RIRIE RESERVOIR
Recreation Carrying Capacity Study

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Snake River Area Office

January 30, 2004

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Recreation Carrying Capacity Study

Prepared for:

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region, Snake River Area Office
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EXECUTIVE SUMMARY

The U.S. Bureau of Reclamation (Reclamation) has prepared this Recreation Carrying Capacity (RCC) Study as part of the long-term management of Ririe Reservoir. Reclamation recently identified the analysis of recreation carrying capacity at the reservoir as a management priority, as documented in the Resource Management Plan (RMP) for Ririe Reservoir and the Tex Creek Wildlife Management Area (WMA) (Reclamation 2001).

In this study, recreation carrying capacity conclusions for the Ririe Reservoir study area are summarized based on four capacity types (ecological, spatial, facility, and social). The table below summarizes capacity conclusions for each developed recreation site, reservoir surface water area, and the overall study area as a whole.

Summary of Ririe Reservoir Recreation Carrying Capacity.

Study Area Subcomponents	Identified Limiting Factor(s)[1]	Overall Capacity Summary[2]	Overall Capacity Priority[3]
Juniper Park	Spatial Facility Social	Approaching	Moderate
Blacktail Park	Spatial Facility	Approaching	Moderate
Benchlands Park	Spatial	Below	Low
Ririe Dam	Spatial	Below	Low
Reservoir Surface Water Area	Spatial Facility	Approaching	Moderate
Overall Study Area	Spatial Facility	Approaching	Moderate

[1] Indicates whether the capacity limiting factor(s) is based on ecological, spatial, facility, or social constraints.

[2] Indicates whether overall recreational use is considered to be below, approaching, at, or exceeding capacity at this time based on a synthesis of the results for each limiting factor.

[3] Indicates whether the overall capacity is of low, moderate, or high priority or concern at this time based on whether capacity has been reached or not.

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Overall, recreational use in the study area appears to be approaching its recreation carrying capacity. During the summer recreation season, spatial and facility capacity indicators appear to be the limiting factors at this time. Social capacity is a unique concern at Juniper Park at this time and may become a limiting factor for the reservoir surface area as a whole in the future; however, social capacity is not viewed as a widespread limiting factor as a whole. Ecological capacity is certainly a concern for the Tex Creek Wildlife Management Area (WMA) as a whole; however, in the reservoir area, it does not appear to be a limiting factor during the summer recreation season at this time.

On a site-by-site basis, recreation use at both Juniper Park and Blacktail Park appears to be approaching the recreation carrying capacity of each of these sites. This conclusion is drawn because of the high weekend-only use levels during the peak season; however,

weekday use levels are generally below capacity. Benchlands Park and Ririe Dam use levels are below their recreation carrying capacity at this time.

From a recreation priority perspective, recreation carrying capacity is seen as a moderate concern overall at Ririe Reservoir. The management recommendations discussed in Section 6.0 of this document are meant to address this higher level of priority. This overall level of concern or priority is based on moderate priorities identified at both Juniper Park and Blacktail Park, the two highest use areas in the study area, as well as the overall reservoir surface water area. During a normal water year, current boating use on the reservoir is viewed as approaching capacity, but not exceeding its recreation carrying capacity. However, during drought conditions with significantly lower pool elevations and much less surface water area, current boating use levels may exceed the recreation carrying capacity of the reservoir surface. Benchlands Park and the Ririe Dam area appear to be low priorities or concerns at this time.

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ABBREVIATIONS AND ACRONYMS

ADA	Americans with Disabilities Act
ATV	all-terrain vehicle
BAOT	boats-at-one-time
BCDPR	Bonneville County Department of Parks and Recreation
BCSO	Bonneville County Sheriff's Office
BOR	Bureau of Outdoor Recreation
COE	U.S. Army Corps of Engineers
DWROS	Draft Water Recreation Opportunity Spectrum
EA	Environmental Assessment
GIS	geographic information system
IDFG	Idaho Department of Fish and Game
NRPA	National Recreation and Parks Association
OHV	off-highway vehicle
OMB	Office of Management and Budget
PAOT	persons-at-one-time
PWC	personal watercraft
QA/QC	quality assurance/quality control
RCC	recreation carrying capacity
Reclamation	U.S. Bureau of Reclamation
RMP	Resource Management Plan
ROS	Recreation Opportunity Spectrum
RV	recreation vehicle
SCORTP	Statewide Comprehensive Outdoor Recreation and Tourism Plan
SCUBA	self-contained underwater breathing apparatus
URDC	Urban Research Development Corporation
USDA	U.S. Department of Agriculture
VAOT	vehicles-at-one-time
WMA	Wildlife Management Area

1.0 INTRODUCTION

Ririe Reservoir, managed by the U.S. Bureau of Reclamation (Reclamation), is located on Willow Creek, a minor tributary of the Snake River in eastern Idaho. The reservoir, formed by an earthen dam at its northern end, is approximately 10.5 miles long and between 500 and 2,000 feet wide with a surface area of approximately 1,560 acres at high pool and a mean depth of 65 feet (Reclamation 2001). Construction of the dam was completed in 1977 by the U.S. Army Corps of Engineers (COE). The primary functions of the reservoir include flood control, irrigation, and recreation.

Located approximately 20 miles east of Idaho Falls, Ririe Reservoir is an important regional recreation area, especially for residents living at or near Idaho Falls and Rexburg. Additionally, the reservoir is a convenient stop for visitors traveling between Interstate 15 and Jackson Hole, Wyoming, along Highway 26 (Figure 1.0-1).

The need for this Recreation Carrying Capacity (RCC) Study was identified as a management action in the recently completed Ririe Reservoir and Tex Creek Wildlife Management Area (WMA) Resource Management Plan (RMP) and Environmental Assessment (EA) that guide the management of the reservoir for the next 10 years (Reclamation 2001). The primary purpose of this Recreation Carrying Capacity Study is to investigate the existing and future capacity of recreation resources. This type of analysis is sometimes called a carrying capacity analysis. 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). This study consists of an analysis of recreation capacity using four capacity indicators: ecological capacity, spatial capacity, facility capacity, and social capacity.

Photo 1.0-1. Ririe Dam and Reservoir.

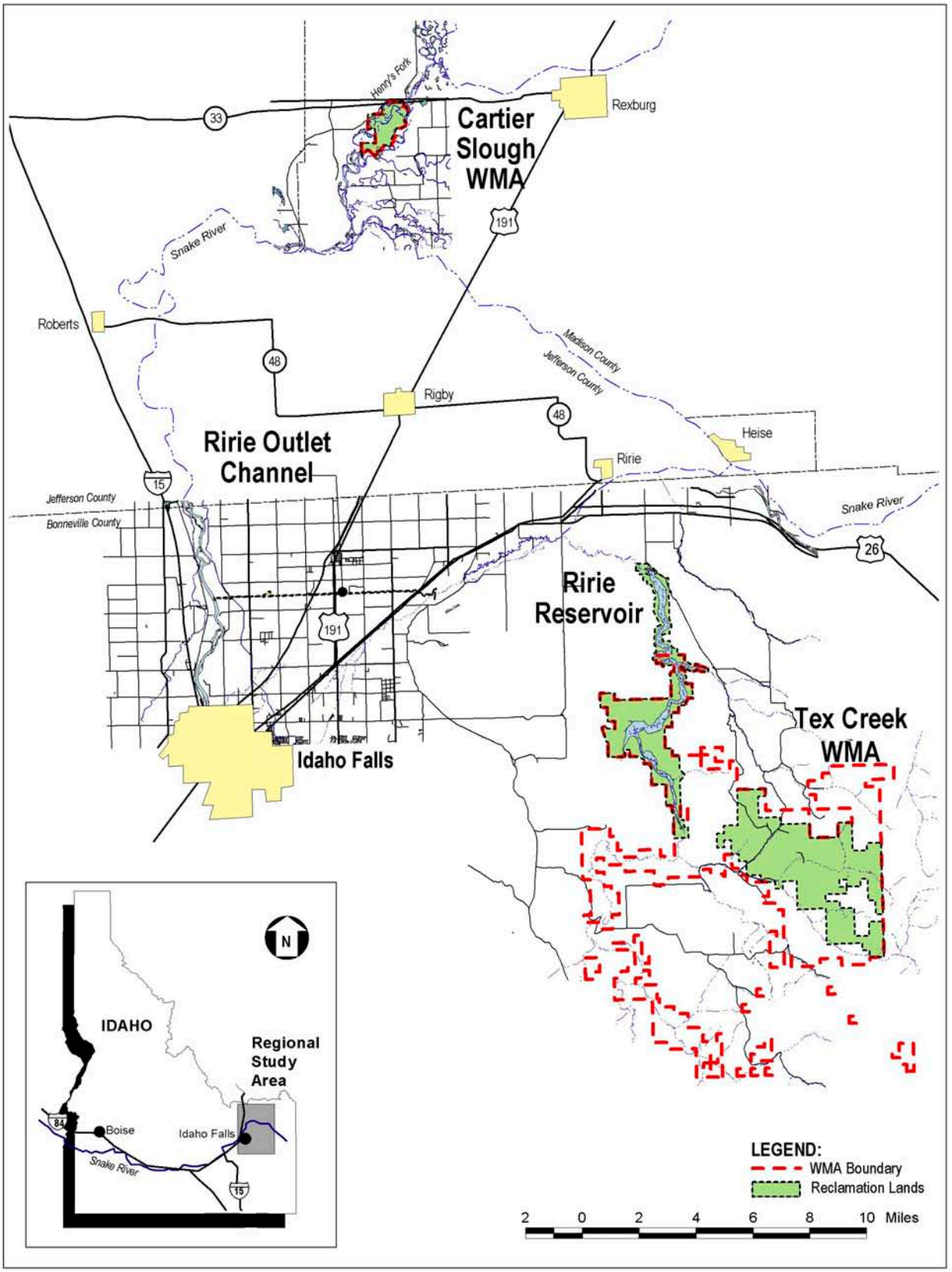

Figure 1.0-1 Ririe Reservoir Region.

Back of Figure 1.0-1.

2.0 PURPOSE

The RCC Study assessed types and levels of recreational use in the study area to determine if use levels are compatible with the capacity of the study area both currently and during the term of the RMP (assumed to be 10 years for planning purposes). Maintaining use levels within a recreation site's capacity is important in terms of protecting natural, cultural, and recreation resources, as well as "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).

The purpose of the RCC Study was to determine if, and when, recreation facilities (e.g., boat ramps, parking spaces, campgrounds, etc.) in the study area need to be expanded for recreation during the next 10 years or beyond. Furthermore, study results will be used to help determine if the expansion of recreation facilities can be accomplished without detriment to natural and cultural resources in the reservoir area, while at the same time addressing many of the visitor needs and preferences.

3.0 STUDY AREA

The RCC study area includes Reclamation-managed lands and waters of Ririe Reservoir, as well as portions of the Tex Creek WMA that are managed by the Idaho Department of Fish and Game (IDFG) on or adjacent to the reservoir (Figure 3.1-1). The RCC Study analysis focuses on the following four developed recreation sites included in the study area:

- Juniper Park (including visitor center and dam overlook)
- Blacktail Park
- Benchlands Park
- Ririe Dam

The study also considers recreation carrying capacity on the reservoir surface water area. The surface water area was divided into three segments (North, Middle, and South Segments) for purposes of this analysis (Figure 3.1-1).

This RCC analysis also includes a more general (i.e., qualitative) assessment of carrying capacity of the dispersed recreation sites located on the reservoir shoreline (Section 5.1.5). Dispersed sites considered in the analysis include Creekside Park (recently closed by Bonneville County because of maintenance problems and safety concerns), Jensen's Cove, Meadow Creek, and the Willow Creek/Tex Creek WMA (Figure 3.1-2).

The study area excludes the Cartier Slough WMA, Ririe Outlet Channel, and Tex Creek WMA areas not on or adjacent to the reservoir because they are not relevant to this study.

Photo 3.0-1. Ririe Reservoir looking south toward Juniper Boat Launch and beyond.

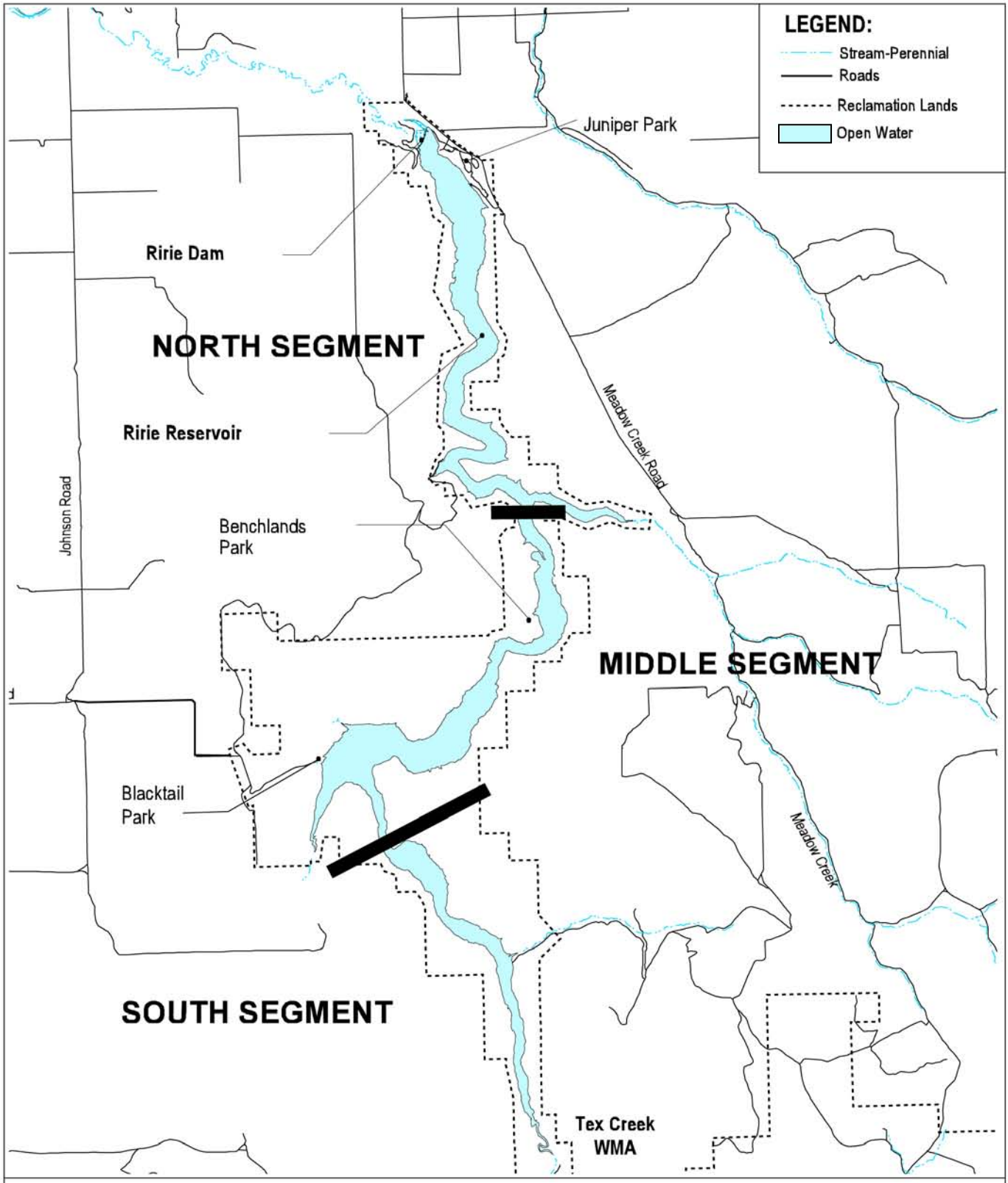

Figure 3.1-1 Developed Recreation Sites and Reservoir Segments at Ririe Reservoir

1 0 1 Miles

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The information displayed here is based on the best available data at the time of publication. Neither the authors, Reclamation, or any other party here warrant or represent that the information is in every respect complete and accurate, and are not held responsible for errors or omissions.

Source: USBR, 2001; EDAW, 2003

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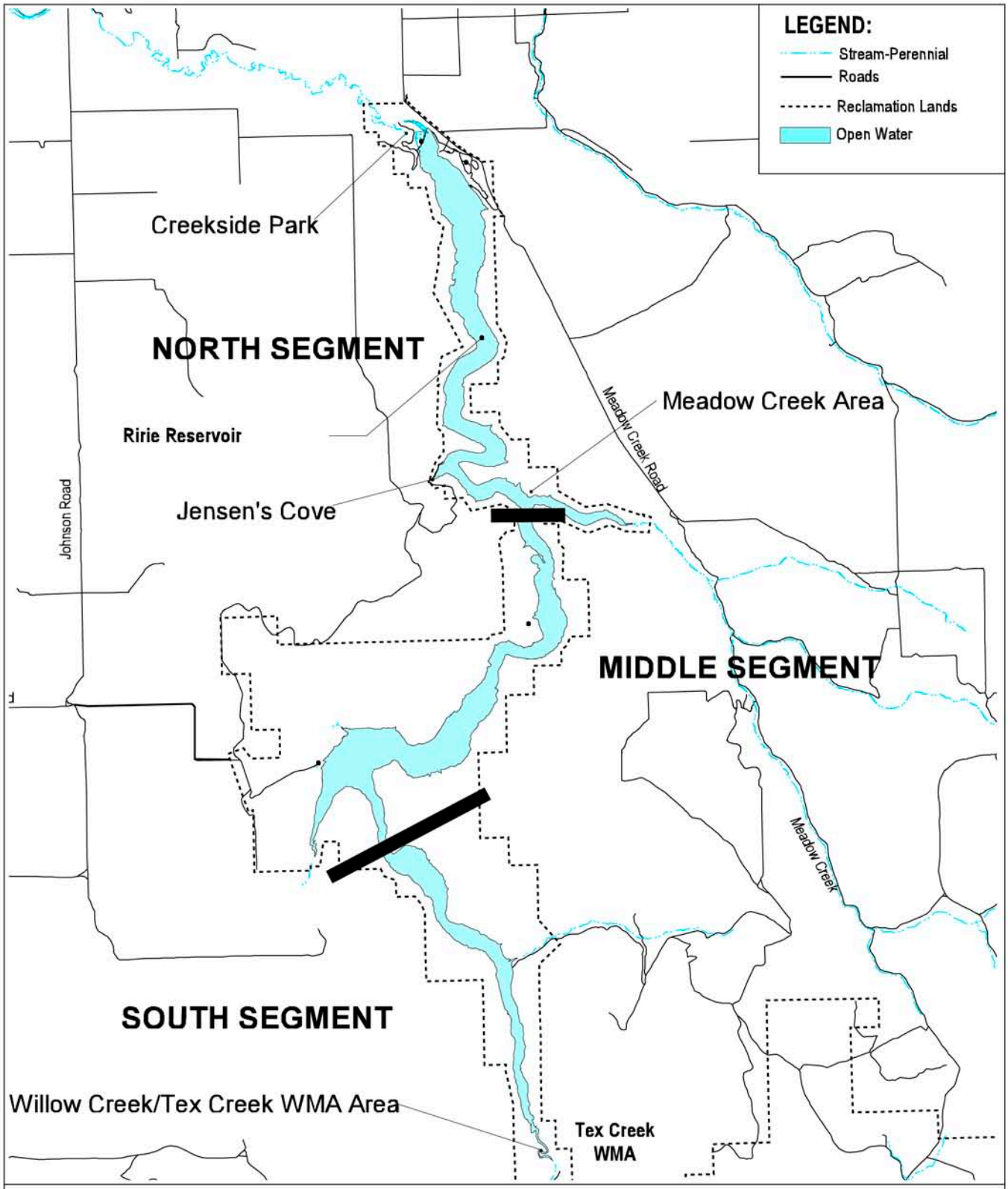

Figure 3.1-2 Identified Dispersed Use Areas and Reservoir Segments at Ririe Reservoir

1 0 1 Miles

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The information displayed here is based on the best available data at the time of publication. Neither the authors, Reclamation, or any other party here warrant or represent that the information is in every respect complete and accurate, and are not held responsible for errors or omissions.

Source: USBR, 2001; EDAW, 2003

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4.0 METHODS

This analysis focuses on the capacity of developed recreation facilities and the reservoir surface in the study area because they receive the greatest amount of visitation and are subject to increased visitor impacts (e.g., crowding issues, ecological degradation, displacement, etc.). The analysis provides an understanding of recreation facilities, existing use patterns, responses to questions regarding crowding, facility capacities, and user impacts and conflicts in the study area.

There is a large body of research on crowding and resource deterioration in recreation settings. In this research, it is useful to distinguish among four types (or indicator variables) of carrying capacity in recreation settings (Shelby and Heberlein 1986). These four capacity types and examples include:

- Ecological Capacity—Concerned with impacts on the ecosystem, such as the loss of ground cover, impacts to wetlands and riparian communities, observed soil compaction and soil erosion, and observed trash accumulation and sanitary problems. Also concerned with impacts to cultural resources at developed and dispersed recreation areas in the study area.

- Spatial Capacity—Concerned with space-related impacts, such as the number of people occupying specific areas or lengths shorelines, number of parties per site, or the expansion potential of existing sites.

- Facility Capacity—Concerned with facility impacts, such as number of people, groups, or vehicles per boat ramp, parking lot, or campground; percent occupancy for various facilities; waiting times to use facilities such as boat launches; or the number of refusals for campsites.

- Social Capacity—Concerned with social impacts, such as visitors' perceptions of crowding (assessed from survey data), perceived and actual conflict between different visitor groups, the number of encounters with other parties per day, and the number of encounters with personal watercraft (PWC).

Each of these four types of capacity was investigated for each developed recreation site and the reservoir surface water area. For each of the recreation sites, the reservoir surface water area, and the reservoir as a whole, qualitative and quantitative data were used to identify ecological, spatial, facility, and social capacity impacts and management parameters. One or multiple capacity types were identified as the primary limiting factor(s) at each recreation site, the surface water area, and the reservoir as a whole. Additionally, a qualitative assessment of carrying capacity at identified dispersed recreation sites was also investigated as a component of the RCC Study.

It should be noted that the concept and practical application of establishing recreation carrying capacity is a work in progress and continues to be researched extensively (Haas 2001). Many carrying capacity frameworks have been researched and applied in a

variety of settings and several are commonly used as recreation management tools, though none are universally accepted. These frameworks include the 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 of quality are being met, and (3) management actions are initiated if/when standards of quality are violated (Manning 1999).

The establishment of capacity triggers or thresholds (i.e., standards of quality) in order to alert outdoor recreation managers that "actions may be necessary to sustain the area's resources, visitor experiences, and management effectiveness," is inherent in developing the recreation carrying capacity of an area (Haas 2001). Four commonly researched indicator variables (i.e., capacity types) were investigated during this study. Standards of quality, which "define the minimum acceptable condition" of each capacity type, were also used to determine whether a site was below, approaching, at, or exceeding one or more of the capacity types, as well as the overall site capacity (Manning 1999). Commonly used qualitative and quantitative standards of quality from existing management plans and other similar recreation carrying capacity studies were employed in this study (standards of quality should be built into a management plan to ensure consistent carrying capacity monitoring and decision-making). Triggers/thresholds should not be confused with visitor limits or site closures; rather, indicator variables (capacity types) and standards of quality (i.e., triggers) are a management tool that can be used to prescribe a range of potential responses.

4.1 Ecological Capacity

To assess visitor impacts on the natural setting of the study area, the following variables were investigated at each of the developed recreation sites, as well as at all identified dispersed recreation areas:

- Bare ground/compaction – qualitative assessment of the extent of compacted area observed in that is likely caused by visitors.
- Litter and debris – qualitative assessment of the extent and type of debris observed that is likely left by visitors.
- Sanitation problems – qualitative assessment of the extent of the problem observed that is likely caused by visitors.
- Erosion – qualitative assessment of the extent of erosion area observed and the likely source of the problem (pedestrian, boat, off-highway vehicles [OHV], etc.).
- Vegetation damage – qualitative assessment of the extent of vegetation damage observed that is likely caused by visitors.
- Proximity to wetlands – distance of use areas to wetlands observed and/or from mapped geographic information system (GIS) polygons and an assessment of adequate buffer area.

- Proximity to riparian areas – distance of use areas to riparian vegetation observed and/or from mapped GIS polygons and an assessment of buffer.
- Man-made disturbances – documentation of observed recreational man-made features that are not part of a facility's design or are not part of a natural undeveloped setting.

All sites were photographed with particular attention given to capturing visitor impacts and the proximity to wetlands and riparian areas. Where needed, wetland and riparian field estimations were confirmed using existing GIS wetland/riparian area data layers. GIS data layers were reviewed and IDFG was contacted regarding bald eagle nests, deer and elk winter range, and other sensitive resources in the vicinity of the reservoir.

Photo 4.1-1. Vegetation loss caused by unconfined vehicle use near Blacktail Park.

Two field observations were made regarding ecological field conditions at developed and dispersed recreation sites in the study area. The first field observation was completed on June 5 and 6, 2003, while the second field observation was completed on September 18 and 19, 2003. The intent of the two site visits was to document and record existing conditions and the level of impact a site receives during the recreation season (considered to be Memorial Day to Labor Day for planning purposes). Site conditions were documented in field notes for each site. A sample of the ecological impact indicator form is provided in Appendix A. Significant impacts were photographed when observed. Anecdotal information regarding recreation site conditions and likely causes of impacts was also collected through interviews with Bonneville County Department of Parks and Recreation (BCDPR), IDFG, and Reclamation personnel. Using the observed ecological impact indicators (Appendix A) and anecdotal ecological concerns in aggregate, existing ecological capacity at each developed recreation site in the study area was categorized according to the capacity levels described in Table 4.1-1 for purposes of this analysis.

Table 4.1-1. Ecological Capacity Levels for Developed Recreation Sites at Ririe Reservoir.

Overall Capacity Level	Number of Significant Observed Impacts	Level of Concern
Below	0	No significant concerns
Approaching	1 to 2	Low level of concern
At	3	Moderate level of concern
Exceeding	>3	High level of concern

Provided by EDAW, Inc.

4.2 Spatial Capacity

For spatial capacity, site expansion potential and visitor use at each developed recreation site were investigated. Some limited information exists in the form of site plans indicating where site expansion capability exists or where new facilities have been proposed. Existing plans were reviewed and on-site conditions were assessed during field investigations (Section 4.1). Setting features (such as sandy beaches or shade trees) and spatial limitations (such as topography or land ownership) were noted at each site. Any areas of potential site expansion were also explored and recorded.

Instantaneous visitor counts were also conducted at each developed recreation site in the study area. Eighteen instantaneous count days were selected on a random/stratified (stratified by weekday/weekend) basis during the peak recreation season. For purposes of this analysis, the peak recreation season was defined as Memorial Day to Labor Day, the period when most use has typically occurred at the reservoir and when capacity may likely be more of an issue. Table 4.2-1 presents the instantaneous counts dates from the 2003 peak recreation season, as well as the reservoir pool elevation (for future comparisons).

Table 4.2-1. Instantaneous Count Dates During the 2003 Peak Recreation Season and Corresponding Pool Elevations at Ririe Reservoir.

Date	Sites	Pool Elevation (ft.)[1]
June 8	Juniper Park, Blacktail Park, Ririe Dam	5085.19
June 9	Benchlands Park	-
June 25	Juniper Park, Blacktail Park, Ririe Dam	5084.29
June 28	Juniper Park, Blacktail Park, Ririe Dam	5084.26
June 29[2]	Juniper Park, Blacktail Park, Ririe Dam	5084.24
July 4	Juniper Park, Blacktail Park, Benchlands Park, Ririe Dam	5084.01
July 5	Juniper Park, Blacktail Park, Ririe Dam	5083.95
July 12	Juniper Park, Blacktail Park, Ririe Dam	5083.51
July 13	Benchlands Park	5083.43
July 15	Juniper Park, Blacktail Park, Ririe Dam	5083.33
July 27	Juniper Park, Blacktail Park, Ririe Dam	5082.53
August 7	Juniper Park, Blacktail Park, Ririe Dam	5081.79
August 10	Juniper Park, Blacktail Park, Ririe Dam	5081.61
August 16	Juniper Park, Blacktail Park, Ririe Dam	5081.20
August 17	Benchlands Park	5081.10
August 23	Juniper Park, Blacktail Park, Ririe Dam	5076.55
August 27	Juniper Park, Blacktail Park, Ririe Dam	5075.72
August 31	Juniper Park, Blacktail Park, Ririe Dam	5073.15

[1] Reclamation datum. Full pool elevation at Ririe Reservoir is 5,119 feet.

[2] Originally scheduled for June 22, but rescheduled to June 29 due to inclement weather.

Provided by EDAW, Inc.

During instantaneous count days, researchers used an instantaneous count form (Appendix B) to collect count information at each developed recreation site including:

- Visitor counts and activity types
- Parked vehicles and trailers
- Watercraft waiting to launch or load
- Visitors using specific areas of interests (e.g., swimming areas, picnic shelters, etc.)

In addition, researches took instantaneous watercraft counts and shoreline use counts on the reservoir to assess surface water area capacity and dispersed use of the shoreline on 4 days during the peak recreation season (Appendix C). Boat/shoreline count days targeted one holiday weekend (July 4th) and three other non-holiday summer weekends (June 8, July 13, and August 17). The number and type of watercraft observed were noted by reservoir segment (Figure 3.1-1) and compared against surface water area standards, such as the Draft Water Recreation Opportunity Spectrum (DWROS) (as described in Section 4.5).

Photo 4.2-1. Picnic area at Blacktail Park.

Instantaneous counts were used to develop persons-at-one-time (PAOT) and vehicles-at-one-time (VAOT) estimates for each developed recreation site. PAOT and VAOT estimates, as well as site expansion potential, were considered in aggregate in determining spatial capacity at each site. Using site expansion potential and use/facility density (ability of site to absorb additional use and facilities based on existing at-one-time visitor use and existing site facilities) as spatial capacity indicators, existing spatial capacity at each developed recreation site in the study area was categorized according to the capacity levels described in Table 4.2-2 for purposes of this analysis.

Table 4.2-2. Spatial Capacity Levels for Developed Recreation Sites at Ririe Reservoir.

Overall Capacity Level	Expansion Potential	Use/Facility Density
Below	Multiple adjacent areas to potentially expand a site	High potential for additional use/site facilities
Approaching	Some adjacent areas to potentially expand a site	Moderate potential for additional use/site facilities
At	Few adjacent areas to potentially expand a site	Low potential for additional use/site facilities
Exceeding	No expansion potential	No potential for additional use/site facilities

Provided by EDAW, Inc.

4.3 Facility Capacity

The primary indicator of facility capacity is percent occupancy. In general, percent occupancy is determined using the following equation:

$$\frac{\text{Sites Occupied}}{\text{Number of Sites}} = \text{Percent Occupancy}$$

Paid fee receipt data provided by BCDPR, in addition to instantaneous count information, were used to develop existing and future occupancy rates at the developed recreation sites in the study area.

Photo 4.3-1. Covered picnic table at Juniper Park.

Basing developed recreation site utilization on theoretical maximum occupancy of a site (i.e., 100 percent occupancy), while important for considering the maximum possible number of visits the study area could potentially accommodate during the peak season (Memorial Day to Labor Day), is less useful as a day-to-day management indicator. Management actions are typically necessary long before recreation site percent occupancy reaches 100 percent in order to plan potential expansion or take other non-construction management actions to avoid impacts related to crowding and facility overuse. For purposes of this analysis and future monitoring, two distinct percent-occupancy thresholds (i.e., indicators) were considered in terms of categorizing existing and future use of developed recreation sites in the study area. A 60 percent occupancy level was used as an indicator that a developed recreation site was at its peak season capacity. Additionally, an 80 percent peak season weekend occupancy level was used as a second indicator of site capacity. Using these percent occupancy levels as indicators, existing percent occupancy at each developed recreation site in the study area was categorized according to the capacity levels described in Table 4.3-1 for purposes of this analysis.

Table 4.3-1. Facility Capacity Levels for Developed Recreation Sites at Ririe Reservoir.

Overall Capacity Level	Peak Season Weeklong Percent Occupancy	Peak Season Weekend Percent Occupancy
Below	<40 percent	<60 percent
Approaching	40 to 59 percent	60 to 79 percent
At	60 percent	80 percent
Exceeding	>60 percent	>80 percent

Provided by EDAW, Inc.

It should be noted that percent occupancy related management actions should not only be based on one year's worth of count data. Professional judgment and anecdotal observations should also be considered before capacity-related management actions are taken. This additional information helps to account for environmental influences (e.g., poor weather, drought conditions, wildfires, etc.) that may affect recreation in the study area.

4.4 Social Capacity

Social capacity is widely studied in recreational settings and is generally concerned with visitors' perceptions of crowding, including visitor conflicts. A visitor questionnaire (Appendix D) was used during the 2003 peak recreation season to collect general information regarding visitors to the study area, to address social capacity at study area recreation sites, and to gather public input on recommendations for management actions (Section 4.4.1—Visitor Questionnaire). The Bonneville County Sheriff's Office (BCSO) was also contacted about potential visitor conflicts and other management concerns in the study area.

Photo 4.4-1. Swimming area at Blacktail Park.

Several questions related to social capacity were included in the visitor questionnaire. The primary social capacity question was about perceived crowding at developed recreation sites in the study area. Visitors were asked to rate on a scale of 1 ("not at all crowded") to 9 ("extremely crowded") how crowded they felt at the recreation site where they were surveyed (Shelby and Heberlein 1986). Results from this question were used to develop a perceived crowding score for each developed recreation site. Additional social capacity question topics included visitor displacement, potential visitor conflict, and potential management concerns. Using perceived crowding scores and these other social capacity topics (conflict and displacement) as indicators, each developed recreation site in the study area was categorized according to the capacity levels described in Table 4.4-1 for purposes of this analysis.

Table 4.4-1. Social Capacity Levels for Developed Recreation Sites at Ririe Reservoir.

Overall Capacity Level	Perceived Crowding Score	Conflict (Actual and Perceived)	Visitor Displacement
Below	<3.0	No reported visitor conflict	No visitor displacement
Approaching	3.1 to 4.5	Low level of reported visitor conflict	Low level of visitor displacement
At	4.6 to 6.0	Moderate level of reported visitor conflict	Moderate level of visitor displacement
Exceeding	>6.0	High level of visitor conflict	High level of visitor displacement

Provided by EDAW, Inc.

It should be noted that while social capacity is frequently studied in outdoor recreation research, a definitive perceived crowding scale (i.e., a standard measurement, methodology, and point at which a site is considered to have exceeded its social capacity) has yet to be commonly accepted by all researchers. Social capacity is a complex issue that is influenced by multiple factors including recreation setting (developed versus dispersed), ethnicity, and activity-type, among other variables. Additionally, empirical studies have shown that a typical inverse relationship does not always exist between perceived crowding and satisfaction with a recreation experience (i.e., as perceived crowding increases, satisfaction decreases) (Manning 1999). It is nonetheless important to develop a social capacity standard on a site-by-site basis based on specific conditions at each site (i.e., the perceived crowding standard may likely be higher for a developed recreation site compared to a wilderness area).

4.4.1 Visitor Questionnaire

A visitor survey was conducted through the use of a questionnaire to assess the attitudes, preferences, and characteristics of the primary visitor user groups in the study area. This questionnaire focused on study area visitors. The questionnaire obtained basic information about the respondents' visit, including areas visited, length of visit, and other trip characteristics. The questionnaire also collected data necessary to determine social capacity. The questionnaire and sampling scheme were approved by the federal Office of Management and Budget (OMB) prior to implementation.

The following items, among others, were included in the survey form (Appendix D):

- Socio-demographic characteristics (for example, age and gender)
- Visitor activities (general and primary)
- Trip characteristics (for example, group size, length of trip, and sites visited)
- Crowding and capacity issues
- Reservoir boating issues and concerns
- Location of primary residence (city, county, state, postal zip code)

A visitor intercept methodology was used to contact visitors at recreation sites in the study area. Visitors were approached by trained field staff and asked to participate in the questionnaire. Visitors who agreed to participate in the survey were provided with a questionnaire, a pencil or pen, and then were given time to complete the questionnaire.

Visitors who did not wish to participate in the survey were asked if they were willing to verbally answer two questions. These questions also appeared in the visitor questionnaire and were asked to test for non-response bias (i.e., statistical differences between respondents and non-respondents pertaining to the focus of the survey). These questions were as follows:

- On this trip, are you staying overnight in the Ririe Reservoir area? (Questionnaire Question 5)
- Overall, how satisfied are you with your recreational experience at Ririe Reservoir? (Questionnaire Question 12)

Additionally, the field researcher noted whether the non-participant was male or female. Non-response bias was tested and is reported in Appendix E.

Visitors who did not want to participate in the visitor survey and also did not want to answer the two verbal questions were thanked for their time. A visitor survey log (Appendix D) was used to record the decisions of potential survey respondents (i.e., whether or not they wanted to participate in the questionnaire).

Prior to administering the visitor survey, it was determined that a target of approximately 250 completed visitor questionnaires was necessary to achieve a 95 percent confidence level project-wide with a small margin of error (approximately 5 percent). A 95 percent confidence level is typically used in social science research and is indicative of sample population accuracy (e.g., if 20 different samples were drawn from the entire population, in 19 of those samples the results would not vary significantly from the entire population). A 5 to 10 percent sampling error is also typically used in social science and is a measure of sample data accuracy (e.g., considering a 10 percent sampling error, results derived from the sample would be ±10 percent of the true value derived from the entire population). This number of completed questionnaires is assumed to capture an adequate sample of the visitors to the study area necessary to generalize results (Salant and Dillman 1994). The response rate and statistical validity of this sample size were tested, with results reported in Section 5.0 (Results and Discussion) of this RCC Study report.

The visitor questionnaires were administered at each developed recreation site in the study area on a similar schedule as the instantaneous counts. Eighteen questionnaire/ instantaneous count days were selected on a random/stratified (stratified by weekday/weekend) basis during the peak recreation season (Memorial Day to Labor Day). Table 4.2-1 presents the visitor questionnaire/instantaneous count dates from the 2003 peak recreation season, as well as the pool elevation for each sample day (pool elevations were recorded for future comparisons). Visitors at Benchlands Park were

surveyed during four boat count days only (Section 4.5—Reservoir Surface Area Boating Capacity) since this site is only accessible by boat.

Returned visitor questionnaires were coded and entered into a database for analysis purposes. These data were subject to Quality Assurance/Quality Control (QA/QC) procedures, including review of the data obtained focusing on consistency between survey data and the resulting database. A statistical software package called Statistix was used to analyze data. This package allowed researchers to query data and to help answer key questions.

4.5 Reservoir Surface Area Boating Capacity

In addition to investigating developed recreation site occupancy, the surface water capacity of the study area reservoirs was also explored. Four on-water survey days (June 8, July 4, July 13, and August 17) were scheduled in the summer of 2003 to observe and assess surface water capacity. The number and type of watercraft observed on each reservoir segment (Figure 3.1-1) were noted on a boat count form (Appendix C). The on-water observations were used to developed boats-at-one-time (BAOT) estimates. Additional boating use information, such as boating conflicts and citation records, was solicited from the BCSO marine patrol.

Photo 4.5-1. Canoe with anglers on Ririe Reservoir.

Surface water capacity is generally considered in terms of surface water acres per watercraft, though overall surface water capacity is also dependent on the types of watercraft used, the natural topography and setting, safety conditions, and on-water crowding perceptions, among other factors (Aukerman et al. 2002). Several density standards for surface water acres per watercraft have been developed and used by researchers and are presented in Table 4.5-1. These density standards vary from as few as 4 surface water acres needed per watercraft, to as many as 40 acres needed. The larger density standards are generally for speed and space-dependent activities, such as water-skiing and PWC use, and for areas with physical constraints, such as shallow areas, areas with submerged hazards, and very narrow areas.

Table 4.5-1. Selected Boating Surface Water Capacity Standards in the United States.

Source	Standard (ac/boat)
National Recreation and Parks Association (NRPA)	4
Bureau of Outdoor Recreation (BOR)	9
Arizona Outdoor Recreation Coordination Commission	10-20
Wisconsin Comprehensive Plan	20-40
Louisiana Parks and Recreation Commission	20-40

Source: NRPA (1981), BOR (1970), and URDC (1977)

Recently, recreation researchers have adapted the U.S. Department of Agriculture (USDA) Forest Service's Recreation Opportunity Spectrum (ROS) recreation planning methodology, which is land-based, to surface water boating capacity and management (Aukerman et al. 2002). Based on previously determined boat density standards, such as those in Table 4.5-1, and using this adapted ROS-type of methodology called the DWROS, boating density standards are dependent on the setting classification(s) of a lake or reservoir. Surface water acres per watercraft density standards in the DWROS system range from as few as 1 to 10 surface water acres needed per watercraft in an urban setting, to as many as 3,200 surface water acres needed per watercraft in a primitive setting. Table 4.5-2 provides a brief description of the DWROS setting classifications, as well as the associated surface water acres per watercraft densities. These setting classifications and watercraft densities were used in this analysis to determine the surface water capacity of the reservoir.

Table 4.5-2. Draft Water Recreation Opportunity Spectrum setting descriptions and surface water densities for lakes and reservoirs.

Setting	Description	Standard (ac/boat)
Urban	Limited opportunities to see, hear, or smell the natural resources due to the extensive level of development, human activity, and natural resource modification. Watching and meeting other visitors is expected and socializing with family and friends is important. Diverse range of visitors and activities, including large groups and special events. Convenience is central and dominant.	1-10
Suburban	Limited or seldom opportunities to see, hear, or smell the natural resources due to the widespread and prevalent level of development, human activity, and natural resource modification. Watching and meeting other visitors is expected and socializing with family and friends is important. Diverse range of visitors and activities. Convenience is central and dominant.	10-20
Rural Developed	Occasional or periodic opportunities to see, hear, or smell the natural resources due to the common and frequent level of development, human activity, and natural resource modification. Brief periods of solitude are important though the presence of other visitors is expected. Diverse range of visitors and activities. A moderate level of comfort and convenience is important.	20-50
Rural Natural	Frequent opportunities to see, hear, or smell the natural resources due to the occasional or periodic level of development, human activity, and natural resource modification. A sense of independence and freedom with a moderate level management presence is important. Diverse range of visitors and activities though experiences tend to be more resource-dependent. Comfort and convenience is not important or expected.	50-110
Semi-primitive	Widespread and very prevalent opportunities to see, hear, or smell the natural resources due to the seldom or minor level of development, human activity, and natural resource modification. Solitude and lack of contact with other visitors, managers, and management is important. Opportunities for more adventure-based enthusiasts and overnight visitors. A sense of challenge, adventure, risk, and self-reliance is important.	110-480
Primitive	Extensive opportunities to see, hear, or smell the natural resources due to the rare and very minor level of development, human activity, and natural resource modification. Solitude and the lack of the sight, sound, and smells of others is very important. Opportunities for human powered activities (e.g., canoeing, fly fishing, backpacking, etc). A sense of solitude, peacefulness, tranquility, challenge, adventure, risk, testing skills, orienteering, and self-reliance is important.	480-3,200

Source: Aukerman et al. (2002)

4.6 Overall Capacity and Priority Synthesis

After evaluating the capacity level for each indicator variable (ecological, spatial, facility, and social capacities), an overall capacity conclusion was determined for each recreation site and for the surface water area in total. In order to determine the overall capacity of a developed recreation site, all four capacity types were considered in aggregate. No attempt was made to prioritize one capacity type over another; rather, all capacity types were considered equally. Field observations, available recreational use data, and input from site managers and agency personnel was also reviewed. Generally, if at least one capacity type was characterized as at or exceeding capacity, then the site was considered to be at least approaching its overall capacity.

Estimating the overall recreational capacity of a developed recreation site or reservoir can be subjective. In this analysis, because capacity indicator variables were not prioritized, site-specific conditions, study results, past experience with other similar reservoirs, and professional judgment were also used to help characterize the overall capacity of each developed recreation site and the reservoir. However, since this characterization involved a synthesis of both detailed site information (e.g., capacity type levels, input from site managers and agency personnel, etc.) and subjective knowledge (e.g., past experience, professional judgment, etc.) to draw overall capacity level conclusions, this methodology is considered reasonable.

Using the overall capacity level as an indicator, each developed recreation site, the reservoir surface water area, and the study area in total was categorized according to the overall capacity priorities described in Table 4.6-1. When determining the overall study area capacity and priority level, consideration was given not only to the capacity of developed recreation sites in aggregate, but also to the reservoir surface area, dispersed use sites, potential areas of development (or lack thereof), population and recreation activity trends in the region, input from site managers and agency personnel, and professional judgment.

Table 4.6-1. Overall Capacity Priority Levels for Developed Recreation Sites at Ririe Reservoir.

Overall Capacity Level	Overall Capacity Priority
Below	Low
Approaching	Medium
At or Exceeding	High

Provided by EDAW, Inc.

5.0 RESULTS AND DISCUSSION

This section describes the results of the RCC Study. Results are first presented for each of the developed recreation sites, then for surface water boating and finally for the study area in total. The analysis relies heavily on observed impacts, questionnaire results, estimates of existing recreational use, input from facility and resource managers, BCSO input, and projections of future recreational use (all included as appendices to this report). A detailed summary of visitor questionnaire results can be found in Appendix E, including a discussion on response rate and non-response bias. An existing visitor use estimate, including a discussion of PAOT, VAOT, BAOT, and BCDPR paid fee receipt data, is presented in Appendix F. Finally, the projection of future recreational use of the study area is presented in Appendix G.

5.1 Developed Recreation Site Capacity

Capacity at outdoor recreation areas is generally associated with determining the level of use a given site or area can accommodate and then comparing the use level to established standards. However, capacity is a complex issue and often requires more than an estimate of how many people can use a given site at any time. Capacity is also dependent on the type and severity of ecological impacts, available space or facilities for recreation, and the social perceptions of visitors to the site, among other variables. To account for the complexity of capacity at recreation sites, four types of capacity were investigated at each site and resource area in the study area: ecological, spatial, facility, and social capacity. An overall estimate of site capacity was then determined based on identifying limiting factors to each type of capacity.

Capacity levels expressed in absolute maximum numbers of users or vehicles, for example, are not the focus of this analysis because capacities are estimates, and absolute numbers have been proven to be incorrect over time in many recreation settings. Capacities reported in this analysis are generally expressed in qualitative terms, or estimated numbers. Because capacities are expressed in qualitative terms and as estimates, capacity levels should be monitored over time to adapt to changing conditions.

Capacity conclusions are presented below for Juniper Park, Blacktail Park, Benchlands Park, Ririe Dam, and other identified use areas.

5.1.1 Juniper Park

Located at the northern end of the reservoir, Juniper Park consists of a day use area, an overnight campground with a total of 48 campsites (including a camp host site), and a boat launch with two ramp lanes (Figure 3.1-1). The campground at Juniper Park generally opens in late April/early May and closes in mid-September/early October, depending on weather conditions. The boat launch and day use areas are typically open year-round. There is a day use fee associated with the boat launch and day use areas of this site, as well as an overnight fee at the campground. A seasonal pass can be

purchased for the boat launch and day use area from BCDPR. A visitor center and dam overlook area are also located at Juniper Park.

Ecological Capacity

Photo 5.1-1. Visitor Center at Juniper Park.

Juniper Park is a developed recreation site with hardened facilities (e.g., paved roads and parking areas, designated picnic sites, trash receptacles, restrooms, etc.) that tend to limit potential ecological impacts to a site. Additionally, the site is well maintained (e.g., watered lawns, trash collection, routine maintenance, etc.) by BCDPR. As a result, observed ecological impacts during both field visits tended to be localized around the periphery of the site. While not observed during the field visits, the area around and including Juniper Park is important deer and elk winter habitat. Seasonal closure of this site, however, likely helps to minimize potential recreation-related impacts to wintering wildlife.

During the first site visit in 2003 (June 5 and 6), observed ecological impacts at Juniper Park included some accumulated litter and several user-defined trails (pictures of typical ecological impacts are presented in Appendix H). These same impacts were also observed during the second field visit (September 18 and 19), though they did not seem to have appreciably worsened during the peak season. The accumulated litter observed during both field visits was mostly located between the boat launch parking area and the reservoir shoreline and also near the dam overlook at the visitor center (both of these areas have trash receptacles). The trash near the boat launch parking area consisted mostly of fishing-related debris (e.g., bait containers, broken fishing line, etc.), some food wrappers, cigarette butts, and several empty soda and beer cans. The trash near the dam overlook consisted mostly of empty beer cans. In both cases, the amount of accumulated litter was minor (i.e., approximately 10 pieces or less of litter) during both visits.

User-defined trails were identified in three areas of Juniper Park: (1) adjacent to the dam overlook near the visitor center, (2) at the southern end of the campground, and (3) near the boat launch parking area. Nearly all of the identified user-defined trails exhibited vegetation trampling and loss, as well as erosion and soil compaction. All the trails appeared to be well established and most provided pedestrian access between site facilities (e.g., between the visitor center and the boat dock, between the campground and the boat launch, between the boat launch and the reservoir shoreline, etc.). The identified trails to the south of the campground are being used by visitors with all-terrain vehicles (ATV). ATV use does appear to increase the amount of dust in the area, as well as cause unwanted noise in the campground according to some visitors. Virtually no additional trail impacts were observed between the first and second field visits.

Overall, ecological capacity is not considered a limiting factor at Juniper Park because the observed impacts tended to be minor and localized. In addition to hardened site facilities and routine maintenance and facility upkeep by BCDPR, on-site supervision also likely minimizes potential ecological impacts at this site. BCDPR had planned several site improvements that will also likely help to reduce some observed impacts in the future, including new formalized hardened trails (pers. comm., Gary Johnson, September 19, 2003).

Spatial Capacity

While current recreation research has moved away from providing visitor density estimates to judge spatial capacity (e.g., people per acre), PAOT and VAOT are reported here to provide context. On average, 15 PAOT were observed at Juniper Park, not including occupied campsites (Appendix F, Table 1). Including occupied campsites, the average number of PAOT jumps significantly to 90 (assuming an average group size of 5.8 from the visitor questionnaire). The maximum number of observed PAOT was 49 (not including occupied campsites) and 281 (including occupied campsites). On average, 37 VAOT were observed at Juniper Park. A maximum of 81 VAOT were observed during the 2003 peak season (Appendix F, Table 2). It is important to note that BCDPR has noted a decrease in visitation in the study area over the past 3 consecutive years, possibly due to drought conditions and the economy, among other reasons (pers. comm., Craig Daniels, June 6, 2003).

Current recreation capacity research considers spatial capacity in term of the ability of a site to absorb additional recreational use either through the construction of new site facilities or site expansion. While the location of Juniper Park likely limits large-scale site expansion (due to topographical, road, and property constraints), the potential does exist to increase the density of use at the existing site, as well as to add new site facilities. The existing visitor center/dam overlook picnic area appears underutilized and could accommodate higher use levels. The picnic table facilities in this area could be expanded to create additional capacity, if necessary. Additionally, the potential to expand the existing campground also exists. A large area to the south of the existing campground could be developed into a third camping loop with approximately 30 to 40 new campsites.

The only area of Juniper Park that is spatially constrained at this time is the boat launch. There is no adjacent space to build new parking facilities at the existing boat launch due to the steep topography. However, an overflow parking area at the top of the canyon was built and hardened in 2003. This new overflow area will likely help ease the spatial constraints at the boat launch area, though some visitors may be less willing to use this new overflow area due to the longer distance between it and the boat ramp.

Given the spatial constraint at the boat launch area, spatial capacity is considered a limiting factor at Juniper Park. However, other use areas of the site (campground, visitor center area) could accommodate additional facilities (e.g., new picnic sites, parking spaces, campsites) to increase the capacity of the site.

Facility Capacity

During the peak season, existing recreational use of this site accounted for approximately 27,705 visitor days (campground, boat launch/day use area, and season passes combined) (Appendix F, Table 6). Existing weekend use during the peak season accounted for about 13,000 visitor days (not including seasonal passes). The boat launch/day use area at Juniper Park accounted for more than twice as much of the recreational use of this site as the campground. By 2013, the total number of visitor days at this site during the peak season is projected to increase to 30,445, while weekend visitor days are projected to increase to 14,275 (Appendix G, Table 3). This represents approximately a 10 percent increase from existing peak season use levels and a 9 percent increase from existing weekend use levels. Facility capacity at the boat launch area is further discussed in Section 5.2 – (Surface Water Boating Capacity).

Existing site occupancy was determined for the boat launch/day use area and the campground separately at this site. For the boat launch/day use area, specifically the boat launch, the existing percent occupancy during the peak season was 65 percent and during peak season weekends was 85 percent (Appendix F, Table 7). By 2013, percent occupancy at the day use area is projected to increase to 68 percent during the peak season and 89 percent during peak season weekends (Appendix G, Table 4). These occupancy levels are considered to be exceeding the facility capacity of the boat launch/day use area of Juniper Park.

At the campground, the existing percent occupancy during the peak season was only 28 percent and 34 percent during peak season weekends (Appendix F, Table 7). Anecdotal information from BCDPR suggests that the campground may be receiving higher levels of use than the actual data show, especially during weekends and holidays (pers. comm., Gary Johnson, September 19, 2003). As a result, paid fee receipt data (which were used to calculate percent occupancy) were reconfirmed and revalidated by BCDPR (pers. comm., Craig Daniels, October 1, 2003). By 2013, these occupancy levels are expected to increase slightly to 29 percent for the peak season and 36 percent for peak season weekends (Appendix G, Table 4). These occupancy levels are relatively low and are considered to be below the facility capacity of the campground at Juniper Park. It is important to note that BCDPR has observed a decrease in visitation in the study area over the past 3 consecutive years (pers. comm., Craig Daniels, June 6, 2003).

Overall, facility capacity is ultimately considered a limiting factor at this site because of the high occupancy rates at the boat launch/day use area, but not the campground.

Social Capacity

The mean perceived crowding score at Juniper Park was 3.9 on a scale of 1 (not crowded) to 9 (extremely crowded) (Appendix E, Question 13). This is the second highest crowding score of the developed recreation sites in the study area. This score is generally considered moderate and indicates that visitors feel slight levels of crowding. Nearly 80 percent of visitors at this site felt that the level of crowding was either about or less than they expected. However, approximately 34 percent of visitors at this site reported that

the number of people present detracted (either a little or a lot) from their overall enjoyment. Additionally, 44 percent of visitors at this site have changed their visitation pattern (displacement) to avoid crowding.

Visitor displacement at Juniper Park tended to be temporal rather than spatial (i.e., visitors chose different times to visit the site as opposed to choosing an alternative recreation area). Popular coping techniques to avoid crowding included coming earlier or later in the day, visiting the area on weekdays instead of weekend days, and avoiding holidays.

Photo 5.1-2. Boat ramp lanes at Juniper Park Boat Launch.

From approximately Memorial Day through Labor Day, Reclamation contracts with BCSO to provide law enforcement services at Ririe Reservoir, including patrols of the recreation sites and reservoir surface area. Reclamation contracted with BCSO to provide law enforcement services for the peak recreation season (Memorial Day through Labor Day) for the past 3 years (pers. comm., Lieutenant B. Langerak, August 26, 2003). In general, BCSO reports that there are few law enforcement issues at the reservoir related to recreation and public use. While generally minor, commonly observed visitor law enforcement issues reported by BCSO include arguments at boat ramps, boaters not obeying "no wake" zones, and excessive boat speeds (pers. comm., Lieutenant S. Poole, September 2, 2003).

At Juniper Park, most observed visitor conflict tends to occur at the boat launch. This is supported by visitor questionnaire results indicating that approximately 41 percent of surveyed visitors are concerned about conflicts with other users at boat ramps (combined response categories of slight, moderate, serious, and very serious problem) (Appendix E). Arguments and some minor vehicle collisions have occurred at the boat launch, especially after the boat launch at Blacktail Park closes for the season (typically mid to late August). According to Lieutenant Poole of BCSO, most visitor conflict occurs at the Juniper Park boat ramp because the size of the site is small, leading to heavy congestion at busy times. The congestion and lack of patience on the part of some visitors lead to most of the arguments and occasional vehicle collisions that occur at the site. The campground and visitor center area of Juniper Park tend to experience very little visitor conflicts that require the presence of BCSO. The low levels of visitor conflict in these areas is likely due to on site supervision (camp hosts and BCDPR personnel) and regular law enforcement patrols (pers. comm., Lieutenant S. Poole, September 2, 2003).

Overall, while the mean perceived crowding score at Juniper Park is only considered moderate, social capacity is a limiting factor, especially at the boat launch. The large

percentage of visitors who reported changing their visit to the site to avoid crowding and the high levels of reported conflict (from BCSO and visitor questionnaire results) at the boat launch are concerns that limit the social capacity of the site. While higher levels of perceived crowding are common and to be expected at popular developed recreation sites, management actions (e.g., more on-site supervision at peak times, site improvements, etc.) may be considered to reduce displacement and visitor conflict.

Overall Site Capacity Conclusion

Overall, recreational use at this site is considered to be approaching its capacity. Currently, the primary limiting factors are spatial capacity, facility capacity, and social capacity. Spatial capacity is considered a limiting factor due to the lack of expansion potential at the boat launch. Facility capacity is considered a limiting factor due to the high levels of use at the boat launch, though other areas of the site could likely absorb additional use (e.g., the campground and visitor center/dam overlook). Social capacity is also considered a limiting factor primarily because of high levels of visitor displacement and occasional conflict at the boat launch. Ecological capacity is not considered limiting factors at this time, but should be monitored. Additionally, the campground, dam overlook area, and visitor center are all underutilized and are considered to be below capacity when considered separately from the boat launch.

5.1.2 Blacktail Park

Blacktail Park is a day use only area and is located on the western shoreline of the reservoir within the Tex Creek WMA (Figure 3.1-1). It is the closest developed recreation site on Ririe Reservoir to Idaho Falls (approximately a 20-25 minute drive). The site contains a boat launch with three ramp lanes, a large grassy picnic area with 13 covered picnic tables, a boat marina, and a swimming area, among other constructed facilities. The boat launch at Blacktail Park is much larger and generally easier to access than that at Juniper Park. The swimming area is the only designated swimming area at the reservoir and is protected from boat traffic by a floating dock delineating a no-wake zone (at higher pool elevations). Two marina docks provide seasonal boat moorage (at higher pool elevations). This site is typically open during the peak recreation season (Memorial Day through Labor Day). There is a day use fee for visitors to this site. There is no camping at Blacktail Park, though visitors with boats in the marina are allowed to spend the night on their boats.

Photo 5.1-3. Boat ramp lanes and marina at Blacktail Park.

Ecological Capacity

Similar to Juniper Park, Blacktail Park is a developed recreation site with hardened facilities, is well maintained by BCDPR, and has on-site supervision. As a result, observed ecological impacts during both field visits tended to be minor and localized around the site periphery.

During the first field visit (June 5 and 6), observed ecological impacts consisted of some accumulated litter and several user-defined trails (pictures of typical ecological impacts are presented in Appendix H). The observed litter tended to be minor but located near the reservoir shoreline. The primary observed ecological impact, however, was a large area of user-defined trails, to the south of the actual site. Pedestrian trails, as well as vehicular trails were identified at the southern end of Blacktail Park and generally provided access to the reservoir shoreline. All of these trails exhibited vegetation trampling and loss, in addition to soil compaction and loss (erosion). These trails appeared to be well established. A BCDPR sign (indicating no vehicular access beyond the overflow parking area) had been knocked over, and fresh tire tracks were observed leaving the overflow parking area.

During the second field visit (September 18 and 19), some accumulated trash and the user-defined trail system at the southern end of the site were still present, though neither appeared to be significantly worse than during the first visit. The BCDPR sign that was knocked over during the first field visit had been replaced, and no new tire tracks were observed in the area. However, there were several new observed ecological impacts during the second site visit, including graffiti and tire tracks along the shoreline. A single instance of graffiti was observed on the rocks adjacent to the boat ramp. Multiple tire tracks were observed leaving the exposed toes of the boat ramps and accessing the exposed reservoir shoreline. Additionally, multiple acts of vandalism occur almost regularly during the off-season (September through late May) according to BCDPR staff (pers. comm., Gary Johnson, September 19, 2003).

IDFG has identified unconfined vehicular access to the exposed reservoir shoreline during low pool levels as a concern, as it potentially disturbs wildlife and contributes to erosion (pers. comm., Steve Schmidt, September 18, 2003). Due to the steep topography along most of the reservoir shoreline, vehicular access along the exposed reservoir shoreline is only possible during lower pool elevations and primarily from Blacktail Park. Unconfined vehicular access is generally only possible during the last week or two of August during lower water years. While this type of use does likely impact the exposed reservoir shoreline area, the impacts tend to be short-term. Vehicular impacts to wildlife along the exposed reservoir shoreline are likely minor at Blacktail Park given the relatively short timeframe that vehicles can potentially access the area (the site generally closes by late August) and the fact that this timeframe occurs during the peak recreation season when the site receives higher levels of use (Blacktail Park is closed during the winter to protect critical winter habitat for deer and elk). Additionally, while erosion may likely be exacerbated by unconfined vehicular access to the exposed reservoir shoreline, the primary agent of erosion in this denuded area is likely seasonal reservoir pool level drawdowns, as well as potentially wind and boat induced wave action.

In addition to potential impacts to wildlife and erosion, unconfined vehicular access to the exposed reservoir shoreline may result in other potential ecological impacts. Vehicle use in this drawdown area may impact water quality by introducing small amounts of antifreeze, oil, gas, and other vehicle fluids to the reservoir. Additionally, vehicle use may potentially allow visitor access to sensitive shoreline areas (e.g., shoreline wetland areas) or near nesting sites (e.g., bald eagle nests) that are otherwise inaccessible during higher pool elevations.

Overall, ecological capacity is not a large concern at Blacktail Park, but actions should be considered to limit observed impacts that occur around the periphery of the site. In particular, unconfined vehicle access to the exposed reservoir shoreline should be prohibited by placing vehicular barriers at the end of the boat ramps. Additionally, access to the user-defined vehicle and pedestrian trails at the southern end of the site should also be further limited and these trails should possibly be rehabilitated. Management actions presented in the RMP call for formalizing and hardening the user-defined pedestrian trail in this area as part of an official trail (see Section 6.0 of this RCC Study).

Spatial Capacity

On average, 30 PAOT were observed at Blacktail Park. The maximum number of observed PAOT was 106 (Appendix F, Table 1). The great difference between the average and maximum number of PAOT indicates that this site receives large influxes of visitors on several occasions during the peak season (e.g., holidays, weekends, etc.). According to BCDPR, use at Blacktail Park is heaviest on weekends and holidays, especially the 4th of July when the site often reaches capacity (pers. comm., Craig Daniels, June 6, 2003; Gary Johnson, September 19, 2003). On a daily basis (weekdays), Blacktail Park tends to receive higher levels of use after 4:00 p.m., when visitors are done with work for the day. On average, 37 VAOT were observed at Blacktail Park. A maximum of 98 VAOT were observed during the 2003 peak season (Appendix F, Table 2).

Photo 5.1-4. Informational sign at Blacktail Park.

In general, there is only a small amount of additional space available for site expansion at Blacktail Park, though some new site facilities may be possible. Topography, land ownership, and wildlife habitat concerns limit site expansion in all directions at this site. The impacted area to the south of Blacktail Park could likely be hardened, but would need to be planned in conjunction with wildlife habitat and cultural resource protection measures. The large grassy area at this site could likely accommodate a few additional

picnic facilities (construction was started in late summer 2003 on an additional group picnic shelter) to increase capacity, but the number of additional facilities is limited based on available space.

Overall, spatial capacity is considered a limiting factor at this time due to the lack of significant expansion potential at this site.

Facility Capacity

During the peak season, existing recreational use of this site accounted for approximately 29,895 visitor days (day use area and season passes combined). Existing weekend use during the peak season accounted for about 19,065 visitor days (not including seasonal passes) (Appendix F, Table 6). By 2013, the total number of visitor days at this site during the peak season is projected to increase to 33,030, while weekend visitor days are projected to increase to 21,060 (Appendix G, Table 3). This represents slightly more than a 10 percent increase from existing peak season and peak season weekend use levels. Facility capacity at the boat launch is further discussed in Section 5.2 (Surface Water Boating Capacity).

The existing percent occupancy at this site during the peak season was 49 percent and 87 percent during peak season weekends (Appendix F, Table 7). By 2013, percent occupancy is projected to increase to 52 percent during the peak season and 91 percent during peak season weekends (Appendix G, Table 4). The existing, as well as the projected, peak season percent occupancy is considered to be approaching the facility capacity of this site. However, the existing peak season weekend percent occupancy is considered to be exceeding the facility capacity of this site. Overall, facility capacity is considered a limiting factor at this site because of high average weekend occupancy rates.

Social Capacity

The mean perceived crowding score at Blacktail Park was about 4.0 on a scale of 1 to 9 (Appendix E, Question 13). This is the highest crowding score of the developed recreation sites in the study area. This score is generally considered moderate though, and indicates that visitors feel slight levels of crowding. Nearly 85 percent of visitors at this site felt that the level of crowding was either about or less than what they expected. However, approximately 33 percent of visitors at this site reported that the number of people present detracted (either a little or a lot) from their overall enjoyment. Additionally, 41 percent of visitors at this site have changed their visitation pattern (displacement) to avoid crowding.

Similar to visitor displacement at Juniper Park, displacement at Blacktail Park tended to be temporal rather than spatial (i.e., visitors chose different times to visit the site as opposed to choosing an alternative recreation area). Popular coping techniques to avoid crowding included coming earlier or later in the day, avoiding holidays, and seeking out quiet places in the area to avoid crowded locations.

Similar to Juniper Park, the BCSO reports very little visitor conflict at Blacktail Park. The generally minor incidences of visitor conflict occur at the boat launch portion of the

park and include some visitor arguments and minor vehicle collisions (though fewer than at the Juniper Park boat launch). The BCSO reported only one major incidence of visitor conflict during the 2003 peak recreation season at Blacktail Park (an argument between a visitor and park staff that escalated and required intervention from the BCSO), though this type of conflict is rare according to the BCSO. On-water visitor conflict tends to be more common than land-based conflict at Blacktail Park and generally includes boaters not obeying the "no wake" zones and speeding. In general, visitor conflict at Blacktail Park tends to be minor compared to other recreation sites at other larger reservoirs in the region. On-site hosts and regular BCSO patrols minimize potential visitor conflict and other associated problems (e.g., vandalism, theft, etc.) at this site (pers. comm., Lieutenant S. Poole, September 2, 2003).

Overall, social capacity is not considered a limiting factor at Blacktail Park due to relatively low occurrences of visitor conflict and relatively moderate perceived crowding scores.

Overall Site Capacity Conclusion

Overall, season-long recreational use at this site is considered to be approaching its capacity. Currently, the primary limiting factors are spatial capacity and facility capacity. Spatial capacity is considered a limiting factor due to the lack of expansion potential at this site. Facility capacity is considered a limiting factor due to the high levels of weekend use. Ecological and social capacities are not considered limiting factors at this time but should be monitored over time.

5.1.3 Benchlands Park

Benchlands Park is a day use site located on the western shoreline of the reservoir (Figure 3.1-1). It is only accessible from the water by boat, as there are neither access roads nor non-motorized trails to this site. The site consists of a grassy picnic area with five covered picnic tables. A floating toilet building was installed adjacent to the site during the summer of 2003. There are no fees associated with use of this site; however, this site can only be accessed by boat from Juniper Park or Blacktail Park, both of which have day use fees. Some tent camping does occur at Benchlands Park, though it is not encouraged or actively promoted by BCDPR.

Photo 5.1-5. Picnic area at Benchlands Park.

Ecological Capacity

As with Juniper and Blacktail Parks, Benchlands Park is a developed recreation site with hardened facilities that limit potential ecological impacts and is also well maintained by BCDPR. The primary observed ecological impacts at this site during the two field visits included erosion and tree damage.

During the first field visit (June 5 and 6), observed ecological impacts consisted of erosion, tree damage, user-created fire pits, and used toilet paper (pictures of typical ecological impacts are presented in Appendix H). The main area of erosion at Benchlands Park occurs along the reservoir shoreline, between the floating dock and the actual site. This section of shoreline is relatively steep, and visitors must walk up the exposed shoreline to access the site. This pedestrian trail use is causing some shoreline erosion, though the impact is localized, in an already denuded area, and not widespread at the site. Limbs were broken off of several of the small trees at this site, and at least one tree was entirely removed by visitors. A large user-created fire pit was located at Benchlands Park during the first field visit and appeared to have been used not only as a campfire, but also to burn trash. Additionally, some used toilet paper was observed at this site, likely a result of the lack of a toilet (the new toilet was installed after the first site visit).

During the second field visit (September 18 and 19), erosion and tree damage were also identified, as well as some accumulated litter. The same shoreline area was being eroded by pedestrian use as during the first field visit, though the reservoir pool elevation was even lower during the second field visit. Tree damage was still evident, and several new limbs had been removed from trees since the first field visit. While no significant trash was observed during the first field visit, an entire fire pit was full of litter during the second visit. The rest of the site, however, was litter-free. The user-created fire pit that was located at Benchlands Park during the first field visit had been removed and replaced by a constructed fire pit with a grill by BCDPR. A floating toilet building was placed adjacent to this site during the summer and likely reduced the number of visitors using the periphery of the site as a toilet, hence the lack of used toilet paper during the second visit.

Overall, ecological capacity is not considered a limiting factor at Benchlands Park at this time. Most of the observed ecological impacts at this site tended to be minor and did not appear widespread. Only the shoreline erosion (exacerbated by lower pool elevations) and tree damage appeared to be concerns. In particular, the tree damage is likely having a long-term effect on the site by reducing the potential for shade trees in the future. Actions should be considered to remedy these situations, such as providing shoreline erosion control measures, visitor education, and firewood for sale.

Spatial Capacity

According to BCDPR, daily use of this site varies greatly, as visitors tend to use it for shorter periods of time (under 2 hours) and are limited by available moorage (pers. comm., Gary Johnson, September 19, 2003). On average, 14 PAOT were observed at

Benchlands Park. The maximum number of observed PAOT was 28 (Appendix F, Table 1). It should be noted that only four observation days were scheduled during the 2003 peak season. This site is only accessible by boat; thus, no vehicles were observed.

In general, there is ample space adjacent to the existing site for potential site expansion, if necessary. However, nearby wildlife management concerns and cultural resources would need to be explored and addressed before expansion could occur at this site due to its location in the Tex Creek WMA. Additionally, use of this site is currently limited by the number of boats that can tie-up to the dock. Increased use may require more temporary moorage at this site. Overall, spatial capacity is considered a limiting factor at this time due to nearby resource concerns and limited boat moorage.

Facility Capacity

During the peak season, existing recreational use of this site accounted for approximately 4,240 visitor days. Existing weekend use during the peak season accounted for about 2,650 visitor days (Appendix F, Table 6). By 2013, the total number of visitor days at this site during the peak season is projected to increase to 4,690, while weekend visitor days are projected to increase to 2,930 (Appendix G, Table 3). This represents slightly more than a 10 percent increase from existing peak season and peak season weekend use levels.

The existing percent occupancy at this site during the peak season was 25 percent, and 34 percent during peak season weekends (Appendix F, Table 7). By 2013, percent occupancy is projected to only slightly increase to 26 percent during the peak season and 36 percent during peak season weekends (Appendix G, Table 4). The existing as well as projected peak season and peak season weekend percent occupancy are considered to be below the facility capacity of this site. Overall, facility capacity is not considered a limiting factor at this time because of the relatively low site occupancy rates.

Social Capacity

A limited number of completed surveys were received from visitors to Benchlands Park (partly due to the sampling scheme). Based on eight respondents, the mean perceived crowding score at this site was 4.5 (Appendix E, Question 13). This is generally not a large enough sample size to draw a statistically significant conclusion. The study area mean crowding score may be a more representative indicator of perceived crowding at this site. The study area mean perceived crowding score is 3.87 and indicates that visitors feel slightly crowded.

The BCSO does not report any significant occurrences of visitor conflict at Benchlands Park, though some on-water conflict occurs in the vicinity of the site. On-water conflict is discussed in more detail in Section 5.2 (Surface Water Boating Capacity).

Overall, social capacity does not appear to be a limiting factor at Benchlands Park at this time due to the relatively low perceived crowding score and general lack of visitor conflict.

Overall Site Capacity Conclusion

Overall, recreational use at this site is considered to be below its capacity. Currently, the only limiting factor is spatial capacity due to wildlife habitat concerns and limited boat moorage. Ecological, facility, and social capacity are not considered limiting factors at this time but should be monitored over time.

5.1.4 Ririe Dam

The top of Ririe Dam consists of a small viewpoint (Figure 3.1-1). Visitors can park at the viewpoint, as well as along the top of the dam. Visitors use the top of the dam to access the reservoir for shoreline fishing, swimming, and other activities. This site is open during the peak recreation season from 7:00 a.m. until 9:00 p.m. There is a day use fee associated with use of this site.

Photo 5.1-6. Portable toilet at parking area on Ririe Dam.

Ecological Capacity

In general, there are no major recreation-related ecological impacts at the Ririe Dam, as the entire site is hardened. Some litter was observed during both field visits along the face of the dam where visitors fish and swim (pictures of typical ecological impacts are presented in Appendix H). Additionally, a small user-defined trail was observed to the north of the small parking area near the spillway; however, the trail appeared to receive very little use. Both of these observed impacts are considered minor, and overall ecological capacity is not considered a limiting factor at the Ririe Dam.

Spatial Capacity

On average, 10 PAOT were observed at the Ririe Dam. The maximum number of observed PAOT was 22 (Appendix F, Table 1). On average, 2 VAOT were observed at this site. A maximum of 8 VAOT were observed during the 2003 peak season (Appendix F, Table 2).

In general, there is no additional space for potential site expansion at the Ririe Dam. The site is built on the top of the dam and thus cannot be expanded. The potential exists to add additional site facilities; however, safety and security concerns should be fully explored before new facilities are considered at this site. Overall, spatial capacity is considered a limiting factor at this time due to the lack expansion potential.

Facility Capacity

During the peak season, existing recreational use of this site accounted for approximately 1,530 visitor days. Existing weekend use during the peak season accounted for about 1,080 visitor days (Appendix F, Table 6). By 2013, the total number of visitor days at this site during the peak season is projected to increase to 1,695, while weekend visitor days are projected to increase to 1,195 (Appendix G, Table 3). This represents nearly an 11 percent increase from existing peak season and peak season weekend use levels.

The existing percent occupancy at this site during the peak season was 13 percent, and 20 percent during peak season weekends (Appendix F, Table 7). By 2013, percent occupancy is projected to only slightly increase to 14 percent during the peak season and 21 percent during peak season weekends (Appendix G, Table 4). The existing, as well as the projected, peak season and peak season weekend percent occupancy are considered to be below the facility capacity of this site. Overall, facility capacity is not considered a limiting factor at this time because of the relatively low site occupancy rates.

Social Capacity

The mean perceived crowding score for visitors to the Ririe Dam was 3.6 on a scale of 1 to 9 (Appendix E, Table 13). This was the lowest crowding score of the developed recreation sites in the study area and indicates that visitors feel slightly crowded. Approximately 86 percent of visitors surveyed at this site felt that the level of crowding was either about or less than they expected. Only 4 percent of visitors felt the level of crowding was more than they expected. However, approximately 40 percent of visitors at this site reported that the number of people present detracted (either a little or a lot) from their overall enjoyment. Additionally, 37 percent of visitors at this site have changed their visitation pattern to avoid crowding. Because this site tends to receive lower levels of use, the visitors at this site appear to be more sensitive to crowding than visitors at sites that regularly experience higher use levels.

Visitor displacement at the Ririe Dam site tended to be temporal rather than spatial, similar to displacement at the other developed recreation sites in the study area. Popular coping techniques to avoid crowding included avoiding holidays and coming earlier or later in the day.

The BCSO does not report any significant occurrences of visitor conflict at Ririe Dam, though visitor safety has been a concern in the past. Previously, some visitors used portions of the dam to jump into the reservoir. These areas have since been fenced to prohibit public use, though on occasion the fence has been illegally cut to allow access. Incidences of visitor conflict are likely minor at the dam because use tends to be lower at this site, road access to the dam is gated and locked at night, and park and BCSO staff regularly patrol the area (pers. comm., Lieutenant S. Poole, September 2, 2003).

Overall, social capacity is not considered a limiting factor at this time at the Ririe Dam. While some displacement is likely occurring, the mean crowding score is relatively low and there are very few visitor conflict concerns at this site.

Overall Site Capacity Conclusion

Overall, recreational use at this site is considered to be below its capacity. Currently, the only limiting factor is spatial capacity due to the lack of site expansion options, though the site could likely accommodate additional facilities. Ecological, facility, and social capacity are not considered limiting factors at this time but should be monitored.

5.1.5 Other Recreational Use Areas at Ririe Reservoir

While the steep canyon walls tend to limit recreation along much of the reservoir shoreline area, there are several dispersed areas that are currently being used. These areas tend to lack constructed facilities and generally receive significantly lower levels of use compared to the developed recreation sites at the reservoir. This section briefly identifies these use areas and qualitatively describes potential capacity concerns. The locations of these sites are displayed in Figure 3.1-2.

Creekside Park

Creekside Park is located directly downstream of Ririe Dam. The road across the top of the dam provides access to this site. The site was recently decommissioned because of maintenance problems and safety and security concerns. Park facilities formerly included two parking areas, a paved access road, landscaped areas, a group tent camping area, vault toilet building, and a shelter and vista point. The vault toilet building was recently demolished. The shelter and parking lot remain at this site, though the internal access road is barricaded. In general, this site showed very little evidence of use.

Photo 5.1-7. Creekside Park area.

A second use area below the dam provides river access for fishing, wildlife observation, and walking. A large gravel parking area for approximately 20 vehicles is located below the dam across from Creekside Park. This site is accessible when the gate at the top of the dam is open (7:00 a.m. to 9:00 p.m. during the peak season). A large amount of litter was identified at this site and generally consisted of beer cans and used fishing equipment. The amount of accumulated litter is likely a result of the lack of a trash receptacle, as well as the lack of supervision at this site.

A pedestrian trail follows the river bank downstream from the dam. This trail shows typical impacts commonly associated with user-defined trails including vegetation trampling and loss, soil compaction and erosion, and litter. The first section of trail is

very well defined and likely receives some use. The second section of trail, located farther downriver, exhibits fewer recreation-related impacts and more closely resembles a game trail.

Specific management actions related to future recreational use of Creekside Park and the adjacent area along Willow Creek are discussed in detail in Section 6.0 (Management Recommendations).

Jensen's Cove

Located on the western shoreline between Juniper Park and Benchlands Park, an old road provides limited access to the reservoir at Jensen's Cove. The access road is well established and likely existed before the dam was constructed. Due to a lack of maintenance and upkeep, this road is generally only usable by 4-wheel drive vehicles. Very few impacts were observed in this area, suggesting few visitors use this road to access the reservoir. Visitors with boats are more likely to use this cove due to a floating dock moored in the area. However, it is unlikely that visitors are able to beach a boat along the shoreline in this cove at most reservoir pool elevations.

The Ririe Reservoir RMP does not provide specific management actions related to recreational use of this site. Due to the low level of use that this site receives, specific management actions are not likely needed at this time. However, consideration should be given to periodically monitoring use and potential related impacts at the site in the future.

Meadow Creek Area

Located on the northern shoreline where the Meadow Creek arm of the reservoir meets the main body of water, a small dispersed use area provides shoreline access. A well-established, user-defined 4-wheel drive road provides access to this use area for shoreline fishing. The site itself exhibits signs of use including some litter and trampled vegetation, though current use levels do not appear to pose a significant concern. Use is estimated to be low at this site based on the lack of significant observed impacts and the difficulty of access.

The Ririe Reservoir RMP does not provide specific management actions related to recreational use of this site (Reclamation 2001). Due to the low level of use this site likely receives, specific management actions are not likely needed at this time. However, consideration should be given to periodically monitoring use and potential related impacts at the site in the future.

Willow Creek/Tex Creek WMA Area

Located at the southern tip of Ririe Reservoir, a dispersed use area along Willow Creek provides creek and reservoir access for shoreline fishing. Difficult road access to this area likely limits the amount of recreational use this area receives. Several small parking areas were identified in this area, though none are in proximity to the reservoir. User-defined trails provide pedestrian access along Tex Creek and Willow Creek. These trails continue to the reservoir; however, due to low reservoir pool levels in 2003, the reservoir

shoreline was a considerable distance from the small undefined parking areas, requiring a lengthy hike. During the peak season, anglers are most likely the primary users in this area, though some visitors may access the area for hiking and wildlife observation.

The trails that were identified in this area exhibited typical impacts from unconfined visitor use including vegetation trampling and loss, soil compaction and erosion, and some litter. These impacts were more common away from the reservoir and are likely being caused by Tex Creek WMA visitors, not visitors to the reservoir.

The Ririe Reservoir RMP does not provide specific management actions related to recreational use of this site. Due to the low level of use that this site likely receives, specific management actions are not likely needed at this time. However, consideration should be given to periodically monitoring use and related impacts at the site in the future. Because this site can only be accessed by vehicle through the Tex Creek WMA, consultation and cooperation with IDFG are likely needed regarding future management actions at this site.

5.2 Surface Water Boating Capacity

Ririe Reservoir is located within Willow Creek Canyon. The reservoir is approximately 10.5 miles long, with a surface area of approximately 1,560 acres at high pool and a mean depth of 64 feet (Reclamation 2001). The steep canyon walls limit access to the reservoir in most areas. Primary access to the reservoir is via the two existing boat launches (Juniper Park and Blacktail Park). The only other developed recreation site on the reservoir is Benchlands Park, which is only accessible by boat. In general, dispersed recreation along the reservoir shoreline is limited by the steep canyon walls. As a result, floating docks are provided at multiple locations around the reservoir in lieu of dispersed shoreline beach areas. For purposes of this analysis, the reservoir surface area was divided into three segments (North, Middle, and South) (Figure 3.1-1).

Ecological Capacity

Typical ecological concerns related to boating commonly include water quality, shoreline erosion, floating debris, noise, the spread of noxious weeds and invasive species, and wildlife disturbance, among others. In general, testing for these types of concerns was beyond the scope of this study. However, water conditions were observed during the first and second field visits. During the first field visit, no significant water-related ecological concerns were observed. Some minor floating debris (litter) was noted though. During the second field visit, water clarity appeared to be significantly reduced from the first field visit. The source of the reduction in water clarity was not researched; however, potential causes that may have contributed to the poorer water clarity during the second field visit appeared to be primarily algae blooms in late summer.

IDFG has identified wave-induced shoreline erosion and unconfined shoreline vehicle use as concerns at Ririe Reservoir also (pers. comm., Steve Schmidt, September 18, 2003). According to IDFG, steeper portions of the reservoir canyon are susceptible to erosion and sloughing. The primary agent of sloughing is likely wind action; however,

boat-induced wave action may also be contributing to sloughing (boat-induced wave action commonly results in varying amounts of shoreline erosion). Based on limited field observations, it is estimated that boat-induced wave action, while adding to the sloughing problem, is not likely resulting in a widespread significant loss of wildlife habitat. Other actions (e.g., encroaching development and agriculture) are more likely to contribute to habitat loss in the region than localized boat-induced wave action. Unconfined vehicle use is discussed in Section 5.1.2 (Blacktail Park).

Surface water boating ecological capacity is not considered a limiting factor at this time, but ongoing monitoring is likely needed. If concerns are determined to be significant based on monitoring, then appropriate management actions should be considered.

Spatial Capacity

On average, the mean number of BAOT observed on Ririe Reservoir was 66 watercraft during the 2003 peak season. The maximum number of BAOT observed was 87 watercraft (Appendix F, Table 3). The mean is relatively high considering the mean VAOT observed in boat launch parking areas (Appendix F, Table 2). This high mean was a result of the four boat count sample days that were scheduled during the peak season per study methodologies (Section 4.0—Methods). Two of the boat count days were weekends and one was a holiday (4th of July) – all days when recreation use tends to be higher than normal. As a result, this sampling scheme likely resulted in a higher mean than an actual mean based on VAOT observed at boat launches.

Boating use within the three reservoir segments was analyzed (Figure 3.1-1). The North Segment of Ririe Reservoir had both the highest mean observed BAOT (31), as well as maximum BAOT (44). The Middle Segment had the second highest observed mean (27) and maximum (32) BAOT, while the South Segment had the lowest observed mean (8) and maximum (11) BAOT (Appendix F, Table 3). The South Segment likely had the lowest mean and maximum BAOT because it was most affected by the lower pool elevations that were experienced in 2003. The Middle Segment was also likely affected by lower pool elevations, though not until late in the peak season (late August).

Powerboats accounted for approximately 83 percent of all observed watercraft during the peak season on Ririe Reservoir. On each reservoir segment, powerboats accounted for more than 80 percent of observed boats (North Segment—83 percent, Middle Segment—82 percent, and South Segment—87 percent). PWC accounted for approximately 15 percent of observed BAOT on the reservoir and more than 10 percent of observed BAOT on each reservoir segment (North Segment—15 percent, Middle Segment—14 percent, and South Segment—13 percent). Other types of watercraft (sailboats, canoes, kayaks, etc.) accounted for only about 2 percent of observed BAOT during the peak season.

In addition to boat counts, boating activity counts were also performed on boat count days. In general, water-skiing (including wake boarding and tubing) was the most observed boating-related activity during the peak season. The presence of a water-ski slalom course and proximity to Idaho Falls make Ririe Reservoir an attractive destination for water-skiers. Approximately half of all observed BAOT were engaged in water-

skiing. Cruising accounted for 29 percent of observed BAOT, while fishing from a boat accounted for the remaining 21 percent of observed BAOT. While use was not monitored during other seasons, one fishing tournament is held at the reservoir each year. The Eagle Rock Bassmasters hold a bass tournament in October that is limited to 20 people/20 boats (IDFG 2003).

Using the DWROS as a guideline (as described in Section 4.5), Ririe Reservoir was categorized as Rural Developed for purposes of this analysis. It was considered Rural Developed due to the level of human development around the reservoir (e.g., the dam, agriculture, developed recreation facilities), the diverse range of activities available (e.g., motor boating, water-skiing, fishing, PWC use, SCUBA diving, etc.), and the level of comfort and convenience provided to visitors (i.e., developed recreation sites). As a Rural Developed setting, the reservoir should be able to accommodate boating use levels between 20 and 50 acres per boat at higher pool elevations without compromising the DWROS setting integrity of the reservoir. This equates to between 31 and 78 BAOT. At lower pool elevations, the number of BAOT would be reduced. For example, only 21 to 52 BAOT could be accommodated if the surface water acres were reduced by 1/3 (1,040 surface water acres), and only 10 to 26 BAOT could be accommodated if the surface water acres were reduced by two-thirds (520 surface water acres).

Given the Rural Developed DWROS setting for the reservoir, existing use is likely approaching capacity at typical higher pool elevations. The mean observed BAOT number during the 2003 peak season fell between the acceptable range of 31 to 78 BAOT given the surface water area of the reservoir assuming a normal water year. However, during 2003, the reservoir pool elevation at Ririe Reservoir was never at full pool during the peak season due to drought conditions. As a result, the acceptable number of BAOT during the 2003 peak season was more likely in the 21 to 52 BAOT range (assuming the available surface water acres were reduced by about one-third). Both the mean and maximum observed BAOT from the 2003 peak season exceed this acceptable BAOT range at this lower pool elevation.

As a result, surface water boating spatial capacity is considered a limiting factor at this time. This conclusion is due to the actual mean observed BAOT exceeding the acceptable range of BAOT during the 2003 peak season, which could be repeated in subsequent years. During a normal water year, observed BAOT in the 2003 peak season would not likely exceed the DWROS setting BAOT standard. While additional boats could be accommodated on the reservoir during more normal water years, the potential exists for increased visitor conflict during periods of lower pool elevations.

Facility Capacity

Surface water facility capacity is commonly estimated in terms of boat launch parking capacity, as boat launches control the number of boats out on the reservoir. At Blacktail Park, existing facility utilization is estimated to be 49 percent during the peak season and 87 percent during peak season weekends. The peak season utilization rate is considered to be approaching capacity, while the peak season weekend utilization rate is considered to be exceeding capacity (Section 5.1.2). At the Juniper Park boat launch, existing

facility utilization is estimated at 65 percent during the peak season and 85 percent during peak season weekends. Utilization at this site is currently considered to be exceeding the peak season and peak season weekend capacity of the site (Section 5.1.1). However, while utilization at these sites is approaching and exceeding capacity thresholds, adding additional vehicle with trailer capacity could result in on-water spatial capacity concerns (i.e., the number of vehicle with trailer parking spaces should not exceed the acceptable density range of BAOT for the reservoir surface water area), especially during lower pool levels similar to those experienced in 2003.

Another indicator of surface water boating facility capacity is boat launch wait times. Nearly 65 percent of visitors reported having to wait to use the boat launch of their choice (Appendix E). At the Blacktail Park boat launch, the mean wait time was 14.6 minutes; at the Juniper Park boat launch it was 14.7 minutes. However, only 15 percent of visitors felt their wait time was more than they expected, while 14 percent felt their wait time was less than they expected. Additionally, only 8 percent of visitors characterized their wait time as unacceptable. The fact that visitors generally accept their wait time indicates either that boat launch wait times are a reasonable length of time and/or that visitors are filling that wait time with other preparatory activities or have become accustomed to these wait times.

Due to the steep grade of the reservoir shoreline, floating docks or platforms are moored close to shore along the length of the reservoir and provide temporary moorage for boaters. There are approximately 20 smaller wooden floating platforms, as well as two larger plastic destination docks scattered throughout the reservoir (two additional destination docks will be installed in summer 2004) (pers. comm., Craig Daniels, June 5, 2003). At lower pool elevations, most of the smaller wooden platforms are beached along exposed banks. These floating platforms appear to receive a considerable amount of use based on anecdotal BCDPR observations (pers. comm., Gary Johnson, September 19, 2003).

Surface water boating facility capacity is considered a limiting factor at this time due to the high levels of parking area utilization and the high levels of use of the floating platforms.

Social Capacity

Similar to visitors at developed recreation sites, visitors using the reservoir surface area for boating were also asked about perceived crowding. Both the Middle and South Segments of the reservoir had a mean crowding score of 4.3 on a scale of 1 to 9. The mean crowding score for the North Segment was lower (3.8), despite experiencing higher levels of boating use (Appendix E). These levels of perceived crowding generally indicate that visitors feel slightly to moderately crowded while boating on the reservoir.

In addition to providing land-based patrols at Ririe Reservoir, BCSO also provides on-water patrols of the reservoir. The majority of on-water patrols occur during weekends and holidays, though occasional weekday patrols are scheduled. In general, one to two BCSO deputies patrol the reservoir, using a PWC, powerboat, or a combination of both.

During busy weekends and holidays, as many as four BCSO deputies may patrol the reservoir at one time. Periodic boat license checks are also performed at both Juniper Park and Blacktail Park boat ramps (pers. comm., Lieutenant S. Poole, September 2, 2003).

Compared to other larger reservoirs in the region, Ririe Reservoir tends to experience very little boating-related visitor conflict. According to the BCSO, the most common boating-related conflicts are boaters not obeying "no wake" zones and speeding. Alcohol-related boating problems do not appear to be a problem at this time. As at most reservoirs and lakes, some boat collisions do occur at the reservoir but are generally minor and many may go unreported.

Given the higher level of boating use and the narrowness of the reservoir, both of which could lead to higher boating accident rates, it is comforting to report that serious boating accidents are not common at Ririe Reservoir. Lieutenant Poole attributes this relative lack of serious boating accidents at the reservoir at least in part to the boating safety classes offered in Idaho Falls during the winter by the BCSO (pers. comm., Lieutenant S. Poole, September 2, 2003).

While the BCSO reports low levels of visitor conflict at Ririe Reservoir, IDFG has identified potential conflicts between water-skiers and anglers as a concern of the agency (pers. comm., Steve Schmidt, September 18, 2003). Questionnaire responses regarding potential user conflict also highlight such boating-related conflicts (Appendix E). Approximately 27 percent of visitors indicated that conflicts between PWC users and other visitors were a moderate to very serious problem (combined response categories of moderate, serious, and very serious problem). Eighteen percent of visitors identified conflicts between water-skiers and other visitors as a moderate to very serious problem. Additionally, 15 percent of visitors thought conflicts between anglers and other visitors were a problem. The low to moderate levels of real or perceived problems regarding PWC users and water-skiers indicates that the reservoir is likely approaching its social capacity. During a normal water year, the percentages noted above may decrease as more surface water acreage would be available, thereby potentially reducing user conflicts.

Overall, the surface water boating social capacity is not considered a limiting factor at this time. The low to moderate levels of reported visitor conflict, however, indicate that the area may be approaching its social capacity and thus should be monitored over time.

Overall Reservoir Surface Water Area Boating Capacity Conclusion

Overall, surface water boating use at Ririe Reservoir is considered to be approaching its surface water boating capacity during a normal water year. Currently, both spatial and facility capacity are limiting factors. Spatial capacity is considered a limiting factor due to the physical number of average watercraft present on the reservoir and the narrow reservoir configuration. Facility capacity is considered a limiting factor because of high levels of use at the boat launch parking areas, ramps, and floating docks. Ecological and social capacities are not considered limiting factors at this time but should be monitored over time.

5.3 Reservoir Area Capacity Conclusions

RCC Study conclusions for the Ririe Reservoir study area are summarized below based on the four capacity types discussed in Sections 5.1 and 5.2. Table 5.3-1 summarizes capacity conclusions for each developed recreation site, reservoir surface water area, and the overall study area as a whole based on qualitative and quantitative results from the RCC Study.

Overall, recreational use in the study area appears to be approaching its recreation carrying capacity. During the summer recreation season, spatial and facility capacity indicators appear to be the limiting factors at this time. Social capacity is a unique concern at Juniper Park at this time and may become a limiting factor for the reservoir surface area as a whole in the future; however, social capacity is not viewed as a widespread limiting factor as a whole. Ecological capacity is certainly a concern for the Tex Creek WMA as a whole; however, in the reservoir area, it does not appear to be a limiting factor at this time during the summer recreation season.

Table 5.3-1. Summary of Ririe Reservoir Recreation Carrying Capacity.

Study Area Subcomponents	Identified Limiting Factor(s)[1]	Overall Capacity Summary[2]	Overall Capacity Priority[3]
Juniper Park	Spatial Facility Social	Approaching	Moderate
Blacktail Park	Spatial Facility	Approaching	Moderate
Benchlands Park	Spatial	Below	Low
Ririe Dam	Spatial	Below	Low
Reservoir Surface Water Area	Spatial Facility	Approaching	Moderate
Overall Study Area	Spatial Facility	Approaching	Moderate

[1] Indicates whether the capacity limiting factor(s) is based on ecological, spatial, facility, or social constraints.

[2] Indicates whether overall recreational use is considered to be below, approaching, at, or exceeding capacity at this time based on a synthesis of the results for each limiting factor.

[3] Indicates whether the overall capacity is of low, moderate, or high priority or concern at this time based on whether capacity has been reached or not.

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On a site-by-site basis, recreation use at both Juniper Park and Blacktail Park appears to be approaching the recreation carrying capacity of each of these sites. This conclusion is drawn because of the high weekend-only use levels during the peak season; however, weekday use levels are generally below capacity. Benchlands Park and Ririe Dam use levels are below their recreation carrying capacity at this time.

From a recreation priority perspective, recreation carrying capacity is seen as a moderate concern overall at Ririe Reservoir. The management recommendations discussed in Section 6.0 are meant to address this higher level of priority. This overall level of concern or priority is based on moderate priorities identified as both Juniper Park and

Blacktail Park, the two highest use areas in the study area, as well as the overall reservoir surface water area. During a normal water year, current boating use on the reservoir is viewed as approaching capacity but not exceeding its recreation carrying capacity. However, during drought conditions with significantly lower pool elevations and much less surface water area, current boating use levels may exceed the recreation carrying capacity of the reservoir surface. Benchlands Park and the Ririe Dam area appear to be low priorities or concerns at this time.

Below are overall conclusions of the study area by the four capacity types (ecological, spatial, facility, and social).

Ecological Capacity

Recreational use of Ririe Reservoir during the summer months does not appear to have a widespread impact on the ecological integrity of the study area's developed recreation sites. Most observed ecological concerns tended to be minor and localized (e.g., accumulated litter, user-defined trails, etc.). Ecological capacity was not considered a limiting factor at any of the developed recreation sites at the reservoir. Ecological concerns at the developed recreation sites are likely minimized by the high level of site maintenance that BCDPR provides and the presence of on-site management. The placement of a floating toilet building near Benchlands Park has also minimized the potential for sanitation concerns. If BCDPR were to reduce the existing level of site maintenance, the developed recreation sites at Ririe Reservoir would likely show more significant signs of use.

With over half of the reservoir located within the Tex Creek WMA, potential recreational impacts on wildlife are a concern in the study area. As a result, Blacktail Park is closed during the sensitive winter months. Reservoir fishing is permitted from late May until late November, though ice fishing is permitted January through March within 1 mile of the dam. Additionally, snowmobiling is not permitted on the reservoir during the winter months. These types of temporal and spatial actions appear to have minimized the potential impact that recreational use may have on wildlife resources in the study area.

Temporal and spatial zoning should also be considered in the vicinity of bald eagle nests. At least one bald eagle nest has been identified in the study area (pers. comm., Steve Schmidt, September 18, 2003). Use restrictions should be implemented as bald eagle nests are located and documented in the future (per management actions in the RMP)(Reclamation 2001). As recreational use levels increase in the future, potential impacts on sensitive raptor and big game species should continue to be monitored.

Wildfires are an additional ecological concern in the study area. The past three wildfires have been caused by visitors to the study area (pers. comm., Steve Schmidt, September 18, 2003). Designated fire pits/grills and fire restrictions help minimize the potential for recreation-caused wildfires. Additional recreation-specific measures to limit the potential for future wildfires are detailed in the Fire Management Plan for Reclamation-managed lands at Ririe Reservoir/Tex Creek WMA (per management actions in the RMP).

Overall, ecological capacity is currently not considered a limiting factor in the study area at this time. This conclusion is because of the existing emphasis placed on the management and protection of wildlife habitat, such as temporal and spatial control of recreational use in the study area. Potential ecological impacts should be monitored, however, as recreational use of the study area increases in the future.

Spatial Capacity

The average number of peak season day use PAOT in the study area was approximately 69 persons (Appendix F, Table 1). The maximum day use PAOT for the study area was approximately 205 persons. Applying the average group size (5.8) (Appendix E, Question 3) to the observed recreation vehicle (RV) and tent campsites occupied raises the average PAOT to 144 persons and the maximum to 437 persons. The maximum number of observed PAOT is about three times as large as the average observed PAOT and indicates that many sites experience large influxes of use on several occasions during the peak season (e.g., weekends and holidays). These estimates do not include recreational use on the reservoir that could not be observed from the developed recreation sites, nor do they include camping.

The average number of VAOT at all developed recreation sites in the study area (excluding Benchlands Park) was 76 vehicles, while the maximum number of observed VAOT was 187 vehicles (Appendix F, Table 2). Similar to PAOT, the difference between average VAOT and maximum VAOT indicates that many sites experience large influxes of use on several occasions during the peak season (e.g., weekends and holidays).

From a spatial capacity perspective, the study area is capable of expanding somewhat to provide additional recreational use and facilities. However, topography, property ownership, and wildlife habitat limit the potential for significant future recreation development. Some of the existing developed sites could potentially accommodate additional facilities to increase spatial capacity, such as additional campsites at Juniper Park, but no new shoreline areas could be developed as new recreation sites. Additionally, boating use levels on the reservoir are already approaching capacity during higher pool elevations, and may be at or exceeding capacity during significantly lower pool elevations. Increasing the supply of boat launches may potentially increase boating-related user conflicts on the reservoir during periods of significant drawdown.

In addition to being a limiting factor at all four developed recreation sites (Juniper Park, Blacktail Park, Benchlands Park, and Ririe Dam) and on the reservoir surface water, spatial capacity is also considered an overall limiting factor in the study area. The one exception is the ability to provide additional campsites at Juniper Park. The primary constraints to spatial capacity in the study area are topography, land ownership, wildlife habitat, and potential user conflicts on the reservoir.

Facility Capacity

According to most visitors (86 percent), the current facilities provided in the study area are adequate to meet their needs (Appendix E, Question 8). However, visitors did express concern over their ability to find specific site facilities. Forty-one percent of visitors indicated that finding a parking space was a problem (combined slight, moderate, serious, and very serious problem responses), 40 percent indicated that finding a swimming/beach area was a problem, and 31 percent indicated that finding a floating dock was a problem. Additionally, approximately 20 percent of visitors felt that finding a campsite, group campsite, or a picnic site was a problem. These facility-related concerns indicate that while visitors may feel that the current facilities provided in the study area are adequate, there may be a need for additional site facilities, at least during holidays and weekends.

High levels of facility utilization at the Juniper Park boat launch and Blacktail Park also point to a potential need for additional site facilities. At the Juniper Park boat launch, the existing percent occupancy during the peak season was 65 percent and during peak season weekends was 85 percent (Appendix F, Table 7). By 2013, percent occupancy at the boat launch area is projected to increase to 68 percent during the peak season and 89 percent during peak season weekends (Appendix G, Table 4). At Blacktail Park, the existing percent occupancy during the peak season was 49 percent and 87 percent during peak season weekends (Appendix F, Table 7). By 2013, percent occupancy is projected to increase to 52 percent during the peak season and 91 percent during peak season weekends (Appendix G, Table 4). These occupancy levels at both the Juniper Park boat launch and Blacktail Park are considered to be exceeding their peak season or peak season weekend facility capacities.

Overall, based on the high day use occupancy rates at both Juniper Park and Blacktail Park and the visitor questionnaire results indicating the need for additional facilities, facility capacity is considered a limiting factor at Ririe Reservoir. However, significantly increasing day use facility capacity at existing recreation sites may result in other capacity concerns, primarily increased user conflicts on the water during lower pool elevations. The one exception to facility capacity is the Juniper Park campground, which could accommodate additional campsites with few resulting capacity concerns.

Social Capacity

The mean perceived crowding score for the study area is 3.9 on a scale of 1 to 9. This score is relatively low and indicates that on average visitors only feel slightly crowded while participating in recreational activities in the study area. However, during higher use months such as July, the mean perceived crowding score is higher at 4.4. This higher score indicates that visitors feel moderately crowded. Despite the higher score, most visitors (82 percent) to the study area felt the study area was less crowded or about as crowded as they expected. Additionally, 67 percent of visitors felt that the number of people present in the study area either didn't affect their enjoyment or added (a little or a lot) to their enjoyment. These results indicate that visitors to the study area appear to be accustomed to higher levels of crowding.

While the mean perceived crowding score for the study area was relatively low, approximately 40 percent of visitors reported changing their visits to avoid crowding. While a common response, this is a relatively high percentage of visitor displacement. Popular coping techniques to avoid crowding in the study area included avoiding holiday weekends (49 percent of visitors who had changed their visit to avoid crowding), coming earlier or later in the day to avoid busy times (45 percent), and visiting the area on weekdays instead of weekends (36 percent). Visitors who may have chosen an alternate recreation area in the region to avoid crowding in the study area were likely not captured in this study.

In general, according to BCSO, visitor conflict tends to be low in the study area compared to other larger reservoirs in the region. Most conflicts that were documented by BCSO involved visitors at the boat launches during heavier use periods. These conflicts generally consisted of arguments and minor vehicle collisions. Typical on-water boating-related conflicts included boaters not observing "no wake" zones and speeding (pers. comm., Lieutenant S. Poole, September 2, 2003).

According to more than half the visitors surveyed in the study area, most potential visitor conflicts are perceived as not being a problem. However, a few visitor conflicts appear to be a growing concern in the study area, at least during a lower pool elevation year. Specifically, these concerns include conflicts between PWC users and other visitors (27 percent), conflicts with other users at boat ramps (22 percent), failure of visitor to observe no wake rules (20 percent), and conflict between water-skiers and other visitors (18 percent). These concerns were all perceived as being moderate to very serious problems (combined moderate, serious, and very serious problem responses from the questionnaire).

Overall, social capacity is not currently considered a significant limiting factor in the study area. However, given the above percentages, social capacity should be monitored in the future based on the level of visitor displacement and perceived user conflict. Social capacity was only a limiting factor at one of the developed recreation sites (Juniper Park) due primarily to conflicts resulting from congestion at the boat launch.

6.0 MANAGEMENT RECOMMENDATIONS

During the recent RMP process, a set of five recreation-related goals were developed (Reclamation 2001). Specific objectives and corresponding management actions were also developed to meet identified goals. Table 6.0-1 presents the RMP recreation-related goals, objectives, and management actions. These management actions and objectives were reviewed considering the results of this RCC Study. Results from the RCC Study were then used to recommend support, non-support, and/or modification of the RMP's recreation objectives and management actions. Only those management actions and objectives that are directly related to information that was investigated as part of this study were included in Table 6.0-1. The full set of management actions and objectives can be found in the Ririe Reservoir RMP (Reclamation 2001).

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
GOAL REC 1: Provide adequate shoreline support facilities at Ririe Reservoir to address demand for boating/water craft uses consistent with natural and cultural resource management objectives.		
Objective REC 1.1: Establish a program for collecting adequate recreation use and demand data to help determine the need and timing of new facilities.	Support	The results of the RCC Study support the need for ongoing recreational use monitoring. Periodic monitoring is important to guide future management decisions and timing.
Objective REC 1.2: In conjunction with Objective REC 1.1 (i.e., Recreational Carrying Capacity Study results), and working with the managing partner (i.e., Bonneville County), reduce peak period congestion at the existing Blacktail boat launch site through improvement of facilities or other feasible means.	Support	The results of the RCC Study indicate that congestion during higher use periods at Blacktail Park is a concern. Efforts are needed to reduce potential conflict (e.g., visitor/visitor, visitor/resource, etc.) that may result from this congestion.
REC 1.2.1: Renovate and, if necessary, expand the Blacktail boat ramp, including both widening and lengthening the ramp.	Support	The boat launch at Blacktail Park does receive heavy use during the peak season and was recently renovated (a third ramp lane was added to the launch since the RMP was finalized in 2001). Further renovations and/or expansions beyond what has already been completed are likely not necessary, nor recommended.
REC 1.2.2: Renovate and, if necessary, expand the Blacktail boat moorage facilities.	Modify	Due to lower pool levels, the moorage facilities at Blacktail Park were only partially usable in 2003. At higher pool elevations, this site can likely accommodate the existing moorage facilities. However, additional moorage facilities may reduce the area available for swimming and create additional hazards. Additionally, if lower water conditions persist, additional moorage facilities should not be placed at this site. Moorage facilities should be relocated to an area of the reservoir that is less affected by lower pool elevations, such as Juniper Park (planned by BCDPR for 2004).

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 1.2.4: Reconfigure the existing parking area at Blacktail Park and/or provide additional parking.	Modify	Currently, peak weekend use at this site is considered to be exceeding capacity (based on occupied parking spaces) (Section 5.1.2). Reconfiguring and/or providing additional parking will help to reduce the capacity concern at this site. However, adding additional parking will likely result in a loss of other recreational facilities (picnic areas, open space areas) or an expansion of the area of impact of the site (i.e., undeveloped areas surrounding the site will be hardened resulting in a potential loss of wildlife habitat). Additionally, adding more vehicle with trailer parking may exacerbate the emerging surface water boating capacity concern during lower pool elevations. Some new single vehicle (without trailer) parking is likely needed, however, especially if additional day use facilities (picnic shelters, trailheads, etc.) are provided at this site. Significant additional parking for boat trailers may impact capacity; however, a few new parking spaces (8 to 10 maximum) would be acceptable.
REC 1.2.6: Provide two additional floating day use platforms in the vicinity of Blacktail Park.	Support	Based on field observations, the floating docks receive moderate to heavy use during the peak season (Section 5.2). Additional floating docks are likely needed, especially to replace the older wooden docks. Two large destination docks were placed on the reservoir during 2003 and two additional destination docks will be added in 2004. In the future, the older wooden floating docks should be gradually replaced with destination docks throughout the reservoir.
Objective REC 1.3: In conjunction with Objective REC 1.1 and working with the managing partner, reduce peak period congestion at the Juniper Park boat launch through improvement of facilities or other feasible means.	Support	The results of the RCC Study indicate that congestion during higher use periods at Juniper Park is a concern. Efforts are needed to help reduce potential conflict (e.g., visitor/visitor, visitor/resource, etc.) that may result from this congestion.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 1.3.1: Design and construct an accessible overflow parking area along the north side of the road leading to the Juniper Park boat launch.	Support	This action was completed during 2003. Additionally, the results of the RCC Study indicate high levels of use at the Juniper Park boat launch (Section 5.1.1). The addition of the overflow parking area helps reduce some of the congestion at this site; however, the lack of space at the existing lower boat launch area prohibits the potential for expanding this congested area.
REC 1.3.2: Develop a new boat moorage facility near the Juniper Park Campground to accommodate overnight use by campers.	Modify	Some temporary boat moorage has been provided at Juniper Park adjacent to the existing boat ramp. More formalized boat moorage (slips) should be provided at Juniper Park to not only accommodate overnight users, but also to help provide peak season-long moorage facilities at the reservoir (the moorage facilities at Blacktail Park cannot be used during lower pool elevations). BCDPR has plans to move one of the mooring docks with slips from Blacktail Park to Juniper Park in 2004.
REC 1.3.3: Provide three additional floating day use platforms in the vicinity of Juniper Park.	Support	Based on field observations, the floating docks receive moderate to heavy use during the peak season (Section 5.2). Additional floating docks are likely needed, especially to replace the older wooden docks. Two large destination docks were placed on the reservoir during 2003 and two additional destination docks will be added in 2004. In the future, the older wooden floating docks should be gradually replaced with destination docks throughout the reservoir.
GOAL REC 2: Manage the Ririe Reservoir water surface to accommodate a variety of different user groups and minimize conflicts among users.		
Objective REC 2.1: In conjunction with Objective REC 1.1, implement actions with Bonneville County that reduce conflicts between motorized and non-motorized watercraft, as needed.	Support	Generally, visitor conflict in the study area appears to be fairly low, but is exacerbated during lower pool levels, such as in 2003. However, several types of conflict are a concern and may require management actions to minimize the potential for more serious problems.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 2.1.1: Potential actions to alleviate motorized/non-motorized conflicts include: seasonal, time of day, and/or zone restrictions on motorized craft in certain areas of the reservoir; no-wake or reduced speed zones; and restrictions on specific types of use.	Support	Spatial and temporal zoning are effective methods to reduce potential conflict. In terms of minimizing on-water conflict, spatial zoning should be considered to minimize conflict between PWC users and other visitors and between water-skiers and other visitors (primarily anglers). No-wake and reduced speed zones should also be considered in areas where the shoreline is prone to erosion and where safety may be a concern (e.g., near swimming areas, boat ramps, etc.).
Objective REC 2.2: Work with Bonneville County to achieve needed enforcement of the 100-foot no-wake zone established by State law (i.e., 100-foot no-wake zone near shoreline structures, other boaters/recreationists, and swimmers).	Support	Approximately 40 percent of visitors perceive boaters not observing no wake zones as a problem (Appendix E). Cooperation and coordination with BCSO is needed to enforce existing and potential new no wake zones on the reservoir. Additional education and signage/buoys may also be needed.
REC 2.2.1: Use the Carrying Capacity Study results to determine the level and focus of needed enforcement at Ririe Reservoir.	Support	According to BCSO, visitor conflict tends to be low at Ririe Reservoir (Section 5.3) compared to other larger reservoirs in the region. The current level of enforcement appears to be adequate for the area, though additional temporary enforcement may be needed during higher use periods (e.g., weekends, holidays, etc.). Additional enforcement during these higher use periods may potentially reduce the conflict that is currently reported on the reservoir (between water-skiers and other visitors, between PWC-users and other users). Most current enforcement in the study area is focused on the developed boat launch areas (Juniper and Blacktail Parks) and on the water. Given the amount of use these sites receive, it is appropriate to continue to focus most enforcement at these sites.
Objective REC 2.3: Develop and/or improve shoreline swimming areas at Ririe Reservoir in conjunction with managing partner.	Support	Forty percent of visitors reported having a problem trying to find a swimming/beach area (Appendix E). New swimming areas are likely needed to help meet existing and future demand for swimming in the study area.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 2.3.1: Continue the use of a system of linked docks or buoys at Blacktail Park to define the designated swimming area.	Support	This action was not specifically researched as part of the RCC Study. A delineated swimming area is needed at this site to reduce the potential for boater/swimmer accidents. The linked dock system does appear to be appropriate at this site. However, at lower pool elevations, the linked docks are not usable (i.e., they are left high and dry).
REC 2.3.2: Use the Recreational Carrying Capacity Study results to determine the need for an expanded or additional swimming area at Blacktail Park.	Support	Forty percent of visitors reported having a problem trying to find a swimming/beach area (Appendix E). Additional swimming/beach areas are likely needed in the study area. Shoreline conditions at Blacktail Park are suitable for an expanded designated swimming area. However, lower water conditions reduce the available area (both shoreline and water) for an expanded swimming area at this site.
REC 2.3.3: Develop a designated swimming area at Juniper Park, with an accessible path to the existing campground.	Support	Forty percent of visitors reported having a problem trying to find a swimming/beach area (Appendix E). Additional swimming/beach areas are likely needed in the study area. Shoreline conditions at Juniper Park do not appear to be ideal for a swimming area (steep shoreline, deep water, lack of beach area), but a new designated swim area is appropriate in this area based on visitor needs. A dock system would likely need to be used to delineate the swimming area due to the steep rocky shoreline in this area. BCDPR plans to develop a hardened trail from the campground/visitor center area to the shoreline area in 2004.
REC 2.3.4: Develop a designated swimming area at the Benchlands Park boat-in access area.	Support	Forty percent of visitors reported having a problem trying to find a swimming/beach area (Appendix E). Additional swimming/beach areas are likely needed in the study area. Shoreline conditions at Benchlands Park appear suitable for a new designated swimming area.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
GOAL REC 3: Accommodate demand for land/shoreline-based recreational uses at Ririe Reservoir, consistent with natural and cultural resource management objectives.		
Objective REC 3.1: Work with managing partners (Bonneville County and IDFG, as appropriate) to provide expanded opportunities for hiking, equestrian, and bicycling around the reservoir.	Support	There are very few existing designated trails in the study area. Given the current lack of trail opportunities, trail visitors (e.g., hikers, horseback riders, bicyclists, etc.) may have been under-represented in the RCC Study visitor questionnaire. Nonetheless, 15 percent of visitors reported hiking while in the study area, while smaller percentages of visitors reported participating in bicycling (6 percent), mountain biking (1 percent), and horseback riding (1 percent) (Appendix E). According to the Idaho Statewide Comprehensive Outdoor Recreation and Tourism Plan (SCORTP), approximately 55 percent of Idaho residents participate in hiking, 35 percent participate in biking, 16 percent participate in horseback riding, and 14 percent participate in mountain biking (IDPR 2003). Given the current level of statewide demand for trails, trail opportunities should be explored in the study area.
REC 3.1.1: Develop a Trails Plan for the coordinated enhancement, development, and maintenance of trails and associated facilities at Ririe Reservoir.	Support	The development of a trails plan was not researched as part of this RCC Study. However, based on existing statewide demand for trail-based activities and the observed trail impacts at several of the developed recreation sites, new trails should be explored in the study area. An analysis of regional trail opportunities should be completed prior to the development of new trails in the study area to determine if regional trail opportunities are adequate and to assess trail linkages. REC 3.1.5 and 3.1.6 would be studied and feasibility determined as part of this trails plan.
REC 3.1.2: Develop an accessible shoreline access trail (non-motorized) from the Juniper Park Campground and the visitor center area to the shoreline using the old construction road immediately south of the visitor center.	Support	This area is currently being impacted by unconfined trail use and should be hardened (Section 5.1.1). BCDPR does have plans to develop an accessible hardened trail at this site. The hardened trail should help limit potential impacts and increase ease of access for visitors.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.1.3: Develop an accessible loop trail from Creekside Park providing access to Willow Creek (below the dam).	Modify	While a developed trail is needed along Willow Creek, based on observed impacts in this area (Section 5.1.5), a loop trail may not be necessary depending on trail alignment. Trail development at Willow Creek should be focused on the opposite shoreline from Creekside Park to avoid potential conflicts between overnight users (if the site is reopened as a group campsite) and day users. A bridge should be provided from Creekside Park to the "out-and-back" trail along Willow Creek (REC 3.1.4). It should be noted that all potential recreation objectives and actions at sites on or below the dam must first meet all Reclamation safety and security policies and protocols.
REC 3.1.4: Upgrade existing Willow Creek access trail below the dam including an accessible path and landing platform, and link (bridge) to Creekside Park loop trail.	Support	A developed (hardened) creekside fishing trail is needed at this site based on field observations and impacts (Section 5.1.5). An "out-and-back" trail along the creek with fishing/wildlife viewing access spurs would likely be the best option in this area. This location is also likely a suitable site for an accessible fishing platform. It should be noted that all potential recreation objectives and actions at sites on or below the dam must first meet all Reclamation safety and security policies and protocols.
REC 3.1.5: Develop an approximately 6-mile long trail for non-motorized use (hiking and bicycling only) beginning at the Juniper Park visitors center and extending south along the rim and shoreline on the east side of the reservoir. Additional guidelines to consider pertaining to this trail are listed below.	Support (contingent on REC 3.1.1)	Trail location suitability was not a part of the RCC Study. However, statewide demand for trail-based activities is high and indicates that new trails should be developed (IDPR 2003). A regional analysis of trail opportunities should be performed prior to development of this potential trail to determine if similar trail opportunities are already available in the region. Additionally, the potential impacts of increasing use in a lower use area of the reservoir should be considered prior to trail development. Development of this potential trail should also be coordinated with IDFG.
REC 3.1.5.1: Possible trail development in two or more phases.	Support (contingent on REC 3.1.1)	If this potential trail is developed, constructing it in two phases is appropriate.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.1.5.2: Provide connections between the rim and shoreline where feasible to accommodate shoreline activities and trail loops of varying distances.	Support (based on REC 3.1.5 decision)	If this potential trail is developed, spur trails should be provided, where appropriate for fishing and wildlife viewing access. Sensitive wildlife habitat, including bald eagle nests, should be avoided during trail siting.
REC 3.1.5.3: Provide a secondary trailhead and appropriate signage adjacent to the Juniper Park boat launch road (i.e., at the point where the trail would cross the road).	Support (based on REC 3.1.5 decision)	If this potential trail is developed, a second trailhead should be located at Juniper Park to provide visitors at this site access to the trail.
REC 3.1.5.4: Trail use to be consistent with Juniper Park season of use (early spring to early fall).	Support (based on REC 3.1.5 decision)	If this potential trail is developed, the season of use should be consistent with the Juniper Park season of use to minimize impacts to wildlife.
REC 3.1.6: Develop a trail for non-motorized use (hiking, bicycling, and equestrian) beginning at Blacktail Park and extending south along Willow Creek with access into the Tex Creek WMA. Additional considerations pertaining to this trail are listed below.	Modify	Trail location suitability was not a part of the RCC Study. However, statewide demand for trail-based activities is high and indicates that new trails should be developed (IDPR 2003). A regional analysis of trail opportunities should be performed prior to development of this potential trail to determine if similar trail opportunities are already available in the region and assess trail linkages. Additionally, the potential impacts of increasing use in a lower use area of the reservoir and Tex Creek WMA should be considered prior to trail development. Providing for equestrian use from Blacktail Park to Willow Creek may not be consistent with potential trail uses described in REC 3.1.5 (i.e., hiking and biking only). Development of this potential trail should also be coordinated with IDFG.
REC 3.1.6.1: Possible trail development in two or more phases.	Support (based on REC 3.1.6 decision)	If this potential trail is developed, constructing it in two phases is appropriate. The first phase could likely be completed in conjunction with the potential trail described in REC 3.1.5.
REC 3.1.6.2: Provide trailhead and appropriate signage (interpretation, education, regulations) at Blacktail Park.	Support (based on REC 3.1.6 decision)	If this potential trail is developed, a trailhead should be constructed at Blacktail Park to provide access for visitors to this site.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.1.6.3: Include equestrian use/facilities at the trailhead meeting accessibility standards.	Modify	If this potential trail is developed, allowing equestrian trail use should be reviewed. Equestrian trails are identified as a need in the Idaho SCORTP and the feasibility of an equestrian trail should be explored. However, equestrian use may not be compatible with the existing uses at Blacktail Park nor with the potential trail users described in REC 3.1.5. Additionally, providing equestrian use facilities at Blacktail Park will likely result in the loss of existing recreational facilities or a loss of wildlife habitat surrounding the site.
REC 3.1.6.4: Trail use to be consistent with Blacktail Park season of use (early spring to early fall).	Support (based on REC 3.1.6 decision)	If this potential trail is developed, the season of use should be consistent with the Blacktail Park season of use to minimize impacts to wildlife.
Objective REC 3.2: In conjunction with Objective REC 1.1 and working with managing partner, improve day use facilities within the existing "active" recreation area (for use from early spring to early fall only) at Blacktail Park without compromising the values and intent of the WMA.	Support	Blacktail Park currently receives a high level of use (Section 5.1.2). Providing additional site facilities within the existing "active" recreation area should be a priority.
REC 3.2.1: Design and construct additional parking and day use facilities, as needed.	Modify	Additional picnic facilities are needed at this site based on the level of use the existing facilities receive. BCDPR began construction of an additional group picnic facility at this site in 2003. Several more picnic shelters should be placed at this site based on demand for the existing shelters. Adding additional parking (8 to 10 spaces) may result in a loss of other recreational facilities (picnic areas, open space areas) or an expansion of the area of impact of the site (i.e., undeveloped areas surrounding the site will be hardened resulting in a potential loss of wildlife habitat) (see REC 1.2.4).
Objective REC 3.3: In conjunction with Objective REC 1.1 and working with managing partner, provide additional facilities at Juniper Park and the visitor center.	Support	Juniper Park, including the visitor center area, has the potential to accommodate additional site facilities (Section 5.1.1) when needed in the future.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.3.1: Develop a third loop expanding the Juniper Park Campground by approximately 40 new individual campsites or by providing one or more group camping areas.	Modify	There is space at Juniper Park to construct a third campground loop. However, current and future use levels do not warrant the need for an additional campground loop at this time (Section 5.1.1). However, recreation use should continue to be monitored to determine if and when a third loop is needed in the future.
REC 3.3.2: Reorganize and provide better signage at the entrance gate (graphics and content/context).	Support	BCDPR has recently installed several new signs near the entrance gate to Juniper Park. New and/or additional signs are likely needed and could help increase use of the site, especially if placed on state route 26.
REC 3.3.3: Provide orientation kiosk, interpretive displays, and regulatory signage at the dam overlook and shoreline access trailhead.	Support	Currently, there is a lack of interpretive signage and/or displays in the study area. Providing additional interpretation and education opportunities in the state is a goal of the Idaho SCORTP (IDPR 2003). The dam overlook is an ideal area for interpretive signs/displays and has the potential to accommodate these types of facilities. Providing interpretive facilities may also help increase use at lower use areas of the study area, such as the dam overlook.
Objective REC 3.4: Manage conflicting uses at the dam overlook (cliff area) adjacent to the visitor center.	Support	Cliff jumping and rock climbing are concerns at the dam overlook. Actions should be taken to communicate the danger of cliff jumping and rock climbing at this site to visitors.
REC 3.4.1: Post “enter at your own risk” signage at the dam overlook (cliff-top) and shoreline (cliff-bottom) to indicate risks associated with rock climbing.	Support	While the need for safety signage was not specifically researched as part of the RCC Study, field researchers did observe trail impacts from visitors accessing the cliff area from the dam overlook (Section 5.1.1), as well as visitors jumping from the cliffs (though not rock climbing). Safety signage should be placed at this site to communicate the danger of rock climbing and cliff jumping.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
Objective REC 3.5: In conjunction with Objective REC 1.1 and working with managing partner, implement improvements at Creekside Park and area adjacent to Willow Creek.	Support	Currently, most developed recreation sites in the study area are focused on reservoir-based activities. The reopening of Creekside Park and the development of Willow Creek would offer visitors an open-space/river setting. Only 1 percent of visitors reported using the Creekside Park area (Appendix E), but due to the site being closed, visitors to this site are potentially underrepresented in the visitor questionnaire results. Demand for this site was not directly captured in the visitor questionnaire, though reopening the site may ease capacity constraints at other developed recreation sites in the study area. However, reopening Creekside Park and developing the area adjacent to Willow Creek should be considered in terms of Reclamation/BCDPR resources (budgets, staffing, etc.) and law enforcement/safety needs. It should also be noted that all potential recreation objectives and actions at sites on or below the dam must first meet all Reclamation safety and security policies and protocols.
REC 3.5.1: Renovate and reopen Creekside Park for day use activities and group tent camping by reservation. Guidelines for park enhancements are listed below.	Modify	Demand for reopening this site was not captured in the visitor questionnaire (although past visitors to this site may have been displaced to other regional recreation areas). Based on low use levels at the Juniper Park day use area (adjacent to the visitor center) (Section 5.1.1), it is unlikely that existing use levels warrant another day use area at the north end of the reservoir. This site may be better suited to development as a group campsite, based on the lack of group campsites in the study area. However, if this site is reopened as a group campsite, dam safety procedures (i.e., locking the gate at the top of the dam) will likely need to be reviewed and modified.
REC 3.5.1.1: Upgrade existing infrastructure (road, parking), as needed.	Support	If this site is reopened and the area adjacent to Willow Creek is developed, some road improvements will likely be necessary. However, the existing road and parking area at Creekside Park appear to be in good condition.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.5.1.2: Provide new day use facilities (picnic tables, shade structures, barbeques, etc.).	Support	If this site is reopened, either group camping facilities or day use facilities should be provided at this site, as none are currently provided.
REC 3.5.1.3: Provide utilities and services (waste receptacles, potable water, restroom facility).	Support	If this site is reopened, utilities and services should be provided at this site, as none are currently provided.
REC 3.5.1.4: Install new park vegetation (small lawn area, shade trees) and irrigation system.	Support	If this site is reopened, manicured vegetation and an irrigation system should be provided at this site.
REC 3.5.1.5: Develop an orientation kiosk, interpretive displays, and regulatory signage.	Support	If this site is reopened, new interpretation facilities should be provided.
REC 3.5.2: Enhance area used by anglers along the east side of Willow Creek below the dam. Guidelines for park enhancements are listed below.	Support	Based on observed impacts at this site (Section 5.1.5), a formalized trail and parking area are needed at this site.
REC 3.5.2.1: Formalize parking into one organized area.	Support	Currently, this area provides unconfined vehicle parking. A formalized parking area should be developed at this site to limit the impacts of unconfined vehicle use.
REC 3.5.2.2: Develop an orientation kiosk, interpretive displays, and regulatory signage.	Support	Currently, there is a lack of interpretive signage and/or displays in the study area. This area is ideal for interpretive signs/displays and has the potential to accommodate these types of facilities.
REC 3.5.2.3: Provide waste receptacles.	Support	Accumulated litter was a concern at this site (Section 5.1.5). Providing trash receptacles should help with the litter problem at this site.
Objective REC 3.6: In conjunction with Objective REC 1.1 and working with managing partner, enhance shoreline fishing uses at the north side of the dam.	Support	Currently, the Ririe Dam site receives low levels of recreational use (Section 5.1.4). The primary existing recreational uses of the dam area include fishing and swimming. If dam safety and security protocols allow for continued recreational use, formalized recreation opportunities should be provided at this site.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.6.1: Develop an accessible fishing pier into the reservoir off the face of the dam.	Support (based on REC 3.6 decision)	Siting an accessible fishing pier was not in the scope of the RCC Study. However, there is a general lack of accessible fishing facilities in the study area. The potential of constructing an accessible fishing pier at this site should be further explored to determine if it is feasible. Considerations should include slope, fishing catch rates and quality, type of fishing pier (fixed or floating), structural integrity of the dam, and dam safety protocols. It should be noted that all potential recreation objectives and actions at sites on or below the dam must first meet all Reclamation safety and security policies and protocols.
REC 3.6.2: Reorganize parking on the dam to accommodate use of the fishing pier.	Support (based on REC 3.6 decision)	If the accessible fishing pier is constructed at this site, the parking area will likely need to be reorganized to promote safe and convenient use of the pier.
REC 3.6.3: Provide interpretive displays and regulatory signage at the parking area and fishing pier.	Support (based on REC 3.6 decision)	Currently, there is a lack of interpretive signage and/or displays in the study area. Providing additional interpretation and education opportunities in the state is a goal of the Idaho SCORTP (IDPR 2003). This area is ideal for interpretive signs/displays and has the potential to accommodate these types of facilities. Interpretive facilities at this location should not duplicate potential facilities that are placed at the dam overlook.
Objective REC 3.7: In conjunction with Objective REC 1.1 and working with managing partner, continue to maintain the Benchlands Park recreation site for boat-in use only and expand recreation use (early spring to early fall only) facilities without compromising the values and intent of the WMA.	Support	Benchlands Park is a popular site that is currently underutilized likely due to the lack of adequate boat moorage. It provides a similar recreation setting as Blacktail Park, but is only accessible by boat. As such, it should continue to be maintained and improved to reduce congestion and higher use levels at Blacktail Park.
REC 3.7.1: Upgrade shoreline access from the existing dock to meet accessibility standards to the extent possible.	Support	Access from the dock is currently problematic, especially at lower pool elevations (Section 5.1.3). Improved access at this site is needed to increase accessibility and reduce erosion.
REC 3.7.2: Upgrade the restroom facility to meet accessibility standards.	Support	An accessible floating toilet was installed adjacent to Benchlands Park in 2003.

Table 6.0-1. Ririe Reservoir RCC Study Results Comparison with Identified RMP Recreation Goals, Objectives, and Management Actions.

Goals, Objectives, and Management Actions	Level of Support[1]	Comments
REC 3.7.3: Provide an additional dock to increase moorage capacity.	Support	Moorage capacity at Benchlands Park is a capacity constraint (Section 5.1.3). An additional dock should ease this constraint and would likely lead to an increase of site facility (picnic tables, grills, etc.) use.
REC 3.7.4: Provide additional day use facilities (picnic tables, shade structures, barbeque grills).	Modify	Currently, the lack of adequate moorage is a limiting factor at this site (Section 5.1.3.). This limits the amount of use the day use facilities at this site receive. If an additional dock is placed at this site (REC 3.7.3), then additional day use facilities will likely be needed in the future as well.
GOAL REC 4: Work with IDFG to provide appropriate recreation opportunities on Reclamation's lands in the Tex Creek WMA, consistent with natural and cultural resource objectives.		
Objective REC 4.1: Support IDFG efforts (as defined in the IDFG Tex Creek WMA Management Plan) to improve public access to and opportunity for wildlife appreciation unrelated to hunting, and consistent with the purposes of the WMA.	Support	While recreational opportunities in the Tex Creek WMA were not specifically researched as part of the RCC Study, cooperation with IDFG is necessary to effectively and efficiently manage recreation in the vicinity of Ririe Reservoir.
REC 4.1.1: Provide planning assistance and/or implementation assistance related to: non-motorized trails, interpretive displays and regulatory signs, photography blinds and viewing platforms or locations, and additional back-county (i.e., primitive) campsites.	Support	Where suitable (e.g., trails providing access from the reservoir to the WMA, wildlife interpretive facilities), coordinated planning efforts with IDFG are needed to minimize the potential impact that recreation may have on wildlife and wildlife habitat, as well as to maximize effective and efficient regional recreation management.

[1] Level of support: Support = management action supported by results of the RCC Study; Not Support = management action not supported by results of the RCC Study; and Modify; = management action supported by results of the RCC Study, but with modifications.

Provided by EDAW, Inc.

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7.2 Personal Communications

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Gary Johnson, Bonneville County Parks and Recreation Department, Idaho Falls, ID. September 19, 2003. Conversation with Sergio Capozzi, EDAW Inc., Seattle, WA.

Bud Langerak, Lieutenant, Bonneville County Sheriff's Office, Idaho Falls, ID. August 26, 2003. Phone conversation with Sergio Capozzi, EDAW Inc., Seattle, WA.

Sid Poole, Lieutenant, Bonneville County Sheriff's Office, Idaho Falls, ID. September 2, 2003. Phone conversation with Sergio Capozzi, EDAW Inc., Seattle, WA.

Steve Schmidt, Idaho Department of Fish and Game, Idaho Falls, ID. September 18, 2003. Letter addressed to Sergio Capozzi, EDAW Inc., Seattle, WA.

APPENDIX A

Ririe Reservoir
Recreation Carrying Capacity Study

Ecological Impact Indicators Form

ECOLOGICAL IMPACT INDICATORS FORM

Project Name: **Ririe Reservoir** **Site Name:** _____ **Date:** _____

Researcher: _____ **Roll:** _____ **Photos:** _____

INDICATORS	NOTES
General Site Description General site notes	❑ Developed ❑ Dispersed ❑ Day Use ❑ Camping ❑ Paved access road ❑ Gravel/dirt access road ❑ Boat-in access ❑ fire ring/pit _____ ❑ picnic table _____ ❑ campsite _____ ❑ boat launch _____ Site Dimensions GPS Coordinates
Vegetation % cover Density of veg compared to surrounding area Notes	❑ 0-25% ❑ 26-50% ❑ 51-75% ❑ 76-100% ❑ same as surrounding area ❑ moderately dissimilar ❑ significantly dissimilar
Soil % bare ground Erosion Notes	❑ 0-25% ❑ 26-50% ❑ 51-75% ❑ 76-100% ❑ none ❑ natural _____ ❑ human impact _____
Trash Notes	❑ none ❑ <3 pieces of trash ❑ 4-6 pieces of trash ❑ 7-10 pieces of trash ❑ >10 pieces of trash

Sanitation	Toilet paper	❑ none	❑ 1-2 pieces	❑ 3-4 pieces	❑ >5 pieces
	Fecal matter	❑ none	❑ 1 pile exposed	❑ 2 piles exposed	❑ >3 piles exposed
	Notes				
Tree Damage	Exposed roots	❑ none	❑ 1-3	❑ 4-6	❑ 7-10 ❑ >10
	Broken limbs, gashes, or other damage	❑ none	❑ <10% of trees	❑ 10-35% of trees	❑ >35% of trees
	Notes				
Social Trails (informal)		❑ none	❑ 1-2	❑ 3-5	❑ 5-10 ❑ >10
	Average width:	❑ <12”	❑ 12-24”	❑ >24”	
	Average depth:	❑ same level as adjacent area	❑ slightly deeper than adjacent area (1”)	❑ deeper than adjacent area (2-3”)	❑ severely deeper than adjacent areas (>4”)
	Notes				
Proximity to Wetlands		❑ <100 ft.	❑ 100-150 ft.	❑ 150-200 ft.	❑ 200-250 ft. ❑ >250 ft.
	Notes				
Proximity to Riparian		❑ <100 ft.	❑ 100-150 ft.	❑ 150-200 ft.	❑ 200-250 ft. ❑ >250 ft.
	Notes				
Man-Made Disturbances (including vandalism)					
Estimate of Use		❑ Low	❑ Moderate	❑ High	
Other					

APPENDIX B

Ririe Reservoir
Recreation Carrying Capacity Study

Instantaneous Count Form

2003 Ririe Reservoir Recreation Carrying Capacity Study - Instantaneous Count Form

Date: _____ Researcher: _____Time started: _____ Time ended: _____ Weather: _____

Ririe Reservoir Developed Sites

Count Category	Time visited	Juniper Park	Blacktail Park	Benchlands Park	Ririe Dam
Vehicles parked	# Vehicles				
	# w/ camping trailers				
	# w/ boat trailers				
	# w/ other trailers (ATV, etc.)				
	# trailers - no vehicle				
Anglers	Boat fishing				
	Bank fishing				
	Float tube fishing				
Other Activity	Picnicking				
	Swimming/sunning				
	Biking				
	Hiking				
	Rest/relaxation				
	Observing wildlife				
	Windsurfing				
	Power boating				
	Water skiing				
	PWC use				
	Canoeing/kayaking				
	Sailing				
	Camping sites occupied - RV				
	Camping sites occupied - Tent				
	Other activities				
Boating	Watercraft/vehicles waiting to launch				
	Watercraft moored/ beached				

Site Notes

Juniper Park
Blacktail Park
Benchlands Park
Ririe Dam

APPENDIX C

Ririe Reservoir
Recreation Carrying Capacity Study

Boat Count Form

Date: _____ Weather: _____ ❑ On-water count

Researcher: _____ Wind: _____ ❑ Shoreline count

Ririe Reservoir Carrying Capacity Study—Boat Count Form

Boats-at-one-Time		North Segment Time:	Middle Segment Time:	South Segment Time:
# of watercraft on water	Power boats			
	Sail boats			
	Jet Ski/PWC			
	Kayak/canoe/raft			
	Float-tubes			
On-water activities	Cruising			
	Waterskiing/tubing			
	Wind surfing			
	Boat fishing			
Boats near Shore	Moored boats			
	Boats at docks			
	Boats on shore			
Shoreline Activities	Bank fishing			
	Float-tube fishing			
	Picnicking			
	Swimming/sunning			
	Hiking/walking			
	Dispersed camping			
	Other			
Vehicles on shoreline				

Additional Reservoir Boat Use Notes:

APPENDIX D

Ririe Reservoir
Recreation Carrying Capacity Study

Visitor Questionnaire and Visitor Survey Log Form

For researcher use only.
Date _____
Location _____
Survey No _____

OMB No. 1006-0025
Expiration date: 09/30/2003

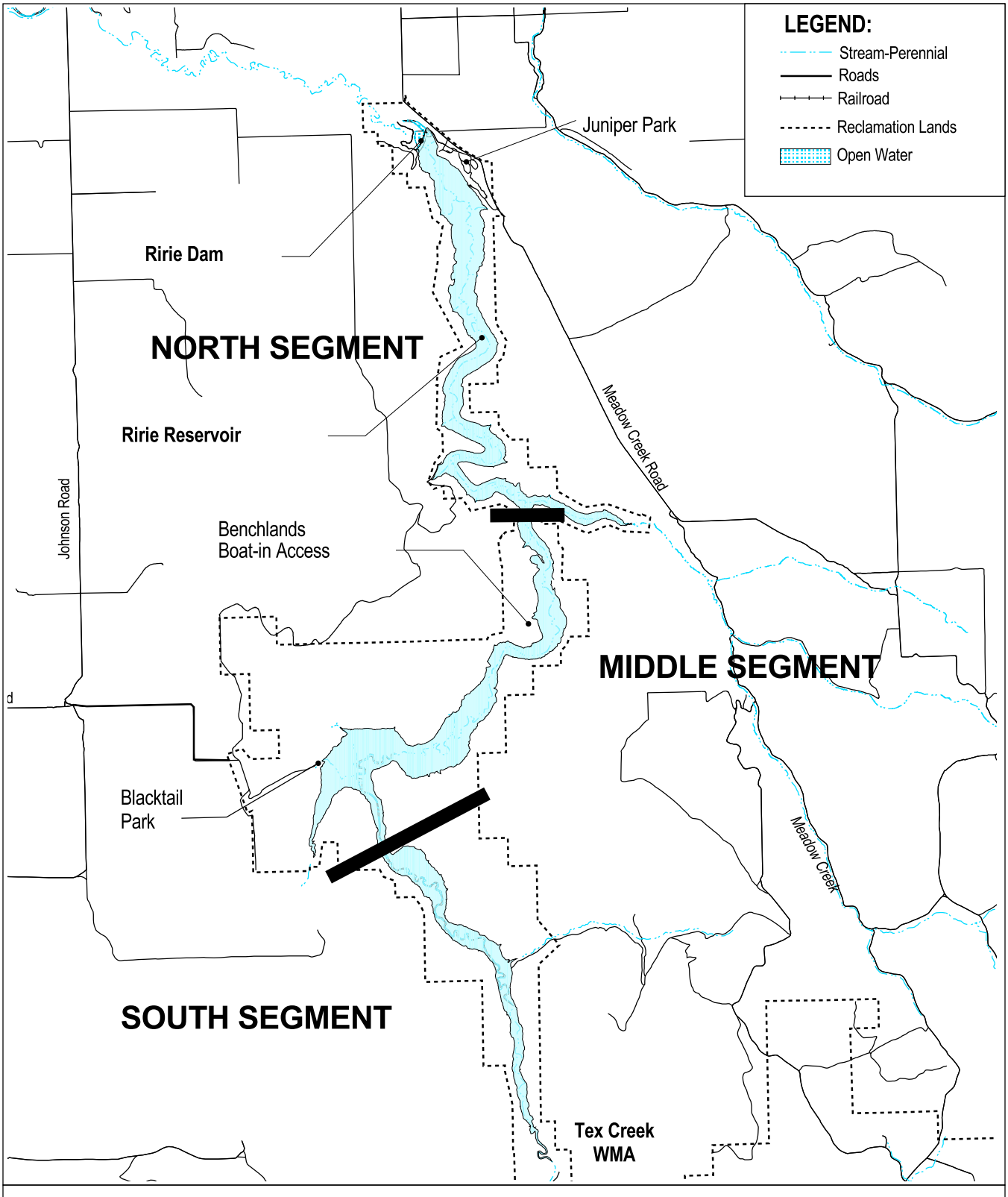
Ririe Reservoir Recreation Survey

Paperwork Reduction Act

The purpose of this information collection is to provide information to the Bureau of Reclamation on the carrying capacity for recreation uses on both Reclamation lands and water. The survey will help determine if and when boat ramps, docks, parking, and other facilities need to be expanded for recreation. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. The reporting burden for this form is estimated to average 30 minutes, including the time for reviewing instructions and completing and reviewing the form. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. Direct comments regarding the burden estimate or any other aspect of these forms to the Bureau of Reclamation, Attention: Vicki Kellerman 1150 N. Curtis Road, Suite 100, Boise, Idaho 83706.

Privacy Act Statement

No Privacy Act Information is being collected and complete anonymity is guaranteed. Information collected will be compiled in a statistical data-base; therefore, no direct link to the individual(s) filling out the questionnaire will be available.



Area Map - Ririe Reservoir

1 0 1 Miles

1:80000

N

The information displayed here is based on the best available data at the time of publication. Neither the authors, Reclamation, or any other party here warrant or represent that the information is in every respect complete and accurate, and are not held responsible for errors or omissions.

Source: USBR, 2001; EDAW, 2001

P: 8E333.01/GIS/APR/RIRIE_RMP.APR

OMB No. 1006-0025 Expiration date: 09/30/2003

EDAW
RECREATION RESEARCH

Ririe Reservoir Recreation Survey

The **Bureau of Reclamation** is conducting a recreation survey of visitors to the **Ririe Reservoir** area during 2003. **This survey relates to your recreational use of the Ririe Reservoir area.** The map provided shows the Ririe Reservoir area. **Your answers will provide important insight into recreational use of the Ririe Reservoir area.**

1. What sites will you visit during this trip to the Ririe Reservoir area? (*mark × all that apply*)

1. ❑ Juniper Park
2. ❑ Blacktail Park
3. ❑ Benchlands Park
4. ❑ Creekside Park
5. ❑ Ririe Dam (viewpoint and visitor center)
6. ❑ Other (please describe) _____

2. Of these six (6) areas, which is your primary destination during this trip? (*circle only one*)

1 2 3 4 5 6

3. How many people visiting this area, including yourself, are in your group today? _____

4. How many vehicles did your group use to come to this area? _____

5. On this trip, are you staying overnight in the Ririe Reservoir area? (*refer to map*)

❑ No ➔ How many hours will you be in the area? _____ hours
❑ Yes ➔ Where? _____ How many nights will you stay on this trip? _____
❑ I live near here.

6. Which of the following activities are you and/or members of your group participating in during your visit to this area? (*mark × all that apply*)

1. ❑ Hiking
2. ❑ Sightseeing
3. ❑ Swimming
4. ❑ Picnicking
5. ❑ Horseback riding
6. ❑ Power boating
7. ❑ Tubing
8. ❑ Water skiing
9. ❑ Canoeing/kayak
10. ❑ Sunbathing
11. ❑ Fishing – boat
12. ❑ Fishing – shore
13. ❑ Hunting
14. ❑ Sailing
15. ❑ Wildlife viewing
16. ❑ RV camping
17. ❑ Tent camping
18. ❑ Bicycling
19. ❑ Mountain biking on trails
20. ❑ Riding off-road vehicles (4WD, ATV)
21. ❑ Personal watercraft use (jetskis)
22. ❑ Rock climbing
23. ❑ Resting/relaxing
24. ❑ Other _____

7. Of the activities you checked above, what are the top three (3) that you're participating in during your visit? (*write in the corresponding number*)

Primary _____ **Second** _____ **Third** _____

8. Are the current recreation facilities (campgrounds, day use areas, boat launches) provided in the Ririe Reservoir area adequate to meet your needs?

❑ Yes ❑ No ➔ If **No**, please explain. _____

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9. Here is a list of reservoirs and water-based recreation opportunities in the region. Please indicate the places you have visited *in the past 12 months.* *(mark × all that apply)*

1. ❑ Island Park Reservoir
2. ❑ Jackson Reservoir
3. ❑ Gem Lake
4. ❑ Snake River
5. ❑ North (Henry's) Fork Snake River
6. ❑ South Fork Snake River
7. ❑ Hebgen Lake
8. ❑ Clark Canyon Reservoir
9. ❑ Henry's Lake State Park
10. ❑ American Falls Reservoir
11. ❑ Palisades Reservoir
12. ❑ Blackfoot Reservoir

10. Of the places listed above, which place do you prefer the most? (*Circle one (**1**) corresponding number*)

1 2 3 4 5 6 7 8 9 10 11 12

Why do you prefer that place more than the other places listed? _____

_____

11. Today, why did you select Ririe Reservoir? (*mark × all that apply*)

- ❑ Proximity/closeness
- ❑ Water temperature
- ❑ Low cost
- ❑ Good fishing
- ❑ Facilities provided
- ❑ Enjoyment
- ❑ Good boating
- ❑ Other _____

12. Overall, how satisfied are you with your recreational experience at Ririe Reservoir?

❑ Very Dissatisfied ❑ Dissatisfied ❑ Neutral ❑ Satisfied ❑ Very Satisfied

13. How crowded do you feel at the area you are currently visiting? (*Circle one (**1**) number*)

1----------2----------3----------4----------5----------6----------7----------8----------9

Not at all crowded **Slightly crowded** **Moderately crowded** **Extremely crowded**

14. How would you compare the level of crowding today with what you expected to experience?

❑ Less crowded ❑ About as I expected ❑ More crowded ❑ I didn't know what to expect

15. Please indicate the extent to which the number of people present in the Ririe Reservoir area affects your overall enjoyment of your visit.

In general, the amount of visitors present at Ririe Reservoir recreation sites…

- ❑ Adds a lot to my enjoyment
- ❑ Adds a little to my enjoyment
- ❑ Detracts a little from my enjoyment
- ❑ Detracts a lot from my enjoyment
- ❑ Doesn't really affect my enjoyment one way or another

16. Have you ever changed your visits to the Ririe Reservoir area to avoid crowding?

- ❑ No
- ❑ Yes, I sometimes… (*mark × all that apply*)
  - ❑ Visit the area earlier or later in the year.
  - ❑ Visit the area on weekdays instead of weekends.
  - ❑ Avoid holiday weekends.
  - ❑ Seek out quiet places in the area to avoid other crowded locations.
  - ❑ Come earlier or later in the day to avoid busy times.
  - ❑ Go to other places in the region when this area is too crowded.
  - ❑ Use another campground or day use site when my first choice location is full.
  - ❑ Use undeveloped campsites or day use sites along roads when my first choice location is full.

17. Below is a list of potential issues at Ririe Reservoir. For each of these potential issues, please indicate the degree of concern you may feel about these issues in the Ririe Reservoir area.

	Not a Problem	Slight Problem	Moderate Problem	Serious Problem	Very Serious Problem
Conflicts between water skiers and other visitors	❑	❑	❑	❑	❑
Conflicts between personal watercraft (jetskis) users and other visitors	❑	❑	❑	❑	❑
Conflicts between anglers and other users	❑	❑	❑	❑	❑
Conflicts with other users at boat ramps	❑	❑	❑	❑	❑
Conflicts between humans and wildlife	❑	❑	❑	❑	❑
Finding a parking space	❑	❑	❑	❑	❑
Finding a campsite	❑	❑	❑	❑	❑
Finding a group camping area	❑	❑	❑	❑	❑
Finding a picnic site	❑	❑	❑	❑	❑
Finding a day-use float	❑	❑	❑	❑	❑
Finding a swimming/beach area	❑	❑	❑	❑	❑
Ability to launch a boat	❑	❑	❑	❑	❑
Finding boat moorage	❑	❑	❑	❑	❑
Boaters not observing "No Wake" rules	❑	❑	❑	❑	❑
Disruptive behavior by other users	❑	❑	❑	❑	❑
Finding solitude	❑	❑	❑	❑	❑

Please describe any other problems you may have had with other visitors during this or past visits to the Ririe Reservoir area.

_____

_____

_____

18. How would you rate the number of watercraft on the reservoir today in terms of how this condition affected your ability to enjoy recreation activities?

Totally Acceptable	Acceptable	Neutral	Unacceptable	Totally Unacceptable	Doesn't Apply to Me
❑	❑	❑	❑	❑	❑

BOATING - The following questions concern **boating use** in the Ririe Reservoir area. If you do not go boating in the area, ***please skip ahead to Question 26***. Otherwise please complete the questions below.

19. Which type(s) of watercraft do you use on Ririe Reservoir? (*mark × all that apply*)

- ❑ Canoe/kayak
- ❑ Rowboat
- ❑ Sailboat (no motor)
- ❑ Sailboat (motor)
- ❑ Motorboat (less than 25 hp)
- ❑ Motorboat (equal to or more than 25 hp)
- ❑ Personal watercraft (jetski)
- ❑ Other _____

20. Which of the following boater access sites/launches do you use? *(mark × all that apply)*

1. ❑ Juniper Park Boat Launch 2. ❑ Blacktail Park Boat Launch 3. ❑ Creekside Park (hand launch)

21. Which boater access site/launch do you most frequently use? _____ (*Write in number from above*)

22. Do you typically have to wait to use the boater access site/launch you most frequently use?

No ➔ (*Skip ahead to **Question 25***)

Yes ➔ On average, how many minutes do you have to wait to use this ramp? _____ min.

23. How would you compare your actual wait time with the time you expected to wait?

❑ Less time than I expected ❑ About what I expected ❑ More time than I expected ❑ I didn't know what to expect

24. How would you characterize your wait time?

Totally Acceptable	Acceptable	Neutral	Unacceptable	Totally Unacceptable
❑	❑	❑	❑	❑

25. When participating in on-water activities (boating, fishing, etc.)**, how crowded do you feel on the various segments of the reservoir?** (*Circle one number for each segment – refer to map for location of segments)* **If you do not use one of these segments, please leave blank.**

	Not at all crowded		**Slightly crowded**			**Moderately crowded**			**Extremely crowded**
North Segment	1	2	3	4	5	6	7	8	9
Middle Segment	1	2	3	4	5	6	7	8	9
South Segment	1	2	3	4	5	6	7	8	9

GENERAL VISITOR INFORMATION

26. Are you ❑ male or ❑ female?

27. What is your age? _____ years

28. What is the postal Zip Code of your primary residence? _____

29. Do you have any additional comments on positive or negative components of your visit?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for providing us with valuable information about your recreation use at the Ririe Reservoir area.

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2003 Ririe Reservoir Recreation Carrying Capacity Study
Visitor Survey Log Form

Date: _____ Time: _____ Day of Week: _____

Researcher: _____ Location: _____ Weather: _____

	Agreed	Refused	Repeat	Survey #	Comments
1	❑	❑	❑		
2	❑	❑	❑		
3	❑	❑	❑		
4	❑	❑	❑		
5	❑	❑	❑		
6	❑	❑	❑		
7	❑	❑	❑		
8	❑	❑	❑		
9	❑	❑	❑		
10	❑	❑	❑		
11	❑	❑	❑		
12	❑	❑	❑		
13	❑	❑	❑		
14	❑	❑	❑		
15	❑	❑	❑		
16	❑	❑	❑		
17	❑	❑	❑		
18	❑	❑	❑		
19	❑	❑	❑		
20	❑	❑	❑		
21	❑	❑	❑		
22	❑	❑	❑		
23	❑	❑	❑		
24	❑	❑	❑		
25	❑	❑	❑		

REFUSED

Number	Male	Female	Overnight Yes	Overnight No	Satisfaction: Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑
	❑	❑	❑	❑	❑	❑	❑	❑	❑

1. Enter number from front.
2. Check Male or Female box.

Questions:

On this trip, are you staying overnight in the Ririe Reservoir area? Check Yes or No based on response.

Overall, how satisfied are you with your recreational experience at Ririe Reservoir? Would you say you are Very Dissatisfied, Dissatisfied, Neutral, Satisfied, or Very Satisfied? Check box corresponding to response.

Thank you very much for your time.

APPENDIX E

Ririe Reservoir
Recreation Carrying Capacity Study

Summarized Visitor Questionnaire Results

Visitor Questionnaire Response Rate

Visitor surveys were distributed to visitors at study area recreation sites on pre-selected dates during the summer (peak recreation season—Memorial Day through Labor Day) of 2003 (Section 4.1.1—Visitor Questionnaire). Survey dates were stratified to ensure that visitors from different areas and in different seasons throughout the survey period were sampled proportionally to actual use levels.

Visitor surveys were handed out to visitors to complete at the site. During the 2003 survey period, 481 visitors were asked to complete a survey. In total, 398 completed surveys were returned. This corresponds to an 86 percent corrected response rate, which is considered adequate for the study area.

A sufficient number of completed surveys were returned to achieve a 95 percent confidence level and a sampling error of less than 5 percent for the entire study area (Table 1). Assuming low variance (relatively homogenous visitor population) at the site level, a sufficient number of completed surveys were also returned to achieve a 95 percent confidence level with a sampling error of less than 5 percent at all sites except the Ririe Dam and Benchland Park.

Table 1. Completed Surveys by Site and Corresponding Sampling Error.

Site	Returned Surveys	Percent of Total	Sampling Error (Low Variance)[1]
Juniper Park Boat Launch	118	30	± 3.22
Juniper Park Campground/Day Use Area	129	33	± 1.34
Ririe Dam	16	4	NA[2]
Blacktail Park	122	31	± 3.21
Benchland Park	3	1	NA[2]
Study Area (Total)	**398**	**100**	**± 1.57**

[1] Low variance in responses (e.g., 80 percent true and 20 percent false in response to a True/False questions) is characteristic of more homogenous populations.
[2] Insufficient sample sizes.
Provided by EDAW, Inc

Non-Response Bias

Non-response bias (also known as non-response error) occurs when a significant portion of the sample population does not respond to the survey and is different from the survey respondents in ways that are important to the study. A well-designed survey and sampling technique can reduce the potential for non-response bias. In this study, an intercept or drop-off survey, which tends to increase the response rate (by personally communicating the importance of the survey to participants), was used (Salant and Dillman 1994). A stratified simple random sampling technique was also used, increasing the probability of a representative sample of the population. Using a 95 percent confidence level, a 5 percent margin of error, and the necessary sample size to achieve these levels helps reduce the potential for non-response bias.

Using these methodologies, the potential for non-response bias still exists, but is relatively lower and should not have significant impacts on the study results. It should be

noted, however, that even with these methodologies, some people (potential respondents) in the population will not be captured in this study. Two types of people in particular will not be captured: (1) those people in the population who currently do not use the study area but might in the future, and (2) those people who may have used the study area in the past, but no longer do. Acknowledging this does not decrease non-response bias, but does address the limitations of the study.

Several methodologies can be used to test for non-response bias. In this study, visitors who did not want to participate in the survey were asked to respond to two verbal questions from the field researcher (Section 4.4.1—Visitor Questionnaire).

Of the 65 visitors who did not want to fill out a questionnaire (referred to as non-participants for purposes of this analysis), 56 (86 percent) provided responses to the verbal questions. Seventy-five percent of the non-participants were men. This percentage is higher than that of questionnaire participants (56 percent men, 44 percent women—Question 26). However, it is not uncommon for there to be a higher percentage of men in outdoor recreation settings compared to women (Manning 1999).

Of non-participants, 90 percent replied that they were day users, while only 10 percent replied that they were spending the night in the study area. Again, this percentage is higher than that of questionnaire participants (Question 5). However, past studies have shown that overnight visitors tend to participate in surveys at a higher rate than day users.

In general, non-participants were as satisfied with their recreational experience at Ririe Reservoir as participants in the questionnaire. Four percent of non-participants were very satisfied and 43 percent were satisfied with their recreational experience. An additional 6 percent of non-respondents were neutral. Using a one-way analysis of variance comparison of means, no statistically significant differences were found between satisfaction among non-participants and questionnaire respondents ($p<0.05$ [p-value is a measure of statistical significance]).

While slight differences exist between non-participants and questionnaire respondents, these differences are considered minor and are not uncommon in outdoor recreation research. The similar satisfaction levels between non-participants and questionnaire respondents are an indication that the survey population can generally be considered homogeneous and that non-response bias is not significant in this study.

Summarized Visitor Questionnaire Results

1. What sites will you visit during this trip to the Ririe Reservoir area?

Site	Percent
Juniper Park	54%
Blacktail Park	43%
Benchland Park	8%
Creekside Park	1%
Ririe Dam	41%
Other	6%

N=385

Note: Percentages do not sum to 100 as multiple responses were possible. Other sites written in by survey respondents include the reservoir (9 responses), destination docks (3 responses), Tex Creek (2 responses), Willow Creek (1 response), and Meadow Creek (1 response).

2. Of these six (6) areas, which is your primary destination during this trip?

Site	Percent
Juniper Park	46%
Blacktail Park	32%
Benchland Park	2%
Creekside Park	1%
Ririe Dam	16%
Other	3%

N=355

3. How many people visiting this area, including yourself, are in your group today?

	Study Area	Juniper Park (Boat Launch)	Juniper Park (Campground)	Blacktail Park	Ririe Dam	Benchlands Park
Mean	8.38	5.7	11.5	7.9	7.5	7.7
Median	5	5	4	5	5	4
Minimum	1	1	1	1	1	4
Maximum	60	15	60	47	15	15
Standard deviation	11.291	3.2	16.9	8.7	5.1	6.4
N	388	118	127	121	16	3

Note: Several large group sizes (group sizes of 20 and higher) likely increased the mean group size (8.38) for the study area, as well as Juniper Park (Campground) and Blacktail Park. Omitting these outliers from the analysis, the mean group size is 5.8 for the study area, 5.3 for Juniper Park (Campground), and 6.0 for Blacktail Park.

4. How many vehicles did your group use to come to this area?

	Study Area	Juniper Park (Boat Launch)	Juniper Park (Campground)	Blacktail Park	Ririe Dam
Mean	2.67	1.8	4.1	2.1	2
Median	2	2	2	1.5	1
Minimum	1	1	1	1	1
Maximum	25	6	25	10	5
Standard deviation	3.66	0.89	5.8	1.7	1.5
N	387	117	126	122	16

Note: Several large responses for the number of vehicles (over 10) likely increased the mean vehicles per group (2.67) for the study area, as well as Juniper Park (Campground). Omitting these outliers from the analysis, the mean number of vehicles per group is 2 for the study area and 2.1 for Juniper Park (Campground). Results are not reported for Benchlands Park, as this site is only accessible by water.

5. On this trip, are you staying overnight in the Ririe Reservoir Area?

Response	Percent
No	48%
Yes	36%
I live near here	16%

N = 391

If NO, how many hours will you be in the area?

Mean	5.4
Median	5
Minimum	1
Maximum	12
Standard deviation	2.1
N	177

If YES, where?

Location	Percent	N
Juniper Park Campground	91%	121
On boat	3%	4
Ririe Dam	3%	4
Idaho Falls	1.5%	2
Other	1.5%	2

If YES, how many nights will you stay on this trip?

Mean	3.5
Median	2
Minimum	1
Maximum	21
Standard deviation	3.8
N	136

Note: Omitting responses over 15 nights from the analysis reduces the mean number of nights to 3.1 (standard deviation = 2.8).

6. Which of the following activities are you and/or members of your group participating in during your visit to this area?

Activity	Percent	N
Hiking	15%	58
Sightseeing	28%	109
Swimming	50%	194
Picnicking	38%	148
Horseback riding	1%	4
Power boating	38%	150
Tubing	33%	127
Water-skiing	35%	137
Canoeing/kayaking	2%	7
Sunbathing	34%	134
Fishing—boat	28%	111
Fishing—shore	21%	81
Hunting	0%	0
Sailing	0.5%	2
Wildlife viewing	15%	57
RV camping	30%	119
Tent camping	9%	34
Bicycling	6%	22
Mountain biking on trails	1%	4
Riding off-road vehicles	7%	29
Personal watercraft use (jetskis)	8%	31
Rock climbing	4%	17
Resting and relaxing	46%	181
Other	12%	46

Note: Percentages do not sum to 100 as multiple responses were possible. Other activities written in by survey respondents include wake boarding (9 responses), spending time with family/reunions (7 responses), SCUBA diving (3 responses), wedding (3 responses), eating (3 responses), drinking (3 responses), water sports (3 responses), people watching (2 responses), and motorcycle ride (2 responses).

7. Of the activities you checked above, what are the top three (3) that you're participating in during your visit?

Primary	Second	Third
RV camping (18%)	Resting/relaxing (13%)	Resting/relaxing (21%)
Power boating (14%)	Water-skiing (10%)	Swimming (15%)
Fishing—boat (13%)	Tubing (9%)	Power boating (10%)
Water-skiing (13%)	Swimming (9%)	Sunbathing (7%)
Fishing—shore (6%)	Picnicking (9%)	Picnicking (6%)

8. Are the current facilities (campgrounds, day use areas, boat launches) provided in the Ririe Reservoir area adequate to meet your needs?

Response	Percent	N
Yes	86%	333
No	14%	53

If NO, please explain.

Summarized Responses (Number of respondents with similar responses)
More parking (28)
More docks (10)
More/extended boat ramps (6)
Positive comments (6)
Larger boat launch areas (5)
More restrooms (4)
More moorage (3)
More camping (2)
More ATV trails (2)
Better ADA access to docks (2)
Better fire rings (1)
More beach areas (1)
More water in reservoir (1)
More trees (1)
More picnic areas (1)

9. Here is a list of reservoirs and water-based recreation opportunities in the region. Please indicate that places you have visited in the past 12 months.

Area	Percent	N
Island Park Reservoir	46%	149
Jackson Reservoir	10%	32
Gem Lake	39%	127
Snake River	61%	196
North (Henry's) Fork Snake River	20%	63
South Fork Snake River	28%	89
Hebgen Lake	11%	36
Clark Canyon Reservoir	7%	22
Henry's Lake State Park	19%	60
American Falls Reservoir	13%	42
Palisades Reservoir	61%	197
Blackfoot Reservoir	21%	69

Note: Percentages do not sum to 100 as multiple responses were possible.

10. Of the places listed above, which place do you prefer the most?

Area	Percent	N
Island Park Reservoir	18%	54
Jackson Reservoir	2%	7
Gem Lake	7%	20
Snake River	15%	43
North (Henry's) Fork Snake River	3%	9
South Fork Snake River	7%	20
Hebgen Lake	2%	7
Clark Canyon Reservoir	1%	4
Henry's Lake State Park	5%	14
American Falls Reservoir	2%	7
Palisades Reservoir	31%	90
Blackfoot Reservoir	5%	15

Why do you prefer that place more than the other places listed?

Summarized Responses (Number of respondents with similar responses)
Proximity/close to home (53)
Better/great fishing (46)
Beauty/scenic quality (32)
Big lake/more room for boating (27)
Less people/not crowded (18)
Better/great camping (13)
More trees/forests (11)
More activities (10)
Good/clean facilities (8)
It has water (6)
Familiarity (5)
Better access (4)
Wildlife (4)
Haven't been other places (4)
Adequate moorage (2)

11. Today, why did you select Ririe Reservoir?

Response	Percent	N
Proximity/closeness	73%	278
Water temperature	11%	40
Low cost	22%	85
Good fishing	15%	56
Facilities provided	36%	134
Enjoyment	48%	182
Good boating	28%	107
Other	13%	47

Note: Percentages do not sum to 100 as multiple responses were possible. Other responses written in by survey respondents include family reunion/gathering (15 responses), good camp hosts (8), scenic (5), water level (4), and activities (3).

12. Overall, how satisfied are you with your recreational experience at Ririe Reservoir?

Response	Percent	N
Very Satisfied	35%	129
Satisfied	49%	182
Neutral	8%	30
Dissatisfied	1%	4
Very dissatisfied	7%	27

13. How crowded do you feel at the area you are currently visiting?

	Study Area	Juniper	Blacktail	Benchlands[1]	Creekside[1]	Ririe Dam	Other[1]
Mean	3.87	3.94	3.98	4.5	3.5	3.59	3.6
Median	4	4	4	5	3.5	3	4
Minimum	1	1	1	2	3	1	1
Maximum	9	9	9	6	4	7	7
sd	2.29	2.44	2.23	1.6	0.7	2.02	2.22
N	376	160	111	8	2	52	10

[1] These sites do not meet statistical validity criteria (sample size [N] too small).

	June	July	August
Mean	3.42	4.44	3.56
Median	3	5	3
Minimum	1	1	1
Maximum	9	9	9
sd	2.19	2.27	2.26
N	100	150	123

Using Statistix' One-Way Analysis of Variance Comparison of Means test (using the LSD comparison method), the mean crowding score in July is statistically different from the mean crowding scores in June and August ($p<0.05$). The mean crowding scores in June and August are statistically similar.

14. How would you compare the level of crowding today with what you expected to experience?

Response	Percent	N
Less crowded	25%	95
About as I expected	57%	214
More crowded	12%	44
I didn't know what to expect	6%	21

	Site		
Response	**Juniper Park**	**Blacktail Park**	**Ririe Dam**
Less crowded	17%	37%	30%
About as I expected	65%	48%	60%
More crowded	13%	10%	6%
I didn't know what to expect	5%	5%	4%

Note: Insufficient completed questionnaires from Benchlands Park to draw significant conclusions.

15. Please indicate the extent to which the number of people present in the Ririe Reservoir area affects your overall enjoyment of your visit.

Response	Percent	N
Adds a lot to my enjoyment	19%	70
Adds a little to my enjoyment	6%	24
Detracts a little from my enjoyment	25%	95
Detracts a lot from my enjoyment	8%	30
Doesn't affect my enjoyment one way or another	42%	156

	Site		
Response	Juniper Park	Blacktail Park	Ririe Dam
Adds a lot to my enjoyment	15%	13%	26%
Adds a little to my enjoyment	6%	7%	11%
Detracts a little from my enjoyment	26%	27%	22%
Detracts a lot from my enjoyment	8%	6%	7%
Doesn't affect my enjoyment one way or another	41%	47%	33%

Note: Insufficient completed questionnaires from Benchlands Park to draw significant conclusions.

16. Have you ever changed your visits to the Ririe Reservoir area to avoid crowding?

Response	Percent
No	60%
Yes	40%

N = 366

	Site		
Response	Juniper Park	Blacktail Park	Ririe Dam
No	56%	59%	63%
Yes	44%	41%	37%

Note: Insufficient completed questionnaires from Benchlands Park to draw significant conclusions.

If YES, I sometimes….

Response	Percent Yes	N
Visit the area earlier or later in the year.	29%	48
Visit the area on weekdays instead of weekends.	36%	59
Avoid holiday weekends.	49%	80
Seek out quiet places in the area to avoid other crowded locations.	34%	55
Come earlier or later in the day to avoid busy times.	45%	73
Go to other places in the region when this area is too crowded.	24%	39
Use another campground or day use site when my first choice location is full.	7%	11
Use undeveloped campsites or day use sites along roads when my first choice location is full.	3%	5

Response	Site		
	Juniper Park	Blacktail Park	Ririe Dam
Visit the area earlier or later in the year.	30%	33%	26%
Visit the area on weekdays instead of weekends.	36%	39%	22%
Avoid holiday weekends.	49%	41%	48%
Seek out quiet places in the area to avoid other crowded locations.	30%	43%	30%
Come earlier or later in the day to avoid busy times.	44%	47&	39%
Go to other places in the region when this area is too crowded.	26%	33%	22%
Use another campground or day use site when my first choice location is full.	11%	6%	0%
Use undeveloped campsites or day use sites along roads when my first choice location is full.	4%	4%	0%

Note: Insufficient completed questionnaires from Benchlands Park to draw significant conclusions.

17. Below is a list of potential issues at Ririe Reservoir. For each of these potential issues, please indicate the degree of concern you may feel about these issues in the Ririe Reservoir area.

Potential Issue (N)	Not a Problem	Slight Problem	Moderate Problem	Serious Problem	Very Serious Problem
Conflicts between water-skiers and other visitors **(325)**	62%	20%	11%	5%	2%
Conflicts between personal watercraft (jetskis) users and other visitors **(322)**	56%	17%	15%	9%	3%
Conflicts between anglers and other users **(321)**	69%	17%	13%	1%	1%
Conflicts with other users at boat ramps **(318)**	59%	19%	16%	5%	1%
Conflicts between humans and wildlife **(324)**	87%	9%	4%	-	-
Finding a parking space **(330)**	59%	17%	13%	7%	4%
Finding a campsite **(306)**	78%	11%	9%	2%	-
Finding a group camping area **(298)**	78%	11%	10%	1%	-
Finding a picnic site **(310)**	80%	11%	8%	1%	-
Finding a day-use float **(296)**	69%	11%	14%	3%	3%
Finding a swimming/beach area **(305)**	60%	21%	14%	3%	2%
Ability to launch a boat **(311)**	61%	19%	12%	6%	1%
Finding boat moorage **(297)**	65%	16%	11%	5%	3%
Boaters not observing "No Wake" rules **(311)**	60%	20%	11%	6%	3%
Disruptive behavior by other users **(318)**	63%	21%	11%	3%	2%
Finding solitude **(323)**	59%	22%	14%	4%	1%

Please describe any other problems you may have had with other visitors during this or past visits to the Ririe Reservoir area.

Summarized Responses (Number of respondents with similar responses)
Boat issues (boats too close to other boats, not observing no wake zones, excessive speeds) (13)
General dislike for PWC (10)
Visitors not obeying quiet time at campground (8)
Long wait to load/unload boat at launch (6)
Impatience/inconsideration (5)
Finding parking (5)
Drunk people/people doing drugs (5)
ATV use in campground (2)
Crowding (2)
Low water (2)
Have to pay (1)

18. How would you rate the number of watercraft on the reservoir today in terms of how this condition affected your ability to enjoy recreation activities?

Response	Percent	N
Totally acceptable	20%	73
Acceptable	39%	140
Neutral	27%	98
Unacceptable	4%	14
Totally unacceptable	1%	2
Doesn't apply to me	9%	31

*****QUESTIONS 19-25 PERTAIN TO BOATERS ONLY*****

Nearly 67 percent of all survey respondents reported using some type of watercraft at Ririe Reservoir. On a site-by-site basis, approximately 88 percent of survey respondents contacted at the Juniper Park boat launch, 51 percent of respondents contacted at the Juniper Park campground, and 66 percent of respondents contacted at Blacktail Park were boaters. An insufficient number of completed surveys were obtained from visitors to Benchlands Park and the Ririe Dam to draw significant results; however, because access to Benchlands Park is by water only, it is assume that all visitors to this site are boaters.

19. Which type(s) of watercraft do you use on Ririe Reservoir?

Boat Type	Percent	N
Canoe/kayak	3%	9
Rowboat	3%	9
Sailboat (no motor)	<1%	1
Sailboat (motor)	1%	3
Motorboat (less than 25 hp)	11%	29
Motorboat (equal or more than 25 hp)	80%	209
Personal watercraft	16%	42
Other	2%	6

Note: Percentages do not sum to 100 as multiple responses were possible. Other responses written in by survey respondents include float tube (2) and Bayliner (1).

20. Which of the following boater access sites/launches do you use?

Boater Access Site	Percent	N
Juniper	71%	179
Blacktail	54%	137
Creekside	2%	6

Note: Percentages do not sum to 100 as multiple responses were possible.

21. Which boater access site/launch do you most frequently use?

Boater Access Site	Percent	N
Juniper	58%	139
Blacktail	41%	99
Creekside	1%	3

22. Do you typically have to wait to use the boater access site/launch you most frequently use?

Response	Percent	N
Yes	64%	151
No	36%	85

If YES, on average, how many minutes do you have to wait to use this wait?

	Study Area	Blacktail	Juniper
Mean	13.36	14.6	14.7
Median	10	15	10
Minimum	0	0	0
Maximum	45	30	45
sd	7.7	6.7	8.6
N	143	35	68

Note: Location-specific results based on location where visitors were contacted. There are no statistically significant difference between mean wait times by location (t-test of means using separate variance estimates and $p<0.05$).

	June	July	August
Mean	13.5	12.4	14.4
Median	10	10	12.5
Minimum	5	0	2.5
Maximum	45	45	30
sd	9.1	7.5	7.1
N	31	61	51

Note: There are no statistically significant differences between mean wait times by month (t-test of means using separate variance estimates and $p<0.05$).

23. How would you compare your actual wait time with the time you expected to wait?

Response	Percent	N
Less time than I expected	14%	26
About what I expected	69%	131
More time than I expected	15%	29
I didn't know what to expect	2%	4

24. How would you characterize your wait time?

Response	Percent	N
Totally acceptable	10%	19
Acceptable	52%	100
Neutral	30%	57
Unacceptable	8%	15
Totally unacceptable	-	-

25. When participating in on-water activities (boating, fishing, etc.), how crowded do you feel on the various segments of the reservoir?

	North	Middle	South
Mean	3.8	4.3	4.3
Median	3	5	4
Minimum	1	1	1
Maximum	9	9	9
sd	1.9	2.1	2.1
N	206	189	177

26. Are you male or female?

Response	Percent	N
Male	56%	210
Female	44%	163

27. What is your age?

Mean	40.5
Median	39
Minimum	12
Maximum	78
Standard deviation	15.4
N	374

28. What is the postal zip code of your primary residence?

State	Percent	N
Idaho	87%	329
Utah	4%	15
California	2%	8
Colorado	2%	7
Montana	1%	4
Other[1]	4%	15

[1] States included in Other category all accounted for less than 1 percent of responses. Other states included Arizona, Georgia, Iowa, North Dakota, New Mexico, Nevada, Oregon, Pennsylvania, South Dakota, Texas, and Washington.

County in Idaho	Percent	N
Bonneville	56%	184
Jefferson	17%	55
Madison	9%	29
Bingham	8%	27
Fremont	4%	13
Bannock	3%	10
Other	3%	11

[1] Counties included in Other category all accounted for less than 1 percent of responses. Other counties included Butte, Caribou, Clark, Kootenai, Power, Teton, and Washington.

Note: States and counties were derived by researchers based on zip code responses by questionnaire participants.

29. Do you have any additional comments on positive or negative components of your visit?

Summarized Popular Responses (Number of respondents with similar responses)
Camp hosts/attendants/park staff are great/friendly (38)
Keep up the good work/general enjoyment (33)
Camping was great at Juniper/very well maintained site (17)
Very nice/scenic/beautiful site (13)
Need longer/better boat ramps (11)
Need additional parking (8)
Boater knowledge/safety is a concern (7)
Longer stays at campground should be allowed (7)
Good place to gather with friends and family (7)
Proximity/close to home (7)
Need more trees (6)
Need improved/more moorage (5)
Keep water level up in reservoir (5)

APPENDIX F

Ririe Reservoir
Recreation Carrying Capacity Study

Existing Recreational Use Estimate

Existing Recreational Use Estimate

As part of assessing existing use levels, this study identified the types, levels, and distribution of recreational use in the study area. Measures of use included persons-at-one-time (PAOT), vehicles-at-one-time (VAOT), boats-at-one-time (BAOT), and visitor days. A visitor day is defined as a visit by a person for any length of time during a calendar day to a recreation site. Existing recreation use is estimated in visitor days, the preferred unit of Reclamation. These commonly utilized measures are useful for helping to determine the capacity of a site, as well as for managers as they consider present conditions while planning for future recreation needs in the study area.

Study Area Activity Counts

A component of the instantaneous counts was to count the number of visitors engaged in specific activities at each recreation site in the study area. The activities, mean number of PAOT, and maximum number of PAOT observed at each recreation site and resource area during the peak season are presented in Table 1. It should be noted that mean PAOT represents a "snapshot in time" and is not an estimate of total daily use. However, daily recreation use, estimated in visitor days for purposes of this analysis, can be extrapolated using PAOT and other field observations.

In total, the average number of peak season PAOT in the study area was approximately 69 (Table 1). The maximum PAOT for the study area was 205. The maximum number of observed PAOT is about three times as large as the average observed PAOT and indicates that many sites experience large influxes of use on several occasions during the peak season (e.g., weekends and holidays). These estimates do not include recreational use on the reservoir that could not be observed from the developed recreation sites, nor do they include camping. Applying the average group size (5.8) (Appendix E—Summarized Visitor Questionnaire Results), to the observed RV and tent campsites occupied raises the average PAOT to 144 and the maximum to 437.

The developed recreation site with the most observed peak season use (PAOT) was Juniper Park. Including camping, use at Juniper Park accounted for nearly 63 percent of all observed use during the 2003 peak season. Blacktail Park had the second highest observed peak season use (21 percent of total use in the study area). Both Benchlands Park and Ririe Dam accounted for 10 percent or less of all observed use during the 2003 peak season.

Both picnicking and swimming/sunbathing were the most observed land-based activities, while power boating, water-skiing (including wake boarding and tubing), and PWC use were the top three observed water-based activities. These observed activity counts are similar to the results obtained from the visitor questionnaire (Appendix E—Summarized Visitor Questionnaire Results). Swimming (50 percent), picnicking (38 percent), power boating (38 percent), water-skiing (35 percent), and sunbathing (34 percent) were five of the top six participated in activities according to questionnaire respondents. Resting and relaxing (46 percent) was the second most participated in activity according to

questionnaire participants, but was not a commonly observed activity (in terms of observed PAOT).

The observed PAOT activity counts and visitor questionnaire results differed slightly for several reasons. First, respondents to the visitor survey were given the choice of 24 activities to choose from, while field observations focused on 18 activities. Second, field observations were focused primarily on the activities occurring at the four developed recreation sites, while visitors were able to report activities that they participated in at areas other than developed sites, including the reservoir surface. Third, field researchers spent a limited amount of time at each recreation site (i.e., an hour or two during counts and questionnaire administration) and likely only observed a certain percentage of all of the activities at any given site. Finally, visitors to recreation areas often associate resting and relaxing with other recreation activities (e.g., picnicking, camping, sunbathing, family gatherings, etc.), while field researchers record only observed activities. Despite these differences, however, questionnaire and field observation results were relatively similar.

Study Area Vehicle Counts

A second component of the instantaneous counts was to count the number of vehicles at each recreation site in the study area. The mean number of VAOT observed at each recreation site during the peak recreation season is presented in Table 2. The maximum VAOT observed during any season are also presented in Table 2. These data represent a "snapshot in time" of the average number of vehicles at study area recreation sites at any given time. Similar to PAOT, VAOT are an important factor in estimating visitor days at each recreation site.

In total, the average number of VAOT at all developed recreation sites in the study area (excluding Benchlands Park) was 76, while the maximum number of observed VAOT was 187. Similar to PAOT, the developed recreation sites with the highest mean VAOT in the study area were Juniper Park and Blacktail Park, each with 37 VAOT. Blacktail Park had the highest maximum VAOT with 98. Again, similar to PAOT, the difference between average VAOT and maximum VAOT indicates that many sites experience large influxes of use on several occasions during the peak season (e.g., weekends and holidays).

Applying the average group size (5.8) (Appendix E—Summarized Visitor Questionnaire Results), to the observed VAOT counts results in a mean PAOT of 441 and a maximum PAOT of 1,085. These PAOT estimates are considerably higher than the observed PAOT counts reported in the Study Area Activity Counts section above. This discrepancy displays a weakness of PAOT counts, that is PAOT counts fail to capture visitors who park at a site, but do not directly participate in activities at that site (e.g., visitors who park at a site and then participate in boating or hiking away from the site). The number of observed VAOT is likely a more accurate estimate of use at one time than PAOT, but also has its limitations and should be considered in conjunction with other available data to develop seasonal use estimates.

Table 1. Mean and Maximum Peak Recreation Season PAOT at Recreation Sites in the Study Area.

Recreation Site	Mean (Maximum) PAOT by Activity																		
	Boat Fishing[1]	Bank Fishing	Float Tube Fishing	Picnicking	Swimming/ Sunning	Hiking	Biking	Rest/ Relax	Observing Wildlife	Windsurfing	Power Boating[1]	Waterskiing[1]	PWC Use[1]	Canoe/ Kayak[1]	Sailing[1]	RV Camping[2]	Tent Camping[2]	Total (Maximum)[3]
Juniper Park	2 (4)	4 (10)	0 (1)	6 (60)	1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	1 (2)	0 (0)	0 (1)	0 (0)	11 (33)	2 (6)	15 (49)
Blacktail Park[4]	1 (2)	2 (11)	1 (6)	10 (40)	6 (30)	0 (0)	0 (0)	0 (2)	0 (0)	0 (1)	4 (11)	2 (5)	4 (16)	0 (0)	0 (0)	-	-	30 (106)
Benchland Park[5]	1 (3)	0 (0)	0 (0)	2 (6)	8 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (2)	1 (3)	0 (0)	0 (0)	-	0 (1)	14 (28)
Ririe Dam	0 (2)	2 (10)	0 (0)	0 (0)	3 (6)	0 (0)	0 (0)	0 (8)	0 (0)	1 (6)	1 (4)	2 (9)	1 (5)	0 (0)	0 (0)	-	-	10 (22)
Total	**4 (11)**	**8 (31)**	**1 (7)**	**18 (106)**	**18 (63)**	**0 (0)**	**0 (0)**	**0 (10)**	**0 (0)**	**1 (7)**	**7 (22)**	**6 (18)**	**6 (24)**	**0 (1)**	**0 (0)**	**11 (33)**	**2 (7)**	**69 (205)**

[1] Indicates number of visitors participating in activity directly adjacent to the site's shoreline. Wake boarding and tubing were included in the waterskiing counts.
[2] Indicates number of sites occupied, not PAOT. Juniper Park is the only site where camping is allowed (camping is allowed, but not encouraged at Benchland Park).
[3] Totals do not include RV and tent camping as counts indicate number of sites occupied, not PAOT.
[4] Includes 3 survey dates after boat ramp was closed.
[5] Based on 4 survey dates (See Section 4.0—Methods).
Provided by EDAW, Inc.

Table 2. Mean and Maximum Peak Recreation Season VAOT at Recreation Sites in the Study Area.

Recreation Site	Mean (Maximum) VAOT					
	Vehicles	Vehicles w/ Camping Trailers	Vehicles w/ Boat Trailers	Vehicles w/ Other Trailers	Trailers (no vehicle)	Total (Maximum)
Juniper Park	6 (31)	20 (36)	7 (14)	2 (4)	2 (11)	37 (81)
Blacktail Park[1]	16 (42)	2 (29)	19 (56)	0 (3)	0 (2)	37 (98)
Benchland Park[2]	-	-	-	-	-	-
Ririe Dam	2 (8)	0 (0)	0 (0)	0 (0)	0 (0)	2 (8)
Total	**24 (81)**	**22 (65)**	**26 (70)**	**2 (7)**	**2 (13)**	**76 (187)**

[1] Includes 3 survey dates after boat ramp was closed.
[2] There is no road access to Benchland Park.
Provided by EDAW, Inc.

Study Area Boat Counts

A third component of the instantaneous counts was to count the number of watercraft on the reservoir. The mean and maximum number of observed boats-at-one-time (BAOT) in each reservoir segment during the peak recreation season are presented in Table 3. Boats that were incorporated in the counts included powerboats, sailboats, PWC, float tubes, and canoes and kayaks.

Table 3. Mean and Maximum Peak Season BAOT on Ririe Reservoir.

Reservoir Segment	Mean BAOT	Maximum BAOT
North	31	44
Middle	27	32
South[1]	8	11
Total	66	87

[1] The South Segment of Ririe Reservoir was the least accessible segment during the 2003 peak season due to lower water conditions.
Provided by EDAW, Inc.

In total, the mean number of observed BAOT for Ririe Reservoir was 66 and the maximum BAOT was 87. These estimates are relatively high and do not follow the trend exhibited by the PAOT and VAOT counts (i.e., maximum count is approximately three times larger than the mean count). This discrepancy is likely due to the small sample size of boat count days (only 4 boat count days were scheduled—Section 4.5—Reservoir Surface Area Boating Capacity) and the fact that the boat count days only included weekend days, as well as one holiday. In general, recreation use tends to be higher on weekends and holidays than on weekdays. The scheduled boat counts during the 2003 peak season only captured these heavier use times (this helps to explain the difference between mean observed vehicles with boat trailers [Table 2] and mean observed BAOT [Table 3]).

The North Segment of Ririe Reservoir had both the highest mean observed BAOT (31), as well as maximum BAOT (44). The Middle Segment had the second highest observed mean (27) and maximum (32) BAOT, while the South Segment had the lowest observed mean (8) and maximum (11) BOAT. The South Segment likely had the lowest mean and maximum BAOT because it was most affected by the lower pool elevations in 2003. The Middle Segment was also likely affected by lower pool elevations, though not until late in the peak season (late August).

Powerboats accounted for approximately 83 percent of all observed watercraft during the peak season on Ririe Reservoir. On each reservoir segment, powerboats accounted for more than 80 percent of observed boats (North Segment—83 percent, Middle Segment—82 percent, and South Segment—87 percent). PWC accounted for approximately 15 percent of observed BAOT on the reservoir and more than 10 percent of observed BAOT on each reservoir segment (North Segment—15 percent, Middle Segment—14 percent, and South Segment—13 percent). Other types of watercraft only accounted for approximately 2 percent of observed BAOT during the peak season.

In addition to boat counts, boating activity counts were also performed on boat count days. In general, water-skiing (including wake boarding and tubing) was the most observed boating-related activity. Approximately half of all observed BAOT were engaged in water-skiing. Cruising accounted for 29 percent of observed BAOT, while fishing from a boat accounted for the remaining 21 percent of observed BAOT.

Bonneville County Department of Parks and Recreation Paid Fee Receipt Data

In addition to PAOT, VAOT, and BAOT counts, summarized paid fee receipt data that are routinely collected by BCDPR were also reviewed. Daily fees ($2.00 per vehicle) are collected at Juniper Park (campground and boat launch), Blacktail Park, and the Ririe Dam. Seasonal passes ($30.00) are also available. Summarized paid fee receipt data for day passes is presented in Table 4 for the Juniper Park and Blacktail Park.

Table 4. Daily Average and Total Number of Day Passes Sold at Juniper Park and Blacktail Park During the 2003 Peak Season (Memorial Day through Labor Day).

Timeframe	Daily Average Number of Day Passes Sold (minimum/maximum/total)	
	Juniper Park	Blacktail Park[1]
Peak Season	45 (5/105/4,264)	78 (2/270/6,447)
Peak Season Weekdays	38 (5/70/2,419)	50 (2/161/2,844)
Peak Season Weekends	60 (8/105/1,845)	139 (23/270/3,603)

[1] Blacktail Park was closed on August 17 in 2003 due to low water.
Provided by BCDPR and EDAW, Inc.

In total, 10,711 day passes were sold during the peak season at Juniper Park and Blacktail Park. Additionally, 66 seasonal passes were also sold (38 at Juniper Park and 28 at Blacktail Park). On a daily basis, more day passes were sold at Blacktail Park than Juniper Park. This is likely a result of the proximity of Blacktail Park to Idaho Falls. At both sites, the average number of day passes sold on weekend days was higher than that on week days. This trend is typical of outdoor recreation areas.

A day pass is required for use of the Ririe Dam. A self-serve pay station is used at the top of the access road to the dam for fee collection (the other developed sites use a site attendant to collect fees during the peak season). The self-serve pay station is not emptied on a daily basis; thus, determining daily averages was not possible. In total, 411 day passes were purchased at the Ririe Dam. Assuming visitor use of this site is evenly spread over weekday and weekend days, an average of four day passes are purchased at the Ririe Dam daily.

Campground fees ($16.00 per night for a full hookup site, $12.00 per night with a Gold Pass, and $9.00 per night for a tent site or dry dock) are also collected at Juniper Park. Table 5 presents the summarized daily paid fee receipt data for the campground at Juniper Park. In total, 1,022 campsites were occupied during the peak season (i.e., 1,022 nights of camping were paid for during the peak season). On average, 13 campsites were occupied per day. This is consistent with the PAOT counts presented in Table 1.

Table 5. Daily Average and Total Number of Occupied Campsites Based on Paid Fee Receipt Data Collected During the 2003 Peak Season (Memorial Day through Labor Day) at Juniper Park.

Timeframe	Average Daily Campsites Occupied (minimum, maximum)	Total Campsites Occupied
Peak Season	13 (3, 29)	1,022
Peak Season Weekdays	12 (3, 26)	587
Peak Season Weekends	16 (7, 29)	435

Provided by BCDPR and EDAW, Inc.

No fees are collected at Benchlands Park, as this site is only accessible by water. However, visitors must use either the Juniper Park or Blacktail Park boat launch to access this site and are required to pay a fee at both of these sites.

Estimate of Existing Peak Recreation Season Use in the Study Area

Existing peak season recreational use of the study area is presented in two formats: (1) visitor days, and (2) percent occupancy. Visitor days are reported to provide an estimate of total recreational use at each developed site and the study area. Percent occupancy is reported to provide a capacity utilization estimate of use for specific site facilities (e.g., campsites, parking spaces, etc.). Visitor days are used as a visitor-based indicator of capacity while percent occupancy is used as a facility-based indicator of capacity.

A visitor day is defined as a visit by a person to an area for recreation purposes during any portion of a calendar day and is Reclamation's preferred unit of recreation measurement. Visitor days were estimated for each recreation site, as well as the entire study area. The number of visitor days at each site and in the study area is an estimate that provides a "ballpark" use figure to base current and future management decisions regarding recreational use of the study area.

Table 6 presents existing peak season visitor days for each developed recreation site, as well as for the entire study area. In total, existing recreational use of the study area accounts for over 59,000 visitor days during the peak season. This represents approximately a 12 percent decrease from recreational use levels as reported in the Ririe Reservoir Resource Management Plan (Reclamation 2001). This decrease in use is likely a result of lower reservoir pool elevations that have resulted from drought conditions the past 3 years in eastern Idaho and has been noted by BCDPR staff (pers. comm., Craig Daniels, June 5, 2003).

Table 6. Existing Peak Season Visitor Days in the Study Area.

Recreation Site	VISITOR DAYS[1] Weekday[2]	Weekend[3]	Seasonal Total
Juniper Park			
Day Use/Boat Launch	7,220	9,120	16,340
Campground[4]	3,635	3,880	7,515
Season Pass[4]	-	-	3,850
Blacktail Park	8,570	19,065	27,635
Season Pass[4]	-	-	2,260
Benchlands Park[5]	1,590	2,650	4,240
Ririe Dam[6]	450	1,080	1,530
Study Area Total[7]	**19,875**	**33,145**	**59,130**

[1] A visitor day is equal to a visit by a person to an area for recreation purposes during any portion of a calendar day (e.g., 5 minute visit = 1 visitor day, 8 hour visit = 1 visitor day, 1 overnight stay = 2 visitor days, etc.). Visitor days were estimated by multiplying the average number of sites occupied per weekday and weekend day (Tables 4 and 5) by the average number of people per site/vehicle (Appendix E, Questions 3 and 4) by the number of weekdays and weekend days per peak season.
[2] Monday, Tuesday, Wednesday, and Thursday were considered weekdays for this analysis.
[3] Friday, Saturday, and Sunday were considered weekend days for this analysis.
[4] It was assumed that visitors who purchased a season pass visited the site where they purchased the pass on average 2 times per week during the peak season.
[5] Visitor days at Benchlands Park were estimated as a percentage of use at the other developed recreation sites based on visitor questionnaire results (Appendix E, Question 1).
[6] A 40/60 weekday/weekend day split was assumed at Ririe Dam.
[7] Visitor days at Benchlands Park were not included in the study area total, as these visitor days were already captured at the other developed recreation sites.
Provided by EDAW, Inc.

Table 7 displays the average percent occupancy for the developed recreation sites in the study area during the peak season.

Table 7. Average Percent Occupancy at Developed Recreation Sites in the Study Area.

Recreation Site	Percent Occupancy[1] Weekday[2]	Weekend[3]	Seasonal Total
Juniper Park			
Day Use/Boat Launch	55 percent	85 percent	65 percent
Campground	24 percent	34 percent	28 percent
Blacktail Park	31 percent	87 percent	49 percent
Benchlands Park[4]	18 percent	34 percent	25 percent
Ririe Dam[5]	7 percent	20 percent	13 percent

[1] Percent occupancy was determined by dividing the average number of occupied sites (parking, campsites, etc.) by the total available sites at each developed recreation site. All available capacity was considered when determining percent occupancy (regular and overflow sites).
[2] Monday, Tuesday, Wednesday, and Thursday were considered weekdays for this analysis.
[3] Friday, Saturday, and Sunday were considered weekend days for this analysis.
[4] Percent occupancy at Benchlands Park was estimated based on visitor days as reported in Table 6.
[5] A 40/60 weekday/weekend day split was assumed at Ririe Dam.
Provided by EDAW, Inc.

APPENDIX G

Ririe Reservoir
Recreation Carrying Capacity Study

Projection of Future Recreational Use in the Study Area

Projected Recreational Use of the Study Area

This appendix provides a brief summary of projected recreational use of the study area and discusses the following topics:

- Areas of visitor origin and projected changes in the population of these areas;
- Participation trends (state, regional, and national) for recreation activities occurring in the study area; and
- Projection of recreational use in the study area through the next 10 years (2013).

Population Growth

To address projected recreation use in the study area, it is important to evaluate current population data for the surrounding counties and counties of origin of visitors to the study area. Additionally, it is also important to evaluate forecasts for population changes in these counties and the potentially effect these changes may have on study area recreation. Zip codes from the visitor questionnaire survey (Appendix E, Question 28) were used to determine the state and counties of origin of visitors to the study area.

Table 1 displays population projections for visitor counties of origin. Only counties in Idaho were included in the table, as nearly 90 percent of all visitors to the reservoir were from Idaho.

Table 1. Population Estimates and Forecasts for Selected Idaho Counties (2003-2013).

County[1]	2003 Population[2]	2013 Population[2]	Percent Change 2003-2013	Annual Percent Change
Bonneville	85,617	95,932	12 percent	1.16 percent
Jefferson	19,939	22,551	13 percent	1.26 percent
Madison	28,605	32,398	13 percent	1.28 percent
Bingham	42,981	47,133	10 percent	0.94 percent
Fremont	12,084	12,966	7 percent	0.71 percent
Bannock	78,427	87,966	12 percent	1.18 percent

[1] Based on visitor questionnaire results (Appendix E, Question 28). Only counties in Idaho were included as these counties represented nearly 90 percent of all survey participants.
[2] 2003 and 2013 population estimates are based on 2000 US Bureau of the Census population data (as reported by Idaho Department of Commerce) and percent change in population from 1990 to 2000.
Source: Idaho Department of Commerce (2002) and EDAW, Inc.

Trends in Outdoor Recreation Activities

Analyzing current and future recreation activity participation in the study area provides information needed to identify the recreational needs of the study area. Statewide, regional, and national activity participation trends were compared with activity participation data from the visitor questionnaire survey and field observations. This comparison was used to understand existing and projected levels of participation in recreational activities commonly pursued in the study area. The following statewide, regional, and national activity trend reports were used in this analysis:

- Outdoor Recreation in American Life: A national assessment of demand and supply trends (Cordell et al. 1999); and
- Idaho Statewide Comprehensive Outdoor Recreation and Tourism Plan (SCORTP) 2003-2007 (IDPR 2003).

These studies provide information regarding outdoor recreation in the United States, as well as Idaho. The Idaho SCORTP does not provide projected future trends in recreation activity participation. It only provides data on existing use within the state. The Idaho SCORTP, however, does reply on the Cordell et al. (1999) report to make activity participation projections. The Cordell et al. (1999) report provides comprehensive research regarding future trends in outdoor recreation participation. Using statistical models, projected changes in demographics are used to assess likely future trends of various outdoor recreation activities. The Rocky Mountain and national activity participation trends from Cordell et al. (1999) are displayed in Table 2.

Table 2. Percent Change in Participation for Popular Activities in the Study Area.

Activity	Annual Percent Change Rocky Mountain Region (National)[1]	Percent Change 2003-2013 Rocky Mountain Region (National)
Motorboating	0.9696% (0.8001%)	12% (9%)
Canoeing	0.6005% (0.6905%)	7% (8%)
Non-Pool Swimming	0.8583% (0.8352%)	10% (10%)
Visiting a Beach	1.0228% (0.8697%)	12% (10%)
Fishing	0.8236% (0.5606%)	11% (7%)
Wildlife Observation	0.9696% (0.8697%)	12% (10%)
Hiking	0.8468% (0.8236%)	10% (10%)
Primitive Camping	0.6652% (0.1734%)	8% (2%)
Biking	0.9147% (0.9696%)	11% (12%)
Developed Camping	0.5336% (0.7277%)	6% (8%)
Family Gathering	0.9147% (0.8236%)	11% (10%)
Picnicking	0.8811% (0.7882%)	10% (9%)
Sightseeing	1.0123% (0.9803%)	12% (12%)
OHV use	0.5740% (0.2702%)	6% (3%)

[1] Annual percent change represents the average projected annual increase over the next 50 years. Rocky Mountain Region includes Idaho, Wyoming, Montana, North Dakota, South Dakota, Nebraska, Colorado, Utah, Nevada, New Mexico, Arizona, and Kansas.
Source: Cordell et al. (1999) and EDAW, Inc.

For most activities, the annual percent change in participation in the Rocky Mountain Region is slightly less than 1 percent. Only visiting a beach and sightseeing have annual increases of slightly larger than 1 percent. By 2013, participation in most of the activities listed in Table 2 is projected to increase by at least 10 percent. Primitive camping (8 percent), canoeing (7 percent), developed camping (6 percent), and OHV use (6 percent) are the only activities that will increase by less than 10 percent by 2013. In general, participation in most activities in the Rocky Mountain Region by 2013 will increase slightly more compared to national increases. Only developed camping (8 percent), biking (12 percent), and canoeing (8 percent) are projected to increase more nationally than in the Rocky Mountain Region by 2013. It is important to note that none of the activities listed in Table 2 are projected to decrease by 2013.

While the Idaho SCORTP does not develop state-specific recreation activity trends, it does draw general conclusions regarding future use based on existing use and future trends reported in the Cordell et al. (1999) report. Future editions of the Idaho SCORTP will develop activity participation trends (using the 2003-2007 report as a baseline). In terms of wildlife-related recreational activities, the Idaho SCORTP reports that existing participation levels in hunting (big game and waterfowl) and non-consumptive activities (wildlife viewing, photography, etc.) are higher in Idaho than the rest of the nation and are projected to remain higher in the future. The SCORTP also reports that demand for water-based recreation activities will grow faster than the population of the state in the next. According to the SCORTP, these increases in demand will result in a need for additional opportunities and facilities related to wildlife and water-based activities. Additionally, the SCORTP predicts that new opportunities and facilities for biking, picnicking, walking, camping, and family gatherings will also be needed in the near future.

Projected Use at Recreation Sites in the Study Area

The previous sections projected future population and participation in various recreational activities that are currently popular in the study area. Using this projection information, this section estimates future use at existing recreation sites and use areas in the study area over the next 10 years (assumed to be through 2013 for planning purposes). Similar to existing use, projected use is estimated both in recreation days and percent occupancy. Site-level projected use was assessed by applying an average annual percent increase (based on population and activity participation increases) (Tables 1 and 2) to existing use estimates at each recreation site (Appendix F, Table 6). Visitor days (Table 3) and percent occupancy (Table 4) at each recreation site, as well as the study area, were projected through 2013.

Table 3. Projected Peak Season Visitor Days in the Study Area in 2013.

Recreation Site	Annual Percent Increase	VISITOR DAYS in 2013		
		Weekday	Weekend	Seasonal Total
Juniper Park				
Day Use/Boat Launch	1.01	7,975	10,075	18,050
Campground	1.008	3,940	4,200	8,140
Season Pass	1.01	-	-	4,255
Blacktail Park	1.01	9,470	21,060	30,530
Season Pass	1.01	-	-	2,500
Benchlands Park	1.01	1,760	2,930	4,690
Ririe Dam	1.01	500	1,195	1,695
Study Area Total[2]		**21,885**	**36,530**	**65,170**

[1] The annual percent increase presents the average percent change in population and activity participation rates. The six Idaho counties in Table 1 were included in the average, as well as specific activities from Table 2 (motorboating, non-pool swimming, visiting a beach, fishing, family gathering, picnicking, and sightseeing). For the Juniper Park Campground, only developed camping was included in the average along with the population changes.

[2] Visitor days at Benchlands Park were not included in the study area total, as these visitor days were already captured at the other developed recreation sites.

Provided by EDAW, Inc.

Table 4. Projected Percent Occupancy at Developed Recreation Sites in the Study Area in 2013.

Recreation Site	Percent Occupancy[1] Weekday	Weekend	Seasonal Total
Juniper Park			
Day Use/Boat Launch	58 percent	89 percent	68 percent
Campground	23 percent	36 percent	29 percent
Blacktail Park	33 percent	91 percent	52 percent
Benchlands Park	19 percent	36 percent	26 percent
Ririe Dam	7 percent	21 percent	14 percent

[1] Percent occupancy was projected by determining the average additional visitor days at each site (Table 3) and the corresponding percent change in facility utilization. On average, facility utilization increased by 0.05 percent based on projected visitor days.
Provided by EDAW, Inc.

In total, recreational use of the study area is projected to increase by approximately 10 percent by 2013. This corresponds to an approximate 1 percent increase per year in visitation to the developed recreation sites at Ririe Reservoir. At the site level, however, this increase in recreational use only translates to a 1 to 3 percent increase in percent occupancy. It should be noted that projected use estimates assume steady growth. These estimates do not take into account unforeseen events that may influence recreational use of an area (e.g., exceptionally good or bad weather during the peak season, the economy, wildfires, etc.). Because these types of events are difficult to capture in projection estimates, recreation use should be regularly monitored and projection estimates updated as necessary.

APPENDIX H

Ririe Reservoir
Recreation Carrying Capacity Study

Photographs of Developed Recreation Site Facilities
and
Typical Ecological Impacts in the Study Area

Aerial view of reservoir and dam (not taken during 2003 field visits).

JUNIPER PARK

Juniper Park—Dam Overlook Area (photo taken from top of dam during second field visit).

Date: September 18, 2003.

User-defined trail at Juniper Park—Dam Overlook Area. Ecological impacts resulting from user-defined trail include vegetation trampling and loss, exposed soil and compaction, and erosion. Trail is likely used to access cliff jumping/rock climbing area (see previous picture).

Date: September 18, 2003.

User-defined trail at Juniper Park—Dam Overlook Area (close-up of trail in previous picture).

Date: September 18, 2003.

Picnic area between Dam Overlook and visitor center at Juniper Park. Very few ecological impacts were observed in this area.

Date: September 18, 2003.

Juniper Park Visitor Center. The manicured lawns adjacent to the visitor center are well maintained by BCDPR.

Date: September 18, 2003.

User-defined trail to boat moorage area at Juniper Park. This trail is well established and provides access from the visitor center and campground to the boat moorage area. Trail impacts are likely caused by pedestrian and ATV use. Observed impacts include multiple social trails, vegetation trampling and loss, exposed soil, and erosion.

Date: September 18, 2003.

Close-up of user-defined trail in previous picture.

Date: September 18, 2003.

Juniper Park boat launch area. This area is hardened. Ecological impacts tend to be minor and located around the periphery of the site.

Date: June 5, 2003.

User-defined shoreline access trail at the Juniper Park boat launch area. Several short trails provide pedestrian access from the parking area to the reservoir shoreline. These trails area likely used primarily by shoreline anglers based on observed litter (discarded fishing-related equipment). The trails traverse rocky areas, limiting some impacts; however, other trail sections exhibit typical impacts including vegetation trampling and loss and erosion.

Date: June 5, 2003.

BLACKTAIL PARK

Picnic area at Blacktail Park. The manicured lawn in this area is well maintained by BCDPR and exhibits very few ecological impacts.

Date: June 5, 2003.

Boat launch and marina at Blacktail Park. These areas are generally hardened and exhibit very few ecological impacts. With the lower pool elevations in 2003, some user-defined trails were observed near the marina area. These trails may contribute to shoreline erosion; however, they are located within the denuded zone that is already impacted by the reservoir drawdown.

Date: June 5, 2003.

User-defined trail at southern end of Blacktail Park. This trail primarily receives pedestrian use and exhibits typical trail impacts including vegetation trampling and loss, exposed soil, and erosion along steeper portions of the trail.

Date: June 5, 2003.

User-defined trail at southern end of Blacktail Park. Unlike the trail in the previous picture, this trail is primarily impacted by vehicular use. The observed impacts are similar to those caused by a pedestrian trail, but the area of impact is generally larger.

Date: September 18, 2003.

User-defined trail at southern end of Blacktail Park. Similar to the previous picture, this trail primarily receives vehicular use. In addition to the typical observed trail impacts, these vehicle and pedestrian trails also detract from the visual character of the area.

Date: June 5, 2003.

Knocked over sign adjacent to overflow parking area at Blacktail Park. Vehicular access to the area south of Blacktail Park is possible, though not allowed, from the overflow parking area. Signs and wheel stops are placed at the access areas to prohibit vehicle entry; however, as exhibited by this sign, not all visitors comply with posted rules.

Date: June 5, 2003.

Tire tracks at end of Blacktail Park boat launch. During lower pool elevations, vehicles can access the reservoir shoreline directly via the boat ramps. This unconfined vehicle access may contribute to shoreline erosion, impacts to water quality and wildlife habitat, and cultural concerns (second field visit).

Date: September 18, 2003.

Marina and shoreline area at Blacktail Park. Similar to the previous picture, unconfined vehicular use is leading to some ecological impacts along the shoreline including vegetation loss and soil erosion, among others (second field visit).

Date: September 18, 2003.

BENCHLANDS PARK

Picnic shelter at Benchlands Park. Similar to the other developed recreation sites in the study area, Benchlands Park is well maintained by BCDPR and exhibits few significant ecological impacts. Some vegetation trampling and loss is occurring around the picnic shelters, though it tends to be minor and localized (second field visit).

Date: September 19, 2003.

User-defined fire pit and accumulated debris at Benchlands Park. Wildfires caused by visitors to the study area are a concern. Built structures (metal fire pits, grills) help reduce the potential for wildfires. This user-defined fire pit was removed by BCDPR between the first and second field visits (first field visit).

Date: June 6, 2003.

BCDPR removed the user-defined fire pit in the previous picture and provided a metal fire pit with a grill at Benchlands Park. The new fire pit was full of litter during the second field visit.

Date: September 19, 2003.

Damaged tree at Benchlands Park. Recently, BCDPR has planted trees at Benchlands Park to provide shade. Many of the small trees that have been planted at the site have been damaged by visitors who use the wood for fires. Tree damage was observed during both field visits (second field visit).

Date: September 19, 2003.

Close-up of tree damage in previous picture (second field visit).

Date: September 19, 2003.

During lower pool elevations, the dock at Benchlands Park does not provide direct access to the site. Visitors have developed a short but steep trail from the end of the dock up to the site. This user-defined trail is causing erosion, though the erosion is generally contained within the denuded zone of the reservoir (first field visit).

Date: June 6, 2003.

User-defined trail from dock to Benchlands Park. Pedestrian use of this trail is causing shoreline erosion, as well as vegetation loss (first field visit).

Date: June 6, 2003.

Floating toilet at Benchlands Park. This toilet was placed adjacent to Benchlands Park during the summer of 2003. The toilet is removed during the winter and stored at Juniper Park (where this picture was taken). Providing the floating toilet likely helps to minimize sanitation concerns at Benchlands Park and on the reservoir (second field visit).

Date: September 18, 2003.

RIRIE DAM

Ririe Dam as seen from the dam overlook at Juniper Park. Parking is provided along the top of the dam, and visitors generally descend the face of the dam to fish and swim. Ecological impacts at this site are minimal, as the entire site is hardened. Some litter was observed along the face of the dam and generally consisted of fishing-related gear and food wrappers (second field visit).

Date: September 18, 2003.

Ririe Dam as seen from the dam overlook at Juniper Park. In general, ecological impacts caused by recreation are minimal at this site. Access to the intake tower was recently fenced to prohibit access, as visitors were using the tower to jump into the reservoir (second field visit).

Date: September 18, 2003.

Portable toilet on Ririe Dam. Providing toilets helps to reduce sanitation concerns at this and other recreation sites in the study area (first field visit).

Date: June 5, 2003.

User-defined trail adjacent to small parking area on Ririe Dam. This trail appears to receive very little recreational use. BCDPR does use this trail on occasion for maintenance purposes. The trail exhibited typical impacts including vegetation trampling and loss, soil compaction, and some accumulated litter (second field visit).

Date: September 18, 2003.

OTHER IDENTIFIED USE AREAS

Access road to decommissioned Creekside Park. This site was recently closed. As a result, it exhibits very few ecological impacts (second field visit).

Date: September 18, 2003.

Creekside Park. A shelter is still in place at this site. Management actions in the Ririe Reservoir RMP call for the re-opening of this site (second field visit).

Date: September 18, 2003.

Angler access area along Willow Creek, below Ririe Dam. This site is located across from Creekside Park and consists of this angler access area, as well as a user-defined trail. Observed impacts at the angler access area consisted of vegetation tramping and loss, erosion, and accumulated litter (second field visit).

Date: September 18, 2003.

User-defined trail along Willow Creek, below Ririe Dam. This trail exhibits typical impacts including vegetation trampling and loss, soil compaction and erosion in areas, and accumulated litter. The trail appears to be well established and may also be used by wildlife (second field visit).

Date: September 18, 2003.

Section of trail along Willow Creek, below Ririe Dam. Trail use in this area is likely contributing to erosion and riverbank destabilization (second field visit).

Date: September 18, 2003.

Shoreline area with exposed beach across from Juniper Park. Several beach areas are exposed during lower pool elevations. In general these areas can only be accessed by boat and appear to receive very little use. Some minor shoreline impacts may result from recreational use of these areas; however, these areas are located within the already impacted denuded area of the reservoir. Shoreline sloughing is occurring in some of these areas, though is likely due to reservoir pool elevations changes and wave action, some of which may be caused by recreational boating.

Date: September 18, 2003.

Exposed shoreline and rocks adjacent to Juniper Park. At lower pool elevations, some shoreline areas are exposed and may be used for recreation (see previous picture). Additionally, several submerged hazards are exposed at lower pool elevations. Ecological impacts resulting from recreation tend to be minor compared to reservoir fluctuation in these areas, though wave action resulting from boats may be contributing to some shoreline erosion.

Date: September 18, 2003.