

**Public Water Recreation Facilities
Rules and Regulations**



Environmental Protection Division

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RULES AND REGULATIONS OF THE SAINT LOUIS COUNTY HEALTH DEPARTMENT

This publication of Rules and Regulations contains the minimum requirements of the Saint Louis County Health Department (referred to herein as "Department") for the design and operation of public water recreation facilities. Procedures for the approval of plans, design criteria and acceptable practices are featured. The criteria are based on current information, engineering principles and public health practices.

Where such terms as "shall" and "must" are used, they are to mean a mandatory requirement. Other terms such as "should," "recommended," "preferred," and the like indicate discretionary requirements and deviations which are subject to individual consideration.

The terms used in these Rules and Regulations shall bear the meanings ascribed to them by the Public Water Recreation Facilities Code, Chapter 808 SLCRO 1974 as amended. However, except to such extent as they may conflict with the provisions of Chapter 808, the following terms shall have the following meanings for the purposes of these Rules and Regulations:

"Alteration" means a modification of a public water recreation facility. The term includes but not limited to an alteration of a pool that changes the depth or volume, addition of an appurtenance to a pool, modification of the design of the recirculation system for a pool, or any addition, replacement or modification that modifies the original engineered design as approved by the Health Department.

"Approval" means official recognition that the Health Department considers that which bears approval to be in compliance with Chapter 808 SLCRO 1974 as amended, and with these Rules and Regulations.

"Approved Certification Agency" means an organization that has been accredited by ANSI and found to meet the requirements specified in ANSI Z 34.1 (1993), Third Party Certification Program to evaluate swimming pool equipment for compliance with NSF Standard 50.

"Appurtenance" means an accessory facility or feature at a public water recreation facility, such as a diving board, slide, plunge pool/catch pool, spray pool, or bathhouse.

"Attendant" means a person at least 15 years of age, stationed at the top of a water slide responsible for ensuring safe use of the slide.

"Bather Load" means the maximum number of persons that may be allowed in the pool area at one time without creating undue health or safety hazards.

"Bathing Place" – means any body of water used collectively by numbers of persons for swimming and recreational bathing together with the shores, structures and equipment, other areas and enclosures pertaining to such bathing places but does not include baths, where the object is the cleansing of the body, or the practice of healing under medical supervision, unless such baths contain pools or tanks which are used collectively by a number of individuals.

"Break Point Chlorination" means the establishment of an elevated chlorine residual in pool water for the purpose of removing combined chlorine (chlorine that has reacted with nitrogenous compounds) or destroying unwanted organisms in the pool.

“Code” means the Public Water Recreation Facilities Code, Chapter 808 SLCRO 1974 as amended.

“Community Water System” means a public water system which serves at least 15 service connections used by residents or regularly serves at least 25 residents for at least 60 days a year.

“Competitive Diving Equipment” includes diving boards and adjustable fulcrum-setting diving stands intended for competitive diving.

“Construction” means the process of building or remodeling a public water recreation facility, or appurtenance.

“Deep Area” means an area of a swimming pool in which the water depth exceeds five feet.

“Diving Pool” means a pool designed and intended for use exclusively for diving.

“Drop Slide” means a slide with an exit angle exceeding 11 degrees measured downward from the horizontal.

“Floor Slope Transition” means a location in a pool where there is an abrupt change in floor slope, or a location on a pool floor where an area having a floor slope of no more than 1 foot vertical in 12 feet horizontal adjoins an area having a greater floor slope, with the floor slope increasing in the direction of increasing water depth.

“Homeowner’s Association” is an organization comprised of members who have common ownership interest in property owned or operated by the association for the benefit of all the members.

“Inlet” means an opening or fitting through which filtered water enters the pool.

“Lazy River/Leisure River” means a swimming pool intended for use with flotation devices and consisting of a closed loop with an artificially induced current.

“Lifeguard” means a qualified person who is responsible for supervision and lifesaving at a pool.

“Main Drain” means an outlet in the floor of a public water recreation facility.

“Make-up Water” means the water added to a pool to replace that which is lost.

“Manager/Operator” means the person or entity responsible for the actual daily operation, or for the supervision of the operation, of a public water recreation facility.

“Operations” means those acts pertaining to the function or process of a swimming pool during times when the pool is capable of being used for its intended purpose.

“Perimeter Overflow System” means a channel normally extending completely around the pool used to skim the surface layer of water, also known as an overflow gutter.

“Permit,” means a certificate issued by the Department allowing the operation or alteration of a public water recreation facility.

“Plunge Area” means a location in a pool or bathing beach at the exit of a slide, or the area in a pool below and in front of a diving board or platform.

“Plunge Pool/Catch Pool” means a pool designed for and used exclusively as a plunge area for one or more slides.

“Pool deck” means a walkway surrounding a pool, which is specifically constructed or installed for use by bathers.

“Pool Depth” means the vertical distance between the pool floor and the water level.

“Pool Type” means public swimming pools/ water recreational facilities are classified as follows for purposes of reference and application of this standard:

Class A pools - Class A pools are pools intended for use for accredited competitive aquatic events such as Federation Internationale de Natation (FINA), U.S.A. Swimming, U.S. Diving, National Collegiate Athletic Association (NCAA), National Federation of State High Schools Associations (NFSHSA), etc. The pool may also be used for recreation. Class A pools are covered by these rules and regulations and the code unless otherwise noted.

Class B pools - Class B pools are pools intended for public recreational swimming not otherwise classified including recreational diving and swimming teams not governed by any Class A sanctioning body. Class B pools are covered within the scope of these rules and regulations and the code unless otherwise noted.

Class C pools - Class C pools are pools intended for use for apartments, condominiums, property owners associations, multi-family owned pools, etc. and are covered within the scope of this code. Pools operated solely for and in conjunction with lodgings such as hotels and motels are also covered within the scope of these rules and regulations and the code unless otherwise noted.

Class D pools - Class D pools are operated for special purposes, including but not limited to wave action pools, activity pools, leisure rivers/watercourse, vortex pools, and sand bottom pools. Class D-1 pools – D-6 pools are covered whether they are provided as stand-alone attractions or in various combinations in a composite attraction. Class D-1 pools – D-6 pools are covered by these rules and regulations and the code regardless of where they are located, including hotels and other lodging facilities. When combinations of Class D-1– D-6 pools occur within a facility, the function of each element shall comply with this code applicable to the function as though the function is a freestanding pool of its functional Class D-1 – D-6.

Definitions:

Class D, other pool: Any pool operated for medical treatment, therapy, exercise, lap swimming, recreational play, and other special purposes, including, but not limited to, wave or surf action pools, activity pools, splashers pools, kiddie pools, and play areas.

Class D-1, wave action pools: Wave action pools include any pool designed to simulate breaking or cyclic waves for purposes of general play or surfing;

Class D-2, activity pools: Activity pools are those pools designed for casual water play ranging from simple splashing activity to the use of attractions placed in the pool for recreation;

Class D-3, catch pools/plunge pools: Catch pools are bodies of water located at the termination of a manufactured waterslide attraction provided for the purpose of terminating the slide action and providing a means for exit to a deck or walkway area.

Class D-4, leisure rivers/watercourse: Manufactured streams of near-constant depth in which the water is moved by pumps or other means of propulsion to provide a river-like flow that transports bathers over a defined path that may include water features and play devices.

Class D-5, vortex pools: Circular pools equipped with a method of transporting water in the pool for the purpose of propelling riders at speeds dictated by the velocity of the moving stream.

Class D-6, interactive play attractions: Only water treatment and filtration for these attractions are within the scope of this code. A manufactured water play device or a combination of water-based play devices in which water flow volumes, pressures, or patterns are intended to be varied by the bather without negatively influencing the hydraulic conditions of other connected devices. Class D-6 attractions may incorporate devices or activities such as slides, climbing and crawling structures, visual effects, user-actuated mechanical devices and other elements of bather-driven and bather-controlled play. Class D-6 attractions do not incorporate captured or standing water greater than 12 inches deep as part of the bather activity area.

Class D-7, amusement park attractions: Attractions or rides traditionally found in amusement parks that are designed to permit bather contact with water.

Class D-8, natural bodies of water: Those natural or man-made aquatic play areas normally regarded as oceans, lakes, ponds, streams, quarries, or bodies of water that the local jurisdiction has designated as natural bodies of water. The design or construction of these facilities is not included in the scope of this code.

Class E pools - Class E pools are pools used for physical therapy and are above 86 °F (30 °C) and are not covered within the scope of this code.

Class F pools - Class F pools are wading pools and are covered within the scope of by these rules and regulations and the code.

“Recirculation Piping” means the piping from the pool to the filters and back to the pool, through which the pool water circulates.

“Safety Cover/Anti Vortex Cover” means a cover for a pool suction outlet that has been designed to prevent bather entrapment, and has been certified for conformance to ASME/ANSI Standard.

“Safety Vacuum Release Device” means a device that has been designed to prevent bather entrapment on a suction fitting in a pool by immediately admitting air into the suction piping or by de-energizing the pump upon sensing an increase in vacuum in the suction pipe.

“Safety Vent Pipe” means a piping arrangement designed to admit air into suction piping to break a vacuum caused by a blocked suction fitting in a pool.

“Shallow Area” means an area in a pool, in which the water depth does not exceed five (5) feet at any point.

“Skimmer” means a mechanical device connected to the recirculation piping which is used to skim the pool surface.

“Skimmer Weir” means the part of a skimmer that adjusts automatically to small changes in water level to assure a continuous flow of water to the skimmer.

“Slide” means a recreational feature, including a water slide or drop slide, with a smooth, inclined flume or channel by which a rider is conveyed downward to a plunge area or catch area.

“Slip-Resistant” means not conducive to slipping under contact with bare feet when wet.

“Spa” means a bathing pool designed for non-swimming recreational use for individuals or small groups in which treated water is recirculated. These structures may employ circulation, tempered water, air induction bubbles or combination thereof.

“Spa User Capacity” means the maximum number of persons that may be allowed in a spa at one time.

“Spray Features/Spray Pool” means the devices and plumbing used to convey the treated water to the spraypad to spray the patrons.

“Spraygrounds” means the buildings and appurtenances used in conjunction with a spraypad in which spraypad water is continually drained and collected in a treatment and recirculation system.

“Spraypad” means the specific area consisting of the play surface, spray features/spray pool, and drains, upon which the patrons stand and are sprayed with water.

“Suction Grate” means a cover for a suction outlet that is flat, normally having a regular and uniform pattern of openings for passage of water. The term does not refer to an anti-vortex cover/safety cover.

“Sunrise and Sunset” conventionally refer to the times when the upper edge of the disk of the Sun is on the horizon, considered unobstructed relative to the location of interest. Atmospheric conditions are assumed to be average, and the location is in a level region on the Earth’s surface.

“Swimming Pool” –means a structure, which is used or designed to be primarily used for swimming or other related recreational or athletic purposes.

“Transition Point” means location in shallow area of swimming pool when the floor slope exceeds one (1) ft vertical in twelve (12) ft horizontal.

“Turnover Period” means the time required to recirculate a volume of water equivalent to the water volume of the pool through the filtration system.

“Wading Area/ Wading Pool” means a portion of a pool, other than an area of limited extent such as a stair, seat or ramp, where the water depth does not exceed twenty four (24) inches.

“Water Level” means the level of the overflow lip of a perimeter overflow system or the mid-level of the skimmer operating range.

“Zero-Depth Edge” means that portion of the perimeter of a zero-depth pool where the pool floor intersects the pool water surface.

“Zero-Depth Pool” means a swimming pool where the pool floor intersects the water surface along a portion of its perimeter.

In instances where the word “pool” or “swimming pool” is used in a context that plainly denotes the intent to use the word interchangeably with other terms defined in Chapter 808 or in these Rules and Regulations, the word shall be interpreted as called for by the context in which it is used.

1. Engineering

All reports, plans and specifications for public swimming pools shall be submitted at least thirty (30) business days prior to the date upon which action by the Division of Environmental Protection is desired. The documents submitted in duplicate for formal

approval shall include: (a) Engineering Report, (b) general layout, (c) detailed plan,(d) specifications and (e) summary of design data.

- 1.1 Engineering Report – An engineering report will be required on all swimming pool projects, prior to the development of final plans and specifications. The engineering report must include that swimming pools shall not be located in areas that will adversely affect the swimming pool water quality, public health or the environment.
- 1.2 General Layout – The general plans for the swimming pool shall show:
 - 1.2.1 Miscellaneous – A suitable title and name of the municipality, school, resort, institution, etc., the graphic scale, the north point, the date, the name of the designing engineer and the imprint of the engineer's or architect's professional seal. The scale for the plans must not be less than one hundred feet (100') to the inch. The lettering and figures on the plans must be of appropriate size and of distinct outline.
 - 1.2.2 Geological Features – Existing or proposed roadways, buildings, and recreational facilities and all water surfaces and streams shall be clearly shown. Contour lines, the boundary line of the property and the location of fences or barriers encircling or separating areas of use must be shown.
 - 1.2.3 Existing Facilities – The location, size, slope and direction of flow of all existing sanitary and storm sewers affecting the proposed improvements; a plot plan of any existing facilities at the proposed location to be utilized in the proposed project; the location, size and pressure of water supply mains available to serve the proposed facilities if a public supply is not available; information on the source of the fresh water supply including sanitary features, yield, bacterial, chemical, and physical quality.
 - 1.2.4 Proposed Facilities – The location of the swimming area, pool, wading pool, together with appropriate details of the bather preparation facilities, diving boards, outlets, drains, overflows, inlets, steps and ladders, walk area, lighting fixtures, heating and ventilating facilities, recirculating system and appurtenances, disinfection equipment, proposed sewers and water main extensions and any other sanitary features affecting the operation or safety of the proposed bathing facility.
- 1.3 Detailed Plans – All detailed plans shall be prepared on blue or white prints and shall be drawn to a suitable scale. The detailed plans for bathing facilities shall show:
 - 1.3.1 A plot of the property to be used for location of the swimming pool development, indicating the topography and the arrangement of present and proposed structures.
 - 1.3.2 Complete construction details, including elevations and cross sections for all units. Complete construction details, including plan view (overhead) elevations, longitudinal (cross) sections for all units. A transverse section view is required.
 - 1.3.3 Schematic diagrams of the pool recirculation, filtration, and disinfection systems.
 - 1.3.4 Detailed plans for all piping.
- 1.4 Specifications – Complete detailed specifications for the construction of the swimming pool, bathhouse, recirculating system, filtration system, disinfection

equipment, and all other appurtenances provided in the detailed plans shall accompany the plans.

1.5 Summary of Design Data – A summary of the basis of design, including information relative to the bathing load, recirculation equipment, capacity of dressing rooms, disinfection equipment, toilet facilities, etc., shall be submitted with the plans.

1.6 Revision to Approved Plans – Any deviation from the approved plans or specifications affecting capacity, flow, or operation of units must be approved in writing before such changes are made. Plans and specifications so revised should, therefore, be submitted 30 business days prior to any construction work, which will be affected by such changes to permit sufficient time for review and approval. Minor changes not affecting an established building code or aquatic code and not affecting the operation will be permitted during the construction without approval. “As built” plans clearly showing such alterations shall be placed on file with the Division of Environmental Protection at the completion of the work.

1.7 Construction

1.7.1 Unless otherwise specified by these rules and regulations and the code, swimming pools or bathing places constructed or permitted prior to the revised effective date of the Code, which do not fully comply with the minimum code requirement regarding the design and construction, may be continued in use until such time as an alteration occurs, or the construction or design are found to be unsafe, unsanitary, a nuisance, or is hazardous to public health or safety.

Alterations shall meet the provisions of these rules and regulations and the code. Replacements or repairs to existing systems or its components shall not be required to meet the provisions unless such work will cause an existing pool to become unsafe, unsanitary, a nuisance, or hazardous to public health or safety. Replacement or repair of equipment or its components shall not require all other components of the swimming pool design and construction to comply with these rules and regulations and the code, but shall be replaced or repaired with at minimum the same or equivalent equipment or components. Alterations and replacements must not cause an existing system to be any less in compliance with the code than it was before the changes

1.7.2 Plan Approval Letter. A Plan Approval Letter authorizing construction must be obtained prior to beginning any construction, development, installation, or major alteration of a public water recreation facility.

1.7.3 Procedure to Obtain a Plan Approval Letter.

A. The owner or his representative must submit to the Department a completed application for approval along with a plan review fee as outlined under Chapter 808 for each public water recreation facility.

B. One set of detailed construction plans and specifications each bearing the seal and signature of a licensed engineer shall be submitted for initial review. However, two (2) sets of such drawings shall be submitted prior to the issuance of a plan approval letter.

- C. No change in location or construction of the project shall be made from plans and specifications that have been approved without first submitting details of the proposed changes to the Department and receiving subsequent approval.
- 1.7.4. Revised Plans and Specifications. If Department review of the submitted documentation identifies the need for correction to the plans and/or specifications, corrected copies shall be submitted. If the revised documentation is satisfactory pursuant to this Section, a plan approval letter shall be issued to the applicant.
- 1.7.5 Procedure after the Issuance of a Plan Approval Letter. The applicant shall notify the Department representative when the work authorized by the plan approval letter has started, when piping rough in is completed and again upon completion of the work. No currently permitted facility that has undergone a major alteration shall be operated until final construction approval has been obtained from the Department. The owner shall keep a set of plans and specifications' bearing the approval of the Department after the project has been completed.
- 1.7.6 Alterations of Existing Facilities.
 - A. Alterations of existing facilities must be in compliance with design requirements in this Chapter. A plan approval letter must be obtained prior to the initiation of an alteration.
 - B. Preliminary Concept Approval. The Department will review innovative design concepts and other design features that are not in strict compliance with this Chapter in advance of submission of plans and specifications to assure that the proposed concept or design will meet the intent of this Chapter. Preliminary concept reviews may be conducted at the request of the project designer so that the innovative design(s) can be explained.

2. Design and Construction of Swimming Pools

This part contains specifically those minimum requirements, which are applicable to the design and construction of swimming pools.

- 2.1. Swimming Pool Sanitation – In the control of swimming pool sanitation, certain broad principles apply to all classes of indoor and outdoor pools.
 - 2.1.1. The same standards of cleanliness and bacterial purity of the water and the same precautions against the possible spread of disease shall apply at both indoor and outdoor swimming pools.
 - 2.1.2. At least one guarded jet drinking fountain with a safe supply of water shall be supplied at all swimming pools.
 - 2.1.3. The water supply for all shower, lavatory, and drinking water facilities as adjuncts to the bathing area shall meet the Division of Environmental Protection bacteriological standards for a safe drinking water.
 - 2.1.4. All equipment installed for the proper operation of the swimming pool shall have been approved for swimming pool use by the National Sanitation Foundation (NSF), American National Standards Institute (ANSI) or an

equivalent testing organization responsible for evaluating swimming pool equipment for compliance with NSF Standard 50. In the absence of an applicable standard or if no testing facility is available, the equipment must be approved by the Department.

2.2. Wastewater Disposal

- 2.2.1. Sanitary Wastes – An approved method for disposing of sanitary wastes shall be provided to serve the toilets, locker room and all related facilities. Where available, a public sewerage system shall be used.
- 2.2.2. Pool Wastewater – Wastewater generated from the operation of a public water recreation facility shall discharge to the sanitary sewer or other method approved by the Department.
- 2.2.3. Outdoor deck drains may drain to daylight or to a storm sewer system. Indoor deck drains shall drain to the sanitary sewer system. Deck drains connected to a storm sewer or sanitary sewer system shall be installed per the Plumbing Code in Title XI of the Saint Louis County Revised Ordinance (SLCRO) 1974 Chapter 1103. Outdoor deck piping that drains to daylight shall not result in nuisance conditions that create an offensive odor, produce a stagnant wet area, or create an environment for the breeding of insects.
- 2.2.4. Cross Connection Prevention – There shall be no direct physical connection between the sewerage system and the pool drain or recirculation system. If the pool drain and the recirculation system overflow drains discharge to a sanitary sewerage system, a six-inch (6”) vertical air gap must be provided. The air gap must be located above ground level.

2.3. Bather Loading

- 2.3.1. Designation of Area – For purposes of computing swimmer and bather capacity for design, those portions of the pool five (5’) feet or less in depth shall be designated “shallow areas”. Portions of the pool greater than five (5’) feet in depth shall be designated as the deep areas.
- 2.3.2. Bather Load. The Department will specify a bather load for each new pool with the issuance of a plan approval letter. In case of multiple swimming pools contained within a common enclosure, the Department may specify an individual and a combined bather load for the pool enclosure. The criteria to be used for computing the bather load are as follows:

Area/Pool Type	Capacity
Shallow	15 square feet per bather
Wave 30 inches or less	15 square feet per bather
Wave 30 inches or greater	25 square feet per bather
Lazy River	25 square feet per bather
Deep with diving	25 square feet per bather with 300 square feet deducted for each platform or diving board

Deck	50 square feet per bather in excess of minimum area of deck required
Spa	10 square feet per bather or 3 lineal feet of seat length, excluding steps, whichever results in the lesser number

- A. A designated plunge area or landing area for a slide shall not be considered in computing a bather load.

2.4. Pool Construction Materials

- 2.4.1. Material. Pools shall be constructed of materials that provide a rigid watertight shell with a smooth, impervious finish that is non-toxic and easily cleaned. The floor of shallow areas shall have a slip-resistant finish. Pool vinyl liners may only be installed over a base of concrete, steel or other such rigid material. The following types of markings shall be of a contrasting color: water line markings; racing lane markings with a maximum width of 15 inches; turn targets; depth markings; stair tread markings, slope transition markings; ledge and seat markings, and other safety markings; suction grates and covers and other pool fittings.
- 2.4.2. Fillet – All corners formed by intersection of walls and floors should be rounded.
- 2.4.3. Pervious Bottoms Prohibited – Sand or earth bottoms are not permitted in pool construction.
- 2.4.4. Sand Bottom – clean sand or similar material, if used in a beach pool shall only be used over an impervious surface and designed to perform in such an environment, and controlled so as not to adversely affect the proper filtration, treatment systems, maintenance, safety, sanitation, water clarity and operation of the overall pool or spa. Positive upflow circulation through the sand shall be provided as necessary to assure that sanitary conditions are maintained at all times, the turnover time shall be 1 hour.
- 2.4.5. Interior Color. The colors, patterns, or finishes of a pool, spa or water recreation attraction shall not obscure the existence or presence of objects or surfaces within the pool or spa.
- 2.4.6. Floor Slopes – Floor slopes shall, as a minimum, be in compliance with Sections 2.4.7 through 2.4.10.
- 2.4.7. The slope of the floor from the shallow end wall towards the deep end shall not exceed one foot in twelve feet (1': 12') to the point of the first slope change.
- 2.4.8. The point of the first slope change shall be defined as the point at which the floor slope exceeds one foot in twelve feet (1': 12').
- 2.4.9. The slope of the floor from the point of the first slope change to the deep end shall not exceed one foot in three feet (1': 3'). Such slopes are not

intended to provide any less water depth than those specified if the pool is intended for diving.

- 2.4.10. Transitional radius from wall to floor where floor slopes join the wall shall comply with the following:
 - A. The radius shall have its center no less than two feet nine inches (2'9") below the waterline in deep areas or two feet six inches (2'6") in the shallow area.
 - B. The radius shall be tangent at the point where the radius either meets the wall or the floor.
 - C. The radius shall be at least equal to, or greater than, the depth of the pool minus the vertical wall depth measured from the waterline (or tolerance allowed in Article 4.2) minus three inches (-3") to allow draining to the main drain. (R minimum = Pool depth – Vertical wall depth – 3").

- 2.5. Pool Water Depths –Water depths at the shallow end of the swimming area shall be a maximum of three feet six inches (3'6"). Competition pools or other special purpose pools may deviate from this requirement if the deviation is required because of the special use of the pool and presents no safety hazard. Water depths at the shallow end of a racing pool shall be three feet six inches (3'6") minimum. Starting platforms shall not be located in less than 5 feet of water extending a minimum sixteen feet five inches (16' 5") from the starting end pool wall, or in compliance with the governing body. Starting Platforms must be removed or covered by a device to prevent use of the platform when not in use by competitive swimmers. Water depth of a pool shall be established by the designer/manufacturer in consideration of the function of the pool. All pools including existing pools must comply with this section.
 - 2.5.1. The beginners' area of a pool shall be visually set apart from, but may be adjoined to, the shallow area and shall not adjoin the deep area.
 - 2.5.2. The transition point of the pool from the shallow area to the deep area shall be visually set apart with a rope and float line, depth markers, and a four inch (4") minimum width row of floor tile, painted line, or similar means of a color contrasting with the bottom. In diving pools with a constant slope, the shallow area shall be visually set apart from the deep area with a rope and float line, depth markers, and a four inch (4") minimum width row of floor tile, painted line, or similar means of a color contrasting with the bottom. If there is no transition point in the shallow end of the pool (less than 5ft depth) then the defining point will be located at the 5ft depth.

- 2.6. Diving Pool Water Depth –Diving pools shall conform to the minimum water depths, areas, and other dimensions as defined by the following governing bodies:
 - 2.6.1. Class A Pools – Class A Pools shall be designed to meet Federation Internationale de Natation Amateur (FINA), National Collegiate Athletic Association (NCAA), National Federation of State High Schools Association (NFSHSA) or other national standards approved by the Health Department.

- 2.6.2. Class B, Class C, and Class D Pools – Class B, Class C, and Class D pools shall be designed to meet the ANSI/NSPI-1 2003 diving standard or any of the standards listed above for Class A pools.
- 2.7. Underwater seat benches and rest ledges – Benches or ledges projecting into the pool at the wall must visually be set apart with a solid stripe two (2") inches (5 cm) wide on the surface along the front leading edge. The stripe shall be plainly visible to persons on the pool deck. Benches and ledges shall have a slip resistant surface. Underwater seat benches shall have a maximum seating width of eighteen (18") inches (46 cm) projecting from the wall at a depth not to exceed twenty-four (24") inches (61cm) below the design water level. Rest ledges shall be at least four (4") inches (10 cm) wide and no more than eight (8") inches (20 cm) wide projecting from the wall or recessed into the wall at a depth not to exceed four (4") feet (122 cm) below the design water level.
- 2.8. Ladders, Recessed Steps, and Stairs
- 2.8.1. Location - Steps or ladders shall be provided to serve the shallow and deep portions of the pool, and if the pool is over thirty feet (30') wide, such steps or ladders shall be installed on each side. Stairs, ladders, and recessed steps should be located so as not to interfere with racing lanes or with diving.
- 2.8.2. Stairs - Stairs leading into pools shall have a minimum tread of twelve inches (12") and a maximum rise not to exceed ten inches (10"). The risers shall be uniform except for the bottom riser whose height is allowed to vary to the floor. There shall be no abrupt drop-off or submerged projections into the pool, unless guarded by handrails.
- 2.8.3. Ladders - Pool ladders shall be corrosion resistant and shall be equipped with non-slip treads. All ladders shall be designed to provide a handhold and shall be rigidly installed. There shall be a clearance of not more than six inches (6") or less than three inches (3") between the ladder and the pool wall.
- 2.8.4. Recessed Steps - If steps are inserted in the walls or if step-holes are provided, they shall be of such design that they may readily be cleaned and shall be arranged to drain into the pool to prevent the accumulation of dirt. Recessed steps shall have a minimum tread of five inches (5") and a minimum width of fourteen inches (14").
- 2.8.5. Handrails - Where stairs, recessed steps, or ladders are provided within the pool, there shall be a handrail at the top of both sides thereof extending over the coping or edge of the deck.
- 2.8.6. Steps and Guard Rails for Diving Boards - Supports, platforms, and steps for diving boards shall be of substantial construction and of sufficient structural strength to safely carry the maximum anticipated loads. Steps shall be of corrosion-resistant material, easily cleanable, and of non-slip design. Handrails shall be provided at all steps and ladders leading to diving boards more than one meter above the water. Platforms and diving boards, which are one meter or more high, shall be protected with guard railings to the water's edge.

- 2.9. Decks - A Deck shall entirely surround the pool except for special use pools such as rivers and plunge pools. A continuous, unobstructed deck (except in the area where starting platforms are located) not less than four feet (4') wide at indoor pools and not less than five feet (5') wide at outdoor pools shall be provided. The deck between two adjacent swimming pools shall be at least eight (8') feet wide. The deck shall be of a uniform, easily cleaned, impervious material; and be of non-slip construction.
- 2.9.1. Pool Edges - The edge of the pool should be rounded at its junction with the deck, and shall be shaped to provide an adequate hand hold.
- 2.9.2. Slope - The minimum slope of the deck shall be $\frac{1}{4}$ inch per foot.
- 2.9.3. Drainage - In no instance shall the walks or walk drains drain directly to the pool. Pool walks shall slope in a direction away from the pool but shall not drain in such a manner as to cause standing water.
- A. Adequate and properly located deck drains are necessary where pool decks slope away from the pool edge.
- B. The drainage shall not be discharged into the pool recirculation system.
- C. Reference Section 2.2.3.
- 2.9.4. Hose Bibs - Sufficient hose connections of five-eighths (5/8") size, served by at least three-fourths inch (3/4") pipe, shall be located to effectively flush all areas of the pool with easily manipulated hose lengths.
- A. Hose bibs with a backflow preventer shall be installed.
- 2.9.5 Fencing - An effective fence or barrier of six-foot (6') minimum height shall be provided on the outside of the deck area to prevent unauthorized pool entrance by spectators. Fencing a minimum of four foot (4') height will be considered and may be approved dependent upon the size, use, and location of the pool to be fenced. Picket type fences of wrought iron or wood shall have openings between uprights no greater than four inches (4"). All entrances (gates) shall be self-closing and self-latching. Facilities that have a "manned front gate" or "gate monitors" during hours of operation shall be exempt from this requirement.
- 2.9.6 Adjacent Area - Landscaping is permitted in so far as the water shall be clear of debris and maintain water clarity and sanitation.
- 2.10. Depth Markings
- A. The water depth in swimming pools shall be marked on the edge of the deck next to the pool so as to be readable by persons on the deck and facing the pool. Where feasible, depth markings at least four inches high shall be installed on pool walls at or above the water level. Where depth markers cannot be placed on the walls at or above the water level such that at least 50% of the marking is above water level, they shall be placed on the fencing or pool enclosure or other location so as to be plainly visible to persons in the pool. Depth markings shall be provided at the shallow and deep ends of the pool, the transition point, and the

point of maximum depth, and shall be installed at intermediate increments of water depth not to exceed two feet (2') nor shall be spaced at more than twenty five feet (25') intervals measured peripherally, except that depth markings are not required at a zero-depth edge or at locations where the water depth is twelve inches (12") or less.

- B. Depth markers shall indicate pool depth either in feet, feet and inches, or feet and fractions of a foot, and shall be of a color that contrasts with the background. Numerals indicating depth shall be a minimum of 4 inches high.
- C. The warning words "NO DIVING" and the international symbol for no diving shall be clearly marked on the pool deck adjacent to the pool at not more than 25 foot intervals around the pool perimeter where the water depth is less than feet (6'), except at a zero-depth edge or spray grounds.

Where the water depth is less than six feet (6'), a warning sign shall be posted in plain view and state, "NO DIVING ALLOWED" with clearly legible letters, at least four inches (4") high with the exception of zero depth entry or spray grounds.

The warning and symbols must meet the following requirements:

- The letters and the symbol shall be in an acceptable, contrasting color and in letters at least four inches (4") high.
- Depth markers in or on the deck shall be slip resistant.
- Depth markers on the deck shall be within twenty four inches (24") of the water.

- D. Spas and wading pools shall have a minimum of two depth markers, regardless of shape or size.

2.11. Lighting and Electrical Requirements

2.11.1. Underwater Lighting – Where night swimming is permitted, underwater lighting shall be provided. Not less than 0.5 watts of incandescent light or its equivalent shall be employed per square foot of pool area. For dedicated diving wells with platform diving, not less than 1 watt of incandescent light or equivalent shall be employed per square foot of pool area. Such lights shall be spaced to provide illumination so that all portions of the pool and pool bottom maybe plainly visible to persons in the pool. Lights should be protected or recessed to prevent breakage.

Pools used at night shall be equipped with underwater light fixtures that will provide complete illumination to all underwater areas of the pool with no blind spots. Illumination shall enable a lifeguard or other persons to determine whether: (1) a bather is lying on the bottom of the pool, and (2) the water [conforms to the definition of "clear pool water"]meets the water quality standards of this code. Exception: Pools provided with a system of overhead lighting fixtures, where it can be demonstrated to the enforcing agency that the system is equivalent to the underwater lighting fixture system.

- 2.11.2. Water Surface. Overhead illumination on the water surface shall be a minimum of thirty (30) foot-candles when underwater lighting as specified in item 2.11.1 is provided. Without underwater lighting, a minimum illumination of fifty (50) foot-candles on the water surface shall be provided.
- 2.11.3. Area Lighting - Where night swimming is permitted, area lighting shall be provided for the deck areas and directed toward the deck areas and away from the pool surface insofar as practical in a total capacity of not less than 0.6 watts per square foot of deck area.
- 2.11.4. Deck Area Lighting - Where the pool is to be used at night, pool deck areas shall be provided with lighting so that persons walking on the deck can identify hazards. Lighting fixtures shall be aimed towards the deck area and away from the pool surface insofar as practical.
- 2.11.5. Wiring – All Swimming Pool Lighting Fixtures shall be U.L. listed with all wiring and power shall conform to Article 680 of the National Electrical Code (NEC), National Fire Protection Association (NFPA) 70 and applicable Saint Louis County Codes.
- 2.11.6. Overhead Clearance – No Electrical wiring shall pass overhead within twenty-two (22') of the water level or diving platform of the pool per National Electrical Code (NEC).
- 2.12. Inlets - Inlets for recirculated water shall be located to produce uniform distribution of the water and to facilitate the maintenance of a uniform disinfectant residual throughout the entire pool.
 - 2.12.1. Number of Inlets - The number of return inlets shall be based on a minimum of one return inlet per 300 square feet (27.87m²) of pool surface area, or fraction thereof. Return inlet fittings shall be of sufficient size or quantity to allow a full turnover rate of the circulation system in accordance with the manufacturer's specification for return inlets.
 - 2.12.2. Orifice Design - Each inlet shall be designed as an orifice to permit adjustment of water volume. Their design and location shall be sufficient to assure distribution of disinfectant residual throughout the pool.
 - 2.12.3. Inlets/outlet design – inlets and outlets from the circulation system shall be designed so that they do not constitute a hazard to the bather.
 - 2.12.4. An inlet must be provided at each set of stairs or recessed area to provide good circulation over the stairs.
 - 2.12.5. Where skimmers are used, the return inlets shall be of a directional design and be located so as to help bring floating particles within range of the skimmers.
- 2.13. Inlets/Outlets – Suction outlets that are a part of the filtration system shall be arranged to produce a uniform circulation of water and maintain the distribution of sanitizer residual throughout the pool. Suction outlets for pools, spas and other water recreation attractions shall be designed to protect against entrapment and not constitute a hazard to the user. Any suction outlet system for a pool, spa or water recreation attraction circulation or filtration system, booster system, automatic cleaning system, water feature circulation system, etc. shall be designed to protect against suction entrapment, evisceration, or hair entrapment/entanglement hazard and shall comply with the following:

- 2.13.1. All grates, covers and fittings on suction outlets shall comply with ASME/ANSI A112.19.8MR96 "Suction Fitting for use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances."
- 2.13.2. There shall be a minimum of two hydraulically balanced suction outlets for each pump suction line unless the grate is eighteen inches by twenty three inches (18"X23") or larger. Multiples sets of pump suction lines shall be permitted into two or more suction outlets as long as they are hydraulically balanced and meet the requirements these rules and regulation and the code. The distance between suction outlets shall be a minimum of three feet.
- 2.13.3. At least one set of filter recirculation outlets shall be located at the deepest point of the pool. Spas shall have at least one of the drains at the deepest point of the floor and the second can be on the floor or in the wall. No means of isolating suction outlets is permitted that could allow one suction outlet to serve as the sole source of water to a pump unless the outlet has at least one dimension that is eighteen inches by twenty three inches (18"X23") or larger. Suction outlets not related to the filtration system may be located in the floor or walls of the body of water.
- 2.13.4. Water velocity through outlet grates shall not exceed 1.5 feet per second. Water velocity through anti-vortex suction outlet covers shall not exceed six feet (6') per second. Suction outlets exceeding 1.5 feet per second are permitted provided each suction outlet has a cover that has been tested and approved for such velocities by AMSE/ANSI A.112.19.9M R96. The maximum velocity in the pump suction hydraulic system shall not exceed 6 feet per second when 100 % of the pump flow comes from the main drain system and any suction fitting in the system in completely blocked. The flow through the remaining suction grate outlet or outlets shall not exceed 1.5 feet per second.
- 2.13.5. All suction outlet covers, grates, anti vortex outlets, etc. shall be secured in such a way that they can be removed only with the use of a tool.
- 2.13.6. The main drain shall be plainly marked by a contrasting color on all pools.
- 2.13.7. Outlets on pools wider than 20 feet shall be spaced not less than three feet (3'), nor more than thirty feet (30') apart, nor more than fifteen feet (15') from side walls and shall be hydraulically balanced.
- 2.13.8. The width of grate openings shall not exceed ½" in suction outlets.
- 2.13.9. A pool shall not be operated if any outlet grate or cover is missing, broken, or secured in such a way that it is removable without the use of tools.
- 2.13.10 A hydrostatic relief valve shall be provided for in-ground pools.
- 2.13.11 Grates that exceed the size covered by ASME/ANSI A112.19.8M R96 must comply with all other aspects of Section 2.13.
- 2.13.12 Existing facilities shall have the suction outlet system serving the pool, spa, or water recreation attraction that does not constitute an entrapment hazard, meeting all requirements of Section 2.13 of the code. All existing spas, pools, and/or water recreation attractions shall comply by December 20, 2008. This work is considered a repair by the Department

to fix a potential safety hazard. The outlet system shall be modified with one of the following:

- A. A single outlet equipped with an eighteen by twenty-three inches (18"X23") or larger grate.
- B. A minimum of two outlets spaced at least three feet (3) apart.
- C. A single outlet protected by a safety vent pipe or a safety vacuum release system.
- D. Or other method approved by the Director.

2.14. Perimeter Overflows - Current pool design provides that overflow gutters or other approved acceptable surface skimming systems serve as collection channels for the recirculation system.

2.14.1. A surface skimming system shall be provided on all public swimming pools. The surface skimming system shall be designed and constructed to skim the pool surface when the water level is maintained within the operational system.

2.14.2. Perimeter Overflow Gutters

- A. When a perimeter-type surface skimming systems is used as the sole surface skimming system, it shall extend around a minimum of 50% of the pool perimeter.
- B. Design – The perimeter overflow shall be capable of continuously removing at least one hundred percent (100%) of the recirculated water and returning it to the filter. All perimeter overflows shall be connected to the recirculation system through a properly designed surge tank. The perimeter overflow drains, and return piping to the surge tank shall be designed to rapidly remove overflow water caused by recirculation displacement, wave actions, or other causes produced from the maximum pool bathing load. (Open channels, if provided, shall be designed to prevent entrance or entrapment of bathers' arms or legs.) The overflow edge or lip shall be rounded and not thicker than two and one-half inches (2-1/2"). Provisions must be made to permit water to flow from overflow channels to waste, as well as to the recirculation system.
- C. Alternate design – Nothing in this section shall preclude the use of rollout or deck level type pools. Such designs shall provide for one hundred percent (100%) recirculation return through the flumes at design flow rate. The design of the curb and handhold shall conform to accepted standards, and approval shall be based on detailed review of this feature of construction and evaluated in the light of proposed use of the pool.
- D. Surge Capacity – All overflow gutters shall be connected to the recirculation system with a total surge capacity of not less than one gallon per square foot of pool surface area. The capacity of the perimeter overflow system and related piping may be considered as a portion of the surge capacity. Each surge

system shall be provided with an overflow drain and a means for draining and cleaning.

2.14.3. Skimmers

- A. The hydraulic capacity of the surface skimming overflow system shall be capable of handling 100% percent of the circulation flow.
- B. Where automatic surface skimmers are used as the sole overflow system, at least one surface skimming shall be provided for each 500 square feet (46m²) or fraction thereof of the water surface area. Recessed areas such as stairs, and swimouts shall not be considered in the calculation. At least two skimmers should be provided. When skimmers are used, they shall be located to maintain effective skimming action.
- C. Capacity - The piping and other pertinent components of skimmers shall be designed for a total capacity of one hundred percent (100%) of the required filter flow of the recirculation system and no skimmer shall be designed for a flow through rate of less than thirty (30) gallons per minute per foot of weir length.
- D. Design - The skimmer weir shall be automatically adjustable and shall operate freely with continuous action to variations in water level over a range of at least four inches (4"). The weir shall be of such buoyancy and design so as to develop an effective velocity. Skimming devices shall be designed and installed so as not to constitute a hazard to the user.
- E. Screen - An easily removable and cleanable basket or screen through which all overflow water must pass shall be provided to trap large solids. Spare screens or baskets shall be readily available.
- F. Relief Line - The skimmer may be provided with a device to prevent air-lock in the suction line. If an equalizer pipe is used it shall provide an adequate amount of water for pump suction, should the water of the pool drop below the weir level. If any other device or arrangement is used, a sufficient amount of water for pump suction shall be assured. When equalizer lines are used, they shall have an anti-entrapment cover or other entrapment protection in accordance with the most recent edition of ANSI.
- G. Lids - Skimmer covers located on a walking surface shall be securely seated, slip resistant, of sufficient strength to withstand normal deck use, and not constitute a tripping hazard.
- H. Material - The skimmer shall be of sturdy, corrosion-resistant materials.
- I. Location, Installation, Handholds, Etc. - Skimmers are permitted on swimming pools provided approved handholds are installed and sufficient motion to the pool water is induced by the pressure return inlets. Handholds shall consist of coping not over two and one-half inches (2-1/2") for the outer two inches (2") or an equivalent approved handhold. The handholds must be no more than six inches (6") above the normal water line.

Skimming devices shall be built into the pool wall and shall develop sufficient velocity on the pool water surface to induce floating oils and wastes into the skimmer from the entire pool area.

2.14.4. Water Level Control - Facilities capable of maintaining a water level sufficient to provide continuous skimming when pool is not in use shall be provided.

2.14.5. Perimeter Overflows or other approved acceptable surface skimming systems shall be required on all pools.

2.15. General Circulation Requirements. A circulation system consisting of one or more pumps, piping, suction outlets, filters, disinfectant feeders, return inlets, and other necessary equipment shall provide complete and uniform circulation of water and shall be designed to accommodate 100% of the design turnover flow rate and maintain the distribution of disinfectant residual through all parts of the pool or spa. The recirculation system shall operate continuously twenty-four (24) hours per day. All equipment shall be separated from the public by a fence or similar barrier.

2.15.1. Hair Strainer - The recirculation system shall include a strainer to prevent hair, lint, etc., from reaching the pump. This requirement is waived on systems where the filters are on the suction side of the pump. Strainers shall be corrosion-resistant with openings not more than one-eighth inch (1/8") in size and the total area of the openings shall be ten (10) times the area of the inlet pipe. The strainer shall be readily accessible to frequent cleaning. Spare screens or baskets shall be readily available.

2.15.2. Vacuum System - Equipment should be provided to remove sludge, sediment and other accumulations from the bottom of the pool. On pools without skimmers, a portable vacuum pump (gasoline or GFI protected electric motor) shall be provided.

2.15.3. The system shall be designed to give the following minimum turnover rates based on the manufacturer's specified maximum working pressure of the filter in dirty media condition, immediately prior to cleaning the filter:

Swimming Pool Class	Turnover Rate
Class A, Class B, Class C	1-1/2 times average depth in feet to equal the hours of turnover required. A minimum of a 6-hour turnover rate is required.
Class D-1 Wave	4 hour minimum turnover rate
Class D-2 Activity – less than 24 inches	1 hour minimum turnover rate
Class D-2 Activity – 24 inches or greater	4 hour minimum turnover rate
Class D-3 Catch/Plunge Pool	4 hour minimum turnover rate
Class D-4 Leisure River/Watercourse	4 hour minimum turnover rate

Class D-5 Vortex	4 hour minimum turnover rate
Class D-6 Sand Bottom	1 hour minimum turnover rate
Class D-7 Amusement Park Attractions	1 hour minimum turnover rate
Public Spas	½ hour minimum turnover rate
Sprayground	½ hour minimum turnover rate
NOTE – The average depth of the pool in accordance with this table determines the minimum turnover rate for each pool.	

- 2.15.4. Circulation system components that require inspection, replacement or servicing shall be accessible and shall be installed in accordance with the manufacturer's specifications.
- 2.15.5. Pool, spa, and water recreation attraction equipment and related plumbing shall be supported to prevent damage. The equipment shall be mounted to minimize the potential for the accumulation of debris and moisture, following the manufacturer's specifications.
- 2.15.6. The water velocity in the pool, spa, and water recreation attraction piping shall not exceed eight feet (8') per second in discharge piping (except for copper piping where the velocity shall not exceed six feet (6') per second), four feet (4') per second for gravity piping and six feet per second in suction piping.
- 2.15.7. Pool piping shall be sized to permit the rated flow for filtering and cleaning without exceeding the maximum design head of the pump.
- 2.15.8. Circulation system piping, other than that integrally included in the manufacture of a pool, spa, and water recreation attraction, shall be subject to an induced static hydraulic pressure test for six (6) hours at pressure 50% greater than the maximum design operating pressure of the system or twenty-five (25) pounds per square inch, whichever is greater. Compressed air shall not be used for pressure testing (per ANSI). Pneumatic tests will need approval from the Health Department. This test shall be performed before the deck is poured and the pressure shall be maintained throughout the deck pour.
- 2.15.9. The circulation system piping and fittings shall be nontoxic and shall be of materials able to withstand operating pressures and conditions. Polyvinyl chloride pipe, fittings, and glue shall bear the NSF mark for potable water use and be of schedule forty (40) or stronger. All piping and valves should be identified by color code or tag.
- 2.15.10. Flow Measurement. The circulation system of all pools, spas, and water recreation attraction shall be equipped with the following:
- A. A pump suction (vacuum) gauge installed as close to the suction side of the pump as possible without sacrificing accuracy;
 - B. A filter inlet pressure gauge installed on the piping immediately after the pump;

- C. A filter outlet gauge, and
 - D. Rate of flow indicator located to accurately (plus or minus 10%) indicate the rate of flow in gallons per minute through the filter during filtering as well as during backwashing.
- 2.15.11. Thermometer - Pools equipped with heaters shall have a fixed thermometer in the recirculation line beyond the heater and another near the outlet to the pool.
- 2.15.12. A separate recirculation system must be used for each pool, i.e., diving, swimming, or wading unless adequate provisions are made to assure the minimum prescribed turnover. Where multiple pools are serviced by a single/central filtration system, suction and pressure gauges and flow meters shall be provided in the supply piping as required at locations to permit the monitoring of the flow characteristics to each pool.
- 2.15.13. Backwash Water - All wastewater generated from the backwashing of filtration systems shall be discharged as an indirect waste to a sanitary sewer. An air gap of six-inch (6") minimum height shall be utilized. Discharge to other than the sanitary sewer may be allowed under extraordinary circumstances with approval of the Director.
- 2.16. Sand Filters –Filters shall comply with the most recent edition of ANSI/NSF 50. The swimming pool water treatment system shall have one or more filters. The three types of sand filters permitted are rapid flow, gravity, and high rate.
- 2.16.1. Rapid flow pressure sand filter systems shall be provided with the following:
- A. Filter Media –Sand and other media shall be carefully graded and meet the manufacture’s and ANSI recommendation for pool use.
 - B. Filter Area - Sufficient filter area must be provided to filter the entire contents of the pool. Filters shall be sized to accommodate or exceed the design flow rate of the system.
 - C. Maximum flow of filters shall not exceed the requirements of the most recent edition of ANSI/NSF 50.
 - D. Filters for pools, spas, and water recreation attractions shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly, and repair.
 - E. A compound gauge on the suction side of the pump, which will indicate both positive and negative head shall be in place.
 - F. Any filter incorporating an automatic internal air release as its principal means of air release shall have a lid(s) that provide(s) a slow and safe release of pressure as part of this design and shall have a manual air releases in addition to automatic releases.
 - G. Filters shall be provided with a readily observable free fall or sight glass installed on the waste discharge line in order that the filter backwashing progress may be observed. Where sight glasses are used, they shall be readily removable for cleaning.
 - H. Filters shall be backwashed, cleaned, and maintained according to manufacturer’s instructions.
- 2.16.2. Vacuum sand filter systems shall be provided with the following:

- A. Filters shall be certified to comply with ANSI/NSF 50 and listed as such by an approved certification agency. The design filtration rate in the particular application in which the filter is utilized shall not exceed the maximum design filtration rate for which the filter was certified. An official certification label from the certifying agency shall be permanently affixed to the filter.
- B. Filter Area - Sufficient filter area must be provided to filter the entire contents of the pool. Filters shall be sized to accommodate or exceed the design flow rate of the system.
- C. Maximum flow rate of filters shall not exceed the requirements of the most recent edition of ANSI/NSF 50.
- D. Filter Media - Sand and other media shall be carefully graded and meet the manufacturer's and ANSI recommendation for pool use.
- E. Filters for pools, spas and water recreations attractions shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly and repair.
- F. Filters shall be provided with a readily observable free fall or sight glass installed on the waste discharge line in order that the filter backwashing progress may be observed. Where sight glasses are used, they shall be readily removable for cleaning.
- G. A vacuum gauge and a vacuum limit switch interconnected with the pump shall be in place between the pump and filter.

2.16.3. High rate sand filter systems shall be provided with the following:

- A. Filters shall be certified to comply with ANSI/NSF 50 and listed as such by an approved certification agency. The design filtration rate in the particular application in which the filter is utilized shall not exceed the maximum design filtration rate for which the filter was certified. An official certification label from the certifying agency shall be permanently affixed to the filter.
- B. Filter Area - Sufficient filter area must be provided to filter the entire contents of the pool. Filters shall be sized to accommodate or exceed the design flow rate of the system.
- C. Maximum flow rate of filters shall not exceed the requirements of the most recent edition of ANSI/NSF 50.
- D. Filter Media - Sand and other media shall be carefully graded and meet the manufacturer's and ANSI recommendation for pool use.
- E. Filters for pools, spas and water recreations attractions shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly and repair.
- F. A compound gauge between the pump strainer and the pump, which will indicate both positive and negative head shall be in place.
- G. Filters shall be provided with a readily observable free fall or sight glass installed on the waste discharge line in order that the filter backwashing progress may be observed. Where sight glasses are used, they shall be readily removable for cleaning.

- 2.17. Regenerative Media Filters – Filters shall comply with the most recent edition of ANSI/NSF 50. Regenerative media (such as Diatomaceous Earth and Perlite)

filtration units are acceptable in swimming pool recirculation systems. The two types approved are pressure and vacuum.

2.17.1. Pressure Regenerative Media Filters

- A. Filter Area - Sufficient filter area must be provided to filter the entire contents of the pool. Filters shall be sized to accommodate or exceed the design flow rate of the system.
- B. Maximum flow rate of filters shall not exceed the requirements of the most current ANSI/NSF 50 standards.
- C. Filter Elements - The filter element and septum shall be constructed and installed to adequately resist significant deformation, rupture or dislocation with the maximum differential pressure between influent and effluent developed by the pump during filtering and/or backwashing operation.
- D. Precoating - Provisions shall be made to introduce a filter media to evenly cover the filter elements upon placing the equipment into initial operation and after each cleaning. Refer to the manufacturer for the necessary amount of filter media to add.
- E. Filters shall be provided with a readily observable free fall or sight glass installed on the waste discharge line in order that the filter washing progress may be observed. Where sight glasses are used, they shall be readily removable for cleaning.
- F. Regenerative Type Filters – Regenerative type filters shall meet the same standards as other pressure filters. Bumping air or manual means must be provided for, and provisions for inspection of elements shall be provided.
- G. Filters for pools, spas and water recreations attractions shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly and repair.
- H. A compound gauge on the suction side of the pump, which will indicate both positive and negative head, shall be in place.

2.17.2. Vacuum Regenerative Media Filters - Vacuum Regenerative Media filters shall be provided with the following:

- A. Sufficient filter area must be provided to filter the entire contents of the pool. Filters shall be sized to accommodate or exceed the design flow rate of the system.
- B. Maximum flow rate of filters shall not exceed the requirements of the most recent edition of ANSI/NSF 50.
- C. Filter Elements - The filter element and septum shall be constructed and installed to adequately resist significant deformation, rupture or dislocation with the maximum differential pressure between influent and effluent developed by the pump during filtering and/or backwashing operation.
- D. Precoating - Provisions shall be made to introduce a filter media to evenly cover the filter elements upon placing the equipment into initial operation and after each cleaning. Refer to the manufacturer for the necessary amount of filter media to add.

- E. Easy physical and visual access to the filter elements must be provided to facilitate cleaning during the backwash cycle.
- F. A spray nozzle system should be installed to wash and clean the surface of the filter septum. In lieu of this system, a hose bib with an adequate length of hose must be provided near the filter for this purpose.
- G. Filters for pools, spas and water recreations attractions shall be installed with adequate clearance and facilities for ready and safe inspection, maintenance, disassembly and repair.
- H. A vacuum gauge and a vacuum limit switch interconnected with the pump shall be in place between the pump and filter.

2.17.3. Cartridge filters – Filter shall comply with the current ANSI/NSF 50 standard. Cartridge filter units will be considered on an individual basis for swimming pool recirculation systems and shall be provided with the following.

- A. Filter area - Sufficient filter area must be provided to filter the entire contents of the pool. Filters shall be sized to accommodate or exceed the design flow rate of the system.
- B. Maximum flow rate of filters shall not exceed the requirements of the current ANSI/NSF 50 standard.
- C. Equipment and facilities shall be provided for cleaning and disinfection of filter elements in accordance with manufacturer's recommendations.
- D. Filter shall be equipped with a pressure gauge or gauges and an air relief valve.
- E. Spare cartridges – An extra set of cartridges, with at least 100 percent filter area, shall be provided.

2.18. Disinfection –All pools shall be equipped with disinfectant and pH control feeders. Disinfectant equipment for pools, spas, and public water recreation facilities shall comply with the following:

- A. Disinfectant equipment for pools, spas and public water recreation facilities shall comply with all applicable requirements of ANSI/NSF-50-1996, "Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs."
- B. Disinfectant feed systems for pools shall have the capacity to maintain up to five parts per million (5ppm) chlorine or approved equivalent for outdoor pools and public water recreation facilities and up to three parts per million (3ppm) chlorine or approved equivalent for indoor pools and public water recreation facilities under all conditions of use. The disinfectant feed equipment for spas shall have the capacity to maintain up to eight parts per million (8ppm) chlorine or approved equivalent for outdoor spas and up to five parts per million (5ppm) chlorine or approved equivalent for indoor spas.

- C. A chlorine or bromine residual or residual of other disinfectant approved by the Department shall be maintained in the pool, spa or water recreation attraction to meet the requirements of these rules and regulations and this code. Disinfectant equipment shall be selected and installed so that continuous and effective disinfection can be secured under all conditions. The use of elemental gas chlorine shall be in compliance with subsection 2.18.3 of these rules and regulations and this code. The pool, spa or water recreation attraction water shall be continuously disinfected by a disinfecting agent whose residual can easily be measured by simple and accurate field tests.
 - D. Personnel responsible for the operation of the disinfectant and associated equipment and other potentially hazardous chemicals shall be properly trained.
 - E. Disinfectant or other chemicals and feed equipment shall be stored in such a manner that pool, spa or water recreation attraction users shall not have access to such facilities and/or chemicals. Dry chemicals shall be stored off the floor in a dry room and protected against flooding or wetting from floors, walls, and ceiling.
 - F. All chemical bulk and day tanks shall be clearly labeled to indicate the tank's contents.
 - G. Solution containers shall be provided with a cover to prevent the entrance of dust, insects and other contaminants.
 - H. Chlorine compounds shall not be stored in the same area as petroleum products.
 - I. Disinfectant agents for pools and spas use shall be registered for such use with the United States Environmental Protection Agency (EPA).
 - J. Supplemental hand feeding of a disinfectant chemical directly into the pool shall not occur when users occupy the pool, spa or water recreation attraction.
 - K. Pool and spa skimmer baskets and pump strainer baskets shall not be used as chemical feeders.
 - L. In pools where the required disinfectant residuals and pH are not being maintained, as determined by the Department, an automated chemical control system that monitors disinfectant and pH shall be installed to assure constant and adequate disinfectant and pH levels.
- 2.18.1. Design and Construction - Disinfectant feeders shall be constructed of materials that will withstand wear, corrosion, or attack by disinfectant solutions or vapors and which are not adversely affected by repeated regular adjustments or other conditions anticipated in the use of the device. The feeder shall be capable of being easily disassembled for cleaning and maintenance. The design and construction shall be such as to preclude

stoppage from chemicals intended to be used or foreign materials that may be contained therein.

2.18.2. Chemical feeders. Chemical feeders at pools, spas and public water recreation facilities shall be installed in accordance with manufacturer's specifications:

- A. Be installed so that the solution is introduced downstream from the filter and heater and, if possible, at a point lower than the heater outlet fitting or according to manufacturer's instructions;
- B. Incorporate failure-proof features so that the chemical cannot feed into the pool, spa or water recreation attraction, the pool, spa or water recreation attraction piping system, water supply system, or the pool, spa and water recreation attraction enclosure if equipment or power fails. Chemical feed pumps shall be wired so they cannot operate unless there is adequate return flow to properly disburse the chemical throughout the pool, spa or water recreation attraction as designed.
- C. Be regulated to ensure constant feed with varying supply or back pressure;
- D. Be designed to prevent siphoning from the recirculation system to the solution container and to prevent siphoning of the chemical solution into the pool, spa or water recreation attraction;
- E. Have a graduated and clearly marked dosage adjustment to provide flows from full capacity to 10% of such capacity. The device shall be capable of continuous delivery within 10% of the dosage at any setting;
- F. To be provided with make-up water supply lines to chemical feeder solution tanks that have an air gap or other acceptable cross-connection control.
- G. If the device has an independent timer, the filter and chemical feed pump timers shall be interlocked.

2.18.3. Gas chlorination - When chlorine gas is used, the facility shall comply with The Chlorine Institute guidelines for gas chlorine use at a water recreation facility. This section applies only to existing pool, spas, and water recreation attractions using gas chlorination. Gas chlorination equipment shall not be installed on new pools or spas and shall not be installed on existing pools, spas, and water recreation attractions except to replace approved, existing gas chlorination equipment.

2.18.4. Dry Feed Chlorinators - Chlorinators utilizing dry chemicals in powder, stick tablet or any other form which feed the chemical into the water through erosion or any other manner are restricted in use to pools containing gallonage as recommended by the manufacturer and approved by the *ANSI/NSF50*.

2.18.5. Water Quality- Required water quality. Water quality for pools, spas and public water recreation facilities shall meet the following criteria. The parameters in the following tables apply to pools, spas, and public water recreation facilities, unless otherwise indicated

Disinfectant Levels	Minimum	Ideal	Maximum
Free Chlorine, ppm	1	2.0-3.0	8.0 ¹
Free Chlorine, ppm-spas	2	3.0-5.0	8.0 ¹
Combined Chlorine	None	None	0.2 ¹
Bromine, ppm	2.5	2.5-6.0	12.0 ¹
Bromine, ppm – spas	4.5	5.5-7.5	12.0 ¹
¹ Refer to product label for maximum level.			

pH Levels	Minimum	Ideal	Maximum
PH	7	7.4-7.6	7.8

Water Clarity	Minimum	Ideal	Maximum
Water Clarity	From the deck, bottom and main drain clearly visible at the deepest part of the pool or spa	N/A	N/A

Chemical Parameters	Minimum	Ideal	Maximum
Total alkalinity, ppm as CaCO ₃	60	80-100.0 ¹ 100.0-120.0 ²	180
Total dissolved solids, ppm	300	1000.0-2000.0	5000
Calcium Hardness, ppm as CaCO ₃	150	200.0-400.0	500.0-1000.0
Heavy Metals	None	None	None
1. For the following sanitizers: calcium hypochlorite, lithium hypochlorite, and sodium hypochlorite. 2 For the following sanitizers: Sodium dichlor, chlorine gas, and bromine compounds.			

Stabilizer, if used	Minimum	Ideal	Maximum
Cyanuric Acid, ppm ¹	None	10.0-40.0	100
Cyanuric acid shall not be used in indoor pools, spas, or public water recreation facilities or brominated pools, spas or public water recreation facilities without approval from the Department.			

Biological Parameters	Minimum	Ideal	Maximum
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Algae	None	None	None
Bacteria	0	0	10 per 100 ml Coliform 0 per 100 ml Fecal/E coli

2.19. Tests for disinfectant residuals as chlorine, hypochlorite, bromine or other halogens tests must be made a minimum of twice daily or as often as necessary to maintain adequate residuals.

- A. When the pool water temperature exceeds 85° F then free chlorine residual shall be maintained at least 2.0 p.p.m and bromine residual shall be maintained at 4.5 p.p.m.
- B. When combined chlorine in excess of 0.2 p.p.m. is detected, the pool water shall be taken to breakpoint by chlorinating to a minimum of at least 10 times the combined chlorine concentration, or oxidized by other means to eliminate the combined chlorine.

2.19.1. Testing Equipment - Testing equipment shall be provided having a minimum disinfectant residual range of 0.5 to 5.0 parts per million (ppm) and a pH range of 6.8 to 8.0.

- A. Water testing equipment for determining pH and disinfectant level of pool water shall be provided. The equipment for determining pH shall include at least five color standards with a range of pH 6.8 to 8.0, as a minimum.
- B. Where chlorine is used as a disinfectant, a DPD-type test kit shall be provided that includes at least four chlorine color standards with a range of 0.5 to 5.0 p.p.m, as a minimum.
- C. Where bromine is used as a disinfectant, a colorimetric test kit shall be provided that will determine total bromine residual. The test kit shall include at least five bromine color standards covering a range of 1.0 to 10 p.p.m.
- D. A test kit for water balance including Total Alkalinity, Calcium Hardness, and Cyanuric Acid, when used, shall be on hand and recorded a minimum of weekly.
- E. Where silver/copper or copper ion generators are used, a test kit to determine the concentration of copper shall be provided. The concentration of copper shall not exceed 1.3 p.p.m. and the concentration of silver shall not exceed 0.05 p.p.m.

2.19.2. If ancillary non-chlorine or non-bromine disinfectants are used, they shall be used in addition to chlorine or bromine or other approved equivalent. A minimum of 1.0 p.p.m. free chlorine or 2.0 p.p.m. free bromine will be maintained to ensure proper disinfection of water. All systems must follow manufacturer's recommendations and meet ANSI/NSF 50.

2.20. Low Output Ozone Generating Equipment (OGE) - The installation of ozone generating equipment shall be limited to low output ozone generating equipment. The installation and use of ozone generating equipment shall conform to the following design performance standards:

- A. Ozone concentration in the spray pad treatment tank water shall not exceed 0.1 mg/l. Off-gassing of ozone shall not result in ozone levels in the equipment room or in the pool area exceeding 0.1 ppm. At the time the OGE is installed and annually thereafter the air space within 6 inches of the spray pad treatment tank water level and air in the equipment room shall be tested to determine compliance with this requirement.
 - B. All corona discharge OGEs must be vacuum systems.
 - C. Backflow of pool water into the OGE shall not occur.
- 2.20.1. Installation of ozone generating equipment shall allow for indications of operation or malfunction to be easily observed. The equipment shall be installed in a manner such that a malfunction shall not endanger operators or spa users.
- 2.20.2. Ozone generating equipment shall be used in conjunction with other chemical treatments to meet the chemical operating parameters. Normal maintenance and monitoring of water chemistry shall be followed.
- 2.20.3. If the equipment is capable of exposing maintenance or service personnel to ozone concentrations exceeding federal, state, or local air standards, a self-contained breathing apparatus approved for ozone usage shall be provided. If a distinct, pungent odor is smelled when the ozone generating equipment is operating, the equipment shall be shut down and the area shall be ventilated. The equipment shall be inspected and repaired as required per the manufacturer's specifications.
- 2.20.4. Manufacturer's specifications shall be used to determine where and how ozone shall be introduced.
- 2.21. Ultraviolet light disinfection units.
- 2.21.1. All ultraviolet light units shall be used in conjunction with an approved disinfection system.
- 2.21.2. All ultraviolet light units must be tested and listed by NSF International or another testing laboratory under standards promulgated by NSF for qualification for use in public water recreation facilities disinfection systems.
- 2.21.3. For systems utilizing quartz sleeves to separate the water passing through the chamber from the ultraviolet source, the system shall be designed to permit cleaning of the lamp jackets and the sensor window or lens without mechanical disassembly. For systems utilizing polytetrafluoroethylene (PTFE) surface materials to separate the water that flows through the ultraviolet chamber from the lamps, the ultraviolet unit shall be designed to be readily accessible to the interior and exterior of the PTFE. The ultraviolet unit shall be designed to permit use of either physical or chemical cleaning methods.
- 2.21.4. An accurately calibrated ultraviolet light intensity meter, properly filtered to restrict its sensitivity to the disinfection spectrum shall be installed in the wall of the disinfection chamber at the point of greatest water depth from the tube or tubes.

- 2.21.5. An automatic alarm to notify operator when output levels drop below required levels. Units shall be equipped with a mechanism for shutting off power to the u/v light source whenever the cover is removed or flow to the chamber is interrupted.
- 2.21.6. The unit shall be designed to protect the operator against electrical shock or excessive radiation.
- 2.21.7. Installation of the unit shall be in a protected enclosure not subject to extremes of temperature.
- 2.22. Saline Chlorination systems:
 - 2.22.1. All units must be NSF-50 and UL-1081 compliant and installed by a qualified technician according to manufacturer's specifications.
 - 2.22.2. System must be able to produce 1 lb./ 5,000 gallons in 24 hours for outdoor pools and 1 lb/10,000 gallons in 24 hours for indoor pools.
 - 2.22.3. The saline chlorination system must be wired into the same circuit as the pump so that if the pump loses power, the Saline Chlorination system will de-activated as well.
 - 2.22.4. Incorporate failure-proof features so that the chemical cannot feed into the pool, spa or water recreation attraction, the pool, spa or water recreation attraction piping system, water supply system, or the pool, spa and water recreation attraction enclosure if equipment or power fails. Chemical feed pumps shall be wired so they cannot operate unless there is adequate return flow to properly disburse the chemical throughout the pool, spa or water recreation attraction as designed.
 - 2.22.5. A saline chlorine system shall be supported by a back up system that is capable of meeting the requirements by these rules and regulations and the code.
- 2.23. Safety Requirements - Lifesaving Equipment
 - 2.23.1. Lifeguard Stations – Lifeguards to be provided on anticipated usage and design characteristics of the public water recreational facility. There shall be a sufficient number of lifeguards on duty at such locations so that the lifeguard(s) have in total a clear, unobstructed view of the entire bottom surface of the pool.
 - 2.23.2. If a hotel/motel operator rents out a public water recreational facility for any event, then a certified lifeguard shall be present.
 - 2.23.3. Lifesaving Equipment -
 - A. One unit of lifesaving equipment consists of the following: A ring buoy with minimum outside diameter of twenty inches (20") to which shall be attached a length of one-quarter inch (1/4") rope, as long as one and one-half (1-1/2) times the maximum width of the pool or 50 feet, whichever is less; a life pole or shepherd's crook type of pole with a minimum length handle of twelve feet (12'). Not less than one unit of equipment, as above, should be

provided at every public pool. One unit is presumed to be adequate for two thousand (2,000) square feet of pool area.

- B. In addition to the requirements above, pools where lifeguards are required shall meet these additional requirements. Pools where lifeguards are in place with rescue tubes shall provide a minimum of one (1) ring buoy per pool where the water depth exceeds five feet (5') in depth. If a rescue tube is required by function of the lifeguard workstation, the lifeguard should wear the strap of the device. A backboard with head immobilizing device, a minimum of three straps, which is equipped to permit care of suspected spinal injuries shall be available.

2.23.4. Location and Storage – Lifesaving equipment should be mounted in conspicuous places, distributed around the pool edge, at lifeguard chairs, or elsewhere, ready of access, its function plainly marked, kept in repair and ready condition, and bathers or others shall not be permitted to tamper with it, use it for any purpose other than its intended use, or remove it from its established location unless in an emergency.

2.23.5. First-Aid Kit – One or more first-aid kits shall be provided. The first aid kit shall include, at a minimum, impermeable, unused, and disposable gloves and a sufficient supply of materials to stop bleeding and to clean or cover minor cuts and abrasions and meet the OSHA standards for prevention of disease transmission. Availability of a kit in the office of a motel, apartment complex, or hotel shall satisfy this requirement for such pools.

2.23.6. When lifeguards are required, a blood borne pathogen spill clean-up kit shall be provided at each public water recreation facility.

2.23.7. When lifeguards are required equipment to reduce staff exposure to transmission of disease shall be available for use in breathing assistance or CPR.

2.23.8. A telephone shall be accessible during all hours of operation in the vicinity of a public water recreation facility or within a 300 foot walking distance from an entrance to swimming facility enclosure. At a multi-level facility, the emergency telephone shall be located within three levels of the level on which the swimming facility is located.

2.23.9. Warning Signs –

- A. Emergency Telephone and Emergency Contact List. The ambulance service, and a hospital, or 911 where applicable, shall be posted in a conspicuous place near the telephone. The name, address and telephone number of the swimming pool facility shall be listed by the telephone. The location of the emergency telephone shall be posted in the swimming pool facility unless the telephone is located in the pool area.
- B. A sign posted in a conspicuous place shall state “Notify the manager or operator on duty if the main drain is not visible.”
- C. A sign posted in a conspicuous place shall state “To register a complaint about the condition of this pool, contact Saint Louis County at (314) 615-8900.”

- D. Bather Load Sign. A sign with clearly legible letters not less than four (4") inches high shall be posted in a conspicuous place within the pool enclosure or near the main entrance that shall indicate the number of bathers permitted for each pool.
 - E. WARNING SIGNS - Whenever the pool area is opened for use and no lifeguard service is provided, warning signs shall be placed in plain view of the entrances and inside the pool area which state, "WARNING - NO LIFEGUARD ON DUTY" with clearly legible letters at least 4 inches (10 cm) high. In addition, the signs shall also state in clearly legible letters at least 2 inches (5.1 cm) high, "NO SWIMMING ALONE. CHILDREN AND NON-SWIMMERS SHALL NOT USE THE POOL UNLESS ACCOMPANIED BY A RESPONSIBLE ADULT."
 - F. Pools without lighting shall be limited to operating between sunrise and sunset. A sign with clearly legible letters not less than 4 inches high shall be posted in a prominent place near each entrance to the pool area. This sign shall state "NO USE OF POOL ALLOWED AFTER DARK".
- 2.24. Notification - All drownings/deaths and injuries or illnesses requiring a physician's care shall be reported to the Department by the facility manager, operator or permittee within 24 hours after learning of the incident.
3. **Spas** - In addition to the general swimming pool requirements stated in this code, spas shall comply with the additional provisions of this section.
- 3.1. Maximum Depths - The maximum water depth shall be four feet (4') measured from the water line. The maximum submerged depth of any seat or sitting bench shall be twenty-eight (28") measured from the water line.
 - 3.2. Handholds - A spa shall have one (1) or more suitable, slip-resistant handhold(s) around the perimeter, located no farther apart than four feet (4') and not over twelve inches (12") above the water line. The handhold(s) may consist of bull-nosed coping, ledges or decks along the immediate top edge of the spa; ladders, steps, or seat ledges; and ropes or railings.
 - 3.3. Stairs, Ladders and Recessed Treads - Stairs, ladders or recessed treads shall be provided where spa depths are greater than two feet (2'). Each set of steps shall be provided with at least one (1) handrail to fully serve all treads and risers. Seats or benches may be provided as part of these steps.
 - 3.4. Deck Widths - A four-foot (4') minimum width, continuous, unobstructed deck, which may include the coping, shall be provided on two (2) sides or fifty percent (50%) or more of the spa perimeter. When the spa is adjacent to another pool, the spa shall be located either with an effective barrier or with a minimum distance of four-foot (4') between the pools. Spas constructed or operated prior to the effective date of this section shall be exempted, so long as they do not jeopardize the public's health, as determined by the Director.
 - 3.5. Depth Markers – Depth markers shall comply with Section 2.10, with a minimum of two (2) depth markers provided regardless of the shape or size of the spa.

- 3.6. Water Temperature Controls - Controls shall be provided to prevent water temperatures from exceeding current ANSI standards. The controls shall be accessible only to the pool operator.
 - 3.7. Spa Drainage – a means to drain the spa to the sanitary sewer shall be provided to allow frequent draining and cleaning.
 - 3.8. Turnover – The minimum turnover rate for all spas shall be thirty minutes (30).
 - 3.9. Surface Skimmers – One surface skimmer shall be provided for each one hundred (100) square feet or major fraction thereof of surface area.
 - 3.10. Inlets – One (1) wall inlet shall be provided for each twenty feet (20') of pool perimeter, and a minimum of two (2) wall inlets shall be provided.
 - 3.11. The bather load calculation for all spas shall be based on 10 square feet per bather or three lineal feet (3) of seat length, excluding steps, whichever results in the lesser number.
 - 3.12. Air Induction Systems – An air induction system, when provided, shall prevent water back up that could cause electrical shock hazards. Air intake sources shall not permit the introduction of toxic fumes or other contaminants.
 - 3.13. All new or altered spas shall have chemical controllers to automatically monitor and adjust sanitizer and pH levels in the water. All spas shall come into compliance by May 1, 2010.
 - 3.14. Agitation Systems – The agitation system shall be separate from the water treatment recirculation system. The agitation system shall be connected to a ten (10) minute timer located out of reach of a person in the spa.
 - 3.15. All spas shall have a clearly labeled emergency shutoff or control switch shall be installed readily accessible to the bathers, for the purpose of stopping the motor(s) that provide power to the recirculation system and jet system in accordance with 680-38 of the NEC.
 - 3.16. Caution Signs - A sign visible and legible from the spa shall be provided. It shall state: "**CAUTION**"
 - A. Elderly persons, pregnant women, infants and those with health conditions requiring medical care should consult with a physician before entering a spa.
 - B. Unsupervised use by children under the age of 18 is prohibited.
 - C. Hot water immersion while under the influence of alcohol, narcotics, drugs, or medicines may lead to serious consequences and is not recommended.
 - D. Do not use alone.
 - E. Long exposure may result in nausea, dizziness or fainting.
4. **Spraygrounds** - In addition to the general swimming pool requirements stated in these rules and regulations and the code, spraygrounds shall comply with the additional provisions of this section:
- 4.1. Cracks in the spraypad shall be repaired when there may be a potential for leakage, present a tripping hazard, a potential cause of lacerations, or impact the ability to properly clean and maintain the spraypad area.

- 4.2. When cleaning the spraypad, all materials and contaminants on the surface of the spraypad must be flushed to waste and not discharged into the spraypad treatment tank.
 - 4.3. The spraypad shall be sloped to the drain(s). The slope shall be sufficient to prevent standing water from collecting on the pad.
 - 4.4. The size, number and locations of the spraypad drains shall be determined and specified so as to assure water does not accumulate on the spraypads. Flow through the drains to the spraypad treatment tank shall be under gravity. Direct suction outlets from the spraypad are prohibited.
 - 4.5. The spraypad treatment tank must be designed to provide ready access for cleaning and inspections, and be capable of complete draining. An overflow pipe to convey excess water to waste must be provided.
 - 4.6. An automatic water level controller shall be provided for the spraypad treatment tank.
 - 4.7. A continuous clear deck shall surround the entire spraypad perimeter. It shall be not less than four (4) feet wide indoors and five (5) feet wide outdoors. The deck shall be of a uniform, easily cleaned, impervious material and be protected from surface runoff.
 - 4.8. Spray features/spray pool shall be designed and installed so as not to pose a tripping hazard, a hazard to patrons due to water velocity from the spray feature discharge, or other safety hazards.
 - 4.9. When water supplying the spray features/spray pool is removed from the spraypad treatment tank by a pump separate from the filtration/recirculation pump system, the ratio of the flow rate of water supplied to the spray features/spray pool directly from the treatment tank must not exceed three (3) times the design filtered water flow rate.
 - 4.10. A minimum turnover rate of 1/2 hour shall be provided.
 - 4.11. Depth markings and warning signs are not required for spraygrounds.
 - 4.12. All new or altered spraygrounds shall have chemical controllers to automatically monitor and adjust sanitizer and pH levels in the water. All spraygrounds shall come into compliance by May 1, 2010.
5. **Wading Pools** - In addition to the general swimming pool requirements stated in this code, wading pools shall comply with the additional provisions of this section:
- 5.1. Wading pools must be located at the shallow end of the main pool or where water depths are in excess of twenty four inches (24") must be separated from the main pool by an effective barrier if not staffed by lifeguard personnel.
 - 5.2. No obstructions such as raised drains or steps on which children may fall or become injured, shall be placed in the wading pool area. Designed play items shall be of a design and so located to provide maximum safety to the children.
 - 5.3. Piping shall be arranged to drain the wading pool separately for frequent cleaning. Drainage shall not be returned to an adjacent pool or its water treatment facilities.

- 5.4. A minimum of two inlets shall be provided in wading pools. The inlets shall be located so as to provide uniform circulation throughout the pool.
 - 5.5. Wading pools shall have a maximum water depth of 24 inches.
 - 5.6. Wading pools shall have a minimum turnover rate of one (1) hour.
 - 5.7. Depth markers shall comply with 2.10, with a minimum of two (2) depth markers provided regardless of the shape or size of the wading pool.
 - 5.8. All new or altered wading pools shall have chemical controllers to automatically monitor and adjust sanitizer and pH levels in the water. All wading pools shall come into compliance by May 1, 2010.
6. **Wave Pools** - In addition to the general swimming pool requirements stated in these rules and regulations and the code, wave pools shall comply with the additional provisions of this section:
- 6.1. The generation of waves more than 3 feet in height in a wave pool, regardless of the depth of the pool, must not continue for more than 15 minutes at a time.
 - 6.2. Bathers must gain access to the wave pool at the shallow or beach end. The sides of the pool must be protected from unauthorized entry into the pool by the use of an effective barrier.
 - 6.3. Wave pools must be provided with handholds at the static water level. These handholds must be self-draining and must be installed so that their outer edge is flush with the pool wall. The design of the handholds must ensure that body extremities will not become entangled during wave action.
 - 6.4. Life jackets must be provided free for use by bathers who request them.
 - 6.5. Each permanent station for pool attendants and lifeguards must be provided with a clearly labeled and readily accessible emergency shut-off switch for the control of the wave action.
 - 6.6. An audible warning system must be provided to alert bathers of the beginning of wave generation.
 - 6.7. Stepholes and handrails must be provided at one or more locations along the wall of the wave pool. The stepholes and handrails must extend down the wall so they will be accessible during wave generation at the lowest water level. The distance between the handrail and the wall must not exceed 6 inches.
 - 6.8. A minimum turnover rate of four (4) hours is required for wave pools.
 - 6.9. The bather load for wave pools shall be calculated based on fifteen square feet (15 sq ft) per bather for water depths of thirty inches (30") and less, and twenty five square feet (25 sq ft) per bather for water depths greater than thirty inches (30").
 - 6.10. Warning signs stating "NO DIVING" shall be provided around the perimeter of the wave pool regardless of the water depth at minimum twenty-five feet (25') spacing.
7. **Leisure Rivers/Watercourse** - In addition to the general swimming pool requirements stated in these rules and regulations and the code, leisure rivers/watercourse shall comply with the additional provisions of this section:

- 7.1. Handrails, steps, stairs and booster inlets for leisure rivers/watercourse must not protrude into the river.
 - 7.2. An approved method of exit(s) must be provided around the river
 - 7.3. Bather load for leisure rivers/watercourse shall be calculated based on 25 square feet per bather.
 - 7.4. The minimum turnover rate for leisure rivers/watercourse shall be four (4) hours.
8. **Waterslides and Catch Pools/Plunge Pools** - In addition to the general swimming pool requirements stated in these rules and regulations and the code, waterslides and catch pools/plunge pools shall comply with the additional provisions of this section:
- 8.1. Design and Construction
 - 8.1.1. A water slide must consist of one or more flumes, catch pools/plunge pools or slide runouts, a pump reservoir, and facilities for the disinfection and chemical treatment of the water.
 - 8.1.2. The structural design of a water slide and the materials used in its construction must conform with generally accepted structural engineering practices and must provide a sound, durable structure that will safely sustain all the dead loads, live loads, liquid hydrostatic and earth pressures encountered.
 - 8.1.3. Any components or accessories of a water slide that come into contact with bathers must be assembled, arranged and finished so that their external surfaces and edges do not present an injury hazard to the skin of users under casual contact.
 - 8.2. Flumes
 - 8.2.1. Each flume of a water slide must be water-tight. Its surfaces must be inert, nontoxic, smooth and easily cleaned.
 - 8.2.2. If a tube-type flume is used, it must be designed or ventilated to prevent a hazardous concentration of toxic disinfectant fumes under all circumstances of operation.
 - 8.2.3. All curves and turns in a flume must be:
 - A. Designed so that the impact of users with the walls of the flume does not present a hazard; and
 - B. Banked so that the forces on the bathers keep them safely inside the flume under all foreseeable circumstances of operation. Bathers must not become airborne.
 - 8.2.4. In curved sections of a flume, the design of the wall of the flume must cause the outward thrust of the body of the bather to be dissipated towards the centerline of the flume.

- 8.2.5. All slopes in a flume must be designed so that the speed of the bathers does not reach a point at which a safe equilibrium of dynamic forces cannot be maintained on any curve or turn in the flume.
- 8.2.6. In sections of a flume where bathers can stop, provision must be made by design or modification to prevent bathers from falling out of the flume.
- 8.2.7. The construction, dimensions and methods of mechanical attachment of a flume must provide a smooth and continuous surface through the entire length of the flume. Any misalignment of joints in a sectional flume must not exceed 1/8 inch.
- 8.2.8. The walls of any flume must be designed so that the continuous and combined action of hydrostatic, dynamic and static loads, as well as normal environmental deterioration do not damage the flume bed to the extent of creating a structural failure that presents a hazard of injury to users or that requires frequent patch repairs that may weaken the structural integrity of the flume.

8.3. Flume Exits

- 8.3.1. The exit of any flume must be designed to ensure that bathers enter the catch pool or slide runout at a safe speed and angle of entry.
- 8.3.2. If a slide has two or more flumes and there is a point of intersection between the centerlines of any two flumes, the distance between that point and the point of exit for each intersecting flume must not be less than the slide manufacturer's recommendations.

8.4. Exit into catch pools/plunge pools

- 8.4.1. If users exit the flume of a water slide into a catch pool/plunge pool, the flume must be:
 - A. Horizontal;
 - B. Perpendicular to the wall of the pool at the point of exit;
 - C. Designed with an exit system which provides for safe entry into the catch pool or slide runout. Present practices for safe entry include a water backup, a deceleration distance, and body attitude control. Other methods are acceptable as long as safe exit velocities and proper body attitudes are assured under normal use; and
 - D. Designed with an exit grade which, for the last 10 feet, does not exceed 10 percent.
- 8.4.2. The flume exits must be in accordance with the slide manufacturer's recommendations.

8.4.3. The distance between:

- A. The side wall of the pool and that portion of the flume exit nearest the wall must be in accordance with the slide manufacturer's recommendations
- B. The centerline of the flume and the centerline of any adjacent flume must not be less than in accordance with the slide manufacturer's recommendations
- C. The point of exit and the side of the pool opposite the bathers as they exit, excluding any steps, must not be less than the slide manufacturer's recommendations

8.5. Catch Pools/Plunge Pools

- 8.5.1. If a catch pool/plunge pool is used at a water slide, it must be located at the base of the slide
- 8.5.2. The minimum required turnover rate for a catch pool/plunge pool is four (4) hours.
- 8.5.3. A designated catch pool/plunge pool shall not be considered in computing the bather load.
- 8.5.4. Except as otherwise provided in this subsection, the water depth in a catch pool at the end of the flume must be not less than the slide manufacturer's prescribed depth from the normal operating water level to the floor.
- 8.5.5. If steps are provided instead of exit ladders or step holes with handrails, a handrail must be provided at the steps opposite the point of exit from each flume.
- 8.5.6. If the water slide flume shall end in a swimming pool, the landing area shall be divided from the rest of the swimming pool by a float line or as approved by the Department.

8.6. Decks. A deck must be provided along the exit side of the catch pool.

8.7. Means of access

- 8.7.1. A concrete walkway, steps, stairway or ramp must be provided between the catch pool/plunge pool and the top of the flume in accordance with the slide manufacturer's recommendations

8.8. Slide Runouts

- 8.8.1. Slide runouts, if used, must have an exit opening or step, unless one or both of the walls of the runout are not more than twelve inches (12") in height.
- 8.8.2. Slide runouts must be designed in accordance with the slide manufacturer's recommendations

8.9. Drop Slides

- 8.9.1. There shall be a slide landing area in accordance with the slide manufacturer's recommendations. This area shall not infringe on the landing area for any other slides or diving equipment. Steps shall not infringe on this area.
- 8.9.2. The minimum required water depth shall be a function of the slide drop height above the water surface and shall be in accordance with the slide manufacturer's recommendations.

8.10. Pump Reservoirs

- 8.10.1. Pump reservoirs used in water slides must have sufficient volume to contain not less than two minutes (2) of combined flow from all water treatment and flume pumps or must contain enough water to ensure that the catch pool will maintain a constant water depth.
 - 8.10.2. The interior of pump reservoirs must be watertight with a hard trowel or equivalent, slip-resistant finish.
 - 8.10.3. Pump reservoirs must be accessible only to authorized persons. Intakes to the slide pump must be designed to allow cleaning without danger of trapping the operator
- 8.11. Posting notice of prohibited conduct. The operator of a water slide shall post one or more warning signs in accordance with the slide manufacturer's recommendations.

9. Special Requirements for Indoor Public Water Recreation Facilities

- 9.1. All indoor pools and all bathhouses, dressing rooms, shower rooms and toilet rooms serving indoor pools must be properly ventilated. Ventilation must be so designed that a direct draft will not blow on the bathers. Fresh air should be heated before discharge into the swimming pool room.
- 9.2. It is also desirable to heat all or a part of the recirculated water. In designing a heater for this purpose, ample surface for heat interchange must be provided. The heater may be designed for use with steam or hot water. The blowing of steam directly into the pool or heating coils placed directly in the pool is prohibited. An automatic thermocontrol of the temperature is desirable. A fixed thermometer should be placed on the recirculation line beyond the heater and another near the outlet of the pool. Thermometers should be accessible and have a type of scale that is easily read.

10. Flow-Through Public Water Recreation Facilities

- 10.1. Approval of flow-through pools will be considered; however, each case is different and the Health Department should be consulted before serious consideration is given to the design of a flow-through pool. In most instances,

the construction of flow-through type pools is not practical or economical. Their construction is limited to areas where there is an abundance of water, usually from springs or wells. Flow-through pools must meet the same requirements as artificially recirculating pools as outlined under these standards. The only difference is the reuse of water in recirculating pools. All other principles are the same. This requires that there be sufficient water available to provide a complete turnover in the pool at least every six (6) hours over the entire period of twenty four (24) hours and continuous chlorination to maintain a free chlorine residual of 1.0 ppm to 8.0 ppm.

- 10.2. Furthermore, even when large volumes of fresh water are available, the temperature of the water may be so low as to require heating, as with most spring and well waters. The rapid turnover rate does not allow sufficient time for natural warming of the water, which is too cold for most swimmers. The heating of fresh water is expensive and the cost may exceed that of treating and recirculating the pool water whereby only the fresh make-up water need be heated. Frequently waters used for flow-through pools contain considerable hydrogen sulfide, which makes it impractical to chlorinate unless pre-treatment of the water, is provided to remove the hydrogen sulfide.

11. Natural Bathing Places

No satisfactory bacteriological standards for natural bathing waters have been developed and adopted. All such waters are subject to surface contamination and bacterial analyses show contamination in varying degrees. Although bacterial analyses have some value as an index of the cleanliness of the water, they are of little value in giving a definite opinion as to the freedom of such water from harmful pollution or the danger to public health. Sanitation of natural bathing waters involves the control of sources of pollution, which may be discharged in a manner, which will adversely affect the sanitary quality of the water. Further, there is no effective means of controlling bacterial contamination introduced by the bathers.

Because of the many problems of safety and sanitation, which are difficult to control, the Health Department discourages the development of such projects; however, the Health Department will provide consultation for each individual case. In many instances, the development of natural bathing places will not permit the provision of many safety features, which must be incorporated in the design, and construction of artificial bathing places or swimming pools. These features include lighting, depth marking, water clarity, the elimination of ledges, obstructions and barriers, the providing of steps and ladders, the development of gradual bottom slopes and the arrangement of springboards, diving towers and floats. Minimum requirements for the above items have been established and are contained in Part 2, "Design and Construction of Swimming Pools". Every effort should be made by the owners and operators of natural public bathing places and by those persons maintaining any bathing place to comply insofar as is practical with these requirements.

12. Bather Preparation Facilities

General - Dressing rooms, shower facilities and toilet facilities are required at all public swimming pools. An exception can be made for a swimming pool at a motel, hotel, apartment complex or similar establishment when such facilities are available within three hundred feet (300') of the pool.

- 12.1. Dressing Rooms - Bathhouses to be used simultaneously by both men and women shall have two parts; one for each sex, entirely separated by tight partition. Dressing rooms shall be suitable designed, located, drained, equipped, lighted and ventilated.
 - 12.1.1. Location of Dressing Rooms - The dressing rooms shall be located adjacent to the showers and shall open to the shallow part of the pool.
 - 12.1.2. Walls and Partitions - The walls and partitions of all dressing rooms and locker rooms shall have a smooth impervious finish.
 - 12.1.3. Floors - All floors shall be of smooth, but non-slip finish, impervious to moisture with no open cracks or joints and have a minimum pitch of three inches (3") in ten feet (10') to the drains with no low spots which will allow water to stand.
 - 12.1.4. Joints and Corners - All junctions of the floors with the sidewalls and partitions should be finished with coved joints
 - 12.1.5. Partitions, Furniture, Etc. - The material used for partitions, furniture, etc., shall be such that it can be easily cleaned and will not be damaged by frequent hosing, wetting or disinfectants.
 - 12.1.6. Partitions - Dressing room partitions shall have a minimum clearance of six inches (6") above the floor and curtains, if used on the booths, should be of sufficiently heavy material to discourage their use as a substitute for towels.
 - 12.1.7. Ventilation - All rooms in the bathhouse shall be ventilated so that they do not remain excessively damp. Open court type bathhouses are advantageous and are recommended for ventilation and sunlight.
 - 12.1.8. Lighting - The rooms shall be lighted so that all parts are easily visible for cleaning.
 - 12.1.9. Cleaning - Hose bibs shall be provided to enable the entire dressing room to be conveniently flushed by hose.
- 12.2. Clothing Storage - Locker rooms or individual lockers located in the dressing room may be used for storing and safekeeping clothes and valuables of the bather, provided that lockers are of sound construction and so designed and located as to permit effective cleaning of floors.
- 12.3. Fixtures
 - 12.3.1. Number of fixtures. Lavatories, showers, and toilets shall have the capacity to meet or exceed the following general requirements. The minimum number of sanitary facilities shall be as follows:
 - A. Facilities having less than seventy five hundred gross square feet (7500 sqft/697 m²) water area shall provide one sanitary unit. NOTE – When the calculations results in fractional components the actual number of components shall be the next highest integer.
 - B. The minimum number of sanitary facilities shall be one sanitary unit per seventy five hundred gross square feet (7500 sqft/697 m²) of water available for bather access. NOTE – When the calculations results in fractional

components the actual number of components shall be the next highest integer.

12.3.2. Sanitary Units. A sanitary unit shall consist of the following components:

- A. 0.7 male water closets
- B. 1.0 male urinal
- C. 0.85 lavatories for males
- D. 1.0 showers for males
- E. 2.0 female water closets
- F. 1.0 lavatory for females
- G. 1.0 shower for females

12.3.3. Shower Facilities - Adequate shower bath facilities with hot and cold water must be provided. Where mixed bathing is permitted it can usually be assumed that one-half (1/2) of the bathers at the time of maximum load will be of each sex. Showers should be located to encourage use by bathers before entering the bathing area. Up to half of the shower units may be located on the pool deck or at the pool entrance.

- A. Separation - Separate shower facilities shall be provided for each sex.
- B. Location - Showers shall be located between the toilets and the pool entrance.
- C. Quantity and Temperature of Water - A minimum of three gallons of water per shower per minute having a temperature of not less the 90 °F and no more than 115 °F shall be provided.
- D. Walls, Ceilings, and Floors - The walls, ceilings and floors of the shower room or area shall be constructed of impervious material not adversely affected by heat or water.
- E. Floors, Floor Surfacing - The floors shall be smooth, non-slip to bare feet, have no open cracks or joints and have a minimum pitch of three inches (3") in ten feet (10') toward floor drains with no low spots which will allow water to stand.
- F. Soap Provided - Soap in suitable dispensing equipment shall be provided for each shower unit and lavatory. Glass containers are not acceptable. Dispensers shall be located in such a manner as to be available to all bathers.
- G. Shower Booths - Shower booths, when provided, shall have partitions which will not be damaged by the shower water and have a minimum clearance of six inches (6") above the floor.
- H. Lighting - Shower rooms shall be adequately lighted so that all parts are easily visible for cleaning.

- 12.4. 12.4 Toilets - Adequate satisfactory and properly located toilet facilities for each sex must be provided.
- 12.4.1. Facilities constructed or remodeled shall be provided with baby-changing tables in all restrooms equipped with two or more sanitary units.
- 12.4.2. Types of Fixtures - All fixtures should be so designed that they may be readily cleaned and that frequent cleaning and disinfecting will not cause damage.
- 12.4.3. Urinals - Urinals should be of a type that will not cause splashing of urine upon the legs and feet of the bathers.
- 12.4.4. Lavatory Facilities - Lavatory facilities located adjacent to toilets must be provided. All newly constructed or extensively remodeled facilities shall provide hot and cold running water with a mixing valve at each lavatory. Lavatory facilities must comply with Section 12.3.3, F of these rules and regulations and the code. A minimum of 1 paper towel dispenser, or hand blow dryer, shall be provided for every 3 lavatories.
- 12.4.5. Floors - Toilet room floors shall be constructed of impervious materials with no open cracks or joints; must have a smooth, non-slip finish and a pitch of not less than three inches (3") in ten feet (10') toward the floor drain.
- 12.4.6. Lighting - Toilet rooms shall be lighted so that they are easily visible for cleaning.
- 12.4.7. Location - Toilet rooms should be located above ground level and shall be so ventilated that no odor nuisance will exist.
- 12.4.8. Cleaning - Hose bibs with a backflow preventer shall be provided such that the dressing room interior may be rinsed downing using a 50-foot (15.2 m) hose.
- 12.4.9. Toilet tissue - Toilet paper holders and papers shall be provided at each water closet.

13.0 Public Water Recreation Facility Operation

General - This part contains the water quality requirements, which must be met, and a list of the operational practices required at all public swimming pools.

- 13.1 The owner/operator of a new public water recreation facility, shall not operate, or allow to be operated, the swimming facility until a permit for such operation has been issued by the Department. In order to apply for a permit, an original permit application form shall be completed and submitted to the Department with the appropriate fee. The permit applicant shall contact the Department to make arrangements for an inspection of the facility after making application and ensuring that the facility is in an operating condition and in compliance with Chapter 808.

The owner shall keep a set of plans and specifications' bearing the approval of the Department after the project has been completed.

- 13.2 Required Operator Certification.

Pools, spas and water recreation attractions shall be maintained by a properly trained and certified operator who shall be responsible for the sanitation, safety, and proper maintenance of the pool, spa or water recreation attraction and all

physical and mechanical equipment and records. A person responsible for supervision can assume responsibility of multiple pools as long as the pools are being maintained and operated in compliance with these rules and regulations and this code. Training and certification can be obtained by successful completion of one of the following courses:

- A. **National Recreation and Parks Association's (NRPA)** "Certified Aquatic Facility Operator" (AFO);
- B. **National Swimming Pool Foundation's (NSPF)** "Certified Pool Operator" (CPO);.
- C. **National Spa and Pool Institute's (NSPI)** "Tech I", "Tech II", or "Certified";
- D. **YMCA's "Pool Operator on Location" (POOL);**
- E. Any other equivalent course or certificate that is nationally recognized.

The operator shall show proof of current certification by May 1, 2010 of one of the above courses or the health authority may, at its discretion, require additional training and testing if such course and/or certification is not equivalent to health authority requirements.

13.3 Water Quality -Required water quality. Water quality for pools, spas and public water recreation facilities shall meet the following criteria. The parameters in the following tables apply to pools, spas, and public water recreation facilities, unless otherwise indicated.

Disinfectant Levels	Minimum	Ideal	Maximum
Free Chlorine, ppm	1	2.0-3.0	8.0 ¹
Free Chlorine, ppm-spas	2	3.0-5.0	8.0 ¹
Combined Chlorine	None	None	0.2 ¹
Bromine, ppm	2.5	2.5-6.0	12.0 ¹
Bromine, ppm – spas	4.5	5.5-7.5	12.0 ¹
¹ Refer to product label			

pH Levels	Minimum	Ideal	Maximum
PH	7	7.4-7.6	7.8

Water Clarity	Minimum	Ideal	Maximum
Water Clarity	Bottom & main drain clearly visible from the deepest part of the pool or spa	N/A	N/A

Chemical Parameters	Minimum	Ideal	Maximum
Total alkalinity, ppm as CaCO ₃	60	80-100.0 ¹ 100.0-120.0 ₂	180

Total dissolved solids, ppm	300	1000.0-2000.0	5000
Calcium Hardness, ppm as CaCO ₃	150	200.0-400.0	500.0-1000.0
Heavy Metals	None	None	None
1.For the following sanitizers: calcium hypochlorite, lithium hypochlorite, and sodium hypochlorite. 2 For the following sanitizers: Sodium dichlor, chlorine gas, and bromine compounds.			

Stabilizer, if used	Minimum	Ideal	Maximum
Cyanuric Acid, ppm ¹	None	10.0-40.0	100
Cyanuric acid shall not be used in indoor pools, spas, or public water recreation facilities or brominated pools, spas or public water recreation facilities without approval from the Department.			

Biological Parameters	Minimum	Ideal	Maximum
Algae	None	None	None
Bacteria	0	0	10 per 100 ml Coliform 0 per 100 ml Fecal/E coli

13.3.1 Tests for disinfectant residuals as chlorine, hypochlorite, bromine or other halogens tests must be made a minimum of twice daily or as often as necessary to maintain adequate residuals.

When the pool water temperature exceeds 85° F then free chlorine residual shall be maintained at least 2.0 p.p.m and bromine residual shall be maintained at 4.5.

When combined chlorine in excess of 0.2 p.p.m. is detected, the pool water shall be taken to breakpoint by chlorinating to a minimum of at least 10 times the combined chlorine concentration, or oxidized by other means to eliminate the combined chlorine.

13.3.1.1 Testing Equipment - Testing equipment shall be provided having a minimum disinfectant residual range of 0.5 to 5.0 parts per million (ppm) and a pH range of 6.8 to 8.0.

- A. Water testing equipment for determining pH and disinfectant level of pool water shall be provided. The equipment for determining pH shall include at least five color standards with a range of pH 6.8 to 8.0, as a minimum.
- B. Where chlorine is used as a disinfectant, a DPD-type test kit shall be provided that includes at least four chlorine color standards with a range of 0.5 to 5.0 p.p.m, as a minimum.

- C. Where bromine is used as a disinfectant, a colorimetric test kit shall be provided that will determine total bromine residual. The test kit shall include at least five bromine standards covering a range of 1.0 to 10 p.p.m.
- D. A test kit for water balance including Total Alkalinity, Calcium Hardness, and Cyanuric Acid, when used, shall be on hand and recorded a minimum of weekly.
- E. Where silver/copper or copper ion generators are used, a test kit to determine the concentration of copper shall be provided. The concentration of copper shall not exceed 1.3 p.p.m. and the concentration of silver shall not exceed 0.05 p.p.m.

13.3.1.2 If ancillary non-chlorine or non-bromine disinfectants are used, they shall be used in addition to chlorine or bromine or other approved equivalent. , a minimum of 1.0 free chlorine or 2.0 free bromine will be maintained to ensure proper disinfection of water. All systems must follow manufacturer's recommendations and meet ANSI/NSF 50.

13.3.2 Disinfection –All pools shall be equipped with disinfectant and pH control feeders. Disinfectant equipment for pools, spas, and public water recreation facilities shall comply with the following:

- A. Disinfectant equipment for pools, spas and public water recreation facilities shall comply with all applicable requirements of ANSI/NSF-50-1996, "Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs."
- B. Disinfectant feed systems for pools shall have the capacity to maintain up to five parts per million (5ppm) chlorine or approved equivalent for outdoor pools and public water recreation facilities and up to three parts per million (3ppm) chlorine or approved equivalent for indoor pools and public water recreation facilities under all conditions of use. The disinfectant feed equipment for spas shall have the capacity to maintain up to eight parts per million (8ppm) chlorine or approved equivalent for outdoor spas and up to five parts per million (5ppm) chlorine or approved equivalent for indoor spas.
- C. A chlorine or bromine residual or residual of other disinfectant approved by the Department shall be maintained in the pool, spa or water recreation attraction to meet the requirements of these rules and regulations and this code. Disinfectant equipment shall be selected and installed so that continuous and effective disinfection can be secured under all conditions. The use of elemental gas chlorine shall be in compliance with subsection 2.19.3 of these rules and regulations and this code

- D. The pool, spa or water recreation attraction water shall be continuously disinfected by a disinfecting agent whose residual can easily be measured by simple and accurate field tests.
- E. Personnel responsible for the operation of the disinfectant and associated equipment and other potentially hazardous chemicals shall be properly trained.
- F. Disinfectant or other chemicals and feed equipment shall be stored in such a manner that pool, spa or water recreation attraction users shall not have access to such facilities and/or chemicals. Dry chemicals shall be stored off the floor in a dry room and protected against flooding or wetting from floors, walls, and ceiling.
- G. All chemical bulk and day tanks shall be clearly labeled to indicate the tank's contents.
- H. Solution containers shall be provided with a cover to prevent the entrance of dust, insects and other contaminants.
- I. Chlorine compounds shall not be stored in the same area as petroleum products.
- J. The United States Environmental Protection Agency (EPA) shall register disinfectant agents for pools and spas for use.
- K. Supplemental hand feeding of disinfectant chemical directly into the pool shall not occur when users occupy the pool, spa or water recreation attraction.
- L. Pool and spa skimmer baskets and pump strainer baskets shall not be used as chemical feeders.
- M. In pools where the required disinfectant residuals and pH are not being maintained, as determined by the Department, an automated chemical control system that monitors disinfectant and pH shall be installed to assure constant and adequate disinfectant and pH levels.

13.3.3 Bacteriological Quality - The water in the pool must conform to the following:

- A. Coliform colonies for standard samples shall not exceed 2.0 per 100 milliliter.
- B. Staphylococci organisms per standard sample shall not exceed 50 per 100 milliliter.
- C. Where the standard plate count is used, not more than fifteen percent (15%) of the samples covering any considerable period of time shall contain more than 200 bacteria per milliliter, as determined by the standard (35 °C) agar plate count.

- 13.3.4 Chlorine Residual - Where chlorine, hypochlorite, or other chlorine compounds are used for disinfection, tests must be made a minimum of twice daily or as often as is necessary to maintain adequate residuals. A free chlorine residual minimum of one part per million (1.0 ppm) to a maximum of eight parts per million (8 ppm) shall be maintained throughout the pool. If cyanuric acid or chlorinated isocyanurates are used, the following additional requirements shall be met:
- A. A cyanuric acid test kit shall be provided.
 - B. The cyanuric acid level in the pool shall be kept below 100 ppm. The cyanuric acid concentration shall be measured a minimum of once weekly
- 13.3.5 pH - Hydrogen-ion (pH) tests shall be made as often as necessary to maintain the pH at a satisfactory level. A pH of 7.0 to 7.8 shall be maintained.
- 13.3.6 Clarity - The water shall have sufficient clarity at all times so that a black disc six inches (6") in diameter, on a white field is readily visible at the deepest point of the pool.
- 13.4 Treatment Facility Operation
- 13.4.1 Recirculation Pump Operation - The recirculation pumps must be operated twenty-four (24) hours per day. The pool turnover rate is calculated for twenty-four (24) hour operation and with part-time operation of the recirculation pumps the required turnover cannot be attained.
- 13.4.2 Filter - The filters must be operated at the appropriate design rate and must be backwashed when the head loss reaches a predetermined level.
- 13.5 Operation Records - The operator of each public water recreation facility open for use shall keep a daily record of information regarding peak bathing load handled, operation, including readings of disinfectant residual, pH, and maintenance procedures such as cleaning of filters and quantity of chemicals used.
- 13.5.1 If cyanuric acid by itself or in a combined form with the disinfectant is added to a pool, the cyanuric acid concentration shall be measured a minimum of once weekly and records shall be kept of the results of such testing.
- 13.5.2 Data collected pursuant to subsections (A) and (B) shall be maintained at least three years for inspection by the enforcing agent, or shall be submitted to the enforcing agent upon request.
- 13.6 Lifeguard Requirements - A lifeguard is required whenever pools with total combined water surface area is two thousand (2000) square feet or greater within one enclosure. A lifeguard, when required, shall be on duty at the poolside at all times when a pool is open to use by bathers. The lifeguard should be in full charge of bathing and have authority to enforce all rules of safety and sanitation.
- 13.7 A lifeguard, when required, should be on duty at the poolside at all times when a pool is open to use by bathers. The lifeguard should be in full charge of bathing and have authority to enforce all rules of safety and sanitation.
- 13.7.1 Every lifeguard shall possess a current life guarding certification from a nationally recognized agency or program approved by the Director.

- 13.7.2 Lifeguard Stations –Lifeguards to be provided on anticipated usage and design characteristics of the public water recreational facility. There shall be a sufficient number of lifeguards on duty at such locations so that the lifeguard(s) have in total a clear, unobstructed view of the entire bottom surface of the pool.
- 13.7.3 If a hotel/motel operator rents out a public water recreational facility for any event, then a certified lifeguard shall be present.
- 13.8 Lifesaving Equipment
- 13.8.1 One unit of lifesaving equipment consists of the following: A ring buoy with minimum outside diameter of twenty inches (20”) to which shall be attached a length of one-quarter inch (1/4”) rope, as long as one and one-half (1-1/2) times the maximum width of the pool or 50 feet, whichever is less; a life pole or shepherd’s crook type of pole with a minimum length handle of twelve feet (12’). Not less than one unit of equipment, as above, should be provided at every public pool. One unit is presumed to be adequate for two thousand (2,000) square feet of pool area.
- 13.8.2 In addition to the requirements above, pools where lifeguards are required shall meet these additional requirements. Pools where lifeguards are in place with rescue tubes shall provide a minimum of one (1) ring buoy per pool where the water depth exceeds five feet (5’) in depth. If a rescue tube is required by function of the lifeguard workstation, the lifeguard should wear the strap of the device. A backboard with head immobilizing device, a minimum of three straps, which is equipped to permit care of, suspected spinal injuries shall be available.
- 13.8.3 Location and Storage – Lifesaving equipment should be mounted in conspicuous places, distributed around the pool edge, at lifeguard chairs, or elsewhere, ready of access, its function plainly marked, kept in repair and ready condition, and bathers or others shall not be permitted to tamper with it, use it for any purpose other than its intended use, or remove it from its established location unless in an emergency.
- 13.9 First-Aid Kit – One or more first-aid kits shall be provided. The first aid kit shall include, at a minimum, impermeable, unused and disposable gloves and a sufficient supply of materials to stop bleeding and to clean or cover minor cuts and abrasions and meet the OSHA standards for prevention of disease transmission. Availability of a kit in the office of a motel, apartment complex, or hotel shall satisfy this requirement for such pools.
- 13.9.1 When lifeguards are required a blood borne pathogen spill clean-up kit shall be provided at each public water recreation facility.
- 13.9.2 When lifeguards are required equipment to reduce staff exposure to transmission of disease shall be available for use in breathing assistance or CPR.
- 13.10 Safety & Disease Control
- 13.10.1 Limits on Use - No bather should be permitted to enter the swimming area unless an attendant or other competent person is present. Solo bathing must be absolutely prohibited. A person under the influence of alcohol or exhibiting erratic behavior shall not be permitted in the pool area.

- 13.10.2 Disease Control - Admission shall be refused to all persons having any contagious disease, infectious conditions such as colds, fever, ringworm, foot infections, skin lesions, diarrhea, vomiting, inflamed eyes, ear discharges, or any other condition which has the appearance of being infectious. Persons with excessive sunburn, abrasions that have not healed, corn plasters, bunion pads, adhesive tape, rubber bandages, or other bandages of any kind shall also be refused admittance. Persons having any considerable area of exposed sub-epidermal tissue, open blisters, cuts, etc., should be warned that these are likely to become infected and advised not to enter the swimming pool.
- 13.10.3 Expectoration - Spitting, spouting of water, blowing the nose, etc., in the bathing area should be strictly prohibited.
- 13.10.4 Conduct - No boisterous or rough play except supervised water sport should be permitted in the swimming pool, on decks, diving boards, floats, platforms or in the dressing room, shower room, etc.
- 13.10.5 Apparel – Only clean swimwear shall be worn in the swimming pool, clean outer clothing may be worn over swimwear for religious reasons.
- 13.10.6 Posting of Regulations - Suitable placards embodying the above personal regulations and instructions shall be conspicuously posted in the dressing rooms, offices and swimming area.
- 13.10.7 Starting Platforms must be removed or covered by a device to prevent use of the platform when not in use by competitive swimmers.

13.11 Warning Signs

- 13.11.1 Whenever the pool area is opened for use and no lifeguard service is provided, warning signs shall be placed in plain view of the entrances and inside the pool area which state, "WARNING - NO LIFEGUARD ON DUTY" with clearly legible letters at least 4 inches (10 cm) high. In addition, the signs shall also state in clearly legible letters at least 2 inches (5.1 cm) high, "NO SWIMMING ALONE. CHILDREN AND NON-SWIMMERS SHALL NOT USE THE POOL UNLESS ACCOMPANIED BY A RESPONSIBLE ADULT."
- 13.11.2 Where the water depth is less than six feet (6'), a warning sign shall be posted in plan view and state, "NO DIVING ALLOWED" with clearly legible letters, at least four inches (4") high with the exception of zero depth entry or spray grounds.
- 13.11.3 A telephone shall be accessible during all hours of operation in the vicinity of a public water recreation facility or within a 300 foot walking distance from an entrance to swimming facility enclosure. At a multi-level facility, the emergency telephone shall be located within three levels of the level on which the swimming facility is located.
- 13.11.4 Emergency Telephone and Emergency Contact List. The telephone numbers of the local police, fire department, physician, ambulance service, and a hospital, or 911 where applicable, shall be posted in a conspicuous place near the telephone. The name, address and telephone number of the swimming pool facility shall be listed by the telephone. The location of the emergency telephone shall be posted in

the swimming pool facility unless the telephone is located in the pool area.

- 13.11.5 A sign posted in a conspicuous place shall state "Notify the manager or operator on duty if the main drain is not visible."
- 13.11.6 A sign posted in a conspicuous place shall state "To register a complaint about the condition of this pool, contact Saint Louis County at (314) 615-8900."
- 13.11.7 Bather Load Sign. A sign with clearly legible letters not less than four (4") inches high shall be posted in a conspicuous place within the pool enclosure or near the main entrance that shall indicate the number of bathers permitted for each pool.
- 13.11.8 Pools without lighting shall be limited to operating between sunrise and sunset. A sign with clearly legible letters not less than 4 inches high shall be posted in a prominent place near each entrance to the pool area. This sign shall state "NO USE OF POOL ALLOWED AFTER DARK".
- 13.11.9 Posting notice of prohibited conduct. The operator of a water slide shall post one or more warning signs in accordance with the slide manufacturer's recommendations.
- 13.11.10 Spas - A sign visible and legible from the spa shall be provided. It shall state: "**CAUTION**"
 - A. Elderly persons, pregnant women, infants and those with health conditions requiring medical care should consult with a physician before entering a spa.
 - B. Unsupervised use by children under the age of 18 is prohibited.
 - C. Hot water immersion while under the influence of alcohol, narcotics, drugs, or medicines may lead to serious consequences and is not recommended.
 - D. Do not use alone.
 - E. Long exposure may result in nausea, dizziness or fainting.

13.12 Pool Markings

- 13.12.1 Interior Color. The colors, patterns, or finishes of a pool, spa or water recreation attraction shall not obscure the existence or presence of objects or surfaces within the pool or spa. The following types of markings shall be of a contrasting color: water line markings; racing lane markings with a maximum width of 15 inches; turn targets; depth markings; stair tread markings, slope transition markings; ledge and seat markings, and other safety markings; suction grates and covers and other pool fittings.
- 13.12.2 Water Depth The water depth in swimming pools shall be marked on the edge of the deck next to the pool so as to be readable by persons on the deck and facing the pool. Where feasible, depth markings at least four inches high shall be installed on pool walls at or above the water level. Where depth markers cannot be placed on the walls at or above the water level such that at least 50% of the marking is above water level, they shall

be placed on the fencing or pool enclosure or other location so as to be plainly visible to persons in the pool.

- A. Depth markings shall be provided at the shallow and deep ends of the pool, the transition point, and the point of maximum depth, and shall be installed at intermediate increments of water depth not to exceed two feet (2') nor shall be, spaced at more than twenty five foot (25') intervals measured peripherally, except that depth markings are not required at a zero-depth edge or at locations where the water depth is twelve inches (12") or less.
- B. Depth markers shall indicate pool depth either in feet, feet and inches, or feet and fractions of a foot, and shall be of a color that contrasts with the background. Numerals indicating depth shall be a minimum of 4 inches high.
- C. The warning words "NO DIVING" and the international symbol for no diving shall be clearly marked on the pool deck adjacent to the pool at not more than 25 foot intervals around the pool perimeter where the water depth is less than six feet (6'), except at a zero-depth edge or spray grounds. Where the water depth is less than six feet (6'), a warning sign shall be posted in plain view and state, "NO DIVING ALLOWED" with clearly legible letters, at least four inches (4") high with the exception of zero depth entry or spray grounds. The warning and symbols must meet the following requirements:
 - The letters and the symbol shall be in an acceptable, contrasting color and in letters at least four inches (4") high.
 - Depth markers in or on the deck shall be slip resisting.
 - Depth markers on the deck shall be within twenty four inches (24") of the water.
 - The warning shall be placed at least every twenty five feet (25'), or fraction thereof around the pool where the water depth is six feet (6') or less.
- D. Spas and wading pools shall have a minimum of two depth markers, regardless of shape or size.

13.12.3 Transition Point - The transition point of the pool from the shallow area to the deep area shall be visually set apart with a rope and float line, depth markers, and a four inch (4") minimum width row of floor tile, painted line, or similar means of a color contrasting with the bottom. In diving pools with a constant slope, the shallow area shall be visually set apart from the deep area with a rope and float line, depth markers, and a four inch (4") minimum width row of floor tile, painted line, or similar means of a color contrasting with the bottom. If there is no transition point in the shallow end of the pool (less than 5ft depth) then the defining point will be located at the 5ft depth.

- 13.12.4 Underwater seat benches and rest ledges. Benches or ledges projecting into the pool at the wall must visually be set apart with a solid stripe two (2") inches (5 cm) wide on the surface along the front leading edge. The stripe shall be plainly visible to persons on the pool deck. Benches and ledges shall have a slip resistant surface.
- 13.12.5 All suction outlet covers, grates, anti vortex outlets, etc. shall be secured in such a way that they can be removed only with the use of a tool. The main drain shall be plainly marked by a contrasting color on all pools.
- 13.12.6 Notification All drownings/deaths and injuries or illnesses requiring a physician's care shall be reported to the Department by the facility manager, operator or permittee within 24 hours after learning of the incident.
- 13.13 Sanitation of Pool Facilities – At swimming pools, sanitary standards shall apply to dressing rooms, toilet facilities, and to the handling and care of towels and other articles of bathing apparel.
- 13.13.1 Pool decks shall be maintained in a clean and sanitary manner. Indoor pool decks shall be disinfected at least weekly. The deck, walkways and floors shall be free of areas with poor drainage that retains water.
- 13.13.2 The floors, walls, furniture and all fixtures in the dressing rooms, showers and toilets, must be cleaned and disinfected daily, or more often if necessary, to maintain them in a clean and sanitary condition. Disinfectant utilized shall be labeled and have the approval of the Environmental Protection Agency.
- 13.13.3 The common use of towels, drinking cups, combs, hair brushes and other toilet articles shall be strictly prohibited.
- 13.13.4 Animals not specifically authorized by the Health Department shall not be within the pool enclosure.
- 13.14 Pool Concessions - There must be a complete separation between areas where food and drink are served and areas used by bathers. Concession facilities available only to spectators shall be separated from the pool deck and areas accessible to swimmers.
- A. In cases where personal service is provided by the establishment, food and/or drink may not be consumed or served within eight feet (8') of the water's edge. Food and beverages served or consumed in designated areas shall be in unbreakable containers.
 - B. Trash containers shall be provided in areas designated for food consumption.
 - C. All food service establishments operated in conjunction with public water recreation facilities shall be constructed and operated in accordance with the Saint Louis County Food Code, Chapter 807 SLCRO.
- 13.15 Conditions Requiring Closing of Pool -

13.15.1 Closure of Facility. Whenever the Department finds any of the conditions hereinafter set forth it shall, by written notice, immediately order the owner, operator or [licensee] permittee to close the swimming facility and to prohibit any person from using such facilities:

- A. If conditions at a swimming facility and appurtenances, including bathhouse facilities, upon inspection and investigation by a representative of the Department, create an immediate danger to health or safety, including conditions that could lead to bather entrapment or entanglement; or
- B. When the Department, upon review of results of bacteriological analyses of water samples collected from a swimming facility, finds that such water does not conform to the bacteriological standards promulgated by the Department for proper swimming water quality; or
- C. When the Department finds by observation or test for water clarity of the swimming facility water a higher turbidity level than permitted in the standards for physical quality as promulgated by the Department; or
- D. When in such cases as it is required, the presence of unsatisfactory water quality including disinfectant residual, or pH of the pool water as prescribed by rule as promulgated by the Department, is absent; or
- E. When the Department finds upon inspection and investigation the swimming facility is open for use by bathers with an inoperable pump, filter, or disinfectant feeder; or
- F. The absence of a required lifeguard on duty is outlined in Section 13.6.

13.15.2 The notice shall state the reasons prompting the closing of the facilities and the owner, operator or permittee must post a copy of the notice conspicuously at the pool. Upon notification to the St. Louis County Police or Police Departments of the incorporated cities, towns, and villages, it shall be their duty to see that the notice of the Director shall be enforced. Any owner, operator or permittee affected by such an order is entitled, upon written request to the Department, to a hearing as provided in these rules and regulations and this code.

13.15.3 When such conditions are abated or when the results of analyses of water samples collected from the swimming facility comply with the Department's bacteriological standards for acceptable water quality, or when the turbidity decreases to the permissible limit, or when the disinfectant residual reaches a satisfactory level as prescribed by rule, the Department may authorized reopening the pool.

13.15.4 Swimming pool closure by the Department shall require a reinspection by the Department prior to reopening the pool, at the time of reinspection the conditions requiring closure shall be abated."

13.16 Swimming Pool Closing (Manager/Operator)

13.16.1 The manager-operator shall immediately close the pool whenever any of the following conditions exist:

- A. The manager/operator determines that conditions at a swimming pool or bathhouse create an immediate danger to health or safety.
- B. When the main drain is not visible.
- C. Bacteriological results show any of the following:
 - 1. Coliform concentration of 10 per 100 ml in two consecutive samples;
 - 2. Presence of fecal coliform, E coli, beta hemolytic Streptococcus or Pseudomonas in any sample.
- D. Turbidity exceeds the criteria as provided in these rules and regulations and this code.
- E. A disinfectant residual consisting of a minimum of 1.0 p.p.m. free chlorine or 2.0 p.p.m. bromine is not present or the disinfection system is inoperable.
- F. The total chlorine concentration exceeds 8.0 p.p.m. or the total bromine concentration exceeds 8.0 p.p.m.
- G. When the recirculation pumps and/or the filters are inoperable.
- H. When the pH of the pool water is less than 6.8 or greater than 8.0.
- I. When a fecal or vomit accident occurs. The manager/operator shall refer to the Centers for Disease Control's (CDC) "Fecal Accident Response Recommendations for Pool Staff. For more information please go to <http://www.cdc.gov/healthyswimming/fecalresponse.htm>.
- J. When a suction or main drain grate is loose, improperly installed, damaged or missing.
- K. When a written notice to close is issued by the Department, in which case the notice shall be posted by the owner, operator or permittee at the entrance to the pool area. The pool shall remain closed until the Department has authorized the reopening of the pool.

13.16.2 The Manager/Operator can reopen a swimming pool that was voluntarily closed by the Manager/Operator whenever such conditions which required the swimming pool closure are abated.

APPENDIX

American National Standards Institute (ANSI) – www.ansi.org
American Red Cross– www.redcross.org
Association of Pool & Spa Professionals (APASP) (formerly NSPI) – www.apsp.org
Center for Disease Control–www.cdc.gov
Consumer Product Safety Commission–www.cpsc.gov
Ellis & Associates – www.jellis.com
Environmental Protection Agency – www.epa.gov
Federation Internationale de Natation (FINA) – www.fina.org
[National Collegiate Athletic Association](http://www.ncaa.org) (NCAA) – www.ncaa.org
[National Federation of State High School Associations](http://www.nfshsa.org) (NFSA) – <http://www.nfshsa.org>
National Oceanic and Atmospheric Administration (NOAA) – www.noaa.gov
National Recreation and Park Association – www.nrpa.org
National Sanitation Foundation (NSF) –www.nsf.org
National Spa & Pool Institute – www.nspi.org
National Swimming Pool Foundation–www.nspf.org
St. Louis County Department of Health – www.stlouisco.com/doh
Starfish Aquatics Institute – www.starfishaquatics.org
The Chlorine Institute–www.chlorineinstitute.org
YMCA – www.ymca.net