GREEN RIVER RECREATION INSTREAM FLOW STUDY

Prepared for Tacoma Public Utilities

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ACRONYMS AND ABBREVIATIONS

ABBREVIATION	Abbreviation Description
AW	American Whitewater
AWS	Additional Water Storage
CFS	Cubic feet per second
ESA	Endangered Species Act
HHD	Howard Hanson Dam
LBS	Pounds
IHA	Index of Hydrologic Alteration
IK	Inflatable Kayak
MIT	Muckleshoot Indian Tribe
NTU	Nephelometric turbidity units
USACE	United States Army Corps of Engineers
USGS	United States Geologic Survey
WDFW	Washington State Department of Fish and Wildlife
WRIA	Water Resource Inventory Area
WW	Whitewater
WY	Water year

EXECUTIVE SUMMARY

The 1995 Settlement Agreement between the Friends of the Green River, the City of Tacoma and King County required the City of Tacoma to undertake a study of instream flow needs and benefits for whitewater recreation on the Green River. Tacoma initiated the study process upon completion of the supply line for their second water diversion right. OASIS environmental was contracted in the spring of 2007 to conduct the recreation instream flow study on the Green River. OASIS conducted a site reconnaissance in April 2007 visiting the four whitewater reaches, touring Howard Hanson Dam and meeting with resource agency staff and Muckleshoot Indian Tribe fisheries biologists. On October 1, 2007, an Internet survey was launched allowing whitewater boaters to evaluate flow preferences and related attributes for conditions on the Green River. The survey was open to the public through August 14, 2008. A total of 333 survey responses were received. To supplement the survey data, focus group discussions were conducted in April 2008 with whitewater boaters in two locations; Seattle metro area and Flaming Geyser State Park in the Green River watershed.

The Green River contains four distinct whitewater reaches varying in difficulty from Class II to Class IV depending on flows. Boaters from the greater Seattle metropolitan area frequent the Green River due to its close proximity, diversity of whitewater opportunities, periodic availability of favorable flow conditions for whitewater and the aesthetics. The Upper Gorge is the most difficult reach and the Green River's primary whitewater destination. In high water years boaters from further distances travel to the Green River for the whitewater challenge in the Upper Gorge.

Kayakers were the most frequent users on the Green River (224) followed by catarafts/rafts (57), inflatable kayaks (36) and lastly, canoes (10). The Upper Gorge was the most popular reach with 44 percent of kayakers paddling this section compared to 24 percent on the Lower Gorge and 20 percent on the Headworks reach. In contrast to the kayak community which tended to focus on one reach per day, cataraft/raft users were more likely to combine two or more reaches into a single run. The most popular combination for cataraft/raft users was from the Headworks to Flaming Geyser (66 percent of cataraft trips).

Whitewater flow preferences were identified for four watercraft types on four reaches of the Green River. The flow preferences include minimum acceptable flows, optimum flows and high challenge flows for each watercraft and reach. The flow preferences vary by watercraft and whitewater reach. Overall, minimum acceptable flows ranged from 600 cfs in the Headworks reach for canoes to 1400 cfs for catarafts and rafts in the Upper Gorge. Optimum flows ranged from 900 cfs for kayaks in the Headworks reach to 3000 cfs for catarafts and rafts linking three reaches into a single outing; the Headworks through the Lower Gorge. Boaters using catarafts and rafts typically link more than one reach into a single outing. The whitewater challenges and aesthetics in the Upper Gorge were the primary attraction for most boaters on the Green even when multiple reaches were linked into a single outing. Minimum acceptable flow preferences

for the Upper Gorge ranged from 1100 to 1400 cfs for all watercraft types. The optimum flows for the Upper Gorge ranged from 1400 to 3500 cfs.

A frequency analysis of the average number of annual whitewater days was conducted for Palmer gage flows compared to inflows at Howard Hanson Dam. Minimum acceptable and optimum flow preferences for individual watercraft and river reaches were used in the frequency analysis. For the period 1963 to 2008, Howard Hanson Dam operations have had no effect on the average number of annual whitewater opportunities. No differences in the annual number of whitewater opportunities were observed after the 1995 Settlement Agreement with the Muckleshoot Indian Tribe was implemented. Recent operational changes to implement the Additional Water Storage Project in 2002, 2007 and 2008 also had little effect on annual whitewater opportunities although this analysis was limited to three different water year types. Additional hydrologic analysis is warranted to determine if these revised flow management practices will impact whitewater opportunities on the Green River. Even though the annual number of whitewater days were similar between the regulated and unregulated sections of the Green River, the lack of forecast flow information has likely inhibited some use by the whitewater community owing to the fact that boaters are less able to predict flow conditions below Howard Hanson Dam in the same manner boaters would track flow conditions on a naturally flowing river.

Identifying a single flow for whitewater recreation on the Green River is not possible given the different watercraft types, respective flow preferences and the different whitewater reaches. To meet this broad, and sometimes divergent, range of flow preferences dam operators should adopt the concept of flow ranges for respective reaches, watercraft, opportunities and specific whitewater attributes. No single flow will fulfill all the whitewater opportunities and associated attributes on the four reaches of the Green River simultaneously. Consequently, when project operations warrant gate adjustments, dam operators could provide a diversity of flow regimes throughout the year that overlap with whitewater flow preferences for respective reaches, watercraft, opportunities and attributes. Flow adjustments done on behalf of whitewater opportunities should be consistent with fishery flow needs. Providing a range of flows on an annual basis bracketing the minimum acceptable and optimum for all watercraft and reaches creates a broad spectrum of opportunities on the Green.

Survey participants were requested to identify their personal highest safe flow suitable for their watercraft and skill level. Data analysis and summaries of the highest safe flow should not be misinterpreted as a threshold for river closures. River safety is dependent on skill level in combination with watercraft and familiarity with a given whitewater reach.

Enhancement of whitewater boating opportunities on the Green can be made through improved flow information, scheduled whitewater flows coordinated with annual project operations and short term shaping of outflows to target whitewater opportunities. These opportunities exist during the fall drawdown period, winter flood control operations and the spring refill period. Whitewater flows are not appropriate under low flow conditions because flow management for fish and municipal water supply is most critical during this period. Inclusion of short and long

term forecasts will greatly improve flow predictability for the boating community. The flow information should include greater transparency regarding HHD management objectives both short and long term throughout the year as well as fisheries management objectives.

Managing flows for whitewater recreation on the Green River will require compatibility with the flow needs of anadromous fish. Whitewater flows released at HHD ultimately travel downstream to critical anadromous fish habitats located in the lower middle Green and lower Green subwatersheds. Opposition to whitewater flow releases from Howard Hanson Dam stems largely from the increased risk for stranding and trapping juvenile fish in the spring and adult fish in the fall/winter in lateral habitats including gravel bar pools, side-channels, and other off-mainstem habitats. There is also concern that spring spawning steelhead will select redd locations in habitats requiring flow levels that cannot be maintained through the incubation period. Nevertheless, the whitewater flow preferences identified in this study demonstrate substantial overlap with the seasonal flows recommended for anadromous fish. Whitewater flows, applied within the appropriate seasonal timeframe, appear quite compatible with the anadromous fishery. The Green River Flow Management Committee provides an appropriate forum for integrating whitewater flows with project mandates and fishery flows.

Throughout the late fall, winter and spring the anadromous flow needs could secondarily provide whitewater boating opportunities. Whitewater flows should be timed to occur during periods of surplus water rather than low flow periods when flow is a limiting factor for fish and municipal water supplies. Therefore, it is inappropriate to be calling for recreation flows during low flow periods. The whitewater community should also avoid calling for releases when flow fluctuations between base flows and whitewater flows would be detrimental to anadromous fish. Similarly, resource agencies and the MIT should acknowledge that whitewater recreation is a legitimate secondary use of fishery flows compatible with fishery management objectives. In addition, resource agencies and the MIT should make an effort to disseminate flow management recommendations to the whitewater community particularly pulse flow events designed to trigger geomorphic processes and restore habitat. These pulse flows can secondarily provide high challenge whitewater opportunities.

The legislation authorizing construction of HHD identified flood control and municipal water storage as the project purposes. The ESA listing of Chinook and bull trout in 1999 requires the USACE to include the instream flow needs of these species in their operations. Providing whitewater recreation flows is not a recognized purpose of HHD. HHD operators are reluctant to shape outflows to meet whitewater flow preferences fearing the USACE will be in violation of its ESA obligations. The USACE can fulfill the project purposes identified in the authorizing legislation and meet ESA requirements as well as elect to include whitewater flow preferences in the outflow decision process rather than manage to the detriment of whitewater. Alternatively, the project could be re-authorized to include whitewater as a secondary purpose. Project re-authorization is more likely to succeed in the legislative process if it includes whitewater recreation as a secondary purpose after fishery needs have been met.

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1. INTRODUCTION

In 1995, the Friends of the Green River successfully appealed the City of Tacoma's application to King County for construction of the second water diversion project water supply line. Through subsequent meetings in 1995, the City of Tacoma, Friends of the Green River and King County reached a settlement agreement. Section 6 of the 1995 Settlement Agreement requires the City of Tacoma to undertake a study of instream flow needs and benefits of recreation on the Green River upon completion of the supply line for Tacoma's second water diversion right. Tacoma completed construction of the supply line for the second diversion water right in 2005, thereby, triggering implementation of section 6 in the 1995 Settlement Agreement.

Specifically, section 6 of the Settlement Agreement states that the recreation study will:

(1) Determine historic, pre Howard Hanson Dam hydrology, existing hydrology regulated by Howard Hanson Dam, flows resulting from the Muckleshoot Agreement of August 1995, and hydrologic changes resulting from implementation of the Howard Hanson Dam Additional Water Storage Project;

(2) identify the range of instream flows for different types of recreational river uses including (at least) whitewater rafting, kayaking and canoeing;

(3) identify the economic benefits from the recreational uses; and

(4) compare recreational flow requirements to the flow needs of anadromous fish.

The recreational flow study was intended to provide stakeholders with additional information on the influence of flood control operations and water storage for municipal withdrawals on whitewater recreational opportunities. OASIS Environmental was contracted by the City of Tacoma in April 2007 to implement the recreation instream flow study. The study objectives were further refined through meetings with Tacoma, American Whitewater (AW), Friends of the Green River, Washington Department of Fish and Wildlife (WDFW) fisheries staff, and Muckleshoot Indian Tribe (MIT) fisheries biologists. The detailed study objectives included the following, organized by study discipline:

Recreation Objectives:

- Identify whitewater recreation opportunities on the four reaches of the Green River (Headworks, Upper Gorge, Lower Gorge, Yo-Yo);
- Define minimum acceptable and optimum flows for hardshell whitewater boats (kayaks and canoes) and inflatable boats (inflatable kayaks, catarafts, self-bailing rafts and wrap-floor rafts);
- Develop flow preference curves for whitewater boat types and river reaches based on relationships between flow levels and quality of the whitewater experience;

- Identify flow-related attributes for each whitewater opportunity;
- Quantify economic benefits of whitewater recreation on the Green River;
- Determine value of providing better flow forecast information to boaters;
- Estimate current use of the river and how that use may change if operations could be modified to make recreational opportunities more predictable; and,
- Compare the Green River to other rivers in the region and determine the regional significance of the resource.

Fisheries Objectives:

- Summarize boating-relevant hydrology, fishery flow needs and project operations and identify the potential for compatible flow regimes defined in time and volume; and
- Examine opportunities to integrate boating flows with other resource needs (e.g., pulse flows for habitat restoration/channel maintenance).

Hydrology Objectives

- Quantify and compare the historic, pre Howard Hanson Dam hydrology, existing hydrology regulated by Howard Hanson Dam, flows resulting from the Muckleshoot Agreement of August 1995, and hydrologic changes resulting from implementation of the Howard Hanson Dam Additional Water Storage Project;
- Quantify the effect of HHD operations on weekday vs. weekend whitewater opportunities;
- Quantify and compare the effect of different HHD management objectives (i.e., flood control vs. refill for water storage) on whitewater opportunities; and,
- Evaluate utility of existing publicly accessible information for predicting flows and recommendations for improving flow forecasts.

The Settlement Agreements calls on Tacoma to "support the provision of adequate instream flows for at least four pre-scheduled-weekends during the spring or other agreed-upon times" and determine how this can best be met given recreational needs, operational constraints, and fishery protection needs.

The study was carried out from April 2007 to August 2008. Information gathering included site reconnaissance, interviews with agency and tribal fishery professionals, review of Green River fishery reports and habitat studies, interviews with U.S. Army Corps of Engineer (USACE) personnel at Howard Hanson Dam (HHD), and surveys of whitewater boaters on the Green River. Survey methods included interviews, focus group sessions, and an Internet survey (the Internet survey was available from October 1, 2007 through August 14, 2008).

2. STUDY AREA AND BACKGROUND INFORMATION

The main stem of the Green River, located in the southern part of King County Washington, flows north and west for approximately 84 miles from its headwaters in the Cascade Mountains to the confluence with the Black River to form the Duwamish River, then empties into Puget Sound at Elliott Bay (Figure 2.1). Historically, the Duwamish River basin was one of the largest basins in Puget Sound, draining an area of 1,639 square miles encompassing the Cedar, the Green and White Rivers. In the early 19th century a series of floods coupled with levee construction and re-routing of river channels resulted in three separate drainage basins. Presently, the Green River drains an area of 484 square miles.

2.1 FLOW REGULATION ON THE GREEN RIVER

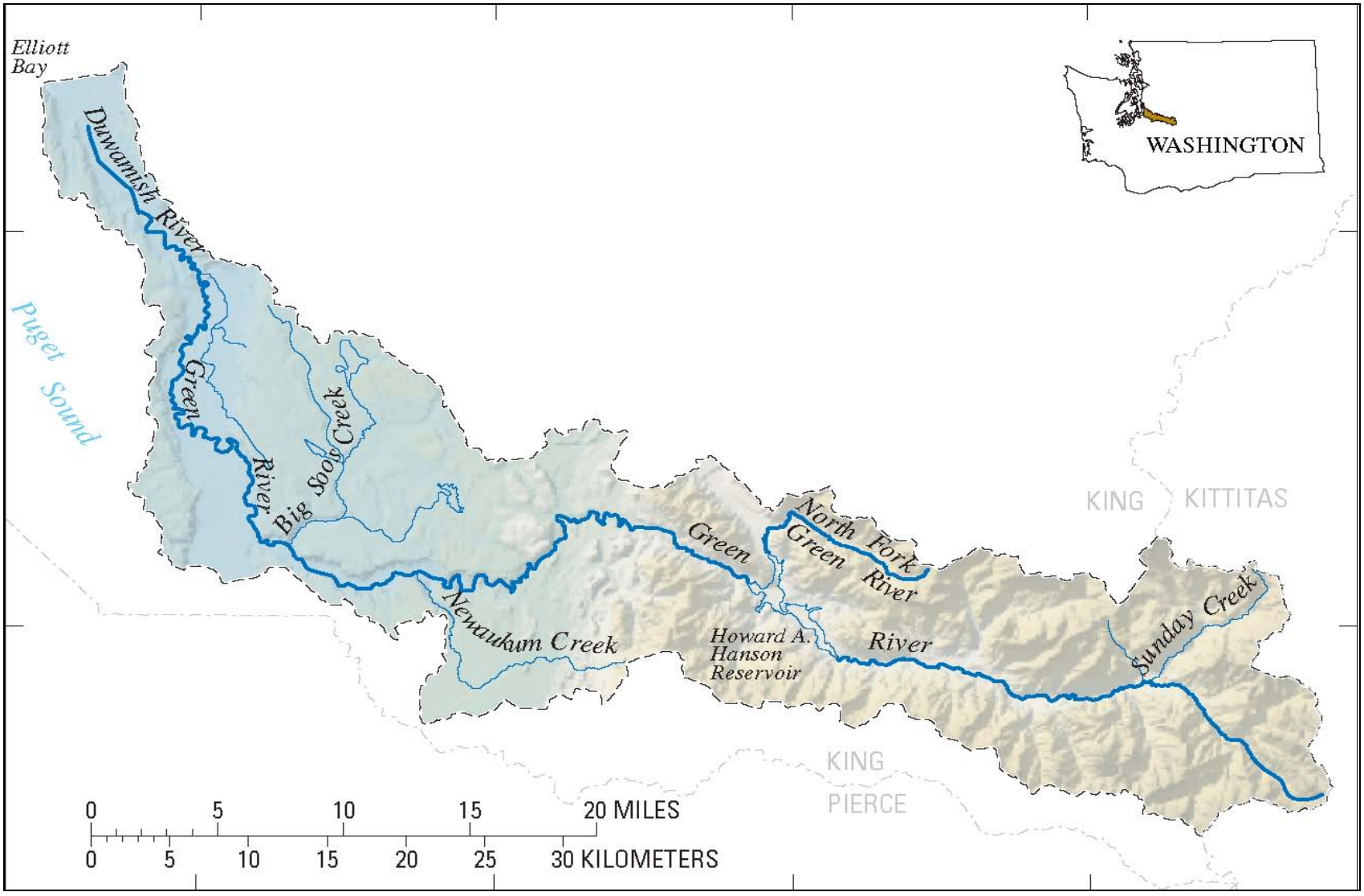
In addition to the major dissection of the original drainage area, flows in the Green River have been altered by past and ongoing human activities including major diversions for consumptive withdrawal purposes, flood control activities and seasonal water storage (Northwest Hydraulics Consultants 2005). Two dams exist in the Upper Green River watershed; Howard Hanson Dam (HHD) operated by the U. S. Army Corps of Engineers (USACE) and the Tacoma Headworks diversion operated by the City of Tacoma.

2.1.1 Howard Hanson Dam Operations

HHD was built in 1962 at river mile 64.5 on the Green River. HHD functions as a flood control reservoir during the winter and spring. The USACE operates HHD to prevent flood flows over 12,000 cfs at Auburn in the lower Green River watershed. HHD serves as a water storage reservoir augmenting low flows in July, August, September, and October for municipal water withdrawals at the Tacoma Headworks diversion and minimum instream flows for fisheries. The minimum discharge from the dam is 223 cfs to ensure that 110 cfs passes the USGS Palmer gage (Gage no. 12106700) after diversion of up to 113 cfs by Tacoma at the Headworks diversion.

The HHD reservoir was originally authorized by Congress to store 24,200 acre-feet of water for summer low-flow augmentation (Figure 2.2). HHD project operations were modified in the 1990s to provide an additional 5000 acre-feet of stored water (pool elevation 1147 ft) for fisheries instream flows. The 5000 acre-feet was authorized under Section 1135 of the 1986 Flood Control Act to mitigate for fisheries impacts from its flood control operations. In 1999, Congress authorized the Additional Water Storage (AWS) project for Tacoma to store its second diversion water right (100 cfs) granted in 1986. Phase 1 of the AWS provided storage of an additional 20,000 acre-feet (pool elevation 1167 ft) of water to meet Tacoma's second diversion water right during the July to October/November low flow period. The USACE stored 20,000 acre-feet for the first time in 2002 as a one-year test to prepare for implementation of the AWS project (K. Brettmann, email communication).

Figure 2.1: Green-Duwamish Watershed



Map courtesy of King County GIS tools

In the spring of 2007, the USACE operations adopted the 1167 ft pool elevation allowing for the 20,000 acre-feet of AWS when not in flood control mode. In addition to providing storage of Tacoma's second diversion water right, congressional authorization of the AWS continued the storage of the original 24,200 acre-feet of water for summer low flow augmentation and the 5000 acre-feet of Section 1135 water. This water may be used to augment low flow conditions during the summer period, in particular, avoiding seven-day low flow conditions inherent in the past.

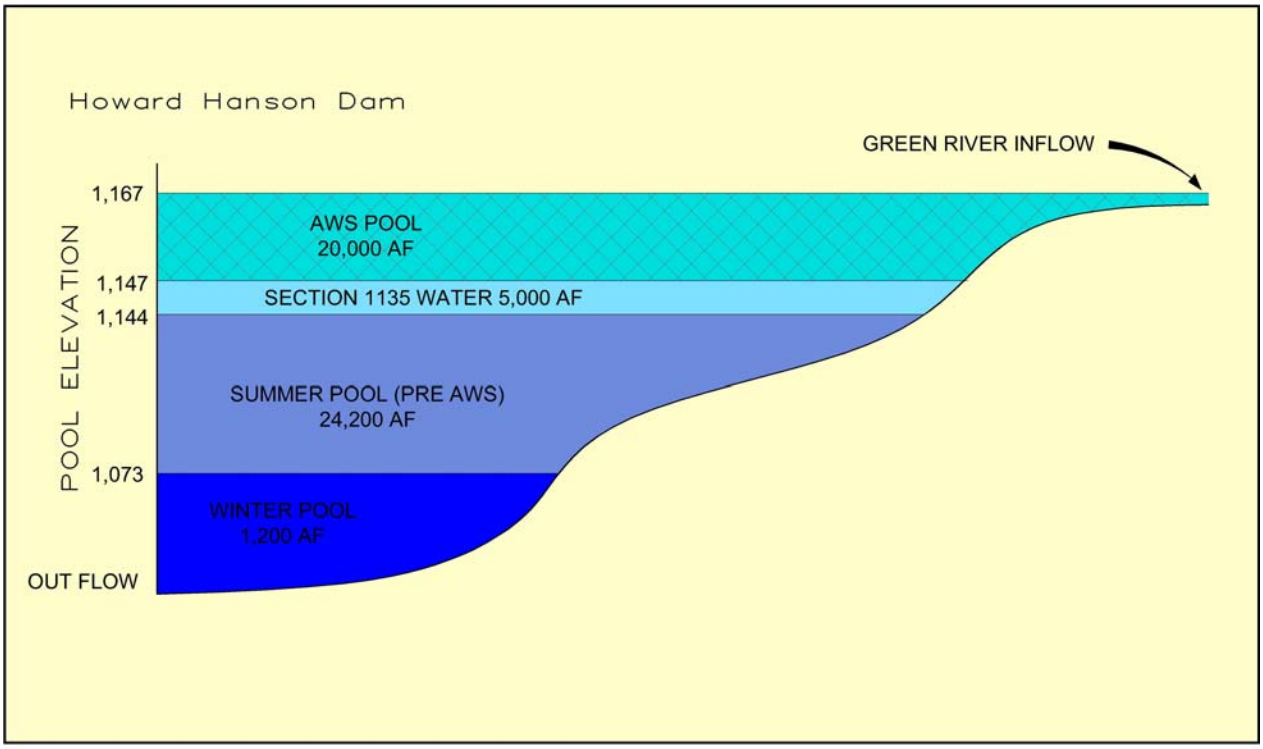
In 1987, the Green River Flow Management Committee was formed to work in conjunction with USACE to adaptively manage flows from HHD. The interagency committee consists of representatives from MIT, state, federal, and county resource agencies, Tacoma Water, FOG and AW. The Committee works with the USACE to balance the downstream habitat needs of salmonids with other competing uses including the filling of HHD. The timing and rate of spring refill are ultimately a compromise between downstream fishery needs (steelhead spawning and juvenile outmigration) and meeting water storage targets (Northwest Hydraulics Consultants 2005).

In general terms, HHD has three modes of operation in a given year corresponding with seasonal management objectives. In the late fall and winter, HHD temporarily absorbs peak inflows dispersing the water as smaller peaks downstream. In the spring, HHD operates in a dual purpose mode balancing refill of the reservoir for water storage purposes with the ongoing need during spring run-off to protect downstream areas from flooding. Throughout the year HHD passes up to 113 cfs of natural flow for the Tacoma First Diversion Water Right. In the summer and early fall months, HHD augments instream flow to insure minimum instream flow requirements for fish are maintained at Auburn and releases stored water for the Tacoma Second Diversion Water Right. When the fall rains negate the need for continued fish flow augmentation and municipal water storage, the remaining stored water is released over a brief period (week or less) to prepare for flood control.

For much of the year, HHD project outflows tend to mimic the rise and fall of HHD inflows. The largest exception is during spring runoff, when the USACE captures some HHD inflow for storage and passes the remainder as outflow. In years with low spring runoff, the USACE captures a relatively higher percentage of HHD inflows to achieve full refill (49,200 acre-feet) assuming instream flow requirements can be met. In years with high spring runoff, a relatively smaller percentage of inflows are necessary to refill the reservoir. The start and end dates for refill are dependent on water year type, but refill generally starts in late February. The target completion date for achieving full refill is more variable and is tied to hydrologic conditions during a specific year. In most years, full pool is reached in late May to early June but in years with low spring runoff full pool may be targeted for early to mid-May. In years with high spring runoff, USACE may target mid to late June for completing refill (K. Brettmann, email communication). During the fall period, reservoir management is dictated by the timing of fall rains and the commensurate increased inflows. Prior to this period, outflows at HHD generally exceed inflows as stored water is released to improve spawning conditions for chinook salmon.

As the rains begin and inflows increase, the remaining stored water is evacuated over a brief period (generally 10 days or less) to prepare for flood control operations. During the winter season, smaller flood flows are passed through HHD largely mimicking the peak and duration of the inflow flood events. For larger scale flood events, HHD reduces the peak by distributing the outflow over a longer period of time.

Figure 2.2: Howard Hanson Dam pool elevations and storage.



2.1.2 Tacoma Headworks

The Green River is the primary source of drinking water for the City of Tacoma and many of its suburbs. Water is diverted at the Tacoma Headworks at river mile 61. Originally, Tacoma constructed a pipeline with a capacity to divert 65 cfs. The pipeline capacity was expanded to 113 cfs by 1952. Tacoma diverts up to a maximum of 113 cfs of run-of-the-river water under its First Diversion Water Right. The amount diverted depends on water demand. The water is treated and piped to an outside storage facility except when turbidity in the Green River exceeds 5 nephelometric turbidity units (NTU).

In 1985, Tacoma was granted a second diversion water right for an additional 100 cfs. The 1995 Settlement Agreement between Tacoma, the MIT, FOG and other parties established minimum instream flow requirements measured at the USGS Auburn gage (USGS Gage 12113000) for dry, average and wet years. Tacoma first exercised the second diversion water right on January 6, 2006 (Email communication, Greg Volkhardt).

2.2 WHITEWATER OPPORTUNITIES ON THE GREEN RIVER

The Green River is well known among whitewater paddlers in western Washington for its high quality whitewater. In the 1960s Wolf Bauer, an influential member of the Washington Kayak Club, explored the whitewater reaches on the Green River. Wolf Bauer led the initial efforts to protect the Green River Gorge. The state legislature passed a Declaration (RCW 79A.05.705) stating that, "the area, a unique recreational attraction with more than one million seven hundred thousand people living within an hour's driving time, is presently used by hikers, geologists, fishermen, kayakers and canoeists, picnickers and swimmers, and those seeking the solitude offered by this unique area." The legislature further noted that the Green River Gorge should be "acquired and developed as a conservation area to preserve this unique area for the recreational needs of the region."

Today, whitewater boaters recognize four whitewater reaches on the Green River (Figure 2.3). These whitewater reaches include the Headworks (Tacoma Headworks to Kanaskat-Palmer State Park); the Upper Gorge (Kanaskat-Palmer State Park to Franklin Bridge); the Lower Gorge (Franklin Bridge to Flaming Geyser State Park); and the Yo-Yo reach (Flaming Geyser to Whitney Bridge). Paradise Ledge, located at Franklin Bridge, is also well-recognized among the kayaking community as a "play spot".

The whitewater difficulty and length vary between reaches (Table 2.1). Boaters often paddle just a single reach or combine whitewater reaches for a longer outing. Boaters choose the length of the run, in part, based on watercraft, flow, skill level and available time. Yo-Yo is the shortest reach (2.8 miles) and the least difficult (Class II). The Headworks is 3.5 miles in length and rated class II to III in whitewater difficulty. The Lower Gorge is 6.1 miles in length and rated class III in whitewater difficulty. The Upper Gorge is 5.9 miles in length and contains class IV whitewater. This is considered the most difficult of the four study reaches on the Green. Some boaters rate the whitewater difficulty Class V in the Upper Gorge for flows greater than 3500 cfs.

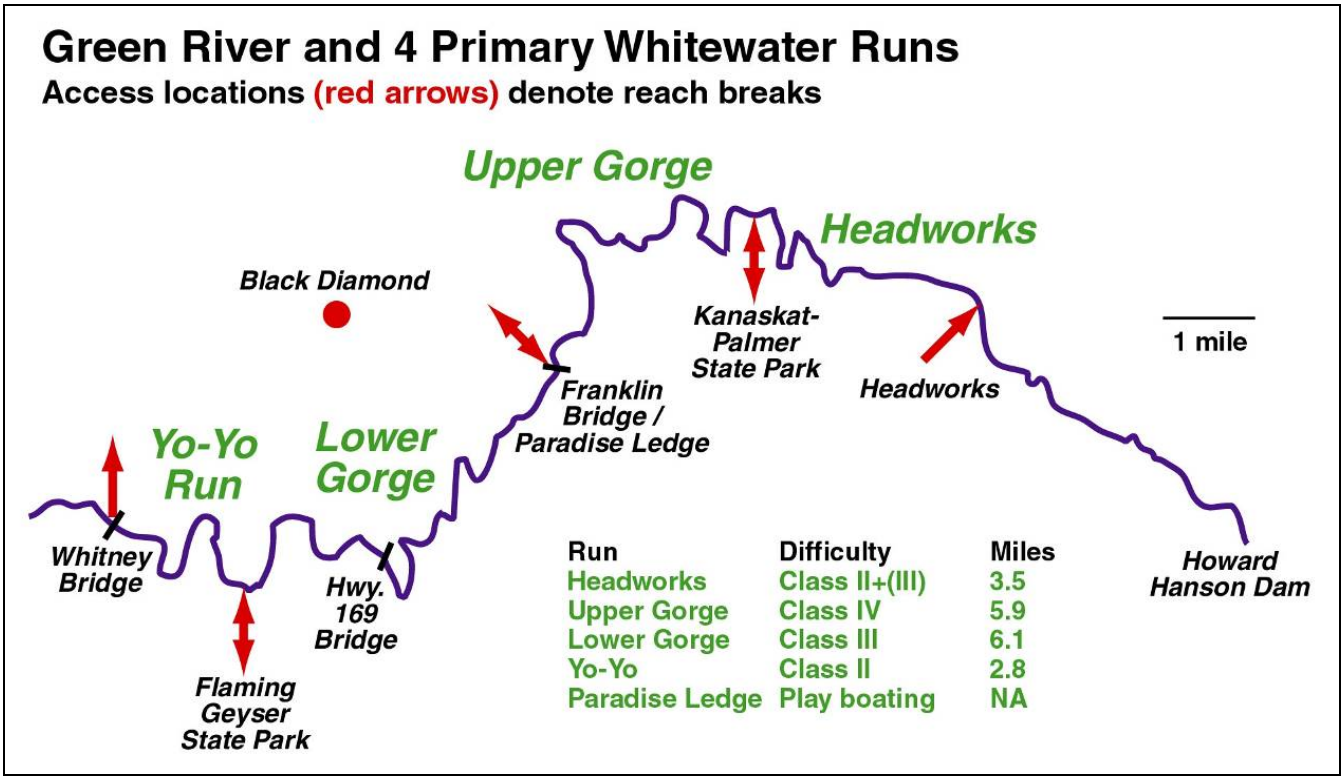
2.3 GREEN RIVER FISH SPECIES AND HABITAT

Over 30 species of fish historically inhabited or currently inhabit the Green River, including up to nine anadromous salmonid species. Currently Chinook, coho, chum, pink and sockeye salmon, steelhead and coastal cutthroat trout are found in portions of the Green River. Native char (bull trout and/or Dolly Varden) enter the lower Green/Duwamish River. Native resident salmonids include rainbow and cutthroat trout and mountain whitefish. Other native fish species include lamprey, minnows, sculpins, and suckers (Kerwin and Nelson 2000). Puget Sound Chinook salmon and bull trout were listed as "Threatened" under the Endangered Species Act (ESA) in 1999. Puget Sound steelhead were listed as "Threatened" in 2007.

The 1999 ESA listing of Chinook salmon and bull trout as threatened species motivated local governments, King County and 15 cities, to take action in the recovery efforts of these species in the Green River watershed. Over the past decade, these local governments have worked closely with state and federal agencies and the MIT conducting studies in the Green/Duwamish and Central Puget Sound watershed (WRIA 9). The Forum of local governments adopted the

"Salmon Habitat Plan, Making our Watershed Fit for a King" (King County 2005). The Salmon Habitat Plan assumes that recovery efforts targeting Chinook and bull trout will also benefit the other native fish populations in the watershed. The Salmon Habitat Plan and associated studies provide an extensive assessment of fish populations and habitat conditions in the Green River watershed. Instream flows upstream of HHD are not regulated. The Tacoma Headworks diversion dam and HHD block the upstream migration of anadromous salmonids to headwater habitats used historically by some species for spawning and rearing. However, efforts are underway by Tacoma Water and the USACE to re-establish salmon and steelhead runs into the upper watershed.

Figure 2.3: Whitewater study reaches on the Green River.



Source--American Whitewater

Table 2.1: Whitewater difficulty and length of the four study reaches.

Run	International Scale of WW Difficulty	Miles	Put-in River Mile
Headworks	Class II+(III)	3.5	RM 61.0
Upper Gorge	Class IV	5.9	RM 57.5
Lower Gorge	Class III	6.1	RM 51.6
Yo-Yo	Class II	2.8	RM 45.5

3. STUDY METHODS

The study combined a field assessment of the whitewater resources on the Green River downstream of HHD with a survey of the boating community to better understand use patterns and flow preferences. Hydrologic data from the United States Geologic Survey (USGS) and the USACE was used for comparative analysis of inflows and outflows from HHD. A synthesis of fisheries flow needs was obtained from recent Green River fisheries studies to assess opportunities and constraints for implementing whitewater flows in the future.

3.1 WHITEWATER FLOW STUDY

The Green River Whitewater Flow Study utilized the Internet to survey whitewater boaters about their flow preferences for four whitewater reaches and a whitewater play spot all located on the Green River. The survey was launched on October 1, 2007 and closed on August 14, 2008. In addition, the study included on-site interviews and focus group sessions with whitewater boaters to supplement the survey data.

Flows in the four whitewater reaches are regulated by operations at HHD and from water withdrawals at Tacoma's Headworks. HHD is managed for seasonal flood control and municipal water storage during the summer. No scheduled or controlled flows were provided as part of this study. Survey participants boated flows resulting from regularly scheduled management operations at HHD.

3.1.1 Reconnaissance

A reconnaissance of the Green River was completed on May 4th and 5th, 2007 to familiarize researchers with the characteristics of the four whitewater reaches and general geography of the Green River basin. The site visit coincided with the 2007 Green River clean-up. The reconnaissance provided first-hand observations of whitewater boaters using the resource in respective reaches. Access points were visited for each reach. In addition, researchers conducted a site visit of the Tacoma Headworks facility and received a tour of the Howard Hanson Dam facilities by the USACE staff.

3.1.2 Internet Survey

The Green River Internet whitewater survey was open to the public and advertised to whitewater boaters through a variety of sources. The Green River Whitewater Flow Study and associated website address for the Internet survey were advertised at whitewater retail stores in the greater Seattle metro area, through local paddling club newsletters, websites, broadcast emails and postings on national paddling websites. AW printed 3X5 cards announcing the survey, study purpose and website address. These postcards were distributed at boating events as well as located at whitewater access points on the Green River. Lastly, the survey was advertised by word of mouth through the paddling community.

The Internet survey was administered using an online service called Survey Monkey (www.surveymonkey.com). The survey questions were designed by OASIS. Survey participants logged into the survey site through a web portal (http://www.greenriverflowstudy.com/). Survey response data was stored online in database format by Survey Monkey. OASIS downloaded the survey data from Survey Monkey at the conclusion of the field study.

The Internet survey was comprised of four sections. Section 1 obtained background information about the participant such as age, gender, watercraft, whitewater skill, reach(s) paddled, date of trip, etc. In section 2, survey participants rated acceptability of whitewater attributes for the single flow they boated on the day of their trip, using a 5-point ordinal scale. The whitewater attributes included boatability, availability of technical boating, availability of whitewater play spots, availability of powerful hydraulics, overall whitewater challenge, safety, aesthetics, length of run, number of portages and overall rating. Section 3 asked participants to identify their preferred flow. In addition, participants rated the acceptability of a range of flows between 500 and 3000 cfs using a 5-point ordinal scale. Participants were also asked to estimate their personal expenditures associated with their trip to the Green River. Data were grouped by boat type for analysis and, where appropriate, by reach boated.

3.1.3 Onsite surveys

Onsite surveys were conducted on April 26 and 27, 2008 to supplement Internet survey data. The onsite surveys were identical to the Internet survey tool. Surveyors targeted boaters at known take-out locations (Headworks—Kanaskat State Park; Upper Gorge—Franklin Bridge; Lower Gorge—Flaming Geyser State Park). The Yo-Yo reach was not surveyed during this site visit due to a lack of paddler vehicles identified at the put-in location on the site visit dates. Boaters typically completed a hardcopy version of the survey immediately. Several boaters requested a copy and mailing address so they could complete the survey later at a more convenient time. A number of completed surveys were received in the mail. Several boaters requested the web address for completing the survey online. All hardcopy surveys were entered electronically by a technician using the Internet-based survey form.

3.1.4 Focus groups

Focus group meetings were conducted on April 25th, 2008 in Seattle and April 26th and 27th at Flaming Geyser State Park. The focus groups sessions were designed to capture qualitative information about flows and their effects on whitewater recreation opportunities. Comments received during focus group sessions were incorporated into the results and discussion.

3.2 HYDROLOGY INVESTIGATION

Two hydrologic data sets were used to analyze the effects of flow regulation on whitewater opportunities in the Green River. Daily average streamflows measured at the USGS Palmer gage (gage no. 12106700) were used to represent regulated flows in the Green River. The Palmer gage is located downstream of the Tacoma Headworks diversion. Accordingly, the

Palmer gage is a measure of regulated flows from HHD as well as water withdrawals from the Tacoma Headworks diversion. For this analysis, Tacoma's water withdrawals were aggregated with the regulated flow effects from HHD. Tacoma's maximum withdrawal under the First Diversion Water Right is 113 cfs but this varies throughout the year depending on demand and turbidity. For example, water demand in 2008 never exceeded 86 cfs under the 1st Diversion Water Right (G. Volkhardt, email communication). The period of record for the Palmer gage was 07/01/1963 to 12/02/2008. The flows at Palmer gage are referred to as the regulated flows throughout this report.

The Palmer gage serves as a representative measure of flow conditions in the four whitewater reaches on the Green River with minimal input from tributaries. Many boaters use this gage to access flow information. Some boaters prefer the USGS gage at Auburn (gage no. 12113000). For the Internet survey boaters were directed to the Palmer gage to record the flow volume during their whitewater trip.

The historic, pre HHD construction flows for the Green River were not available. Alternatively, daily average inflows to the HHD reservoir were used for the comparative analysis. The USACE calculates the daily average inflow based on daily changes in pool elevation combined with the daily mean flow from the Green River below Howard Hanson Dam (USGS gage no. 12105900). The period of record for the HHD inflows was 01/01/1962 to 08/27/2008. The HHD inflows are routinely referred to as the unregulated or natural flows in this report.

The annual average number of minimum acceptable and optimum whitewater days were counted for the water years 1963 through 2008 for unregulated and regulated conditions. A minimum acceptable whitewater day was counted if the daily average flow fell between the median minimum acceptable flow and the 75% optimum flow for a respective watercraft and whitewater reach. An optimum whitewater day was counted if the daily average flow fell between the optimum inter-quartile ranges for a respective watercraft and whitewater reach. Comparative analysis of the unregulated and regulated hydrologic data sets was carried out for several distinct timeframes representative of changes in HHD management practices. These timeframes included the following; the entire period of record (1963-2008); the 1995 Muckleshoot Agreement (1963-1995 versus 1996-2008); and the Additional Water Storage Project (2002, 2007 and 2008 WY's).

3.3 FISHERIES INVESTIGATION

Prior to traveling into the Green River basin, researchers met separately with Tacoma staff, WDFW fisheries staff and MIT fisheries biologists. Gary Sprague, WDFW fisheries biologist, briefed researchers on fisheries issues associated with whitewater flows from HHD. Researchers also met with Holly Coccoli, MIT fisheries biologist, to discuss fisheries issues in the Green River. Ms. Coccoli provided relevant reports for fishery studies conducted by the MIT on the Green River. The Salmon Habitat Plan for WRIA 9 (King County 2005) and the associated studies that serve as the foundation for that plan provided an extensive information on fish populations, life histories and instream flow needs in the Green River watershed.

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4. RESULTS

The study results describe the findings associated with the Whitewater Flow Study, hydrologic analysis and fisheries investigation. Integration of these independent study efforts are covered in the Discussion section.

4.1 COMPOSITION OF SURVEY PARTICIPANTS

The Green River Whitewater Flow Study utilized the Internet to survey whitewater boaters for four whitewater reaches on the Green River. The survey was launched on October 1, 2007 and closed on August 14, 2008.

4.1.1 Number of Survey Responses

Whitewater boaters were encouraged to complete the Internet survey for each day boated on the Green River. A total of 333 responses were received during the survey time frame. A number of responses were from repeat participants. Five of the responses contained insufficient information to analyze the data and were removed from the analysis. As a result, 328 responses were used for this analysis.

4.1.2 Gender

The survey participants consisted of 278 males (85%) and 48 females (15%) (Table 4.1). Participants were 42 years old on average. Males averaged 43 years while females averaged 41. Male participants had 11 years of boating experience on average while females had 8 years of experience.

4.1.3 Whitewater Skill Level

The survey tool allowed respondents to rate their whitewater skill level relative to the International scale of Whitewater Difficulty (American Whitewater Affiliation 1959). The majority of male participants rated themselves as advanced, class IV boaters (48%) or expert, class V boaters (28%). In contrast, most female boaters were split between intermediate, class III (48%) and advanced, class IV (42%). Novice, class II boaters, comprised 3% of the participants overall and expert, class V boaters, comprised 24% overall.

4.1.4 Watercraft

The survey tool allowed participants to select from six watercraft types. The majority of the respondents, 224 (69%), used hardshell kayaks (referred to as kayaks throughout the report) on the Green River (Table 4.2). Inflatable kayaks (referred to as IKs) were a distant second comprising 36 survey responses (11%). A total of 32 (10%) surveys were completed by individuals using catarafts. There were 21 (6%) surveys for self-bailing rafts and 4 (1%) surveys

for wrap floor rafts. Open and closed-deck canoe survey responses were 6 (2%) and 4 (1%) respectively.

Table 4.1: Summary of survey participants.

Gender	Count		Age		Years Boating		Skill Level			
	No.	%	Average	Median	Average	Median	Novice Class II	Intermediate Class III	Advanced Class IV	Expert Class V
Female	48	15%	41	38	8	5	6%	48%	42%	4%
Male	278	85%	43	43	11	10	3%	22%	48%	27%
Total	326		42	42	10	8	3%	27%	47%	23%

Due to the small number of participants using cataraft, self-bailers and wrap-floor rafts, responses to flow preference questions were pooled into a single group labeled cataraft and raft for reporting purposes (Cat/Raft in figures). Similarly, the small data set for open and closed-deck canoes warranted combining the survey responses into a single group labeled canoes for flow preference analysis. Data analysis of flow preferences for each of these individual watercraft indicated similar flow preferences within their respective groups.

For results not dealing with flow preferences, results were often reported for distinct (non-pooled) watercraft types. The small sample size of some boat types (e.g., closed-deck canoes) should be considered when interpreting those results.

Table 4.2: Responses by watercraft type.

Gender	Kayak				Canoe				Raft					
	Hardshell		IK		Open		Closed		Cataraft		Self Bailer		Wrap Floor	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Female	32	67%	4	8%	3	6%	0	0%	1	2%	7	15%	1	2%
Male	192	69%	32	12%	3	1%	4	1%	31	11%	14	5%	3	1%
Total	224	69%	36	11%	6	2%	4	1%	32	10%	21	6%	4	1%

4.1.5 Frequency of Use

Whitewater use varied during the 320 day study period. Flow fluctuations below HHD had a substantial influence on the number of whitewater trips for a given date (Figure 4.1). Overall, the frequency of whitewater trips increased substantially as instream flow increased in volume particularly when flows were 1000 cfs or greater. In fact, 69% of the survey participants

indicated instream flows were 1000 cfs or greater on the day they boated compared to 31% that boated flows less than 1000 cfs.

The frequency of use for respective watercraft types was calculated for four flow ranges boated: <1000 cfs, 1000 to 1500 cfs, 1500 to 3000 cfs and > 3000 cfs (Figure 4.2). For the four watercraft types, use patterns varied with respect to flow range. For kayakers, 36% of survey respondents boated flows less than 1000 cfs, 42% boated flows between 1000 and 1500 cfs, 17% boated flows between 1500 and 3000 cfs and 4% boated flows greater than 3000 cfs. For IKs, 30% boated flows less than 1000 cfs compared to 49% boating flows between 1000 and 1500 cfs, 19% boating flows between 1500 and 3000 cfs and 3% boating flows greater than 3000 cfs. Users of catarafts and rafts boated higher flows, with 7% boating flows less than 1000 cfs compared to 46% boating flows between 1000 and 1500 cfs, 39% boating flows between 1500 and 3000 cfs and 8% boating flows greater than 3000 cfs. The majority (60%) of canoeists took advantage of flow opportunities less than 1000 cfs, followed by 20% each for flows between 1000 to 1500 cfs and 1500 cfs to 3000 cfs respectively; no survey responses were submitted by canoeists boating flows greater than 3000 cfs.

The Green River was closed for 17 days from May 17th to June 3rd 2008 as a result of high flows and a fatality on the river. During this period daily average discharge ranged from a peak of 5280 cfs on May 17th to 1630 cfs on June 3rd, 2008. For 13 days of the closure the flow was greater than 3000 cfs. Therefore, the actual frequency of use that would have occurred at flows greater than 3000 cfs is unknown due to the temporary closure. Furthermore, the frequency of trips for individual watercraft types decreased substantially after the river was re-opened for the remainder of the study period despite the fact that flows were in a suitable range. This decrease in frequency is likely a combination of uncertainty regarding the regulatory status of the river (open versus closed), respect for the whitewater difficulty and/or respect for the fatality.

The frequency of whitewater use increased substantially on weekends compared to weekdays (Figure 4.3). For the study period, 70% of the use occurred on weekends compared to 30% on weekdays. For kayak trips, 35% and 33% occurred on Saturday and Sunday respectively. For IK trips, 53% occurred on Saturday and 25% on Sunday. Canoe trips occurred 30% on Saturday and 70% on Sunday. For cataraft and raft trips, 21% occurred on Friday, 43% on Saturday and 23% on Sunday. Kayaks were the predominant use during the week but accounted for less than 8% of total kayak use for any day of the week. No canoe trips were reported on weekdays.

By July 13th, 2008 flows at Palmer gage dropped below 1000 cfs. On July 19th flows were below minimum acceptable. The survey was closed to the public on August 14th, 2008.

Figure 4.1: Use frequency by watercraft relative to average daily discharge.

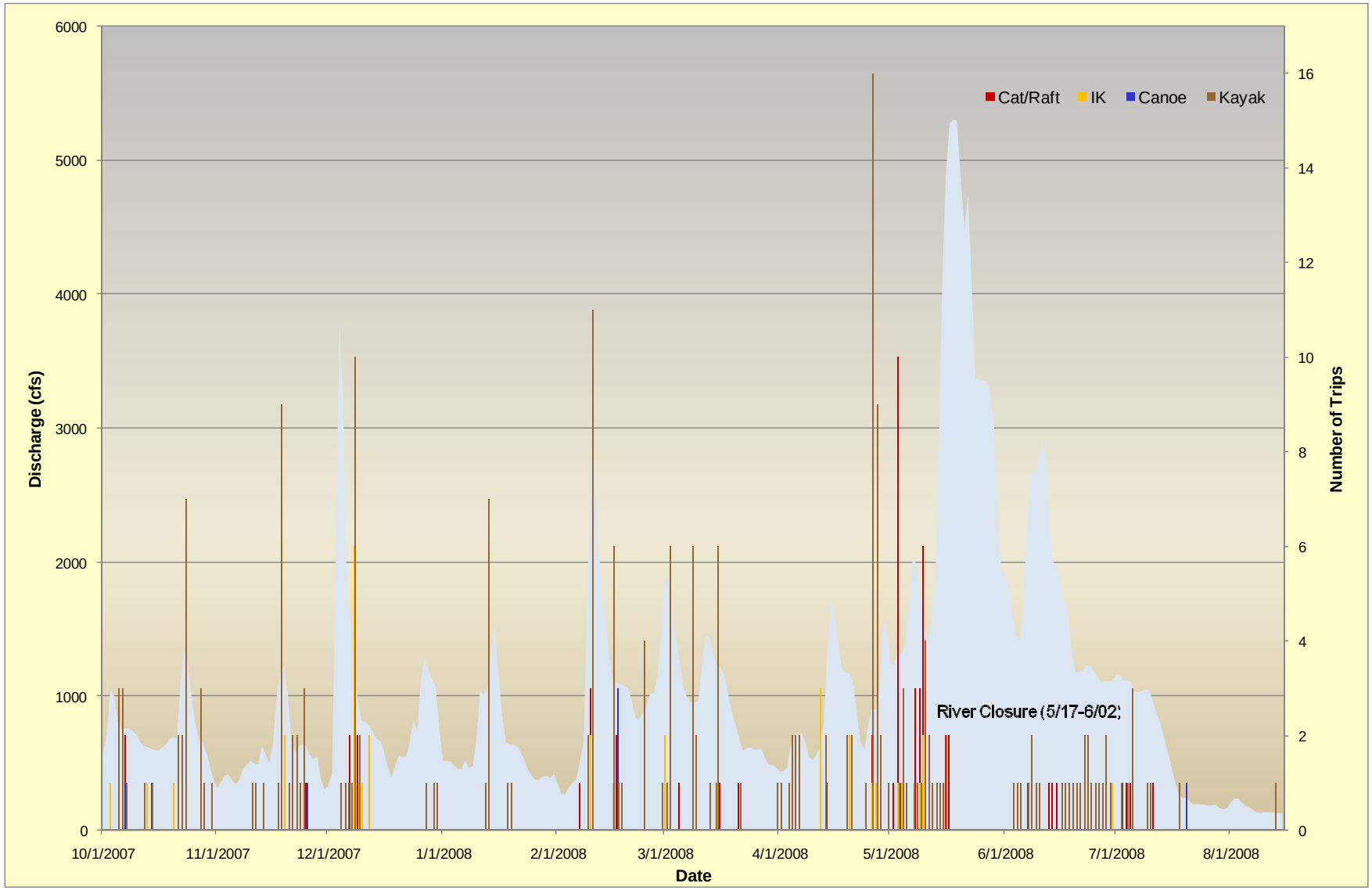


Figure 4.2: Frequency of trips for four flow range categories.

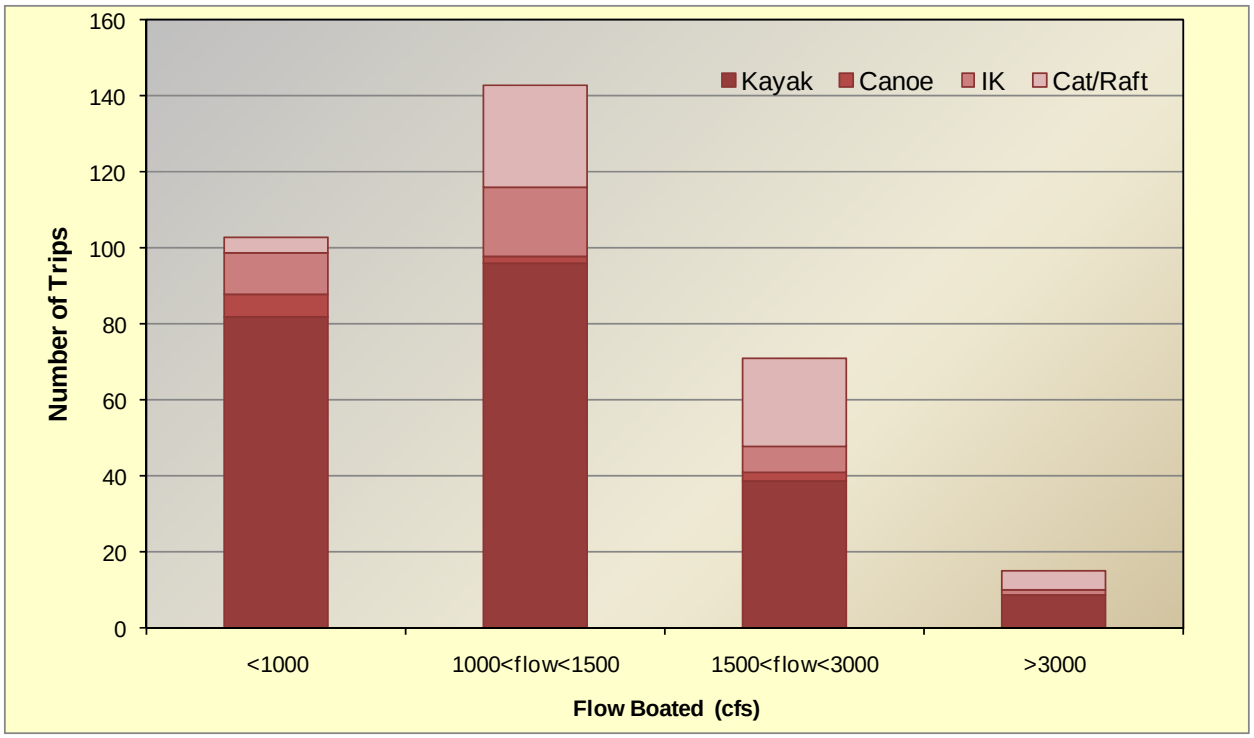
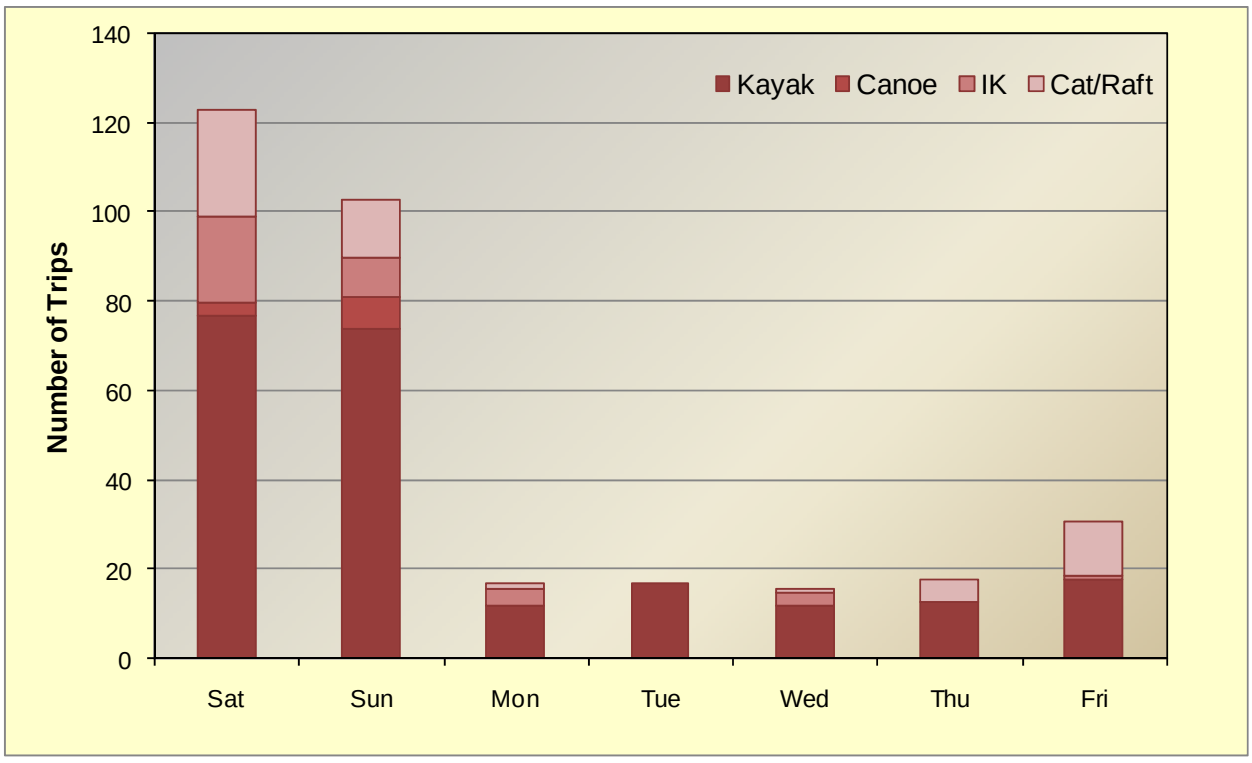


Figure 4.3: Frequency of trips relative to day of the week.



4.1.6 Whitewater Reach Preferences

Four distinct whitewater reaches plus a non-destination play spot are recognized by the boating community on the Green River. The survey responses grouped by whitewater reach for respective watercraft types serve as a use frequency measure of each reach (Table 4.3). Use patterns were influenced by respondent skill level, flows and watercraft type. Additional variables not measured in this survey such as daylight length, launch time and weather likely had an influence as well. Table 4.3 is an indirect ranking of the popularity of the four whitewater reaches individually and in combination for respective whitewater users grouped by watercraft types.

For kayakers (n=224), the Upper Gorge was boated the most by survey participants (44%), followed by the Lower Gorge (24%), the Headworks (20%) and the Yo-Yo reach (5%) (Figure 4.4). Only 2 kayakers provided a survey response for Paradise Ledge. In contrast, IK users (n=36) responding to the survey were more likely to be on the Headworks (28%) followed by the Upper Gorge (8%) and Yo-Yo (6%). Open canoeists (n=6) also favored the Headworks reach (67%) followed by the Upper Gorge and Lower Gorge (17% each respectively). Close-deck canoeists (n=4) on the other hand, preferred the Lower Gorge over the Headworks reach (75% and 25% respectively). For survey participants using catarafts (n=32), the Headworks was the only reach boated without linking other reaches (9%). For self-bailing rafts (n=21), the Upper Gorge was the only reach boated in isolation (19%). No survey responses were received for catarafts and rafts on the Yo-Yo reach.

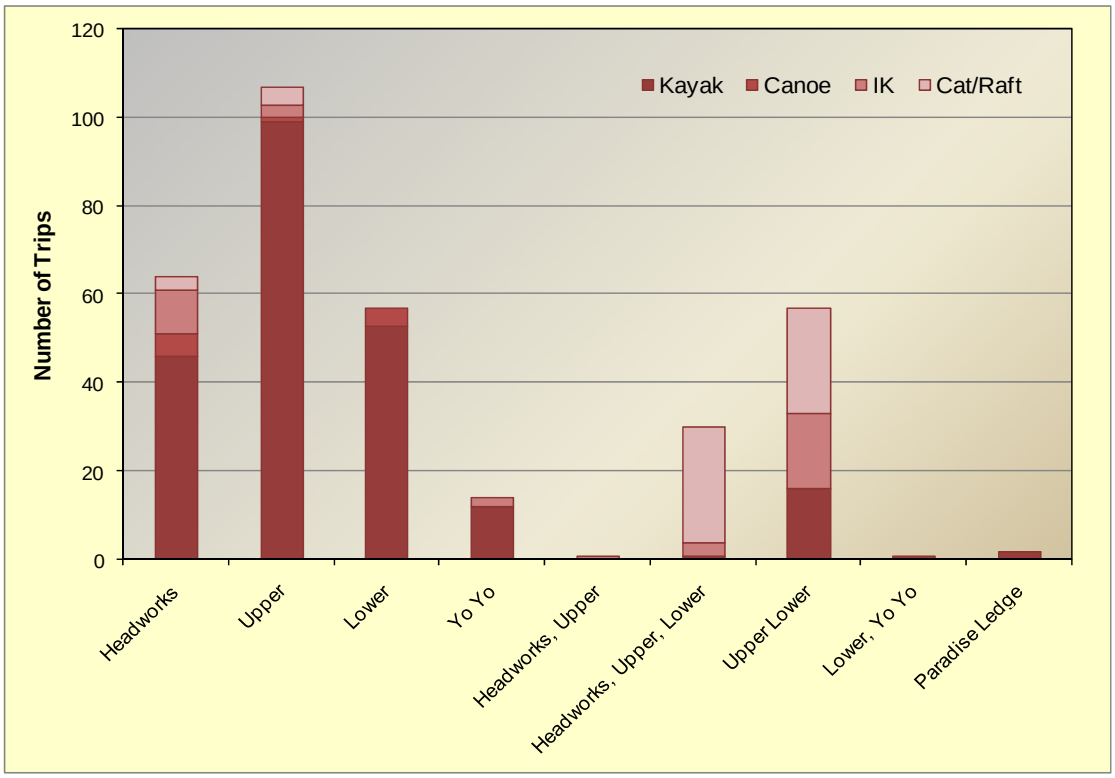
A number of respondents combined several reaches into a single trip to increase the length of the run and/or utilize easier access for their respective watercraft. This was particularly evident for inflatable watercraft especially catarafts and rafts which require more effort to inflate and transport to the water. For the 32 survey participants using catarafts, 66% used the Headworks put-in and the Flaming Geyser take-out combining three whitewater reaches into a single run (Headworks, Upper Gorge and Lower Gorge). Another 25% of the participants in catarafts combined the Upper and Lower Gorge into a single run. For survey participants in self-bailing rafts (n=21), 57% combined the Upper and Lower Gorge into a single run while another 24% started at the Headworks and exited at Flaming Geyser combining three whitewater reaches. For survey participants in wrap floor rafts (n=4), 100% combined the Upper and Lower Gorge into a single run.

In contrast, boaters in hardshell kayaks were less likely to combine reaches into a single trip. Linking the Upper and Lower Gorge was the most popular combination for hardshell kayakers (7% of total hardshell kayakers). Inflatable kayakers, on the other hand, preferred combining the Upper and Lower Gorge into a single run (47%).

Table 4.3: Use patterns by watercraft and reach.

Watercraft (No. of responses)	Reach Boated	Reach				
		Headworks	Upper Gorge	Lower Gorge	Yo Yo	Paradise Ledge
Hardshell kayak (224)	Single Reach	20%	44%	24%	5%	0.9%
	Linked Reaches	0.4%				
			7%			
				0.4%		
Inflatable kayak (36)	Single Reach	28%	8%	-	6%	-
	Linked Reaches	3%				
		8%				
			47%			
Open Canoe (6)	Single Reach	67%	17%	17%	-	-
Closed Canoe (4)	Single Reach	25%	-	75%	-	-
Cataraft (32)	Single Reach	9%	-	-	-	-
	Linked Reaches	66%				
			25%			
Self Bailing Raft (21)	Single Reach	-	19%	-	-	-
	Linked Reaches	24%				
			57%			
Wrap Floor Raft (4)	Single Reach	-	-	-	-	-
	Linked Reaches		100%			

Figure 4.4: Use patterns by watercraft for respective reaches on the Green River.



4.2 RECREATION INSTREAM FLOW PREFERENCES

Flow preference curves were developed from survey responses rating the quality of 15 flows ranging from 500 cfs to flows greater than 3000 cfs. Survey participants rated the quality of the flows using a 5 point ordinal scale to score the acceptability of each flow. Flow increments were 100 cfs for flows between 500 and 1500 cfs, 250 cfs increments for flows between 1500 and 2000 cfs, and 500 cfs increments for flows between 2000 and 3000 cfs. This range of flows was thought to adequately bracket the minimum acceptable and optimum whitewater flows for the Green River based on the reconnaissance site visit and interviews with boaters knowledgeable of the Green River whitewater opportunities. Furthermore, this brackets the critical range of flows over which operational changes have the potential to alter the quality of boating opportunities through flow adjustments.

Flow preference curves were developed for four boat types (kayak, IK, canoe, and cataraft/raft) and four whitewater reaches (Headworks, Upper Gorge, Lower Gorge, and Yo-Yo) and the play area at Paradise Ledge. A substantial number of survey participants combined two or more whitewater reaches into a single outing. This resulted in three additional reaches for development of flow preference curves (Headworks and Upper Gorge combined; Headworks, Upper and Lower Gorge combined; and the Upper and Lower Gorge combined). Flow preference curves were not developed for unique reach combinations with only a single survey response or boat type.

The survey also requested participants to identify preferred flows for seven specific flow questions:

1. *From a recreational perspective what is the minimum acceptable flow for this run? The minimum acceptable flow is the lowest flow you would return to boat, not the minimum flow necessary to navigate.*

2. *What is the optimum flow for this run?*

3. *Many people are interested in a "standard" whitewater trip at medium flows. Think of this standard trip for your craft. What is the best or optimal flow for a "standard" trip?*

4. *Some people are interested in taking trips at higher flows for increased whitewater challenge. Think of this "high challenge" trip in your craft. What is the best or optimal flow for a "high challenge" trip?*

5. *Some people are interested in park and play paddling at Paradise Ledge. What is the best or optimal flow for "Paradise Ledge park and play"?*

6. *What is the highest safe flow for your craft and skill level?*

7. *If one flow for boating was released, what flow would you prefer?*

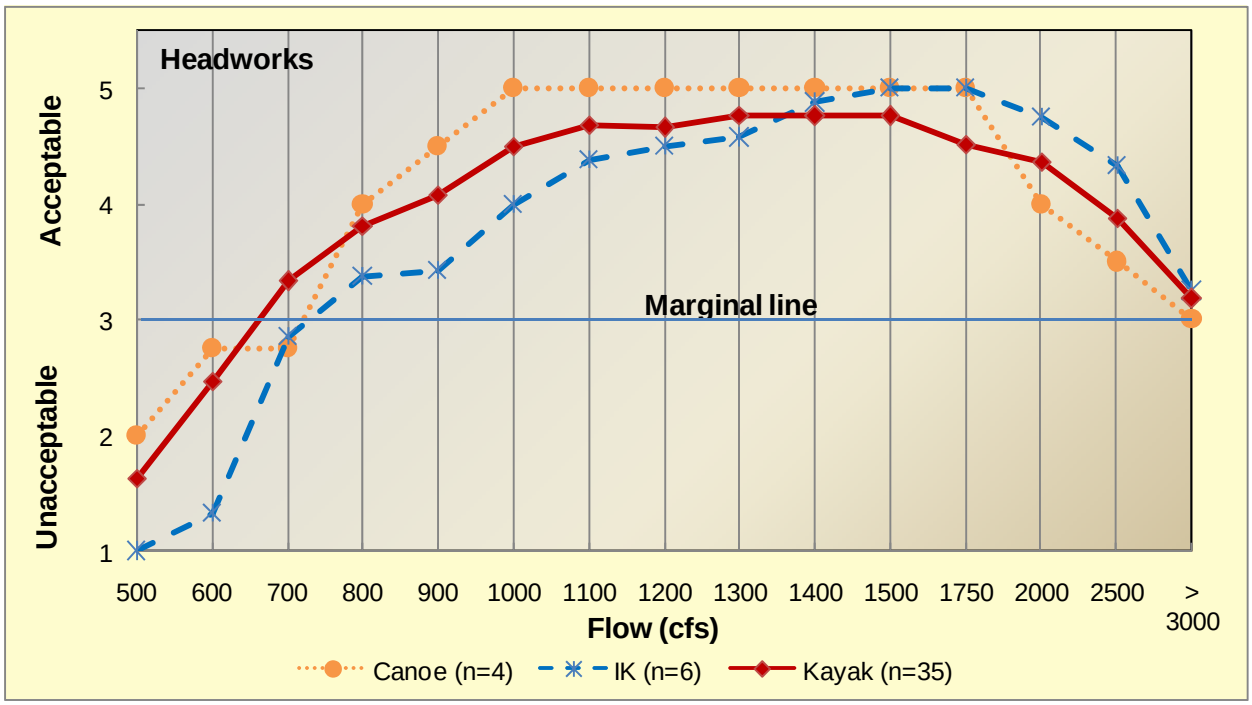
Responses to these questions were organized by reach (or combination as described above) and boat type. Results were graphed in box-whisker plots identifying the median, mean, inter-quartiles and range of responses (means are identified by a transparent red diamond in the graphs). For simplicity, the medians are used to summarize central tendencies in the data and the inter-quartile ranges are used to describe variation.

The highest safe flow referenced in question 6 is unique for each individual based on their skill level and watercraft. The question helps researchers better understand the range of flows falling outside the optimum flow preferences. Some individuals specifically seek out whitewater challenges associated with high flows. These individuals have the skills and watercraft to boat these high flows safely. Data analysis and summaries for question 6 should not be misinterpreted as a threshold for river closures. River safety is dependent on skill level in combination with watercraft and familiarity with a given whitewater reach.

4.2.1 Headworks Reach

On the Headworks reach, survey responses were received for canoes, IKs and kayaks. Catarafts and rafts did not boat the Headworks reach in isolation. Flows less than 650 cfs were rated unacceptable for kayakers whereas canoe and IK users considered flows less than 725 cfs to be unacceptable (Figure 4.5). Totally acceptable flows for canoes ranged from 1000 to 1750 cfs. Totally acceptable flows for IKs ranged from 1500 to 1750 cfs. For kayaks, flows ranging between 1300 and 1500 cfs had the highest average acceptability rating, 4.8. The acceptability rating declined for all three watercraft for flows greater than 1750 cfs and reached a marginal rating for flows greater than 3000 cfs.

Figure 4.5: Flow preference curve for the Headworks reach.



Minimum Acceptable Flow: Survey participants were asked to identify the lowest flow they would return to boat. For research and management purposes, the minimum acceptable flow is defined as the lowest flow that 50% of the survey respondents would return to boat and therefore, the median value of all responses for respective watercraft defines the minimum acceptable flow. The median minimum acceptable flow for canoes, kayaks and IKs was 600, 700 and 750 cfs respectively (Figure 4.6). These flows provide a marginal recreational opportunity for the Headworks reach for respective watercraft.

Optimum Flow: The median for optimum flow for canoes, kayaks and IKs was 1500, 1200 and 1900 respectively. The inter-quartile range for optimum flows was 1000 to 1500 cfs (canoes), 900 to 1500 cfs (kayaks) and 1500 to 2100 cfs (IKs). Flows of 1500 cfs fall within the optimum range for all three watercraft. Flows in this range provide a high quality recreation experience for the respective watercraft in the Headworks reach.

Standard Trip: The median flow for the standard trip for canoes, kayaks and IKs was 1000, 1200 and 1500 cfs respectively.

High Challenge Trip: The median flow for a high challenge trip for canoes, kayaks and IKs was 2500 cfs for all three watercraft types.

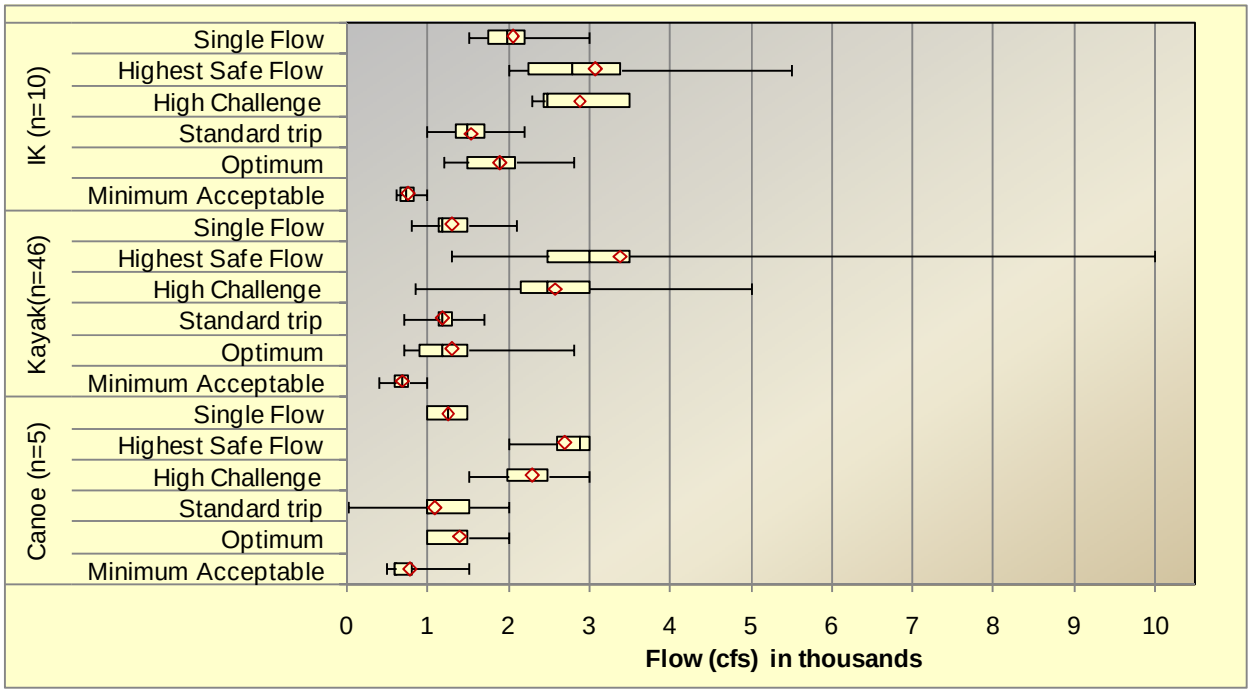
Highest Safe Flow: The median for the highest safe flow for canoes, kayaks and IKs was 2900, 3000 and 2800 cfs respectively.

Single Boating Flow: The median for a single boating flow (i.e., Flow Preference Question #7) for canoes, kayaks and IKs was 1250, 1200 and 2000 respectively. The inter-quartile range was 1000 to 1500 cfs, 1150 to 1500 cfs, and 1750 to 2200 cfs respectively.

The Headworks reach appeals to intermediate canoeists, kayakers and IK users largely due to the Class III difficulty, short shuttle, short distance to the river at access points and favorable hydraulic features such as well-defined rapids, eddylines and surf waves for improving skills. Because of these features the Headworks serves as a good reach for instruction. The short length (2.9 miles) discourages use by catarafts and rafts unless combined with a downstream reach.

Flow preferences overlapped for the most part for canoes, kayaks and IKs in the Headworks reach with the exception that IK users preferred slightly higher flows for all categories. This preference for higher flows was evident in the comparative evaluation of fifteen flows and responses to specific flow questions. The minimum acceptable flow suitable for all three watercraft in the Headworks was 750 cfs, the median minimum acceptable flow for IK users and highest median for all three watercraft. A 1500 cfs flow falls within the inter-quartile range for optimum flow of all three watercraft. Flows less than 1500 cfs fall below the 25% quartile for optimum flow for IK users, while flows greater than 1500 cfs exceed the 75% quartile for optimum flow for canoes and kayaks in the Headworks reach.

Figure 4.6: Median, mean, inter-quartile and range of responses for the Headworks reach.



4.2.2 Green River Gorge Reaches

The Green River Gorge contains the cornerstone of whitewater opportunities on the Green River for the paddling community. Two whitewater reaches are used on the Green River Gorge; the Upper Gorge (5.9 miles, Class IV) and Lower Gorge (6.1 miles, Class III). Survey participants boated these reaches independently and in combination. Accordingly, flow preferences were analyzed for each reach independently and for responses encompassing both reaches.

4.2.2.1 Upper Gorge

On the Upper Gorge reach, multiple survey responses were received for IK and kayaks as well as catarafts and rafts. A single survey response was submitted for canoes and, therefore, excluded from the descriptive statistical analysis of flow preferences. For kayakers, flows less than 975 cfs were rated unacceptable whereas IK users and cataraft/raft users considered flows less than 1125 and 1100 cfs respectively to be unacceptable (Figure 4.7). IK and cataraft/raft users also rated 1500 cfs poorly but flows between 1100 and 1500 cfs as moderately acceptable. Both groups rated flows of 2500 cfs as the most acceptable.

Minimum Acceptable Flow: The median minimum acceptable flow for kayaks, IKs and catarafts/rafts was 1100, 1100 and 1400 cfs respectively (Figure 4.8). These flows provide a marginal recreational opportunity for the Upper Gorge for the respective watercraft. The minimum acceptable flows for kayaks and IKs in the Upper Gorge were substantially greater than minimum acceptable flows identified for the same watercraft in the Headworks reach.

Optimum Flow: The median optimum flow for kayaks, IKs and catarafts/rafts was 1850, 2500 and 2500 cfs respectively. The inter-quartile range for optimum flows was 1400 to 3000 cfs (kayaks), 2500 to 2950 cfs (IKs) and 2150 to 2750 cfs (catarafts/rafts). Flows of 2500 to 2750 cfs fall within the inter-quartile range for all three watercraft but are substantially greater than the median optimum identified for kayaks.

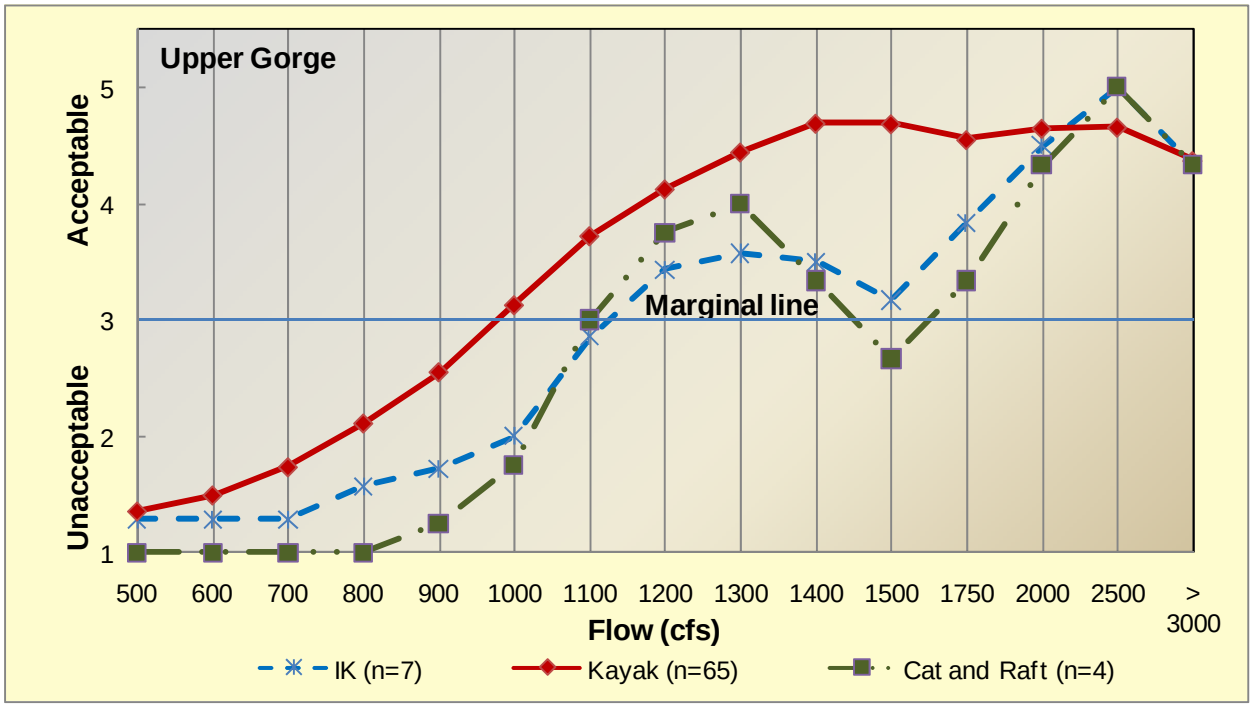
Standard Trip: The median flow for the standard trip for kayaks, IKs and catarafts/rafts was 1500, 2200 and 2150 cfs respectively.

High Challenge Trip: The median flow for a high challenge trip for kayaks, IKs and catarafts/rafts was 3500 3400 and 3000 cfs respectively.

Highest Safe Flow: The median for the highest safe flow for kayaks, IKs and catarafts/rafts was 4000, 4000 and 3000 respectively.

Single Boating Flow: The median for a single boating flow for kayaks, IKs and catarafts/rafts was 1700, 2500 and 2500 cfs respectively. The inter-quartile range for each watercraft category was 1400 to 2850 cfs, 2250 to 2950 cfs, and 2150 to 2750 cfs respectively.

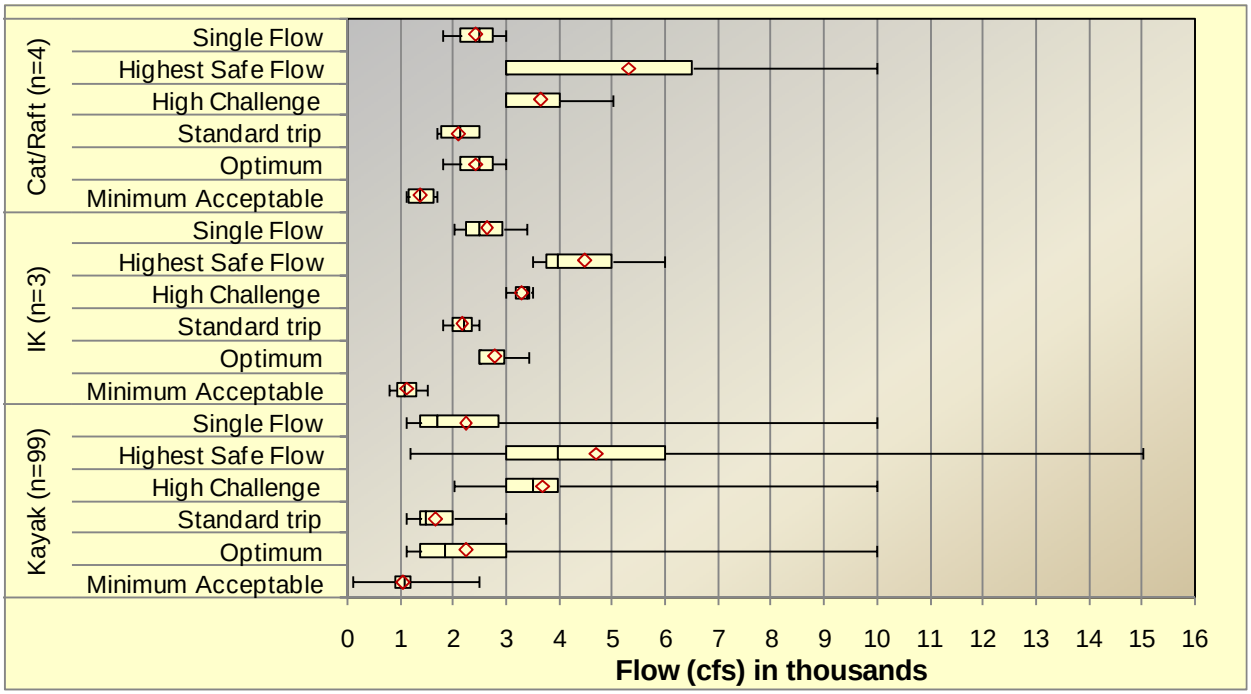
Figure 4.7: Flow preference curve for the Upper Gorge.



The Upper Gorge appeals to advanced and expert kayak and IK users largely due to the Class IV difficulty, challenging rapids and aesthetics. Boating only the Upper Gorge requires carrying boats up a steep undeveloped trail directly downstream from Franklin Bridge. The difficult take-out for the Upper Gorge discourages cataraft/raft users. The trail from the river to the parking area is steep and narrow. Catarafts and rafts weigh 200 to 300 lbs. This weight, combined with

the width and bulkiness makes it difficult to carry a cataraft or raft up this steep trail. Consequently, cataraft/raft users prefer, instead, to combine the Upper Gorge with the Lower Gorge for the easier access at both the put-in and take-out.

Figure 4.8: Median, mean, inter-quartile and range of responses for the Upper Gorge.



Minimum acceptable and optimum flow preferences for kayaks and IKs in the Upper Gorge were substantially greater than preferences for boaters in the same type of watercraft using the Headworks Reach. These differences in flow preferences were likely a reflection of the whitewater opportunities in each reach (Headworks Class III, Upper Gorge Class IV) and the user groups attracted to the respective reaches (Headworks intermediate paddlers, Upper Gorge advanced paddlers). Advanced paddlers tend to prefer higher flows.

The challenge of identifying a single flow that falls within the range of flow preferences for all watercraft in multiple reaches is evident in the Headworks and Upper Gorge. For example, while 1500 cfs provides an optimum flow opportunity for canoes, kayaks and IKs on the Headworks reach, it is at the lower end of the optimum inter-quartile range for kayaks and well below optimum for catarafts and rafts as well as IKs on the Upper Gorge. Providing a range of flows between the minimum acceptable and optimum for all watercraft and reaches creates a broad spectrum of opportunities on the Green. Kayakers exhibit the highest frequency of use on the Green River. Flows targeting optimum for kayakers in the Upper Gorge will likely result in the highest number of whitewater users. With that said, kayakers can mobilize on short notice to changing flows whereas catarafts and rafts require more preparation. As a result, the use numbers in this study might be a reflection of flow predictability or lack thereof on the Green and the unintended influence on user groups. Kayakers have the ability to be more opportunistic to flow changes on short notice. Cataraft/raft users, on the other hand, require

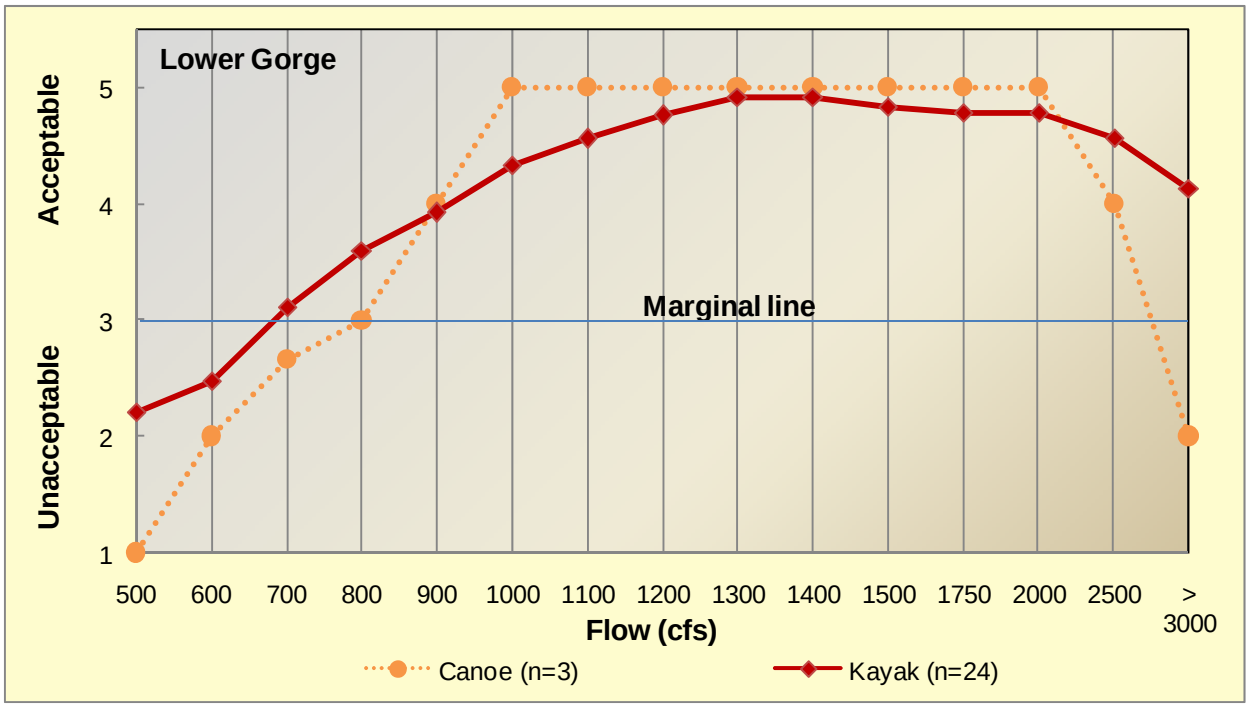
more lead time to prepare equipment for an outing. Consequently, these users require more dependable flow information. Scheduling flows in a predictable manner might increase cataraft and raft use above frequencies measured in this survey effort.

4.2.2.2 Lower Gorge

On the Lower Gorge reach, survey responses were limited to canoes and kayaks. For canoes, flows less than 800 cfs were rated unacceptable whereas kayakers considered flows less than 680 cfs to be unacceptable (Figure 4.9). Canoe users identified flows between 1000 and 2000 cfs as the most acceptable for the Lower Gorge. Kayakers found flows from 1200 to 2000 the most acceptable.

Minimum Acceptable Flow: The median minimum acceptable flow for canoes and kayaks was 700 and 800 cfs respectively (Figure 4.10). These flows provide a marginal recreational opportunity for the Lower Gorge for the respective watercraft. The minimum acceptable flows for kayaks in the Lower Gorge was substantially lower than minimum acceptable flows identified for kayaks in the Upper Gorge.

Figure 4.9: Flow preference curve for the Lower Gorge.



Optimum Flow: The median optimum flow for canoes and kayaks was 1400 and 1200 cfs respectively. The inter-quartile range for optimum flows was 1200 to 1700 cfs (canoes) and 1000 to 1450 cfs (kayaks). Flows of 1200 to 1450 cfs overlap the optimum range for both watercraft.

Standard Trip: The median flow for the standard trip for canoes and kayaks was 1400 and 1200 cfs respectively.

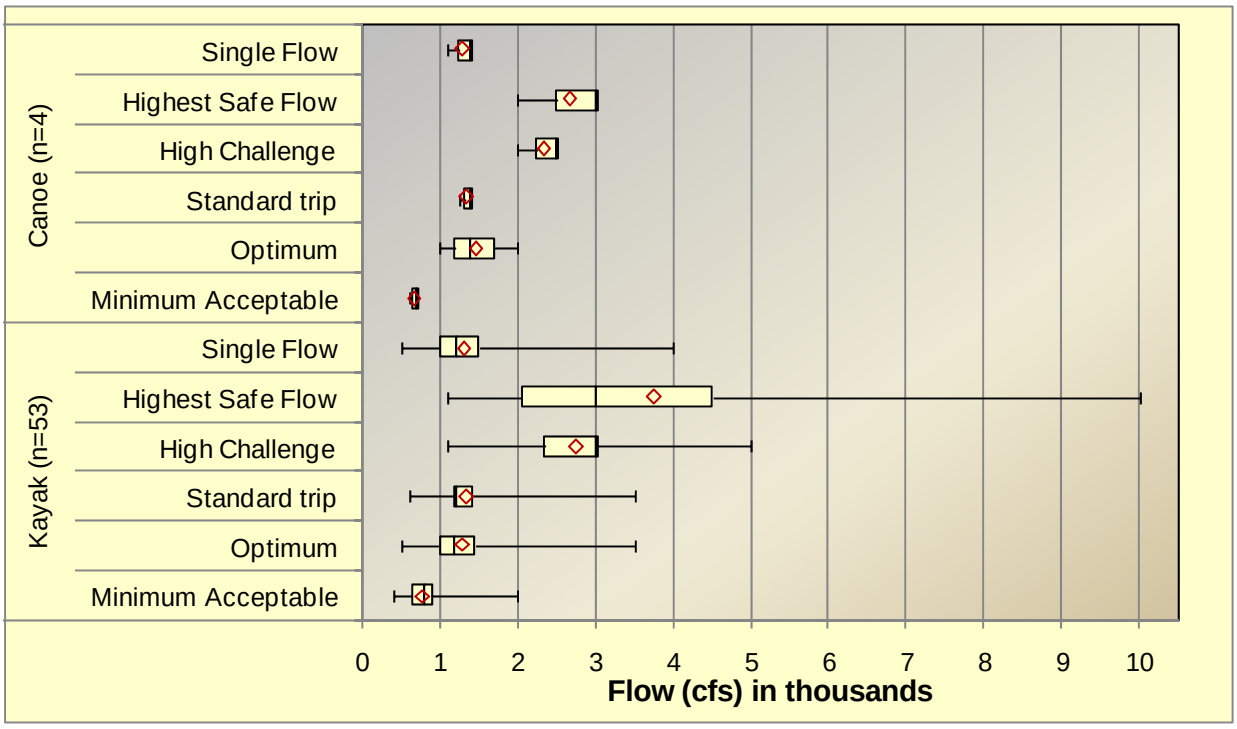
High Challenge Trip: The median flow for a high challenge trip for canoes and kayaks was 2500 and 3000 cfs respectively.

Highest Safe Flow: The median for the highest safe flow for canoes and kayaks was 3000 cfs respectively.

Single Boating Flow: The median for a single boating flow for kayaks and canoes was 1225 and 1400 cfs respectively. The inter-quartile range for each watercraft was 1000 to 1500 cfs and 1250 to 1400 cfs respectively.

The Lower Gorge provides an intermediate skill level boating opportunity. During focus group sessions, advanced boaters indicated they will often paddle the Lower Gorge when flows are around 700 to 800 cfs because the reach provides technical boating opportunities and a whitewater play spot available only at these flows plus the aesthetics of paddling in the Green River Gorge. Furthermore, flows in the 700 to 800 cfs range are well below the minimum acceptable flows for the Upper Gorge causing higher skilled boaters looking for an opportunity to gravitate to the Lower Gorge. Boaters also commented that the Lower Gorge serves as a stepping stone for intermediate paddlers wanting to improve their skills and build confidence for the Upper Gorge.

Figure 4.10: Median, mean, inter-quartile and range of responses for the Lower Gorge.



4.2.2.3 Paradise Ledge

Paradise Ledge is a whitewater play spot frequented by whitewater kayakers. Paradise Ledge is near Franklin Bridge and marks the dividing point between the Upper and Lower Gorge on the Green River. The Washington Kayak Club has reached an agreement with a private landowner to allow vehicle parking on the bench above the river adjacent to Franklin Bridge. Boaters use a steep trail on the north side of the river (river right bank) to access the river.

Survey responses for Paradise Ledge participants were limited to two individuals but only one of these individuals completed the flow preference portion of the survey. Consequently, no descriptive statistics were calculated for Paradise Ledge. The single response identified 1000 cfs as the minimum acceptable flow and 1450 cfs as the optimum flow for "park and play" at Paradise Ledge. In focus group sessions kayakers identified optimum flows as 1400 to 1500 cfs. At flows less than 1200 cfs, Paradise Ledge becomes less of a play feature and more difficult to exit but remains navigable for boaters running the river into the Lower Gorge section.

Paradise ledge is used primarily by kayakers as a play spot. It's uncertain why there was a lack of responses specific to Paradise Ledge. Kayakers specifically requested Paradise Ledge be listed as a separate destination in the whitewater survey. Boaters lacking time for a full day of paddling are known to focus on Paradise Ledge opportunities rather than one of the full river reaches. Furthermore, some kayakers focus specifically on whitewater play and avoid river running as much as possible. The private access point, although steep, was open during the survey period. In fact, kayakers were observed using the steep trail during both site visits (Photo 4.1).

Photo 4.1: Paradise Ledge trail frequently used by kayakers for ingress and egress.

4.2.3 Yo-Yo Reach

On the Yo-Yo reach, survey responses were limited to kayaks and IKs. For kayaks, flows less than 700 cfs were rated unacceptable whereas IK users considered flows less than 1000 cfs to be unacceptable (Figure 4.11). Acceptable flows for kayakers ranged between 1500 and 1750 cfs. IK paddlers found flows from 1750 to 2500 cfs the most acceptable.

Minimum Acceptable Flow: The median minimum acceptable flow for kayaks and IKs was 800 and 850 cfs respectively (Figure 4.12). These flows provide a marginal recreational opportunity for the Yo-Yo reach for the respective watercraft. The minimum acceptable flows for kayaks in the Yo-Yo reach were identical to the Lower Gorge.

Optimum Flow: The median optimum flow for kayaks and IKs was 1500 and 2000 cfs respectively. The inter-quartile range for optimum flows was 1300 to 2150 cfs for kayaks. There was no difference in optimum flows between the two IK responses.

Standard Trip: The median flow for the standard trip for kayaks and IKs was 1450 and 1500 cfs respectively.

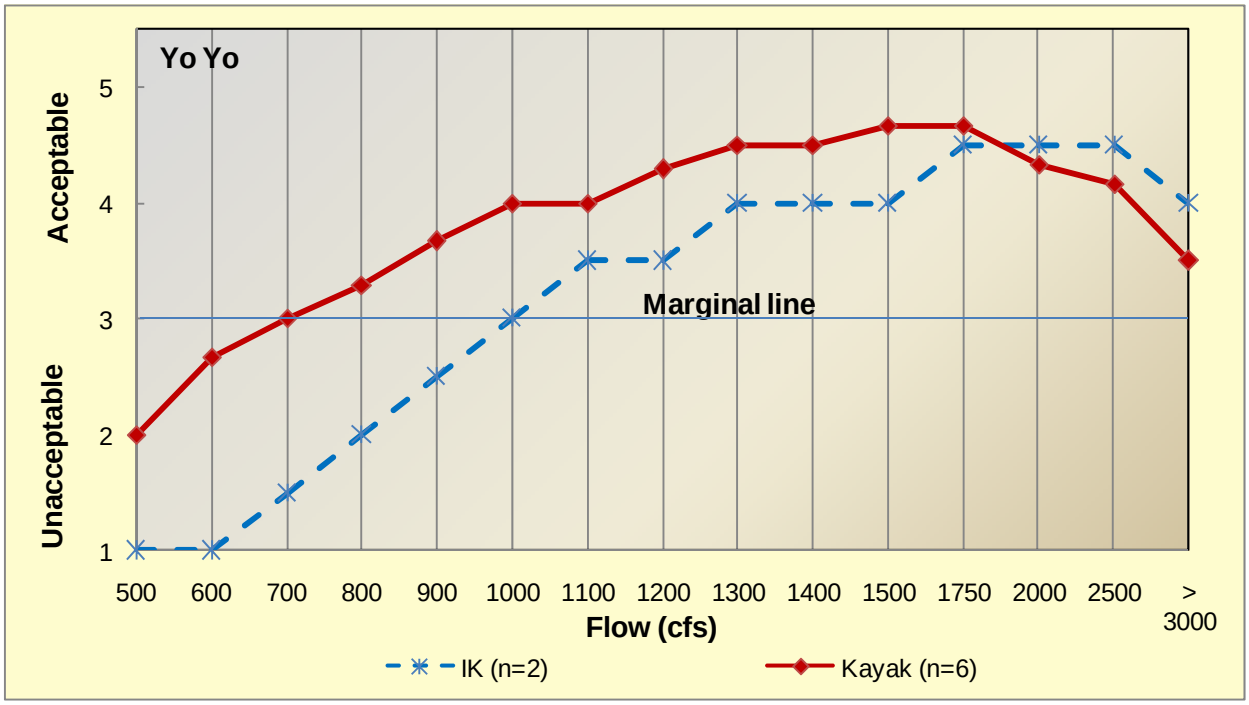
Highest Safe Flow: The median for the highest safe flow for kayaks and IKs was 3000 and 2250 cfs respectively.

Single Boating Flow: The median for a single boating flow for kayaks and IKs was 1400, and 2250 cfs respectively. The single flow inter-quartile range for each watercraft was 1300 to 1450 cfs, and 1875 to 2625 cfs respectively.

The Yo-Yo reach provides a boating opportunity for novice boaters. This reach is often used for instruction. During focus group sessions, boaters providing novice instruction indicated that flows around 1500 cfs were best for teaching because eddy lines and hydraulic features were more defined.

High Challenge Trip: The median flow for a high challenge trip for kayaks and IKs was 2750 cfs respectively.

Figure 4.11: Flow preference curve for the Yo-Yo Reach.

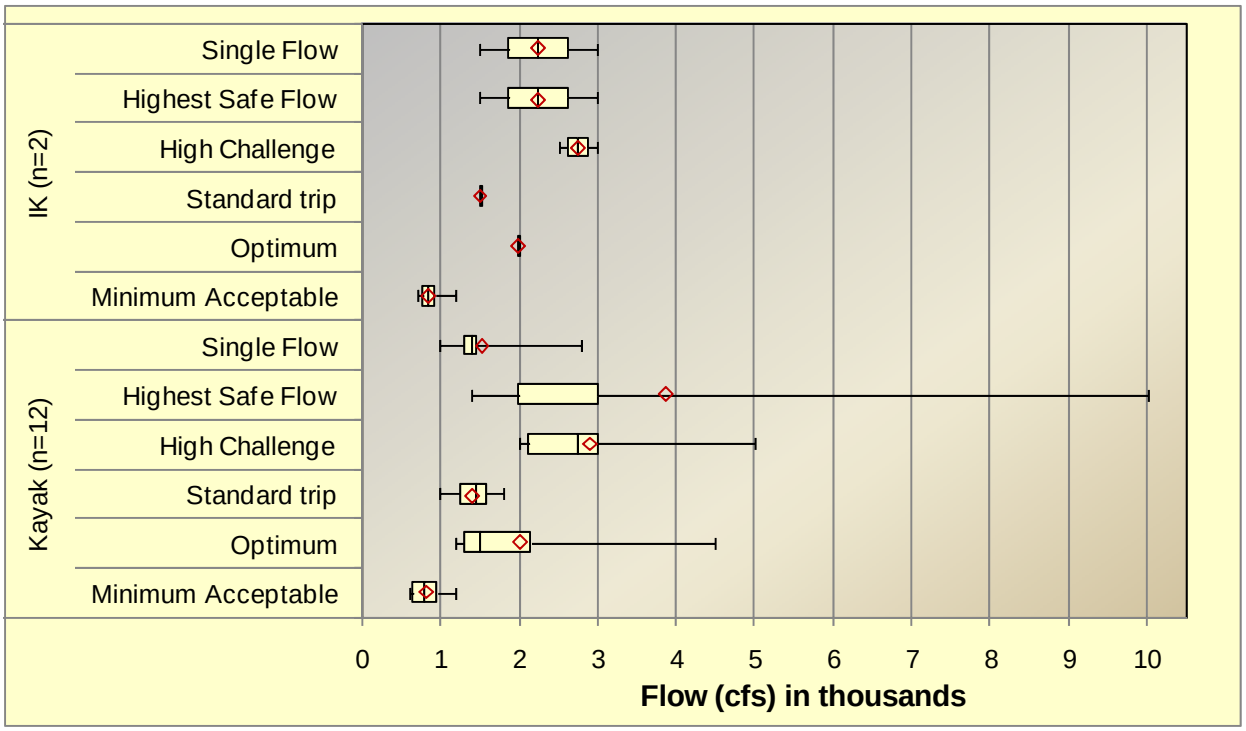


4.2.4 Combined Reaches

A number of survey participants boated more than one reach in a single outing. Boaters paddling more than one reach typically boated from the Headworks to Flaming Geyser (n=29) or from Kanaskat State Park to Flaming Geyser (n=57). The former outing is 14.9 miles in length combining three reaches (Headworks, Upper Gorge and Lower Gorge) while the latter is 12 miles in length combining two reaches (Upper and Lower Gorge). The additional length relative to paddling a single reach in isolation requires additional on-water travel time which is greatly influenced by instream flows. Also, survey responses from trips that involved multiple reaches were based on a mix of flow-dependent conditions within the boated reaches. Consequently, flow preferences for survey responses encompassing multiple reaches in a single outing were analyzed independent of single reach responses.

Other combinations of reaches were observed in the survey data but lacked sufficient numbers to warrant analysis. These combinations include the Headworks and Upper Gorge (1 IK response) and the Lower Gorge and Yo-Yo reach (1 kayak response).

Figure 4.12: Median, mean, inter-quartile and range of responses for the Yo-Yo reach.



4.2.4.1 Headworks to Flaming Geyser

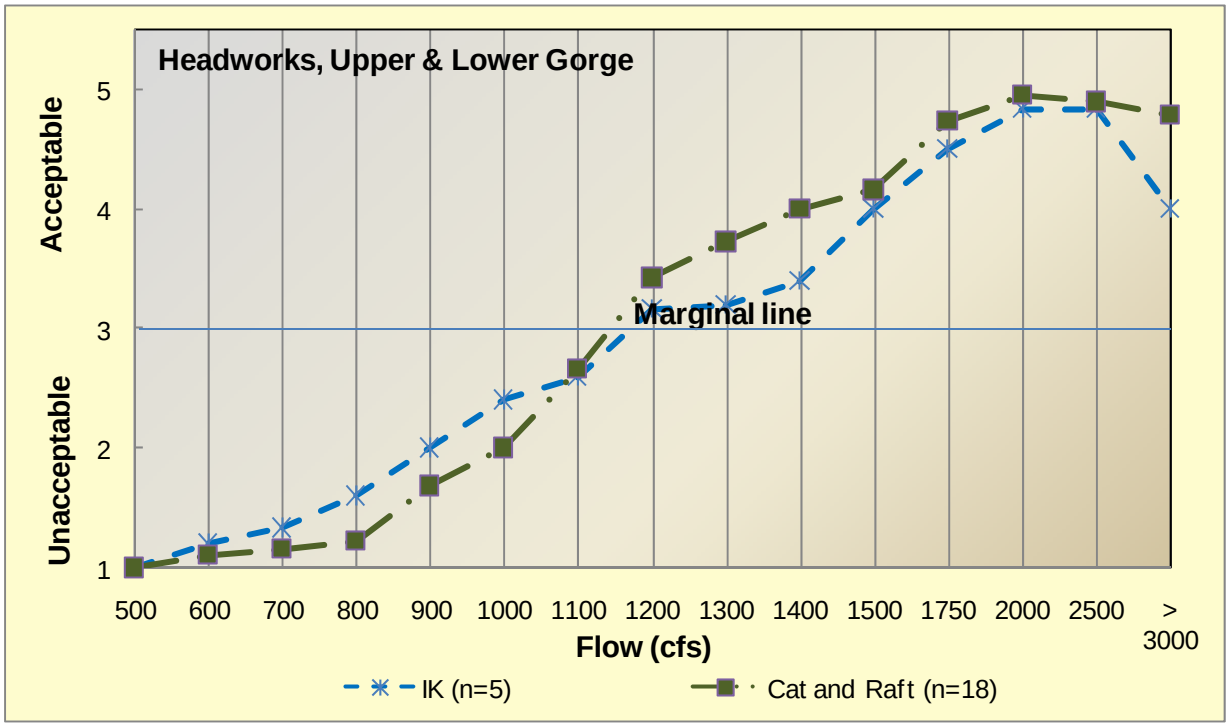
This reach combines the Headworks, Upper and Lower Gorge into a single outing. The total length is 14.9 miles. Paradise Ledge, the whitewater park and play location, marks the boundary between the Upper and Lower Gorge. A total of 29 survey responses were received for this reach (IK=3 and cataraft/raft=26). Fewer survey participants completed the comparative flow question, therefore, the flow preference curves were based on fewer responses relative to the descriptive statistics of responses to specific flow questions. The survey data did not contain any responses from kayakers boating from the Headworks to Flaming Geyser.

For IKs, flows less than 1175 cfs were rated unacceptable whereas catarafts/rafts considered flows less than 1150 cfs to be unacceptable (Figure 4.13). The most acceptable flows for IKs ranged from 2000 to 2500 cfs. Catarafts/rafts preferred flows from 1750 to 3000 cfs. For both user groups, the marginal flows identified were 50 cfs greater than the marginal flows identified for the Upper Gorge only. The preferred flows for the combined reaches were similar to the flows identified for the Upper Gorge for each watercraft.

Minimum Acceptable Flow: The median minimum acceptable flow for IKs and catarafts/rafts was 900 and 1200 cfs respectively (Figure 4.14). These flows provide a marginal recreational opportunity for the reach for the respective watercraft.

Optimum Flow: The median optimum flow for IKs and catarafts/rafts was 2500 and 3500 cfs respectively. The inter-quartile range for optimum flows was 2350 to 2500 cfs for IKs and 3000 to 3500 cfs for catarafts/rafts.

Figure 4.13: Flow preference curve for the Headworks to Flaming Geyser.



Standard Trip: The median flow for the standard trip for IKs and catarafts/rafts was 1800 and 2500 cfs respectively.

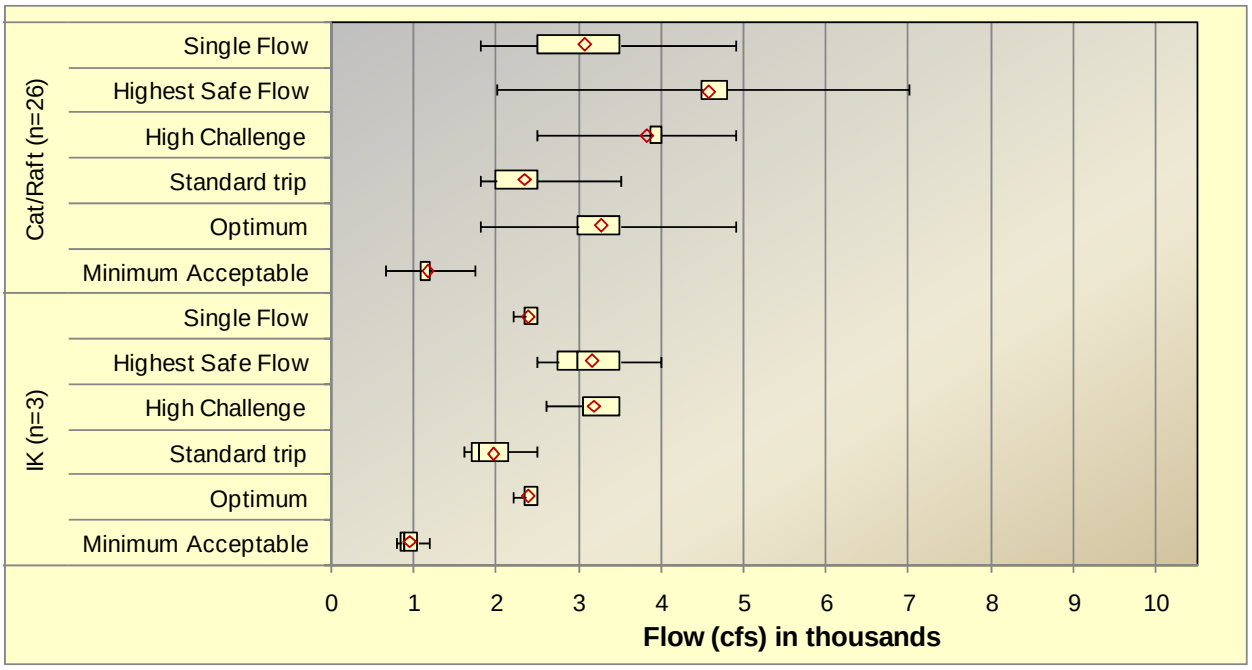
High Challenge Trip: The median flow for a high challenge trip for IKs and catarafts/rafts was 3500 and 4000 cfs respectively.

Highest Safe Flow: The median for the highest safe flow for IKs and catarafts/rafts was 3000 and 4800 cfs respectively.

Single Boating Flow: The median for a single boating flow for IKs and catarafts/rafts was 2500, and 3500 cfs respectively. The single flow inter-quartile range for each watercraft was 2350 to 2500 cfs, and 2500 to 3500 cfs respectively.

The marginal flows for IKs and catarafts/rafts in the three reaches combined were higher than the flows for each reach individually. The higher flow necessary to achieve an acceptable rating was likely due to the fact that rate of travel becomes more important for a reach of this length compared to the shorter individual reaches. Optimum flows were the same for IKs but 1000 cfs greater for catarafts/rafts likely reflecting the need for increased rate of travel associated with higher flows.

Figure 4.14: Median, mean, inter-quartile and range of responses for the Headworks to Flaming Geyser.



4.2.4.2 Kanaskat to Flaming Geyser

This reach combines the Upper and Lower Gorge into a single outing. The total length is 12 miles. Paradise Ledge, the whitewater park and play location, marks the boundary between the Upper and Lower Gorge. A total of 57 survey responses were received for this reach (kayaks=16, IK=17, and cataraft/raft=24). Fewer survey participants completed the comparative flow question, therefore, the flow preference curves were based on fewer responses relative to the descriptive statistics of responses to specific flow questions.

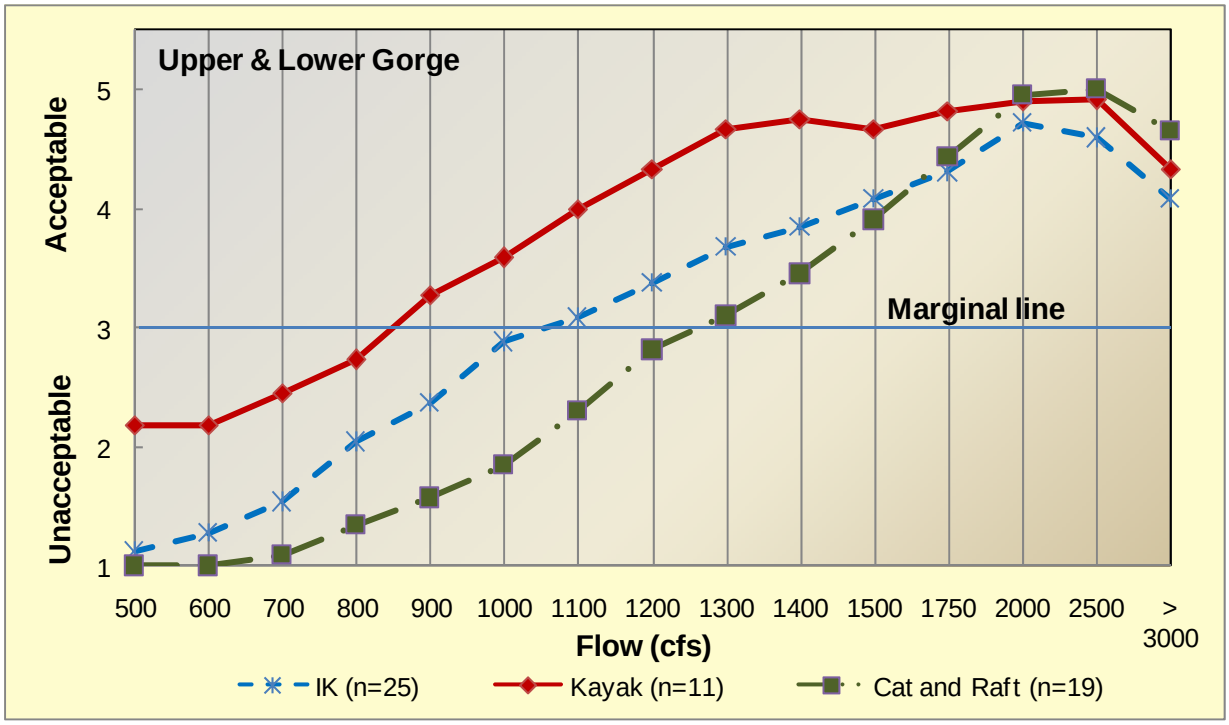
For kayaks, flows less than 850 cfs were rated unacceptable whereas IKs and catarafts/rafts considered flows less than 1050 and 1250 cfs respectively to be unacceptable (Figure 4.15). The most acceptable flows for kayaks ranged from 1,300 to 2,500 cfs. IKs and Catarafts/rafts preferred flows from 2000 to 2500 cfs and 2000 to 2500 cfs respectively. The marginal flows identified for the Kanaskat to Flaming Geyser reach (combined Upper and Lower Gorge) were not consistent with the marginal flows identified for the Upper and Lower Gorge individually. Using the Upper Gorge for comparison purposes since it has the higher marginal flow requirements of the two reaches, kayakers identified 975 cfs as the marginal flow when boating that reach only, 125 cfs greater than the marginal flow identified for the combined reaches. IK users were nearly the same, 1125 for the Upper versus 1150 cfs for the combined reaches. Catarafts/rafts identified a slightly higher flow for the combined reaches, 1250 cfs versus 1100 cfs.

Minimum Acceptable Flow: The median minimum acceptable flow for kayaks, IKs and catarafts/rafts was 900, 1000 and 1200 cfs respectively (Figure 4.16). These flows provide a

marginal recreational opportunity from Kanaskat to Flaming Geyser for the respective watercraft.

Optimum Flow: The median optimum flow for kayaks, IKs and catarafts/rafts was 1800, 2500 and 3000 cfs respectively. The inter-quartile range for optimum flows was 1500 to 2300 cfs for kayaks, 1200 to 2500 cfs for IKs and 2500 to 3500 cfs for catarafts/rafts.

Figure 4.15: Flow preference curve for Kanaskat to Flaming Geyser.



Standard Trip: The median flow for the standard trip for kayaks, IKs and catarafts/rafts was 1600, 1800 and 2350 cfs respectively.

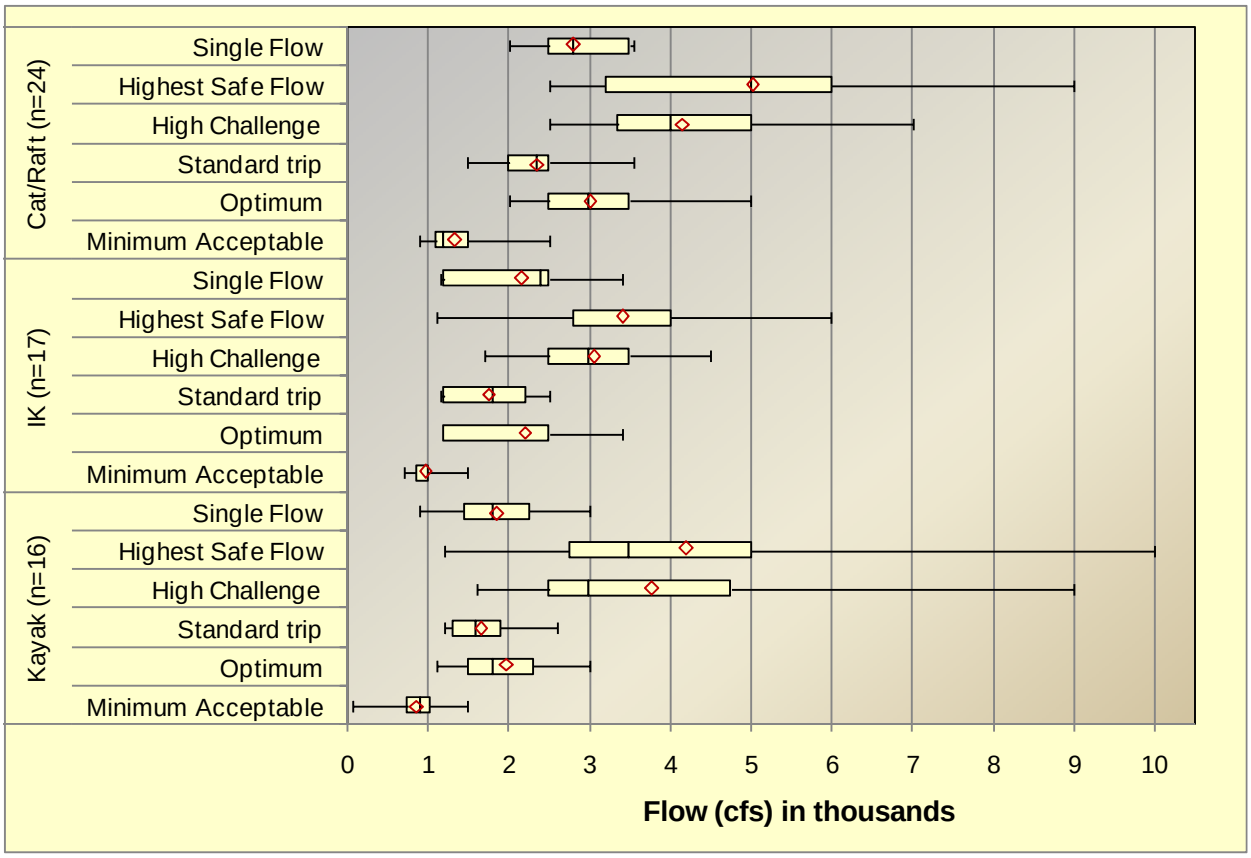
High Challenge Trip: The median flow for a high challenge trip for kayaks, IKs and catarafts/rafts was 3000, 3000 and 4000 cfs respectively.

Highest Safe Flow: The median for the highest safe flow for kayaks, IKs and catarafts/rafts was 3500, 4000 and 5000 cfs respectively.

Single Boating Flow: The median for a single boating flow for kayaks, IKs and catarafts/rafts was 1800, 2400 and 2800 cfs respectively.

The marginal flows identified for kayaks were higher for the Upper Gorge compared to the combined Upper and Lower Gorge. In contrast, IKs and catarafts/rafts identified marginal flows that were nearly equal or slightly greater for the combined reaches. Optimum flows for the combined reaches were nearly identical for kayaks, the same for IKs but 1000 cfs greater for catarafts/rafts likely reflecting the need for increased rate of travel associated with higher flows.

Figure 4.16: Median, mean, inter-quartile and range of responses for Kanaskat to Flaming Geyser.



4.2.5 High Challenge and Highest Safe Flows

Flows were equal to or greater than the optimum flows identified for each watercraft type for the respective reaches for a 74-day period of snowmelt run-off, April 28 through July 11, 2008. On some days during this period, the daily average exceeded the upper quartile range for high challenge opportunities and even the highest safe flow depending on user group preferences (watercraft and skill) and whitewater reach.

Two whitewater fatalities on the day flows peaked at Palmer, May 17, 2008, on separate reaches of the Green (Upper Gorge and Yo-Yo), underscore the fact that flows were indeed in the high challenge realm particularly given the fact that the accident on the Upper Gorge involved a highly skilled individual familiar with the reach. The accidents were tragic for the victims friends and relatives. Nonetheless, the flows associated with these whitewater accidents should not be used to define the highest safe flow. In fact, the fatality on the Upper Gorge involved a highly skilled individual that had successfully run that section numerous times at high flows in the past. Other individuals paddling on that same day were capable of navigating the rapids without mishap. Boating during high flow events requires personal judgement. The highest safe flow is dependent on user skill level and familiarity with the reach as well as other subjective factors. The county sheriff closed the Green River to whitewater

boating from May 17, 2008 to June 3, 2008 as a result of the accidents. No survey responses were received for this closure period.

4.2.6 Hits, Stops and Drags

Boaters rate the quality of a whitewater outing, in part, on their ability to navigate through obstacles on the river. The degree of navigability is typically directly related to water depth and size of the watercraft. Larger watercraft, such as catarafts and rafts, require more depth over a wider area for boat passage than kayaks. Navigability can be measured by the number of hits, stops, drags and portages required for a given flow. Lower flows typically result in more hits, stops and drags due to lack of sufficient depth for boat passage. At times, flows get so low that portages are required to navigate around obstacles in some rapids.

In the Green River survey instrument, boaters were asked to count the number hits, stops, drags and portages required for a given flow. The number of hits for catarafts and rafts increased substantially as flows dropped below 1500 cfs (Figure 4.17). The highest number of hits reported was 100 for four different trips on flows of 1400, 1250, 1050 and 750 cfs respectively. The number of hits decreased to 25 or less for flows greater than 2000 cfs. Stops for catarafts and rafts occurred for flows less than 2000 cfs for the most part with a single stop reported for a flow of 2050 cfs (Figure 4.18). The highest number of stops, 15, occurred at 1200 cfs. Nine trips reported drags at flows between 320 and 1600 cfs. The highest number of drags, 6, occurred at a flow of 1200 cfs. Catarafters and rafters identified nine rapids in the Green River with specific low flow thresholds for navigability (Table 4.4). Mercury and the Nozzle, two rapids in quick succession on the Upper Gorge, tend to be the most difficult on the Green River. The entrance to Mercury contains numerous rock obstacles that can stop rafts. Avoiding these rocks can be difficult at flows less than 1,400 cfs (Photo 4.2). A number of unnamed class III rapids contain rock gardens in broad shallow channels making downstream boat passage challenging. These rapids typically need flows greater than 1400 cfs for rafts to negotiate the rock gardens. Flows of 2000 cfs improve navigability in these rapids considerably.

Stops and drags, particularly in sections of the river with rapids, expose boaters to safety hazards because the boaters must enter the river to remove the watercraft from the obstacle. Hazards include foot entrapment, swimming whitewater rapids, and/or getting pinned under the boat. All of these hazards can result in injury or death. Consequently, whitewater boaters avoid flow conditions with poor navigability. When flows drop below the navigable threshold whitewater use numbers typically decline dramatically for most rivers.

4.3 FOCUS GROUP SESSIONS

The focus group sessions conducted in April 2008 provided additional information on flow preferences for respective reaches as well as flow information needs, safety concerns and commercial viability for the Green River. The Seattle metro session was composed largely of advanced to expert paddlers while the sessions held at Flaming Geyser State Park consisted mostly of intermediate to advanced boaters with the exception of an expert boater at each of

these two weekend sessions. Consequently, the flow preferences identified by the respective focus groups reflect the skill level and whitewater interests for that group. For the most part the focus group flow preferences were consistent with the ranges identified from the survey data. The sessions consisting of intermediate boaters preferred flows in the lower quartile range of the survey flow preferences whereas boaters in the expert session selected flows in the upper quartile. Comments about the advantages and disadvantages of specific flows during the focus group sessions provided narrative explanations for the flow preference results derived from the survey data.

Figure 4.17: Number of hits for catarafts and rafts on the Green River.

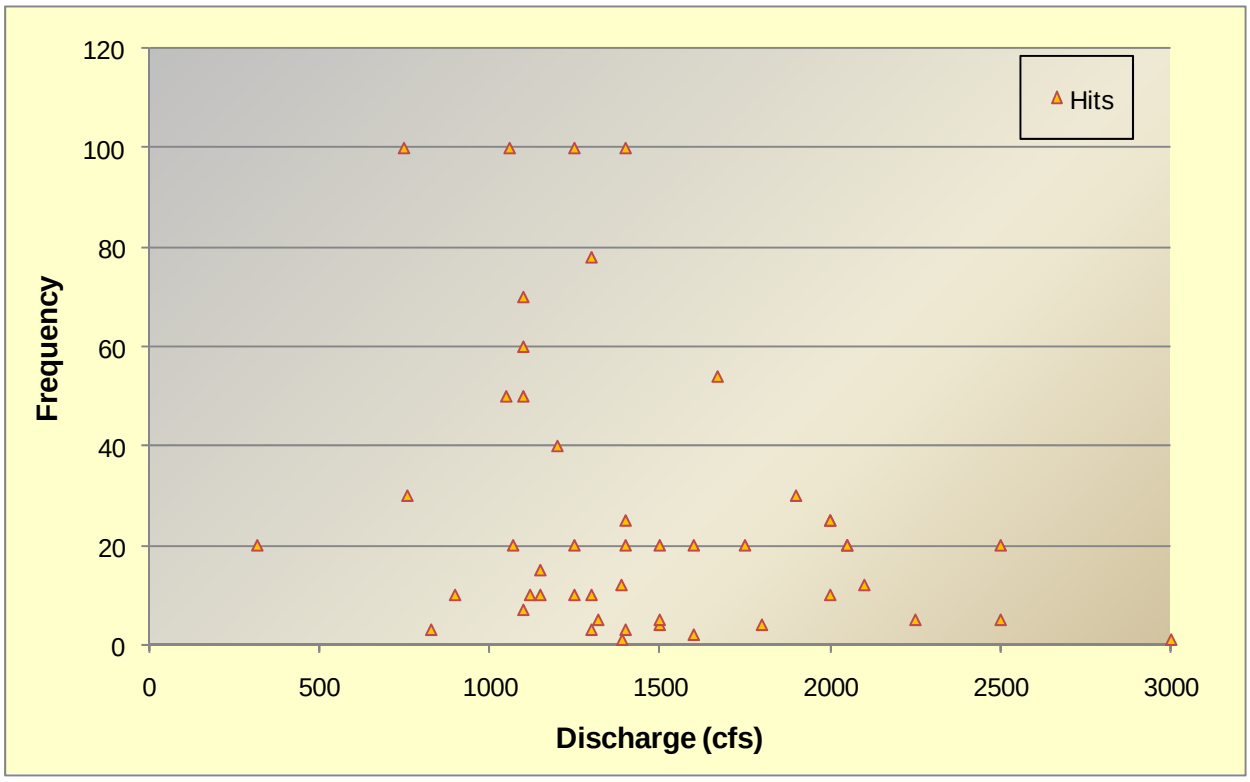


Figure 4.18: Number of stops and drags catarafts and rafts on the Green River

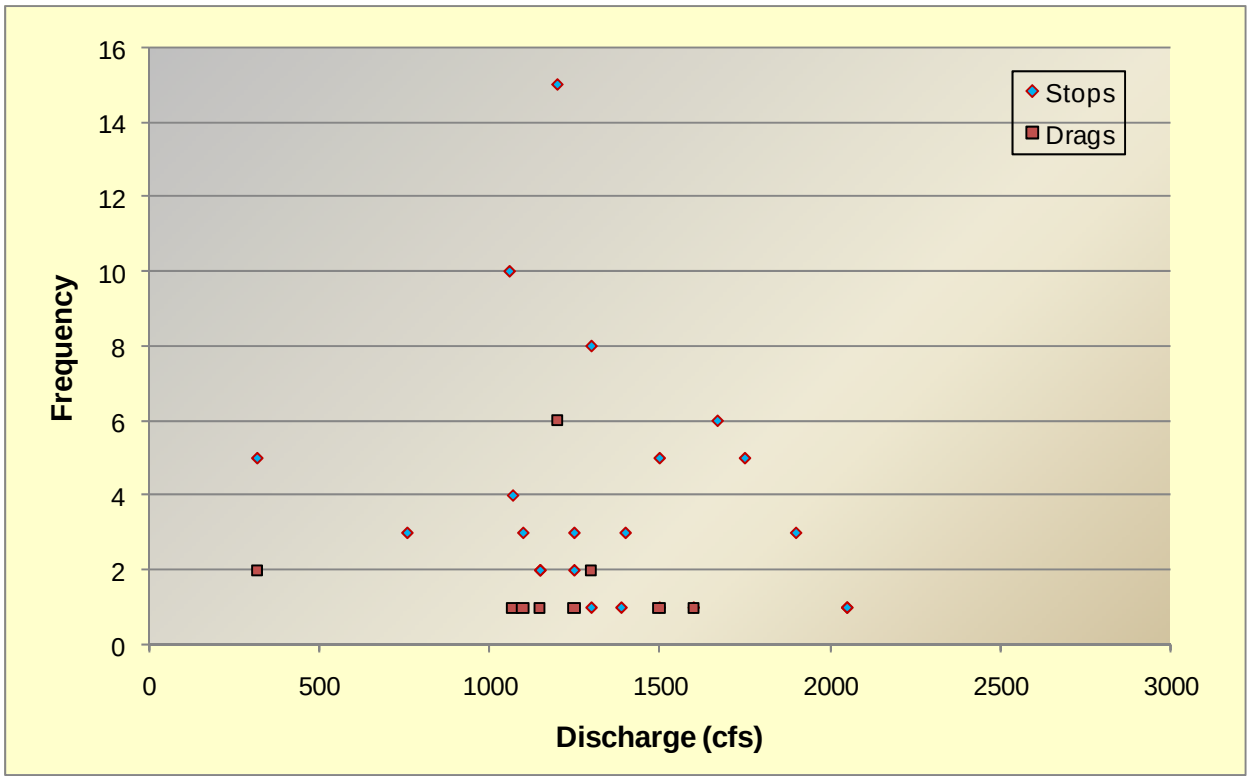


Table 4.4: Significant rapids and low flow navigability thresholds for catarafts and rafts.

River Reach	Rapid Name	Low Flow Navigability Threshold
Headworks	Railroad	<1700
	Rock Garden	<2,000
Upper Gorge	Ledge Drop 1	<2,000
	Ledge Drop 2	<1,500
	Ledge Drop 3 (aka pipeline)	<1,500
	Unnamed rapid	<2,000
	Mercury	<2,000
	Nozzle	<1,200
Lower Gorge	Unnamed rapids	<1,500

Photo 4.2: Raft stopped in Mercury Rapid in the Upper Gorge at 841 cfs.

The Seattle Metro area focus group held on Friday, April 25, 2008 attracted advanced to expert boaters comfortable paddling class IV and V whitewater. The group consisted of kayakers (including wildwater kayakers), IK boaters, canoeists, and rafters. Optimum flow preferences for the most part were in the upper quartile of the flow preference range for the respective reaches (Table 4.5). The group listed a number of advantages for these optimum flows: 1) optimum flows allow boaters to link the Upper and Lower Gorge into a single run avoiding the steep and difficult take-out at Franklin Bridge; 2) there are more routes through individual rapids; and 3) there are more play areas throughout the river. Optimum flows for play paddling at Paradise Ledge were from 1400 to 1500 cfs. In the Upper Gorge, the group commented that flows of 2000 cfs lacked appeal because they washed out good play spots present at lower flows but were too low to increase the number of routes in rapids and lacked the pushiness of the higher flows attracting boaters to high challenge trips. Two optimum flows were identified by kayakers for the Lower Gorge, 600 and flows greater than 2000 cfs. The 600 cfs flow was specifically called out by one boater because of a single play spot that appears at this flow. The focus group listed a single disadvantage for these optimum flows: the higher volume intimidates intermediate boaters. The focus group universally selected the Upper Gorge as the reach to target for managing optimum flows. Advantages of the minimum acceptable flows included: 1) good wildwater training flow on Headworks; 2) opportunities for technical boating 3) good introductory flow for learning the lines in the Upper Gorge; 4) water clarity is better; and 5) there is still good play in the Lower Gorge at these flows. The disadvantages of minimum acceptable flows included the inability to combine reaches into a single run and lower flows made it difficult to run clean lines in the Upper Gorge. Flows greater than 3500 cfs were rated as high challenge flows. These flows were attractive because of the powerful hydraulics and continuous whitewater. Some focus group participants indicated that the Green River Gorge starts to attract boaters from farther away when flows reach the high challenge range. The

group agreed that high challenge flows make rescue difficult and mistakes result in "big consequences." Flows greater than 4800 cfs were considered class V in the Upper Gorge.

Lastly, the group preferred whitewater flows on weekends, Fridays and holidays. After daylight savings time boaters felt they would take advantage of flows on weekday evenings. The group would also like to see later season flows when air temperatures are warmer and day lengths are longer.

Table 4.5: Flow preferences identified at the Seattle focus group session

	Headworks		Upper Gorge		Lower Gorge		Yo Yo		Paradise Ledge	
Boat Type	minimum	optimum	minimum	optimum	minimum	optimum	minimum	optimum	minimum	optimum
Kayak	600	800-1000	700-1200	3000	400	600 (play) 2000+	500	1000 (teach)	900	1400-1500
Wildwater	1500	2000	2000	2000	2000	2000	1000	2000		
IK	600		800-1000	2500	1200	1200-2500				
Canoe	600	1200					500	1200		
Raft				2500		2500				

The weekend focus group sessions held at Flaming Geyser State Park on April 26 and 27, 2008, consisted largely of intermediate to advanced kayakers comfortable running class III and IV whitewater. One catarafter and one canoeist participated in the weekend focus groups. Kayakers in the weekend sessions described multiple discrete optimum flow preference ranges corresponding to specific attributes unique to each flow range (Table 4.6). This was particularly evident for the Headworks and Lower Gorge reaches, suggesting this group is more familiar with these reaches. Nonetheless, the group universally agreed that flows should be managed for optimum flows of 1200 to 1400 cfs in the Upper Gorge. For kayakers these optimum flows provided good lines through the rapids, play paddling opportunities, and breaks between rapids for recovery particularly in the Upper Gorge. The preferred flow for catarafts was listed as 3500 cfs in the Upper Gorge. This flow provided a good rate of travel to combine the Headworks, Upper and Lower Gorge into a single run. In contrast, the kayakers considered the preferred cataraft flows beyond their skill level to safely run the river. The minimum acceptable flows for kayakers and catarafts in the weekend focus group sessions were nearly identical to the survey results with the exception of the Upper Gorge. Kayakers in the weekend focus group session were willing to boat 800 cfs in the Upper Gorge compared to a median minimum acceptable flow of 1100 cfs identified in the survey data. Focus group participants noted that the minimum acceptable flows contained a number of disadvantages: 1) lack of powerful hydraulics; 2) only one play spot located in Lower Gorge; 3) routes through the rapids are difficult to find; 4) hit lots of rocks; and 5) swimmers tend to get banged up on rocks. In contrast, minimum acceptable flows offer a good introductory level for kayakers to get familiar with the Upper Gorge. For

catarafts, the minimum acceptable flows made for long, slow trips. Weekend focus group participants preferred weekend flows and evenings after daylight savings time goes into effect.

Table 4.6: Flow preferences identified at the Flaming Geyser focus group sessions

	Headworks		Upper Gorge		Lower Gorge		Yo Yo		Paradise Ledge	
Boat Type	minimum	optimum	minimum	optimum	minimum	optimum	minimum	optimum	minimum	optimum
Kayak	700	800-1200 (play) 1600-1900 (play) 1200-1500 (teach)	800	1000-1500 2500-2700	650	700-800 (play) 800-1200 (novice) 1200-2500 (good)	600	1000-1500 (teach)	1200	1200-1400
Canoe		1000			900	1200	900			
Cataraft	1200	3500	1200	3500	1200	3500	1200	3500	1200	1200-1400

4.3.1 Flow Information

Most boaters use the USGS Palmer gage to evaluate current flow conditions on the Green although some boaters also use the USGS Auburn gage as a reference. Focus group participants universally agreed that forecasted flow information is needed on the Green River. Flow regulation at HHD makes flows unpredictable for advance trip planning. Typically, boaters paddle in groups for safety, shuttle logistics and social interaction. Coordinating paddling groups requires advance planning. Consequently, most boaters make plans several days in advance of weekend trips. On natural free-flowing rivers, boaters routinely utilize time series flow information available on the Internet to predict when flow conditions will be at or near optimum for whitewater boating. Most veteran boaters double as arm-chair hydrologists because of their routine tracking of flow conditions on their favorite rivers. Focus group participants complained that the unpredictable gate changes at HHD make it impossible for boaters to plan trips in advance. Improved flow information including forecasted flows will help boaters make informed decisions in advance about short term flow conditions on the Green River and potentially result in increased use on the Green River.

Boaters provided a number of recommendations for flow information during the focus group sessions. Some of the participants commented that the USACE provided some of this information in the past but discontinued the practice. Participants felt that more predictable and reliable flow information for the outflows from HHD would greatly benefit the paddling community:

- The USACE should continue to post real-time flow information for HHD inflows including the previous 7-days in a format similar to the USGS real-time flow pages;
- The USACE real-time flow page for HHD outflows should contain a provisional 72-hour forecast graph portraying flow management anticipated in the ensuing 3-day period

- The USACE should include short and long-term target pool elevations along with the corresponding rule curves and proposed schedule for achieving the target pool elevations;

- The flow forecast should be updated at noon on Friday each week and clearly document any anticipated Friday gate changes;

- The HHD flow information should include the following narrative text:

    - HHD inflow thresholds that would trigger a gate change (up or down) affecting the posted 72-hour flow forecast;

    - Current HHD management objectives, e.g. flood control, refill, fish flows, or fall drawdown;

    - Water year type (drought, low, normal, high) and general timeframes for achieving pool elevation targets;

    - Forecasted date for changes in management mode;

    - HHD scheduled maintenance periods and flows potentially targeted for restoration purposes in the future, e.g.; channel maintenance flows, gravel augmentation and LWD placement; and

    - Monthly Green River Flow Management Committee meetings should be posted on the webpage and include a bulleted list of the flow management decisions made at each meeting.

4.3.2 Flows for Commercial Boating

Focus group participants universally agreed that the Green River has potential for commercial rafting and kayaking but is currently limited to non-existent due to the lack of predictable flows. Commercial rafting requires predictable minimum flows of 1400 cfs to be viable. Optimum flows for commercial rafting were estimated to be 2500 cfs. Commercial kayaking largely involves novice and intermediate instruction with flows ranging from 800 to 1500 cfs.

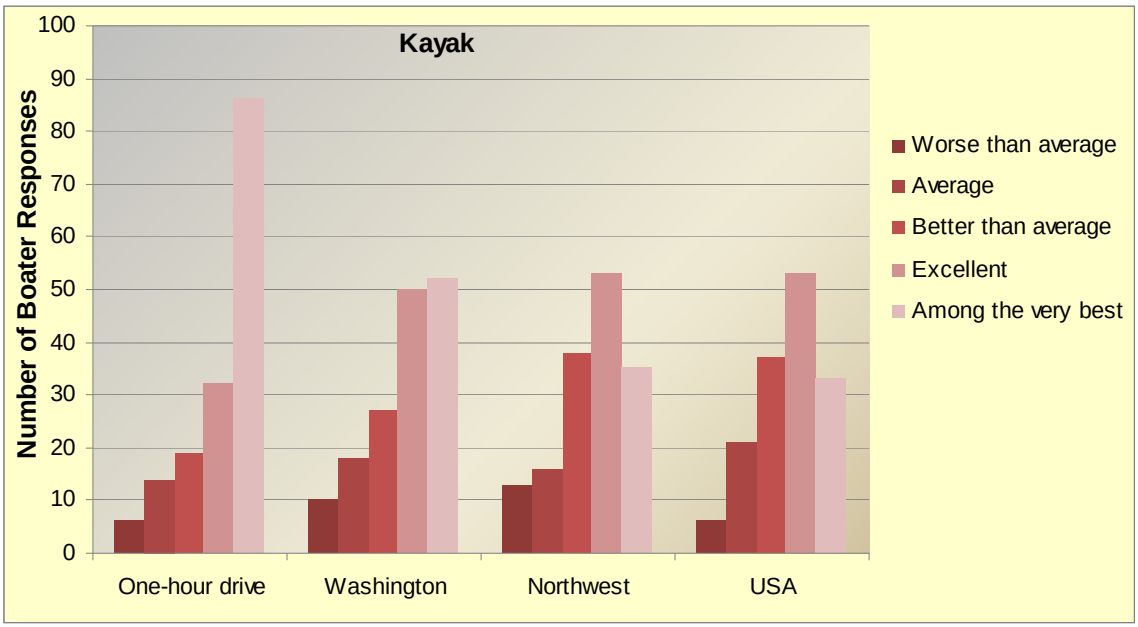
4.4 GREEN RIVER COMPARED TO OTHER RIVERS

The Green River offers high-quality whitewater boating, especially for boaters seeking opportunities in close proximity to the greater Seattle metropolitan area. Most boaters ranked the Green as “excellent” or as “among the very best” when compared to other local, state, northwest, or national rivers. Green River boating was rated particularly well among the kayaking community.

Kayakers rated the Green highly, with 75% rating it “excellent” or “among the very best” compared to other rivers within a one-hour drive, and 65% giving it the equivalent rating

compared to other rivers in Washington (Figure 4.19). Even when the Green was compared to other rivers in the northwest or nationally, more than half (57%) of kayakers felt the river was "excellent" or "among the very best."

Figure 4.19: Kayakers rating of Green River compared to other rivers



IK boaters also rated the Green highly, with two-thirds (66%) rating it "excellent" or "among the very best" compared to other rivers within a one-hour drive or compared to other rivers in Washington (Figure 4.20). Sixty-three percent of IK users rated the river "excellent" or "among the very best" when compared to other rivers in the northwest, and 46% gave it that rating when it was compared to other rivers in the country.

About half of survey participants using catarafts and rafts rated the Green "excellent" or "among the very best" compared to other rivers within a one-hour drive (56%), statewide (53%), regionally (52%), and nationally (48%) (Figure 4.21).

Relative to participants in other types of watercraft, canoeists rated the Green River opportunities the lowest compared to other local, regional and national whitewater canoeing opportunities. Only 33% of canoeists rated the Green River as "excellent" or "among the very best" compared to other rivers within a one-hour drive, other rivers in Washington, or other rivers in the northwest (Figure 4.22). This might be in part due to the unusually high spring runoff flows during the survey.

Figure 4.20: IK users'rating of Green River compared to other rivers

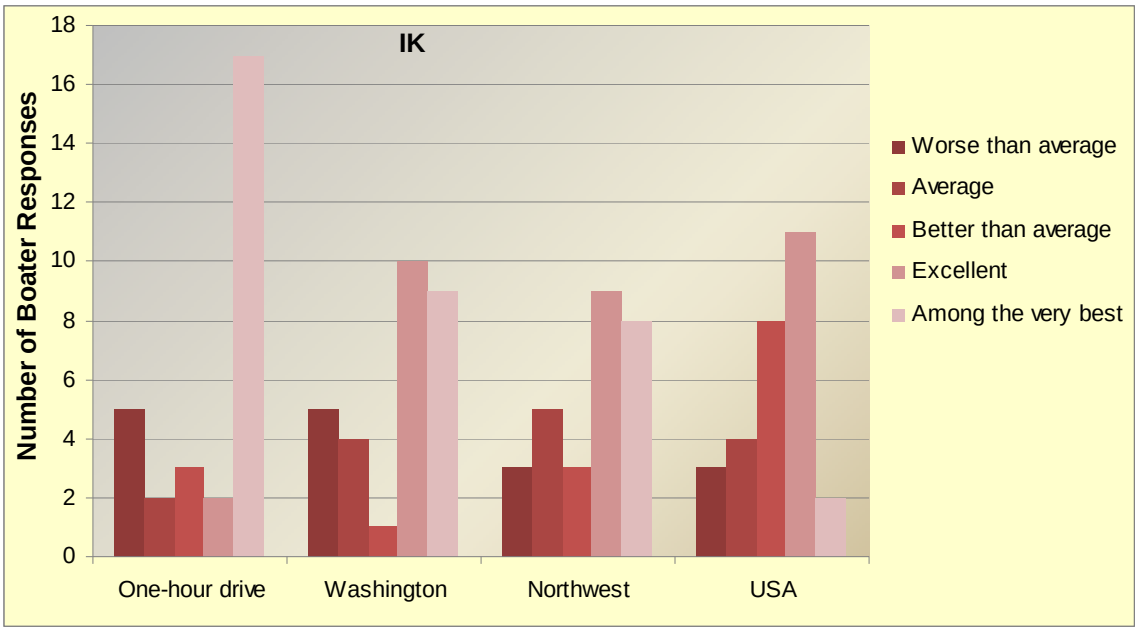


Figure 4.21: Cataraft and Raft users' rating of Green River compared to other rivers

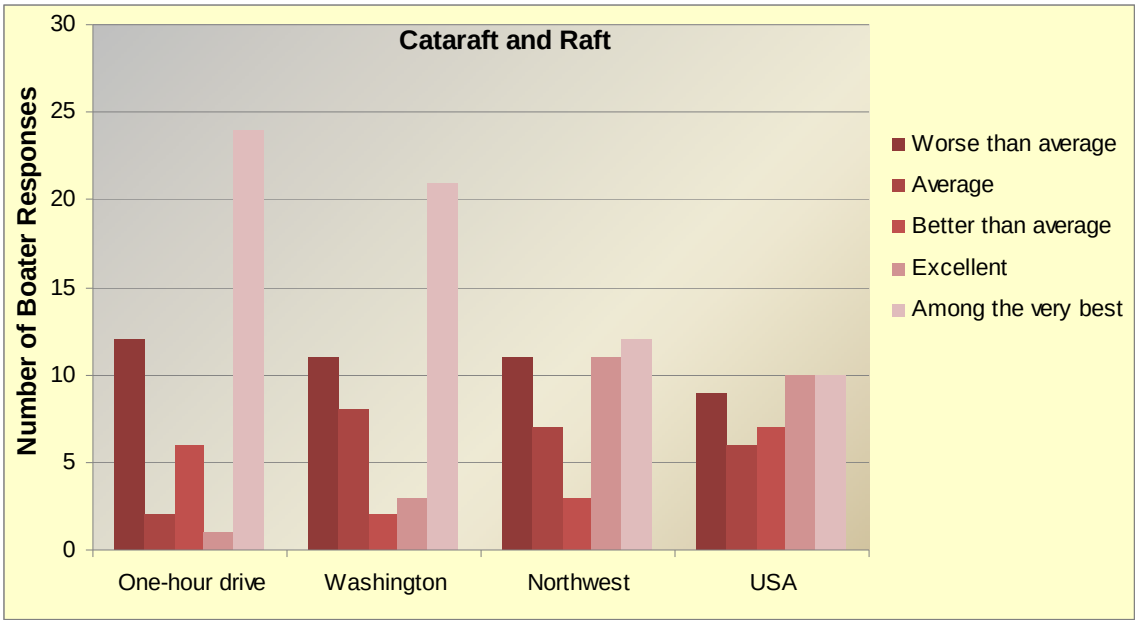
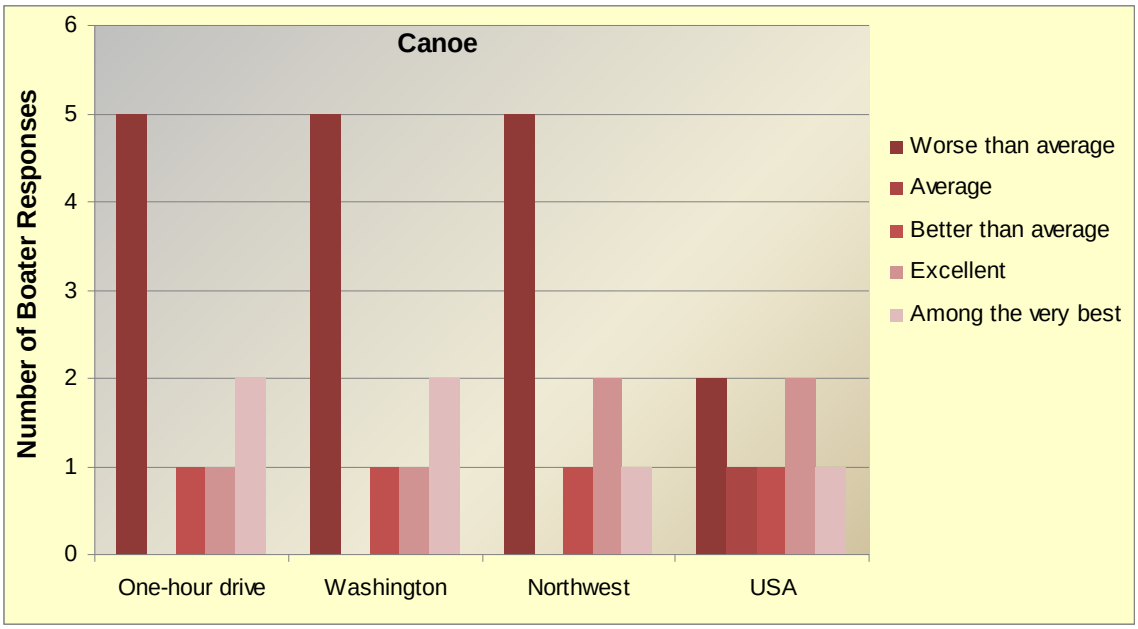


Figure 4.22: Canoe users' rating of Green River compared to other rivers



4.5 RECREATION ECONOMICS

Whitewater enthusiasts spend money on goods and services in order to boat the Green River. Of particular interest are their direct expenditures for travel, meals, lodging, lessons, equipment rental, and other trip-related costs. Estimates of boater expenditures help stakeholders better understand the economic value of the Green River's whitewater resource and the economic effects from boating use.

The study used the Internet-based survey to acquire expenditure information from kayakers, rafters and canoeists related to their Green River trips. These included the costs for gas for travel to and from the river, costs to stay near the river for the duration of their activity (e.g., meals, camping, motels), and costs for equipment rental or guide services. Each respondent was asked to report only their share of costs if they were part of a group.

Expenditure information related to 238 whitewater trips was acquired. On average, each boater spent $36.74 related to their trip (Table 4.7).

Table 4.7: Direct trip costs

TOTAL (n=238)	Gas	Meals and Refreshments	Equipment Rental or Guide Service	Motels or Campsite Fees
$36.74	$18.03	$14.12	$3.88	$0.71

The largest trip expense was $18.03 for gas for travel to and from the river (Table 4.8). Other travel-related expenses, such as vehicle maintenance and depreciation, were not measured.

Generally, the gas cost represents fuel consumed for a return trip between home and the river, excursions for meals and lodging, and vehicle shuttles between the put-in and take-out points (whitewater boating trips require at least two vehicles per group to accomplish the shuttles). Based on an average gas cost of $4.00 per gallon and an average vehicle fuel economy of 20 mpg, $18.03 of fuel buys about 90 miles of travel. Because the Green River is a popular boating destination for residents of King, Pierce and other nearby counties the estimate seems reasonable.

Table 4.8: Gas costs

Mean	Median	Minimum	Maximum
$18.03	$15.00	$0.00	$60.00

The second largest trip expense was $14.12 for meals and refreshments (Table 4.9). Eighty-seven percent of respondents spent money in this category. This cost includes expenditures at area restaurants and grocery stores for food and beverages purchased during the boating trip. Because a whitewater boating trip on the Green River is usually accomplished during a single day (as opposed to a multi-day excursion) this amount would typically be spent within a relatively short time period.

Table 4.9: Meals and refreshments costs

Mean	Median	Minimum	Maximum
$14.12	$10.00	$0.00	$100.00

An average of $3.88 was spent on equipment rental or guide service (Table 4.10). Only 4% of survey participants (9 paddlers) spent any money in this category, indicating that most surveyed paddlers own their boating gear and didn't require professional boating services. Because the Internet survey generally targeted paddlers with at least some boating experience, boaters who required rental equipment or the services of commercial guides might have been under sampled. One kayaker who spent $600 was probably on a commercially-guided trip or lesson.

Table 4.10: Equipment rental or guide service costs

Mean	Median	Minimum	Maximum
$3.88	$15.00	$0.00	$600.00

Only $0.71 on average was spent for motel or campground fee costs (Table 4.11). Most Green River boaters do not need overnight accommodation because a whitewater boating trip on the river is usually accomplished during a single day and boaters return home. Only 5% (10 paddlers) spent anything on this cost category.

Table 4.11: Motel or campground fee costs

Mean	Median	Minimum	Maximum
$0.71	$0.00	$0.00	$50.00

Estimating the total economic effect of Green River paddler expenditures requires extrapolating the per paddler expenditures by an estimate of total Green River boating activity. That is, multiplying the $36.74 spent by each paddler by the number of boaters using the Green each year. Unfortunately, no systematic counts of Green River boating activity have been made. Accomplishing such a use count would be difficult because of several access points and a long boating season. A reliable estimate would therefore be complicated and costly to acquire.

4.5.1 Annual Whitewater Use Numbers

Available information suggests that kayaking, rafting, and canoeing activity on the four Green River reaches included in this study is in the magnitude of a few thousand trips per year.

The City of Tacoma requires all persons entering the upper watershed to stop at their entry gate and register their trip. Consequently, boaters on the full length of the Headworks reach must register at the entry gate. This entry point serves as a surrogate for extrapolating boating use on the Green River. During the 12-month period from September 2007 to August 2008, 472 boaters entered the watershed to paddle the Headwaters reach. In some instances, boaters access the Headworks reach without registering by accessing the river just downstream of the entrance gate. Those boaters are not counted. Comparing the number of boating trips reported for the Headworks reach on the Internet survey during 10 comparable months indicates that 22% of total Headwaters reach trips were reported in the study (i.e., the survey response rate for this reach was 22%). Given the fact that Tacoma's headcounts underestimate actual whitewater use on the Headworks reach this is likely an overestimate of the survey response rate.

The Internet survey recorded information from 328 trips on the four Green River reaches included in this study during an almost 12-month study period (September 2007 through early August 2008). Many boaters did not participate in the survey and many who made repeat trips probably did not report all their trips. If the total survey response rate were estimated to be 22 percent (as it was determined to be for the Headwaters Reach and assuming the response rate is similar for each reach), then total boating activity on the four studied reaches would be about 1500 boater trips during the study period. This should be considered a low estimate of annual boater trips given the fact that headcounts at the Tacoma entry gate underestimated actual use. In other words, the 328 surveys submitted indicate a larger number of annual whitewater user days under a lower survey response rate. As noted earlier in this report, river use during the study period was affected by extreme spring runoff in 2008 and temporary river-use closures. The higher flows may have deterred some novice and intermediate users on the Headworks reach. On the other hand, the higher flows may have attracted users more interested in high challenge trips.

Two principal river access points, Kanaskat-Palmer and Flaming Geyser State Parks, receive significant day use, some of which is attributable to paddling. Flaming Geyser State Park (a day use only facility) received 279,579 visits in 2006, 68 percent of which occurred in the months of May through August. Kanaskat-Palmer State Park (a camping and day use facility) received

169,112 day use visits in 2006, 66 percent of which occurred May through August. While only a very small amount of park visitation is due to boating activity, observation at these parks' river access points indicate that kayaking, rafting and canoeing on the Green is popular during certain flow conditions. Although not part of this study, tubing is extremely popular at certain flow conditions in the reaches around Flaming Geyser State Park as well as downstream to Whitney Bridge (Yo Yo reach). These users would not be defined as "boaters". Nonetheless, this user group likely has a flow preference and economic impact that could be quantified through proper study design.

Anecdotal information and observation at the put-in and take-out sites therefore suggest that annual Green River boating use on the studied reaches is between 2000 and 4000 boater trips per year. Based on this use estimate, the total expenditures by boaters would be between $73,000 and $147,000 per year. These numbers should be viewed as a "best guess" estimate due to the lack of legitimate user counts at the access points.

Future economic effects associated with Green River boating, similar to current effects, depend on two principal factors: the amount of money paddlers spend to participate in a trip and the total number of trips offered annually by the resource. Per trip costs will vary over time as prices for commodities such as fuel, food, lodging, etc. change, or if the supply of goods or services changes. For example, if conditions are conducive to more commercially-guided trips being offered on the river, boater expenditures on this cost category will increase.

The economic effects of Green River boating activity are mostly dependent on the amount of whitewater opportunity it provides. As the supply of boating opportunity increases, so will the boating activity and the resulting expenditures. Although this simple model has limits, the Green is a popular, easily-accessed boating opportunity and paddling will generally increase when flow conditions are conducive to boating activity.

Although this study limited its analysis to direct expenditures, these expenditures create a "ripple" effect within the local economy. Direct expenditures stimulate local industries and businesses that supply the recreation and tourism sectors, generating indirect and induced effects termed secondary economic effects. Secondary effects can be estimated by applying appropriate multipliers to the direct effects. The "Money Generation Model" used by the National Park Service and Forest Service for estimating secondary effects from recreation expenditures generally applies multipliers ranging from 1.2 to 1.4, depending on the expenditure category and other factors. In other words, the total effect (direct, indirect and induced effects) of Green River boater expenditures is about 20 to 40 percent higher than what the paddlers themselves spend.

In addition to the effects of boater spending on the regional economy, economists often measure the net economic benefits or consumer surplus associated with a resource. That is, the dollar amount that individuals are willing-to-pay to use the resource above and beyond what they currently pay. For example, if a paddler would pay $100 for a day of Green River boating and paid $37 in direct costs, the boater would have $63 of benefits remaining. Although outside

the scope of this study, estimating the surplus value received or retained by the visitor is often used to better understand the value of a resource and conduct benefit-cost analysis. Non-market values such as "existence value" offer yet another way to examine the economic benefit of whitewater. Quantifying the "existence value" of whitewater on the Green River requires a specific study methodology beyond the scope of this effort.

The Salmon Habitat Plan for the Green/Duwamish and Central Puget Sound Watershed (King County 2005) includes recreational boating in its discussion of the "basket" of economic values that accrue within the watershed, although it did not place a specific value on this particular "ecosystem service." Whitewater boating on the Green River is a small part of this larger watershed-based system that provides significant economic benefits to the region.

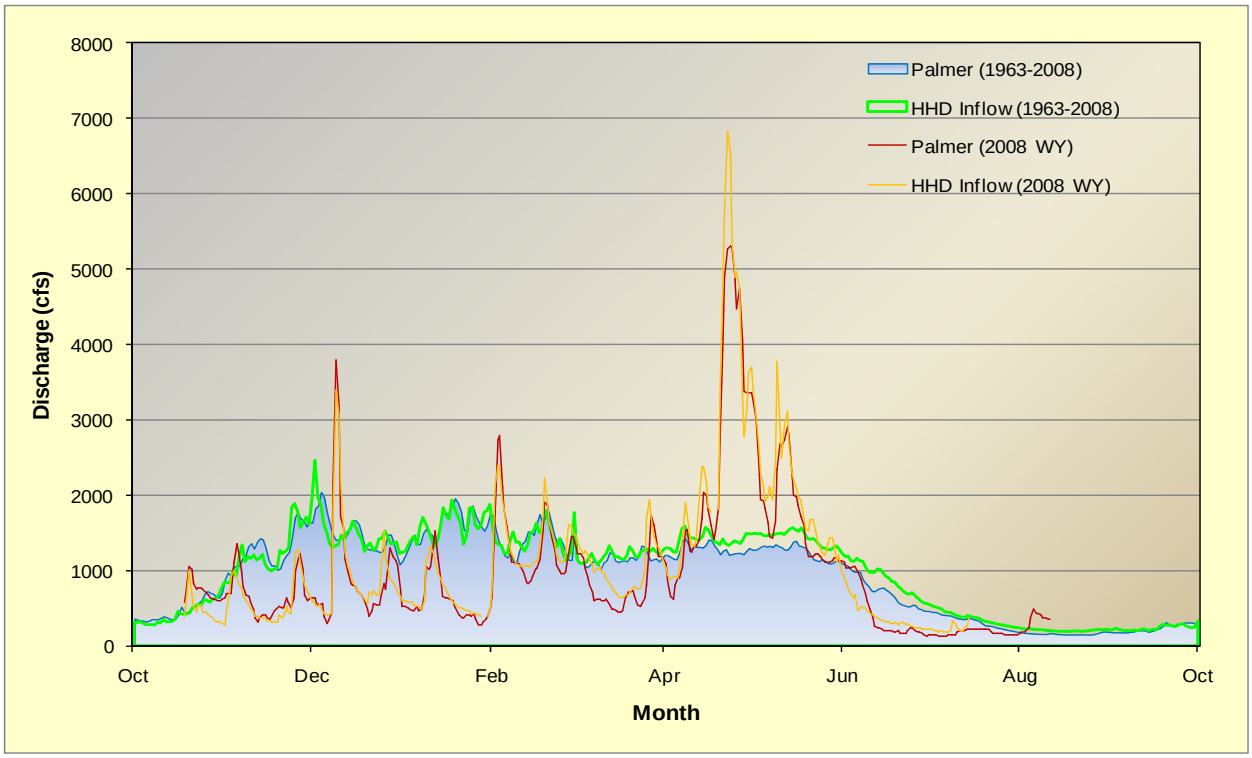
4.6 HYDROLOGY ANALYSIS

During the survey period the Palmer gage (USGS 12106700) daily average flows mirrored HHD daily average inflows with the exception of slightly lower peak flows at Palmer gage extended over a longer period of time (Figure 4.23). The maximum daily average HHD inflow was 6837 cfs measured on May 17, 2008 compared to a delayed peak daily average of 5300 cfs at Palmer gage on May 19, 2008. The lower and delayed peak daily discharge at Palmer was a result of HHD reservoir operations.

In 2008, the Palmer gage daily average flows in the Green River spiked above 1000 cfs on ten separate occasions between October 1, 2007 and April 15, 2008 coinciding with late fall, winter and spring storm events manifesting as rain in the lower elevations and snow in the higher elevations. These flow increases above 1000 cfs lasted between 2 and 12-days in duration. The spring snowmelt run-off was first evident at Palmer gage on April 28, 2008 when daily average flows at Palmer reached 1,060 cfs. Daily average flows remained above the 1000 cfs threshold for a 74-day period finally dropping below 1000 cfs on July 12, 2008. HHD inflow exhibited a nearly identical pattern to Palmer gage during this period with flows slightly greater on the rising limb of the run-off hydrograph and slightly lower on the descending limb.

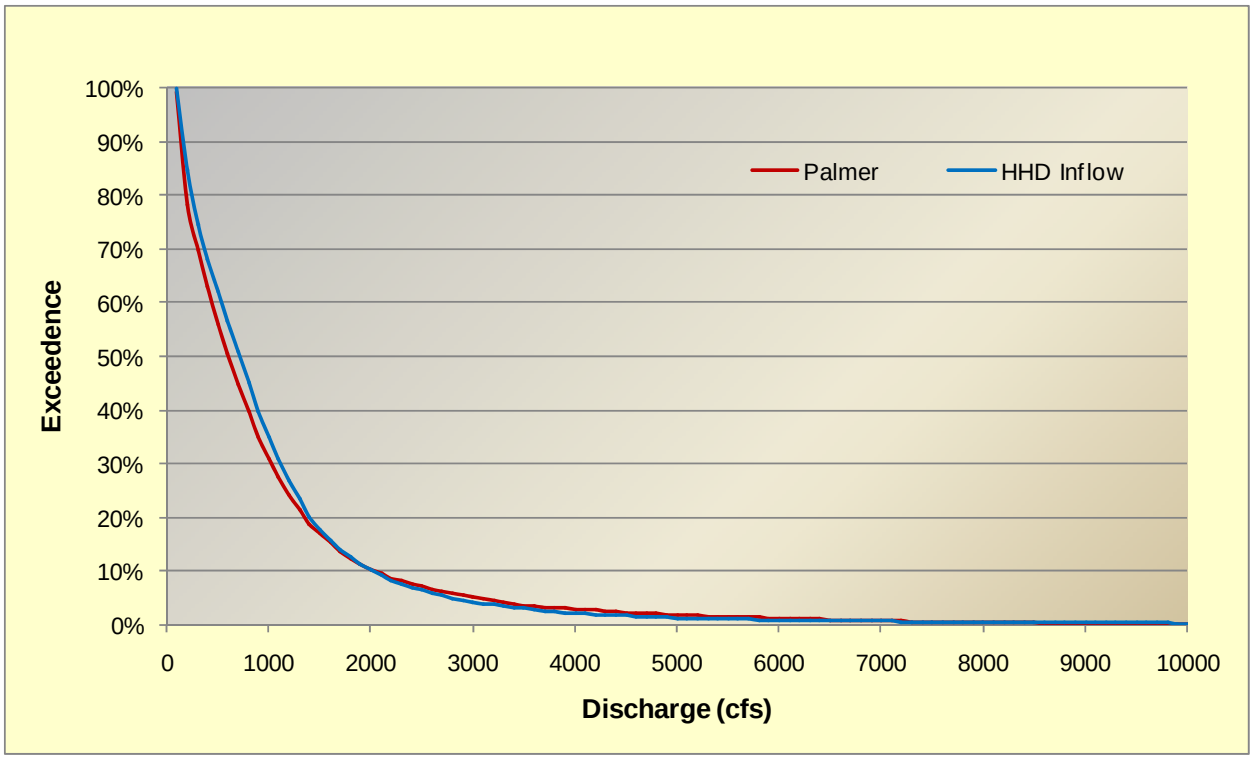
Discharge exceedence curves for the respective locations for the period of record (1963-2008) allows comparisons between unregulated and regulated flow conditions (Figure 4.24). The discharge exceedence curves for unregulated versus regulated flows were relatively similar. The largest differences were between 200 and 1000 cfs but only differed by 4% to 6%. Flows ranging from 1100 to 1400 cfs were 3.2% to 1.3% more likely to occur under unregulated conditions than regulated conditions. For flows greater than 1400 cfs there was less than 1% difference between the unregulated and regulated exceedence curves. For flows between 2000 and 7200 cfs, the frequency of occurrence was slightly greater for regulated conditions than unregulated but less than 1%.

Figure 4.23: Discharge measures (average 1963-2008 and 2008 WY) for HHD inflows and Palmer gage.



For whitewater boaters, the discharge exceedence curves predict the percent frequency for a given flow to occur on the Green River under regulated and unregulated conditions. Furthermore, the discharge can be overlayed with whitewater flow preferences to determine the percent frequency for a whitewater opportunity on an annual basis. Flows of 700 cfs occur 50% of the time under unregulated conditions (HHD inflow) compared to 45% of the time for regulated (Palmer gage). The 700 cfs corresponds to the kayak minimum acceptable flow for the Headworks reach. For the Upper Gorge, minimum acceptable flows were 1100 cfs for kayaks and IKs. Under unregulated conditions, these minimum acceptable flows occur 31% of the time compared to 28% for regulated. Minimum acceptable flows of 1400 cfs for catarafts and rafts in the Upper Gorge occur 20% of the time under unregulated conditions and 19% for regulated. Optimum flows for catarafts and rafts in the Upper Gorge (lower quartile = 2150 cfs) occur 9% of the time under unregulated and regulated conditions. Optimum flows for kayaks in the Upper Gorge (lower quartile = 1400 cfs) occurred 20% and 19% respectively for unregulated and regulated conditions.

Figure 4.24: Discharge exceedence curves for HHD inflows and Palmer Gage (1963-2008).



The average annual hydrograph for Palmer Gage and HHD inflow for the period of record (1963-2008) exhibit nearly identical seasonal patterns. On average, flows exceed 1000 cfs at both locations starting in the late fall remaining above this threshold into spring run-off in June. Individual water years deviate from this pattern as evident with the 2008 data. During the fall season, average annual flows at Palmer gage slightly exceed HHD inflows likely reflecting reservoir drawdown. During the winter and spring season HHD inflows were equal to or slightly greater than flows at Palmer gage corresponding to unregulated storm events in the basin and HHD reservoir buffering the spikes in flow.

4.6.1 Effects of Flow Regulation on the Annual Number of Whitewater Days

The annual number of whitewater days was quantified for Palmer gage and HHD inflows for two operational periods corresponding to changes in HHD management objectives; pre and post AWS project implementation. Daily average flows were used to count two types of whitewater days; minimum acceptable and optimum. The flow range for a minimum acceptable day was the median minimum acceptable flow to the 75% quartile for optimum flow. An optimum day ranged from the 25% to the 75% quartile for optimum flow. The total number of whitewater days meeting these criteria at each location was presented in a line graph format. The difference in the number of whitewater days between the two locations (HHD Inflow – Palmer gage) was presented in bar graph format for weekdays and weekends. Positive numbers indicate a higher frequency of whitewater days for HHD inflows whereas negative numbers represent more days at Palmer gage. The average annual number of minimum acceptable and optimum whitewater

days was calculated for the 44-year period of record (1963-2008). The average number of days ranges from a low of 48-days annually to a high of 140-days. In some cases low survey response numbers for certain watercraft types and reach categories resulted in narrow optimum flow quartile ranges from which to quantify optimum days (e.g., IKs – YoYo where n=2). Where survey responses were low, the reported quartile ranges probably do not reflect the true optimum flow range for that watercraft type.

The number of minimum acceptable days was consistently lower at the Palmer gage compared to HHD inflows for the 44-year period. The number of minimum acceptable days measured at the Palmer gage ranged from a low of 48-days for cataraft and raft opportunities in the Upper Gorge to a high of 124-days for canoes in the Headworks reach (Figure 4.25). In contrast, the number of minimum acceptable days for HHD inflows ranged from a low of 54-days for catarafts and rafts in the Upper Gorge to a high of 140-days for canoes and IKs in the Headworks reach. The largest difference was 19-days for canoeing in the Headworks where there were 140-days under HHD inflow conditions compared to 121-days at Palmer gage. The smallest difference was 6-days for catarafts and rafts in the Upper Gorge where there were 54-days under HHD inflow conditions compared to 48-days at Palmer gage. The differences between the number of minimum acceptable days for HHD inflows compared to Palmer gage were minor relative to the total average annual days available at each location. On weekdays, HHD inflows provided 4 to 13 more days than Palmer gage. For weekends, HHD inflows provided 2 to 6 more minimum acceptable days than Palmer gage.

The average annual number of optimum whitewater days was similar to the number of minimum acceptable days although the total number of days was lower due to the increased thresholds for optimum flows (Figure 4.26). For HHD inflows, the number of optimum days ranged from 3 (IKs—Headworks to Lower Gorge combined reaches) to 79-days (kayaks—Headworks). For Palmer gage, the number of optimum days was identical for IKs in the Headworks reach (3-days) while kayaks were reduced to 67-days compared to 79-days for HHD inflows. The number of optimum days was consistently lower at the Palmer gage compared to HHD inflows for the 44-year period except for IKs, catarafts and rafts where there were slightly more optimum days at Palmer gage. IK preferences in the Yo Yo reach were excluded from this data summary due to the insufficient responses from which to develop quartile ranges (n=2).

For the four individual reaches, optimum flow preferences were highest on the Upper Gorge for all watercraft. The Upper Gorge contains the most difficult whitewater in the Green River. This reach is the primary destination for most whitewater boaters, either by itself or in combination with other reaches. Accordingly, the Upper Gorge serves as a good comparison between the number of optimum days for HHD inflow conditions versus Palmer gage. The number of optimum days for kayaks (interquartile range 1400 to 3000 cfs) was 57 and 51 for HHD inflows and Palmer gage respectively. For catarafts and rafts (interquartile range 2150 to 2750 cfs), the number of optimum days in the Upper Gorge was nearly equal, 13 and 12 for HHD inflows and Palmer gage respectively. IKs, exhibiting a slightly higher but similar well-defined optimum flow range (interquartile range 2500 to 2950 cfs), had fewer whitewater days, 8 and 7 for HHD

Figure 4.25: Annual number of minimum acceptable days (1963-2008).

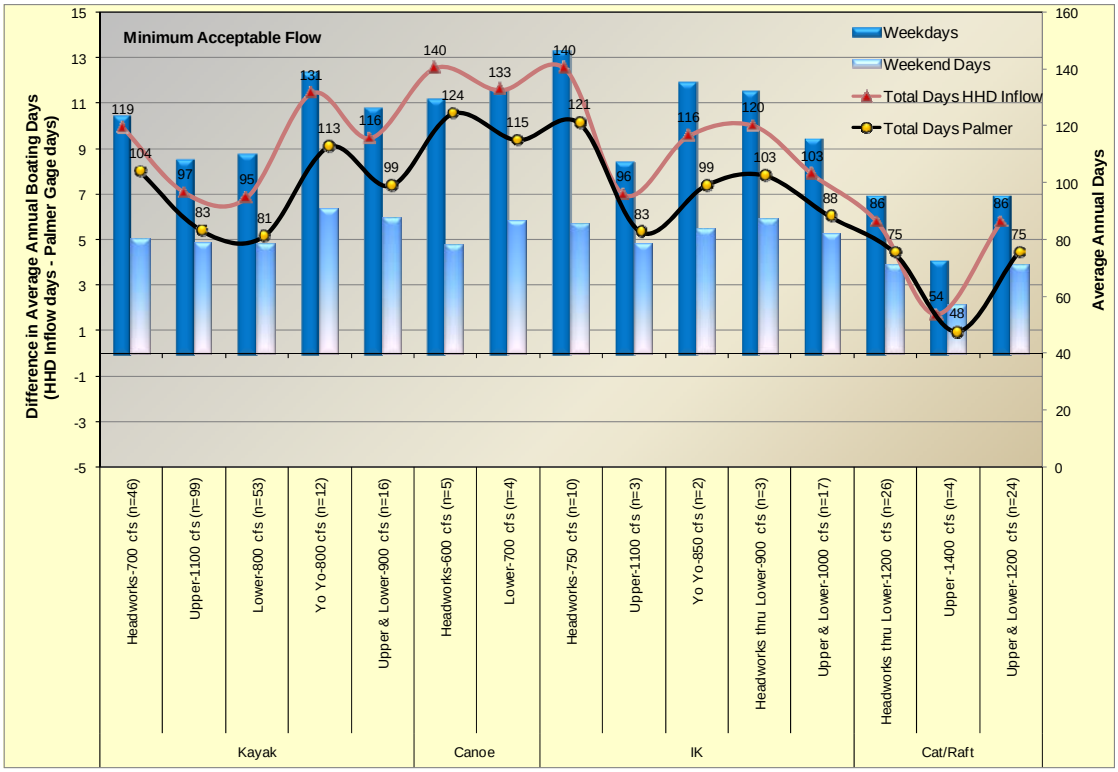
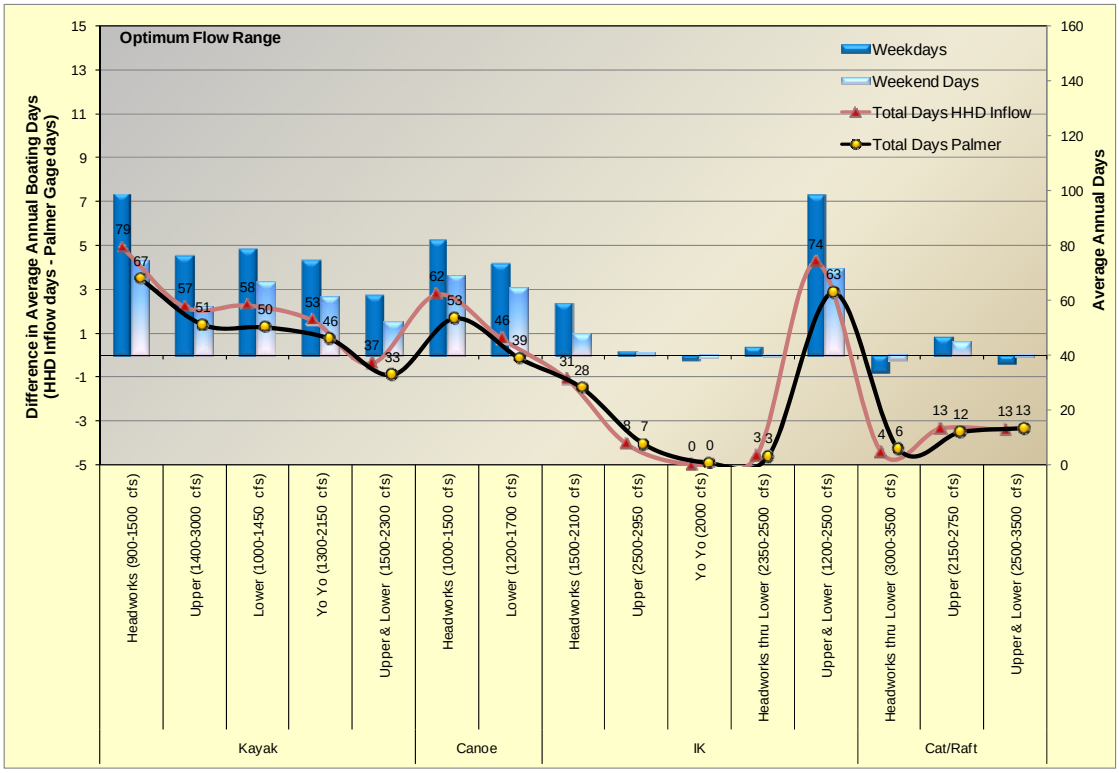


Figure 4.26: Annual number of optimum days (1963-2008).



inflows and Palmer gage respectively, owing to the slightly higher 25% quartile and narrower range of optimum flows. As optimum flow preferences increase and in some cases the range narrows, the number of annual whitewater days decreases for both HHD inflows and Palmer gage to the point where the number of days were nearly equal for either condition.

On average, the Green river provides a substantial number of whitewater opportunities within the minimum acceptable to optimum range for flows recorded as inflow to HHD and at Palmer gage. For each respective watercraft and reach, the average annual number of whitewater days for minimum acceptable and optimum boating greatly exceeded the lost days resulting from HHD flow regulation for the period of record. In low water years, the differences in the number of whitewater days between the unregulated versus regulated flow conditions could be more acute due to the fewer number of days meeting the minimum acceptable flow threshold compounded by reservoir operations increasing the percentage of inflow directed to storage during the refill period.

4.6.2 1995 Settlement Agreement Effects on Annual Number of Whitewater Days

The 1995 Muckleshoot Agreement established seasonal minimum instream flow requirements measured at the USGS Auburn gage. Section 6 in the 1995 Settlement Agreement between Tacoma and Friends of the Green called for investigation of the effects of the minimum instream flow requirements in the 1995 Muckleshoot Agreement on the frequency of whitewater opportunities. A comparative analysis of hydrologic data was undertaken to quantify the frequency of whitewater opportunities (minimum acceptable and optimum flows for respective watercraft and river reach). The analysis was identical to the frequency analysis described above with the exception that the hydrology data was divided into two time periods; set 1—1963 to 1995 and set 2—1996 to 2008. The average annual number of minimum acceptable and optimum days was nearly identical for the two time periods for individual watercraft and reaches. The average number of days was also similar to the results for the combined time periods (1963-2008). As a result, the minimum instream flow requirements established in the 1995 Muckleshoot Settlement Agreement did not affect the average annual number of whitewater days. The minimum instream flow requirements associated with the 1995 Muckleshoot Agreement are well below the minimum acceptable boating flow thresholds. Furthermore, flow conditions triggering implementation of the Settlement Agreement typically occur during the low flow period when flows are not suitable for boating.

4.6.3 AWS Project Effects on the Annual Number of Whitewater Days

The USACE began implementing the AWS pool elevations in the spring of 2007. Prior to implementation, the USACE tested the AWS project in 2002. As a result, there are a limited number of years available to assess the potential effects of additional water storage at HHD on the number of whitewater boating days measured at Palmer gage. The three years vary in discharge patterns falling into roughly three water year types; low water year (2007), normal year (2002) and high water year (2008) (Figure 4.27). Consequently, these three years of data

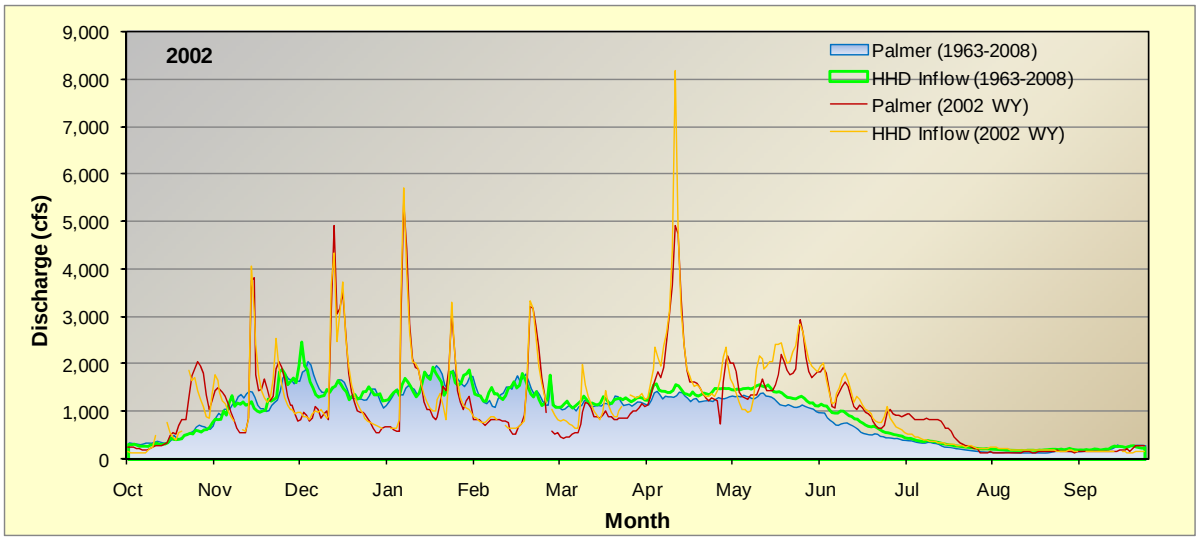
require independent analysis and lack sufficient data to draw definitive conclusions about the impact of AWS operations relative to the previous period of record.

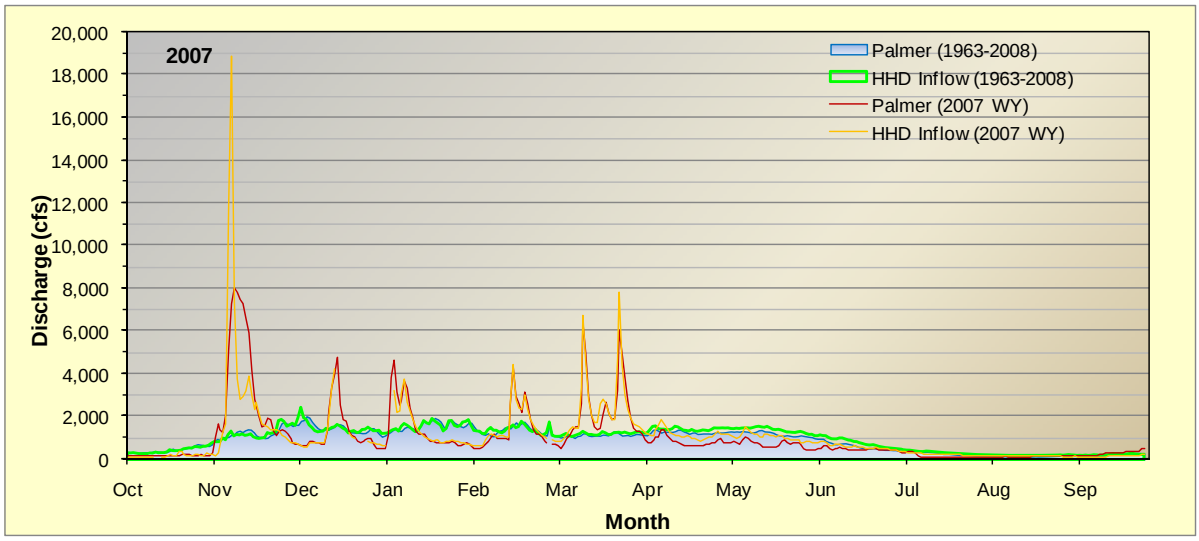
In 2002, the number of minimum acceptable days ranged from 96 days in the Headworks for kayaks to a low of 9-days for catarafts and rafts combining the Headworks to Flaming Geyser (Figure 4.28). The number of minimum acceptable days was typically higher for HHD inflows compared to Palmer gage but only by a minor amount. The largest difference between locations was 11 more days for kayaks, canoes and IKs in the Headworks under HHD inflows excluding IK results for the Yo Yo reach due to the low number of survey responses. There were more weekend minimum acceptable days at Palmer gage in 2002 for kayaks in the Upper Gorge, IKs (Headworks and Upper Gorge) and catarafts and rafts (Upper Gorge) compared to the HHD inflows. The number of optimum days in 2002 for HHD inflows and Palmer gage were nearly identical to the minimum acceptable day comparisons.

In 2007, the number of boating days was less than 2002. The minimum acceptable days ranged from 64 to 13-days for HHD inflows. For Palmer Gage, the number of minimum acceptable days ranged from 64-days in the Headworks for kayaks to a low of 20-days for catarafts and rafts in the Upper and Lower Gorge (Figure 4.29). In contrast to the 2002 water year, regulated flows measured at Palmer gage provided more whitewater days than HHD inflows. For example, there were 4 more weekend days for kayaks in the Upper Gorge for Palmer gage flows compared to HHD inflows. For catarafts and rafts, there were also 4 additional days of minimum acceptable flows at Palmer gage compared to HHD inflows. The number of optimum days were also higher at Palmer gage in 2007 compared to HHD inflows for kayaks in the Upper Gorge and catarafts and rafts as well. In 2007, HHD flood control operations during the winter period appear to have distributed acute flood events over a longer period of time in the outflows.

In 2008, the number of boating days was less than 2002. The minimum acceptable days ranged from 75-days to 11-days for HHD inflows. For Palmer gage, the number of minimum acceptable days ranged from 75-days in the Lower Gorge for kayaks to a low of 10 days for catarafts and rafts in the Upper and Lower Gorge (Figure 4.30). For the most part, HHD inflows provided more whitewater days than Palmer gage but only by a small margin relative to the total number of annual days. The largest disparity between locations was for canoe days in the Lower Gorge where there were 12 more weekday opportunities under HHD inflows. For catarafts and rafts, there was one more day of minimum acceptable boating in the Upper and Lower Gorge under HHD inflows. The number of optimum days was also higher under HHD inflow conditions compared to Palmer gage. Nonetheless, the differences in the number of boating days between HHD inflows and Palmer gage were minor relative to the overall number of annual days in 2008.

Figure 4.27: Annual hydrograph for AWS implementation (2002, 2007 and 2008).





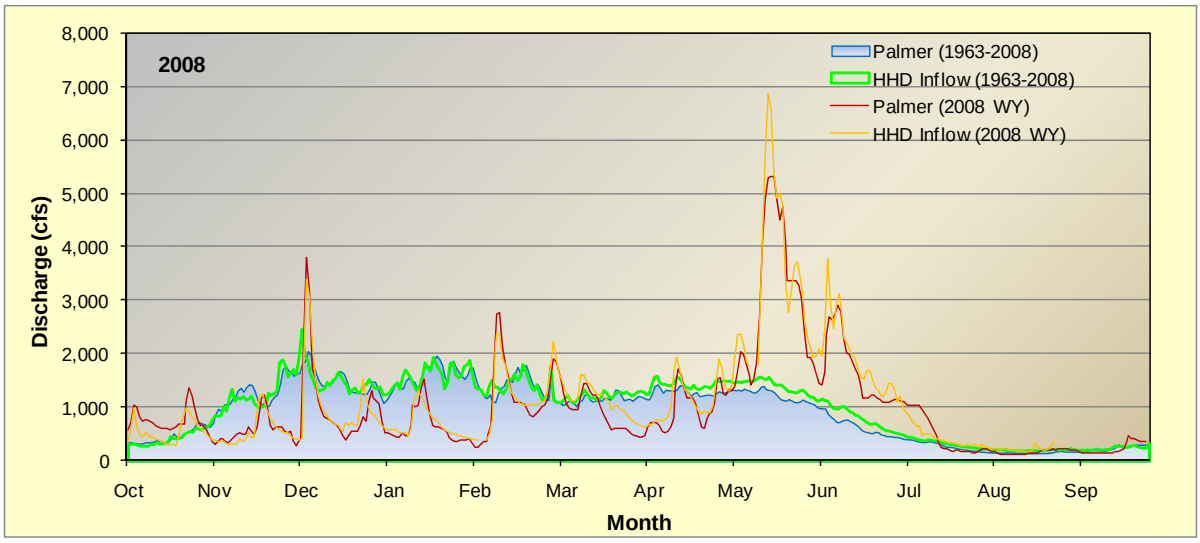
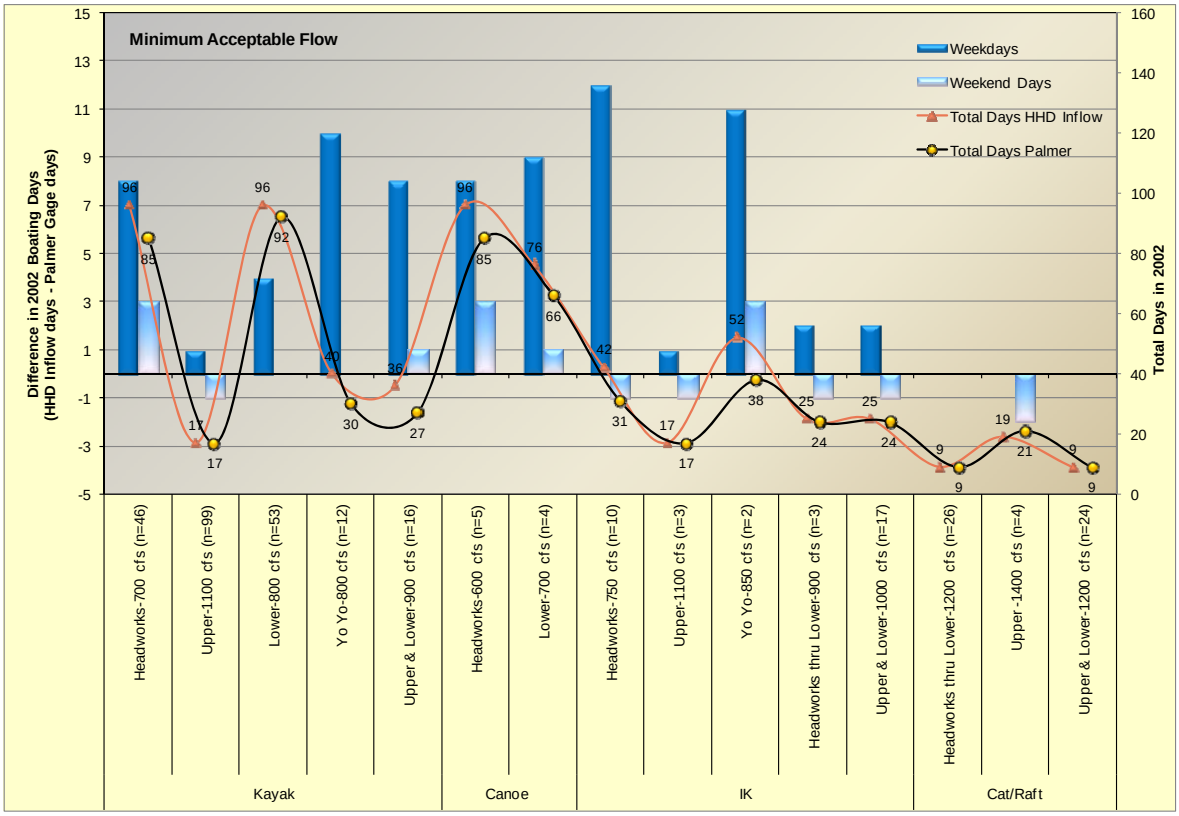


Figure 4.28: Annual number of boating days in 2002.



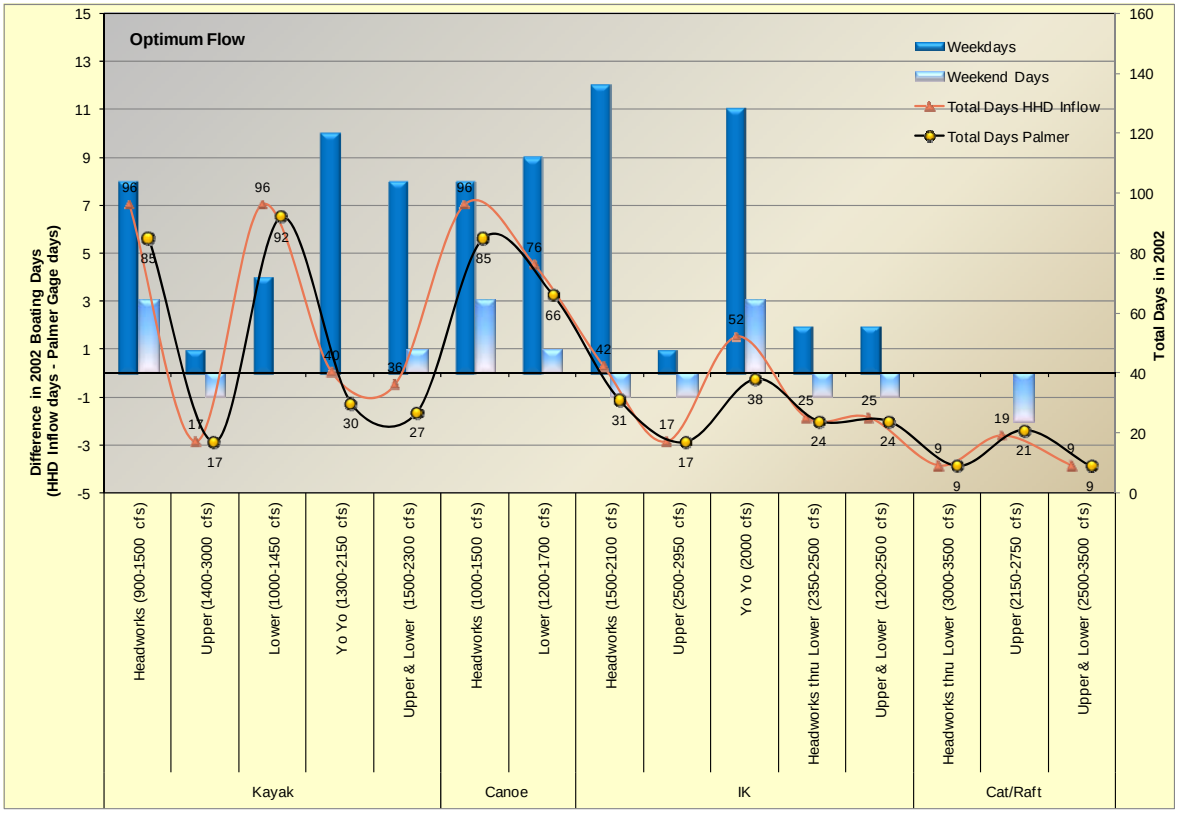
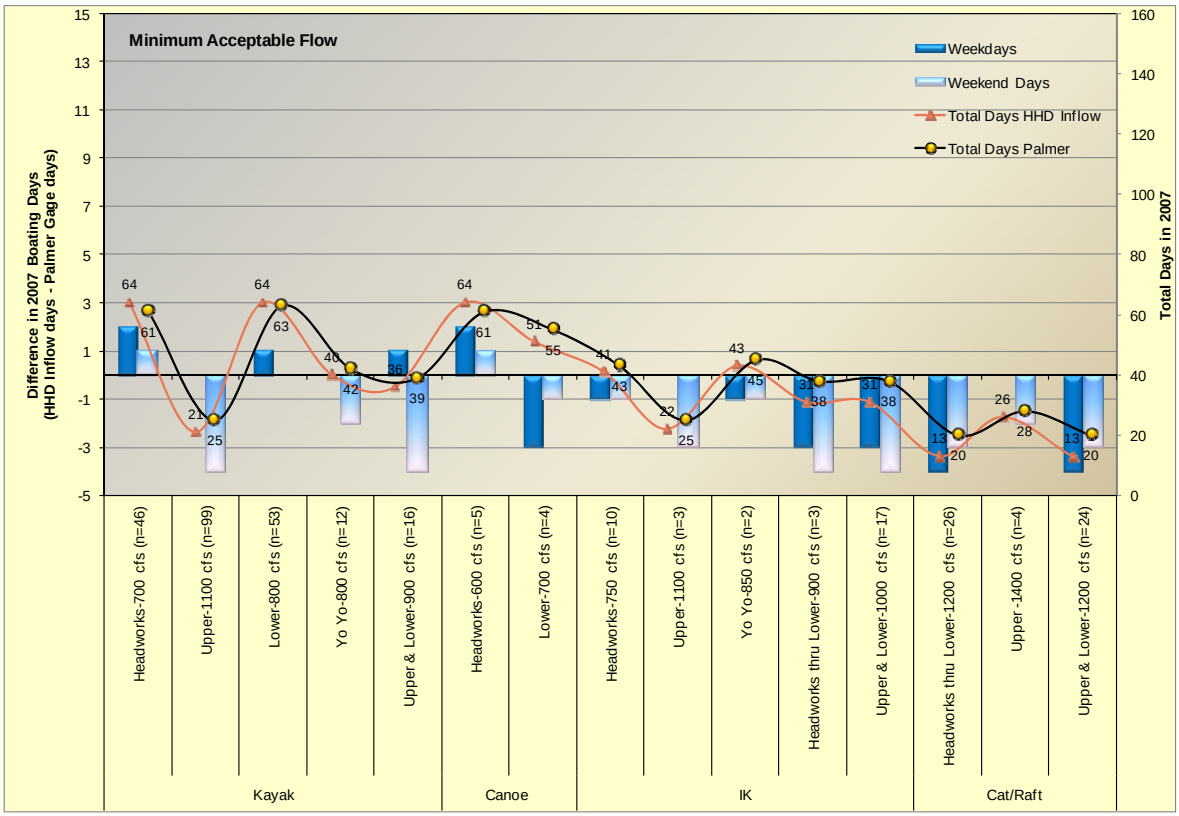


Figure 4.29: Annual number of boating days in 2007.



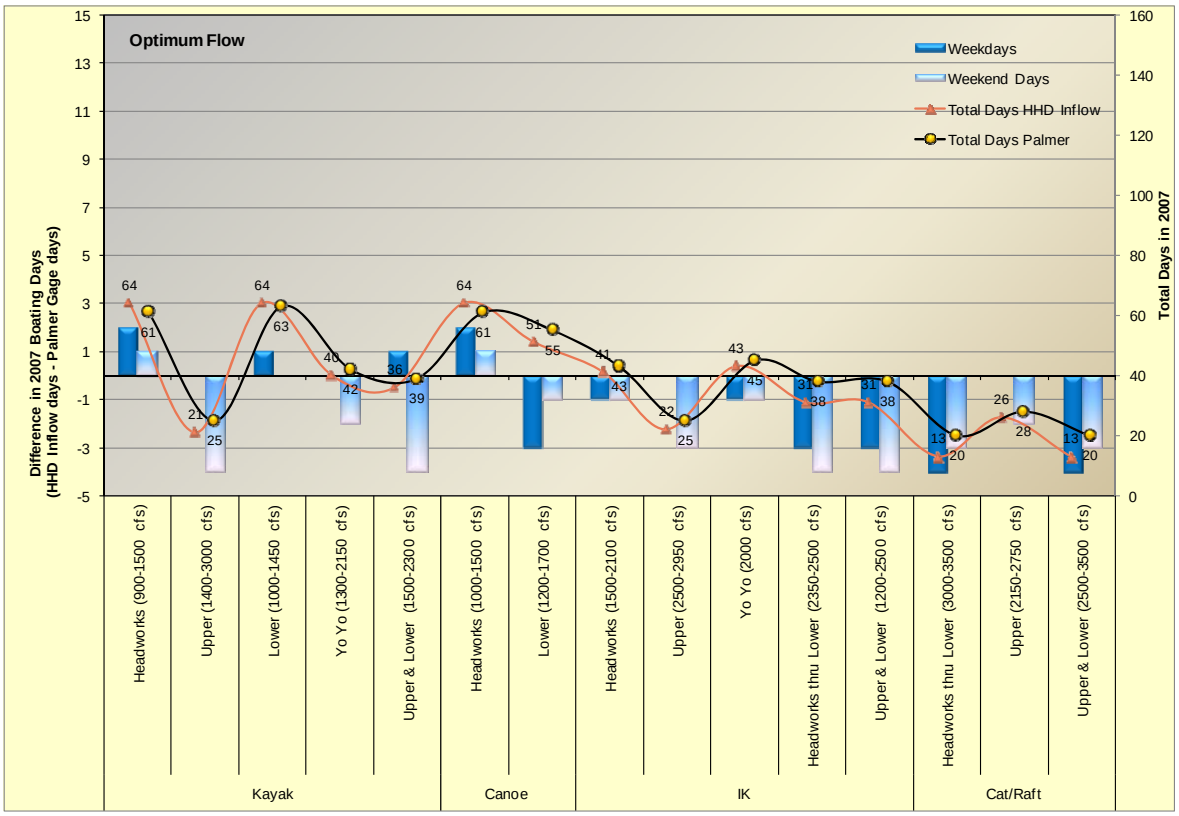
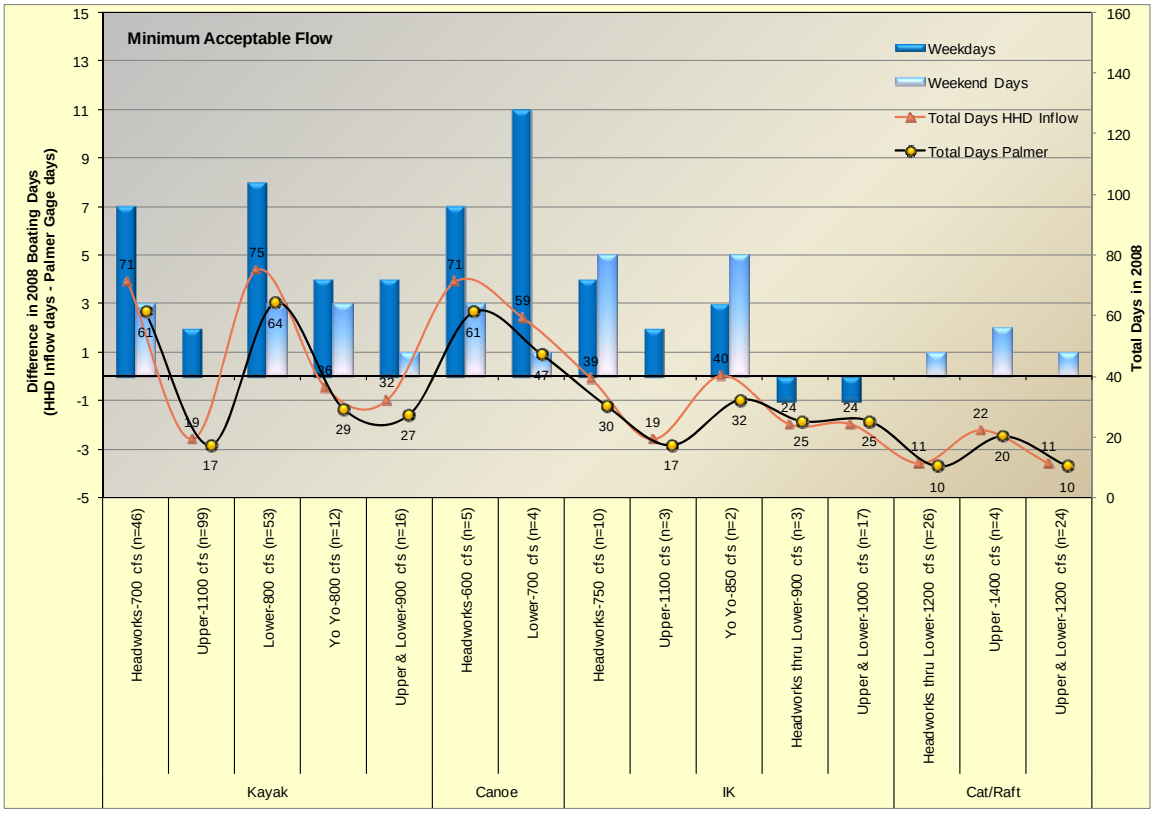
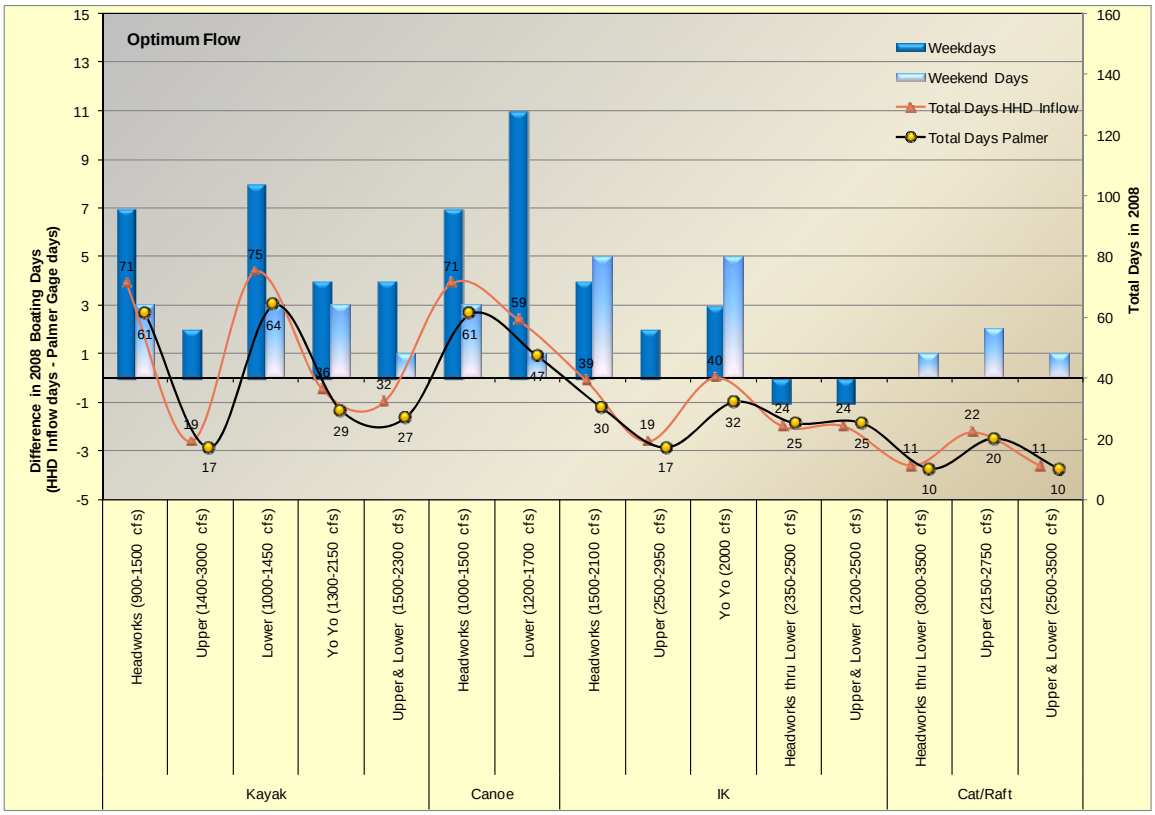


Figure 4.30: Annual number of boating days in 2008.





The comparative analysis of available whitewater days for HHD inflows versus Palmer gage for years associated with implementation of the AWS storage represent a total for each respective year. The annual total lacks the resolution to measure the potential effects on the whitewater opportunities during distinct time periods within an individual year corresponding with specific management objectives. Further comparative analysis using hydrologic data partitioned into respective HHD management objectives, e.g., fall drawdown, winter flood control or spring refill, might reveal a different outcome. The timing for implementation of specific HHD management objectives is dictated largely by water year type and meetings with resource agencies to assess downstream fishery needs. Consequently, partitioning of hydrologic data requires examining HHD operational practices for each year to determine management objectives. In some years management objectives are dynamic rather than static making data partitioning difficult.

4.6.4 Weekday versus Weekend Management of HHD outflows

In the focus group sessions participants routinely complained about "Monday morning dumps" referring to flow increases at Palmer Gage as a result of gate changes at HHD to spill more water. According to boaters, in the winter and spring during operational periods the USACE often decreases spill from HHD on Friday afternoons at the end of the work week then increases spill on Monday morning at the start of work week. From the boaters perspective, decreasing flows on weekends, particularly when flows are on the threshold of minimum acceptable, then increasing flows again on weekdays, degrades the quality of the whitewater and even has the potential to make the river not boatable altogether.

Gate adjustments are made at HHD on a regular basis based on management objectives. In the winter season, HHD operators strive to maintain low pool elevations for flood control purposes but must balance that objective with maintaining adequate pool elevation to keep turbidity below 5 NTUs for the Tacoma water withdrawals. Overshooting the pool elevations over the weekend based on a Friday gate adjustment results in a Monday morning dump of water as observed by the boaters in focus group sessions. Likewise, overshooting pool elevation targets on weekends during the spring refill period typically results in a Monday morning dump of water.

The daily average flows used in the hydrologic analysis lacked the resolution to adequately analyze the effects of short term gate adjustments on whitewater opportunities. Furthermore, the hydrology analysis indicates that HHD operations have a minor effect on the annual number of whitewater days on the Green River. Nonetheless, the observations of weekend versus weekday boatable flows by boaters should be taken into account when evaluating HHD gate adjustments.

In recent years, input from river ecologists and fisheries biologists has helped identify the need for dam managers to minimize the frequency of flow fluctuations and rate of change to avoid adverse fishery and habitat impacts (Stanford et al 1996). On regulated rivers such as the Green River, artificial flow fluctuations are unavoidable. The USACE manages HHD for flood control, municipal water storage and instream flows for the anadromous fishery. Flow

fluctuations occur on short notice in response to storm events and on seasonal time frames corresponding to management objectives. The USACE works collaboratively with the Green River Flow Management Committee to establish flow targets each year. Presently, whitewater flows are not included in the flow decision matrix. In fact, to some degree, there is opposition to consider whitewater flows in the decision matrix because this is viewed as one more human demand on flow management that could lead to more non-normative flow fluctuations further impacting fish. The minimum acceptable flow thresholds identified in this study demonstrate that flows necessary for whitewater opportunities are similar to winter and spring fishery flows. Creating flow conditions suitable for whitewater boating below HHD is not inconsistent with present operations. For example, the current practice of decreasing outflows on weekends followed by an increase on Monday morning results in flow fluctuation. Ideally, HHD would be managed in real-time on a 7-day schedule to avoid Friday/Monday fluctuations and provide a more normative hydrograph. IIn the absence of establishing a 7-day dam management schedule, reversing this pattern of flow fluctuations so that flows increase on weekends rather than Monday morning will provide whitewater flows when the public can utilize the opportunities without changing the magnitude of the flow fluctuation for fish. The Green River Flow Management Committee provides an appropriate forum for integrating whitewater flows with project mandates and fishery flows.

4.6.5 IHA Analysis

Two hydrologic investigations of the Green River in the past decade compared the pre-project flows (natural) with the HHD outflows (regulated) to quantify how much HHD has altered the annual hydrograph (Kerwin and Nelson 2000, Mathews and Richter 2007). The Index of Hydrologic Alteration (IHA) developed by Richter (1996) was used for the hydrologic analysis. The IHA methodology uses 32 parameters to measure the hydrologic variability for a given site and compare this with the flow regime at a regulated site to determine the degree of hydrologic alteration caused by anthropogenic sources. The 32 parameters encompass flow volume, frequency, duration, timing and rate of change.

The IHA analysis determined that the hydrology in the Green River is less dynamic below HHD because of flow moderation during flood events as well as low flow conditions. HHD has decreased the volume and duration of floods. In particular, HHD has completely eliminated flood flows greater than 10,700 cfs at Palmer (Kerwin and Nelson 2000). In addition, short term pulse events (one to three-day) are captured in the HHD reservoir and released as outflows over a longer time-frame at a lower volume. From a biological perspective this loss of flood flows can result in substantial impacts on riverine ecological processes and fisheries habitat. For whitewater boaters, on the other hand, flood control management at HHD has increased the duration of flows between 1300 and 5000 cfs at Palmer compared to HHD inflows (Kerwin and Nelson 2000).

4.7 INTEGRATING WHITEWATER AND INSTREAM FLOWS FOR SALMONIDS

The 1999 ESA listing of Chinook salmon and bull trout as threatened species motivated local governments, King County and 15 cities, to take action in the recovery efforts of these species in the Green River watershed. Over the past decade, these local governments have worked closely with state and federal agencies and the MIT conducting studies in the Green/Duwamish and Central Puget Sound watershed (WRIA 9). The Forum of local governments adopted the "Salmon Habitat Plan, Making our Watershed Fit for a King" (King County 2005). The MIT has also been conducting studies of winter steelhead habitat and instream flow needs. The Salmon Habitat Plan and supporting studies as well as the MIT winter steelhead monitoring efforts identify salmonid instream flow needs for various life history stages of the respective species. Consequently, any efforts to shape whitewater flows from HHD must be compatible with salmonid instream flow needs. Despite the perceived constraints, substantial opportunities exist throughout the fall, winter and spring seasons to provide instream flows targeting salmonid recovery efforts that secondarily provide opportunities for whitewater boating.

4.7.1 Anadromous fish and habitat conditions

Historically, the Green/Duwamish watershed supported as many as 8 distinct populations of anadromous salmonids; spring and summer/fall Chinook, chum, pink, and coho salmon, steelhead, bull and cutthroat trout and possibly sockeye salmon (Ruggerone et al. 2004). Land use practices over the past century resulted in the extirpation of distinct population units and in some cases complete loss of species from the watershed. The re-routing of the White and Black Rivers away from the Green/Duwamish watershed altered the annual hydrologic cycle resulting in geomorphic responses manifested through reduced floodplain width and wetland area, loss of side channel habitats and narrowing of the mainstem channel features. Dredging and filling of wetlands and estuary habitats in the Duwamish for industrial purposes further compounded loss of aquatic habitats critical for completing salmon life histories. The more recent conversion of forest, agricultural and wetlands to high density urban environments has also greatly reduced the availability and diversity of floodplain habitats in the middle and lower Green River. Levee construction for flood control has greatly reduced, and in some cases completely eliminated, connectivity between the mainstem and former side channel habitats in the floodplain. Flow regulation since construction of HHD in 1962 coupled with water withdrawals for municipal water supply has further altered the diversity, quantity, and quality of aquatic habitats in the Green/Duwamish watershed (Kerwin and Nelson 2000).

The Salmon Habitat Plan divides the watershed into five distinct subwatersheds for management purposes; Upper Green, Middle Green, Lower Green and Duwamish Estuary and Marine Nearshore. Historically, anadromous salmonids were found in all five subwatersheds. The Salmon Habitat Plan lists goals and objectives specific to each subwatershed based, in part, on the historic ecological structure and function balanced with present day constraints imposed by human alterations of the Green River. In some cases, habitat restoration is not feasible due to limitations on available space or alterations that prohibit reestablishing historic river structure and function (King County 2005). Construction of the Tacoma Headworks water

diversion in 1913 at river mile 61 blocked upstream fish passage to the Upper Green subwatershed. In 1962, HHD construction added a second barrier to upstream fish passage into the Upper Green subwatershed.

The lower portions of the Middle Green and the Lower Green subwatersheds offer substantial habitat restoration opportunities. Historically, the Middle Green and Lower Green subwatersheds provided the highest habitat diversity and complexity supporting a range of salmonid life history stages. Restoration of spawning and rearing habitats in the lower Middle Green subwatershed and Lower Green subwatershed are considered crucial for establishing a viable Chinook population. The Middle Green subwatershed starts at the outlet to Howard Hanson Dam.

4.7.2 Life History Patterns and Seasonal Flow Needs

The riverine life history stages of Chinook and winter steelhead serve as surrogates for establishing instream flow needs for the salmonid community in the Green River. Individual life history stages for each species have a corresponding instream flow component for successful completion of that life stage to support a viable population (Mathews and Richter 2007). The instream flow needs vary seasonally by life stage and species corresponding to habitat conditions favorable to the given life stage. The instream flow requirements for Chinook and winter steelhead, in turn, serve as an annual hydrograph template for flow management from Howard Hanson Dam.

The summer/fall Chinook migrate upstream in the Green/Duwamish system between mid-June to November with the peak corresponding to pulses of higher flows during storm events or manufactured releases from HHD (Ruggerone et al. 2004; Mathews and Richter 2007).

Winter steelhead spawn in the spring throughout the lower and middle Green River subwatersheds and tributaries. Annual spawning surveys in 2005, 2006 and 2007 by MIT fisheries biologists estimate the total number of redds and the critical flows necessary to adequately inundate redds to insure egg survival to fry emergence. In 2006 and 2007, the MIT called for 2,500 and 4,490 acre-feet of water respectively released from HHD during the descending limb of the spring hydrograph to protect winter steelhead redds from dewatering (Coccoli and Leslie 2006 and 2007). Winter steelhead fry and juveniles require sufficient water for rearing in the middle and lower Green River. Low flows in the summer period restrict fry and juveniles to the main channel of the river. Historically, the braided channel of the lower river increased access to side channel habitats with rich food resources. Furthermore, high temperatures associated with low summer flows can result in fry and juvenile mortality. Low flow augmentation during these periods requires release of stored water from HHD.

Flow regulation at HHD has been identified as one of the principal factors impacting anadromous fish habitat. The ESA listing of Chinook and bull trout requires the USACE to manage instream flows, in part, to meet downstream fishery needs. To accomplish this requirement the USACE manages HHD outflows, in part, to meet fishery instream flow needs

during the early summer through fall conservation pool allocation period (USACE 2008). The fishery instream flow needs include; protection of wild winter steelhead redds through fry emergence; adequate summer low flows for juvenile steelhead and salmon rearing; and sufficient later summer/fall flows for Chinook spawning. These seasonal fishery instream flow needs compete for the same finite supply of water. In the majority of years, there is insufficient water to meet all the fishery instream flow needs. For example, later summer streamflow augmentation requires diverting spring flows for water storage purposes between February and May. In some years, this reduction in the spring hydrograph may disconnect lateral and off-channel juvenile rearing habitat from the main channel thereby limiting food resource availability and, in some cases, stranding juveniles indefinitely. The aggressive refill rates associated with the AWS project may further reduce spring peak flows in some years further impacting habitat and survival (USACE 2008). The IHA analysis determined that HHD flow augmentation during summer low flow periods prior to implementation of the AWS project failed to compensate for water withdrawals at the Tacoma Headworks (Kerwin and Nelson 2000). Under the AWS project operations, balancing spring instream flow needs for fish in low and dry water years with aggressive refill rates for late season flow augmentation will prove particularly challenging.

In high water years, delivering the necessary flows to maintain and improve fish habitat will be an achievable objective for HHD dam operators. The true challenge will be in the dry years with low snow pack when reservoir refill demands a higher percentage of the inflow. Additional fishery studies particularly stage-discharge relationships for critical habitats combined with reservoir management techniques will be needed to minimize downstream fishery impacts. Tacoma, the MIT, WDFW, and the USACE are currently initiating a study to assess hydrologic connectivity in lateral and off-channel rearing and incubation areas as well as flow needs for juvenile salmon to egress from these habitats back to the main stem channel for outmigration. The results of this study effort should help identify critical spring flow thresholds for the successful use of lateral habitats.

4.7.3 Restoration Tools

The Green River Salmon Habitat Plan adopts four approaches for recovering anadromous fish populations; habitat protection, restoration, rehabilitation and substitution. The latter two approaches are necessary in WRIA9 because the landscape on portions of the watershed have been irretrievably altered. The former two approaches include identification of existing habitats that are partially or fully intact and taking the necessary steps to protect and restore where applicable. HHD outflows provide an important restoration tool in the overall recovery efforts of anadromous fish populations by mitigating some of the current habitat limiting factors. Pulse flows originating from HHD can be used to trigger geomorphic processes restoring aquatic habitat diversity and complexity in the Middle and Lower Green subwatersheds (King County 2005, Mathews and Richter 2007).

The IHA analysis (Kerwin and Nelson 2000; Mathews and Richter 2007) found a decrease in the frequency, magnitude and duration of flood events below HHD compared to the pre-dam hydrology. The USACE manages outflows from HHD to limit flows at the Auburn gage to

12,000 cfs or less to prevent flooding of residential and commercial lands in the lower watershed. Thus, flood events greater than 12,000 cfs measured at the Auburn gage have been completely eliminated. Floods of this magnitude initiate important geomorphic processes diversifying downstream habitats through changes in channel shape and structure. Overall, there has been a reduction in aquatic habitat diversity due, in part, to water withdrawals and flow regulation (Kerwin and Nelson 2000). Ruggerone et al. (2004) determined that flood flows were an important ecological component of Chinook life histories; transporting juvenile salmon downstream, creating spawning and rearing habitat and triggering adult spawning migrations. HHD could be used to reestablish these ecological flow components to help restore habitat diversity and complexity in the Middle and Lower Green Subwatersheds as well as provide seasonal flows for upstream and downstream fish movement. Yet, providing restoration flows of this magnitude in the future is not possible because it would jeopardize public and private lands, infrastructure, and property in the lower Green River Valley.

Ideally, returning to a more normative hydrograph downstream of HHD will help increase the potential for recovering viable populations. Constraints on flood peaks due to property damage as noted above and water storage needs limit the degree to which the normative hydrograph can be achieved. Nonetheless, development of annual hydrograph targets based on ecologically meaningful flow components in light of the human imposed constraints would be instructive for USACE dam operators managing daily gate changes and seasonal pool elevations. The instream flow targets would vary with each water year depending on annual snowpack and associated climatic conditions. HHD outflows may serve as a hydrologic restoration tool to increase habitat diversity and complexity in the Middle and Lower Green Subwatersheds. Secondarily, HHD outflows could provide whitewater boating opportunities. HHD outflows ranging from 1,000 cfs to 3,500 cfs provide minimum acceptable and optimum flows for whitewater boating.

4.7.4 Additional Studies

Each year the MIT develops a stage discharge threshold needed to keep winter steelhead spawning redds inundated through fry emergence. This monitoring data provides important information to dam operators managing outflows, in part, to protect salmonids. The stage discharge relationship changes each year influenced by the timing of winter steelhead spawning and spring runoff volumes. Higher discharge during spawning can lead steelhead to spawn in channel profile locations vulnerable to dewatering prior to fry emergence. The MIT monitoring of winter steelhead spawning locations and stage discharge relationships should be continued annually. Investigations for other life history stages for winter steelhead as well as other salmonids will help identify critical instream flow needs for other time periods in the year. The information gained from these studies will help integrate fish flow preference curves with whitewater flow preference curves. In some cases the preference curves may overlap substantially. Biologists and HHD dam operators alike need this information in order to manage outflows from HHD.

Construction and operation of HHD has eliminated the historic 2-yr flood flow (12,000 cfs). Flows of this magnitude and greater performed important geomorphic processes in the Green River prior to dam construction (Kerwin and Nelson 2000; Mathews and Richter 2007). Flows of this magnitude will not occur in the future due to extensive urbanization and potential for flooding in the lower Green River. Furthermore, extensive levee construction and channelization brings into question what pulse volume is necessary in the Green for channel maintenance. The specific volume for high pulse flows and their ecological significance for the fishery is more uncertain in the present day constrained channel. Further study is needed to define the range of high pulse flows, the timing and frequency of the flows to determine if these restoration flows will also serve as whitewater opportunities.

5. DISCUSSION

This study documents the flow preferences for four watercraft types on four whitewater reaches of the Green River. For each watercraft type and reach there is a suitable flow preference range delineated by the minimum acceptable flow at the bottom end and the optimum flow at the upper end. Boaters seek out whitewater opportunities when flows measured at the Palmer gage are within this range which typically occurs in the late fall, winter and spring.

The IHA analysis determined that regulation of flows at HHD coupled with water withdrawals at the Tacoma Headworks diversion alters the timing, magnitude, duration, rate and frequency of flows recorded at Palmer gage (Kerwin and Nelson 2000; Mathews and Richter 2007). The IHA analysis takes into consideration the full range of hydrologic conditions from the low flows to the peak flood events. In contrast, the number of whitewater days did not differ dramatically between unregulated and regulated flows. In other words, flow regulation at HHD statistically has little effect on the annual frequency of whitewater opportunities measured at Palmer gage. The range of flows defined for whitewater boating (minimum acceptable to optimum) largely pass through HHD. In fact, the IHA analysis found a net increase in the number of days with regulated flows between 1200 and 5000 cfs compared to natural conditions. The extreme events such as flood flows and low flow periods were more affected by HHD regulation.

Recent operational changes at HHD to accommodate the AWS coupled with Tacoma implementing use of their second diversion water right could potentially alter the annual number of whitewater days. The higher pool elevation targets associated with the AWS project will likely require the USACE to start refill earlier in the year and implement a more aggressive refill rate depending on the water year type. The AWS project was tested in 2002 by the USACE then annual storage to 1167 ft began in 2007. Tacoma initiated their second diversion water right starting in 2006. The three years vary in discharge patterns falling into roughly three water year types; low water year (2007), normal year (2002) and high water year (2008). Consequently, these three years of data require independent analysis and lack sufficient data to draw definitive conclusions about the impact of AWS operations relative to the previous period of record. The annual number of whitewater days under AWS operations was not dramatically different between the regulated flows and natural conditions respectively for the individual water year types. Surprisingly, in the normal water year conditions, there tended to be more whitewater days under regulated flows compared to natural conditions. Additional frequency analysis should be conducted as more hydrologic data becomes available under the AWS operations.

Short term gate adjustments at HHD have the potential to affect quality of whitewater opportunities and, in some cases where flow conditions are already at the minimum acceptable threshold, render a reach unboatable by decreasing the flows below the threshold. In the focus group sessions, boaters complained that in the last several years HHD outflows in the winter and spring typically decrease below a boatable flow range on Friday afternoon then jump back to a boatable range on Monday as dam managers dump water because target pool elevations have been exceeded over the weekend. In fact, the USACE currently does not have a staff

person on site during the weekends except under flood conditions. Under the current work schedule weekend gate adjustments are typically made on Friday afternoons and re-adjusted on Monday mornings if necessary to match existing pool elevations with management targets (USACE staff communication). Routinely overshooting pool elevation targets on weekends results in increased whitewater opportunities during the week when most boaters have to work. The survey results indicated that whitewater boaters were more likely to use the Green River on weekends (70%) than weekdays (30%). A reversal of this weekly discharge fluctuation would provide weekend whitewater opportunities without changing the overall flow regime. Boaters noted that, in the past, flows were typically higher on weekends than weekdays. Boaters referred to these as Wagner Weekends in recognition of the USACE dam operator at the time. From the standpoint of resource agencies, the preferred solution would be to facilitate dam operations on the weekends to avoid making large gate changes and provide a more normative flow pattern. However, until a 7-day dam operations schedule is initiated, targeting whitewater flows on weekends is not inconsistent with current flow fluctuations on the Green River. Reversing the existing weekend gate adjustments will not change the net effect on the fishery.

HHD operators could consider whitewater flow preferences in their decision process for balancing short term pool elevation targets and weekend outflows. The whitewater flow preference chart (Figure 5.1) has been developed as a resource tool to facilitate the HHD operator's decision process for outflows. The whitewater flow preferences chart highlights a critical zone between 500 and 1,400 cfs for flow management purposes. The critical zone of flow preferences brackets the range of minimum acceptable flows identified for all watercraft and reaches. Within this critical zone, the lower flows equate to fewer, if any, whitewater opportunities while the higher flows expand the opportunities to include additional types of watercraft and available river reaches. Flows in the upper end of the critical range have the potential to result in more whitewater boaters enjoying the resource.

Small gate adjustments (10 to 20%) by HHD operators within the critical zone can determine the presence or absence of a given whitewater opportunity. For example, 500 cfs measured at Palmer gage fails to provide a whitewater boating opportunity for any watercraft in all four reaches of the Green River. A gate adjustment of 100 cfs (20%) would increase flows to 600 cfs at Palmer gage providing a whitewater opportunity for canoes in the Headworks reach. For flows of 600 cfs at Palmer gage, a gate adjustment of 100 cfs (17%) would bump flows to 700 cfs at Palmer gage providing whitewater opportunities for canoes and kayaks in the Headworks and canoeing in the Lower Gorge. For flows of 1,000 cfs at Palmer gage an upward gate adjustment of 200 cfs (20%) creates whitewater opportunities in all four river reaches for all watercraft.

Opportunities exist to shape HHD outflows with small gate adjustments to provide a whitewater flow during the fall drawdown period, winter flood control and spring refill operations. HHD dam operators currently make gate adjustments within this range on a routine basis to achieve target pool elevations throughout these three operational periods. During the fall drawdown period and spring refill HHD dam operators could target whitewater flows on weekends by adjusting flows by 10 to 20%. Dam managers could be more aggressive with refill rates on weekdays

compared to weekends in the spring to include whitewater opportunities in their management objectives. In addition, HHD operators could potentially schedule whitewater flows in advance during the fall draw-down period using the flow preference chart.

Improved flow information including forecasted flows will help boaters make informed decisions about short term flow conditions on the Green River and potentially result in increased use on the Green River. Boaters rely heavily on real-time flow information to plan trips. Flow regulation at HHD makes whitewater flows at Palmer gage unpredictable. The lack of predictability discourages boaters from planning trips to the Green River. Inclusion of short and long term forecasts will greatly improve predictability for the boating community. The flow information should include greater transparency regarding HHD management objectives both short and long term throughout the year as well as fisheries management objectives.

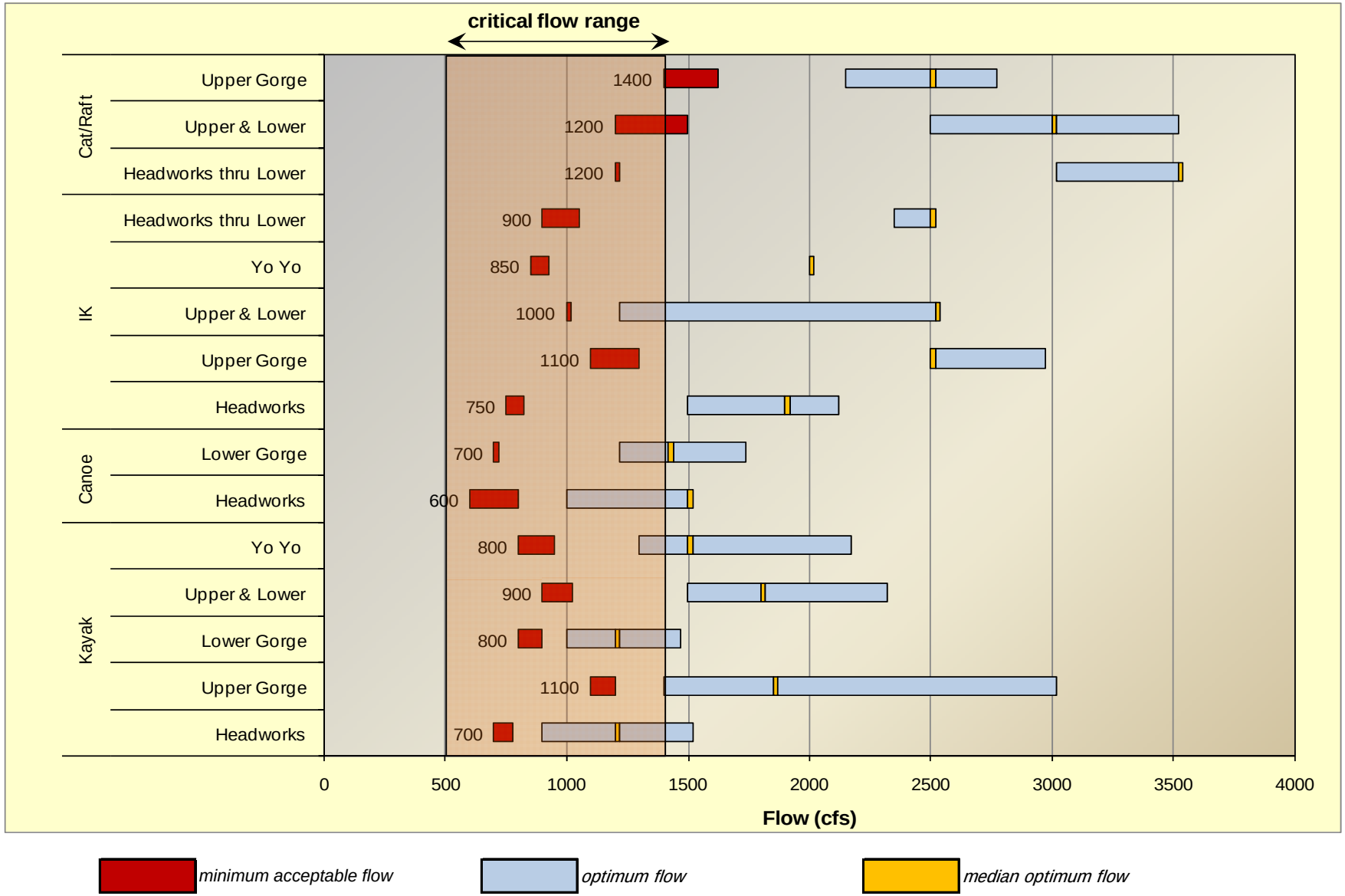
Managing flows for whitewater recreation on the Green River will require compatibility with the flow needs of anadromous fish. Whitewater flows released at HHD ultimately travel downstream to critical anadromous fish habitats located in the lower middle Green and lower Green subwatersheds. The whitewater flow preferences identified in this study overlap substantially with the seasonal flows recommended for anadromous fish. In fact, the whitewater community and fisheries advocates have an opportunity to work collaboratively on the solution by advocating together for seasonal increases in flows to satisfy the habitat needs of salmon life history stages. The seasonal timing of whitewater flows needs to be compatible with the anadromous fishery flow needs. The Green River Flow Management Committee provides an appropriate forum for integrating whitewater flows with project mandates and fishery flows.

Throughout the late fall, winter and spring the anadromous flow needs could secondarily provide whitewater boating opportunities. Boaters need to focus on periods of surplus water rather than low flow periods when flow is a limiting factor for fish and people. Therefore, it is inappropriate to be calling for flows for recreation during the low flow period. Boaters should also avoid calling for releases when flow fluctuations between base flows and whitewater flows would be detrimental to anadromous fish at several life stages. Similarly, resource agencies and the MIT should acknowledge that whitewater recreation is a legitimate secondary use of fishery flows. In addition, resource agencies and the MIT should make an effort to disseminate flow management recommendations to the whitewater community particularly pulse flow events designed to trigger geomorphic processes and restore habitat. These pulse flows can secondarily provide high challenge whitewater opportunities.

The legislation authorizing construction of HHD identified flood control and municipal water storage as the project purposes. The ESA listing of Chinook and bull trout in 1999 requires the USACE to include the instream flow needs of these species in their operations. Providing whitewater recreation flows is not a recognized purpose of HHD. HHD operators are reluctant to shape outflows to meet whitewater flow preferences fearing the USACE will be in violation of its ESA obligations. The USACE can fulfill the project purposes identified in the authorizing legislation and meet ESA requirements as well as elect to include whitewater flow preferences in the outflow decision process rather than manage to the detriment of whitewater.

Alternatively, the project could be re-authorized to include whitewater as a secondary purpose. Project re-authorization is more likely to succeed in the legislative process if it includes whitewater recreation as a secondary purpose after fishery needs have been met.

Figure 5.1: Minimum Acceptable and optimum flow preferences with active flow management range for whitewater flows



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APPENDIX A

GREEN RIVER SURVEY

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Green River (WA) Recreation Flow Study

You are participating in a Recreation Flow Study for the Green River. The study is being conducted by Tacoma Public Utilities in collaboration with Friends of the Green and American Whitewater.

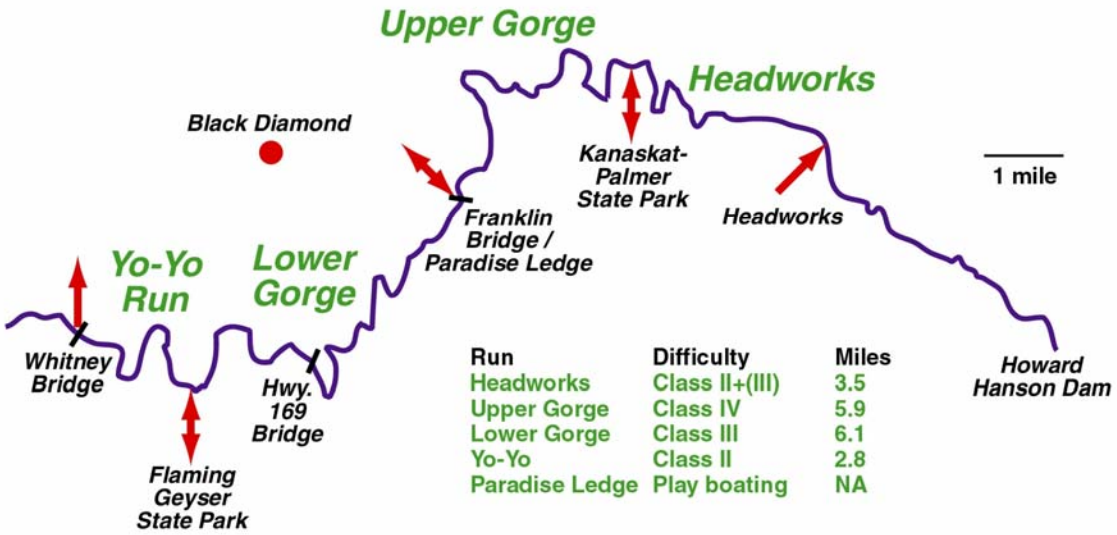
Your responses on this survey are important to the study's success. Please **base responses on your direct experience** from your trip rather than guidebooks, group opinions or historic flow preferences. Advances in whitewater boat design have expanded the range of flow preferences on many rivers. Accurate responses to this survey will help refine flow preferences for the Green River using today's technology.

Please **complete this survey each time you boat** the Green River. Information from repeat paddlers provides valuable comparative information that helps us better understand the boatable flow range. The survey will be available online (www.greenriverflowstudy.com/) through the spring of 2008 for as long as outflows from Howard Hanson Dam remain within a boatable range.

The Green River has a finite supply of water. Flood control, municipal water supply, fisheries and whitewater recreation typically compete for this limited resource. This survey is part of a study to determine instream flow needs for whitewater recreation, and not a proposal to modify existing operations; although a discussion of management alternatives designed to integrate flow needs for various uses may follow. Inflating flow preferences in the survey responses to purposely "grab" more water for the boating community will be self-defeating. "Elegant solutions" exist where instream flows overlap between competing resource uses. Tacoma Public Utilities will publish the results of this study.

Green River and 4 Primary Whitewater Runs

Access locations (red arrows) denote reach breaks



Run	Difficulty	Miles
Headworks	Class II+(III)	3.5
Upper Gorge	Class IV	5.9
Lower Gorge	Class III	6.1
Yo-Yo	Class II	2.8
Paradise Ledge	Play boating	NA

2. Background Information

* 1. Date of Run:

MM DD YYYY

Date: ____ / ____ / ____

* 2. Your Name: (for data sorting purposes only)

* 3. Is this the first time you have participated in the Green River whitewater flow survey?

- ◯ Yes
- ◯ No

* 4. Where did you paddle on this trip? (check all that apply)

- ☐ Headworks to Kanaskat-Palmer State Park
- ☐ Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)
- ☐ Lower Gorge (Franklin Bridge to Flaming Geyser)
- ☐ Yo-Yo (Flaming Geyser to Whitney Bridge)
- ☐ Paradise Ledge only (park and play)

* 5. Prior to this trip, how many times have you boated this section of the Green River?

- ◯ 0 times
- ◯ 1 to 10 times
- ◯ 11 to 20 times
- ◯ 21 to 30 times
- ◯ More than 30 times

* 6. What was the flow (cfs) on this run when you boated? (use the Palmer gage USGS No. 12106700)

Flow (cfs):

* 7. What type of craft did you use?

- ◯ Hardshell kayak
- ◯ Inflatable kayak
- ◯ Closed-deck canoe
- ◯ Open canoe with floatation
- ◯ Cataraft
- ◯ Self-bailing raft
- ◯ Wrap-floor raft
- ◯ Other

8. How many years have you been using this craft?

Years:

9. How would you rate your skill level with this type of craft?

- ◯ Novice (comfortable running Class II)
- ◯ Intermediate (comfortable running Class III)
- ◯ Advanced (comfortable running Class IV)
- ◯ Expert (comfortable running Class V)

10. In general, how many days a year do you spend whitewater boating?

- ◯ 1
- ◯ 2-5
- ◯ 6-10
- ◯ 11-20
- ◯ 21-30
- ◯ 31-50
- ◯ >50

11. What is your gender?

- ◯ Male
- ◯ Female

12. What is your age?

Age: _____

3. Rating This Flow

* 13. Please estimate the time you put-in and completed this run.

	HH	MM	AM/PM
Approximate put-in time:		:	
Approximate take-out time:		:	

14. In general, how would you rate the whitewater difficulty on this reach at this flow?

- ◯ Class I
- ◯ Class II
- ◯ Class III
- ◯ Class IV
- ◯ Class V
- ◯ Class VI
- ◯ Not sure

* 15. Please estimate the number of hits, stops, boat drags and portages you had on this run.

Number of times I hit rocks and other obstacles (but did not stop):

Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream):

Number of times I had to get out to drag or pull my boat off rocks or other obstacles:

Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:

16. Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics. (check one for each row)

	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable
Boatability	◯	◯	◯	◯	◯
Availability of technical boating	◯	◯	◯	◯	◯
Availability of powerful hydraulics	◯	◯	◯	◯	◯
Availability of whitewater play areas	◯	◯	◯	◯	◯
Overall whitewater challenge	◯	◯	◯	◯	◯
Safety	◯	◯	◯	◯	◯
Aesthetics	◯	◯	◯	◯	◯
Length of run	◯	◯	◯	◯	◯
Number of portages	◯	◯	◯	◯	◯
Overall rating	◯	◯	◯	◯	◯

* 17. Are you likely to return to boat this flow you just evaluated?

- ◯ Definitely no
- ◯ Possibly
- ◯ Probably
- ◯ Definitely yes

* 18. In general, would you prefer a flow that was lower, higher or about the same as this flow?

- ◯ Much lower flow
- ◯ Slightly lower flow
- ◯ About the same
- ◯ Slightly higher flow
- ◯ Much higher flow

* 19. If you prefer a higher or lower flow, please indicate the volume in cubic feet per second that you would like to boat.

Preferred flow (cfs): _____

20. Are you likely to return for future boating at the preferred flow you identified above?

- ◯ Definitely no
- ◯ Possibly
- ◯ Probably
- ◯ Definitely yes

4. Comparing Flows

21. For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level. In making your evaluations, consider all the flow dependent characteristics that contribute to a high quality trip (boatability, WW challenge, WW play, safety, aesthetics, and length of run). If you do not feel comfortable evaluating a flow you have not seen, leave that row blank.

	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable
500 cfs	◯	◯	◯	◯	◯
600 cfs	◯	◯	◯	◯	◯
700 cfs	◯	◯	◯	◯	◯
800 cfs	◯	◯	◯	◯	◯
900 cfs	◯	◯	◯	◯	◯
1000 cfs	◯	◯	◯	◯	◯
1100 cfs	◯	◯	◯	◯	◯
1200 cfs	◯	◯	◯	◯	◯
1300 cfs	◯	◯	◯	◯	◯
1400 cfs	◯	◯	◯	◯	◯
1500 cfs	◯	◯	◯	◯	◯
1750 cfs	◯	◯	◯	◯	◯
2000 cfs	◯	◯	◯	◯	◯
2500 cfs	◯	◯	◯	◯	◯
> 3000 cfs	◯	◯	◯	◯	◯

22. Based on your previous boating trips on these sections of the Green River, please specify the flows (in cfs) that provide the following types of experiences. (Note, you can specify flows that you have not seen, but which you think would provide the type of experience in question.)

From a recreational perspective what is the minimum acceptable flow for this run? The minimum acceptable is the lowest flow you would return to boat, not the minimum flow necessary to navigate.

For you, what is the optimum flow for this run?

Many people are interested in a "standard" whitewater trip at medium flows. Think of this standard trip for your craft. What is the best or optimal flow for a "standard" trip?

Some people are interested in taking trips at higher flows for increased whitewater challenge. Think of this "high challenge" trip in your craft. What is the best or optimal flow for a "high challenge" trip?

Some people are interested in park and play paddling at Paradise Ledge. What is the best or optimal flow for "Paradise Ledge park and play"?

What is the highest safe flow for your craft and skill level?

If one flow for boating was released, what flow would you prefer?

23. Boating opportunities on the Green River are ....? (choose one per row)

	Worse than average	Average	Better than average	Excellent	Among the very best
Compared to other rivers within a one-hour drive:	◯	◯	◯	◯	◯
Compared to other rivers in Washington:	◯	◯	◯	◯	◯
Compared to other rivers in the Northwest:	◯	◯	◯	◯	◯
Compared to other rivers in the country:	◯	◯	◯	◯	◯

24. Please estimate your personal expenditures related to that day's trip on the Green River. If you were part of a group, include only your share of expenses. (Note: round to the nearest dollar and DO NOT include a $ sign.)

Food and refreshments (restaurants, groceries):

Lodging (motels, campground fees):

Equipment rental or guide services:

Gas:

25. Do you have other comments you would like to make about flows on the Green River?

Thank you for your participation! Please complete another questionnaire the next time you float the Green River.

(Intentionally Blank)

APPENDIX B

FOCUS GROUP QUESTIONS

(Intentionally Blank)

Green River Focus Group Questions

1. Optimum Flow

a. What is the optimum flow for the following reaches on the Green River for respective water craft (kayak, C1, open canoe, IK, Cataraft, self bailer, bucket boat):

   i. Headworks

   ii. Upper Gorge

   iii. Lower Gorge

   iv. YoYo

   v. Paradise Ledge

b. What are the advantages of this flow?

c. What are the disadvantages of this flow?

d. What is the whitewater class of this flow?

e. Any safety concerns at this flow?

f. What are the special attributes at this flow?

g. What is the commercial potential at this flow?

2. Minimum Acceptable Flow

a. What is the minimum acceptable flow for the following reaches on the Green River for respective water craft (kayak, C1, open canoe, IK, Cataraft, self bailer, bucket boat):

   i. Headworks

   ii. Upper Gorge

   iii. Lower Gorge

   iv. YoYo

   v. Paradise Ledge

b. What are the advantages of this flow?

c. What are the disadvantages of this flow?

d. What is the whitewater class of this flow?

e. Any safety concerns at this flow?

f. What are the special attributes at this flow?

g. What is the commercial potential at this flow?

3. High Challenge Flow

a. What is an acceptable High Challenge flow for the following reaches on the Green River for respective water craft (kayak, C1, open canoe, IK, Cataraft, self bailer, bucket boat):

i. Headworks

ii. Upper Gorge

iii. Lower Gorge

iv. YoYo

v. Paradise Ledge

b. What are the advantages of this flow?

c. What are the disadvantages of this flow?

d. What is the whitewater class of this flow?

e. Any safety concerns at this flow?

f. What are the special attributes at this flow?

g. What is the commercial potential at this flow?

4. Minimum Navigable Flow

a. Think of the river as a transportation corridor. What is the minimum navigable flow for the following reaches on the Green River for respective water craft (kayak, C1, open canoe, IK, Cataraft, self bailer, bucket boat):

i. Headworks

ii. Upper Gorge

iii. Lower Gorge

iv. YoYo

v. Paradise Ledge

b. What are the advantages of this flow?

c. What are the disadvantages of this flow?

d. What is the whitewater class of this flow?

e. Any safety concerns at this flow?

f. What are the special attributes at this flow?

g. What is the commercial potential at this flow?

5. Choosing a Single Flow

a. Imagine you have to select a single flow for all four sections of the Green River for respective water craft. What flow would you select for:

i. kayak,

ii. C1,

iii. open canoe,

iv. IK,

v. Cataraft,

vi. self bailer,

vii. bucket boat

b. Imagine you have to select a single flow meeting the needs of all watercraft for all four sections of the Green River. What flow would you select?

6. Flow Timing

a. Are boatable flows preferred on Weekdays or Weekends?

7. Flow Information

a. What is the preferred source for flow information

b. Realtime data

   i. Internet

   ii. Flow phone

c. Flow Forecast

   i. Internet

   ii. Flow phone

8. Economic Questions

a. Estimate your expenditures for an individual trip to the boat the Green River

   i. Gas

   ii. Food

   iii. Lodging

   iv. Equipment rental

   v. Guide services

APPENDIX C

RAW SURVEY DATA

(Intentionally Blank)

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
1	07/15/2008	07/15/2008	07/11/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1050	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	11:30:00 AM	5:30:00 PM
2	07/08/2008	07/08/2008	06/15/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2000	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	10:00:00 AM	2:00:00 PM
3	07/08/2008	07/08/2008	06/14/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2000	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	10:30:00 AM	2:30:00 PM
4	07/08/2008	07/08/2008	06/13/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2500	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	10:30:00 AM	3:00:00 PM
5	07/07/2008	07/07/2008	07/04/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1100	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	11:00:00 AM	5:00:00 PM
6	07/07/2008	07/07/2008	07/03/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1100	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	11:00:00 AM	5:00:00 PM
7	05/25/2008	05/25/2008	05/17/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	5270	Cataraft	17	Expert (comfortable running Class V)	>50	Male	40	11:30:00 AM	2:30:00 PM
8	05/19/2008	05/19/2008	05/17/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	5300	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	11:30:00 AM	2:00:00 PM
9	05/17/2008	05/17/2008	05/16/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	4817	Cataraft	7	Expert (comfortable running Class V)	>50	Male	54	12:00:00 PM	3:00:00 PM
10	05/17/2008	05/17/2008	05/16/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	4871	Cataraft	17	Expert (comfortable running Class V)	>50	Male	40	12:00:00 PM	3:00:00 PM
11	05/14/2008	05/14/2008	05/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2000	Cataraft	22	Expert (comfortable running Class V)	>50	Male		10:30:00 AM	4:00:00 PM
12	05/14/2008	05/14/2008	05/09/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1400	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	10:00:00 AM	3:00:00 PM
13	05/11/2008	05/11/2008	05/08/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2250	Cataraft	4	Advanced (comfortable running Class IV)	>50	Male	58	10:23:00 AM	2:30:00 PM
14	05/11/2008	05/11/2008	05/09/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1950	Cataraft	14	Expert (comfortable running Class V)	>50	Male	42	10:00:00 AM	2:30:00 PM
15	05/11/2008	05/11/2008	05/04/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	1500	Cataraft	1	Novice (comfortable running Class II)	11/20/2008	Female	34	12:00:00 PM	2:30:00 PM
16	05/11/2008	05/11/2008	05/08/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2050	Cataraft	12	Expert (comfortable running Class V)	>50	Male	40	10:00:00 AM	4:00:00 PM
17	05/08/2008	05/08/2008	05/08/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2050	Cataraft	12	Expert (comfortable running Class V)	>50	Male	40	11:00:00 AM	2:00:00 PM
18	05/08/2008	05/08/2008	05/03/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1388	Cataraft	12	Advanced (comfortable running Class IV)	11/20/2008	Male	57	10:30:00 AM	3:30:00 PM
19	05/08/2008	05/08/2008	05/03/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1320	Cataraft	10	Expert (comfortable running Class V)	11/20/2008	Male	58	11:00:00 AM	3:30:00 PM
20	05/07/2008	05/07/2008	05/03/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1400	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	12:00:00 PM	4:00:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
21	05/07/2008	05/07/2008	05/02/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1250	Cataraft	22	Expert (comfortable running Class V)	>50	Male	56	10:00:00 AM	4:00:00 PM
22	05/05/2008	05/05/2008	05/03/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1400	Cataraft	15	Advanced (comfortable running Class IV)	21-30	Male	52	12:00:00 PM	5:00:00 PM
23	04/27/2008	04/27/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	900	Cataraft	18	Expert (comfortable running Class V)	21-30	Male	55	11:15:00 AM	4:30:00 PM
24	03/21/2008	03/21/2008	03/21/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					11 to 20 times	830	Cataraft	3	Advanced (comfortable running Class IV)	11/20/2008	Male	53	11:30:00 AM	2:00:00 PM
25	03/17/2008	03/17/2008	03/15/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1250	Cataraft	25	Advanced (comfortable running Class IV)	>50	Male	55	10:00:00 AM	3:30:00 PM
26	03/17/2008	03/17/2008	03/05/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1300	Cataraft	25	Advanced (comfortable running Class IV)	>50	Male	55	11:00:00 AM	4:00:00 PM
27	03/16/2008	03/16/2008	03/16/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1250	Cataraft	20	Expert (comfortable running Class V)	31-50	Male	50	10:15:00 AM	4:00:00 PM
28	01/23/2008	01/23/2008	09/05/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					1 to 10 times	320	Cataraft	4	Advanced (comfortable running Class IV)	06/10/2008	Male	53	10:00:00 AM	3:00:00 PM
29	12/11/2007	12/11/2007	12/09/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1060	Cataraft	15	Expert (comfortable running Class V)	>50	Male	40	10:00:00 AM	1:00:00 PM
30	12/10/2007	12/10/2007	12/07/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	2500	Cataraft	14	Expert (comfortable running Class V)	31-50	Male	53	11:00:00 AM	2:30:00 PM
31	12/10/2007	12/10/2007	12/09/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	1070	Cataraft	3	Advanced (comfortable running Class IV)	>50	Male	58	10:00:00 AM	1:30:00 AM
32	12/09/2007	12/09/2007	12/07/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2600	Cataraft	13	Expert (comfortable running Class V)	>50	Male	42	11:15:00 AM	1:45:00 PM
33	06/08/2008	06/08/2008	06/07/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	2200	osed-deck can	6	Advanced (comfortable running Class IV)	31-50	Male	54	12:30:00 PM	3:30:00 PM
34	02/19/2008	02/19/2008	02/17/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					21 to 30 times	1160	osed-deck can	5	Advanced (comfortable running Class IV)	31-50	Male	54	12:15:00 PM	3:30:00 PM
35	11/26/2007	11/26/2007	11/25/2007	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	625	osed-deck can	3	Advanced (comfortable running Class IV)	31-50	Male	53	11:55:00 AM	3:15:00 PM
36	10/18/2007	10/18/2007	10/07/2007	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	750	osed-deck can	4	Advanced (comfortable running Class IV)	31-50	Male	53	12:30:00 PM	4:00:00 AM
37	08/05/2008	08/05/2008	05/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1300	Hardshell kaya	25	Expert (comfortable running Class V)	21-30	Male	60	10:30:00 AM	3:30:00 PM
38	08/05/2008	08/05/2008	04/26/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		21 to 30 times	910	Hardshell kayak		Intermediate (comfortable running Class III)	31-50	Male	62	1:23:00 PM	3:45:00 PM
39	08/05/2008	08/05/2008	04/26/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	907	Hardshell kaya	8	Intermediate (comfortable running Class III)	21-30	Male	52	11:30:00 AM	4:00:00 PM
40	08/05/2008	08/05/2008	04/24/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	900	Hardshell kaya	6	Intermediate (comfortable running Class III)	>50	Male	57	2:30:00 PM	6:30:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
41	08/05/2008	08/05/2008	04/26/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	900	Hardshell kaya	15	Intermediate (comfortable running Class III)	>50	Male	49	11:30:00 AM	4:00:00 PM
42	08/05/2008	08/05/2008	04/26/2008	XXXX	Yes				Yo-Yo (Flaming Geyser to Whitney Bridge)		More than 30 times	910	Hardshell kaya	2		11/20/2008	Male	58	1:23:00 PM	3:45:00 PM
43	08/05/2008	08/05/2008	04/26/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		1 to 10 times	900	Hardshell kaya	4	Advanced (comfortable running Class IV)	31-50	Male	46	1:20:00 PM	3:45:00 PM
44	08/05/2008	08/05/2008	04/26/2008	XXXX	Yes				Yo-Yo (Flaming Geyser to Whitney Bridge)		More than 30 times	910	Hardshell kaya	2	Intermediate (comfortable running Class III)	21-30	Male	46	1:23:00 PM	3:45:00 PM
45	08/04/2008	08/04/2008	04/26/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	900	Hardshell kaya	4	Advanced (comfortable running Class IV)	31-50	Male	39	11:00:00 AM	3:00:00 PM
46	08/04/2008	08/04/2008	04/27/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	907	Hardshell kaya	8	Intermediate (comfortable running Class III)	>50	Male	57	11:30:00 AM	4:00:00 PM
47	08/04/2008	08/04/2008	04/28/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	907	Hardshell kaya	5	Intermediate (comfortable running Class III)	>50	Male	43		
48	08/04/2008	08/04/2008	04/27/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	900	Hardshell kaya	8	Intermediate (comfortable running Class III)	>50	Female	37	11:30:00 AM	3:10:00 PM
49	08/04/2008	08/04/2008	04/28/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	907	Hardshell kaya	15						
50	08/04/2008	08/04/2008	04/27/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	906	Hardshell kaya	28	Expert (comfortable running Class V)	>50	Female	54	10:15:00 AM	2:30:00 PM
51	08/04/2008	08/04/2008	04/27/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	905	Hardshell kaya	0	Intermediate (comfortable running Class III)	21-30	Male	47	12:00:00 PM	3:00:00 PM
52	08/04/2008	08/04/2008	04/27/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					More than 30 times	900	Hardshell kaya	28	Advanced (comfortable running Class IV)	>50	Female	52	11:11:00 AM	1:30:00 PM
53	08/04/2008	08/04/2008	04/26/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	990	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Female	47	11:30:00 AM	3:30:00 PM
54	08/04/2008	08/04/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					1 to 10 times	990	Hardshell kaya	1	Intermediate (comfortable running Class III)	31-50	Female	48	11:00:00 AM	3:30:00 PM
55	08/04/2008	08/04/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					More than 30 times	920	Hardshell kaya	1	Intermediate (comfortable running Class III)	>50	Female	36	11:00:00 AM	3:30:00 PM
56	08/04/2008	08/04/2008	04/26/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	990	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Male	51	11:00:00 AM	4:00:00 PM
57	08/04/2008	08/04/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					11 to 20 times	990	Hardshell kaya	16	Expert (comfortable running Class V)	>50	Male	37	11:30:00 AM	3:45:00 PM
58	08/04/2008	08/04/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					11 to 20 times	990	Hardshell kaya	7	Intermediate (comfortable running Class III)	21-30	Male	49	11:00:00 AM	3:30:00 PM
59	08/04/2008	08/04/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					More than 30 times	990	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Female	45	11:00:00 AM	3:30:00 PM
60	08/04/2008	08/04/2008	04/27/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	907	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Male	36	11:00:00 AM	3:00:00 PM
61	07/19/2008	07/19/2008	07/18/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	242	Hardshell kayak						6:00:00 PM	8:30:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
62	07/14/2008	07/14/2008	07/05/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1100	Hardshell kaya	10	Advanced (comfortable running Class IV)	21-30	Male	40	1:00:00 PM	3:00:00 PM
63	07/11/2008	07/11/2008	07/10/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		11 to 20 times	1040	Hardshell kaya	5	Intermediate (comfortable running Class III)	06/10/2008	Male	46	4:00:00 PM	5:00:00 PM
64	07/11/2008	07/11/2008	07/09/2008	XXXX	Yes				Yo-Yo (Flaming Geyser to Whitney Bridge)		1 to 10 times	1020	Hardshell kaya	5	Intermediate (comfortable running Class III)	06/10/2008	Male	46	3:00:00 PM	4:30:00 PM
65	07/09/2008	07/09/2008	07/05/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1250	Hardshell kaya	16	Expert (comfortable running Class V)	>50	Male	37	3:30:00 PM	5:30:00 PM
66	07/06/2008	07/06/2008	07/05/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1140	Hardshell kayak						3:30:00 PM	6:15:00 PM
67	07/05/2008	07/05/2008	07/04/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1120	Hardshell kayak						12:30:00 PM	3:00:00 PM
68	07/03/2008	07/03/2008	07/02/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1110	Hardshell kayak						6:00:00 PM	8:30:00 PM
69	07/02/2008	07/02/2008	06/28/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	1160	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	62	11:15:00 AM	3:45:00 PM
70	07/01/2008	07/01/2008	06/29/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1120	Hardshell kaya	4	Advanced (comfortable running Class IV)	21-30	Male	28	11:30:00 AM	3:30:00 PM
71	06/29/2008	06/29/2008	06/28/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1110	Hardshell kayak						11:00:00 PM	3:00:00 PM
72	06/28/2008	06/28/2008	06/27/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1110	Hardshell kayak						12:15:00 PM	3:00:00 PM
73	06/27/2008	06/27/2008	06/26/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1120	Hardshell kayak						5:15:00 PM	7:00:00 PM
74	06/26/2008	06/26/2008	06/25/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1190	Hardshell kayak						6:00:00 PM	7:45:00 PM
75	06/25/2008	06/25/2008	06/24/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1190	Hardshell kayak						5:30:00 PM	7:30:00 PM
76	06/24/2008	06/24/2008	06/23/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1370	Hardshell kaya	5	Advanced (comfortable running Class IV)	>50	Male	27		
77	06/24/2008	06/24/2008	06/22/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1190	Hardshell kaya	5	Advanced (comfortable running Class IV)	>50	Male	27	1:00:00 PM	5:00:00 PM
78	06/24/2008	06/24/2008	06/23/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1260	Hardshell kayak						5:30:00 PM	7:00:00 PM
79	06/22/2008	06/22/2008	06/22/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1190	Hardshell kayak						11:30:00 AM	2:30:00 PM
80	06/22/2008	06/22/2008	06/21/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1180	Hardshell kayak						2:15:00 PM	6:30:00 PM
81	06/21/2008	06/21/2008	06/20/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1180	Hardshell kayak						5:30:00 PM	7:15:00 PM
82	06/20/2008	06/20/2008	06/19/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1180	Hardshell kayak						5:45:00 PM	7:15:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
83	06/19/2008	06/19/2008	06/18/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1530	Hardshell kayak						6:00:00 PM	8:15:00 PM
84	06/18/2008	06/18/2008	06/17/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1690	Hardshell kayak						5:30:00 PM	7:15:00 PM
85	06/17/2008	06/17/2008	06/16/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1740	Hardshell kayak						5:30:00 PM	7:15:00 PM
86	06/11/2008	06/11/2008	06/08/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				21 to 30 times	2600	Hardshell kaya	5	Expert (comfortable running Class V)	>50	Male	29	2:00:00 PM	4:00:00 PM
87	06/11/2008	06/11/2008	06/10/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2790	Hardshell kayak						5:45:00 PM	6:45:00 PM
88	06/10/2008	06/10/2008	06/09/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2640	Hardshell kayak						5:30:00 PM	7:15:00 PM
89	06/09/2008	06/09/2008	06/08/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2690	Hardshell kayak						9:00:00 AM	11:15:00 AM
90	06/09/2008	06/09/2008	06/07/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2160	Hardshell kayak						11:15:00 AM	2:30:00 PM
91	06/06/2008	06/06/2008	06/05/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1440	Hardshell kayak						5:45:00 PM	7:45:00 PM
92	06/05/2008	06/05/2008	06/04/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1390	Hardshell kayak						5:45:00 PM	8:00:00 PM
93	06/05/2008	06/05/2008	06/03/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)		More than 30 times	1500	Hardshell kayak						5:45:00 PM	8:00:00 PM
94	05/18/2008	05/18/2008	05/16/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	5270	Hardshell kayak						11:45:00 AM	1:15:00 PM
95	05/17/2008	05/17/2008	05/16/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	5210	Hardshell kayak						5:45:00 PM	7:15:00 PM
96	05/16/2008	05/16/2008	05/15/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	4470	Hardshell kayak						5:45:00 PM	7:15:00 PM
97	05/15/2008	05/15/2008	05/14/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	3520	Hardshell kayak						5:40:00 PM	6:50:00 PM
98	05/14/2008	05/14/2008	05/13/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2010	Hardshell kayak						5:45:00 PM	7:30:00 PM
99	05/13/2008	05/13/2008	05/12/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1690	Hardshell kayak						5:45:00 PM	7:45:00 PM
100	05/12/2008	05/12/2008	05/11/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1410	Hardshell kaya	2	Intermediate (comfortable running Class III)	>50	Male	44	3:30:00 PM	5:30:00 PM
101	05/12/2008	05/12/2008	05/11/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1410	Hardshell kayak						11:45:00 AM	4:00:00 PM
102	05/11/2008	05/11/2008	05/03/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1300	Hardshell kaya	12	Advanced (comfortable running Class IV)	11/20/2008	Male	45	11:00:00 AM	2:00:00 PM
103	05/11/2008	05/11/2008	05/10/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1660	Hardshell kayak						11:30:00 AM	2:00:00 PM

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Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
104	05/11/2008	05/11/2008	05/10/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1660	Hardshell kayak						11:30:00 AM	2:00:00 PM
105	05/11/2008	05/11/2008	05/10/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1660	Hardshell kaya	18	Intermediate (comfortable running Class III)	>50	Female	51	11:45:00 AM	2:30:00 PM
106	05/10/2008	05/10/2008	05/05/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1400	Hardshell kaya	27	Expert (comfortable running Class V)	>50	Male	37	6:30:00 PM	8:30:00 PM
107	05/10/2008	05/10/2008	05/09/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1660	Hardshell kayak						5:45:00 PM	7:45:00 PM
108	05/09/2008	05/09/2008	05/08/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1950	Hardshell kayak						5:45:00 PM	7:15:00 PM
109	05/08/2008	05/08/2008	05/07/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2030	Hardshell kayak						4:45:00 PM	7:00:00 PM
110	05/07/2008	05/07/2008	05/04/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	1400	Hardshell kaya	2	Intermediate (comfortable running Class III)	21-30	Male	38	11:30:00 AM	3:30:00 PM
111	05/05/2008	05/05/2008	05/04/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1320	Hardshell kaya	20	Advanced (comfortable running Class IV)	>50	Male	43	11:00:00 AM	2:00:00 PM
112	05/04/2008	05/04/2008	05/04/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1320	Hardshell kaya	18	Advanced (comfortable running Class IV)	>50	Female	51	11:00:00 AM	1:45:00 PM
113	05/01/2008	05/01/2008	04/27/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					21 to 30 times	900	Hardshell kaya	5	Advanced (comfortable running Class IV)	31-50	Female	52	11:30:00 AM	1:30:00 PM
114	05/01/2008	05/01/2008	04/30/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1480	Hardshell kayak						5:00:00 PM	6:30:00 PM
115	04/29/2008	04/29/2008	04/19/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1200	Hardshell kaya	3	Advanced (comfortable running Class IV)	31-50	Male	40	1:00:00 PM	4:00:00 PM
116	04/28/2008	04/29/2008	04/27/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	900	Hardshell kaya	16	Expert (comfortable running Class V)	>50	Male	37	10:30:00 AM	2:30:00 PM
117	04/28/2008	04/28/2008	04/26/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	907	Hardshell kaya	3	Advanced (comfortable running Class IV)	31-50	Male	35	1:00:00 PM	5:30:00 PM
118	04/28/2008	04/28/2008	04/27/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	990	Hardshell kaya	1	Intermediate (comfortable running Class III)	11/20/2008	Female	26	12:00:00 PM	4:30:00 PM
119	04/27/2008	04/27/2008	04/26/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	900	Hardshell kayak		Advanced (comfortable running Class IV)	>50	Male	43	1:30:00 PM	4:30:00 PM
120	04/27/2008	04/27/2008	04/20/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1170	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	43	11:30:00 AM	3:00:00 PM
121	04/27/2008	04/27/2008	04/13/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	930	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	43	12:30:00 PM	4:00:00 PM
122	04/21/2008	04/21/2008	04/20/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1170	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	12:00:00 PM	3:00:00 PM
123	04/21/2008	04/21/2008	04/19/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1190	Hardshell kaya	5	Advanced (comfortable running Class IV)	>50	Male	27	1:30:00 PM	4:00:00 PM
124	04/15/2008	04/15/2008	04/13/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	930	Hardshell kaya	18	Advanced (comfortable running Class IV)	>50	Female	51	3:00:00 PM	5:45:00 PM

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Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
125	04/07/2008	04/07/2008	04/06/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	817	Hardshell kaya	28	Advanced (comfortable running Class IV)	>50	Male	58	10:00:00 AM	1:30:00 PM
126	04/06/2008	04/06/2008	04/06/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	709	Hardshell kayak						10:00:00 AM	1:00:00 PM
127	04/06/2008	04/06/2008	04/05/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	714	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	62	11:25:00 AM	4:00:00 PM
128	04/06/2008	04/06/2008	04/05/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	709	Hardshell kayak						11:30:00 AM	3:45:00 PM
129	04/05/2008	04/05/2008	03/13/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1290	Hardshell kaya	8	Expert (comfortable running Class V)	31-50	Male	20	5:00:00 PM	7:00:00 PM
130	04/05/2008	04/05/2008	04/04/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	578	Hardshell kaya	30	Advanced (comfortable running Class IV)	>50	Male	58	10:00:00 AM	1:30:00 PM
131	04/04/2008	04/04/2008	04/03/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	427	Hardshell kayak						1:00:00 PM	4:00:00 PM
132	04/04/2008	04/04/2008	03/31/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	481	Hardshell kayak						1:30:00 PM	4:00:00 PM
133	04/04/2008	04/04/2008	04/04/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	435	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	62	1:40:00 PM	4:00:00 PM
134	03/26/2008	03/26/2008	03/21/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		1 to 10 times	1250	Hardshell kaya	1	Novice (comfortable running Class II)	06/10/2008	Male	27	11:00:00 AM	4:00:00 PM
135	03/26/2008	03/26/2008	03/08/2008	XXXX	Yes				Yo-Yo (Flaming Geyser to Whitney Bridge)		0 times	0	Hardshell kaya	1	Novice (comfortable running Class II)	02/05/2008	Male	27	11:00:00 AM	4:00:00 PM
136	03/23/2008	03/23/2008	03/15/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		1 to 10 times	1250	Hardshell kaya	0	Novice (comfortable running Class II)	06/10/2008	Male	47	11:00:00 AM	4:00:00 PM
137	03/23/2008	03/23/2008	03/08/2008	XXXX	Yes				Yo-Yo (Flaming Geyser to Whitney Bridge)		0 times	1030	Hardshell kaya	0	Novice (comfortable running Class II)	06/10/2008	Male	47	11:00:00 AM	3:00:00 PM
138	03/21/2008	03/21/2008	03/15/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		More than 30 times	1230	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	42	11:30:00 AM	3:00:00 PM
139	03/17/2008	03/17/2008	03/15/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1200	Hardshell kaya	3	Expert (comfortable running Class V)	>50	Male	34	12:30:00 PM	2:00:00 PM
140	03/17/2008	03/17/2008	03/15/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				21 to 30 times	1260	Hardshell kaya	7	Expert (comfortable running Class V)	>50	Male	35	12:00:00 PM	3:00:00 PM
141	03/17/2008	03/17/2008	03/15/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1230	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	12:30:00 PM	2:45:00 PM
142	03/15/2008	03/15/2008	03/15/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	1230	Hardshell kaya	3	Intermediate (comfortable running Class III)	31-50	Male	36	11:30:00 AM	3:00:00 AM
143	03/13/2008	03/13/2008	03/09/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	980	Hardshell kaya	12	Advanced (comfortable running Class IV)	21-30	Male	29	12:00:00 AM	4:00:00 PM
144	03/11/2008	03/11/2008	03/08/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	950	Hardshell kaya	3	Advanced (comfortable running Class IV)	31-50	Male	35	11:30:00 AM	2:30:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
145	03/11/2008	03/11/2008	03/08/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				21 to 30 times	950	Hardshell kaya	18	Advanced (comfortable running Class IV)	>50	Female	51	11:00:00 AM	2:30:00 PM
146	03/11/2008	03/11/2008	03/08/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	960	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	11:33:00 AM	4:00:00 PM
147	03/11/2008	03/11/2008	03/09/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	950	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	42	12:30:00 PM	3:30:00 PM
148	03/11/2008	03/11/2008	03/08/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	950	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	42	11:30:00 AM	2:00:00 PM
149	03/05/2008	03/05/2008	03/02/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1860	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	11:30:00 AM	2:00:00 PM
150	03/04/2008	03/05/2008	03/02/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1870	Hardshell kaya	6	Expert (comfortable running Class V)	31-50	Male	31	10:00:00 AM	12:00:00 PM
151	03/04/2008	03/04/2008	02/29/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1800	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	26	12:01:00 PM	3:00:00 PM
152	03/04/2008	03/04/2008	04/01/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1900	Hardshell kaya	4	Advanced (comfortable running Class IV)	31-50	Male	26	11:30:00 AM	3:00:00 PM
153	03/04/2008	03/04/2008	03/01/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1800	Hardshell kaya	10	Advanced (comfortable running Class IV)	31-50	Male	32	11:00:00 AM	2:00:00 PM
154	03/04/2008	03/04/2008	03/02/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1850	Hardshell kaya	10	Expert (comfortable running Class V)	>50	Female	35	11:30:00 AM	3:30:00 PM
155	03/04/2008	03/04/2008	03/02/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1850	Hardshell kaya	3	Advanced (comfortable running Class IV)	>50	Male	35	11:30:00 AM	2:30:00 PM
156	03/03/2008	03/03/2008	03/02/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1860	Hardshell kaya	18	Advanced (comfortable running Class IV)	>50	Female	51	11:30:00 AM	2:30:00 PM
157	03/03/2008	03/03/2008	03/02/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1880	Hardshell kaya	23	Expert (comfortable running Class V)	>50	Male	42	11:30:00 AM	3:00:00 PM
158	02/26/2008	02/26/2008	02/16/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1100	Hardshell kaya	4	Advanced (comfortable running Class IV)	21-30	Male	39	11:00:00 AM	3:00:00 PM
159	02/25/2008	02/25/2008	02/09/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	200	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	11:00:00 AM	1:30:00 PM
160	02/25/2008	02/25/2008	02/24/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	880	Hardshell kaya	18	Advanced (comfortable running Class IV)	>50	Female	51	12:30:00 PM	4:00:00 PM
161	02/25/2008	02/25/2008	02/24/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	860	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	12:30:00 PM	4:10:00 PM
162	02/25/2008	02/25/2008	02/17/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1080	Hardshell kaya	13	Expert (comfortable running Class V)	31-50	Male	34	10:00:00 AM	1:00:00 PM
163	02/25/2008	02/25/2008	02/24/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	870	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	42	1:15:00 PM	4:00:00 PM
164	02/25/2008	02/25/2008	02/24/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	950	Hardshell kaya	5	Intermediate (comfortable running Class III)	31-50	Female	38	11:00:00 AM	2:30:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
165	02/22/2008	02/22/2008	02/16/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		More than 30 times	1110	Hardshell kaya	1	Novice (comfortable running Class II)	11/20/2008	Male	29	12:30:00 PM	3:00:00 PM
166	02/21/2008	02/21/2008	02/18/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	1070	Hardshell kaya	5	Intermediate (comfortable running Class III)	31-50	Female	38	11:00:00 AM	2:00:00 PM
167	02/21/2008	02/21/2008	02/16/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1070	Hardshell kaya	5	Intermediate (comfortable running Class III)	31-50	Female	38	11:30:00 AM	3:30:00 PM
168	02/19/2008	02/19/2008	04/15/2007	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	4000	Hardshell kaya	5	Advanced (comfortable running Class IV)	31-50	Male	27	10:00:00 AM	1:00:00 PM
169	02/19/2008	02/19/2008	02/16/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1050	Hardshell kaya	25	Advanced (comfortable running Class IV)	21-30	Male	49	11:30:00 AM	4:00:00 PM
170	02/17/2008	02/17/2008	02/16/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1080	Hardshell kaya	4	Advanced (comfortable running Class IV)	>50	Male	46	11:30:00 AM	3:30:00 PM
171	02/17/2008	02/17/2008	02/16/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	1100	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	62	12:30:00 PM	3:40:00 PM
172	02/16/2008	02/16/2008	11/20/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	4000	Hardshell kaya	4	Advanced (comfortable running Class IV)	>50	Female	24	2:00:00 PM	4:00:00 PM
173	02/13/2008	02/13/2008	02/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	2860	Hardshell kaya	1	Intermediate (comfortable running Class III)	>50	Female	40		
174	02/12/2008	02/12/2008	02/10/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	2500	Hardshell kaya	1	Intermediate (comfortable running Class III)	11/20/2008	Male	28	11:00:00 AM	2:00:00 PM
175	02/11/2008	02/11/2008	02/10/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	2330	Hardshell kaya	15	Advanced (comfortable running Class IV)	>50	Male	49	12:00:00 PM	2:00:00 PM
176	02/11/2008	02/11/2008	02/09/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1500	Hardshell kaya	20	Advanced (comfortable running Class IV)	31-50	Male	47	11:30:00 AM	2:30:00 PM
177	02/11/2008	02/11/2008	02/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	2800	Hardshell kaya	8	Expert (comfortable running Class V)	21-30	Male	31	1:00:00 PM	3:00:00 PM
178	02/11/2008	02/11/2008	02/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	3050	Hardshell kaya	8	Expert (comfortable running Class V)	>50	Male	34	12:30:00 PM	3:00:00 PM
179	02/11/2008	02/11/2008	02/10/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	2400	Hardshell kaya	28	Advanced (comfortable running Class IV)	>50	Male	53	11:00:00 AM	4:30:00 PM
180	02/11/2008	02/11/2008	02/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	2700	Hardshell kaya	5	Intermediate (comfortable running Class III)	31-50	Female	38	11:00:00 AM	11:30:00 AM
181	02/11/2008	02/11/2008	02/10/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	2330	Hardshell kaya	13	Expert (comfortable running Class V)	21-30	Male	38	11:15:00 AM	1:15:00 PM
182	02/11/2008	02/11/2008	02/09/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1500	Hardshell kaya	23	Advanced (comfortable running Class IV)	>50	Male	42	11:30:00 AM	2:30:00 PM
183	02/11/2008	02/11/2008	02/10/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	3000	Hardshell kaya	3	Advanced (comfortable running Class IV)	11/20/2008	Male	32	12:00:00 PM	3:00:00 PM
184	02/11/2008	02/11/2008	02/10/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					21 to 30 times	3000	Hardshell kaya	8	Intermediate (comfortable running Class III)	21-30	Female	55	11:00:00 AM	1:30:00 PM

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No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
185	02/11/2008	02/11/2008	02/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	3000	Hardshell kaya	3	Intermediate (comfortable running Class III)	>50	Female	55	10:30:00 AM	12:30:00 PM
186	01/25/2008	01/25/2008	01/19/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park				Paradise Ledge only (park and play)	1 to 10 times	647	Hardshell kaya	3	Advanced (comfortable running Class IV)	>50	Male	36	11:30:00 AM	2:30:00 PM
187	01/18/2008	01/18/2008	01/18/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	625	Hardshell kaya	25	Advanced (comfortable running Class IV)	>50	Male	98	11:30:00 AM	3:00:00 PM
188	01/16/2008	01/16/2008	01/13/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1080	Hardshell kaya	9	Advanced (comfortable running Class IV)	31-50	Male	46	11:30:00 AM	4:15:00 PM
189	01/16/2008	01/16/2008	01/13/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	1060	Hardshell kaya	25	Advanced (comfortable running Class IV)	>50	Male	68	11:30:00 AM	3:00:00 PM
190	01/15/2008	01/15/2008	01/13/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	1010	Hardshell kaya	5	Intermediate (comfortable running Class III)	31-50	Female	38	11:00:00 AM	2:30:00 PM
191	01/15/2008	01/15/2008	01/13/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					More than 30 times	1050	Hardshell kaya	15	Intermediate (comfortable running Class III)	31-50	Female	55	11:00:00 AM	2:00:00 PM
192	01/15/2008	01/15/2008	08/13/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	1090	Hardshell kaya	17	Intermediate (comfortable running Class III)	31-50	Male	45	11:00:00 AM	3:00:00 PM
193	01/14/2008	01/14/2008	01/13/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1000	Hardshell kaya	3	Intermediate (comfortable running Class III)	>50	Female	55	11:30:00 AM	2:30:00 PM
194	01/14/2008	01/14/2008	01/13/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	950	Hardshell kaya	3	Intermediate (comfortable running Class III)	>50	Female	25	11:00:00 AM	3:00:00 PM
195	01/13/2008	01/14/2008	01/13/2008	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1030	Hardshell kaya	25	Expert (comfortable running Class V)	>50			11:00:00 AM	2:00:00 PM
196	01/13/2008	01/13/2008	01/12/2008	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	960	Hardshell kayak		Advanced (comfortable running Class IV)	>50	Male	68	11:30:00 AM	3:00:00 PM
197	12/31/2007	12/31/2007	12/30/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1040	Hardshell kayak						10:30:00 AM	3:00:00 PM
198	12/30/2007	12/30/2007	12/29/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1100	Hardshell kaya	20	Advanced (comfortable running Class IV)	>50	Male	42	12:00:00 PM	3:30:00 PM
199	12/28/2007	12/28/2007	12/27/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				21 to 30 times	1280	Hardshell kaya	7	Advanced (comfortable running Class IV)	31-50	Male	23	12:30:00 PM	3:30:00 AM
200	12/16/2007	12/16/2007	12/08/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1150	Hardshell kaya	6	Advanced (comfortable running Class IV)	31-50	Female	36	10:00:00 AM	2:00:00 PM
201	12/11/2007	12/11/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1140	Hardshell kaya	8	Advanced (comfortable running Class IV)	31-50	Male	46	12:00:00 PM	4:00:00 PM
202	12/10/2007	12/10/2007	12/09/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1140	Hardshell kaya	4	Expert (comfortable running Class V)	>50	Male	27	11:00:00 AM	4:00:00 PM
203	12/09/2007	12/09/2007	12/08/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1154	Hardshell kaya	2	Intermediate (comfortable running Class III)	>50	Male	44	1:00:00 PM	3:15:00 PM

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No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
204	12/09/2007	12/09/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1100	Hardshell kaya	25	Expert (comfortable running Class V)	>50	Male		10:45:00 AM	1:15:00 PM
205	12/09/2007	12/09/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1140	Hardshell kaya	4	Advanced (comfortable running Class IV)	>50	Male	51	11:00:00 AM	2:00:00 PM
206	12/09/2007	12/09/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1140	Hardshell kaya	7	Advanced (comfortable running Class IV)	31-50	Male	22	12:00:00 PM	3:30:00 PM
207	12/09/2007	12/09/2007	12/08/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1150	Hardshell kaya	5	Advanced (comfortable running Class IV)	31-50	Male	28	12:45:00 PM	3:30:00 PM
208	12/09/2007	12/09/2007	12/12/1977	XXXX	No					Paradise Ledge only (park and play)	1 to 10 times	1410	Hardshell kaya	5	Intermediate (comfortable running Class III)	>50	Male	29	12:01:00 PM	2:00:00 PM
209	12/09/2007	12/09/2007	12/08/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1160	Hardshell kaya	1	Intermediate (comfortable running Class III)	11/20/2008		36	12:00:00 PM	2:30:00 PM
210	12/09/2007	12/09/2007	12/08/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					0 times	1140	Hardshell kaya	4	Intermediate (comfortable running Class III)	21-30	Female	55	11:00:00 AM	2:30:00 PM
211	12/09/2007	12/09/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1140	Hardshell kaya	3	Advanced (comfortable running Class IV)	>50	Male	46	11:30:00 AM	3:00:00 PM
212	12/09/2007	12/09/2007	12/09/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1160	Hardshell kaya	1	Intermediate (comfortable running Class III)	11/20/2008	Male	36	12:00:00 PM	2:30:00 PM
213	12/08/2007	12/08/2007	12/07/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1600	Hardshell kaya	4	Advanced (comfortable running Class IV)	21-30	Female	23	2:00:00 PM	4:00:00 PM
214	12/08/2007	12/08/2007	10/23/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1280	Hardshell kaya	4	Advanced (comfortable running Class IV)	21-30	Female	23	2:00:00 PM	5:00:00 PM
215	12/08/2007	12/08/2007	12/04/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	3600	Hardshell kaya	9	Expert (comfortable running Class V)	>50	Male	21	12:00:00 PM	3:00:00 PM
216	12/07/2007	12/07/2007	12/06/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	3000	Hardshell kaya	12	Advanced (comfortable running Class IV)	21-30	Male	37	2:00:00 PM	4:00:00 PM
217	12/07/2007	12/07/2007	12/04/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	3800	Hardshell kaya	9	Expert (comfortable running Class V)	>50	Male	23	11:30:00 AM	1:30:00 PM
218	12/07/2007	12/07/2007	12/05/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					21 to 30 times	3160	Hardshell kaya	12	Advanced (comfortable running Class IV)	31-50	Male	31	11:00:00 AM	3:40:00 PM
219	11/30/2007	11/30/2007	11/23/2007	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	580	Hardshell kaya	10	Expert (comfortable running Class V)	>50	Male	30	11:00:00 AM	4:30:00 PM
220	11/28/2007	11/29/2007	11/18/2007	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1140	Hardshell kaya	3	Intermediate (comfortable running Class III)	>50	Male	50	11:00:00 AM	3:00:00 PM
221	11/28/2007	11/28/2007	11/24/2007	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	745	Hardshell kaya	4	Intermediate (comfortable running Class III)	21-30	Female	38	11:00:00 AM	3:30:00 PM
222	11/27/2007	11/27/2007	11/24/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	644	Hardshell kaya	3	Advanced (comfortable running Class IV)	>50	Male	46	12:30:00 PM	3:30:00 PM
223	11/27/2007	11/27/2007	11/24/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	644	Hardshell kaya	3	Advanced (comfortable running Class IV)	>50	Male	46	12:30:00 PM	3:30:00 PM
224	11/25/2007	11/25/2007	11/22/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	600	Hardshell kaya	25	Expert (comfortable running Class V)	>50	Male	45	11:00:00 AM	3:00:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
225	11/25/2007	11/25/2007	11/18/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					11 to 20 times	1150	Hardshell kaya	27	Advanced (comfortable running Class IV)	06/10/2008	Male	52	8:30:00 AM	1:00:00 PM
226	11/23/2007	11/23/2007	11/22/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					21 to 30 times	680	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Male	51	11:00:00 AM	3:30:00 PM
227	11/22/2007	11/22/2007	11/21/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					1 to 10 times	547	Hardshell kaya	1	Intermediate (comfortable running Class III)	>50	Male	29	1:40:00 PM	3:23:00 PM
228	11/22/2007	11/22/2007	11/21/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	650	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	62	1:30:00 PM	3:30:00 PM
229	11/20/2007	11/20/2007	11/18/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1120	Hardshell kaya	7	Advanced (comfortable running Class IV)	31-50	Male	22	11:45:00 AM	3:30:00 PM
230	11/20/2007	11/20/2007	11/18/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1120	Hardshell kaya	13	Expert (comfortable running Class V)	21-30	Male	37	12:00:00 PM	3:00:00 PM
231	11/20/2007	11/20/2007	11/18/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1150	Hardshell kaya	5	Intermediate (comfortable running Class III)	>50	Male	32	12:00:00 PM	2:30:00 PM
232	11/19/2007	11/19/2007	11/18/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1120	Hardshell kaya	2	Intermediate (comfortable running Class III)	31-50	Male	29	12:00:00 PM	2:30:00 PM
233	11/19/2007	11/19/2007	11/18/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1150	Hardshell kaya	7	Advanced (comfortable running Class IV)	11/20/2008	Male	38	11:45:00 PM	3:45:00 PM
234	11/19/2007	11/19/2007	11/18/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1150	Hardshell kaya	5	Advanced (comfortable running Class IV)	>50	Male	32	12:00:00 PM	2:30:00 PM
235	11/19/2007	11/19/2007	11/18/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1150	Hardshell kaya	3	Intermediate (comfortable running Class III)	31-50	Male	29	12:01:00 PM	2:30:00 PM
236	11/18/2007	11/18/2007	11/17/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	1000	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	62	12:30:00 PM	3:30:00 PM
237	11/14/2007	11/14/2007	11/13/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					More than 30 times	600	Hardshell kaya	10	Advanced (comfortable running Class IV)	>50	Male	37	10:20:00 AM	1:00:00 PM
238	11/13/2007	11/13/2007	11/11/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					0 times	100	Hardshell kayak						12:00:00 PM	11:00:00 AM
239	11/11/2007	11/11/2007	11/10/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	535	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	61	12:45:00 PM	4:00:00 PM
240	11/04/2007	11/04/2007	10/05/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	740	Hardshell kaya	10	Advanced (comfortable running Class IV)	21-30	Male	38	12:00:00 PM	3:30:00 PM
241	11/01/2007	11/01/2007	10/28/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	650	Hardshell kaya	5	Intermediate (comfortable running Class III)	>50	Male	36	12:30:00 PM	3:30:00 PM
242	11/01/2007	11/01/2007	10/23/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	1350	Hardshell kaya	5	Intermediate (comfortable running Class III)	>50	Male	36	3:30:00 PM	6:30:00 PM
243	10/31/2007	10/31/2007	10/30/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	535	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	61	12:30:00 PM	4:30:00 PM
244	10/31/2007	10/31/2007	09/29/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	512	Hardshell kaya	3	Advanced (comfortable running Class IV)	>50	Male	46	12:45:00 PM	4:00:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
245	10/30/2007	10/30/2007	10/27/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					11 to 20 times	600	Hardshell kaya	2	Intermediate (comfortable running Class III)	31-50	Male	29	11:00:00 AM	1:00:00 PM
246	10/28/2007	10/28/2007	10/27/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					21 to 30 times	767	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Male	50	12:30:00 PM	3:33:00 PM
247	10/28/2007	10/28/2007	10/27/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	674	Hardshell kaya	10	Intermediate (comfortable running Class III)	31-50	Male	61	1:00:00 PM	3:15:00 PM
248	10/26/2007	10/26/2007	10/23/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1280	Hardshell kaya	1	Intermediate (comfortable running Class III)	>50	Male	30	3:30:00 PM	6:30:00 PM
249	10/25/2007	10/25/2007	10/23/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1322	Hardshell kaya	2	Advanced (comfortable running Class IV)	>50	Male	36	4:00:00 PM	6:30:00 PM
250	10/25/2007	10/25/2007	10/05/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	900	Hardshell kaya	4	Intermediate (comfortable running Class III)	31-50	Female	38	11:30:00 AM	3:30:00 PM
251	10/24/2007	10/24/2007	10/23/2007	XXXX	Yes					Paradise Ledge only (park and play)	0 times	1300	Hardshell kaya	6	Expert (comfortable running Class V)	>50	Male	16	2:30:00 PM	4:00:00 PM
252	10/24/2007	10/24/2007	10/23/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1280	Hardshell kaya	10	Advanced (comfortable running Class IV)	11/20/2008	Male	31	1:00:00 PM	3:30:00 PM
253	10/24/2007	10/24/2007	10/23/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1280	Hardshell kaya	4	Advanced (comfortable running Class IV)	>50	Male	26	4:00:00 PM	6:30:00 PM
254	10/23/2007	10/23/2007	10/22/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				21 to 30 times	1380	Hardshell kaya	20	Advanced (comfortable running Class IV)	21-30	Male	45	3:15:00 PM	5:20:00 PM
255	10/23/2007	10/23/2007	10/22/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1380	Hardshell kaya	12	Expert (comfortable running Class V)	>50	Male	31	3:00:00 PM	5:30:00 PM
256	10/22/2007	10/22/2007	10/21/2007	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	684	Hardshell kaya	17	Advanced (comfortable running Class IV)	11/20/2008	Female	46	12:00:00 PM	4:00:00 PM
257	10/22/2007	10/22/2007	10/06/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					More than 30 times	780	Hardshell kaya	10	Advanced (comfortable running Class IV)	31-50	Female	38	10:30:00 AM	3:00:00 PM
258	10/22/2007	10/22/2007	10/21/2007	XXXX	Yes			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	689	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Female	46	12:00:00 PM	4:15:00 PM
259	10/22/2007	10/22/2007	10/14/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	680	Hardshell kaya	4	Intermediate (comfortable running Class III)	>50	Male	50	11:30:00 AM	3:30:00 PM
260	10/19/2007	10/19/2007	10/05/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	760	Hardshell kaya	14	Advanced (comfortable running Class IV)	>50	Female	49	1:00:00 PM	3:30:00 PM
261	10/19/2007	10/19/2007	10/06/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	800	Hardshell kaya	15	Expert (comfortable running Class V)	11/20/2008	Male	32	11:45:00 AM	2:00:00 PM
262	10/18/2007	10/18/2007	10/07/2007	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	808	Hardshell kayak		Intermediate (comfortable running Class III)	>50	Male	50	11:30:00 AM	4:30:00 PM
263	10/18/2007	10/18/2007	10/12/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	650	Hardshell kaya	5	Intermediate (comfortable running Class III)	>50	Male	36	3:30:00 PM	6:30:00 PM
264	10/18/2007	10/18/2007	10/06/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	808	Hardshell kaya	2	Intermediate (comfortable running Class III)	>50	Male	50	11:00:00 AM	3:30:00 PM

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Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
265	10/18/2007	10/18/2007	11/22/2006	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)			Paradise Ledge only (park and play)	11 to 20 times	1500	Hardshell kaya	6	Advanced (comfortable running Class IV)	31-50	Male	22	10:00:00 AM	3:00:00 PM
266	10/18/2007	10/18/2007	04/07/2002	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	1500	Hardshell kaya	6	Expert (comfortable running Class V)	31-50	Male	26	11:00:00 AM	3:00:00 PM
267	08/04/2008	08/04/2008	04/26/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	990	nflatable kaya	0	Intermediate (comfortable running Class III)	31-50	Female	55	11:15:00 AM	3:40:00 PM
268	07/08/2008	07/08/2008	06/30/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					More than 30 times	1100	nflatable kaya	18	Advanced (comfortable running Class IV)	>50	Male	38	6:00:00 PM	7:15:00 PM
269	05/15/2008	05/15/2008	05/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1650	nflatable kaya	17		>50	Male	37	10:30:00 AM	3:00:00 PM
270	05/15/2008	05/15/2008	05/03/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1300	nflatable kaya	17	Advanced (comfortable running Class IV)	>50	Male	37	11:00:00 AM	3:30:00 PM
271	05/12/2008	05/12/2008	05/09/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1900	nflatable kayak		Expert (comfortable running Class V)	>50	Female	44	12:00:00 PM	5:00:00 PM
272	05/11/2008	05/11/2008	04/12/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					0 times	740	nflatable kaya	2	Novice (comfortable running Class II)	11/20/2008	Female	34	11:00:00 AM	3:00:00 PM
273	05/11/2008	05/11/2008	05/10/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	1670	nflatable kaya	5	Advanced (comfortable running Class IV)	31-50	Male	39	11:30:00 AM	3:45:00 PM
274	05/08/2008	05/08/2008	05/04/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	1500	nflatable kaya	3	Intermediate (comfortable running Class III)	11/20/2008	Male	51	11:30:00 AM	1:30:00 PM
275	05/02/2008	05/02/2008	04/27/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	1000	nflatable kaya	15	Advanced (comfortable running Class IV)	21-30	Male	50	11:50:00 AM	2:30:00 PM
276	04/24/2008	04/24/2008	04/20/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				More than 30 times	1200	nflatable kaya	15	Advanced (comfortable running Class IV)	>50	Male	37	1:00:00 PM	5:00:00 PM
277	04/21/2008	04/21/2008	04/20/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				11 to 20 times	1160	nflatable kaya	5	Advanced (comfortable running Class IV)	>50	Male	28	1:00:00 PM	6:30:00 PM
278	04/15/2008	04/15/2008	04/12/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		0 times	700	nflatable kaya	10	Advanced (comfortable running Class IV)	21-30	Male	50	2:00:00 PM	3:00:00 PM
279	04/15/2008	04/15/2008	04/12/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	700	nflatable kaya	10	Advanced (comfortable running Class IV)	21-30	Male	50	12:00:00 PM	1:30:00 PM
280	04/01/2008	04/01/2008	03/01/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1800	nflatable kaya	12	Advanced (comfortable running Class IV)	21-30	Male	50	11:00:00 AM	4:30:00 PM
281	03/17/2008	03/17/2008	03/15/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1225	nflatable kaya	17	Advanced (comfortable running Class IV)	>50	Male	37	12:00:00 PM	3:00:00 PM
282	03/05/2008	03/05/2008	03/01/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				21 to 30 times	1900	nflatable kaya	4	Advanced (comfortable running Class IV)	>50	Male	28	11:00:00 AM	2:00:00 PM
283	02/20/2008	02/20/2008	02/16/2008	XXXX	No				Yo-Yo (Flaming Geyser to Whitney Bridge)		0 times	1150	nflatable kaya	1	Novice (comfortable running Class II)	21-30	Female	32	1:00:00 PM	2:30:00 PM

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
284	02/12/2008	02/12/2008	02/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	3070	nflatable kaya	5	Expert (comfortable running Class V)	>50	Male	44	12:30:00 PM	3:00:00 PM
285	02/11/2008	02/11/2008	02/10/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	3000	nflatable kaya	17	Advanced (comfortable running Class IV)	>50	Male	37	1:00:00 PM	3:30:00 PM
286	12/13/2007	12/13/2007	12/12/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	880	nflatable kaya	1	Advanced (comfortable running Class IV)	11/20/2008	Male	48	10:15:00 AM	3:00:00 PM
287	12/13/2007	12/13/2007	12/12/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	880	nflatable kaya	5	Advanced (comfortable running Class IV)	21-30	Male	47	10:00:00 AM	2:30:00 PM
288	12/13/2007	12/13/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1160	nflatable kaya	10	Advanced (comfortable running Class IV)	31-50	Male	49	11:15:00 AM	3:30:00 PM
289	12/12/2007	12/12/2007	12/08/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1200	nflatable kaya	6	Advanced (comfortable running Class IV)	31-50	Male	47	11:30:00 AM	3:30:00 PM
290	12/12/2007	12/12/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1160	nflatable kaya	10	Advanced (comfortable running Class IV)	31-50	Male	49		
291	12/11/2007	12/11/2007	12/10/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	500	nflatable kaya	19	Advanced (comfortable running Class IV)	>50	Male	47	9:20:00 AM	3:30:00 PM
292	12/11/2007	12/11/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1140	nflatable kaya	15	Advanced (comfortable running Class IV)	>50	Male	37	11:00:00 AM	3:00:00 PM
293	12/11/2007	12/11/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1160	nflatable kaya	10	Advanced (comfortable running Class IV)	31-50	Male	49		
294	12/10/2007	12/10/2007	12/08/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	1160	nflatable kaya	4	Advanced (comfortable running Class IV)	>50	Male	27	11:00:00 AM	4:00:00 PM
295	12/09/2007	12/09/2007	12/09/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	1140	nflatable kaya	19	Advanced (comfortable running Class IV)	>50	Male	47	11:30:00 AM	3:30:00 PM
296	11/20/2007	11/20/2007	11/19/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	1190	nflatable kaya	5	Advanced (comfortable running Class IV)	31-50	Male	47	11:00:00 AM	2:30:00 PM
297	11/20/2007	11/20/2007	11/19/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1190	nflatable kaya	4	Intermediate (comfortable running Class III)	11/20/2008	Male	45	10:30:00 AM	2:00:00 PM
298	10/18/2007	10/18/2007	10/07/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	850	nflatable kaya	10	Intermediate (comfortable running Class III)	06/10/2008	Female	38	12:30:00 PM	4:15:00 PM
299	10/18/2007	10/18/2007	10/13/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	720	nflatable kaya	18	Advanced (comfortable running Class IV)	>50	Male	47	11:45:00 AM	3:00:00 PM
300	10/18/2007	10/18/2007	10/20/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					11 to 20 times	650	nflatable kaya	4	Advanced (comfortable running Class IV)	>50	Male	27	12:00:00 PM	2:00:00 PM
301	10/18/2007	10/18/2007	10/14/2007	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	724	nflatable kaya	9	Advanced (comfortable running Class IV)	21-30	Male	49	12:01:00 PM	2:30:00 PM
302	10/04/2007	10/04/2007	10/03/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					1 to 10 times	1200	nflatable kaya	1	Novice (comfortable running Class II)	02/05/2008	Male	58	12:30:00 PM	2:30:00 PM
303	08/04/2008	08/04/2008	04/26/2008	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					21 to 30 times	990	canoe with flo	19	Intermediate (comfortable running Class III)	>50	Female	45	11:30:00 AM	3:30:00 PM

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No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
304	07/23/2008	07/23/2008	07/20/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	250	canoe with flo	10	Intermediate (comfortable running Class III)	31-50	Female	54	5:30:00 PM	8:30:00 PM
305	02/22/2008	02/22/2008	02/17/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	2020	canoe with flo	5	Intermediate (comfortable running Class III)	21-30	Male	50	12:00:00 PM	4:00:00 PM
306	02/18/2008	02/18/2008	02/17/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park					1 to 10 times	1070	canoe with flo	3	Intermediate (comfortable running Class III)	31-50	Male	54	12:00:00 PM	3:30:00 PM
307	12/04/2007	12/04/2007	10/14/2007	XXXX	Yes	Headworks to Kanaskat-Palmer State Park					0 times	614	canoe with flo	2	Intermediate (comfortable running Class III)	31-50	Male	53	12:00:00 PM	3:00:00 PM
308	10/19/2007	10/19/2007	10/06/2007	XXXX	No			Lower Gorge (Franklin Bridge to Flaming Geyser)			11 to 20 times	700	canoe with flo	9	Advanced (comfortable running Class IV)	31-50	Female	53	11:00:00 AM	3:00:00 AM
309	08/05/2008	08/05/2008	05/03/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	1300	Self-bailing raf	10	Expert (comfortable running Class V)	11/20/2008	Male	50	12:00:00 PM	4:30:00 PM
310	08/04/2008	08/04/2008	04/26/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	21000	Self-bailing raf	19	Advanced (comfortable running Class IV)	>50	Male	46	11:15:00 AM	4:45:00 PM
311	07/07/2008	07/07/2008	07/05/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1100	Self-bailing raf	30	Expert (comfortable running Class V)	>50	Male	56	11:00:00 AM	5:00:00 PM
312	05/13/2008	05/13/2008	05/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	1600	Self-bailing raf	20	Advanced (comfortable running Class IV)	11/20/2008	Male	38	11:00:00 AM	3:00:00 PM
313	05/12/2008	05/12/2008	05/03/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1300	Self-bailing raft		Advanced (comfortable running Class IV)	>50	Female	34	11:40:00 AM	4:00:00 PM
314	05/12/2008	05/12/2008	05/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1670	Self-bailing raf	10	Advanced (comfortable running Class IV)	>50	Female	34	10:15:00 AM	3:45:00 PM
315	05/11/2008	05/11/2008	05/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1600	Self-bailing raf	12	Advanced (comfortable running Class IV)	>50	Male	42	10:30:00 PM	3:30:00 PM
316	05/11/2008	05/11/2008	05/10/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1800	Self-bailing raf	6	Advanced (comfortable running Class IV)	11/20/2008	Female	34	10:30:00 AM	4:30:00 PM
317	05/11/2008	05/11/2008	05/03/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1500	Self-bailing raf	6	Advanced (comfortable running Class IV)	11/20/2008	Female	34	11:00:00 AM	12:00:00 AM
318	05/11/2008	05/11/2008	05/09/2008	XXXX	No	Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1900	Self-bailing raf	16	Expert (comfortable running Class V)	>50	Male	40	10:30:00 AM	3:45:00 PM
319	05/08/2008	05/08/2008	05/03/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	1390	Self-bailing raf	3	Intermediate (comfortable running Class III)	21-30	Female	29	11:30:00 AM	4:45:00 PM
320	05/08/2008	05/08/2008	05/03/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1500	Self-bailing raf	5	Intermediate (comfortable running Class III)	11/20/2008	Male	51	11:00:00 AM	5:00:00 PM
321	04/18/2008	04/18/2008	04/14/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1200	Self-bailing raf	10	Advanced (comfortable running Class IV)	31-50	Male	31	11:00:00 AM	2:00:00 PM
322	02/11/2008	02/11/2008	02/07/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	2500	Self-bailing raf	5	Expert (comfortable running Class V)	>50	Male	34	11:30:00 AM	3:00:00 PM
323	02/11/2008	02/11/2008	02/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			0 times	3000	Self-bailing raf	2	Advanced (comfortable running Class IV)	>50	Male	25	1:00:00 PM	5:00:00 PM
324	02/11/2008	02/11/2008	02/10/2008	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				0 times	3000	Self-bailing raf	5	Advanced (comfortable running Class IV)	11/20/2008	Female	33	12:00:00 PM	3:30:00 PM

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No.	StartDate	EndDate	Date of Run:	Your Name:	Is this the first time you have participated in the Green River WW survey?	Where did you paddle on this trip? (check all that apply)					Prior to this trip, how many times have you boated this section of the Green River?	What was the flow (cfs) when you boated?- Palmer gage USGS No. 12106700	What type of craft did you use?	How many years have you been using this craft?	How would you rate your skill level with this type of craft?	In general, how many days a year do you spend whitewater boating?	gender	age	Approximate put-in time:	Approximate take-out time:
						Headworks to Kanaskat-Palmer State Park	Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)	Yo-Yo (Flaming Geyser to Whitney Bridge)	Paradise Ledge only (park and play)										
325	02/11/2008	02/11/2008	02/10/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)				1 to 10 times	3000	Self-bailing raf	5	Advanced (comfortable running Class IV)	21-30	Male	30	1:30:00 PM	3:30:00 PM
326	12/12/2007	12/12/2007	11/25/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1120	Self-bailing raf	13	Expert (comfortable running Class V)	>50	Male	54	9:30:00 AM	12:30:00 PM
327	12/10/2007	12/10/2007	12/08/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1150	Self-bailing raf	2	Advanced (comfortable running Class IV)	31-50	Male	32	11:15:00 AM	3:30:00 PM
328	10/18/2007	10/18/2007	10/07/2007	XXXX	Yes		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	750	Self-bailing raf	5	Advanced (comfortable running Class IV)	31-50		31	12:15:00 PM	4:30:00 PM
329	10/18/2007	10/18/2007	10/07/2007	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	760	Self-bailing raf	3	Advanced (comfortable running Class IV)	21-30	Male	28	12:00:00 PM	4:30:00 PM
330	05/11/2008	05/11/2008	05/10/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	1750	Wrap-floor raf	20	Advanced (comfortable running Class IV)	>50	Male	29	11:00:00 AM	4:00:00 PM
331	05/08/2008	05/08/2008	05/03/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			More than 30 times	1400	Wrap-floor raf	20	Advanced (comfortable running Class IV)	21-30	Male	50	11:45:00 AM	4:45:00 PM
332	02/22/2008	02/22/2008	02/17/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			21 to 30 times	1100	Wrap-floor raf	10	Advanced (comfortable running Class IV)	11/20/2008	Male	29	11:15:00 AM	4:00:00 PM
333	02/20/2008	02/20/2008	02/17/2008	XXXX	No		Upper Gorge (Kanaskat to Franklin Bridge/Paradise Ledge)	Lower Gorge (Franklin Bridge to Flaming Geyser)			1 to 10 times	1150	Wrap-floor raf	1	Intermediate (comfortable running Class III)	21-30	Female	32	12:30:00 PM	4:30:00 AM

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Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
1	Class IV	50	0	0	0	Marginal	Totally acceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
2	Class IV	25	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3500	Definitely yes
3	Class IV	25	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3500	Definitely yes
4	Class IV	20	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
5	Class IV	60	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
6	Class IV	70	0	0	0	Moderately acceptable	Totally acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
7	Class V	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	5500	Definitely yes
8	Class V	0	0	0	0	Moderately unacceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	3500	Definitely yes
9	Class V	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	4500	Definitely yes
10	Class V	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	4900	Definitely yes
11	Class IV	10	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
12	Class IV	20	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Moderately unacceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
13	Class IV	5	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
14	Class III	0	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
15	Class III	4	1	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1800	Definitely yes
16	Class IV	20	1	0	0											Definitely yes	Much higher flow	3500	Definitely yes
17	Class IV	20	1	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
18	Class IV	12	1	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Much higher flow	3000	Definitely yes
19	Not sure	5	0	0	0	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Possibly	Much higher flow	4000	Definitely yes
20	Class IV	100	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes

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						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
21	Class IV	100	0	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Marginal	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
22	Class IV	3	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	2200	Definitely yes
23	Class III	10	0	0	0	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Possibly	Much higher flow	3000	Definitely yes
24	Class II	3	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1800	Definitely yes
25	Class III	20	2	0	0	Marginal	Marginal	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	2000	Definitely yes
26	Class III	10	1	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	2000	Definitely yes
27	Class III	10	3	1	0	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Much higher flow	2000	Definitely yes
28	Class II	20	5	2	0	Marginal	Marginal	Moderately unacceptable	Marginal	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1000	Definitely yes
29	Class IV	100	10	0	0	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	3550	Definitely yes
30	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	5000	Definitely yes
31	Class III	20	4	1	0	Moderately unacceptable	Marginal	Moderately unacceptable	Moderately unacceptable	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable		Possibly	Slightly higher flow	1800	Definitely yes
32	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3500	Definitely yes
33	Class III	0	0	0	0	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	2500	Definitely yes
34	Class II	2	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1160	Definitely yes
35	Class III	20	0	0	0	Marginal	Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	100	Definitely yes
36	Class III	10	1	0	0	Moderately acceptable	Totally acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1000	Definitely yes
37	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
38	Class II	20	0	0	0	Totally acceptable	Marginal	Marginal	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	950	Probably
39	Class III	6	0	0	0	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
40	Class III	15	5	0	0	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1250	Definitely yes

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
41	Class III	12	6	0	0	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable		Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
42	Class II	0	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	1500	Probably
43	Class II	2	0	0	0	Totally acceptable	Marginal	Marginal	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1400	Definitely yes
44	Class II	0	0	0	0	Totally acceptable	Marginal	Marginal	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	900	Definitely yes
45	Class III	10	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Probably	Slightly higher flow	1200	Definitely yes
46	Class III	15	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable		Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
47																			
48	Class II	10	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1300	Definitely yes
49																			
50	Class III	2	0	0	0	Moderately acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3000	Definitely yes
51	Class III	10	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1100	Definitely yes
52	Class II	0	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1	Definitely yes
53	Class II	0	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1	Definitely yes
54	Class II	4	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1	Definitely yes
55	Class II	20	1	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Marginal	Marginal	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Marginal	Definitely yes	Slightly higher flow	1500	Definitely yes
56	Class II	4	0	0	0	Marginal	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Marginal	Probably	Slightly lower flow	800	Definitely yes
57	Class II	20	2	0	0	Totally acceptable	Totally acceptable	Totally unacceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Definitely yes
58	Class II	5	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1400	Definitely yes
59	Class III	6	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	About the same	1200	Definitely yes
60	Class III	6	1	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
61		251	5	0	0											Probably	Much higher flow	7000	

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
62	Class IV	0	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	2000	Definitely yes
63	Class II	6	4	0	0	Moderately unacceptable	Moderately unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	2000	Definitely yes
64	Class II	10	5	1	5	Marginal	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Possibly	Much higher flow	2200	Definitely yes
65	Class III	12	0	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	3800	Definitely yes
66		30	0	0	0											Probably	Much higher flow	7000	
67		25	0	0	0											Probably	Much higher flow	7000	
68		15	0	0	0											Probably	Much higher flow	7000	
69	Class II	20	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	1000	Definitely yes
70	Class III	0	0	0	0	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	2000	Definitely yes
71		30	0	0	0											Probably	Much higher flow	7000	
72		10	0	0	0											Probably	Much higher flow	7000	
73		20	3	0	0											Probably	Much higher flow	7000	
74		15	0	0	0											Probably	Much higher flow	7000	
75		25	0	0	0											Probably	Much higher flow	7000	
76																			
77	Class III	10	1	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1350	Definitely yes
78		25	0	0	0											Probably	Much higher flow	7000	
79		25	0	0	0											Probably	Much higher flow	7000	
80		50	0	0	0											Probably	Much higher flow	7000	
81		20	0	0	0											Probably	Much higher flow	7000	
82		15	0	0	0											Probably	Much higher flow	7000	

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
83		20	0	0	0											Probably	Much higher flow	7000	
84		10	0	0	0											Probably	Much higher flow	7000	
85		25	0	0	0											Probably	Much higher flow	7000	
86	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	3300	Definitely yes
87		0	0	0	0											Probably	Much higher flow	7000	
88		20	0	0	0											Probably	Much higher flow	7000	
89		10	0	0	0											Probably	Much higher flow	7000	
90		10	0	0	0											Probably	Much higher flow	7000	
91		10	0	0	0											Probably	Much higher flow	7000	
92		10	0	0	0											Probably	Much higher flow	7000	
93		10	0	0	0											Probably	Much higher flow	7000	
94	Not sure	1	0	0	0											Probably	Slightly higher flow	7000	
95		0	0	0	0											Probably	Much higher flow	7000	
96		1	0	0	0											Probably	Slightly higher flow	5000	
97		2	0	0	0											Probably	Much higher flow	5000	
98		5	0	0	0											Probably	Much higher flow	3000	
99		6	0	0	0											Probably	Much higher flow	3000	
100	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1500	Definitely yes
101		10	0	0	0											Probably	Much higher flow	3000	
102	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1800	Definitely yes
103		4	0	0	0											Probably	Much higher flow	3000	

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
104		4	0	0	0											Probably	Much higher flow	3000	
105	Class III	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Much lower flow	500	Definitely yes
106	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	About the same	2000	Definitely yes
107		3	0	0	0											Probably	Slightly higher flow	3000	
108		6	0	0	0											Probably	Slightly higher flow	3000	
109		5	2	0	0											Probably	Slightly higher flow	3000	Probably
110	Class III	7	1	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	2000	Definitely yes
111	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1300	Definitely yes
112	Class IV	1	1	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
113	Class II	1	0	0	0	Moderately acceptable	Marginal	Moderately unacceptable	Moderately acceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
114		5	0	0	0											Probably	Much higher flow	1900	
115	Class III	15	1	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	About the same	1200	Probably
116	Class III	40	2	0	0	Marginal	Moderately acceptable	Totally unacceptable	Moderately acceptable	Marginal	Marginal	Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Possibly	Much higher flow	3500	Definitely yes
117	Class III	15	1	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly lower flow	550	Definitely yes
118	Class III	15	0	2	0	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	2000	Definitely yes
119	Class III	1	0	0	0	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	800	Definitely yes
120	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	3500	Definitely yes
121	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	800	Definitely yes
122	Class III	10	0	0	0	Moderately acceptable	Marginal	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1400	Probably
123	Class III	10	1	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1400	Definitely yes
124	Class III	3	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	600	Definitely yes

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
125	Class IV	10	0	0	0	Marginal	Moderately acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Much higher flow	1800	Definitely yes
126		75	3	0	0	Marginal	Marginal	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Definitely yes	Much higher flow	1900	Definitely yes
127	Class IV	10	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1100	Probably
128		100	5	0	0	Marginal	Marginal	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Definitely yes	Much higher flow	1800	Definitely yes
129	Class IV	0	0	0	0	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Definitely yes	About the same	1350	Definitely yes
130	Class III	100	0	0	0	Marginal	Moderately acceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Totally acceptable	Totally acceptable	Moderately unacceptable	Definitely yes	Much higher flow	2500	Definitely yes
131	Class III	100	10	0	0	Marginal	Marginal	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Totally acceptable	Marginal	Definitely yes	Much higher flow	1900	Definitely yes
132	Class III	100	10	0	0	Marginal	Marginal	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Totally acceptable	Marginal	Definitely yes	Much higher flow	1800	
133	Class IV	50	4	0	0	Marginal	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable		Moderately acceptable	Probably	Much higher flow	1100	Probably
134	Class II	2	0	0	0	Marginal	Marginal	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Probably	Slightly lower flow	1000	Probably
135	Class II	4	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Probably	About the same	0	Probably
136	Class II	4	0	0	0	Totally acceptable	Moderately acceptable		Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	About the same	1300	Probably
137	Class II	6	1	0	0	Moderately acceptable	Moderately acceptable		Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1300	Possibly
138	Class II	0	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	About the same	1200	Definitely yes
139	Class III	5	0	0	0	Moderately acceptable	Moderately acceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Probably	Much higher flow	2800	Probably
140	Class III	6	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Much higher flow	2800	Definitely yes
141	Class III	2	0	0	0	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1400	Definitely yes
142	Class III	3	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1800	Definitely yes
143	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable		Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	4000	Definitely yes
144	Class III	10	2	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1500	Definitely yes

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
145	Class IV	2	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
146	Class III	6	0	0	0	Marginal	Moderately acceptable	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	1400	Definitely yes
147	Class III	5	0	0	0	Moderately acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
148	Class III	5	0	0	0	Moderately acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
149	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	1700	Definitely yes
150	Class III	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	1500	Definitely yes
151	Class III	3	0	0	0	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Much higher flow	3000	Definitely yes
152	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1900	Definitely yes
153	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	2000	Definitely yes
154	Class III	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1800	Definitely yes
155	Class IV	8	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	1500	Definitely yes
156	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
157	Class III	3	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
158	Class IV	5	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	1500	Probably
159	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1500	Definitely yes
160	Class IV	5	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2000	Definitely yes
161	Class III	25	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Possibly	Much higher flow	1300	Definitely yes
162	Class IV	15	0	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1200	Definitely yes
163	Class III	6	0	0	0	Moderately acceptable	Totally acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Much higher flow	3000	Definitely yes
164	Class II	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	850	Definitely yes

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						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
165	Class II	1	0	0	0	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Probably	Slightly higher flow	1800	Definitely yes
166	Class III	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Much lower flow	700	Definitely yes
167	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1070	Definitely yes
168	Class IV	1	1	1	1	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	4000	Definitely yes
169	Class III	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
170	Class IV	20	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1500	Definitely yes
171	Class III	26	1	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1200	Definitely yes
172	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	3000	Definitely yes
173																			
174	Class III	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	2100	Definitely yes
175	Class III	3	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	2330	Definitely yes
176	Class III	5	0	0	0	Marginal	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Possibly	Much higher flow	3000	Definitely yes
177	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3000	Definitely yes
178	Class IV	0	0	0	0	Totally acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	5000	Definitely yes
179	Class IV	3	0	0	0	Totally acceptable	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	2000	Definitely yes
180	Class III	0	0	0	0	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately unacceptable	Totally unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately unacceptable	Definitely no	Much lower flow	800	Possibly
181	Class III	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	3000	Definitely yes
182	Class III	10	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
183	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	2500	Definitely yes
184	Class II	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Much lower flow	1800	Definitely yes

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						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
185	Class III	1	1	1	1	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Totally unacceptable	Marginal	Moderately acceptable	Marginal	Totally unacceptable	Possibly	Much lower flow	2000	Definitely yes
186	Class II	3	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Totally unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Marginal	Possibly	Much higher flow	1400	Definitely yes
187	Class II	50	0	0	1	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Totally unacceptable	Marginal	Marginal	Totally unacceptable	Totally unacceptable	Possibly	Much higher flow	1200	Definitely yes
188	Class IV	50	1	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Probably	Slightly higher flow	1500	Definitely yes
189	Class III	15	0	0	0	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Probably	About the same	1500	Definitely yes
190	Class III	0	0	0	1	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Definitely yes	Slightly lower flow	850	Definitely yes
191	Class II	2	0	0	1	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately unacceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1800	Definitely yes
192	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	1300	Probably
193	Class III	50	1	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1400	Definitely yes
194	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1050	Definitely yes
195	Class III	5	0	0	0	Moderately acceptable	Marginal	Moderately unacceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Much higher flow	2000	Probably
196	Class III	50	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Marginal	Marginal	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Marginal	Probably	Slightly higher flow	1500	Definitely yes
197		20	1	0	0											Probably	Much higher flow	1900	Probably
198	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3500	Definitely yes
199	Class IV	15	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1350	Definitely yes
200	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1700	Definitely yes
201	Class IV	20	1	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1300	Definitely yes
202	Class III	41	3	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1250	Definitely yes
203	Class III	7	1	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1500	Definitely yes

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						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
204	Class IV	20	2	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	1900	Probably
205	Class IV	25	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1400	Definitely yes
206	Class IV	50	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Possibly	Slightly higher flow	1300	Definitely yes
207	Class III	3	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1600	Probably
208	Class III	25	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Probably	Slightly higher flow	1400	Probably
209		8	1	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1600	Definitely yes
210	Class II	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1500	Definitely yes
211	Class IV	5	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable		Moderately acceptable	Probably	Slightly higher flow	1400	Definitely yes
212	Class V	8	1	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1600	Definitely yes
213	Class IV	2	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Probably	Much higher flow	3000	Definitely yes
214	Class III	5	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Probably	Much higher flow	3000	Definitely yes
215	Class IV	5	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately unacceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Possibly	Much higher flow	10000	Probably
216	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	4000	Definitely yes
217	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Much higher flow	7000	Probably
218	Class III	0	0	0	0	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	2600	Probably
219	Class III	1000	2	0	0	Moderately acceptable	Marginal	Totally unacceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Probably	Much higher flow	1400	Definitely yes
220	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1500	Definitely yes
221	Class III	20	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1100	Definitely yes
222	Class III	10	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Definitely yes
223	Class III	10	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Definitely yes
224	Class III	50	5	0	0	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Definitely yes	Much higher flow	1800	Definitely yes

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						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
225	Class II	3	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1500	Definitely yes
226	Class III	50	1	0	0	Marginal	Moderately unacceptable	Totally unacceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Totally acceptable		Marginal	Probably	Slightly higher flow	1100	Definitely yes
227	Class II	100	2	0	0	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately unacceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Definitely no	Much lower flow	1200	Definitely yes
228	Class II	30	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	950	Definitely yes
229	Class IV	15	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Probably	Slightly higher flow	1300	Definitely yes
230	Class III	100	0	0	0	Marginal	Marginal	Marginal	Totally unacceptable	Totally unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately unacceptable	Definitely no	Much higher flow	2000	Definitely yes
231	Class III	10	0	0	0	Moderately acceptable	Marginal	Marginal	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1400	Definitely yes
232	Class VI	10	0	0	0	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Definitely yes
233	Class IV	20	5	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Much higher flow	1900	Definitely yes
234	Class III	15	0	0	0	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1450	Definitely yes
235	Class III	100	5	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Marginal	Possibly	Slightly higher flow	2500	Probably
236	Class II	10	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	950	Definitely yes
237	Class II	1	0	0	0	Marginal	Marginal	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Marginal	Probably	Much higher flow	1800	Definitely yes
238		2	2	22	2											Definitely yes	About the same	33	
239	Class II	30	2	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	900	Definitely yes
240	Class IV	10	0	0	0	Moderately acceptable	Marginal	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	1800	Definitely yes
241	Class II	2	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
242	Class II	0	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	1350	Definitely yes
243	Class II	30	0	0	0	Marginal	Marginal	Moderately unacceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	900	Definitely yes
244	Class III	50	2	0	0	Marginal	Marginal	Moderately unacceptable	Marginal	Marginal	Moderately acceptable		Totally acceptable	Totally acceptable	Marginal	Possibly	Slightly higher flow	1300	Definitely yes

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
245	Class II	10	0	0	0	Marginal	Moderately unacceptable	Totally unacceptable	Moderately unacceptable	Totally unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally unacceptable	Marginal	Possibly	Much higher flow	1600	Definitely yes
246	Class III	30	0	0	0	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable		Marginal	Possibly	Much higher flow	1400	Definitely yes
247	Class II	20	0	0	0	Totally acceptable	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	850	Definitely yes
248	Class III	3	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Definitely yes
249	Class III	4	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Much higher flow	2000	Definitely yes
250	Class II	1	1	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1000	Definitely yes
251	Class II	0	0	0	0	Marginal	Marginal	Marginal	Marginal	Marginal		Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Definitely no	Slightly higher flow	1450	Possibly
252	Class III	5	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Probably
253	Class III	20	1	0	0	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1500	Definitely yes
254	Class IV	10	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1600	Definitely yes
255	Class III	12	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1700	Definitely yes
256	Class III	10	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1000	Definitely yes
257	Class II	10	5	0	0	Totally acceptable	Moderately acceptable	Totally unacceptable	Moderately acceptable	Moderately unacceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Much higher flow	1300	Probably
258	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	1000	Definitely yes
259	Class III	30	0	2	0	Moderately unacceptable	Marginal	Totally unacceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable				Marginal	Possibly	Slightly higher flow	1400	Definitely yes
260	Class III	30	1	0	0	Moderately acceptable	Totally acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Much higher flow	2500	Definitely yes
261	Class III	5	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	3000	Definitely yes
262	Class III	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
263	Class II	10	0	0	0	Totally acceptable	Moderately acceptable	Marginal	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	800	Possibly
264	Class II	0	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	1200	Definitely yes

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
265	Class IV	10	0	0	0	Moderately acceptable		Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	1300	Definitely yes
266	Class III	75	1	0	0	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	About the same	1450	Definitely yes
267	Class II	5	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
268	Class III	5	2	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Marginal	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1800	Probably
269	Class III	0	0	0	0											Definitely yes	Slightly higher flow	2500	Definitely yes
270	Class III	0	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Probably	Slightly higher flow	2500	Definitely yes
271	Class IV	0	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Much higher flow	3400	Definitely yes
272	Class III	8	2	1	0	Moderately acceptable	Totally acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
273	Class III	2	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
274	Class III	10	2	0	0	Totally acceptable	Moderately acceptable		Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1800	Definitely yes
275	Class II	5	1	0	0	Marginal	Marginal	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Moderately unacceptable	Totally acceptable	Marginal	Possibly	Much higher flow	2000	Definitely yes
276	Class III	2	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	2000	Definitely yes
277	Class III	4	0	0	0	Moderately acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	2500	Definitely yes
278	Class II	4	0	0	0	Marginal	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately acceptable	Moderately unacceptable	Totally unacceptable	Totally acceptable	Moderately unacceptable	Possibly	Slightly higher flow	1000	Possibly
279	Class II	3	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Totally acceptable	Moderately acceptable	Moderately unacceptable	Totally acceptable	Marginal	Possibly	Slightly higher flow	1000	Probably
280	Class IV	10	2	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2200	Definitely yes
281	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Probably	Slightly higher flow	2200	Definitely yes
282	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	2800	Definitely yes
283	Class I	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	2000	Possibly

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
284	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	3400	Definitely yes
285	Class IV	0	0	0	0	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	2500	Definitely yes
286	Class IV	30	2	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
287	Class IV	6	1	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1200	Definitely yes
288	Class IV	30	3	0	0	Marginal	Marginal	Moderately unacceptable	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Moderately unacceptable	Totally acceptable	Moderately unacceptable	Probably	Much higher flow	2500	Definitely yes
289	Class IV	2	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Probably	Much higher flow	2500	Definitely yes
290																			
291	Class IV	0	0	0	0	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Definitely yes	Much higher flow	2400	Definitely yes
292	Class III	10	2	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	2500	Definitely yes
293																			
294	Class III	8	3	1	0	Marginal	Totally acceptable	Totally unacceptable	Moderately acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Possibly	Much higher flow	3000	Definitely yes
295	Class III	4	1	0	0	Marginal	Marginal	Moderately unacceptable	Marginal	Moderately unacceptable	Marginal	Totally acceptable	Moderately acceptable	Totally acceptable	Marginal	Definitely yes	Much higher flow	2000	Definitely yes
296	Class IV	4	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1500	Definitely yes
297	Class III	6	2	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	0	Definitely yes
298		12	3	0	0	Marginal	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	1100	Probably
299	Class III	4	1	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Much higher flow	2400	Definitely yes
300	Class II	5	1	0	1	Marginal	Moderately acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Probably	Much higher flow	3000	Definitely yes
301	Class II	4	1	0	0	Moderately acceptable	Totally acceptable	Moderately unacceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	900	Probably
302		0	0	0	0											Definitely no	Much lower flow	300	
303	Class II	4	0	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately unacceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1500	Definitely yes

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
304	Class III	24	3	2	0	Moderately unacceptable	Totally acceptable	Marginal	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Moderately unacceptable	Possibly	Slightly higher flow	1000	Definitely yes
305	Class II	3	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Definitely yes	About the same	2020	Definitely yes
306	Class III	20	0	0	0	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	1500	Probably
307	Class II	15	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1000	Probably
308	Class III	3	0	0	0	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	1500	Definitely yes
309	Class IV	3	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
310	Class III	12	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable		Totally acceptable	Probably	Much higher flow	3200	Definitely yes
311	Class IV	50	0	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Much higher flow	3500	Definitely yes
312		20	1	1	0	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Definitely yes	Slightly higher flow	2250	Definitely yes
313	Class IV	78	8	2	0	Moderately unacceptable	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable		Totally acceptable	Moderately acceptable	Totally acceptable	Moderately unacceptable	Possibly	Much higher flow	3200	Definitely yes
314	Class IV	54	6	0	0	Marginal	Marginal	Marginal	Marginal	Moderately unacceptable		Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Probably	Much higher flow	3200	Definitely yes
315	Class III	2	0	0	0	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Moderately acceptable	Probably	Slightly higher flow	2000	Definitely yes
316	Class IV	4	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2000	Definitely yes
317	Class IV	5	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2000	Definitely yes
318	Class IV	30	3	0	0											Definitely yes	Much higher flow	3500	
319	Class IV	1	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2500	Probably
320	Class IV	20	5	1	0	Moderately acceptable	Totally acceptable	Totally acceptable		Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable		Totally acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
321	Class III	40	15	6	1	Moderately unacceptable	Marginal	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Definitely no	Much higher flow	3000	Definitely yes
322	Class III	5	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Much higher flow	5000	Definitely yes
323	Class IV	1	0	0	0	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Probably	Slightly higher flow	4000	Definitely yes
324	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Probably	Slightly lower flow	1800	Definitely yes

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Green River Whitewater Flow Study

No.	In general, how would you rate the whitewater difficulty on this reach at this flow?	Number of times I hit rocks and other obstacles (but did not stop)	Number of times I was stopped after hitting rocks or other obstacles (but did not have to get out of my boat to continue downstream)	Number of times I had to get out to drag or pull my boat off rocks or other obstacles:	Number of times I had to portage around unrunnable rapids, log jams, or other obstacles:	Please evaluate that day's flow on this run for your craft and skill level for each of the following characteristics.										Are you likely to return to boat this flow you just evaluated?	In general, would you prefer a flow that was lower, higher or about the same as this flow?	If you prefer a higher or lower flow, please indicate the volume in cfs that you would like to boat. Preferred flow (cfs)	Are you likely to return for future boating at the preferred flow you identified above?
						Boatability	Availability of technical boating	Availability of powerful hydraulics	Availability of whitewater play areas	Overall whitewater challenge	Safety	Aesthetics	Length of run	Number of portages	Overall rating				
325	Class IV	0	0	0	0	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly lower flow	2500	Definitely yes
326	Class III	10	0	0	0	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Totally acceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Moderately unacceptable	Possibly	Much higher flow	4000	Definitely yes
327	Class IV	15	2	0	0	Moderately unacceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately unacceptable	Possibly	Much higher flow	2500	Definitely yes
328	Class III	100	50	0	0	Marginal	Moderately acceptable	Moderately unacceptable	Marginal	Moderately unacceptable	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	2000	Definitely yes
329	Class III	30	3	0	0	Moderately unacceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Totally acceptable	Marginal	Definitely no	Much higher flow	2800	Definitely yes
330	Class IV	20	5	0	0	Totally acceptable	Totally acceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Definitely yes	Slightly higher flow	2500	Definitely yes
331	Class IV	25	3	0	0	Marginal	Totally acceptable	Marginal	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Probably	Much higher flow	2400	Definitely yes
332	Class III	7	3	1	0	Moderately unacceptable	Moderately acceptable	Moderately unacceptable	Marginal	Marginal	Marginal		Moderately acceptable	Marginal	Marginal	Possibly	Much higher flow	3200	Definitely yes
333	Class III	10	2	1	0	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Marginal	Totally acceptable	Moderately acceptable	Possibly	Slightly higher flow	2000	Probably

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
1	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	3500	2500	4000	1700	4800	3500
2	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	3500	2500	4000	1700	4800	3500
3	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	3500	2500	4000	1700	4800	3500
4	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	2500	4000	1700	4800	3500
5	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	3500	2500	4000	1700	4800	3500
6	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	3500	2500	4000	1700	4800	3500
7															Totally acceptable							
8	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	2500	4000	1700	4800	3500
9																						
10	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1750	4900	3500	4900	1750	7000	4900
11	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	2500	4000	1700	4800	3500
12	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	2500	4000	1700	4800	3500
13																						
14	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1400	3000	2500	4000	1400	4500	3000
15			Moderately acceptable					Totally acceptable			Totally acceptable	Totally acceptable	Totally acceptable			1200	1800	1800	2500		1800	1800
16																						
17	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	2500	3500	3500	5000	2500	7000	3500
18	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2500	2000	3500	1200	4500	2500
19	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	4000	2000	4000	1000	7000	4000
20	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	2500	4000	1400	4800	3500

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
21			Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	2500	4000	1400	4800	3500
22	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	1200	2400	2000	3000	2000	3000	2500
23	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3500	1800	4000	1200	4000	1800
24																						
25																						
26																						
27	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately unacceptable	1100	2000	1800	2500		2500	1800
28																						
29	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1500	3550	3550	5000	3550	6000	3550
30	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1500	5000	2200	7000	1800	9000	3000
31																						
32	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1400	3500	2500	5000	1400	6000	3500
33	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	700	1400	1400	2500	2500	3000	1400
34	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately unacceptable	500	1000	1000	2500		3000	1000
35	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable		600	1000	1250	2500		3000	1100
36																						
37	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	800	2000	2000	5000	2000	5000	2500
38	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	700	1200	1000	2000	1200	1400	1400
39	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	1200	1000	3000	1200	3000	1000
40	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	850	1200	1200	3000	1200	3000	1200

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
41	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	1200	1200	3000	1200	3000	1200
42	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	600	2500	1500	3000	1500	3000	1400
43	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1200	1400	1400	2500	1350	3000	1400
44	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	1000	4500	1600	2000	1300	2000	1000
45																						
46	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	650	1250	1250	2500	1500	2000	1250
47																						
48	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable					750	1300	1300	2300	1300	1100	1300
49																						
50	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	3000	1200	4500	1200	5000	3000
51	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	800	1100	1300	1900	1300	1800	1100
52	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	1000	1200	1200				1200
53	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	500	800	800	1500	0	3000	1200
54		Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable										650	900	900	2000	900	2000	1000
55	Totally unacceptable	Totally unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Totally unacceptable	700	1500	1500	3000	700	5000	1500
56	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	700	1800	1500	2500	1400	2500	1800
57	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	1500	1500	3000	1450	10000	1500
58	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Totally unacceptable	700	1400	1100	2000		2000	1500
59	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable							600	800	800	1	1	1300	1000
60	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	700	1000	1200	3000	1300	3000	900
61																						

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
62	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	2000	2000	4000	3000	6000	2000
63																						
64	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	900	1800	1800	5000	2000		1500
65	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	3000	1600	5000	1450	8000	1600
66																						
67																						
68																						
69	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	800	950	1200	3500	1100	2500	950
70																						
71																						
72																						
73																						
74																						
75																						
76																						
77	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1150	1350	2000	3000	1350	4000	1350
78																						
79																						
80																						
81																						
82																						

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
83																						
84																						
85																						
86	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	1800	3300	2200	4000	1800	5000	3300
87																						
88																						
89																						
90																						
91																						
92																						
93																						
94																						
95																						
96																						
97																						
98																						
99																						
100						Marginal				Totally acceptable												
101																						
102	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1100	1800	1500	3000	900	3500	1700
103																						

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
104																						
105	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	400	500	1200	5000	1500	8000	500
106																						
107																						
108																						
109																						
110																1100	1700	1700	2600			
111	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	700	3500	1500	4000	1400	7000	3500
112	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	700	3000	1300	3500	1500	4400	3000
113																						
114																						
115						Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1000	1200	1200	2500	1200	3000	1200
116	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	3000	1600	5000	1450	8000	1600
117	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	500		1000		1300	3000	1300
118					Moderately acceptable	Moderately acceptable										900	2000	2000	3000		2500	2000
119	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	400	850	1400	3000	1400	10000	850
120	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	700	3500	1400	5000	1400	7000	3500
121	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	400	850	1200	3000	1400	10000	850
122	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1200	1300	1400	3000	1300	3500	1300
123	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1200	1500	1400	3000	1400	4000	1500
124	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	500	600	600	2000	1500	8000	500

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
125	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	800	1800	1800	3000	1200	2500	2000
126																						
127	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable				Moderately unacceptable	700	1100	1200	1600	1100	1600	900
128	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable							
129	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	1350	1400	3000	1350	5000	1350
130	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	600	2000	2000	3200	1200	1200	2000
131	Marginal	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable							
132	Marginal	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable							
133	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Moderately unacceptable	Moderately unacceptable	450	1100	1200	3500	1150	1300	1100
134																						
135																						
136						Moderately acceptable		Totally acceptable														
137						Moderately acceptable																
138	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Marginal	600	1200	1200	3000	1400	10000	1200
139								Marginal								1000	3000	3000	7000			7000
140	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2800	2000	3500		7500	2800
141	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1200	1400	1400	3000	1300	3500	1400
142	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	1800	1800	3000	1400	3000	1200
143	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	3000	2000	3000	1450	5000	2500
144	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	900	1500	1500	3000	1500	3000	1500

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
145	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	800	1200	1500	3500	1500	4400	2500
146	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1000	1400	1300	3000	1300	4000	1400
147	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	700	3000	1500	4000	1400	6000	1400
148	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	700	3000	1500	4000	1400	6000	1400
149	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1300	1700	1500	3500	1300	4000	1400
150	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	1000	1200	1200	5000	1200	10000	1500
151	Totally unacceptable	Totally unacceptable				Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1250	3000	1800	3000	1200	4000	1600
152	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1250	1750	1750	2500	1850	3500	1800
153												Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3000	2000	3500	3000	3500	3000
154	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	1800	1800	3500	1400	3500	1600
155					Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable		1000	1500	1500	2500	1300	2500	1400
156	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	800	2500	1500	4000	1300	4400	1500
157	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	700	3000	1500	4000	1400	6000	3000
158	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	800	1500	1200	2300	1200	3500	1500
159	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1100	1400	1300	4000	1300	4500	1300
160	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable			1500	3500	1500	4500	2000
161	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1100	1300	1300	4000	1300	4000	1300
162	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1100	1300	1400	2800	1300	4000	1300
163	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	600	3000	1500	4000	1400	6000	3000
164	Totally unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	Marginal	600	850	850	850	2200	3000	850

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
165				Marginal			Marginal									800	1500					2800
166	Totally unacceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	600	700	700	1000	2200	3000	1100
167	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	1100	1100	1100	2500	2500	1400	1100
168	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	2000	3500	3500	5000	3000	5000	4000
169	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately unacceptable	1000	1200	1200	2000	1400	3000	1200
170						Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable				1050	1500	1500	2500	1400	2500	1400
171	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	800	1200	1200	3000	1200	2200	1000
172	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1300	2500	2000	5000		5000	2500
173																						
174	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	800	1800	1500	2500	1700	2800	1700
175	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	560	1200	1200	3000	1500	3000	1500
176	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1300	3000	2400	4000	1300	5000	3000
177	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1500	3000	2000	4000	1200	5000	2800
178	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	1300	4000	3000	6000	1500	15000	4000
179														Totally acceptable	Moderately acceptable	1500	2600	2600	3000	1500	3000	2600
180	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Totally unacceptable	Totally unacceptable	600	800	800	2000		3000	800
181	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	2500	3000	2500	4000	1400	8000	3000
182	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	700	3000	1500	4000	1300	7000	3000
183																						
184	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	650	1800	1200	3000		3000	1800

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
185	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately unacceptable	Moderately unacceptable	1000	2000	1700	2300	2000	3000	2000
186	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	750	1400	1200	2500	1200	3500	1400
187	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	1000	1500	1500	3000	1500	6000	1200
188	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1000	1500	1400	3000	1300	3000	1400
189	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	1000	1500	1200	3000	1200	6000	1200
190	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	550	850	900	1100	1200	2000	1100
191	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Totally unacceptable	700	1200	1200	2500	1600	3000	1200
192	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately unacceptable		1500	1200				1500
193	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	800	1500	1500	2000		2500	1500
194					Moderately acceptable											900	1000	1200	2500			1300
195																						
196	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	1500	1500	3000	1500	6000	1500
197																						
198	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	700	3000	1500	4500	1400	8000	3500
199	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	1200	1350	2000	4000	1350	6000	1350
200	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally unacceptable	1000	1700	1700	2500	1300	2500	1700
201	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable		1000	1400	1400	3000	1300	3000	1400
202	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable							
203							Moderately acceptable	Moderately acceptable								1150	1500	1500				

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
204	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	100	1900	1800	8000		10000	1800
205																						
206	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	1100	1300	1300	3000	1250	5000	1300
207	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable				1300	1500	1500	2000	1400	2000	1500
208	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Marginal	Moderately unacceptable	Totally unacceptable	1000	1400	1600	4000	1450	3500	1500
209	Totally unacceptable	Totally unacceptable	Totally unacceptable				Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	1600	1600	3600	1300	4500	2300
210																						
211	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	1400	1400	2200	1400	3000	1400
212																						
213	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	2500	1600	3000	1800	1200	2500
214	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	2500	2000	4000	1600	3500	2200
215	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	1000	10000	2000	10000	0	100000000	10000
216	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	2000	4000	2000	4000	1450	5000	4000
217																						
218	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2800	1400	3000	1290	4000	1600
219																						
220	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Moderately unacceptable	700	1200	1200	2500	1500	1500	1500
221	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Marginal	650	1100	1100	1100	1100	2000	1100
222																						
223																						
224	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	75	1800	1800	9000	1200	10000	1800

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
225	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable								800	2200	1200	5000	1200	5000	1500
226	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal							
227	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	700	1200	1200	3000	1300	4000	1300
228	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	500	950	1200	2200	1200	3000	1200
229					Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable				1100	1300	1300	2000	1300	3000	1300
230																2000	3000	3000	6000	1400	8000	3000
231							Moderately acceptable									1000	1400	1400	2500	1500	3000	1400
232	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	1500	1500	2500	1500	2000	1500
233	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable			1200	1900	1400	2200	1400	2500	1900
234																						
235	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	2500	1800	5000	1400	2500	2500
236	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	500	950	1200	2200	1200	3000	1000
237	Totally unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately unacceptable	650	2100	1400	2800	1400	3200	2100
238																						
239	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	500	900	1200	3000	1300	2200	1200
240	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	750	1800	1800	3000	1800	3000	1800
241	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	650	1200	1200	3500	1300	3500	1200
242	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	650	1200	1200	3500	1300	3500	1200
243	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	450	900	1200	2500	1300	2500	1200
244																						

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
245	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2000	1500	3000	2000	3000	2000
246																						
247	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	400	850	1200	2500	1200	2500	1200
248	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	1280	1500	1500	3000	1500		1500
249	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	1100	2000	1700	2500	1700	3500	2000
250	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	700	1000	1000				1000
251																						
252																						
253	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1200	1500	2000	3000	1400	4000	1500
254					Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	900	1600	1600	2500	1400		1500
255	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	1300	2300	1700	3500	1250	4000	1600
256			Totally acceptable			Totally acceptable										700	1000	1000	2500		2500	1000
257	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	700	1700	1700	2000	1700	2500	1700
258	Marginal	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable								650	1000	1200	2000		1800	1200
259																						
260				Moderately acceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	750	2000	1600	3000	1200	3500	2500
261	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	800	3000	2000	5000	1400	7500	3000
262		Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately unacceptable	800	1400	1200	2000		2000	1400
263	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	650	1200	1200	3500	1300	3500	1200
264	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Totally unacceptable	700	1200	1200	2200		2500	1200

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
265	Totally unacceptable	Totally unacceptable	Totally unacceptable		Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable				1100	1250	1500	3000	1250	5000	1250
266	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Totally acceptable	Totally acceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	1300	5000	2500	5000	1450	7000	5000
267																						
268				Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	900	2000	1500	3500		5500	2000
269																800	2500	1800	3500		4000	2500
270	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	900	2500	1800	3500	1200	4000	2200
271	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	1100	3400	2200	3400	1500	6000	3400
272			Moderately acceptable	Totally acceptable			Totally acceptable	Totally acceptable		Totally acceptable		Totally acceptable	Totally acceptable			700	1200	1500	2300		2000	1500
273	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	2500	2500	3500	1100	3000	2500
274	Totally unacceptable	Totally unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Totally unacceptable	Totally unacceptable	1000	1800				2000	
275	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable		800	2000	1600	2500			2000
276	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	800	2500	1800	3000	1400	4000	2000
277	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1500	2500	2500	3500	1400	3500	2500
278	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	700		1500	3000		3000	3000
279	Totally unacceptable	Totally unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable		700	1500	1200	2400		2800	2000
280	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally unacceptable	900	2200	1600	2600		2500	2200
281	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1000	2500	1800	3000	1400	4000	2500
282	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1500	2800	2200	4000	1200	4000	2800
283	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable		1000	2000	1500	2500		1500	1500

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

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	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
284	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1300	3400	2200	4500		6000	3400
285	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1000	2500	1800	3500	1200	4000	2500
286	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal		Moderately unacceptable	Totally unacceptable	750	1200	1150	1750	1200	1500	1200
287	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately unacceptable	750	1200	1200	2500	1200	4000	1200
288	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable		1000	2500	1500	2800		2800	2400
289					Totally unacceptable			Moderately unacceptable								1000	2500	2500	3500	2500	4000	2500
290																						
291																						
292	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2500	1600	3000	1400	3500	2500
293																						
294	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1500	3000	2500	4000	1500	4000	3000
295	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	2400	2400	4000	1800	3500	2400
296																						
297	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Moderately unacceptable	700	1200	1200	2000	1500	2000	1200
298	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Marginal	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	850	1200	1200	1700		1100	1150
299	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	600	2400	1800	3500	1800	2800	2400
300	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	800	2800	2200	3500		4000	3000
301	Totally unacceptable	Moderately unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable			600	1500	1000	2500		2500	1500
302																						
303	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Marginal	Marginal	800	1500	12	2000	1800	2800	1500

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

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	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
304	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Marginal	Moderately unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	450	1000	1000	1200		1000	1000
305											Totally unacceptable	Totally unacceptable	Totally unacceptable			1500	2000	2000	3000			
306	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	600	1500	1500	2500	1500	3000	1500
307	Moderately unacceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Marginal	Marginal	600	1000	1000	1500		2000	1000
308	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally unacceptable	Totally unacceptable	700	2000	1400	2000		2000	14000
309	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2500	2000	3000	2000	8000	2000
310	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	650	3200	2000	3750		4500	1800
311	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1100	3500	2500	4000	1700	4800	3500
312	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Totally acceptable	Totally acceptable	Moderately acceptable							
313	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	1300	3200	2800	4500	2300	4800	2800
314	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	3000	2200	3600		4500	3000
315	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	1400	3000	2500	4000	1400	3500	2500
316			Moderately unacceptable		Marginal			Moderately acceptable			Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable		1200	1800	1800	2500		2000	1800
317			Moderately unacceptable		Marginal			Moderately acceptable			Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable		1200	2000	1800	3000		2500	2000
318																						
319	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable							1200		1700				
320	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	1200	2400				3000	2400
321	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1600	3000	2500	4500	1750	6500	3000
322	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	1100	3000	2500	5000	1200	10000	3000
323														Totally acceptable	Totally acceptable	2000	4000	2500	5000		5000	3000
324	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	Totally acceptable	Totally acceptable	Totally acceptable	Marginal	1600	1800	1800	3000	1300	3000	1800

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

No.	For comparative purposes, please estimate the quality of the following Green River flows for your craft and skill level.															From a recreational perspective what is the minimum acceptable flow for this run?	For you, what is the optimum flow for this run?	What is the best or optimal flow for a "standard" trip?	What is the best or optimal flow for a "high challenge" trip?	What is the best or optimal flow for "Paradise Ledge park and play"?	What is the highest safe flow for your craft and skill level?	If one flow for boating was released, what flow would you prefer?
	500 cfs	600 cfs	700 cfs	800 cfs	900 cfs	1000 cfs	1100 cfs	1200 cfs	1300 cfs	1400 cfs	1500 cfs	1750 cfs	2000 cfs	2500 cfs	> 3000 cfs							
325	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately acceptable	Totally acceptable	Totally acceptable	1700	2500	2500	3000	1400	3000	2500
326																						
327	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1500	2500	2000	3200	2000	3000	2500
328	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Totally acceptable	900	2000	2000	4000	1000	5000	2000
329	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	3500	2500	4500		5500	2800
330	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	Moderately acceptable	1000	2500	2000	5000	1300	5000	2500
331	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1200	2600	2000	3400		3200	2800
332	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable	Totally acceptable	1000	2500	2200	3500		5500	2500
333	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Totally unacceptable	Moderately unacceptable	Moderately unacceptable	Marginal	Marginal	Marginal	Moderately acceptable	Moderately acceptable	Totally acceptable	Totally acceptable		1500	2000	1500	2500		3000	2000

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

	Boating opportunities on the Green River are ....? (choose one per row)				Please estimate your personal expenditures related to that day's trip on the Green River. If you were part of a group, include only your share of expenses.				Do you have other comments you would like to make about flows on the Green River?
No.	Compared to other rivers within a one-hour drive:	Compared to other rivers in Washington:	Compared to other rivers in the Northwest:	Compared to other rivers in the country:	Food and refreshments (restaurants, groceries):	Lodging (motels, campground fees):	Equipment rental or guide services:	Gas:	Open-Ended Response
1	Among the very best	Among the very best	Excellent	Excellent	15	0	0	20	Great Season, probably the last run of the Green season for me, I'm done below 1000 cfs (probably)?
2	Among the very best	Among the very best	Excellent	Excellent	10	0	0	20	
3	Among the very best	Among the very best	Excellent	Excellent	10	0	0	20	
4	Among the very best	Among the very best	Excellent	Excellent	10	0	0	20	
5	Among the very best	Among the very best	Excellent	Excellent	10	0	0	15	
6	Among the very best	Among the very best	Excellent	Excellent	15	0	0	15	
7									
8	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	15	The nozzle and below for 1/2 mile is solid class V boating, otherwise class IV+
9									
10	Worse than average	Worse than average	Worse than average	Worse than average	25	40	0	25	More water please?
11	Among the very best	Among the very best	Among the very best	Among the very best	10			15	
12	Among the very best	Among the very best	Among the very best	Among the very best	10			15	
13									
14	Worse than average	Worse than average	Worse than average	Worse than average	50	0	0	25	I would like to see the mid week higher releases pushed into the weekends. For example, if a freshet brings the inflow up to 2000 on Tuesday I would like to see the matching release moved to Friday. This would allow the most amount of people to enjoy the runnable flow.
15	Better than average	Average	Average	Average					Provide more consistent flows
16									
17	Among the very best	Among the very best	Among the very best	Among the very best	5			12	I float this much more often than I complete the survey. A simple paper registration at the Put Ins would be much more user friendly
18	Among the very best	Excellent	Excellent	Better than average	15	0	0	40	The Green River Gorge is a regional treasure. Finding a compromise whereby boaters could be sure to get a decent flow on some warm weather weekends in the spring, allowing them to make plans and safely bring passengers to allow them to share this treasure is not too much to ask. Historically, the flows during the weekdays are high and the weekends are low. Boaters just ask that the days be shifted slightly to balance things out for the benefit of recreation.
19	Better than average	Better than average	Better than average	Better than average	15	0	0	25	
20	Among the very best	Among the very best	Among the very best	Among the very best	10			15	

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

	Boating opportunities on the Green River are ....? (choose one per row)				Please estimate your personal expenditures related to that day's trip on the Green River. If you were part of a group, include only your share of expenses.				Do you have other comments you would like to make about flows on the Green River?
No.	Compared to other rivers within a one-hour drive:	Compared to other rivers in Washington:	Compared to other rivers in the Northwest:	Compared to other rivers in the country:	Food and refreshments (restaurants, groceries):	Lodging (motels, campground fees):	Equipment rental or guide services:	Gas:	Open-Ended Response
21	Among the very best	Among the very best	Among the very best	Among the very best	15			15	I hit rocks on purpose
22	Worse than average	Worse than average	Worse than average	Worse than average	30	0	0	12	
23	Among the very best	Among the very best	Among the very best	Among the very best	2	0	0	5	
24									
25									
26									
27	Among the very best	Among the very best	Among the very best	Excellent	30	0	0	35	unbelievable how much garbage was left by summer swimmers, fisherman and campfires for this pristine area. From start to finish, we picked up trash but we're not prepared, nor expected, to haul garbage out. It will take pre-planning for the amount of time and a lot more boats to haul the garbage. To bad you can't simply raise the river and flush out the canyon to a dump site below or back to the homes of those who trash the area.
28									
29	Worse than average	Worse than average	Worse than average	Worse than average	5	0	0	12	
30	Among the very best	Among the very best	Among the very best	Among the very best	5	0	0	25	The Corps could do a better job of informing boaters about planned adjustments to flows. Even though recreational boating is not a consideration in management of the Howard Hansen Dam, dissemination of information regarding flow changes that are dicted by other priorities would cost nothing, yet enable boaters to plan so they can take advantage of the releases when they are planned. Posting planned releases on a website, say 24 hrs. in advance, would be one solution.
31									
32	Worse than average	Worse than average	Worse than average	Worse than average	5			15	today the flow went from 1500 cfs to 2600 cfs and back down to 1500 cfs in a period a few hours. The USACE said it was a sedimentation project? I was fortunate to find out the day before by calling the regulators when I noticed they were increasing the pool over the last 24 hours. I think this type of "project" should be advertised to the boating community. Increased releases are a big interest to boaters. A little communication would go a long way.
33	Worse than average	Worse than average	Worse than average	Average	30			30	stop dumping logs in the river
34	Worse than average	Worse than average	Worse than average		18			5	logs are becoming hazardous to life below put in. Please stop putting them there. They are going to kill someone.
35	Worse than average	Worse than average	Worse than average		15				it's difficult to say what the "optimum" flow is. At low water (<800) for example, there's a great play wave at the bottom of the run. At higher water the wave goes away but the run, in general, is more fun.
36									
37	Average	Worse than average	Worse than average	Worse than average	10	0	0	8	
38	Among the very best	Excellent	Better than average	Better than average	20	0	0	9	Put forcasted flow rates on website or tape recording NOAA or GS sites.
39	Excellent	Excellent	Excellent	Excellent	20	500	0	20	Weekends are better for higher flows.
40	Excellent	Excellent	Excellent	Excellent	5	0	0	7	Save it for the weekend.

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Green River Whitewater Flow Study

No.	Boating opportunities on the Green River are ....? (choose one per row)				Please estimate your personal expenditures related to that day's trip on the Green River. If you were part of a group, include only your share of expenses.				Do you have other comments you would like to make about flows on the Green River?
	Compared to other rivers within a one-hour drive:	Compared to other rivers in Washington:	Compared to other rivers in the Northwest:	Compared to other rivers in the country:	Food and refreshments (restaurants, groceries):	Lodging (motels, campground fees):	Equipment rental or guide services:	Gas:	Open-Ended Response
41	Among the very best	Among the very best	Among the very best	Among the very best	5	0	0	10	At least keep the releases high for the weekend.
42	Excellent	Excellent	Better than average		20	0	0	0	Please do not create any log jams.
43	Better than average	Excellent	Excellent	Better than average	20	0	0	10	It would be nice to be able to get a forecast or prediction of flow level from the dam operators. Min level for upper gorge 1100 Min level for headworks 700 Min level for lower gorge 800
44	Excellent	Excellent	Better than average	Average	25	0	0	40	Log Jams for fishing are getting unacceptable. Someone is going to die!
45									
46									
47									
48	Excellent	Excellent	Excellent	Excellent	0	0	0	6	
49									
50	Among the very best	Among the very best	Among the very best	Excellent	5	0	0	30	
51	Among the very best	Among the very best	Excellent	Among the very best	0	0	0	20	Keep us informed ref flows
52	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	20	na
53	Among the very best	Among the very best	Among the very best	Excellent	20	0	0	20	Yahoo!
54	Excellent	Excellent	Excellent		10	10	0	10	na
55	Average	Average	Average	Average	30	0	0	30	Would like published weekend est. levels on FRI when corp develops them. *Woody debri shoulch lauch not @ 3000 cfs but higher ie 6000 to mimic floods, 3000 should not lauch wood.
56	Better than average	Better than average	Better than average	Better than average	20	0	0	20	na
57	Among the very best	Excellent		Better than average	15	0	0	10	na
58	Excellent	Better than average			15	0	0	10	na
59	Better than average	Better than average	Better than average	Better than average	1	1	1	1	na
60	Among the very best	Among the very best	Among the very best	Among the very best	1	1	1	10	
61									

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

	Boating opportunities on the Green River are ....? (choose one per row)				Please estimate your personal expenditures related to that day's trip on the Green River. If you were part of a group, include only your share of expenses.				Do you have other comments you would like to make about flows on the Green River?
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62	Excellent	Better than average	Better than average	Better than average	25			50	it's fantastic. A hassle free takeout at Franklin Bridge would be GREAT
63									
64	Among the very best	Excellent	Better than average	Better than average	5	0	0	20	HIGHER FLOWS ON WEEKENDS, WHEN POSSIBLE.
65	Among the very best	Excellent	Better than average	Better than average	10	0	0	30	Paradise Ledge was coming in at 1250 cfs.
66									
67									
68									
69	Among the very best	Excellent	Better than average	Better than average	23				Would like a river future forecast or the next 2 days, so you can plan river trips.
70									
71									
72									
73									
74									
75									
76									
77	Among the very best	Among the very best	Among the very best	Among the very best	3	0	0	10	
78									
79									
80									
81									
82									

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83									
84									
85									
86	Excellent	Better than average	Better than average	Excellent	2	0	0	12	
87									
88									
89									
90									
91									
92									
93									
94									
95									5200 was very nice, more water would give a bigger water feeling
96									
97									After getting on a flow >3500 this year, more water would be better
98									
99									
100	Excellent	Excellent	Excellent	Excellent	10	0	0	15	This isn't a comment about flows but since it is my only place to make a comment... I thought the flow at 1410 was super fun. The only big minus for me on this run is the terrible take-out. Climbing out w/boat from Paradise (or just below the warm spring) is difficult for weaklings like myself!
101									
102	Among the very best	Excellent	Excellent	Excellent	8	0	0	10	
103									We witnessed a commercial trip on the Upper and Lower Gorge today.

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

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104									
105	Among the very best	Among the very best	Among the very best	Among the very best	0	0	0	50	
106									
107									
108									
109									
110	Among the very best	Excellent	Excellent	Excellent	5			20	
111	Among the very best	Excellent	Excellent	Among the very best	35			20	My favorite levels for the upper gorge are 900-1400 for technical boating and play, and then 2500 - 4500 for big water / big water play. In between is a bit of a "dead spot", but still certainly fun.
112	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	8	
113									
114									
115	Excellent	Excellent	Excellent	Excellent	15	0	0	20	
116	Among the very best	Among the very best	Excellent	Better than average	15	0	0	10	Values above are for the Green River Gorge. In my previous survey I provided values for the Headworks, but I view the Gorge as "more important". My reason for selecting 1600 as the preference for release is this is a great level for a "social trip" that attracts a wide spectrum of users. At 3000 cfs this is one of the best class IV runs in the entire region.
117	Excellent	Among the very best	Excellent		5			10	
118	Excellent	Better than average	Better than average	Better than average	50	0	0	30	It's a beautiful stretch but yesterday was the first time boating it because the flows were never high enough when we wanted to go last year.
119	Among the very best	Better than average	Better than average	Excellent	30				My "optimum" flow is on the low side due to what I consider better play. The run is a better overall paddle with a bit more water - 1000cfs plus - but the distinct play spots wash out and instead of paddling the lower gorge I go to the upper.
120	Among the very best	Better than average	Better than average	Excellent	5			20	I wish the multiple choice question "would you prefer the flow to be higher, lower, or about the same" would allow multiple entries, as at certain flows I prefer this run both higher and lower...
121	Among the very best	Better than average	Better than average	Excellent	25			20	For the lower gorge, my "optimum" flows, which are somewhat low, are based on the play opportunities associated with this level. Most people prefer higher flows on this stretch, such as noted for the "standard trip" ideal flow. When the river is flowing at these higher flows, I prefer the upper gorge.
122	Among the very best	Among the very best	Excellent	Excellent	10	0	0	20	
123	Among the very best	Among the very best	Among the very best	Excellent	5	0	0	20	Keep it flowing!
124	Among the very best	Among the very best	Among the very best	Among the very best	8	0	0	10	THere are several flows that i like on this stretch of river. 500 cfs has a good play spot for kayaks. But, i like the lower gorge at higher flows too. If it was higher though, i would likely end up on the upper gorge.

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

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125	Better than average	Better than average	Better than average	Better than average	0	0	0	30	
126									
127	Among the very best	Excellent	Excellent	Excellent	12	0	0	9	would like website with project flows for trip planning, could use USGS or NOAA estimate flow
128									
129	Among the very best	Among the very best	Excellent	Excellent	5	0	0	10	It is fantastic that you guys are doing this flow survey, it means a lot to the paddling community
130	Excellent	Excellent	Excellent	Excellent	15	0	0	20	Tacoma has always seemed uncooperative!!!
131									
132									
133	Among the very best	Excellent	Excellent	Excellent	15	0	0	9	Need projected flow data posted somewhere so people can plan trip days around planned released flows. Big unexpected releases while on river can be a problem.
134					6		12	12	I am a beginner, so I don't know a whole lot about varying river levels on the river. Thanks for doing this survey, it seems like a great idea.
135					2		15	12	
136	Excellent	Better than average	Better than average		22			30	
137	Excellent	Better than average	Better than average		25			30	The most dangerous things on the river are logs. I understand they are being used to creat fish habitat, and I'm all for that, but they may need to be controlled better to prevent serious hazards to boaters on the river and damage to boats downstream.
138	Excellent	Better than average	Better than average	Excellent	15				This trip was the WA Kayak Club ww kayaking class trip, and was the students 2nd day on the river. The above comments are based on a teaching perspective of using the yo-yo stretch for introductory whitewater kayaking classes. In other words, rating the characteristics in question #16, as well as comments on flow, etc are based from a "teaching" perspective and not a class IV / V boater perspective. I've been teaching ww kayaking, both as a volunteer for WKC and professionally for both Pacific Water Sports and Fluid since 1990. The yo-yo stretch of the Green is BY FAR AND AWAY the best day 1 / day 2 river stretch for novice students within a reasonable drive from the puget sound region.
139	Average	Average	Average	Better than average	8	0	0	10	I have not run this section much so many of the answers in this form were guesses based on what I have heard from other paddlers of the same ability as myself.
140	Average	Average	Worse than average	Average	0	0	0	25	No but what are the headwaters of the river like above the dam?
141	Among the very best	Among the very best	Excellent	Excellent	5	0	0	12	
142	Among the very best	Among the very best	Among the very best	Among the very best	0	0	0	0	
143	Among the very best	Among the very best	Among the very best	Among the very best	20	0	0	20	Safety issues relate mostly to boater skill and capability, not river features. Not really sure what the highest safe flow is.
144	Excellent	Among the very best	Among the very best	Excellent	10	0	0	10	

Appendix C: Raw Survey Responses
Green River Whitewater Flow Study

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145	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	10	when i strike rocks at this level (950cfs) it's because i want to, not because there wasn't an alternative.
146	Among the very best	Excellent	Excellent	Excellent	0	0	0	12	
147	Among the very best	Excellent	Excellent	Among the very best	15				
148	Among the very best	Excellent	Excellent	Among the very best	20				
149	Among the very best	Among the very best	Excellent	Excellent	0	0	0	12	
150	Better than average	Better than average	Better than average	Better than average	15	0	0	40	The Green is a valuable resource, I wish the flow was moderated more to flow into the dry months.
151	Excellent	Average	Worse than average	Worse than average	10	0	0	10	
152	Better than average	Excellent	Excellent	Among the very best	5	0	0	45	I have been boating the Green along the Upper and Lower Gorge for 3 years now and found this flow made for a very pleasant and well balanced whitewater trip. The channel was not to bony, nor were features washed out by the release.
153	Excellent	Excellent	Better than average	Average	20	0	0	60	
154	Better than average	Average	Average	Average	15	0	0	20	it is a beautiful river and fun for kayaking
155	Among the very best	Among the very best	Among the very best	Excellent	15	0	0	10	keep it flowing. it's unbelievably beautiful.
156	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	5	I like to have varying release levels, i wouldn't like it if it was always at the same level. I actually like it 300 to 800 cfs lower than today or 500 cfs higher.
157	Among the very best	Better than average	Excellent	Excellent	20			20	On page 3 I checked I prefered the run slightly higher, which is true. BUT, I also prefer it slightly lower. My opinion is that somewhere around 1600 - 2200cfs is an "off" level for the gorge. Better play and moves are found at slightly lower levels, and better play and big water feel is found at higher levels.
158	Better than average	Better than average	Better than average	Better than average	25	0	0	10	
159	Among the very best	Excellent	Excellent	Excellent	10	0	0	12	
160	Among the very best	Among the very best	Among the very best	Among the very best	12	0	0	5	I like a variety of flows. THe character of the river changes immensly at different flows. It's completely different at 800 from 4,000. I like it all. Wouldn't be happy with just "one flow"
161	Among the very best	Excellent	Excellent	Excellent	10	0	0	12	At low flows kayakers and fishermen are put in very close proximity to each other and prime fishing locations. Higher flows allow us to easily avoid these fishing locations and not disturb the fishermen.
162	Among the very best	Excellent	Excellent	Excellent	10	0	0	12	
163	Among the very best	Better than average	Excellent	Among the very best	30			20	Flow was kind of low, so despite the sunny day, we didn't see anyone else on the upper gorge. We did see vehicles of another group running the headworks...
164	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	8	Not at this time

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165	Worse than average	Worse than average	Worse than average		8			10	When making plans for the weekend mid-week, there was no way to forcast what water level we would have for our trips on Saturday and Sunday. Several people that were to join us backed out because there was no way of knowing if the flow would be high enough to have a run good enough to justify the travel time and expenses. Bottom line this is a dam controled river. Why is there no published forcast. The NOAA Northwest River forcast center can reasonably forcast undamed rivers i.e. Skykomish, which should be more dificult to do than a river that is dam controled!
166	Among the very best	Among the very best	Among the very best	Among the very best	0	0	0	5	The trees they dumped in the river at the put-in have gone downstream and most of them are now out of the water and are doing no good for salmon habitat..
167	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	5	It would be great to be able to predict what the engineers will be doing over the weekend!
168	Among the very best	Among the very best	Excellent	Excellent	5	0	0	20	
169	Among the very best	Among the very best	Excellent	Excellent	22	0	0	15	1050 cfs is great level for first timers. Slightly higher is better if you don't have newbies along.
170	Average	Worse than average	Worse than average	Average	26	10	10	15	23. I rated the "boating opportunity" low because we rarely have enough flow to run it. When it is running, it is among the best.
171	Among the very best	Excellent	Better than average	Better than average	23	0	0	6	It would be wonderful to have the forecasted CFS release information, flow change ahead of time for safety and planned boating days, even one day ahead would be nice.
172	Among the very best	Excellent	Better than average	Average	20	0	0	40	I love the Green and would love to run it more often.
173									
174	Among the very best	Excellent	Excellent	Excellent	15	0	0	20	
175	Among the very best	Among the very best	Among the very best	Among the very best	30	0	0	15	Keep minimum flows above 750 cfs and this river can be run all summer and all year easily. It's a fantastic recreational resource that adds considerable value to the qualitiy of life of living in the puget sound area. It's a hidden jewel for sure!
176	Among the very best	Excellent	Excellent	Better than average				15	
177	Among the very best	Excellent	Among the very best	Excellent				30	
178	Excellent	Excellent	Better than average	Better than average	20	0	0	10	There are two specific flow targets. One is for boatability or river running appeal. The other is playboating specific appeal at Paradise Ledge. Great boating levels are from 3000 to 5000. Playboating levels are 1300 to 1500 for Paradise Ledge. I've boated for many years beginning as a commercial raft guide. I started running the Green in 1997.
179	Among the very best	Among the very best	Among the very best	Among the very best	45	0	0	50	Would like to see the data as it accumulates
180	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	10	They released 1000 cfs over a span of approx 3 hrs and it caused the tagged logs to come downstream while we were on it. They had advised us they would not be releasing today.
181	Better than average	Better than average	Better than average	Better than average	40	0	0	50	Please give us recreational flows during daylight hours. There is no reason that flows can't be backed down at night and cranked up during the day. Seriously, this isn't rocket science or difficult...but it would make a lot of people happy!!! So why not do it???!!!
182	Excellent	Better than average	Excellent	Excellent	10	0	0	30	
183									
184	Excellent	Excellent	Excellent	Excellent	25	0	0		Logs up at the top of the Headworks at higher flows tend to be a hazard.

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Green River Whitewater Flow Study

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185	Average	Better than average	Better than average	Better than average	15	0	0	10	river recently (for a fish habitat experiment) and felt that since the level had not change in 24 hours that the logs and stumps would be stable. When we arrive at the headworks gate we asked if the flow had been changed and were told it had not. When we launched we noticed some of the logs beginning to dislodge and move down river. It turned out that the level had been changed from 2100 to 3100 and we were not aware of the change. The result was a very dangerous situation as we had been planning on a lower level. The river was flooding into its banks eliminating the all important eddie system. This, in itself is not a problem except when it is a surprise because of a very poorly timed release. Why was it poorly timed? It was on a Sunday when many boaters take to the water, there was a recent dumping of logs and stumps which would be dislodged by the rising water. At the very least, the current level should be displayed at the security gate. More then that, any releases that are planned should be published somewhere. We don't NEED you to release for us, but for our safety you need to at least COMMUNICATE the releases. Today, eight of us pulled off of the river because of the danger of the huge logs and stumps that had been dislodeged as a result of
186	Average	Average	Average	Better than average	0	0	0	15	More water please
187	Better than average	Average	Average	Average	5	1	1	10	best flows are 1200 to 1800
188	Average	Average	Average	Better than average	5	0	0	40	Good flows on the weekends
189	Better than average	Average	Average	Better than average	5	1	10	10	not happy about the large number of loggs that were dumped in at the put in area. boatable flows on the green river are few and far between.
190	Among the very best	Among the very best	Among the very best	Excellent	10	0	0	10	The logs they dumped in the river at the put-in for the Headworks are very dangerous, we had some newer boaters with us and had to walk along the shore to put in below them.
191					10	0	0	7	I don't play Paradise--please let me leave that answer blank? If answers are inconsistent, it's because I enjoy all 4 runs, each at a different level. If one flow for boating was released, I must think about all, not just Hdwks. And Stop Putting Logs In Please.
192	Worse than average	Worse than average	Worse than average	Worse than average	20	0	0	10	My first trip there. Would travel there more often but I understand it doesn't run that often.
193	Better than average	Excellent	Excellent	Excellent	10	0	0	15	
194	Among the very best	Among the very best	Among the very best	Among the very best	0	0	600	15	a beautiful river--help keeps logs out of it please!! and weekend release would be wonderful. Hold it steady and we will paddle.
195									
196	Better than average	Average	Better than average	Better than average	10	22	25	15	Flows below 1000 cfs are not worth the time spent driving there. Kayakers think if the Green is at 1200 to 1800 you should take the day off work and run it. Also please have who ever is dumping the logs in quit.
197									
198	Among the very best	Excellent	Excellent	Among the very best	20			10	Finally - water in the river over a weekend...!
199	Among the very best	Among the very best	Excellent	Excellent	20	0	0	25	I would like to see a prediction of levels that will be released. Also I would like to see more reliable weekend flows.
200	Among the very best	Excellent	Excellent	Excellent	0	0	0	10	
201	Average	Average	Average	Excellent	5	0	0	40	Knowing the flow a few days ahead would be great. Also good flows on the weekend would be good too.
202									
203	Excellent	Better than average	Better than average	Better than average	15	0	0	30	Yes. It would be highly desirable if there could be advance notice of flows - say one day in advance. Most importantly, if there is a plan to change flows during daylight (i.e. boating) hours, advance notice can make the difference between a great trip and a ruined (or dangerous) trip. Also, it would be an amazing treat if it was possible to do a few releases in July or August when other rivers in the Seattle area are dry. Thank you for doing this survey and asking for the opinions of boaters.

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Green River Whitewater Flow Study

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204	Excellent	Better than average	Better than average	Average	15	0	0	15	
205									
206	Among the very best	Among the very best	Excellent	Excellent	20	0	0	10	I would like to see a prediction of what the flow will be a few days in advance.Also, I would like to see more dependable weekend flows. It seems that,quite often, the river is at a great level during the week only to be cut off and be unacceptable for the weekend.
207	Average	Average	Average	Average	0	0	0	35	I would like to see the flow posted early so plans can be made ahead of time without having to call the dam operators
208	Average	Average	Average	Average	15	0	0	15	1450
209	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	20	I answered #23 based on how good it is when it is running. Because it doesn't run often, or predicatbly, it would have lower ratinng if I took that into accoount. It would be nice if 23 could be clarified.
210									
211	Among the very best	Among the very best	Among the very best	Excellent	100	0	5	5	It would be nice if the dam operators could post a forecast flow.
212									
213	Average	Worse than average	Worse than average	Average	10	0	0	10	nope
214	Better than average	Worse than average	Worse than average	Average	10	0	0	20	nope
215	Better than average	Better than average	Better than average	Better than average	10	0	0	10	
216	Excellent	Average	Average	Average	20	0	0	35	Please allocate flows for whitewater on the weekends! 2000 cfs could be released for a few hours and then backed down to 500 and the same amount of water would be released. We only need a 3-5 hour window of release to accomodate a lot of paddlers. Thanks
217									
218	Among the very best	Better than average	Better than average	Average	0	0	0	32	We saw one other group of two paddlers and there were three in our group. Fun flow new surf waves formed and U-turn wave was wonderful.
219									
220	Excellent	Excellent	Excellent	Excellent	35	0	0	15	It would be good to be able to answer "not sure" to some of the above questions. The survey forces invalid answers by insisting on a number.
221	Among the very best	Among the very best	Among the very best	Excellent	5	0	0	10	please post the future flows on the usgs website
222									
223									
224	Better than average	Average	Average	Average	0	0	0	12	

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225	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	25	I have run the gorge at about 800 1100 and 1200 Headworks at about 800 1100 and about 2500. We went to the new upper put in about the gate. Worked out fine, but the extra distance may not be worth going through the gate. I like the surf spots a little way down this run. They are best at about 2200. I have not been paddling as much this year, so wanted an easier run than the gorge.
226									
227	Among the very best	Among the very best	Among the very best	Among the very best	25	0	0	20	Lets get some weekend releases.
228	Among the very best	Excellent	Better than average	Better than average	5			7	Best overall flows 900 to 1400 cfs for entire river. We need a future estimated flow release or trend line on the NOAA & USGA CFS sites for planning trips. I started at 780 cfs acceptable and end up with 548 cfs, marginal. The Teiton River Dam has a trend line, so it can be done.
229	Among the very best	Among the very best	Excellent	Excellent	30	0	0	20	I really like this run. I wish it would run more often
230	Better than average	Worse than average	Worse than average	Average	10	0	0	10	A flow of 1120 cfs on the Upper Gorge was barely Class III. I counted 2 Class III+ rapids and maybe 2-3 that were Class III. Other than that the river was class II - II+. Definitely need regular flows from 2000-4000 cfs.
231	Better than average	Average	Worse than average	Worse than average	20	0	0	40	
232	Worse than average	Worse than average	Average	Average	7	0	0	8	need more weekend releases
233	Excellent	Better than average	Better than average	Better than average	7	0	0	10	Since the green is a dam controlled river, I would like to see a more predictable schedule of recreational flow releases. I have a 9-5 professional job, therefore I would also appreciate the opportunity for predictable or scheduled weekend flows. I have paddled dam controlled rivers with recreational releases in California, including the S. Fork American, Tuolumne and N. Fork Feather, and I found their flows to be fun and adequate and their schedules helpful to plan for. If a regular schedule of releases is not possible, then some kind of recreational flow alert or prediction (on the internet/on a web site) from the dam operators would be the next best thing. thank you.
234									
235	Average	Average	Average	Average	5	1	1	20	It sucks that realeses seem to happen midweek. Can you do something about all the tweakers up there? Its like Palm Springs for crackheads.
236	Among the very best	Excellent	Better than average	Better than average	5	0	0	7	Would like to see a flow release forecast or CFS trend line on river flow graft, so individuals could plan their trips better. The release are so random, it is hard to plan trips.
237	Among the very best	Among the very best	Among the very best	Among the very best	40			20	Thanks for being interested
238									
239	Among the very best	Excellent	Excellent	Better than average	15	0	0	7	Best level for headworks 900 cfs; Best level upper Gorge 1200 cfs, lower gorge & YO YO 1200 to 2500 cfs; best overall for whole river 1200 to 1400 cfs. Could Tacoma City Water add a cfs trend line or estimated future date cfs(anticipated dam release flows) to river flow grafts, so you can plan boating days ahead of time.
240	Worse than average	Better than average	Average	Better than average	15	0	0	20	I'd like to see releases more consistently on the weekends. It seems common to have the flow cranked up mid-week only to be shut down for the weekend.
241	Among the very best	Among the very best	Among the very best	Among the very best	0	0	0	0	The canyon wave is excellent at this level. We were able to do ledge 1 and the class III section and both were runnable and fun.
242	Among the very best	Among the very best	Among the very best	Among the very best	0	0	0	0	The canyon wave was excellent at this level. We also did Ledge 1 and the park class III on the gorge section this day. That whitewater was excellent at this level
243	Among the very best	Excellent	Better than average	Better than average	8			7	Different section of the river for me require different flow rates, because of the river structure to get maxium enjoyment. 1200 to 1300 is a good for the whole river. Please see if Tacoma Water could give future trend data for CFS changes, so people can plan their boating days.
244									

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Green River Whitewater Flow Study

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245	Worse than average	Worse than average	Worse than average	Average	3	0	0	5	releases appear only on weekdays more weekend releases
246									
247	Among the very best	Excellent	Better than average	Better than average	10	0	0	7	Part of my boating is to hit rocks, strange question. I like the Headworks section at 800 to 1000 cfs. I like the Upper Gorge run at 1100 to 1300 cfs. Lower Gorge & YO YO 1000 to 4000 cfs. I don't like log jams or logs in river!!! If there was one overall flow for the whole river I guess it would be around 1200 cfs.
248	Better than average	Average	Average	Average	25	0	0	10	
249	Among the very best	Excellent	Excellent	Excellent	0	0	0	10	I am a huge fan of the Green River as a whole, especially the Gorge. It is a treasure to have such a beautiful place so close to Tacoma / Seattle.
250	Among the very best	Among the very best	Excellent	Excellent	15	0	0	15	I wish they would indicate on the usgs website what they are anticipating the flow to be over the next couple of days, with a statement that says "Subject to Change"
251									
252									
253	Among the very best	Among the very best	Excellent	Excellent	10	0	0	10	Keep it coming!!!
254	Among the very best	Among the very best	Excellent	Excellent					
255	Excellent	Excellent	Better than average	Better than average	10	0	0	35	It would be nice to have a release schedule posted on the dams web site, along with more reliable realese dates and times. More security for parks parking lots due to the number of break ins that have been occuring.
256	Excellent	Excellent	Excellent	Better than average	0	0	0	15	
257	Worse than average	Worse than average	Worse than average	Worse than average	15	0	0	13	I rarely boat the Green any more because I usually boat with a lot rafter friends, and the flows are too low to take anything inflatable down the river. Plus the releases don't cprrespond with the weekends. We just go to other rivers and spend our money in other communities
258	Among the very best	Among the very best	Excellent	Better than average	5	0	0	10	
259									
260	Among the very best	Among the very best	Excellent	Excellent	0	0	0	20	The low flow we experienced was preferable to a slightly higher flow because it made the rapids more technical and interesting; however, it severely limited play opportunities.
261	Among the very best	Excellent	Better than average	Better than average	10	0	0	10	Predictibility of flows is very important.
262	Excellent	Excellent	Excellent	Excellent	30	0	0	20	
263	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	30	There are several flows that are very good for the Green. For the Upper and Lower Gorge, I really like about 1400 cfs. It is a good level for Paradise and also the runs. For the Headworks, things are a little different. There is a fabulous little wave in the canyon that is perfect at about 800 cfs. So, here is my deal... If I can get flows above 1000 cfs then I prefer them for the Upper and Lower Gorge. If we are relegated to below 1000 cfs, then I would prefer flows of 650 to 800 cfs for the wave to be in. Summer flows of 250 -500 are not acceptable so there is not Green boating in the summer. My .02
264	Excellent	Excellent	Excellent	Excellent	30	0	0	20	

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265	Among the very best	Among the very best	Excellent	Excellent	30	0	0	30	
266	Average	Better than average	Worse than average	Worse than average	15	0	0		Instead of filling out this survey 4 more times, here are the other flows I've been on the Green at: 06/12/2002☐1475☐Class III 02/01/2003☐6000☐Class IV+ 12/27/2005☐3200☐Class III-IV 11/22/2006☐1600☐Class III+ Thanks, Eric
267					2	0	0	9	
268	Among the very best	Among the very best	Among the very best	Excellent	5	0	0	30	
269									
270	Among the very best	Among the very best	Among the very best	Excellent	10	0	0	30	
271	Excellent	Excellent	Excellent	Excellent	5	0	0	12	
272	Better than average	Average	Average	Average					Provide more consistent flows
273	Average	Worse than average	Average	Average	12	0	0	18	
274	Average	Average			20			40	
275	Worse than average	Average	Average	Better than average	20			10	When I know this section better I would probably be up for running it at higher flows, but for now I am working my way up. I can picture being able and comfortable at 3000 or even higher, but can't say for sure as the highest I have run it is a little over 1000. If the river was above 1200 I would likely run the gorge, unless I was helping train people. I would like to see it higher so I could bring my son back. He ran it at 800 and had no trouble at all. We even ran ledge drop 1 and the following rapids to the lower take out in the park, and he did great. I'm sure he could handle the Headworks at 1200-1500. Hopefully he'll get the chance this spring. This year the boating opportunities on the green should be excellent. Let's see what the corps does with it. If they pull the old "high weekday flows and low weekend flows, we may start a fund to hire a lawyer to represent us when the damn comes up for relicensing. And the old excuse of the fish can't take large fluctuations is bogus! The fish don't know monday from sunday. Alright enough ranting, for now. Looking fwd to the clean up this weekend and really hoping they don't stiff us like last year. If we don't get at least 1200 cfs, there will be a lot of disappointed/frustrated/angry boater/taxpayers.
276	Among the very best	Among the very best	Among the very best	Among the very best	15	0	0	20	Would like to see the practice of setting the level from the dam low on Friday and then release extra water on Monday end. This happens much too often, leaving boaters without the water that would naturally be in the river.
277	Among the very best	Excellent	Better than average	Better than average	20	0	0	40	PLEASE sahre some flow 5/3 for the green cleanup. Announcements say 3000 - 5000 release event is expected in May. Give us some of that for the cleanup please!
278	Better than average	Excellent	Excellent	Better than average	20			10	Have never run the yo-yo stretch before and since the headworks was a short run we decided to run this stretch too with some newbies. It was a nice hot day, and a good trip. There is a log almost all the way across the right channel where the river splits around an island. Luckily we saw it from the road but an k-mart kayaker wasn't so lucky and lost his boat. He made it out safely after getting pushed under the log.
279	Among the very best	Excellent	Excellent	Better than average	20	0	0	10	I would prefer more water but came on this trip to help my son learn to kayak, so this flow was fine for his 3rd trip paddling solo. Very soon he will be wishing for more water as well.
280	Worse than average	Worse than average	Average	Better than average	10	0	0	10	Give us water for the clean up on 5/3, for crying out loud! At least 1,200, and 1,500 would be better. We're doing a good thing and the ACE is just being obstinate by not giving us enough water to get down the river w/o a LOT of effort and wear and tear on our gear.
281	Among the very best	Among the very best	Among the very best	Excellent	10	0	0	25	
282	Among the very best	Excellent	Better than average	Better than average	8	0	0	20	
283	Better than average	Average	Average	Average	0	0	0	5	

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284	Among the very best	Excellent	Excellent	Excellent	0	0	0	10	I prefer any flow over about 2200 cfs, and I have run it as high as 5700 cfs in my IK, though I thought running it at 4600 was almost as thrilling, and a lot safer.
285	Among the very best	Excellent	Excellent	Excellent	20	0	0	20	
286	Among the very best	Among the very best	Among the very best	Excellent	0	0	0	20	
287	Among the very best	Among the very best	Among the very best	Excellent	15	0	0	30	
288	Among the very best	Among the very best	Excellent	Excellent	0	0	0	10	Releasing water all week long and then cutting back on weekends is just plain uncooperative, especially for the annual clean-up. And I know from last Sun. that the Corps does have staff that work on weekends when there is a good reason. I'd say hundreds of taxpayers wanting to float the river and pick up trash is a good reason, Wouldn't you? The minimum reasonable flow for a raft on the gorge is 1500 and 2000 is better. One thing about low flows on the gorge is that it can take a long time to get to Flaming Geyser. Short winter days and cold temps make low water runs harder to fit in. The Green is probably my favorite river I've ever known and even getting on it once in the fall and once in the spring is getting harder to manage due to reduced flows on the weekends. The fish don't know Wed. from Sat. Give us water on the weekend! Thank you, Chris herman
289	Worse than average	Worse than average	Worse than average	Worse than average	5	0	0	20	I would boat the Green River gorges much more often if the flows were acceptable on the weekends
290									
291									
292	Among the very best	Excellent	Excellent	Excellent	10	0	0	23	
293									
294	Among the very best	Excellent	Excellent	Better than average	12	0	0	20	
295	Worse than average	Worse than average	Worse than average	Worse than average	4	0	0	10	The Gorge is a magnificent run, and people don't get enough opportunities to run it. I appreciate your work in trying to improve things.
296									
297	Among the very best	Among the very best	Among the very best	Excellent	10	0	0	25	we had a great run today.
298	Excellent	Excellent	Excellent	Better than average	0	0	0	5	
299	Worse than average	Worse than average	Worse than average	Worse than average	0	0	0	12	It would be useful to have advanced flow info for weekends so people could plan. Also, it would really be nice to have water for the Green River Cleanup. A lot of people work very hard on this, and decent flows would be a nice reward.
300	Among the very best	Better than average	Better than average	Average	20	0	0	25	If the same volume of water in a give week were realesed with boatable flows on the weekends, many more boating opportunites would be available without increasing demand on reservour supply.
301	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	10	If we could be guaranteed a decent flow of 1,200-2,000 cfs for the annual clean up, it would be a good thing. If they could stop such good releases during the week, only to throttle it back on Friday afternoon, that would be grand. If the dam regulators could treat the boating community like the ones that help pay their salaries that would be appropriate.
302									
303	Among the very best	Among the very best	Among the very best	Among the very best	20	0	0	45	na

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304	Worse than average	Worse than average	Worse than average	Worse than average	0	0	0	10	They can not be trusted. What is published and what actually happens vary during the day, which has caused boaters to be in danger when the flow went higher.
305	Excellent	Excellent	Excellent	Better than average	20	0	0	50	We really appreciate the efforts Agency personnel are extending to enable us to float this river. Thank you.
306	Among the very best	Among the very best	Excellent	Excellent	15	0	0	25	
307	Better than average	Better than average	Better than average	Excellent	20	0	0	20	
308	Worse than average	Worse than average	Worse than average	Worse than average	10	0	0	12	
309	Among the very best	Among the very best	Among the very best	Among the very best	10	0	0	5	
310	Among the very best	Among the very best	Among the very best	Among the very best	25	0	0	15	na
311	Among the very best	Among the very best	Excellent	Excellent	15	0	0	20	
312	Worse than average	Average	Worse than average	Average	15	0	10	10	
313	Among the very best	Among the very best	Excellent	Better than average	40	0	0	30	More water, please.
314	Among the very best	Among the very best	Excellent	Better than average	20	0	0	30	More water, please.
315	Worse than average	Worse than average	Worse than average	Worse than average	50	0	0	25	
316	Better than average	Average	Average	Average					Provide more consistent flows
317	Better than average	Average	Average	Average					Provide more consistent flows
318									
319									
320	Average	Average			40			40	
321	Among the very best	Among the very best	Among the very best	Excellent	50	10	100	50	You need at least 2500 cfs in order to float larger rafts and catarafts. Flows below 2000 are UNACCEPTABLE for recreation purposes!
322	Better than average	Average	Average	Average	20	0	0	40	
323	Among the very best	Excellent	Better than average	Better than average	40	0	0	40	
324	Worse than average	Worse than average	Worse than average	Worse than average	10	0	0	20	

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325	Worse than average	Worse than average	Worse than average	Worse than average	5	0	0	0	This level (3000 cfs) created a continuous high excitement class III+/IV experience that many boaters I was with today really enjoyed. However, a lot of paddlers showed up to the river today expecting the flow level they had seen on the internet (2300), but in the time between leaving the house and arriving at the put-in, this had been adjusted up significantly. This situation created a difficult choice for paddlers who are comfortable boating this section between 2000-2500, and had planned to do so. Cooperation with the Corps of Engineers is necessary for safety on this stretch, as flows can increase (even with no rain) while boaters are on the river. This creates an unsafe situation, even for paddlers who have really planned carefully, know the levels, and try to fit their skill level to the expected levels on a given day.
326									
327	Excellent	Better than average	Better than average	Excellent	30	0	0	10	
328	Average	Worse than average	Worse than average	Worse than average	10	1	1	5	
329	Worse than average	Worse than average	Average		15	0	0	10	I think the biggest problem with river flows on the Green are the lack of predictability. There is no way to know if the level you are seeing on Thurdsay or Friday will still be there when you show up to go boating on Saturday. With an undamed river you can somewhat predict what the flow will be based on the weather. I never know when the dam is going to change the flow.
330	Among the very best	Excellent	Excellent	Better than average	40	0	0	40	I loves me some green river gorge!
331	Worse than average	Average	Average	Better than average	10			15	and increase the liklihood of having someone fall out of the raft and potentially get hurt. It also does way more wear and tear on the boat and oars than higher flows. It's also a lotmore work than higher flows. In short it's not as much fun as having more water. At higher water I can do more forward ferrying and tis gives the crew more chance to paddle and stay warm and feel the entire experience of river running. At low water I need to keep closer control to avoid being hung up. It's also not nearly as exciting. Even though I did the clean up last year at 900 cfs, I would not do it that low again in the raft, and it still ticks me off that they released 1300 just 3 days before and then couldn't give us decent flow for the clean up. I'm sure the only reason we got good water this year is because the inflow was so good. If they were being cooperative at all they could've given us 2,000 instead of 1,400, as that is what the river is at now. I called last year to ask why they wouldn't give us reasonable flow and got a long winded explanation of stranding fish by fluctuating flows. Pure bullshit! The fish don't know Wednesday from Saturday. I've also been told that they have to set conservative flows on Friday as there is no one there to adjust the flows on the weekend. Bullshit again! I have
332	Worse than average	Worse than average	Worse than average		20	0	0	10	When making plans for the weekend mid-week, there was no way to forcast what water level we would have for our trips on Saturday and Sunday. Several people that were to join us backed out because there was no way of knowing if the flow would be high enough to have a run good enough to justify the travel time and expenses. Bottom line this is a dam controled river. Why is there no published forcast. The NOAA Northwest River forcast center can reasonably forcast undamed rivers i.e. Skykomish, which should be more dificult to do than a river that is dam controled!
333	Better than average	Average	Average	Average	0	0	0	5	