

OA Guide to Planning a Safe River Trip by Rick Curtis

Paddling can be a hazardous sport. You need to be aware of the potential risks and your own skill level and paddle at an appropriate level. The information provided here is designed for educational use and is not a substitute for specific training or experience. Princeton University and the author assume no liability for any individual's use of or reliance upon any material contained or referenced herein. The material contained in this workshop may not be the most current.

1. Preplanning

- Know the river
- Know your group
- Know your own skills and resources
- Have the right equipment

2. On the River

- Travel safely
- Keep the group together in some fashion
- Be prepared for a rescue
- Have the proper paddling and rescue skills

II. THE DYNAMICS OF ACCIDENTS MODEL

1. Dynamics of Accidents Formula

Dynamics of Accidents Model



These two factors can overlap to a greater or lesser extent. The greater the overlap the higher the Accident Potential. The effect of combining Environmental Hazards and Human Factor Hazards multiplies the Accident Potential rather than simply being additive. The greater the number of hazards, the more quickly the Accident Potential can rise. For example:

2 Environmental Hazards	+	2 Human Factor Hazards	=	4 times higher Accident Potential
3 Environmental Hazards	+	3 Human Factor Hazards	=	9 times higher Accident Potential

2. Examples of Hazards

When assessing the potential environmental hazards you need to look at three factors.

1. Activity

- Static - activities in which the environment is relatively unchanging (e.g. hiking)
- Dynamic - activities in which the environment change very quickly in unpredictable ways (e.g. whitewater paddling, biking)

2. LocationIn remote locations you need to exercise additional precautions. One common method of accomplishing this is to increase the rating of the rapid by one class if you are in a remote setting. For example, a Class III becomes a Class IV. This helps take into account the increase in Accident Potential (see below).

3. Season/ClimateWeather and the possibility of weather changes also have a significant impact on Accident Potential.

i. Environmental Hazards

A. Environment

pinning/entrapment
undercut rocks/ledges
foot entrapment
strainers
holes
cold temperatures (water/air) equipment
overexposure to sun
bees

B. Equipment

lack of proper equipment (PFD, helmet etc.)
improper clothing for temperature
boat in poor repair

C. Driving

bad road conditions

ii. Human Factor Hazards

A. Participants

no awareness of hazards
fear
no skills to avoid hazards
resistance to instructions
irresponsible/careless attitude towards self, others, equipment
other inexperienced paddlers on the river
need to “prove” self - macho
exhaustion
poor physical strength, stamina

B. Leaders

lack of knowledge of environmental hazards
inadequate skills to extricate self and group from hazards
poor safety judgement
poor teacher of necessary skills
instructions unclear
poor supervisor, does not correct problems
ineffectual under stress

C. Group

group not yet formed, lacks cooperative structure

overloaded vehicle
darkness
other erratic drivers
rushing to meet schedule
overly tired from long drive
not driving defensively
poor driving skills
alcohol

interpersonal frictions unresolved
poor communication patterns
excessive competition
scapegoating or lack of concern for slow or different
individuals excessive pressure or stress to “perform” macho
no practice in working harmoniously under stress
lack of leadership within group
splintering into sub-groups

3. Sample Accident Scenarios

Think of an accident situation you have been in whether on an outdoor trip or in some other setting. Analyze the situation and list the Environmental Hazards and the Human Factor Hazards that lead to the Accident Potential.

4. Teaching the Formula = Reducing the Accident Potential

It is essential to teach the Dynamics of Accidents Formula at the very beginning of any trip so that all participants are aware of how their behavior is directly related to accidents. The formula also gives you as leaders a rationale for why things are done a particular way on the river.

5. Environmental Briefing

A comprehensive Safety Program allows one to intervene to prevent Human Factor Hazards from overlapping with Environmental Hazards and thereby reducing the Accident Potential. In order to do this it is necessary to rethink *what is an environment?* In planning a trip the leaders must examine the environment and the activities of the trip in order to ascertain what the possible environment hazards of that trip are. This information must be communicated to the group in the form of an Environmental Briefing at the beginning of the trip. The first Environmental Briefing should follow the leaders’ presentation of the Dynamics of Accidents formula. On longer trips it may be useful to have the participants do some of the Environmental Briefings once they are familiar with the formula. This can be done with the help of the leaders. The Environmental Briefings set a tone for safety and help inculcate the idea that the participant is responsible for his/her own behavior.

III. RUNNING A RIVER

1. Preplanning

- A. Introduction - Skills/River
- B. What Skills?
 - i. What is the highest skill level of the group?
 - ii. What is the lowest skill level of the group?

The river or river section should be chosen based on something that the person(s) with the least skills in the group could run. The person(s) with the highest skills should feel comfortable in performing rescues in the most difficult section of the river.

2. What River?

- A. River Classification System
 - i. Standard I - VI Classification
 - ii. Be aware of differences in western vs eastern ratings and the current tendency towards

downrating.

iii. Downrate a river by one class if in a remote area (especially if it is a multi-day trip).

B. Flow

i. Depth in Feet

ii. Cubic Feet per Second (CFS)

C. Gradient

i. How much?

D. Type of River

i. Pool/Drop - drops tend can be steeper and more difficult

ii. Continuous - can present more difficult rescue

E. Temperature

i. Air

ii. Water

iii. Weather Change?

3. What Equipment?

A. How long is the trip? one day, multi-day

B. How remote is the trip? from help, resupply

C. What are temperature and weather conditions?

D. What spare equipment should you have?

E. If something went wrong, what would you need?

F. Equipment to bring

i. Boats - in good repair

ii. Paddles - are spares needed?

iii. River Safety Equipment

a. Clothing - What type is needed based on water **and** air temperatures? If air and water temp add up to less than 100 degrees F you should have a wet or dry suit (this is a not especially conservative).

b. PFD - with knife, whistle, carabiner

c. Helmet

d. Throw Bag

e. First Aid Kit

f. Other Rescue Gear

- extra carabiners

- slings (1/2 " tubular nylon webbing)

- prussik loops (made from perlon)

- rescue pulleys (optional)

g. Check it out - Leaders then need to make sure that all participants have the necessary equipment. If people are bringing their own equipment it must be examined to make sure that it is in good shape.

h. How to use it - Participants must be instructed on the safe and appropriate use of all equipment.

4. Leadership

This issue of leadership on paddling trips is often overlooked, especially on club trips. Whenever you head to the river there are some fundamental skills that need to exist both with each paddler, and among the group. Individual paddlers obviously need appropriate paddling skills, equipment, and judgement to let them navigate the river safely. There also need to be skills like first aid, CPR, river rescue and equipment like rescue gear and a good first aid kit. If these things aren't there and you need them, you may be in serious danger.

The notion of a “trip leader” may be antithetical to some paddlers, but having someone who is designated to make sure that all these things are taken care of is just good expedition-style planning. It doesn't mean that the “leader” makes all the trip decisions. Rather, this person serves as the “conscience” of the group, that little reminder to make sure that all the bases are covered. In an emergency situation, the people with the most river rescue and/or first aid experience need to take charge and this might not be the designated trip leader. This is something that also should be determined before a group goes out, who has the skills and judgment to take over in an emergency and who is the back-up person in case the primary is the victim.

5. On the River

A. How to Run a River

- i. Scout - especially anything blind or new
- ii. Eddy Scout
- iii. Scout “Down from the Top and Up from the Bottom”
- iv. Trip Organization
 - Lead and Sweep boats - keeps the group “contained” within a safety net
 - Buddy System - makes sure that someone else is always aware of where you are

B. When Do You Carry?

- i. When there are **any** serious concerns/reservations about the safety of running the drop.
- ii. When you need to “set an example” for other members of the group
- iii. When you are tired/cold etc. and are not in the proper condition to run the drop safely and in control.
- iv. **Tell** someone else not to run the drop if they are in questionable shape to handle it (either physically or skill-wise.)

C. Save Others - size up people on river via technique, equipment attitude and give appropriate feedback - be tactful

D. Hypothermia

IV. SAFETY TRAINING

In order to deal with any emergency situation you need to have the proper skills and training. These skills must be learned **before** going out on the river. In the middle of an emergency is not the time to see if you can throw your Throw Bag well.

1. CPR

2. First Aid

- To treat injuries or medical emergencies
- What if someone on a raft trip had a heart attack or a diabetic emergency?
- What if someone in your group was highly allergic to bee stings?

3. AWA River Signals

- All members of the party should know them

4. River Rescue

- From an experienced River Rescue training group.
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V. RIVER RESCUE ORGANIZATION

1. Preplanning

Ask yourself these questions before you get to the river.

- A. What if there is an emergency situation?
 - How much time do I have to effect a rescue?
 - Where to set up rescue systems?
 - Should someone walk out for help? Who?
- B. What do I do about the emergency?
 - What equipment would I need for a rescue?
 - Do I have the skills for the rescue?
 - Do I have the manpower for the rescue? Do I need additional help?
- C. Who takes control in an emergency?
 - The person(s) most skilled in that area (river rescue, first aid) must take control and others follow his/her instructions
 - What if the leader(s) are the victim(s)? Who is next in charge? You should have a back-up person both for rescue and first aid.

2. Rescue Planning

Ask yourself these questions in an actual emergency.

- A. Assess the situation - Establish Priorities
 - How many people are involved?
 - Head up vs head down situation?
 - Is the person stable?
 - How much time do I have?
 - What are my resources - human and equipment?
 - What are the extent of injuries?
 - What is the safest way to effect the rescue?
- B. Effecting the rescue
 - i. The leader must assign tasks to the group
 - ii. The leader should try to keep from being intimately involved in the actual rescue to remain free to continually assess the situation. This assumes that there are others in the group with the skills/abilities to follow through with the rescue. If this is not the case the leader may have to effect the rescue.

SAFETY = JUDGEMENT

- 1) Know your limits and groups limits. Be conservative.
 - 2) Be flexible - (e.g. change route if needed)
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SUGGESTED READING:

- River Rescue by Les Bechdel and Slim Ray, Appalachian Mountain Club Books, Boston, 1989, ISBN 0-910146-76-4
- The Best of the River Safety Task Force Newsletter, first and second editions, edited by Charlie Walbridge
- Whitewater River Rescue by Wayne Sundermacher and Charlie Walbridge, Ragged Mountain Press, Camden, 1995, ISBN 0-07-067790-5
- AWA River Safety Cards - American Whitewater Affiliation - available spring '96 - co-authored by Rick Curtis
- River Rescue - The Video (VHS 55 minutes) - Anne Ford & Les Bechdel, Gravity Sports Films, Jersey City, NJ.
- Heads Up! - River Rescue for River Runners (VHS 30 minutes) - Russ Nichols, distributed by the American Canoe Association, Lorton, VA

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