THE BAKARI WILLIAMS AQUATICS MAINTENANCE AND SAFETY PROTOCOL

City of Arlington Aquatics

Table of Contents

POOL MAINTENANCE AND SAFETY

Chemical Safety and Storage

Pump room

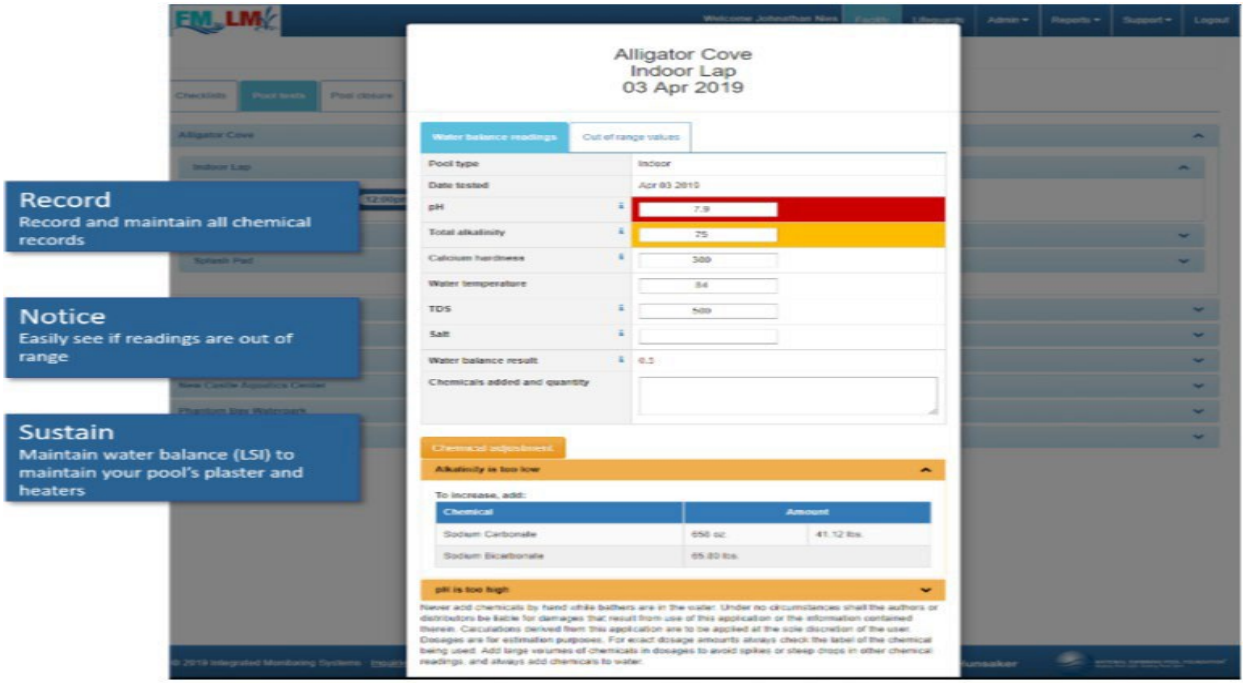
Our Systems

POOL CHEMICAL SAFETY

City of Arlington Aquatics

GOOD COMMUNICATION

- Establish a chain of command among handlers.
- Document the use of pool chemicals in Hydroapps (for example, keep records on the name of chemical added, the reason why it was added, the date and time it was added, and the amount added).



SAFE CHEMICAL HANDLING PRACTICES

1

Read product labels or MSDSs.

- Contact supplier or manufacturer if additional information is needed.

2

Use only pool chemicals in original manufacturer's labeled containers

3

Read the product name and directions before each use. Do *not* simply rely on the container's shape, size, or color to identify its contents.

SAFE CHEMICAL HANDLING PRACTICES

Keep

Children and animals away from the area when handling pool chemicals.

Use

Appropriate PPE when handling pool chemicals.

- Check the MSDSs to determine which PPE (for example, safety goggles or gloves) is needed

SAFE CHEMICAL HANDLING PRACTICES

Do *not* smoke while handling pool chemicals.

Use caution when opening containers to avoid splashing them and generating dust.

Follow the manufacturer's instructions on how to use the product.*

SAFE CHEMICAL HANDLING PRACTICES

- Do *not* mix individual pool chemicals together or with any other substances.
  - Do *not* mix different types of chlorine products.
  - Do *not* mix old and fresh chemicals, even if they are the same product Dedicate equipment — such as scoops, buckets, crocks, and their lids — to one pool chemical. Do *not* use this equipment for any other chemical.
  - Label the equipment to indicate which chemical to use with it.

SAFE CHEMICAL HANDLING PRACTICES

Use only dry equipment (for example, scoops) when handling chemicals.

Add individual pool chemicals to water, never the reverse.

Only pre-dissolve pool chemicals when directed by product label

Close containers properly after each use.

Wash hands after working with pool chemicals

Respond	Immediately and follow the emergency response plan.
Never	Put spilled chemicals back in the original container because they might be contaminated with substances such as dirt or grease.
Use	Separate, dedicated materials to clean up and appropriately dispose of each spilled chemical.
Do not	Pour spilled chemicals down the drain or sewer.

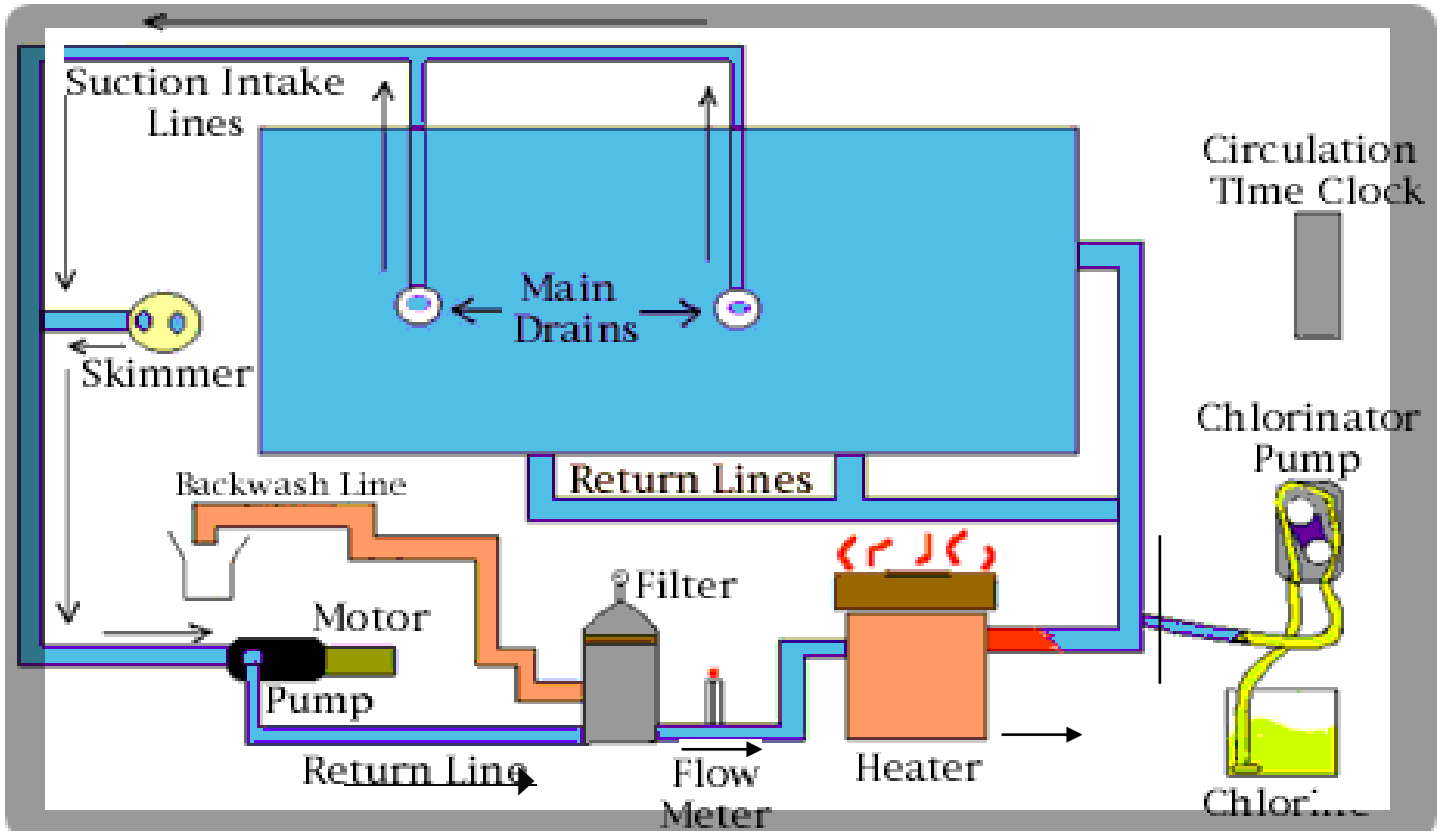
STORING POOL CHEMICALS

- Dress for safety by wearing appropriate equipment
- Separate incompatible chemicals (Acid and Chlorine)
- Lock chemical up to protect people and animals
- Keep chemicals dry and do not mix different chemicals
- Keep chemicals cool in a well-ventilated area away from direct sunlight
- Keep chemical closed in original container
- Store liquid chemicals low to prevent accidental contact.

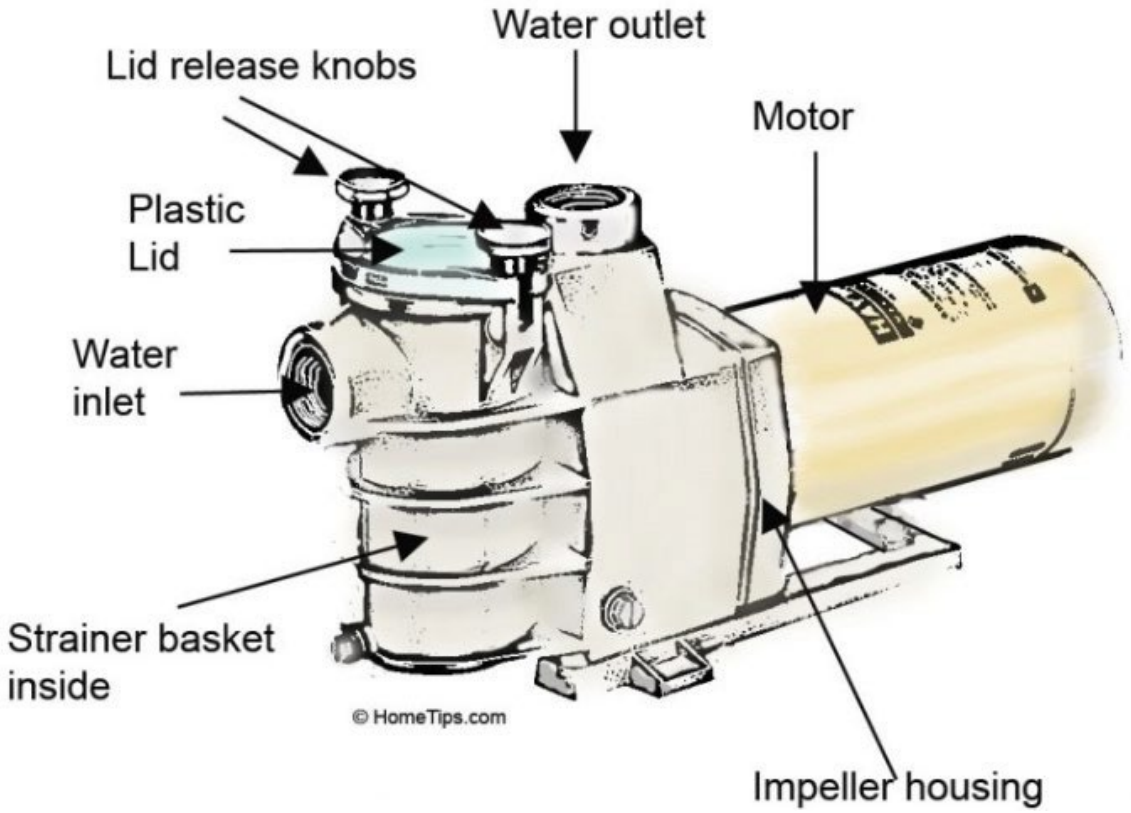
PUMP ROOM

City of Arlington Aquatics

THE PROCESS


Suction Intake Lines
Main Drains
Skimmer
Circulation Time Clock
Chlorinator Pump
Backwash Line
Return Lines
Filter
Motor
Pump
Return Line
Flow Meter
Heater

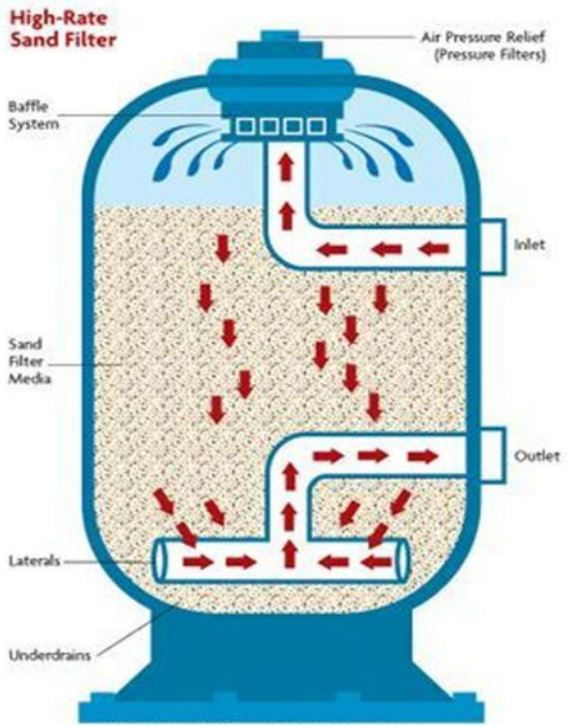
POOL PUMP


Water outlet
Lid release knobs
Motor
Plastic
Lid
Water
inlet
Strainer basket
inside
© HomeTips.com
Impeller housing

POOL FILTERS

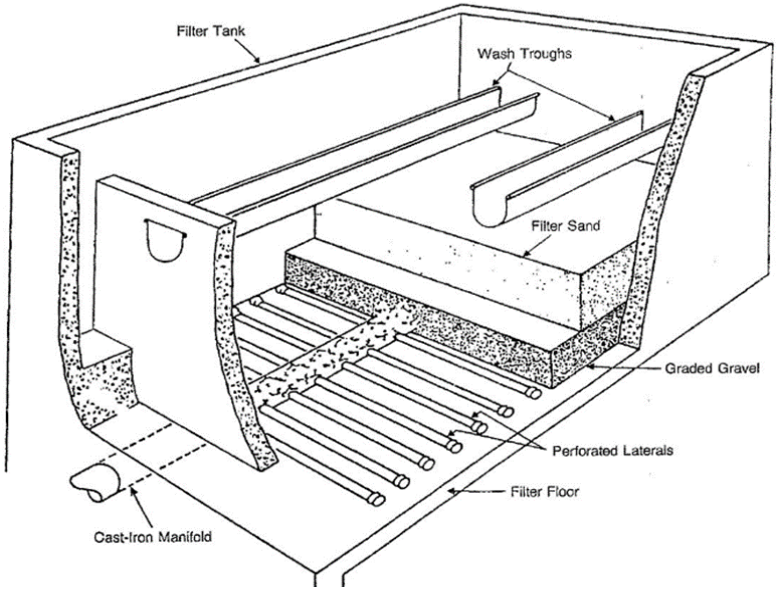
West, Moore and Wessler

- High Rate Sand filters
- BK & Mill



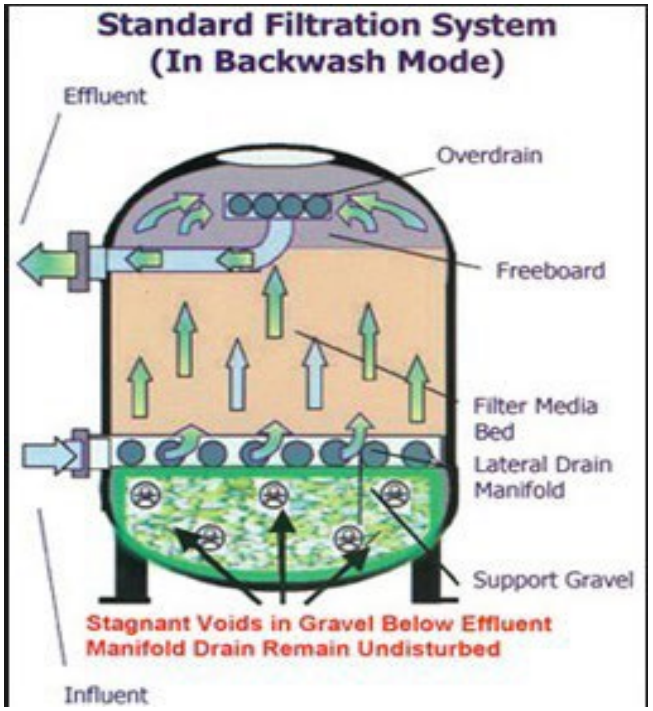
POOL FILTERS - BOLDEN

Type of gravity sand system with vacuum side pump



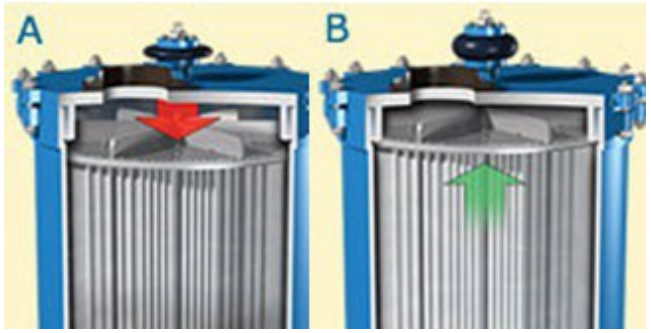
POOL FILTERS

- Backwash – Redirecting water flow backward through the filter to lift the entrapped soil and carry to waste.
- Backwash according to gauges



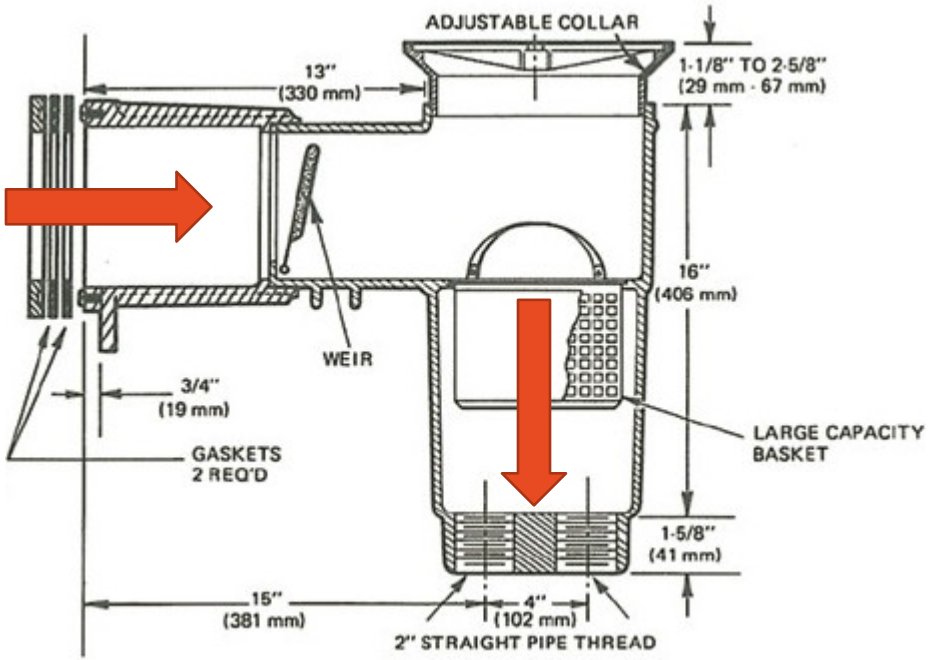
POOL FILTERS - BK

- Regenerative filtration system.
- Programed to bumps once a day at 7:30am
- If more then one bump per day media needs changed out.



SKIMMERS

Water flow



BASIC PUMP ROOM MAINTENANCE

1. Skimmer must be cleaned every day
2. Strainer must be cleaned every 2-3 days
3. Backwash sand filter when gauges are minimum 15 points a part
4. Never leave Chlorine hopper or Acid containers empty
5. IF YOU ARE NOT SURE, DON'T TOUCH, CALL MICHAEL OR VICTOR

CHEMICAL CONTROLLER

- Typical chemical controllers measure ORP (oxidation reduction potential) and pH
  - ORP –Qualitative measure of Chlorine
  - Parts per million – Quantitative measure of Chlorine
- Controllers require a pool operator to maintain set points

WATER CHEMISTRY

pH – has the largest influence upon oxidation/disinfection process

- Higher pH, less effective chlorine
- Acid and Soda Ash

Sanitizer/oxidant (chlorine) - has the greatest influence on pool water pH

- Compound found in the sanitizer will increase or decrease pH
- Calcium Hypochlorite/Sodium Hypochlorite have high pH
- Dichlor and Triclor have a low pH

Stabilizer – helps to prevent chlorine destruction by UV

- Chlorine is very unstable
- Save on chlorine but results in poor oxidation
- Cyanuric acid

WATER CHEMISTRY REQUIREMENTS – WATER PLAYGROUNDS

pH – Maintain at 7.2-7.8

- Muriatic Acid – Decreases pH
- Soda Ash – Increase pH

Chlorine – State code at least 1pm, preferred 2-4ppm

- Minimum free available chlorine of 1.0 ppm (mg/L), if not using cyanuric acid (such as stand-alone cyanuric acid or stabilized chlorine, commonly known as "dichlor" or "trichlor")
- Minimum free available chlorine of 2.0 ppm, if using cyanuric acid
- Minimum total bromine of 3.0 ppm
- Calcium Hypochlorite (Cal-hypo) – Accu-Tab pucks
- Power Powder Pro(Shock) - granular chlorine (Cal-hypo)

Cyanuric Acid – State code 50ppm, preferred 10-20ppm

- Know as Stabilizer, Conditioner

WATER CHEMISTRY REQUIREMENTS – WATER PLAYGROUNDS

- Conduct daily inspection before opening to the public, including ensuring disinfection, secondary disinfection (such as UV and ozone), and recirculation systems and filters are operating and daily inspection for and removal of biofilm on water playground surfaces (such as the tank, spray nozzles, and drains) as required.
- Test free available chlorine or total bromine and pH before opening to the public each day and maintain adequate disinfectant level.
- Test free available chlorine or total bromine and pH every 2–4 hours while open to the public and maintain adequate disinfectant level.
- Maintain water turnover times at 30 minutes or less.
- Ensure drains prevent standing water from collecting in the user activity area.
- Inspect tank regularly and as needed, clean it.

WATER CHEMISTRY REQUIREMENTS – WATER PLAYGROUNDS

Document	Ensure	Test	Require
Document operation and management activities such as water testing results, response to testing results, and equipment maintenance (such as tank cleaning) and repairs on Hydroapps.	Ensure all staff who handle pool chemicals (such as chlorine, bromine, and acid) are trained in pool chemical safety.	Test the backflow preventers regularly to ensure they prevent backflow, or back siphonage, into the water distribution system serving the water playground.	Require at least one staff responsible for oversight of the play feature to be CPO certified

WATER CHEMISTRY REQUIREMENTS – DECORATIVE WATER FEATURES

Ensure during plan review of water playgrounds that:

- Water is from a potable water source or other source approved by the authority having jurisdiction.
- Size, number, and location of the drains prevent standing water from collecting in the user activity area.
- Slope prevents surface water from draining into the water playground system during rain events.
- Inspect water playgrounds regularly to ensure code compliance.
- Educate operators about proper operation and management of water playgrounds and jurisdiction requirements.

WATER CHEMISTRY REQUIREMENTS – POOLS

- Protecting swimmers and their families from Recreational Water Illnesses (RWIs) is the reason that pool staff regularly check both chlorine and pH levels. Chlorine and pH, your disinfection team, are the first defense against germs that can make swimmers sick.
- What does chlorine do? Chlorine kills germs in pools--but it takes time to work. Therefore, it's important to make sure chlorine levels are always at the levels recommended by the health department (usually at least 1.0 ppm).
- Why does chlorine need to be tested regularly? All sorts of things can reduce chlorine levels in pool water. Some examples are sunlight, dirt, debris, skin, and fecal matter from swimmer's bodies. That's why chlorine levels must be routinely measured. However, the time it takes for chlorine to work is also affected by the other member of the disinfection team, pH.

WATER CHEMISTRY REQUIREMENTS – POOLS

- Why is pH important? Two reasons. First, the germ-killing power of chlorine varies with pH level. As pH goes up, the ability of chlorine to kill germs goes down. Second, a swimmer's body has a pH between 7.2 and 7.8, so if the pool water isn't kept in this range, then swimmers will start to feel irritation of their eyes and skin. Keeping the pH in this range will balance chlorine's germ-killing power while minimizing skin and eye irritation.
- What else can be done to promote Healthy Swimming? The best way to kill germs is by routinely measuring and adjusting both chlorine and pH levels. Since a few germs can survive for long periods in even the best maintained pools, it is also important that swimmers become aware of Healthy Swimming behaviors (don't swim when ill with diarrhea, don't swallow pool water, take frequent bathroom breaks, and practice good hygiene). Combining Healthy Swimming behaviors with good chlorine and pH control will reduce the spread of RWIs.

Required Chemical Levels			
Disinfectant Level	Minimum	Ideal	Maximum
Pool Free Available Chlorine	1.0 ppm	2.0 – 3.0 ppm	8.0 ppm
Spa Free Available Chlorine	2.0 ppm	3.0 ppm	8.0 ppm
Pool Bromine	3.0 ppm	4.0 – 6.0 ppm	10.0 ppm
Spa Bromine	4.0 ppm	5.0 ppm	10.0 ppm
Combined Chlorine	None	None	0.4 ppm
pH	Not less than 7.0	7.2 – 7.6	7.8
Cyanuric Acid	None	30 – 50 ppm	100 ppm
ORP	600 mV	650 – 750 mV	900 mV
Alkalinity	60 ppm	60 ppm – 180 ppm	>180 ppm
Calcium Hardness in Pools	150 ppm	>150 – 400 ppm	1000 ppm
Calcium Hardness in Spas	100 ppm	150 – 400 ppm	800 ppm
Algae	None	None	None

Testing reagent accuracy. Testing reagents shall be changed at frequencies recommended by the manufacturer to ensure accuracy of the tests.

Chemical balance. Water in the pool or spa shall be chemically balanced. Testing methods to determine the chemical balance of the water in the pool or spa, such as the Langelier Saturation Index, shall be conducted at a minimum, every 10 days while the pool or spa is open.

Testing frequency and record keeping when pools and spas are open for use.

All pools shall be tested for disinfectant levels, and pH every 2 hours.

If a system is used to automatically control disinfectant and pH, testing for disinfectant level and pH shall be made at least once per day and a reading of the automatic control device shall also be made. Cyanuric acid levels shall be measured once each week.

WATER TESTING

- Test water from pool and controller
- Testing Technique
  - Follow specific instructions according to the Palintest Manual.
  - Collect sample away from return outlet

WATER TESTING-TEST 001 FREE CHLORINE

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Rinse a test tube with pool water sample leaving a few drops.
2. Add one DPD 1 or DPD XF tablet, crush to form a paste.
3. Fill with pool water sample to the 10 mL line and mix.
4. Allow no more than a few seconds for any gas bubbles to clear, then take the photometer reading.
5. This is the value for Free Chlorine.
6. Keep this test solution for the "Follow-On" Total Chlorine Test.

WATER TESTING-TEST 002 TOTAL CHLORINE

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Use the sample from Test 001 Free Chlorine
   - If no shock treatment has been used continue to step 3
2. Add one DPD Oxystop tablet, crush and mix to dissolve. Stand for one minute.
3. Add one DPD 3 or DPD XT tablet, crush and mix.
4. Stand for two minutes.
5. Take the photometer reading. This is the value for Total Chlorine.
6. NB: Combined Chlorine = Total Chlorine - Free Chlorine

WATER TESTING-TEST 003 BROMINE

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Rinse a tube with sample leaving a few drops.
2. Add one DPD 1 tablet, crush to form a paste.
3. Fill with pool water sample to the 10 mL line and mix.
4. Allow no more than a few seconds for any gas bubbles to clear then take the Photometer reading.
5. This is the value for Total Bromine

WATER TESTING-TEST 006 PH-PHENOL RED

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Fill tube with sample precisely to the 10 mL line.
2. Add one Phenol Red tablet, crush and mix until completely dissolved.
3. Take the Photometer reading.

WATER TESTING-TEST 007 TOTAL ALKALINITY

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Fill tube with sample to the 10 mL line.
2. Add one Alkaphot™ tablet, crush thoroughly and mix. Ensure all particles have completely dissolved.
3. Stand for one minute. Mix again if the color is not uniform.
4. Take the Photometer reading.

WATER TESTING-TEST 008 CALCIUM HARDNESS

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Fill tube with sample to the 10 mL line.
2. Add one Calcicol No 1 tablet, crush and mix.
3. Add one Calcicol No 2 tablet, crush and mix.
4. Stand for two minutes.
5. Take the Photometer reading.

WATER TESTING-TEST 009 CYANURIC ACID

- It is important to use the correct tablets for the range that has been selected in System Mode.

1. Fill tube with sample to the 10 mL line.
2. Add one Cyanuric Acid tablet. DO NOT CRUSH. Allow to disintegrate for at least two minutes. A cloudy solution indicates the presence of cyanuric acid.
3. Crush any remaining tablet and mix.
4. Take the Photometer reading.

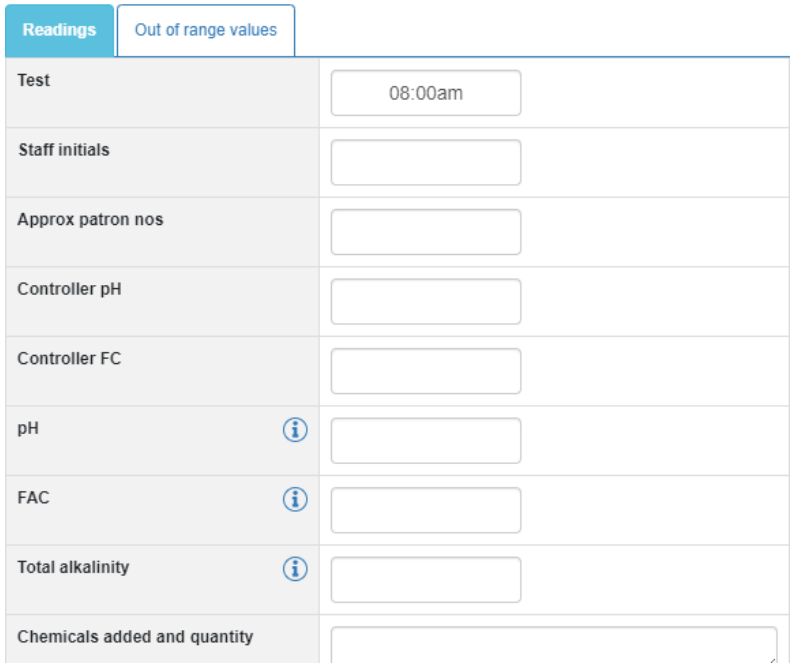
CHEMICAL LEVEL REPORTING

Built in redundancies

- Controller
- Palintest
- Hydroapps
- QR Code
- Public Dashboard

HYDROAPPS

Allen Bolden Pool
Pool
May 25 2022



- Log and record test results online
- Reports accessible 24/7
- Follows Model Aquatic Health Code
- Built in redundancy

YOUR SAFETY IS OUR PRIORITY.

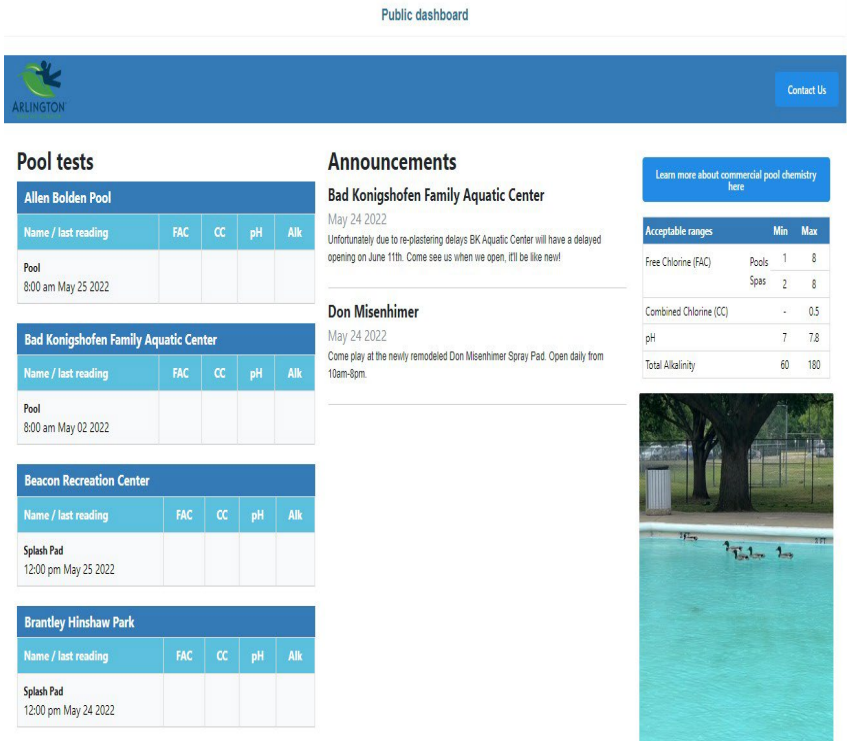
The Parks and Recreation Department recently developed the *Bakari Williams Protocol*, which puts additional checks and balances in place for aquatics facility maintenance, and also made recommended upgrades to the aquatics facilities' chemical testing, controllers, and secondary sanitation systems to ensure facilities are safe for public use.

Please scan the QR code below to access the data of the most recent sample collected for this location, as well as all other City of Arlington aquatics facilities.

ARLINGTON
THE AMERICAN DREAM CITY

COMMUNICATION

HYDROAPPS



- Public dashboard
- QR Code
- Increased redundancy
- Increased transparency

OUR SYSTEMS

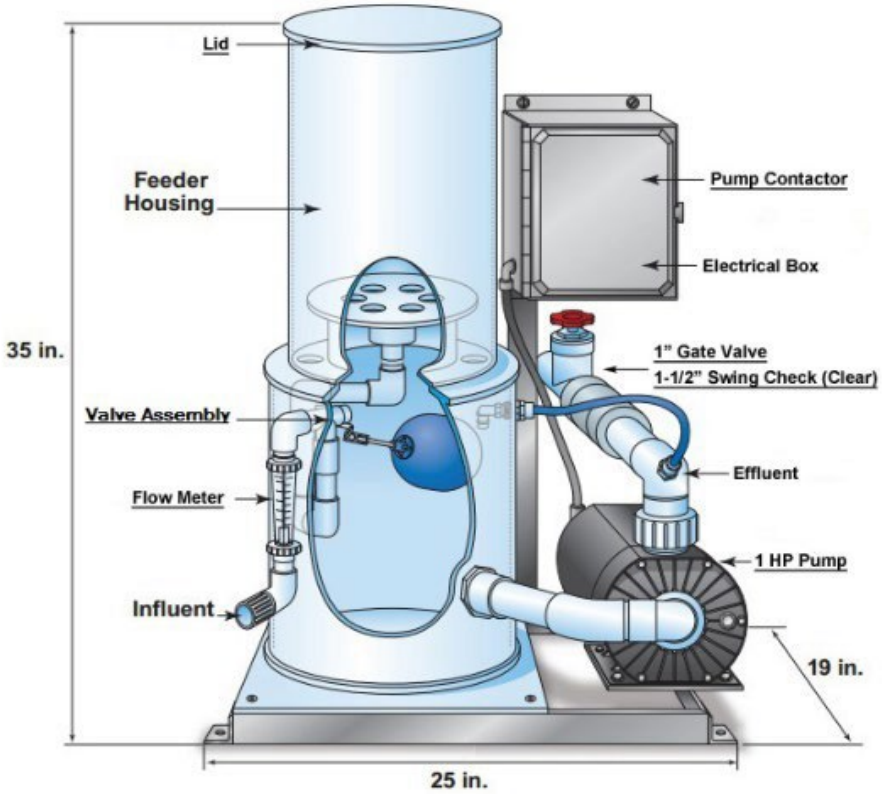
ARLINGTON CHEMICAL SYSTEMS

- Accutab Feeder – Calcium Hypochlorite (Chlorine)
- Stenner pump – Muriatic Acid
- Dry Acid - BK/Bolden
- CRS – Crypto Removal System

CHLORINE SYSTEM

- Accu-Tab – Chlorine system
- Calcium Hypochlorite (Cal-Hypo)
- Dry Erosion feeder

CHLORINE SYSTEM



CHLORINE SYSTEM

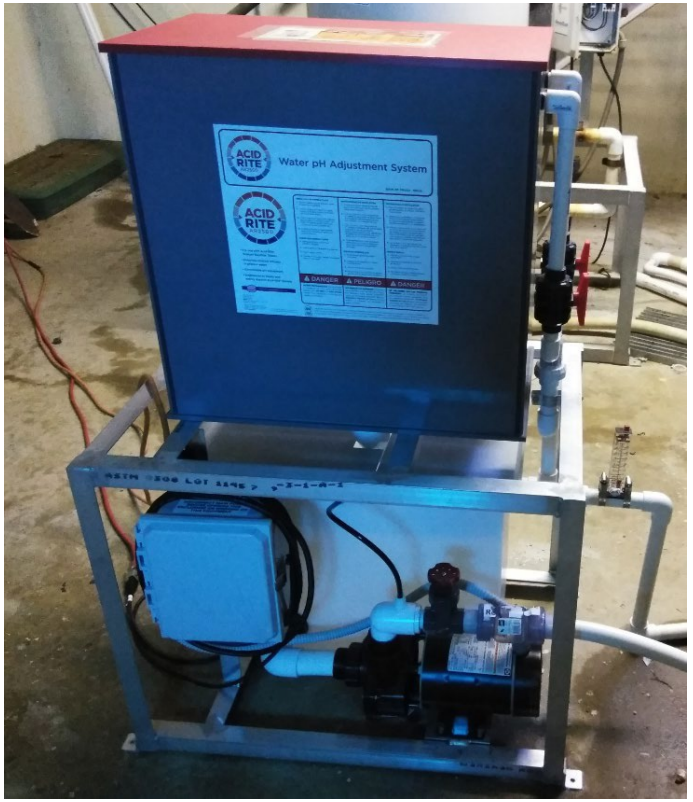
- Only Accu-Tab chlorine puck go into feeder

ACID SYSTEMS

- Two different systems
- Muriatic Acid with Stenner
  - Hugh, Mill, Wessler, Moore and West
- Acid Rite – Dry acid feeder
  - BK and Bolden

ACID RITE

- Dry erosion feeder
- Works the same way as Accu-Tab



ACID RITE

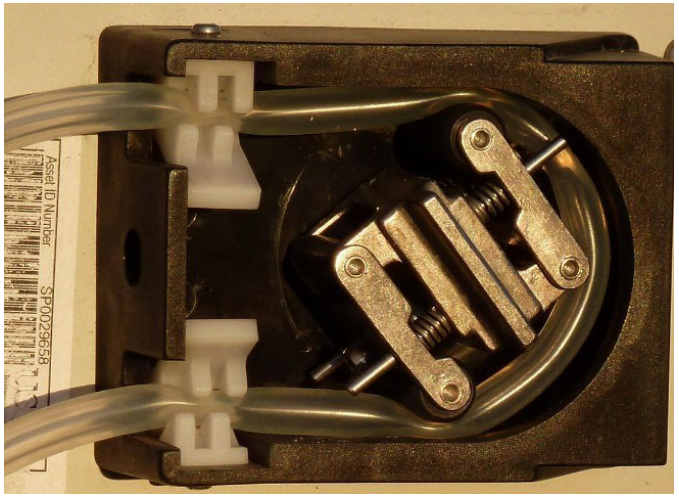
	SAFETY	HANDLING	MAINTENANCE	MATERIAL COMPATABILITY AND CORROSIVITY
ACID RITE Water pH Adjustment System	Solid chemical made of sodium bisulfate with no dual containment	Easier to handle 45-lb resealable pails	Acid feeders rarely require cleaning or maintenance; no small tubing that can kink and crack	Tablets have low odor and are red in color to help eliminate inadvertent mixing of chemicals
Muriatic Acid 	Strong odor/fuming; potential liquid spills	55-gal drums weigh more than 500 lbs	Feed pumps need frequent repair and tubing can leak	Strong corrosive liquid with strong noticeable odor; leaking tubes or feed pumps can attack equipment room

ACID RITE

- Pucks are pink in color
- Sodium Bisulfate
- DO NOT put in Accu-tab feeder

MURIATIC ACID SYSTEM

- Stenner peristaltic feeder



MURIATIC ACID

- Acid comes in barrels or gallon jug

CRS - CRYPTO REMOVAL SYSTEM

- Works a clarifier and crypto protector
- Increases the filter's capacity to capture crypto oocysts

Testing Procedures

Splash Pad Testing Instructions

Testing for PH (Test 006 pH-Phenol Red)

1. Before Testing, we reset the Palintest by inserting a blank test tube with water
2. Rinse out a test tube with water
3. Fill the test tube with 10ml of water (be exact, use the syringe if needed to add/remove water)
4. Place the cap on the test tube
5. Turn the Palintest on with the power button
6. Press the #6 on the keypad for the Test 006 pH-Phenol Red Test (key is labeled “MNO pH 6”)
7. Press “OK”
8. Toggle over to “Blank” and Press “OK”
9. The system should say “Insert Blank”
10. Insert the test tube in the hole and place the lid on top
11. Press “OK”
12. Place 1 “Phenol Red” tablet into the test tube with water (pop in from packet)
13. Crush the tablet with the white tool
14. Place the cap on the test tube and shake
15. Press the #6 on the keypad for the Test 006 pH-Phenol Red Test (key is labeled “MNO pH 6”)
16. Press “OK”
17. Insert the test tube in the hole and place the lid on top
18. The system should read “Insert Sample”
19. Press “OK”
20. Remove the test tube and dump out the water
21. If the PH is NOT between 7.2 and 7.8, call Aquatics Staff

Testing for Chlorine (Test 001 pH-Chlorine-Free/5)

1. Before Testing, we reset the Palintest by inserting a blank test tube with water
2. Rinse out a test tube with water
3. Fill the test tube with 10ml of water (be exact, use the syringe if needed to add/remove water)
4. Place the cap on the test tube
5. Turn the Palintest on with the power button
6. Press the #6 on the keypad for the Test 006 pH-Phenol Red Test (key is labeled “MNO pH 6”)
7. Press “OK”
8. Toggle over to “Blank” and Press “OK”
9. The system should say “Insert Blank”
10. Insert the test tube in the hole and place the lid on top
11. Press “OK”
12. Place 1 “DPD1” tablet into the test tube with water (pop in from packet)
13. Crush the tablet with the white tool
14. Fill the test tube with 10ml of water (be exact, use the syringe if needed to add/remove water)
15. Place the cap on the test tube and shake
16. Turn the Palintest on with the power button
17. Press the #1 on the keypad for the Test 001 pH-Chlorine-Free/5 Test (key is labeled “Aa CLf 1”)
18. Press “OK”
19. Insert the test tube in the hole and place the lid on top
20. Press “OK”

21. Remove the test tube and dump out the water
22. If the Chlorine is below 2.0ppm, call Aquatics Staff

Inputting your Test Results in HydroApps

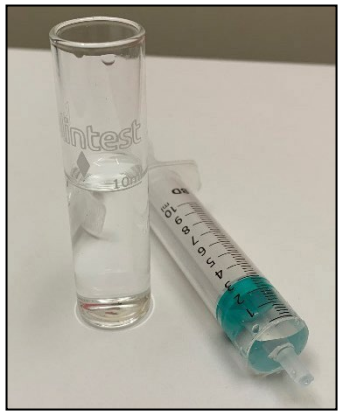
1. Record your test results for pH and Chlorine in Hydro Apps on the iPad
2. Open the HyrdoApps
3. Select “Add Pool Test”
4. Select the time frame you are testing (usually every 2 hours)
5. Input the Time
6. Flow Rate (from controller)
7. FAC (Chlorine from your Palintest)
8. pH (pH from your Palintest)
9. Controller HRR/ORP (from the controller)
10. Staff Initials
11. Click “Save & Exit”

Aquatics Contact Staff

Michael Mosley: 817-718-6690 (Sun-Wed) Victor Quijano: 817-459-5467 (Wed-Sun)
Tom Osen: 817-706-4785 Courtni Anderson: 214-202-1939 Greg: 281-684-6484

Pictures for Reference

Test Tube with 10ml water & Syringe



Crushing Tablet with White Tool

Placing Tablet into Test Tube

DPD 1 for Chlorine

Phenol Red for PH

HyrdoApps Test Results #1

Beacon Recreation Centel
Splash Pad
May 09 2022

-ae, Out of range values

Test	10:30pm	
Flow Rate	199.6	
FAC	CD	1.0
Free bromine		
cc	CD	
pH	CD	69
Cyanuric acid	CD	
Controller HRRJORP	871	

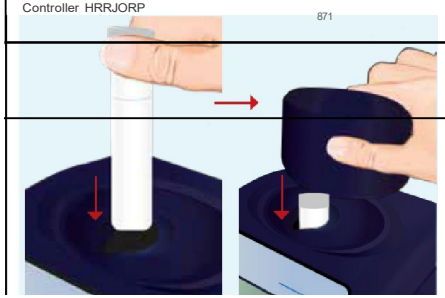
HyrdoApps Test Results #2

Controller HRR/ORP	871	
Total alkalinity	CD	
Water temperature		
Approx patron nos		
Staff initials	GG	
Chemicals added and quantity		

FfoiHldiiiMF

Created	10.29pm May 09 2022
Created by	Greg Guse

1■.11



Insert the blank, place the light cap on the photometer and press OK.

Remove the blank when complete.

Standard Operating Procedures

City of Arlington Aquatics

Standard Operating Procedures – Pool Chemical Monitoring

I. Purpose:

This SOP aims to ensure that adequate operating procedures are in place, which will help facilitate the daily operations of aquatic facilities and the public's safety. This SOP has been drafted using specific guidance from Model Aquatic Health Code and Texas Administrative Code Standards for Public Pools and Spas.

II. Responsibilities:

a. Pool Manager / Assistant Pool Manager will monitor the pool water quality upon arrival, and at two-hour intervals, the pool is operational.
b. Aquatics Technicians will monitor the pool water quality daily before the aquatic facility opens by utilizing BECSys Live.
c. The Aquatics Manager and Facility Maintenance Supervisor will monitor the quality of pool water daily before operating the aquatic facility by utilizing BECSys Live.
d. The Aquatics Manager and Facility Maintenance Supervisor will monitor the Aquatics Chemical Dashboard daily to ensure chemical tests are performed.
e. Assistant Director of Community Programs and Assistant Director of Operations will monitor the Aquatics Chemical Dashboard bi-weekly to ensure chemical tests are performed.
f. The Parks and Recreation Management staff that has access to monitor the quality of aquatic facilities via BECSys Live is listed below:
    i. Director, Assistant Director CP, Assistant Director Ops, Aquatic Manager, Facility Maintenance Supervisor, Aquatic Technicians, Center Programs Manager, EAST Facility Manager
    ii. BECSys will notify Aquatic Manager, Facility Maintenance Supervisor, Aquatic Technicians, and other designated staff electronically when parameters fall out of range.

III. Testing Procedure

a. Aquatics staff will test using a photometer instrument, Palintest 10 (detailed instructions located at each facility).
b. Samples shall be collected at both controller and/or pool surface.
c. Samples should be tested before pool opening and at two-hour intervals during operating hours.

d. Staff will record the result of each sample on the Pool Test Log utilizing the HydroApps system. The pool test log shall report the time and date of each of these results and the initials of the staff performing the test. Suppose the test result is not within acceptable ranges. In that case, the HydroApps system will provide necessary steps on corrective measures.

IV. Required Chemical Levels

Required Chemical Levels			
Disinfectant Level	Minimum	Ideal	Maximum
Pool Free Available Chlorine	1.0 ppm	2.0 – 3.0 ppm	8.0 ppm
Spa Free Available Chlorine	2.0 ppm	3.0 ppm	8.0 ppm
Pool Bromine	3.0 ppm	4.0 – 6.0 ppm	10.0 ppm
Spa Bromine	4.0 ppm	5.0 ppm	10.0 ppm
Combined Chlorine	None	None	0.4 ppm
pH	Not less than 7.0	7.2 – 7.6	7.8
Cyanuric Acid	None	30 – 50 ppm	100 ppm
ORP	600 mV	650 – 750 mV	900 mV
Alkalinity	60 ppm	60 ppm – 180 ppm	>180 ppm
Calcium Hardness in Pools	150 ppm	>150 – 400 ppm	1000 ppm
Calcium Hardness in Spas	100 ppm	150 – 400 ppm	800 ppm
Algae	None	None	None

*If the required standards of ranges are exceeded, or fall below-required levels, Aquatics Manager will be notified immediately. Aquatic facilities will be closed until readings are within safe operating ranges.

V. Training of Staff

Staff must attend the following training before performing chemical testing at any Aquatic Facility.

a. The Bakari Williams Protocol
b. HydroApps
c. Palintest 10 Photometer

City of Arlington Aquatics

Standard Operating Procedures – Splash Pad Chemical Monitoring

I. Purpose:

This SOP aims to ensure that adequate operating procedures are in place, which will help facilitate the daily operations of aquatic facilities and the public's safety. This SOP has been drafted using specific guidance from Model Aquatic Health Code and Texas Administrative Code Standards for Public Pools and Spas.

II. Responsibilities:

1. Operations staff will monitor the quality of the water upon arrival and two additional times each day that the splash pad is operational.
2. Aquatics Technicians will monitor the quality of the water daily before the aquatic facility opens by utilizing BECSys Live.
3. Aquatics Manager and Facility Maintenance Supervisor will monitor water quality daily before the aquatic facility opens by utilizing BECSys Live.
4. Aquatics Manager and Facility Maintenance Supervisor will monitor the Aquatic Chemical Dashboard daily to ensure chemical tests are performed.
5. Assistant Director of Community Programs and Assistant Director of Operations will monitor the Aquatics Chemical Dashboard Bi-weekly to ensure chemical tests are performed.
6. The Parks and Recreation Management staff that has access to monitor the quality of aquatic facilities via BECSys Live is listed below:
    1. Director, Assistant Director CP, Assistant Director Ops, Aquatic Manager, Facility Maintenance Supervisor, Aquatic Technicians, Park District Supervisors, and Park Operations Manager
    2. BECSys will notify Aquatic Manager, Facility Maintenance Supervisor, Aquatic Technicians, and other designated staff electronically when parameters fall out of range.

III. Testing Procedure

a. Staff will test using a photometer instrument, Palintest 10 Photometer (detailed instructions located at each facility).
b. Samples shall be collected at the controller.
c. Samples should be tested before opening and two other times during operating hours.

d. Staff will record the result of each sample on the Splash Pad Test Log utilizing the HydroApps system; the current chemical sample result will be available online at the Aquatics Chemical Dashboard. The test log shall report the time, date, and tester for each result. If the test result is not within acceptable ranges, HydroApps will provide necessary steps for corrective measures.

IV. Required Chemical Levels

Required Chemical Levels			
Disinfectant Level	Minimum	Ideal	Maximum
Pool Free Available Chlorine	1.0 ppm	2.0 – 3.0 ppm	8.0 ppm
Spa Free Available Chlorine	2.0 ppm	3.0 ppm	8.0 ppm
Pool Bromine	3.0 ppm	4.0 – 6.0 ppm	10.0 ppm
Spa Bromine	4.0 ppm	5.0 ppm	10.0 ppm
Combined Chlorine	None	None	0.4 ppm
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Calcium Hardness in Pools	150 ppm	>150 – 400 ppm	1000 ppm
Calcium Hardness in Spas	100 ppm	150 – 400 ppm	800 ppm
Algae	None	None	None

*If the required standards are exceeded, or fall below-required levels, Hydroapps system will provide necessary steps on corrective measures.

V. Training of Staff

Staff must attend the following training before performing chemical testing at any Aquatic Facility.

a. The Bakari Williams Protocol
b. HydroApps
c. Palintest 10 Photometer