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**Bend Whitewater Park Accident Evaluation, Findings and Recommendations**

**June 7, 2022**

**Background**

On April 30, a Bend Park & Recreation District (BPRD) employee received a call about an event while it was in progress on the surf wave at Bend Whitewater Park. A river user was surfing with several other people when he went down in the surf wave and remained underwater. The surfer was submerged at the surf wave gates in the whitewater channel. The other river users present tried, without success, to free the surfer. This phone call was concurrently timed with the call to 911 by whitewater park users on site.

The BPRD employee immediately started the emergency response protocol developed in consultation with Bend Fire Department. This protocol requires the flow control gates upstream of the surf wave to be lifted/closed to reduce water flows into the whitewater channel and to divert more water into the fish ladder. While the flow control gates were reducing water volume in the area of the entrapment, the employee observed on the webcam that the surfer still appeared to be submerged. Next, the surf wave gates were lowered, which ultimately released the surfer.

Surfers on-site retrieved the surfer and started cardiopulmonary resuscitation (CPR) until Bend Fire Department reached the island where the surfer received further treatment. Bend Fire Department took over emergency responses. The rescue effort by surfers while the victim was trapped lasted approximately six minutes. Paramedics arrived at the scene and administered lifesaving protocols for approximately 35 minutes and then transported the surfer to St. Charles Hospital. The surfer passed the following day.

**Reviewers**

The Bend Whitewater Park and the operation of the site were inspected by three groups who conducted a thorough evaluation. The three groups were:

1. BPRD staff – A staff team most familiar with the construction and operation of the surf wave inspected the site on May 2-5.
2. Engineers – A team of three engineers, one from OTAK and two from River Restoration (whitewater park designers), visited the site on May 5. They evaluated the entire whitewater park, including the conditions of the surf wave.
3. Whitewater Users/Responders Committee – A committee was convened by the Bend Paddle Trail Alliance (BPTA) consisting of experts in swift water rescue, Bend Fire Department, and experienced kayakers and surfers reviewed the modifications recommendations and overall operations of the park. They met on May 13 and May 20. BPTA’s recommendations are attached.

**Mechanics of Bend Whitewater Park**

The surf wave operates with a pneumatic bladder system that raises and lowers two gates in order to shape the wave. The gate system operates remotely from an iPad controlled by one of two BPRD staff members. In order to keep the wave in optimal surfing condition, additional pneumatic gates are used to:

* + divert flows between the channels of the park,
	+ maintain habitat levels for endangered frog species,
	+ control fish ladder flows to facilitate fish passage,
	+ maintain upstream fire suppression pools,
	+ mitigate frazil ice and ice dams, and
	+ aid in rescue/recovery situations.

All 26 gates must be monitored throughout the day and evening. Staff members monitor the wave and other river conditions while on-site and remotely. This effort is continual due to fluctuations in river flow.

The surf wave has been closed to public use since the accident in order for the wave and its features to be evaluated. The principal engineer prepared an inspection report following the evaluation on May 5. The bulk of the findings in the report focus on general operations of the entire park and are not specific to the surf wave. The purpose of inspecting the entire park was to identify potential hazards elsewhere and to evaluate the overall condition of the facility that opened in 2015. Per the assessment report, the park was observed to be working well, in operable condition with normal levels of wear and tear for its age.

**Contributing factors to the accident**

Video evidence indicates that the surfer fell off his board at the interface between the static wave block and pneumatic (moveable) gate, on river left. In this location, there is approximately a 1.5”- 2” space between the static block and the pneumatic gate. There is also approximately a 3” space between the bottom of the gate and the concrete base where the bladder and gate attach to the bottom slab of concrete that supports the wave feature.

Water levels on April 30 were seasonally low, which can make it more likely for a surfer to come in contact with the bottom of the river and/or the gate system. During higher water levels this condition becomes far less likely.

The surfer was wearing a surf-leash with a quick release, which connects the board to the surfer’s leg. Upon inspection days later, the leash is gray in color and is marked with black rubber across the majority of the length of the leash. The leash was significantly stretched and severed, indicating it experienced intense pressure/load. The black rubber markings likely came from the rubber framing around the pneumatic gate. The black rubber framing is intended to provide protection to a surfer from falling onto the edge of the steel plate.

A combination of the location on the wave where the surfer fell off his board, the low water levels, and the concurrent load placed on the surfer’s body from the leash and surfboard caught in strong current enabled the surfer’s foot, to become trapped at the interface between the static block and pneumatic gate. It is unknown if the surfer’s ankle slipped between the wave blocks by water pressure and body weight alone or if the extreme leash tension pulled the surfer’s leg deep into the juncture of the two blocks.

**Risks Assessment**

The Bend Whitewater Park is located within a dynamic river. Rivers change, carry debris (some of which can be hazards), and exhibit different flow conditions each day and throughout the day. Much attempt has been made to minimize risk, but it is not possible to eliminate all risk associated with the river. As in other recreation activities such as skate parks, swimming pools, or bike parks, inherent risk exists. The district works to minimize these risks through proper design, and implementation of operational safety measures to be carried out by staff and users, each having an important role.

Current signage addresses anticipated risks that existed prior to this accident. There is a sign located along river-left that talks about how to use the facility and a second sign at the surf wave put-in that instructs surfers not to use leashes as they can get tangled and cause death. Other district information about the whitewater park also includes warnings about the use of leashes at the park.

The placement of sweepers between the gates will reduce the chance a body part can be entrapped, but may not eliminate a cord or leash carried by a surfer. The gaps between the static and pneumatic gates prior to this accident were not perceived. Even though it is believed the leash is a contributing factor, the gap between the gates should be addressed in order to reduce this area as a risk.

Use of personal floatation devices (PFDs) by all river users would be wise. The use of PFDs on waterways in Oregon is under the jurisdiction of the Oregon State Marine Board. Other agencies have no authority to create or enforce rules on waterways. There are no state regulations for non-boaters in Oregon, which includes surfboards, body boards, inner tubes, float tubes, and anything else that isn’t classified as a vessel, or viable means of transportation. In other words, unless there is a paddle or some type of motor involved, it isn’t a boat and therefore isn’t regulated by state authorities.

The Marine Board’s regulatory authority only extends to boats, and they have no jurisdiction over the non-boating public. It would take an act of the Legislature to require PFD or helmet usage on water craft other than boats. It is recognized, however, that use of both helmets and PFDs would add to river user safety and should be strongly encouraged.

The surf wave is only one area within the whitewater park used by river users and therefore other risks are present. Continuous communication about the hazards of the river, use of proper whitewater equipment such as helmets and PFDs, and no leashes should continue and be strengthened in order to reach greater compliance.

**Recommendations and Reopening Considerations**

Recommendations have been developed and vetted by the engineering team and whitewater user/responders committee and include the following:

1. **Modifications to the Surf Wave Blocks –** Sweepers to be installed on the static blocks to eliminate any gap between the pneumatic gate and the static gate. The sweepers are to be installed onto the static gate and flush with the rubber edge framing attached to the pneumatic gate. (Note: These sweepers were installed on May 25 in order to take advantage of low-water level conditions. Waiting could have rendered the modification impossible to accomplish until water levels recede in the fall. The installation of the sweepers accomplished the desired effect.)
2. **Operational changes**
3. Prohibit the use of leashes in the park. As described above, it is not within the jurisdiction of the district to create regulations on Oregon waterways; therefore, it will continue to be the surfer’s responsibility to be equipped properly. BPRD staff will flatten the wave for all surfers if a leash is observed to obtain compliance with the rule change.
4. Moving forward, PFDs and helmets will be strongly recommended with signage emphasizing their use as standard river surfing gear. Helmets and PFDs worn should be properly fitted and meet appropriate standards for class III or IV whitewater. A communications campaign will be created to support river surfers with website information, handouts at local retailers, videos, social media, etc. This is expected to be a long-term effort, similar to the seasonal support for river floating.
5. Upgrade signage on the island accessing the surf wave (river-left) and at the surf wave staging area with whitewater safety guidance (i.e., reinforce no leashes, and strongly encourage use of helmets and PFDs as standard river surfing gear, and a phone number to call for immediate attention to emergency issues (911)).
6. The pneumatic gates operate off an air compressor to inflate and deflate the gate bladders. BPRD staff to research the ability to upgrade compressor air chamber to expedite movement of the gates. The faster gates move, the quicker the response times can be.
7. Add a BPRD webcam capable to zoom, tilt and scan to better monitor the whitewater park.

**C.** **Prior to reopening**

1. Install sweepers between the static wave blocks and pneumatic gates within the surf wave on river left and right. (Completed)
2. BPRD staff to meet with Bend Fire Department to review rescue protocol and to make changes as necessary to expedite river rescue efforts.
3. Create and install signage at the surf wave put-in and along river left to educate whitewater users about safety procedural changes: the prohibition of leashes, and strongly recommend the use of helmets, and PFDs. Begin communications campaign implementation as identified above.

Tentative reopening of the surf wave is scheduled for June 18 if the three items listed above are in place.

**Attachments**:

* Incident Report
* BPTA letter resultant from Users/Responders Committee