

REC-1 WHITEWATER BOATING STUDY PLAN

**KERN RIVER NO. 3 HYDROELECTRIC PROJECT
*FERC PROJECT No. 2290***

PREPARED FOR:



July 2022

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1.0 POTENTIAL RESOURCE ISSUE

- Evaluation of whitewater boating opportunities and flow needs for a range of watercraft in the Fairview Dam Bypass Reach (the 16-mile bypass reach of the North Fork Kern River [NFKR] between Fairview Dam and the Kern River No. 3 [KR3] Powerhouse tailrace).

2.0 PROJECT NEXUS AND HOW THE RESULTS WILL BE USED

- KR3 Hydroelectric Project (Project) operations at Fairview Dam divert water from the NFKR to the KR3 Powerhouse, potentially affecting whitewater boating opportunities in the 16-mile Fairview Dam Bypass Reach and timing of flows in the river segment downstream of the KR3 Powerhouse.
- Information obtained in this study may be used to document whitewater boating opportunities over a range of flows.
- Describe existing flow information available to public, assess usability of flow information, and seek improved communication of real-time flow information in the bypass.

3.0 STUDY GOALS AND OBJECTIVES

The goals of this study are to (1) document the whitewater boating opportunities and the range of whitewater boating flows in the Fairview Dam Bypass Reach from Fairview Dam to the KR3 Powerhouse and the NFKR from the KR3 Powerhouse to the Kern River Park in Kernville under current conditions; and (2) identify potential operational constraints and (3) evaluate public safety concerns associated with boating flows.

The study has the following objectives:

- Describe the whitewater boating segments in the NFKR from Fairview Dam to Kernville including the length, whitewater difficulty, name of key rapids, and typical access locations for put-in and take-out.
- Identify the range of flows (minimum acceptable and optimum) that would provide whitewater boating opportunities in each whitewater segment for a variety of watercraft including, kayaks, rafts, packrafts, stand-up paddleboards, and body boards.
- Quantify the annual frequency that minimum acceptable and optimum whitewater flows occur in each whitewater segment with Project operations and unimpaired flows for each watercraft type.
- Document potential conflicts of boating flows with other recreation users and identify strategies to mitigate those conflicts.

4.0 STUDY AREA AND STUDY SITES

The study area includes the 16-mile Fairview Dam Bypass Reach from Fairview Dam to the KR3 Powerhouse and the NFKR from the KR3 Powerhouse to the Kern River Park in Kernville. The Fairview Dam Bypass Reach contains eight whitewater segments ranging in whitewater difficulty from Class II to Class VI (Figure 4-1). The river can be accessed from multiple locations including designated and informal access locations.

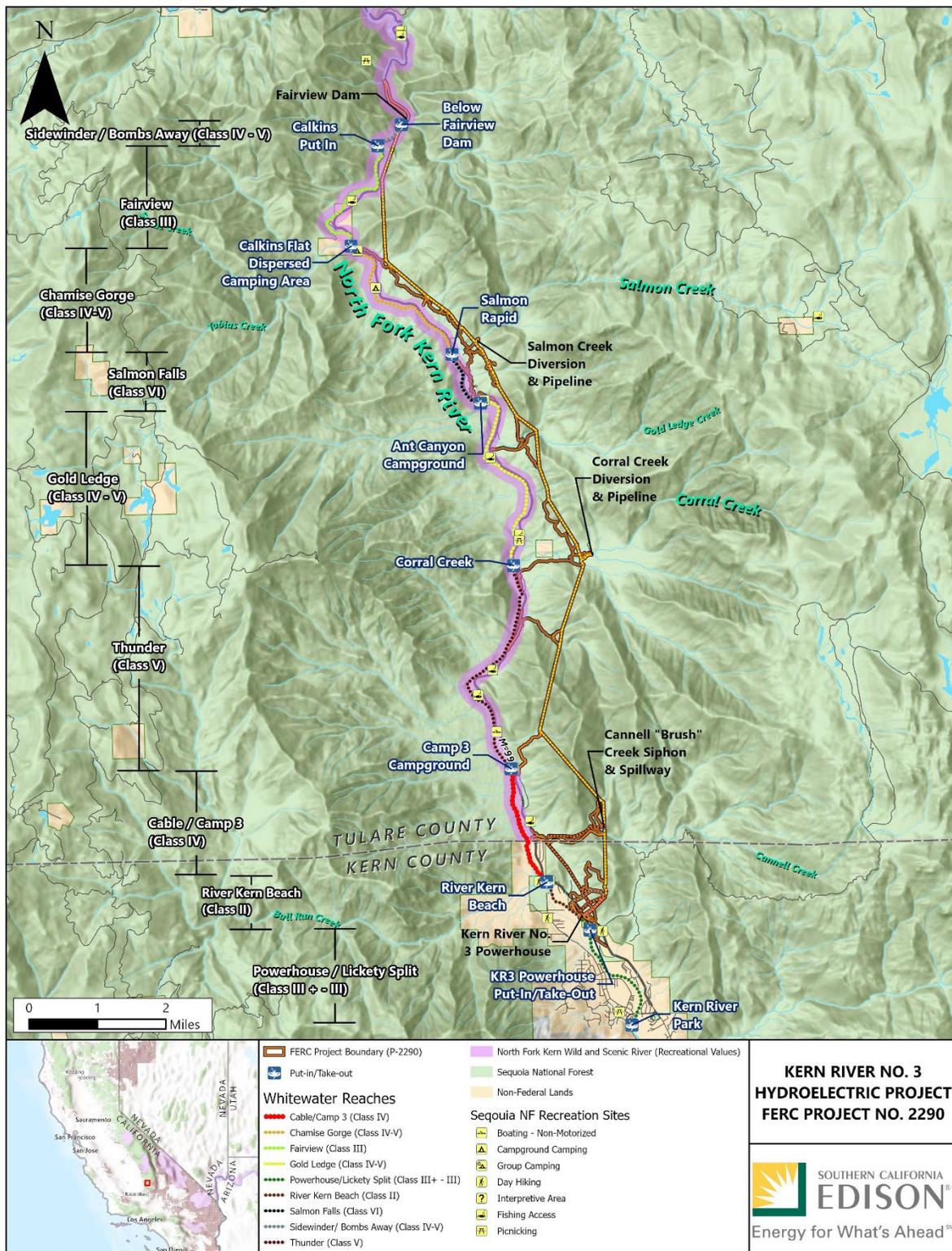


Figure 4-1. Whitewater Boating Runs along North Fork Kern River.

5.0 EXISTING INFORMATION

Whitewater boating is a well-established activity on the Kern River with a long history of commercial and non-commercial use in a variety of watercraft. The whitewater community has a deep knowledge and understanding of flow dependent recreation opportunities in the 16-mile Fairview Dam Bypass Reach. Southern California Edison (SCE) conducted a Whitewater Flow Study (SCE, 1994) that will be reviewed during the desktop review as part of Phase 1. The Sequoia National Forest (SQF) manages special use permits authorizing commercial whitewater use on the bypass reach. Whitewater opportunities in the bypass reach are documented in commercial outfitter brochures and websites. Whitewater guidebooks and online resources provide detailed descriptions of the whitewater boating opportunities and whitewater difficulty across a broad range of flows.

6.0 STUDY APPROACH

The Whitewater Boating Resource Evaluation Study follows the methods in *Flows and Recreation: A Guide to Studies for River Professionals* (Whittaker et al., 2005). The 2005 publication outlines a sequential framework to investigate flow dependent recreation opportunities using various investigative tools across three progressive levels of study. Progression through the framework affords a better understanding of the whitewater recreation opportunities and flow needs in each segment of the bypass reach. The three levels of study increase data resolution as investigations progress from one level to the next and share interim results earlier in the relicensing process across resource disciplines.

6.1. LEVEL 1: DESKTOP REVIEW OF EXISTING INFORMATION

The Level 1 Desktop Review of Existing Information will include the following elements:

- Literature review
 - Literature review will include reviewing the 1994 Whitewater Flow Study (SCE, 1994), whitewater guidebooks, magazine publications with a focus on whitewater recreation and online river information pages.
 - A table summarizing whitewater opportunities in the Kern River basin will be compiled that will include the name of the whitewater run, river name, put-in and take-out location, length, gradient (feet per mile), and whitewater difficulty.
 - Detailed information on the whitewater segments from Fairview Dam to Kern River Park will be included in the table. This will include length, gradient, whitewater difficulty, as well as formal and informal access points.
 - Summarize commercial and private whitewater boating use where available using records from the SQF and/or provided by local commercial outfitters.
 - Summary of regulatory agency resource management goals and Tribal interests where applicable from Fairview Dam to Kern River Park.

- Hydrology summary
 - Utilizing the hourly gage data compiled as part of WR-2 Hydrology Study Plan, include a summary of the hydrology in the 16-mile Fairview Dam Bypass Reach under impaired and unimpaired conditions, as well as the river segment from KR3 Powerhouse to Kern River Park.
 - The hydrology summary will include discharge frequency, timing, duration, and magnitude. Data will be reported using mean, median, interquartile and range.
- Project facility evaluation
 - Description of Fairview Dam impoundment storage and gate operation.
- Structured interviews:
 - Conduct structured interviews (not to exceed 10) with individuals nominated from the whitewater boating community representative of a range of watercraft, skill levels, and knowledge of the whitewater boating segments from Fairview Dam to Kern River Park as well as commercial and non-commercial backgrounds.
 - The interviews will focus on individual knowledge of the whitewater segments from Fairview Dam to Kern River Park; estimated range of preferred flows for each segment for respective watercraft; document gaps, if any, for estimating range of preferred flows; flow information needs; and use patterns for commercial and non-commercial boaters.

Information obtained in the Level 1 investigation will be used to support and guide the Level 2 Limited Reconnaissance.

6.2. LEVEL 2: LIMITED RECONNAISSANCE

The Level 2 investigation will include a limited reconnaissance site visit with study participants consisting of agency staff and boaters as described in the study guidance in Whittaker et al. (2005). The elements of the Level 2 Limited Reconnaissance are described below.

Limited Reconnaissance

- Site visit for direct observation of the whitewater boating segments from Fairview Dam to Kern River Park with a group of study participants consisting of agency staff and boaters.
 - The boating community will nominate study participants for the Level 2 Limited Reconnaissance Site Visit. Study participant composition should be representative of a range of watercraft, skill levels and knowledge of the whitewater boating segments in the 16-mile bypass as well as commercial and non-commercial backgrounds. For logistical and safety reasons, the Level 2 Limited Reconnaissance will consist of 6 to 12 individuals.

- Information collected during the Level 2 Limited Reconnaissance may include:
 - Review of information collected in Level 1 to confirm accuracy and revise where necessary based on input from Level 2 study participants and field observations;
 - Preliminary estimates of flow preferences for respective watercraft types for each whitewater segment and potential knowledge gaps in flow preferences based on input from study participants;
 - Information on factors influencing flow preferences for respective whitewater segments based on recommendations from study participants;
 - Recreation use patterns in the river segments from Fairview Dam to Kern River Park, e.g., watercraft use by segment, segments typically combined, preferred segments for respective watercraft types and skill levels, and timing of use per respective whitewater segment (weekday, weekend, time of day);
 - Visits to formal and informal access locations used for respective whitewater segments; and
 - Flow information use and needs:
 - How do boaters currently utilize flow information?
 - How do boaters assess flow conditions on-site for respective whitewater segments, e.g., visual inspection of staff gages, rocks, etc.?
 - What are the whitewater boating community's flow information needs?

The Level 2 Limited Reconnaissance Site Visit coupled with the study participant recommendations will increase the precision of estimated boating flow ranges for respective whitewater segments and watercraft types as well as knowledge of recreation use patterns in the river segments from Fairview Dam to Kern River Park. Information obtained in the Level 1 and Level 2 investigations will be used to support and guide planning and implementation for the Level 3 Intensive Study.

6.3. LEVEL 3: INTENSIVE STUDY

The Level 3 Intensive Study will collect flow preference information directly from whitewater boaters for a variety of watercraft for the respective whitewater segments using a single flow survey for individual trips and a flow comparison survey for a range of flows as described by Whittaker et al. (2005). The single flow survey and flow comparison survey would be similar to other studies conducted by American Whitewater (AW) to collect flow preference information and recreation use patterns on rivers where a controlled flow study is not possible and/or have unpredictable flow conditions (AW, 2017 and 2021).

The lack of storage in the reservoir at Fairview Dam coupled with the uncertainty of the snowmelt hydrograph of the NFKR severely limits the scheduling and flow volume for a controlled flow study. Recommended boating flows in guidebooks and online greatly exceed the capacity of Fairview Dam to provide flows in a controlled flow study format. The online single flow and flow comparison survey resolves the limitations of a controlled

flow study at the Project. The single flow survey and flow comparison survey is not limited to the unpredictable snowpack and associated flows during the Integrated Licensing Process study period. Whitewater boaters can provide input immediately after completing individual boating trips using the single flow survey and complete the flow comparison survey based on their collective experience over the study season including past experiences over a wide range of water year types. Furthermore, the online single flow and flow comparison survey approach greatly expands the pool of study participants regardless of geographic location or schedule. The goal of the survey is to improve the precision for developing flow preference curves for a variety of watercraft types for the respective whitewater segments from Fairview Dam to Kern River Park. In concert with the online survey, and when feasible, SCE will attempt to enhance flows where potential gaps may exist in user experiences of flow conditions. Flow enhancement may include diverting a portion of flow over Fairview Dam to target specific flow ranges where knowledge gaps were identified in Levels 1 and 2 of the study. Enhanced flows will be opportunistic, not scheduled in advance, and subject to available inflows and tunnel flow needs.

SCE will make a good-faith effort to inform the boating community in advance when hydrologic conditions for opportunistic flow enhancements are likely possible. If flows are likely to allow for such enhancement, SCE will reach out to Kern River Boaters, AW, Los Angeles Kayak Club, Dreamflows, and outfitters holding permits with SQF. This is not a guarantee of a particular flow, just an indication that there may be the possibility of flow enhancement within the diverted reach outside the ordinary whitewater release schedule based on forecasted inflows upstream of Fairview Dam. This good faith effort will attempt to give boaters advance notice to plan trips to the river using forecasting technology available to SCE at the time of study to encourage additional boater use at the targeted flows and participation in the single flow survey. Ideally, boaters will be notified 2 to 3 days in advance to plan a trip. However, inflows to the Project are subject to run-off patterns, which are difficult to forecast in advance.

Results from *OPS-1 Water Conveyance Assessment* may become available prior to or during implementation of the Level 3 study. Additional tunnel operations flexibility identified in the OPS-1 study beyond the current license condition may be used to provide flows that satisfy knowledge gaps discovered in Levels 1 and 2.

The elements of the Level 3 Intensive Study are described below.

- A whitewater single flow survey published online.
 - Information collected in Levels 1 and 2 will be used to develop an online single flow survey.
 - The single flow survey will allow respondents to evaluate individual flows shortly after experiencing them. Respondents will be asked name, zip code, date, time, watercraft type, and river segment(s), and to rate the acceptability of the flow using scale in Whittaker et al. (2005). Single flow survey questions will be formatted for viewing on smart phone screens.

- Posters containing the link to the single flow survey including a QR code will be installed at river access locations and distributed to local retailers in Kernville as well as local, regional, and national whitewater boating groups and accessible on the KR3 relicensing website.
- A whitewater flow comparison survey published online.
 - Information collected in Levels 1 and 2 will be used to develop an online whitewater flow comparison survey.
 - The online whitewater flow comparison survey will be designed to obtain information on flow preferences for respective whitewater river segments from Fairview Dam to Kern River Park. Survey questions will ask respondents to rate the acceptability of a range of flows for each whitewater segment and watercraft type, timing of use, preferred whitewater segments, river access locations, flow information needs and comparison with other whitewater opportunities in the Kern River basin. The range of flows presented in comparative flow questions will be based on information gathered in Levels 1 and 2.
 - The link to the online whitewater flow comparison survey will be distributed to local, regional and national whitewater boating groups and accessible on the KR3 relicensing website.
- Whitewater focus group
 - The Level 3 Intensive Study will include a focus group designed to gather information from boaters with direct experience on the whitewater river segments from Fairview Dam to Kern River Park. Focus group questions will prompt discussion on suitable range of flows for a variety of watercraft for each whitewater segment; navigability and whitewater difficulty across a range of flows; preferred whitewater segment(s) from Fairview Dam to Kern River Park; daily, weekly, and seasonal use patterns; flow information needs; river access; safety; other areas of concern; and uniqueness of the whitewater river segments compared to other opportunities in the region.
 - Focus group participants will be identified in advance and nominated collaboratively with the whitewater community. Selection will be based in part on knowledge of whitewater boating opportunities in the Kern River basin and direct experience on the river segments from Fairview Dam to Kern River Park. The focus group will include representation across watercraft types, commercial and non-commercial as well as the local boating community and boaters traveling to paddle on the bypass from outside the North Fork Kern watershed.
- Hydrology analysis
 - Quantify annual number of days of whitewater boating using flow preference curves developed from data collected in the online single flow and flow comparison survey and supplemented with information obtained in focus groups. Analysis will be done for respective watercraft in each whitewater segment under impaired and unimpaired hydrology in Fairview Dam bypass.

Public safety concerns associated with whitewater boating flows will be documented using available information such as the Kernville Chamber of Commerce, SQF, California Department of Boating and Waterways, AW accident database and other Federal Energy Regulatory Commission (FERC) proceedings where whitewater releases occur. Potential measures to mitigate public safety concerns will also be described.

Potential recreation-use conflicts associated with whitewater boating flows will be identified where possible. Recreation uses occurring in and adjacent to the NFKR documented in the *REC-2 Recreation Facilities Use Assessment* study will be integrated into the REC-1 Updated Study Report (USR). Potential flow related conflicts will be described based on REC-2 survey responses. Mitigation measures to minimize recreation conflicts will be identified where appropriate.

7.0 REPORTING

SCE will file an Initial Study Report (ISR) within 1 year following FERC’s Study Plan Determination (estimated August 3, 2023) and an USR no later than 2 years after FERC’s Study Plan Determination. The ISR and USR will provide an update on SCE’s overall progress in implementing the Study Plan and schedule and the data collected, including an explanation of any variance from the Study Plan and schedule. The information provided in the ISR and USR will be summarized in, and appended to, the Application for New License.

In addition, SCE may prepare interim reports during the study year to apprise Stakeholders on study implementation progress and to support consultation with Stakeholders.

8.0 SCHEDULE

Date	Activity
Summer/Fall 2022	Conduct Level 1 Desktop Study
Winter/Spring 2023	Conduct Level 2 Limited Reconnaissance
August 2023	Provide study plan progress, including Level 1 and Level 2 results, and any schedule updates in the Initial Study Report (ISR)
Spring/Summer/Fall 2023	Implement Level 3 Intensive Study
Spring 2024	Continue Level 3 Intensive Study if needed
Fall 2024	Provide Level 3 results in the Updated Study Report (USR)

ISR = Initial Study Report; USR = Updated Study Report

9.0 LEVEL OF EFFORT AND COST

The cost estimate (2022 dollars) for the study is \$100,000, which includes study-specific consultation, field work, data compilation and analysis, and reporting for all three Levels.

10.0 REFERENCES

AW (American Whitewater). 2017. *Dolores River Boating Survey*. Accessed: February 17, 2022. Retrieved from:
https://www.americanwhitewater.org/content/Article/view/article_id/33759/.

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Whittaker, D., B. Shelby, and J. Gangemi. 2005. *Flows and Recreation: A Guide to Studies for River Professionals*. Washington, DC: Hydropower Reform Coalition and National Park Service Hydropower Recreation Assistance Program.