Revised Study Plan
Boundary Hydroelectric Project (FERC No. 2144)

Study No. 21
Recreation Resource Study

Seattle City Light

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Study No. 21 – Recreation Resource Study

1.0 INTRODUCTION

The Recreation Resource Study (RRS) will analyze current recreational use and opportunities in the Boundary Project (Project) area and region, as well as potential future recreational demand and need over the term of the new license (30 to 50 years). The overall RRS is composed of the following five study elements:

- Recreation surveys
- Regional recreation analysis
- Dispersed recreation use, access, and condition analysis
- Future recreation use analysis
- Recreation carrying capacity analysis

The RRS will address a variety of information needs as described below. Currently, there is limited information regarding existing recreation and public use in the Project area. Additional data are needed to adequately describe existing and future visitor use levels and patterns, preferences, impacts, and demand in the Project area. Such data are also needed to determine existing and future recreation needs in the Project area.

Existing information regarding the Project area's role in providing specific regional recreation opportunities and helping meet regional demand is also incomplete. Additional information and consultation with relicensing participants is needed to better understand the regional context of the Project, as well as recreation carrying capacity levels at surrounding recreation sites and use areas that may affect Project-area recreation use.

The amount, extent, and potential impact of Project-related dispersed recreation use on the Project area's land and water resources is currently unknown, although recent observations in 2005 and 2006 have revealed that some level of impact may be occurring. Various user-defined and developed roads and trails exist along the reservoir shoreline, providing public access to the reservoir. However, more information is needed to fully describe how visitors access and use the Project shoreline, where shoreline access is limited or non-existent, and if and where recreational use and shoreline access potentially impacts sensitive resources. Dispersed recreational use of the reservoir shoreline, such as off-highway vehicle (OHV) use or dispersed camping, and public use of user-defined or developed access roads to the shoreline potentially affect sensitive resources (e.g., wildlife, aquatic resources, cultural resources, etc.) along the shoreline.

Information on existing recreation carrying capacity is needed to determine if existing recreational use levels are below, approaching, at, or exceeding the Project area's ability to accommodate recreational use without adversely impacting the biophysical/ecological, social, or managerial capacity of the Project area. Recreation demand for water- and shoreline-related recreation facilities and opportunities, such as those found in the Project, continues to increase in the state and region, according to the Washington State Comprehensive Outdoor Recreation Plan (SCORP) (IAC 2002, 2003) and other national projections (Cordell et al. 1999) and regional

studies. As currently developed, some existing public recreation sites and use areas in the Project area may not be capable of accommodating higher levels of recreational use that may occur during the term of the new license, particularly during peak-use summer weekends. Additional recreation activity demand information is needed to determine whether future use levels exceed capacity thresholds at existing recreation facilities.

2.0 STUDY PLAN ELEMENTS

2.1. Nexus Between Project Operations and Effects on Resources

The Project provides a number of public recreation opportunities including developed recreation sites, recreational use of the reservoir water surface, and dispersed use of undeveloped areas along the reservoir shoreline. To date, no known Project-related impacts related to recreation resources and land use in the Project vicinity have been identified. However, based on review of existing recreation resource and land use information, and PAD-related field reconnaissance conducted in 2005 and 2006, potential Project-related impacts related to recreation resources and land use include the following:

- Potential recreation-related impacts to sensitive resources along the reservoir shoreline.
- Boat ramp usability limitations and the potential for boat stranding caused by reservoir pool level fluctuations.
- Public use and access limitations to some recreation facilities and public use areas due to Project security requirements.
- The possible role of recreational shoreline use as a contributing factor to shoreline erosion at some erosion sites.
- Periodic summer weekend crowding at the Forebay Recreation Area due to the site's limited capacity.

These potential impacts, as well as others that may be identified during the RRS, should be adequately addressed by the RRS and fully considered prior to the development of license requirements and a proposed Recreation Management Plan (RMP) for the Project.

2.2. Agency Resource Management Goals

In addition to providing information needed to characterize potential Project effects, the RRS will provide information to help relicensing participants with jurisdiction over recreation and land use in the Project area and vicinity identify potential measures for consideration in the proposed RMP for the Project. Additionally, the RRS will identify Project-related recreation opportunities that may help address some regional and/or statewide recreation needs defined in the Washington SCORP (IAC 2002), as amended, as well as USFS, BLM, Pend Oreille County, Towns of Metaline and Metaline Falls, and Washington Department of Transportation (WDOT) recreation resource management goals, as applicable, in the areas within and surrounding the Project.

Relevant recreation resource management goals are summarized below for agencies engaged in the FERC relicensing of the Project.

USDA Forest Service (USFS)

The Colville National Forest Plan (CNFP) guides natural and cultural resource management activities on USFS-managed lands and waters and establishes management standards and guidelines. It describes resource management policies and prescriptions, levels of resource production and management, and the availability and suitability of lands for resource management (USFS 1988b). The CNFP is currently being updated by the Colville National Forest (CNF) and is scheduled to be complete in 2007. Changes to the CNFP, as amended, may affect recreation-related management within the Project vicinity. Recreation-related goals of the existing CNFP include the following:

- Provide for a broad spectrum of developed and dispersed recreational opportunities that meet public demand.
- Provide a trail system adequate to meet day and overnight use demand for all different classes of trail users.
- Provide Forest visitors with visually acceptable scenery, consistent with the management use and public demand.
- Maintain and protect those characteristics of the segment of the Kettle River flowing through the Forest that make the river eligible for inclusion in the Wild and Scenic River System.
- Protect and preserve significant prehistoric and historic sites, structures, and objects for the future enjoyment and education of the public.
- Preserve the natural conditions and outstanding opportunities for solitude in the Salmo-Priest Wilderness Area.
- Provide and manage for a diversity of habitats sufficient to maintain viable populations of all vertebrate species, and populations adequate for the consumptive and non-consumptive demands of the public.
- Provide a diversity of high quality aquatic habitats that ensures viable populations of fish in sufficient numbers to meet angler demands.
- Achieve a land ownership pattern that improves resource management and administration, and provides for uses that are in the public interest and cannot be provided on private land.
- Provide for safe, efficient, and environmentally acceptable access to Forest lands.
- Provide cost-efficient fire protection and law enforcement integrated with other resource management objectives.

The CNFP also describes the desired future condition of USFS-managed lands in 10 years, as well as 50 years, given the anticipated implementation of actions towards these recreation-related

goals. Specific to recreation use and management, the 10-year desired future conditions include the following:

- The overall character of the CNF will be very similar to what it is now, with some changes starting to become visible.
- Existing developed recreation sites will be properly used within their design constraints, and the Sullivan Lake Campgrounds will be expanded to handle increased use of sites around the lake.
- The majority of dispersed recreation use will continue to occur on or near roads or high standard trails.
- The existing trail system will be expanded based upon public demand.
- The existing Nordic (cross-country) trail system will be expanded by 20 to 30 percent, there will continue to be 200 to 300 miles of CNF roads groomed for snowmobile use, and the permit for the 49 Degrees North Ski Area will be expanded to provide facilities to meet demand.
- A wide variety of recreation opportunities will be provided, at a low unit cost, to meet demand.
- The principal access roads will be readily identifiable, and approximately 25 percent of the existing roads will be closed.
- Semi-primitive non-motorized, and semi-primitive motorized areas will be maintained without any intrusions.
- The USFS-managed portion of the Kettle River will retain the characteristics that make it eligible for inclusion in the Wild and Scenic River System.
- Visually, the CNF will appear much as it does today, especially along the important travel corridors.
- The Salmo-Priest Wilderness will continue to meet the attributes of a wilderness area.

Looking 50 years into the future, the desired conditions of the CNF specific to recreation use and management include the following:

- The overall character of the Forest will continue to improve.
- Additional developed recreation sites will be added, and existing sites will have had some major reconstruction and design changes to facilitate public needs and meet demand.
- The principal road systems will be complete with improved or paved surfaces, and approximately 34 percent of existing roads will be closed.
- Dispersed recreation use will have increased substantially.
- A much larger trail system will be in place, and most trails will show significant public use.

- Winter recreation will have increased in importance, and more designated trails, routes, and trailhead facilities will be available.
- The 49 Degrees North Ski Area will have been expanded to maintain competitiveness and accommodate increased demand.
- The Forest will continue to provide highly diverse recreation opportunities for all users and continue to maintain and develop "partnerships" to reduce costs and to provide increased diversity of uses.
- Semi-primitive non-motorized and semi-primitive motorized areas, as originally identified, will be maintained to retain their Recreation Opportunity Spectrum (ROS).
- Visually, the areas along the primary travel routes and riparian areas will be very pleasing and will appear as stands with a mixture of tree sizes.

USDI Bureau of Land Management (BLM)

The BLM's Spokane District Resource Management Plan (RMP) (BLM 1985) does not discuss recreation-specific management of BLM-managed parcels within the Project vicinity; however, these parcels are generally managed for dispersed recreational use (J. Spessard, BLM Adjudicator, personal communication, February 2006).

Washington State Interagency Committee for Outdoor Recreation (IAC)

The primary purpose of the 2002 Assessment of Outdoor Recreation in Washington State, a SCORP document, is to provide information on outdoor recreation issues and opportunities to decision-makers (IAC 2002). The following are listed as statewide recreation concerns that may also be considered in the Project area over the next several years:

- There is a need to provide better-managed lands and facilities supporting virtually all outdoor recreation categories.
- Linear (i.e., trail-based) activities (e.g., walking, hiking, biking) are the most popular activities.
- Nature and natural settings play a vital role in many recreational activities and pursuits.
- Preserving habitat for fish and wildlife is important due to high statewide participation rates in nature-dependent activities (e.g., wildlife viewing, photography, hunting, fishing, etc.).
- Acceptable means of financing the operations and maintenance of public lands and facilities need to be determined.
- Improved public recreation data and facilities inventories are needed to ensure effective utilization of public resources.

The IAC's 2002 Assessment also provides an analysis of the need for recreation facilities in Washington. This analysis is based on actual recreation participation and an inventory of land

and recreation facilities; preference is not a factor in this assessment. Conclusions of the needs analysis that are relevant to the Project include the following:

- Most outdoor recreation takes place close to home on local lands.
- Federal, state, and private lands may experience fewer numbers of visitors (compared to the past decade), but will likely still experience considerable use levels and the challenges (e.g., crowding, conflict, displacement, resource degradation, etc.) that accompany these use levels.
- Public frustration with recreation agencies seems to indicate a need for better communication among providers and users.
- Reports of increased crowding and conflict in virtually all types of recreation indicate a need to provide better-managed land and facilities.

Additionally, the IAC's 2002 Assessment provides specific recommendations for hydroelectric project licensees, including the following:

- Enhance recreational opportunities with new trails, walkways, and paths for pedestrian and bicycle use.
- Manage dispersed shoreline camping.
- Improve access for water-based recreation activities.
- Provide additional opportunities for non-consumptive recreation activities (e.g., wildlife viewing, photography, etc.).
- Improve operations and maintenance at existing and new recreation sites.

Pend Oreille County

The Pend Oreille County Comprehensive Plan was finalized in October 2005. The Washington State Growth Management Act requires that county and city comprehensive plans include a parks and recreation element, with some exceptions. In addition to providing supply, demand, and needs information, the parks and recreation element of a comprehensive plan should also provide goals and policies to guide recreation-related development and management. The parks and recreation element of the Pend Oreille County Comprehensive Plan includes the following recreation-related goals (Pend Oreille County 2005):

- Provide public facilities at Pend Oreille County parks and designated public access sites that enable and enhance a fulfilling experience for visitors and residents, including recreation vehicle (RV) park areas designed to accommodate the largest RVs.
- Generate revenue to provide for the maintenance, future development, and use of Pend Oreille County parks as a year-round facility.
- Support the establishment of a countywide river and lake park system.
- Support the identification and promotion of the full range of public and private recreational opportunities in the county for local residents and visitors.

- Support the designation of the North Pend Oreille Scenic Byway and the Selkirk Loop, and the development of the Sweet Creek Recreation Area.
- Establish a permanent County Parks and Recreation Department.

The Pend Oreille County Comprehensive Plan also outlines 11 parks and recreation-related policies intended to help meet these goals. Some of these policies may potentially affect the Project area over the next several years and include:

- Support local efforts to integrate local parks and recreation planning with economic development strategies and priorities to promote recreational tourism opportunities.
- Adopt regulations to implement National Scenic Byway requirements on designated scenic corridors.
- Update the Boating Ordinance 97-27, as necessary.
- Review and update standards to guide the development of public and privately owned and operated commercial RV parks, campgrounds, and related facilities to address water and sanitary sewer requirements, access requirements, and permitted densities and uses.
- Identify priorities for designating, signing, striping, and/or constructing bike lanes, pedestrian paths, and/or routes.
- Support the design and installation of signage to identify Scenic Byways and viewpoints, boat accesses, and designated recreation areas.
- Collaborate with the USFS and other public resource agencies and managers to inventory recreational opportunities and promote the shared use and full enjoyment of publicly owned land in the county.

Towns of Metaline and Metaline Falls

Neither of the town comprehensive plans for Metaline (Town of Metaline 1996) or Metaline Falls (Town of Metaline Falls 1996) have recreation-specific elements. However, both town comprehensive plans identify Pend Oreille River-specific goals that may affect the Project area. These goals include:

- Provide increased public access to the Pend Oreille River with the support of local, state, and federal agencies.
- Manage the level and flow of the Pend Oreille River to enhance recreational opportunities, wildlife, the fishery, and water quality, while recognizing power generation requirements.

Both plans also call for the effective involvement of local residents in the ongoing management of the Pend Oreille River.

Washington Department of Transportation (WDOT)

The North Pend Oreille Scenic Byway consists of 27 miles of State Route (SR) 31 from its junction with SR 20 to the U.S.-Canada border. This scenic byway is also part of the larger International Selkirk Loop. Local communities, stakeholders, and land management agencies cooperated on the development and ongoing implementation of the corridor management plan (under the direction of a citizen's advisory board). The vision of the corridor management plan (WDOT 2003) is as follows:

> "The North Pend Oreille Scenic Byway provides visitors with an opportunity to discover and interpret the legacy that local pioneers have left for modern-day residents while preserving the all-important life styles of those residents. Mining, logging, and the production of hydroelectric power represent the historic and modern-day economic base for this area. The Scenic Byway offers access to one of the more active artist and performing arts communities in the Pacific Northwest. Those who follow the Byway along the Pend Oreille River are greeted by vistas of snow-capped mountains, rural villages, and viewing sites for wildlife, cultural legacy interpretive sites, and all back-dropped by a unique natural environment. This Byway is a scenic highway connecting Washington, British Columbia, and Idaho."

The corridor management plan outlines a set of goals and objectives that cover transportation and land use, economic development and tourism, heritage resources, and plan involvement and coordination. These goals include:

- Travel safety for visitors, local residents, and industry.
- Scenic Byway improvements that complement existing natural and developed environments and support land uses and activities desired by the local community.
- Expanded opportunities for economic development and tourism that are sensitive to the needs and values of the local community.
- Increased awareness and appreciation of heritage resources by visitors and community residents.
- Protection and enhancement of all heritage resources.
- Community-based planning process that promotes a high level of community involvement and ownership in plan development and supports collaboration in plan implementation.

The corridor management plan is not a regulatory document; however, it is intended to be a reference document that entities (including local communities, private land owners, WDOT, Pend Oreille County, and the USFS, among others) use to guide stewardship activities along the scenic byway corridor.

Specific to the Project area and vicinity, the International Selkirk Loop Corridor Management Plan, of which the SR 31 scenic byway is a component, identifies multiple key byway sites and

proposes development at each. Byway sites in the Project area and vicinity, primarily along SR 31, and proposed development actions at each include the following:

- USFS Crescent Lake and SCL Boundary Vista House — Vegetation treatments and possible realignment of curve to improve views.
- Abercrombie-Hooknose Viewpoint — Construct a paved parking area and provide interpretive signage.
- USFS Mill Pond Flume Historic Site — No proposals.
- Crawford State Park - No proposals.
- Cutter Theater and Museum in Metaline Falls — Upgrade lighting, audio, and visual aides.
- SR 31 Sweet Creek Falls Site — Construct parking area, trail, picnic sites, restroom, and provide interpretive signage (being completed in phases).
- SR 31 Eagle's Nest View Site — Construct a vehicle pull-out and parking, and provide interpretive signage (completed).
- Pend Oreille PUD Box Canyon Dam Recreation Area (Campbell Park) — Provide improved signage.

2.3. Study Area — General

The proposed study area for the RRS includes lands and waters within and adjacent to the Project boundary. The focus of this study will be on lands within the Project boundary; however, adjacent public and private lands will also be evaluated, as appropriate, based on the needs of each RRS study element. The study area is further described in each study element.

Lands between the reservoir shoreline and major adjoining parallel roads and/or highways (SR 31 and County Road 2975, for example) will be included where public access to the reservoir is being investigated (refer to Dispersed Recreation Use, Access, and Condition Analysis study element).

For the Regional Recreation Analysis study element, the regional study area boundary will represent the likely extent of substitute recreation opportunities (considering travel times, setting, facility conditions, and quality of experience, among other factors) and includes not only northeastern Washington, but also the nearby northern Idaho panhandle and southern British Columbia along the International Selkirk Loop corridor. A component of the proposed methodology of the Regional Recreation Assessment is to specifically define an appropriate regional boundary.

In its official study request filed with FERC, the USFS suggested that the study area for the RRS "should at a minimum encompass the area described in the Project Pre-Application Document…" (USFS 2006b, page 2). However, Seattle City Light (SCL) believes the study area needs are different for each RRS component and thus has proposed differing study areas for the various study elements. The study areas are described in detail in the respective sections of the RRS.

2.4. Study Elements

This overall RRS is comprised of the following five study elements:

- Recreation surveys
- Regional recreation analysis
- Dispersed recreation use, access, and condition analysis
- Future recreation use analysis
- Recreation carrying capacity analysis

Each of these study elements is described below.

Recreation Surveys

Study Element Goals and Objectives

The overall goal of this RRS element is to provide information necessary to define and analyze current recreational use and opportunities at the Project and in the nearby vicinity, as well as to project future recreational use, demand and needs in the Project area. The main objective of the Recreation Surveys is to characterize existing levels and patterns of recreational use and visitor characteristics, preferences, needs and attitudes in the Project area and vicinity. Specific objectives of the Recreation Surveys are as follows:

- *Quantify existing recreational use in the Project area* — Identify the amount of use, activity types, daytime and overnight use, and spatial and temporal distribution of existing use within the Project area, including developed recreation sites, dispersed recreation use, and boating on the reservoir.
- *Quantify visitor perceptions relative to Project-related recreation facilities, use areas, and opportunities* — Collect information on visitor characteristics, attitudes and preferences, as well as existing and/or anticipated future unmet need of the Project area's primary visitor populations (e.g., boaters, picnickers, sightseers, anglers) and populations who may come in the future.

The Recreation Surveys methodology consists of: (1) reviewing other existing regional survey and public input data, (2) conducting visitor counts, (3) conducting visitor questionnaires, and (4) compiling and summarizing Recreation Surveys results into a report. Two questionnaires are proposed: (1) a Project-area visitor questionnaire, and (2) an area resident questionnaire plus focus groups. Information gathered during the Recreation Surveys study element will be used in conjunction with other RRS elements to help evaluate the need for additional public access and/or recreation facilities in the Project area. The follow-on recreation needs analysis and synthesis (part of the integrated resource analysis described in Attachment 1, section 2.4 of this RSP) will synthesize RRS study element results, and the results of other related resource studies, to help identify existing and future recreation needs related to the Project.

Need for Study Element

Summary of Existing Information

Available recreation use data for the Project area is minimal and potentially inaccurate. Informal visitor counts are occasionally conducted at SCL-managed recreation areas, and every six years, SCL is required to report recreational use levels and capacity at the Project to meet FERC Form 80 reporting requirements.

Informal recreational use counts were conducted at the Forebay Recreation Area during 2002 and for selected months during 2003 and 2004 (Table 2.4-1). In 2002, the only year in which data were collected for six months, approximately 3,833 visitors were documented at the Forebay Recreation Area, with peak recreational use levels occurring in July and August. Again in 2003 and 2004, site use peaked in July and August. Anecdotal information suggests that on peak-use weekends during the summer season, the Forebay Recreation Area experiences use levels beyond its current design capacity (L. Johnson, SCL, personal communication, April 2005). Based on the limited data, presented in Table 2.4-1, use levels at the Forebay Recreation Area appear to be declining; however, given the limited nature of the data, this decline may or may not be a long-term trend and may not be accurate. Facility capacity is discussed later in the Recreation Carrying Capacity Analysis study element.

Table 2.4-1. Monthly use estimates for the Forebay Recreation Area (2002–2004). (Source: SCL 2005)

Year/Month	Overnight Campsite Use	Vehicles	Boat Launch/ Dock Use	Estimate of Total Visitors
2002				
May	290	344	78	718
June	104	134	46	322
July	213	503	140	1,236
August	545	636	242	1,116
September	163	177	57	400
October	18	21	9	41
Total [1]	**1,333**	**1,815**	**572**	**3,833**
2003				
May	128	209	59	489
July	139	359	126	959
August	268	361	130	767
October	9	14	6	31
2004				
July	141	255	104	704
August	163	255	114	673
September	92	135	32	219

Note:

1 Total use available for 2002 only. Use counts for select months only are available for 2003 and 2004.

To date, similar recreation use counts have not been completed at SCL's Tailrace Recreation Area or Vista House. The Tailrace Recreation Area was closed during 2002 and 2003 because of security requirements. Additionally, SCL has not completed on-water boat counts or counts at dispersed recreation sites in the Project area. For FERC Form 80 reporting requirements, use estimates were made for total daytime and nighttime recreation days (RD) for the entire Project, as well as for each site element (e.g., picnic area, campground, boat launch, viewpoint). RDs are FERC's preferred unit of recreation measurement. An RD is a visit for any length of time to a recreation area during a 24-hour period. Use estimates in RDs are provided in Table 2.4-2 for the past three Form 80 reporting periods.

Table 2.4-2. Total estimated annual recreation days for the Vista House, Tailrace Recreation Area, and Forebay Recreation Area. (Source: SCL 1991, 1996, and 2002)

	Recreation Days	
	Annual Total	**Peak Weekend Average**
1991 [1]		
Daytime	20,251	543
Nighttime	-	-
1996		
Daytime	21,741	1,173
Nighttime	127	16
2002		
Daytime	4,503	124
Nighttime	3,231	95

Note:

1 Nighttime recreation use not reported on 1991 FERC Form 80.

The data summarized in Table 2.4-2 appear to indicate that recreational use levels at the Project have declined between 1991 and 2002. However, a review of the completed FERC Form 80s and associated data collection methodologies indicates that an improper methodology (in part due to confusion caused by Form 80 reporting requirements) appears to have been used to compile the total recreational use estimate for the 1991 Form 80. In addition to use estimates for specific site elements of a recreation area, Form 80 also requires an estimate of total annual use for the Project. The specific use estimates of each site element on the 1991 Form 80 were summed to determine the total annual Project recreational use, which likely counted individual visitors more than once (e.g., a visitor who used the boat launch, visited the overlook, and was camping at the Forebay Recreation Area may have been counted three times instead of just once), leading to an inflated total use level in the 1991 Form 80 filing.

The 1996 total use estimate for the Project was determined by applying a percent increase to the 1991 Form 80 estimate. As a result, the methodological miscalculation of the 1991 total use estimate was carried over into the 1996 total use estimate. The 2002 Form 80 may be a more

accurate indication of current use levels at the Project at that time; however, security restrictions may have also caused the total estimates to be lower than for other years.

Aside from the visitor use level data presented in Tables 2.4-1 and 2.4-2, no other Project area recreation use level information has been collected to date for SCL-managed recreation sites. Additionally, no information has been collected regarding visitor characteristics, preferences, and attitudes at any of the recreation sites in the Project area.

Need for Additional Information

SCL currently collects some visitor use level information at the Forebay Recreation Area; however, most areas of the Project have not been adequately surveyed or analyzed for relicensing purposes. The purpose of the Recreation Surveys study element is to better analyze current use and visitor preferences within the Project area, with special emphasis placed on recreation-related data necessary for FERC relicensing. The Recreation Surveys study element focuses on visitors at existing developed recreation sites in and/or adjacent to the Project area, as well as at more primitive, dispersed recreation use areas. In addition to collecting visitor use information, the Recreation Surveys study element also focuses on understanding local resident use of the Project area and vicinity for recreational purposes, as well as understanding changing resident characteristics.

The results of the Recreation Surveys will help SCL and relicensing participants better understand how the Project area and vicinity are used for recreational purposes and establish a baseline of visitor data that may be compared in future years for monitoring purposes during the term of the potential new FERC license. Data collected during the Recreation Surveys will also be used in other RRS elements, including the Regional Recreation Analysis, Recreation Carrying Capacity Analysis, and Future Recreation Use Analysis, as well as in the follow-on recreation needs analysis and synthesis of all elements of the RRS and identify existing and anticipated future recreation needs. All of this information will be used to develop a proposed RMP for the Project. Responses to visitor and resident survey questions and focus group workshop questions will also be used in the Aesthetic/Visual Resource Study (Study No. 23) to document the public's perception of various aesthetic conditions that exist in the Project area.

Detailed Description of Study Element

Study Area

The study area for the Recreation Surveys study element includes the lands and waters within and adjacent to the Project boundary and its vicinity, local communities near the Project, and existing survey and public input data gathered within the broader region.

The focus of this assessment will be the Project area including lands (dispersed shoreline use areas and trails) and waters of the Project and adjoining public and private lands adjacent to the Project. Developed recreation sites in the Project area include:

- SCL Vista House
- SCL Tailrace Recreation Area

- SCL Forebay Recreation Area/Boat Ramp
- BLM Boundary Recreation Area
- Town of Metaline Waterfront Park/Boat Ramp
- Pend Oreille County PUD Campbell Park/Boat Ramp

The Recreation Surveys data-gathering effort will address public use and recreation sites in the vicinity of the Project used by local residents and other visitors who may also visit the Project area, including USFS Crescent Lake Recreation Area (boating access road and developed picnic sites), SR-31 Sweet Creek Falls Rest Area, and residents of communities near or along Boundary Reservoir including Metaline, Metaline Falls, and Ione in Washington, and Salmo and Trail in British Columbia.

Existing regional survey and public input data, such as the WA SCORP (as updated), surveys conducted in Pend Oreille County, and USFS surveys conducted in the Colville National Forest (as updated), will also be reviewed.

Proposed Methodology

The Recreation Surveys methodology consists of four tasks: (1) reviewing existing regional survey and public input data, (2) conducting visitor counts, (3) conducting visitor questionnaires, and (4) compiling and summarizing Recreation Surveys results into a report. Each of these components is discussed below.

The Recreation Surveys will be conducted over a minimum 12-month period of time; beginning in 2007 and ending in 2008 (additional detail is provided under "Schedule," below). The schedule and duration of the Recreation Surveys may potentially need to be adjusted based on factors that may influence recreation use levels in the Project area including forest fires, road closures, security restrictions, and/or extreme weather conditions. Additionally, the focus of data collection efforts will be during the primary recreation season, generally considered May through October for the Project area, as this is when the Project area receives the majority of visitor and resident use.

Prior to study implementation in early 2007, all forms for the Recreation Surveys (questionnaire forms, user and activity count forms, registration forms, other detailed data collection forms, etc.) and related survey methodologies and protocols (scheduling, logistics, frequency, number of survey days, targeted number of surveys, etc.) will be reviewed with the USFS and other relicensing participants. Issues that are raised during this consultation will be resolved prior to implementation, to the extent possible.

Review of Other Existing Regional Survey and Public Input Data

In coordination with the Regional Recreation Analysis study element, existing and new/ongoing regional visitor survey information, as well as regional public input (non-survey input such as focus groups), will be reviewed as available for pertinent information related to public access and recreation use in the Project area and vicinity, as well as the region. Sources of information to be reviewed include:

- Colville National Forest National Visitor Use Monitoring (NVUM) Results (USFS 2004).
- Additional USFS NVUM survey results from the USFS as available (should be available in 2009; these data may need to be considered following completion of the study).
- Colville National Forest Travel Management planning documents if available from the USFS during the study timeframe (should be available late 2007)
- Pend Oreille Valley Tourism and Marketing and Development Assessments (various reports) (Dean Runyun Associates 2005).
- County of Spokane Comprehensive Plan – Parks, Recreation and Open Space Element, relevant survey or public input, as available (County of Spokane 2006).
- City of Spokane Comprehensive Plan – Parks, Recreation and Open Space Element, relevant survey or public input, as available (City of Spokane 2001).
- County of Pend Oreille Comprehensive Plan – Parks, Recreation and Open Space Element, relevant survey or public input, as available (Pend Oreille County 2005).
- Pend Oreille County PUD Box Canyon Hydroelectric Project FERC License Application, relevant survey or public input, as available (Pend Oreille County PUD 2000).
- University of Idaho recreation and tourism surveys or studies in the region.
- SR 31 border crossing data – U.S. Border Patrol anecdotal data or other information, as available.
- An Assessment of Outdoor Recreation in Washington State (a SCORP document) (IAC 2002 and 2003).
- Ongoing IAC statewide recreation survey data by CTED tourism regions (should be available in 2007).

The regional survey and public input sources listed above will be used to help characterize use levels and visitor characteristics in the region and how these characteristics may potentially affect recreational use in the Project area and vicinity in the future. Some questions used in the regional data collection efforts listed above will also be considered in the Visitor Questionnaires (described below) to determine if similarities and/or differences exist between regional responses and Project area and vicinity visitor responses.

Visitor Counts

The objective of visitor counts is to establish an estimate of existing visitor use levels and activity participation in the Project area and vicinity particularly at recreation sites of interest. The focus of visitor counts will be on SCL-managed recreation sites and use areas at the Project, dispersed reservoir shoreline use areas, and the reservoir surface area (i.e., watercraft use). Visitor counts will similarly be conducted at non-SCL-managed recreation sites in and/or adjacent to the Project. Visitor count methodologies are described below for the primary SCL-

managed sites (Vista House, Tailrace Recreation Area, and Forebay Recreation Area), as well as those in the Project area and vicinity (Metaline Waterfront Park, Campbell Park Boat Ramp, Crescent Lake Recreation Area, SR-31 Sweet Creek Falls Rest Area, dispersed shoreline use areas, and the reservoir surface).

SCL-Managed Recreation Sites

At the three SCL-managed recreation sites, a combination of on-site visitor counts and visitor registries will be used to gather existing use information. Given an adequate sampling schedule, on-site visitor counts are an effective and generally accurate method of collecting recreation and public use level information (Watson et al. 2000). On-site counts coupled with the use of visitor registries are a particularly efficient and potentially more accurate method of developing use level estimates (Hornback and Eagles 1999). On-site visitor counts typically involve the observation of visitors to a recreation site by trained field researchers for a specified period of time. Visitor registries are forms that visitors use to self-record their visit to a recreation site. Visitor registries are currently used at both the Vista House and Tailrace Recreation Area (currently at the Visitor's Gallery only, but could be expanded to include the Security Gate entrance as well).

During on-site visitor counts, the following types of information, among others, will be recorded on a standardized count form (to be developed prior to field work):

- Code #, location, date, time, and weather
- Number of vehicles entering/exiting site
- Number of parking spaces occupied
- Number of campsites occupied (Forebay Recreation Area only)
- Boat launch use and watercraft type (Forebay Recreation Area only)
- Number of people observed
- Activities observed, including number of participants per activity
- Estimated compliance rate with visitor registry
- Estimated length of stay of visitors to site (day use only)
- Other anecdotal information (e.g., facility issues, visitor conflict, etc.)

Visitor count periods will be scheduled for 2- to 4-hour periods of time (as needed to collect adequate data) to adequately observe on-site use. On-site visitor count periods will also be scheduled during the Recreation Surveys data collection period using a stratified (by season and day) random sampling technique. Sampling frequency will include an adequate number of sample periods and will be scheduled to ensure that collected data can be generalized over a one-year period of time for a statistically accurate use estimate.

The visitor registries currently being used at both the Vista House and Tailrace Recreation Area will be modified to include the following information:

- Date of visit
- Number of people in group
- Zip or postal code of primary residence
- First visit to Project area or recreation site

Other information that is currently being collected on the visitor registries (name, address, and comments) may still be used on the new visitor registry forms at SCL's discretion, though this information will likely not be used to generate use estimates. Additionally, at the Forebay Recreation Area (currently no visitor registry), a new visitor registry form for the campground will be developed. At a minimum, this form will include the following:

- Date of visit
- Intended length of stay
- Number of people in group
- Zip or postal code of primary residence
- First visit to Project area or recreation site

Additional brief questions may also be considered as long as the registry form does not become too lengthy.

As an example, the campground visitor registry may use a card format that includes a portion that is placed on the vehicle's dashboard (or other location) and a portion that is collected on a daily basis (this portion will have the information listed above).

On-site count and visitor registry methods are summarized by recreation site in Table 2.4-3. All data collected through the on-site visitor counts and visitor registries will be compiled and summarized by site, season, and for the year-long Recreation Surveys period or as amended.

Table 2.4-3. Summary of on-site count and visitor registry methodology for SCL-managed recreation sites in the Project area.

Recreation Site	On-Site Counts	Visitor Registry	Other
Vista House	*Yes*, per predetermined sampling schedule.	*Yes,* modified to include new information. Compliance rate will also be monitored during on-site counts.	- -
Tailrace Recreation Area	*Yes*, per predetermined sampling schedule. Sampling schedule at this site may be modified if vehicle/ visitor counts are performed at the Project access road gatehouse.	*Yes,* modified to include new information and a second registry at the Security Gate entrance. Compliance rate will also be monitored during on-site counts.	During the Recreation Surveys period, SCL staff will keep a record of group tours of the Visitor Gallery/ Machine Hall, including date, group origin, and number of people in the group.
Forebay Recreation Area	*Yes*, per predetermined sampling schedule.	*Yes,* for campground and boat ramp areas.	Number of watercraft in Forebay area will also be counted during routine on-site visitor counts.

Non-SCL-Managed Recreation Sites

Similar to the SCL-managed recreation sites, periodic on-site visitor counts and activity observations will be performed at Metaline Waterfront Park, Campbell Park Boat Ramp, Crescent Lake Recreation Area, and SR-31 Sweet Creek Falls Rest Area. A similar on-site count methodology to that used at SCL-managed recreation areas (described above — except for registries) will be used at these other recreation sites. The focus of on-site counts at Metaline Waterfront Park and Campbell Park Boat Ramp will be on use of the reservoir and the boat launching facilities at these locations, other shoreline uses such as fishing or swimming, and watercraft use and type. Non-shoreline-related activities at these sites will be described based on existing quantitative and/or anecdotal information collected from the Town of Metaline and Pend Oreille County PUD, such as observed peak use conditions at locations throughout these sites. For Crescent Lake Recreation Area and SR-31 Sweet Creek Falls Rest Area, the focus of the effort at these sites will be on collecting data on Scenic Byway-related use and visitor use linkages to the Project, if any. The BLM Boundary Recreation Site is discussed below.

Dispersed Recreation Sites and Use Areas

While limited opportunities currently exist for dispersed shoreline recreation, use will be monitored at well established sites that have been identified by SCL through other study elements. Because most existing dispersed shoreline sites and use areas can only be accessed by watercraft, dispersed shoreline use counts will be scheduled to coincide with on-water counts (described below). Identified dispersed recreation sites that are not located along the immediate shoreline will be surveyed on foot or by vehicle using existing roadways. At a minimum, the following count information will be recorded for each identified dispersed use site or area:

- Location, date, time, and weather
- Number of people observed at site
- Activities observed, including number of participants per activity
- Other anecdotal information (e.g., facility issues, visitor conflict)

Use counts at the BLM Boundary Recreation Site will be combined with dispersed use counts and on-water counts because this site is easier to access by watercraft than by vehicle on land. Quantitative and/or other anecdotal information as available from BLM will also be collected for this site, as well as other shoreline areas managed by BLM. The condition of dispersed sites and use areas will be addressed in the Dispersed Recreation Use, Access, and Condition Analysis.

Reservoir Surface Area

To estimate watercraft use and type on Boundary Reservoir, periodic on-water counts will be performed. During on-water counts, the following types of information will be recorded on a standardized count form (to be developed prior to field work):

- Date, time, and weather
- Number of watercraft observed by type and location on the reservoir
- Number of people per watercraft
- Activities observed, including number of watercraft/participants per activity
- Other anecdotal information regarding watercraft use

On-water counts will be conducted from watercraft on Boundary Reservoir. These counts will be completed by sweeping directional counts of the reservoir surface (e.g., from north to south or south to north along the entire reservoir surface area), as this methodology will help minimize potential double-counting of watercraft. To facilitate data collection and summary, the reservoir surface area will be divided into geographic zones (e.g., upper reservoir, lower reservoir, canyon area, forebay area). On-water count periods will be scheduled during the Recreation Surveys data collection period when boat ramps on Boundary Reservoir are fully operational using a stratified (by season and day) random sampling technique. An adequate amount of on-water time (per count period) will be scheduled to complete all on-water counts, including dispersed shoreline use counts. Additionally, an adequate number of sample periods will be scheduled to ensure that collected data can be adequately estimated over a 1-year period of time for a relatively accurate use estimate.

Private RV Resorts/Campgrounds and Mill Creek/Sullivan Lake Campground Concessionaires

Private recreation business owners/operators near the Project (SR 31 corridor) and concessionaire operators of nearby USFS campgrounds (Mill Pond and Sullivan Lake) will be informally surveyed to identify the following information, as available:

- Inventory of facilities including any plans to expand facilities and services
- Facility use levels and capacity

- Season of operations
- Visitor information including origin, length of stay, party size, activities, etc.
- Anecdotal information about trends
- Fees charged and average funds expended by RV and tent campers

Project Area Visitor Questionnaires and Area Resident Questionnaires/Focus Groups

Visitor questionnaires will be used to collect more detailed information about visitors to the Project area and their perceived preferences and needs. Questionnaires are particularly useful in recreation data collection and monitoring because their cost is relatively low in comparison with other methods, they allow a large amount of information to be collected, their results can be generalized to describe the sampled population, and their results tend to be highly accurate. Questionnaires do have limitations that need to be addressed, however, including lack of control over individual responses resulting from potential misconceptions and misunderstandings of survey questions. These limitations can be minimized through appropriate planning and pre-testing (Pizam 1994).

Two questionnaires are proposed: (1) Project area visitor questionnaire, and (2) area resident questionnaire. The Project area visitor questionnaire will be used at recreation sites and use areas in and adjacent to the Project to gather information from visitors at these sites. The area resident questionnaire will be used to gather information from area residents (towns or areas near Metaline, Metaline Falls, Ione, Salmo, and Trail) who may or may not use the Project area for recreation. In addition to the area resident questionnaire, activity focus groups will also be used to gather information related to area residents and their use of the Project area for various recreation activities. Each of these questionnaires is discussed in more detail below.

Project Area Visitor Questionnaire

The objective of the Project Area Visitor Questionnaire is to assess the attitudes, perceptions, needs and characteristics of visitors to developed recreation facilities and dispersed recreation use areas in the Project area. The Project Area Visitor Questionnaire may be potentially administered using a variety of techniques including on-site, telephone, internet, and mail, among others. Given the limited number of public access and recreation sites in the Project area, the visitor questionnaire will likely be distributed on site using an intercept or drop-off survey method that tends to increase the response rate by personally communicating the importance of the survey to participants and assuring their confidentiality (Salant and Dillman 1994). A well-planned intercept / drop-off questionnaire will also likely result in an adequate response rate for purposes of this analysis (Pizam 1994, Salant and Dillman 1994). Anticipated questionnaire format and topics, sampling methodology, and questionnaire protocol are discussed below.

Questionnaire Format and Topics — The format and topics will vary between developed facilities and dispersed use area visitor questionnaires. Participation in a questionnaire is greatly affected by the details of the questionnaire, including surveyor message, cover design, and format. The length of the questionnaire will need to be limited to encourage on-site participation and a higher response rate. If the length of the questionnaire is not conducive to on-site administration, a different method will be considered (e.g., mail, combination on-site and mail,

or internet). The questionnaire will include topics and questions that are typically asked of visitors to FERC-licensed hydroelectric projects, as space allows. Questionnaires will differ between developed facilities and dispersed use areas. The questionnaires will include questions related to the following topics:

- Primary destination/other sites visited
- Primary and secondary activities
- Group size
- Origin of main residence by Zip or postal code
- Other regional recreation areas used
- Alternative recreation destinations to the Project by zone (5 miles, 25 miles, 50+ miles)
- Visitor and facility conflicts or concerns
- Perceived crowding levels
- Changes to use patterns due to crowding
- Facility and service adequacy and needs
- Demographics
- Waste options and water quality
- Reservoir pool level fluctuation concerns
- Access adequacy and needs
- Reasons for coming to the area
- How visitors heard about the area
- Awareness and use of specific portions of the Project area
- Positive or negative attributes of the existing aesthetic landscape at selected Key Observation Points (KOPs)
- Average funds expended by their party during the visit and willingness to pay questions
- General comments (will be encouraged)

In addition to survey length and relative order of questions, the format of the questionnaire is also important to the overall success of the study. Questionnaires are typically produced as booklets, on good quality paper using professional printing techniques. The booklet format can be produced in varying sizes, makes use of double-sided printing, and can be modified to incorporate stimulating graphics, if needed. Other questionnaire formats may potentially be acceptable.

A good questionnaire cover (assuming a booklet format is used) helps stimulate interest in participating in the survey process and can significantly influence response rates (Salant and

Dillman 1994, Watson et al. 2000). A well-designed cover typically includes the following four components:

- An informative title—the title will convey as simply as possible the topic of the questionnaire; it should be memorable and neutral, not misleading or biased.
- A graphic design or illustration—a design or illustration helps generate interest; it should be simple and representative of the questionnaire topic.
- The name, address, and logo of the questionnaire's sponsor(s)—providing the name, address, and logo of the questionnaire's sponsor(s) helps establish the legitimacy of the survey.
- A unique identification number—each questionnaire will have a unique identification number. Using identification numbers enables completed questionnaires to be linked to an electronic record (database/spreadsheet entry) for Quality Assurance/Quality Control purposes.

A complete map of the Project area and vicinity will be included. A back cover will be used to elicit additional comments from questionnaire participants. The back cover will also include a thank-you statement, as well as a contact name and address and/or phone number if participants have further questions/concerns.

Sampling Methodology — The sampling methodology will vary between developed recreation facilities and dispersed use area visitor questionnaires. The benefit of a well designed sample population is the "ability to obtain information from a relatively few respondents to describe the characteristics of an entire population" (Salant and Dillman 1994). The number of visitors included in the sample population will depend on the estimated number of visitors to the Project area. Existing use estimates, such as the 2002 FERC Form 80 data, will be reviewed and adjusted up or down to estimated current conditions based on input from Project operators and others who routinely observe Project area conditions and changes in use patterns through the years.

A large enough sample population will be selected to achieve a reasonable confidence level and sampling error. A 90–95 percent confidence level and 5–10 percent sampling error are typically used in recreation and other social research efforts.

A random sample of visitors will be chosen from the entire population of Project area visitors. A simple random sample "is the selection of items from the population such that each item has an equal probability of being selected" (Watson et al. 2000). To increase the efficiency of selecting a random sample of visitors, a systematic sampling procedure will be used to select potential questionnaire participants. A sample is obtained by randomly selecting the first visitor and then selecting other visitors based on a predetermined interval. For example, instead of continuously selecting a random vehicle/visitor to approach, every third vehicle entering a site would be approached to participate in the questionnaire using this sampling methodology. In areas of lower recreational use (dispersed use areas), a census of all visitors may be selected during survey periods to ensure an adequate number of questionnaires are completed.

Visitors to the Project area will be contacted on multiple days according to a predetermined stratified schedule. The sampling schedule will be stratified proportionally by location (Vista House, Forebay Recreation Area, etc.), season (e.g., peak summer season, early shoulder season, later shoulder season), and by type of day (e.g., weekend day, weekday, holiday). Scheduling assumptions will be reviewed with SCL site managers familiar with seasonal use and trends to confirm percent allocation assumptions. For example, if 75 percent of existing use occurs during the peak summer season, then 75 percent of sample days will be randomly scheduled during the peak summer season. Additionally, if 80 percent of peak summer season use occurs on weekends, then 80 percent of sample days will be randomly scheduled during peak summer season weekends. Using a proportionally stratified sampling methodology tends to be more statistically efficient than a simple random sample, especially when distinct strata are identifiable. This sampling methodology will also be developed to adequately capture all significant user groups (e.g., anglers, reservoir boaters, overnight visitors, sightseers).

A well-designed survey and sampling technique will reduce the potential for non-response bias. The intercept / drop-off method tends to increase response rate by personally communicating the importance of the questionnaire to potential participants. A stratified simple random sampling technique is also proposed, increasing the probability of a representative sample of the population. Additionally, the potential for non-response bias is also reduced by achieving a 90–95 percent confidence level, a 5–10 percent margin of error, and an adequate sample size.

Using all of these methodologies, the potential for non-response bias still exists; however, it is relatively lower and should not have significant impacts on the results. It should be noted, however, that even with these methodologies, some people in the population will not be represented. Two types of people in particular will not be represented: (1) those people in the population who currently do not use the Project area but might in the future, and (2) those people who may have visited the Project area in the past, but no longer do so. Acknowledging this fact does not decrease non-response bias, but does address the limitations of this survey methodology. Other methodologies, such as reviewing regional survey and public input data and also statewide regional demand for recreation activities and facilities, will be employed to help portray the perceptions of other visitors who may not visit the Project area. Additionally, the Area Resident Questionnaire and focus groups should also help gather information on these types of potential past and/or potential Project area visitors.

Questionnaire Protocol – The protocol will vary between developed recreation facilities and dispersed use area visitor questionnaires. Visitors will be contacted regarding participation in the questionnaire at each of the developed recreation sites in and/or adjacent to the Project area according to a predetermined random schedule (see Sampling Methodology, above). A trained visitor survey crew will be responsible for contacting potential respondents. Potential respondents will fill out the questionnaire on-site (where they are contacted). A drop-off location may also be considered for visitors to return their completed questionnaires as they leave the Project area. To help improve response rates, SCL may consider compensating participants with a small incentive award, similar to other surveys conducted in the industry.

Area Resident Questionnaire

Differences in visitor perception, use, activity, and needs may exist between local and vicinity residents and Project visitors from outside of the Project vicinity such as Spokane. These potential differences will be identified and explored through the use of an Area Resident Questionnaire. In addition, focus groups will be used to gather information regarding area resident activity participation (or non-participation) in the Project area. Questionnaire format and topics, sampling methodology, and questionnaire protocol are discussed below.

Questionnaire Format and Topics — The Area Resident Questionnaire will be developed using the same formatting guidelines discussed in the Project Area Visitor Questionnaire. The questionnaire itself will focus on recreation-related issues and needs that apply specifically to area residents in the towns of Metaline, Metaline Falls, Ione, Salmo, and Trail. The survey will also replicate many of the items in the Project Area Visitor Questionnaire so that data from the two groups can be compared.

Sampling Methodology — Area Resident Questionnaire participants will be randomly selected from a list of residents in the Project vicinity. This list will be developed from homeowner associations, county tax records, and/or local phone books. The number of area residents included in the sample population will depend on the total number of residents in the Project vicinity. For purposes of this analysis, the Project vicinity will be limited to Metaline, Metaline Falls, Ione, Salmo, and Trail. A large enough sample population will be selected to achieve a reasonable confidence level and sampling error. A 90–95 percent confidence level and 5–10 percent sampling error are typically used in recreation and other social research efforts.

Questionnaire Protocol — Area Resident Questionnaires will be sent through the mail using the random sampling approach detailed above. Up to three mailings will be sent to potential participants, as is common in mail survey research (Salant and Dillman 1994). The first mailing will include a cover letter, a copy of the questionnaire, and a stamped return envelope. Two weeks after this initial mailing, a postcard reminder will be sent to those individuals who have not returned a questionnaire (tracked via unique questionnaire numbers). Two weeks after the second mailing, a third and final mailing will be sent to those potential participants who have not yet returned a completed questionnaire. This third mailing will include a reminder cover letter, a second copy of the questionnaire, and a new stamped return envelope. Using multiple mailings will help to ensure an adequate response rate and will also allow for non-response bias statistical-related testing.

Area Resident Focus Groups — In addition to the Area Resident Questionnaires, three focus group meetings will be held with area residents. Focus groups will be defined by activity types, such as hunting, boat and bank fishing, and general recreation use. Names of individuals will be solicited from representatives of sports organizations and the towns of Metaline, Metaline Falls, Ione, Salmo, and Trail. Focus group meetings will be convened in the vicinity of the Project and will allow participants the opportunity to discuss their current use (or non-use) of the Project area and their desired future condition. Aesthetic-related questions will also be asked of focus group participants for use in the Aesthetic/Visual Resource Study. Specific details and logistics of the focus groups will be developed.

Compile and Summarize Recreation Surveys Results

Following completion of the Recreation Surveys data collection effort, data will be analyzed and summarized and a Recreation Surveys report will be prepared. Results will be summarized in text, table, and graphic format, and conclusions will be drawn, as appropriate. The report will provide an overall estimate of recreation use levels in the Project area, as well as site-specific use estimates. Visitor use estimates will be provided in Recreation Days (RD), FERC's preferred unit of recreation measurement. The Recreation Surveys report will also provide a detailed summary of visitor types, characteristics, preferences, needs, and attitudes. Where appropriate, relevant regional survey and public input data will also be incorporated into the Recreation Surveys report to support or counter results obtained in the Project area and vicinity. Tables, charts, and other graphics will be used to visually display the results of the Recreation Surveys. The individual Recreation Surveys study element results will be comprehensively assessed later in the recreation needs analysis and synthesis and development of the proposed RMP for the Project, as appropriate.

Regional Recreation Analysis

Study Element Goals and Objectives

The goal of the RRS is to provide information necessary to analyze current and future recreational use, opportunities, and needs at the Project and in the region. The objective of the Regional Recreation Analysis study element of the RRS is to analyze recreation information related to the supply and demand of regional recreation resources near the Project and to place the Project in the proper regional context. This is an important step in determining the role of the Project area in meeting a portion of regional recreation demand, and in planning for future recreational development, if needed, on or near Project lands.

The following represent objectives that the Regional Recreation Analysis study element is designed to address:

- Define approximate boundaries of the region by zone (likely including the local area, vicinity, more distant areas of Pend Oreille County and potentially adjacent Washington state counties such as Spokane County, and nearby areas of the northern Idaho panhandle and southern British Columbia within the Scenic Byway corridor).
- Identify similarities, differences and relative significance of the Project area's recreational resources and opportunities within each zone and the broader regional context.
- Document existing regional recreation opportunities by zone including specific facilities, use areas, and capacities.
- Identify regional alternatives to Project area facilities, use areas, and opportunities by zone.
- Broadly assess current use levels for regional recreation opportunities, facilities, and use areas by zone.
- Identify relevant regional trends in recreation participation and demand.

- Understand the role and significance of the Scenic Byway (SR 31) (a component of the International Selkirk Loop) to the region and to the Project area, including existing and projected use of the Scenic Byway and existing and planned facility components and visitor programs.

While the Regional Recreation Analysis is broader in scope (goals and objectives) and geographic context compared to the other study elements, the primary focus will be on Project-related recreational activities and opportunities with a Project nexus.

Need for Study Element

The Project area is both similar to other areas and unique in the region. It is one of several water-based flat water recreational resources in the region offering recreational opportunities that are similar to other river corridors and/or reservoirs/lakes in the region. At the same time, the Project's canyon area downstream of Metaline Falls is likely unique in the region with no known comparable equivalent recreational experience. The Project area also has the SR 31 Scenic Byway traversing through the Project area, and interpretation and education (I&E) opportunities exist at both Project facilities and along the Scenic Byway. The Regional Recreation Analysis is intended to adequately describe the regional context of the Project from a recreational perspective and to help define the roles of the Project in this broader regional context. The Project likely plays different roles in helping satisfy regional demand for recreational activities and opportunities.

Summary of Existing Information

The PAD provides a brief summary of regional recreation use areas and facilities (see PAD section 4.8.9 – Regionally or Nationally Important Recreation Areas within the Project Region), as well as regional and national activity participation and demand trends (see PAD section 4.8.3 – Current Recreation Use in the Project Vicinity and Region).

For the PAD, the region was defined as the Pend Oreille River Valley north of Newport and west of the Washington-Idaho border to the Canadian border. While the greater Pacific Northwest region, including Washington, Oregon, Idaho, and British Columbia, has an abundance of outdoor recreation opportunities, the Project region for the PAD was limited to the Pend Oreille River Valley because outdoor recreation sites and facilities in this area represent the most likely substitute sites for Project vicinity recreation sites (i.e., recreation sites in proximity to and with similar settings and available opportunities to those found in the Project vicinity). Regional facilities and associated opportunities include SR 31 Scenic Byway sightseeing and driving for pleasure, RV and tent camping, picnicking, swimming, day use hiking and bicycling, wilderness backpacking and hiking, whitewater boating, visiting historic and I&E-related sites, wildlife observation and photography, fishing, hunting, and others.

Recreation use areas and facilities of regional significance discussed in the PAD include the following:

- Colville National Forest (USFS):
  - Salmo-Priest Wilderness Area

  - Mill Pond Campground and Day Use Area
  - Sullivan Lake Campgrounds (Sullivan Creek Hydroelectric Project)
  - Noisy Creek Campground and Day Use Area (Sullivan Creek Hydroelectric Project)
  - Edgewater Campground and Day Use Area
  - Old Ruby Ferry (East) Public Boat Launch
  - Lake Leo Campground and Boat Launch
  - Lake Thomas Campground
  - Gillette Campground
  - Lake Gillette Campground
  - Panhandle Campground and Boat Launch
  - Browns Lake Campground and Boat Launch
  - South Skookum Lake Campground and Boat Launch
  - Pioneer Park Campground and Day Use Area
- Little Pend Oreille National Wildlife Refuge (U.S. Fish and Wildlife Service)
- North Pend Oreille Scenic Byway/International Selkirk Loop:
  - Tiger Historical Museum (existing)
  - Ione Riverfront Park (existing)
  - Box Canyon Overlook (existing)
  - Eagle's Nest View Site (proposed)
  - Sweet Creek Falls Site (existing)
  - Metaline Falls Overlook Pocket Park (proposed)
  - Crescent Lake (existing)
  - Abercrombie-Hooknose Viewpoint (existing)
  - Mill Pond Flume Historic Site (existing)
  - Crawford State Park (existing)
  - Cutter Theater and Museum (existing)
- Flume Creek Mountain Goat Viewing Area (WDFW)
- Big Meadow Lake (WDFW)
- Old Ruby Ferry (West) Boat Launch (WDFW)
- Pend Oreille County River Access Site (Pend Oreille County)
- Campbell Park (Box Canyon Hydroelectric Project, Pend Oreille County PUD)
- Manresa Grotto (Kalispel Tribe)
- Kalispel Boat Launch (Kalispel Tribe)
- Ione City Park (Town of Ione)
- Cusick Boat Launch (Town of Cusick)

The list above is not exhaustive but does capture most nearby and/or regionally significant recreation use areas and facilities that offer similar activities and opportunities to those available in the Project area. Other nearby and/or regionally significant recreation use areas and facilities include rivers and trails designated under the Wild and Scenic River Act (Priest River) or National Trail System (Pacific Northwest National Recreation Trail, Kettle Crest National Recreation Trail, Lewis and Clark National Historic Trail, and Grassy Top and Lakeshore National Recreation Trails in the Sullivan Lake area).

Several estimates of regional recreational use are available and help define recreational use level characteristics of the region, including the Project vicinity. These regional use level estimates were included in the PAD and include the following:

- Colville National Forest National Visitor Use Monitoring Results (USFS 2004)
- Pend Oreille Valley Tourism and Marketing and Development Assessments (Dean Runyun Associates 2005)
- Final Environmental Impact Statement for the Box Canyon Hydroelectric Project (FERC 2004)
- Final Environmental Impact Statement for the Sullivan Creek Hydroelectric Project (FERC 1998)
- An Assessment of Outdoor Recreation in Washington State (IAC 2002 and 2003)
- Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell et al. 1999)

Overall, these estimates indicate that most use in the Project vicinity occurs in the summer season (Memorial Day to Labor Day), most visitors tend to be fairly local (i.e., from counties in northeastern Washington), and nearly all regional recreation facilities and use areas are currently being utilized below their design capacity, though many sites experience near-capacity utilization (occasionally exceeding design capacity) during a few summer weekends and holidays. In general, future participation rates in most outdoor recreation activities are anticipated to increase at the state level; however, both fishing and hunting, activities occurring in the Project vicinity, are expected to decline over the next 20 years. The anticipated decrease in fishing and hunting participation at the state level may be less pronounced in the Project vicinity due to their current popularity in the region.

Need for Additional Information

The Project area is one of several water-based recreation resources in the region. Visitors from northeastern Washington, as well as other states and countries, likely come to the Project area for its existing recreation opportunities and scenic qualities, among other factors. The results of the Regional Recreation Analysis will build off the preliminary regional information presented in the PAD and will help provide the data and analysis necessary to better understand the role of the Project in the context of the surrounding regional area and its recreational opportunities.

The Regional Recreation Analysis will further investigate the International Selkirk Loop and its component SR 31 Scenic Byway and the loop's regional significance and relationship to the Project. This highway loop was recently designated a National Scenic Byway in the U.S. Other scenic byways that have received national designation have seen an increase in visitation. This component of regional recreation and tourism will be further explored.

This analysis is intended to help focus decision-making about what kinds of recreation facilities and services may be needed in the Project area in the future (30 to 50 years). If certain facilities or opportunities are already provided in the vicinity or region, perhaps they do not need to be provided and duplicated in the Project area. Alternatively, if the Project area provides unique opportunities that are not available elsewhere in the vicinity or region, then perhaps they should become the focus of new recreation development in the future.

These types of results will feed into the subsequent recreation needs analysis and synthesis that will compile the results from this and other RRS study elements. Based on findings of the recreation needs analysis and synthesis, SCL will prepare a proposed RMP for the Project that will define actions to be taken by SCL to help meet existing and future Project-related recreation needs over the term of the new license (30 to 50 years).

Detailed Description of Study Element

Study Area

As previously noted, the Project region in the PAD was defined as the Pend Oreille River Valley north of Newport and west of the Washington-Idaho border to the Canadian border. A component of the methodology of the Regional Recreation Analysis study element is to define an appropriate regional boundary and local and vicinity zones within that region (see Proposed Methodology, below). For purposes of this study element, the revised regional boundary may be more extensive than the regional boundary described in the PAD. The revised regional boundary should represent the likely extent of substitute recreation opportunities (considering travel times, setting, facility conditions, and quality of experience, among other factors) and may include not only northeastern Washington, but also the northern Idaho panhandle and southern British Columbia where the scenic byway corridor passes through these areas.

This assessment is not intended to be an exhaustive analysis of all recreation alternatives to the region. Rather, it is intended to focus on surrounding regional recreation resources that may affect the Project and that may provide alternatives for Project area visitors.

Proposed Methodology

The proposed Regional Recreation Analysis methodology includes three primary tasks:

1. Determine the regional study area boundary.
2. Collect and analyze regional data.
3. Develop Regional Recreation Analysis results.

Each of these proposed tasks is described in detail below.

Determine the Regional Study Area Boundary

One of the first tasks of the Regional Recreation Analysis will be to determine an appropriate regional study area boundary, while considering Project nexus and context. The regional study area boundary would encompass major recreation destinations that offer similar types of reservoir water-based and shoreline-related recreation opportunities within a reasonable distance to the Project area. Three regional study area distances or zones from the Project area are tentatively proposed, including: (1) a 5-mile radius (local residents and visitors at or near the Project), (2) a 25-mile radius (residents and visitors in the Project vicinity), and (3) a 50+-mile radius (regional visitors; the outer radius distance will need to be further examined during this analysis). These zones may be modified based on further study. Regional recreation use areas and facilities that offer similar types of reservoir water-based and shoreline-related recreation opportunities within each of these three distance zones will be identified.

Differences in visitor perception, use, activity, and needs may exist between local and vicinity residents and Project visitors from outside of the Project vicinity. These potential differences will be explored. Recreation travel characteristics (trips per year, travel distance, etc.) and recreation preferences of visitors and local residents (recreation facilities, activity participation, opportunities, etc.) will be surveyed in the Project area (as a component of the Recreation Surveys study element to the RRS). Differences in survey results between residents and non-residents will be noted, if any.

Existing and new/ongoing regional visitor survey information will also be reviewed to help define the regional study area boundary and regional study needs related to the Project, including, among others:

- Existing Colville National Forest National Visitor Use Monitoring (NVUM) survey results (USFS 2004)
- Additional USFS NVUM survey results as available (should be available in 2009; these data may need to be considered following completion of the study)
- Pend Oreille Valley Tourism and Marketing and Development Assessments (Dean Runyun Associates 2005)
- An Assessment of Outdoor Recreation in Washington State (IAC 2002 and 2003)
- Ongoing IAC statewide recreation survey data (available by CTED tourism regions) that should be available by November 2007

Collect and Analyze Regional Data

Within local and vicinity zones and a broader regional study area, information will be obtained on relevant recreation facilities, activities, and opportunities that are available. Regional activities/sites that will likely be assessed include I&E sites, sightseeing, wildlife observation and photography, power and non-power boating, personal watercraft (PWC) use, boat and bank fishing, hunting, RV and tent camping, picnicking, hiking/walking, and swimming, among others.

To obtain regional recreation supply and demand information for this analysis, the following entities or resources, among others, will be contacted and/or existing reports will be reviewed:

- Kalispel Tribe
- USFS
- BLM
- National Park Service
- U.S. Fish and Wildlife Service
- U.S. Department of Transportation Federal Highway Administration
- Interagency Committee for Outdoor Recreation (State of Washington)
- Washington State Parks and Recreation Commission
- Washington Department of Fish and Wildlife
- Washington Department of Transportation
- Washington State Tourism
- Washington Outfitter and Guides Association
- Spokane Convention and Visitors Bureau
- International Selkirk Loop
- Pend Oreille County PUD
- Idaho Department of Parks and Recreation
- Idaho Department of Commerce, Tourism Division
- Idaho Outfitters and Guides Association
- Pend Oreille County, WA
- Stevens County, WA
- Spokane County, WA
- Boundary County, ID
- Bonner County, ID
- Kootenai County, ID
- British Columbia Parks, Ministry of Environment
- BC Hydro, Seven Mile Dam Project
- City of Spokane, Parks and Recreation Department
- Boundary Tours
- Selkirk Trail Blazers
- Northeast Washington Forestry Coalition (Recreation Subcommittee)

- Spokane Mountaineers
- Back Country Horseman
- Pacific Northwest Trail Association

Some of the contacts within these organizations and/or agencies may also be asked to participate in focus group meetings, as appropriate.

Existing recreation supply and demand information will be obtained from these sources, as available, focusing on water-based recreation and shoreline recreation activities with possible linkages to the Project. Each of these sources will be contacted and asked to provide information regarding the extent of current recreation facilities and use areas, the level of utilization of these facilities and use areas, and recreational opportunities that can be pursued in their respective area. Anecdotal information also will be obtained from staff at these entities regarding the perceived adequacy of facilities to meet potential increases in visitation over time. This information will assist in determining the regional supply and demand for recreation facilities and current and anticipated use in the future that may affect capacity of facilities and use areas.

A separate objective of this assessment is to characterize the demand for various recreational activities and how this demand may change in the future. Potential changes in use levels in the Project area will be discussed, including the SR 31 Scenic Byway recently being designated a National Scenic Byway and the increased cost of fuel and its affect on recreational travel. Regional demand information will be obtained from the entities and sources listed above to determine anticipated changes in demand for various outdoor recreation activities. This information will be combined with updated national and regional demand forecasts from other recent publications and sources.

Data on projected changes in regional population will also be collected and analyzed in this task as a way to gauge the anticipated impact of population changes on recreation activity participation and demand at the Project. Anticipated changes in county and town populations and demographics over a 30- to 50-year period will be identified from existing information (some information is currently provided in the Pre-Application Document (PAD) (SCL 2006a).

Develop Regional Recreation Analysis Results

Regional recreation opportunities will be described for each of the primary recreation activities in the Project area. The relative significance of the Project's recreational opportunities will be compared with other regional opportunities for the same activity type within regional boundary zones (tentatively 5-mile, 25-mile, and 50+-mile radii).

Regional demand and supply for the Project's most popular primary recreation activities will be discussed. A comparison of Project and regional recreation supply and demand factors will be used to characterize overall recreation needs for the region that relate to the Project area. Project-specific considerations will be identified and assessed later during the recreation needs analysis and synthesis and development of a proposed RMP for the Project.

Dispersed Recreation Use, Access, and Condition Analysis

Study Element Goals and Objectives

The goal of the RRS is to provide information necessary to analyze current and future recreational use, opportunities, and needs at the Project. In addition to developed recreation facilities, dispersed recreation sites and use areas and public access/trails to and along the reservoir shoreline and water surface are important recreational components to be considered in the Project area.

For this study element, trails (land and water) are non-motorized and are defined in the Washington State Trails Plan (IAC 1991). Dispersed recreation sites and use areas include undeveloped day use and overnight recreation sites/use areas that are user-defined and may be accessible by foot, watercraft, or vehicle.

Specific objectives of the Dispersed Recreation Use, Access, and Condition Analysis study element of the RRS include the following:

- Identify and document/map existing and potential dispersed recreation use areas and sites in the Project area. Physical site attributes of existing sites will be defined (e.g., location, slope, vegetation, access). The presence of user-created facilities will be inventoried (e.g., campfire rings, benches and tables, tent pads, trails, excavated sandy beaches, boat mooring poles). Likely users will be identified based on anecdotal information (e.g., access to each site, impacts observed, and observations).
- Identify and document/map existing road, foot trail, and/or watercraft access routes used by the public and SCL to access the Project shoreline, Project facilities, or along the reservoir water surface. In addition, potential road and/or trail routes that may potentially be developed in the future for enhanced public access will be noted. Information to be obtained along existing routes includes the qualitative condition of site features and/or routes, presence of fencing, gates or other barriers (natural or man-made), presence of posted signs that may direct or prohibit public access, impacts observed along these routes such as erosion, and an assessment of the likely users of these land and water routes. Additional detailed information on Project-related roads and their condition will be collected and analyzed in the Land and Roads Study (see Attachment 2, Study No. 22 of this RSP).
- Identify and document/map trail and dispersed site-related ecological impacts (e.g., vegetation damage or removal, wetland impacts, exposed soil and compaction, accumulated litter and debris, sanitation issues). Identify the likely users of these areas or sites based on observed impact and access, such as OHV use. Evaluate and quantify the location, timing, and extent of user-related impacts to sensitive Project area lands, waters, and resources.
- Identify opportunities and constraints to maintaining or enhancing dispersed recreation use areas, sites, and public road/trail access within the Project area.
- Identify the potential effects of projected future private shoreline development directly adjacent to but outside of the Project boundary on dispersed recreation use

areas, sites, and public road and trail access in the Project area. Identify the potential effects of current and potential future Project operations on dispersed recreation use areas, sites, and public road/trail access.

Need for Study Element

Summary of Existing Information

During the preparation of the PAD, SCL staff visually identified multiple dispersed recreation sites (undeveloped use areas with user-created site features and/or impacts such as fire rings, benches, bare ground, vegetation damage, etc.) along the Boundary Reservoir shoreline. Other sites were identified by SCL staff knowledgeable of visitor use areas and dispersed sites (undeveloped areas where visitors have been previously observed participating in recreational activities). These sites are primarily accessed by watercraft and are mainly used for day use, as well as some short-term tent camping. One particular area along the reservoir shoreline was being accessed by OHV users, and ecological impacts to Project lands were observed.

Vehicular access to the Project area's primary developed recreation facilities is documented in the PAD (SCL 2006a). The three developed recreation facilities operated by SCL (Vista House, Tailrace Recreation Area, and Forebay Recreation Area) are easily accessed by vehicle via SR 31 or County Road 2975. The other developed recreation facilities on Boundary Reservoir (BLM Recreation Site, Metaline Waterfront Park/Boat Ramp, and Campbell Park/Boat Ramp) are also accessed via these roads or by boat. Little is known or is documented about how the public accesses the Project shoreline for dispersed recreation purposes.

Need for Additional Information

Steep canyon walls along much of the reservoir (especially north of the SR 31 Bridge) limit dispersed recreation use in much of the Project area. Some shoreline areas, however, provide opportunities for dispersed recreation and access. A detailed inventory of existing and potential dispersed sites and use areas along the reservoir shoreline needs to be completed to adequately describe these opportunities and constraints and any potential impacts that may result from dispersed shoreline recreation use. This information is also needed to accurately describe existing and potential public road and trail access along and to the reservoir shoreline.

While vehicular access has generally been documented in the PAD (SCL 2006a), informal access (e.g., non-paved roads, user-defined trails, shoreline watercraft access) and potential future access opportunities have not been fully investigated.

Detailed Description of Study Element

Study Area

The study area for the Dispersed Recreation Use, Access, and Condition Analysis study element of the RRS includes the lands and waters within and adjacent to the Project boundary. This assessment will include SCL-owned lands in and adjacent to the Project boundary, the water surface within the Project, and adjacent public and private lands. Dispersed recreation sites and use areas that may be affected by pool level fluctuations will also be evaluated within the top 10

feet (elevations 1,980 feet to 1,990 feet NGVD 29 [1,984–1,994 feet NAVD 88]) of the reservoir pool. Above Boundary Dam, lands between the reservoir shoreline and major adjoining parallel roads and/or highways, such as SR 31, will be included in the study area relative to assessing public access to and along the reservoir. Below Boundary Dam, the study area will extend to SR 31 to the east and the SCL land ownership boundary to the west. The USFS requested[1] a 0.25-mile buffer in this downstream area; however, SCL's proposal is appropriate given restricted public access in this area due to border and Project security restrictions. In 2006, SCL collected additional information on public road and trail access in the Project area that will be used to further define this study area including study area buffer width along known public access roads and trails.

Proposed Methodology

Two primary tasks are proposed for the Dispersed Recreation Use, Access, and Condition Analysis study element of the RRS: (1) Dispersed Recreation Inventory and Condition Analysis and (2) Public Access Analysis. Each of these tasks is described below.

Dispersed Recreation Inventory and Condition Analysis

Prior to conducting a field inventory of existing dispersed recreation use areas and dispersed sites, a site condition analysis form will be developed. The site condition analysis form will be based on forms commonly used to evaluate potential biophysical impacts resulting from public use and recreation (Cole 1989, Hammitt and Cole 1998). The form will include qualitative and quantitative assessments for potential public use and recreation impacts including, but not limited to, the following:

- Vegetation (percent cover, density of site vegetation compared to surrounding area, exposed tree roots, broken tree limbs, etc.)
- Soil (percent bare ground, erosion, etc.)
- Trash (presence, amount, etc.)
- Sanitation (toilet paper, human waste, etc.)[2]
- Informal/social trails (presence, number, average width, average depth, etc.)
- Proximity to wetlands
- Location relative to pool level and ability to access and use
- Proximity to riparian habitat or other sensitive environmental features, such as nests of both listed and non-listed species
- Other man-made disturbances and/or site features (fire rings, benches, hunting blinds, etc.)

[1] Request was made in USFS's PAD/Scoping comment letter filed with FERC on August 31, 2006 (USFS 2006b).
[2] The USFS's official study request included the following task: "Determine options and procedures for addressing safety and sanitation concerns within and adjacent to the Project reservoir as a result of existing and future recreational demand" (USFS 2006b, page 1). SCL agrees that data on existing use, future demand, and carrying capacity need to be obtained before a comprehensive analysis of safety and sanitation can be completed, and therefore has not specifically included this requested task.

Shoreline erosion impacts not associated with a specific dispersed use area will be investigated separately as a component of the Erosion Study (Study No. 1). Additionally, various types of potential impacts on wildlife, vegetation, fish, water quality, and cultural resources, including those from public use and recreation, will also be assessed as appropriate during several other studies associated with each of these resource areas. To the extent possible, all resource impact-related studies will be coordinated.

Following completion of a site condition analysis form, a field inventory of existing dispersed use areas and sites will be completed. Potential dispersed use areas and sites will be identified by boat, where possible, as most dispersed use areas and sites are known to occur along the reservoir shoreline. Additionally, dispersed sites and use areas near the shoreline, but not visible by boat, will be identified via traveling existing roads and trails, reviewing aerial photography and road maps, and having discussions with Boundary Project staff who are very familiar with the corridor. Existing dispersed use areas and sites will be identified based on setting characteristics (e.g., slope, vegetation, access), the presence of user-created facilities (e.g., campfire rings, benches), and/or the identification of use-related impacts (e.g., vegetation damage, exposed soil, accumulated litter, sanitation issues). At each identified dispersed use area or site, the following field tasks will be completed:

- Photograph existing features and significant impact areas.
- Establish use area/site location information using GPS for GIS mapping.
- Complete a site condition analysis form.

After the field inventory is complete, all identified dispersed use areas and sites, including access to these sites, will be mapped.

Public Access Analysis

Existing and potential future public access routes (land and water) in the Project area will be identified and assessed by:

- Reviewing existing resource and land ownership maps, topographic maps, and aerial photography.
- Consulting with SCL, USFS and BLM staff, and others who know the Project area well and are familiar with its history.
- Boating to dispersed sites and use areas/sites along the shoreline, driving existing roads where vehicular access is possible, and walking formal and informal user-defined trails on lands open to the public.
- Defining likely existing water trail routes along the reservoir water surface, current shoreline watercraft put-ins/take-outs and portage sites, constraints to watercraft access along the reservoir water surface such as the falls area, and overnight stop-over sites.
- Documenting and mapping existing and potential public access routes to and within the Project area in GIS, including roads and trails (land and water).

- Reviewing potential recreation use areas and potential trail opportunities identified in the 1965 Boundary Reservoir Area Recreation Plan (USFS 1965).
- Reviewing existing USFS road inventory data for Level 1-5 roads.
- Reviewing USFS Road Management Objectives (RMO) being developed as part of the CNFP update.
- Reviewing Colville National Forest Travel Management planning documents if available from the USFS during the study timeframe (expected by late 2007).
- Analyzing and reporting the results of this analysis task.

These tasks should be adequate to meet the needs of the trail-related study request submitted by the USFS (USFS 2006b).[3] It is the intent of this initial study to define under-served areas and general areas of opportunity as they relate to public access roads, land trails, water trails, and sites in the study area that may potentially be enhanced or developed in the future by SCL or others. Prior to obtaining user demand data, SCL believes it is premature to consider site-specific trail options. SCL believes it is appropriate to use a phased approach to considering recreation opportunities. Prior to acquiring user demand data through the visitor questionnaires and focus groups, it is premature to assume that user preferences can be known. The Dispersed Recreation Use, Access, and Condition Analysis component of the RRS is intended to identify both under-served areas of the Project area and areas where viable options exist for new or enhanced public access or land or water trails. Once these analyses are completed, the results will be merged in the subsequent recreation needs analysis and synthesis. During the recreation needs analysis and synthesis and development of the RMP, these candidate roads, trails and sites will be further analyzed and specific ones may be selected in under-served areas, if appropriate.

Particular attention will be focused on shoreline access (by land and water) opportunities and constraints in the Project area. GIS mapping will be used to identify and overlay opportunity and constraint factors such as private and public land ownership, easements, recreational facilities, formal and informal parking areas, roads, trails, steep slopes, rock outcrops, dense forest vegetation, and sensitive resources.

Public road and trail access in the Project area (land and water) will be evaluated using three criteria ratings (high, medium and low) for existing public shoreline and reservoir access, as well as potential future public shoreline and reservoir access. Public access (land and water) criteria for each rating will be defined; these include criteria such as ease of public access (roads and land and water trails) both now and potentially in the future, significant constraints encountered, trail and road distances and conditions, and existing and potential future destinations. A descriptive analysis with tables and maps will summarize Project areas (1) where the public has reasonable and safe public road and trail access now, (2) where public road and trail access to the

[3] The USFS's official study request included the following task: "Determine the potential for developing a trail system that would include: • A land based trail connecting Metaline Falls with the Vista House and with other scenic overlooks en route; • A trail to an overlook of Pee Wee Falls with trailhead and appropriate facilities from the east side of the reservoir; • A portage point north of the Metaline Falls rapids allowing for river trail opportunities by canoes wishing to travel with the current and then take out at the Boundary Dam Recreation Area." (USFS 2006b, page 5)

shoreline and along the reservoir is highly constrained now and will likely remain so into the future, and (3) where public road and trail access could potentially be improved in the future if identified options were further investigated and found to be viable for implementation. This assessment will consider, among other factors, shoreline areas accessible by vehicle and pedestrian travel, shoreline and reservoir areas suitable for watercraft use and access, and planned private development in or adjacent to the Project boundary.

During this initial assessment, viable options for potential new or enhanced public access roads and/or land and water trails in under-served areas will be identified for further consideration in the recreation needs analysis and synthesis and RMP. Most resource studies will have been completed and multi-resource opportunities and constraints can be fully assessed, along with existing and future recreation needs for the Project area.

Future Recreation Use Analysis

Study Element Goals and Objectives

The goal of the RRS is to provide information necessary to analyze current and future recreational use, opportunities, and needs related to the Project. It is important to estimate future use levels in the Project area to appropriately plan for anticipated recreation needs over the term of the new FERC license.

Specific objectives of the Future Recreation Use Analysis study element of the RRS include the following:

- Analyze recreation activity demand and user data by activity type collected during the Recreation Surveys and the Regional Recreation Analysis.
- Estimate recreation use levels and demand for different activity types within the study area through the anticipated term of the new license (30 to 50 years).
- Identify any specific recreation activities in the Project area that may currently have lower demand, but are anticipated to experience increased (or decreased) rates of participation in the future.

Need for Study Element

Summary of Existing Information

To date, no Project-specific estimates of future use have been completed. However, several regional sources of recreation information provide estimates of future recreation use for specific activities. These regional sources of information include, among others, Estimates of Future Participation in Outdoor Recreation in Washington State (IAC 2003) and Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell et al. 1999).

The IAC's Estimates of Future Participation in Outdoor Recreation in Washington State (IAC 2003) provides estimated future participation rates for popular outdoor recreation activities in the state, including some that are known to occur in the Project vicinity and region. Ten- and 20-year estimates, as a percent change in the number of people participating in each activity, are

provided in Table 2.4-4 for select activities. In general, statewide future participation rates in most outdoor recreation activities are anticipated to increase; however, both fishing and hunting, popular activities occurring in the Project vicinity, are expected to decline (statewide and in the Western U.S.) over the next 20 years.

Table 2.4-4. Anticipated changes in outdoor recreation activity participation in Washington. (Source: IAC 2003)

Activity	Estimated 10-Year Change	Estimated 20-Year Change
Walking	+23 percent	+34 percent
Hiking	+10 percent	+20 percent
Nature Activities	+23 percent	+37 percent
Sightseeing	+10 percent	+20 percent
Bicycle Riding	+19 percent	+29 percent
Picnicking	+20 percent	+31 percent
Motor Boating	+10 percent	No estimate
Non-pool Swimming	+19 percent	+29 percent
Canoeing/Kayaking	+21 percent	+30 percent
Fishing	-5 percent	-10 percent
Camping (developed)	+10 percent	+20 percent
Hunting	-15 percent	-21 percent

Regional and national outdoor recreation participation and projections are provided in Outdoor Recreation in American Life (Cordell et al. 1999) for many of the most popular outdoor recreation activities in the U.S. This document provides one of the only national assessments of current participation, trends, and future supply and demand for recreation activities and facilities in the U.S. and is commonly used in recreation research. Activity participation rates and projections presented in this document are based on results from the 1994–1995 National Survey on Recreation and the Environment (NSRE).

Cordell et al. (1999) provides a comprehensive analysis of future trends in outdoor recreation participation for the U.S., as well as for specific regions. Washington, including the Project vicinity, is considered to be within the Pacific Region for purposes of the Cordell et al. (1999) assessment. Other states included in the Pacific Region are California, Oregon, Alaska, and Hawaii. Because the Project area is adjacent to the state line and the Rocky Mountain Region, results from both the Pacific and Rocky Mountain regions will be reviewed for relevance to the Project.

Using statistical models, projected changes in demographics (including age, race and ethnicity, gender, income, education, and previous experience) were used to assess likely future trends of various outdoor recreation activities through 2050. Evaluating future trends in recreation activity participation is helpful in assessing the type of recreation facilities and opportunities that may be

needed in the future. Table 2.4-5 provides a summary of participation projections for popular activities in the Project vicinity and region. These activity participation projections indicate that participation in outdoor activities is expected to increase by 2050 and beyond. Some activities are expected to experience modest growth (e.g., fishing, primitive camping, backpacking), while others may experience more robust growth (e.g., rafting/floating, motor boating, canoeing, sightseeing, hiking). Only hunting is expected to decrease in terms of numbers of participants in the Pacific Region. If the number of participants in these various activities increases over time, then increased use levels could potentially occur.

Table 2.4-5. Recreation activity participation projections through 2050[1]. (Source: Cordell et al. 1999)

Activity	1995[2]	2000[3]	2010[3]	2020[3]	2030[3]	2040[3]	2050[3]
Walking	21.10	8%	23%	34%	49%	62%	73%
Non-Consumptive Wildlife Activities	16.70	8%	23%	37%	52%	65%	77%
Family Gatherings	19.30	7%	20%	30%	42%	54%	65%
Sightseeing	18.50	9%	26%	42%	58%	74%	87%
Visiting a Beach	20.70	8%	21%	33%	46%	60%	72%
Picnicking	15.80	7%	20%	31%	44%	54%	63%
Visiting Historic Places	13.80	8%	22%	33%	46%	58%	68%
Hiking	10.90	8%	23%	34%	53%	69%	85%
Non-pool Swimming	11.60	6%	19%	29%	43%	57%	72%
Fishing	7.50	5%	12%	20%	23%	30%	38%
Biking	9.80	6%	19%	29%	41%	53%	65%
Developed Camping	8.80	6%	19%	32%	45%	59%	73%
Primitive Camping	5.60	5%	13%	23%	27%	35%	44%
Motor Boating	6.30	7%	22%	32%	52%	69%	88%
Hunting	1.70	-6%	-15%	-21%	-27%	-33%	-36%
Backpacking	3.80	5%	12%	23%	24%	34%	46%
Rafting/Floating	2.30	5%	20%	30%	52%	73%	97%
Canoeing	1.20	6%	21%	30%	51%	69%	89%

Notes:

1 Projections are for the Pacific Region, which includes Washington.
2 1995 baseline totals for numbers of participants in millions.
3 Projections are provided in 10-year increments from 2000–2050. Percent change provided by decade based on 1995 baseline data.

Need for Additional Information

As stated previously, no Project-specific estimates of future use have been completed to date. An estimate of anticipated future use must be completed to adequately plan for probable future recreation needs in the Project area over the anticipated term of the new FERC license. This information is also needed to help identify recreation activities in the Project area and region that

may currently have lower demand and/or actual use but are anticipated to experience increased (or decreased) rates of participation in the future.

Detailed Description of Study Element

Study Area

The study area for the Future Recreation Use Analysis study element of the RRS includes the lands and waters within and adjacent to the Project boundary, including:

- SCL-managed developed recreation sites (Vista House, Tailrace Recreation Area, and Forebay Recreation Area).
- Non-SCL-managed recreation sites within or adjacent to the Project boundary (Metaline Waterfront Park [boat ramp and shoreline area], Pend Oreille County PUD Campbell Park [boat ramp area], USFS Crescent Lake Recreation Area, BLM Boundary Recreation Site, and SR 31 Sweet Creek Falls Rest Stop).
- Major dispersed sites and trails within the Project area.
- On-water reservoir power boating and non-power boating use (above Boundary Dam).

This analysis will also include recreation activity trends in the broader region where visitors to the Project area may originate. The broader region for visitors to the Project area will be defined in the Recreation Surveys and Regional Recreation Analysis elements of the RRS.

Proposed Methodology

Estimating future recreation use is important to help planners determine how and where to invest in recreation programs and infrastructure. Future recreation use is influenced by the same supply and demand factors as current use — supply, location and attractiveness of facilities, age, income, demographic trends, population size, and the condition of the regional economy. However, future use is also influenced by variables for which no or very little hard data exist. Future use estimates must consider less clearly defined variables such as emerging new technologies and recreation equipment, and changes in visitors' tastes and preferences for recreation. They must also consider larger changes that occur at a societal level, both nationally and regionally, such as shifts in the amount of free time and disposable income, shifts in family structure, and increased ethnic diversity. As a result, most recreation forecasting efforts involve a combination of quantitative and qualitative approaches that examine multiple future scenarios and attempt to predict different use levels and needs.

The Future Recreation Use Analysis will build off data and summary results from the Recreation Surveys study element of the RRS. Specifically, the following components of the Recreation Surveys are needed for this analysis:

- Estimate of existing use in the Project area
- County of origin of visitors to the Project area (based on Zip codes [US] and postal codes [Canada])

- Existing activity participation rates in the Project area
- Regional survey and public input data

Using this information, future recreation use levels in the study area will be estimated by decade for the anticipated term of the new FERC License (up to 50 years). Three primary tasks will be conducted for the Future Recreation Use Analysis study element of the RRS:

- Assess regional population and use trends that may affect future Project area recreation use levels.
- Estimate future recreation use in the study area.
- Compile and summarize results into a report.

Each of these tasks is described below.

Assess Regional Population and Use Trends

Prior to estimating future recreation use in the Project area, regional sources of population and recreation use level projections will be assessed. Using Zip codes (U.S.) and postal codes (Canada) collected during the Recreation Surveys, county population projections will be researched and compiled for the primary counties of origin of visitors to the Project area. Existing activity participation or demand levels, as well as projections, will also be researched. Potential sources of information for outdoor activity levels and projections include the following, among others:

- Washington Statewide Comprehensive Outdoor Recreation Plan (IAC 2002)
- Estimates of Future Participation in Outdoor Recreation in Washington State (IAC 2003)
- Idaho Statewide Comprehensive Outdoor Recreation and Tourism Plan (IDPR 2003)
- Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends (Cordell et al. 1999) – Pacific and Rocky Mountain Regions
- National Survey on Recreation and the Environment (NSRE) (USFS 2006a)
- Outdoor Recreation Participation Study: Trend Analysis for the United States, 8th Ed. (Outdoor Industry Foundation 2006)
- Other data sources identified, as appropriate, per the results of the Regional Recreation Analysis and Recreation Surveys

Fishing and hunting license sales, available from the Washington Department of Fish and Wildlife, will also be researched for Pend Oreille County and other counties where most visitors to the Project area originate. In addition, USFS survey data on fishing and hunting within the CNF will be evaluated.

These reviews will focus on identifying the most recent population estimates (likely the 2000 Census), anticipated population changes, annual outdoor activity participation rates, and

anticipated changes in activity participation rates. All population and activity research will be compiled and summarized, and used to estimate future recreation use levels in the study area.

Estimate Future Recreation Use in the Project Area

Based on the information collected in the previous task, an estimate of potential future recreation use will be developed for the study area. This estimate will likely include a range of estimated future use based on assumptions that will be defined during the study implementation planning phase. Selection of the appropriate methodology will include consideration of three sources of data and other input. Use of specific data in making these projections will depend upon the quality and applicability of the available data for the study area. Future recreation use projections, presented as a range of use levels based on different assumptions about future conditions, will be based on the following, as appropriate:

- *Activity participation rate-based projections* — this focuses on applying anticipated changes in regional activity participation rates to existing Project area recreation participation rates. These projections may vary depending upon assumptions about future activity use levels and trends.
- *Population change-based projections* — this focuses on applying anticipated county-level population changes to current use levels based on the existing counties of origin of visitors to the Project area. Development potential in the Pend Oreille River corridor may also affect use levels in the corridor and will be considered as a factor.
- *Professional judgment* — this focuses on consideration of past, current, and future trend projections unique to the Project area based on professional judgment, the unique physical characteristics and location of the study area, anecdotal information from various sources, input from the local community and from focus groups, input from site operators and land and resource managers, among other factors.

Considerations and assumptions regarding the accuracy, source, age, and quality of data to be used in making projections will be documented. Future recreation use levels in the Project area will be estimated as a range of use in 10-year increments for the anticipated term of the new FERC license (30 to 50 years).

Compile and Summarize Future Recreation Use Analysis Results

The results of the Future Recreation Use Analysis will be summarized in text, table, and graphic format and conclusions will be drawn, as appropriate. The report will provide an overall estimate of regional population and activity participation rate projections, as well as estimated future recreation use levels for the study area. Additionally, particular attention will be given to extremely low and/or high future population and activity rate changes in the region and how these expected changes may influence recreation use in the Project area. The individual RRS study element results, including the Future Recreation Use Analysis, will be comprehensively assessed during the subsequent recreation needs analysis and synthesis and development of a proposed RMP for the Project.

Recreation Carrying Capacity Analysis

Study Element Goals and Objectives

The concept of recreation carrying capacity was originally developed out of biological models that attempted to determine the capability of a given environment (e.g., range, pasture) to sustain a specific number of animals over time. As such, attention has been placed on developing a specific number of visitors that represents the ideal carrying capacity of a recreation facility. In actuality, many management issues regarding recreation carrying capacity decision-making are not necessarily density dependent; rather, recreation carrying capacity issues are also related to the ecological, social, and managerial aspects of recreational opportunities (McCool 1996).

Recreation carrying capacity has been defined in a number of ways, but a useful definition is "the level of use beyond which impacts exceed standards" (Shelby and Heberlein 1986). At some point, recreation demand cannot be met without negatively affecting sensitive resources and/or the recreation experience that people expect. The goal for decision-makers is to manage recreation use levels and impacts so that they do not exceed overall capacity standards.

Recreation carrying capacity is often applied as either a research tool (to define capacity based on existing conditions and constraints and potential future use) or as a monitoring/management tool (to identify indicators [key issues] and standards/guidelines of quality and experience to help manage use within established capacity parameters). In this study element, the primary purpose is as a research tool that will investigate existing and potential future use and the carrying capacity of recreation resources in the study area, including developed recreation sites, dispersed use areas, and the reservoir surface. While this analysis will utilize capacity standards/guidelines, specific detailed indicators and standards/guidelines of the type used for monitoring/management will not be fully developed at this time; however, they may be developed later as part of a monitoring program, if needed.

Specific objectives of the Recreation Carrying Capacity Analysis study element of the RRS include the following:

- Use the information developed in the other RRS elements to help develop the results of this analysis.
- Establish whether existing recreation use levels are below, approaching, at, or exceeding the Project area's ability to adequately accommodate recreational use without adversely impacting the ecological, social, or managerial capacity of the Project area, including the reservoir surface, developed recreation sites, and dispersed use areas.
- Use the results of the recreation carrying capacity analysis to help define potential capacity indicators and standards/guidelines and determine whether management actions may be needed to maintain use levels at or below established standards/guidelines.

Need for Study Element

Summary of Existing Information

To date, a recreation carrying capacity analysis has not been completed for the Project area. The limited existing information, primarily regarding existing use levels, that could potentially be used in a recreation carrying capacity analysis is described above in the Dispersed Recreation Use, Access, and Condition Analysis, and the Recreation Surveys study elements (in the "Summary of Existing Information" sections).

FERC Form 80 requires licensees to develop Project recreation facility capacity estimates. Facility capacity estimates are required for aggregated recreation sites based on intended use instead of for individual sites. Table 2.4-6 displays Form 80 facility capacity estimates that SCL has submitted to FERC since 1991.

Table 2.4-6. Estimated facility capacity for recreation facilities in the Project area (Source: SCL 1991, 1996b, and 2002).

Recreation Resource Type	Existing Facility Capacity (Percent)		
	1991	1996	2002
Access Areas	2	4	1
Boat Ramps	4	8	30
Boat Launching Lanes	4	8	30
Tailwater Fishing Facilities	1	1	NA
Parks	NA	NA	51
Picnic Areas	2	4	30
Wildlife Areas	3	7	7
Visitor Centers	8	18	0
Interpretive Displays	10	22	26
Overlooks	5	10	10
Camping Areas	5	12	44
Tent/Trailer/RV Sites	5	12	44

The capacity estimates provided in Table 2.4-6 are specific to facility capacity. A well designed and operated developed recreation facility should be able to be used at high capacity levels (80 to 100 percent). However, as stated above, recreation capacity is a complex issue involving multiple variables; currently, FERC Form 80 reporting requirements do not address all types of capacity.

Need for Additional Information

A thorough analysis of carrying capacity variables is required for FERC relicensing purposes. This information will also be used in the recreation needs analysis and synthesis and development of a proposed RMP for the Project.

Detailed Description of Study Element

Study Area

The study area for the Recreation Carrying Capacity Analysis study element of the RRS includes the lands and waters within and adjacent to the Project boundary, including:

- SCL developed recreation sites — Vista House, Tailrace Recreation Area, and Forebay Recreation Area.
- Non-SCL recreation sites within or adjacent to the Project — Metaline Waterfront Park, BLM Boundary Recreation Area, Pend Oreille County PUD Campbell Park (boat ramp only), USFS Crescent Lake Recreation Area, and SR 31 Sweet Creek Falls Rest Area.
- Major trails and dispersed recreation sites and use areas in the Project area (as defined in the Dispersed Recreation Use, Access, and Condition Analysis study element).
- The reservoir or river surface area (above Boundary Dam).

Proposed Methodology

Maintaining use levels within a recreation site's capacity is important in terms of protecting natural, cultural, and recreation resources. Assessing a recreation site's carrying capacity is also important in "helping to assure public safety, providing predictability to private sector permittees and local communities, allocating opportunities among public and private sector providers, contributing to planning at a local or regional ecosystem scale, and helping to assess the consequences of management alternatives" (Haas 2002).

Recreation carrying capacity studies are often conducted with two purposes in mind: (1) as a research tool, and (2) as a monitoring/management tool. As a research tool, recreation carrying capacity studies define the biophysical, social, and managerial capacity of an area based on existing opportunities and constraints that can then be applied to the future based on anticipated use levels. As a monitoring/management tool, recreation carrying capacity studies are often used to identify specific detailed indicators (key issues) and standards/guidelines of quality and experience to be used to keep existing and anticipated future recreation use within established carrying capacity parameters.

The focus of this Recreation Carrying Capacity Analysis is on carrying capacity as a research tool for study purposes. Proposed recreation capacity indicators and standards/guidelines for the Project may be developed later as part of a monitoring program, if needed.

The Recreation Carrying Capacity Analysis will build off data and summary results from the other study elements of the RRS. Specifically, the following RRS elements are needed for this analysis:

- Dispersed Recreation Use, Access, and Condition Analysis
- Regional Recreation Analysis
- Recreation Surveys
- Future Recreation Use Analysis

Using this information, existing carrying capacity levels will be discussed for the study area. Future carrying capacity levels will generally be addressed, although the detailed, site-specific indicators and standards/guidelines needed to accurately predict potential future carrying capacity issues and/or concerns will not be developed. Four primary tasks are proposed for the Recreation Carrying Capacity Analysis study element of the RRS: (1) compile and review carrying capacity data and information from the other RRS elements, (2) determine carrying capacity levels, (3) recommend potential carrying capacity indicators and standards/guidelines, and (4) compile and summarize results into a report. Each of these tasks is described below.

It is important to recognize that the concept and practical application of establishing recreation carrying capacity is a work in progress and continues to be researched extensively (Haas 2001). Recreation carrying capacity frameworks have been researched and applied in a variety of settings and several are commonly used as recreation monitoring and/or management tools, though none are universally accepted. These frameworks include Limits of Acceptable Change (Stankey et al. 1985), Visitor Impact Management (Graefe et al. 1990), and Visitor Experience and Resource Protection (National Park Service 1997), among others. Each of these frameworks share three important elements: (1) indicator variables and standards of quality are used to specifically define the types of recreation opportunities to be provided; (2) indicator variables are monitored to determine whether standards/guidelines of quality are being met; and (3) management actions are initiated if/when standards/guidelines of quality are violated (Manning 1999).

Compile and Review Carrying Capacity Data and Information

In general, no new large-scale field research will be completed for the Recreation Carrying Capacity Analysis, though some follow-up field work may be required. Instead, this analysis will build off the data and information collected through the other RRS elements. Table 2.4-7 describes the data and information from each of the RRS elements that will be used for the Recreation Carrying Capacity Analysis. These data and information in Table 2.4-7 are presented by capacity type: biophysical, social, and managerial. Each of these capacity types is described in the next task (Determine Carrying Capacity Levels).

Table 2.4-7. RRS element sources of data and information for the Recreation Carrying Capacity Analysis.

RRS Elements	Capacity Types		
	Biophysical	**Social**	**Management**
Dispersed Recreation Use, Access, and Condition Analysis	• Potential recreation-related impacts (dispersed shoreline areas and trails only)		• Access issues • Potential opportunities for dispersed recreation and trails
Regional Recreation Analysis			• Substitute recreation sites and use areas
Recreation Surveys – including Recreational Fishing Study	• Visitor identified biophysical issues and/or concerns	• Visitor and area resident identified conflicts • Visitor and area resident crowding levels and responses	• Existing recreation site use levels (facility capacity) – developed sites, major dispersed use areas, and trails • Existing on-water use levels
Future Recreation Use Analysis			• Future use levels (facility capacity) – developed sites, major dispersed use areas, and trails

Other information that will be collected as a component of this task includes a biophysical impact assessment at developed recreation sites and interviews with on-site managers to obtain their qualitative observations on recreation and public use in the study area. By nature, biophysical capacity is usually less of a concern at developed recreation sites, compared to dispersed sites and trails, because of the presence of hardened recreation facility features that tend to help limit potential biophysical impacts. Nonetheless, improper site design and/or site misuse by visitors can result in biophysical impacts at developed recreation sites including erosion, vegetation damage, and other potential recreation-related impacts (note: biophysical impacts will be assessed at dispersed sites and trails during the Dispersed Recreation Use, Access, and Condition Analysis).

Determine Carrying Capacity Levels

Based on the data collected in the other study elements, and information compiled in the previous carrying capacity task, the existing carrying capacity of the study area and its components will be defined. These study area components include individual developed recreation sites (SCL- and non-SCL-managed), the reservoir surface area by zone, dispersed use areas and major trails (reported in aggregate, though specific sites and/or trails may be discussed if significant capacity-related issues are identified), and the study area as a whole. While quantitative data collection is a vital component of capacity-based research and the decision-making process, qualitative professional judgment (e.g., prior experience, management context

and priorities, public values, tradition, history) is also important. As such, capacities will be expressed in qualitative terms for purposes of this analysis (e.g., below, approaching, at, or exceeding capacity).

There is a large body of research on crowding and resource deterioration in recreation settings, including a state-of-the-art summary regarding carrying capacity decisions (Haas 2001). In such research, at least three types of capacity are typically delineated including (Manning 1999):

- *Biophysical (Ecological) Capacity* — typically concerned with the biophysical characteristics of the natural resource base, including the ability of the resource base to absorb potential recreation-related impacts. Common biophysical capacity indicators include erosion, vegetation damage, sanitation concerns, and accumulated litter, among others. Examples of standards/guidelines for biophysical capacity include: distance in feet to wetlands, approximate percent of bare ground at erosion sites, presence of accumulated trash and debris (qualitative), and presence of sanitation problems (qualitative).
- *Social Capacity* — typically concerned with the characteristics of the visitor base, including preferences, demand, and needs. Common social capacity indicators include perceived crowding, visitor conflict, and distance preferences between groups/visitors, among others. Examples of standards/guidelines for social capacity include: rating of respondents with a perception of crowding (scale of 1–9), percent of respondents that observed user conflicts, and percent of respondents that changed their use patterns due to crowding.
- *Management Capacity* — typically concerned with recreation provider-controlled resources and policies, including legal directives, policy guidelines, goals and objectives, and funding priorities. Common management capacity indicators include expansion potential, facility capacity (e.g., parking spaces, campsites, boat ramp lanes, picnic tables), and rules and regulations (types and levels of recreation use that are allowed), among others. Examples of standards/guidelines for management capacity include: wait times at boat launches, capacity utilization at developed recreation facility elements, and number of violations of rules or regulations.

One or more indicator variables will be established for each of these capacity types. Indicator variables are the key issues that will be researched in the RRS elements, including biophysical impacts (vegetation damage, erosion, litter accumulation, etc.), social impacts (perceived crowding, responses to crowding, conflict, etc.), and management impacts (facility capacity, site expansion potential, boat ramp congestion). For each indicator variable, a quantitative and/or qualitative standard/guideline will be established for each capacity level (e.g., 80 percent occupancy = approaching facility capacity, 100 percent occupancy = at facility capacity).

The Recreation Carrying Capacity Analysis focuses on the capacity of developed recreation sites and the reservoir surface area because they tend to receive the greatest amount of visitation and thus have a higher potential for visitor-related impacts (e.g., crowding issues, excessive boat ramp wait times, visitor displacement). However, capacity will also be assessed at major dispersed use areas and trails in the study area. Identified dispersed use areas and trails will likely be reported in aggregate because existing opportunities for these types of experiences are

very limited in the Project area at this time. Specific dispersed use areas and/or trails will be discussed if site/trail-specific significant capacity-related issues are identified.

For developed sites, dispersed sites and trails, the reservoir surface area, and the study area as a whole, this analysis will provide an understanding of recreation facilities, existing use patterns, perceived crowding and responses, facility capacity, and user impacts and conflicts, among other factors. Quantitative and qualitative data will be used to describe the existing biophysical, social, and management capacities in the study area. One or more capacity indicator variables will be identified as the primary limiting factor(s) at each recreation site based on the level of concern for each individual capacity indicator. A limiting factor is defined as an indicator that constrains the level of recreation use (capacity) at a site or use area. The limiting factor often drives future decision-making regarding management priorities and monitoring programs and is often the "trigger" that determines when recreation use has reached a specific level of capacity.

After evaluating the capacity level for each biophysical, social, and management indicator variable, an overall capacity conclusion will be determined for each developed recreation site, dispersed use areas and trails, reservoir surface area, and the study area. To determine the overall capacity level, all three capacity types and their full suite of indicator variables will be considered in aggregate. No attempt will be made at this time to prioritize one capacity type or indicator variable over another; rather, all capacity types and indicators will be considered equally. Capacity types and indicator variables will likely be prioritized (through the use of a carrying capacity framework for monitoring and management) in a proposed RMP for the Project.

Recommend Potential Carrying Capacity Indicators and Standards/ Guidelines

The establishment of capacity indicators and standards/guidelines of quality that would help alert outdoor recreation managers that "actions may be necessary to sustain the area's resources, visitor experiences, and management effectiveness," is inherent in developing and monitoring the recreation carrying capacity of an outdoor recreation area (Haas 2001). While the focus of the Recreation Carrying Capacity Analysis is on defining existing and projected future capacity based on current use and opportunities, carrying capacity indicators and standards/guidelines will also be generally explored for potential future conditions, as appropriate.

Compile and Summarize Recreation Carrying Capacity Analysis Results

The results of the Recreation Carrying Capacity Analysis will be summarized in text, table, and graphic format and conclusions will be drawn. The report will provide existing carrying capacity information for the study area and applicable adjacent areas, as described in the Study Element Area. The individual RRS study element results, including the Recreation Carrying Capacity Analysis, will be comprehensively assessed later in the recreation needs analysis and synthesis and development of a proposed RMP for the Project.

2.5. Work Products

Study reports will be provided to relicensing participants for technical review and input per the Process and Schedule Overview provided in Attachment 1, section 2.3 of this RSP and the RRS

schedule described below. The interim study reports will be prepared and made available for review within 1 year of FERC's approval of the final study plans.

2.6. Consistency with Generally Accepted Scientific Practice

The methodology described herein for the RRS is generally consistent with recreation resource research methodology and practices and are consistent with other comparable relicensing studies in the Pacific Northwest that involve larger hydroelectric projects and federally managed lands within and adjacent to the Project boundary. Study results will be adequate to conduct a subsequent recreation needs analysis and synthesis; SCL anticipates incorporating the results of the recreation needs analysis and synthesis into the PLP in the form of a proposed RMP for the Project.

2.7. Consultation with Agencies, Tribes, and Other Stakeholders

Input regarding the RRS, and its five study elements or chapters, was provided by relicensing participants during Recreation, Land Use, Aesthetics, and Socioeconomics (RLAS) Workgroup meetings held in Spokane and in Metaline Falls, Washington. These workgroup meetings occurred on May 24, June 28, July 26, and August 15, 2006. During these workgroup meetings, draft and revised study plans were presented and discussed. First, input was received from relicensing participants on the five individual study elements during the first three workgroup meetings. For the last workgroup meeting, individual study elements were combined into one RRS proposed study plan. This complete RRS proposed study plan was reviewed and discussed at the RLAS Workgroup meeting on August 15 in Spokane. Comments provided by relicensing participants on the draft RRS proposed study plan are summarized in the Proposed Study Plan (PSP), Attachment 6-1 (SCL 2006b) and can also be found in the workgroup meeting summaries (available on SCL's relicensing website (http://www.seattle.gov/light/news/issues/bndryRelic/).

After draft versions of the RRS study plan were discussed at the RLAS Workgroup meetings, SCL further modified the study plan in response to comments and study requests filed with FERC by the USFS (USFS 2006b). Modifications included adding clarification, additional supporting rationale, and additional detail to address comments and specific components in the USFS recreation resource study request. The modified RRS plan was included in the PSP that was filed with FERC on October 16, 2006.

Since filing the PSP, SCL has continued to work with relicensing participants on its proposed study plans. In response to comments made during the November 15 study plan meeting and comments filed with FERC by the USFS (2007) and the USFWS (2007), SCL has further modified the RRS plan. (SCL's responses to comments are summarized in Attachment 3 and consultation documentation is included in Attachment 4 of this RSP.) Modifications included adding clarification, additional supporting rationale, and additional detail to address USFS and USFWS comments. SCL believes that the USFS and USFWS comments are adequately addressed in this revised plan.

2.8. Schedule

Finalization of the study plan for the RRS and implementation of the study will be in accordance with the process schedule presented in Attachment 1, section 2.2 of this RSP. The RRS and its individual study elements will be implemented and completed per the schedule defined in Table 2.8-1.

Table 2.8-1. Recreation Resource Study schedule.

Recreation Resource Study Elements	**2007**				**2008**				**2009**
	1 Q	**2 Q**	**3 Q**	**4 Q**	**1 Q**	**2 Q**	**3 Q**	**4 Q**	**1 Q**
Technical Consultant study refinement	●								
Conduct Recreation Surveys		▲▲	▲▲	▲---	▲▲	------	------		
Regional Recreation Analysis					▲▲	------	------		
Dispersed Recreation Use, Access, and Condition Analysis		▲▲	▲---						
Prepare interim study reports (first-year results)				●					
Distribute interim study reports					●				
Meet with relicensing participants to review first year efforts and results and discuss plans for any second year efforts					●				
Include interim study reports in Initial Study Report (ISR) filed with FERC					●				
Hold ISR meeting and file meeting summary with FERC					●				
Future Recreation Use Analysis						▲▲	▲---		
Recreation Carrying Capacity Analysis					▲▲	------	------		
Prepare "draft" final study reports								●	
Distribute "draft" final study reports for relicensing participant review								●	
Meet with relicensing participants to review study efforts and results and "cross-over" study results									●
Include final study reports in Updated Study Report (USR) filed with FERC									●
Hold USR meeting and file meeting summary with FERC									●

Notes:

▲ Research including field activities and non-field based information gathering.
(---) Data analysis and summary.

2.9. Progress Reports, Information Sharing, and Technical Review

The draft study report will be made available for relicensing participant review and comment per the Process and Schedule Overview provided in Attachment 1, section 2.3 and the RRS schedule described above. Prior to release of the Initial and Updated Study Reports (which will include the results of the RRS), SCL will meet with relicensing participants to discuss the study results, as described in Attachment 1, section 2.3 of this RSP.

During the summer and fall of 2006, SCL collected and analyzed additional information about the Project area that was shared with relicensing participants during draft PSP preparation. This information was provided to help focus RRS study efforts. This information included further investigations of the following:

- Abandoned trails in the Project area
- Proposed (circa 1969) Monument Bar recreation site on USFS-managed lands
- Roads in the Project area and public access to the reservoir
- Land ownership along the reservoir, including easements
- Shoreline conditions

2.10. Anticipated Level of Effort and Cost

The anticipated total cost for preparing the study plans, conducting the assessments and analyses, and preparing the summary reports is approximately $200,000 to $250,000. Anticipated level of effort and estimated costs for each study element of the RRS are summarized below.

- *Recreation Surveys* — $135,000 to $155,000. Two persons would be expected to spend 3 to 5 days refining the study plan, 2 persons spending 4 to 6 days reviewing recreation use areas, facilities, and access routes, up to 300 to 450 days to complete several components including a field survey, regional survey, and data collection effort, up to 60 days to analyze and compile the survey data, and up to 60 days to prepare and finalize summary reports, plus expenses.
- *Regional Recreation Analysis* — $20,000 to $30,000. One to two persons would be expected to spend two days refining the study plan, approximately 10 to 15 days to research regional recreation use areas, facilities, and opportunities (not including time associated with development, implementation, and data analysis resulting from the Recreation Surveys), and approximately 15 days to prepare and finalize summary reports, plus expenses.
- *Dispersed Recreation Use, Access, and Condition Analysis* — $20,000 to $30,000. One to two persons would be expected to spend 1 to 2 days refining the study plan, 10 to 15 days to complete the field inventory and access assessment, and approximately 15 to 20 days to prepare and finalize summary reports, plus expenses.
- *Future Recreation Use Analysis* — $10,000 to $15,000. One person would be expected to spend 1 day refining the study plan, 4 to 6 days analyzing the data

collected, and approximately 10 to 15 days to prepare and finalize summary reports, plus expenses.

- *Recreation Carrying Capacity Analysis* — $15,000 to $20,000. One person would be expected to spend 1 day refining the study plan, 8 to 12 days analyzing the data collected, and approximately 12 to 15 days to prepare and finalize summary reports, plus expenses.

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