



Whitewater Boating and Access Study Safety Plan

Lowell Hydroelectric Project

(FERC No. 2790)

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Prepared for:

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Appendix A: Safety Plan Addendum

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List of Acronyms

AW	American Whitewater
Boott	Boott Hydropower, LLC
CFR	Code of Federal Regulations
cfs	cubic feet-per-second
City	City of Lowell
COVID-19	Coronavirus Disease 2019
FERC	Federal Energy Regulatory Commission (or Commission)
ILP	Integrated Licensing Process
MW	megawatt
NPS	National Park Service
POC	Point of Contact
PPE	Personal Protective Equipment
Project	Lowell Hydroelectric Project (or Lowell Project)
RSP	Revised Study Plan
Safety Code	Safety Code of American Whitewater
Safety Plan	Whitewater Boating and Access Study Safety Plan
SPD	Study Plan Determination
Study	Whitewater Boating and Access Study
Working Group	Whitewater Boating and Access Study Working Group

1 Introduction and Background

Boott Hydropower, LLC (Boott), is the Licensee and operator of the 20.2-megawatt (MW) Lowell Hydroelectric Project FERC No. 2790) (Project or Lowell Project). The Project is located along the Merrimack River in Middlesex County, Massachusetts and in Hillsborough County, New Hampshire.

The existing license for the Project was issued by the Federal Energy Regulatory Commission (FERC or Commission) with an effective date of May 1, 1973. The existing license expires on April 30, 2023. Accordingly, Boott is pursuing a new license for the Project pursuant to the Commission's Integrated Licensing Process (ILP), as described at 18 Code of Federal Regulations (CFR) Part 5. As proposed in Boott's January 28, 2019 Revised Study Plan (RSP) and approved in the Commission's March 13, 2019 Study Plan Determination (SPD), Boott will conduct a Whitewater Boating and Access Study (Whitewater Study) in support of Project relicensing.

This Whitewater Boating and Access Study Safety Plan (Safety Plan) is intended to provide guidelines and protocols for protecting the safety of volunteer study participants boating the Project's bypass reach during controlled flow releases. This Safety Plan also provides procedures for emergency situations and guidance for communicating with study participants, Project staff, and emergency responders. The Safety Plan was developed in consultation with American Whitewater (AW), the City of Lowell (City), National Park Service (NPS), Zoar Outdoor, and the Massachusetts Department of Conservation and Recreation (collectively, the Whitewater Boating and Access Study Working Group or Working Group).

As a condition to participation in the controlled flow releases, Boott requires volunteers to review this Safety Plan and understand the safety measures, guidance, and requirements herein. Boott notes that this Safety Plan includes details about Personal Protective Equipment (PPE) that participants are responsible for providing, as well as mandatory pre-fieldwork Coronavirus Disease 2019 (COVID-19) screening requirements. Persons who do not have the required PPE or who do not complete the pre-fieldwork COVID-19 screening measures will not be allowed to participate in the Whitewater Study.

1.1 Whitewater Boating and Access Study Overview

The Lowell Project is a run-of-river hydropower plant. When river flows exceed the hydraulic capacity of the two generating units located at the E.L. Field Powerhouse (combined capacity of approximately 8,000 cubic feet-per-second [cfs]), excess flows (up to approximately 2,000 cfs) are routed through the downtown Lowell canal system and through the canal units. When inflows exceed the 10,000 cfs capacity of the generating units and canals, all excess flows are passed over the Pawtucket Dam spillway into the bypass reach. The Project has the potential to affect whitewater boating opportunities in the bypass reach when flows are less than 10,000 cfs.

As described in the approved RSP, the goal of the study is to assess the Project's bypass reach for whitewater boating and access opportunities. The objectives of the study are as follows:

- Assess a range of flows suitable for whitewater boating opportunities in the Project's bypass reach;
- Assess the frequency, timing, duration, and predictability of paddling flows under current and proposed Project operations;
- Define potential locations for put-in and take-out points for boaters; and,
- Assess the flow information needs for whitewater boating and the current and potential flow information distribution system.

The approved study plan includes three primary tasks:

- **Task 1: Study Planning and Preparation** – The Study Planning and Preparation task includes (1) formation of the Working Group and identification of volunteers to participate in controlled flow release evaluations; (2) identification of appropriate put-in and take-out locations for on-water evaluations; (3) development of a Safety Plan; (4) determination of a method for verifying flows in the Project's bypass reach; and (5) development of survey forms to be used in the execution of the flow evaluations.
- **Task 2: Controlled Whitewater Releases** – In consultation with the Working Group, Boott will schedule controlled flow releases from the Project's Pawtucket Dam. Each flow release is expected to last approximately three hours, and volunteer boaters will have the opportunity to boat the Project's bypass reach and to make multiple passes at each flow to evaluate lines through sections of the study reach. Pre, post, and comparative surveys will be provided to controlled flow release participants for their completion during this portion of the study.

Following completion of the controlled flow releases, Boott will conduct an on-site meeting to discuss the results of the study and summarize opinions about the feasibility or quality of different types of boating opportunities at different flows.

- **Task 3: Whitewater Recreational Access** – Based on the results of the Recreation and Aesthetics Study, and in consultation with the Working Group, Boott will conduct an evaluation of prospective whitewater recreational access to the bypass reach.

This Safety Plan has been developed pursuant to Task 1 of the approved Whitewater Boating and Access Study Plan to provide appropriate safety measures and emergency protocols for the controlled flow releases (Task 2). Boott will require that all volunteer boaters participating in the controlled flow releases review and adhere to the Safety Plan requirements and applicable Boott safety policies.

2 Safety Code of American Whitewater

Boott's Safety Plan adopts the Safety Code of American Whitewater (AW 2005) (Safety Code). The Safety Code includes guidelines for Personal Preparedness and Responsibility, Boat and Equipment Preparedness, Group Preparedness and Responsibility, and Guidelines for River Rescue. Guidance from the Safety Code is presented in the following sections. ***As a precursor to participating in the controlled flow releases, volunteer boaters will review the Safety Code in its entirety on the AW Website at www.americanwhitewater.org.***

As noted in the Safety Code, the code "is only a collection of guidelines; attempts to minimize risks should be flexible, not constrained by a rigid set of rules. Varying conditions and group goals may combine with unpredictable circumstances to require alternate procedures" (AW 2005). If conditions require modifications to this Safety Plan, Boott, the Working Group, and study participants, will document and review those modifications prior to boating the controlled flow releases.

While it is appropriate to develop and review safety guidance for whitewater boating, all parties recognize that whitewater boating has inherent risks that cannot be completely avoided or mitigated. As such, volunteer boaters participating in the controlled flow releases do so at their own risk and in recognition of the inherent dangers that such activities pose.

2.1 Personal Preparedness and Responsibility

1. **Be a competent swimmer**, with the ability to handle yourself underwater.
2. **Wear a life jacket**. A snugly fitting vest-type life preserver offers back and shoulder protection as well as the flotation needed to swim safely in whitewater.
3. **Wear a solid, correctly fitted helmet** when upsets are likely. This is essential in kayaks or covered canoes and is recommended for open canoeists using thigh straps and rafters running steep drops.
4. **Do not boat out of control**. Your skills should be sufficient to stop or reach shore before reaching danger. Do not enter a rapid unless you are reasonably sure that you can run it safely or swim it without injury.
5. **Whitewater rivers contain many hazards which are not always easily recognized. The following are the most frequent killers.**
 - I. **High Water**. A river's speed and power increase tremendously as the flow increases, raising the difficulty of most rapids. Rescue becomes progressively harder as the water rises, adding to the danger. Floating debris and strainers can make even an easy rapid quite hazardous. It is often misleading to judge the river level at the put-in, since a small rise in a wide, shallow place will be multiplied many times where the river narrows. Use reliable gage information whenever

possible, and be aware that sun on snowpack, hard rain, and upstream dam releases may greatly increase the flow.

- II. **Cold.** Cold drains your strength and robs you of the ability to make sound decisions on matters affecting your survival. Cold-water immersion, because of the initial shock and the rapid heat loss which follows, is especially dangerous. Dress appropriately for bad weather or sudden immersion in the water. When the water temperature is less than 50° Fahrenheit, a wetsuit or drysuit is essential for protection if you swim. Next best is wool or pile clothing under a waterproof shell. In this case, you should also carry waterproof matches and a change of clothing in a waterproof bag. If, after prolonged exposure, a person experiences uncontrollable shaking, loss of coordination, or difficulty speaking, he or she is hypothermic, and needs your assistance.
 - III. **Strainers.** Brush, fallen trees, bridge pilings, undercut rocks or anything else which allows river current to sweep through can pin boats and boaters against the obstacle. Water pressure on anything trapped this way can be overwhelming. Rescue is often extremely difficult. Pinning may occur in fast current, with little or no whitewater to warn of the danger.
 - IV. **Dams, weirs, ledges, reversals, holes, and hydraulics.** When water drops over an obstacle, it curls back on itself, forming a strong upstream current which may be capable of holding a boat or swimmer. Some holes make for excellent sport. Others are proven killers. Paddlers who cannot recognize the difference should avoid all but the smallest holes. Hydraulics around man-made dams must be treated with utmost respect regardless of their height or the level of the river. Despite their seemingly benign appearance, they can create an almost escape-proof trap. The swimmer's only exit from the "drowning machine" is to dive below the surface when the downstream current is flowing beneath the reversal.
6. **Broaching.** When a boat is pushed sideways against a rock by strong current, it may collapse and wrap. This is especially dangerous to kayak and decked canoe paddlers; these boats will collapse, and the combination of indestructible hulls and tight outfitting may create a deadly trap. Even without entrapment, releasing pinned boats can be extremely time-consuming and dangerous. To avoid pinning, throw your weight downstream towards the rock. This allows the current to slide harmlessly underneath the hull.
 7. **Boating alone is discouraged.** The minimum party is three people or two craft.
 8. **Have a frank knowledge of your boating ability,** and don't attempt rivers or rapids which lie beyond that ability.
 9. **Be in good physical and mental condition,** consistent with the difficulties which may be expected. Make adjustments for loss of skills due to age, health, and fitness. Any health limitations must be explained to your fellow paddlers prior to starting the trip.

10. **Be practiced in self-rescue**, including escape from an overturned craft. The Eskimo roll is strongly recommended for decked boaters who run rapids Class IV or greater, or who paddle in cold environmental conditions.
11. **Be trained in rescue skills, CPR, and first aid** with special emphasis on recognizing and treating hypothermia. It may save your friend's life.
12. **Carry equipment needed for unexpected emergencies**, including footwear which will protect your feet when walking out, a throw rope, knife, whistle, and waterproof matches. If you wear eyeglasses, tie them on and carry a spare pair on long trips. Bring cloth repair tape on short runs, and a full repair kit on isolated rivers. Do not wear bulky jackets, ponchos, heavy boots, or anything else which could reduce your ability to survive a swim.
13. Despite the mutually supportive group structure described in this code, **individual paddlers are ultimately responsible for their own safety, and must assume sole responsibility for the following decisions:**
 - I. The decision to participate on any trip. This includes an evaluation of the expected difficulty of the rapids under the conditions existing at the time of the put in.
 - II. The selection of appropriate equipment, including a boat design suited to their skills and the appropriate rescue and survival gear.
 - III. The decision to scout any rapid, and to run or portage according to their best judgment. Other members of the group may offer advice, but paddlers should resist pressure from anyone to paddle beyond their skills. It is also their responsibility to decide whether to pass up any walk-out or take-out opportunity.
 - IV. All trip participants should consistently evaluate their own and their group's safety, voicing their concerns when appropriate and following what they believe to be the best course of action. Paddlers are encouraged to speak with anyone whose actions on the water are dangerous, whether they are a part of your group or not.

2.2 Boat and Equipment Preparedness

1. **Test new and different equipment** under familiar conditions before relying on it for difficult runs. This is especially true when adopting a new boat design or outfitting system. craft may present additional hazards to inexperienced or poorly conditioned paddlers.
2. **Be sure your boat and gear are in good repair** before starting a trip. The more isolated and difficult the run, the more rigorous this inspection should be.
3. **Install flotation bags** in non-inflatable craft, securely fixed in each end, designed to displace as much water as possible. Inflatable boats should have multiple air chambers and be test-inflated before launching.

4. **Have strong, properly sized paddles or oars** for controlling your craft. Carry sufficient spares for the length and difficulty of the trip.
5. **Outfit your boat safely.** The ability to exit your boat quickly is an essential component of safety in rapids. It is your responsibility to see that there is absolutely nothing to cause entrapment when coming free of an upset craft. This includes:
 - I. Spray covers which won't release reliably or which release prematurely.
 - II. Boat outfitting too tight to allow a fast exit, especially in low volume kayaks or decked canoes. This includes low-hung thwarts in canoes lacking adequate clearance for your feet and kayak footbraces which fail or allow your feet to become wedged under them.
 - III. Inadequately supported decks which collapse on a paddler's legs when a decked boat is pinned by water pressure or inadequate clearance with the deck because of your size or build.
 - IV. Loose ropes which cause entanglement. Beware of any length of loose line attached to a whitewater boat. All items must be tied tightly, and excess line eliminated; painters, throw lines, and safety rope systems must be completely and effectively stored. Do not knot the end of a rope, as it can get caught in cracks between rocks.
6. **Provide ropes** which permit you to hold on to your craft so that it may be rescued. The following methods are recommended:
 - I. Kayaks and covered canoes should have grab loops of ¼-inch + rope or equivalent webbing sized to admit a normal-sized hand. Stern painters are permissible if properly secured.
 - II. Open canoes should have securely anchored bow and stern painters consisting of 8 – 10 feet of ¼-inch + line. These must be secured in such a way that they are readily accessible, but cannot come loose accidentally. Grab loops are acceptable but are more difficult to reach after an upset.
 - III. Rafts and dories may have taut perimeter lines threaded through the loops provided. Footholds should be designed so that a paddler's feet cannot be forced through them, causing entrapment. Flip lines should be carefully and reliably stowed.
7. **Know your craft's carrying capacity**, and how added loads affect boat handling in whitewater. Most rafts have a minimum crew size which can be added to on day trips or in easy rapids. Carrying more than two paddlers in an open canoe when running rapids is not recommended.
8. **Car-top racks** must be strong and attach positively to the vehicle. Lash your boat to each crossbar, then tie the ends of the boats directly to the bumpers for added security. This arrangement should survive all but the most violent vehicle accident.

2.3 Group Preparedness and Responsibility

1. **Organization.** A river trip should be regarded as a common adventure by all participants, except on instructional or commercially guided trips as defined below. Participants share the responsibility for the conduct of the trip, and each participant is individually responsible for judging his or her own capabilities and for his or her own safety as the trip progresses. Participants are encouraged (but are not obligated) to offer advice and guidance for the independent consideration and judgment of others.
2. **River Conditions.** The group should have a reasonable knowledge of the difficulty of the run. Participants should evaluate this information and adjust their plans accordingly. If the run is exploratory or no one is familiar with the river, maps and guidebooks, if available, should be examined. The group should secure accurate flow information; the more difficult the run, the more important this will be. Be aware of possible changes in river level and how this will affect the difficulty of the run. If the trip involves tidal stretches, secure appropriate information on tides.
3. **Group equipment should be suited to the difficulty of the river.** The group should always have a throw-line available, and one line per boat is recommended on difficult runs. The list may include carabiners, prussic loops, first aid kit, flashlight, folding saw, fire starter, guidebooks, maps, food, extra clothing, and any other rescue or survival items suggested by conditions. Each item is not required on every run, and this list is not meant to be a substitute for good judgment.
4. **Keep the group compact** but maintain sufficient spacing to avoid collisions. If the group is large, consider dividing into smaller groups or using the “buddy system” as an additional safeguard. Space yourselves closely enough to permit good communication, but not so close as to interfere with one another in rapids.
 - I. **A point paddler** sets the pace. When in front, do not get in over your head. Never run drops when you cannot see a clear route to the bottom or, for advanced paddlers, a sure route to the next eddy. When in doubt, stop and scout.
 - II. **Keep track of all group members.** Each boat keeps the one behind it in sight, stopping if necessary. Know how many people are in your group and take headcounts regularly. No one should paddle ahead or walk out without first informing the group. Paddlers requiring additional support should stay at the center of a group, and not allow themselves to lag behind in the more difficult rapids. If the group is large and contains a wide range of abilities, a “sweep boat” may be designated to bring up the rear.
 - III. **Courtesy.** On heavily used rivers, do not cut in front of a boater running a drop. Always look upstream before leaving eddies to run or play. Never enter a crowded drop or eddy when no room for you exists. Passing other groups in a rapid may be hazardous; it's often safer to wait upstream until the group ahead has passed.

5. **Float Plan.** If the trip is into a wilderness area or for an extended period, plans should be filed with a responsible person who will contact the authorities if you are overdue. It may be wise to establish checkpoints along the way where civilization could be contacted if necessary. Knowing the location of possible help and planning escape routes can speed rescue.
6. **Drugs.** The use of alcohol or mind-altering drugs before or during river trips is not recommended. It dulls reflexes, reduces decision-making ability, and may interfere with important survival reflexes.
7. **Instructional or commercially guided trips.** In contrast to the common adventure trip format, in these trip formats, a boating instructor or commercial guide assumes some of the responsibilities normally exercised by the group as a whole, as appropriate under the circumstances. These formats recognize that instructional or commercially guided trips may involve participants who lack significant experience in whitewater. However, as a participant acquires experience in whitewater, he or she takes on increasing responsibility for his or her own safety, in accordance with what he or she knows or should know as a result of that increased experience. Also, as in all trip formats, every participant must realize and assume the risks associated with the serious hazards of whitewater rivers.
8. It is advisable for instructors and commercial guides or their employers to acquire trip or personal liability insurance:
 - I. An “instructional trip” is characterized by a clear teacher/pupil relationship, where the primary purpose of the trip is to teach boating skills, and which is conducted for a fee.
 - II. A “commercially guided trip” is characterized by a licensed, professional guide conducting trips for a fee.

2.4 Guidelines for River Rescue

1. **Recover from an upset with an Eskimo roll** whenever possible. Evacuate your boat immediately if there is imminent danger of being trapped against rocks, brush, or any other kind of strainer.
2. **If you swim, hold on to your boat.** It has flotation and is easy for rescuers to spot. Get to the upstream end so that you cannot be crushed between a rock and your boat by the force of the current. Persons with good balance may be able to climb on top of a swamped kayak or flipped raft and paddle to shore.
3. **Release your craft if this will improve your chances,** especially if the water is cold or dangerous rapids lie ahead. Actively attempt self-rescue whenever possible by swimming for safety. Be prepared to assist others who may come to your aid.
 - I. When swimming in shallow or obstructed rapids, lie on your back with feet held high and pointed downstream. Do not attempt to stand in fast moving water; if your foot wedges on the bottom, fast water will push you under and keep you

there. Get to slow or very shallow water before attempting to stand or walk. Look ahead! Avoid possible pinning situations including undercut rocks, strainers, downed trees, holes, and other dangers by swimming away from them.

- II. If the rapids are deep and powerful, roll over onto your stomach and swim aggressively for shore. Watch for eddies and slackwater and use them to get out of the current. Strong swimmers can affect a powerful upstream ferry and get to shore fast. If the shores are obstructed with strainers or undercut rocks, however, it is safer to “ride the rapid out” until a safer escape can be found.
4. **If others spill and swim, go after the boaters first.** Rescue boats and equipment only if this can be done safely. While participants are encouraged (but not obligated) to assist one another to the best of their ability, they should do so only if they can, in their judgment, do so safely. The first duty of a rescuer is not to compound the problem by becoming another victim.
5. **The use of rescue lines requires training;** uninformed use may cause injury. Never tie yourself into either end of a line without a reliable quick-release system. Have a knife handy to deal with unexpected entanglement. Learn to place set lines effectively, to throw accurately, to belay effectively, and to properly handle a rope thrown to you.
6. **When reviving a drowning victim,** be aware that cold water may greatly extend survival time underwater. Victims of hypothermia may have depressed vital signs, so they look and feel dead. Don't give up; continue CPR for as long as possible without compromising safety.

3 Safety, First Aid, and Rescue Equipment

For this study, volunteer boaters participating in the controlled flow releases are required to have the following PPE, regardless of skill level or experience:

- **Personal Floatation Device:** All study participants are required to wear a Type III or V personal floatation device when boating or within 10 feet of the water.
- **Helmet:** All study participants must wear a properly fitted whitewater helmet when boating.
- **Whistle:** All study participants must carry a whistle to alert other participants or spotters of an emergency situation or to signal distress.
- **Sturdy Footwear and Leg Coverings:** All study participants must wear sturdy, closed-toe footwear at put-in and take-out locations or when portaging or scouting rapids. Pants or other leg coverings are required at the put-in and take-out locations.

As noted in the Safety Code, ***it is the responsibility of the study participants to have the PPE, first aid, rescue, and other safety equipment that they determine to be***

appropriate. Participants should consider (both individually and as a group) the equipment that may be appropriate for weather conditions, flows, watercraft, and skill levels. Other appropriate PPE, first aid, rescue, and safety equipment may include (but is not limited to), wetsuits, drysuits, spraycovers, extra oars/paddles, gloves, throw ropes, rescue knives, floatation, first aid kits, and an extra set of dry clothes. It is the responsibility of study participants to have the PPE, safety, first aid, and rescue equipment available for the controlled flow releases and to be familiar with proper use of any such equipment.

4 Alcohol and Drug Policy

For the safety of all participants, and consistent with the Safety Code, the use of alcohol or drugs is prohibited during the controlled flow releases. Whitewater rafting requires exceptional physical exertion and risk of injury or death from whitewater rafting can be mitigated by excluding those under the influence of alcohol or drugs. As noted in the Safety Code, the use of alcohol or drug, dulls reflexes, reduces decision-making ability, and may interfere with important survival reflexes. ***Persons who appear visibly intoxicated will not be allowed to participate in the study.***

5 Safety Issues

Each volunteer boater is responsible for understanding the safety issues associated with participation in the study. In addition to the safety guidance discussed in the Safety Code, volunteer boaters should be aware of the following safety issues that may be encountered during the study:

- **Strainers and obstructions** along the Project's bypass reach that present potential pinning scenarios for boats and boaters, including downed trees, rocks/boulders, and bridge pilings.
- **Potential foot entrapments** that could result from dangling feet over or near the bottom of the river or attempting to stand in the current.
- **Weather related illness**, such as hypothermia or dehydration.
- **Severe or sudden weather events** (i.e., thunderstorms, heavy rainfall, etc.).
- **Sudden rapid flow releases** that may occur if the powerhouse is tripped offline (due to a lightning strike or equipment failure) or if water is released through the surge gate located upstream from the Projects E.L. Field Powerhouse.
- **Advice/encouragement from the general public** to attempt rivers or rapids which lie beyond the volunteer boater's ability.

- **Sudden changes in physical health or mental condition** of volunteer boater on the day of the study.
- **Hazardous materials** commonly found along the shoreline of many urban rivers, including broken glass, rusted metal, and used hypodermic needles.
- **Unexpected emergency situations** (i.e., medical/health emergency, boating collisions, etc.).

6 Safety Measures

Boott, the Working Group, and study participants will all have responsibilities to support safe boating during the controlled flow releases. The following safety measures will be implemented for this study:

- Volunteer boaters will be experienced and will have the skills necessary to boat the Project's bypass reach. AW will be responsible for selecting volunteers to participate in the controlled flow releases.
- The minimum age for participating in the controlled flow releases is 18. All participants will sign a waiver prior to boating the controlled flow releases. Individuals who do not sign the waiver will not be allowed to participate in the Whitewater Study.
- All study participants must adhere to the COVID-19 Protocols described in Section 7 of this Safety Plan. Boott reserves the right to remove any participant who does not adhere to the COVID-19 Protocols from the Whitewater Study.
- All study participants will be required to provide contact information for themselves and an emergency contact. Study participants will have the option to disclose medical conditions/disabilities that could be relevant to potential medical treatment/care (i.e., allergies to certain medications, asthma, etc.).
- Boott will maintain contact information for the City's fire department. The point of contact (POC) for the fire department shall be Joe Roth, Interim Fire Chief, 978-674-1217.
- At least 48 hours prior to boating the controlled flow releases, Boott will contact the City's fire department and any other contact designated by the City to make them aware of the timing and expected schedule for the controlled flow releases. If the fire department's POC has concerns regarding the timing or schedule for controlled flow releases, Boott will consult the working group to address any concerns. If the concerns cannot be addressed to the satisfaction of the fire department's POC, Boott reserves the right to postpone the study.
- Prior to boating the controlled flow releases, all study participants will participate in a daily "tailgate" safety discussion. During the tailgate discussion, Boott will summarize

the safety plan, including the procedures for emergencies. The tailgate discussion will be an opportunity for the Working Group to provide any additional or updated safety information to study participants, and for the volunteer boaters participating in the controlled flow releases to discuss conditions and any additional safety measures, recommendations, or guidance. Boott will document any new or modified safety measures, recommendations or guidance in the Safety Plan Addendum provided in Appendix A to this Safety Plan.

- Prior to boating the controlled flow releases, all study participants will participate in an equipment check to be sure that their gear is in proper functioning condition, all loads are secured so as not to break free and cause harm to fellow study participants, and that required PPE (i.e., vest, helmet, and whistle) are not damaged in a way that would inhibit them from working properly.
- Study participants will sign-in and sign-out on a daily basis and Boott will record the names of individual volunteer boaters as they put-in and take-out their craft.
- During the controlled flow releases, Boott will place “spotters” at two locations identified in the field in consultation with the Working Group. The spotters will observe boaters during the controlled flow releases and will be prepared to call emergency services (911) if there is an observed accident, injury, pinning, or other emergency.
- Boott, the Working Group, and study participants will continually evaluate boating safety and will speak with anyone whose actions on the water are dangerous.
- Study participants will make the decision to scout any rapid, and to run or portage according to their best judgment. Do not enter a rapid unless you are reasonably sure that you can run it safely or swim it without injury. Consistent with the Safety Code, it is the responsibility of individual study participants to decide whether to pass up any walk-out or take-out opportunity.
- A “sweep boat” will be designated for each controlled flow release to ensure all study participants have safely exited the water.
- Study participants should avoid touching or handling any hazardous materials observed along the shoreline, including broken glass, rusted metal, or used hypodermic needles. Sturdy, closed-toe footwear should be worn at put-in and take-out locations or when portaging or scouting rapids.
- Any study participant should call 911 to report life-threatening or medical emergencies (i.e., chest pains) during the controlled flow releases. When calling 911, briefly describe the incident you are reporting to the dispatcher, remain calm, speak clearly, and stay on the line.
- If a safety incident occurs during the controlled flow releases, and a rescue is required, Boott will notify Project operations staff. If the flow in the bypass reach can

safely be reduced to facilitate rescue, Project staff will reduce the flow as quickly as possible.

- Boott reserves the right to remove any participant from the Whitewater Study who does not follow the safety measures or is acting in an unsafe manner.

7 COVID-19 Protocols

COVID-19 is a new disease that presents hazards that must be considered and addressed as part of this Whitewater Study. Massachusetts Governor Charlie Baker declared a State of Emergency to Respond to COVID-19 on March 10, 2020, and the World Health Organization designated COVID-19 as a pandemic on March 11, 2020. On March 13, 2020, the President of the United States declared the COVID-19 pandemic a national emergency.

The Commonwealth of Massachusetts remains under an emergency declaration and has promulgated regulations and guidance to reduce the spread of COVID-19. The Commonwealth's regulations and guidance related to COVID-19 are available at <https://www.mass.gov/info-details/covid-19-updates-and-information>.

Boott notes that the Commonwealth's regulations and guidance are subject to change, and study participants must review the guidance and recommendations prior to arriving at the Project. It is the responsibility of each study participant to review and comply with the Commonwealth's regulations and guidance regarding COVID-19.

The spread of COVID-19 between humans most likely occurs when a person is within six feet of an infected person. Sources of exposure to COVID-19 include droplets of respiratory secretions produced when an infected person coughs or sneezes; these droplets are believed to enter the mouths and noses of people nearby and can be inhaled into the nose and lungs. Exposure can also occur by touching surfaces/objects contaminated with the virus (SARS-COV-2) that causes the disease and then touching the mouth, nose, or possibly the eyes. Activities that involve close (within six feet) contact with infected people or other sources of the virus, social conditions (i.e., high population density, frequent person-to-person contact, large group gatherings), or travel to areas highly affected by COVID-19 are risk factors for exposure to the virus. (OSHA 2020)

Hazards associated with exposure to the virus include developing COVID-19 illness, which has a wide range of symptoms ranging from mild to severe illness, and, in some cases, death. Symptoms may appear 2-14 days after exposure to the virus. People at higher risk for severe illness include older adults, people with severe underlying medical conditions (i.e., heart or lung disease, liver disease), people with asthma, and/or people that are immunocompromised.

The following COVID-19 protocols to prevent or reduce the likelihood of exposure to the virus will be implemented during the Whitewater Study:

- The Commonwealth of Massachusetts has issued a COVID-19 Travel Order, effective August 1, 2020. The Travel Order requires visitors and Massachusetts residents returning from certain states to complete the Massachusetts Travel Form and self-quarantine (or produce a negative COVID-19 test result that has been administered up to 72 hours prior to arrival in Massachusetts). ***It is the responsibility of each study participant to review and comply with the Commonwealth's COVID-19 Travel Order.*** Failure to comply may result in fines or legal action by the Commonwealth.
- For the safety of staff, contractors, study volunteers, and the public, Boott is implementing a COVID-19 screening for study participants. ***Participants must complete the COVID-19 Screening Form in Appendix B of this Safety Plan and email an electronic copy of the completed form to Kevin Webb with Boott at kwebb@centralriverspower.com. The completed COVID-19 Screening Form must be emailed the day before the controlled flow releases are scheduled to begin.*** Persons who do not complete the form or who answer any of the screening questions in the affirmative will not be allowed to participate in the Whitewater Study.
- When arriving at the Project, all study participants will have their temperature screened. Temperature screening will be conducted by Boott using a non-contact thermometer. Study participants exhibiting a temperature of 100.4 degrees Fahrenheit or higher will not be allowed to participate in the study.
- Study participants will maintain a minimum of six feet of social distance during the Whitewater Study, including tailgate safety meetings. If appropriate social distancing cannot be maintained, use of a face covering is required.
- It is the responsibility of each study participant to have the appropriate PPE to prevent or reduce the likelihood of exposure to COVID-19. This PPE includes a face covering and hand sanitizer and/or sanitizing wipes.
- To prevent or reduce the likelihood of exposure to COVID-19, the following hygienic practices will be followed by all study participants:
 - Wash hands regularly and thoroughly with soap and water, for a minimum of 20 seconds. Hand sanitizer (containing at least 60 percent alcohol) may be used if soap and water is not available;
 - Avoid touching your nose, mouth, and eyes and sanitize hands before and after eating;
 - Cover coughs and sneezes with a tissue, or cough and sneeze into upper sleeve if tissues are not available;
 - Properly dispose of tissues immediately after use (do not place used tissues in clothing pockets);

- Wash hands or use hand sanitizer after coughing, sneezing or blowing your nose;
 - Wipe-down frequently touched surfaces and equipment with sanitizing wipes;
 - Use disposable gloves if handling equipment that may be contaminated;
 - Avoid using or sharing other's equipment;
 - Avoid handshakes and direct physical contact with others; and
 - Always wash/sanitize hands after physical contact with others.
- **To reduce overall exposure, one-person crafts (i.e., kayaks) are recommended for use during the controlled flow releases.** If a multi-person craft is used, the total number of volunteer boaters on the craft should not exceed the minimum crew size necessary to safely operate the craft, and all volunteer boaters should be separated as far as possible.
 - Boott will operate a shuttle system between put-in and take-out locations. Study participants will load/unload their own equipment. A maximum of two occupants will be permitted in each of the shuttle vehicles, including a driver and passenger. Passengers must ride in the back seat, and both the driver and passenger are required to wear a mask or face covering while in the vehicle. Frequently touched surfaces (i.e., door handle, seat belt, etc.) should be disinfected after every shuttle trip.
 - Any study participant with signs or symptoms of COVID-19 must report symptoms to Boott and must leave the Project as soon as safely possible.
 - Specific guidance from the State of Massachusetts regarding COVID-19, including requirements of any local, state, and federal government directives and/or ordinances applicable to the study area will be reviewed prior to the study and implemented as necessary.
 - Boott reserves the right to remove any participant from the Whitewater Study who does not follow the COVID-19 Protocols or who is acting in an unsafe manner.

8 Contact Information

Contact information for emergency services, law enforcement, and Boott personnel are provided below. ***In the event of a life-threatening or medical emergency, call 911.***

City of Lowell Fire Department
99 Moody Street
Lowell, MA 01852
(978) 458-4588

City of Lowell Police Department
50 Arcand Drive
Lowell, MA 01852
(978) 937-3200


Lowell General Hospital
295 Varnum Avenue
Lowell, MA 01854
(978) 937-6000

Kevin Webb
Boott Hydropower, LLC
670 N. Commercial Street, Suite 204
Manchester, NH 03101
(978) 935-6039
kwebb@centralriverspower.com


9 References Cited

American Whitewater. 2005. Safety Code of American Whitewater. Available at:
<https://www.americanwhitewater.org/content/Wiki/safety:start>. Accessed September 8, 2020.

Occupational Health and Safety (OHS). 2020. COVID-19. Available at:
<https://www.osha.gov/SLTC/covid-19/>. Accessed May 28, 2020.



Appendix A Safety Plan Addendum



Appendix B COVID-19 Screening Form

**Lowell Hydroelectric Project
Whitewater Boating and Access Study Safety Plan**

COVID-19 Screening Form

Please read each question in the table below carefully and circle the answer that applies to you.

<p>1. Within the past 14 days, have you, or anyone in your household, been in close physical contact (6 feet or closer for at least 15 minutes) with a person who is known to have laboratory-confirmed COVID-19 or with anyone who has any symptoms consistent with COVID-19?</p>	<p>YES NO</p>
<p>2. To the best of your knowledge, have you, or anyone in your household, been in close contact with a person that is in the process of being tested for COVID-19?</p>	<p>YES NO</p>
<p>3. Are you, or anyone in your household, currently waiting on the results of a COVID-19 test?</p>	<p>YES NO</p>
<p>4. Have you, or anyone in your household, experienced any of the following symptoms in the past 72 hours:</p> <ul style="list-style-type: none"> • fever (over 100.4 degrees Fahrenheit) or chills • cough • shortness of breath or difficulty breathing • fatigue • muscle or body aches • headache • new loss of taste or smell • sore throat • congestion or runny nose • nausea or vomiting • diarrhea 	<p>YES NO</p>
<p>5. Have you, or anyone in your household, traveled internationally, been on a cruise ship, or been to a state other than a lower-risk state designated by the Massachusetts Department of Public Health (see https://www.mass.gov/info-details/covid-19-travel-order) in the last 14 days?</p>	<p>YES NO</p>

Name

Signature

Date

A completed copy of this COVID-19 Screening Form must be emailed to Kevin Webb with Boott Hydropower, LLC at kwebb@centralriverspower.com the day before the controlled flow releases.