

**Placer County Water Agency  
Middle Fork of American River Project**

**July 1, 2008 Update on the  
REC 4 – Stream Based Opportunities Technical Study Plan  
Focus Group Sessions and Refined Flow Study Approaches**

This report summarizes the primary flow-related findings that evolved out of three focus group sessions that Placer County Water Agency (PCWA) conducted as part of the REC 4 Stream-based Recreation Opportunities Technical Study Plan (TSP). In addition, it describes how PCWA proposes to refine the flow study approaches that were originally outlined in the REC 4 TSP based on the information developed through the focus group sessions.

**Background**

The REC-4 TSP focuses on developing information to characterize stream-based recreational opportunities in the bypass and peaking reaches associated with the Middle Fork American River Project (MFP or Project). Among other things, the REC-4 TSP includes study components that center on developing activity specific information about: 1) trail use at stream crossings; 2) angling; and 3) whitewater boating. The TSP indicates that Information regarding these three activities would be developed by: 1) utilizing existing information to characterize opportunities and use; 2) implementing structured group interviews (focus group sessions); and 3) conducting flow studies. The TSP was designed so that information developed through the focus groups could be used to refine the flow study objectives and target flows originally proposed in the TSP.

**Focus Group Sessions**

PCWA conducted three focus group sessions, as follows:

- April 23, 2008 – Whitewater Boating Focus Group
- May 12, 2008 – Trail User/Stream Crossing Focus Group
- May 20, 2008 – Angler Focus Group

Each of the focus groups was well attended by users representing a range of interests and skill levels. The focus group participants were very knowledgeable and provided useful information about trail crossing, angling and whitewater boating in the Project bypass and peaking reaches. The specific reaches that were discussed during the focus group sessions are identified on Tables 1, 2 and 3, along with summary information that was developed through the focus groups.

The information that was developed during the three focus group sessions helped PCWA define the flow related issues that are unique to each user group. This information was then used to refine the study approaches outlined in the REC 4 TSP to

more directly address the flow-related issues associated with each user group. Information developed through each of the focus group sessions is summarized below along with the refined flow study approach.

## **Whitewater Boating**

### ***Focus Group Summary***

The whitewater boating focus group session was attended by 10 people affiliated with the following activities: private boating (3), commercial boating (4) and angling (3). Together, the focus group identified and discussed seven runs:

- 2 runs on the Rubicon River;
- 1 run on the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay;
- 3 runs on the Middle Fork American River between Oxbow Powerhouse and the Confluence; and
- 1 run on the North Fork American River between the Confluence and Oregon Bar.

None of the focus group participants had any experience on the Middle Fork American River between French Meadows Reservoir and Middle Fork Interbay, Duncan Creek, or Long Canyon Creek.

Each of the runs discussed by the focus group is briefly described in the following. Additional information is provided in Table 1.

### ***Peaking Reach***

Four runs located in the peaking reach were discussed during the focus group session. All of the focus group participants were familiar with the runs in the peaking reach, associated boating flows, and potential uses. The following is an excerpt of that discussion:

#### **Oxbow PH to Ruck-a-Chucky Run**

- 15 mile run
- Class IV with one portage (Ruck-a-Chucky rapid)
- Used by intermediate to advance kayakers and rafters
- Primarily used for commercial rafting
- Estimated minimum boating flow is 600 cfs; maximum flow is 3,000 cfs for rafts and kayaks
- A flow study at 368 cfs is not necessary because it is well below the estimated minimum boatable flow.

### Ruck-a-Chucky to Mammoth Bar Run

- 7 mile run
- Class II+
- Used by novice rafters and kayakers. Potentially could be used for instructional boating and family rafting.
- Estimated minimum boating flow is 800 cfs; maximum flow is 1,200 cfs for kayaks, inflatable kayaks (IKs) and canoes
- Any flow is okay for more skilled boaters
- A flow study at 368 cfs is not necessary because it is well below the estimated minimum boatable flow.

### Mammoth Bar to Confluence Run

- 2.3 mile run
- Class II with one portage (Murderer's Bar)
- Used by novice rafters and kayakers. Potentially could be used for instructional boating and family rafting.
- Estimated minimum boating flow is 400 cfs; maximum flow is 15,000 cfs for all watercraft
- A flow study on this reach would involve a long, difficult portage around Murderer's Bar rapid
- The boating characteristics of this run would be very similar to those of the Ruck-a-Chucky to Mammoth Bar Run

### Confluence to Oregon Bar Run

- 3.5 mile run (to Birdsall Take out)
- Class II+, III-
- Used by novice rafters and kayakers. Potentially could be used for instructional boating and family rafting.
- Estimated minimum boating flow is 300 cfs; maximum flow is 15,000 cfs
- 100 cfs minimum for inner tubes and inflatable kayaks
- Flow ranges are not well known because this run was just recently opened when water was reintroduced to the channel at the old Auburn Dam site.

### *Rubicon River*

The Rubicon River was discussed as two runs, one extending from Hell Hole Dam to Ellicott Bridge and the other extending from Ellicott Bridge to Ralston Afterbay. A couple of the focus group participants had boated these runs. The focus group participants identified several other boaters to contact for additional information and to refine the flow ranges discussed during the focus group. PCWA is in the process of contacting these boaters.

### Hell Hole Dam to Ellicott Bridge

- Hike-in put-in located at RM 25
- 4 mile run from RM 25 to Ellicott Bridge
- Class V
- Typically boated when Hell Hole Reservoir spills
- Estimated minimum boating flow is 400 to 500 cfs; maximum flow is 1,200 to 1,500 cfs
- Used by expert kayakers and rafters
- Remote wilderness area
- Access is usually restricted by snow when boating flows are available

### Ellicott Bridge to Ralston Afterbay

- 24 mile run
- Class V
- Typically boated when Hell Hole Reservoir spills
- Estimated minimum boating flow is 400-600 cfs; maximum boating flow is 1,200-2,000 cfs.
- Used by expert kayakers and rafters
- Remote wilderness area
- 2 day run
- Access is usually restricted by snow when boating flows are available

### *Middle Fork American River between French Meadows Reservoir and Ralston Afterbay*

The Middle Fork American River between French Meadows Reservoir and Ralston Afterbay was discussed as two runs, one extending from French Meadows Dam to Middle Fork Interbay and the other extending from Middle Fork Interbay to Ralston Afterbay. None of the focus group participants had experience boating on the Middle Fork American River between French Meadows Dam and Middle Fork Interbay. One focus group participant had boated the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay. The focus group identified other boaters who may have additional information and PCWA is in the process of contacting these boaters.

### Middle Fork American River between Middle Fork Interbay and Ralston Afterbay

- 9 mile run
- Class IV-V for kayaks (5-6 class V drops)
- Class V for small rafts (13-14 foot max)
- 2 day run with rafts, 1 day run with kayaks
- Estimated minimum boating flow is 300-400 cfs; maximum boating flow is 800 cfs for both kayaks and rafts
- Remote
- Many technical portages

### *Duncan Creek and Long Canyon Creek*

None of the focus group participants had experience boating on Duncan Creek. As such, it was not discussed during the focus group. In addition, none of the focus group participants had boated on Long Canyon Creek. One participant had looked at Long Canyon Creek but didn't think it was a desirable boating reach because it is too steep and narrow.

### ***Refined Flow Study Approach***

The REC – 4 TSP indicated that PCWA would conduct whitewater boating studies on four runs in the peaking reach, under a range of flow conditions, up to a maximum of 1,000 cfs, the flow capacity of the Oxbow Powerhouse. In addition, the REC 4 TSP indicates that PCWA would determine the need for flow studies in the bypass reaches based on information developed through the focus group and other sources.

PCWA proposes to conduct the flow studies in the peaking reach as outlined in the REC 4 TSP, with some minor refinements based on the focus group feedback. PCWA is continuing to develop information about the potential whitewater boating opportunities in the bypass reaches for future discussions with the Recreation Technical Working Group (TWG).

### *Peaking Reach*

Based on the information developed through the focus group session, PCWA proposes to conduct boating flow studies on three of the four runs in the peaking reach at the following target flows:

Run	Target Flows (cfs)
Oxbow to Ruck-a-Chucky	1000, 800, and 600
Ruck-a-Chucky to Mammoth Bar	1000, 800, and 600
Confluence to Oregon Bar	368, 600 and 1000 plus either 200 or 800 depending upon the results of the 368 flow study

A flow study is not proposed on the Mammoth Bar to Confluence run because it is a short run and involves a difficult portage around Murderer's Bar Rapid. In addition, the flow characteristics in this reach would be similar to those on the Ruck-a-Chucky to Mammoth Bar Run.

Studies at a target flow of 368 cfs are not proposed on either the Oxbow to Ruck-a-Chucky or Ruck-a-Chucky to Mammoth Bar runs because this flow is well below the known boatable flow range for these runs.

### *Rubicon River*

PCWA is continuing to interview boaters to refine the boatable flow ranges expressed by the focus group participants. The expressed flow ranges can then be used in conjunction with hydrologic data to determine how Project operations do or do not affect boating opportunities on the Rubicon River.

At this time, controlled flow studies on the Rubicon River do not appear feasible for the following reasons:

- Releasing flows in the boating range from the current outlet structure at the base of Hell Hole Dam would flood and damage the adjacent powerhouse and surrounding area.
- It requires 2-3 days to boat to Ralston Afterbay from Mile 25 or Ellicott Bridge, respectively, thereby creating a significant logistical constraint for PCWA to provide such releases.
- The Rubicon River is extremely remote and potentially dangerous, thereby creating a liability concern for PCWA.

Flow studies conducted on spill events do not appear to be feasible for the latter two reasons cited above and for the following reasons:

- Spill events typically occur when the road to the put-ins (RM 25 and Ellicott Bridge) are impassible due to snow.
- During wet water years, tributaries contribute significant volumes of water to the Rubicon River making it difficult to estimate flow in the Rubicon at any one point. The focus group indicated flow in the Rubicon can increase 3 times between Ellicott Bridge and Ralston Afterbay due to accretion from tributaries during wet years.

### *Middle Fork American River between French Meadows Reservoir and Ralston Afterbay*

PCWA is continuing to interview boaters identified by the focus group to obtain additional information about these reaches, including boatable flow ranges, if available. The expressed flow ranges can then be used in conjunction with hydrologic data to determine how Project operations do or do not affect boating opportunities on either of these reaches. Otherwise, PCWA does not propose to conduct boating flow studies on these reaches.

### *Duncan Creek and Long Canyon Creek*

PCWA is continuing to interview boaters identified by the focus group to determine whether either of these streams have been boated and associated boating flows. The expressed flow range, if available, can then be used in conjunction with hydrologic data to determine how Project operations do or do not affect boating opportunities on either of these streams. Otherwise, PCWA does not propose to conduct boating flow studies on these streams.

## ***Flow Study Schedule***

Flow studies are currently being planned based on the results of the focus group sessions, and will be conducted in late July, early August, and September of 2008. A final flow schedule will be provided to the TWG in early July.

## **Trail User /Stream Crossing**

### ***Focus Group Summary***

The focus group was attended by 13 people affiliated with the following activities: horseback riding (7), mountain biking (3) and hiking/running (3). Together, the focus group identified and discussed eight potential stream crossings: one on the Rubicon River, four on the Middle Fork American River between Oxbow Powerhouse and the Confluence, and three on the North Fork American River between the Confluence and Oregon Bar. No stream crossings were discussed on the Middle Fork American River between French Meadows Reservoir and Ralston Afterbay, on Duncan Creek, or on Long Canyon Creek. Each of the crossing discussed by the focus group is briefly described in the following. Additional information is provided in Table 2.

#### *Rubicon River*

##### Nevada Point Trail Crossing

- Located on the Rubicon River, about 5 miles upstream of the confluence of the Rubicon River and Long Canyon Creek
- Formerly a foot bridge that was washed out by high flow
- Bridge was located along the Nevada Point trail, which connects Nevada Point Road on the northeast side of the river to Road 13N66 on the southwest side of the river.
- Project flows reduce flows making it easier to cross the river at this location.

#### *Middle Fork American River – Oxbow Powerhouse to Confluence*

##### Ford's Bar

- Located at RM 14 on the Middle Fork American River, at the mouth of Otter Creek
- Formerly used as an equestrian crossing
- No longer regularly used by equestrians due to changes in stream morphology
- Connects the Roanoke Trail on the south side of the river to a private, gated road on the north side of the river.

##### Ruck-a-Chucky

- Located at RM 9 on the Middle Fork American River
- Site of the old Greenwood Bridge
- Connects Drivers Flat Road (also the Western States Trail in this location) on the north side of the river to Sliger Mine Road on the south side of the river

- Crossing for Western States 100 Endurance Run (WS 100)
- Sometimes used by bikers
- Not currently used by equestrians due to boulders, rocky substrate, and deep center channel.
- PG&E and PCWA consult with the commercial boaters and WS 100 event coordinators every year regarding race logistics and flows.
- Target flow during the WS 100 is 125 cfs (knee high).
- Crossing during the WS 100 is not possible between flow of 350 cfs and 800 cfs because it is too high to wade and too low to boat.
- Boat crossing can be done at flows ranging from 800-3,500 cfs.

### Poverty Bar

- Located at RM 6.5 on the Middle Fork American River
- Connects the American River Trail on the south side of the river and the Western States and Butcher Ranch Road Trails on the north side of the river
- Crossing for the Tevis Cup Endurance Ride
- Not used for the WS 100 Endurance Run
- Not used by bikers because mountain biking on the trails in this area is prohibited
- PG&E/PCWA reduces flows for the Tevis Cup every year. During 2007, flow from Oxbow PH was reduced to a maximum of 250 cfs for a 12 hour period.
- Maximum depth for horse safety is 3 feet.
- Maximum flow for the average rider is 250 cfs (on horses chest).
- Less experienced riders need lower flows to cross.
- Maximum depth for hikers/runners to cross at this location is 18 inches (knee high)

### Mammoth Bar

- Located at RM3 on the Middle Fork American River
- Connects the Mammoth Bar OHV area trails on the north side of the river and the Quarry Road Trail on the south side of the river
- Formerly used by horseback riders as a crossing but no longer regularly used due to the presence of OHV area
- Bikers can use this crossing but it is not heavily used because bikers do not want to use the Quarry Trail
- Potential alternative crossing during the Tevis Cup endurance ride
- Maximum depth for horses to cross at this location is 18-30 inches.
- Difficult to carry a bike across when water depth is over 2 feet.

### *North Fork American River - Confluence to Oregon Bar*

### No Hands Bridge

- Located on the North Fork American River, just downstream of its confluence with the Middle Fork American River
- Existing Historic bridge, as such flow is not an issue

- Bridge is located on the Western States Trail

### Coffer Dam

- Located on the North Fork American River, adjacent to the site of the old Auburn Coffer Dam
- Located along the Auburn to Cool Trail
- Previously used as a crossing when the river was routed through the Coffer Dam tunnel
- This crossing can no longer be used now that the tunnel has been closed and the water has been rerouted back into the river channel
- The river banks were graded and armored with rip rap so the banks are now too steep for horses
- A crossable channel may be present at very low flows.

### Oregon Bar Trail Crossing

- Located at RM 15.5 on the North Fork of the American River
- Connects the Pioneer Trail on the north side of the river an unnamed trail on the south side of the river, which connects to the Olmstead Loop
- Used by horseback riders year-round when flow is low enough
- Hikers and runners don't use this crossing
- Mountain biking is prohibited in this area
- Maximum depth for horses to cross at this location is 18 inches. Can be deeper if velocity is lower.

### ***Refined Flow Study Approach***

The REC 4 TSP indicates that PCWA would assemble a group of stream crossing users to assess stream crossing conditions over a range of flows at specific locations in the peaking reach. The REC 4 TSP did not identify crossing studies on any of the bypass reaches.

Based on the information developed during the focus group session, PCWA proposes to develop stage/discharge relationships at each of the stream crossing locations *in lieu of* assembling a group of stream crossing users to assess crossing conditions. PCWA believes this approach would yield information that more directly addresses the issues associated with stream crossing.

In general, a stage/discharge relationship shows the depth of the water and velocity across a channel cross section over a range of flows. The relationship is developed by first surveying the topography of the stream channel, perpendicular to flow. Depth and velocity measurements are then taken across the channel at specific flows. This information can then be used to “model” what depths and flow velocities would be under a range of flows at that location. The information can be displayed either graphically or in tabular format.

Stage discharge relationships would to be developed at five specific locations in the peaking reach. These locations are:

- Ford's Bar (Otter Creek)
- Ruck-a-Chucky
- Poverty Bar
- Mammoth Bar
- Oregon Bar

A stage/discharge relationship may also be developed at the Coffey Dam crossing location, pending the results of a PCWA team site visit. The focus group participants expressed that crossing may be possible at this location during low flow conditions. During the site visit, the channel morphology will be examined to determine whether it would be possible to safely enter, cross, and exit the river under low flow conditions. If it is possible, then a stage/discharge relationship would be developed at this location. The results of the site visit will be provided to the Recreation TWG for discussion.

PCWA believes this approach would yield information that more directly addresses the issues associated with stream crossing for the following reasons.

- The REC – 4 TSP indicates that the trail crossing flow studies would occur in coordination with whitewater boating and aquatics flow studies. Most of the target flows for these studies are above 350 cfs. The focus group indicated that river crossing is not possible at flows above 350 cfs. Therefore, conducting flow studies at flows above 350 cfs would not yield meaningful information. More importantly, conducting studies at flows above 350 cfs would impose unacceptable risk to the study participants and horses.
- Stream crossing is primarily dependent upon channel morphology, water depth and velocity. The development of stage/discharge relationships would allow PCWA to depict the stream morphology, water depths, and velocities at specific locations over a wide range of flows.

### ***Flow Study Schedule***

The data for the stage/discharge relationships would be collected during the aquatic flow studies, which are scheduled to occur in late July, early August, and September, 2008. A final flow schedule will be sent to the TWG in early July.

The focus group participants expressed interest in documenting crossing conditions themselves during the aquatic and whitewater flow studies. Upon approval by PG&E, the boating and aquatic flow study schedules will be provided to the stream crossing focus group participants so that they may visit the crossing locations during the specified releases to observe and document crossing conditions. PCWA encourages the group to document their observations on the forms that were developed by the

Recreation TWG. Information developed by the trail users and provided to PCWA will be incorporated into the REC 4 Technical Study Report.

## **Angling**

### ***Focus Group Summary***

The angler focus group session was attended by eight anglers. Together, the focus group characterized fishing opportunities in the peaking reach and on the Rubicon River, Long Canyon Creek, Duncan Creek, and the Middle Fork American River from French Meadows Reservoir to Middle Fork Interbay. The focus group did not have any experience fishing on the Middle Fork American River between Middle Fork Interbay and Ralston Afterbay. As such, this reach was not discussed.

### *Peaking Reach*

The peaking reach was divided into two sections for discussion purposes. All of the focus group participants were knowledgeable about the fishing opportunities in the peaking reach.

### Oxbow Powerhouse to Ruck-a-Chucky

- Primary access is available at Indian Bar Rafter Put-in and at Ruck-a-Chucky Day Use Area (Driver's Flat Road)
- Additional access is available via various private and public access roads and trails
- Mixture of public and private land limits access to some areas
- Long distance between public access points also limits access to some areas
- Accessible year round
- Spin, bait, and fly fishing
- Wade, boat and bank fishing
- Predominantly brown and rainbow trout, with brown trout increasing downstream of Cache Rock
- Portage around Ruck-a-Chucky rapid limits use by boat fisherman
- Fishing quality is good at high and low flows
- Fishing success declines as flow changes during ramping, and for about an hour after ramping
- Potential to be stranded on opposite side of river due to increase in flow

### Ruck-a-Chucky to Oregon Bar

- Primary access is available at Ruck-a-Chucky Day Use Area (Driver's Flat Road), Mammoth Bar, Confluence area, and China Bar Day Use Area
- Access to China Bar Day Use Area is limited to weekends
- Additional access is available via various public access roads and trails

- Spin, bait, and fly fishing
- Wade, boat and bank fishing
- Predominantly brown trout
- More variety of fish compared to upstream reach
- Fewer trout compared to upstream reach but good brown trout fishing in the fall
- “Not great fishing” but proximity to town provides nearby angling opportunities
- Fishing quality is good at high and low flows
- Can fish at fairly low flows in this reach
- Fishing success declines as flow changes during ramping, and for about an hour after ramping
- Potential to be stranded on opposite side of river due to increase in flow

### *Rubicon River*

#### Hell Hole Dam to Ellicott Bridge

- Accessible via Hunters Trail, Parsley Bar Trail, Deer Creek Trail, South Fork Trail, and FR 2 at Ellicott Bridge
- Some trail segments are difficult to find or are not well maintained
- Access is limited by snow during winter and early spring
- Combination bank and wade fishing
- Generally more spinning and bait fishing near Ellicott bridge
- More fly fishing farther away from access point
- Predominantly rainbow trout
- Fish size has declined in the last 10-12 years
- Good opportunity for remote camping/fishing experience
- Typical summer time flow is easy to fish
- Flows usually decrease to fishable levels by the time the area is accessible
- Flow looks the same throughout the summer

#### Ellicott Bridge to Ralston Afterbay

- Accessible via FR 2 at Ellicott Bridge, Slide Point Trail, Lawyer Trail, Nevada Point Trail, 13N66 and 14N25G, and FR 23 upstream of Ralston Afterbay
- Middle part of reach is inaccessible
- Access to and near Ellicott Bridge is limited by snow during winter and early spring
- The lower portion of this reach can be accessed earlier in the season due to lower elevations
- Spin and fly fishing
- Combination bank and wade fishing
- Predominantly rainbow and brown trout
- Sometimes catch big Sacramento suckers
- Generally more spinning and bait fishing near Ellicott bridge
- More fly fishing farther away from Ellicott bridge
- Fish size has declined since 1997

- Good opportunity for remote camping/fishing experience
- Typical summer time flow is easy to fish
- Flows usually decrease to fishable levels by the time the area is accessible
- Flow looks the same throughout the summer
- High spring flows can preclude ability to walk the stream bank or cross the river

### *Duncan Creek*

- Accessible via Robinson Flat Road to FR 96, which crosses Duncan Creek downstream of Duncan Creek diversion dam.
- Also accessible from unpaved roads 96.52 and 96.54.
- Access is limited by snow during the winter and early spring
- Used mainly by fly fishers
- Good fishing for brown trout in the fall
- Similar to Rubicon River but smaller fish
- Spring fishery - Fishing success declines as flows recede and water warms
- No problem fishing or wading under typical flow conditions

### *Long Canyon Creek*

- FR 2 and FR 22 provide paved access to confluence of North and South Fork Long Canyon
- FR 23 and 13N65 provide access to Long Canyon at Ramsey Crossing
- Trail access to Long Canyon from 13N65
- 14N25G and 13N66 provide 4WD road access to confluence of Long Canyon and Rubicon River
- Access limited by snow during the winter and early spring
- Spinning and fly fishing
- Predominantly rainbow trout
- Flow is adequate and fairly stable
- Remains fishable as flows decrease through summer

### *Middle Fork American River*

#### French Meadows Dam to Middle Fork Interbay

- Accessible via FR 96 and FR 22 at French Meadows Dam, Middle Fork Interbay Road
- Middle part of reach is inaccessible
- Access is limited by snow during winter and early spring
- Spin and fly fishing
- Have to wet wade to fish area below French Meadows Dam
- Predominantly brown trout
- High spring flows can preclude ability to wet wade the stream
- Must fish after high flows recede

### ***Refined Flow Study Approach***

The REC – 4 TSP indicates that PCWA would assemble a group of anglers to assess fishing conditions over a range of flows at specific locations in the peaking reach and on the Rubicon River, below Ellicott Bridge.

Based on the information developed during the focus group session, PCWA proposes to address flow-related fishing issues in the peaking reach by analyzing ramping conditions in the peaking reach *in lieu of* assembling a group of anglers to assess fishing conditions. PCWA believes this approach would yield more useful information than assembling a group of anglers to assess fishing conditions, for the following reasons:

- Flow ranges for angling in the bypass and peaking reaches are already understood. The focus group participants reported that fishing quality is generally good at all flow levels in the peaking reach. In addition, flows in the Rubicon River below Ellicott Bridge are at good fishing levels when the area is accessible.
- The primary flow-related effect on fishing in the peaking reach is associated with ramping. Specifically, fishing quality and success decline during the ramping period (about 2 hours) and for about one hour after ramping.

PCWA proposes to characterize the frequency, timing and duration of ramping in various locations in the peaking reach under current Project operations. PCWA would then utilize this information to determine how current ramping scenarios affect fishing opportunities in the peaking reach. PCWA believes that this approach would more directly address angler concerns regarding the effects of ramping on fishing opportunities.

This information would be utilized in the future during discussions regarding new license conditions and proposed future operational scenarios. Specifically, the frequency, timing, and duration of ramping at various locations in the peaking reach under proposed future operating scenarios would be assessed with respect to conditions that exist under current operations.

**Placer County Water Agency**

**Middle Fork American River Project**

**Summary of Information Developed through Whitewater Boating Focus Group and Flow Studies Proposed by PCWA**

River	Runs	Difficulty	Potential Use	Estimate of Boatable Flow Range	Recommendation	Rationale
Rubicon River	RM 25 to Ellicott Bridge	Class V	Expert kayakers and rafters	Minimum 400 - 500 cfs Maximum 1,200 - 1,500 cfs	Utilize the estimated boatable flow ranges provided by focus group participants and other boaters to analyze project impacts.	Access is via a hike in put-in. Area is not typically accessible when boating flows are available. Remote wilderness area.
Rubicon River	Ellicott Bridge to Ralston Afterbay	Class V	Expert kayakers and rafters	Minimum 400 - 600 cfs Maximum 1,200 - 2,000 cfs	Utilize the estimated boatable flow ranges provided by focus group participants and other boaters to analyze project impacts.	Remote, 2-day wilderness run. Put-in is not typically accessible when boating flows are available. Controlled flow releases for study purposes do not appear feasible based on infrastructure constraints.
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	Class V for rafts Class IV-V for kayaks	Expert kayakers and rafters	Minimum 300 - 400 cfs Maximum 800 cfs	Utilize the estimated boatable flow ranges provided by focus group participants and other boaters to analyze project impacts.	Further discussion required regarding need for refinement of flow estimates, logistics, environmental considerations, and liability. Remote wilderness area. Numerous portages. Biological considerations. No ability to release flows in the boating range.
Middle Fork American River	Oxbow PH to Ruck-a-Chucky	Class IV with one mandatory portage	Intermediate to advanced kayakers and rafters. Popular commercial run.	Minimum 600 cfs Maximum 3,000 cfs	Controlled Flow Studies to be conducted in 2008 Target flows: 600 cfs, 800 cfs, 1000 cfs	A flow study at 368 cfs in not necessary because it is below the known minimum boatable flow.
Middle Fork American River	Ruck-a-Chucky to Mammoth Bar	Class II+	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 800 cfs Maximum 1,200 cfs	Controlled Flow Studies to be conducted in 2008 Target flows: 600 cfs, 800 cfs, 1000 cfs	A flow study at 368 cfs in not necessary because it is below the known minimum boatable flow.
Middle Fork American River	Mammoth Bar to Confluence	Class II with one mandatory portage	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 400 cfs Maximum 15,000cfs	No Flow Study	Short run. Difficult portage is required to complete run. Flow related characteristics would be similar to those on the Ruck-a-Chucky to Mammoth Bar run.
North Fork American River	Confluence to Oregon Bar	Class II+ to III-	Novice rafters and kayakers. Instructional boating. Family rafting.	Minimum 300 cfs Maximum 15,000cfs	Controlled Flow Studies to be conducted in 2008 Target flows: 368, 600 and 1000 plus either 200 or 800 depending upon the results of the 368 flow study	

**Placer County Water Agency  
Middle Fork American River Project  
Summary of Information Developed through Trail User/Stream Crossing Focus Group and Flow Studies Proposed by PCWA**

River	Reach	Stream Crossing Location	User Group	Flow/Depth Information Obtained through Focus Group	Recommendation	Rationale
Rubicon River	Ellicott Bridge to Ralston Afterbay	Nevada Point Trail Crossing	Primarily used by hikers.	Formerly a bridge that was washed out by high flow.	No Flow Study	Project operations reduce flows at this location making it easier to cross
Middle Fork American River	Oxbow PH to Confluence	Ford's Bar	Formerly used as an equestrian crossing.	No longer used as a primary stream crossing due to changes in stream morphology.	No Flow Study Develop Stage/Discharge Relationship	This area is no longer a primary crossing location. However, it is still used as a crossing by some users. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Ruck-a-Chucky	<u>Hikers/Runners.</u> Important crossing for Western States 100 Endurance Run. <u>Equestrians.</u> Not currently used by equestrians due to boulders, rocky substrate, and deep center channel. <u>Bikers.</u> Sometimes used by bikers. Bikers would use this location more if substrate was better and flows were lower.	<u>Hikers/Runners.</u> PG&E and PCWA consult with the commercial boaters and race event coordinators every year regarding race logistics and flows. Target flow during WS 100 is 125 cfs (knee high). A flow of 125-350 cfs is crossable with just a cable, although it is possible to cross without a cable at flows below 200 cfs. Crossing during the WS 100 is not possible between flows of 350 - 800 cfs because it is too high to wade and too low to boat. Boat crossings can be done at flows ranging from 800-3500 cfs.	Develop Stage/Discharge Relationship	Crossing depths and flows for runners and hikers are already understood based annual coordination activities for the WS 100 Endurance Run. Consultation occurs annually because stream morphology sometimes changes resulting in different flow needs. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Poverty Bar	<u>Equestrians.</u> Important crossing for the Tevis Cup Endurance Ride. <u>Hikers/Runners.</u> Not used for the WS 100. <u>Bikers.</u> Not used by bikers because biking on the trails in this area is prohibited.	<u>Equestrians.</u> PG&E reduces flows for the Tevis Cup every year. During 2007, flows from Oxbow PH were reduced to a maximum of 250 cfs for a 12 hours period. Maximum depth for horses is 3 feet. Maximum flow for the average rider is 250 cfs (on horses chest) Ideal crossing depth for horses is 18 inches. Less experienced riders need lower flows. <u>Hikers/runners.</u> Maximum depth for hikers/runners is 18 inches (knee high) 250 cfs is too high a flow for hikers/runners to cross	Develop Stage/Discharge Relationship	Crossing depths are already understood based on consultation activities between PG&E and Tevis Cup organizers. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
Middle Fork American River	Oxbow PH to Confluence	Mammoth Bar	<u>Equestrians.</u> Formerly used as an equestrian crossing. <u>Bikers.</u> Bikers can use this crossing but it is not heavily used because bikers do not want to use the Quarry Trail.	Maximum depth for horses to cross at this location is 18-30 inches. Difficult to carry a bike across the river when flow is over 2 feet.	No Flow Study Develop Stage/Discharge Relationship	This is not a desirable crossing location due to presence of OHV area. However, it is still used as a crossing by some users. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.
North Fork American River	Confluence to Oregon Bar	No Hands Bridge	<u>Equestrians.</u> Important crossing for equestrian users. <u>Hikers/Runners.</u> Important crossing for hikers/runners. <u>Bikers.</u> Not used by bikers because biking on the trails in this area is prohibited.	Flow is not an issue at this location due to presence of bridge.	No Flow Study	Not needed due to presence of existing bridge.
North Fork American River	Confluence to Oregon Bar	Coffer Dam	<u>Equestrians.</u> Formerly used as crossing by equestrians when the river was routed through the coffer dam tunnel. This crossing can no longer be used by equestrians now that the tunnel has been closed and the water has been rerouted back into the river channel. The river banks were graded and armored with rip rap so the banks are now too steep for horses. <u>Hikers/Runners.</u> Would use a crossing at this location. <u>Bikers.</u> Would use a crossing at this location.	Cannot be used as a crossing due to the presence of steep, armored banks.	No Flow Study Under Consideration pending results of field visit to assess whether a channel is present at low flows	Not a feasible crossing location at high flows. Crossing may be possible at low flows if deep channel is not present.
North Fork American River	Confluence to Oregon Bar	Oregon Bar	<u>Equestrians.</u> Used by equestrians year round when flow is low enough. <u>Hikers/Runners.</u> Don't tend to use this crossing location. <u>Bikers.</u> Not used by bikers because biking on the trails in this area is prohibited.	Maximum depth for horses to cross at this location is 18 inches. Can be deeper if velocity is lower. Hikers and runners don't use this location. Bikers can't use this location because they are prohibited on the trails in this area.	Develop Stage/Discharge Relationship	Crossing depth for primary user group (equestrians) is already known. A stage/discharge relationship would provide additional information about the relationship between depth and flow at this location.

Placer County Water Agency  
Middle Fork American River Project  
Summary of Information Developed through Angler Focus Group and Proposed Flow Studies

River	Reach	Characterization (type, method, species)	Flow-Related Information	Recommendation	Rationale
Duncan Creek	Duncan Creek Diversion Dam to Middle Fork American River Confluence	Mostly fly fishing Bank fishing - float tube near inlet at French Meadow Reservoir Brown and rainbow trout - varies by year	Fishing and wading not affected by typical flows. Fishing success declines as flow decrease and water warms	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Long Canyon	North and South Fork Long Canyons and Long Canyon to Confluence with Rubicon River	Spinning and fly fishing Bank fishing and wading Predominately rainbow trout	Flows are adequate and fairly stable. Reach is fishable as flows decrease during the summer	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Rubicon River	Hell Hole Reservoir to Ellicott Bridge	Spinning, bait and fly fishing Bank fishing and wading Predominantly rainbow trout	Typical summer flows are easy to fish Flows usually decrease to fishable levels by the time the area is accessible Flow looks the same throughout the summer	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Rubicon River	Ellicott Bridge to Ralston Afterbay	Spinning and fly fishing Bank fishing and wading Predominately rainbow trout	Typical summer flows are easy to fish Flows usually decrease to fishable levels by the time the area is accessible Flow looks the same throughout the summer High stream flows can preclude the ability to walk the stream bank or cross the river	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Middle Fork American River	French Meadows Dam to Middle Fork Interbay	Spinning and fly fishing Wet wading below French Meadows Dam Predominately brown trout	High spring flows can preclude the ability to wet wade. Must fish after high flows recede.	No Flow Study	See flow-related information, adequate flow information provided by focus group participants to assess project impacts.
Middle Fork American River	Middle Fork Interbay to Ralston Afterbay	No reported use by focus group.	Not "great fishing" due to lack of water. Other opportunities nearby.	No Flow Study	See flow-related information, adequate information provided by focus group participants to assess project impacts.
Middle Fork American River	Oxbow PH to Ruck-a-Chucky	Spin, bait and fly fishing Wade, boat and bank fishing Predominantly brown and rainbow trout with brown trout increasing downstream.	Fishing quality is good at high and low flows Fishing success declines as flow changes during ramping, and for about an hour after ramping. Potential for stranding due to increases in flow.	Assess Ramping Conditions	Flow related effects are primarily related to ramping. Effects of ramping will be analyzed.
Middle Fork American River/North Fork American River	Ruck-a-Chucky to Oregon Bar	Spin, bait and fly fishing Wade, boat and bank fishing Predominantly brown trout.	Fishing quality is good at high and low flows Can fish at fairly flow low flows on this reach Fishing success declines as flow changes during ramping, and for about an hour after ramping. Potential for stranding due to increases in flow.	Assess Ramping Conditions	Flow related effects are primarily related to ramping. Effects of ramping will be analyzed.