized an Environmental Systems Research Institute (ESRI) ArcView© GIS for mapping and data storage in this study. The GIS for the BPCA Master Plan will be provided to IDPR and IFPL for their future use in management of the BPCA.

2.3 ECOLOGICAL FACTORS

2.3.1 Topography

The BPCA is located on a floodplain, where the river flows from a steep canyon. The site is surrounded by mountains and bluffs, which provide the most topographic variation in the vicinity (see Plate 3). The interior terrain of the BPCA is generally flat or gently rolling. The greatest changes in elevation occur along the water channels, including New York Canal. Many of the river and side channel areas are cut through sand and gravel deposited by the Boise River, creating steep cut banks. Few gently sloping areas are found adjacent to the river, which limits human access to the interior of the BPCA from the river. Land ownership patterns and vegetation further inhibit human access to the interior.

a. Slope

The majority of land (approximately 438 acres) in the BPCA is classified Flat to Moderately Flat. Lands of steeper slopes generally occur along water channels (*i.e.*, the Boise River and side channels, and New York and Penitentiary Canals)

Photo 5: View of the Boise River, showing 15 vertical feet of exposed sediments.

and historic river side channels that are now dry. The steepest slopes occur along the periphery of the BPCA, between the floodplain and the surrounding bluffs. The results of the slope analysis are shown in table 1 (also see Plates 4 and 5).

Table 1
Barber Pool Conservation Area Steepness of Slope

Slope	Slope Percent	BPCA Acreage	Percent of BPCA
Flat/Moderately Flat	0-5	438.23	61.49
Moderate	5-10	140.60	19.73
Steep	10-15	46.20	6.48
Very Steep	15+	87.65	12.30
Total		**712.68**	**100**

b. Aspect

Aspect is the specific direction a slope faces. Aspect, combined with slope, can be used to determine the evaporation and solar radiation an area will receive. Aspect has a tremendous influence on vegetation, with northern and eastern slopes generally maintaining more moisture than slopes with a western or southern aspect. The slope analysis divided the BPCA into nine aspect zones, which were mapped with the GIS. This analysis found areas of eastern aspect to be most abundant, covering 142.68 acres, or 20.02% of the study area. The results of the aspect analysis are shown in table 2 (see Plate 6).

Table 2 Barber Pool Conservation Area Aspect		
Aspect	**BPCA Acreage**	**Percent of BPCA**
Flat	0.45	0.06%
North	50.61	7.10%
Northeast	46.15	6.48%
East	142.68	20.02%
Southeast	84.57	11.87%
South	48.84	6.85%
Southwest	76.31	10.71%
West	139.65	19.59%
Northwest	123.42	17.32%
Total	**712.68**	**100%**

c. Analysis of Landform

The gentle, rolling terrain of the majority of the BPCA makes it suitable for restoration, recreation, or educational activities. The flat areas will hold water, with little concern about erosion, which is a benefit in establishing vegetation. The steep slopes around the exterior and along the canals and river channel will assist in limiting human access to the interior, thus reducing potential damage to vegetative communities and limiting wildlife disturbance.

2.3.2 Geology

The geology documented by the Idaho Geological Survey at the BPCA is classified primarily as gravel, and is consistent with the riverine environment. These gravels fall into four different types and originate from different time periods, but the Boise River deposited most of what occurs on the site. The distribution of the geologic formations within the BPCA is shown on plate 7.

The first, and most familiar type of gravel, is the Alluvium of the Boise and Snake River. The Idaho Geological Survey characterizes this gravel as “sandy cobble gravel upstream grading to sandy pebble gravel downstream. Mostly channel alluvium of the Boise and Snake Rivers.” These rocks originated in the Holocene Era (8,000 years ago to the present) and are found 6 to 14 meters below the surface. This geologic type is found on 466 acres (65%) of the BPCA.

The second most common geologic type found within the BPCA study area is the Gravel of the Boise Terrace. The Boise Terrace gravel is described as "Sandy pebble and cobble gravel. First terrace above the floodplain. Mostly mantled with thin loess." This gravel depth ranges from 3 to 14 meters deep, and originates in the Boise River drainage. It covers approximately 127 acres (18%) of the BPCA.

Alluvial Fan Gravel is also present in the BPCA. Alluvial Fan Gravel is described as follows: "Sandy pebble and cobble gravel when formed from reworked Tenmile Gravel and sand and granule gravel where formed from weathered granite. Primarily formed from weathered granite. Primarily formed by Pleistocene debris flows and local high-energy streams during times of greater run-off. Loess 1-2 meters thick discontinuously covers surface of gravel. Patterned ground."

These gravels range from 3 to 14 meters deep, and originate in the Boise River drainage. The grain size is characterized as sand to cobble, and they are light gray in color. This gravel type is found in 2.7 acres of the BPCA (<1%).

The Gravel of Whitney Terrace is the third most prevalent type found at BPCA. It is described as "sandy pebble and cobble gravel, second terrace above floodplain. Mantled with 1-2 meters loess. Thickest toward the east." This gravel was formed in the Pleistocene Era, and is 5 to 24 meters deep. The Gravel of Whitney Terrace covers 14.6 acres (2%) of the BPCA.

The final geologic type found in the BPCA is Talus Deposits, which are brown-gray to dark gray in color. The Idaho Geologic Survey describes the Talus Deposits as "very coarse gravel consisting of angular boulders and cobbles of basalt. Rock-fall and rockslide colluvium deposited at base of lava bluffs and ledges." It was formed in the Holocene and Pleistocene Eras, and ranges in depth from 1 to 25 meters deep. This gravel type is found on only 1.8 acres (<1%) within the BPCA.

A report completed for construction of the Idaho Shakespeare Festival states that there are no faults known to be present in the vicinity of the Idaho Shakespeare Festival or IDPR. However, Barber Pool does lie in a region of potential seismic activity. The soils composition and high water table could lead to conditions of soil liquefaction in the event of moderate to severe seismic activity. Liquefaction could lead to soil settlement and damage to structures (Maxim Technologies, Inc., Boise, Idaho, March 1996, *Report to the Idaho Shakespeare Festival*).

2.3.3 Soils

a. General

The US Natural Resource Conservation Service (NRCS) surveyed a portion of the BPCA in the summer of 2001, which resulted in the reclassification (from the 1980 Ada County soil survey) of some soils in the area. However, little change was noted in the types of soils found on the site, or their properties. Vegetation types recorded on the site are consistent with the soils series documented.

Using the NRCS method of soil classification, the soils that exist within the BPCA study area boundaries are divided into six series: 1) Carwalker; 2) Flofeather; 3) Haw; 4) Moulton; 5) Shawmount; and 6) Tindahay. Within the six series, subclassifications exist that further distinguish soils of different texture and slope. The paragraphs that follow describe each classification. Further description of the subclasses appears in table 3 (also see Plate 8).

- **Carwalker Series**

  The Carwalker soils are very deep, moderately well-drained soils that formed in alluvium derived from igneous rocks. Carwalker soils occur on low stream terraces. These soils will remain saturated, with a water table occurring between 3.3 and 5 feet below the surface. Native vegetation associated with Carwalker soils include cottonwood, basin big sagebrush, sweetclover, beardless wildrye, western wheatgrass, and willows.

- **Flofeather Series**

  Flofeather soils are very deep, somewhat excessively drained, with moderately rapid permeability and slow to medium runoff. These soils formed in alluvium from lacustrine deposits and granite. Native vegetation associated with these soils is dominated by basin big sagebrush, Antelope bitterbrush, needle-and-thread grass, and basin wildrye.

- **Haw Series**

  The Haw series consists of very deep, well-drained soils, which occur in foothills, terraces, alluvial fans, and draw bottoms. The soils formed in coarse or moderately coarse textured, unconsolidated, or weakly consolidated lacustrine sediment, covered by a thin mantle of loessal material. Permeability is classified as “moderately slow,” while runoff is rapid. Native vegetation associated with Haw soils includes bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush, Thurber needlegrass, and Indian ricegrass.

- **Moulton Series**

  The Moulton series consists of very deep, poorly drained soils that formed in alluvium, dominantly from granitic material. Moulton soils occur on flood plains, low terraces, and low alluvial fans; and have slopes of 0 to 3 percent. Native vegetations associated with this soil type include bunchgrasses, big sagebrush, rabbitbrush, rushes, and sedges.

- **Shawmount Series**

  This soil series consists of very deep, well-drained soils. The Shawmount Series soils formed in colluvium and slope alluvium from volcaniclastic materials. Shawmount soils exhibit rapid run-off and moderate permeability. Vegetation associated with these soils includes big basin sagebrush and bluebunch wheatgrass.

- **Tindahay Series**

  The Tindahay Series consists of very deep, somewhat excessively drained soils, with moderately rapid permeability that formed in mixed alluvium. Tindahay soils occur on alluvial fans, fan piedmonts, and extremely dissected terraces. Native vegetation associated with Tindahay soils includes big sagebrush, Indian ricegrass, bluebunch wheatgrass, Thurbers needlegrass, needle-and-thread grass, and fourwing saltbush.

Table 3 Description of Soils at BPCA					
Series, Texture	**Slope %**	**BPCA Acreage**	**% BPCA**	**Depth Class**	**Permeability**
Aridic Argixerolls – Rubble Land Complex		5.83	1.0	>60”	
Carwalker – Notus Complex	0 – 2%	392.60	55.0	>60”	Moderate
Flofeather Sandy Loam	1 – 3%	14.00	2.0	>60”	Moderately Rapid
Flofeather Sandy Loam	3 – 8%	50.10	7.0	>60”	Moderately Rapid
Flofeather Urban Land Complex	3 – 8%	6.44	1.0	>60”	Moderately Rapid
Haw Loam		8.38	1.0	Very deep >60”	
Haw Loam	2 – 4%	11.92	2.0	Very deep >60”	Moderately Slow
Haw-Urban Land Complex	2 – 8%	10.47	1.0	Very deep >60”	Moderately Slow
Moulton Fine Sandy Loam	0 – 3%	48.10	7.0	>60”	
Shawmount Sandy Loam		13.93	2.0	>60”	
Tindahay Fine Sandy Loam	0 – 30%	14.64	2.0	>60”	Moderately Slow
Water		136.29	19.0		

b. Analysis of Soils

The soils at the BPCA are predominantly deep, well-drained, and excessively well-drained soils formed of colluvium and alluvium. The water holding capacity of these soils is low. The majority of soil series are associated with shrub-steppe vegetation, but hydrologic conditions make them capable of supporting palustrine and wetland species, also. Soil series present on the site are consistent with vegetation found on the site. No soil type is present that will prevent establishment of appropriate vegetation (see Plate 9), or recreational or educational activities.

2.3.4 Hydrology

a. General

The natural hydrology of the BPCA has been greatly impacted by manmade structures in the river. Water in the area of the BPCA has been impounded since Barber Dam was constructed in 1904. Maps and photos from the 19th and 20th century paint a clear picture of the changes to the river and, consequently, the BPCA landform. Though impounded and reshaped, the river has resumed a riverine course, and typical geomorphologic processes of cutting and deposition have created a diversity of habitats (see Plate 10).

A General Land Office Survey map, dated 1867 but recently interpreted from field notes and a map, shows a wider, more cohesive river channel. The 1867 map does not cover the full extent of the current BPCA study area, but does indicate several side channels and two large bends in the river (see plate 11). A map of the area, dated 1921, shows the log holding pond at Barber, a lake used to float logs for storage at the mill (plate 12). By 1939, the river exhibited braiding and deposition, although the shape of the "pond" is still quite evident (plate 13). An aerial photo from 1950 (plate 14) shows the river as having become further braided, with multiple side channels cut through the area that is currently considered "upland." These channels contributed to the formation of the black cottonwood forest on the site. An aerial photo, dated 1972, shows continued channelization of the river, less braiding, and considerably more deposition, which formed islands and peninsulas (plate 15).

Photo 6: View of BPCA as it looked in 1930. Diversion Dam and the New York Canal are in the center. Note the extent of "Barber Pond" in the background.

Significant deposition behind Barber Dam probably occurred until construction at Diversion Dam, upstream, was completed in 1908. Photos from 1908 show a large landmass on the south shore, and a large sand bar on the north shore near the current location of the Highway 21 Bridge. Diversion Dam received some of the sediments that would have deposited in Barber Pool. Lucky Peak Dam, constructed in 1955, further reduced deposition downstream, while also diminishing spring flows that may have helped flush some sediments out of the river system.

The water surface elevation of Barber Pool was lowered approximately 11 feet in 1978, when the control gates at the top of Barber Dam were removed. This action lowered the water table throughout the pool. In 1989, Ada County and

Bonneville Pacific installed self-regulating flashboard gates at Barber Dam, which raised the water level 3 feet. The current pool elevation fluctuates between 2760 and 2787 feet. The dam operating level is maintained at elevation 2775.

Both Lucky Peak Dam and Diversion Dam upstream control water flows into the BPCA. Lucky Peak Dam was constructed to reduce high flood flows through Boise during spring runoff. Diversion Dam passes most of the outflow from Lucky Peak during the non-irrigation season (October to March). Diversion Dam splits flows between the river and New York and Penitentiary Canals during irrigation season (April to September). This means that the highest flows through Barber Pool usually occur during late fall and winter, and continue into the spring, depending on runoff during this period. Diversion into New York and Penitentiary Canals begins in April, and this contributes to a reduction in flow through the BPCA. During late summer, inflow into Barber Pool is greatly reduced, and water temperatures are at their highest. The normal total non-irrigation season streamflow below Diversion Dam is regulated to a minimum flow of 150 cfs. This streamflow is regulated at Lucky Peak Dam and at Diversion Dam.

Photo 7: An outlet from the New York canal contributes to wetlands within the BPCA.

A wasteway diversion from New York Canal augments the wetland located near the canal in the BPCA. During periods of filling or draining of New York Canal, excess water is released into the wasteway. These releases may cause localized flooding within the south shore peninsula.

b. Analysis of Hydrology

The BPCA is an area that is, and has been, profoundly affected by manmade structures on the Boise River. Historic maps and photos show that the configuration of the Boise River through the BPCA has changed dramatically, due in part to the construction of Barber Dam, Boise Diversion Dam, and the diversion works that feed New York and Penitentiary Canals. Prior to construction of Lucky Peak Dam upstream, the water regime on the Boise River was less regulated, and the BPCA was more prone to the effects of a dynamic river system, scouring and deposition. Since the construction of Lucky Peak Dam and the regulation of water flows through Boise, the landform and river channel through the BPCA has stabilized. Some of the consequences of this regulation are the reduced generation of black cottonwood trees in the riparian zones along the Boise River, and lowered groundwater levels related to recharge from the Boise River within the BPCA.

2.3.5 Climate

a. General

Air currents from the Pacific Ocean are the primary influence on weather in the Boise River Basin. Boise enjoys four distinct seasons, ranging from hot, dry summers to moderately cold winters. The area experiences low to sub-moderate precipitation, low velocity winds, low humidity, and a large proportion of sunny days.

b. Temperature

Temperatures in southeast Boise vary considerably with the seasons. Extreme temperatures observed in the BPCA area, and recorded at the Lucky Peak Dam weather station, include a high temperature of 112 degrees Fahrenheit (°F), (recorded July 19, 1960) and a low temperature of –17° F (recorded on two separate occasions in 1989 and 1990). The average frost-free periods occur during May through September in the lower valleys, but are shorter in the higher mountain valleys.

The mean monthly temperature in the BPCA vicinity, as recorded at the Lucky Peak Dam weather station, ranges from 28.8° F in January, to 74.4° F in July. Diurnal (daily) temperature range varies with the season, being lowest in winter (due to more cloud cover), with greater temperature ranges occurring in summer.

Long periods of extreme heat (over 95° F) in the summer months of June, July, and August are rare, as are extended periods of low temperatures in the winter months (December, January, and February). The normal progress of weather fronts across the state results in frequent weather changes.

Table 4
Lucky Peak Dam
Boise, Idaho
Period of Record General Climate Summary – Temperature

Station: (101018) Boise Lucky Peak Dam
From Year=1951 to Year=2000

	Monthly Averages			Monthly Extremes			
	Max. F	Min. F	Mean F	Highest Mean F	Year	Lowest Mean F	Year
January	36.9	20.8	28.8	36.6	78	18.0	1979
February	44.9	27.4	36.1	44.2	63	20.5	1989
March	53.4	31.3	42.4	50.2	86	36.9	1976
April	62.4	36.9	49.6	56.8	87	42.3	1975
May	72.2	44.0	58.2	67.1	58	52.5	1977
June	81.4	51.1	66.3	75.7	61	60.2	1991
July	91.3	57.5	74.4	81.6	60	62.8	1993
August	90.0	57.0	73.5	80.9	61	68.1	1993
September	79.5	49.2	64.3	72.8	63	57.0	1985
October	67.0	40.5	53.6	60.6	63	48.2	1969
November	49.7	31.5	40.6	45.6	81	28.4	1985
December	39.3	23.6	31.5	38.0	58	15.2	1985
Annual	64.0	39.2	51.6	54.9	58	49.6	1984
Winter	40.4	23.9	32.1	37.3	59	22.7	1989
Spring	62.7	37.4	50.1	54.3	87	45.1	1975
Summer	87.6	55.2	71.4	78.7	61	63.8	1993
Fall	65.4	40.4	52.9	59.2	63	44.7	1985

Winter = December, January, and February
Spring = March, April, and May
Summer = June, July, and August
Fall = September, October, and November
Source: Western Regional Climate Center, *wrcc@dri.edu*

c. Precipitation

Annual precipitation at the Lucky Peak weather station averages 14 to 15 inches. Over half of the annual precipitation recorded in the Boise River Basin occurs during the cool months, while summer rainfall contributes only minor amounts. In the summer, rainless periods of several days to several weeks are common. Since 1951, annual precipitation at Lucky Peak Dam has ranged from 6.97 inches in 1954 to 19.62 inches in 1980. This wet winter/dry summer precipitation regimen is characteristic of the northwestern United States and coincides with the normal seasonal passage of northern Pacific Ocean air masses.

The proportion of precipitation occurring as snow varies from less than 30 percent at Lucky Peak Dam and valley elevations, to approximately 50 percent at the 5000-foot elevation level. Data from snow courses on the Boise River watershed above the 7,000-foot level show that, by April 1, an average water equivalent of more than 30 inches is stored as snow. This represents nearly two-thirds of the expected total annual precipitation.

d. Humidity

Relative humidity values are high during the winter months (December through February) when temperatures are comparatively low. The values decrease during the spring months (March through May), and are generally very low (less than 25%) during summer days (June through August).

e. Wind

Wind velocities in the vicinity of the BPCA average between 6 and 8 miles per hour, and seldom exceed velocities of 40 miles per hour. Afternoon winds blow from the west, while prevailing winds in the evening and overnight are light and easterly. Mornings are generally calm (Barton *et al.,* 1974)

f. Analysis of Climate

Climatic conditions dramatically affect the physical state of the BPCA. Precipitation affects hydrology (although the effects are moderated by the dams), vegetation, and wildlife.

Approximately 78 percent of the runoff from the Boise River and its tributaries is the result of snowmelt. The volume of spring flows is directly tied to the amount of snow pack at the upper elevations, and the amount of precipitation at lower elevations. High spring flows are the result of increased temperatures and melting snow at higher elevations. Vegetative germination, growth, and density are also directly related to precipitation and temperature levels.

Table 5
Lucky Peak Dam
Boise, Idaho
Period of Record General Climate Summary – Precipitation

Station: (101018) Boise Lucky Peak Dam
From Year=1951 to Year=2000

	Precipitation							Total Snowfall		
						1 Day Max				
	Mean	High	Year	Low	Year	In.	dd/yyyy or yyyymmdd	Mean In.	High In.	Year
January	1.75	4.58	53	0.26	85	2.41	19/1953	2.5	22.0	82
February	1.22	2.70	75	0.15	64	0.90	15/1976	0.9	9.0	66
March	1.44	3.66	83	0.05	67	1.17	13/1983	0.2	3.5	51
April	1.42	3.20	65	0.21	59	1.58	07/1969	0.0	1.0	82
May	1.40	5.04	98	0.00	92	1.87	12/1958	0.0	0.0	51
June	1.04	2.82	58	0.01	60	1.47	11/1976	0.0	0.0	51
July	0.31	1.52	82	0.00	53	1.11	31/1960	0.0	0.0	51
August	0.41	4.14	68	0.00	51	1.81	10/1968	0.0	0.0	51
September	0.69	3.83	86	0.00	51	1.56	12/1976	0.0	0.0	51
October	0.79	2.71	75	0.00	52	0.73	30/1982	0.0	0.0	51
November	1.73	4.31	88	0.00	54	1.33	23/1953	0.4	6.5	79
December	1.54	4.63	64	0.14	86	1.40	26/1996	1.3	8.0	81
Annual	13.74	19.62	80	6.97	54	2.41	19530119	5.4	8.1	72
Winter	4.51	8.58	65	1.29	77	2.41	19530119	4.8	31.0	82
Spring	4.26	8.05	80	1.41	92	1.87	19580512	0.2	3.5	51
Summer	1.76	5.16	68	0.14	57	1.81	19680810	0.0	0.0	51
Fall	3.21	5.82	86	0.66	52	1.56	19760912	0.4	6.5	79

Winter = December, January, and February
Spring = March, April, and May
Summer = June, July, and August
Fall = September, October, and November

Low winter temperatures and deep snow in the foothills concentrate wildlife in the BPCA. Winter monitoring studies have shown that higher numbers of bald eagles congregate in the BPCA during winters with especially low temperatures.

Deer and elk also utilize the BPCA for feeding and thermal cover in cold winters and periods of heavy snowfall and snow accumulation. The higher numbers of large mammals feeding in the BPCA may adversely impact vegetative communities.

2.3.6 Air Quality

a. General

Ada County meets overall Federal air quality standards, although natural occurrences such as valley inversions in the winter, or forest fires (usually in summer and fall) may create detrimental conditions. Land management practices such as controlled burns, along with the increasing urban growth in the Boise Valley, also contribute to poor air quality.

Table 6
Lucky Peak Dam
Boise, Idaho
Monthly Climate Summary
Period of Record: 1/12/1951 to 12/31/2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Average Max. Temperature (F)	36.0	44.9	53.4	62.4	72.2	81.4	91.3	90.0	79.5	67.0	49.7	39.3	64.0
Average Min. Temperature (F)	20.8	27.4	31.3	36.9	44.0	51.1	57.5	57.0	49.2	40.5	31.5	23.6	39.2
Average Total Precipitation (in.)	1.75	1.22	1.44	1.42	1.40	1.04	0.31	0.41	0.69	0.79	1.73	1.54	13.74
Average Total Snowfall (in.)	2.5	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.3	5.4
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 84.6%, Min. Temp.: 84.6%; Precipitation: 92.4%, Snowfall: 76.1%; Snow Depth: 75%
Source: Western Regional Climate Center, *wrcc@dri.edu*

Testing for carbon monoxide and fine particulate matter PM-10 (particulate of an aerodynamic diameter of 10 microns or less), which is considered respirable, has resulted in a “non-attainment” of Federal standards classification in the past. The State Department of Environmental Quality (DEQ) is currently working on maintenance plans for the US Environmental Protection Agency (EPA) that will plot a course for attainment in the future. The Air Quality Maintenance Plan is due to be released in Fall 2002 by the Idaho DEQ.

Due to a lack of historic data, air quality for the following pollutants remains unclassified:

- Nitrogen dioxide
- Sulfur dioxide
- Lead
- Ozone

b. Analysis of Air Quality

Although air quality has remained within acceptable levels in the past, the increased development in the Boise Valley raises the potential for air quality problems in the future, particularly in the winter, when inversions are common, and during forest fire season. It will be important for city and county planning agencies to coordinate with the Department of Environmental Quality and state and county transportation departments to regulate growth and transportation planning to attain compliance with air quality laws.

2.3.7 Land Cover and Vegetation

a. General

For the purpose of this report, land cover mapping units have been classified using guidelines taken from Plant Communities, by R. Daubenmire (1968). Mapping classifications followed basic dominant cover with first sub-dominant(s). Existing data from the Idaho Conservation Data Center were ground-truthed on a site visit, by a Corps wildlife biologist, May 7 to 9, 2001. Mapped polygons were further refined using photo interpretation and field notes (see Plate 16). The polygon limits were dictated by the photography available and private land holdings outside of the immediate river corridor. Soils on the site (except on the extreme uplands) are very porous. Soil delineations are primarily dictated by subsurface hydrology, which will split shrub-steppe from wetland vegetative types. For technical descriptions of vegetative types, see table 7. For soil descriptions see table 3.

Table 7 Vegetation/Cover Mapping Units			
Shrub- steppe			
CHNA/BRTE	*Chrysothamnus nauseosus*	Gray rabbitbrush	With varying amounts of bare ground background of sands or gravels. Sometimes with scattered *Ribes aureum* (golden currant)
	Bromus tectorum	Cheatgrass	
SHRUB/BRTE/POTR	*Chrysothamnus nauseosus*	Gray rabbitbrush	Mostly gray rabbitbrush with cheatgrass and scattered clumps/individual Populus trichocarpa (black cottonwood) trees. Some areas have golden currant
	Bromus tectorum	Cheatgrass	
ARTR/CHNA/PUTR	*Artemesia tridentate*	Big sagebrush	Herbaceous layer is usually bunchgrasses of Festuca Idahoensis (Idaho Fescue), Agropyron spicata (Bluebunch Wheatgrass), Cheatgrass, and forbs
	Chrysothamnus nauseosus	Gray rabbitbrush	
	Purshia tridentada	Bitterbrush	
Annual Grass			
BRTE/CHNA	*Bromus tectorum*	Cheatgrass	Cheatgrass with scattered rabbitbrush, with varying amounts of bare ground background of sands or gravels. Site could mature to shrub-steppe.
	Chrysothamnus nauseosus	Gray Rabbitbrush	

Table 7 Vegetation/Cover Mapping Units (continued)			
BRTE/FORB	*Bromus tectorum*	Cheatgrass	Cheatgrass and miscellaneous forbs like erodium sp. (filaree), with varying amounts of bare ground background of sands or gravels. Some sites have scattered decadent golden currant and/or big sagebrush shrubs. Weedier sites have whitetop.
		Miscellaneous forbs	
BRTE/FORB/ POTR	*Bromus tectorum*	Cheatgrass	Same as above, except with scattered black cottonwood.
	Populus trichocarpa	Black cottonwood	
Palustrine Forest			
POTR/SALIX	*Populus trichocarpa*	Black Cottonwood	Black Cottonwood and yellow willow, sometimes with Wood's rose and/or golden currant in the under story. Peach-leaf willow can also be found in the canopy in places. Weedier sites have Cardaria draba (whitetop) as a dominant herb. Wetter areas gave Carex lanuginose (sedge) in the herbaceous layer. Some areas have Salix exigua (coyote willow) as the dominant sub-canopy. Usually a wetland community, but can be upland.
	Salix lutea	Yellow willow	
ROAC/SALIX	*Robinia pseudo-acacia*	Black Locust	Black locust, peach-leaf willow, mixed with black cottonwoods. This community may be found in wetlands or uplands.
	Salix amygdaloides	Peach-leaf willow	
POTR/DRY	*Populus trichocarpa*	Black Locust	This is an upland site. Sometimes peach-leaf willow is found mixed with cottonwood. Black cottonwood and willow established under wetter conditions, now existing in drier conditions due to a drop in hydrology.
	Bromus tectorum	Cheatgrass	

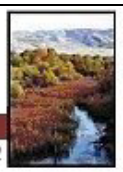

Table 7 Vegetation/Cover Mapping Units (continued)			
POTR/RIAU	*Populus trichocarpa*	Black cottonwood	Black cottonwood and golden currant with some woods rose. These sites border upland, or are located in upland sites. Golden currant is very decadent, with little new growth.
	Ribes aureum	Golden current	
Palustrine scrub-shrub			
SALIX/WET	*Salix lutea*	Yellow willow	Yellow willow, miscellaneous forbs, and Poa pratentis (bluegrass). Sometimes bluegrass and sedge are the dominant components. In the wettest sites, bluegrass and sedge are replaced by Typha lativolia (common cattail), and//or Typha agustifolia (narrow-leaved cattail). This site is a wetland.
POTR/SALIX	*Populus trichocarpa*	Black cottonwood	Young black cottonwood and yellow willow. Will become Palustrine forest if cottonwoods mature. This community can be wetland or upland.
	Salix lutea	Yellow willow	
POTR/WET	*Populus trichocarpa*	Black cottonwood	Young black cottonwood and sedge with cattail. Wetland community.
SALIX/POTR	*Salix amygaloides*	Peach-leaf willow	Peach-leaf willow with young black cottonwood and yellow willow. Wetter sites have sedge as the dominant herb. Will become Palustrine forest if cottonwoods mature. This community is found in wetland or upland areas.
	Populus trichocarpus	Black cottonwood	
POTR/DRY	*Populus trichocarpus*	Black cottonwood	Black cottonwood sprouts in sand. Bare ground with sparse cheatgrass can make up a significant amount of the community. Some sites have sparse rabbitbrush in the mix. Upland site.
SALIX/FORB	*Salix lutea*	Yellow willow	Yellow willow with miscellaneous forbs and bluegrass. Wetland site.

Table 7 Vegetation/Cover Mapping Units (continued)			
SALIX/DRY	*Salix amygaloides*	Peach-leaf willow	Peach-leaf willow and cheatgrass. In some sites Peach-leaf willow is replaced by young black cottonwood and yellow willow. Upland site.
BETULA/SALIX	*Betula occidentalis*	Water birch	Water birch and peach-leaf willow with scattered black cottonwood. Wetter sites have sedges dominating the herbaceous layer. Usually a wetland.
	Salix amygaloides	Peach-leaf willow	
Palustrine emergent			
TYLA/WATER	*Typha latifolia*	Cattails	Cattails and some sedge with open water. Some sites have scattered clumps of black cottonwood.
POTR/WET	*Populus trichocarpa*	Black cottonwood	Bulrush, cattail, and black cottonwood. Some sites have bluegrass and sedge replacing Baltic rush and cattail. Site will mature to palustrine forest.
	Juncus balticus	Baltic rush	
BRTE/FORB/POTR	*Bromus tectorum*	Cheatgrass	Same as above, but with scattered black cottonwood
	Populus trichocarpa	Black cottonwood	
Cleared/Mowed			
CLEARED/MOWED			Sites were probably Palustrine forest originally, but have been cleared for pasture space.
Sand			
SAND			Barren ground with sand or gravel

b. Species of Concern

- **Threatened and Endangered Species**

  The BPCA provides existing habitat for one plant species listed under the Federal Endangered Species Act, and one plant species which is a candidate for listing under the act. Ute Ladies' Tresses (*Spiranthes diluvialis*) is a threatened orchid that lives in side channels of large river systems, such as the side-channels within the BPCA. Slick spot peppergrass (*Lepidium papilliferum*) is a mustard found in desert uplands, and is a candidate for listing under the Endangered Species Act (ESA). The Idaho CDC has identified two populations of slick spot peppergrass near the BPCA, but has not found any Ute ladies' tresses.

  Several plant species under review by the US Fish and Wildlife Service are found in the BPCA vicinity, according to the Idaho CDC. These include Aase's onion (*Allium aaseae*), slender moonwort (*Botrychium lineare*), Davis' peppergrass (*Lepidium davisii*), Snake River milkvetch (*Astragulus purshii* var. ophiogens) and Mulford's milkvetch (*Astragulus mulfordiae*). Shining flatsedge (*Carex rivularis*), a sensitive plant; and one lichen, also under review, have been found within the BPCA study area. Wovenspore lichen (*Texosporium sancti-jacobi*) has been found in several areas south of BPCA (refer to plate 18).

c. Vegetative Communities

The land areas contained within the BPCA may be categorized as the north shore, south shore, and the islands. Vegetation on the large peninsula of the south shore is composed of degraded shrub-steppe, with transition areas of palustrine forest and shrub-steppe that becomes pure palustrine forest. Palustrine scrub-shrub communities also occupy large areas of the south shore. Palustrine emergent wetlands are found primarily in the flooded channels and ponds. Much of the shrub-steppe in the BPCA consists of gray rabbitbrush (*Chrysothamnus nauseosus*) and cheatgrass (*Bromus tectorum*), although there are some shrub-steppe areas that contain little more than cheatgrass. The shrub-steppe is just starting to establish and, with coarse soils on the site, this development will be slow. Some areas of moderately good soils support dense stands of cheatgrass *(B. tectorum*), and rye (*Secale cereale*).

Cattle grazing was permitted on the south shore area until 1978, when Boise Cascade turned the land over to the IFPL. The IFPL permitted monitored grazing at a specified level until 1984, but no authorized grazing since that time. The vegetation associated with the sandy soils will not support extensive grazing for extended time periods. The current vegetation on the south shore will not support grazing, except for short-duration spring grazing within the cheatgrass meadows.

Photo 8: Whitetop is one of the most common noxious weeds found in the BPCA

The BPCA, at this time, does not have a major noxious weed infestation in the upland locations. The most common weeds are scotch thistle (*Onopordum acanthium*) and whitetop (*Cardaria draba*). Purple Loosestrife has begun to take hold along the river and side channels. A high potential exists for yellowstar thistle (*Centaurea solstitialis*) and diffuse knapweed (*Centaurea diffusa*) to invade the area due to open soils and little competition from native plants.

Palustrine forest consists primarily of black cottonwood (*Populus trichocarpa*) and/or peachleaf willow (*Salix amygdaloides*), along with yellow willow (*Salix lutea*), Wood's rose (*Rosa woodsii*), mockorange (*Philedelpheous lewisii*), and/or golden currant (*Ribes aureum*). In drier sites, the understory is reduced to young black cottonwood and willow, with sparse cheatgrass. The palustrine emergent vegetation is dominated by cattails (*Typha latifolia*), with some reed canary grass (*Phalaris aundinacea*) and sedges (*Carex lanuginose*). Coyote willow (*S. exigua*) and yellow willow (*S. lutea*)

Photo 9: The BPCA is known for its cottonwoods, which provide important roosting areas for wintering bald eagles.

dominate the palustrine scrub-shrub vegetative areas. The Idaho CDC has designated the yellow willow plant community a "Native Plant Community of Significance."

Vegetation of the north shore area is dominated by palustrine forest and palustrine scrub-shrub. The area near the river is dry, with little under story. The deeper channels away from the river exhibit dense cottonwood forest with golden currant and rose. An open, forested meadow with scattered pockets of cottonwood and willow or green ash (*Fraxinus pennsylvanica*), cheatgrass, annual rye (*Secale cereale*), and white-top (*Cardaria draba*) is also found in the area.

Currently, the south shore and, to a lesser extent, the islands and the north shore, are classified as perched wetland habitats. The National Wetland Inventory depicts wetlands only on the lower islands and in isolated spots on the mainland areas. The wetland areas away from the river are created by seepage from New York Canal. The palustrine forest and palustrine scrub-shrub areas outside of this influence are at risk, and will survive only if fire or some other impact (such as beavers) does not kill the trees or root crowns. The young cottonwood and willow in the area are regrowth of existing root masses, and little vegetative reproduction appears to be taking place, due to lack of suitable hydrological conditions for seedbeds. The islands may be classified predominantly as dry palustrine forest, with fringes of palustrine scrub-shrub and palustrine emergent of sedge and Kentucky bluegrass (*Poa pratensis*).

Photo 10: Red winged blackbirds utilize the wetland habitat at the BPCA.

d. Analysis of Landcover and Vegetation

The BPCA supports varied vegetative systems within a relatively small geographical area (see Plate 17). Of these systems, the yellow willow community has been designated a Plant Community of Importance by the Idaho CDC. The BPCA also has the potential to host several plant species of concern, and close monitoring of the vegetative communities is prudent.

Vegetation within the BPCA is shifting due to changes in the hydrological regime. The lowering of the elevation of Barber Dam resulted in less water behind the dam, and lower groundwater and wetland elevations within the BPCA. Further regulation of the hydrological regime by Lucky Peak Dam limits high water events that help to create suitable seedbeds for black cottonwoods. The consequence

Photo 11: Changes to the hydrological regime have helped establish the shrub-steppe vegetative community within the BPCA.

is that vegetation traditionally associated with the BPCA, the black cottonwood riparian forest, is changing. Without intervention, some of the upland forested areas will probably convert to a shrub-steppe community over the next 10 to 20 years.

Shrub-steppe communities will most likely develop slowly due to the sandy soils within the BPCA. Competition from noxious weeds will also limit establishment of desirable native species. The current weed control practices will help to establish native species within the BPCA, thus enhancing wildlife habitat.

2.3.8 Wildlife

a. General

Although urban development is beginning to encroach upon the BPCA, the area is on the outer edge of urban Boise, and a good diversity of wildlife can still be found. Open lands upstream and to the north of the BPCA provide habitat and migration corridors that are used by deer to move between the river and the foothills. Good riparian habitat, on private, public, and IFPL lands, exists within the BPCA. The IFPL lands have limited public access, which further enhances the value of the area for wildlife. The following paragraphs contain a general discussion of wildlife that is relatively common to the area. A complete list of wildlife is contained in Appendix A.

b. Species of Special Concern

The BPCA provides habitat or potential habitat to multiple species listed as Threatened or which are candidates for listing as Species of Concern by the USFWS (see Plate 18).

- **Mammals**

  Two mammal species that are listed by the USFWS as "Species of special concern" are noted for Ada County: the Canada Lynx (*Lynx Canadensis*) and gray wolf (*Canis lupus*). Under normal circumstances, neither of these species would be found in the BPCA vicinity. While it is possible that individual wolves could migrate through the area, this would be a rare occurrence.

  Several other mammals are also under review by the US Fish and Wildlife Service (USFWS) for Federal listing. The Idaho CDC has documented some of these species in the vicinity of the study area, including pygmy rabbit (*Brachylagus idahoensis*), Townsend's big-eared bat (*Corynorhinus townsendii*), long-legged myotis (*Myotis volans*), western small-footed myotis (*Myotis ciliolabrum*), pallid bat (*Antrozous pallidus*), and Merriam's shrew (*Sorex merriami*).

- **Birds**

  The only Federally-listed bird species present at the BPCA is the bald eagle. Bald eagles are seen in the region during winter months, and utilize the BPCA for perching and roosting in the cottonwood trees, and hunting fish and waterfowl along the river. No bald eagle nesting has been documented within 50 miles of Boise.

  The BPCA is known for its wintering bald eagle population. Every year people observe the eagles in the BPCA from viewpoints in the Surprise Valley subdivision, from the Idaho Shakespeare Festival site, or from overlooks along Warm Springs Avenue. Bald Eagle Day, an annual event organized by IDPR and held at the Idaho Shakespeare

Festival Interpretive Center, attracts large crowds who come to observe and learn about bald eagles.

A multi-year study (1993 to 1996) of bald eagles along the Boise River monitored eagle populations and habitat use from Lucky Peak Lake to Eagle Island. This multi-year study affirmed the importance of the BPCA to wintering bald eagles, as the area was used by eagles for perching, roosting, foraging, and as a staging area for eagles moving to other places. A conservation plan was developed from the data collected by the researchers, and recommendations regarding the preservation and enhancement of bald eagle habitat were presented to the public. The plan specifically targeted the roosting habitat in the BPCA as a resource to be preserved and enhanced. Habitat enhancement recommendations of the task force that may be implemented at the BPCA include enhancement of the black cottonwood forest and the riparian zone, control of invasive weed species, protection of eagle use areas from human interference, and the enhancement of aquatic habitats as a means of providing healthy fisheries for food for the eagles. (Boise River Bald Eagle Task Force, 1995)

c. Species Under Review

There are several bird species under review for listing by the US Fish and Wildlife Service, and the Idaho CDC has documented some of these species in the vicinity of the BPCA. These include the yellow-billed cuckoo (*Coccyzus americanus*), sage grouse (*Centrocercus urophasianus*), western burrowing owl (Athene cunicularia), ferruginous hawk (*Buteo regalis*), mountain quail (*Oreortyx pictus*), and long-billed curlew (*Numenius americanus*). Of the listed species, BPCA has the potential to attract long-billed curlews, burrowing owls, and yellow-billed cuckoos, but this is dependent on how aggressively shrub-steppe and palustrine forest values are managed. Anecdotal evidence suggests that long-billed curlews use the agricultural fields across Warm Springs Avenue during their migration.

- **Reptiles and Amphibians**

  Several reptile and amphibian species listed by USFWS as “species of concern” might be found in, or near, the BPCA. These species include Woodhouse’s toad (*Bufo woodhousii*), western toad (*Bufo boreas*), northern leopard

frog (*Rana pipiens*), Columbia spotted frog (*Rana lutieventris*), common garter snake (*Thamnophis sirtalis*), night snake (*Hypsiglena torquata*), rubber boa (*Charina bottae*) striped whipsnake (*Masticophis taeniatus*), and ground snake (*Sonora semiannulata*). The Idaho CDC, in their survey, found only the western toad and common garter snake. However, the BPCA includes appropriate habitat for the other species recommended for listing, which makes future monitoring prudent.

- **Fish**

  The BPCA is classified as habitat for redband trout, which is a review species under the ESA. Bull trout are currently listed as threatened under the ESA, but the bull trout population is restricted to areas above Lucky Peak Dam, and any bull trout or redband trout found in the BPCA would be considered incidental.

2.3.9 Wildlife – General

a. Mammals

Evidence exists of a resident mule deer (*Odocoleus hemionus*) population on IFPL lands within the BPCA. Also, white-tailed deer (*Odocoleus virginiana*) were sighted in May 2001, a period when they would usually move to higher elevations. White-tailed deer, mule deer, and Rocky Mountain elk (*Cervis elaphus canadensis*) inhabit the BPCA during migration and winter. Predators on the site include cougar (*Felis concolor*) bobcat (*Lynx rufus*) and red fox (*Vulpes vulpes*) Medium-sized mammals that live in the area include beavers (*Castor canadensis*), striped skunk (*Mephitis mephitis*), river otter (*Lutra canadensis*), raccoon (*Procyon lotor*), and coyote (*Canis latrans*). Smaller mammals include cottontail (*Sylvilagus nuttali*), muskrat (*Ondatra zibethicus*), woodrat (*Neotoma* sp.), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomys megalotis*), meadow vole (*Microtus pennsylvanicus*), and little brown myotis (*Myotis lucifugus*).

Photo 12: Coyotes are one of the many mammals living in the BPCA.

b. Connectivity

The Idaho Department of Fish and Game Foothills Management Area is located approximately ¼ mile northeast of the BPCA, across Warm Springs Avenue. The Idaho Department of Fish and Game manages approximately 19,000 acres in the Boise area as critical winter habitat for mule deer and elk. The IDFG has documented as many as 270 deer per square mile within this unit, and over 500 head of elk within management unit 39, which is closest to the BPCA. Severe winter weather pushes wildlife from areas of higher elevation into the foothills, and then into the BPCA.

Photo 13: Deer and other large ungulates move from the foothills to lower ground near the river. These deer were grazing an alfalfa field within the BPCA study area.

Deer and elk seek thermal cover and browse along the Boise River, making the BPCA critical winter habitat for large ungulates. Adjacent development has removed land from agricultural production, making fewer resources available to deer and elk. The BPCA is one of the last lowland areas available to large mammals during the winter. Increased development in the area could potentially block or severely restrict deer passage into the BPCA. Warm Springs Avenue is already experiencing high deer mortality. There is also an increase in deer usage of suburban areas as they search for browse and cover. Human/wildlife conflicts are anticipated to increase as deer continue to move into traditional wintering grounds that are now occupied by homes. Big game in urban areas may also attract large predators, further increasing the potential for human/wildlife conflicts. These conflicts will put greater burden on local wildlife officials and governments.

Development has also created an increase in traffic on Warm Springs Avenue, which has caused high rates of deer mortality. During the winter of 2000-2001, between 160 and 170 deer were killed between the Warm Springs Golf Course and Lucky Peak Dam. In December 2001, 10 deer were killed in one night, prompting the Ada County Highway Department to lower the speed limit on

Warm Springs Avenue from 50 to 40 miles per hour. Neighbors of the BPCA named deer mortality on Warm Springs Avenue as an important issue at both the October 2001 and the May 2002 Master Plan open houses held at IDPR headquarters.

Photo 14: Signs warning motorists of deer crossings have been posted on Warm Springs Avenue. However, deer mortality on the road has continued to rise due to increased traffic.

c. Birds

The BPCA provides habitat for a diverse avian population numbering over 200 documented species. The palustrine forest currently exhibits many growth stages, from young regeneration to old growth. This variety is very important to certain habitat indicator species, such as Lewis' woodpecker (*Melanerpes lewis*), which require old growth riparian habitat. During a site visit in May 2001, a Lewis' woodpecker was seen nesting in a snag on the south shore. Other species that serve as indicators of good quality riparian habitat are willow flycatchers (*Empidonax traillii*), yellow warbler (*Dendroica petechia*), and downy woodpecker (*Picoides pubescens*). The yellow warbler and downy woodpecker were also seen during the site visit in May 2001, and habitat is very suitable for the willow flycatcher. Other songbirds seen during the 2001 site visit include song sparrow (*Melospiza melodia*), Lazuli bunting (*Passerina amoena*), American goldfinch (*Carduelis tristis*), house finch (*Carpodacus mexicanus*), American robin (*turdus migratorius*), red-winged blackbird (*Agelaius phoeniceus*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), bank and northern rough-wing swallows (*Riparia riparia* and *Stelgidopteryx serripennis*), Bullock's oriole (*Icterus bullockii*), belted kingfisher (*Ceryle alcyon*), northern flicker (*Colaptes auratus*), and American dipper (*Cinclus mexicanus*).

Photo 15: A yellow-headed blackbird, one of the many songbirds found in the BPCA

- **Waterfowl**

The BPCA supports varied habitat for waterfowl. Some habitat has been degraded due to the lowering of the hydrology and increased human activity in the area. Canada goose (*Branta canadensis*) and mallard (*Anas platyrhynchos*) are the most common, but wood duck (*Aix sponsa*) and common merganser (*Mergus merganser*) were also found to be nesting in the BPCA. During an inventory of the islands in May 2001, 14 goose nests were found; and broods of geese, mallard, merganser, and wood duck were observed (see Plate 19).

Photo 16: The BPCA provides important nesting habitat for waterfowl. Pictured, a Canada goose nest.

In the winter, Barber Pool provides an important land stopover for migrating waterfowl. However, adjacent agriculture is quickly being converted to urban development, and this will ultimately reduce the food supply for wintering waterfowl due to the loss of grain crops. Other waterfowl common to the area are American widgeon (*Anas americana*), American coot (*Fulica americana*), lesser scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), green-winged teal (*Anas crecca*), northern pintail (*Anas acuta*), gadwall (*Anas strpera*), and the northern shoveler (*Anas clypeata*).

Photo 17: A common merganser and her brood in the BPCA

- **Shore birds and wading birds**

Shore and wading birds can also be found in the BPCA, but the habitat is too limited to support high diversity. The most common shore and wading birds found there are killdeer

(*Charadrius vociferous*), great blue heron (*Ardea herodias*), western sandpiper (*Calidris mauri*), western grebe (*Aechmophorus occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), ring-billed gulls, and California gulls (*Larus delawarensis* and *L. californicus*). Killdeer is the only species showing signs of nesting within the Barber Pool area, although there is potential for heron colonies on the larger islands.

- **Upland Game Birds**

  The most common upland game birds found in the BPCA are California quail (*Callipepla californica*), ring-necked pheasant (*Phasianus colchicus*), and mourning dove (*Zenaida macroura*). Suitable nesting habitat to support all of these species is present in the BPCA. Some pheasant nests were found during the site visit in May 2001. General habitat for these species is very good, as they prefer a mosaic of open and forested vegetation. Hunting is not allowed in the area, so the biggest threat to upland bird species within the BPCA comes from coyotes and feral domestic pets.

- **Raptors**

  Raptors are seen year-round in the BPCA. Red-tailed hawk (*Buteo jamaicensis*), great-horned owl (*Bubo virginianus*), Northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), and western screech owl (*Otus kennicottii*) are commonly observed within the study area. Winter migrants include the rough-legged hawk (*Buteo lagopus*) and bald eagle (*Haliaeetus leucocephalus*). Other raptors recorded in the BPCA include barn owl (*Tyto alba*), sharp-shinned and Cooper's hawks (*Accipiter striatus* and *Accipiter cooperii*), prairie falcon (*Falco mexicanus*), northern pygmy owl (*Glaucidium gnoma*), and long-eared owl (*Asio otus*). Osprey (*Pandion haliaetus*) are generally observed only in the summer.

  No signs of raptor nesting were seen during the May 2001 site visit, but it is suspected that kestrels, and possibly screech owls and great-horned owls, are currently nesting in the BPCA or the vicinity (based on habitat potential).

Researchers monitoring bald eagles reported at least two resident pair of red-tailed hawk on the site, and observed one red-tailed hawk nest in February, 1996 (Kaltenecker, 1996). Northern harriers nest on the ground within grassland shrub-steppe, and could potentially nest at the south shore area. Trees of sufficient size to support either red-tailed hawk or osprey nests were noted.

d. Reptiles and Amphibians

In a semi-arid climate, reptile and amphibian diversity is somewhat limited. Eighteen species of reptiles and amphibians have been documented within the boundaries of the BPCA study area. However, it is highly likely that the area supports a broader variety than what has been documented, due to the diversity of habitat. The most common documented reptiles are the western rattlesnake (*Crotalus viridis*), Pacific gopher snake (*Pituophis melanoleucus catenifer*), yellow-bellied racer (*Coluber constrictor*), wandering Garter Snake (*Thamnophis elegans*), common garter snake, (*Thamnophilis sirtalis*), and western fence lizard (*Sceloporus occidentalis*). Although not documented, it is likely that the night snake (*Hypsiglena torquata*), rubber boa (*Charina bottae*), and striped whipsnake (*Masticophis taeniatus*) may also be found on the BPCA.

Amphibian habitat is generally restricted to, or near, wetland areas. Common amphibians found in the BPCA study area are western toad (*Bufo boreas*), bullfrog (*Rana catesbeiana*), long-toed salamander (*Ambystoma macrodactylum*), striped chorus frog *(Pseudacris triseriata),* and Pacific tree frog (*Pseudacris regilla*). The bullfrog is not a particularly desirable species, as they aggressively compete with other reptiles and amphibians and, thus, are disruptive to the natural ecosystem. Amphibian populations are distributed across forest, grassland, and shrub-steppe habitats, and the BPCA provides suitable habitat for over nine documented species. Shrub-steppe species found at BPCA include great basin spadefoot (*Scaphiopus intermontanus*), long-toed salamander, and Northern leopard frog (*Rana pipiens*). Grassland species documented at the BPCA include Western skink (*Eumeces skiltonianus*), Pacific chorus frog (*Pseudacris regilla*), striped chorus frog, pacific tree frog, woodhouse's toad (*Bufo woodhousii*), northern leopard frog (*Rana pipiens*), and Columbia spotted frog (*Rana luteiventris*). Amphibian species found in forested areas within the BPCA are western skink, great basin spadefoot, Pacific chorus frog, striped chorus frog, western toad, and long-toed salamander.

Habitat for amphibians was greatly reduced when the water level dropped due to modifications to Barber Dam. Currently, the best amphibian habitat is within the lands owned by IFPL, where the New York Canal augments wetlands. This area

is characterized by its wetland habitat, deep side channels of the Boise River, Boise river islands, and forested grasslands.

e. Butterflies

Butterflies are of interest to many naturalists and others who may frequent the BPCA area. The BPCA includes habitat to support a large variety of butterflies. Viceroys (*Limenitis archippus*) and monarchs (*Danus plexippus)* are attracted to shoreline areas during the spring and summer. Cabbage whites (*Pieris rapae*), skippers (*Polites, Pyrgus*, *Amblyscirtes, Epargyreus, Euphyes, Hesperia, Ochlodes*), blues (*Agriades, Euphilotes, Everes, Glaucopsyche, Plebejus*), fritillaries (*Speyeria, Boloria*), painted ladies (*Vanessa* spp.), wood nymphs (*Cercyonis* spp.), and swallowtails (*Papilio* spp.) are also likely. However, there is not a large preponderance of forbs within the landmasses of Barber Pool, and this reduces the attractiveness of this area to these species. The plantings at William Shakespeare Park on the Idaho Shakespeare Festival grounds have potential to attract butterflies and, because the willow is a host species for the viceroy, this species should be seen seasonally. Very few butterflies were noted during the site visit in May 2001. Most of those noted were cabbage whites and skippers.

2.3.10 Aquatic Resources

Aquatic resources include fish and invertebrates found within the river system. Thirteen resident fish species are present in the Boise River, and the Idaho Department of Fish and Game stocks other sport species, as well. Anadromous fish are restricted to areas below Hells Canyon on the Snake River, due to the construction of the Hells Canyon Dam complex.

Native resident trout include redband trout (*Oncorhynchus mykiss* spp.), cutthroat trout (*Oncorhynchus clarki*), and bull trout (*Salvelinus confluentus*). The USFWS lists bull trout as a threatened species, and redband trout is a candidate species for listing. The construction of the diversion dams, and Lucky Peak Dam later, greatly restricted fish movement within the Boise River. Barber Dam does not have a fish ladder, so the only way for fish to get into the BPCA stretch of the Boise River is by entrainment through Lucky Peak Dam and Diversion Dam, upstream of the BPCA. This may be a viable source of fish populations in the Boise River below Lucky Peak Dam. The IDFG stocks Lucky Peak Lake with game fish each year (fall chinook, rainbow trout, early spawner kokanee, and domestic kamloops). See appendix B for fish species associated with the BPCA.

Mountain whitefish and trout are also stocked in the Snake and Boise Rivers by IDFG, and fishermen have been observed catching whitefish behind Barber Dam. The IDFG conducted electrofishing just below Diversion Dam in 1995, and

found that mountain whitefish are the most dominant species in the stretch of river just below Lucky Peak Dam. Suckers and wild rainbow trout were also found (IDFG, cited in BOR's Draft Environmental Assessment). Rainbow trout are stocked below Barber Dam annually, and Chinook and Steelhead have been stocked periodically by IDFG.

Changes in hydrology in the BPCA created changes in invertebrate species and populations. Invertebrate populations would have changed from those species that occupy free-flowing rivers to those adapted to impounded conditions after the construction of Barber Dam. The lowered hydrology probably has helped conditions somewhat to promote a higher diversity of invertebrates within BPCA, especially at the upper end. With restrictive flows due to the upstream dams, it is unclear how much habitat has been improved.

2.3.11 Analysis of Fish and Wildlife

The BPCA provides habitat for over 200 avian species and 60 species of mammals, reptiles, and amphibians. The location of the BPCA in the transition zone from the foothills to the Boise River makes it heavily utilized by various species for different periods of the life cycle. It is both an important nesting area for birds in the spring and summer, and a critical wintering area for bald eagles, deer, and elk.

The BPCA is a winter congregation area for big game, including mule and white-tailed deer and elk. As open space is reduced due to residential development and expansion, these animals will congregate in smaller areas and/or spill into adjacent neighborhoods. Big game congregate in lowlands, especially during harsh winters, where they can still find food and get some thermal cover from the winds at higher elevations. They will feed on anything they find during this period. If enough suitable habitats are not found they will over-graze the lands that are available. Big game populations will need to be monitored within the BPCA, and their impacts to the natural and urban landscapes controlled. Special management may be needed within the BPCA to address this problem, which will require close coordination with IDFG.

Increased development has also meant heightened interaction between wildlife and humans. One major result has been a marked rise in deer mortality caused by increased traffic on Warm Springs Avenue in the winter of 2001-2002 (see Plate 20). It will be important for humans to accommodate the needs of wildlife if they want to enjoy wildlife viewing as an amenity of life near the Boise River.

The Boise Bald Eagle Task Force recommended enhancement of aquatic habitat along the Boise River as a means to encourage the wintering bald eagle population to return to the Boise River Valley in winter. Whitefish are believed to

make up a portion of the bald eagle's winter diet, and the development of fishery resources would benefit the population, as would enhancement of waterfowl habitat and possibly the development of food plots for wintering waterfowl.

Habitat preservation and enhancement will be a critical component of a successful management program at the BPCA. Good habitat exists on the site, but there is room for improvement, particularly as the area becomes crowded by human encroachment. It will be necessary for wildlife to have enough cover and resources to find respite within the interior of the BPCA.

2.4 CULTURAL FACTORS/HUMAN ENVIRONMENTAL FACTORS

2.4.1 Cultural Resources

a. General Regional Overview

Humans have occupied southwest Idaho for over 10,000 years. Our understanding of this long period of human presence is based largely on archeological research (Butler, 1963; Meatte, 1989). However, archeological investigations of the Boise Valley leave many unanswered questions about past people and their activities. The remains of past activities, cultural resources, help provide a record of past cultures. Following the National Historic Preservation Act's definition of historic properties, cultural resources can be assessed based on whether they meet certain criteria of significance, given they are at least 50 years in age. (Some resources less than 50 years old may also be managed as cultural resources.)

The existing model characterizing the region's prehistory is based on investigations of sites from southwest Idaho that help address settlement and subsistence changes over time, as expressed in table 8, below.

Until approximately 4,200 years ago, small groups of people traversed large areas, exploiting diverse food resources and using limited tools. Following the glacial period, the climate gradually became warmer and drier, allowing peoples to exploit a larger variety of resources. Further climatic warming, occurring up to 3,000 years ago, encouraged peoples to focus settlement and subsistence activities around predictable riverine areas, using uplands and broad plains to acquire resources. The period from 4,200 to 250 years ago saw a transition to larger groups who occupied riverine winter villages and sustained themselves using stored foods gathered the previous year. A diverse tool kit, semi-subterranean homes, and a focus on harvesting salmon characterized these cultures. Over the previous 3,000 years, the climate has become similar to the present, with increased moisture. Larger habitations on river systems were supported with specialized resource activities at upland locations.

Table 8 Suggested Cultural Chronology for Southwestern Idaho		
Years Before Present	**Developmental Period**	**Settlement and Subsistence Strategy**
0 - 100	Historic	Cultural change
250 - 100	Equestrian Foraging	Wide ranging travel for foods, using horses for transport and trade.
4200 - 250	Semisedentary Foraging	Larger riverine villages; increased reliance on salmon; seasonal travels to specific food sources
11,500 - 4200	Broad Spectrum Foraging	Small mobile family groups exploiting diverse resources
13,000+ -11,500	Early Humans	Little Information available
This chronology is based largely on surface investigations of archeological sites. Archeological excavations of several sites are needed to provide a more detailed model of cultural change in southwest Idaho. Based on Meatte (1989).		

From 250 years ago up to the early 1800's, the intensive use of horses allowed for a dramatic increase in range of travel and harvests of resources (Meatte, 1989).

b. The Prehistoric Period

The few prehistoric period sites studied in the Boise River drainage have posed more questions than their limited data can answer. A prehistoric site near Lucky Peak Dam has two occupation periods. Based on point styles, the earlier occupation may date from 7,000 years ago, while the later occupation has been radiocarbon dated to around 700 to 1,300 years old. Hunters harvested animals from the foothills (mule deer/elk/mountain sheep), the desert (mule deer/antelope), and the Boise River floodplain (fish/river mussels). Another prehistoric site, found 4 miles north of the Boise River, has provided a series of radiocarbon-dated occupations from about 4,150 to 1,300 years ago. Site analysis found a strong similarity with Great Basin cultures to the south. However, dated projectile point types indicate the bow and arrow was used in the Boise region about 1,000 years earlier than in the Great Basin sites. Both archeological sites appear to have been used temporarily by people hunting large game animals. One site contained burials.

c. Ethnographic Record

In the 1800's, the Boise, Bruneau, and Weiser bands of the Western Shoshone occupied southwest Idaho. They spoke dialects of the Northern Shoshone language; and maintained close social, political, and economic inter-relations. Bands of the Northern Paiute-speaking peoples occupied lands to the west and south of the Boise Shoshone, and were culturally similar. The native name for the

Boise River Valley was “Kopkophepash”- much cottonwood meeting place (Ericson, 1994). Native peoples subsisted on and traded local resources from their own homeland (*e.g.,* salmon, deer, river mussels, camas, various berries, chert, artifacts, and deer hides), as well as those they could acquire in travel or trade (such as buffalo and obsidian). The Boise Shoshone were known to have large numbers of horses, and took part in Indian trade markets across southern Idaho (Ericson, 1994; Steward, 1941:347; Sappington, 1981).

The BPCA study area lies within a historically significant area for the Boise Shoshone people. Various bands of Indian peoples periodically gathered, harvested foods, camped in large numbers, traded, and buried their deceased at the eastern end of the Boise River Valley. They also used riverine travel routes that lead further up the Boise River to upland locations. Archeological sites may reflect the presence of these different cultures in late prehistory. A significant Boise Shoshone encampment and general location of historic “Sehewoki’I”, (Indian gatherings similar to rendezvous, but excluding non-Indians) were once located about 5 miles from the study area. Indian trails are said to have converged at Boise. The historic Shoshone Trail (later used as the Oregon Trail) lies immediately to the south and, in the past, may have encouraged use of the study area by travelers. This portion of the Oregon Trail reportedly followed the approximate location of the older Shoshone Trail, which had connected the homelands of Shoshoni peoples across southern Idaho. The fur trading party of John Jacob Astor followed the Shoshone trail along the Boise River in 1811. The trail was also used by the Whitman-Spalding missionary party in 1836. (Ericson, 1994; Dames and Moore, 1999; SAIC, 1995)

A Federal military post, (Fort Boise, later the Boise Barracks) was established in Boise during the summer of 1863 to ensure peace between Indian peoples and miners in the Boise area. An Indian encampment was photographed on the south side of the Boise River, southeast of the Boise Barracks, in the 1860s (Sappington, 1981:43). Several culturally significant places lie in the vicinity of the project area. Kelly Hot Springs, located west of the project area, was likely the spring used by historic native people for spiritual and healing practices into the 1900s. Prominent Shoshone elders were buried at this location (SAIC, 1996). A large native cemetery and traditional camp lies within 5 miles of the BPCA, south of Table Rock (Ericson, 1994:109; Ostrogorsky, 1979). A fishing camp, dating from the early 1800s, was located west of Barber Dam, where the Oregon Trail crossed to the north side of the Boise River.

d. Historic Period

The 1863 treaty with the Shoshone-Bannock transferred legal ownership to the United States of all lands of the Boise River drainage. (Kappler, 1904; Ostrogorsky, 1979). The following year, the Boise band was removed to the

Shoshone-Bannock Reservation at Fort Hall, although they had not been party to the treaty. At the time the treaty was ratified, the Boise band numbered around 300 people, and was led by Chief Tam Tomeco. The Boise people awaited their transfer to Fort Hall at their Kelly Hot Springs encampment. In 1867, president Andrew Johnson set aside reservation land along the confluence of the Snake and Portneuf Rivers for the Boise and Bruneau Shoshone bands. Some Boise Shoshone continued to visit the Boise Valley after 1864, in order to use its resources and pass on to younger generations knowledge of its culturally significant places.

Between 1843 and 1900, settlement of the west was facilitated by travel over the Oregon Trail, which lay just south and west of the BPCA. The Oregon Trail brought most northwest settlers through southern Idaho in the 1800's. Traffic along the trail continued as the Boise-Rocky Bar Stage Line and the Overland Stage Line followed its route as it merged with the Kelton Road from Utah to Boise. Commerce, military ,and mail to Boise followed the route until railroads like the Oregon Shortline Railroad (1887) and, eventually, automobiles, supplanted the use of the trail route (SAIC, 1995:4 and 1996:2-7). This trail segment was assessed for the development of the Oregon Trail Reserve Park (Dames and Moore, 1999). By the mid-1860's, settlers were established in the Boise River Valley, and the Boise community was growing. In 1861, gold was discovered about 35 miles northeast of the BPCA, and Boise area farms supplied the mining camps with food. The main Boise wagon road leading to the mines ran along the north boundary of the BPCA study area (Ostrogorsky, 1980; and Sappington, 1981). The need to link low elevation farms and ranches to typically higher elevation mines encouraged the construction of road networks.

Photo 18: A commemorative marker at the Oregon Trail Park, developed by the City of Boise.

In the 1880's, there were 256 farms growing crops on 81,000 acres in the Boise River Valley. Irrigation companies began construction of Ridenbaugh Canal, (a mile west of the study area) in 1867 and New York Canal in 1888 (BOR, 1978; and Davis, 1990). These water diversion projects took decades to complete, as they were enlarged and improved to support the growing agricultural industry. (In the early 1900's funding was received from BOR to upgrade New York Canal and construct Diversion Dam.) New York Canal was originally designed with a wooden flume, and later modified to a larger-capacity concrete structure. Diversion Dam was constructed to provide a storage reservoir to increase meager flows through New York Canal. A temporary town comprised of several buildings and tents, called "Government Town," was built just below Diversion

Dam (within the study area) to accommodate the influx of construction workers to the area. Just uphill from the town is the remains of a large borrow pit from which 13 million tons of gravel was removed for use in building Arrowrock Dam. In 1919, Ada County Highways took over use of the pit, but Highway 21 widening has reduced the pit size.

In 1912, a hydroelectric power plant with three generators was installed in Diversion Dam to support construction of Arrowrock Dam, which was built in 1915. Arrowrock Dam, a water storage reservoir, was needed to supply additional irrigation waters to the Boise Valley. Once Arrowrock Dam was complete, the power generated by Diversion Dam was sold to over 1,000 Boise residents and, later, to local irrigation projects. Penitentiary Canal, constructed with prison labor, diverted water along a 7-mile long earth channel from the north side of Diversion Dam. The canal route lies partially within the BPCA study area. Completed in 1909, the canal watered prison gardens, which supplemented the prison food supply.

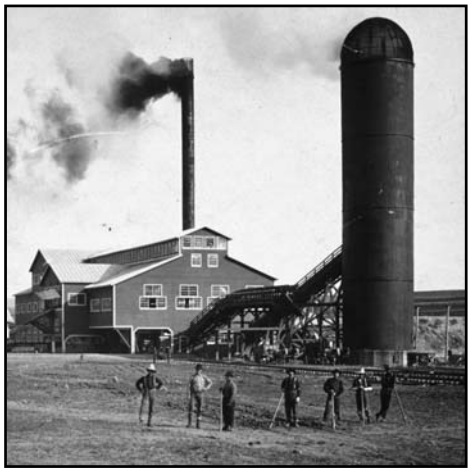

Photo 19: The Barber Lumber Mill operated on the site of the BPCA from 1906-1931.

The livestock and the timber industry also contributed to the success of the Boise area. Incorporated in 1902, Barber Lumber Company completed the construction of Barber Dam in 1905, and Barber Mill, (alongside and immediately west of the study area) in 1906. Barber Dam was constructed to create a log-holding pond in support of the adjacent mill. Construction of a company town, “Barberton,” began in 1906 to support the Barber Mill complex. Barber Lumber Mill opened in 1906, but closed a year later as the Fall Creek/South Fork Boise River route to transport logs was found to be impractical. The mill owners also dealt with a Federal timber fraud charge from 1908 to 1912, of which they were acquitted, and the mill was reopened.

In 1909, a post office was established, and the town’s name was changed to “Barber.” The Barber Lumber Company (with a 25,000-acre timber base and 40-mile Intermountain Railroad tract) and Payette Lumber Company merged in 1913, becoming the Boise Payette Lumber Company. This company operated from 1915 to 1934, using the intermountain railroad track constructed in 1914 to transport logs. The mill shut down when it could no longer profitably harvest available timber. Many Barber houses were sold and moved into Boise,

where most were purchased as staff housing for the Idaho Soldier's Home. Barber (mill, town and Intermountain Railway) was scrapped in 1935, and the Intermountain Railway right-of-way was sold to the State Highways Department, to become the footprint of State Highway 44 (later renumbered to State Highway 21). In 1957, the Boise Payette Lumber Company became the Boise Cascade Corporation.

Photo 20: A house from the original town of Barber. It was relocated to 3rd Street in Boise.

e. Analysis of Archeological and Historic Resources

Previous archeological investigations in the Boise Valley have found sites dating from a broad spectrum of prehistory and recent history. Preliminary information suggests native people may have largely used the local environment for limited subsistence acquisition activities (*e.g.,* hunting, fishing, and gathering). Sites located within 1 mile of the BPCA study area represent different kinds of cultural resources than those found at the valley's east end. The project area has received different uses and impacts to its land surface. Evidence of human use on the Boise River floodplain tends to be historic in age, and related to the regulation of the Boise River (*e.g.,* water diversion for irrigating agricultural lands, and ranching/livestock grazing). The study area's location, at the mouth of the Boise River canyon, invited the construction of transportation routes as well as livestock and agricultural practices.

Little documented evidence of prehistoric resources on the local Boise River floodplain exists. However, there are prehistoric period sites located in the project vicinity. Oral history accounts relate native people's values for Table Rock, Kelly Hot Springs, and Eagle Rock. Historic records describe native fishing camps, a cemetery, and general use of the area by native peoples in the historic period. Also, the section of the Oregon Trail south of the project area was once the "Shoshone Trail," a major travel route that connected various native peoples and their homelands.

Although other cultural resources may be found in the BPCA study area, currently known sites are listed in table 9.

The only known cultural resource not formally documented in the project area is the Intermountain Railway, which is associated with the Barber Mill complex (10-AA-439). Idaho State Highway 21 follows the historic track line of the Intermountain Railway (Wetherill, 1989).

2.4.2 Analysis of Cultural Resources

a. Applicable Laws and Guidance

Portions of the BPCA study area were inventoried for cultural resources prior to construction of IDPR headquarters and the Idaho Shakespeare Festival, but no significant resources were found. However, the proximity of the BPCA to the river, canyon, Shoshone and Oregon Trail(s), and the Barber Lumber Mill site make it likely that cultural resources are present on the site. Future activities related to restoration or ground disturbance will need to be monitored for the presence of cultural resources if they occur on Idaho State property. Actions undertaken on private or county property will not require strict monitoring, but it is recommended.

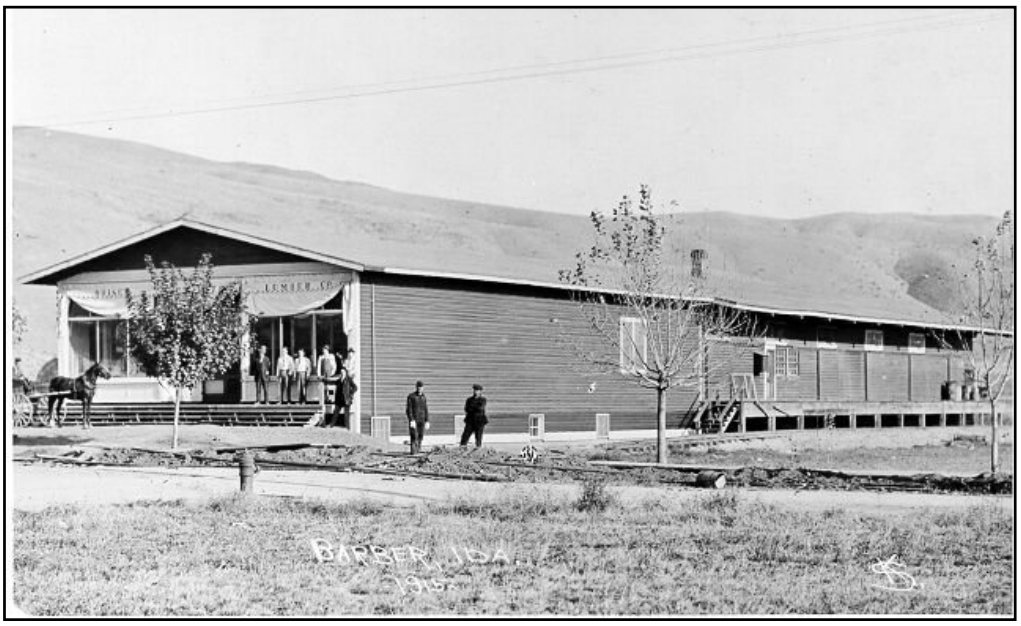

Photo 21: The Barber store. The town boasted a post office, school, and hotel, also.

Table 9 Previously Documented Cultural Resources Within The BPCA Study Area			
State Site Number	**Age**	**Name/Description**	**Management Status**
10-AA-137/ 00-2629	Historic (1904-06 to present)	Barber Dam and Powerhouse	NR listed 1978, maintain
01-955/ 01-996	Historic (1988/1910-present)	New York Canal	NR eligible, maintain and protect sub-components
01-1717	Historic (1909/12-Present)	Diversion Dam & Power Plant	Listed on National Register in 1976
00-2629	Historic (mill 1903-1934)	Barber Dam and Lumber Mill	National Register listed in 1978, Dam rehabilitated in 1989
01-15202	Historic	Wooden structure upstream of Barber Dam	Improve Documentation, Potentially NR eligible
01-15920	Historic (c.1909)	Barber Wastewater Control Valves	Potentially NR eligible, improve documentation
01-15921	Historic	Barber Wastewater Bridge	Potentially NR eligible, improve documentation
01-15925	Historic	New York Canal Headworks	Potentially NR eligible
01-19030	Historic (1908/09-1967?)	Penitentiary Canal	Potentially NR eligible. Maintained and used by Bureau of Reclamation – Water Works Project

The Idaho Antiquities Act (Title 27, Chapter 5, section 27-502) applies only to Idaho State property, but protects human remains, funerary objects, or cairns wherever they are found, under Idaho Statute (Title 27 "Cemeteries and Crematorium", Chapter 5, section 27-501-504). The statute states that graves and cairns cannot be removed, mutilated, defaced, injured, or destroyed. In addition, artifacts or human remains from such graves or cairns cannot be possessed, displayed, or sold.

Project activities implemented with Federal monies or assistance, or requiring a Federal license/approval would fall under the National Historic Preservation Act (NHPA) guidelines. Section 106 of NHPA outlines specific steps that must be taken during the planning of a project. The purpose of the section is to ensure that Federal agencies consider effects to historic properties resulting from their actions, and to encourage the preservation of properties listed or eligible to be listed to the National Register (see the Code of Federal Regulations 36 CFR Part 800).

b. Analysis of Cultural Resources

Due to the large project area, no comprehensive inventory was conducted to identify cultural resources. Instead, a cursory assessment was made to recommend how future resource inventories should be conducted.
Barber Pool once covered a significant portion of the project area – about 180 acres. Processes that scoured and deposited sediments may have exposed or covered intact cultural deposits. Historic photographs suggest that the size and configuration of Barber Pool changed over time (Boise Historic Societies archival library), and past farming activities occurred down to the high water level area. The current vegetative community is still in an early seral stage following the partial drawdown of the water level and the re-exposure of the river bottomland. Historic photographs of the project vicinity and the project's sandy soil types suggest that the area once supported a sagebrush/bunchgrass community (*Oxyaquic torrifluvents*), with some riparian woodland (*Aquc xerofluvents*) along the Boise River.

The lack of prehistoric cultural resource finds in the Boise River bottomlands is inconclusive. The BPCA study area offered many opportunities to harvest species culturally significant for fishing, hunting, and plant gathering. Prehistoric period artifacts (10-AA-370) and reports of a historic Indian fishing camp, cemetery, and healing springs on the Boise River floodplain involve land in the BPCA vicinity. Both prehistoric and historic travel routes included the BPCA area. Fur traders (*e.g.,* Ross) and others stated they crossed the Boise River in the area that became Barber Pool, and camped on adjacent land. It is practical to assume that prehistoric resources can be expected, but their condition may have been compromised by historic activities.

A few historic cultural resources are known, while others, associated with homesteads and ranches, are suspected in the study area. Barber and Diversion Dam complexes, New York and Penitentiary Canals, and potentially the remains of the Intermountain railway line, were all constructed along the periphery of the BPCA. The archeological remains of the historic Coston ranch may yet be discovered. The Barber Pool area was originally property associated with three homesteads, and residents of Barber used the project area, as well. Evidence of past livestock grazing, fishing, hunting, farming, and mining activities could be found (*e.g.* trails, fence lines, camps, structures, resources cquisition/processing stations, and placer soils). All lands within the BPCA, especially above the original Boise River/side drainage channels, could possess prehistoric and historic cultural resources.

2.4.3 Buildings and Other Facilities

Several buildings are identified with the BPCA. These include IDPR Headquarters (which also houses the offices of IFPL), and the Idaho Shakespeare Festival. In addition to these buildings, several private residences are located around the periphery of the study area.

a. The IDPR and IFPL

The IDPR occupies 18.03 acres within the study area. The IDPR headquarters building is a 22,896 square foot building, which houses offices and meeting spaces. The IDPR facility also includes a vehicle storage building, carport, Boise Greenbelt restroom facilities, and a pump house. Other facilities on site include sidewalks, parking lots, irrigation system, and landscaping.

Photo 22: The Idaho Department of Parks and Recreation headquarters houses IDPR and IFPL.

The IFPL inhabits a 540-square-foot office within IDPR headquarters, which includes office and meeting space. Most information about the BPCA is distributed to the public from either the IFPL or the IDPR offices.

b. Idaho Shakespeare Festival

The Idaho Shakespeare Festival is situated on the banks of the Boise River, southwest of the IDPR building. The Idaho Shakespeare Festival headquarters includes administrative offices, a ticket booth, visitor center, concessionaire restaurant, and a 770-seat amphitheater. The Shakespeare Festival buildings and landscape feature extensive use of sandstone, originally quarried within view of the study area. Over 200 tons of sandstone salvaged from the Sand Creek Drainage Flume, built by the Works Progress Administration (WPA), was donated by the City of Boise. Sandstone remains of the walls of Boise's Oddfellows building were also donated to the project. Paths are lined with "bluestone cobble" salvaged from the streets of California's Bay Area.

In addition to theater facilities, the Idaho Shakespeare Festival grounds include William Shakespeare Park, the gift of a former Boise Cascade chief executive officer and his wife, John B. and Delores C. Fery. The park features walking paths, and over one dozen native Great Basin wildflowers blooming in the

Photo 23:The Idaho Shakespeare Festival houses the amphitheater and related facilities, visitor center, restaurant, and offices.

butterfly gardens. The picnic and observation areas in the park were created from large, sandstone boulders transported from the nearby quarry on Table Rock. The Idaho Shakespeare Festival and William Shakespeare Park offer one of the best vistas (from ground level) into the BPCA, and is a common point of public interface with the BPCA.

The Shakespeare Festival annually entertains more than 50,000 audience members from June through September, and is a leader not only among Idaho's performing arts organizations, but also among 100 peer organizations that produce Shakespearean plays around the world, including the Royal Shakespeare Company in Stratford-upon-Avon and Shakespeare's Globe in London. The Idaho Shakespeare Festival also offers educational and performance opportunities for young people, touring to 50,000 school children throughout Idaho and surrounding communities each spring; bringing more than 6,000 students to matinee performances in the amphitheater each fall; and producing performances of its Drama School students, its high school apprentice company, and its collegiate and graduate-level professional interns. The Festival also encourages cross-disciplinary use of its grounds and facilities, such as a pilot

Photo 24: The Idaho Shakespeare Festival Stage. The Festival annually entertains more than 50,000 audience members.

program in riparian biology for high school students (conducted by the Idaho Bird Observatory), a residency for students at nearby Riverstone Community School, and the annual Bald Eagle Day coordinated IDPR.

Land for the Shakespeare Festival was purchased from IFPL in 1995. Construction was begun in 1997, and the theater opened for its first performance season in that location in 1998. Prior to construction of the theater, the Idaho Shakespeare Festival had occupied three different sites since it was founded in 1977.

c. Fencing

Private landowners within and adjacent to the BPCA have erected fences along their property lines. Most of the fencing along New York Canal is barbed wire, suitable for livestock fencing. A 6-foot chain link fence was constructed above New York Canal as part of an agreement between IFPL and developers of the Surprise Valley housing development on the bluff above the BPCA. The fence prevents access into the BPCA by humans and pets from Surprise Valley.

d. Wildlife Habitat Improvements

Several projects have been undertaken to enhance wildlife habitat, all with the primary goal of pest management. Two of these endeavors target noxious weeds. Another attempts to protect existing cottonwoods from beaver, using various methods. Additionally, the Idaho Shakespeare Festival seasonally sprays structures at their facility to eliminate wasps.

Photo 25: A tree-wrapping campaign was instituted in 1984 to protect cottonwood trees from beavers.

The IDPR has undertaken a program to eliminate two noxious weeds: scotch thistle (*Onopordum acanthium*,) and purple loosestrife *(Lythrum salicaria*). The scotch thistle eradication program involves spraying and mechanical removal, which has been ongoing since 1999. An additional 7 years of spraying and mechanical removal are anticipated in order to completely eradicate the scotch thistle from BPCA.

Purple loosestrife control utilizes a species of beetle (*Gallerucella* sp.), which was released in sites of purple loosestrife infestation within the BPCA. The adult beetle emerges from hibernation in the spring and feeds on the leaves and main stem of the loosestrife plant,

preventing the plants from flowering. Larvae feed on leaf tissues and shoots. The *Gallerucella* will lay eggs and feed only on purple loosestrife. The initial release of *Gallerucella* occurred in 2001. The IDPR plans a continued program of biological control and mechanical removal of purple loosestrife.

The cottonwood protection strategy has been two-pronged. One approach is the wrapping of tree trunks with wire mesh fencing to protect them from beaver damage. This activity was first implemented in 1984. In addition, the Idaho Shakespeare Festival is currently in the process of implementing a beaver control program that consists of a low wire fence planted with native roses to act as a barrier to beaver entering Shakespeare Festival grounds.

e. Fish Habitat Improvements

No fish habitat improvement actions have been undertaken. However, the Boise River Bald Eagle Task Force, in their 1995 report, recommended enhancement of aquatic systems as a way to increase bald eagle populations on the Boise River

f. Recreation Facilities and Operations

In the past, IFPL and IDPR have managed the BPCA as a wildlife preserve. Public access has been restricted to protect wildlife from human disturbance. Only those accompanied by staff or authorized for scientific study were allowed into the interior. Most people enjoy the BPCA from the exterior, using overlooks and access at the Idaho Shakespeare Festival for wildlife viewing. However, several options exist for the public to experience the BPCA, including Bald Eagle Day and viewing from the Boise Greenbelt Trail.

Bald Eagle Day, an event sponsored by IDPR and the Golden Eagle Audubon Society, takes place each January, when bald eagles are concentrated in the BPCA. The inaugural event occurred in January 2000. Ranger Aimee Pope developed the idea for the purpose of educating the public about Bald Eagles in Boise and across the State of Idaho, and to emphasize the importance of the BPCA as bald eagle habitat.

Bald Eagle Day activities include live bird presentations, research presentations, an educational room for children, and viewing stations set up around BPCA and staffed with volunteers and IDPR staff. Spotting scopes at the viewing stations assure visitors close-up views of bald eagles. Bald Eagle Day has grown in popularity. Over 600 people attended the Bald Eagle Day 2002 event, and publicity and attendance is expected to grow.

g. The Boise Greenbelt

The Boise Greenbelt Pathway runs along the eastern edge of the BPCA. The Greenbelt consists of 25 miles of trails, and follows the Boise River from the City of Boise to the Sandy Point Unit of Lucky Peak State Park. The majority of the trail is paved and striped to accommodate running, walking, biking, and roller blading.

The Boise Greenbelt was established in 1966, and is still growing at present. In 1971, the City of Boise adopted the Greenbelt Ordinance, which requires a 70-foot setback from the river for all structures and parking areas. Through the years, the City of Boise and Ada County have acquired land along the river

Photo 26: The Boise Greenbelt offers recreational access to the BPCA.

corridor through various methods, including purchase, exchange, leasing, and donations of property by individuals, civic groups, and corporations (City of Boise Website: *http://www.cityofboise.org/parks/parks_facilities/greenbelt_features.shtml*). In 1986, the IFPL conveyed approximately 34 acres to Ada County, which enabled the extension of the Boise Greenbelt to the Sandy Point Unit of Lucky Peak State Park. The gift of the land from IFPL allowed Ada County to use the land as a matched asset, and qualify for Land and Water Conservation funds (authorized by Congress in 1964 to provide money for purchase of public open spaces).

h. Visitation

No access is allowed except when accompanied by staff, or by special arrangement. The IDPR hosts Bald Eagle Day at the Idaho Shakespeare Festival Visitor Center each January, which offers the public excellent viewing of the BPCA and wildlife. Also, Recreation Equipment, Incorporated (REI) offers float trips down the stretch of the Boise River that passes through the BPCA, but these are not sanctioned by IDPR, IFPL, Ada County, or the Friends of BPCA.

2.5 AESTHETIC RESOURCES

2.5.1 Visual Quality Management

a. General

This section examines the visual resources of BPCA. The criteria for evaluating and managing the visual environment are based upon visual quality, sensitivity levels, areas seen, and the visual absorption capacity of the area. The BPCA provides a valuable aesthetic resource for Treasure Valley, based on the fact that BPCA has high visual resource values, and the premise that the general public expects BPCA to be an aesthetically pleasing environment (aesthetic resources are made up of visual, auditory, and olfactory sensory experiences).

Photo 27: The BPCA is located in the Boise flood plain. The contrast of the flat topography of Treasure Valley adjacent to the Boise Mountains in the background is significant to the high visual quality of the BPCA.

b. Visual Quality

The BPCA is considered a landscape with high visual quality, based on the factors used to determine scenic quality. These factors include variety, uniqueness, and vividness. The higher the variety in the landscape, the more unique; the more vivid or memorable the landscape, the higher the scenic quality.

Landscapes can be described by form, line, color, and texture. Landscapes that have unique features such as major water features (*i.e.*, the Boise River), are considered to have high scenic quality. Because BPCA is located at the edge of Treasure Valley, adjacent to the steep foothills of the Boise Mountains, this sharp contrast of landform adds to it's high visual quality.

The BPCA is a "natural appearing landscape." Most manmade structures located within the study area are located on the edge of the BPCA. The Boise River and associated riparian vegetation are the predominant features of the BPCA, thus giving the majority of the area its natural appearance. The variety of textures, colors, and lines found throughout the BPCA contribute to its high scenic quality. Texture results from the varied types of vegetation, gravels along the Boise River, and the Boise River itself. Color in the BPCA is a result of the vegetation, mostly deciduous, which changes colors in the fall and loses its leaves in the winter. The grasses and forbs also add quality to the scenic area. A strong line appears along the edge of the Boise River - the contrast in the vegetation patterns and the line between the Boise Mountains and the sky, as well as the rim along New York Canal.

The following points present brief descriptions of visual elements found at BPCA:

- Landform: Flat topography, gravel islands, the rim above New York Canal and the Boise Mountains.

- Vegetation: Palustrine (riparian) forest and scrub-shrub, wetland, and upland shrub-steppe

- User Activity: Wildlife viewing from major viewpoints, Idaho Shakespeare Festival and access to IDPR are the only authorized recreation uses of BPCA. Both IDPR and IFPL require that staff accompany a person for any other use of the area. Most people view the BPCA from overlooks.

- Water Resources: Boise River, wetlands, upland wetlands (created by drainage from New York Canal)

- Manmade Structures: Idaho Shakespeare Festival, IDPR Headquarters, New York Canal, Barber Dam, Residential, and the State Highway 21 Bridge (viewed from BPCA)

- Wildlife: White-tailed and mule deer, Rocky Mountain elk, beaver, other small mammals, raptors such as bald eagle, Canadian geese, wading birds, upland birds, song birds, reptiles and amphibians, and butterflies.

c. Sensitivity Levels

Factors that influence sensitivity levels are use volume, community importance, land use, and the attitudes and planning of other agencies. The BPCA has a very high sensitivity level due to its importance to the community, the number of agencies and organizations involved and interested in its management, the open space in a fast growing community, and the amount of available views of the area.

The following points present factors related to sensitivity levels at BPCA:

- Use Volume: The BPCA has low use, but it has a high viewing use from the viewpoints along the perimeter. People use the BPCA for fishing, rafting, biking, and running along the Green Belt Bike path. High use of the area occurs at the Idaho Shakespeare Festival Theater.

- Community Importance: The public considers BPCA of high community importance for wildlife and aesthetic purposes.

- Land Use: The BPCA is an open space conservation area. Adjacent lands are becoming increasingly residential, making the open and wild nature of the BPCA more valuable than before the development began to occur around it.

- Agencies and Organization: The IFPL, Ada County, Idaho Shakespeare Festival Theater, and IDPR all own lands within the BPCA. The Friends of BPCA, which include the above mentioned agencies and Boise City Parks and Recreation, The Nature Conservancy, Golden Eagle Audubon Society, the Land Trust of Treasure Valley, Idaho Department of Fish and Game, the US Bureau of Land Management, BOR, and Boise Cascade Corporation are heavily involved with the area.

Photo 28 : Viewpoint of BPCA from Surprise Valley. The viewpoint offers interpretive signs and an overlook of the BPCA. The view is enhanced by the Boise Mountains in the background.

d. Area Seen

The BPCA can be seen from many different areas and viewpoints. The major viewpoints are along Warm Spring Avenue, Ada County bike trail, Surprise Valley Development, and the Idaho Shakespeare Festival. The public may view the BPCA area at ground level from the Idaho Shakespeare Festival. A public viewpoint from the rim of the Surprise Valley housing development also provides excellent views into the BPCA, and includes parking and interpretive signs. Over 60 housing units that directly overlook the BPCA are located on the rim of Surprise Valley. In a comment sheet collected at the October 4, 2001 Open House, one Surprise Valley resident cited the visual resources at BPCA as the reason they built a home at Surprise Valley.

e. Visual Absorption Capacity (VAC)

The VAC is the ability of the landscape to accept change. Factors influencing VAC in the BPCA landscape are flat slopes, height of vegetation, seasonal color change, and loss of leaf cover. The BPCA has a medium to high VAC because of the heavy vegetation and the flat slope. The deciduous vegetation (bare trees in the winter) and the overlooks (which enable viewing from above) are factors that give the BPCA a medium VAC.

f. Analysis of Aesthetic Resources.

The landscape of BPCA is rated as having high visual quality, high sensitivity levels, and medium VAC. The BPCA is very sensitive to negative aesthetic impacts, and this should be taken into account when making future management decisions. There are several factors that contribute to this conclusion, the most important being the location of BPCA adjacent to two major physiographic sections (human perceptions are most acute at landscape transitions).

The second factor is the landscape of steep slopes and open areas of vegetation that give the area a medium VAC. The third factor is the area's high visibility from the viewpoints around the perimeter. The BPCA is a conservation area that provides open space and species conservation. These factors require that any changes in the BPCA be orchestrated in a sensitive manner that minimizes any negative impacts on this visual environment.

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2.6.3 Photos

Photographs of Project area and associated sites
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60-51.4 - Barber, Idaho (sawmill and village)
60-52.395 - Project area
62-86.7 – Indian camp on Boise River, Boise barracks in background (Dr. Calvin Cowles collection). This photograph was taken west of project area.
63-211.24 - Barber Mill and Dam
64-30.2 - Barber pool with Barber Dam
71-134.1 - Boise Payette Lumber Company, May, 1919
71-134.3 - Power Plant of Barber Dam, May, 1919
84-11.5 - Barber mill pond ca. 1905
2631, 2632 - Barber Mill and Pool
1938 Barber Dam and Barber Lumber Mills Boise, Idaho

2.6.4 Maps

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SUPPORTING DATA

Appendix A:
List of Wildlife Associated with Barber Pool Conservation Area

Wildlife associated with Barber Pool Conservation Area	
Amphibians	
Long-toed Salamander	*Ambystoma macrodactylum*
Great Basin Spadefoot	*Scaphiopus intermontanus*
Bullfrog	*Rana catesbeiana*
Northern Leopard Frog	*Rana pipiens*
Pacific Tree Frog	*Hyla regilla*
Pacific Chorus Frog	*Pseudacris regilla*
Striped Chorus Frog	*Pseudacris triseriata*
Western Toad	*Bufo boreas*
Woodhouse's Toad	*Bufo woodhousii*
Reptiles	
Sagebrush Lizard	*Sceloporus graciousus*
Western Fence Lizard	*Sceloporus occidentalis*
Western Skink	*Eumeces skiltonianus*
Yellow-bellied Racer	*Coluber constrictor*
Pacific Gopher Snake	*Pituophis melanoleucus*
Western Ground Snake	*Sonora semiannulata*
Western Rattlesnake	*Crotalus viridis*
Common Garter Snake	*Thamnophis sirtalis*
Western Terrestrial Garter Snake	*Thamnophis elegans*
Wandering Garter Snake	*Thamnophis elegans*
Birds	
Common Loon	*Gavia immer*
Western Grebe	*Aechmophorus occidentalis*
Eared Grebe	*Podiceps nigricollis*
Pied-billed Grebe	*Podilymbus podiceps*
Red-necked Grebe	*Podiceps grisegena*
American White Pelican	*Pelecanus erythrorhynchos*
Double-crested Cormorant	*Phalacrocorax auritus*
Great blue Heron	*Ardea herodias*

Birds (continued)	
Black-crowned Night Heron	*Nycticorax nycticorax*
American Bittern	*Botaurus lentiginosus*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Canada Goose	*Branta canadensis*
Greater white-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Mallard	*Anas platyrhynchos*
Northern Pintail	*Anas acuta*
American Wigeon	*Anas americana*
Northern Shoveler	*Anas clypeata*
Gadwall	*Anas strepera*
Blue-winged Teal	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Green-winged Teal	*Anas crecca*
Wood Duck	*Aix sponsa*
Redhead	*Aythya americana*
Canvasback	*Aythya valisineria*
Lesser Scaup	*Aythya affinis*
Ring-necked Duck	*Aythya collaris*
Common Goldeneye	*Bucephala clangula*
Barrow's Goldeneye	*Bucephala islandica*
Bufflehead	*Bucephala albeola*
Ruddy Duck	*Oxyura jamaicensis*
Common Merganser	*Mergus merganser*
Hooded Merganser	*Lophodytes cucullatus*
Red-breasted Merganser	*Mergus serrator*
Turkey Vulture	*Cathartes aura*
Northern Goshawk	*Accipiter gentilis*
Swainson's Hawk	*Buteo swainsoni*
Cooper's Hawk	*Accipiter cooperii*
Sharp-shinned Hawk	*Accipiter striatus*
Northern Harrier	*Circus cyaneus*
Rough-legged Hawk	*Buteo lagopus*
Red-tailed Hawk	*Buteo jamaicensis*
Peregrine Falcon	*Falco peregrinus*

Birds (continued)	
Golden Eagle	*Aquila chrysaetos*
Bald Eagle	*Haliaeetus leucocephalus*
Osprey	*Pandion haliaetus*
Prairie Falcon	*Falco mexicanus*
Merlin	*Falco columbarius*
American Kestrel	*Falco sparverius*
Wild Turkey	*Meleagris gallopavo*
Blue Grouse	*Dendragapus obscurus*
Sage Grouse	*Centrocercus urophasianus*
California Quail	*Callipepla californica*
Mountain Quail	*Oreortyx pictus*
Gray Partridge	*Perdix perdix*
Ring-necked Pheasant	*Phasianus colchicus*
Sandhill Crane	*Grus canadensis*
Sora	*Porzana carolina*
American Coot	*Fulica americana*
American Avocet	*Recurvirostra americana*
Killdeer	*Charadrius vociferus*
Long-billed Curlew	*Numenius americanus*
Spotted Sandpiper	*Actitis macularia*
Willet	*Catoptrophorus emipalmatus*
Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Black-necked Stilt	*Himantopus mexicanus*
Least Sandpiper	*Calidris minutilla*
Western Sandpiper	*Calidris mauri*
Wilson's Phalarope	*Phalaropus tricolor*
Common Snipe	*Gallinago gallinago*
California Gull	*Larus californicus*
Ring-billed Gull	*Larus delawarensis*
Franklin's Gull	*Larus pipixcan*
Herring Gull	*Larus argentatus*
Caspian Tern	*Sterna caspia*
Forster's Tern	*Sterna forsteri*
Rock Dove	*Columba livia*
Mourning Dove	*Zenaida macroura*
Yellow-billed Cuckoo	*Coccyzus americanus*

Birds (continued)	
Barn owl	*Tyto alba*
Western Screech Owl	*Otus kennicottii*
Great Horned Owl	*Bubo virginianus*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*
Boreal Owl	*Aegolius funereus*
Northern Saw-whet Owl	*Aegolius acadicus*
Northern Pygmy Owl	*Glaucidium gnoma*
Western Burrowing Owl	*Athene cunicularia*
Common Nighthawk	*Chordeiles minor*
White-throated Swift	*Aeronautes saxatalis*
Vaux's Swift	*Chaetura vauxi*
Black Swift	*Cypseloides niger*
Calliope Hummingbird	*Stellula calliope*
Black-chinned Hummingbird	*Archilochus alexandri*
Broad-tailed Hummingbird	*Selasphorus platycercus*
Rufous Hummingbird	*Selasphorus rufus*
Belted Kingfisher	*Ceryle alcyon*
Northern Flicker	*Colaptes auratus*
Lewis' Woodpecker	*Melanerpes lewis*
Red-naped Sapsucker	*Sphyrapicus nuchalis*
Hairy Woodpecker	*Picoides villosus*
Downy Woodpecker	*Picoides pubescens*
Eastern Kingbird	*Tyrannus tryrannus*
Western Kingbird	*Tyrannus verticalis*
Say's Phoebe	*Sayornis saya*
Least Flycatcher	*Empidonax minimus*
Dusky Flycatcher	*Empidonax oberholseri*
Olive-sided Flycatcher	*Contopus borealis*
Willow Flycatcher	*Empidonax traillii*
Cordilleran Flycatcher	*Empidonax occidentalis*
Hammond's Flycatcher	*Empidonax hammondii*
Western Wood Pewee	*Contopus sordidulus*
Horned Lark	*Eremophila alpestris*
Barn Swallow	*Hirundo rustica*
Tree Swallow	*Tachycineta bicolor*
Cliff Swallow	*Hirundo pyrrhonota*
Bank Swallow	*Riparia riparia*

Birds (continued)	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Violet-green Swallow	*Tachycinata thalassina*
Blue Jay	*Cyanocitta cristata*
Stellar Jay	*Cyanocitta stelleri*
Black-billed Magpie	*Pica pica*
Clark's Nutcracker	*Nucifraga columbiana*
Common Raven	*Corvus corax*
American Crow	*Corvus brachyrhynchos*
Black-capped Chickadee	*Parus atricapillus*
Mountain Chickadee	*Parus gambeli*
American Dipper	*Cinclus mexicanus*
Red-breasted Nuthatch	*Sitta Canadensis*
Brown Creeper	*Certhia Americana*
House Wren	*Troglodytes aedon*
Canyon Wren	*Catherpes mexicanus*
Rock Wren	*Salpinctes obsoletus*
Winter Wren	*Troglodytes troglodytes*
Bewick's wren	*Thryomanes bewickii*
Marsh Wren	*Cistothorus palustris*
Gray Catbird	*Dumetella carolinensis*
American Robin	*Turdus migratorius*
Swainson's Thrush	*Catharus ustulatus*
Hermit Thrush	*Catharus guttatus*
Varied Thrush	*Ixoreus naevius*
Sage Thrasher	*Oreoscoptes montanus*
Townsend's Solitaire	*Myadestes townsendi*
Mountain Bluebird	*Sialia currocoides*
Western Bluebird	*Sialia mexicana*
Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*
Blue-gray Gnatcatcher	*Polioptila caerulea*
American Pipit	*Anthus rebescens*
Bohemian Waxwing	*Bombycilla garrulus*
Cedar Waxwing	*Bombycilla cedrorum*
Northern Shrike	*Lanius excubitor*
Loggerhead Shrike	*Lanius ludovicianus*
European Starling	*Sturnus vulgaris*
Plumbeous Vireo	*Vireo plumbeus*

Birds (continued)	
Red-eyed Vireo	*Vireo olivaceus*
Cassin's Vireo	*Vireo cassinii*
Warbling Vireo	*Vireo gilvus*
Orange-crowned Warbler	*Vermivora celata*
Nashville Warbler	*Vermivora ruficapilla*
Tennessee Warbler	*Vermivora peregrina*
Magnolia Warbler	*Dendroica magnolia*
Black – throated Blue Warbler	*Dendroica virens*
Townsend's Warbler	*Dendroica townsendi*
Black and White Warbler	*Mnioltilta varia*
Yellow Warbler	*Dendroica petechia*
Yellow-rumped Warbler	*Dendroica coronata*
American Redstart	*Setophaga ruticilla*
Ovenbird	*Seiurus aurocapillus*
Common Yellowthroat	*Geothlypis trichas*
Yellow-breasted Chat	*Icteria virens*
Wilson's Warbler	*Wilsonia pusilla*
MacGillivray's Warbler	*Oporornis tolmiei*
Western Tanager	*Piranga ludoviciana*
House Sparrow	*Passer domesticus*
Western Meadowlark	*Sturnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Red-winged Blackbird	*Agelaius phoeniceus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Great-tailed Grackle	*Quiscalus mexicanus*
Common Grackle	*Quiscalus quiscula*
Brown-headed Cowbird	*Molothrus ater*
Green-tailed Towhee	*Pipilo chlorurus*
Bullock's Oriole	*Icterus bullockii*
Northern Oriole	*Icterus galbula*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Evening Grosbeak	*Coccothraustes vespertinus*
Lazuli Bunting	*Passerina amoena*
House Finch	*Carpodacus mexicanus*
Cassin's Finch	*Carpodacus cassinii*
Black Rosy Finch	*Leucosticte atrata*
Gray-crowned Rosy Finch	*Leucosticte tephrocotis*
Pine Siskin	*Carduelis pinus*

Birds (continued)	
American Goldfinch	*Carduelis tristis*
Lesser Goldfinch	*Carduelis psaltria*
Spotted Towhee	*Pipilo maculatus*
Savannah Sparrow	*Passerculus sandwichensis*
Lark Sparrow	*Chondestes grammacus*
Chipping Sparrow	*Spizella passerina*
White-crowned Sparrow	*Zonotrichia leucophrys*
Song Sparrow	*Melospiza melodia*
American Tree Sparrow	*Spizella arborea*
House Sparrow	*Passer domesticus*
Brewer's Sparrow	*Spizella breweri*
Vesper Sparrow	*Pooecetes gramineus*
Black-throated Sparrow	*Amphispiza bilineata*
Fox Sparrow	*Passerella iliaca*
Lincoln's Sparrow	*Melospiza lincolnii*
Swamp Sparrow	*Melospiza Georgiana*
White-throated Sparrow	*Zonotrichia albicollis*
Golden-crowned Sparrow	*Zonotrichia atricaphilla*
Harris' Sparrow	*Zonotrichia querula*
Dark-eyed Junco	*Hybci gtenakus*
Red Crossbill	*Loxia curvirosta*
Mammals	
Vagrant Shrew	*Sorex vagrans*
Little Brown Myotis	*Myotis lucifugus*
Long-eared Myotis	*Myotis evotis*
Silver-haired Bat	*Lasionycteris noctivagans*
Big Brown Bat	*Eptesicus fuscus*
Hoary Bat	*Lasiurus cinereus*
Townsend's Big-eared Bat	*Corynorhinus townsendii*
Long-legged Myotis	*Myotis volans*
Western Small-footed myotis	*Myotis ciliolabrum*
Pallid Bat	*Antrozous pallidus*
Mountain Cottontail	*Sylvilagus nuttallii*
Black-tailed Jackrabbit	*Lepus californicus*
Least Chipmunk	*Tamias minimus*
Yellow-bellied Marmot	*Marmota flaviventris*
Townsend's Ground Squirrel	*Spermophilus townsendii*

Mammals (continued)	
Fox Squirrel	*Sciurus niger*
Townsend's Pocket Gopher	*Thomomys townsendii*
American Beaver	*Castor canadensis*
Deer Mouse	*Peromyscus maniculatus*
Merriam's Shrew	*Sorex merriami*
Bushy-tailed Woodrat	*Neotoma cinerea*
Porcupine	*Erethizon dorsatum*
Meadow Vole	*Microtus pennsylvanicus*
Western Harvest Mouse	*Reithrodontomys megalotis*
House Mouse	*Mus musculus*
Coyote	*Canis latrans*
Red Fox	*Vulpes vulpes*
Common Raccoon	*Procyon lotor*
Long-tailed weasel	*Mustela frenata*
Mink	*Mustela vison*
Ermine	*Mustela erminea*
Muskrat	*Ondatra zibethicus*
American Badger	*Taxidea taxus*
Western Spotted skunk	*Spilogale gracilis*
Striped skunk	*Mephitis mephitis*
River Otter	*Lutra canadensis*
Bobcat	*Lynx rufus*
Cougar	*Felis concolor*
Mule Deer	*Odocoileus hemionus*
White-tailed Deer	*Odocoileus virginianus*
Elk	*Cervus elaphus*
Butterflies	
Cabbage White	*Pieris rapae*
Skipper	*Polites sp.*
Skipper	*Pyrgus sp.*
Skipper	*Amblyscirtes sp.*
Skipper	*Epargyreus sp.*
Skipper	*Euphyes sp.*
Skipper	*Hesperia sp.*
Skipper	*Ochlodes sp.*
Viceroy	*Limenitis archippus*
Monarch	*Danus plexippus*

Butterflies (continued)	
Blue	*Agriades sp.*
Blue	*Euphilotes sp.*
Blue	*Everes sp.*
Blue	*Gluacopsyche sp.*
Blue	*Plebejus sp.*
Fritillary	*Speyeria sp.*
Fritillary	*Boloria sp.*
Painted Lady	*Vanessa spp.*
Wood Nymph	*Cercyonis spp.*
Swallowtail	*Papilio spp.*

Appendix B:
Fish Species Associated with Barber Pool Conservation Area

Fish Species Stocked in Lucky Peak Reservoir Since 1995	
Hayspur Rainbow Trout	*Oncorhynchus mykiss*
Domestic Kamloops Trout	*Oncorynchus mykiss*
Fall Chinook Salmon	*Oncorhynchus tshawytscha*
Mt. Shasta Rainbow Trout	*Oncorynchus mykiss*
Steelhead (A-Run) Trout	*Oncorynchus mykiss*
Unspecified Rainbow Trout	*Oncorynchus mykiss*
Lake Trout	*Salvelinus namaycush*
Early Spawner Kokanee Salmon	*Oncorhynchus nerka*
Late Spawner Kokanee Salmon	*Oncorhynchus nerka*
October Spawner Kokanee Salmon	*Oncorhynchus nerka*
Henry's Lake Cutthroat Trout	*Oncorhynchus clarki*

Fish Species Stocked in the Boise River Since 1995	
Steelhead Trout	*Oncorynchus mykiss*
Domestic Kamloops Trout	*Oncorynchus mykiss*
Unspecified Rainbow Trout	*Oncorynchus mykiss*
Colorado River Rainbow Trout	*Oncorynchus mykiss*
Mt. Lassen Rainbow Trout	*Oncorynchus mykiss*
Brown Trout	*Salmo trutta*
Hayspur Rainbow Trout	*Oncorynchus mykiss*
Spring Chinook Salmon	*Oncorynchus tshawytscha*
Summer Chinook Salmon	*Oncorynchus tshawytscha*

Resident Fish of the Boise River	
Mountain Whitefish	*Prosopium williamsoni*
Rainbow Trout	*Oncorynchus mykiss*
Redside Shiners	*Richardsonius balteatus*
Chiselmouths	*Acrocheilus alutaceus*
Suckers	*Catastomus spp.*
Sunfish	*Lepomis spp.*
Sculpins	*Cottus spp.*
Largemouth bass	*Micropterus salmoides*
Bluegills	*Lepomis macrochirus*
Black Crappie	*Pomoxis nigromaculatus*
Pumpkinseeds	*Lepomis gibbosus*
Channel Catfish	*Ictalurus punctatus*
Smallmouth Bass	*Micropterus dolomieui*