



## Birch Bay Water Slides Injury Event Investigation Summary February 29, 2024

A serious injury event occurred at Birch Bay Water Slides (BBWS) on August 25, 2023. This report summarizes the Whatcom County Health and Community Services (WCHCS) Department investigation of this event as of February 29, 2024. Our investigation includes information gathered during:

- A site visits to BBWS on August 29, 2023; and
- Correspondence with BBWS management; and
- An office meeting between BBWS and WCHCS staff on November 28, 2023; and
- A site visit to BBWS on February 2, 2024.

### **Background**

Birch Bay Water Slides (BBWS) is a [\*\*\*Recreational Water Contact Facility\*\*\*](#). BBWS is subject to the provisions of Washington Administrative Code (WAC) Title 246 chapters 246-260 and 246-262. WCHCS issues a permit to this facility on an annual basis. WAC 246-262-080 requires a facility owner to: ***“...ensure proper operation to protect the public health and safety of the users and the water quality of the RWCF.”***

The facility operates seasonally from Late May through early September. The park consists of 10 slides/raft rides. The tower slides are comprised of four single-rider slides starting from a shared elevated platform and ending in a shared landing pool. The tower slides are identified to as “Snake”, “Corkscrew”, “Hairpin”, and “Twister”.

Each slide consists of a slide deck and splash guards.

- Slide decks are made from reinforced, prefabricated panels.
- Splash guards are made from non-reinforced prefabricated panels.
- Both slide deck and splash guard sections are attached to one another using bolts through flared ends on the exterior of each prefabricated panel.
- Interior surfaces are finished to provide a smooth surface. The seams between slide deck and splash guard panels are filled to produce a uniform, smooth sliding surface.

### **August 25, injury incident**

On August 25, 2023 at 12:53 pm a ***“Code Red”*** was reported by BBWS operations staff to BBWS management, indicating a serious injury had occurred. A guest who had exited the ***“Hairpin”*** slide presented with lacerations and bleeding. BBWS staff initiated first aid and called 911. An unrelated BBWS guest (self-identified as an ER nurse) volunteered to assist and helped to stabilize the injured guest. EMS arrived in 8 minutes and took over care of the injured guest. The injured guest was transported to St. Joseph Hospital in Bellingham.



BBWS staff decided to close the facility immediately after responding to the injury incident to assess conditions. The facility remained closed for the rest of the day. A site assessment by BBWS staff identified a section of splash guard on the **Hairpin** slide that was damaged – leaving a opening approximately 18 inches by 50 inches. The guest’s legs apparently passed through the damaged section of the splash guard, causing injuries to the guest’s legs.

On the day of the injury incident (August 25, 2023) facility staff decided to close the entire facility for the remainder of the season. Iain Buchanan, BBWS General Manager, notified Joshua Leinbach from WCHCS about the injury incident and informed our department of his decision to close for the remainder of the 2023 season effective August 25, 2023.

### **August 29, 2023 site visit and inspection**

WCHCS staff contacted Iain Buchanan and scheduled a site visit on August 29, 2023. WCHCS staff recorded information about the injury event and park operations. Findings were entered in Washington State Department of Health (DOH) Water Recreation Injury/Death Reporting Form. The site visit included:

- Observations of the failed splash guard panel and slide flume
- Recording information about the injury event, the victim, and emergency care provided at the facility
- Discussion of staff training and daily operations
- Discussion of maintenance and self-inspection activities

BBWS staff provided WSHCS staff a copy of a draft incident report which detailed the injury event and facility response as well as employee incident reports from the three lifeguards involved in the rescue and the park manager, and a witness statement from the bystander who assisted in the rescue response.

WCHCS staff observed the failed splash guard panel and slide flume from the splash/landing pool area and from ground outside the slide flume. WCHCS staff confirmed the location of the failed panel and verified that the failed panel presented a health and safety hazard. WCHCS photographed the area from both locations to provide a visual record of the location and nature of the failure. WCHCS staff did not enter the slide flume for examination due to weather conditions at the time of site visit.

WCHCS and BBWS staff discussed the facility’s Emergency Action Plan (EAP), employee certifications, and employee trainings. BBWS Park Operations Manager, Megan Hall, reported that all lifeguarding staff members have current life guard certifications. BBWS lifeguarding staff attend pre-season training and biweekly trainings during the operational season. Documentation describing facility’s EAP, staff certification records, in-service/training session agenda and



attendance, guard positioning and rotation, and job duties for guard positions was not available on site at the time of the visit.

WCHCS and BBWS staff discussed the facility's maintenance and operations materials related to the inspection and repair of slide elements. BBWS reported that slides were inspected annually by Kingworks Engineering and Safe Slide Restoration. Iain Buchanan reported that any repairs recommended by Kingworks were conducted within the timeframe recommended by Kingworks. Safe Slide Restoration has inspected and repaired slides each spring for several years, including like-for-like replacement of the River Ride flumes.

BBWS maintenance supervisor, Trevor Parson, reported that he inspects approximately two slides each day by walking and inspecting inside the slide flumes; this allows for most slides to be inspected twice per week – note that this is slightly different than what Trevor said during our meeting on November 28, 2023 (see below). If repairs are needed, park staff conduct the repair immediately. If repairs needs are identified during operational hours, access to the affected element is closed and the repair need is addressed after operational hours. Repairs are noted in the facility's water monitoring logbook; invoices are retained for larger repairs. BBWS was unable to provide operations manuals, maintenance schedules, maintenance logs, service records, or inspection reports at the time of the visit.

WHCHS staff informed BBWS that WCHCS was suspending the operational permit for the Tower Slides. This permit suspension was based on an imminent health risk – failure of one of the slide elements for an unknown reason. We notified Iain Buchanan that the permit suspension may be extended to the entire facility if requested operation and maintenance records are not available.

### **Documentation activities August 30 – September 8, 2023**

On August 30, WCHCS staff contacted BBWS by email to remind Iain Buchanan that a permit suspension for the entire facility would be issued if the materials requested were not provided by the following deadlines:

- Copies of inspection records from all 3rd party contractors, documentation for self-inspection and repairs in preparation for and during the 2023 season, or most recent if not yet available for 2023 season. Submit by end of day 8/30/23.
- Emergency action plan, 2023 staff certifications, lifeguard placement and rotation plan, lifeguard duties and responsibilities, training, in-service, and response drill records. Submit by 9/8/23.
- Final copy of incident report when completed.

On September 1, 2023, BBWS submitted copies of contracts for slide restoration work in 2022 and 2023 from Safe Slide Restoration. No other documentation was submitted. Since BBWS did not provide all requested information, WCHCS staff suspended the operational permit for all





BBWS elements. WCHCS staff met with Iain Buchanan at WCHCS offices to complete permit suspension documentation.

On September 6, WCHCS submitted a completed Water Recreation Injury/Death Reporting form to Washington State Department of Health Water Recreation program.

On September 8, Megan Hall of BBWS submitted all requested information and documentation related to Emergency Action Plan, lifeguard placement, rotation, training, and certifications. Information regarding operation and maintenance records was still not provided.

### **Office meeting November 28, 2023**

WCHCS staff contacted Iain Buchanan to schedule a meeting since we had not received all of the information requested previously. A meeting was scheduled for November 28.

Iain Buchanan, BBWS General Manager; Trevor Parson, BBWS Maintenance Supervisor; and Megan Hall, BBWS Operations Supervisor met with WCHCS staff. Megan again described the injury incident that occurred August 25 (details provided above under the header “August 25, injury incident.”)

Iain and Trevor explained that the slides are made from two types of material:

- The slide deck is made from reinforced material designed to support the weight of guests as they traverse each feature. Iain reports that the park has set no restrictions on maximum weight or height for guests. The slide deck material covers the lower half of the slide surface.
- The splash guards are made from a non-reinforced material that consists of roughly 18 inch by 8 foot long sections that are bolted together and finished with a durable coating similar to the interior of the slide deck to provide a smooth sliding surface. The splash guards are installed 1 to 3 sections high in areas such as sharp turns.

BBWS management hires an engineer each year to assess the structural integrity of the cement, steel and wood supports for each slide. Kingworks Engineering has conducted these assessments for the past several years. This assessment is conducted before the season begins so necessary repairs can be completed before the slides open to the public. According to Iain Buchanan, the engineering firm has not assessed structural integrity of the slide decks or splash guards.

BBWS hires Safe Slide Restoration Company (Safe Slide) to assess slide deck integrity. Safe Slide has also completed annual maintenance and repair in the interior of the slides to assure a smooth sliding surface, according to BBWS management. This work is also completed before the facility opens to the public.



After the slides open to the public each season, Trevor Parson and his staff are responsible for inspecting slide surfaces. These inspections assure the slide surfaces are smooth, that gaps and cracks have not formed in the panels, and that the slides are not developing leaks. Minor repairs are conducted by Trevor's team as needed. Trevor reports that his staff inspect 1-2 slides per day – assessing all slides at least once per week.

No records are maintained following routine inspection or minor repair work completed by BBWS staff during the operating season. Annual pre-season reports from Safe Slide and Kingworks Engineering are available, according to BBWS management. WCHCS requested copies of these reports for 2019-2023 during our November 2023 meeting with BBWS staff – some of these reports have not yet been provided.

BBWS staff state that no damage to the failed section of the splash guard was noted by BBWS staff, nor was any damage reported to BBWS staff by patrons prior to the injury. BBWS staff stated that they do not know why the splash guard failed. They could not identify witnesses who observed the incident as it occurred. As of February 2, 2024, BBWS staff report no further contact with the injured person or representatives of the injured person.

#### **Site visit February 2, 2024**

Attending: **Iain Buchanan** – Birch Bay Water Slides General manager

**Trevor Parson** – Birch Bay Water Slides Maintenance Supervisor

**Tom Kunesh** - Whatcom County Health and Community Services

**Joshua Leinbach** – Whatcom County Health and Community Services

Tom Kunesh and Trevor Parson walked the length of the Corkscrew, and Hairpin water slides at Birch Bay Water Slides (BBWS). Our observations include:

- Corroded fasteners (bolts) where splash guard panels attach to each other and where splash guard panels attach to the slide deck sections.



- Corrosion on fasteners and missing fasteners were noted in several locations, including areas where the splash guard failed.







- Missing or damaged fasteners appear more common on the windward (south and west facing) surfaces and less prevalent on other surfaces. The damaged section of the splash guard is on the windward side of the slide.
- Damaged fasteners in area of splash guard failure. A loose splash guard panel is noted just upstream from the failed splash guard panel.





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- A crack in a slide deck panel upstream near the failed splash guard panel.



- Downstream end of damaged splash guard. Note crack in panel above on close -up.

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- Previously repaired damage to a splash guard panel immediately downstream from the failed panel is noted. The area around two bolt locations is ripped out and has been patched to provide material for the bolt attachment.





WCHCS staff are not structural engineers and cannot draw conclusions about the reason the splash guard panel failed, nor can staff draw conclusions based on visual inspections that occurred during the August 29, 2023 and February 2, 2024, site visits. However, these findings indicate a need for a structural integrity assessment of the exterior portions of the slide deck and splash guards in addition to the interior the slide decks, splash guards and support structures by a qualified third party.

On November 28, 2023, WCHCS staff met with BBWS staff and requested the following documents and information:

- The original maintenance and operation specifications from the waterpark designer.
- Credentials and scope of expertise for Safe Slide technicians.
- Copies of slide deck/splash guard inspection reports from Safe Slide for the past 5 operating seasons (2018, 2019, 2021, 2022, and 2023).
- Copies of structural support inspection reports from Kingworks Engineering for the past 5 operating seasons (2018, 2019, 2021, 2022, and 2023).

On February 2, 2024, we reminded Iain Buchanan that we need a response to this request before we can establish conditions for permit reinstatement. As of February 29, 2024, most of the requested information has not been provided.

Report prepared by Tom Kunesh, RS - February 29, 2024.