

Entertain the Possibilities





Introduction

We love water parks and have built our business to support them all around the world. We know when you buy one of our products, it is to bring your park to life. Your water park equipment works hard for you to keep your guests happy, and that means you need to maintain it to keep it working properly. We are here

In this guide, we've outlined all of the activities you'll need to do in order to keep your attractions running smoothly for years to come.

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Optimal Times to Call for Parts and Services

To help you open your park looking great and performing great season after season, here is a calendar of recommended times to contact our Performance Services team as well as when to get refurbishment work done so that you can better plan and avoid last minute stress.



	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY
Water slide and aquatic play structure maintenance	OPEN PARK	SCHEDULE	INSPECTION	Q PERFORM	INSPECTION	REFURB N LOCATIO (MORE AVAI	VORK IN NS THAT SNOW LABILITY)	REFU THAT	RB WORK IN LOO DO NOT SNOW	CATIONS	REFU (LESS A	RB WORK IN ALL VAILABILITY)	LOCATIONS
		EMERGE	NCY PARTS AND	SERVICE				C	ORDER PARTS*				
Replacement parts										*	INSTALL PARTS		

^{*} AquaLaunch capsule or Master Blaster control parts require a 12-week lead time



OPTIMAL TIME PERIOD FOR SERVICE WORK

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The importance of water park maintenance

Proper maintenance of your water park and its equipment is essential to keeping park guests happy. A comprehensive maintenance plan ensures rider safety and comfort, extends the lifecycle of your equipment, and increases the curb appeal of the park.

Heading into the season with a comprehensive and organized strategy for the maintenance of your water park can eliminate significant attraction downtime and control costs. Properly maintained water park equipment is proven to be more profitable and will provide years of uninterrupted service and keep your guests playing the way they are meant to: SAFE and FUN. By keeping your equipment and all its components properly maintained, you will be ensuring high performance and high guest satisfaction.

RIDER SAFETY AND COMFORT

A satisfied guest is a safe and comfortable water park guest. There are many interactive and fun elements that make up the experience of riding down a water slide or playing on a play structure that need to be maintained in order to induce maximum smiles and laughter.

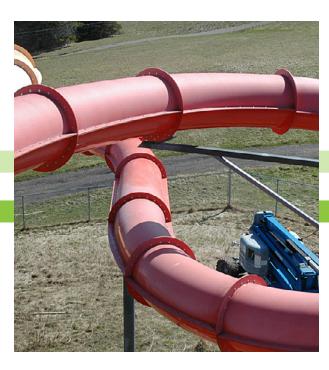


Slide Exterior Surface

The exterior of the slide is subject to weathering and deterioration. UV exposure eventually causes a white fade to appear where your slides are exposed to direct sunlight. If left untreated for years, UV exposure can deteriorate the coating, leading to flaking, and expose the fiberglass layers, potentially reducing the structural strength of the fiberglass parts.

Where long-term UV degradation has caused the structural fiberglass layer to be exposed, re-coating is recommended to renew the integrity of the fiberglass parts.

Your fiberglass water slide should be professionally inspected if it is five years or older.





Slide Joints

Slide joints play an important role in rider comfort, safety, and pleasure. Proper maintenance will keep the joints smooth, safe, and trouble-free year after year.

Fiberglass water slide sections "move" with ride usage and expand and contract daily with temperature changes. The caulking used to seal the fiberglass joints plays a part in this dynamic movement, and it is normal for it to wear down after some time. If not attended to, the deteriorated caulking will cause leaks that lead to corrosion, mineral build-up, damage to the landscaping, and of course, excessive water consumption as well as chemicals to treat the water.

Re-caulking is needed to stop leaks and close gaps that can become uncomfortable to riders.





Boomerango - Island H2O Live! Water Park



Slide Tower - Jungala at Vidanta Riviera Maya Resort

Sliding Surface

The sliding surface of your flume is subject to wear, weathering, and build-up. Regular maintenance is key to a smooth ride experience while helping to avoid costly repairs down the road.

Waxing plays a big role in protecting your slide's surface. For seasonal parks, before and after your season are essential times to wax. For parks with longer seasons, every three months is required if used continuously.

In most water parks, calcium is present in the water. Over time, this can accumulate on ride surfaces, resulting in a light whitish film despite waxing. If not removed regularly, this can build up to thick white deposits, which can affect safety and become difficult and costly to remove.

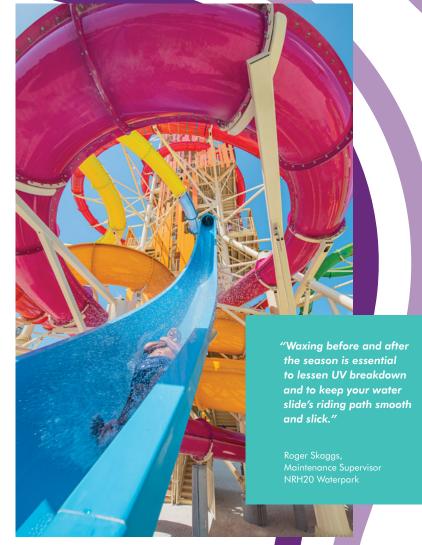
In addition to water deposit build-up, the sliding surface can also become faded due to direct sunlight and chemical oxidation from pool water.

In all three of these instances, a faded slide can be brought back to life through a highly involved process of wet sanding, power buff polishing, and gloss sealing.

Remember that fiberglass is a composite made up of layers. The gel coat acts as a water barrier so any nicks and chips need to be fixed so that water does not enter the fiber layer.



STEP-BY-STEP INSTRUCTIONS ON HOW TO BUFF AND WAX WATER SLIDES



Free Fall - Thrill Waterpark at Perfect Day at CoCoCay

Towers, Stairwells, Decks, and Pathways

As a guest climbs the stairs to their destination to embark on the thrilling adventure of riding a water slide, park operators need to ensure they get there safely and comfortably. The climb up the slide tower is the beginning of the experience for your water park guest.

This remains true as they weave through the stairwells and decks of a play structure. As towers, stairs and platforms age, they are exposed to weather, pool chemical deterioration, rust and corrosion. Problem areas can be reconditioned or may need to be replaced.

Keeping all of these areas clean and safe ensures a guest starts the experience off on a good foot, literally.

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Season Start-up

After a piece of equipment sits dormant during the off-season, it needs some attention before it's ready to entertain eager water park guests. Off-season downtime is the perfect time to conduct a thorough inspection, cleaning, and testing of all water park equipment.

A proper season start-up regimen will safeguard your attractions to make sure they operate the way they are intended. Before the gates open, the park and its equipment may require repairs or upgrades and it's important to think ahead to ensure there is enough time put aside to complete all necessary repairs before opening day.



Flip to the end of this guide for your Printable Maintenance Tools, including a complete season start-up checklist!

Winterizing

Winterization is the process of preparing your equipment for the winter layover. It can involve draining, cleaning, disassembling, and properly storing equipment during the offseason to further extend the product's life.

Winterizing your equipment is very important to reduce the amount of degradation that occurs during winter when your water slides, towers, and play structures are exposed to the harsh elements.

If a park and its equipment are inadequately winterized, there are risks of incurring additional and unexpected costs. For example, if water supply and drain pipes of water slides and play structure are not properly drained at the end of the season and exposed to freezing temperatures, the water can freeze over the winter, causing the water volume to expand and leading to blown gaskets and seals.

"Poor seasonal shutdown can cost significant time and money in the spring when you realize you have to get things repaired, replaced and/or cleaned."

Pat Finnegan,
Former Director of
Operations
Wet'n'Wild Orland

EXTEND THE LIFE OF YOUR ATTRACTIONS WITH REGULAR MAINTENANCE

To extend the life of your water slide, play structure or other water park equipment, it's important to conduct regular maintenance services.

- Water slides require polishing and sealing of the riding surface to reduce the risk of cracks and chips.
- Play structures have small moving parts and valves that need to be checked regularly to keep water flowing steadily.
- Wave generating equipment relies on its pumps so keeping them properly maintained is essential.

Completing specific milestones will ensure your equipment is operating properly season after season, thus reducing the risk of major annual repairs and replacements.



Proper polishing and sealing provides protection from UV deterioration and water deposit accumulation, reducing slide fading and premature deterioration.

Daily Inspections

Daily inspections include quick checks and tests that ensure your water park guests have a safe and fun day at the water park. Inspecting all major rides and park equipment before the park opens each day to ensure they are operating properly reduces the risk of accidents and potential liability. The daily inspections don't take a long time each day, but can save time and money in the long run and improve overall customer satisfaction.

Permanently bound log books should be kept to record all inspections, operational tests, water quality monitoring, accidents, complaints, and unusual occurrences that may require more detailed inspection, leading to repairs for risk mitigation. These can also be useful to demonstrate your duty of care was carried out should any legal evidence ever be required.



See the "Conducting Regular Maintenance and Service" section for a more detailed overview of the daily inspection checklists.



Your daily inspections should cover everything from physically walking the water slide flumes to inspect them and ensure they're clear to checking water flow and water chemistry.

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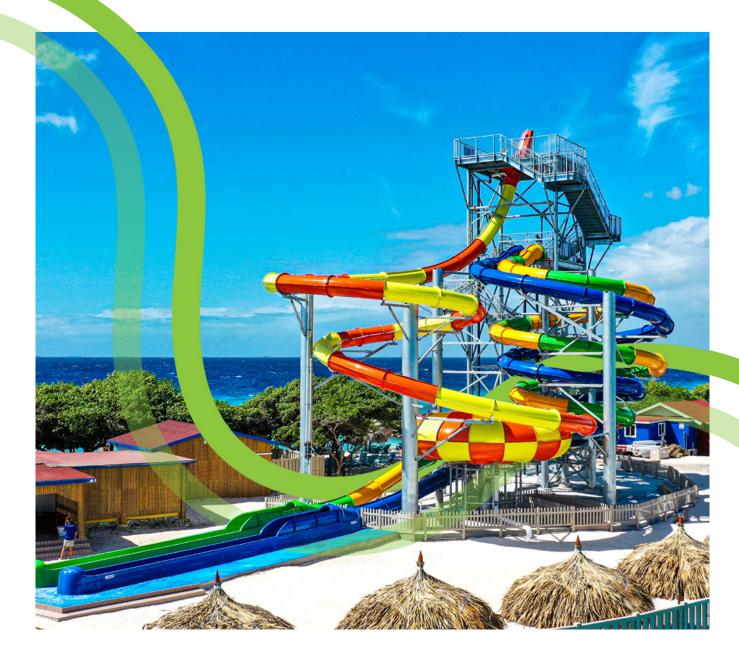
If you don't take the time or plan for proper maintenance, your park's attractions can lose their luster—and





Customer perception is a factor in return business, so careful maintenance helps keep your park looking at its best. Make sure the slides stay bright, the fiberglass shiny, and the atmosphere positive and attractive by paying attention to maintenance details. Taking action to ensure operations staff eliminate rust, calcium build-up, and any broken spray toys, for example, will increase guest satisfaction and your water park's curb appeal.

The option to change the colour of your water slide or play structure also exists if you feel your water park needs a facelift and some refreshing. At WhiteWater, we can also help add theming elements to give structures an updated new look.



BUDGETING ACCORDINGLY

Avoiding regular maintenance may seem like a way to save costs in the short term but will actually cost more in the long term and may lead to safety issues. Regular maintenance can prevent major repairs and replacements, ensuring you don't need to conduct emergency repairs during the operating season, which is very costly.

Breakdowns of major attractions can result in unhappy customers, loss of revenue, and an increase in maintenance costs. By budgeting and conducting regularly scheduled maintenance, your risk of downtime is significantly diminished.

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Creating your maintenance plan in 6 steps

There are multiple milestones of a maintenance plan that you must consider. Planning the maintenance schedule you should be following during the off-season as well as allocating resourcing to your season start-up plan are essential for a successful operating season. There are daily, weekly, and monthly maintenance measures to take that ensure each day is a great one for every guest.

The following 6 steps take you through the process of creating your maintenance plan, the ideal reference tool to guide you through your entire year of maintenance, services, and repairs.

The manufacturer's operations and maintenance (O&M) manual is the best tool for specific maintenance requirements and instructions.





Take Inventory

Take inventory of all the equipment in your park and develop a list and schedule of required maintenance for each

Your inventory should list of all the major components of the attraction, as well as manufacturer and model information and specifications, local vendor or supplier and technical representative contact information, warranty information, and estimated costs.



Set Your Schedule

The next step is to determine the frequency that each item should be checked. The day-to-day maintenance requirements, even if they seem obvious, need to be line items within your maintenance plan.

Additionally, have a replacement plan — yearly, or every three or five years — that replaces either equipment or parts, and budget for it. The maintenance schedule for year-round and seasonal parks will differ as will indoor and outdoor



Craft Your Game Plan

Seasonal water parks have the advantage of being able to perform repairs without disrupting the operations. As part of your repair and replacement plan, at the end of the season, you take note of the major repairs and replacements that will need to be completed prior to your upcoming opening.

While it's difficult to do the same type of major repairs to a year-round facility, proper planning allows operators to anticipate repairs and minimize disruption. While some maintenance tasks can be scheduled months or even years in advance, others can pop up more suddenly, and operators need to be prepared. Sit down and think of the critical items that, if they fail, will shut down the attraction immediately, or if you do continue operating, could lead to injury. Identify high risk areas and have a game plan and perhaps a backup.

Include in your game plan to have spares and repair kits for critical items that could shut your attraction down if it fails.

"Plan ahead! A preventative maintenance program is only effective when you have a schedule of tasks and plan on when to complete them."

"Don't be afraid of change and always challenge the status quo of your maintenance plan!"

Anthony Sabo Rides Maintenance Manager Columbus Zoo and Aquarium



Budgeting for major and minor repairs is integral to the success of a preventive-maintenance plan. Use your maintenance tasks checklist as a list of line items that require budget numbers, enter the estimated cost of each item and its date that the cost may occur.

Once complete, submit your summary budget to your approver for implementation and look forward to seeing your water park funded for improvement and maximum customer enjoyment.

Your long-term plans should include an inspection and possible recommissioning over a 7-10 year time frame. Over time, there are degradations to equipment that could potentially cause safety issues.



Contact WhiteWater's Performance Services team for full inspections and budgeting assistance: +1.604.273.1068 or aftersales@ whitewaterwest.com

Educate Your Team

Ensure staff who are required to deal with the water park equipment are familiar with it and receive the training they need to operate the equipment safely. This can be particularly challenging in a seasonal environment, but if those who are meant to carry out your maintenance plan aren't properly trained, your plan won't be very effective.

The employees in charge of maintenance inspections should be put through a basic training program to familiarize themselves with the components of the aquatic facility. The most effective way to safeguard your maintenance plan is to have your maintenance team utilize a series of checklists created by the manufacturers for each piece of equipment.

Document and Review

Documenting routine inspections is necessary to maintain compliance with O&M manual recommendations as well as occupational health and safety and insurance compliance. Accurately recorded and audited checklists help guide the process, ensure no items are left unmaintained or not inspected, while protecting the health and safety of maintenance staff, park patrons, and facility operators from liability.

A preventive-maintenance plan is not fail-safe but, carefully structured and adhered to, it can reduce the likelihood of major incidents and keep attractions running at their best.

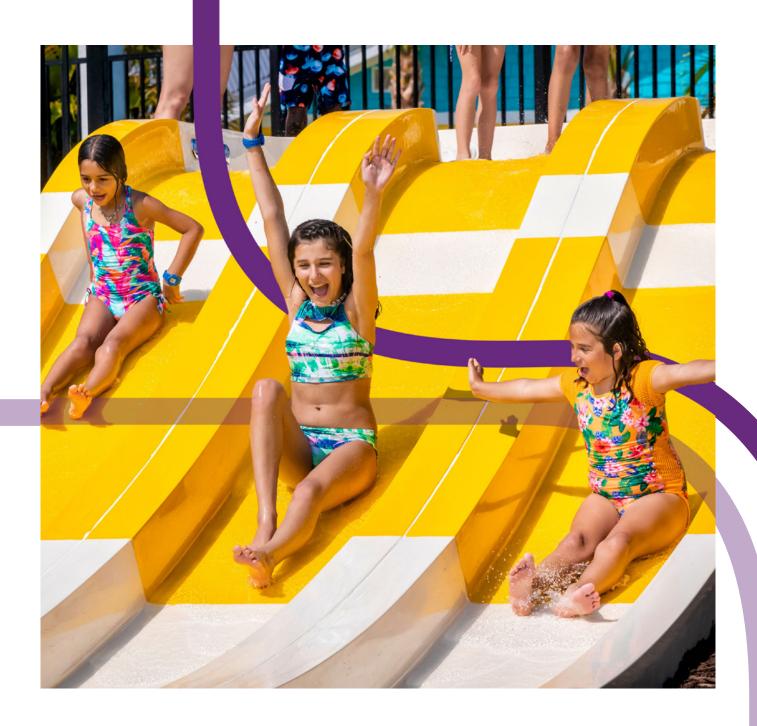
"Label your water slide joints! By labeling the joints, it makes it extremely communicate the exact location of any issues."



Conducting regular maintenance and service

Regular maintenance of the play unit is important not just for appearance or function, but in keeping the play unit safe. Although you will probably have a maintenance staff to perform repair work on the structure, attendants must also play a part through observing the play structure during morning start-up and daily operation.

The attendants will be the first line of defense in spotting potential hazards that might develop.



REGULAR CHECKLISTS

Different attractions have different maintenance requirements to ensure their safe and smooth operations. Here you'll find equipment checklists for a range of WhiteWater products.



A full printable checklist is availabe at the back of



WATER SLIDES MAINTENANCE CHECKLIST

Daily inspections of the water slide flume's riding surface must be completed to maintain a safe and fun environment in your water park.

Daily

Obstructions in slide paths
Cracks, chips, or bubbles in sliding surfaces
Rough patchwork at joints or cracks
Caulking protruding from joined flanges
Leaking seals at joints
Loose risers on turns
Excessive movement of flumes when walked on
Joints opening up
Proper inflation and condition of rafts, tubes and vehicles
Landing or pool bottom padding, if used, is in good condition and properly secure
Safety hazards (before turning on water)
Sufficient water flow in the channel and correct water level in splash pool or runout lane
Correctly operating pumping and filtration equipment
Properly operating conveyor system to ensure it poses no hazard

Ensure water flow is maintained in accordance with manufacturers' guidelines at all times throughout operations. Serious hazards may develop when water flow fluctuates or is blocked or interrupted in a water slide flume. Riders should not be allowed to enter a water slide when water flow or water levels at any area of a water slide are observed to deviate from the recommended settings.



Immediately shutdown the slide if the following are not correct:

- 1. Operational water levels not at marked levels
- 2. Operational water flow not at correct flowrate
- 3. Vehicle condition is not acceptable
- 4. Slide is not clean and has calcium build-up

Specialty water slide parts require additional inspection and maintenance components, such as for AquaLaunch and Master Blaster®. For complete maintenance guidelines and how to care for the advanced equipment, please refer to the original manufacturer's operations and maintenance manual.

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PLAY STRUCTURE EQUIPMENT CHECKLIST

Daily, weekly, semi-annual, and end of season inspections of the structure's play area and mechanical systems must be completed to ensure all components are operating safely and uninterrupted. Regular audits of the daily inspection and maintenance checklist will ensure all inspections and maintenance tasks are up to date.

Da	ily
	Obstructions in play area pathways
	Cracks or chips in deck surfaces
	Chipped or peeling paint
	Properly secured and tied net lashings
	Cuts, tears or damage to climbing nets, safety nets, and web crawl tunnels
	General wear of climbing nets, safety nets, and web crawl tunnels
	Excessively sagging climbing nets
	Proper operating pressure and flow to all effects
	GPM flow rates conform to design flow rates for each water slide
	Empty filter baskets of lint and debris
	Water levels in shutdown lanes are at correct operating levels
We	Aligned torque indicators on the tipping bucket's lock nuts Delamination or excessive wear and tear to tipping bucket façade Damaged safety net handrails, support bars or attachments Check valve operating assemblies Clogged jets and nozzles causing ineffective operation of interactive elements
Se	mi-Annualy Loose connections between tipping bucket support frame and the structure's stand pipes Loose metal roof cladding
	Signs of fatigue in the tipping buckets pivot shaft (cracking of metal or welds)
	Free swinging tipping bucket with properly secured bearings



All daily inspections to water slides apply to the water slides that are also part of your play structure.



WAVE GENERATING EQUIPMENT CHECKLIST

Daily, weekly, semi-annual, and end of season inspections of the wave generating equipment mechanical systems must be completed to ensure all components are operating safely and uninterrupted.

Da	nily
	Tight nuts and bolts and tighten as required
	Air leaks from compressed air system
	Unusual noises from fans or compressors
	Excessive motion of fans and compressors
	Air filter bowl drainage
W	eekly
_	
	Oil level of air compressor and top up if necessary
	Compressor air receiver for full drainage
	Properly drained and cleaned air filter bowl
	Pressure of air supply value set to O&M manual levels
	Wave control valve cylinders are properly mobbing back and forth with the same speed as the other control valves
	Tightness of nuts on all bolted joints on swivel arms
Ch	eck After 150 hours of Operations for:
	Tighten all bolts as required
	Leaks in air connection, joints, and unloading lines
	Air compressor filter and clean as required
	Air compressor belt tension and adjust if necessary
	Clogged or dirty filter elements and clean as necessary
Ch	eck After 800 hours of Operations for:
	Change of air compressor oil
	Greased main fan bearings
	Greased wave control valve bearings

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FLOWRIDER® EQUIPMENT CHECKLIST

If damage on any FlowRider attraction is left unnoticed and/or unattended, small problems (e.g. small holes, tears, or bubbles in the ride surface) can result in massive issues and potential ride shutdown. Operators must ensure hazards are removed immediately; this is achieved through conducting inspections on a regular bases.

D	a	П	y

Excessive dirt build-up
Sharp or pointed foreign objects or debris that can easily damage the ride surface and/or system overall, especially under nozzle flaps and side closures
Sharp or pointed items on riders' clothing, shoes, back pockets, etc.
Tears, cuts, cracks, delamination, and/or bubbles
Fraying seams across the entire ride surface
Loose or broken bars, specifically in the rear recovery/pillow padding area
Sharp edges, burrs, splinters or damage on queue area handrails
Security of all grates covering pump area
Properly functioning buttons, switches, and indicator lights on pump controls
Sufficient water level in tank, so as to avoid flow decay (occurs when too low)
Sufficient ride surface tension (flow decay occurs when too loose) Appropriate nozzle aperture – should be 1.5" to 2.5" Power usage reading – should be between 90 and 98 percent
inually
Sufficient tightness of all bolts supporting steel structure supporting pillow padding
Sufficient tightness of all bolts that connect pillow padding brackets to the walls
Structural integrity of steel at rear
Structural integrity of steel at front; pay special attention to the joints and check for cracked or broken welds
Properly seated side closures; there should be no gapping
Sufficient tension at each tension point at rear and on each side
Tightness of each bolt holding tension members in place



CHEMICAL BALANCE INSPECTIONS

Proper water chemical balance recordings must be obtained each day before the facility is opened to the public. While the facility is operational, water quality testing should be performed at intervals in accordance with local health authority's guidelines.

Inspections should also be made during periods of heavy usage to ensure circulation and filtration systems are handling peak loads. The attendant should be keeping logs of all water tests performed to ensure consistency, accountability, and proper testing methods.

If water quality is not maintained within health authority guidelines, it will also cause long-term damage to the equipment. Mineral deposits or scale can form on equipment, causing deterioration or oxidation/rusting of equipment.

Also, heavy dosing of chlorine or other chemicals to "shock" the water can cause spikes in water chemistry that is also detrimental to equipment. Shocking should be avoided, as it can cause fading of paint or coatings, and can void the warranty.



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PRE-SEASON STARTUP PLANNING

Before opening to the public, all park equipment needs to be thoroughly inspected and tested following an extended period of shutdown.





PLAY STRUCTURES PRE-SEASON CHECKLIST

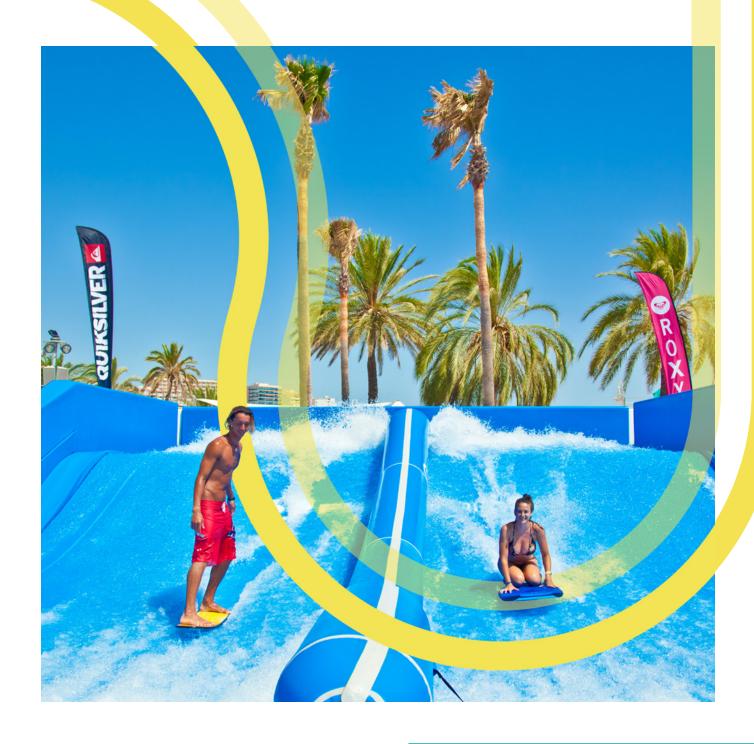
Filling pools
Checking under platforms and behind skirted in areas for leaks
Checking water supply to each interactive feature
Cycling valves and replacing worn valves
Inspecting restrictor plates, valves, and restrictive areas of flow to remove debris blockages
Checking and balancing water chemistry
Checking water supply filters for blockages and build-up
Walking all water slide flumes, inspecting joints and ride surfaces, clearing out debris
Inspecting slide tower stairs and all slide entry tubs
Testing any electronic slide traffic systems
Run water in all equipment prior to opening to ensure flow is consistent and flow rate is as required in the O&M manual, with no leaks, pooling water, or standing water
Cleaning and waxing the water slide flume
Checking the grating, dewatering grates, and other drain systems to ensure they are freeflowing



WATER SLIDES PRE-SEASON CHECKLIST

Filling pools
Checking and balancing water chemistry
Checking filters for blockages and build up
Inspecting all valves and wear and tear items on play structures
Walking all water slide flumes, inspecting joints and ride surfaces, clearing out debris
Inspecting netting and stairs in play structures for holes, chips, or cracks
Inspecting slide tower stairs and all slide entry tubs
Testing any electronic slide traffic systems
Run water in all equipment prior to opening to ensure flow is consistent and ensure water flow is as required in O&M manual and no leaks, pooling water, standing water
Cleaning and waxing the water slide flume

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END OF SEASON REQUIREMENTS

The end of the operating season is the time when a thorough inspection of all water park equipment should be performed. This ensures that if any repairs are needed, they can be performed before the next operating season.

"To avoid changing your gaskets yearly, it's important to winterize your play structure by draining all the pipes properly. Take the bleed cap off and let the water drain, otherwise it will freeze and expand and look for some way out, which will probably be your gasket seal!"



PLAY STRUCTURES END OF SEASON CHECKLIST

Drain the pool and play unit of all water
Drain the large tipping bucket and leave the drain open for the winter season
Open all handwheel and lever operated valves and leave them open for the winter season
Make sure all pull rope valves are open during draining
Make sure all basins, water curtains, and small tipping buckets are empty
Make sure all hose-bib basin feed valves are open
After draining basins, operate one-man and two-man pumps to remove any remaining water
Operate the bucket conveyor to insure all buckets are empty
Operate waterguns to allow any water to drain out
Make sure all waterwheels, runnels, etc. are emptied of standing water
WATER SLIDES END OF SEASON CHECKLIST
Turn off and drain all water supply pipes

Inspect water slide flume for required repairs Check slide joints for proper alignment

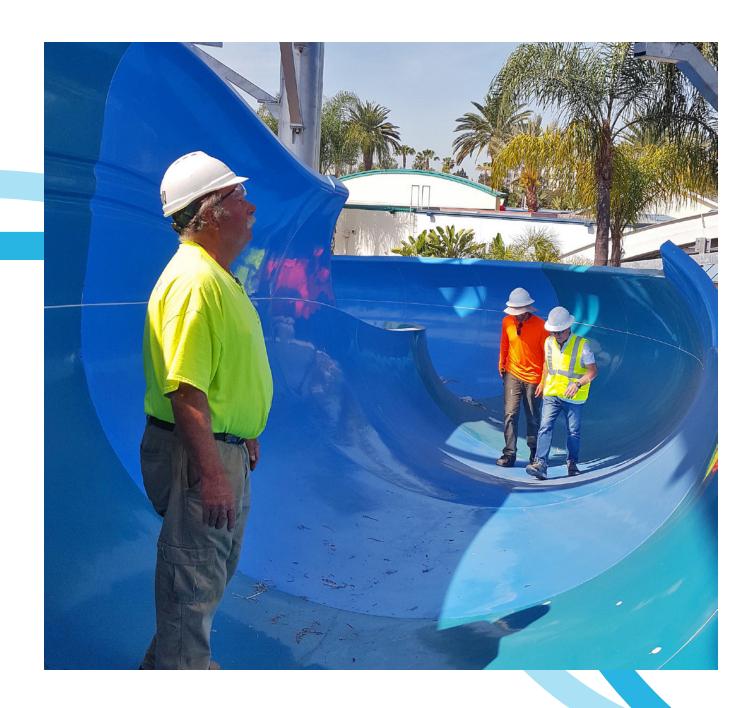
Create a maintenance plan and budget for the following season

Check caulking in slide joints



FLOWRIDER® END OF SEASON CHECKLIST

Drain the ride and filtration system completely and ensure that it remains free of water and liquid. Water that freezes in the ride has the potential to cause irreparable damage to the FlowRider
Remove the ride surface, clean and dry before placing in storage
As an option you can cover the attraction with a tent of some kind to ensure that the ride surface remains free of water and snow



IN-HOUSE VS. OUTSOURCED SERVICES

You can spend the staff resources trying to bring things up to snuff yourself, or you can simplify the process by hiring an outside service provider to maintain your water park. The benefits of this approach are extensive. A professional team will be able to pinpoint the exact maintenance needs of your park, and because they are performing these tasks at parks across the country, they have more experience than your staff, who also have other duties outside of park maintenance.

Benefits of Hiring Professional Technicians

A service provider will be able to perform standard maintenance and notify you if there are any concerns or potential problems.

A professional technician can evaluate your existing water park elements and perform a detailed cost analysis. If you want to be able to have your team perform minor maintenance themselves, most service provides will provide training. With vast experience in maintaining water slides and aquatic play equipment across the country, an experienced technician can show you what works and what doesn't.

Water park equipment is expensive and technical, especially when it gets damaged by uncertified technicians conducting repairs or performing maintenance services. Uncertified technicians or contractors can actually cause more problems than good.

Using untested and unproven repair methods, materials, or products can reduce the service life of your equipment by allowing UV deterioration, pool chemical fade and deterioration, and possibly result in having to prematurely remove material or equipment due to product failure.



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Creating your maintenance budget

Parks can control their costs by engaging in proper capital planning, which allows you to understand the expenditures for the year and budget accordingly. Emergency repairs caused by deprioritized issues and deferred maintenance will likely incur long-term higher costs than well-planned repairs and/or maintenance.

Well-maintained equipment is less problematic, and it frees up manpower and funds to do things that will really make your water park stand out, such as adding new equipment elsewhere, or investing in other improvements. Water park owners that don't develop a dedicated maintenance plan eventually realize the cost of not prioritizing a budget to dedicate funding to water park equipment maintenance over the years.

Budgeting for annual water park maintenance has been proven to defer long term capital replacement costs, increase safety, and dramatically improve the aesthetic appearance and attraction to park patrons.



ESTIMATING YOUR MAINTENANCE EXPENDITURES

There are many variables to take into consideration when estimating your maintenance expenditures in order to properly prepare your annual budget.

When determining the types of budgeting considerations your park faces when preparing your budget, ask yourself:

- Is my water park indoor or outdoor?
- What's my product mix?
- Does the location of my park present unique constraints barriers or challenges?
- How much training do my maintenance staff require?
- How many maintenance staff do I have on my roster?
- How many water slides are in my water park?
- What's square footage and length of each water slide flume that requires maintenance?
- Are there any environmental factors that will affect my maintenance plan (i.e. cold weather, extreme heat, storm season, water quality, salt water, UV exposure, etc.)?

In the first year, the maintenance budget will be an estimate based on best practices. Your second year will be refined based on the variances observed and experience gained from the first year. Year three will allow for further refinement and the clear definition of annual improvement opportunities based on the first two years. By following these steps, you'll have a reliable and robust maintenance budget based on the variables unique to your park.



Did you know
that indoor water
parks face higher
maintenance
requirements because
of their enclosed
moist environment?
The moisture in
the air facilitates
the chemicals used
throughout the park
to penetrate the
porous steel, leading
to more rust and
degradation.

COMPONENTS OF YOUR BUDGET

Various products require different treatments and maintenance to keep guests smiling and all your equipment operating safely. Conducting steps 1, 2 and 3 in "Creating your Maintenance Plan" will help to prioritize budgeted items and clarify what is required.

Annual Play Structure Maintenance Budget

Your play structure maintenance budget will be mainly allocated to general wear and tear items. These items include:

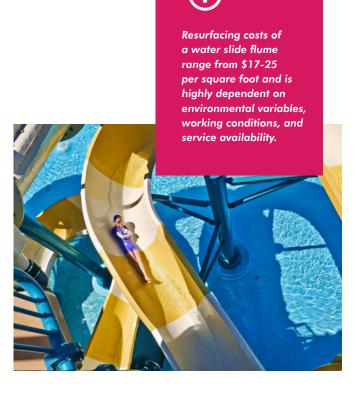
- Climbing and safety netting
- Web crawl tunnels
- Hose jets, pull ropes, valves
- Thematic elements
- Repair materials: paint kit
- Spare parts kit
- Cleaning the play structure

Long-Term Play Structure Maintenance Budget

The following long-term maintenance services and structure component repairs should be considered as the play structure ages:

- Fiberglass stairs and decks
- Buckets and bearings
- Repainting the play structure
- Replacement of thematic elements





Annual Water Slide Maintenance Budget

Your annual water slide maintenance budget will be mainly allocated to repairing the sliding surface. These items include:

- Gel coat chips, cracks, and blemishes
- · Slide joint sealant
- Repair materials: gelcoat repair kit
- Cleaning, buffing, and waxing

Long-Term Water Slide Maintenance Budget

Consider following these long-term maintenance services and structure component repairs for all stand-alone waterslides and the water slide features in your play structure ages:

- Resurfacing the water slide external flume surface and the sliding surface
- Recolouring the water slide to refresh the park
- Replacement of corroded slide joint bolts
- Replacement of sections of the water slide or replacement of the entire slide path
- Replacement of corroded structural steel tower, stair, and support elements
- Replacement of corroded structural bolts at steel tower, stair, and support elements
- Replacement of decking on tower platforms and stairs

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Understanding the ROI of maintenance

To understand ROI, it's essential to understand your costs versus your benefits achieved by the investment. The challenge is, many benefits are qualitative and hard to quantify with concrete numerical data. However showing the impact of maintenance can be an important part of winning approval for the budget.





COST-BENEFIT ANALYSIS

Costs









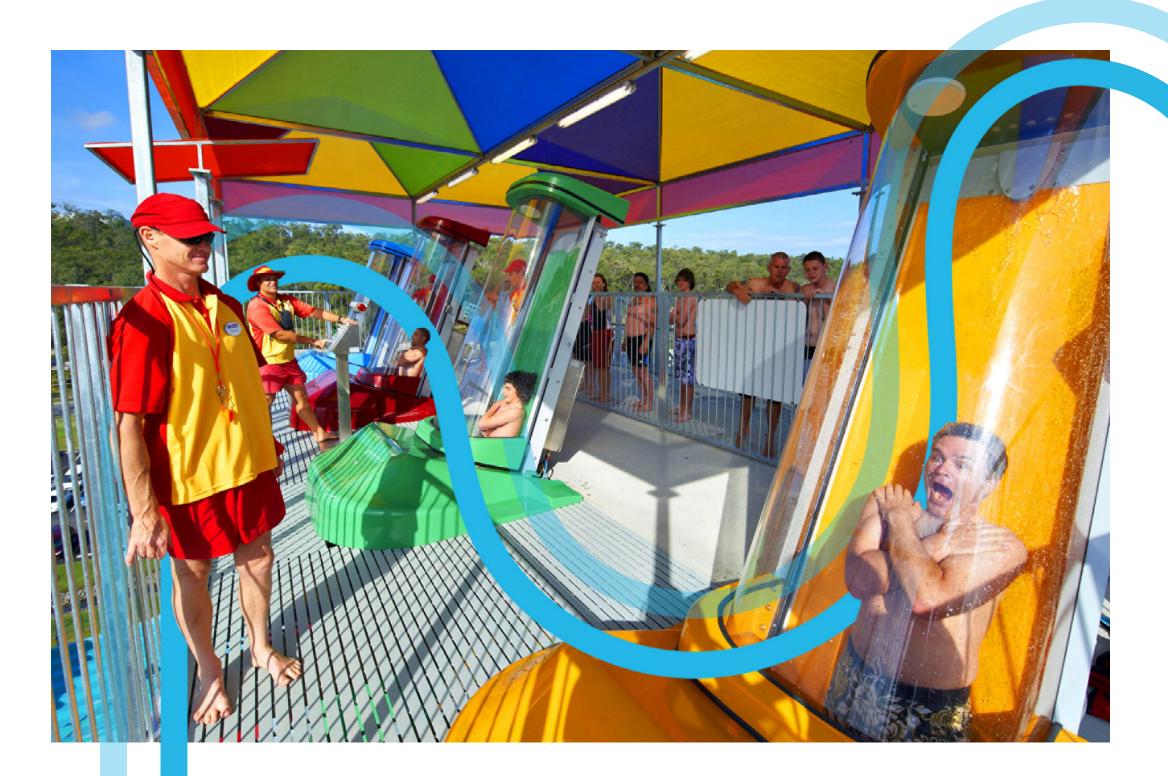
Labour (Staff Requirements)

"When you have something new to offer before the season opens, it encourages group of season pass holders. We experienced the majority of this revenue boost by promoting the brand new Baboon Lagoon,

Benefits

- Increase season pass sales by providing new opportunities for creative marketing campaigns
- Avoids costly downtime and refunding of gate fees
- Boosted guest perception and visual impact (guests prefer clean, new-looking products)
- Reduces last minute unplanned spending for emergency repairs and maintenance
- Extends the service life of water park equipment, lowers long-term capital costs
- Improved image of your water park's brand
- Increased safety and lower litigation costs

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We hope that this guide has helped you with some practical steps to plan and budget for regular maintenance. The experience of our customers around the world is that regular preventative maintenance helps keep their parks SAFE and FUN. Planned maintenance schedules minimize the risk of unforeseen stoppages, which can be very costly to repair and negatively impact customer satisfaction.

We make it our mission to help make our customers' parks successful in every way we can, which is why WhiteWater has a dedicated Performance Services department here to help you with some of the bigger maintenance jobs that you may choose to outsource.

If you need extra help or maintenance expertise please contact us at:

1.604.273.1068 aftersales@whitewaterwest.com

We love your water slides and rides and want to see them sparkle almost as much as you do!

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This guide is NOT an operations and maintenance manual.

If you need more support, Performance Services team is here to help you.

For full maintenance guidelines for your water park equipment please contact us:

+1.604.273.1068 whitewaterwest.com whitewaterwest.com/water-parks-maintain

Printable Maintenance Tools



Daily

Daily inspections of the water slide flume's riding surface must be completed to maintain a safe and fun environment in your water park.

M T W T F S S	
	Where applicable, ride vehicle is in good condition, clean, and free of mineral deposits. Air pressure is correct.
	Surfaces are clean, waxed, and free of any cracks, chips, bubbles, and debris.
	Drains, dewatering grates, and grating clean of debris
	Caulking protruding from joined flanges
	Leaking seals at joints. Joints opening up. Rough patchwork at joints or cracks.
	Loose risers on turns
	Excessive movement of flumes when walked on
	Slide entry and pool or shutdown lane water levels are correct.
	Proper inflation and condition of rafts, tubes and vehicles
	Landing or pool bottom padding, if used, is in good condition and properly secure
	Safety hazards (before turning on water)
	Sufficient water flow in the channel and correct water level in splash pool or runout lane
	Correctly operating pumping and filtration equipment
	Properly operating conveyor system to ensure it poses no hazard
	Drains, grates, and dewatering grates are clean and clear of debris



NOTE: Ensure water flow is maintained in accordance with manufacturers' guidelines at all times throughout operations. Serious hazards may develop when water flow fluctuates or is blocked or interrupted in a water slide flume. Riders should not be allowed to enter a water slide when water flow or water levels at any area of a water slide are observed to deviate from the recommended settings.





Pre-Season Startup

Before opening to the public, all park equipment needs to be thoroughly inspected and tested following an extended period of shutdown.

Filling pools
Checking and balancing water chemistry
Checking filters for blockages and build up
Walking all waterslide flumes inspecting joints and ride surfaces, clearing out debris
Inspecting slide tower stairs and all slide entry tubs
Testing any electronic slide traffic systems
Cleaning and waxing the water slide flume
Run water in all equipment prior to opening to ensure flow is consistent and ensure water flow is as required in O&M manual and no leaks, pooling water, standing water
Check all piping and drains including grates, dewatering grates, and other drainage areas.



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End of Season Requirements

The end of the operating season is the time when a thorough inspection of all water park equipment should be performed. This ensures that if any repairs are needed, they can be performed before the next operating season.

Turn off and drain all water supply pipes
Inspect water slide flume for required repairs
Check slide joints for proper alignment
Check caulking in slide joints
Create a maintenance plan and budget for the following season



AQUATIC PLAY STRUCTURES

Daily

Daily, weekly, semi-annual, and end of season inspections of the structure's play area and mechanical systems must be completed to ensure all components are operating safely and uninterrupted. Regular audits of the daily inspection and maintenance checklist will ensure all inspections and maintenance tasks are up to date.

M T W T F S S	
	Obstructions in play area pathways
	Cracks or chips in deck surfaces
	Chipped or peeling paint
	Properly secured and tied net lashings
	Cuts, tears or damage to climbing nets, safety nets, and web crawl tunnels Loose risers on turns
	General wear of climbing nets, safety nets, and web crawl tunnels
	Excessively sagging climbing nets
	Proper operating pressure and flow to all effects
	GPM flow rates conform to design flow rates for each water slide
	Empty filter baskets of lint and debris



NOTE: All daily inspections to water slides apply to the water slides that are also part of your play structure.







AQUATIC PLAY STRUCTURES

Weekly

Daily, weekly, semi-annual, and end of season inspections of the structure's play area and mechanical systems must be completed to ensure all components are operating safely and uninterrupted. Regular audits of the daily inspection and maintenance checklist will ensure all inspections and maintenance tasks are up to date.

W1	W2	W3	W4	
				Aligned torque indicators on the tipping bucket's lock nuts
				Delamination or excessive wear and tear to tipping bucket façade
				Damaged safety net handrails, support bars, or attachments
				Check valve operating assemblies
				Clogged jets and nozzles causing ineffective operation of interactive elements



AQUATIC PLAY STRUCTURES

Semi-Annually

Daily, weekly, semi-annual, and end of season inspections of the structure's play area and mechanical systems must be completed to ensure all components are operating safely and uninterrupted. Regular audits of the daily inspection and maintenance checklist will ensure all inspections and maintenance tasks are up to date.

1st	2nd	
		Loose connections between tipping bucket support frame and the structure's stand pipes
		Loose metal roof cladding
		Signs of fatigue in the tipping buckets pivot shaft (cracking of metal or welds)
		Free swinging tipping bucket with properly secured bearings







AQUATIC PLAY STRUCTURES

Pre-Season Startup

Before opening to the public, all park equipment needs to be thoroughly inspected and tested following an extended period of shutdown.

Filling pools
Checking under platforms and behind skirted in areas for leaks
Checking water supply to each interactive feature
Cycling valves and replacing worn valves
Inspecting restrictor plates, valves, and restrictive areas of flow to remove debris blockages
Checking and balancing water chemistry
Checking water supply filters for blockages and build up
Inspecting all valves and wear and tear items on play structures
Walking all water slide flumes, inspecting joints and ride surfaces, clearing out debris
Inspecting netting and stairs in play structures for holes, chips, or cracks
Inspecting slide tower stairs and all slide entry tubs
Testing any electronic slide traffic systems
Cleaning and waxing the water slide flume
Run water in all equipment prior to opening to ensure flow is consistent and the flow rate is as required in the O&M manual, with no leaks, pooling water or standing water





AQUATIC PLAY STRUCTURES

End of Season Requirements

The end of the operating season is the time when a thorough inspection of all water park equipment should be performed. This ensures that if any repairs are needed, they can be performed before the next operating

Drain the pool and play unit of all water
Drain the large tipping bucket and leave the drain open for the winter season
Open all handwheel and lever operated valves and leave them open for the winter season
Make sure all pull rope valves are open during draining
Make sure all basins, water curtains, and small tipping buckets are empty
Make sure all hose-bib basin feed valves are open
After draining basins, operate one-man and two-man pumps to remove any remaining water
Operate the bucket conveyor to insure all buckets are empty
Operate waterguns to allow any water to drain out
Make sure all waterwheels, runnels, etc. are emptied of standing water





Daily

Daily, weekly, semi-annual, and end of season inspections of the wave generating equipment mechanical systems must be completed to ensure all components are operating safely and uninterrupted.

M I W I F 5 5	
	Tight nuts and bolts and tighten as required
	Air leaks from compressed air system
	Unusual noises from fans or compressors
	Excessive motion of fans and compressors
	Air filter bowl drainage



Weekly

Daily, weekly, semi-annual, and end of season inspections of the wave generating equipment mechanical systems must be completed to ensure all components are operating safely and uninterrupted.

VV I	VV2	W3	W4	
				Oil level of air compressor and top up if necessary
				Compressor air receiver for full drainage
				Properly drained and cleaned air filter bowl
				Pressure of air supply value set to O&M manual levels
				Tightness of nuts on all bolted joints on swivel arms
				Wave control valve cylinders are properly mobbing back and forth with the same speed as the other control valves







After 150 Hours of Operation

Daily, weekly, semi-annual, and end of season inspections of the wave generating equipment mechanical systems must be completed to ensure all components are operating safely and uninterrupted.

	Tighten all bolts as required
	Leaks in air connection, joints, and unloading lines
	Air compressor filter and clean as required
	Air compressor belt tension and adjust if necessary
	Clogged or dirty filter elements and clean as necessary



After 800 Hours of Operation

Daily, weekly, semi-annual, and end of season inspections of the wave generating equipment mechanical systems must be completed to ensure all components are operating safely and uninterrupted.

Change of air compressor oil
Greased main fan bearings
Greased wave control valve bearings







Daily

If damage on any FlowRider attraction is left unnoticed and/or unattended, small problems (e.g. small holes, tears, or bubbles in the ride surface) can result in massive issues and potential ride shutdown. Operators must ensure hazards are removed immediately; this is achieved through conducting inspections on a regular bases.

MTWTFSS	
	Excessive dirt build-up
	Sharp or pointed items on riders' clothing, shoes, back pockets, etc.
	Tears, cuts, cracks, delamination, and/or bubbles
	Fraying seams across the entire ride surface
	Loose or broken bars specifically in the rear recovery/pillow padding area
	Sharp edges, burrs, splinters, or damage on queue area handrails
	Security of all grates covering pump area
	Properly functioning buttons, switches, and indicator lights on pump controls
	Sufficient water level in tank, so as to avoid flow decay (occurs when too low)
	Sharp or pointed foreign objects or debris that can easily damage the ride surface and/or system overall, especially under nozzle flaps and side closures



FLOWRIDER® EQUIPMENT

Weekly

If damage on any FlowRider attraction is left unnoticed and/or unattended, small problems (e.g. small holes, tears or bubbles in the ride surface) can result in massive issues and potential ride shutdown. Operators must ensure hazards are removed immediately; this is achieved through conducting inspections on a regular bases.

W1	W2	W3	W4	
				Sufficient ride surface tension (flow decay occurs when too loose)
				Appropriate nozzle aperture – should be 1.5" to 2.5"
				Power usage reading – should be between 90 and 98 percent





Annually

If damage on any FlowRider attraction is left unnoticed and/or unattended, small problems (e.g. small holes, tears or bubbles in the ride surface) can result in massive issues and potential ride shutdown. Operators must ensure hazards are removed immediately; this is achieved through conducting inspections on a regular bases.

Sufficient tightness of all bolts supporting steel structure supporting pillow padding
Sufficient tightness of all bolts that connect pillow padding brackets to the walls
Structural integrity of steel at rear
Structural integrity of steel at front; pay special attention to the joints and check for cracked or broken welds
Properly seated side closures; there should be no gapping
Sufficient tension at each tension point at rear and on each side
Tightness of each bolt holding tension members in place



End of Season Requirements

The end of the operating season is the time when a thorough inspection of all water park equipment should be performed. This ensures that if any repairs are needed, they can be performed before the next operating season.

Drain the ride and filtration system completely and ensure that it remains free of water and liquid. Water that freezes in the ride has the potential to cause irreparable damage to the FlowRider
Remove the ride surface, clean and dry before placing in storage
As an option, you can cover the attraction with a tent of some kind to ensure that the ride surface remains free of water and snow







EST. 1980

WhiteWater was born in 1980 with one clear purpose, to create places where families unite and make joyful lasting memories.

We achieve this by standing alongside our customers from concept to completion of award-winning attractions, from slides to water rides and everything in between. We aim to inspire our clients by unleashing our creativity to realize their ambitions; we craft solutions which make each park unique. We are dedicated to making products that operators can count on, because we understand the importance of reliability and efficiency on the bottom line.

As market leaders, we put our success down to our attitude, in all our years we've never once forgotten why we're here – to help parks solve problems, create immersive experiences, and delight guests all over the world.

We're here to create places where fun thrives.