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Recreational Use Associated with the Snake River in the Hells Canyon National Recreation Area

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Technical Report
Appendix E. 5-3

Hells Canyon Complex
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ABSTRACT

On August 4, 1955, Idaho Power Company (IPC) obtained a 50-year license from the Federal Power Commission (now the Federal Energy Regulatory Commission or FERC) to build and operate the Hells Canyon Complex (HCC) hydroelectric project. The HCC is located on the Snake River where it forms the boundary between west-central Idaho and northeastern Oregon. This complex consists of Brownlee, Oxbow, and Hells Canyon dams and reservoirs. IPC will submit an application to FERC to relicense the HCC (FERC Project No. 1971) during July 2003.

To help develop this application, IPC and concerned agencies and entities formed the Recreation and Aesthetic Resources Work Group (RARWG). Members of this group worked cooperatively to develop plans for studies that gather FERC-required information on recreational use and aesthetics and address issues the group identified. This study of recreational use associated with the reach of the Snake River that flows through the Hells Canyon National Recreation Area (HCNRA) was one of several resulting from this process.

We compiled this report using information from 1992 to 1999 U.S. Forest Service (USFS) boater registration records, a 1999 on-site contact and follow-up mail survey conducted in the HCNRA, and cooperative efforts between IPC and the USFS to identify and assess the condition of dispersed recreational-use sites. During 1998 and 1999, the USFS instituted several boating regulation changes that influenced some of these results. These changes mainly consisted of tighter controls on powerboat use.

Overall, the annual number of boaters within the HCNRA differed by only 19% (of the highest annual number) during the study period. Among separate user groups and locations, boating passenger and trip numbers varied considerably more than 19%. The total number of powerboating passengers varied relatively little; the number of float boat passengers varied by as much as 100%. Results from these efforts indicate that several important patterns of use can be identified within the study area:

- Use numbers in several categories varied considerably but were not part of any apparent trend over time. These changes appeared to be associated with extremes in river flows or changes in USFS boating regulations.
- Use patterns by river reach shifted: generally, boaters were more likely to visit a larger proportion of the Snake River during each trip.
- Overnight stays by commercial powerboaters decreased.
- Weekend and weekday use patterns differed between user groups: weekend use was higher among most user groups.
- Monthly use patterns were relatively consistent among user groups: late spring through late fall accounted for more than 95% of overall boating use.

IPC, in cooperation with the USFS, extensively mapped and analyzed site conditions of recreational-use areas during 2000. Through these efforts, 145 distinct recreational-use areas were identified near or adjacent to the Snake River within the HCNRA. By combining campsite-use information obtained from our mail survey and site condition information from USFS personnel, IPC personnel, and a commercial outfitter, we determined use levels at each recreational area. Then we assigned each recreational area to one of seven use categories: 0) no report or signs of use, 1) very low, 2) low, 3) medium, 4) medium high, 5) high, and 6) very high.

Because of consistent very high levels of use in the area, we ranked all campsites accessible by road at Pittsburg Landing as 6 (very high). Copper Creek Resort (ranked 5), Kirby Creek Lodge (4), and Sheep Creek Cabin (2) are commercial enterprises where guests stay in cabins, lodges, or houses. Other recreation sites ranking 5 (high) include Battle Creek, Bernard Creek, Johnson Bar, Kirkwood Bar, Oregon Hole, and Pine Bar. Nineteen sites were ranked 4 (medium high), 31 were ranked 3 (medium), 17 were ranked 2 (low), and 51 were ranked 1 (very low). Thirteen sites were ranked 0 (no report or signs of use). Sites ranking 0 were not mentioned in mail survey responses or by professionals we contacted, nor did these sites show any sign of human use during site condition efforts.

1. INTRODUCTION

On August 4, 1955, Idaho Power Company (IPC) obtained a 50-year license from the Federal Power Commission (now the Federal Energy Regulatory Commission or FERC) to build and operate the Hells Canyon Complex (HCC) hydroelectric project (FERC No. 1971). The HCC is located on the Snake River where it forms the boundary between west-central Idaho and northeastern Oregon (Figure 1). This complex consists of Brownlee, Oxbow, and Hells Canyon dams and reservoirs. During July 2003, IPC will submit an application to the FERC to relicense the HCC.

To help develop this application, IPC and concerned agencies and entities formed the Recreation and Aesthetic Resources Work Group (RARWG). Members of this group worked cooperatively to develop study plans to gather FERC-required recreational use and aesthetics information and address issues the group had identified. IPC submitted the resulting study plans to FERC as part of the *Formal Consultation Package for Relicensing* (IPC 1997). The package contained thirteen proposals for recreation-related studies to be conducted within or pertaining to the Hells Canyon Recreation Area (HCRA), the name designating IPC's study area for recreation resources. The HCRA includes the reservoirs associated with the three HCC dams plus downstream Snake River-related areas within the Hells Canyon National Recreation Area (HCNRA).

1.1. Associated Studies and Technical Reports

This report and 11 other technical reports (listed below) are part of the technical appendices to the license application. These reports contain all the original goals from the proposals of the formal consultation package (IPC 1997), as well as additional goals identified since.

A Review of Past Recreation Issues and Use in the Hells Canyon Complex and Hells Canyon National Recreation Area (Sorensen 2001)

Reservoir-Related Recreational Use at the Hells Canyon Complex (Brown 2001a)

Recreation Users and Issues at Hells Canyon Complex Reservoirs: 1994−2000 On-Site Survey and 2000 Mail Survey Results (Whittaker and Shelby 2002a)

General Recreation Findings from Hells Canyon National Recreation Area: 1999 Visitor Survey (Shelby and Whittaker 2001)

Reservoir Level Issues in the Hells Canyon Complex (Whittaker et al. 2002)

River Level Issues in the Hells Canyon National Recreation Area (Shelby et al. 2002)

Description of Existing Developed Recreation Sites in the Hells Canyon Complex and Associated Recreational Use (Moore and Brown 2002)

Description of Existing Recreation Areas in the Hells Canyon Complex and Hells Canyon National Recreation Area (Hall and Bird 2002)

Reservoir Angling in the Hells Canyon Complex (Brown 2002b)

Angling on the Snake River in the Hells Canyon National Recreation Area (Brown 2001c)

Hunting Associated with the Hells Canyon Complex and the Hells Canyon National Recreation Area (Claycomb and Brown 2001)

Recreation in the Hells Canyon Complex: Selected Photos and Major Study Findings (Whittaker and Shelby 2002b).

The size and complexity of the study area, the multitude of important issues to be addressed, and the amount of information we collected required a format of several separate recreation-related reports. We realize that much of the information contained in the separate reports is interconnected. The various authors of these reports have coordinated their efforts and, where appropriate, have included results and information from other reports. For related or more detailed information, consult these other reports and sources listed in the Literature Cited section.

1.2. USFS–HCNRA Boating-Related Regulations

The HCNRA is a large, relatively isolated area managed by the USFS (Figure 1). In managing this area, the USFS must follow mandates for National Recreation Areas and Wild and Scenic Rivers. Additionally, portions of the HCNRA border wilderness areas, which have their own set of requirements. Besides meeting those requirements, the USFS must protect the special character of the area and its resources to help ensure quality recreational opportunities for visitors. Most of the area's recreational use relates to boating, both float and power. Commercial outfitters, with a strong historical presence, offer recreational boating services in the area.

During the last three decades, the USFS has tried to balance the needs of the various boaters by establishing management plans to regulate many aspects of boating use in the HCNRA. In fact, the USFS changed several boating regulations in 1998 through 1999 that could have influenced the results of our study. The USFS–HCNRA management plan restricts the type, timing, location, and amount of boating on the Snake River within the HCNRA. The plan allows both float and powerboating, but certain boating uses are limited or banned in some geographically defined areas. In certain locations and during certain times of year, the amount of boating is quite strictly controlled. Restrictions also change considerably with days of the week.

The latest HCNRA management plan also regulates the length of stays at campsites within a quarter mile of the high-water mark. During the primary season, campers can stay up to three days and two nights per campsite in the wild section, and four days and three nights in the scenic section. During the secondary season, campers can stay up to 14 days and 13 nights per campsite (USFS 1999).

1.2.1. Types of Watercraft Allowed in the HCNRA

Certain types and sizes of watercraft are not allowed on the Snake River within the HCNRA. The USFS plan defines valid and nonvalid craft by both float and power categories.

Valid Motorized Craft—Rigid-hull watercraft with water-cooled exhaust (inboard engines must have "through the hull" exhaust) that are driven by propellers or jet pumps and have mufflers or other noise reduction devices.

Valid Nonmotorized Craft—Sweep boats, pontoons, cat-a-rafts, inflatable rafts, rigid-hull and inflatable kayaks, canoes, dories, and drift boats. Nonmotorized craft must be controllable by paddles, oars, sweep, or outboard motors limited to 15 horsepower (hp). If motors are used, the boats must meet state and Coast Guard licensing specifications. Motor use is restricted to downstream propulsion and maneuverability. Nonmotorized crafts are not capable of being mechanically propelled upstream through rapids.

Nonvalid (Motorized and Nonmotorized) Craft—Nonvalid nonmotorized rivercraft include windsurfing boards, sailboards, sailboats, or crafts that are not under maneuverable control. Nonvalid motorized rivercraft include water skis, air boats, motorized surfboards, hovercraft, winged watercraft, any powerboats not equipped with a water-cooled exhaust, amphibious craft, mini-submarines, powerboats under 12 feet (ft) long, and watercraft that riders must straddle. Personal water vehicles, such as Jet Skis, are defined as nonvalid in both the wild and scenic river corridors.

1.2.2. Boating Regulation

For purposes of regulation, the USFS divides each year into two distinct periods. The primary season is from the Friday before Memorial Day through September 10. The secondary season is September 11 through the Thursday before Memorial Day. All boaters must register at each launch in the HCNRA. However, the definition of launch varies with types of boating. A powerboat launch is one trip taken by one boat. A commercial powerboat launch does not allow multiple round trips from a portal to river locations. Private powerboaters may, with some limitations, enter and leave the HCNRA multiple times on one permit. A float boat launch is eight or fewer float craft launching at the same time as a party.

1.2.2.1. Float Boating Regulation

Float boaters have been regulated at some level during the primary season since 1972. This regulation began at the insistence of the float boaters themselves, who perceived that crowding reduced the quality of the recreational experience. Float boating regulations remained constant during the period covered by this study (1992 through 1999).

Commercial Float Boating—The HCNRA management plan calls for a maximum of 14 and a minimum of 10 commercial float special-use permits. While most float trips are multiple-day trips because of distances involved, two single-day, temporary uses are authorized from Hells Canyon Dam to Pittsburg Landing to allow for day trips on float boats with transportation out provided by powerboat (known as a "jet back").

All commercial float boat launches are limited to eight or fewer float craft per party in all river sections year-round. Maximum party size year-round is 24 people (including guides). During the primary season, commercial float boaters must have reservations. Total launches are limited to 224. These launches are distributed at the rate of two per day among the individual outfitters, and

all commercial float boat trips must originate upstream of Pittsburg Landing. During the secondary season, no restrictions apply to the location or number of commercial float boat launches.

Private Float Boating—Private float boat launches are controlled during the primary season by a reservation system. Self-issue permits are required during the secondary season. Private float parties are limited to a maximum of eight float craft and 24 persons per party in all river sections year-round. During the primary season, three private float boat launches per day are permitted at the Hells Canyon Creek portal. Two launches per day are allowed on weekends (Friday through Sunday) and legal holidays from either Pittsburg Landing or Dug Bar. Private float limitations do not apply in the scenic river on weekdays (Monday through Thursday), and no limitations on either number or location of private float boat launches apply during the secondary season.

1.2.2.2. Powerboating Regulation

Before 1999, the only powerboating regulation in the HCNRA was that boaters register upon entering the area. Since 1999, private and commercial motorized crafts may not access a certain section of the river on certain days. The restriction applies to the section of wild river between the top of Wild Sheep Rapids and the upper landing at Kirkwood Historic Ranch. Access to this area is restricted each summer for up to 21 days. Starting the first Monday of June, these restrictions occur Monday through Wednesday of every other week. When the restricted period falls right after a Fourth of July weekend (that is, July 4 is on a Friday, Saturday, or Sunday), the restricted period is moved to the following week and alternates every other week until the end of that primary season.

Commercial Powerboating—The overall length of commercial powerboats must be no greater than 42 ft. A few larger commercial powerboats that were in operation before this regulation went into effect can continue to operate in the HCNRA. Party size for commercial powerboaters is limited to the U.S. Coast Guard capacity certification of each boat. The USFS maintains a maximum of 19 and minimum of 10 special-use permits for commercial powerboat outfitters (including land-based outfitters who provide ferrying and camp supply services). Minimum and maximum permits per portal appear in Table 1.

Note—Snake River Adventures has an exemption to the launch point location. This company is the only permit holder that has regularly launched commercial trips from both Pittsburg Landing and Cache Creek portals. Snake River Adventures' authorization will continue. When considering existing outfitters, this business is included in the maximum for the Cache Creek portal only.

The maximum total capacity for commercial powerboats (cumulative boat days for all permit holders) is 1,506 boat days for the primary season. Allocation of this use varies among the outfitters, based on historic use by that outfitter. In the secondary season, there is no limitation on commercial powerboat use, but commercial powerboat manifests are required. Commercial operators may run jet backs or jet outs for commercial or private float parties within their allocation of launches. During the nonmotorized period, commercial powerboats may not operate between the top of Wild Sheep Rapids and the upper landing at Kirkwood Historic Ranch.

Private Powerboating—Private powerboats are limited to 39.6 ft in overall length. A reservation system for private powerboat launches is in effect during the primary season. In the secondary season, there is no limitation on private powerboat use, but self-issued permits are required. Two different categories of regulations apply to private powerboating. One set of regulations applies to the wild river and another to the scenic river.

In any part of the wild river, up to six private powerboat launches may occur per day for traveling or camping. However, during the nonmotorized periods, powerboats may not operate between the top of Wild Sheep Rapids and Kirkwood Historic Ranch. During nonmotorized periods, up to five private powerboat launches are allowable per day between Kirkwood Historic Ranch and the upper landing at Pittsburg. Also during those periods, permits for a maximum of two private powerboat launches per day (for day-use only) can be issued at Hells Canyon Creek for use between Hells Canyon Dam and the top of Wild Sheep Rapids.

In the scenic river, up to 18 private powerboat launches are allowable per day on weekends and legal holidays (for overnight or daytime use) to destinations between Pittsburg Landing and Cache Creek. On weekends and legal holidays, up to five additional private, day-use only powerboat launches are allowable from Cache Creek to the mouth of the Salmon River.

2. STUDY AREA

As mentioned earlier, the extent of the HCRA, the study area for recreation resources, was determined by the RARWG, made up of representatives from IPC and various federal, state, and local agencies and interest groups. The HCRA covers a 166.9-mile (mi) reach of the Snake River (Figure 2). This reach extends from approximately 8 mi downstream of the bridge near Weiser, Idaho, at the FERC project boundary near the crossing of an overhead powerline (river mile [RM] 343) downstream to the northern boundary of the HCNRA (RM 176.1). Additionally, the study area includes the reach of the Powder River that is considered part of Brownlee Reservoir, from RM 0 upstream to RM 9. The majority of IPC's recreation-related study efforts have focused on the immediate Snake River corridor; however, the study area differs among the various recreation studies. Some studies are confined to portions of the HCRA, while others extend to or beyond the canyon rim.

Hells Canyon is one of the most rugged river gorges in the continental United States. Canyon depth ranges from nearly level with the surrounding land (at the upstream end of the study area) to 3,000 ft (along Oxbow Reservoir). The elevation of the Snake River near Weiser is about 2,090 ft mean sea level (msl), descending to about 910 ft msl at the confluence of the Salmon River, about 59 mi downstream of Hells Canyon Dam. Below Oxbow Dam, the river enters a narrow, steep-sided chasm measuring up to 5,500 ft deep. From the confluence with the Grande Ronde River, located 6 mi upstream of the northern end of the HCNRA, the Snake River flows into a lava-flow basin and through a much shallower canyon to Lewiston, Idaho.

Throughout the canyon reach of the HCRA, topography is generally steep and broken, with slopes often dominated by rock outcrops and talus. At the deepest points of the canyon, the walls rise almost vertically. Canyon walls are deeply dissected by numerous side canyons formed by

tributaries of the Snake River. The Seven Devils Mountains to the east and the Wallowa Mountains to the west form the upper reaches of the canyon walls. These mountains form a series of jagged peaks reaching nearly 10,000 ft.

As a reference, especially for those readers unfamiliar with the area, a separate report has been prepared that contains photos of recreation-related subjects in the HCRA (Whittaker and Shelby 2002b).

2.1. Distinct River Reaches

The study area contains four distinct reaches: the three IPC reservoirs and the unimpounded Snake River within the HCNRA (Figure 2).

Brownlee Reservoir Reach—The Brownlee Reservoir Reach of the Snake River is 58.4 mi long, extending from the FERC project boundary near the crossing of an overhead powerline (RM 343) to Brownlee Dam (RM 284.6). The lower two-thirds of Brownlee Reservoir is steep-sided, with a maximum depth approaching 300 ft near the dam. Shoreline slopes ranging from 20 to 30% are most common. The Powder River reach of Brownlee Reservoir begins at the confluence with the Snake River (RM 0) and extends upstream approximately 9 mi through a relatively narrow, moderately steep canyon (with slopes of 20 to 30%) to the Powder River pool, where the surrounding terrain abruptly changes to a relatively flat agricultural area. This shallow pool area ends in multi-channel wetlands (RM 9.0).

Oxbow Reservoir Reach—The Oxbow Reservoir Reach is 12 mi long and extends from immediately downstream of Brownlee Dam to the Oxbow Dam (RM 272.5). From the tailrace of Brownlee Dam to the mouth of Wildhorse River (1.1 mi downstream of Brownlee Dam on the Idaho side of the Snake River), the Snake River is a high-velocity narrow channel. Oxbow Reservoir is relatively narrow and shallow, with maximum depths approaching 100 ft. Shorelines are primarily basalt outcrops and talus, except for alluvial fans created by small tributaries. The area surrounding Oxbow Reservoir is of moderate to steep topography (20 to 75% slopes).

Hells Canyon Reservoir Reach—The Hells Canyon Reservoir Reach, extending from 24.9 mi below Oxbow Dam to Hells Canyon Dam (RM 247.6), has a maximum depth approaching 200 ft. The unique design of Oxbow Powerhouse and Oxbow Dam leaves a 2.5-mi stretch of the original river channel between Oxbow Dam and the outflow of the powerhouse with a minimum flow of 100 cubic feet per second (cfs). This channel and flow creates a backwater area that is relatively shallow and slow. Reservoir shorelines, especially in the lower half of the reservoir, are generally very steep.

The HCNRA Reach—The HCNRA Reach of the study area begins at Hells Canyon Dam and extends north 71.4 mi to the northern boundary of the HCNRA, just north of the Cache Creek Administrative Site (USFS) (RM 176.1). The Snake River in this reach is a high-gradient river (1.8 meters/kilometer [m/km]) with diverse aquatic habitat, including numerous large rapids, shallow riffles, and deep pools. This unimpounded reach of Hells Canyon is considered the deepest gorge in North America and is surrounded at the upstream end by nearly vertical cliff

faces. At the mouth of Granite Creek, approximately 7 mi below Hells Canyon Dam, the river elevation is 1,480 ft and the canyon depth is 7,913 ft. The canyon becomes somewhat wider near Johnson Bar (RM 230), with moderate to steep topography continuing to the northern boundary of the HCNRA.

2.2. Land Features and Geology

Hells Canyon consists of a series of folded and faulted metamorphosed sediments and volcanics overlain unconformably by nearly horizontal flows of Columbia River basalt. This basalt group covered much of eastern Washington, northern Oregon, and adjacent parts of Idaho (Bush and Seward 1992). The older rocks in the series are Permian to Jurassic in age and represent at least two episodes of island arc volcanism and adjacent marine sedimentation, similar to that found today in the Aleutian Islands west of Alaska. These rock units represent old island arc chains that were sequentially "welded" to the west coast of North America during the late Paleozoic and early to mid-Mesozoic eras by subduction of a tectonic plate beneath the North American Continental tectonic plate (Asherin and Claar 1976, USFS 1994).

In more recent geologic time, Hells Canyon was formed by the Snake River eroding the Blue Mountains in Oregon and the Seven Devils Mountains in Idaho (USDE 1985). The Snake River has existed since the Pliocene era and probably cut the gorge to its present level during the Pleistocene era. During the Pleistocene era, glacial meltwater provided abundant runoff for down-cutting, while regional uplifting created weak points in the 2,000- to 3,000-ft-thick basalt plateau that overlaid the Blue and Seven Devils mountains. Resulting erosion formed the current drainage pattern that established the Snake River (USDE 1985). Northeast-trending, high-angle fault patterns characterize the Snake River fault system that runs throughout the study area (Fitzgerald 1982). Rock types other than basalt are also present within the study area. Extensive limestone outcrops, as well as local granite outcrops, are found in some tributary drainage areas.

2.3. Soils

The soils throughout Hells Canyon are derived primarily from Columbia River basalt, and, in most areas, are covered with a thin mantle of residual soils from weathered native rock. Isolated areas contain deposits of windblown silt. Unconsolidated materials include river sands and gravel deposited during the Bonneville floods 15,000 years ago, ash-loess from the Mount Mazama eruption 6,900 years ago, and colluvium and talus deposited more recently. Soil cover declines northward through Hells Canyon. Near Hells Canyon Dam (RM 247.6), most rock faces are nearly vertical with little soil cover (USFS 1994).

Most soil complexes are well drained and vary from very shallow to moderately deep. Loams are the dominant textural class and vary from very stony to silty, often with a clay subsoil component (NRCS 1995).

2.4. Climate

From late fall to early spring, the climate of west-central Idaho and eastern Oregon is typically influenced by cool, moist Pacific maritime air. Periodically this westerly flow is interrupted by outbreaks of cold, dry continental air from the north, which is normally blocked by mountain ranges to the east. During the summer, a Pacific high-pressure system dominates weather patterns, resulting in minimal precipitation and more continental climatic conditions overall (Ross and Savage 1967). The climate of Hells Canyon, located in the high desert region, is significantly influenced by the rain shadow of the Cascade Mountains to the west.

Average annual precipitation is lowest at the southern end of the study area, near Weiser (286 millimeters [mm] [11.3 inches]), increases northward toward Richland, Oregon (298 mm [11.7 inches]), peaks around Brownlee Dam (445 mm [17.5 inches]), and declines toward Lewiston (326 mm [12.8 inches]). The average annual precipitation ranges from about 380 to 500 mm (15 to 20 inches), depending on elevation. Nearly 45% of the average annual precipitation at Brownlee Dam falls from November through January; this pattern strongly contrasts with the 9% average recorded for July through September. Thus, most precipitation occurs in spring and winter (Tisdale et al. 1969, Tisdale 1986, Johnson and Simon 1987), and little or no precipitation falls during the hottest months of summer. Average annual evapotranspiration is estimated at 1,300 mm (51.2 inches).

Mean annual temperatures are similar among the four weather stations. Generally, the climate tends to become drier and warmer downstream of Brownlee Dam. Climatological information from Brownlee Dam is probably characteristic of the central section of the study area. The canyon bottom area is dry, with seasonal temperatures ranging from lows of about −5 °C in January to highs of about 35 °C in July. Temperatures from mid-November through mid-April are normally below freezing. As a rule, winters in the canyons are mild, while summers on the canyon floor are hot. Mean temperatures above elevation 2,000 m (6,562 ft msl) range from −9 °C in January to 13 °C in July. By contrast, mean temperatures below 1,000 m (3,281 ft msl) range from 0 °C in January to between 28 and 33 °C in July (Johnson and Simon 1987).

2.5. Vegetation

Three primary ecological factors—topography, soils, and climate—determine the types of vegetation growing along the canyon slopes of the middle Snake River. Climate exerts the strongest influence on the development of plant life. The relatively mild winters below the canyon rim have allowed the development of disjunct species. For example, hackberry (*Celtis reticulata*), most often found in the southwestern states, also commonly grows in the middle and lower Snake River areas (Tisdale 1979, DeBolt 1992).

Within the context of regional climate, topography strongly influences the development and distribution of vegetation (Tisdale et al. 1969; Tisdale 1979, 1986). The topographical complexity of Hells Canyon has produced a mosaic of vegetation types (Tisdale 1979, BPA 1984, BLM 1987). Grassland, shrubland, riparian, and coniferous forest communities exist in close proximity. Interfingering of grassland and forest, for example, occurs at a number of sites throughout the canyon because of variations in aspect (Tisdale 1979).

Wetland and Riparian Communities—Emergent wetland communities are composed mostly of common cattail (*Typha latifolia*), narrowleaf cattail (*Typha angustifolia*), American bulrush (*Scirpus americanus*), and common spikerush (*Eleocharis palustris*). Willows are sparse, and various forbs grow on the shoreline side of the stands (Asherin and Claar 1976). A narrow band of diverse riparian communities follows the course of the Snake River and its many tributaries. Predominant tree species in riparian areas include white alder (*Alnus rhombifolia*), water birch (*Betula occidentalis*), and black cottonwood (*Populus trichocarpa*). Predominant shrub species in riparian areas include syringa (*Philadelphus lewisii*), netleaf hackberry, chokecherry (*Prunus virginiana*), black hawthorn (*Crataegus douglasii*), and poison ivy (*Toxicodendron radicans*).

Although coniferous forest communities are generally restricted to the higher elevations of steep canyon slopes, they do extend down to the river at certain locations. For example, a ponderosa pine (*Pinus ponderosa*)/bluebunch wheatgrass (*Pseudoroegneria spicata*) type extends to the river on north-facing slopes at sites around the main bodies of Oxbow and Hells Canyon reservoirs (Asherin and Claar 1976, BPA 1984). A ponderosa pine/hackberry type may also extend down to the river in this area.

Herbaceous-Dominated Vegetation Types—The dry climate and typically stony, shallow soils of the canyon have favored the development of grassland steppe communities at the lower and middle elevations (Tisdale 1979, 1986). Commonly occurring grass species in the study area include bunchgrasses, such as bluebunch wheatgrass, Sandberg bluegrass (*Poa secunda*), and Idaho fescue (*Festuca idahoensis*) (Garrison et al. 1977, BPA 1984, Tisdale 1986, Franklin and Dyrness 1988). Sand dropseed (*Sporobolus cryptandrus*) and red threeawn (*Aristida longiseta*) are also common and, at times, dominant (BPA 1984, Tisdale 1986).

Shrub-Dominated Vegetation Types—Shrub species comprise a large segment of the canyon's overall vegetation composition. Shrub-steppe vegetation types occur at mid-elevations in the HCRA, especially in the southern region of the study area. For example, big sagebrush (*Artemisia tridentata*) is a dominant species in the southern sector of the study area, particularly around Brownlee Reservoir (BPA 1984). Commonly occurring shrubs include big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridentata*), hackberry, serviceberry (*Amelanchier alnifolia*), and bitter cherry (*Prunus emarginata*) (BPA 1984, Tisdale 1986). Other species of sagebrush are also present, including low sagebrush (*Artemisia arbuscula*), stiff sagebrush (*Artemisia rigida*), and silver sagebrush (*Artemisia cana*) (Tisdale and Hironaka 1981, Franklin and Dyrness 1988). For the most part, sagebrush stands are limited to the area around Brownlee Reservoir. In these stands, the herbaceous layer is dominated by Sandberg bluegrass, with a variety of forbs also occurring.

Stands of hackberry may be found throughout the study area, either on lower slopes with rocky residual/colluvial soil or on alluvial terraces with sandy soil (Tisdale 1986). In these stands, hackberry is often mixed with a number of other shrub and tree species, including antelope bitterbrush, blue elderberry (*Sambucus cerulea*), and ponderosa pine (BPA 1984). The herbaceous layer is most often dominated by bluebunch wheatgrass, with cheatgrass (*Bromus tectorum*) and sand dropseed dominant in those areas that have been heavily disturbed by the grazing and trampling of cattle.

Tree-Dominated Vegetation Types—The predominant forest community in the study area is a ponderosa pine/bluebunch wheatgrass plant association. This association typically occurs as a savanna of ponderosa pine trees distributed over a grassland steppe that is dominated by bluebunch wheatgrass. Shrubs are almost completely absent, except for sparsely distributed, drought-resistant species such as antelope bitterbrush and serviceberry (Garrison et al. 1977, Johnson and Simon 1987). Hackberry dominates the shrub layer in moderate density. Poison ivy is also abundant (Asherin and Claar 1976).

Cover Types—Twenty-six cover types—for vegetation, natural features, and land use—were identified along the Snake River in the study area used for many of the resource studies, an area which included the HCRA (Holmstead 2001). The most abundant upland vegetation cover type was *Grassland* (35.5% of the total area), followed by *Shrub Savanna* (21.0%) and *Shrubland* (6.6%). Tree-dominated upland vegetation cover types were infrequent in the study area. The most abundant riparian vegetation cover type was *Shore & Bottomland Wetland* (1.8%), followed closely by *Scrub-Shrub Wetland* (1.7%). The most abundant natural-feature cover types were *Lotic* (moving water, 16.1%) and *Cliff/Talus Slope* (5.6%), while *Agriculture* was the most abundant land-use cover type (5.0%).

2.6. Population Centers

The only major population center within 100 mi of any portion of the study area is Boise, Idaho, about 60 mi from the upstream end of Brownlee Reservoir (Figure 3). The majority of the other cities and towns in the vicinity of the study area have populations of less than 10,000. People living within this vicinity contribute the majority of the recreational use occurring within the study area (Shelby and Whittaker 2001, Whittaker and Shelby 2002a). Population centers within a 100-mi radius of some portion of Hells Canyon include Boise (population 185,787), Meridian (34,919), Nampa (51,867), Caldwell (25,967), Fruitland (3,805), Payette (7,054), Weiser (5,343), Midvale (176), Cambridge (360), Council (816), Riggins (443), Grangeville (3,228), Lewiston (30,904), and New Meadows (533), on the Idaho side. Population centers in Oregon include Baker City (9,860), Enterprise (1,895), Halfway (337), Huntington (515), La Grande (12,327), Ontario (10,985), and Richland (147). Washington population centers near the study area include Clarkston (7,337) and Asotin (1,095) (U.S. Census Bureau 2001).

2.7. Political Boundaries and Land Management

The Hells Canyon Complex (HCC) occurs within and across the political boundaries of Idaho, Adams, and Washington counties in Idaho, and Wallowa, Baker City, and Malheur counties in Oregon (Figure 3). Federal agencies, such as the Bureau of Land Management (BLM) and USFS, are responsible for managing the majority of public land in Hells Canyon. These areas fall within the jurisdictional boundaries of the Wallowa-Whitman National Forest in Oregon, the Payette and Nez Perce National Forests in Idaho, the Four Rivers Field Office (FO) of the Lower Snake River District of the BLM in Idaho, the Cottonwood FO of the Upper Columbia−Salmon Clearwater District of the BLM in Idaho, and the Baker and Malheur FOs of the Vale District of the BLM in Oregon. The Idaho Department of Fish and Game (IDFG) and Oregon Department of Fish and Wildlife (ODFW) are directly responsibility for wildlife population and habitat

management. These agencies also administer several areas within Hells Canyon that have been set aside specifically for wildlife habitat, including the Cecil D. Andrus Wildlife Management Area in Idaho. Other state and federal government agencies with natural resource jurisdiction in the greater project area include the Idaho Department of Lands, National Marine Fisheries Service, Bureau of Indian Affairs, and U.S. Fish and Wildlife Service.

Several special management areas also exist in the Hells Canyon area and are directly administered by the USFS. These include the Eagle Cap Wilderness in Oregon, the Hells Canyon Wilderness in Idaho and Oregon, the HCNRA in Idaho and Oregon, the Wild and Scenic Imnaha River in Oregon, the Seven Devils Scenic Area in Idaho, and the Wild and Scenic Snake River in Idaho and Oregon.

2.8. Road Access

Road access to the Snake River varies considerably within the study area. At one extreme, roads running parallel and immediately adjacent to the reservoirs provide relatively easy access in some areas. At the other extreme are extensive reaches with no road access, the longest stretch being 76 mi. The following description does not include several access roads that may appear on some maps but are either private ranch roads or, in the case of some USFS roads, in such poor condition that motorized travel is not advisable. All access roads and locations in the following description can be found in Figures 3 and 4.

2.8.1. Road Access to the Oregon Side of the Study Area

2.8.1.1. Road Access to Upper Brownlee Reservoir

The uppermost 3 mi of Brownlee Reservoir on the Oregon side of the study area (RM 343–340) are accessible only through private property. Olds Ferry–Ontario Highway (State Highway 201) from Weiser runs parallel to the Snake River for 2 mi before joining Interstate 84 (I-84) at RM 338. I-84 (which crosses southern Idaho, then proceeds northwest to the Columbia River and Portland, Oregon) runs parallel to the upper end of Brownlee Reservoir for 3 mi (RM 338–335) before turning west, away from the river, at Farewell Bend, Oregon. From Farewell Bend, Huntington Highway goes to Huntington, Oregon. From Huntington, the Snake River Road leads to Brownlee Reservoir at the confluence of the Burnt River. On the Oregon side of Brownlee Reservoir, a 4-mi reach beginning at Farewell Bend and ending at the confluence with the Burnt River (RM 334–328) is not readily accessible by road. The Snake River Road—for most of its length a well-maintained gravel road—runs parallel to the Oregon side of Brownlee Reservoir from the mouth of the Burnt River to a point 24 mi downstream. The Snake River Road then leaves the river (RM 304) and cuts across the ridge to Richland, at the upper end of the Powder River arm of Brownlee Reservoir.

2.8.1.2. Road Access to the Powder River Arm and the Lower End of Brownlee Reservoir

The majority of the Powder River arm of Brownlee Reservoir is inaccessible by road. There is no road access to the Snake River for the 19.4-mi reach between Snake River Road and

Brownlee Dam. The Snake River Road, described above, runs parallel to the southern side of the upper pool area of Brownlee Dam for a short distance, but access in this area is through private land. Sullivan Lane (out of nearby Richland) ends at Hewitt and Holcomb parks at the northeastern end of the pool area (RM 7.5). Sag Road, which starts at Oregon Highway 86 (Oregon 86) near Halfway, Oregon, ends at the north shore of the Powder River arm (RM 3.6). Sag Road crosses private land and requires a gate key for access.

2.8.1.3. Road Access to Oxbow and Hells Canyon Reservoirs

Oregon 86 continues through Halfway and ends at Copperfield, Oregon (RM 269.5), immediately below Oxbow Dam. From Copperfield, three roads provide access to the reservoirs. The Oxbow–Brownlee Road begins at Copperfield and runs south for about 12 mi, the last 11 mi parallel to Oxbow Reservoir, before crossing the river immediately below Brownlee Dam. Across the bridge at Copperfield, the Brownlee–Oxbow Road ends at Oregon 86. Oregon 86 connects to the Hells Canyon Road, which leads to Hells Canyon Dam. The third route takes Homestead Road, which is gravel. It begins at Copperfield, runs parallel to Hells Canyon Reservoir for 9 mi north, and ends at Copper Creek (RM 260.7), a BLM recreation site.

2.8.1.4. Road Access to the HCNRA

Downstream of Copper Creek, there is no road access to Hells Canyon Reservoir or the Snake River until Dug Bar (RM 197), 64 mi to the north. Dug Bar Road, a relatively rough road of gravel and dirt, runs north from Imnaha, Oregon, and ends at the USFS Dug Bar access site on the Snake River. Farther north, no additional roads access the reservoir between Dug Bar and Heller Bar (RM 168.4) in Washington, a distance of 28.6 mi. Aside from hiking, access to the Snake River at this end of the HCNRA is by boat. At Heller Bar, just north of the mouth of the Grande Ronde River (RM 168.7), the BLM operates a landing—a boat ramp and parking facility on Snake River Road—about 8 mi north of the HCNRA's northern boundary and 20 mi south of Asotin. Additionally, in the 25-mi stretch downstream of Heller Bar to Clarkston, Washington, several smaller private and public boat ramps provide river access.

2.8.2. Road Access to the Idaho Side of the Study Area

2.8.2.1. Road Access to Upper Brownlee Reservoir

The upper end of Brownlee Reservoir on the Idaho side can be reached using Olds Ferry Road, which runs from Weiser northward for 31 mi to Rock Creek (RM 320). Changing from pavement to gravel, the road runs north 22 mi, parallel to Brownlee Reservoir. The northern 10 mi become progressively more difficult to traverse because of erosion, slides, and private access. Between Rock Creek and Trail Creek (RM 315), a distance of about 5 mi, no roads access Brownlee Reservoir. Rock Creek Road, a gravel and dirt road, runs from Weiser through more than 20 mi of ranch land before reaching Brownlee Reservoir at Trail Creek. From there, it runs parallel to Brownlee Reservoir for 4.5 mi before ending at Mountain Man Lodge (RM 310.5).

2.8.2.2. Road Access to Lower Brownlee Reservoir

No maintained public roads provide access to Brownlee Reservoir between Mountain Man Lodge and Brownlee Creek (RM 288), a distance of about 23 mi. Between Brownlee Creek and just downstream of Brownlee Dam, a distance of about 4 mi, Idaho Highway 71 (Idaho 71) from Cambridge runs parallel to the Brownlee Reservoir and tailrace, before crossing the river into Oregon. The IDFG also maintains a road between Brownlee and Cottonwood creeks through the Cecil D. Andrus Wildlife Management Area. This road is used primarily by hunters in the fall and early winter.

2.8.2.3. Road Access to Oxbow and Hells Canyon Reservoirs

From the Idaho 71 bridge (just below Brownlee Dam) to Oxbow Dam, a distance of about 11 mi, there is no road access to Oxbow Reservoir on the Idaho side. Beginning just below Oxbow Dam, Hells Canyon Road—which joins Oregon 86 by bridge at RM 270—runs parallel to Hells Canyon Reservoir for about 23 mi northward before crossing Hells Canyon Dam. It ends about 1 mi below Hells Canyon Dam on the Oregon side at the USFS Hells Canyon Visitors Center (at the Hells Canyon Creek Recreation Site). The Kleinschmidt Grade (RM 263.5), a steep, rocky road that joins USFS roads to New Meadows, Idaho, ends at Hells Canyon Road, about 6 mi north of Oxbow Dam.

2.8.2.4. Road Access to the HCNRA

Between Hells Canyon Dam and the Pittsburg Landing Administrative Site (RM 215), a distance of about 33 mi, no maintained roads access the Snake River. At Pittsburg Landing, a well-maintained, 17-mi-long gravel road runs east-west across the ridge from U.S. Highway 95 (U.S. 95) and ends at the Snake River. North of Pittsburg Landing, no maintained roads access the Snake River until Lewiston, a distance of about 76 mi. Access in this 76-mi area is limited to unimproved and private roads. In and around Lewiston, numerous public and private boat ramps provide access to the Snake River.

2.9. Recreational Sites and Amenities

2.9.1. Recreational Sites and Amenities Associated with HCC Reservoirs

Recreational-use sites discussed in this section are shown in Figure 5.

2.9.1.1. IPC Sites and Amenities

IPC provides and regulates its parks and other recreational facilities in accordance with Section 10(a) of the Federal Power Act. Consistent with applicable laws, rules, and regulations, reasonable fees are charged for use of the park facilities at Brownlee, Oxbow, and Hells Canyon projects.

IPC Parks

All four IPC parks have full-time, on-site maintenance personnel. Rules and regulations, as well as informational, historical, and interpretive signs, are posted at various locations throughout the parks and the HCC. Public telephones are available at all four parks. The parks are open year-round, with limited amenities and reduced rates available during the off-season. The off-season runs from November 1 through March 30. For more detailed information about IPC's park facilities, see Moore and Brown 2002.

Woodhead Park—Woodhead Park (RM 287.3) is located adjacent to Idaho 71, on the Idaho side of Brownlee Reservoir, approximately 24 mi west of Cambridge, Idaho, and 4 mi south of Brownlee Dam. Originally constructed in 1959, Woodhead Park underwent a remodel and expansion that was completed in spring 1995 to enhance camping, parking, and boating facilities. A realignment of Idaho 71 increased park acreage, now 65 acres of turf, shade trees, and naturally landscaped areas. Woodhead Park has 124 recreational vehicle (RV) sites, with electricity, water, picnic tables, and fire rings. Fifteen walk-in tent sites are equipped with water, picnic tables, and fire rings. Within large day-use areas, two large picnic areas with shelters accommodate group gatherings. Additionally, Woodhead Park has the following amenities: three restrooms, two comfort stations with showers, a wastewater treatment lagoon, a fish-cleaning station, interpretive and information displays, a trail system, paved roads, a boat trailer parking area, and a four-lane and a single-lane boat ramp, both with docking systems. The new four-lane boat ramp was extended in spring 1996 to allow reservoir access down to 2,022 ft msl (reservoir "full pool" is 2,077 ft msl). The original one-lane boat ramp allows reservoir access during maximum drawdowns (1,976 ft msl).

McCormick Park—Constructed in 1958, this park is located on the Idaho side of Oxbow Reservoir, approximately 1 mi downstream of Brownlee Dam. McCormick Park (RM 283.3) is a day- and night-use recreation facility with the following amenities: 9 acres of turf, shade trees, restroom facilities with showers, 34 RV sites with electrical and water hookups, numerous tent spaces, picnic tables, fire pits, and a sanitary dump station for RVs. In addition, a concrete boat ramp, boat ramp parking, and docks are adjacent to the park.

Copperfield Park—Originally constructed in 1965 and subsequently remodeled in 1989, Copperfield Park (RM 269.5) is located on the Oregon side of Hells Canyon Reservoir just 3 mi downstream of Oxbow Dam and adjacent to the intersection of Idaho 71, Oregon 86, and Hells Canyon Road. The park has 12 acres of turf, paved roads, terraced landscaping, and numerous trees throughout. Sixty-two RV sites have electricity, water, fire pits, and picnic tables. The park also has 10 camping sites for tents, with nearby picnic tables and barbecue stands. Restroom facilities with showers, a sanitary dump station, and additional vehicle parking are also available. Nearby is Copperfield Boat Launch, described below.

Hells Canyon Park—Hells Canyon Park (RM 263.5) is located on the Idaho side of Hells Canyon Reservoir adjacent to Hells Canyon Road and about 9 mi downstream of Oxbow Dam. The park's 15 acres are landscaped with turf and mature shade trees, and a paved road runs through the park. Amenities include restroom facilities with showers, an RV dump station, 24 RV sites with electrical and water hookups, picnic tables, and barbecue stands. Numerous tent sites with picnic tables are available in a turf area that has large trees and copious shade. A large day-use area within the park has parking, picnic tables, shade trees, and a

swimming area. An adjacent boat ramp area provides parking for vehicles and boat trailers, four electric pedestals for recharging boat batteries, a concrete boat ramp, and boat docks.

IPC Non-Park Recreational Facilities

IPC operates and maintains several less-developed recreational sites and owns many impromptu, or undeveloped, sites that are open to recreational use. Impromptu campsites are also referred to as dispersed campsites.

Carters Landing—Located adjacent to the Brownlee–Oxbow Road on the Oregon side of Oxbow Reservoir approximately 4 mi downstream of Brownlee Dam, Carters Landing (RM 280.5) occupies approximately 1.7 acres. Facilities include several impromptu campsites, a composting toilet, picnic tables, garbage receptacles, and an unimproved boat launch. IPC charges nominal fees for use of this site.

Copperfield Boat Launch—Constructed in 1994, the Copperfield Boat Launch (RM 269.1) is located on the Oregon side of Hells Canyon Reservoir, approximately 1 mi downstream of Copperfield Park on Homestead Road. Amenities include a two-lane concrete boat ramp, boat docks, parking, garbage receptacles, and seasonal toilets.

Impromptu Areas—In addition to those sites listed here, IPC owns a number of areas adjacent to project waters that are used for impromptu day-use sites and campsites. Some have portable toilets, garbage pickup, and unimproved boat launching areas. For more detailed information about IPC non-park recreational facilities, see Hall and Bird 2001.

2.9.1.2. USFS Sites and Amenities

The USFS currently does not manage any highly developed recreation facilities in the study area associated with Brownlee, Oxbow, or Hells Canyon reservoirs. However, the agency manages much of the land in the study area surrounding Hells Canyon Reservoir and upstream of Hells Canyon Dam, as well as several trails and sites either adjacent to or associated with the HCC reservoirs.

Idaho and Oregon Sites

Eckels Creek—Eckels Creek (RM 256.8) is a small area used for impromptu day-use sites and campsites located on the Idaho side of Hells Canyon Reservoir, just downstream of Big Bar on Hells Canyon Road, about 15 mi north of Oxbow Dam. While it offers no amenities, this site is one of the most popular of the small sites for dispersed camping associated with the reservoirs. Shade, good bank fishing access, and privacy are available at this site.

Big Bar—The USFS manages this 38-acre terraced area (RM 255.7) located on the Idaho side of Hells Canyon Reservoir, 16.5 mi downstream of Oxbow Dam and adjacent to Hells Canyon Road. Amenities include vault toilets, interpretive signs, two unimproved gravel boat ramps, and one dock. Camping is allowed at various locations throughout this site.

Black Point—Black Point (RM 252.2) is a scenic overlook pullout 20 mi north (downstream) of Oxbow Dam on Hells Canyon Road. Situated about 1,200 ft above and immediately adjacent to

Hells Canyon Reservoir, this pullout accommodates large vehicles and displays interpretive signs.

Eagle Bar—Eagle Bar (RM 249.5) is a 3-acre site on the Idaho side of Hells Canyon Reservoir, approximately 7.5 mi downstream of Big Bar. During construction of the Hells Canyon Dam, IPC used this site for trailer offices, tool shops, and a first-aid station. The USFS manages this site for dispersed day and camping use.

Deep Creek Access Trail Pullout—A parking area with a vault toilet provides a pullout for recreationists who use the Deep Creek Access Trail. This site is located immediately upstream of Hells Canyon Dam, adjacent to Hells Canyon Road.

Impromptu Areas—Many impromptu campsites and sportsman access areas exist along Brownlee, Oxbow, and Hells Canyon reservoirs on lands managed by various state and federal agencies, including the USFS.

Over 50 mi of hiking trails are accessible along Hells Canyon Reservoir. These trails are located along both the Idaho and Oregon sides of the river. Maintenance of these trails varies.

Oregon Trails

Hells Canyon Trail (#1890)—Hells Canyon Trail begins on the Oregon side of Hells Canyon Reservoir at Copper Creek Trailhead, located at the northern end of the Homestead Road. Approximately 2 mi downstream, the Hells Canyon Trail connects with trail #1884 at Spring Creek. The trail is currently maintained by the USFS and is in a designated Wilderness area.

Bench Trail (#1884)—Bench Trail connects Spring Creek to Squaw Creek.

McGraw Trail (#1879)—McGraw Trail is a loop trail that goes to McGraw Creek Ridge, then continues north to connect with Bench Trail.

Thirty-two Point Trail (#1789)—Thirty-two Point Trail connects Squaw Creek to USFS Road 3965.

Stud Creek Trail (#1781)—Stud Creek Trail is located below Hells Canyon Dam at the Visitors Center. It is maintained by the USFS for 1 mi downstream to Stud Creek.

Idaho Trails

Eckels Creek Trail (#223). Eckels Creek Trail connects with the Midslope Contour Trail and continues up Eckels Creek to Lynes Saddle Trailhead on USFS Road 111, near Cuprum, Idaho.

Allison Creek Trail (#514)—Allison Creek Trail connects with the Midslope Contour Trail, 2 mi from the trailhead.

Kinney Creek Trail (#221)—This trail connects with the Midslope Contour Trail, 2 mi from the trailhead.

Midslope Contour Trail (#222)—Midslope Contour Trail connects with Kinney, Allison, and Eckels creeks.

Deep Creek Trail (#219)—This trail extends from Eagle Bar to Deep Creek.

Haley Ridge Trail (#220)—Haley Ridge Trail connects with Deep Creek Trail and continues to Sheep Rock Overlook.

Copper Creek Trail (#320)—Copper Creek Trail connects Sheep Rock and Deep Creek via the Copper Creek drainage.

Deep Creek Stairway Trail (#218)—A steep stairway from Hells Canyon Dam, this trail provides fishing access to the mouth of Deep Creek.

2.9.1.3. BLM Sites and Amenities

Oasis Site—On the Oregon side of Brownlee Reservoir, the Oasis site (RM 340) is located adjacent to U.S. Highway 30 (U.S. 30). Amenities include a boat ramp, gravel parking lot, and vault toilet. Some impromptu campsites can occur here. In 1997, the BLM and IPC cooperatively added a vault toilet and graded the parking lot.

Steck Recreation Site—On the Idaho side of Brownlee Reservoir, this day- and night-use site (RM 327.9) is adjacent to Olds Ferry Road. Although the land is owned by the IDFG, the BLM has a perpetual management easement for site operation. The area is landscaped with turf and shade trees. Amenities include vault toilets, drinking water, picnic tables, a covered picnic area, camping sites, a fish-cleaning station, a boat ramp, and docks. With assistance from the IDFG and acquisition of adjacent land, the BLM constructed an additional boat ramp in 1990 just downstream of the park. In 1995 and 1996, the BLM improved the structure of 7 individual campsites, adding fire rings, picnic tables, and barbecue grills. Six new vault toilets were also added. In 1998, the existing downstream boat ramp was extended to provide access during low-water conditions (2,055-ft level). In 1999, the BLM finished a 4-year renovation project that expanded the camping capacity and improved the overall quality of the facilities. The older, shaded area has 16 RV sites and 5 tent sites. The newer, upper area has 29 RV sites, including 4 group sites. All sites have grills, campfire rings, and picnic tables. Potable water is available, but there are no RV hookups or showers.

Spring Recreation Site—On the Oregon side of Brownlee Reservoir, Spring Recreation Site (RM 326.7) is adjacent to the Snake River Road, just downstream of the mouth of the Burnt River. This is a day- and night-use facility. Originally, the lands on which the park was constructed were donated by IPC to the BLM for recreational development. Minimal shade is provided. The facility has vault toilets, multiple campsites, drinking water, a fish-cleaning station, a boat ramp with docks, and a large boat and trailer parking area. A BLM firefighting crew is stationed adjacent to this site.

Swedes Landing—On the Oregon side of Brownlee Reservoir, Swedes Landing (near RM 304) is adjacent to the Snake River Road. George Stover of Weiser originally maintained this site. In 1958, a boat club from Baker City built wooden docks, anchor stays, and dry toilets (Murray 1960). Swedes Landing covers approximately 3 acres, providing impromptu campsites, vault

toilets, and an unimproved boat ramp area. In a cooperative effort with IPC, the BLM installed an additional vault toilet in 1997 and added gravel to the existing parking area and boat ramp.

Oxbow Boat Launch—A day-use-only site, Oxbow Boat Launch (RM 275.8) is located on a narrow strip of land adjacent to the Brownlee–Oxbow Road on the Oregon side of Oxbow Reservoir, approximately 10 mi downstream of Brownlee Dam. Amenities include garbage pickup, a gravel boat ramp, dock, composting toilet, and parking area. BLM owns this site, and IPC maintains it.

Impromptu Areas—In addition to those sites previously described, BLM manages several areas adjacent to the HCC that are used for impromptu day-use sites and campsites. Some areas provide garbage pickup, vault or portable toilets, and unimproved boat launching areas. For detailed information about these and other BLM recreational facilities, see Hall and Bird 2001.

2.9.1.4. Sites and Amenities Managed by State Agencies

Within the study area, the only recreation area that is managed by a state agency is Farewell Bend State Park (RM 333.5), which is managed by the Oregon Department of Parks and Recreation (ODPR). This site is a day-use and overnight camping facility located adjacent to Huntington Highway near I-84. Originally, the lands on which the park was constructed were donated by IPC to the State of Oregon for recreational development. The park covers 73 acres and is extensively landscaped with turf, shrubs, and shade trees. Amenities include 93 RV sites with electrical and water hookups, 45 primitive sites with paved areas and a common water source (but no electrical hookups), and 4 walk-in sites for tent camping. Since 1995, ODPR has added two covered wagons, two primitive cabins, teepees, and an amphitheater for interpretive programs. Additional amenities include restrooms with showers and a washroom, electrical hookups, water hookups, picnic tables, barbecue pits, interpretive and information panels, a fishing access trail and pier, a fish-cleaning station, a boat ramp with docks, and boat and trailer parking.

2.9.1.5. County Sites and Amenities

Hewitt and Holcomb parks, managed by Baker County, are the only recreation areas within the study area that are owned and operated by a county. These adjacent parks are located on the northern side of the Powder River arm of Brownlee Reservoir at the end of Sullivan Road (RM 7.5), near Richland. These two parks provide day-use and camping facilities. Originally, the lands on which the parks were constructed were donated by IPC to a local sportsman's club, which later donated the land to Baker County for recreational development. The park is landscaped with turf, shade trees, a paved road, and a parking area. Facilities include restrooms, RV sites with electrical and water hookups, picnic tables, a playground, a fish-cleaning station, boat ramps, and numerous docks. In 1996, IPC extended the length of the main boat ramp by 100 ft at Hewitt Park, extending boat launching from 2,048.5 to 2,036.5 ft msl during low-water periods.

2.9.1.6. Privately Owned Sites and Amenities

Oasis Campground—On the Oregon side of upper Brownlee Reservoir, Oasis Campground (RM 340) is a privately owned facility. It lies between the BLM Oasis Site and the Snake River

RV Park; all three of these sites are adjacent to the Olds Ferry–Ontario Highway (U.S. 30), approximately 10 mi downstream of Weiser. Oasis Campground has 23 RV sites with electrical, water, and sewer hookups, as well as a restroom with showers. Bait and tackle are sold on site.

Snake River RV Park—This privately owned, 25-acre campground is adjacent to Oasis Campground. It has 10 campsites with electrical, water, and sewer hookups and 10 sites with only electrical hookups and water. Other amenities include a restroom with showers, a laundromat, a fish-cleaning station, and a paved boat ramp.

Mountain Man Resort and Marina—Mountain Man Resort (RM 310.5) is a privately owned facility on the Idaho side of Brownlee Reservoir, located 32 mi northwest of Weiser. It is part of a 38,000-acre ranch that is accessible via county-maintained Rock Creek Road. Before 1997, lodge amenities included accommodation for up to 34 people, a meeting room, and meals. Primitive camping facilities and teepees were available for overnight use for a fee. Guided hunting and fishing were offered on a private shooting preserve. A marina adjacent to the lodge provided boat mooring, boat rentals, fuel, bait, tackle, fishing licenses, and groceries. Since 1997, Mountain Man Lodge has not been open to the public.

Little Deacon Creek—Little Deacon Creek (RM 310.5) is a privately owned site encompassing approximately 5 acres. It provides a primitive boat ramp, a dock, and some graveled pads for RV parking. This site also provides access by boat from the Oregon side of the river to Mountain Man Resort.

2.9.2. Recreational Sites and Amenities Below Hells Canyon Dam Associated with the HCNRA

2.9.2.1. USFS Recreational Sites and Amenities

USFS Administrative Sites

The USFS manages four administrative sites within the HCNRA. These include maintenance facilities, historic areas, and recreational sites.

Hells Canyon Creek Recreation Site (and Hells Canyon Visitors Center)—Built at this recreation site in 1995, the Hells Canyon Visitors Center (RM 246.8) is located on the Oregon side of the Snake River about 1 mi north (downstream) of Hells Canyon Dam, at the northern end of Hells Canyon Road. This recreation site is the launch site for most float trips on the Snake River through Hells Canyon. The launch site also offers commercial and private jet boat access to the upper end of the HCNRA. Amenities include a pay phone, vault toilets, covered picnic shelters, a concrete boat launch, a float boat launch, and a docking system for commercial jet boats. The modern rock-and-glass visitors center is staffed seven days a week from Memorial Day weekend through September 15th. IPC provides one full-time employee from May through September.

Kirkwood Historic Ranch and Associated Campsites—The Kirkwood Historic Ranch site (RM 221.5) is located on the Idaho side of the Snake River, about 27 mi north of Hells Canyon Dam. Open all year, this historic ranch, museum, and interpretive site portrays early pioneer life

in the canyon. Volunteers staff this site during the high-use season. Toilets are available. A satellite telephone is on site for emergencies and reporting fires. Three campsites that can accommodate large groups are within easy walking distance of Kirkwood Historic Ranch and provide shade, toilets, and tables.

Pittsburg Administrative Site and Associated Campsites—On the Idaho side of the Snake River, the Pittsburg Administrative Site (RM 215) is located about 33 mi north of Hells Canyon Dam. This site provides road access to the Snake River. It is the main exit portal for float boat trips originating at the Hells Canyon Creek Recreation Site and a launching site for jet boats using this section of the Snake River. The administrative site does not have campsites; however, the adjacent Pittsburg Landing campground provides road access, a boat launch ramp and a float boat apron, some shade, drinking water, toilets, and picnic tables. A satellite telephone is available for reporting fires and emergencies. Directly across the river, the USFS operates a maintenance and housing facility, which is not open to public use.

Cache Creek Ranch Administrative Site—On the Oregon side of the Snake River, the Cache Creek Ranch Administrative Site (RM 177) is located about 71 mi north of Hells Canyon Dam and 43 mi south of Lewiston. It is the only entry portal at the northern end of the HCNRA. Permits, maps, and other information are available at this day-use-only site. Amenities include shade, water, a toilet, and tables.

USFS Special-Use Permit Sites within the HCNRA

Sheep Creek—Sheep Creek (RM 229.5) is a privately operated site located on the Idaho side of the Snake River, about 18 mi north (downstream) of Hells Canyon Dam. This site contains an old, refurbished farmhouse and offers overnight accommodation with meals. Mike and Jodee Luther manage it, under a USFS special-use permit.

Temperance Creek Ranch—Temperance Creek Ranch (RM 223.8) is on the Oregon side of the Snake River about 24 mi north of Hells Canyon Dam. The USFS purchased these holdings in 1975. Butch and Karen Brown currently operate this site as a base for outfitted hunting trips, under a special-use permit.

Copper Creek—Copper Creek Resort (RM 205) is on the Oregon side of the Snake River, about 43 mi north of Hells Canyon Dam. Operated by Beamers (a guide and outfitting service) under a special-use permit, this site offers cabins and all-you-can-eat meals.

Other USFS Sites and Trails

Deep Creek Access Trail—In 1989 the USFS, IDFG, and IPC cooperatively participated in a project to construct and improve the trail from Hells Canyon Dam to Deep Creek, a very popular angling spot. Deep Creek is 0.1 mi downstream of and about 350 ft below the top of Hells Canyon Dam and marks the beginning of the access trail. The trail is very steep, traversing almost vertical canyon walls. A series of metal stairways, landings, railings, and natural surfaces provides access for anglers and other outdoor enthusiasts to the Idaho side of the Snake River below Hells Canyon Dam. A parking area with a vault toilet is located immediately adjacent to Hells Canyon Dam and Hells Canyon Road.

Stud Creek Trail—The Stud Creek Trail begins at the Hells Canyon Visitors Center (at the Hells Canyon Creek Recreation Area) and extends downstream along the Oregon side of the river for about 1 mi to Stud Creek (RM 246).

Snake River National Recreation Trail—This 25-mi trail runs parallel to the Snake River in Idaho. It begins at Granite Creek (RM 239.6), about 8 mi north (downstream) of Hells Canyon Dam, and ends at the Pittsburg Administrative Site. Sections of the trail are sometimes flooded.

Dug Bar Site—Dug Bar (RM 197) is on the Oregon side of the Snake River about 50 mi north of Hells Canyon Dam. A USFS road from Imnaha provides vehicle access to the Snake River. A boat ramp, vault toilet, and several campsites are located at this site.

Designated Campsites—The USFS has identified more than 100 distinct camping areas within the HCNRA. These sites are scattered throughout the Snake River corridor. For details about these and other sites, see Hall and Bird 2001.

2.9.2.2. Privately Owned Recreation Sites and Amenities

Kirby Creek Lodge—Kirby Creek Lodge (RM 218.9) is located approximately 80 mi upstream of Lewiston and 26 mi downstream of Hells Canyon Dam. Mike and Jodee Luther own and operate both Snake River Adventures and Kirby Creek Lodge. The lodge has a grassy lawn, 8 guest rooms, 2 shared bathrooms with showers, and 1 shared living room. Family-style dining is provided.

Garden Creek Preserve (also known as Deer Head Rapids, China Gardens, Madden Ranch, and Butch and Deb's) —Owned by The Nature Conservancy (TNC), this preserve (RM 176.0) is located just north of the HCNRA boundary, approximately 37 mi south of Lewiston, on what was once a working ranch. The lodge, now leased from TNC by River Quest Excursions, is a large home that was built in the 1920s. The house overlooks the Snake River and is surrounded by an orchard. Garden Creek runs past the orchard and supplies the property with its own hydroelectric power. There are 4 guest rooms with beds and 2 shared bathrooms. Meals are served family style.

2.9.2.3. BLM Recreation Sites and Amenities

Heller Bar—Just north of the mouth of the Grande Ronde River, the landing at Heller Bar is about 8 mi north of the HCNRA's northern boundary and 20 mi south of Asotin. This BLM site has a boat ramp and a parking facility on Snake River Road. Although Heller Bar is not within or adjacent to the HCNRA, it provides significant access for boaters accessing the HCNRA through the Cache Creek Portal.

3. PROJECT HISTORY AND OPERATIONS

3.1. Project History

In 1908, the Idaho–Oregon Light and Power Company constructed the first hydroelectric plant in the project reach. That company, which was IPC's predecessor, built the plant at the oxbow of the Snake River. The project comprised a wing dam on the oxbow's east side that employed 22 ft of fall around the oxbow and diverted water through a tunnel to a power plant on the west side of the oxbow.

The wing dam, which was intermittently damaged by high flows, was expanded between 1915 and 1922. Then in 1947, IPC submitted a preliminary license application in which the company proposed to expand the Oxbow Project. On December 15, 1950, the company submitted the final application for licensing the project.

In Exhibit Q of the 1950 license application, IPC indicated its intention to develop this reach of the Snake River by following the Oxbow Project with a series of four other dams on the river: the Hells Canyon, Brownlee, Sturgill, and Bayhorse Rapids projects. After extensive hearings and interventions, the Federal Power Commission issued a license on August 4, 1955, that approved construction of the current three-dam complex.

In November 1955, access and site preparation work began for Brownlee Dam. In January 1956, a diversion tunnel, through which the river would be redirected while work on Brownlee Dam continued, was started. On May 9, 1958, Brownlee Dam was completed and the reservoir began filling. The first generating unit at the Brownlee Project began operating on August 27, 1958. The last generator installed at the HCC, Brownlee Unit 5, went into service on March 31, 1980.

Project benchmarks include the following dates:

August 4, 1955	License was granted for the Hells Canyon Complex.
November 1955	Construction on Brownlee Dam began.
December 11, 1957	Excavation for Oxbow Dam began.
May 9, 1958	Brownlee Dam was completed, and the reservoir began filling.
March 12, 1961	Oxbow Dam was completed, and the reservoir began filling.
July 27, 1961	Construction of the road to Hells Canyon Dam began.
August 27, 1964	Excavation for Hells Canyon Dam began.
October 10, 1967	Hells Canyon Dam was completed, and the reservoir began filling.

3.2. Operational Overview

Hells Canyon, on the Oregon–Idaho border, is the deepest canyon in North America and home to IPC's largest hydroelectric generating complex, the HCC. The HCC includes the Brownlee, Oxbow, and Hells Canyon dams, reservoirs, and power plants. Operations of the three projects of the complex are closely coordinated to generate electricity and to serve many other public purposes.

When the complex was built, its main purpose was generating power. Currently, over 400,000 customers rely on IPC's hydro and thermal generation system for power. The HCC is an integral part of IPC's generation system. Its winter and summer operations are particularly important because energy needs are highest during those seasons. In wintertime, customers need extra electricity for lighting and heating. During the summer, they need extra electricity for air conditioning and irrigation pumping.

But over the years, operations have been adapted to meet changing needs. So IPC operates the complex within the bounds of the FERC license and according to other concerns, such as environmental conditions and regulatory constraints. For example, flood control, anadromous fish, spawning protection, and recreational uses are issues to be balanced with power needs and system-reliability requirements.

Brownlee Reservoir is the only one of the three HCC facilities—and IPC's only project—with significant storage. It has 101 vertical feet of active storage capacity, which equals approximately 1 million acre-feet of water. On the other hand, Oxbow and Hells Canyon reservoirs have significantly smaller active storage capacities—approximately 0.5 and 1.0% of Brownlee Reservoir's volume, respectively.

Brownlee Dam's hydraulic capacity is also the largest of the three projects. Its powerhouse capacity is approximately 35,000 cfs, while the Oxbow and Hells Canyon powerhouses have hydraulic capacities of 28,000 and 30,500 cfs, respectively.

Target elevations for Brownlee Reservoir define the flow of water through the HCC. However, when flows exceed powerhouse capacity for any of the projects, water is released over the spillways at those projects. When flows through the HCC are below hydraulic capacity, all three projects operate closely together to re-regulate flows through the Oxbow and Hells Canyon projects so that they remain within the 1-foot per hour ramp rate requirement (measured at Johnson Bar below Hells Canyon Dam) and meet daily peak load demands.

In addition to maintaining the ramp rate, IPC maintains minimum flow rates in the Snake River downstream of Hells Canyon Dam. These minimum flow rates are for navigation purposes and IPC's compliance with Article 43 of the existing license. Neither the Brownlee Project nor the Oxbow Project has a minimum flow requirement below its powerhouse. However, because of the Oxbow Project's unique configuration, a flow of 100 cfs is maintained through the bypassed reach of the Snake River below the dam (a segment called the Oxbow Bypass).

3.3. Seasonal Operations of Brownlee Reservoir

Brownlee Reservoir is a multiple-use, year-round resource for the Northwest. Although its primary purpose is providing a stable power source, Brownlee Reservoir is also used for flood control, fish and wildlife mitigation, and recreation.

The U.S. Army Corps of Engineers North Pacific Division defines flood-control requirements and coordinates flood-control efforts with IPC. During the spring, IPC complies with Article 42 and responds to the COE request to lower the water level in Brownlee Reservoir. The lower water level provides space for excess spring runoff and helps prevent flooding primarily on the lower Columbia and lower Snake rivers. Depending on the water year and COE mandates, flood-control requirements for Brownlee Reservoir may continue through June.

After flood-control requirements have been met, IPC begins refilling Brownlee Reservoir. The reservoir refill target is 2,069 ft msl (about 8 ft below the full reservoir capacity of 2,077 ft) toward the end of May and full by the end of June. Meeting these targets ensures that enough water is stored in Brownlee Reservoir to meet peak summer electricity demands, provide suitable spawning habitat for bass and crappie, and offer optimal recreational opportunities through the Fourth of July holiday.

In response to the 1995 flow augmentation RPA (reasonable and prudent alternative) program, developed as part of the Federal Columbia River Power System biological opinion, the Bureau of Reclamation (BOR) periodically releases water from the upper Snake River. That water flows into Brownlee Reservoir to be stored for various purposes, among them flow augmentation for anadromous fish. From 1995 through the summer of 2000, IPC participated in the program and drafted specified amounts of reservoir water between July 4 and early fall. The amount and timing of these drafts were planned to balance environmental, recreation, and power generation needs.

Depending on the type of water year the basin is experiencing, Brownlee Reservoir typically delivers approximately 130,000 acre-feet of federal water a year in addition to the 237,000 acre-feet of IPC water. Because weather, stream flows, and power demand conditions fluctuate from year to year, greater drafts are sometimes necessary to meet power needs.

Later in the fall, Brownlee Reservoir's releases are managed to maintain constant flows of approximately 9,000 to 13,000 cfs below Hells Canyon Dam. These flow requirements, which are based on the *Idaho Power Fall Chinook Interim Recovery Plan and Study* that IPC adopted in 1991, as well as the minimum flow required by Article 43, help ensure sufficient water levels to protect even the shallowest spawning nests (or redds). To maintain the proper water levels for spawning, the reservoir's elevation must be at least 2,040 ft msl through October. Then, forecasted inflows must be adequate to fill the reservoir to approximately 2,075 ft by the first week in December. Besides protecting spawning nests, a full reservoir helps IPC meet customers' electricity needs, maintain system reliability through the winter, and reduce operating costs by minimizing the need for purchasing outside power.

With all of the issues that influence how IPC operates Brownlee Reservoir, the company tries to "strike a balance" among the many environmental, recreational, and power needs of its service territory and the surrounding region.

4. METHODS

We compiled this report using information from USFS boater registration records, an on-site contact and follow-up mail survey conducted during 1999, and IPC and USFS cooperative efforts to identify and assess the condition of dispersed recreational use sites within the HCNRA.

4.1. USFS Boater Registrations

The USFS requires all private river users to complete registration forms upon entry into the HCNRA (Appendix A) and all commercial outfitters and guides to self-report all trips within a reasonable time. The USFS has recorded this information consistently since 1980. The USFS cooperated with our efforts by converting its registration database into a format compatible with non-USFS software. We analyzed USFS registration data to obtain overall use trends and patterns by season and type (commercial or private, float boat, or powerboat). USFS observations indicate that compliance with the registration requirement is consistently high. Our survey clerks monitored compliance with the registration requirement at Hells Canyon Creek, Pittsburg Landing, and Cache Creek portals during on-site collection of data for the IPC mail survey (see below).

4.2. IPC On-Site Surveys

We conducted an on-site contact and follow-up mail survey during 1999 (the second full season of implementation of new USFS boating regulations). The survey captured recreational-use information from boaters and other users within the HCNRA from Hells Canyon Dam downstream to Cache Creek Ranch. We chose the mail survey format because we needed information about completed trips. The busiest portal in the HCNRA is Cache Creek. Because the USFS does not require boaters leaving the HCNRA via the Cache Creek portal to stop, it is impossible to consistently obtain completed-trip information from on-site interviews. We conducted on-site contact surveys at Hells Canyon Creek, Pittsburg Landing, and Cache Creek portals. Although Dug Bar serves as another portal into the HCNRA for boaters, it is very isolated. USFS records indicate that boaters entering the HCNRA through Dug Bar comprise substantially less than 1% of HCNRA boaters.

We began contacting recreationists to obtain names, addresses, and other pertinent information for follow-up mail surveys on January 1, 1999, and continued through December 31, 1999.

We divided the year into three distinct time blocks:

Block one: January 1, 1999, through May 27, 1999

Block two: May 28, 1999, through September 10, 1999.

Block three: September 11, 1999, through December 31, 1999

Each year, the USFS controls and limits many types of boating use from the Friday before Memorial Day until September 10. A reservation system controls float boating from Hells Canyon Creek portal, and other types of boating operate under specific limitations. Blocking the year (as described above) separated the HCNRA controlled-use seasons from open-use seasons and allowed for distinction among seasonal use patterns.

We stratified days into weekend days and weekdays. We included Friday, Saturday, and Sunday in the weekend stratum; and Monday, Tuesday, Wednesday, and Thursday in the weekday stratum. Because of the logistics involved in getting a surveyor to and from Cache Creek and Pittsburg Landing, IPC staff stayed multiple days at each site during each sampling unit. The weekend sampling unit consisted of all three days (Friday, Saturday, and Sunday); likewise, the sampling unit for weekdays consisted of all four days (Monday, Tuesday, Wednesday, and Thursday).

Within each time block, we randomly selected eight units for sampling at each of the three entry points. We divided these eight units equally between weekday and weekend strata (four each). We further divided each day within a selected weekend or weekday unit into two periods, each calculated by halving the period from 15 minutes before sunrise to 15 minutes after sunset. For each day selected for sampling, we randomly selected the time period for sampling.

Survey clerks used contact sheets to record names, addresses, phone numbers, descriptive, and trip type information from boaters who entered the HCNRA at each of the three sites (Appendix B). Additionally, survey clerks gave people zip-locking bags containing a twenty-three-page HCNRA map (IPC 1999), a pencil, and a flier explaining the survey (Appendix C). Survey clerks asked them to use the map and pencil to track the location of activities during their trip. We excluded outfitters and guides on work-related trips. We contacted them during a separate survey effort and reported their responses separately (Shelby et al. 2001). We contacted boaters only upon initial entry into the HCNRA. This restriction helped ensure that, as suggested for valid sampling (Dillman 1978, Schaeffer et al. 1979, Tull and Hawkins 1993, Pollock et al. 1994), each boater had an equal chance of being interviewed, regardless of use types or patterns. We also interviewed some of the non-boaters we encountered within the portal areas.

4.3. IPC Mail Survey

During the on-site contact portion of this survey effort, we asked people if they would participate in a follow-up mail survey. We mailed follow-up mail questionnaires to everyone that agreed and gave us their valid names and addresses. IPC prepared the mail questionnaire in cooperation with the RARWG, outside consultants Dr. Bo Shelby and Dr. Doug Whittaker. General recreational-use questions covered user profile information, length of trip, types of activities engaged in while in the HCNRA, and location of camping and other activities (Appendix D). Additional information from the mail survey appears in Whittaker and Shelby (2002a).

Mail survey procedures followed the total design method (Dillman 1978). We mailed surveys on a three-week rotation to all boaters we contacted since the previous mailing. The mailing included the questionnaire, a cover letter, and another copy of both the HCNRA map and the flier explaining the survey and prizes. We followed up each initial mailing one week later with a reminder card, and in three weeks with another complete survey and an appropriate cover letter. If no response was received, we mailed another reminder letter three weeks after the last correspondence (Appendix E).

As suggested in *Mail and telephone surveys: the total design method* (Dillman 1978), we offered prize incentives for participating in each stage of the survey. Over the course of the study, IPC gave away four trip packages each valued at $3000 by entering participants' names in prize drawings. Participants who completed the initial questionnaire during the period from January 1, 1999 through July 15, 1999 were eligible for the first $3000-trip drawing. Participants who were contacted for a follow-up mail questionnaire and returned a completed questionnaire in the period from January 1, 1999 through July 15, 1999 were eligible for the second $3000-trip drawing. Participants who completed the initial questionnaire in the period from July 16, 1999 through December 31, 1999 were eligible for the third $3000-trip drawing. Participants who were contacted for a follow-up mail questionnaire and returned a completed questionnaire in the period from July 16, 1999 through January 31, 2000 were eligible for the fourth $3000-trip drawing. We required winners to complete their trips by December 31, 2000 and use outfitter/guide permitted by the USFS to provide recreational trips within the HCNRA.

4.4. Recreational Use Areas within the HCNRA

In 1999, the USFS had identified 96 designated campsites within the HCNRA (IPC 1999). During 2000, IPC and the USFS cooperated in conducting extensive mapping and site condition analyses of recreational-use areas. This effort identified 145 distinct recreational-use areas near or adjacent to the Snake River within the HCNRA. Two factors caused the increased number of sites. First, several areas that received obvious recreational use had not been previously identified on USFS maps. Second, some USFS-designated sites were really extensive areas that contained more than one distinct campsite (Hall and Bird 2001).

IPC determined relative-use levels at each recreational area (Hall and Bird 2001 and Dumas et al. 2001). We combined campsite-use information obtained from our mail survey, site condition analysis, USFS personnel, IPC personnel, and a commercial outfitter. We assigned each recreational-use area to one of seven use categories: 0) no report or signs of use, 1) very low, 2) low, 3) medium, 4) medium high, 5) high, and 6) very high.

4.5. Data Entry, Processing, and Analysis

IPC personnel quality checked and coded appropriate data from all contact sheets and questionnaires. IPC personnel entered data into Microsoft Access software. In some cases, we transferred data into Microsoft Excel software for further processing. We ultimately transferred data into PC-based SAS software (SAS Institute, Inc.), which we used to analyze the data.

5. RESULTS

Most of the figures in this report appear as multiple graphs on one page. This layout makes it easier to compare categories and allows each graph on the page to have the same scale. Because ranges sometimes differ dramatically between categories, several pages contain similar graphs with differing scales. (Always note the scale before interpreting results.)

5.1. General Boater Use from USFS Registration Database

Beginning in 1992, full-time USFS personnel were stationed at Hells Canyon Creek, Pittsburg Landing, and Cache Creek portals during the high-use season. Because of this change, USFS personnel felt that they obtained more accurate boater-registration data during 1992 and subsequent years than during earlier years. Because of these concerns, analyses for this report includes data only from 1992 through 1999. (IPC personnel administering the on-site contact portion of the mail survey observed that, almost without exception, boaters complied with USFS registration requirements.)

During 1992 and 1993, there was a problem with commercial powerboat manifest data. Apparently an accurate of number and type of passengers was recorded, but the number of trips was inflated. For that reason, we omitted 1992 and 1993 commercial powerboating permit numbers from several analyses presented in this document.

Using boater registration data, the USFS publishes annual reports on the amount and location of boating use within the HCNRA. While the results in this document are very close to those from the USFS reports, there are some small differences. The USFS continuously updates and corrects its boater registration database as new information is obtained. Consequently, the same analyses done years apart will yield slightly different results.

5.1.1. Overall Boater Use within the HCNRA

The USFS boater registration database contains the total group size for private parties and the number of crew and passengers separately for commercial trips. In the following results, all references to either float or powerboater numbers include only passenger counts and do not include crew who were not considered recreationists for the purposes of this study.

Overall annual number of boaters—The number of boaters entering the HCNRA varied from a high of 51,650 during 1995 to a low of 43,361 during 1997, a difference of 8,289 or 19% of the 1997 total (Figure 6). Float boater percentage of the total comprised a low of 9% during 1997 and a high of 18% during 1994. The highest number of float boaters (9,319 during 1994) was more than double the number during the lowest year (4,018 during 1997). The overall number of powerboaters varied by 9%, from a high of 42,711 during 1995 to a low of 39,343 during 1997 (Figure 7).

Overall annual numbers of commercial and private float boaters—The number of commercial float boaters differed dramatically. During 1996, there were 5,696 commercial float boaters. The

next year, 1997, the total dropped to one third of that number (1,885). The number of private float boaters differed almost as much, varying from a high of 4,716 during 1994 to a low of 2,037 during 1997, which was the highest flow year on record (Figure 8).

Overall annual number of commercial and private powerboaters—The overall number of commercial powerboaters remained relatively stable during the period, varying up and down within a range about 10% of the highest number. The highest number of commercial powerboaters recorded was 31,113 during 1999; the lowest was 27,169 during 1992. The overall number of private powerboaters varied by 27% (of the lowest year reported), with a high in 1994 of 12,909 and a low in 1997 of 9,460 (Figure 9).

Total annual number of permits—The total number of powerboating permits issued did not follow the same pattern of variability as the overall number of powerboaters. While the total number of boaters wavered slightly during the period, the number of permits decreased consistently from 5,426 during 1994 to 4,404 during 1999. The pattern of variability of the total number of float boat permits was consistent with that exhibited by the total number of float boaters. Consistent with the annual number of boaters, the highest number of permits (1,077) was issued during 1994 and the lowest (464) during 1997 (Figure 10).

Numbers of passengers per permit—The annual mean number of commercial float boaters per permit wavered in no distinct pattern between 1992 and 1999, from 8.1 during 1992 to 12.0 during 1999. The number of private float boaters per permit remained relatively consistent, varying from a low of 8.0 during 1994 to a high of 9.2 during 1993. Commercial powerboaters per permit increased steadily during the study period, from a low of 14.8 during 1994 to a high of 18.9 during 1999. The number of private powerboaters per permit was very consistent during the study period, varying from a low of 3.7 during 1994 to a high of 3.9 during 1996 (Figure 11).

Number of overnight and day trip boaters—Most float boaters stayed overnight during their trips. Annually, up to 40% of commercial float boaters participated in day trips while less than 5% of private float boaters participated in day trips. The majority of powerboaters participated in day trips. Generally, less than 10% of commercial powerboaters stayed overnight while about one-third of private powerboaters stayed overnight (Figure 12).

Boater use of six reaches of the Snake River—The USFS boater registration database requires that boaters identify their destination. We coded these destinations into six distinct reaches of the Snake River within the HCNRA (Figure 13):

1. Cache Creek to Salmon River Confluence
2. Salmon River Confluence to Pittsburg Landing
3. Pittsburg Landing to Kirkwood Ranch
4. Kirkwood Ranch to Rush Creek Rapids
5. Rush Creek Rapids to Wild Sheep Rapids
6. Wild Sheep Rapids to Hells Canyon Dam

To establish boater-use patterns, we credited each boat and boater with one visit to each reach they passed through between the portal of entry and the destination. For the purposes of determining river traffic in each reach, we doubled powerboat numbers within each reach to account for back and forth passages during the trip. The USFS database did not contain the same destination information from float boaters during 1992 as it did for the other years. For that reason, we used 1993 as the starting year for comparison of float boater use patterns within the study period.

The pattern of use of powerboaters, as shown by number of visits to each river reach, did not change much between 1992 and 1999. The percentage of powerboaters visiting Reaches 3 and 4 decreased slightly. The number of powerboat trips in each reach was consistently much lower during 1999 than 1992. The greatest changes occurred in Reaches 3 and 4. In both of those reaches, the 1999 number of trips was about 30% of the 1992 count. This count could be the result of USFS regulation changes that limited the amount and changed the timing of visitation in these reaches.

The pattern of float boat use remained generally the same. Most float boaters and float boat groups floated from Hells Canyon Creek to Pittsburg Landing. The percentage of boaters who continued through Cache Creek appeared to increase during the study period (Figure 14). This apparent increase may not be real. In the study period's early years, the USFS kept track of the number and exit point of float boat passengers who left trips that continued through Cache Creek. During the later years, this information was not considered critical.

Number of boaters registered per portal—Of the four boating entry portals within the HCNRA, Cache Creek Ranch consistently registered the most boaters, varying from a high of 30,205 during 1999 to a low of 27,842 during 1996. The total number of boaters entering through the Hells Canyon Creek portal varied considerably, from a low of 10,714 during 1997 (the highest flow year on record) to a high of 20,369 during 1995. Although boater counts at Pittsburg Landing remained relatively consistent (from a high of 2,844 during 1994 to a low of 2,234 during 1996), they were much lower than those at Cache Creek and Hells Canyon Creek. Dug Bar portal had very few boaters registering each year, varying from a high of 74 during 1999 to four during 1996 (Figure 15).

5.1.2. Boater Use at Individual Portals within the HCNRA

5.1.2.1. Boater Use Registered at Cache Creek Ranch

Overall annual numbers of commercial and private float boaters—No commercial float boaters registered at Cache Creek portal. Private float boater numbers were extremely low, varying from a high of 64 during 1998 to a low of zero during 1999 (Figure 16). Because, by regulation, no float boat use can be registered through Cache Creek portal, these few may be errors in data entry. Another possibility, suggested by USFS personnel, is that a few USFS volunteers staying at Cache Creek had a kayak and may have filled out permits when they entered the water.

Overall annual number of commercial and private powerboaters—The number of commercial powerboaters registered at Cache Creek portal, the largest single user group within the HCNRA, varied by 24% during the study period. The lowest number registered was 18,292 during 1994,

while the highest was 22,729 during 1999. The number of private powerboaters dropped more than 20% during the study period from a high of 9,572 during 1994 to a low of 7,231 during 1998 (Figure 16). This drop may have occurred because of powerboat use regulations instituted during 1998 and 1999, and some private powerboaters may have been reacting to the USFS decision to implement the regulations before they were actually put into effect.

Mean daily number of boaters by weekday or weekend—The average per-day number of commercial powerboaters for both weekends and weekdays varied from 47 to 63 (Figure 17) during the time period. No pattern of weekend or weekday dominance was discernable for commercial powerboaters. Private powerboaters were consistently more numerous on weekend days.

Monthly number of boaters—For both commercial and private powerboaters, July and August are the most popular months, and fall months are more popular than spring (Figure 18).

Day use and overnight stays—The number of commercial overnight powerboaters decreased during the study period, both as a percentage of the total number of powerboaters and in absolute terms. During 1992, there were 2,911 commercial powerboaters (14% of the commercial powerboaters). During 1999, there were 1,554 commercial powerboaters (7% of the commercial powerboaters). The number of private powerboaters staying overnight remained at about 30% of the private powerboaters during the study period but decreased from 2,815 in 1992 to 2,091 in 1999 (Figure 19).

Number of Boaters per Permit—The mean number of commercial powerboaters per permit increased during the study period. The 1999 average of 20.5 was 25% higher than the 1994 average of 16.3 boaters per permit. The remainder of the study period showed more increases, ending with 20.5 boaters per permit in 1999, an overall increase of 128%. The number of private powerboaters per permit remained steady during the study period, ranging from 3.7 to 3.9 (Figure 20).

Length of Stay—The mean length of stay of all commercial powerboaters varied little during the study period, ranging from 1.09 to 1.25 days. The length of stay of only those commercial boaters who stayed at least one night also remained stable, varying from 2.23 to 2.52 days. For private powerboaters, the average length of stay was also stable during the study period. The mean of all private powerboaters ranged from 1.45 to 1.58 days while the mean of those who stayed at least one night ranged from 2.75 to 3.09 days (Figure 21).

Boater use of six reaches of the Snake River—Commercial powerboaters were less likely to visit river reaches upstream of the Salmon River during 1999 than they were during 1992. Private powerboaters did not follow the same pattern. During 1999, they were more likely to visit the reach between the Salmon River and Pittsburg Landing (Reach 2) than in 1992, but slightly less likely to visit above Pittsburg Landing (Reaches 3,4,5, and 6) (Figure 22). This difference is predictable because of changes in regulations that limit the number of powerboaters and their range of travel in the upper reaches.

5.1.2.1. Boater Use Registered at Dug Bar

Overall annual numbers of commercial and private float boaters—The number of private floaters was low, varying from a low of zero to a high of 24 annually. The number of commercial powerboaters was zero during five of the study years; the highest count was 17. The majority of boaters registered at Dug Bar were private powerboaters. Their count varied from four in 1996 to 57 in 1994 (Figure 23).

There were not enough boaters in any category to yield meaningful results from additional analyses.

5.1.2.3. Boater Use Registered at Pittsburg Landing

Overall annual numbers of commercial and private float boaters—Commercial float boaters registered at Pittsburg Landing during only one year of the study period, when 19 were counted. There were also very few private float boaters during the study period, varying from a low of 31 during 1992 to a high of 142 during 1994 (Figure 24).

Overall annual number of commercial and private powerboaters—Commercial powerboater numbers varied from 1,094 during 1998 to 716 during 1993. Private powerboaters varied from a high of 1,819 during 1994 to a low of 1,304 during 1996 (Figure 24).

Mean daily number of boaters by weekday or weekend—The weekend daily mean number of both commercial and private powerboaters was consistently higher—at times almost double—than the same mean for weekday boaters (Figure 25).

Monthly number of boaters—Private float boaters were consistently low, with the highest monthly average of 43 occurring during July. Commercial power use peaked in August (255) with more than 100 boaters during May, June, July, and September. Some private powerboating occurred in every month. The highest monthly averages were 348 in July, 343 in August, and 257 in September (Figure 26).

Day use and overnight stays—Although the numbers were consistently low, overnight use was always higher than day use among private float boaters. Most commercial powerboaters were day users and overnight use in that group declined during the study period. While the overall number of private powerboaters varied considerably during the study period, most of them stayed overnight during their trips (Figure 27).

Number of boaters per permit—The number of private float boaters per permit varied considerably during the study period, from 7.1 during 1993 to 3.6 during 1997. The number of commercial powerboaters per permit increased slightly, from 6.0 during 1992 to 7.4 during 1999. The number of private powerboaters per permit decreased slightly, from 4.4 during 1992 to 3.7 during 1999 (Figure 28).

Length of stay—The mean length of stay of all private floaters during the study period varied from 3.11 during 1997 to 5.52 during 1992. Among private floaters who stayed at least one night, the average length of stay varied from 3.33 during 1995 to 5.83 during 1992. Length of stay for commercial powerboaters was stable, varying from 1.02 to 1.29. Among commercial

powerboaters who stayed at least one night, the average length of stay varied considerably, from 2.00 during 1997 to 5.59 during 1996. Mean length of stay of private powerboaters was relatively constant, varying from 2.53 to 3.18. Among private powerboaters who stayed at least one night, the average length of stay varied from 3.57 to 3.93 (Figure 29).

Boater use of six reaches of the Snake River—During 1992, most commercial powerboaters launching at Pittsburg Landing portal remained in sections three and four. During 1999, more than 70% visited Reach 5 and 44% visited the reach above Wild Sheep Rapids. Private powerboaters were most likely to remain in Reaches 3 and 4 during both years, but showed more of a tendency to visit river reaches both upstream and downstream during 1999 (Figure 30).

5.1.2.4. Boater Use Registered at Hells Canyon Creek

Overall annual numbers of commercial and private float boaters—The overall number of commercial float boaters at Hells Canyon Creek portal varied dramatically during the study period. The highest total, 5,677 during 1996, was more than three times the total for the lowest year, 1,885 during 1997 (the highest flow year on record). The number of private float boaters also varied considerably. The highest total, 4,543 during 1994, was more than twice the lowest total, 1,950 during 1997 (Figure 31).

Overall annual number of commercial and private powerboaters—Commercial powerboater numbers varied by 57% (of the highest year's total), from a low of 5,703 during 1992 to a high of 10,093 during 1995. Private powerboater numbers were consistently low, varying from a low of 597 during 1992 to a high of 1,471 during 1995 (Figure 31).

Mean daily number of boaters by weekday or weekend—Both commercial and private float boating numbers varied considerably during the study period, with the daily averages of the highest year being triple that of the lowest year. Commercial float boating showed no consistent pattern when comparing weekend and weekday launches. Weekdays were slightly higher during two years (1998 and 1999), weekends were higher during five years (1993–1997), and the daily means were equal during 1992. Private float boating was higher on weekends during all study years, but the differences in means dropped during the period. Commercial and private powerboating was higher on weekends for all study years and showed no apparent pattern of change in this relationship (Figure 32).

Monthly number of boaters—Commercial and private float boaters followed the same monthly pattern of use. July and August had the highest use, with May, June, and September receiving lower use. The remaining months received very little or no use. Commercial power use was highest during July and August, with June and September also receiving considerable use. Commercial power use during the remaining months varied from low to very low; power use in the fall months was considerably higher than in the spring. Private power use was low throughout the year, with the most use occurring during the fall season (Figure 33).

Day use and overnight stays—The overwhelming majority of float boaters stayed overnight, although some participated in day trips. Almost all commercial powerboat excursions were day trips. In 1993, the highest percentage of commercial boaters staying overnight was recorded—

about 2% of the total for that year. Private powerboaters reported day trips more often than overnight stays during all years except 1993 (Figure 34).

Number of boaters per permit—The mean number of commercial floaters per permit increased from 8.1 during 1992 to 12.0 during 1999. The mean number of private floaters was relatively stable, ranging from 8.2 during 1994 to 9.5 during 1998. Commercial powerboaters per permit increased during the study period, from 11.2 during 1992 to 18.3 during 1999. Private powerboaters per permit varied from 3.4 during 1997 to 4.2 during 1992 (Figure 35).

Length of stay—Mean length of stay of both commercial and private float boaters was generally between three and four days and showed no apparent pattern of change. The number of commercial powerboaters was consistently low, leading to very high variability in the mean length of stay. Private powerboaters who stayed overnight averaged more than three days in each year and the average increased from 3.05 days during 1992 to 3.88 days during 1999 (Figure 36).

Boater use of six reaches of the Snake River—Although most commercial float boaters who launched at Hells Canyon Creek portal took out at Pittsburg Landing during both years, the number who floated past the landing was 75% higher during 1999 than during 1992. Most private float boaters also took out at Pittsburg Landing portal and the percentage remained relatively constant between 1992 and 1999 (Figure 37). Commercial powerboaters were much less likely to visit downstream river reaches in 1999 than they were in 1992. Private powerboaters were not very likely to visit downstream reaches during either year but were less likely during 1999 (Figure 38).

5.2. IPC On-Site and Mail Survey

The majority of information gathered during the IPC mail survey is not within the purview of this report; survey results directly related to amount, location, and type of recreational use are included. Complete survey information is available in Whittaker and Shelby's 2002a report.

During on-site data-collection, 2,773 recreationists completed contact interviews. Forty-five percent were from Hells Canyon Creek, forty-one percent were from Cache Creek, and fourteen percent were from Pittsburg Landing. Ninety-nine respondents who lived outside the U.S.A. were not considered for the mail survey. Of the 2,674 remaining respondents, 346 did not want to be contacted during the mail survey (12.9%). We mistakenly sent the mail survey to six people who did not want to be contacted (none of whom responded). Of the 2,328 respondents who said they did want to be contacted, 29 gave incomplete or wrong addresses, which we interpreted to mean that they did not really want to be contacted. Adding them to the no category gives 375 no responses (14.0% of the total). We mailed surveys to 2,317 people. Eleven surveys were sent back blank (0.4%); we received no response from 758 people (32.5%) and received 1,526 completed surveys (65.9% of those who received surveys).

5.2.1. Recreational Activities

When asked to list the recreational activities they participated in during their river trip, private floaters most often listed camping (91%), sightseeing (71%), swimming (70%), wildlife viewing

(68%), visiting cultural sites (67%), photography (66%), fishing (63%), and hiking (49%). Responses received from commercial floaters were similar, however these boaters were less likely to participate in swimming (47%) and fishing (32%) and more likely to participate in hiking (72%) and picnicking (56%). Activities listed most often by private powerboaters were fishing (76%), sightseeing (72%), wildlife viewing (68%), photography (51%), and camping (41%). Responses from commercial powerboaters were similar except that fishing (15%) and camping (6%) were reported much less often and visiting cultural sites (72%) was reported much more frequently (Figure 39).

5.2.2. River Reaches Visited

5.2.2.1. Overall River Reach Visits Reported by Type

We asked mail survey participants to list specific reaches of or associated with the Snake River they visited during their trips. Choices included the same six reaches appearing earlier in this report (while reporting results from the USFS boater registration database) plus the Salmon River, for a total of seven reaches:

1. Cache Creek to Salmon River Confluence
2. Salmon River Confluence to Pittsburg Landing
3. Pittsburg Landing to Kirkwood Ranch
4. Kirkwood Ranch to Rush Creek Rapids
5. Rush Creek Rapids to Wild Sheep Rapids
6. Wild Sheep Rapids to Hells Canyon Dam
7. Salmon River

Boater use of six river reaches—The survey revealed that non-boaters most often visited river reaches having portals with vehicle access. Reach six was listed most often (173 times), followed by the two reaches adjacent to Pittsburg Landing portal (Reaches 2 and 3 combined, 65 times). Powerboaters reported considerable use throughout all river reaches; the highest number (423) reported visiting Reach 1 and the lowest number (174) reported visiting Reaches 5 and 6. Float boaters reported the highest number of visits to Reach 6 and almost equal numbers of visits to Reaches 3, 4, and 5. Low numbers reported visiting Reaches 1 and 2—33 and 43 visits, respectively. Only eight float boaters reported visiting Reach 7—the Salmon River (Figure 40).

5.2.2.2. River Reach Visits Reported by Portal and Type

Cache Creek Portal—Commercial powerboaters reported decreasing numbers of visits to each successive reach upstream (221 visits to Reach 1 and 40 visits to Reach 6). Private powerboaters did not visit the upstream reaches as often as commercial powerboaters and visited the Salmon River much more often (Figure 41).

Pittsburg Landing Portal—There were not enough float boat respondents to yield meaningful results. As would be expected, non-boaters reported visiting the two river reaches adjacent to Pittsburg Landing most often. A few non-boaters reported visiting river reaches upstream of

Pittsburg Landing. At least three people seemed to be confused about where they were or about the questionnaire's instructions. Only two respondents reported visiting Reaches 4 and 5, while five reported visiting Reach 6. Commercial powerboaters reported traveling upstream from Pittsburg Landing more often than downstream. Private powerboaters reported river reach use patterns very similar to those reported by commercial powerboaters (Figure 42).

Hells Canyon Creek—Although non-boaters reported visiting all reaches, few reported visiting downstream reaches. Commercial float boaters reported visiting all reaches; almost one-third reported visiting the two reaches downstream of Pittsburg Landing. Private float boaters also reported visiting reaches, but a smaller percentage than commercial float boaters reported visiting the reaches downstream of Pittsburg Landing (Figure 43). While the majority of commercial powerboaters did not report going downstream of Wild Sheep Rapids, at least a few from this category reported visiting all reaches. Private powerboaters did not report visiting reaches downstream of Wild Sheep Rapids as often as did commercial boaters. No private powerboaters reported visiting Reaches 1, 2, or 7 (Figure 44).

5.2.3. Recreational-Use Sites

Because of consistent very high levels of use in the area, we ranked all campsites accessible by road at Pittsburg Landing as 6 (very high). Copper Creek Resort (ranked 5), Kirby Creek Lodge (ranked 4), and Sheep Creek Cabin (ranked 2) are commercial enterprises where guests stay in cabins, lodges, or houses. Other recreation sites ranked 5 (high) include Battle Creek, Bernard Creek, Johnson Bar, Kirkwood Bar, Oregon Hole, and Pine Bar. Nineteen sites were ranked 4 (medium low), 31 were ranked 3 (medium), 17 were ranked 2 (low), and 51 were ranked 1 (very low). Thirteen sites were ranked 0 (no use). No use (0) sites received that ranking because they were not mentioned in mail surveys or by professionals we contacted, and showed no sign of human use during site condition efforts (Figure 45, Appendix F) (Figure 45 starts with panel 7 of twelve).

5.2.4. Overnight Locations Outside the HCNRA

Cache Creek Portal—The most frequent response category was Snake River north of Cache Creek with eighteen total responses. These respondents either camped or stayed in cabins in the river reach between Lewiston and Cache Creek. Other categories receiving five or more responses were 15 responses for Salmon River; 10 each for Hells Gate State Park and general motels; and 6 for RV parks north of Cache Creek (Table 2).

Pittsburg Landing Portal—Only one response category, White Bird, Idaho, was mentioned more than five times by recreationists who entered the HCNRA through Pittsburg Landing portal (Table 3).

Hells Canyon Creek Portal—Twenty-one recreationists who entered the HCNRA through Hells Canyon Creek portal reported staying in the HCC reservoir area. Four other response categories were mentioned more than five times: 8 responses for McCall, Idaho; 7 for Salmon River; 6 each for Halfway, Oregon and the area north of Cache Creek (Table 4).

6. DISCUSSION AND SUMMARY

The Snake River corridor's rugged topography and the resulting access limitations strongly influence recreation types and locations available within the HCNRA.

Some hardy individuals (comprising a very small percentage of overall recreational users) access the river corridor by foot or on horseback. The high-gradient nature of the river and subsequent rapids (up to Class IV) limit boat access to whitewater-type float boats and powered jet boats. Vehicle access to the river corridor is limited to four entry portals the USFS administers.

Three of the USFS entry portals are located at the terminus of dead-end roads. Cache Creek portal, the most northern entry into the area, is not publicly accessible by road. Located at an old ranch house, the portal is accessible only by boat using other road-accessible ramps downstream. Pittsburg Landing portal is located at the end of a well-maintained, 17-mi long gravel road that originates at U.S. Highway 95 near White Bird, Idaho. Dug Bar portal is located on the Oregon side of the Snake River at the end of a 20-mi long, four-wheel drive USFS road that originates in Imnaha, Oregon (a very isolated community).

Some hiking and hunting within the HCNRA occurs away from the immediate area of the portals. But most land-based recreational use occurs near the relatively few, easily-accessible flat areas adjacent to the Snake River. These areas consist of sand bars, benches, or sand bar and bench combinations. Recreational users are generally categorized as day users who hike, sightsee, or picnic; or overnight users who camp at numerous USFS-designated and undesignated campsites within the area. Boating use in the HCNRA can be divided into four distinct categories, each having its own patterns of use.

Commercial powerboaters—Most commercial powerboaters are with sightseeing tours having up to 40 people. These day-use trips stop at historic and cultural sites and provide a continuous interpretational commentary. A smaller percentage of this group consists of smaller groups who are angling or hunting. An even smaller (but consistently present) number of commercial powerboat customers "drop camp," which means they have themselves and their equipment transported to campsites and picked up at a predetermined later time.

Private powerboaters—This group consists of large numbers of both day and overnight users. While concentrated in the areas near portals, these users have the flexibility to travel throughout the HCNRA. Three large upstream rapids (Wild Sheep, Granite, and Rush Creek) limit many private powerboaters to areas either above or below this stretch (depending on boat size and operator expertise). These users participate in a myriad of activities including angling, hunting, camping, hiking, sightseeing, and pleasure boating.

Commercial float boaters—A very large majority of these boaters access the river through Hells Canyon Creek portal at the upstream end of the HCNRA. Most of them stay overnight while floating the river. On day trips, customers float downstream for all or a portion of a day and are transported back upstream by jet boat. Many commercial float boaters, aside from float boating, participate in angling, hiking, swimming, picnicking and sightseeing while on these trips.

Private float boaters—Almost all of these boaters also access the river through Hells Canyon Creek portal. More than 90% stay overnight. A few take day trips and pay commercial outfitters to transport them back upstream. Generally, private float boaters participate in the same types of activities as commercial float boaters.

The overall number of boaters annually within the HCNRA differed by only 19% (of the highest annual number) during the study period. Numbers of boaters and boating trips varied considerably more than 19% among separate user groups and locations. The total number of powerboaters varied relatively little while the number of float boaters varied by as much as 100%. Study results identify several significant use patterns within the study area:

- Use numbers in several categories varied considerably but were not part of any apparent trend over time. These changes appeared to be associated with extremes in river flows or changes in USFS boating regulations.
- River reach use patterns shifted. Generally, boaters were more likely to visit a larger proportion of the Snake River during each trip.
- Commercial power overnight stays decreased.
- Weekend and weekday use patterns differed between user groups. Weekend use was higher among most user groups.
- Among all user groups, monthly use patterns were relatively consistent with late spring through late fall—accounting for more than 95% of overall use.

Water levels in free-flowing rivers often impact both float and powerboating. When flows are either very low or very high, navigation can become more difficult or impossible. Relatively placid reaches can become highly challenging and difficult reaches can be "washed out," becoming relatively easy to navigate (Whittaker et al. 1993, Shelby et al. 1998).

Additionally, flow levels that are available at other whitewater rivers in the region can influence boaters' choices about where to go, especially for float boaters who seek challenging waters. The years with the lowest total numbers of boaters (1992 and 1997) correspond to the lowest and the highest water years on record for the Snake River watershed upstream of the HCNRA. These two years also had the lowest total numbers of powerboaters. Float boaters' numbers were the lowest during 1997 and 1999, with 1992 being third from the lowest. IPC survey results show that HCNRA boaters generally prefer medium flow levels. Additionally, analyses of flow levels and USFS boater registrations indicate that some boaters respond to high or low flow extremes by going elsewhere or staying at home. For more information about IPC study results on how flows effect boating in the HCNRA, see Shelby et al. (2002).

The overall number of powerboat passengers remained relatively stable during the study period while the overall number of powerboat trips decreased to 80% of the 1994 total. Increases in the average number of commercial powerboat passengers per boat through Cache Creek portal accounted for virtually all of this reduction in number of trips.

During the study period, changes in travel patterns seemed to occur among several groups of boaters. On the average, commercial power trips from Cache Creek portal did not travel as far

upstream as they had at the beginning of the study period. This change in travel patterns can be at least partially explained by changes in USFS regulations that limit both the available time periods and the number of allowable trips for accessing upper reaches. Other differences involved increased travel:

Cache Creek—New USFS regulations limit the number of days boaters can access the upper reaches. Nonetheless, private powerboaters were much more likely to travel upstream to Reach 1 and also somewhat more likely to travel to the other upstream areas.

Pittsburg Landing—Commercial powerboaters were much more likely to travel to upstream reaches and slightly less likely to go to downstream reaches. Private powerboaters at Pittsburg Landing were more likely to travel to both upstream and downstream reaches. As with Cache Creek, the increased travel to distant reaches is despite new regulations, which tend to limit such travel.

Hells Canyon Creek—Commercial powerboat trips were much more likely to travel to downstream reaches. Private powerboaters were a little more likely to travel to downstream reaches.

Many types of recreational use are higher on weekend days than on weekdays. This difference may occur because people's employment patterns prevent them from participating in recreational activities except during weekends or vacations. Within the HCNRA, weekend and weekday boating use patterns varied by type of activity and portal.

Almost all float boating activity originated at Hells Canyon Creek portal. Private float boaters consistently tended to start their trips on a weekend day, although during 1999 the difference was very small. Commercial float boat trips showed no consistent pattern of weekend or weekday preference.

Private powerboater use at all three portals was great enough to yield meaningful weekend and weekday analysis. Private powerboaters using Cache Creek, Pittsburg Landing, and Hells Canyon Creek portals were more likely to launch during weekend days. Commercial powerboaters at Cache Creek portal showed no consistent weekend or weekday preference. (Cache Creek is the largest single entry portal for commercial powerboaters, and a large percentage are tourists from outside the immediate area.) Commercial powerboating at Pittsburg Landing and Hells Canyon Creek portals was consistently higher on weekends than on weekdays.

Most user groups had similar monthly-use patterns, and the patterns were not symmetrical during the year. The highest use occurred late spring through late fall, which corresponds with the warmest times of the year and with the popular fall activities of hunting and steelhead angling. The one exception to this pattern was Hells Canyon Creek private powerboaters, whose relatively small amount of activity occurs during the fall.

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Table 1. Minimum and maximum number of permits per portal.

Portal	Minimum Number of Permits	Maximum Number of Permits
Hells Canyon Creek	*2	*2
Pittsburg Landing	3	4
Cache Creek	6	13
Total	10	19

* Based on a voluntary split of the business authorized by the existing special-use permit at the option of the permit holder.

Table 2. Locations outside the HCNRA where recreationists who entered HCNRA through Cache Creek portal stayed overnight during their trips (from IPC 1999 HCNRA mail survey, Shelby and Whittaker 2001).

Location	Count
Snake River north of Cache Creek	18
Salmon River	15
Hells Gate State Park	10
Motel - location unclear	10
RV park north of Cache Creek	6
Heller Bar area	5
Cruise Ship	4
McCall, Idaho	3
White Bird area	3
Garden Creek	2
Motel in Lewiston, Idaho	2
Moscow, Idaho	2
Baker, Oregon	1
Boise, Idaho	1
Joseph, Oregon	1
Asotin, Washington	1
Riggins, Idaho	1

Table 3. Locations outside HCNRA where recreationists who entered HCNRA through Pittsburg Landing portal stayed overnight during their trips (from IPC 1999 HCNRA mail survey, Shelby and Whittaker 2001).

Location	Count
White Bird, Idaho	6
Snake River north of Cache Creek	4
Riggins, Idaho	3
Unspecified Salmon River area	3
McCall, Idaho	2
Motel - location unclear	1
HCC Reservoir Area	1
Lucille, Idaho	1
Pomeroy, Idaho	1
Troy, Idaho	1

Table 4. Location outside the HCNRA where recreationists entering the HCNRA through Hells Canyon Creek portal stayed overnight during their trips (from IPC 1999 HCNRA mail survey, Shelby and Whittaker 2001).

Location	Count
HCC Reservoir Area	21
McCall, Idaho	8
On or near Salmon River	7
Halfway, Oregon	6
North of Cache Creek	6
Whitebird, Idaho	4
Motel - location unclear	3
LaGrande, Oregon	3
Pine, Oregon	3
USFS areas in Oregon	3
Baker City, Oregon	2
Boise, Idaho	2
Enterprise, Oregon	2
Joseph, Oregon	2
Richland, Oregon	2
Stanley, Idaho	2
Cuprum, Idaho	2
Kamiah, Idaho	1
Caldwell, Idaho	1
Troy, Oregon	1
Orofino, Idaho	1

Walla Walla
WASHINGTON
Salmon River
Snake River
Imnaha River
Grangeville
Imnaha
IDAHO
Enterprise
Riggins
Hells Canyon
National Recreation Area
La Grande
OREGON
Hells Canyon Dam
Oxbow Dam
Brownlee Dam
New Meadows
McCall
Halfway
Baker
Powder River
Richland
Council
Cambridge
Midvale
Cascade
Huntington
Weiser
Payette
Ontario
Fruitland
Caldwell
Meridian
Boise
11
82
129
3
13
95
14
204
203
86
71
245
84
55
26
201
20
21

Vicinity Map

IDAHO POWER
An IDACORP Company

Features Legend

- Primary Route
- Secondary Route
- Major Road
- Minor Road
- County
- Rivers
- Lakes and Reservoirs
- Hells Canyon Complex Dams

Hells Canyon Hydroelectric Project - FERC No. 1971

Tech. Report E.5-3 Figure 1

Location of Idaho Power Company's Hells Canyon Hydroelectric Complex and the adjoining Hells Canyon National Recreation Area

0 4 8 16 24 32 Miles

Scale = 1:891,407

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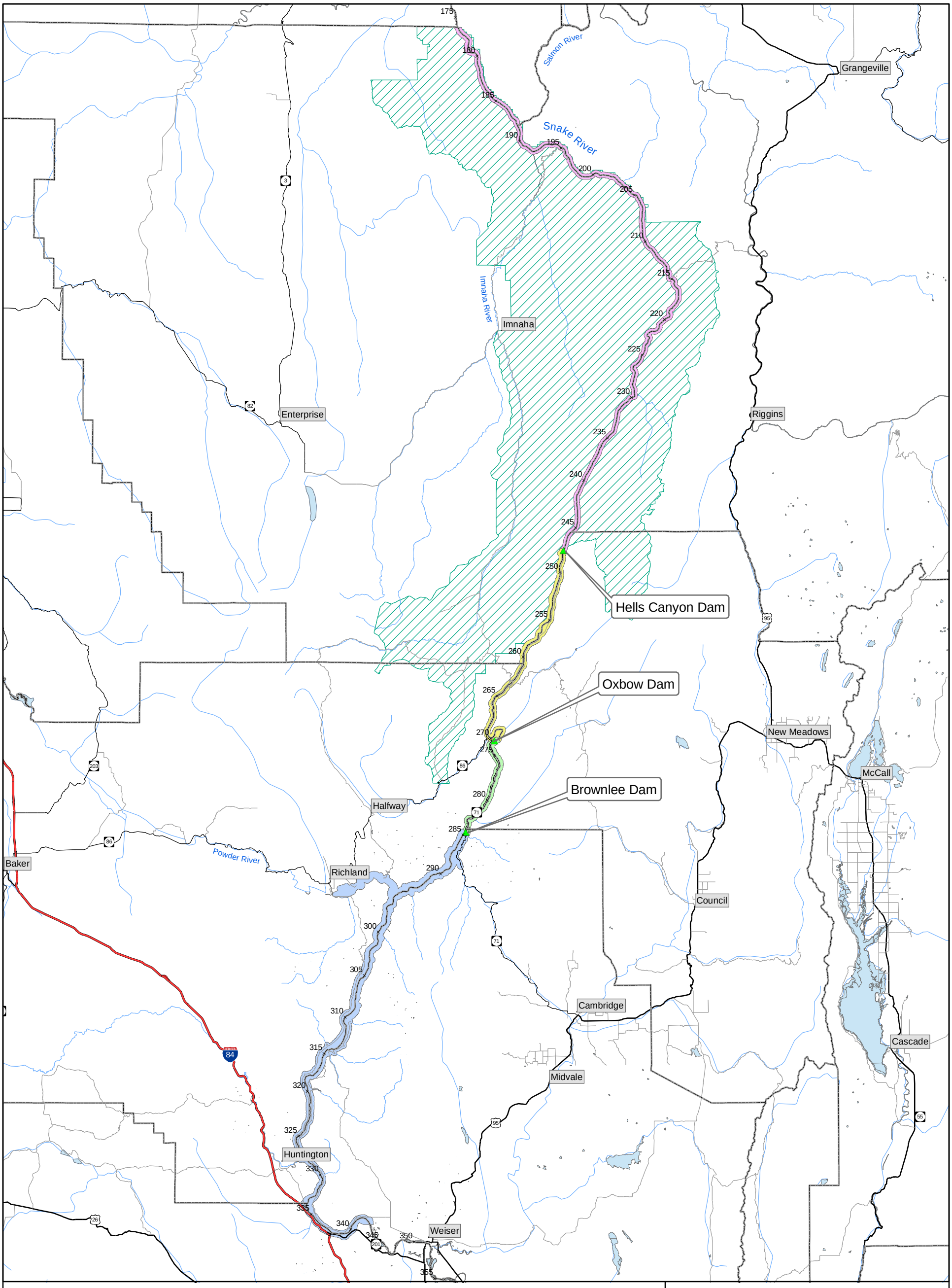

IDAHO POWER
An IDACORP Company

Features Legend

- Primary Route
- Secondary Route
- Major Road
- Minor Road
- County
- Rivers
- Brownlee Reservoir Reach
- Oxbow Reservoir Reach
- Hells Canyon Reservoir Reach
- HCNRA Reach
- Hells Canyon National Recreation Area
- Lakes and Reservoirs

Hells Canyon Hydroelectric Project - FERC No. 1971

Tech. Report E.5-3 Figure 2

Four distinct reaches of the Snake River within Idaho Power Company's recreational use study area

0 3 6 12 18 24 Miles

Scale = 1:595,779

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WHITMAN
CLEARWATER
WALLA WALLA
COLUMBIA
GARFIELD
ASOTIN
NEZ PERCE
LEWIS
Clarkston
Lewiston
Asotin
Walla Walla
Salmon River
Grangeville
Snake River
UMATILLA
IDAHO
WALLOWA
Imnaha River
Imnaha
Enterprise
Riggins
Hells Canyon
National Recreation Area
La Grande
UNION
Hells Canyon Dam
Oxbow Dam
Brownlee Dam
New Meadows
McCall
ADAMS
Halfway
Powder River
Baker
Richland
Council
BAKER
VALLEY
Cambridge
Cascade
Midvale
WASHINGTON
Huntington
Weiser
GRANT
Payette
Ontario
Fruitland
PAYETTE
GEM
BOISE
MALHEUR
HARNEY
CANYON
ADA
Meridian
Boise
OWYHEE
EL

Vicinity Map

Features Legend

- Interstate Highway
- Principal Highway
- Major Road
- Minor Road
- Rivers
- Counties
- Lakes and Reservoirs

1. Olds Ferry-Ontario Highway
2. Interstate 84
3. Huntington Highway
4. Snake River Road (OR)
5. Powder River Arm
6. Sullivan Road
7. State Highway 86
8. Sag Road
9. Oxbow-Brownlee Road
10. Homestead Road
11. Dug Bar Road
12. Snake River Road (WA)
13. Olds Ferry Road
14. Rock Creek Road
15. State Highway 71
16. Hells Canyon Road
17. Kleinschmidt Road
18. Pittsburg Landing Road

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Hells Canyon Hydroelectric Project - FERC No. 1971

Tech. Report E.5-3 Figure 3

State and county boundaries, area communities, and access roads associated with Idaho Power Company's Hells Canyon Hydroelectric Complex and the Hells Canyon National Recreation Area

0 4.5 9 18 27 36 Miles

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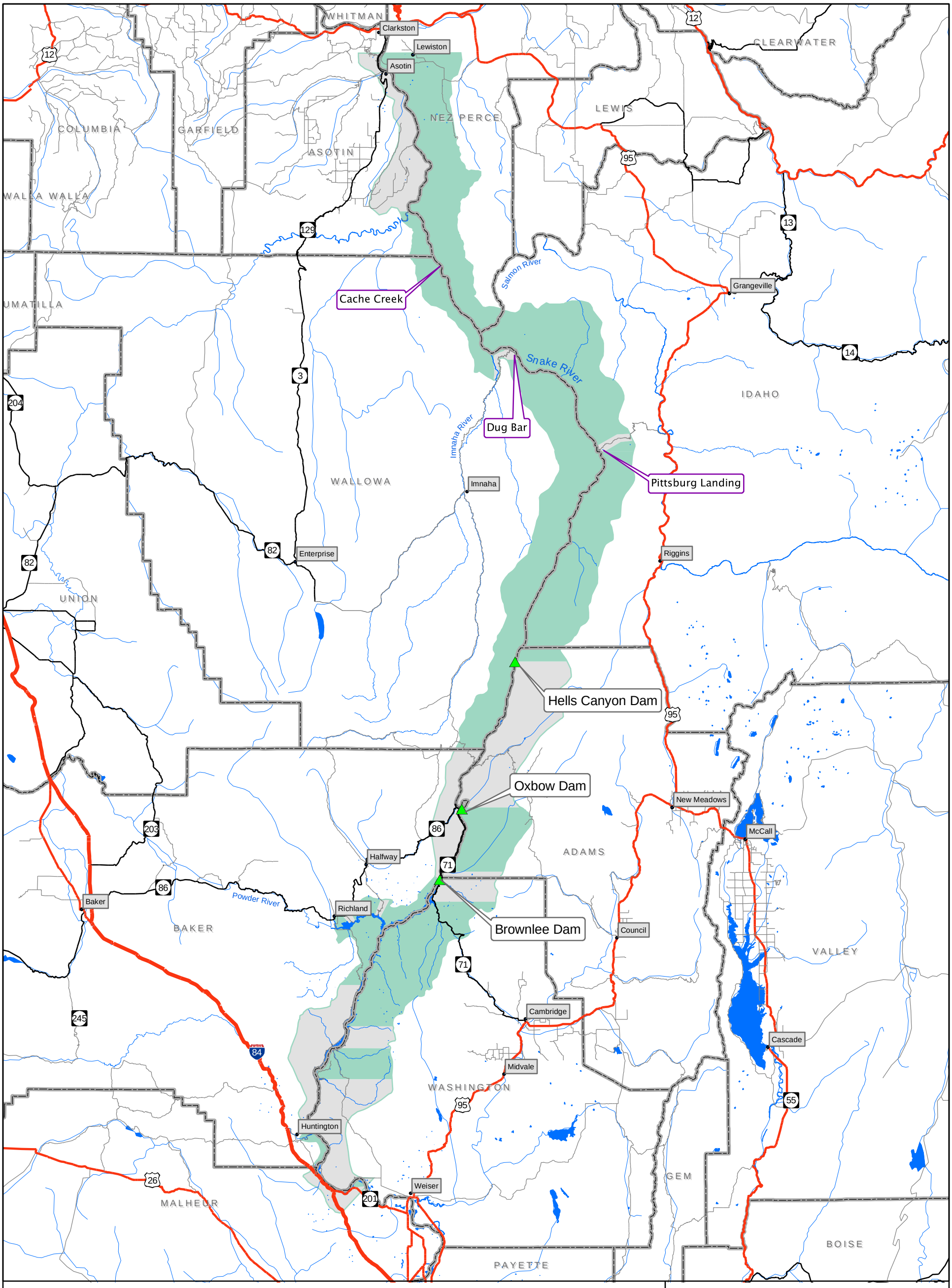

IDAHO POWER
An IDACORP Company

Features Legend

- Interstate Highway
- Principal Highway
- Major Road
- Minor Road
- Rivers
- Counties
- Lakes and Reservoirs
- Roaded
- Unroaded

Hells Canyon Hydroelectric Project - FERC No. 1971

Tech. Report E.5-3 Figure 4

Unroaded areas of the Snake River corridor within Idaho Power Company's Hells Canyon Hydroelectric Complex and Hells Canyon National Recreation Area

0 3.75 7.5 15 22.5 30 Miles

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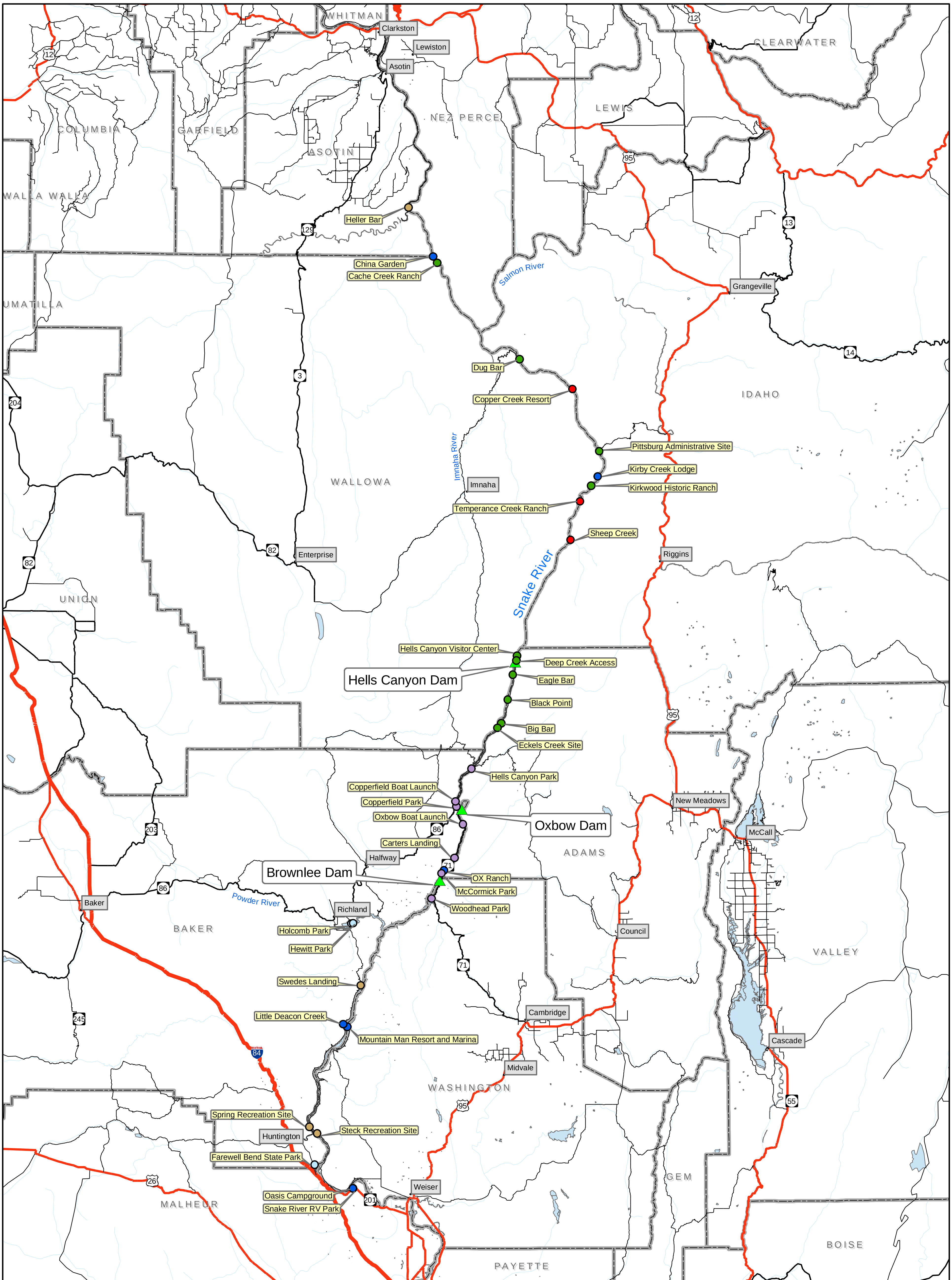

Vicinity Map

IDAHO POWER
An IDACORP Company

Features Legend

- Interstate Highway
- Principal Highway
- Major Road
- Minor Road
- Rivers
- Hells Canyon Complex Dams
- Lakes and Reservoirs
- Counties

Site Administration

- Idaho Power Company
- USFS Special Use Permit
- USFS
- Private
- BLM
- Oregon

N

Hells Canyon Hydroelectric Project - FERC No. 1971

Tech. Report E.5-3 Figure 5

Some significant recreation sites associated with Idaho Power Company's Hells Canyon Hydroelectric Complex and the Hells Canyon National Recreation Area

0 3.75 7.5 15 22.5 30 Miles

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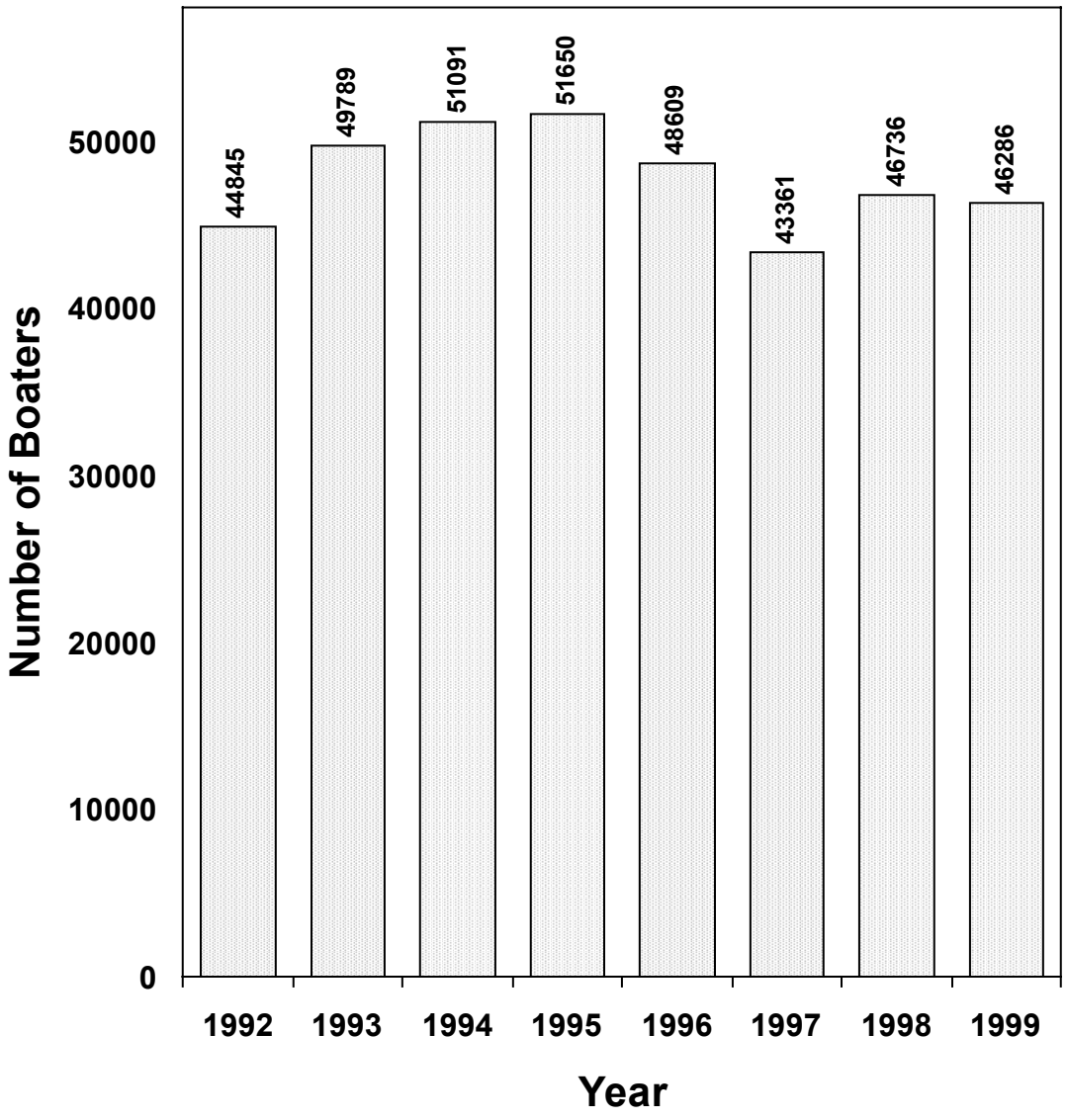

Figure 6. Total number of boaters, by year, registered as entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined (from USFS boater registration database).

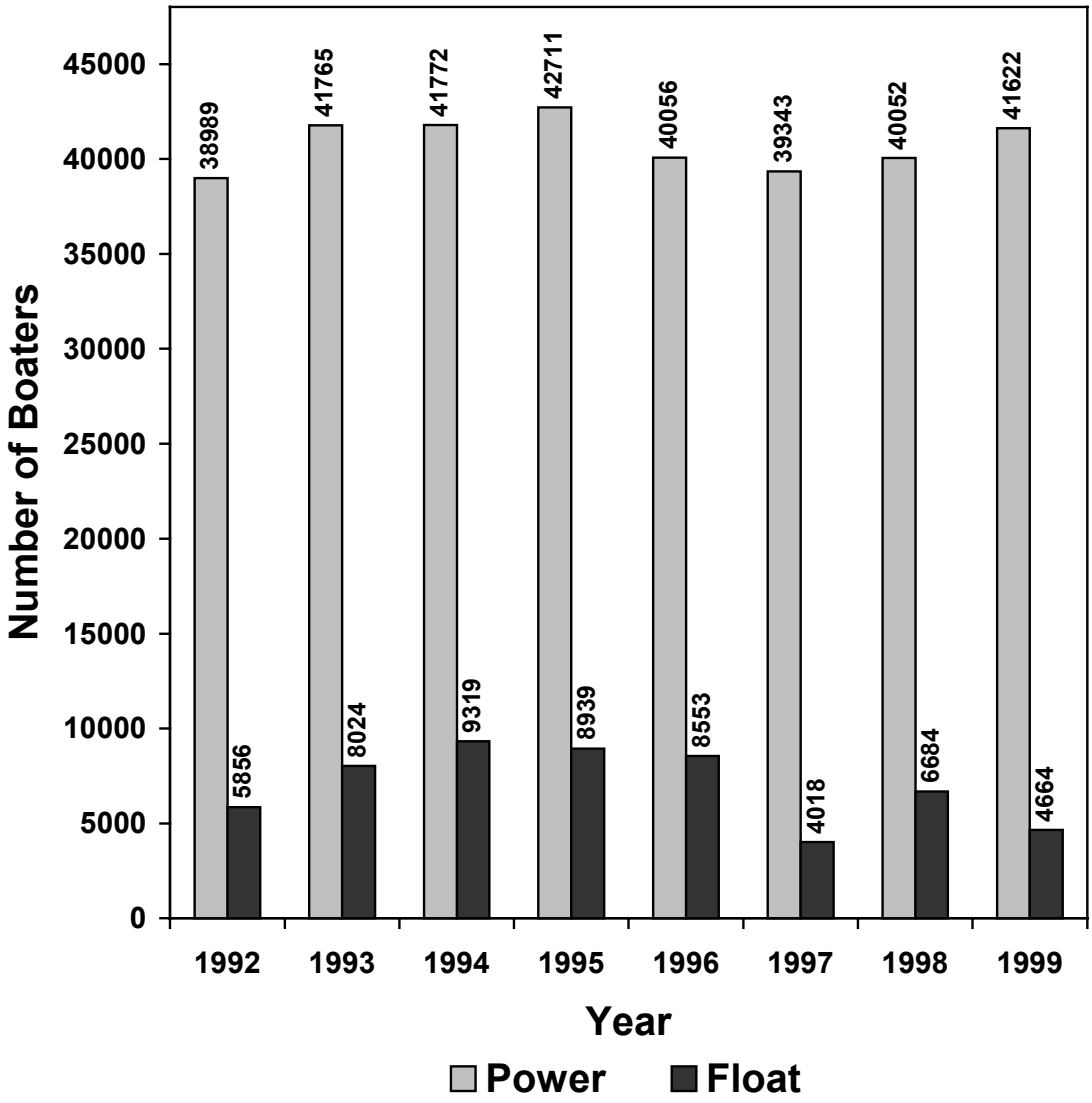

Figure 7. Number of boaters registered as entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined, by year and boat type (from USFS boater registration database).

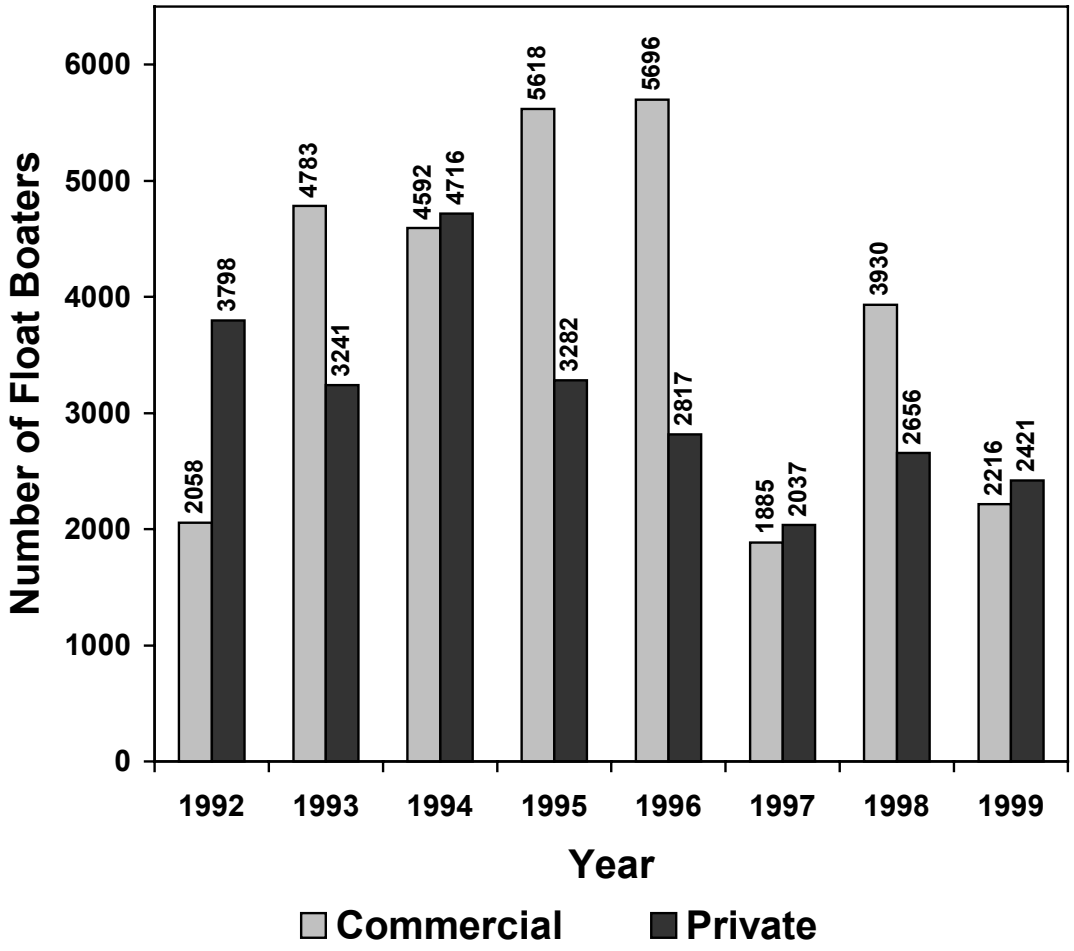

Figure 8. Number of float boaters registered as entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined, by year and commercial or private status (from USFS boater registration database).

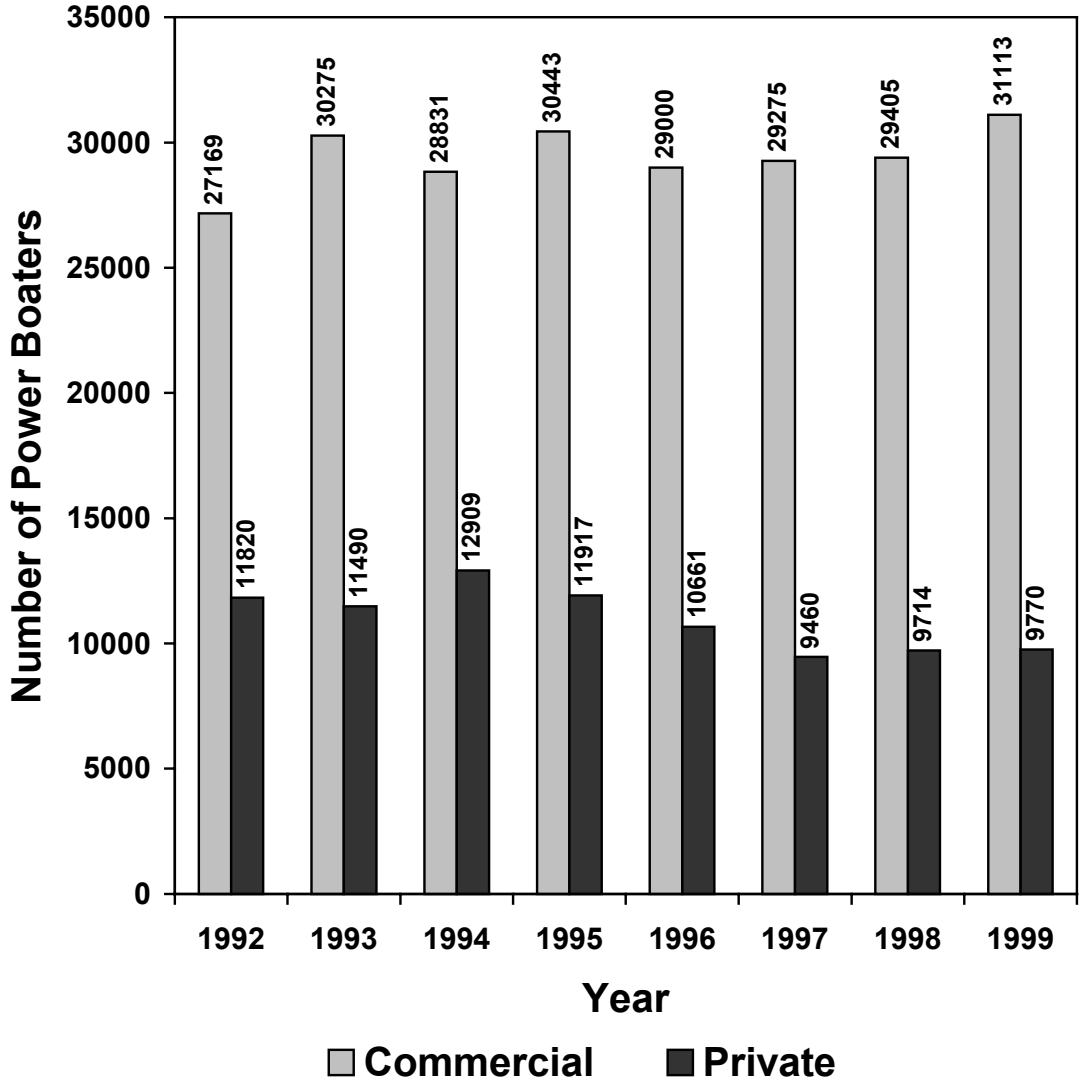

Figure 9. Number of registered powerboaters entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined, by year and commercial or private status (from USFS boater registration database).

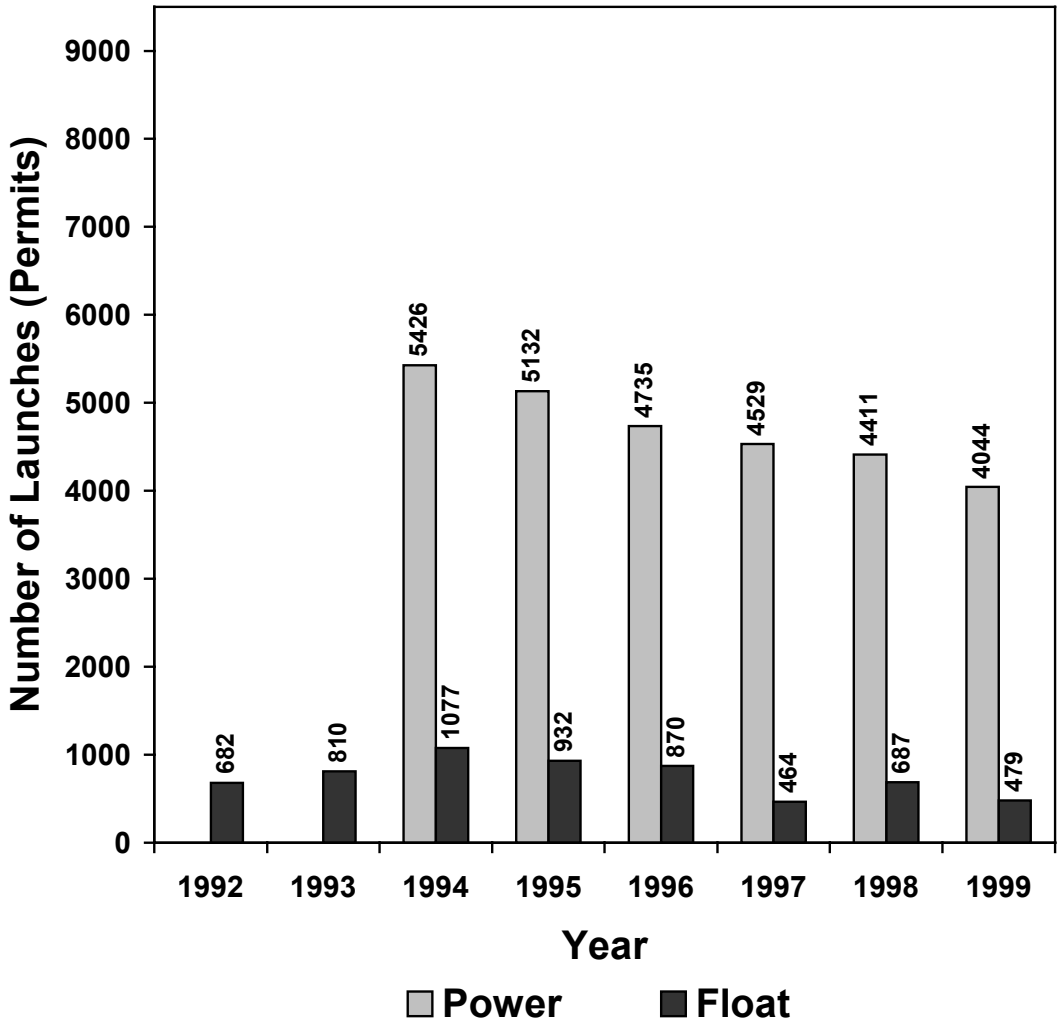

Figure 10. Number of launches (permits) entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined, by year and type of trip (from USFS boater registration database).

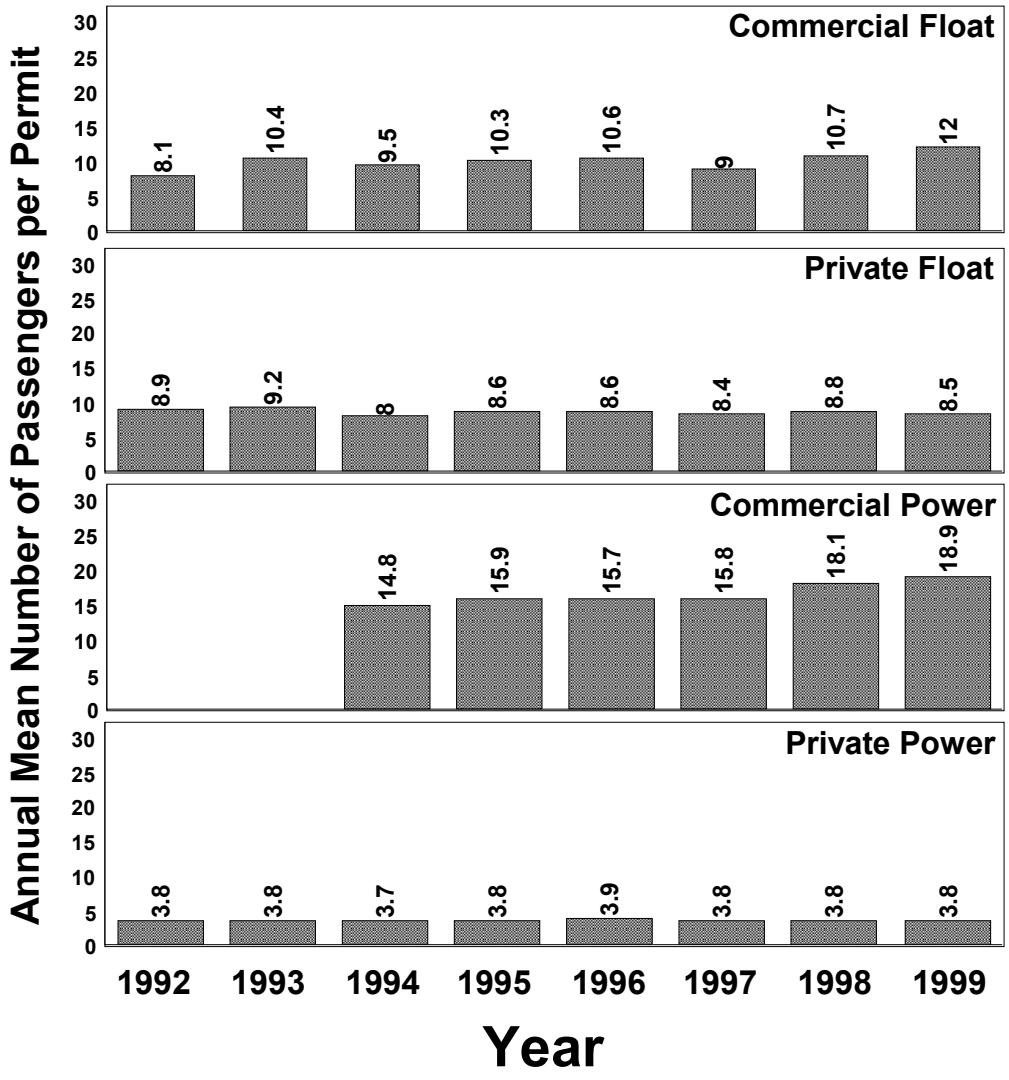

Figure 11. Annual mean number of registered passengers per permit by status (commercial or private) and type (float or power) entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined (from USFS boater registration database).

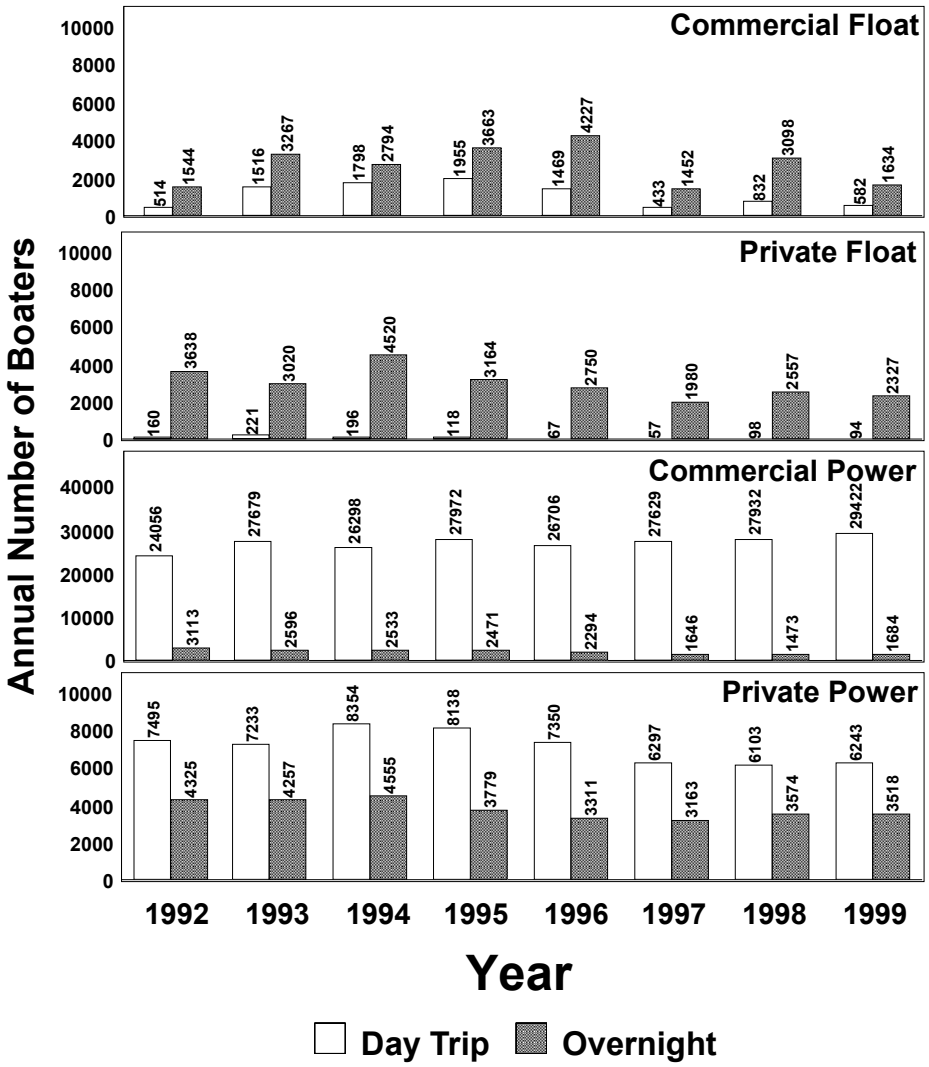

Figure 12. Annual number of registered day trip and overnight passengers by status (commercial or private) and type (float or power) entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals combined (from USFS boater registration database).

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Cache Creek
180
185
190
195
Dug Bar
200
205
210
215
220
225
230
235
240
245
250
Pittsburg Landing
Kirkwood Ranch
Rush Creek Rapids
Wild Sheep Rapids
Hells Canyon Visitor Center
Hells Canyon Dam
Salmon River
Salmon River
Imnaha River
Snake River
Imnaha
Riggins
95
1
2
3
4
5
6
N

Vicinity Map

Features Legend

- Interstate Highway
- Principal Highway
- Major Road
- Minor Road
- Rivers
- County
- Lakes and Reservoirs
- Rivermile

- 1 Salmon River - Cache Creek
- 2 Pittsburgh Landing - Salmon River
- 3 Kirkwood Ranch - Pittsburgh Landing
- 4 Rush Creek Rapids - Kirkwood Ranch
- 5 Wild Sheep Rapids - Rush Creek Rapids
- 6 Hells Canyon Dam - Wild Sheep Rapids
- Hells Canyon National Recreation Area

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Tech. Report E.5-3 Figure 13

Six distinct reaches of the Snake River in the Hells Canyon National Recreation Area designated to differentiate location of boater use during recreational use surveys conducted in 1999

0 1.25 2.5 5 7.5 10 Miles

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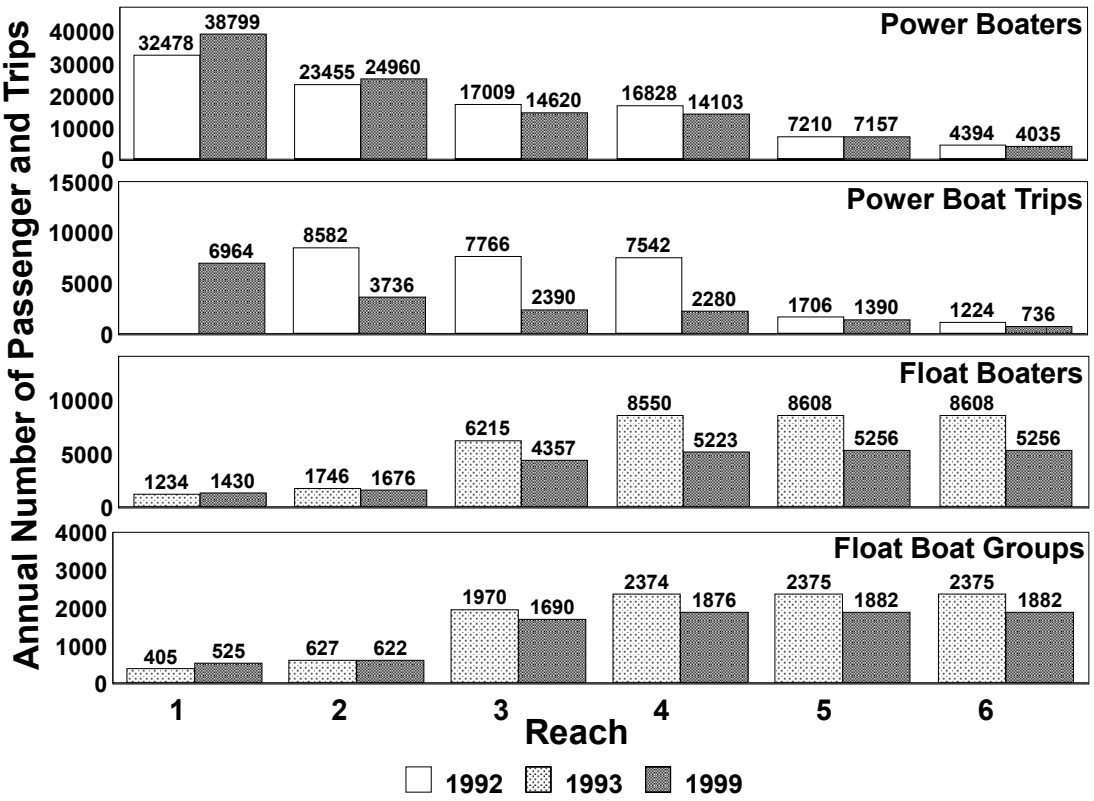

Figure 14. Annual number of passengers and trips within six reaches of the Snake River in the HCNRA at the beginning and end of the study period. Because the USFS registration database did not contain the necessary destination information from float boaters for 1992, we substituted 1993 registration information.

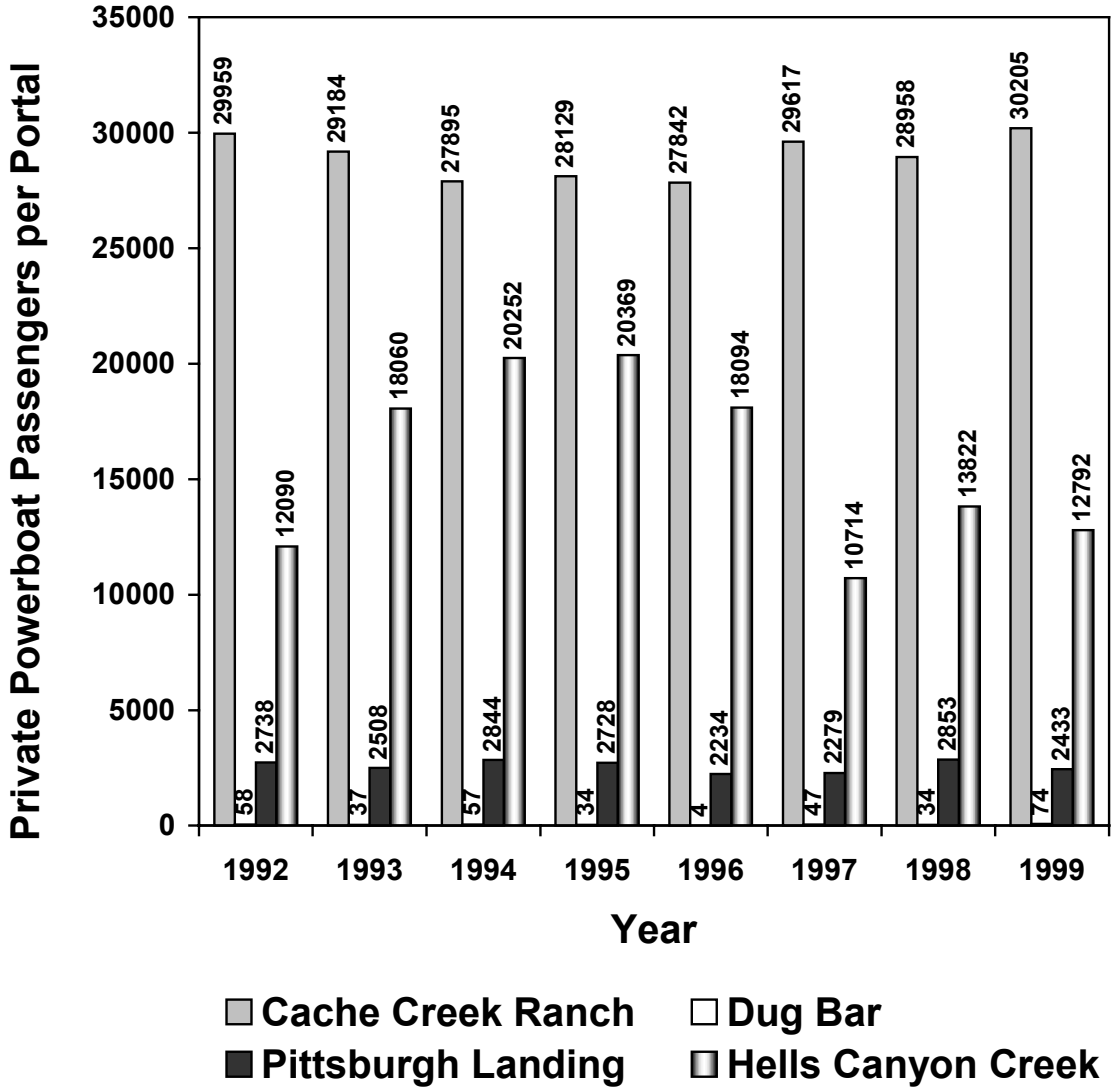

Figure 15. Number of boaters registered by year per portal entering the HCNRA through Hells Canyon Creek, Pittsburg Landing, Dug Bar, and Cache Creek portals (from USFS boater registration database).

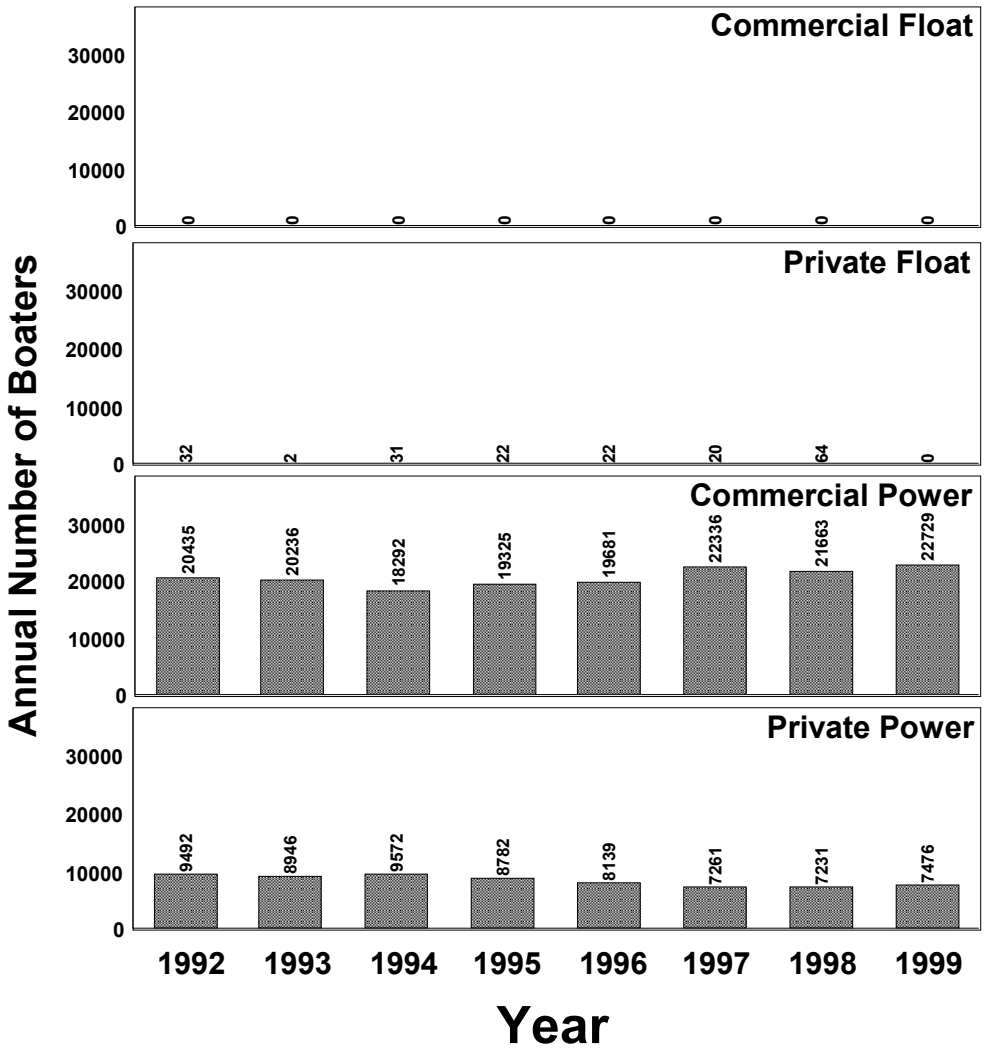

Figure 16. Annual number of passengers registered by status (commercial or private) and type (float or power) entering the HCNRA through Cache Creek portal (from USFS boater registration database).

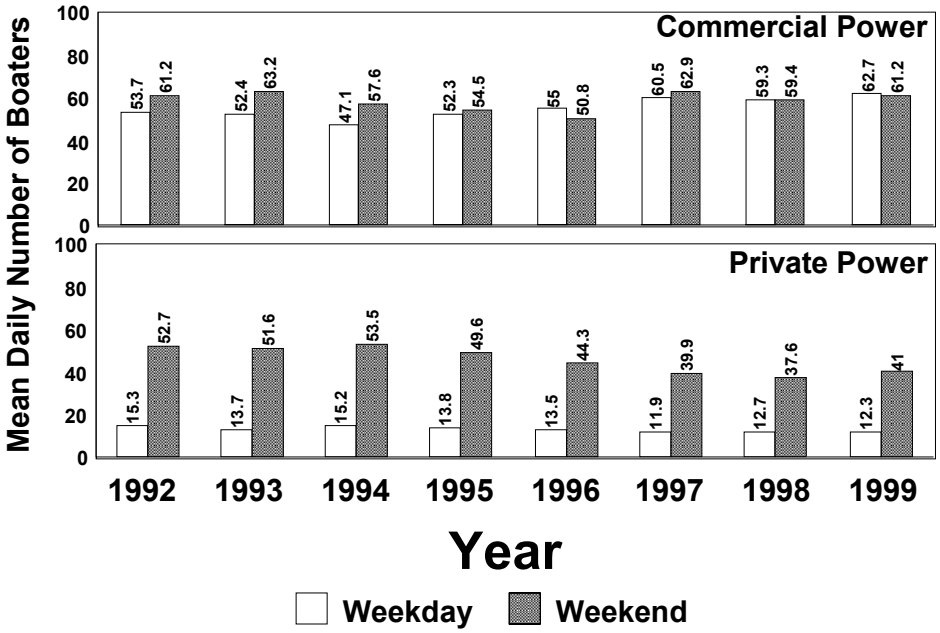

Figure 17. Annual mean number of passengers registered per day by status (commercial or private), type (float or power), and weekend or weekday entering the HCNRA through Cache Creek portal (from USFS boater registration database).

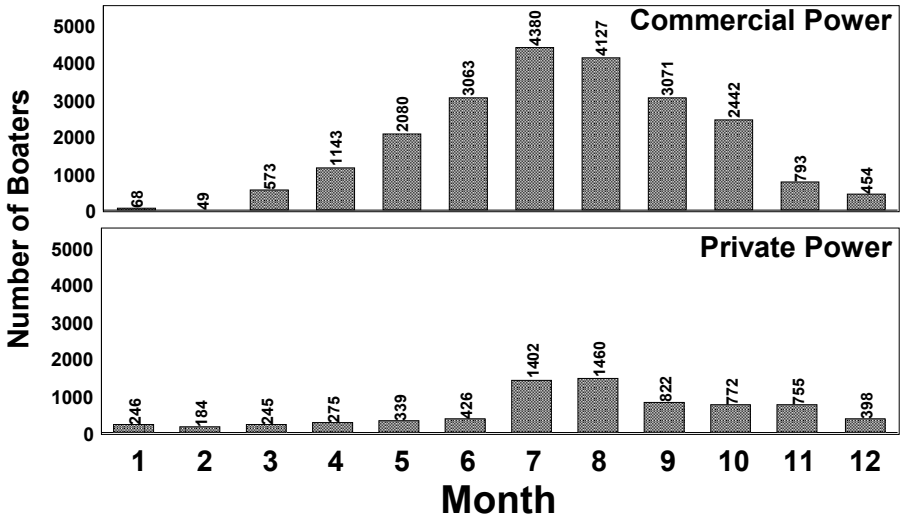

Figure 18. Monthly (mean of 1997, 1998, and 1999) number of registered powerboaters by status (commercial or private) entering the HCNRA through Cache Creek portal (from USFS boater registration database).

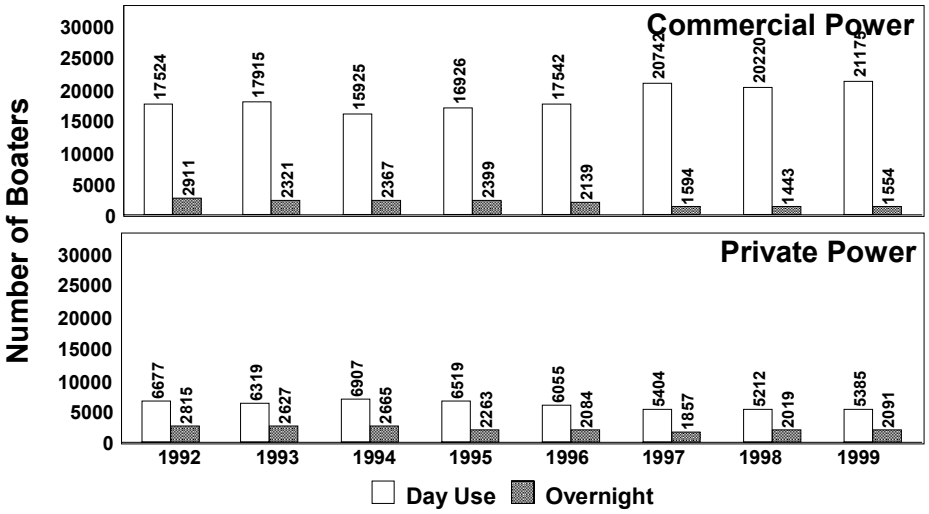

Figure 19. Number of registered powerboaters by status (commercial or private) and use (day or overnight) entering the HCNRA through Cache Creek portal (from USFS boater registration database).

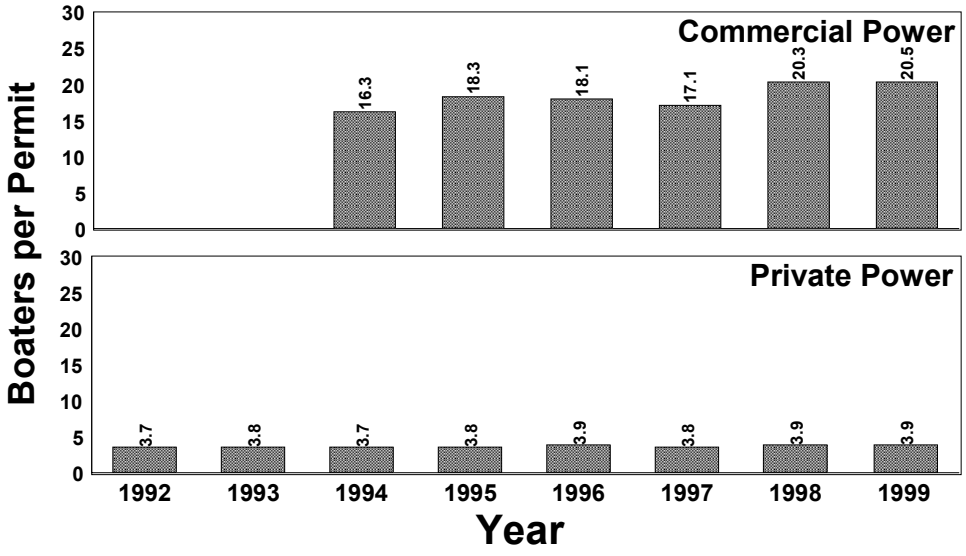

Figure 20. Number of powerboaters registered per permit by status (commercial or private) entering the HCNRA through Cache Creek portal (from USFS boater registration database).

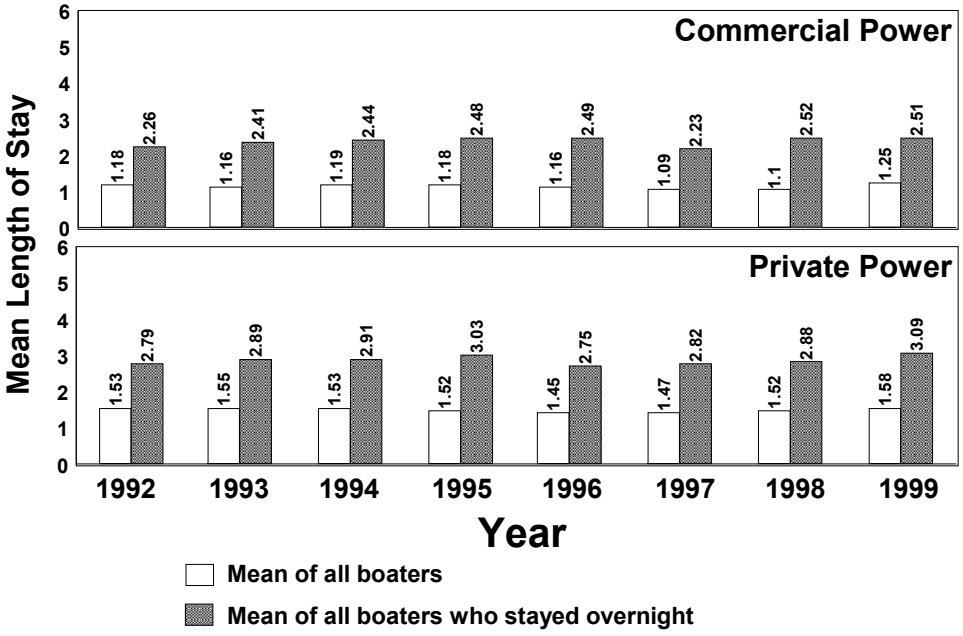

Figure 21. Mean length of stay of registered powerboaters by status (commercial or private) entering the HCNRA through Cache Creek portal (from USFS boater registration database).

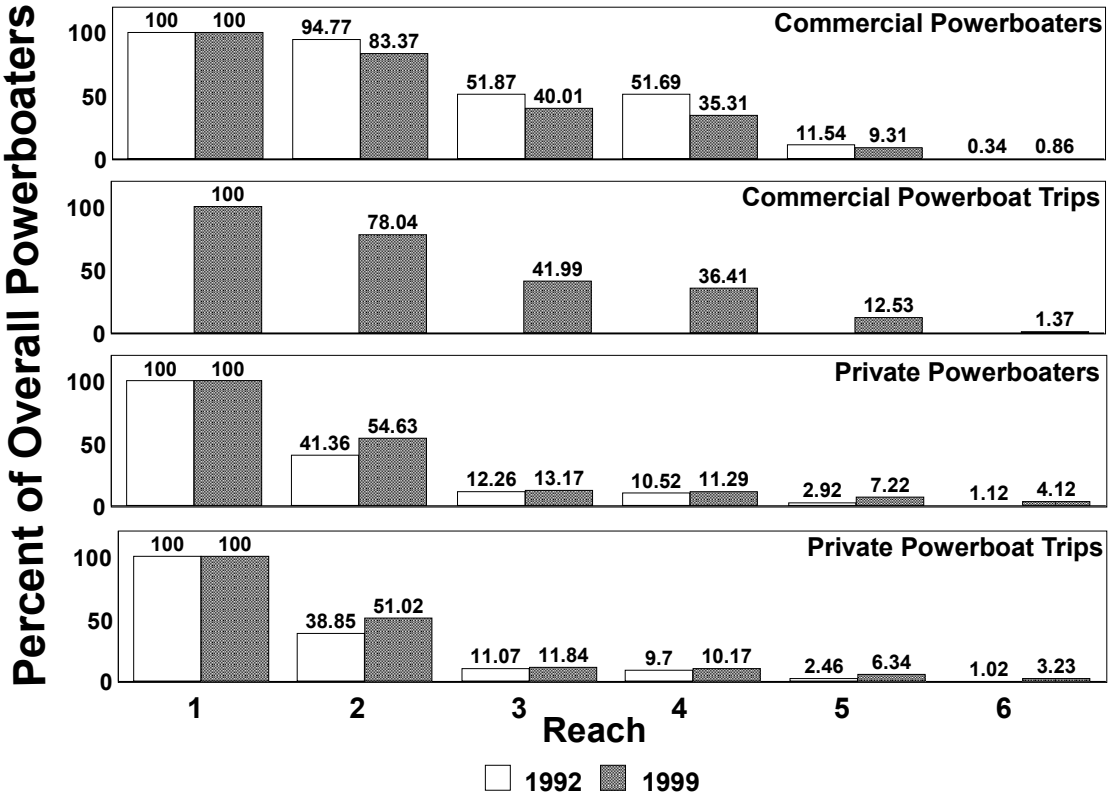

Figure 22. Annual number of powerboaters and powerboat trips originating at Cache Creek portal, expressed as a percentage of overall annual numbers, within six reaches of the Snake River in the HCNRA at the beginning and end of the study period.

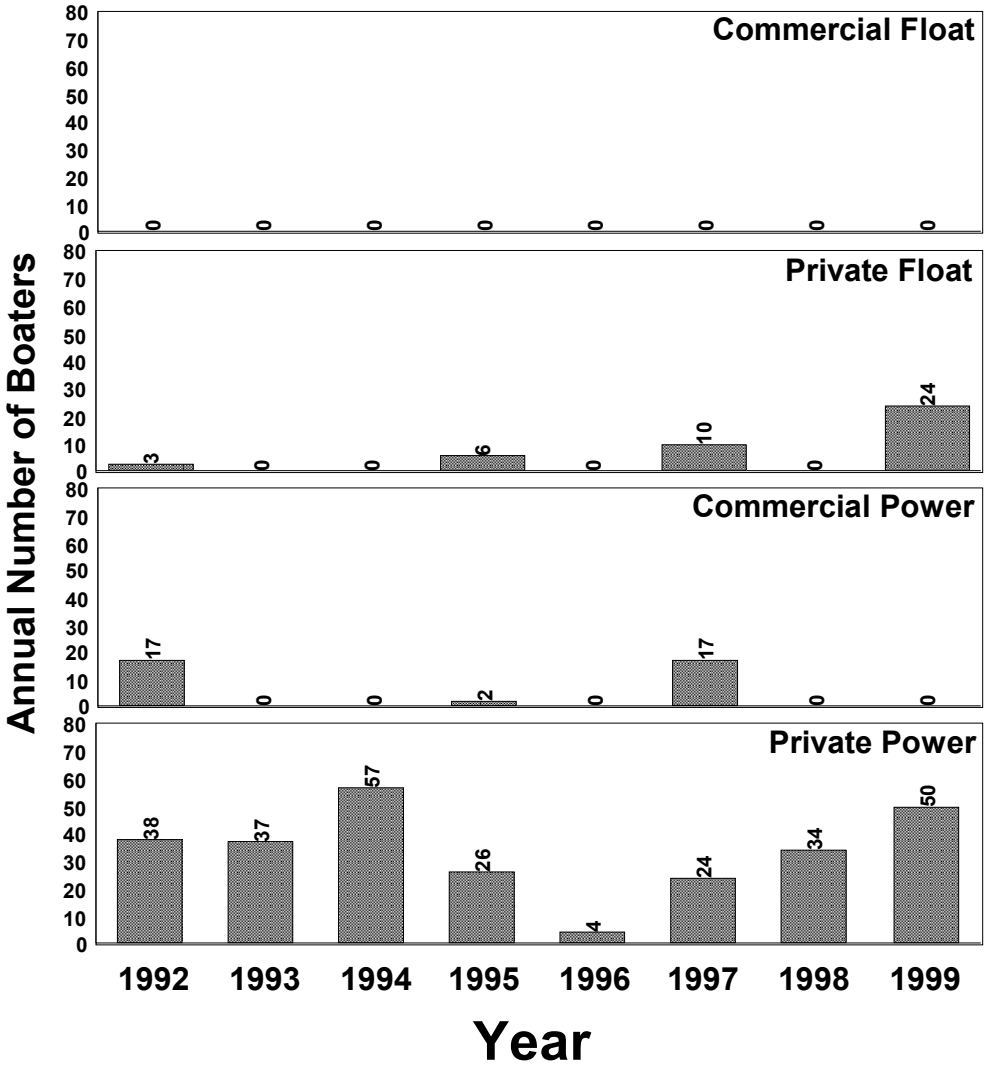

Figure 23. Annual mean number of registered passengers by status (commercial or private) and type (float or power) entering the HCNRA through Dug Bar portal (from USFS boater registration database).

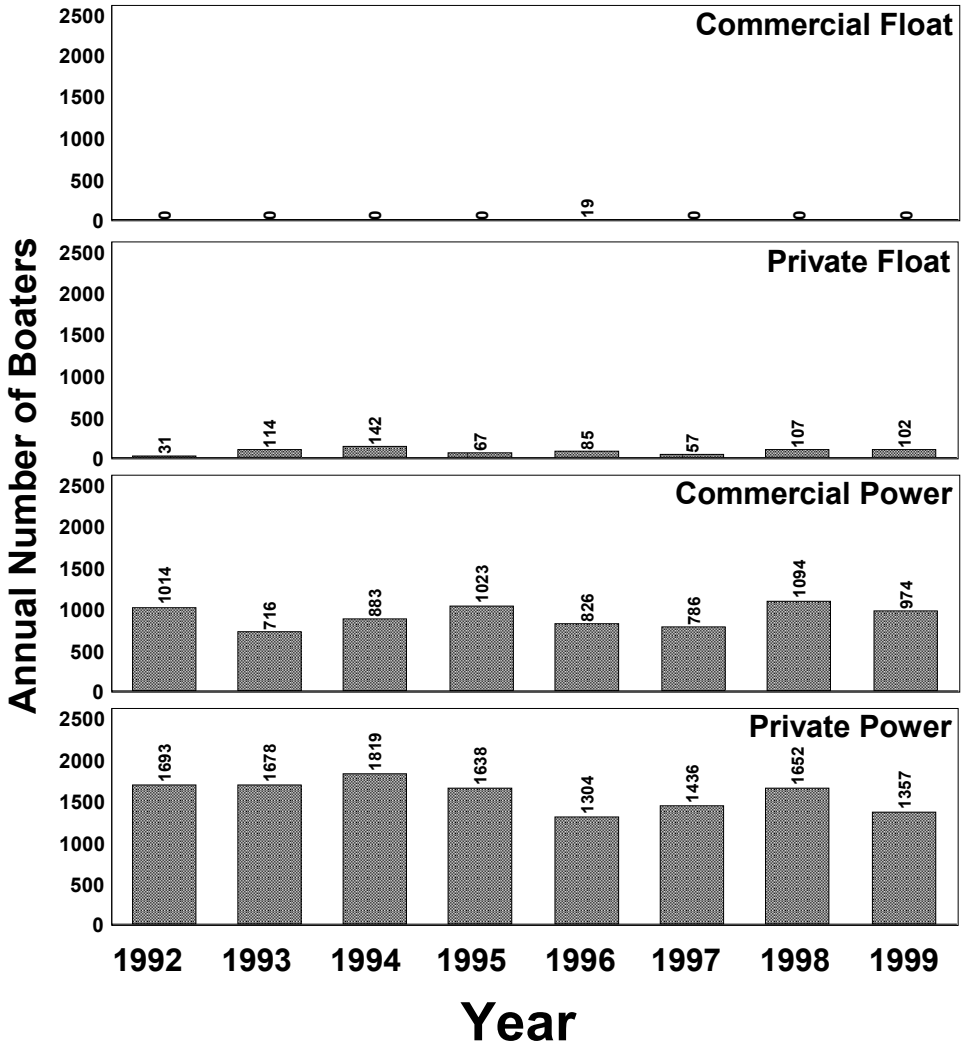

Figure 24. Annual mean number of registered boaters by status (commercial or private) and type (float or power) entering the HCNRA through Pittsburg Landing portal (from USFS boater registration database).

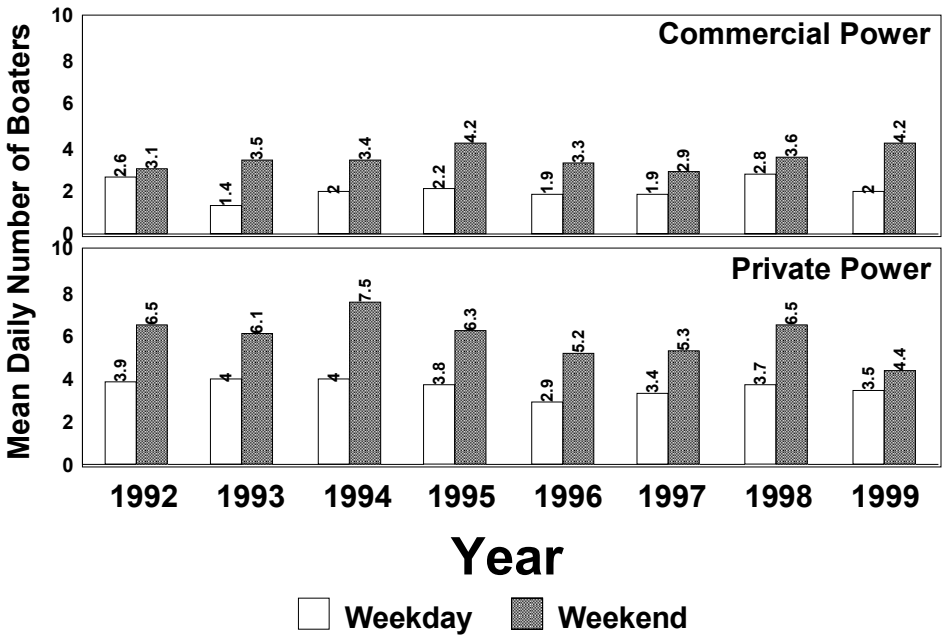

Figure 25. Annual mean number of registered powerboaters per day by status (commercial or private) and weekend/weekday entering the HCNRA through Pittsburg Landing portal (from USFS boater registration database).

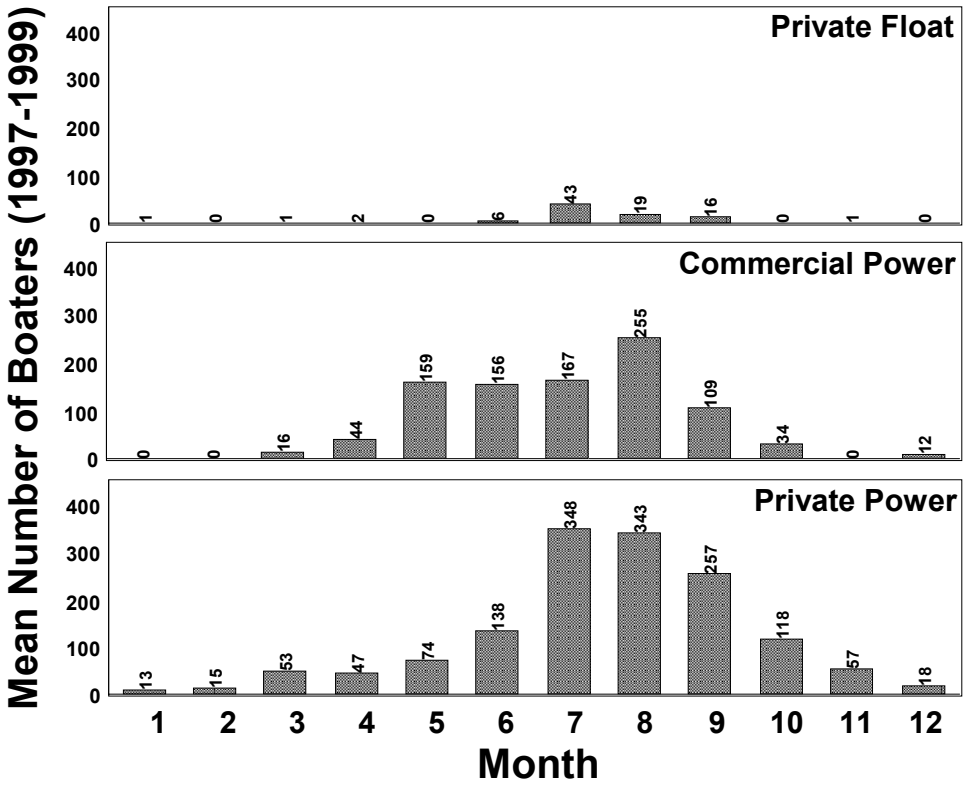

Figure 26. Monthly number (mean of 1997, 1998, and 1999) of registered private float boaters and powerboaters by status (commercial or private) entering the HCNRA through Pittsburg Landing portal (from USFS boater registration database).

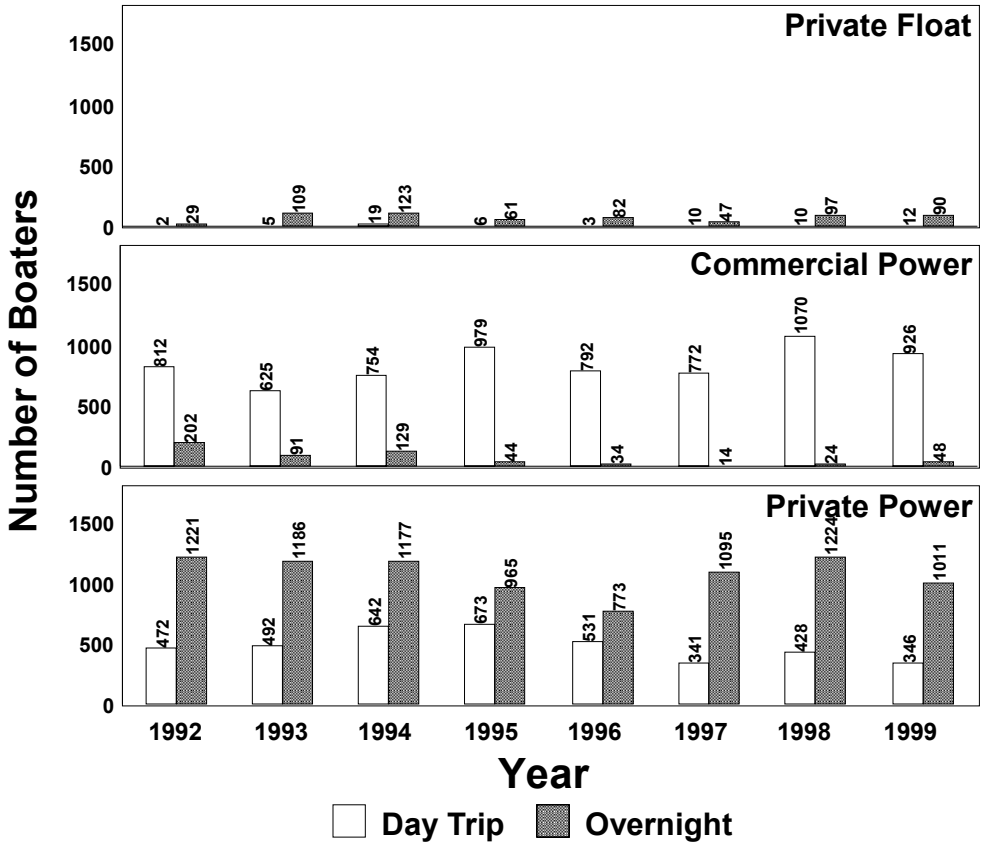

Figure 27. Day use and overnight use numbers for registered private float boaters, commercial powerboaters, and private powerboaters who entered HCNRA through Pittsburg Landing portal (from USFS boater registration database).

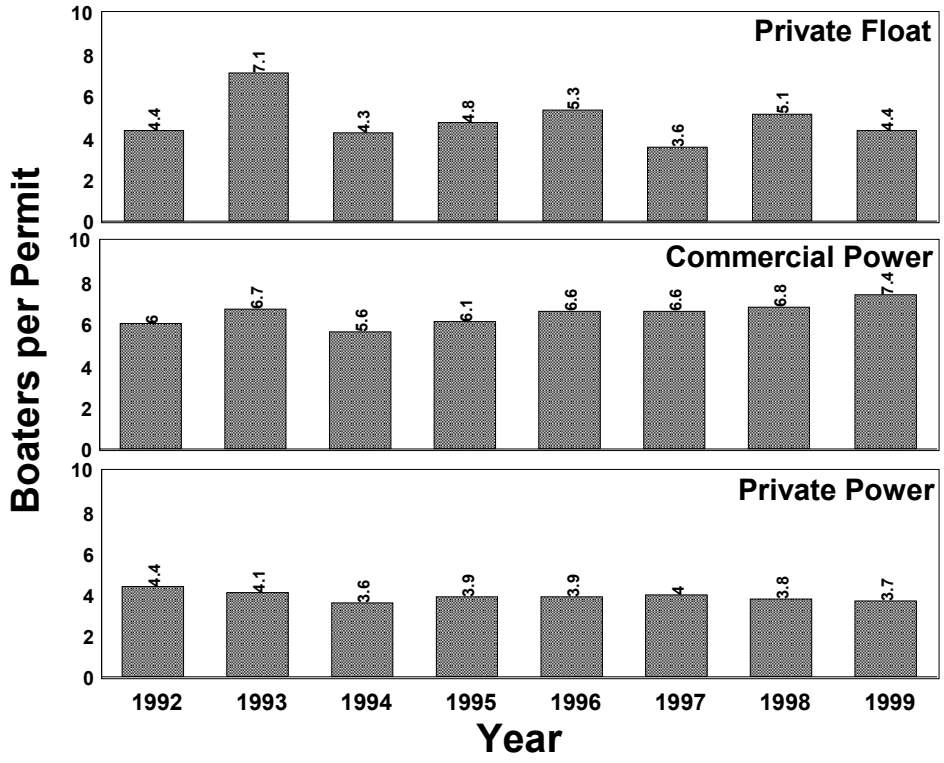

Figure 28. Number of boaters registered per permit of private float boaters, commercial powerboaters, and private powerboaters who entered HCNRA through Pittsburg Landing portal (from USFS boater registration database).

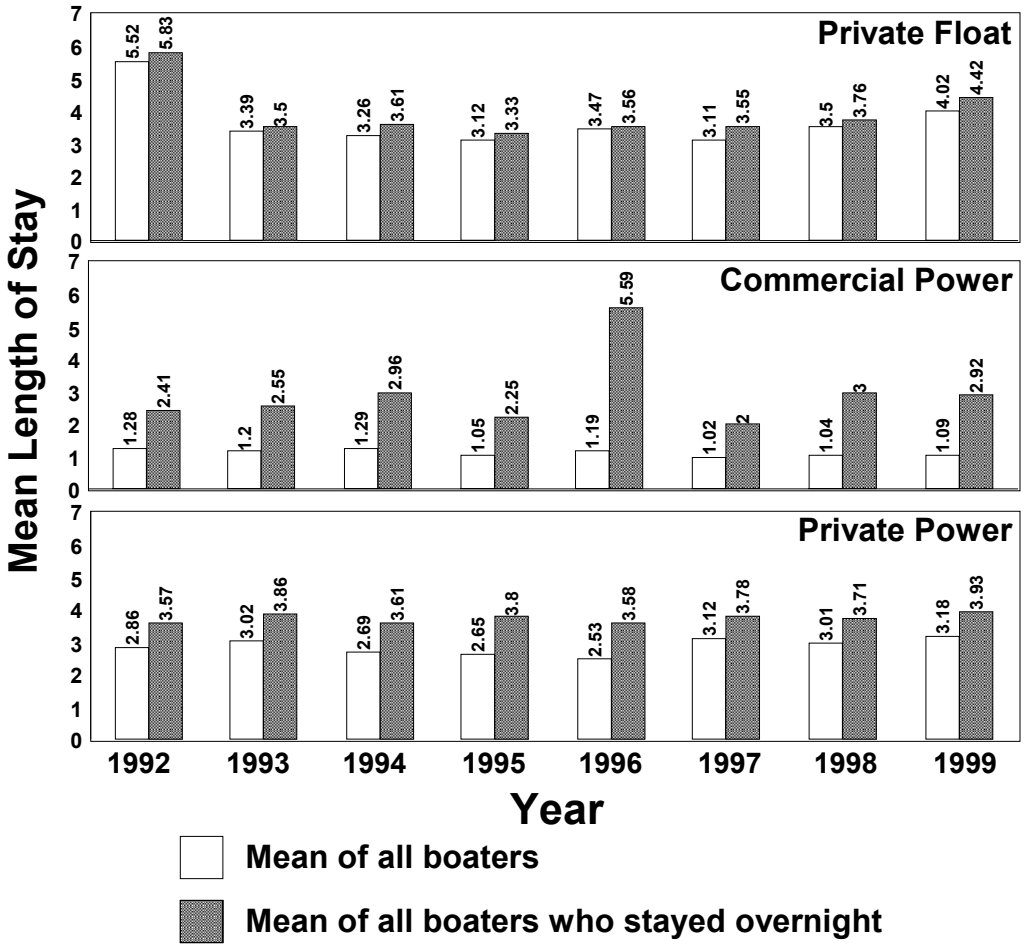

Figure 29. Mean length of stay of registered private float boaters, commercial powerboaters, and private powerboaters who entered HCNRA through Pittsburg Landing portal (from USFS boater registration database).

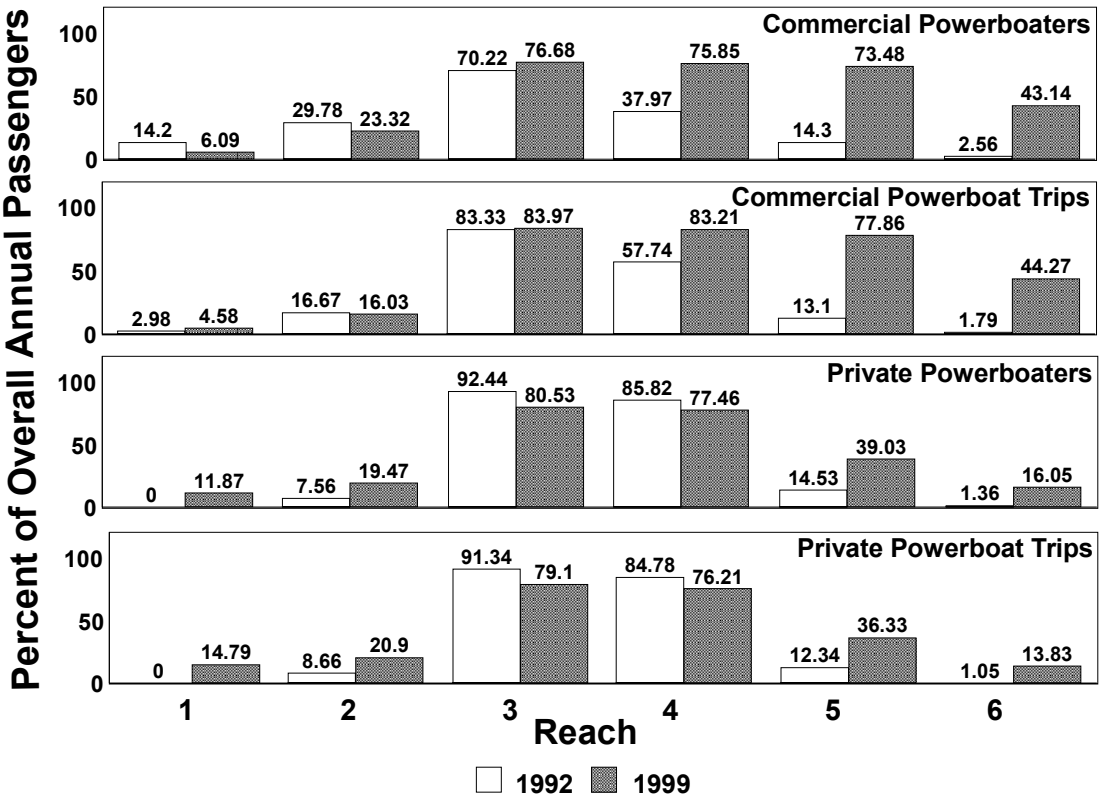

Figure 30. Percentages of the overall annual number of powerboaters and powerboat trips originating at Pittsburg Landing portal within six reaches of the Snake River in the HCNRA at the beginning and end of the study period.

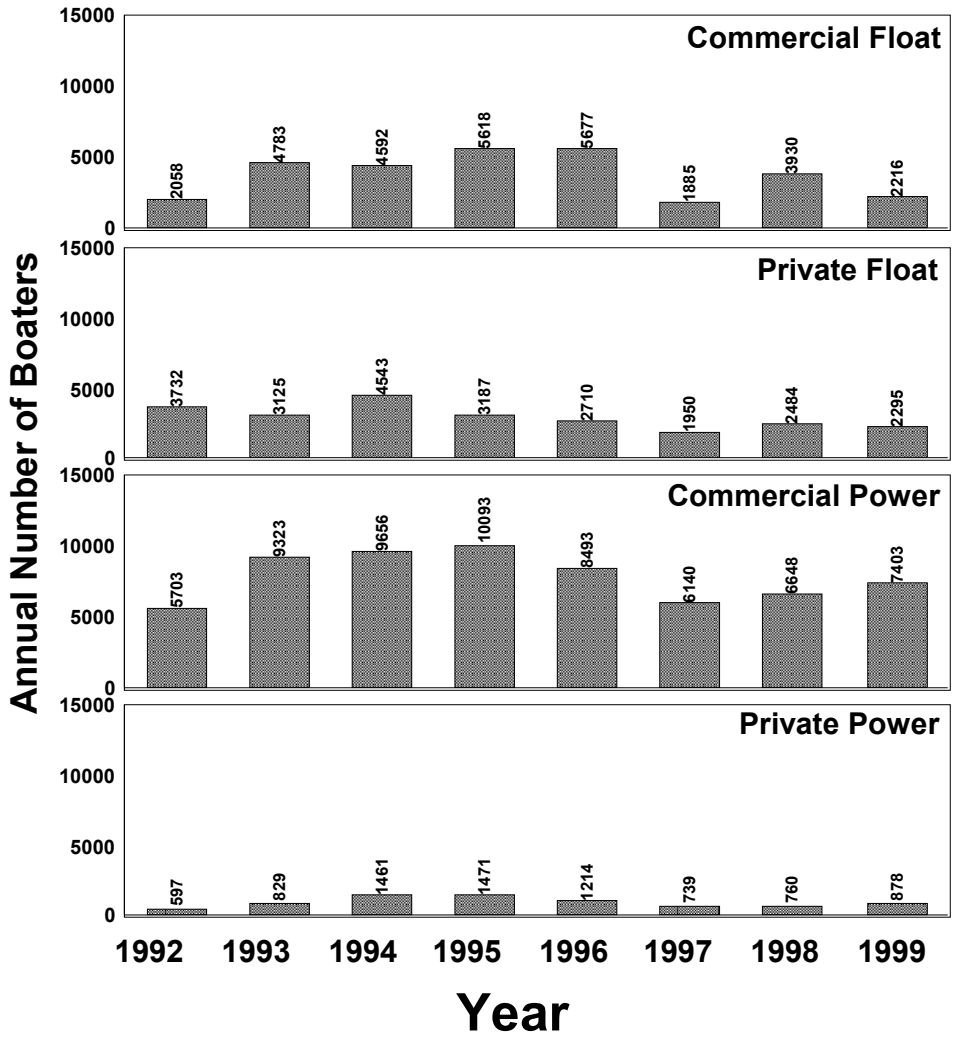

Figure 31. Annual number of boaters by status (commercial or private) and type (float or power) registered as entering the HCNRA through Hells Canyon Creek portal (from USFS boater registration database).

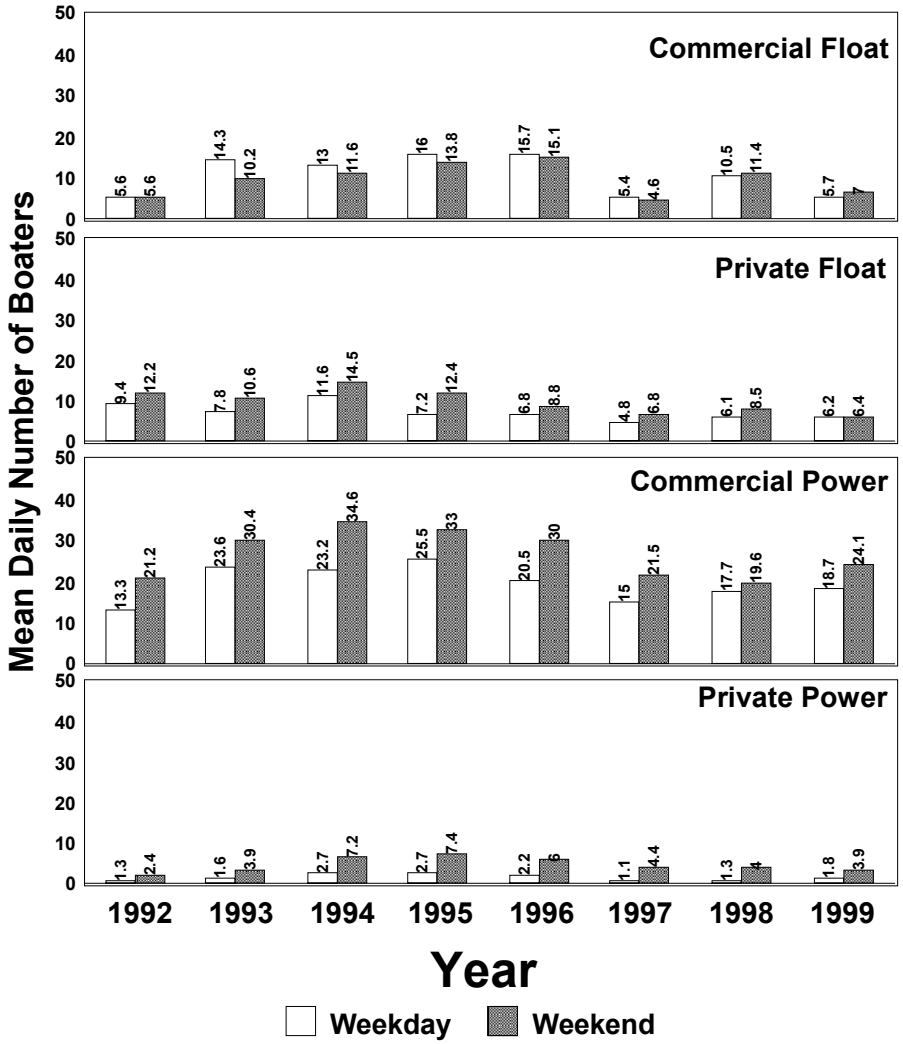

Figure 32. Annual mean numbers of float boaters and powerboaters registered per day by status (commercial or private) and weekend or weekday entering the HCNRA through Hells Canyon portal (from USFS boater registration database).

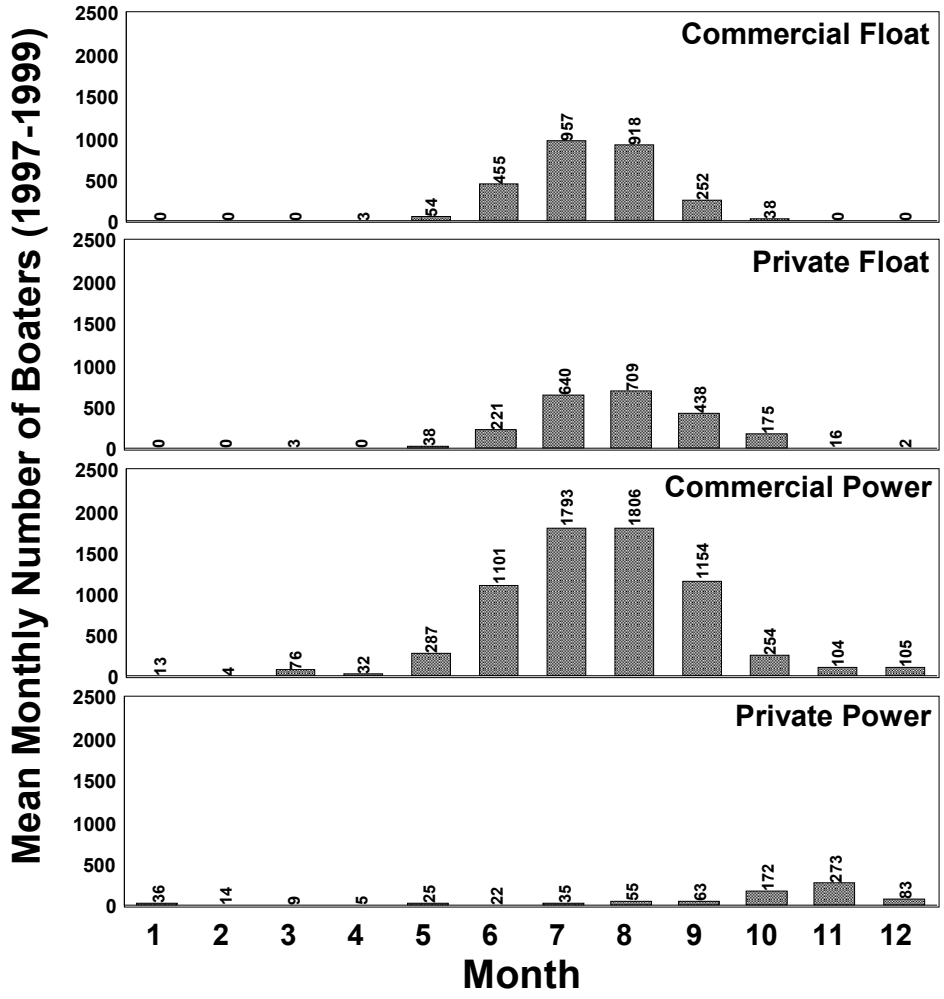

Figure 33. Monthly number (mean of 1997, 1998, and 1999) of registered float boaters and powerboaters by status (commercial or private) entering the HCNRA through Hells Canyon Creek portal (from USFS boater registration database).

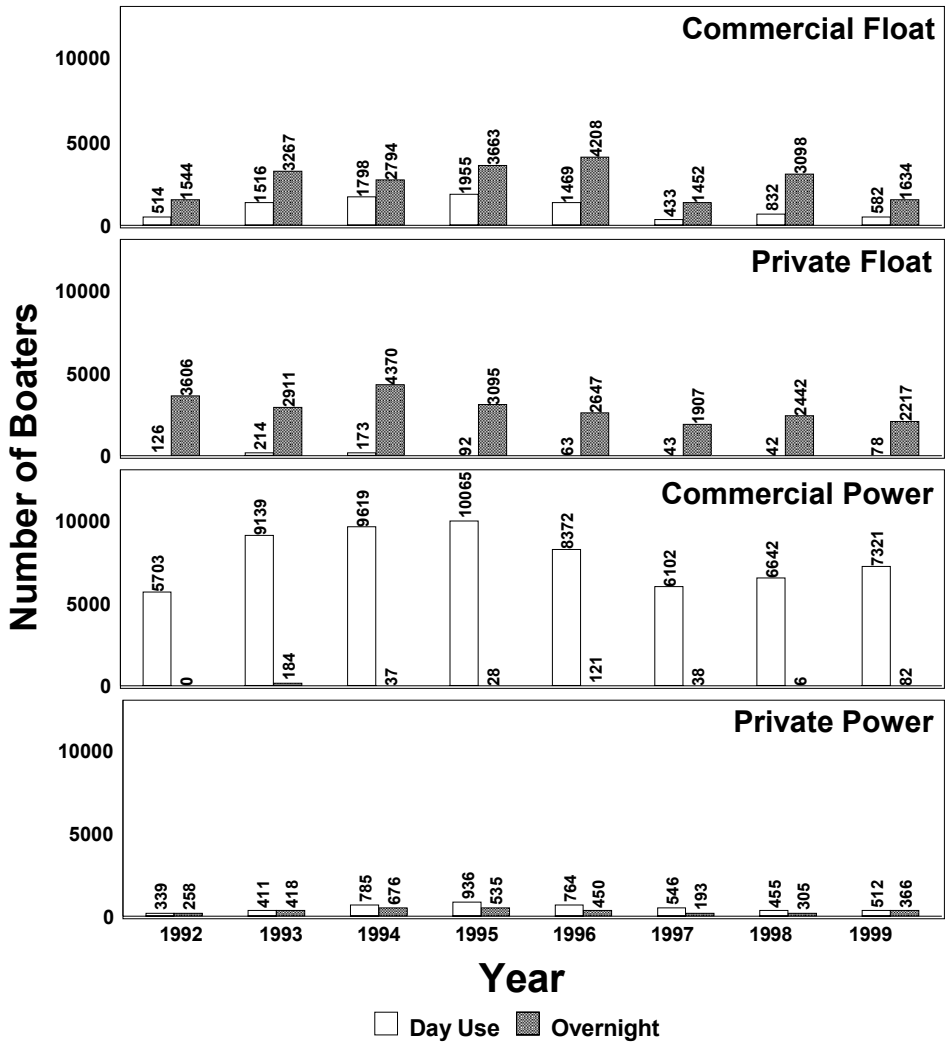

Figure 34. Day use and overnight numbers of registered commercial and private float boaters, and commercial and private powerboaters that entered HCNRA through Hells Canyon Creek portal (from USFS boater registration database).

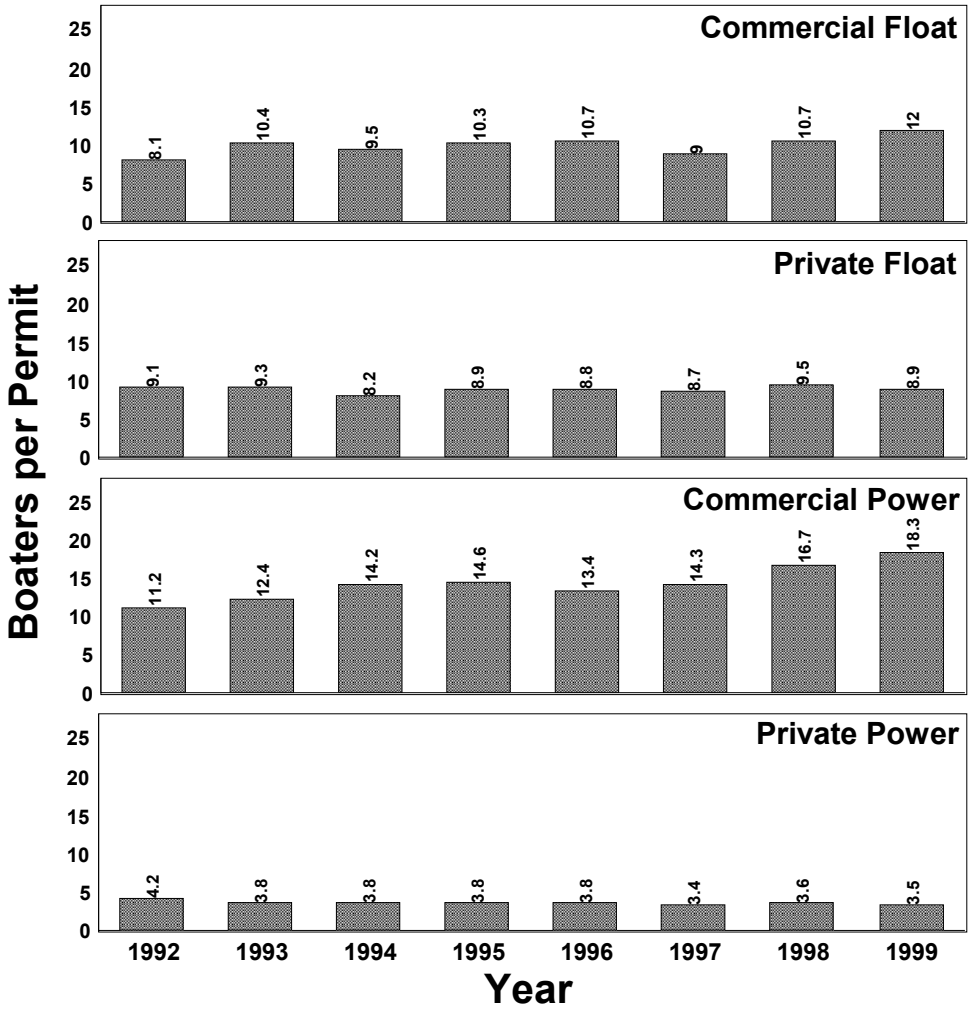

Figure 35. Number of boaters registered per permit of commercial and private float boaters, and commercial and private powerboaters that entered HCNRA through Hells Canyon Creek portal (from USFS boater registration database).

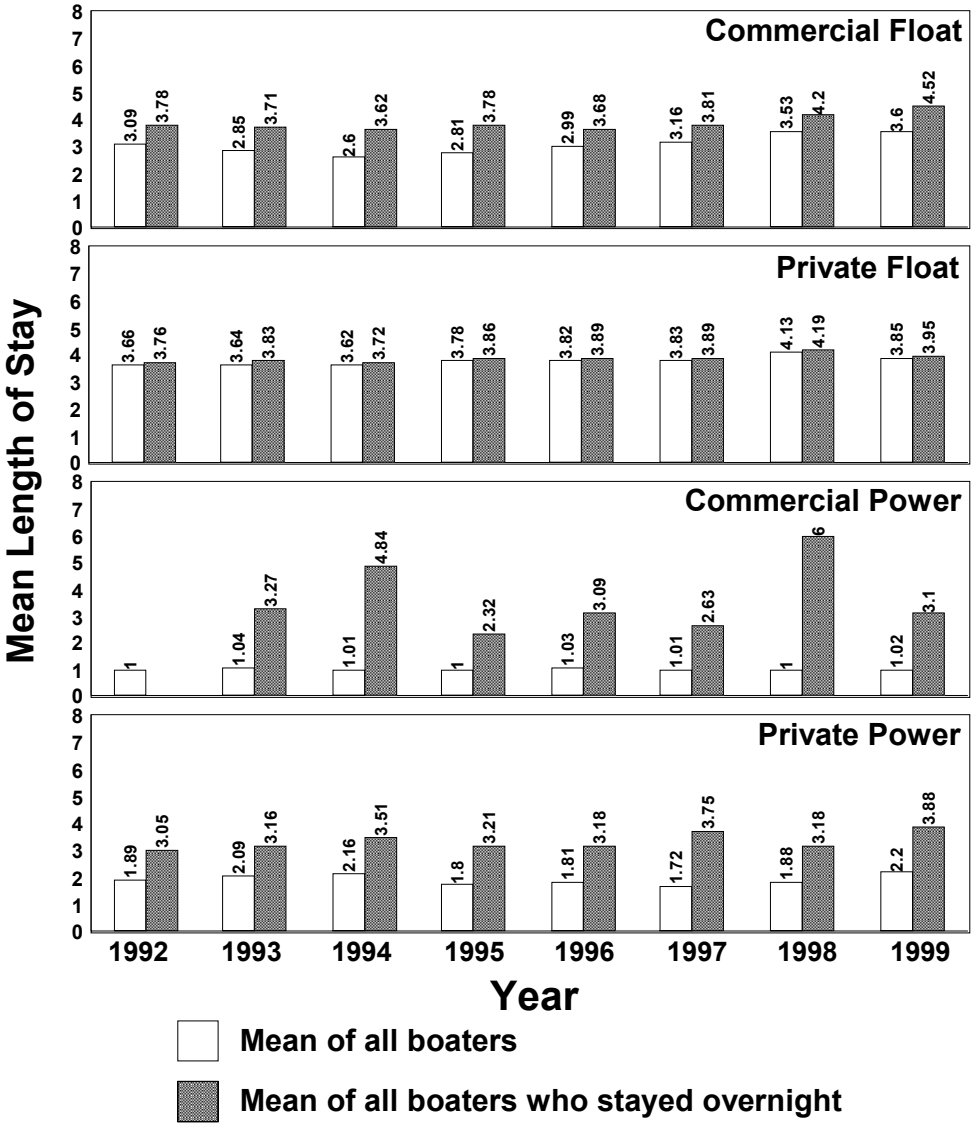

Figure 36. Mean length of stay of registered float boaters and powerboaters by status (commercial or private) entering the HCNRA through Hells Canyon Creek portal (from USFS boater registration database).

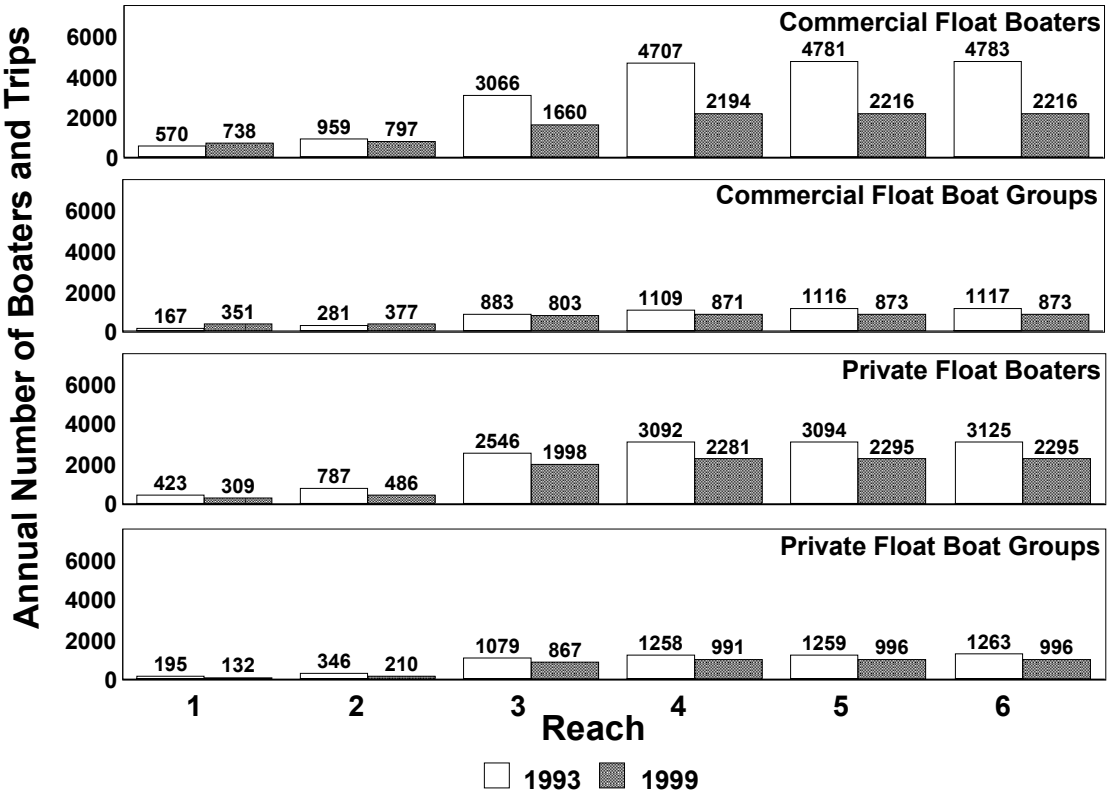

Figure 37. Percentages of overall annual numbers of float boaters and float boat groups originating at Hells Canyon Creek portal within six reaches of the Snake River in the HCNRA at the beginning and end of the study period.

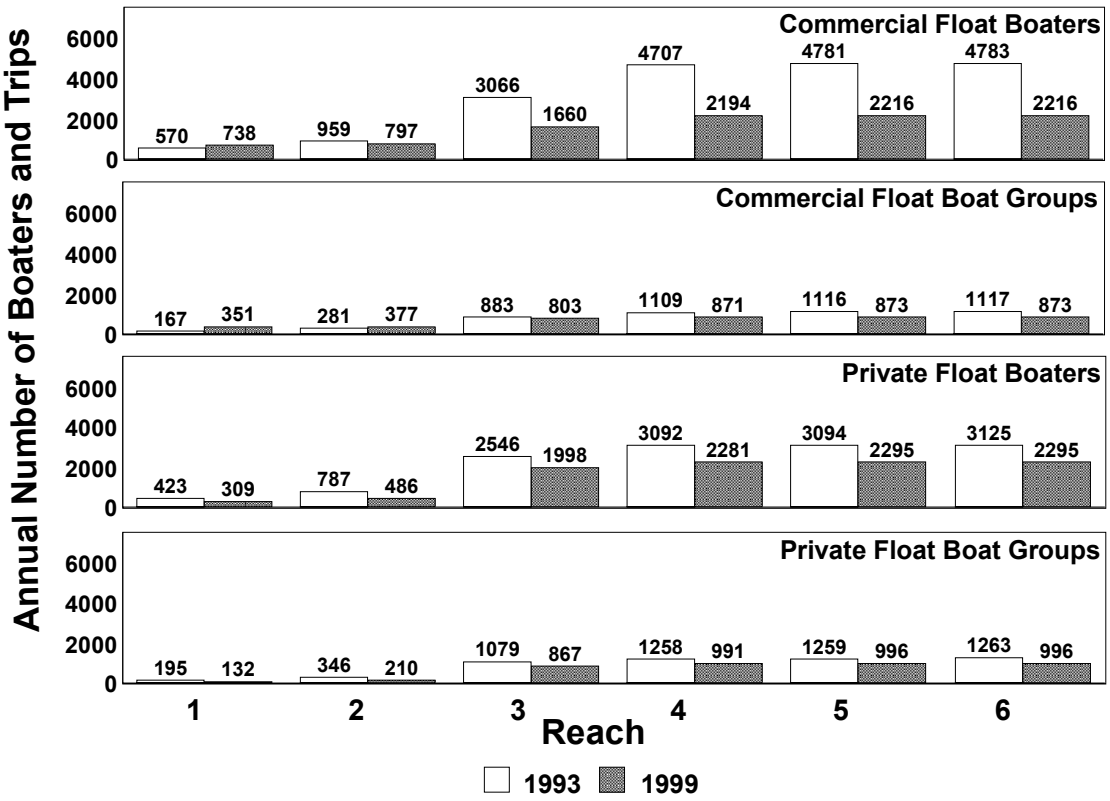

Figure 38. Percentages of overall annual numbers of powerboaters and powerboat trips originating at Hells Canyon Creek portal within six reaches of the Snake River in the HCNRA at the beginning and end of the study period.

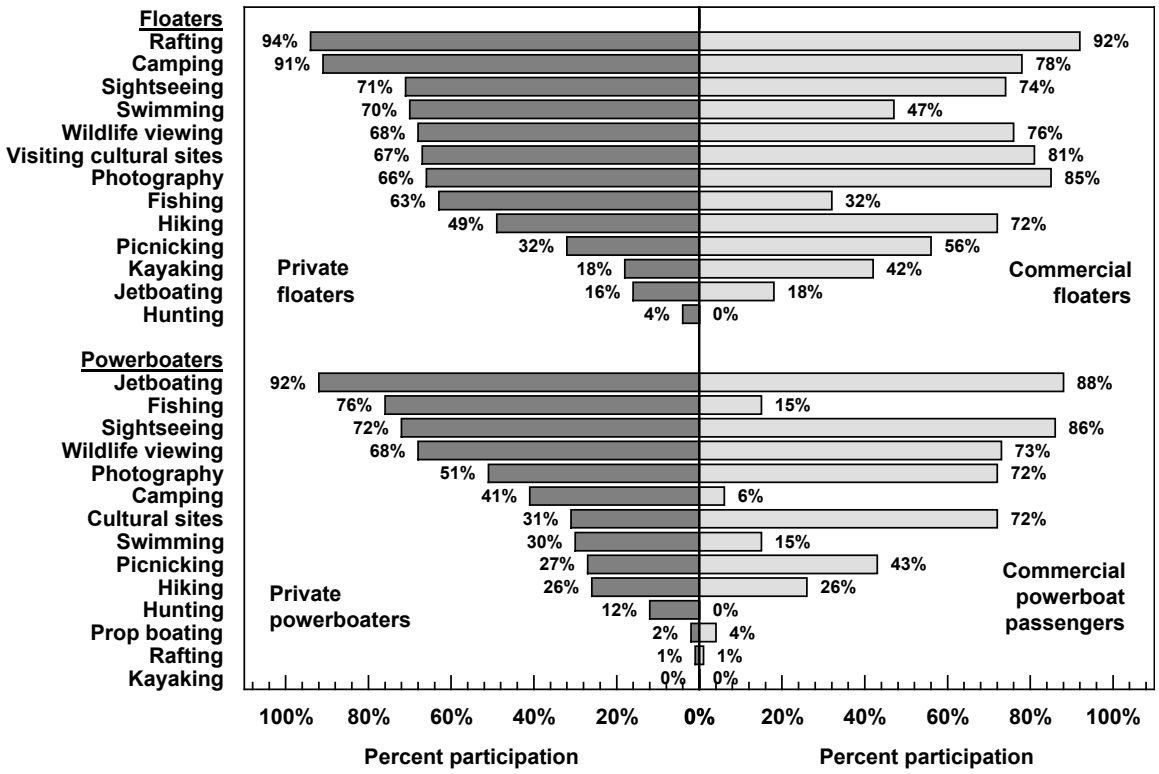

Figure 39. Participation in different activities by boating user groups as reported by respondents to IPC mail survey conducted in the HCNRA during 1999 (Whittaker and Shelby 2001).

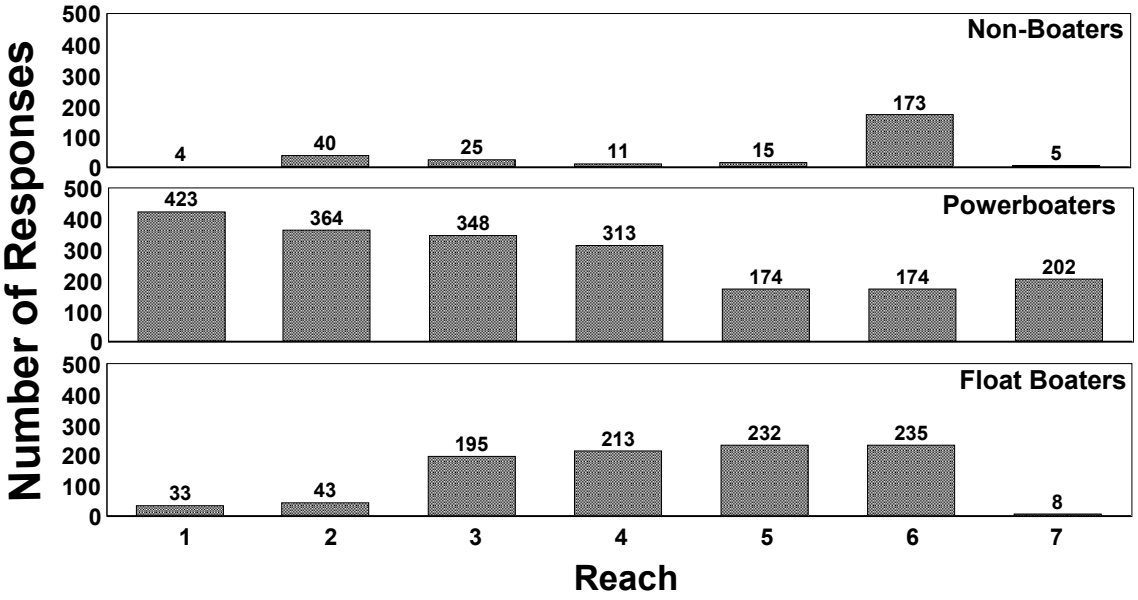

Figure 40. Number of respondents, by type, who visited seven different river reaches in or associated with the HCNRA (from 1999 IPC mail survey).

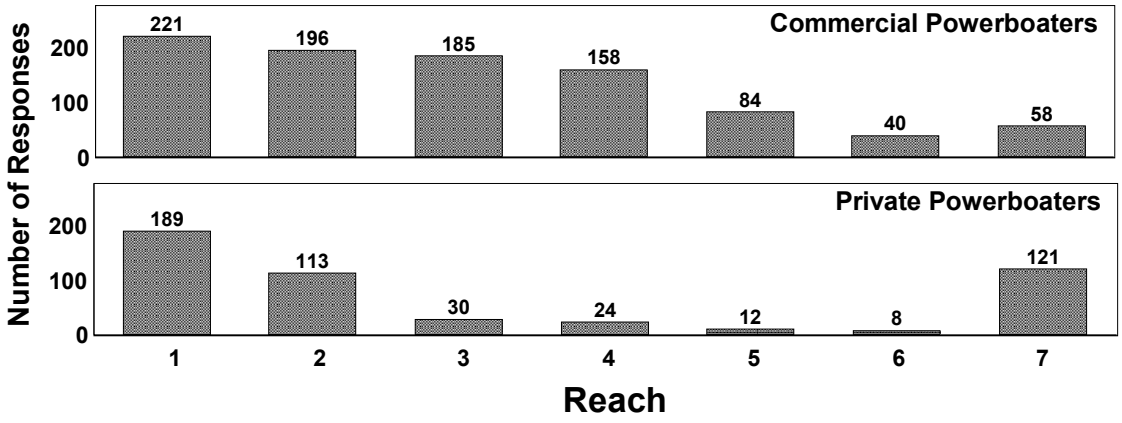

Figure 41. Number of respondents contacted at Cache Creek portal who visited seven different river reaches in or associated with the HCNRA (from 1999 IPC mail survey).

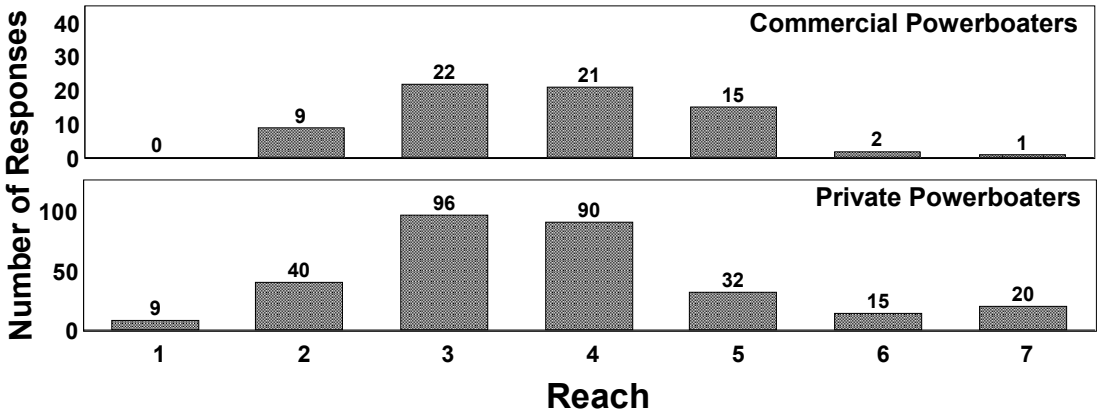

Figure 42. Number of respondents contacted at Pittsburg Landing portal who visited seven different river reaches in or associated with the HCNRA (from 1999 IPC mail survey).

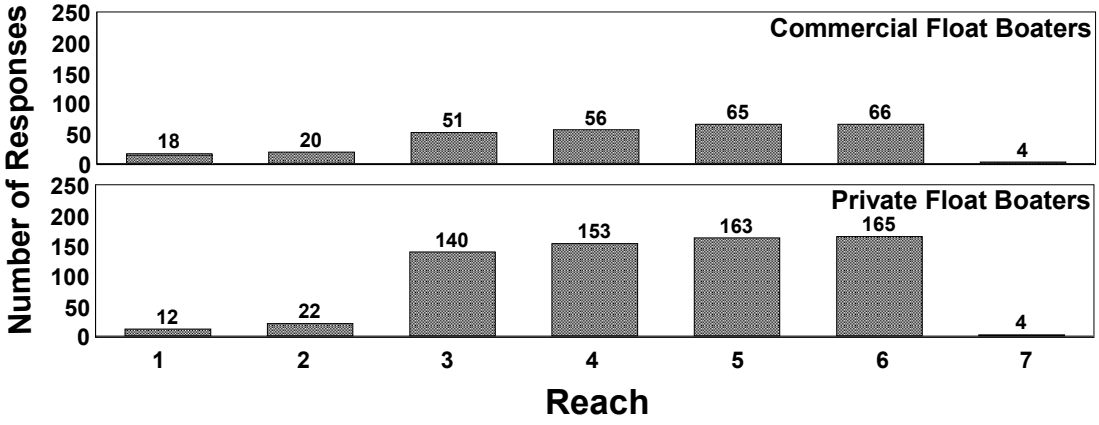

Figure 43. Numbers of nonboaters and float boaters contacted at Hells Canyon Creek portal who visited seven different river reaches in or associated with the HCNRA (from 1999 IPC mail survey).

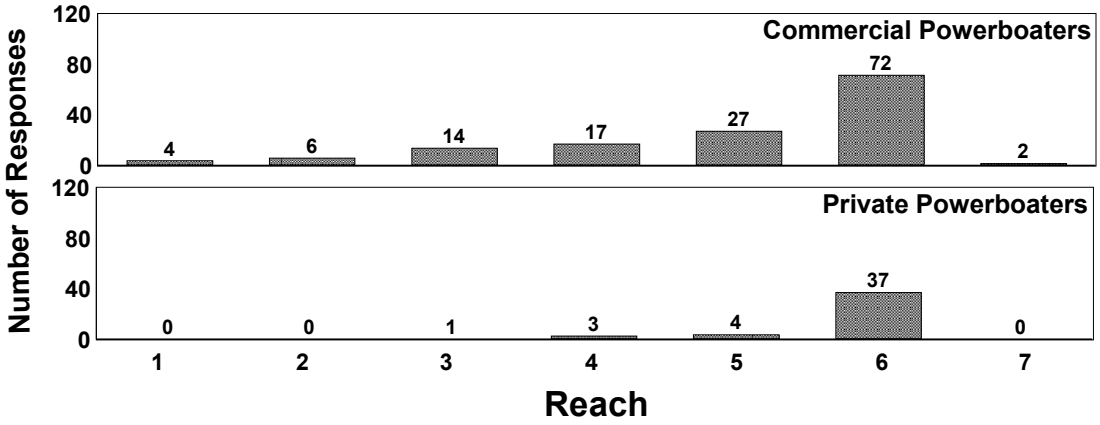

Figure 44. Number of powerboating respondents contacted at Hells Canyon Creek portal who visited seven different river reaches in or associated with the HCNRA (from 1999 IPC mail survey).

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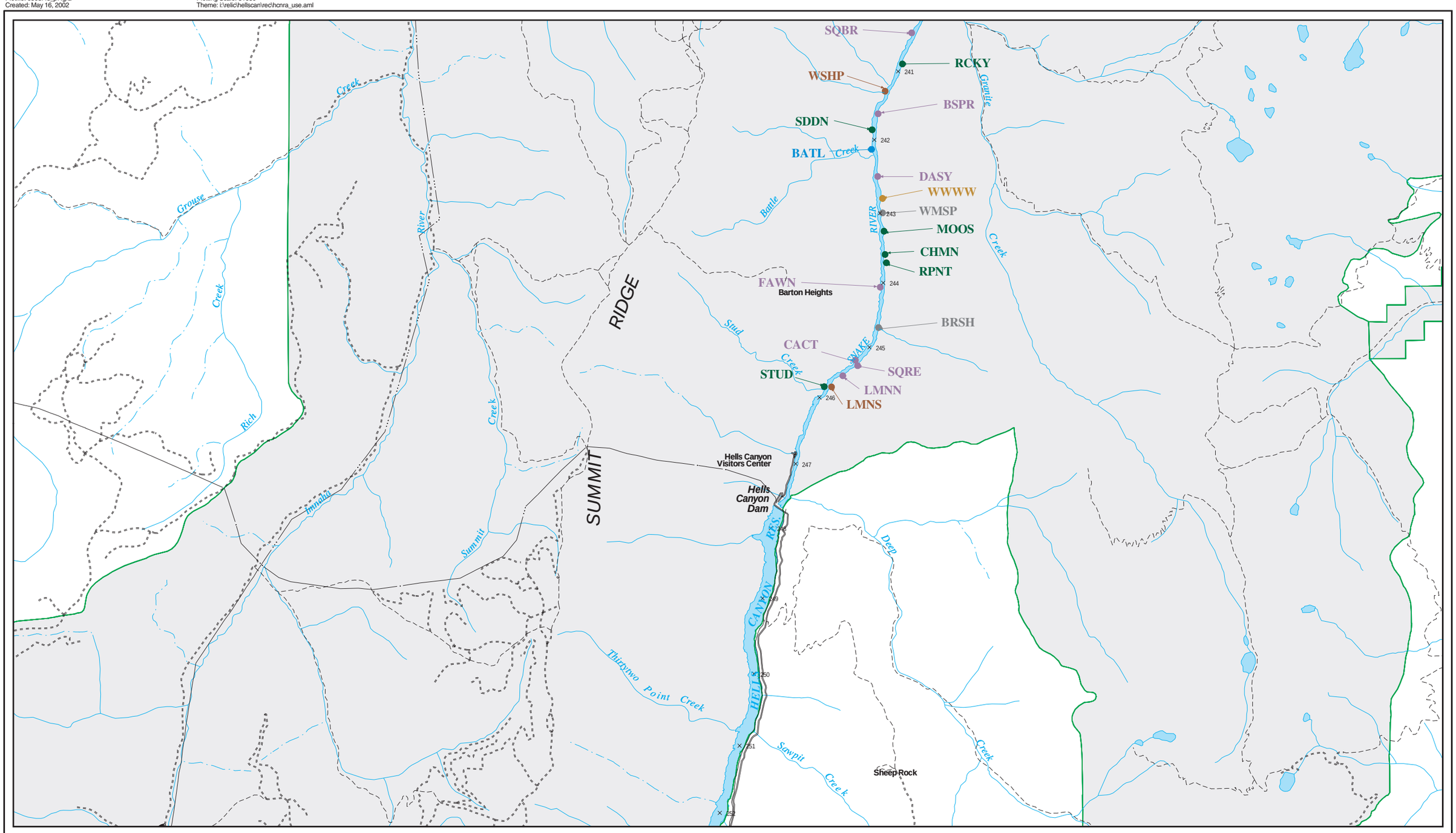
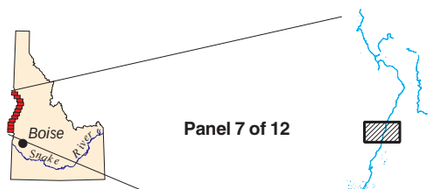




Vicinity Map

Panel 7 of 12

IDAHO POWER
Geographic Information Services

Note: Only those panels (7,8,9,10,11,12) that contain thematic data are mapped

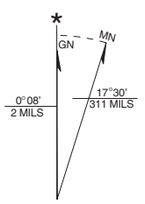
Base Features Legend

- Primary Route
- Secondary Route
- Light Duty Road
- Unimproved Road
- Trail
- Railroad
- Transmission Line
- Perennial River or Stream
- Intermittent River or Stream
- Ditch or Canal
- Water Body
- × River Mile

Thematic Features Legend

Intensity of Recreation Use

- None
- Very Low
- Low
- Medium
- Medium-Low
- High
- Very High
- Hells Canyon National Recreation Area



UTM GRID AND 1987
MAGNETIC NORTH DECLINATION
AT CENTER OF OXBOW QUADRANGLE

Tech. Report E.5 - 3 Figure 45

Location and intensity of use for 145 sites identified in the HCNRA during use surveys in 1999-2000

1 .5 0 1 MILES

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Created: May 16, 2002

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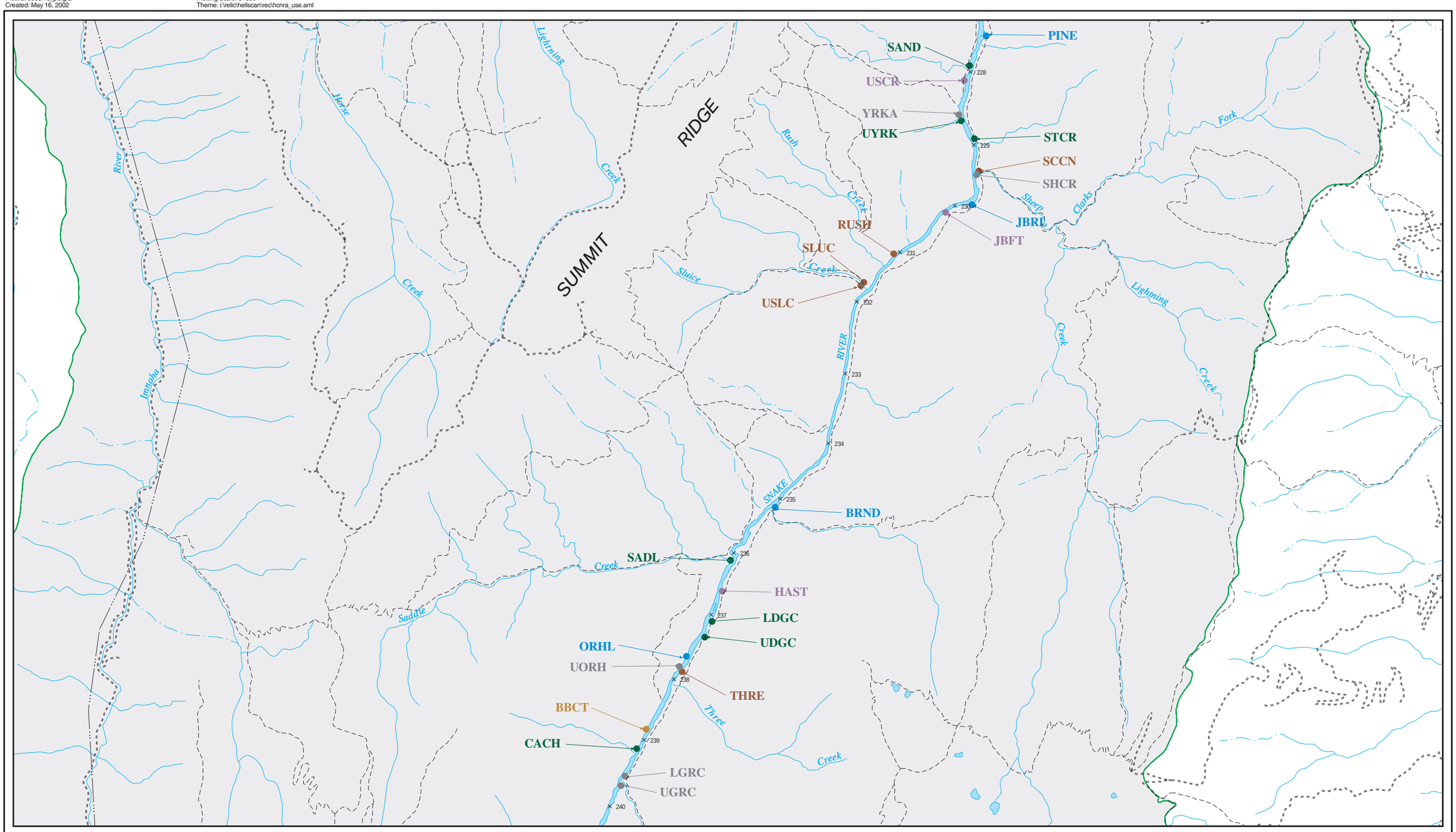
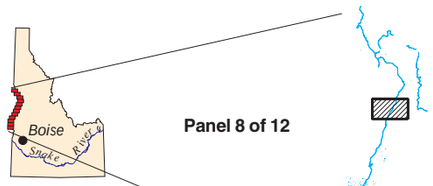




Vicinity Map

Panel 8 of 12

IDAHO POWER
Geographic Information Services

Note: Only those panels (7,8,9,10,11,12) that contain thematic data are mapped

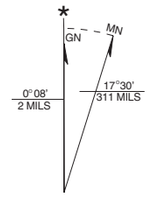
Base Features Legend

- Primary Route
- Secondary Route
- Light Duty Road
- Unimproved Road
- Trail
- Railroad
- Transmission Line
- Perennial River or Stream
- Intermittent River or Stream
- Ditch or Canal
- Water Body
- × River Mile

Thematic Features Legend

Intensity of Recreation Use

- None
- Very Low
- Low
- Medium
- Medium-Low
- High
- Very High
- Hells Canyon National Recreation Area



UTM GRID AND 1987
MAGNETIC NORTH DECLINATION
AT CENTER OF OXBOW QUADRANGLE

Tech. Report E.5 - 3 Figure 45

Location and intensity of use for 145 sites identified in the HCNRA during use surveys in 1999-2000

1 .5 0 1 MILES

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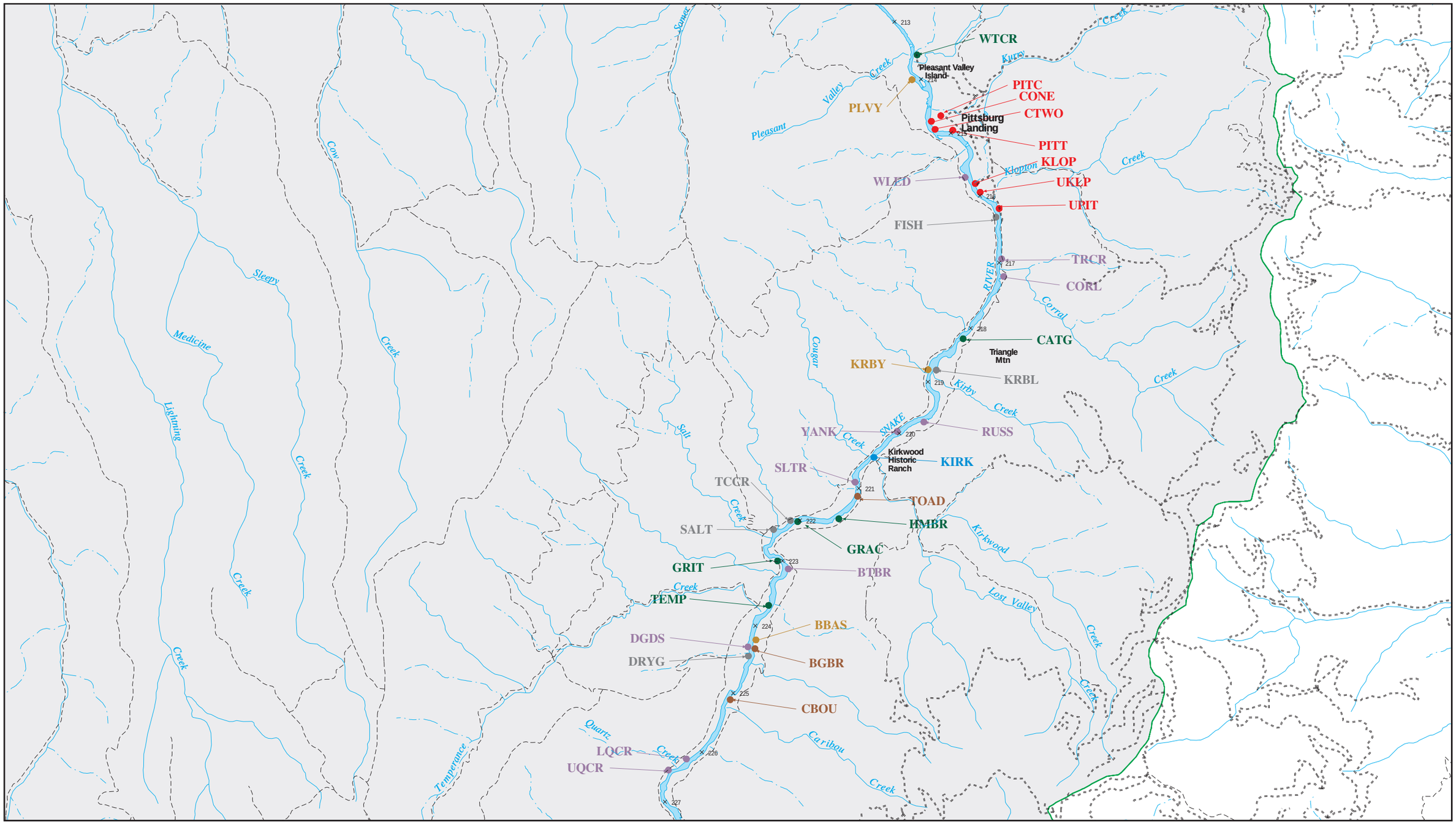
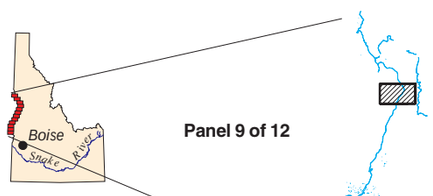




Vicinity Map

Panel 9 of 12

IDAHO POWER
Geographic Information Services

Note: Only those panels (7,8,9,10,11,12) that contain thematic data are mapped

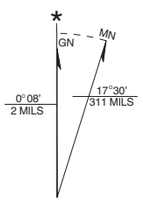
Base Features Legend

- Primary Route
- Secondary Route
- Light Duty Road
- Unimproved Road
- Trail
- Railroad
- Transmission Line
- Perennial River or Stream
- Intermittent River or Stream
- Ditch or Canal
- Water Body
- × River Mile

Thematic Features Legend

Intensity of Recreation Use

- None
- Very Low
- Low
- Medium
- Medium-Low
- High
- Very High
- Hells Canyon National Recreation Area



UTM GRID AND 1987
MAGNETIC NORTH DECLINATION
AT CENTER OF OXBOW QUADRANGLE

Tech. Report E.5 - 3 Figure 45

Location and intensity of use for 145 sites identified in the HCNRA during use surveys in 1999-2000

1 .5 0 1 MILES

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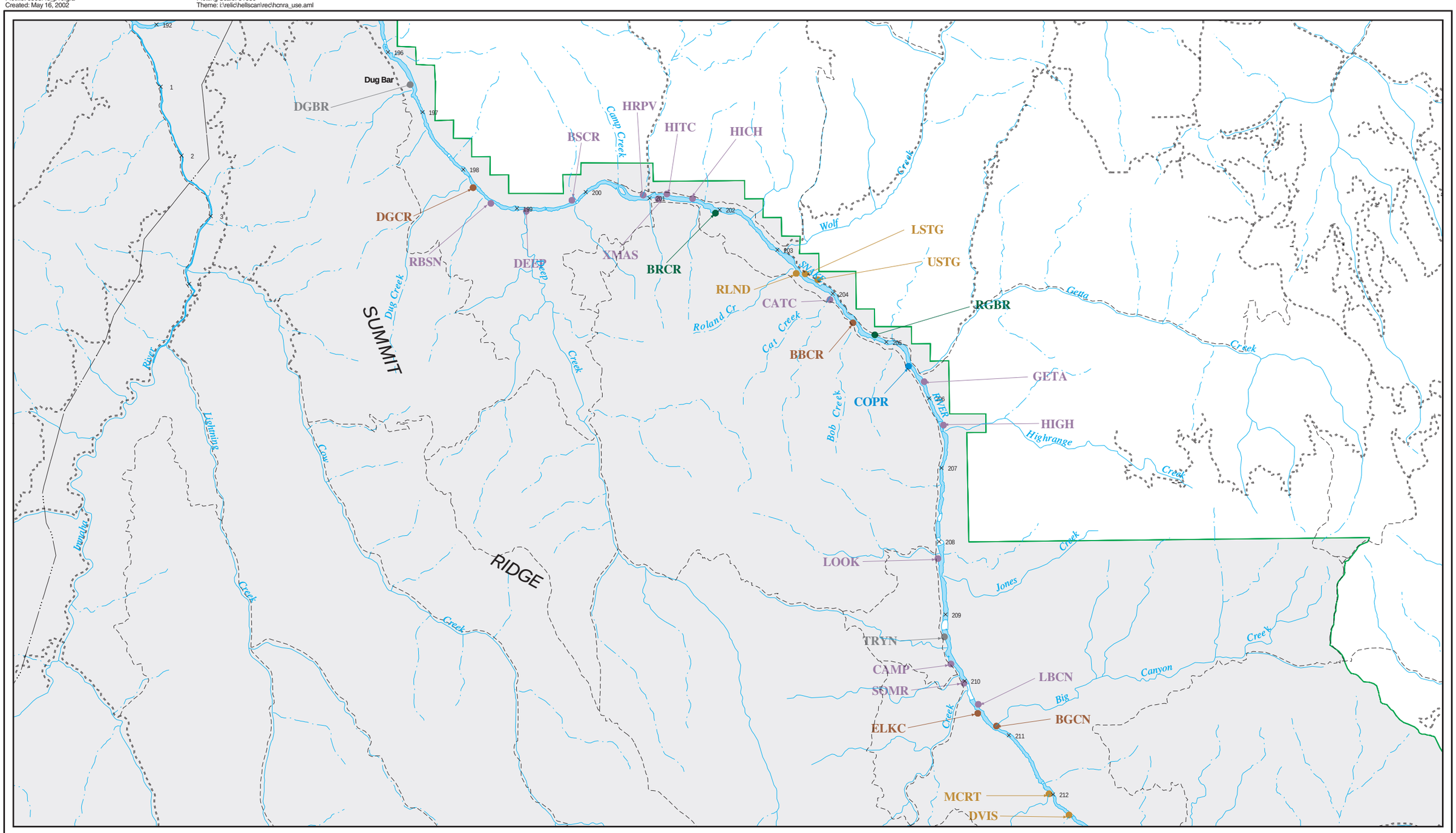
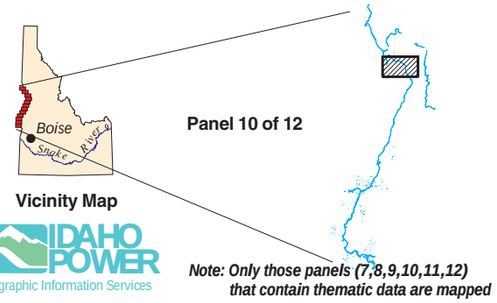




Panel 10 of 12

Vicinity Map

IDAHO POWER
Geographic Information Services

Note: Only those panels (7,8,9,10,11,12) that contain thematic data are mapped

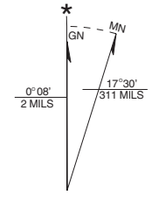
Base Features Legend

- Primary Route
- Secondary Route
- Light Duty Road
- Unimproved Road
- Trail
- Railroad
- Transmission Line
- Perennial River or Stream
- Intermittent River or Stream
- Ditch or Canal
- Water Body
- × River Mile

Thematic Features Legend

Intensity of Recreation Use

- None
- Very Low
- Low
- Medium
- Medium-Low
- High
- Very High
- Hells Canyon National Recreation Area



UTM GRID AND 1987
MAGNETIC NORTH DECLINATION
AT CENTER OF OXBOW QUADRANGLE

Tech. Report E.5 - 3 Figure 45

Location and intensity of use for 145 sites identified in the HCNRA during use surveys in 1999-2000

1 .5 0 1 MILES

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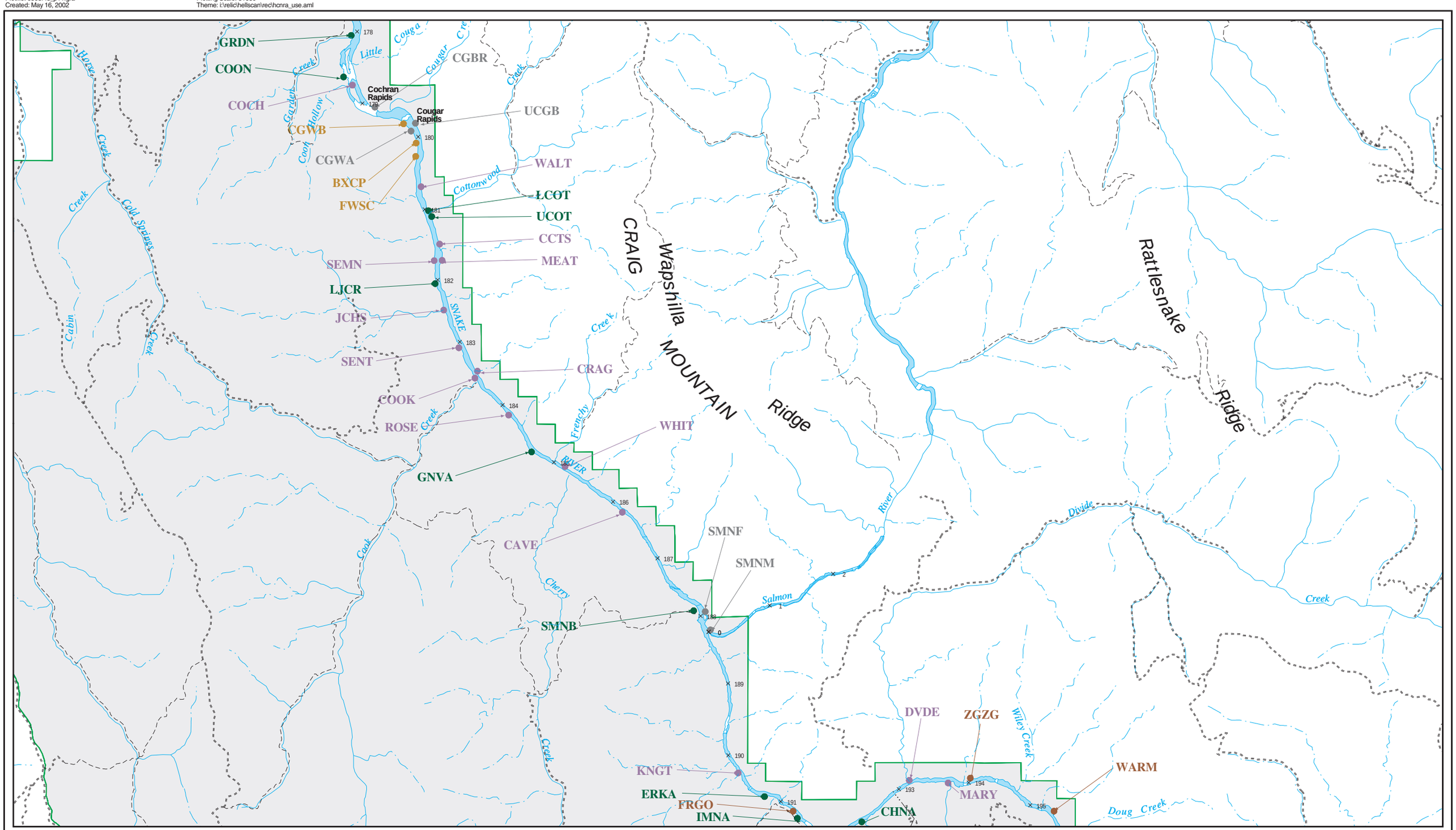
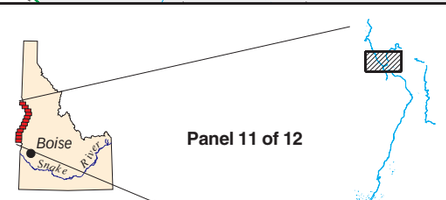




Vicinity Map

Panel 11 of 12

IDAHO POWER
Geographic Information Services

Note: Only those panels (7,8,9,10,11,12) that contain thematic data are mapped

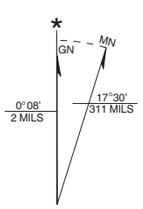
Base Features Legend

- Primary Route
- Secondary Route
- Light Duty Road
- Unimproved Road
- Trail
- Railroad
- Transmission Line
- Perennial River or Stream
- Intermittent River or Stream
- Ditch or Canal
- Water Body
- × River Mile

Thematic Features Legend

Intensity of Recreation Use

- None
- Very Low
- Low
- Medium
- Medium-Low
- High
- Very High
- Hells Canyon National Recreation Area



UTM GRID AND 1987
MAGNETIC NORTH DECLINATION
AT CENTER OF OXBOW QUADRANGLE

Tech. Report E.5 - 3 Figure 45

Location and intensity of use for 145 sites identified in the HCNRA during use surveys in 1999-2000

1 .5 0 1 MILES

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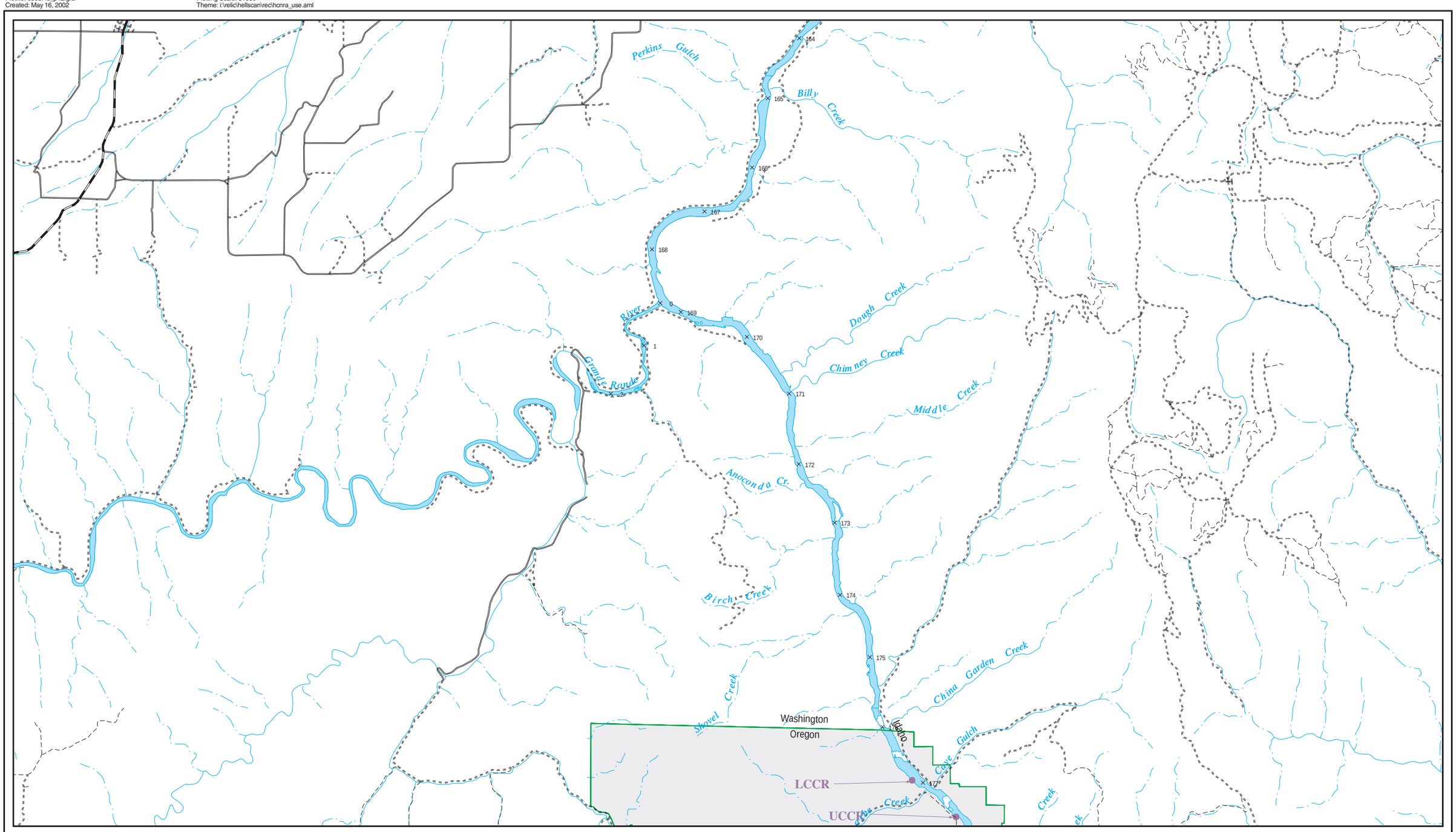
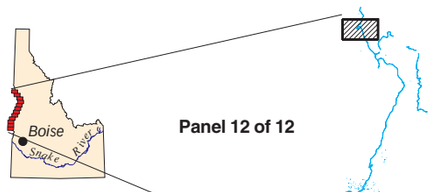




Vicinity Map

Panel 12 of 12

IDAHO POWER
Geographic Information Services

Note: Only those panels (7,8,9,10,11,12) that contain thematic data are mapped

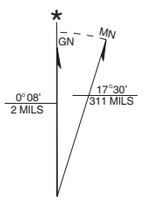
Base Features Legend

- Primary Route
- Secondary Route
- Light Duty Road
- Unimproved Road
- Trail
- Railroad
- Transmission Line
- Perennial River or Stream
- Intermittent River or Stream
- Ditch or Canal
- Water Body
- × River Mile

Thematic Features Legend

Intensity of Recreation Use

- None
- Very Low
- Low
- Medium
- Medium-Low
- High
- Very High
- Hells Canyon National Recreation Area



UTM GRID AND 1987
MAGNETIC NORTH DECLINATION
AT CENTER OF OXBOW QUADRANGLE

Tech. Report E.5 - 3 Figure 45

Location and intensity of use for 145 sites identified in the HCNRA during use surveys in 1999-2000

1 .5 0 1 MILES

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Appendix A. HCNRA boater registration form (USFS).

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WALLOWA-WHITMAN NATIONAL FOREST

Hells Canyon National Recreation Area
Snake River Permit/Manifest

A Signed Permit is Required For Each River Entry Into The HCNRA Year-Round

☐ Powerboat Wild River ☐ Powerboat Scenic River ☐ Powerboat Salmon River Access From Cache Creek/Day Use Only ☐ Float Launch: Wild _____ Scenic _____ ☐ Administrative ☐ Private Land Access

Powerboat Reservation/Confirmation No. _____ Float Trip No. _____ FS Rep Initials _____

This Permit Is Valid For The Period Between The Launch Date And The Takeout Date

Launch Date _____ Time _____ Location of Launch _____

Takeout Date _____ Location of Takeout _____

Snake River Destination (Power) _____ Total No. of People _____ (Power and Float) Total No. of Craft _____ (Float)

Lower Salmon River Destination (Power) _____ Powerboat Make _____ and State Registration No. _____

Commercial Float Outfitter _____

☐ DROP CAMP Location _____ No. of People _____
No. of Days _____ Transported by (Name) _____

A VALID RESERVATION/CONFIRMATION NUMBER IS REQUIRED FOR LAUNCH DURING THE PRIMARY SEASON AS FOLLOWS:
Wild River Use – 7 days per week (see back of permit for non-motorized information)
Scenic River Use—Friday, Saturday, Sunday, and Holiday Launches

WE, THE UNDERSIGNED, AGREED TO ABIDE BY ALL LAWS, RULES, REGULATIONS, AND TERMS AND CONDITIONS OF USE LISTED ON THE BACK OF THIS PERMIT APPLICABLE TO THE HELLS CANYON NATIONAL RECREATION AREA, WALLOWA-WHITMAN NATIONAL FOREST.

1. Trip Leader: Print Name _____ Signature _____
Address _____ Phone _____

	Signature	Zip Code
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

	Signature	Zip Code
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		
24.		

CONDITIONS OF USE

Primary Season - from the Friday preceding Memorial Day through September 10th
Secondary Season - from September 11th through the Thursday preceding Memorial Day

This permit is required for all non-commercial power and float boating, commercial floating and/or drop camps on the Wild and Scenic Snake River within the Hells Canyon National Recreation Area. The trip leader must have this permit in possession and display it upon request by any Forest Officer.

Possessing or operating rivercraft in violation of applicable State and Federal laws and regulations is prohibited.

MAXIMUM PARTY SIZE is 24 People.

FLOATCRAFT -

- Limit of 8 floatcraft per float party.
- Reservation identification tags are required and must be attached to and displayed by each floatcraft during the primary season.
- Floatcraft operators may have a "kicker" motor mounted on their craft, even during periods where powerboats are prohibited. Operation of the motor at any time on the Wild River section is PROHIBITED, except during emergencies.

BOAT REGISTRATION NUMBERS on motorized rivercraft must be displayed pursuant to State and Federal requirements year round. This includes floatcraft with kickers.

WILD RIVER NON-MOTORIZED PERIODS
Possessing or operating a motorized rivercraft is prohibited in the section of the Wild River between the top of Wild Sheep Rapids and the upper landing at Kirkwood Historic Ranch during the non-motorized periods. These periods are Monday-Tuesday-Wednesday beginning the first Monday in June and continuing every other week through the end of August. if the July 4th holiday falls in a non-motorized period, the non-motorized period will be the following week and every other week thereafter.

The use of NON-VALID RIVERCRAFT is not authorized. Information on the types of valid and non-valid rivercraft is posted at all river permit stations or call (509) 758-0616.

CAMPING -

- Primary Season:
  Wild River - Hells Canyon Dam to Upper Pittsburg Landing - Three Days and Two Nights per Campsite.
  Scenic River - Upper Pittsburg Landing to Cache Creek Adm. Site - Four Days and Three Nights per Campsite.
  Each party may not occupy more than one campsite per night.
  Camping at Upper Granite, Lower Granite or Saddle Creek is limited to one night per trip.
- Secondary Season
  Stay lengths of up to 14 days and 13 nights per campsite.

EQUIPMENT LEFT UNATTENDED for more than 24 hours without permission from a Forest Officer is not authorized.

LAUNCHING OF FLOATCRAFT WATERCRAFT FROM POWERBOATS, year-round in the Wild River and on Friday, Saturday or Sunday in the Scenic River is not authorized.

A PERSONAL FLOTATION DEVICE (PFD) is **REQUIRED** for each person on any rivercraft.

CHILDREN 12 years or younger are **REQUIRED** to wear a **PFD** at all times while rivercraft is under way.

USE OR DISPOSAL of soap, detergent or other pollutants in the river is not authorized.

SANITATION - All solid human waste must be carried out and disposed of as required by local regulations. All trips must be equipped with an approved carry-out system - RV dump station compatible or equipment indelibly marked with name, address, and phone number of party member. Strain waste water (dishwater) and dispose of at least 100 feet from the outer edge of campsite and river. You are required to pack out ail garbage.

Use **of FUEL ABSORPTION MATERIAL** is required during any on-river fueling operation.

Obey the **NO-WAKE ZONES** within 200 feet of developed recreation and administrative sites at Hells Canyon Creek, Kirkwood, Pittsburg Landing, Copper Creek, Dug Bar and Cache Creek.

DROP CAMPS are not authorized during the primary season unless transportation is provided by Commercial Outfitters. A permit must be completed for each drop camp location.

Any type of **COMMERCIAL ACTIVITY WITHOUT A SPECIAL USE AUTHORIZATION IS PROHIBITED**.

OPERATING ANY RIVERCRAFT IN A RECKLESS OR CARELESS MANNER or WHILE UNDER THE INFLUENCE OF INTOXICANTS IS PROHIBITED.

DISCHARGING A FIREARM or other instrument capable of causing death or injury within 150 yards of an occupied area, or in any manner or place where persons or property could be injured or damaged is prohibited.

POSSESSION AND/OR DISCHARGE OF FIREWORKS is prohibited.

CUTTING OR GATHERING ANY FIREWOOD within the river corridor is not authorized. **OPEN CAMPFIRES** are prohibited. **FIREPANS** are required to contain camp and/or cooking fires year-round. Use of wood for fuel is prohibited from July 1 through September 15. All ashes and other fire residue must be packed out.

The Forest Service cooperates with States and Counties in the enforcement of all applicable laws, including laws pertaining to boating safety.

Appendix B. On-site survey questionnaire used during HCNRA surveys. Questionnaires used at other portals were identical except for initial location reference.

***PLEASE NOTE**- These questions pertain to your trip in the Hells Canyon National Recreation Area only.
(HCNRA is the Snake River corridor from here to about 70 miles downstream, see map.)

1. Have you been on the Snake River in the HCNRA before **this trip**? ❑ YES ❑ NO

2. Which one of the following *best* describes your type of transportation while in the HCNRA on **this trip**?
❑ FLOAT BOAT ❑ FOOT ❑ HORSEBACK ❑ CAR/RECREATION VEHICLE
❑ MOTORIZED BOAT ❑ OTHER (PLEASE DESCRIBE):_____.

3. Is **this trip** a commercial/guided trip or a private trip? *(Check only one.)* ❑ COMMERCIAL ❑ PRIVATE

4. How many days will you be in the HCNRA on **this trip**? ____DAYS
(Count part of a day as 1 day, and don't count time spent in the reservoirs above Hells Canyon Dam.)

5. What activities will you be participating in on **this trip** to the HCNRA? *(Check all that apply.)*
❑ RAFTING ❑ KAYAKING ❑ WILDLIFE VIEWING ❑ VISITING CULTURAL/HISTORIC SITES
❑ PHOTOGRAPHY ❑ PICNICKING ❑ JET BOATING ❑ PACKING STOCK ANIMALS
❑ HIKING ❑ HUNTING ❑ POWER BOATING (PROP) ❑ CAMPING
❑ SWIMMING ❑ FISHING ❑ SIGHTSEEING ❑ OTHER (DESCRIBE):

6. If you plan to fish, please check each of your targeted species on **this trip**: ❑ I DON'T PLAN TO FISH
❑ STEELHEAD ❑ TROUT ❑ STURGEON ❑ OTHER (PLEASE LIST):_____

7. If you plan to hunt, please check each type of hunting you will do on **this trip**: ❑ I DON'T PLAN TO HUNT
❑ UPLAND GAME BIRD ❑ WATERFOWL ❑ BIG GAME ❑ SMALL GAME
❑ OTHER (PLEASE LIST):_____

8. Are you ❑ MALE ❑ FEMALE?

9. What is the highest level of formal education you have completed? *(Please circle one number.)*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21+

ELEMENTARY THROUGH HIGH SCHOOL COLLEGE THROUGH GRADUATE SCHOOL

10. May we contact you for more information about your stay in the HCNRA? ❑ YES ❑ NO

(You get a second chance to win a $3,000 trip package if you complete the follow-up survey!)

Please provide your name, address and phone number. This information will be used for the recreational-use studies only and will not be given out. ***Even if you do not want to be contacted for more information, it is important that you include your name, address, and phone number so we can contact you if you win one of the $3,000 HCNRA trip packages. THANK YOU!***

NAME_____ **TELEPHONE NUMBER**

ADDRESS _____ _____

CITY_____ **STATE** _____ **ZIP** _____

For clerk's use only: Survey Clerk:_____ Date:_____ Time(MST):_____ Location: PL CC HCC
If jet boating, first time launching on this permit?_____
HC Creek 6/7/99

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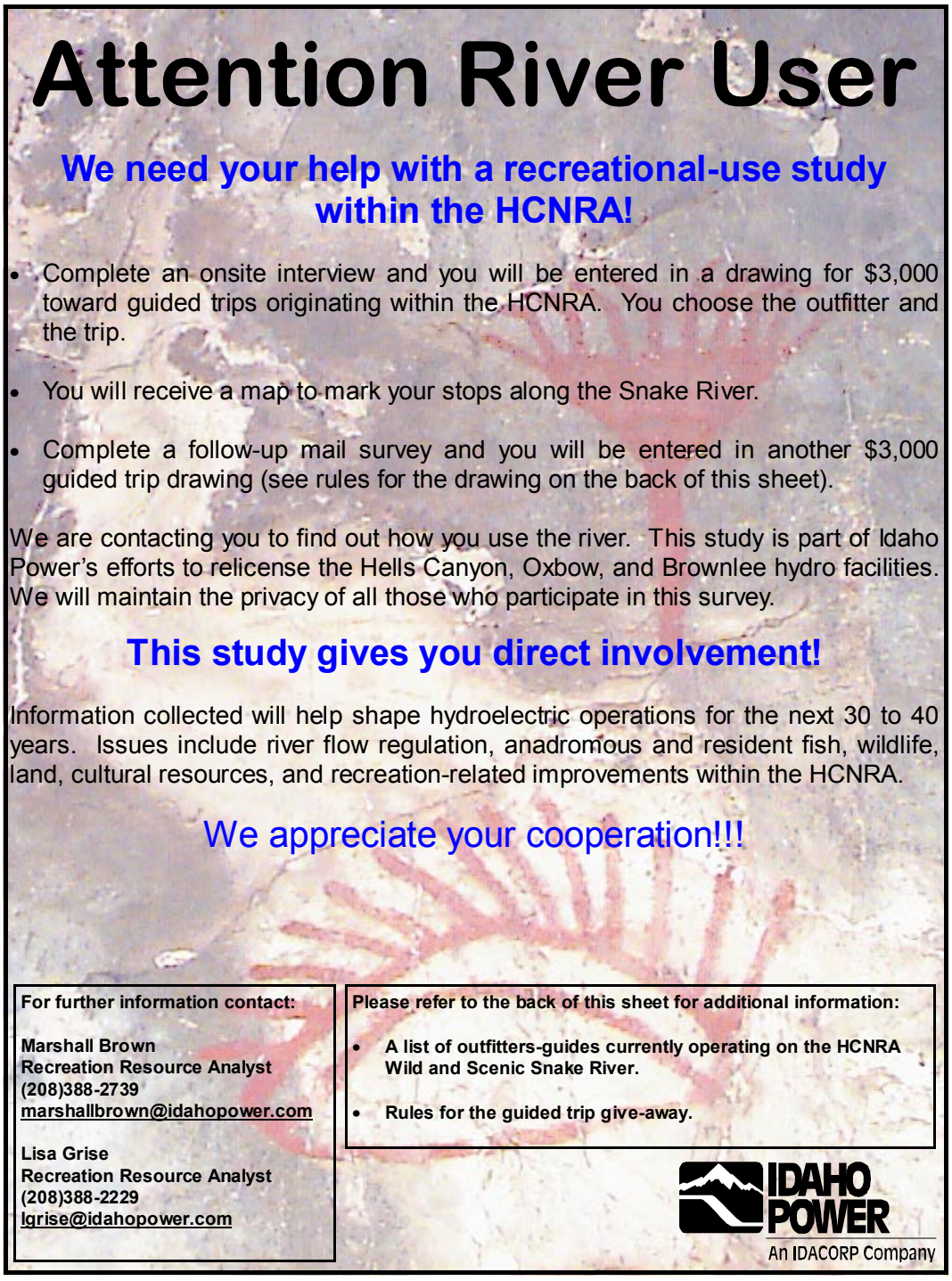
Appendix C. Front of flier explaining IPC HCNRA on-site and mail survey.



Attention River User

We need your help with a recreational-use study within the HCNRA!

- Complete an onsite interview and you will be entered in a drawing for $3,000 toward guided trips originating within the HCNRA. You choose the outfitter and the trip.
- You will receive a map to mark your stops along the Snake River.
- Complete a follow-up mail survey and you will be entered in another $3,000 guided trip drawing (see rules for the drawing on the back of this sheet).

We are contacting you to find out how you use the river. This study is part of Idaho Power's efforts to relicense the Hells Canyon, Oxbow, and Brownlee hydro facilities. We will maintain the privacy of all those who participate in this survey.

This study gives you direct involvement!

Information collected will help shape hydroelectric operations for the next 30 to 40 years. Issues include river flow regulation, anadromous and resident fish, wildlife, land, cultural resources, and recreation-related improvements within the HCNRA.

We appreciate your cooperation!!!

For further information contact:

Marshall Brown
Recreation Resource Analyst
(208)388-2739
marshallbrown@idahopower.com

Lisa Grise
Recreation Resource Analyst
(208)388-2229
lgrise@idahopower.com

Please refer to the back of this sheet for additional information:

- **A list of outfitters-guides currently operating on the HCNRA Wild and Scenic Snake River.**
- **Rules for the guided trip give-away.**

IDAHO POWER
An IDACORP Company

Appendix C. (Cont.) Raffle rules from back of flier explaining IPC HCNRA on-site and mail survey.

Rules for the Outfitted Trip Give-away

Participants must be 18 or older; must be contacted by an Idaho Power Company (IPC) employee or person assisting with the IPC Recreational-use Survey while visiting the HCNRA for recreational purposes; must agree to provide requested information about their visit to the HCNRA; must provide their name and address on the questionnaire provided onsite by the IPC surveyor.

A total of 4 trip packages each valued at $3000 will be given away over the course of the one year study from January 1, 1999 through January 31, 2000. Participants who complete the initial questionnaire during the period from January 1, 1999 through July 15, 1999 will be entered into the first drawing for a $3000 trip package. Those participants who are contacted for a follow-up mail questionnaire and return a completed questionnaire in the period from January 1, 1999 through July 15, 1999 will be included in a second drawing for a $3000 trip package.

Participants who complete the initial questionnaire in the period from July 16, 1999 through December 31, 1999 will be entered into a third drawing for a $3000 trip package. Those participants who are contacted for a follow-up mail questionnaire and return a completed questionnaire in the period from July 16, 1999 through January 31, 2000 will be included in a forth drawing for a $3000 trip package.

Each trip package is valued at $3000. Winners must use the trip package by December 31, 2000; must use an outfitter/guide permitted by the USFS (see list on back of sheet) to provide recreational trips within the HCNRA; must choose from any trip or combination of trips offered for up to $3000 that originate within the HCNRA.

Idaho Power will not be liable for any accidents or injuries that may result from use of any prize connected with this offer.

Appendix D. Questionnaire mailed to participants in 1999 IPC HCNRA mail survey. Interviewees who indicated during on-site interviews that they would not be fishing or hunting during their trips received versions without fishing or hunting sections.

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In the following questions, "**this trip**" refers to your recent trip to the Hells Canyon National Recreation Area (HCNRA), when you were interviewed. The **HCNRA** refers to the 68 miles along the Snake River from Hells Canyon Dam downstream to the Washington/Oregon border (see map on opposite page).

A. Questions about your trip.

1. How many total days did you spend in the HCNRA on **this trip**? *(Count part of a day as 1 day.)*
   _____ DAYS

2. Was the HCNRA your primary destination on **this trip**? *(Check one.)*
   ❑ NO
   ❑ YES

3. Which <u>one</u> of the following best describes your type of transportation while in the HCNRA **on this trip**? *(Check one.)*
   ❑ FLOAT BOAT ❑ FOOT ❑ HORSEBACK ❑ CAR/RECREATION VEHICLE
   ❑ MOTORIZED BOAT (Length? _____ft.) ❑ OTHER (PLEASE DESCRIBE):_____.

4. Was **this trip** a commercial/guided trip or a private trip? *(Check only one.)*
   ❑ COMMERCIAL
   ❑ PRIVATE

5. Including yourself, how many people and boats were in your party on **this trip**? (If you were on a commercial/guided trip, include everyone in your tour group.)
   _____ PEOPLE _____BOATS

6. On **this trip**, who was with you in the HCNRA? *(Check all that apply.)*
   ❑ NO ONE ❑ FAMILY
   ❑ FRIENDS ❑ TOUR GROUP/OUTFITTER (NAME OF GROUP/OUTFITTER: _____.)

7. What activities did you, personally, do on **this trip** to the HCNRA? *(Check all that apply.)*

❑ RAFTING	❑ KAYAKING	❑ WILDLIFE VIEWING	❑ VISITING CULTURAL/HISTORIC SITES
❑ PHOTOGRAPHY	❑ PICNICKING	❑ JET BOATING	❑ SIGHTSEEING
❑ HIKING	❑ HUNTING	❑ POWER BOATING (PROP)	❑ CAMPING
❑ SWIMMING	❑ FISHING	❑ PACKING STOCK ANIMALS	❑ OTHER _____

8. What were <u>your</u> three most important activities from the list above? *(If you participated in less than three, just rank the activities you did.)*

   MOST IMPORTANT ACTIVITY _____

   2ND MOST IMPORTANT ACTIVITY _____

   3RD MOST IMPORTANT ACTIVITY _____

9. How would you rate the HCNRA <u>compared to similar areas</u> for each of your most important activities*? (Circle one number on the scale for each activity, or "not sure".)*

	WORST					SAME				BEST	
MOST IMPORTANT ACTIVITY	1	2	3	4	5	6	7	8	9	10	NOT SURE
2ND MOST IMPORTANT ACTIVITY	1	2	3	4	5	6	7	8	9	10	NOT SURE
3RD MOST IMPORTANT ACTIVITY	1	2	3	4	5	6	7	8	9	10	NOT SURE

B. Places you visited while in the HCNRA and the surrounding Hells Canyon Area.

1. Which of the following sections in the HCNRA did you visit on **this trip**? *(Refer to map if necessary. Check all that apply.*

- ❑ Hells Canyon Dam to Wild Sheep Rapids—*river mile 247 to 241 on map page 3.*
- ❑ Wild Sheep Rapids to Rush Creek Rapids—*river mile 241 to 231 on map pages 3-7.*
- ❑ Rush Creek Rapids to Kirkwood Ranch—*river mile 231 to 220 on map pages 7-11.*
- ❑ Kirkwood Ranch to Pittsburgh Landing—*river mile 220 to 215 on map pages 11-13.*
- ❑ Pittsburgh Landing to Salmon River confluence—*river mile 215 to 188 on map pages 13-17.*
- ❑ Salmon River confluence to Cache Creek Admin. Site—*river mile 188 to 177 on map pages 17-21.*
- ❑ Salmon River upstream of the confluence.
- ❑ Trails or roads between the river corridor and canyon rim on the Oregon side of river.
- ❑ Trails or roads between the river corridor and canyon rim on the Idaho side of river.

Or….

- ❑ I'm not sure which areas I visited.

2. During **this trip**, did you spend one or more nights within the HCNRA? *(Check one.)*
   - ❑ NO ➨ **SKIP TO PAGE 3, QUESTION 6.**
   - ❑ YES

3. Do you remember where you stayed? *(Check one.)*
   - ❑ NO ➨ **SKIP TO PAGE 3, QUESTION 6.**
   - ❑ YES

4. Please give the name of each site where you stayed in the HCNRA on **this trip**, the state it was in, and the number of nights you stayed there. *(If you can't remember the name, please describe the location as best you can.)*

Name (or description) of site	River Mile	Side of River (Oregon or Idaho)	Number of Nights
_____	_____	OR ID	_____
_____	_____	OR ID	_____
_____	_____	OR ID	_____
_____	_____	OR ID	_____
_____	_____	OR ID	_____

5. During **this trip**, did you spend the night at a site in the HCNRA that was not listed on the map? *(Check one.)*
   - ❑ NO
   - ❑ YES
   - ❑ NOT SURE

B. Places you visited while in the HCNRA and the surrounding Hells Canyon Area. (Continued)

6. During **this trip**, did you spend one or more nights outside the HCNRA, but in the Hells Canyon Area? *(Check one.)*

- ❑ NO ➨ **SKIP TO QUESTION 8.**
- ❑ YES

7. Please give the name of each place where you stayed outside the HCNRA, the state it was in, and the number of nights you stayed there. *(If you can't remember the name, please describe the location as best you can.)*

Name (or description) of place	State: Oregon, Idaho, or Washington			Number of Nights
_____	OR	ID	WA	_____
_____	OR	ID	WA	_____
_____	OR	ID	WA	_____
_____	OR	ID	WA	_____

8. Other than the sites where you stayed overnight, on **this trip** did you stop at any other sites, areas, or facilities in the Hells Canyon Area that were an important part of your recreational experience? *(Check one.)*

- ❑ NO ➨ **SKIP TO QUESTION 10.**
- ❑ YES

9. Please give the name of each site, the state it was in, and the primary activity(s) you did while there. *(Refer to map. If you can't remember the name, please describe the location as best you can.)*

Name (or description) of site / facility / area	State: Oregon, Idaho, or Washington			Activity(s)
_____	OR	ID	WA	_____
_____	OR	ID	WA	_____
_____	OR	ID	WA	_____
_____	OR	ID	WA	_____

10. Were there any recreational sites, areas or facilities in the Hells Canyon Area that you particularly **disliked**?

- ❑ NO ➨ **SKIP TO PAGE 4, QUESTION 1.**
- ❑ YES

11. Please identify the site(s) and why you disliked it/them.

Name (or description) of site / facility / area	Reason(s) you disliked it…
_____	_____
_____	_____
_____	_____
_____	_____

C. Questions about recreational opportunities, sites, and facilities in the HCNRA.

1. How does the HCNRA compare to other river areas where you recreate? *(Check one.)*
   - ❑ IT IS MY FAVORITE RIVER AREA TO VISIT.
   - ❑ IT IS ONE OF MY FAVORITE RIVER AREAS TO VISIT.
   - ❑ IT IS NOT ONE OF MY FAVORITE RIVER AREAS.
   - ❑ I'M NOT SURE.

2. If you had the opportunity, would you take a trip to the HCNRA again? *(Check one.)*
   - ❑ DEFINITELY YES. ➨ **SKIP TO QUESTION 4.**
   - ❑ PROBABLY YES.
   - ❑ PROBABLY NOT.
   - ❑ DEFINITELY NOT.
   - ❑ I'M NOT SURE.

3. Please describe the things about your trip to the HCNRA that would keep you from returning in the future.

   _____

   _____

4. We would like to know how you feel about the amount and type of recreation facilities in the HCNRA. For each of the following facilities, please tell us whether you think that presently there is the right amount of development, too much development, or if more is needed. *(Check one answer for each type of facility.)*

	Right Amount	Too Much	Need More	Not Sure
Information and interpretation signs and displays	❑	❑	❑	❑
Human waste disposal facilities at take-outs	❑	❑	❑	❑
Vehicle parking at launch sites	❑	❑	❑	❑
Campground facilities at put-in/take-out sites	❑	❑	❑	❑
Boat ramp facilities at the Hells Canyon Creek launch	❑	❑	❑	❑
Boat ramp facilities at the Pittsburgh Landing	❑	❑	❑	❑
Boat ramp facilities at Dug Bar	❑	❑	❑	❑
Information about regulations at launches	❑	❑	❑	❑
Other (describe):	❑	❑	❑	❑
Other (describe):	❑	❑	❑	❑

D. Questions about campsites.

1. Have you ever used one or more campsites in the HCNRA? *(Check one.)*
   - ❑ NO ➨ **SKIP TO PAGE 6, QUESTION 1.**
   - ❑ YES

2. How important are each of the following features when choosing a **campsite in the HCNRA**? *(Circle one number for each feature.)*

Features	I don't consider it when choosing a site	It's nice to have if available	It's important for a high quality experience	It's absolutely necessary	I'm Not Sure
A. a flat area for sleeping	1	2	3	4	5
B. out of sight and sound of others	1	2	3	4	5
C. a good view of river	1	2	3	4	5
D. an outhouse nearby	1	2	3	4	5
E. a good view of surrounding landscape	1	2	3	4	5
F. close to the river	1	2	3	4	5
G. close to stream, creek, or spring	1	2	3	4	5
H. little evidence of prior use	1	2	3	4	5
I. a picnic table	1	2	3	4	5
J. easy access to unload gear	1	2	3	4	5
K. a good kitchen setup area	1	2	3	4	5
L. sheltered from wind and rain	1	2	3	4	5
M. no evidence of livestock	1	2	3	4	5
N. close to trails for hiking	1	2	3	4	5
O. gets evening sun	1	2	3	4	5
P. gets morning sun	1	2	3	4	5
Q. close to good fishing	1	2	3	4	5
R. trees or rocks for shade	1	2	3	4	5
S. a good location for portable toilet	1	2	3	4	5
T. a sandy beach for sleeping	1	2	3	4	5
U. a sandy beach for playing	1	2	3	4	5
V. few weeds	1	2	3	4	5
W. no problems from river level changes	1	2	3	4	5
X. a good boat landing area	1	2	3	4	5
Y. other (describe):	1	2	3	4	5

3. Which is the <u>most important feature</u> from the list above for camping in the HCNRA? *(Give the letter from the list of features in question 2.)*
   The most important feature is letter _____.

4. Please describe any problems associated with campsites you used in the HCNRA. _____

   _____

   _____

E. Questions about Crowding

1. Overall, how crowded did you feel during **this trip** in the HCNRA? *(Circle one number.)*

1----------	**2**----------	**3** ----------	**4**----------	**5**----------	**6** ----------	**7**----------	**8**----------	**9**
NOT AT ALL CROWDED		SLIGHTLY CROWDED		MODERATELY CROWDED			EXTREMELY CROWDED	

2. If you felt the river was at all crowded during **this trip**, could you tell us where and why you felt crowded? **(SKIP THIS QUESTION IF YOU CIRCLED "1" ABOVE.)**

Location	Reason for feeling crowded
_____	_____
_____	_____
_____	_____

3. How would you rate the overall acceptability of the number of people you encountered on **this trip** in the HCNRA*?* *(Check one.)*

❑ TOTALLY ACCEPTABLE ❑ SOMEWHAT ACCEPTABLE ❑ NEUTRAL ❑ SOMEWHAT UNACCEPTABLE ❑ TOTALLY UNACCEPTABLE ❑ NOT SURE

4. We would like to know if you had a problem with encounters with other individuals or groups while visiting the HCNRA. *(Check one answer for each encounter listed below.)*

ENCOUNTERS WITH:	**DID NOT ENCOUNTER**	**DID ENCOUNTER AND IT WAS:** Not a Problem	Minor Problem	Major Problem
Float boats on the river	❑	❑	❑	❑
Power boats on the river	❑	❑	❑	❑
Repeated contact with the same group	❑	❑	❑	❑
Loud or rowdy people along the river bank	❑	❑	❑	❑
Other people at the put-in or take-out	❑	❑	❑	❑
People on shore at major rapids	❑	❑	❑	❑
Noise from powerboats	❑	❑	❑	❑
Inconsiderate boaters	❑	❑	❑	❑
Large groups of people	❑	❑	❑	❑
Noise from float boaters	❑	❑	❑	❑
People swimming through the rapids	❑	❑	❑	❑
Other people near your campsite	❑	❑	❑	❑
People carrying or using firearms	❑	❑	❑	❑
Parties with large numbers of boats	❑	❑	❑	❑
Other (describe): _____	❑	❑	❑	❑

F. Questions about flow levels.

1. Did you know how to obtain flow information for the Snake River when you planned your trip? *(Check one.)*
   - ❑ NO
   - ❑ YES

2. Did you or someone in your group obtain flow information before you left on your trip? *(Check one.)*
   - ❑ NO ➨ **SKIP TO QUESTION 4.**
   - ❑ NOT SURE ➨ **SKIP TO QUESTION 4.**
   - ❑ YES

3. What sources did you or someone in your group use to obtain flow information? *(Check all that apply.)*
   - ❑ IDAHO POWER TOLL-FREE RECREATION HOTLINE
   - ❑ IDAHO POWER INTERNET SITE
   - ❑ USGS INTERNET SITE
   - ❑ US FOREST SERVICE
   - ❑ IDAHO WATER RESOURCES FLOW PHONE
   - ❑ IDAHO WATER RESOURCES INTERNET SITE
   - ❑ OTHER (DESCRIBE):_____
   - ❑ NOT SURE

4. How did river flows influence **this trip** to the HCNRA? *(Check all that apply.)*
   - ❑ FLOWS DID NOT INFLUENCE MY TRIP.
   - ❑ FLOWS WERE A MAJOR FACTOR FOR DECIDING WHETHER I TOOK THE TRIP.
   - ❑ FLOWS WERE ONE OF THE FACTORS I CONSIDERED IN DECIDING WHETHER TO TAKE THE TRIP.
   - ❑ FLOWS INFLUENCED WHEN I CHOSE TO GO ON THE TRIP.
   - ❑ FLOWS INFLUENCED WHAT TYPE OF CRAFT I USED.
   - ❑ FLOWS INFLUENCED HOW I RAN THE RAPIDS.
   - ❑ OTHER (DESCRIBE):_____
   - ❑ NOT SURE

5. Did you notice a water level or flow change during **this trip** in the HCNRA? *(Check one.)*
   - ❑ NO ➨ **SKIP TO QUESTION 9.**
   - ❑ YES

6. What made you aware of the water level or flow change?_____

   _____

7. During **this trip** to the HCNRA, did fluctuating water levels/flows cause any problems for you? *(Check one.)*
   - ❑ NO PROBLEM
   - ❑ A MINOR PROBLEM
   - ❑ A MAJOR PROBLEM, BUT IT WOULD NOT KEEP ME FROM RETURNING IN THE FUTURE
   - ❑ A MAJOR PROBLEM THAT WOULD KEEP ME FROM RETURNING IN THE FUTURE
   - ❑ NOT SURE

8. If fluctuating water levels/flows were a problem, please explain why:_____

   _____

   _____

F. Questions about flow levels. (Continued)

9. Given the highest flow levels you had during **this trip**, how would you rate the acceptability of those flows for the activities you participated in during your trip? *(Check one.)*
   - ❑ TOTALLY ACCEPTABLE
   - ❑ SOMEWHAT ACCEPTABLE
   - ❑ NEUTRAL
   - ❑ SOMEWHAT UNACCEPTABLE
   - ❑ TOTALLY UNACCEPTABLE
   - ❑ NOT SURE

10. Given the lowest flow levels you had during **this trip**, how would you rate the acceptability of those flows for the activities you participated in during your trip? *(Check one.)*
   - ❑ TOTALLY ACCEPTABLE
   - ❑ SOMEWHAT ACCEPTABLE
   - ❑ NEUTRAL
   - ❑ SOMEWHAT UNACCEPTABLE
   - ❑ TOTALLY UNACCEPTABLE
   - ❑ NOT SURE

11. Do you have a minimum flow level for the activities you participated in on **this trip**? *(Check one.)*
   - ❑ NO ➨ **SKIP TO QUESTION 13.**
   - ❑ NOT SURE ➨ **SKIP TO QUESTION 13.**
   - ❑ YES

12. I would not go on the trip unless the flow was above _____ cfs.

13. Do you have an ideal flow level for the activities you participated in on **this trip**? *(Check one.)*
   - ❑ NO ➨ **SKIP TO PAGE 9, QUESTION 1.**
   - ❑ NOT SURE ➨ **SKIP TO PAGE 9, QUESTION 1.**
   - ❑ YES

14. An ideal flow is _____ cfs.

15. An ideal flow range is from _____ cfs to _____ cfs.

G. Questions about fishing.

1. Did you fish during **this trip** to the HCNRA? *(Check one.)*
   - ❑ NO ➨ **SKIP TO PAGE 13, QUESTION 1.**
   - ❑ YES

2. Did you use a paid fishing guide during **this trip** to the HCNRA? *(Check one.)*
   - ❑ NO ❑ YES

3. Did you fish from a boat, from shore, or from both during **this trip**? *(Check one.)*
   - ❑ BOAT ❑ SHORE ❑ BOTH

4. What type of fishing license/permits/stamp did you have for **this trip**? *(Check all that apply.)*
   - ❑ IDAHO RESIDENT ❑ OREGON RESIDENT ❑ ANNUAL LICENSE ❑ STURGEON STAMP
   - ❑ IDAHO NON-RESIDENT ❑ OREGON NON-RESIDENT ❑ SHORT-TERM LICENSE ❑ STEELHEAD STAMP
   - ❑ NO LICENSE

5. What type of fishing gear / terminal tackle did you use during **this trip**? *(Check all that apply.)*

TYPE OF GEAR	TYPE OF TERMINAL TACKLE
❑ SPINNING (OPEN FACED)	❑ PLUGS
❑ CASTING (PUSH BUTTON, CLOSED FACE)	❑ SOFT-BODIED LURES
❑ BAITCASTING (FREE SPOOL TYPE)	❑ SPINNERS
❑ FLY	❑ CUT, LIVE, OR DEAD BAIT
❑ OTHER (PLEASE LIST):	❑ FLIES
	❑ OTHER _____

If you can't remember exact numbers for the following questions, please give your best estimate.

6. During **this trip** in the HCNRA, how many days did you actually fish during some part of the day? _____DAYS

7. Please estimate the total number of hours you spent fishing during **this trip** to the HCNRA. _____HOURS

8. Please circle yes or no to indicate which type of fish you fished for during **this trip.** Then for each fish type, estimate the number of hours you spent fishing.

Fish Type	Did you fish for this type of fish?	How many hours did you spend?
No specific type ("just fishing")	Yes or No	_____
White Sturgeon	Yes or No	_____
Steelhead	Yes or No	_____
Trout	Yes or No	_____
Bass	Yes or No	_____
Crappie	Yes or No	_____
Catfish	Yes or No	_____
Other:	Yes or No	_____
Other:	Yes or No	_____

G. Questions about fishing. (Continued)

9. Considering only the fishing portion of your trip, please rate the importance to you of fishing for the types of fish listed below. **Rate only those types of fish you actually fished for during this trip** *(Circle one number for each.).*

	Less Important				More Important
No specific type ("just fishing")	1	2	3	4	5
White Sturgeon	1	2	3	4	5
Steelhead	1	2	3	4	5
Trout	1	2	3	4	5
Bass	1	2	3	4	5
Crappie	1	2	3	4	5
Catfish	1	2	3	4	5
Other:	1	2	3	4	5
Other:	1	2	3	4	5

10. How many fish did you catch during **this trip** in the HCNRA?

	Number of Fish Released	Number of Fish Kept
White Sturgeon	_____	_____
Steelhead	_____	_____
Trout	_____	_____
Bass	_____	_____
Crappie	_____	_____
Catfish	_____	_____
Other:	_____	_____
Other:	_____	_____

11. If you caught sturgeon during **this trip** to the HCNRA, please record the number of fish in each of the following length categories:

_____ STURGEON, 0 TO 3 FEET
_____ STURGEON, 3 TO 6 FEET
_____ STURGEON, 6 TO 9 FEET
_____ STURGEON, OVER 9 FEET

12. On a scale of one to ten, please rate your overall fishing success during **this trip** to the HCNRA. *(Circle one number or not sure.)*

POOR EXCELLENT

1 2 3 4 5 6 7 8 9 10 NOT SURE

13. On a scale of one to ten, please rate the HCNRA compared to similar areas that you fish. *(Circle one number or not sure.)*

WORST SAME BEST

1 2 3 4 5 6 7 8 9 10 NOT SURE

H. Questions about hunting.

1. Did you hunt during **this trip** to the HCNRA?

   ❑ NO ❑ YES ➨ **IF NO, SKIP TO PAGE 13, QUESTION 1.**

If you can't remember or don't know exact answers for the following questions, please give your best estimate.

2. Did you use a paid hunting guide/outfitter during **this trip** to the HCNRA?

   ❑ NO ❑ YES

3. What type of hunting license(s) did you have for **this trip**? *(Check all that apply.)*

   ❑ IDAHO RESIDENT ❑ OREGON RESIDENT ❑ ANNUAL LICENSE ❑ NO LICENSE
   ❑ IDAHO NON-RESIDENT ❑ OREGON NON-RESIDENT ❑ SHORT-TERM LICENSE

4. What type of hunting weapon did you use during **this trip**? *(Check all that apply.)*

   ❑ BOW ❑ MUZZLE LOADER ❑ SHOTGUN
   ❑ CENTERFIRE RIFLE ❑ RIMFIRE ❑ OTHER (PLEASE LIST) _____

5. During **this trip** to the HCNRA, how many days did you actually hunt during some part of the day? _____DAYS

6. Where did you hunt in relation to the Snake River? *Please check each of the following that apply to hunting during **this trip**.*

   ❑ I HUNTED THE RIVER AND ITS IMMEDIATE BANKS
   ❑ I HUNTED IN AN AREA LESS THAN ONE-FOURTH MILE FROM THE SNAKE RIVER
   ❑ I HUNTED IN AN AREA BETWEEN ONE-FOURTH MILE AND TWO MILES FROM THE SNAKE RIVER
   ❑ I HUNTED IN AN AREA GREATER THAN 2 MILES FROM THE SNAKE RIVER

7. Which of the following sections in the HCNRA did you hunt in during **this trip**? *(Refer to map if necessary. Check all that apply. If you only hunted in one location, check the section that includes that location.)*

   ❑ HELLS CANYON DAM TO WILD SHEEP RAPIDS—*RIVER MILE 247 TO 241 ON MAP PAGE 3.*
   ❑ WILD SHEEP RAPIDS TO RUSH CREEK RAPIDS—*RIVER MILE 241 TO 231 ON MAP PAGES 3-7.*
   ❑ RUSH CREEK RAPIDS TO KIRKWOOD RANCH—*RIVER MILE 231 TO 220 ON MAP PAGES 7-11.*
   ❑ KIRKWOOD RANCH TO PITTSBURGH LANDING—*RIVER MILE 220 TO 215 ON MAP PAGES 11-13.*
   ❑ PITTSBURGH LANDING TO SALMON RIVER CONFLUENCE—*RIVER MILE 215 TO 188 ON MAP PAGES 13-17.*
   ❑ SALMON RIVER CONFLUENCE TO CACHE CREEK ADMIN. SITE—*RIVER MILE 188 TO 177 ON MAP PAGES 17-21.*
   ❑ SALMON RIVER UPSTREAM OF THE CONFLUENCE.
   ❑ TRAILS OR ROADS BETWEEN THE RIVER CORRIDOR AND CANYON RIM ON THE OREGON SIDE OF RIVER.
   ❑ TRAILS OR ROADS BETWEEN THE RIVER CORRIDOR AND CANYON RIM ON THE IDAHO SIDE OF RIVER.

   OR

   ❑ I'M NOT SURE WHICH AREAS I VISITED.

8. If applicable, was this a controlled or general season hunt? *(Check one.)*

   ❑ NOT APPLICABLE ❑ CONTROLLED ❑ GENERAL

H. Questions about hunting (Continued)

9. Please circle yes or no to indicate the species you hunted for during **this trip**. If the species you hunted for is not listed, please write it/them in where indicated. Additionally, please give the number of days in **this trip** during which you hunted for each species and the number harvested. *(Count part of a day as 1 day.)*

Species	**Targeted** *(please circle Yes or No)*	**Number of days during which you hunted for this species**	**Number harvested**
ELK	YES NO	_____ DAYS	( )
MULE DEER	YES NO	_____ DAYS	( )
WHITE TAIL DEER	YES NO	_____ DAYS	( )
CHUCKAR	YES NO	_____ DAYS	( )
QUAIL	YES NO	_____ DAYS	( )
DOVE	YES NO	_____ DAYS	( )
HUNGARIAN PARTRIDGE	YES NO	_____ DAYS	( )
WATERFOWL (*PLEASE LIST SPECIES TARGETED BELOW*)	YES NO	_____DAYS	
			( )
			( )
			( )
			( )
			( )
OTHER SPECIES TARGETED (*PLEASE LIST BELOW*)	YES NO		
		_____DAYS	( )
		_____DAYS	( )
		_____DAYS	( )
		_____DAYS	( )

10. Which state did you hunt in during **this trip**? *(Please check all that apply)*

❑ IDAHO ❑ OREGON ❑ WASHINGTON

11. Did you see bighorn sheep or mountain goats during **this trip**? *(Please check all that apply)*

❑ BIGHORN SHEEP ❑ MOUNTAIN GOATS ❑ NEITHER

12. How important do you consider seeing bighorn sheep or mountain goats to your overall experience in the HCNRA? *(Check one.)*

❑ VERY IMPORTANT ❑ SOMEWHAT IMPORTANT ❑ NEUTRAL ❑ NOT IMPORTANT ❑ NOT SURE

Questions 13 and 14 refer to those areas of the HCNRA and surrounding Forest Service land which is normally accessed by way of the Snake River.

13. Do you consider the HCNRA and surrounding areas your favorite place to hunt? *(Check one.)*

❑ NO ❑ YES

14. What percentage of your total hunting time each year is spent in this area? _____%

I. Questions about you.

*This information will be used to describe groups of people we surveyed and **will never** be associated with your name.*

1. Is the address printed on the envelope your current place of residence? *(Check one.)*
   - ❑ YES ➡ **SKIP TO QUESTION 3.**
   - ❑ NO

2. What is your current place of residence? *(So we can notify you if you win the drawing.)*
   ADDRESS_____

   CITY _____ STATE _____ ZIP_____

3. Have you been on the Snake River in the HCNRA before this trip? *(Check one.)*
   - ❑ NO ➡ **SKIP TO QUESTION 7.**
   - ❑ YES

4. About how many times did you visit the HCNRA last year **(1998)**?
   _____ TIMES

5. Please estimate the total number of times you have visited the HCNRA.
   _____ TIMES

6. Please estimate the year when you **first** visited the Hells Canyon Area.
   19____

7. About how many trips did you take last year **(1998)** to rivers or lakes other than the Snake River in the HCNRA? *(Check one.)*
   ❑ NONE ❑ 1 - 5 ❑ 6 - 10 ❑ 11 - 15 ❑ MORE THAN 15

8. How would you rate your personal skill level for float boating? *(Check one.)*
   - ❑ NEVER FLOAT BOATED
   - ❑ NOVICE (NO PREVIOUS BOATING EXPERIENCE)
   - ❑ BEGINNER (SOME PREVIOUS BOATING EXPERIENCE)
   - ❑ INTERMEDIATE
   - ❑ ADVANCED
   - ❑ EXPERT

9. How would you rate your personal skill level for power boating? *(Check one.)*
   - ❑ NEVER POWER BOATED
   - ❑ NOVICE (NO PREVIOUS BOATING EXPERIENCE)
   - ❑ BEGINNER (SOME PREVIOUS BOATING EXPERIENCE)
   - ❑ INTERMEDIATE
   - ❑ ADVANCED
   - ❑ EXPERT

10. Did you personally pilot some type of boat during this trip? *(Check one.)*
    - ❑ NO
    - ❑ YES

11. Which of these information sources did you use to help you decide to visit the HCNRA? *(Check all that apply.)*

❑ MAGAZINES/ NEWSPAPERS	❑ TRAVEL AGENTS	❑ INFORMATION FROM STATE AGENCIES
❑ FOREST SERVICE	❑ BOOKS AND RIVER GUIDES	❑ IDAHO POWER COMPANY
❑ TELEVISION OR RADIO	❑ OUTFITTERS	❑ INTERNET
❑ AAA INFORMATION	❑ PREVIOUS EXPERIENCE	❑ OTHER_____
❑ FRIENDS OR RELATIVES	❑ CHAMBER OF COMMERCE	❑ OTHER_____

I. Questions about you. (Continued)

12. Are you ❑ MALE or ❑ FEMALE?

13. What is your age? _____

14. What race do you consider yourself? *(Check one.)*
- ❑ WHITE—NON-LATINO
- ❑ WHITE—LATINO OR HISPANIC
- ❑ BLACK OR AFRICAN AMERICAN
- ❑ AMERICAN INDIAN
- ❑ ASIAN OR PACIFIC ISLANDER
- ❑ MIXED
- ❑ OTHER: _____

15. Which best describes your annual household income before taxes in **1998**? *(Check one.)*
- ❑ less than $30,000
- ❑ $30,001 to 50,000
- ❑ $50,001 to 70,000
- ❑ $70,001 to 90,000
- ❑ $90,001 to 110,000
- ❑ $110,001 to 130,000
- ❑ $130,001 or more

16. What is the highest level of formal education you have completed? *(Circle one number.)*

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21+

ELEMENTARY THROUGH HIGH SCHOOL — COLLEGE THROUGH GRADUATE SCHOOL

17. Do you have any additional comments about your visit to the HCNRA?

_____

_____

_____

_____

_____

_____

_____

Thank you for completing this survey! Please fold the survey and place it in the self-addressed, stamped envelope and mail it back to us.

Your completed survey enters you in the drawing for $3,000 toward an outfitted trip in the HCNRA!

Appendix E. Cover letter mailed with initial questionnaire during IPC HCNRA survey.

Name
address
city, state

Dear name,

As part of a relicensing effort, Idaho Power Company is conducting environmental studies to determine the effects of its hydropower operations in the Hells Canyon Area. We have enclosed a brochure that will give you more information about relicensing and how to become part of this public involvement process.

We are conducting studies throughout the Hells Canyon Area, but one of the places of special interest is the Hells Canyon National Recreation Area (HCNRA). **You are being contacted because our records indicate you were interviewed on (date) at (location) in the HCNRA**. Enclosed is a questionnaire to ask you about your experiences during your stay in this area. We have also enclosed a map to help you identify places you visited.

You are one of a random sample of people who are being asked their opinions on these matters. In order that the results truly represent HCNRA visitors, it is important that each questionnaire be completed and returned. It is also important that the questionnaire be filled out by only you and not a friend or someone else in your family. Even if you were in the HCNRA for a brief time, **your opinion is important to us**. If for some reason you are unable to complete the questionnaire, please return it in the self-addressed, stamped envelope provided.

If you complete the questionnaire, we will enter you in a drawing for $3,000 toward an outfitted trip in the HCNRA—you pick the type of trip and the outfitter. You were already entered in one drawing from your initial contact with us during your trip to the HCNRA. Completing this questionnaire enters you in a second drawing for a $3,000 trip. For complete rules of the drawing see the back of this letter.

You are assured of complete confidentiality. The questionnaire has an identification number for mailing purposes only, so we can check your name off the list when your questionnaire is returned. Your name will never be placed on the questionnaire or associated with your answers.

Results of this research (not including names and addresses) will be made available to those who are involved in the relicensing process such as agencies, environmental organizations, and interested citizens. We would be happy to answer any questions you might have about this study. Please write or call us.

Thank you for your assistance!

Sincerely,

Lisa Grise, Recreation Resource Analyst

Phone: (208) 388-2229
Email: lgrise@idahopower.com

Marshall Brown, Recreation Resource Analyst
Phone: (208) 388-2739
Email: marsallbrown@idahopower.com

Appendix E. (Cont.) Post card sent as first reminder to participants in IPC HCNRA mail survey.

March 4, 1999

Last week a questionnaire about your visit to the Hells Canyon National Recreation Area (HCNRA) was mailed to you. Your name was randomly sampled from visitors to the HCNRA over the past 2 months.

If you have already completed and returned it to us, ***please accept our sincere thanks***. If not, we request that you please do so **as soon as possible**. It is ***extremely important*** that your opinion be included in this study as part of Idaho Power Company's relicensing effort for the Hells Canyon hydro-electric facilities. Also, your completed questionnaire enters you in a **drawing for $3,000 toward an outfitted trip in the HCNRA**.

If by some chance you did not receive the questionnaire, or it was misplaced, please call (toll free) 1-888-388-5741 and we will send you another one right away.

Sincerely,

Marshall Brown, Resource Analyst
Idaho Power Company

Lisa Grise, Resource Analyst
Idaho Power Company

Appendix E. (Cont.) Cover letter sent with second reminder to participants in IPC HCNRA mail survey.

Name
address
city, state

Dear name,

About three weeks ago, we wrote to you seeking information about your visit to the Hells Canyon National Recreation Area (HCNRA). As of today we have not received your completed questionnaire. If you recently mailed your questionnaire, thank you and please disregard the remainder of this letter.

We have undertaken this study because of Idaho Power Company's commitment to obtaining citizen input throughout the relicensing process in the Hells Canyon Area. We are writing to you again because each questionnaire is important to this study. In order for the results of this study to be truly representative of the opinions of all HCNRA visitors, **it is essential that each person in the sample return their questionnaire**. As mentioned in our last letter, the questionnaire must be filled out by you and not a friend or someone else in your family.

If you complete the questionnaire, we will enter you in a drawing for $3,000 toward an outfitted trip in the HCNRA—you pick the type of trip and the outfitter. You were already entered in one drawing from your initial contact with us during your trip to the HCNRA. Completing this questionnaire enters you in a second drawing for a $3,000 trip. For complete rules of the drawing see the back of this letter.

In the event that your questionnaire has been misplaced, a replacement is enclosed along with a map of the HCNRA. If our records are in error and you did not visit the HCNRA on or around (**date**), please indicate that on the survey and return it to us in the stamped envelope provided.

If you have any questions about the study, please email us or call us at our toll free number, (888) 388-5741.

Your cooperation is greatly appreciated.

Lisa Grise, Recreation Resource Analyst
Phone: (208) 388-2229
Email: lgrise@idahopower.com

Marshall Brown, Recreation Resource Analyst
Phone: (208) 388-2739
Email: marsallbrown@idahopower.com

Enc.: 2

Appendix E. (Cont.) Letter sent as third reminder to participants in IPC HCNRA mail survey.

Name
address
city, state

Dear name,

We are writing to you about our study of recreational use in the Hells Canyon National Recreation Area (HCNRA). We have not yet received your completed questionnaire.

The large number of returned questionnaires is very encouraging. But, whether we will be able to describe accurately how visitors feel on these important issues depends upon you and the others who have not yet responded. Our past experiences suggest those of you who have not yet sent in your questionnaire may hold quite different preferences for recreation in the HCNRA than those who we have already heard from.

This is the only study of this type that Idaho Power Company plans to do in the HCNRA during the relicensing process. Therefore, the results are of particular importance to the many visitors, recreation planners, and agency personnel now considering what kinds of enhancements or changes may be needed in the HCNRA over the next 30 years. The usefulness of our results depends on how accurately we are able to describe what visitors want.

May we urge you to, please, complete the questionnaire and return it as quickly as possible. If you have misplaced the questionnaire, call us at our toll free number, (888) 388-5741 and we will send you another. We would like to remind you that if you complete the questionnaire, we will enter you in a drawing for $3,000 toward an outfitted trip in the HCNRA—you pick the type of trip and the outfitter.

If you have any questions about the study, please email or call us.

Your contribution to the success of this study will be greatly appreciated!

Lisa Grise, Recreation Resource Analyst
Phone: (208) 388-2229
Email: lgrise@idahopower.com

Marshall Brown, Recreation Resource Analyst
Phone: (208) 388-2739
Email: marsallbrown@idahopower.com

Appendix F. Location and use-level ranking of 145 recreational use sites within the HCNRA.

Site	Site Code	River Mile	Shore	Use Rating
UPPER PITTSBURG LANDING	UPIT	216.2	IDAHO	6
UPPER KLOPTON CREEK	UKLP	215.9	IDAHO	6
KLOPTON CREEK	KLOP	215.7	IDAHO	6
PITTSBURG LANDING	PITT	214.9	IDAHO	6
CAMP TWO	CTWO	214.7	IDAHO	6
CAMP ONE	CONE	214.6	IDAHO	6
PITTSBURG LANDING CREEK	PITC	214.5	IDAHO	6
BATTLE CREEK	BATL	242.1	OREGON	5
OREGON HOLE	ORHL	237.7	OREGON	5
BERNARD CREEK	BRND	235.1	IDAHO	5
BERNARD CREEK	BRND	235.1	IDAHO	5
JOHNSON BAR LANDING	JBRL	229.8	IDAHO	5
PINE BAR	PINE	227.5	IDAHO	5
KIRKWOOD BAR	KIRK	220.3	IDAHO	5
COPPER CREEK RESORT	COPR	205.4	OREGON	5
BRUSH CREEK	BRSH	244.7	IDAHO	4
WARM SPRINGS	WMSP	243	IDAHO	4
UPPER GRANITE CREEK	UGRC	239.6	IDAHO	4
LOWER GRANITE CREEK	LGRC	239.4	IDAHO	4
UPPER OREGON HOLE	UORH	237.8	OREGON	4
SHEEP CREEK	SHCR	229.4	IDAHO	4
YREKA BAR	YRKA	228.6	OREGON	4
DRY GULCH	DRYG	224.5	OREGON	4
SALT CREEK	SALT	222.6	OREGON	4
TWO CORRAL CREEK	TCCR	222.2	OREGON	4
KIRBY CREEK LODGE	KRBL	218.8	IDAHO	4
FISH TRAP BAR	FISH	216.4	OREGON	4
TRYON CREEK	TRYN	209.4	OREGON	4
DUG BAR	DGBR	196.2	OREGON	4
SALMON MOUTH	SMNM	188.3	IDAHO	4
SALMON FALLS	SMNF	188	IDAHO	4

Appendix F. (Cont.)

Site	Site Code	River Mile	Shore	Use Rating
UPPER COUGAR BAR	UCGB	179.8	IDAHO	4
COUGAR WEST A	CGWA	179.7	OREGON	4
COUGAR BAR	CGBR	179.3	IDAHO	4
STUD CREEK	STUD	245.8	OREGON	3
ROCKY POINT	RPNT	243.7	IDAHO	3
CHIMNEY BAR	CHMN	243.4	IDAHO	3
MOOSE HOLE	MOOS	243.4	IDAHO	3
SAND DUNES	SDDN	241.8	OREGON	3
ROCKY BAR	RCKY	240.8	IDAHO	3
CACHE CREEK	CACH	239.2	OREGON	3
UPPER DRY GULCH	UDGC	237.3	IDAHO	3
LOWER DRY GULCH	LDGC	237.1	IDAHO	3
SADDLE CREEK	SADL	236.2	OREGON	3
STEEP CREEK	STCR	229	IDAHO	3
UPPER YREKA BAR	UYRK	228.5	OREGON	3
SAND CREEK	SAND	227.9	OREGON	3
TEMPERANCE CREEK RANCH	TEMP	223.8	OREGON	3
HOMINY BAR	GRIT	222.9	OREGON	3
GRACIE BAR	GRAC	222	IDAHO	3
HALF MOON BAR	HMBR	221.4	IDAHO	3
CAT GULCH	CATG	218.3	IDAHO	3
WEST CREEK	WTCR	213.7	IDAHO	3
RAGTOWN BAR	RGBR	205	IDAHO	3
BAR CREEK	BRCR	201.9	OREGON	3
CHINA BAR	CHNA	192.4	OREGON	3
IMNAHA CAMP	IMNA	191.7	OREGON	3
EUREKA BAR	ERKA	190.8	OREGON	3
SALMON BAR	SMNB	187.8	OREGON	3
GENEVA BAR	GNVA	184.6	OREGON	3
LOWER JIM CREEK	LJCR	182	OREGON	3
UPPER COTTONWOOD CREEK	UCOT	181.1	IDAHO	3
LOWER COTTONWOOD CREEK	LCOT	180.9	IDAHO	3

Appendix F. (Cont.)

Site	Site Code	River Mile	Shore	Use Rating
COON HOLLOW	COON	178.6	OREGON	3
GARDEN CREEK	GRDN	178	OREGON	3
LAMONT SPRINGS SOUTH	LMNS	245.7	IDAHO	2
WILD SHEEP	WSHP	241.3	OREGON	2
THREE CREEK	THRE	237.9	IDAHO	2
UPPER SLUICE CREEK	USLC	231.9	OREGON	2
SLUICE CREEK	SLUC	231.8	OREGON	2
RUSH CREEK	RUSH	231.4	OREGON	2
SHEEP CREEK CABIN	SCCN	229.3	IDAHO	2
CARIBOU CREEK	CBOU	225.2	IDAHO	2
BIG BAR	BGBR	224.4	IDAHO	2
TOAD BAR	TOAD	221.2	IDAHO	2
BIG CANYON	BGCN	210.8	IDAHO	2
ELK CALF CAMP	ELKC	210.5	OREGON	2
BOB CREEK	BBCR	204.5	OREGON	2
DUG CREEK	DGCR	198.1	OREGON	2
WARM SPRINGS RAPIDS	WARM	195.3	IDAHO	2
ZIGZAG	ZGZG	194	IDAHO	2
FARGO CAMP	FRGO	191.2	OREGON	2
LAMONT SPRINGS NORTH	LMNN	245.8	IDAHO	1
CACTUS CAMP	CACT	245.3	OREGON	1
SQUARE BEACH	SQRE	245.1	IDAHO	1
FAWN BAR	FAWN	244.2	OREGON	1
DAISY BAR	DASY	242.6	IDAHO	1
BIRCH SPRINGS	BSPR	241.5	IDAHO	1
SQUARE BAR	SQBR	241.5	OREGON	1
HASTINGS	HAST	236.6	IDAHO	1
JOHNSON BAR FLAT	JBFT	230.2	IDAHO	1
UPPER SAND CREEK	USCR	228.2	OREGON	1
UPPER QUARTZ CREEK	UQCR	226.5	OREGON	1
LOWER QUARTZ CREEK	LQCR	226.2	OREGON	1
DRY GULCH DOWNSTREAM	DGDS	224.3	OREGON	1

Appendix F. (Cont.)

Site	Site Code	River Mile	Shore	Use Rating
BITTY BAR	BTBR	222.9	IDAHO	1
SLAUGHTER GULCH	SLTR	221	OREGON	1
YANKEE BAR	YANK	220	OREGON	1
RUSSELL BAR	RUSS	219.6	IDAHO	1
CORRAL CREEK	CORL	217.2	IDAHO	1
TRAIL CREEK	TRCR	216.7	IDAHO	1
WILSON EDDY	WLED	215.6	OREGON	1
LOWER BIG CANYON	LBCN	210.4	IDAHO	1
SOMER'S CREEK	SOMR	210	OREGON	1
CAMP CREEK	CAMP	209.6	OREGON	1
LOOKOUT CREEK	LOOK	208.1	OREGON	1
HIGHRANGE CAMP	HIGH	206.3	IDAHO	1
GETTA CREEK	GETA	205.8	IDAHO	1
CAT CREEK	CATC	204	OREGON	1
HITCHCOCK RANCH	HICH	201.4	IDAHO	1
HITCHCOCK RANCH	HITC	201.2	IDAHO	1
CHRISTMAS CREEK	XMAS	201.1	OREGON	1
HITCHCOCK RANCH	HRPV	201	IDAHO	1
BIG SULPHUR CREEK	BSCR	199.7	OREGON	1
DEEP CREEK	DEEP	199.2	OREGON	1
ROBINSON GULCH	RBSN	198.4	OREGON	1
MARY CAMP	MARY	193.6	OREGON	1
DIVIDE CREEK	DVDE	193.2	IDAHO	1
KNIGHT CREEK	KNGT	190.4	OREGON	1
CAVE COVE	CAVE	186.3	OREGON	1
WHITE BEACH	WHIT	185.2	IDAHO	1
ROSE BAR	ROSE	184.1	OREGON	1
COOK CREEK	COOK	183.5	OREGON	1
CRAIG CAMP	CRAG	183.4	IDAHO	1
SENTINEL ROCK	SENT	183	OREGON	1
JIM CREEK	JCHS	182.5	OREGON	1
MEAT HOLE	MEAT	181.8	IDAHO	1

Appendix F. (Cont.)

Site	Site Code	River Mile	Shore	Use Rating
SEAMEN'S CAMP	SEMN	181.7	OREGON	1
CACTUS BAR	CCTS	181.5	IDAHO	1
WALT'S CAMP	WALT	180.6	IDAHO	1
COCHRAN ISLAND	COCH	178.7	I	1
UPPER CACHE CREEK	UCCR	177.7	OREGON	1
LOWER CACHE CREEK	LCCR	176.8	OREGON	1
WARM WATER CAMP	WWWW	242.7	IDAHO	0
BOBCAT BAR	BBCT	238.8	OREGON	0
BIG BAR AIR STRIP	BBAS	224.2	IDAHO	0
KIRBY CREEK CAMP	KRBY	218.9	OREGON	0
PLEASANT VALLEY	PLVY	213.8	OREGON	0
DAVIS CREEK	DVIS	212.4	OREGON	0
MCCARTY CREEK	MCRT	211.9	OREGON	0
UPPER STURGEON CAMP	USTG	203.7	IDAHO	0
LOWER STURGEON CAMP	LSTG	203.6	IDAHO	0
ROLAND BAR	RLND	203.2	OREGON	0
BOX CAMP	BXCP	180.2	OREGON	0
F&WS CAMP	FWSC	180.2	OREGON	0
COUGAR WEST B	CGWB	179.5	OREGON	0

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