Volusia County

Department Of Public Protection

Beach Safety Division

LIFEGUARD TRAINING MANUAL

4TH EDITION

2008 Volusia County Beach Patrol
Daytona Beach, Florida

STUDENT NAME:_____

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CHAPTER ONE :
THE PROFESSIONAL LIFEGUARD

Lifeguarding in America has its roots in the formation of the U.S. Coast Guard in the early 1800's. In those days, most lifesaving efforts were haphazard at best, usually involving untrained persons or loosely organized groups of volunteers. Through the efforts of the Young Men's Christian Association (YMCA) and the American Red Cross, formal training programs were developed to teach swimming and lifesaving skills.

The number of professional lifeguards is growing worldwide, but lifeguard agencies are still small compared with other emergency services such as police and fire departments. This is due in part because of the seasonal nature of lifeguarding and only Florida, California and Hawaii employ significant numbers of full-time lifeguards.

The outdoor nature of lifeguarding can make the job uncomfortable at times. There are long days in the hot sun. When it rains, lifeguards get wet. The job doesn't pay very well, and most of the time it is just plain boring. So why would anyone want to be a lifeguard?
Some lifeguards are attracted by the athletic nature of the job. They welcome the opportunity to maintain peak physical fitness and to participate in lifeguard competitions. Others enjoy working outdoors in the natural setting of the beach environment. For many, lifeguarding provides temporary employment while preparing for some other profession

Professional Responsibility

To understand the role of the professional lifeguard one must first understand the difference between a **lifesaver** and a lifeguard. A lifesaver is a person who has had formal training in swimming skills, personal water safety and basic water rescue. Lifesavers have the *ability* to rescue individuals using their training, swimming skills and ingenuity.

A **lifeguard** on the other hand, is a person who is employed as a professional emergency responder. Lifeguards have the *responsibility* to prevent incidents within their assigned areas and to rescue individuals using special equipment, established procedures and regularly practiced swimming skills.

A lifesaver reacts to unexpected emergency situations and may improvise based on available rescue equipment. He acts because of a moral imperative to save a life and it usually protected from legal consequences by "Good Samaritan" laws.

Lifeguards, however, are trained to predict and respond to incidents. A lifeguard is equipped with specialized tools and is legally bound to provide competent water rescue and emergency care when needed. A lifesaver differs from a professional lifeguard in the same way a lay person with basic first aid differs from a specially trained and equipped paramedic.
In the United States, the general public has developed a perception of lifeguards similar to firefighters, police and emergency personnel. Americans are willing to pay for lifeguard services

with tax dollars or service fees, and they expect lifeguards to have training and equipment equal to that of professionals in other emergency services.

In short, professional lifeguards are accountable for their actions. The duties of the lifeguard in preventing accidents, performing rescues and providing medical treatment require that he/she provide a certain **standard of care** to be protected from legal consequences. The actions of an individual lifeguard are judged based upon what is expected of someone with the same training and experience, under similar circumstances.

The rewards are few, but there is a genuine satisfaction that comes with being a competent lifeguard. Lifeguarding is not for everyone, some people regardless of age, lack the maturity to accept the profound responsibility of safeguarding human lives. These individuals do not realize until it is too late, the terrible burden of knowing their negligence caused the death of an innocent being.

There are many ways to make a living. Very few involve the protection of human life. If you are not ready for the responsibilities of a Volusia County lifeguard, PLEASE find another job!

The Training Process

The Volusia County Beach Patrol requires qualified candidates to complete a formal process of lifeguard training. Prospective employees must be at least 16 years of age. Candidates must demonstrate physical competence by swimming 50 yards in 30 seconds or less and 500 meters in ten minutes or less, and by running a distance of one half mile in three minutes and fifteen seconds or less.

Candidates must successfully complete a 44 hour Surf Rescue Training class and receive certification in cardiopulmonary resuscitation and First Responder emergency care. New hire lifeguards must serve an apprenticeship with seasoned lifeguards. This involves at least four days of tower duty under the direct supervision of a professional lifeguard.

Volusia County Beach Patrol Supervisors may stage mock water emergencies to test the reaction and performance of new lifeguards. The goal of the training process it to provide new employees with every skill needed to perform lifeguard duties with competence.

About this Manual

The text was developed to support the Surf Rescue Training curriculum of the Volusia County Beach Patrol. Although every effort has been made to provide information that is accurate and useful for the lifeguards-in-training, the County of Volusia assumes no responsibility for errors or omissions in this document.

Prospective lifeguards are required to read this manual thoroughly as part of the Surf Rescue Training class. Refer to this book often, especially during your first season of employment with the Volusia County Beach Patrol. Suggestions for improving this manual or any part of the

Volusia County lifeguard training process are welcomed. Please submit your comments in writing to:

Kevin Sweat, Director
Volusia County Beach Department
440 South Beach St.
Daytona Beach, FL 32114

Effective Fall 2008:
515 S. Atlantic Ave.
Daytona Beach, FL 32118

Acknowledgements

The Volusia County Beach Department gratefully acknowledges the contributions of the United States Lifesaving Association and the Los Angeles County lifeguards in preparing this manual.

CHAPTER TWO :
THE ORGANIZATION

The Volusia County Public Protection Division of Beach Safety was created in 1988 after area voters approved an amendment to the County Charter providing for county management of beach services. Although lifeguards have been a county wide service since 1973, law enforcement and other beach services had been provided by individual beachside communities. The Beach Trust amendment mandated the funding of a county agency to provide uniform law enforcement and services for all Volusia County beaches.

The Volusia County Beach Patrol is the largest agency of its kind in Florida, with an annual budget of $8 million. More than 200 seasonal lifeguards are employed by the Beach Patrol from February 1 to Labor Day, and nearly 60 full-time employees work year round. The Beach Patrol provides lifeguard and police protection, recreational services, and environmental management for Volusia County beaches. The Beach Patrol is under the supervision of the Beach Director.

Beach Patrol

The Volusia County Public Protection Division of Beach Safety is comprised of full-time cross-trained employees certified in Law Enforcement, Aquatic Rescue and Emergency Medical Training. These employees provide lifeguard and safety protection, surf rescue and emergency medical care to the millions of visitors and residents who visit Volusia County beaches each year. They are also responsible for the traffic and crowd control and for the parking for cars and other motorized vehicles on the beach. Through the efforts of these officers the many injuries that once resulted from beach traffic have been significantly reduced. The beach is patrolled 24 hours a day.

Beach Patrol officers are state certified Law Enforcement Officers who complete the same state regulated training as other police officers. These officers are trained to understand important aspects of the beach environment and ecology.

The Beach Patrol also promotes public awareness of beach safety through presentations at schools and civic groups.

Beach Lifeguards

Lifeguards provide water safety and protection, and first aid to visitors on 40 miles of Volusia County beaches. There are contiguous lifeguard patrol zones that extend from the Flagler County line to the Canaveral Seashore National Park. The zones are North County, Ormond, Daytona, Daytona Beach Shores (Shores), Dunlawton and New Smyrna Beach. Each zone includes a lifeguard station facility that is run by a captain, station and patrol personnel and a radio dispatcher.

There are portable lifeguard towers which are distributed within these patrol zones that are opened according to seasonal requirements. Lifeguards who are assigned to portable towers are under the supervision of the Zone Supervisor, station personnel and dispatcher.

The Volusia County Beach Patrol is recognized as one of the best trained and equipped lifeguard agencies in the world and is responsible in part for the premier reputation of the "World's Most Famous Beach".

Administration
(386) 239-6414

The Administration Department, located at 440 S. Beach St., is responsible for Volusia County Public Protection Division of Beach Safety budget and oversees financial operations of the other departments. They are also responsible for the payroll and personnel functions of the beach. The Administration issues permits for special beach events and promotes beach recreation. Administration personnel also provide County liaison to the Beach Advisory Board which makes recommendations on beach related matters to the County Council.

Other Beach Related Departments

Finance Department
Republic Parking (386) 254-4605 or 254-4626

The Finance Department is responsible for overseeing the contract with Republic Parking which provides the fee collection at the 28 vehicular access sites. The access fee season begins February 1st and ends November 30th. All fee collectors are hired as part-time employees. The company works continuously to expedite operations and to avoid traffic backups while remaining courteous and helpful to all beach visitors. Personnel also provide information to beach visitors to promote the many attributes offered by the Volusia County beaches and outline the environmental regulations necessary under the Habitat Conservation Plan.

Finance personnel are also responsible for administering a county contract for beach concessionaire services involving 150 franchises.

Facility Services
(386) 248-1760

Facility services are responsible for overseeing the contracts to an outside vendor for cleaning the beach and clearing vehicle ramps of soft sand accumulation. Vendor employees clean beach restrooms, empty trash containers, and collect debris from the beach.

Parks and Recreation
Lighthouse Point (386) 756-7488
Smyrna Dunes (386) 424-2935

The Parks and Recreation Department is responsible for the administration and maintenance of two state parks. Lighthouse Point Park in Ponce Inlet and Smyrna Dunes Park in New Smyrna Beach are located on either side of the Ponce de Leon inlet. Each provides beach frontage with park amenities such as restrooms, picnic tables, grills and an extensive boardwalk system. Lighthouse Point Park also includes a jetty walk for site seeing and fishing. Dogs are permitted on leashes at both parks.

CHAPTER THREE :
PERSONAL SAFETY

The dangers of surf rescue and exposure to the sun and infectious diseases make lifeguarding a high risk profession. The Volusia County Beach Patrol is concerned about the safety of all employees and committed to safe job practices. Much of the training now required for Volusia County lifeguards is designed to reduce the risk of personal injury and exposure to disease. However, personal safety is ultimately the responsibility of the individual employee. Personal safety in the workplace begins with a thorough knowledge of potential health hazards and a lifelong commitment to safe job practices.

Sun Exposure

Lifeguarding is outdoor work and it's impossible to be completely protected from the sun. Recent evidence suggests that even minimal sun exposure for some individuals may be hazardous. Sun exposure and skin damage can occur even on a cloudy day.

The sun's rays are composed of both visible and invisible portions of the light spectrum, but the invisible, ultraviolet frequencies are of primary interest for health concerns. **Ultraviolet-B rays** are considered "burning rays" and are responsible for skin sunburns. **Ultraviolet-A rays**, however, penetrate deep into the skin causing permanent damage that leads to a wrinkled, leathery skin appearance. Worst of all, this "silent" skin damage can result in deadly melanoma and other skin cancers. Remember that even a mild sunburn results in premature aging of your skin and increases your chances of developing skin cancer later in life.

The Volusia County Beach Patrol strongly recommends that lifeguards and other employees make sun protection a high priority. Tower umbrellas and sunscreen are supplied to each lifeguard employee, and conscientious use of these items can significantly reduce sun exposure. For maximum effectiveness, sunscreen should be applied 30 to 60 minutes before the first exposure to the sun to allow the sunscreen to penetrate the skin. Also, sunscreen should be reapplied frequently during the day as perspiration reduces the effectiveness of sunscreen. Even so-called "waterproof" sunscreen products are eventually washed away by perspiration and swimming.

Long-term exposure to the sun can lead to the development of **pterygium** deposits in the cornea of the eye. These fleshy growths become progressively larger and ultimately block the lens of the eye, interfering with normal vision. Most sunglasses filter the ultraviolet radiation that causes pterygium and they should be worn by lifeguards at all times. Sunglasses with polarizing lenses have the added advantage of reducing glare on the ocean surface, making it easier to see swimmers and bathers during the high glare conditions.

Infectious Disease Exposure

Lifeguards are familiar with handling risk, yet some worry more about getting AIDS than they do about making a dangerous surf rescue. There is no doubt that infectious diseases are a real danger to lifeguards, but with proper safety practices and the use of the personal protective equipment (PPE) the risks can be minimized.

Although AIDS is the most feared infectious disease, it is the least likely disease to be contracted by a healthcare worker in the job. Healthcare workers are at a much higher risk of contracting hepatitis-B (HBV). An estimated 250 healthcare workers die each year from HBV or its complications, more frequently than any other disease

Bloodborne and Airborne Pathogens

Infectious diseases range from generally mild conditions such as influenza to life-threatening diseases like tuberculosis. The four diseases of most concern to lifeguards are HIV, hepatitis, tuberculosis, and meningitis.

Human Immunodeficiency Virus (HIV). Causes Acquired Immune Deficiency Syndrome (AIDS) which is fatal. HIV does not survive well outside of the body, and it is much more difficult to transmit than other diseases like hepatitis-B. The routes of exposure are limited to direct contact of broken skin or mucus membranes with infected blood, semen or other body fluids. It is very unlikely for a lifeguard using standard precautions to contract HIV on the job.

Hepatitis-B (HBV). Causes permanent liver damage and in many cases can be fatal. Unlike HIV, hepatitis-B is a very tough virus and can survive on clothing, newspaper, or other objects, days after infected blood has dried. Lifeguards should remember that even dried body fluids are potentially infectious, and they should take appropriate measures to prevent contact.

Tuberculosis (TB). An infectious lung disease that can be fatal. Thought to have been eradicated as recently as 1985, TB has since made a comeback. Even worse, new strains of the disease are resistant to treatment with traditional medication. Unlike HIV and HBV, TB is spread by droplets in the air, usually the result of coughing and sneezing. Because of this, TB can be contracted even without diret physical contact with an infected patient. Use of one-way air masks for rescue breathing greatly reduces the risk of exposure to this airborne disease.

Meningitis. An inflammation of the lining of the brain and spinal cord. The most infectious varieties of meningitis are caused by bacteria. Like TB, meningitis is transmitted by respiratory droplets but is far easier to contract. The disease has a rapid onset (several hours to a few days) and requires quick treatment with antibiotics.

Disease Prevention

The first concern of the Volusia County lifeguard at the scene of an emergency should be personal safety. Part of this concern involves proper protection from infectious diseases. Always

avoid direct contact with patient blood, body fluids, membranes, wounds and burns. Lifeguards should use latex gloves when examining or treating patients and pocket face masks with one-way valves for rescue breathing. A pocket face mask should be carried in the Volusia County lifeguard's uniform pocket at all times so that it will be available for use during water rescue.

Reporting Exposure

Volusia County lifeguards exposed to possible infectious disease must report the incident immediately to their Zone Supervisor or their designee.

Injuries on the Job

Worker injury is a serious problem for almost every business and government agency in the United States. The rising cost of medical treatment has caused a proportionate increase in Worker's Compensation insurance, creating a significant economic burden for employers. In many cases workers are not sufficiently insured for long-term disability, and they may experience permanent financial hardship as a result of injuries on the job. Most worker injuries are preventable through the use of safe job practices.

Two of the most common injuries to Volusia County lifeguards are ankle sprains received while running through the surf and back or shoulder injury received while moving portable towers. In these cases, injury is entirely preventable using proper procedure as described in this manual.

Reporting Job Injuries

All cases of injury to Beach Patrol employees should be immediately reported to the Zone Supervisor or their designee.

CHAPTER FOUR :
THE SURF BEACH

A basic understanding of marine science is essential for the competent surf lifeguard. Lifeguards must be able to recognize hazardous surf or beach conditions to provide for the safety of beach visitors. Lifeguards should develop a thorough knowledge of wave dynamics, ocean currents and the potential hazards of the surf beach.

Waves

Most waves are generated over the open ocean by wind blowing across the water surface. The wind forms **gravity waves**, but other forces of nature can make waves too. **Tidal waves** are caused by the gravitational pull of the sun and moon, **tsunamis** result from earthquakes or other seismic activity and **seiche waves** are caused by sudden changes in barometric pressure.

The creation of gravity waves begins when the frictional drag of a breeze on a calm sea creates ripples on the water surface. The ripples then present a surface against which moving air can exert pressure. Large storms are responsible for most of the waves reaching the beach. When waves move out of the storm area they become **swells** which can travel half the distance around the world.

Waves are classified according to height, length, period, velocity and steepness. Wave **height** is the vertical distance measured from crest to trough. Wave height is determined by a combination of factors including the speed of the wind, the duration of time that the wind blows and the **fetch** or distance of water over which the wind blows. **Wavelength** is the horizontal distance between a point on a wave and the corresponding point on the following wave. Wave **period** is the time it takes for one complete wave, crest to crest, to pass through a fixed point. **Phase velocity** is the ratio of wavelength to wave period. Wave **steepness** is the ratio of wave height to wavelength.

Waves behave differently depending upon whether they are in deep or shallow water. Waves in a water depth greater than one half the wavelength are called **deep water waves**. Deep water waves move at a velocity in miles per hour that is 3.5 times the wave period measured in seconds. For example, a deep water wave with a period of 10 seconds will have a velocity of about 35 miles an hour.

Waves approaching shore begin to take in different characteristics as the depth of the water is reduced and the waves begin to "feel" the bottom. When the water depth is less than one half the wavelength the wave becomes a **shallow water wave**. Shallow water waves are affected by the process of shoaling, breaking, reflection, refraction and diffraction. The combination of these forces continuously shapes and sculpts the ocean bottom near shore, resulting in the formation of sandbars and rip channels.

Shoaling

Shoaling is caused by the frictional drag of shallow water waves on the ocean bottom. Shoaling waves are slowed down while at the same time their wavelength becomes shorter. Since the wave period remains the same, shoaling waves appear to "bunch up" as they near shore. When a wave first enters into shallow water near the beach and starts to shoal its height begins to decrease. However, as the wave moves through the surf zone and approaches the beach its height increases until the wave becomes unstable and breaks.

Breaking Waves

The shape of the ocean bottom and the slope of the beach affect how waves break, resulting in spilling, plunging, collapsing, and surging breakers. Although the ocean bottom along Volusia County beaches has a predominantly gentle slope, the steepness of the beach begins to increase in both the northern and southern ends of the county. The depth of the water and shape of the ocean bottom are continually changing, because of this waves of every type occur on Volusia County beaches.

Spilling Waves, are formed on a gently sloping beach and consist of an over-steepened wave that starts to break at the crest and continues to break as the wave travels toward the beach. Spilling waves are the most common type and provide the best waves for surfing. Spilling waves dissipate their energy over a wide area of the surf zone, minimizing beach erosion.

Plunging Waves, are formed when the slope of the ocean bottom is between three and eleven degrees, causing the wave crest to curl over a pocket of air and form a tube. As a plunging wave breaks the tube is pushed toward the bottom beneath the wave, creating turbulence and stirring up sand from the bottom. Plunging waves are the most dramatic breakers to watch and the most dangerous to ride. They also do the most damage in terms of beach erosion.

Collapsing Waves, these occur on relatively steep beaches with a bottom slope between eleven and fifteen degrees. Breaking is confined to the lower half of a collapsing wave with a small air pocket forming as the wave moves toward the beach.

Surging Waves, these occur on the steepest beaches with slopes greater than fifteen degrees. Surging waves wash up the face of the beach instead of breaking, and then rush back to down towards the ocean. Surging waves can be hazardous to swimmers and bathers because of the **backwash** or "undertow" they create near the shore.

Reflection

When waves approach the shore they either break or are reflected by the beach. **Reflection** generates an opposing wave of the same frequency, but 180 degrees out of phase with incoming waves. The incoming and outgoing waves combine in a process of constructive and destructive

interference. The result is a stationary, or **standing wave**, that has higher crests and deeper troughs than either the incoming or outgoing wave. Wave reflection responsible for the formation of offshore sandbars and is also an important factor in beach erosion.

Refraction

Wave **refraction** causes waves to bend as they approach the shoreline. When the water depth decreases to half the wavelength of the incoming wave, frictional forces begin to slow the shoremost edge of the wave. The further the wave moves towards shore the greater it is slowed down along the near side, having the affect of swinging the wave around toward the beach like a barn door.

The net result of refraction is that waves reach the beach almost parallel to the shoreline. Refracted waves generate a current parallel to shore that carries sand down the coast in a process known as **littoral drift**. These lateral currents can also be a hazard to swimmers and bathers who can be swept into manmade obstructions in the ocean such as piers and jetties.

Diffraction

When waves sweep past a point of land such as a jetty, a circular wave is generated that sets up an interference pattern called **wave diffraction**. This process causes an increase in wave height at the entrance to ocean inlets that can be hazardous to boat operation.

Sandbar and Rip Channel Formation

Longshore bars create a buffer zone for ocean swells causing them to break and dissipate energy before reaching the beach. Sandbars are created by wave reflection and are formed at intervals of one half the wavelength of the waves reaching the beach. Wave reflectance also generates waves that are perpendicular to incoming and outgoing waves. These **edge waves** further shape both the beach and offshore sandbars. The vertical motion of water in the wave washes up and down the shoreline dislodging sand. The sand is carried horizontally across the nodes of the wave where it builds up into points or **horns**, on the beach. Similarly, sandbars are sculpted until ridges alternate with deep troughs called **rip channels**. When wave action pushes a wave over the sandbar toward shore, gravity forces the water back out through these troughs resulting in rip currents. **Rip currents are the single leading cause of surf rescues in Volusia County, and the ability to recognize rip currents is a fundamental responsibility of the surf lifeguard.**

Tides

The periodic rise and fall of waters on the earth's surface, including those of open seas, gulfs and bays, is a result of the gravitational attraction of the sun and the moon. On the Atlantic coasts of North America and Europe there are two high tides and two low tides each day with an interval of 6 hours and 12 minutes between high and low tide and 12 hours and 25 minutes between consecutive high tides. Twice daily tides with equal highs and lows are known as **semidiurnal** tides.

Along the Gulf of Mexico there is only one low tide and one high tide each day with an interval of 24 hours and 50 minutes between consecutive high tides. Single tide cycles are known as **diurnal** tides. A combination of diurnal and semidiurnal tides occurs along the Pacific coast of North America and is known as a **mixed** tide.

The sun and the moon exert gravitational pulls on the water in the earth's oceans and these forces are opposed by the centrifugal force caused by the earth's rotation. Centrifugal force flattens the oceans at the north and south poles and elongates the oceans at the equator, making the earth assume the appearance of a squashed beach ball. The moon pulls on the water with a force proportional to the square of the distance between the earth and the moon. Water on the side of the earth nearest the moon experiences the greatest gravitational pull, while water on the opposite side of the earth is less affected by the moon's gravity and more by the earth's centrifugal force. The combination of centrifugal and gravitational forces results in the formation of tidal bulges in the oceans on opposite sides of the earth.

The sun also produces diurnal and semidiurnal bulges which interact with the tidal bulges caused by the moon. Tidal bulges from the sun and the moon coincide during full and new moons. These **spring tides** produce higher high tides and lower low tides. **Neap tides** occur during the first and third phases of the lunar cycle when tidal bulges are out of phase, resulting in lower high tides and higher low tides.

The difference in height between successive high and low tides is called a **tidal range**. The tidal range in Volusia County averages 3.95 feet, and increases to 4.65 feet during spring tides. Accurate tide prediction can only be made after years of on-site measurement and recording. Tide tables for Volusia County are calculated using measurements made in Jacksonville Beach and extrapolated to the Sun Glow Pier in Daytona Beach Shores. Since the 47 miles of Volusia County coastline varies widely in shape, tide times will be different at various locations on the beach. Daily surf conditions can also have a significant affect on the accuracy of the times for high and low tide.

Surf Hazards

Surf hazards most commonly encountered on the east coast of Florida are caused by rip currents, large waves and strong lateral currents. These natural forces combine with obstructions such as piers and jetties to create dangerous surf conditions. An understanding of natural forces enables the surf lifeguard to anticipate many dangers unforeseen be beach visitors who often bring their own hazards into the surf environment in the form of surfboards, boats, personal watercraft, fishhooks and glass containers.

A competent surf lifeguard learns to "read the water" for dangerous conditions and potential hazards. The size and shape of waves, the direction of shore current, the color and surface texture of the water all provide valuable information about surf conditions to the knowledgeable lifeguard.

Rip Currents

Rip currents are the single most hazardous ocean condition on the east coast of Florida, causing numerous drownings each year. Statistics show that up to 80 percent of all surf rescues worldwide are the result of rip currents. Volusia County lifeguards annually rescue between 1500 to 5500 swimmers and bathers caught in rip currents.

Rip currents are also known as "runouts", "riptides", "rips", and "suckouts"; rip currents are seaward moving streams of water caused by wave action. Even expert swimmers can be helpless in the surf if they do not know what to expect from a rip current. Rip currents may actually attract swimmers as the water rushing seaward can cause the ocean to look smoother than surrounding water. Knowledgeable swimmers can safely swim out of rip currents or avoid them in the first place. Lifeguards will often use fast moving rip currents to their advantage when making surf rescues.

Rip currents vary in size, force, and physical appearance and may be created by a variety of causes. Along Volusia County beaches, rip currents are caused by the interaction of ocean waves and offshore sandbars.

Gravity continually pulls water downward to a uniform surface level, and in the absence of wave action the ocean becomes smooth and level. When wave action pushes water towards the beach it creates a higher water level on the shoreward side of the sandbar. Gravity exerts a downward force to restore the water level, and the excess water is forced out to sea. Submerged sandbars act like underwater dams against this seaward flow of water. Deep cuts in the sandbars, or **rip channels**, provide "holes in the dam" through which water can move more rapidly out to sea.

Although rip currents vary in appearance, they can usually be distinguished by the trained observer from adjacent areas of the surf. Rip currents may appear as an especially rough, choppy, or unusually smooth patch of water, or they may carry sand or debris giving the water a dirty or muddy quality. The rip current may have a darkened color because of a deep rip channel or the water surface may be white with sea foam. Waves on the sandbar may not break over a rip current, or they may break much faster than in adjacent areas. In strong rip currents, a seaward rush of water can be seen running in the opposite direction as the incoming waves.

A rip current moving through calm, level surf is relatively easy to see. It is much harder to spot a rip current when the ocean is choppy or rough. Under most conditions a rip current can be seen overlooking the surf line from an elevated point such as a lifeguard tower.

Rip currents usually are strongest at low tide when water along the sandbar is shallow and the rip channels are the only path for seaward flowing water. Rip currents also pull hardest during the lull immediately following a set of waves as the water carried in by the wave set rushes back to sea. Ultimately, rip currents are unpredictable because of the many variable associated with their formation. For this reason, it is the responsibility of the individual lifeguard to monitor the surf line continually to safeguard the bathers in his or her assigned area.

Components of Rip Currents

Rip currents have three distinct components (Figure 4.1). The **feeder** is the main source of supply for the rip current. This water, gathered from the returning force of expended waves, collects and begins to move laterally along the beach. Once the water finds a rip channel or encounters an obstacle such as a jetty in its lateral drift, it will turn seaward. A rip current may have one or two feeders. For example, waves breaking on both sides of a deeper water channel would create two feeders. Single feeder rip currents are much more common.

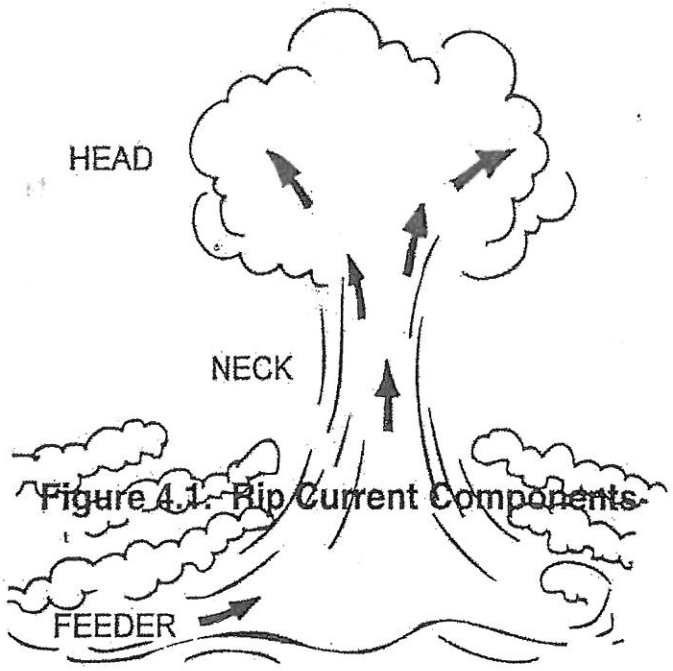


Figure 4.1. Rip Current Components

The stream of seaward moving water forms the **neck** of a rip current. The neck is where the rip current has its strongest flow and can vary in width up to several hundred yards. The majority of drownings and rescues occur in the neck of a rip current.

The rip current **head** is the area where the neck disperses into deeper water. At this point, the rip channel expands into the open ocean, reducing water pressure in the current until it eventually comes to a stop.

The obvious danger of a rip current is its tendency to pull swimmers away from shore into deeper water. The simplest way for a swimmer to escape the pull of a rip is to swim parallel to the beach out of the current's neck and then back to shore. However, if the rip current is moving the same direction as the swimmer this maneuver will be more difficult.

Sometimes swimmers re-enter the rip current feeder after swimming free of the rip current, only to be sucked back into the neck of the current. Swimmers should carefully evaluate a rip current before crossing it to avoid the possibility of being swept back into it. If the feeder must be crossed in order to reach shore, the swimmer should either swim a good distance upstream form the neck or be prepared to swim hard across the feeder while using wave action to assist in forward movement.

Lateral Currents

Lateral currents move parallel to the beach and are caused by wave refraction. Lateral currents may be so strong that bathers are swept off their feet and into rip current feeders. Children may become lost when they drift down the beach away from parents or guardians.

Manmade structures in the ocean such as pier pilings, sign poles and rock jetties form dangerous obstacles in the surf. Lateral currents can sweep bathers into these barnacle covered structures with fatal results. The lifeguard should maintain a buffer area clear of bathers upstream from obstructions when strong lateral currents are present.

Backwash

Surging waves on a steeply sloped beach can create a powerful **backwash** as the water runs back down the beach face to the ocean. The backwash of larger waves can be strong enough to prevent swimmers from reaching shallow water or pull unsuspecting waders into overhead water. A swimmer can overcome a backwash by diving underwater toward the beach and digging his or her hands into the sand. This can be achieved by; holding onto the bottom until the backwash subsides, bringing the knees to the chest, and then planting the feet on the bottom and lunging forward onto the beach face.

Sandbars

Sandbars are ridges of sand lying parallel to the beach at regular intervals from shore. Sandbars cause waves to break it the water depth on the sandbar is less than half the height of the wave. Significant wave energy is dissipated on sandbars, reducing the size and energy of waves reaching the beach. For this reason, sandbars are an effective natural barrier to beach erosion.

Swimmers and bathers are often attracted to sandbars because of the prospect of breaking waves. However, inexperienced swimmers often misjudge the distance of sandbars from shore and may tire before reaching the bar. Also wave action across the sandbar pushes against the swimmer, making forward progress more difficult. Since this happens at the end of the long swim from shore and in the deepest water, a weak or inexperience swimmer may panic just short of the sandbar.

Water depth on sandbars changes continually with the tide. Bathers who walked out to the sandbar during low tide often panic when they start back to shore hours later and step into overhead water. Volusia County lifeguards must continually monitor water depth and make judgment calls about allowing bathers on the sandbar. Cooperation from lifeguards on adjacent towers is essential since bathers may access the sandbar in shallow water in front of one lifeguard, and then drift into an area of deeper water at an adjacent tower.

Holes

Deep holes several yards in diameter are often dug into the sand near shore by wave action. Holes are a hazard for children, elderly and infirm bathers and they can also cause injury to lifeguards running through the surf during rescues. Holes may be visible from the lifeguard tower as darker patches of water due to their increased depth.

Large Waves

Heavy surf presents a danger to swimmers and bathers. Large waves can knock a bather off his or her feet and cause severe head or spinal injury. Heavy surf can hold even strong swimmers underwater long enough to cause drowning. Surfers drawn to the beach by large waves before and after hurricanes risk their lives with sometimes fatal results. Volusia County lifeguards should treat any case of trauma caused by wave action as a possible **spinal injury**. The patient's head and neck should be held immobile until additional medical help arrives.

Tidal Pools

The outgoing tide often leaves sloughs or tidal pools on the foreshore of the beach. Although generally quite shallow, these pools are a potential drowning hazard for infants and small children. Volusia County lifeguards should move their towers to the east side of shallow tidal pools in order to better watch the bathing area of the ocean but should still be able to watch for children in these tidal pools. If a lifeguard does execute a rescue into a tidal pool or shallow slough it is often referred to as a **dash and splash**, this term should only be used for very minimal rescues.

Environmental Hazards

Electrical Storms

Lightning is an extremely dangerous weather condition. Numerous fatalities and serious injuries occur at recreational beaches each year because of lightning strikes. The incidence of lightning varies widely throughout the world, but in the United States lightning strikes occur more frequently in the central and southeastern regions of the country.

In Florida, sea breezes during the summer months bring moisture from the east and west coasts over the center of the state each day. As this moist air is heated, it rises rapidly to the very high altitudes where it cools, forming **cumulonimbus** clouds. These violent thunderstorms give central Florida the highest incidence of lightning strikes in the United States.

The formation of cumulonimbus clouds near the beach should be monitored closely by lifeguards for the development of lightning. Lightning channels typically extend between cloud and ground over a distance of five to ten miles, but lightning strikes can reach many tens of miles away from the cloud edge.

Sound travels through the air at a rate of approximately one mile every five seconds. The proximity of lightning strikes to the beach can be determined by timing the interval between a lightning flash and the subsequent arrival of thunder. For example, an interval of twenty seconds between a flash and thunder would indicate a distance of four miles from the observer to the lightning strike.

Volusia County lifeguards must take immediate action to insure the safety of beach visitors whenever lightning threatens. Lifeguards have been killed in the line of duty, and **personal**

safety must be a primary concern. Each of the Volusia County Beach Patrol stations is equipped with lightning detection systems and when lightning becomes a danger to the lifeguards and beachgoers, the dispatcher will advise the zone of hazardous weather conditions and the water will be closed until the lightning passes and it is again safe to be in the water. Lightning tends to strike the highest point in an open area, and beach visitors should be advised to move away from water's edge and seek shelter in a nearby building or vehicle. Volusia County lifeguards should always climb down from portable lifeguard towers when clearing bathers and whenever hazardous weather conditions have been advised. Also static charge precedes a lightning strike and lifeguards should be prepared to drop to the ground immediately if his/her hair suddenly stands on end.

Tornadoes and Waterspouts

Tornadoes occurring in Florida are usually spawned by thunderstorms or hurricanes and can cause severe structural damage, personal injury and fatality. Tornadoes over water are known as **waterspouts** and can present a very real danger to boaters and beach visitors. Volusia County lifeguards should be prepared to clear bathers immediately if a tornado or waterspout is sighted.

A vehicle can become a deathtrap in a tornado. If unable to seek shelter inside a building, the lifeguard should lie flat in a ditch or other low spot on the beach. The primary danger from tornadoes is the flying debris, and the lifeguard should utilize any available covering as a protective shield.

Strong Winds

Umbrellas, chairs, lifeguard towers and other objects can become deadly missiles on the beach when blown by strong winds. In the event of strong winds, Volusia County Beach Patrol employees should insure that their vehicles are parked away and upwind from lifeguard towers to avoid damage. Tower umbrellas whether in the up or down position need to be secured to the lifeguard towers. Offshore winds have a tendency to push swimmers and bathers into deeper water. Inexperienced sailors and wind surfers are often unable to return to shore in the presence of strong offshore winds.

Floats ride high on the surface and are especially susceptible to wind effects. Novice lifeguards are sometimes caught unaware when a bather on a float suddenly accelerates out to sea. This phenomenon is caused by two factors. The first factor is that buildings and dunes on the beach tend to shield the shoreline from offshore winds such that the wind velocity increases with distance from shore. The second factor is that breaking waves tend to push bathers inside the surf line back towards shore. On the seaward side of the break, the offshore winds become the dominant force. Returning to shore with a rescue victim during offshore winds presents an additional problem to the lifeguard since the wave direction may be out to sea.

Hurricanes

Hurricanes are areas of extremely low air pressure with a constant, counterclockwise wind circulation of 74 miles per hour or more. Although hurricane winds can exceed 150 miles per

hour, most damage in a hurricane is caused by flooding. Residents of low lying, coastal areas are particularly vulnerable to hurricanes, and prompt evacuation to inland shelters is a necessity whenever hurricanes threaten.

The hurricane season extends from June through November in the northern hemisphere. Volusia County Beach Patrol officers provide mutual aid to county Civil Defense personnel during hurricanes and other natural disasters.

Flotsam

Northeasterly winds bring an abundance of floating debris onto shore, especially during the winter months. Large, heavy debris is a hazard to swimmers and bathers when propelled by waves and lateral currents. Lifeguards must be alert for debris in the surf zone and bathers should be cleared from the water if their safety is threatened. When possible, Volusia County lifeguards should collect and remove debris from the water to prevent injury to bathers.

Hazardous Materials

Hazardous wastes are routinely dumped in the ocean, and containers of these materials often find their way onto bathing beaches. Volusia County lifeguards must immediately contact the Zone Dispatcher when any suspicious container is spotted. All swimmers and bathers should be cleared from the area immediately and moved upwind from the site. **Volusia County lifeguards must never attempt to retrieve suspected hazardous materials.**

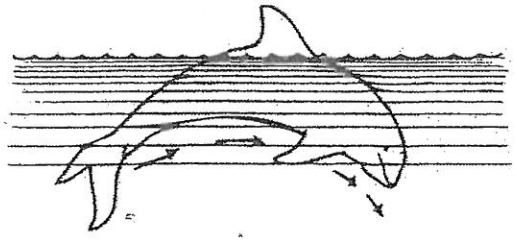
Piers and Jetties

Manmade obstructions in the ocean can be dangerous to swimmers, bathers, surfers, and boaters. Any object submerged in the ocean will become encrusted with razor sharp barnacles that can cause sever lacerations. In the presence of large waves or strong lateral currents, bathers can be swept into piers and jetties, resulting in serious bodily injury or fatality. Piers and jetties also tend to divert lateral currents seaward, creating strong rip currents. Volusia County lifeguards attempting to execute a rescue near a pier or jetty should wear surf fins or shoes to protect themselves from the barnacles.

Piers are used for fishing and the area surrounding a pier usually contains fish hooks that may be stepped on by bathers wading nearby. Piers and jetties also draw sharks because of the presence of bait and the sound of struggling fish. The area within 300 feet on either side of fishing piers is off limits to surfers, swimmers and waders.

Dangerous Marine Life

Most marine life is harmless to humans, but some marine animals found in the Atlantic Ocean along the Volusia County coastline can be dangerous. Lifeguards should be prepared to clear their area of bathers and swimmers if a shark is spotted, and keep the area closed until it is determined to be safe. Volusia County lifeguards should know how to recognize and treat injuries caused by other marine animals.



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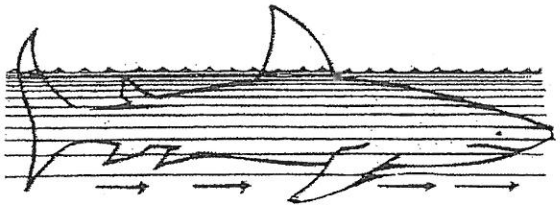

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Sharks. Sharks are common along Florida's east coast. Spinner sharks, lemon sharks, tiger sharks and hammerheads are frequently found in shallow waters along Volusia County beaches. Sharks can usually be recognized by the presence of dorsal and tail fins on the water surface. The dorsal fin cuts the surface while the tail fin moves back and forth.

Dolphins on the other hand, have a horizontal tail fin and expose only their dorsal fin when swimming near the surface. Dolphins often swim in pairs and the dorsal fins of two dolphins are frequently mistaken for a shark. Manta rays also frequent the Volusia County coastline, they move along the surface of the water with their wing tips exposed and the two tips can also be mistaken for the two fins of a shark. Volusia County lifeguards should investigate reports of shark sightings and clear his or her assigned area if a shark is spotted. Lifeguards should also alert zone personnel to the incident by using the term "dangerous marine life", the word shark should not be used on the radios.

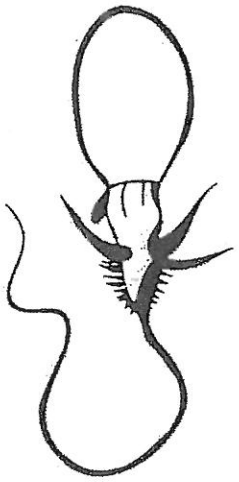
Stingrays. Stingrays are found along sandy beaches during the summer months in shallow water, usually when the ocean temperature is above 70 degrees Fahrenheit. If stepped on the ray will arch its body upward, driving a barbed appendage on its tail into the offender's foot or leg. Wounds caused by stingray barbs can result in serious bleeding and pain. Volusia County lifeguards will **never** remove a stingray barb or any other penetrating object from anyone's skin.

Jellyfish. There are several varieties of **coelenterates** or jellyfish that drift into the surf zone along Volusia County beaches throughout the year. Coelenterates have no direct means of propulsion and are dependent on wind and ocean currents for mobility.

Coelenterates are carnivores whose prey is captured using microscopic cells called **nematocysts** contained in the jellyfish tentacles. When stimulated these cells eject a fiber coated with a toxic chemical. Animals stunned by the toxin are pulled by the tentacles to the underside of the jellyfish and digested.

The nematocyst toxin varies among species. Strong toxins cause a chemical burn or sting on human skin that can be very painful. Also, some humans may experience a delayed systemic reaction to coelenterate

BEFORE DISCHARGE



AFTER DISCHARGE

stings called **anaphylactic shock**. This is a life threatening emergency and Volusia County lifeguards should be prepared to provide basic life support in the event of systemic reactions.

Treatment of jellyfish stings should comply with current medical protocol.

Portuguese Man-O-War. This coelenterate is composed of a colony of organisms functioning as a single animal. The Portuguese Man-O-War consists of a purple, gas filled sac which floats above the water. Dark purple tentacles hang below the animal, reaching lengths up to 40 feet. The top edge of the gas sac is used as a sail, and the Man-O-War can twist as needed to catch the wind.

The Man-O-War uses the same nematocyst stinging mechanism as jellyfish and other coelenterates; however, the toxin of the Man-O-War is considerably more potent than most jellyfish. Basic life support should be provided in the event of systemic reaction.

Barnacles. Any object that remains in the ocean for any length of time will accumulate barnacles below the water surface. Barnacles are filter feeders that sweep fanlike appendages through the water to collect tiny food particles. They are encased in shells that have razor-sharp edges. Barnacle encrusted objects in the ocean such as sign poles, pier pilings, or rock jetties are a serious hazard for swimmers, surfers, bathers and lifeguards.

CHAPTER FIVE :
PREVENTATIVE LIFEGUARDING

Thousands of people drown in the United States each year. Simply stated, the job of the lifeguard is to make sure that visitors enjoy the beach and go home alive. In this role the lifeguard must understand the circumstances that lead to drowning, be able to recognize hazardous surf and beach conditions, evaluate beach visitors for drowning risk and prevent dangerous situations from occurring in the first place. Proficient practice of these collective skills is known as **preventative lifeguarding**.

Some Facts about Drowning

Studies show that all American are susceptible to drowning, but certain demographic factors influence the likelihood of drowning accidents. The following statistics indicate drowning risks as a function of age, gender, time and location.

1. Drowning rates peak significantly in adolescent and young adult age groups. Among these ages drowning is second only to motor vehicle accidents as the leading cause of accidental death.
2. Males lead females in drowning accidents. The male to female drowning ratio is 12:1 for boat-related drownings and 5:1 for non-boat related drownings.
3. Swimming pools are the usual site of drowning accidents for children, while adolescent drownings are more likely to occur in open water locations. Drownings in fresh water outnumber those in salt water.
4. Most drownings occur on weekends and during the summer (May through August).
5. Alcohol is present in 50% of teenaged and young adult drowning victims.

Statistics indicate drowning accidents in open water locations are usually preceded by swimming, boating, diving or scuba activities.

Swimming Accidents

Factors that contribute to drowning while swimming include alcohol or drug use, peer pressure (taking a dare, impressing friends) and carelessness. Two to three percent of drownings occur when swimmers attempt to rescue others in trouble.

Boating Accidents

About 70% of recreational boating deaths result from drowning. Alcohol use is a contributing factor in many boat drownings involving teenagers and young adults. According to the Florida Wildlife Commission, in boat related drownings nearly 63% of the boats involved had open decks and were less than 16 feet. Capsizing or falling overboard accounted for 43% of boat related drownings in Florida in 2006.

Diving Accidents

There are an estimated 700 to 800 diving injuries each year in the United States. Over 70% of those diving accidents occur as a result of dives into shallow water (four feet or less). Many victims of diving accidents are adolescent or young adult males with little or no formal training in diving. Consumption of alcoholic beverages, primarily beer, has been documented in 40% to 50% of diving accidents. The victim is usually unfamiliar with the area or pool where the dive is made, and the injury is usually sustained during the first dive attempt.

Diving accidents often result in severe head and spinal injury. In most cases, the diver is removed from the water by friends and bystanders who are unaware of the possibility of spinal injury. This failure to provide spinal immobilization often results in permanent paralysis or death.

Scuba Accidents

At least 60% of scuba fatalities are the result of drowning. Most underwater deaths are the result of inexperience, carelessness or over-inflation of the lungs leading to the loss of consciousness and drowning. Alcohol and drug use are not thought to play a significant role in most scuba related drownings.

Drowning Presentations

Informal studies of drowning situations at open water recreation areas show that drowning involves phases of distress, trauma and submersion. Volusia County lifeguards should be able to recognize the visible signs or presentations associated with each phase of the drowning process, and able to react quickly to prevent drowning.

Distress

In many recreational drownings, swimmers find themselves in dangerous situations prior to a drowning incident. Victims include bathers caught in rip currents, poor or tired swimmers in water deeper than standing depth, or persons with physical injury or sudden illness.

During a distress presentation swimmers often support themselves in the water while calling or waving for help. In many cases they are able to reach safety or the support of bystanders. Some distressed swimmers don't realize they are in trouble and may continue to swim against a current unaware of their lack of progress towards safety.

A distress presentation may last for a few seconds or may go on for many minutes. However, as the strength of the swimmer wanes, the distress presentation will inevitably deteriorate to a drowning if the victim is not rescued or able to reach safety on their own. Volusia County lifeguards must take immediate action at the first sign of any distress presentation to prevent a more serious problem.

Drowning Trauma/Panic

A drowning victim makes little or no attempt to swim during the trauma stage of drowning. The victim's arms are usually at his or her sides, thrashing downward in a last attempt to "climb the ladder" or "climb out of the hole". The victim's face is low in the water, usually with the chin extended, and he or she is unable to call for help due to ineffective breathing and lack of air. Drowning trauma can develop very quickly and be followed within a matter of seconds by submersion and death. Drowning trauma calls for the fastest possible response on the part of the lifeguard.

Submersion

Drowning usually results in complete submersion of the victim. Submersion is generally the result of a drowning trauma that began at the water surface, but it may also be the consequence of underwater entrapment due to a capsized vessel, plane crash or scuba accident. Once submerged, the victim will usually remain underwater until recovered by divers, or until gases caused by decomposition cause the body to rise to the surface.

Physiology of Drowning

Drowning usually results in respiratory failure which leads to cardiac arrest due to lack of oxygen. Unlike simple **asphyxia**, drowning involves ingestion of water into the stomach and lungs. During resuscitation efforts the victim's stomach contents are usually regurgitated. In the absence of suctioning equipment, vomitus may enter the lungs, obstruct air passages and make resuscitation impossible. Drownings are classified as "wet" or "dry" depending upon whether water has entered the victim's lungs.

Wet Drowning

In 80% of drownings, water gets into the victim's lungs. During drowning trauma, water ingestion usually causes a muscular spasm of the victim's larynx, stopping water and air from entering the lungs. As the victim loses consciousness, the larynx muscle relaxes, allowing water to enter the lungs. The result is a **wet drowning**.

Salt water ingestion has a different effect on the body than fresh water. Fresh water enters the bloodstream by **osmosis** through the lungs, diluting the electrolytic balance of the body. Spasm of the bronchioles occurs and lung alveoli collapse from loss of surfactant. Salt water on the other hand, draws blood fluids into the lungs through **reverse osmosis**, resulting in **pulmonary edema**.

Dry Drownings

In a **dry drowning** the victim's larynx remains closed, preventing water from entering the lungs. The cause of death is simple asphyxia. Although dry drownings make up only 20% of drownings, some studies show that up to 90% of successful resuscitations involve dry drowning.

However, revival of a dry drowning victim may be impossible if his or her larynx fails to open during resuscitation.

Exhausted Swimmer

Victims of a water incident are considered to be an **exhausted swimmer** when they require help exiting the water and are treated by Beach Patrol personnel on the beach, but do not require transportation for advanced medical treatment.

Near Drowning

A water accident is classified as a **near drowning** when the victim requires advanced medical treatment. Physiological complications from water in the lungs can occur within 96 hours of the drowning trauma. Even small amounts of aspirated water can lead to pneumonia and other serious medical conditions. One study shows that five percent of patients in near drowning incidents develop medical complications and that 25% of those complications result in death.

Secondary Drowning

Drowning may occur without warning under a variety of circumstances that differ from the classic distressed swimmer scenario. Heart attack, stroke, asthma attack, head injury or homicide may lead to sudden drowning. For example, sudden immersion in cold water may trigger cardiac arrest or a bather may be knocked unconscious while diving under a wave. Wet or dry drowning takes place as the victim submerges, but the accident itself is a consequence of a sudden event that was difficult or impossible to predict.

Sizing Up Your Bathers

The practice of preventative lifeguarding involves evaluating beach visitors for swimming competence before they enter the water, these evaluations are known as **dry land observations**. High risk individuals should be closely monitored until their competence in the water is clearly evident. The following high risk profiles are general guidelines and are not intended to be discriminatory to any individual or group. In many cases, individuals matching these profiles turn out to be competent swimmers with considerable experience in the surf environment.

Age

Very old and very young people should be watched carefully. Very young children should be prevented from entering the water unless accompanied by an adult. Volusia County lifeguards cannot provide adequate supervision for small children and effectively monitor the rest of his or her area at the same time. Teenagers and young adults, especially males, have a higher incidence of drowning accidents. Teens are strongly influenced by peer pressure and may take risks in the water to impress friends. Adolescents tend to be rebellious to authority figures and may ignore the warnings or instructions of lifeguards. Older adults may lack the physical strength necessary to fight an unexpected current or to quickly move away from a big wave and should also be monitored closely.

Body Weight

People who are overweight may become easily exhausted and are likely to be less able to move quickly to avoid a hazardous condition.

Complexion

If a light skinned person arrives at a sunny beach with no tan whatsoever, it is a reasonable presumption that the person is not a regular beachgoer and therefore may be inexperienced or unfamiliar with the open water environment. This is a particularly useful clue in an area frequented by tourists, since they may have a total lack of familiarity with local water conditions.

Intoxication

Those who display a behavior pattern which suggests a probable impairment of normal physical coordination due to alcohol or drugs should be eyed as potential rescue candidates, particularly considering the high degree of drownings which involve alcohol. Slurred speech, an unstable gait, or erratic behaviors are some examples of tell-tale behavior.

Flotation Device

The only truly safe flotation devices are US Coast Guard approved lifejackets which fit the wearer and are properly worn. With that exception, flotation devices such as inflatable rafts, balls, and life rings can be killers. While flotation devices are sometimes used by accomplished swimmers for purely recreational purposes, they are also used by weak and nonswimmers. Often nonswimmers use flotation devices to access deep water so that they can stay with friends who can swim; but if the non-swimming user of a flotation device becomes separated from the flotation device, submersion and death can occur very rapidly with little or no observable struggle. One of the most chilling sights to a lifeguard is a flotation device offshore with no one around it.

Parents of small children often give them flotation devices, believing they can pay less attention to their children as a result. It is not unusual to see very small children with inflated rings around their upper arms to assist them in swimming, but if such devices deflate unexpectedly or fall off, death by drowning may be the result. Since flotation devices can completely prevent the lifeguard from determining whether a person can swim at all, it should be assumed by the lifeguard that a person using a flotation device is a nonswimmer until the lifeguard is certain that the person is competent without the device.

Improper Equipment or Attire

In most climates, under normal summerlike conditions a swimmer is adequately attired with only a swimsuit. Body surfers will usually equip themselves with swim fins. In cold water, an experienced swimmer could be expected to wear a wetsuit to prevent loss of body heat and

exhaustion. Depending on the conditions, absence of such equipment may be a clue of inexperience.
Any person who enters the water wearing clothes, other than those designed for swimming, should be watched carefully. Clothes offer a negative buoyancy factor and restrict swimming ability. While some people with strong swimming skills may simply lack the funds to purchase swimsuits, the wearing of street clothes while swimming is a likely sign of a lack of water knowledge. On the other hand, it is easy to dismiss from consideration a person who arrives at the beach with an impressive array of equipment under the assumption that the person must have extensive water skills. There is no guarantee however. Particular attention should be paid to those who have unusual difficulty donning their equipment or whose equipment fits poorly. The poorly fitting wetsuit, for example, may be borrowed by a nonswimmer from a friend who is a swimmer.

Disability

People with physical disabilities are increasingly using open water areas for recreation. Some areas furnish ramps for wheelchairs to help wheelchair bound people move across the beach. Other areas furnish wheelchairs specifically designed to move through the sand and water. Volusia County Beach Patrol has beach wheels, which are beach wheelchairs available for the use to the public at all of the lifeguard stations. Amputees and people with less obvious disabilities also swim. Physically challenged people usually know their limitations and make prudent decisions, just like other beachgoers; but just like other beachgoers, people with disabilities may overestimate their abilities. Given the same hazard and all other things being equal, a disabled person is likely to have more difficulty than a fully able-bodied person. It is important however, not to presume that a disabled person is an incompetent swimmer. Volusia County lifeguards will find that just like able bodied swimmers, there are disabled swimmers who are very strong and some who are very weak. Lifeguards should make their evaluations on a case by case basis.

Mentally Ill Persons

Mental illness is becoming a very serious problem in our society. Due to changes in laws and medical practice, persons once confined to hospitals due to schizophrenia, depression and other severe mental disorders are now being turned away. These individuals tend to have a very unpredictable nature and Volusia County lifeguards should carefully monitor anyone who is talking to themselves or exhibiting other signs of mental illness. A law enforcement officer should be summoned if the situation necessitates it.

Watching the Water

Volusia County lifeguard's first priority is to monitor swimmers and bathers in his or her assigned area at all times. Treating first aid cases, answering questions or talking with other lifeguards are secondary to the lifeguard's primary responsibility. These tasks may only be done if the lifeguard can continue to scan his or her assigned area without interruption.

The size of a Volusia County lifeguard's assigned area varies but in general it includes a **Protected Area** of some specified size and extends as far as the lifeguard can see on either side of his or her tower. On Volusia County beaches the Protected Area is the bathing region within 300 feet of a lifeguard. Adjacent lifeguard towers provide overlapping coverage of bathing areas. The lifeguard on each tower is responsible for both his own area and the areas of the lifeguards next to him or her.

Scanning Technique

Effective scanning involves constant movement of the lifeguard's head and eyes. Begin the scan by looking to the left as far up the beach as possible, glancing at the soft sand area and traffic lanes. Note people walking down to the water and begin to evaluate them for swimming competence. Check the flag on the adjacent tower and the status of the lifeguard. Are they blowing their whistle? Are they off their tower? Do they need your help? Check the bathers in front of the adjacent tower, begin a slow scan to the right along the surf line. Pause and concentrate on your Protected Area, checking each bather in turn. Try to predict what each bather will do next. Is the adult going to stay with the kids on the float? Are those two teenagers with boogie boards about to head for the sandbar? Make mental notes of what you think will happen, look for unexpected behavior during your next scan across the area. Continue scanning to the right, checking the area in front of the adjacent tower. Check the status of the lifeguard and his or her flag. Glance behind his tower down the beach, checking the traffic lanes and the soft sand area. You have now completed one scan. Now reverse the process and begin scanning back to the left. Each scan should not take more than 30 seconds, do not focus too long in one area and neglect the rest of your scanning region.

Constantly evaluate your scanning technique. Watching the water will soon become a habit, and most experienced lifeguards find themselves scanning even when they come to the beach on their days off.

Spotting Trouble

Competent lifeguards are able to prevent most water emergencies from occurring in the first place. They have the ability to spot trouble from a distance and take action to prevent a drowning or injury.

The most difficult part of lifeguard training is teaching new lifeguards how to recognize water emergencies. Every incident is somewhat unique and it is hard to generalize the circumstances that make a rescue necessary. The most important thing to remember is, don't hesitate. If you have even the slightest doubt as to whether a bather needs help, hit the water first and ask questions when you get there.

The following are indications of a water emergency. There is no guarantee that any of these clues will be present in a given situation. Be prepared to check out any circumstance that looks suspicious. Remember, in preventative lifeguarding there is no such thing as an unnecessary rescue. A popular saying among California lifeguards reminds us "When in doubt, go out!"

Anxious Expression

The eyes and face give excellent clues to a swimmer's state of mind. Fear or anxiety are usually detectable. Binoculars help give the lifeguard the ability to examine facial expressions in detail.

Lack of Progress toward Shore

The swimmer may be exhausted, caught in a rip or lack the swimming ability to reach safety.

Crowd Behavior

Body language is a good indicator of trouble, both for individual swimmers and among groups of bathers. The lifeguard may not hear a call for help because of distance or the sound of crashing surf, but he or she may see bystanders suddenly move to assist the victim. Crowd movement may also indicate a rip current as bathers back pedal or strain against the rushing water.

Low Head

Competent swimmers remaining in a stationary location, hold their heads high. They tread water, breaststroke, or float on their backs. The chin is usually clearly above the water level. Swimmers whose heads hang low in the water demand attention to determine competency.

Low Stroke

This normally accompanies a low head and can be visualized as a stroke that is very low to the water with elbows dragging.

Ineffective/Weak Kick

Under normal circumstances, the weak swimmer displays little or no kick. The lack of a break in the surface of the water should cue the lifeguard to a possible problem. In these cases, the body plane changes to a more upright position and little forward progress is made.

Climbing the Ladder

This presentation will include the swimmer having their head low in the water, a low or non-existent stroke and an ineffective or weak kick.

Waves Breaking Overhead

Most people who are competent at swimming in the surf dive under waves. When waves wash over a swimmer's head with no apparent attempts by the swimmer to duck under them, it is a strong indicator that this is a rescue candidate.

Heads Together

When other swimmers suddenly converge on a particular swimmer or simply cluster together, it may be an indicator that one or more needs assistance. Often people in distress are unable to signal to a lifeguard or don't think to do so. Instead they call to the people nearest to them for buoyancy or moral support. This request for aid may not be perceptible to the lifeguard, but the actions of other swimmers can suggest that a rescue is needed. When swimmers congregate for any significant length of time, the situation should be investigated with binoculars or in person.

CHAPTER SIX :
EMERGENCIES

Emergencies seem to arise on the beach when they are least expected. In the midst of a quiet weekend afternoon, the lifeguard may suddenly be called upon to render aid in a life or death situation. Volusia County lifeguards are expected to respond to all incidents in the water, but he or she is also responsible for any emergency that occurs on the beach or in nearby hotels, condominiums or private residences.

Since most emergencies involve little warning, it is most important that the lifeguard be trained to handle any contingency. This education should include a thorough background in rescue fundamentals as well as training for the special rescue situations.

Rescue Fundamentals

Many water rescues and assists become routine with experience; however, certain fundamentals apply to every rescue. Lifeguard training should involve the rehearsal of rescue procedures until these skills become second nature.

Starting the Rescue

Keep your eyes on the victim and use your tower radio to give the location and nature of the rescue. Make a mental note of the victim's location with respect to other bathers in the vicinity. Take down your tower flag and place it across the tower seat with the cloth portion pointed in the direction of the rescue.

Leaving the Tower

Keep your eyes on the victim while climbing down from your tower. Look for a landmark on the beach opposite the victim. Never jump from the tower – any injury to you will jeopardize the rescue. Pull the buoy strap over your head and across your chest. Run down the beach holding the buoy high to avoid tripping on the rope. Also if you have them remember to bring along your surf fins. Do not enter the water until you are directly opposite (perpendicular to) the victim.

Going through the Surf

Run through shallow water, lifting your knees high above the water surface. Use short strides to avoid stumbling on the bottom. Drop the buoy behind you in waist deep water. Use porpoise dives to reach deep water quickly, at this point, if you have them don your swim fins. Dive under large waves and hold onto the bottom as the waves pass overhead. Begin swimming, lifting your head from the water frequently to look for the victim.

Approaching the Victim

Come to a complete stop about six feet in front of the victim. Grab the buoy rope and pull the buoy around in front of you. Assess the situation. If the victim shows signs of panic, and threatens your personal safety, remove the buoy rope. If the victim is conscious, tell him or her you are there to help. Speak calmly but be firm and authoritative.

Tell the victim to grab the buoy as you push it toward him or her. If the victim lunges toward you, leave the buoy and backstroke away from the victim.

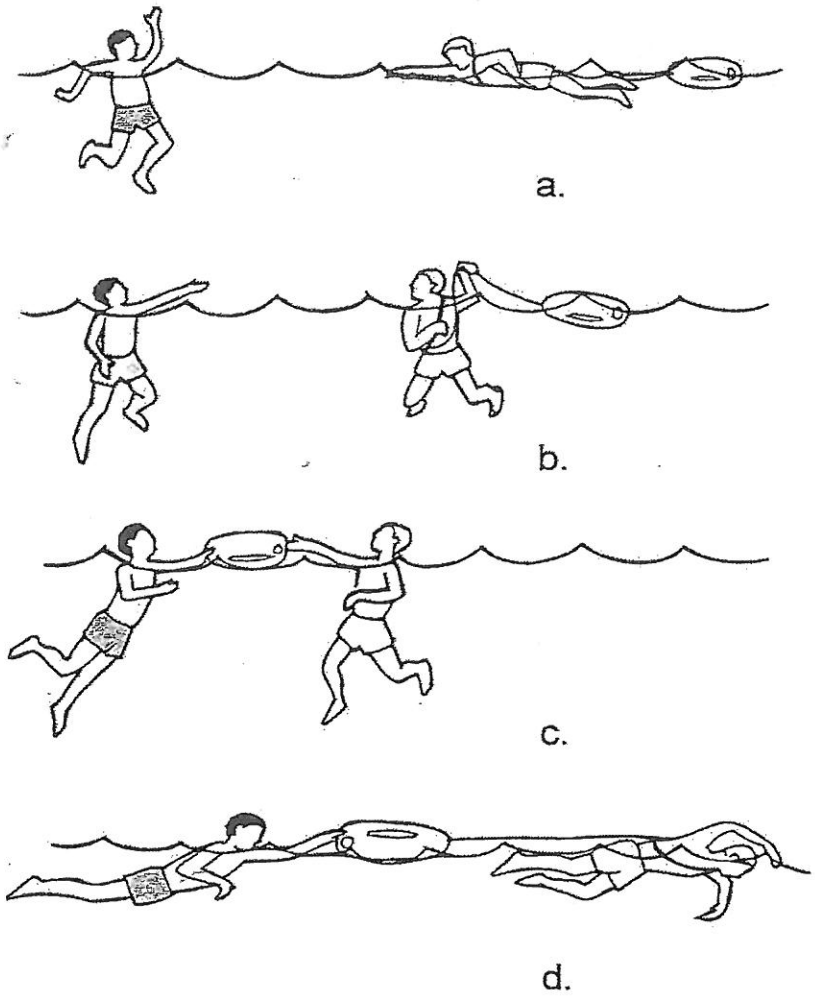


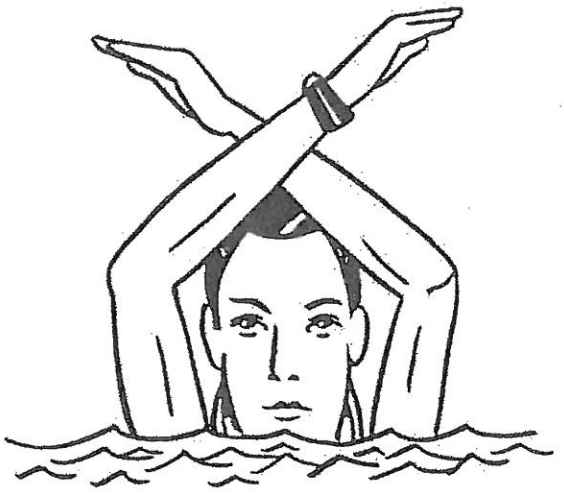
Figure 6.1. Using the Rescue Buoy

If the victim is conscious but unable to grab the buoy, dive below the surface and approach the victim underwater. Grasp his or her legs firmly with your arms and use your hand to locate their knees. Turn the victim so their knees face away from you. Climb up the victim, arm over arm, until you have a hold around the victim's chest. Without letting go of their chest, use your free hand to pull backwards on their chin, propelling you and the victim with a scissors kick until the victim is floating on the surface of the water. Use a **cross chest carry**, placing your arm across the victim's chest and under his or her armpit, grabbing the buoy with your hand. If necessary, grab your wrist with your free arm to control the victim; otherwise, use your free arm to sidestroke toward shore.

If the victim is unconscious, assume that a spinal injury has occurred. If necessary, turn the victim face up by placing one arm along the victim's spine. Hold the victim's forehead with your other hand and roll him or her like a log. Use the cross chest carry to bring the victim into shallow water.

Code X

This is used in the case of a missing swimmer. The lifeguard will raise his or her hands above the head in the shape of an X. The victim that the rescue was initiated for is missing and presumed to be submerged. The lifeguard in the water believes that search and recovery procedures need to be initiated. This signal allows a lifeguard in the water to advise lifeguards on shore of the need for immediate backup without interrupting and initial search for the submerged victim without having to swim to shore. Lifeguards on shore receiving this signal should immediately take bearings to fix the point of the lifeguard, as well as prepare an emergency response.



Making the Return

Monitor the victim closely as you swim back to shore. Make sure the victim does not let go of the buoy. Watch for large waves. If you need help, wave your arm overhead to signal other lifeguards on shore.

Releasing the Victim on Shore

Once the victim is in shallow water and able to walk without difficulty, ask if he or she is all right. Carefully evaluate the patient for respiratory difficulty, or other injuries; if none are present and no further assistance is needed, display a high buoy. High buoy display should only be used if the situation is secure, meaning that the victim(s) and all the lifeguards on scene are all safe. If you have any doubts about the patient's condition, stay with him or her until backup arrives and assumes responsibility. Special procedures for handling victims with suspected spinal injury are described later in this chapter.

Returning to the Tower

Run back to your tower, scanning your area for any indications of bathers in distress. Also, check adjacent tower flags. You may need to assist another lifeguard on a separate rescue.

When you reach your tower, drop your buoy and climb to the top of your tower. Carefully scan your area and adjacent tower flags. If all is well, twirl your tower flag and replace it in the upright position. If you have a radio and the station crew has not yet arrived, contact the dispatcher and indicate that you have completed the rescue.

Climb down from your tower, continue to watch your area and secure your buoy to the tower, Get back on your tower and resume scanning your assigned area.

Special Rescue Situations

After mastering the fundamentals of surf rescue, the lifeguard should learn to handle specific water emergencies. The most common rescue scenarios for Volusia County lifeguards involve rip currents and bathers on floats. However, many other circumstances may be encountered as the result of surf conditions, environmental factors and human behavior.

Backup

Some rescue situations require the assistance of more than one lifeguard. Determining when to backup another lifeguard requires good judgment.

Lifeguards cannot make rescues and supervise their assigned areas at the same time. When a lifeguard leaves his or her tower to execute a rescue, the lifeguards on adjacent towers become responsible for watching his or her area. However, when two or more lifeguards leave their towers in a given area, a large region of bathing area is left unsupervised.

When a lifeguard initiates the rescue of a single bather in relatively calm surf, he or she can usually do so without the need for assistance. On the other hand, the rescue of an injured or unconscious victim or multiple bathers in a rip current are emergencies that require immediate backup. There are many rescue scenarios that fall between these extremes, and the decision to backup another lifeguard must be made on a case by case basis.

Rip Currents

Use rip currents to your advantage. Enter the water directly opposite the victim and swim into the neck of the rip current, using the current to sweep you toward the victim. Make contact with the victim, then swim parallel to shore. When you are well clear of the rip current, turn and begin swimming toward shore. Make sure that you do not enter the rip current feeder(s) as you move toward shallow water.

Float Rescues

The return swim to shore will be much easier if the victim is on top of his or her float. Reduce drag by having the victim lie lengthwise across the longest part of the float. Make sure the victim holds on to your buoy.

Heavy Surf

Tell the victim not to let go of the buoy. When a wave approaches, grab the victim's wrist with one hand and the buoy with the other hand. Tell the victim to take a deep breath before each wave. If the victim is unconscious or a small child, pinch his or her nose with your thumb and

forefinger and cover their mouth with the palm of your hand. If possible, wait for a lull between wave sets before crossing the sandbar or coming through the impact zone.

Sandbars

A rising tide can strand bathers on a sandbar. If there are multiple victims stranded on a bar, keep the victims calm and signal for help from other lifeguards. In the absence of other lifeguards, make multiple trips to shore, bringing the shortest victims first.

Multiple Victims

Calm the victims by assuring them the buoy is capable of holding everyone afloat. If the victims are separated, give the buoy to the closest victim and pull him or her to the next closest victim. If a distant victim is in sever distress, remove the buoy strap from around you and leave it with the first victim. Swim to the distressed victim and place him or her in a cross chest carry. Swim back to the first victim and use the buoy for support. Signal to lifeguards on shore for help.

Multiple Rescuers

The best way to effectively utilize multiple rescuers on a rescue will be dictated by the conditions and the type of rescue being executed. If the conditions are relatively calm but there are multiple victims, it will be easier to spread the victims among the rescuers to that each lifeguard can effectively swim their victim(s) back toward shore.

In the event that there are multiple rescuers and a minimal number of victims but the conditions are rough or the rescue is in a strong rip current, the best use of multiple lifeguards is as a chain. The initial rescuer should have the victim on this or her buoy and the responding lifeguard should offer their buoy to the initial lifeguard to create a chain. This can be repeated as many times as necessary in order for all parties involved to return safely to shore.

Lateral Currents

Enter the water **directly in front of the victim**. Do not attempt to outguess the current. If you are wrong, you will waste valuable time reaching the victim.
Carefully evaluate the situation before bringing a victim to shore across a lateral current. If a jetty, pier or other hazard is downstream from your position, it may be better to drift past the obstruction before returning to shore. If your speed of drift will bring you into contact with the obstruction before you can reach shore, swim further **out to sea** and around the hazard. Allow plenty of margins for error in your judgment.

Jetty Rescues

When entering the water, take advantage of currents alongside the jetty to reach the victim. Personal safety requires that the lifeguard remain alert and clear of the jetty while approaching the victim. Upon reaching the victim, instruct him or her to let go of the jetty and grab the buoy.

Never climb up onto the jetty; they are covered in slippery algae and dangerous barnacles. Use of swim fins or shoes should be considered when making a rescue around the jetty. Swim well away from the jetty before returning to shore.

Pier Rescues

Pier rescues are one of the most challenging of open water rescues, and they are as dangerous for the lifeguard as they are for the victim. Stay alert and keep away from pier pilings to avoid serious or fatal injury.

If the speed of the lateral drift permits, pull the victim back out to sea and around the pier. If you must go through the pier, keep a close watch for incoming waves and make your entry under the pier between wave sets. Use your buoy as a shield to protect you and the victim from the pilings. If the buoy shatters, use the victim if necessary to protect yourself from the pilings. Tow the victim downstream, well clear of the pier (at least 50 yards) before starting toward shore.

When executing a rescue around a pier this is an especially important time to use swim fins if you have them. When rescuing a victim clinging to a pier piling, tell him or her to grab the buoy. If the victim refuses to let go of the piling, cover their nose and mouth with one hand and grab their hair with your other hand. You should then lean back in the water, using your body weight to pull the victim free from the pier piling. Once the victim is free of the pier, place the buoy under his or her arms and chest.

Spinal Injuries

Spinal injury should be suspected in all cases of unwitnessed water accidents. **Always assume an unconscious victim has a spinal injury.**

Upon reaching the victim of a suspected spinal injury, support his or her head and neck, maintain an open airway and signal for help. If the victim is breathing adequately, support him or her in shallow water until a backboard or other rigid surface is available. When help arrives, float the backboard under the victim, secure him or her to the backboard with straps and carefully remove him or her from the water.

If a victim with suspected spinal injury is not breathing adequately to sustain life, they must be removed from the water immediately for resuscitation. A **Hawaiian Drag** should be used to remove the victim from the water. Stand behind the victim and place your arms under his armpits. Cradle the victim's head using your chest and upper arms. Walk backwards toward the beach, dragging the victim along the vertical axis of his or her body. If the victim is too heavy to carry in this manner, use any means possible to get him or her to shore and begin resuscitation. **Use your best effort** to avoid any unnecessary bending of the victim's neck and back during water removal and resuscitation.

Rescue Equipment

Watercraft – PWC

Rescue boats and personal watercraft are useful tools for the open water lifeguard. Personal watercraft devices can be quickly deployed from the beach to travel long distances over the water at high speeds. Rescue boats take more time to deploy, but they provide a stable platform in the water for treating and transporting victims of serious water accidents. Volusia County lifeguards must complete special training before being authorized to use rescue boats or personal watercraft.

Rescue Tubes

Rescue tubes or "Peterson belts", are used to assist in the rescue of unconscious victims or in conjunction with a rescue board. The tube is wrapped around the back of a conscious victim so that he or she faces toward shore during the rescue. For unconscious victims, the tube is wrapped around the victim's chest so that he or she floats on their back. The rescue tube can be formed into a ring and used in place of a maxi-can buoy; however the lifeguard must be aware that a person can lose their grip on the tube's slick surface. Tubes should be stored in an elongated position to prevent deterioration and cracking.

Rescue Boards

Rescue boards are used to make rescues at long distances from shore. The lifeguard must use good judgment in deciding whether he or she can reach the victim quicker by swimming or by using a rescue board. Always carry a buoy or rescue tube when using a rescue board. Make sure the nose of the board points directly into oncoming waves. In large surf, hold your arm around the nose of the board and dive under breaking waves. Paddle the rescue board alongside the victim, slide off the board on the side opposite the victim and turn the board upside down. Grab the victim's hand and pull his arm across the top of the board. While holding the victim's hand in place with one hand, reach across and grab the far edge of the board with your other hand. Lean back and pull the board over, bringing the victim's body on top of the board. Position the victim lengthwise on the forward part of the board. Slide yourself onto the lower part of the board between the victim's legs. Paddle toward the beach, keeping the nose of the board pointed in the same direction as incoming waves. Keep alert for large waves and cross the sandbar between wave sets. Slide further back toward the tail of the board as needed to avoid "pearling" on breaking waves.

Emergencies on the Beach

Volusia County lifeguards will respond to all emergencies on the beach in his or her assigned area. Beach emergencies range from relatively minor first aids to life threatening injuries and illnesses. In some cases bystanders will notify the lifeguard of an emergency, but more often than not the lifeguard's attention is drawn by unusual crowd behavior or noise. The lifeguard should follow basic rescue procedure when responding to a beach emergency. This includes contacting the dispatcher by radio, placing the tower flag in the emergency position and taking the rescue buoy. In addition, the lifeguard should take the tower first aid kit and the lifeguard radio to the scene of the beach emergency.

Upon arrival at the scene of a beach emergency, the lifeguard should use his or her radio to tell the zone dispatcher of the exact location of the incident. A quick description of the patient's condition should also be given, especially if the patient is unconscious or in respiratory distress. Bystanders should be utilized when needed to provide crowd control and to flag down responding emergency vehicles.

Heat Exhaustion

Heat related illness is a common medical problem on the beach, especially during the summer months. Many beach visitors are acclimated to cooler temperatures and lower humidity, and often they are unaware of how quickly dehydration occurs in a hot, beach environment. Victims of heat exhaustion are usually found at beach concessions having fainted while waiting for service. Upon arrival at the scene, the lifeguard should provide basic life support according to established medical protocols. Until proven otherwise, the patient should be assumed to have a spinal injury.

Vehicular Injuries

Volusia County is one of the few places in the world that permits the use of motorized vehicles on the beach. Inevitably there are accidents on the beach involving pedestrians and vehicles. When called to the scene of an accident the lifeguard should first provide for scene safety, using bystanders as necessary to stop or reroute traffic. Injured persons should not be moved unless fire or other hazard is imminent. Concern for spinal injury should be a primary concern of the lifeguard when caring for accident victims.

Off Beach Emergencies

Lifeguards are sometimes called to beachside hotels, condominiums and private residences to assist with emergencies. These incidents may involve a pool drowning or diving injury, heart attack, heat exhaustion or a fall from a balcony. When leaving your tower for an off beach emergency, Volusia County lifeguards are expected to take their buoy, first aid kit and radio with them to the location of the emergency. The lifeguard must make sure that the zone dispatcher is aware of his or her exact location at all times. If the emergency is in a guest room of a hotel or condominium, the lifeguard should notify the dispatcher of the room number.

Lost Children and Missing Persons

Missing persons on the beach should be a matter or immediate concern to the lifeguard. Children are frequently separated from their parents on the beach; fortunately most incidents do not result in injury or drowning. The lifeguard should keep a lost child at his or her tower until an officer or responding unit arrives. Parents reporting lost children should be asked to provide the child's name, age, and description, as well as anything they may have been carrying with them. Once the lifeguard has all of this information, it should be relayed to the zone dispatcher so that a search can begin.

Reports of persons missing in the water should be handled as an emergency. The lifeguard should radio the station and place his or her tower flag in the emergency position. The lifeguard

should stand on his or her tower and scan the water looking for signs of the victim. If a body is spotted by the lifeguard or a bystander, the lifeguard should immediately initiate a rescue. Otherwise, the lifeguard should wait for the arrival of an officer or zone supervisor who will direct appropriate search procedures.

CHAPTER SEVEN :
LIFEGUARD FACILITIES

Portable Towers

Setting up the Tower

Equipment should be picked up from the zone station and checked over for defects, missing components or required repairs. Lifeguards should report equipment damage to the station crew as soon as possible.

Upon arrival at the tower location, the lifeguard should begin scanning the water for signs of trouble. The rescue buoy should be fastened to the tower first, and the tower flag placed in an upright position in its holder. All other equipment should be placed on the seat of the tower. The lifeguard should pull the tower down to the water's edge prior to opening time. Volusia County lifeguards should take pride in their appearance and their equipment. If the tower is covered in sand, pull it down toward water's edge and use your bucket to wash it off. Rinse the blackboard with water, but don't rub it with sand as the surface will become scratched. Fill out the blackboard within 30 minutes of opening your tower, listing tide times, water temperature and ocean conditions. All information on the blackboard should be legible and pertain only to beach related matters. Drawings, nicknames, slogans and childish comments will not be tolerated. Pick up glass or other dangerous objects near the tower while keeping watch on bathers and adjacent tower flags. The blackboard must not be obstructed by towels or clothing hanging over the back of the tower.

Tower Equipment

Basic tower equipment includes a rescue buoy, first aid kit, whistle, People's flag, tower flag, umbrella, and trash bucket. In addition, almost every tower is equipped with a hand-held radio for communication with the lifeguard zone personnel. All equipment is expensive to repair or replace, especially the radio, and it is the responsibility of each lifeguard to properly care for all assigned equipment.

Rescue Buoy. This is the single most important piece of lifeguard equipment. The "maxi-can" or RFD rescue buoy can provide flotation for several adults of average body weight under most surf conditions. Lifeguards assigned to tower duty are required to have their rescue buoys within reach at all times while on duty. Care of the plastic rescue buoy is minimal. Buoy ropes and shoulder straps should be checked daily for cuts or signs of rot, make sure the rope is securely tied to the buoy. Check frequently during the day and make sure the buoy is properly tied to the tower and ready for emergency use.

First Aid Kit. Lifeguards are responsible for the proper maintenance of their first aid kit. Lifeguards should properly inspect first aid kits daily when picking up equipment at the zone station. Kits should be cleaned of sand and fully stocked with supplies.

Whistle. The whistle is an effective tool for alerting beach visitors to lifeguard warnings. Lifeguards should never be afraid to use their whistle. On the other hand, beach visitors may pay less attention to a lifeguard's whistle if they hear it blowing all day long. The lifeguard should develop a whistle style that is firm and authoritative. Two short blasts from the whistle followed by hand motions are usually all that is needed to give clear instructions to bathers.

Hand Flag. The hand held "People's Flag" is used as an extension of the lifeguards hand. The orange cloth is visible at a considerable distance from the tower and is used to help signal bathers. Point the flag at the offending bather and motion in the direction you want the bather to move. Use authoritative body language.

Tower Flag. The tower flag indicates the status of the lifeguard and is used to transmit signals to adjacent towers and the zone station. The tower flag is kept in an upright position on the back of the tower when the lifeguard is on duty.

Umbrella. The umbrella is essential for the lifeguard to help prevent skin damage due to the sun; they can however become dangerous to the lifeguard or beachgoers on windy days. The Volusia County Beach Patrol recommends that the tower guards secure their umbrellas to their towers when in the upright position. The umbrella should never be left up while the lifeguard is off his or her tower, or while whistling at bathers. Be especially cautious of the umbrella while moving the tower, it should be secured in a lowered position.

Personal Items. Due to limited space, personal items should be kept to a minimum on portable towers. Sunscreen, hat, sunglasses and drinking water are practical necessities and a seat cushion will make the shift much more comfortable. Binoculars are not supplied by the Volusia County Beach Patrol, but they are strongly recommended for all lifeguards. AM/FM radios, CD and MP3 players are allowed on tower provided that the volume is kept to a reasonable level and the lifeguard does not have earphones on.

Moving the Tower

Due to changing tides, portable lifeguard towers must be moved frequently during each lifeguard shift. Keep the tower positioned approximately 20 feet from water's edge. Under no circumstances should vehicles be allowed to drive in front of a lifeguard tower. Care must be taken to prevent personal injury as a result of moving portable towers. Do not let the water undercut sand from your tower's wheels as movement of the tower will

be more difficult. Bend your knees and keep your back straight when lifting the tower handles. Use your legs, not your back!

Tower Communications

A primary function of any emergency agency involves the remote transmission of information. Volusia County lifeguards communicate primarily through the use of portable radios on a licensed radio frequency. Tower flag relays are mostly a relic of a bygone lifeguard era but are still used in the absence of a tower radio.

Emergency Flag Signal. An emergency at a portable lifeguard tower is declared by taking down the tower flag and placing the flag horizontally across the seat of the tower. If the lifeguard is leaving the tower on a water rescue or other emergency, the cloth end of the flag should point in the direction of travel. If the emergency is at the lifeguard tower itself (first aid, etc.), then the cloth end of the tower flag should point in the direction away from the zone station. The emergency flag signal should be used even if the tower lifeguard notifies the zone dispatcher of the emergency by radio transmission. The flag signal also serves as a redundant communication in the event a radio transmission was not received by the dispatcher. The emergency flag signal also indicates to bathers in the water and beachgoers that the lifeguard is unavailable.

Non-Emergency Flag Signal. A request for assistance with a non-emergency matter is indicated by holding the tower signal flag horizontally overhead with the cloth end pointed toward the ocean. This procedure should be used if the tower is not equipped with a radio, if the tower radio has malfunctioned or if the radio network is busy to an emergency.

Flag Signal Relays. Tower lifeguards are responsible for the immediate recognition of tower flag signals on adjacent towers. If his or her tower is equipped with a radio, the lifeguard should notify the zone dispatcher of the flag signal. If his or her tower is not equipped with a radio and his or her tower is in the **relay path**, the lifeguard should use his or her tower flag to relay the flag signal. The relay consists of those towers between the zone station and the tower which initiated the flag signal. The tower lifeguard should blow his or her whistle until the next lifeguard in the relay path recognizes the signal and places his or her own flag in the relay position. The tower umbrella should always be closed and placed in the down position when relaying a flag signal.

1. Emergency Relay The lifeguard stands on his or her tower, lowering the tower flag horizontally overhead. The cloth end of the flag points away from the water, or out the back of the tower. The lifeguard should blow his or her whistle to notify the next tower guard of the relay.

2. Non-Emergency Relay The lifeguard stands on his or her tower, lowering the flag horizontally overhead. The cloth end of the tower flag points toward the

ocean, while the lifeguard uses his or her whistle to alert the next tower guard in the relay path.

3. Relay Spin-off. Successful transmission of a flag relay is indicated by a flag spin-off. The last tower in the relay path is responsible for initiating the flag spin-off upon indication from the zone station that the relay was received. The flag spin-off is performed by standing on the tower and twirling the tower flag alongside of the tower until the next lifeguard in the relay path begins his or her spin-off. Care must be taken to prevent hitting bystanders with the tower flag during spin-off.

Radio Communications. In 1995 Volusia County implemented a county-wide 800 megahertz radio network. This advanced technology permits any radio user to communicate with any other radio in the network, regardless of the distance between radios. All Volusia County Beach Patrol lifeguard stations, towers and vehicles are equipped with either base or portable radios. An important concept in the 800 megahertz system is the **talk group**, which is somewhat analogous to a radio channel or frequency. The Volusia County lifeguard's primary talk group is determined by the zone to which they are assigned. Tower guards working in the Daytona zone for example will have their radios set to "bchsta 3". Tower radios can be switched between sixteen talk groups. Except for the specials circumstances listed below, lifeguards on portable towers are required to keep their radios on their assigned talk group.

During an emergency, the lifeguard station crew involved in the emergency may switch their radios to a different talk group. If a lifeguard on a portable tower is involved or has information about the current emergency, he or she should switch to the rescue designated talk group. After the emergency, all radios should be switched back to the primary talk group.

1. Hand-Held Radio Operation. Shield the microphone from the wind and begin each transmission by identifying your tower location. Speak slowly and clearly, make transmissions as brief as possible.

2. Radio Tests. Each morning, all radio equipment is checked for proper operation. The testing procedure is handled by the zone dispatcher on behalf of each zone.

3. **FCC Regulations. The Federal Communications Commission monitors licensed radio frequencies for improper use. Lifeguards must use radios in a professional manner. Disregard for proper radio procedure will be cause for dismissal.**

Securing Tower for Hazardous Weather

The radio dispatcher will announce "**hazardous weather conditions**" when the zone is threatened by thunderstorms or other violent weather. The lifeguard should quickly alert bathers by blowing his or her whistle once in each direction of the beach while motioning bathers away from the water with his or her People's Flag.

Personal Safety should be the lifeguard's highest priority when lightning is nearby. The lifeguard should not remain on his or her tower while attempting to clear bathers. This job should be left up to the station crew and officers in units. The lifeguard should pull the tower away from water's edge and turn the tower so that the wheels face into the wind. The tower should remain on the east or seaward side of the traffic lanes so that the tower flag is visible to adjacent guards.

Tower equipment should be secured inside the lifeguard's vehicle if possible. Otherwise, the umbrella should be secured under the tower, in the closed position so the wind cannot easily move it. The tower radio and first aid kit are susceptible to damage if they get wet, they must be secured in a dry place. If the lifeguard cannot provide for safe storage of the radio, they should notify the zone dispatcher and request for pickup of the radio.

Volusia County lifeguards are responsible for keeping persons out of the surf and away from the water's edge during hazardous weather conditions, and they are also responsible for monitoring adjacent tower flags. Lifeguards may use their vehicles to help keep their assigned area clear of bathers during hazardous weather conditions. Lifeguards should operate their vehicles with their headlights and 4-way flashers on and observe the speed limit while operating outside designated the traffic lanes, during hazardous weather conditions.

Closing the Tower

Volusia County lifeguards will not close their towers until the closing signal has been given by the zone dispatcher. The lifeguard should pull his or her tower a short distance from the water, climb up on the tower and twirl the tower flag, while simultaneously blowing his or her whistle to alert beachgoers in the area. The lifeguard should not take down his or her tower flag until the tower has been pulled into the soft sand and been turned so that the seat faces west. The lifeguard should remove all equipment from the tower and properly dispose of any trash.

Lifeguard Stations

Lifeguard stations include and observation and control tower, first aid room, and station crew offices. Lifeguards assigned to station duty are state certified Emergency Medical Technicians. The station crew is responsible for maintaining emergency equipment and station facilities. Lifeguards assigned to portable towers should never interfere with the operations of the station.

Telephones

Lifeguards must not use the station phone for personal phone calls. If the lifeguard needs to arrange for transportation, the dispatcher or station crew should be asked for permission before placing the call. The placing of long distance calls from the station telephones will be grounds for disciplinary action.

Cell Phones

Conversations on cell phones are not permitted on portable towers. It has been determined that extended cell phone conversations are very distractive and may cause a tower guard to miss a life threatening situation. For this reason the use of cell phones is restricted to emergency situations only. Cell phones on tower will be left in the off position at all times unless an emergency situation arises.

Public Address Systems

Public address systems should be used only to broadcast information relevant to beach safety. Announcements made over public address systems should be made using slow, deliberate speech. Most announcements will require repetition due to the distance and ambient noise.

CHAPTER EIGHT :
THE BEACH ENVIRONMENT

Beach visitors often ask lifeguards about marine life and other aspects of the coastal ecology. Volusia County beaches are part of a delicate ecosystem, and laws have recently been enacted to help preserve the fragile beach environment. In answering environmental questions, the lifeguard has an opportunity to inform the public about the importance of protecting dunes and beach wildlife. A basic knowledge of marine ecology and the beach erosion cycle will help fulfill this important role.

Volusia County Beaches

The characteristics of a beach ecosystem are largely determined by climate and coastal geology. The primary beach types are coral, rock, sand, mud, marsh and mangrove. The quartz sand beaches of Volusia County are formed from **barrier islands**. Barrier islands are aptly named because they provide a natural defense against hurricanes and other violent storms.

The ecology of a barrier island is closely linked with the sea. The sand and mud of the islands and inland marshes are supplied by the waves and currents and are molded by the wind and vegetation. The climate of the barrier island is milder than adjacent mainland: warmer in the winter and cooler in the summer. On the beach face, breaking waves and shifting sand produce an inhospitable environment for a good portion of the year; however, the beach, dunes, salt marshes and tidal flats provide abundant habitats for a diversity of plants and animals.

On the lagoon side of the barrier island a salt marsh develops on low, intertidal flats. Fresh water streams from the mainland pour into the lagoon, producing brackish water where fresh and salt water mix. The calm, shallow waters of the lagoon provide an ideal nursery for many species of fish. Hardy grasses on the islands survive and actually thrive on burial by sand. Many of the plants on the dunes are especially adapted to salt spray and have evolved mechanisms for extruding salt from their tissues. Seeds and roots carried by the waves are washed up along the beach, forming drift lines. Pioneer species of plants become rooted in the drift lines and start the formation of dunes

Many small invertebrate including crabs, clams, beach hoppers and pill bugs live on and in the beach. Some of the animals move back and forth with the waves, while others extend their arms or tentacles into the waves to capture suspended food particles. Small and large mammals live in the dunes and maritime forests, and venture onto the beach at night to feed on the feast brought up by the waves and left by the receding tide. Several types of shorebirds live along the beach and fish in the surf zone. Gulls and terns dart and soar along the beach while smaller sandpipers and sanderlings scamper back and forth with the waves. Pelicans nest among the mangroves on the smaller islands of the lagoon,

flying over the island to fish offshore. Egrets and herons lurk among the tall reeds of the tidal flats in search of fish, shrimp, frogs, and an occasional snake.

Dunes and Beach Erosion

A profile across a coast area can be broken into four distinct zones. The **offshore zone** In Volusia County consists of a broad, gentle sloping continental shelf. The **surf zone** extends from just beyond the breakers to the beach and includes a series of longshore bars with troughs or rip channels. The **beach zone,** in turn is divided into the **foreshore** which slopes toward the sea and the **backshore** which is nearly horizontal. The **berm** is a flat area on the beach which makes a sharp break in slope between the foreshore and backshore. The **dune zone** begins along the backshore with small plants and grasses accumulating into dune thickets, large shrubs and small trees.

Dunes are formed on barrier islands when wind-blown sand is trapped by beach grass and other vegetation known as **pioneer plants**. The beach grass thrives when buried by the sand and grows upward, anchoring the dune. Larger plants soon take root, spreading a thick system of roots throughout the dune. When the dune becomes high enough, a dense thicket or **maritime forest** is formed in the swale between the dunes.

Cycles in beach erosion and accretion are directly related to storm waves and swells. Each wave that washes up on the beach either removes sand or deposits it to the beach face. The beach profile is constantly shaped and altered by wave action. In Volusia County, storms and heavy surf usually occur during the fall and winter months, with extended periods of calm surf conditions in the summer months. Steep waves generated by storm winds remove sand from the foreshore, causing beach erosion. Wave action may cut a small, nearly vertical cliff, or **scarp**, into the beach face. The eroded sand is carried a short distance offshore and gives the water a brown, murky appearance. During the summer months, small, long period swell breaks along the beach. The eroded sand carried by the surf gradually settles to the bottom. Wave reflectance caused by the gently breaking swells gathers the loose sand and forms offshore sandbars. Throughout the summer, the sandbars slowly migrate towards shore and reattach themselves to the beach.

Barrier Island Ecology

Many specialized plants and animals live on the barrier island and its surrounding waters. Marine life is abundant in the Atlantic Ocean along Volusia County, but most of the time only larger animals such as whales, dolphins, sharks and rays are noticed by beach visitors. However, with close observation beach visitors can catch a glimpse of many varieties of fish, crabs, birds and mammals in their native habitat.

Dolphins

Bottle-nosed dolphins are a common sight in the waters along Volusia County beaches. Dolphins are social animals and are usually seen in groups swimming outside the break or chasing schools of fish into the surf zone. Lifeguards opening their towers in the

morning are sometimes treated to the sight of a dolphin riding a wave or frolicking with companions in the surf.

Mantarays

Using their wings to "fly" through the water, these graceful creatures can sometimes be seen swimming near shore. Mantarays are sometimes mistaken for sharks as their wingtips pierce the water surface. Although mantarays are large animals with wingspans of up to 20 feet, they are completely harmless to humans. Sadly, these docile, friendly animals are being hunted to extinction in many parts of the world.

Fish

Large numbers of mullet, menhaden and other fish often spawn close to shore during the spring and fall. They are an easy target for pelicans that repeatedly dive into the schools of fish. Dolphins, sharks and other predatory fish feed on the smaller bait fish, and lifeguards should be prepared to clear bathers if a shark is spotted.

Sea Turtles

Our beaches are an important nesting site for several species of sea turtles, all of which are threatened or endangered. Most common to our shores is the **loggerhead turtle** which is believed to travel great distances from their feeding grounds to nest along Volusia and Brevard County beaches. Larger than the green turtle but smaller than the enormous leatherback turtle, loggerheads can grow to a length of nearly four feet and weigh as much as 500 pounds. Loggerheads get their name because of the appearance of their broad, olive brown head which resembles a wooden log. Loggerhead turtles breed in the shallow offshore ocean waters, and nesting females begin to crawl ashore in April. Female turtles lay an average of two clutches of about 120 eggs each at thirteen day intervals, and it is believed that large numbers of eggs are laid because only a small percentage of hatchlings survive to maturity.

Hatchlings emerge from their nest as a group, probably as a survival tactic to confuse waiting predators. Sea turtles have good vision while submerged but are nearsighted out of the water. Scientists believe that hatchlings are drawn to the brightest, most open horizon they see upon emerging from their nest. Street lights and other bright objects may disorient them, leading them away from the water and into deadly situations. For this reason, artificial lights are strictly regulated along the beach in Volusia County during sea turtle nesting season from May 1 until October 31.

Sea turtle conservation measures have shown positive results in most cases, but some species such as Kemp's Ridley continue to decline in population. Environmentalists believe that fishing nets used by commercial fishing boats are largely to blame. Like all reptiles, sea turtles are air breathing and hold their breath while they dive for food beneath the surface of the water. The feeding grounds of sea turtles are found in areas of the ocean known as convergence zones where fish and many other creatures including

shrimp congregate. Nets trawled behind shrimp boats scoop up shrimp but can also capture sea turtles that drown before the nets are raised.

In 1989, the National Marine Fisheries Service required all fishing trawlers operating in the United States waters to equip their nets with a Turtle Excluder Device or TED, which allows trapped turtles to escape. Unfortunately, there is much resistance to the use of the TEDs, an average of 11,000 sea turtles continue to drown in commercial fishing nets each year. Many sea turtles also die when they swallow plastic bags or balloons which they evidently mistake for jellyfish. For this reason, the outdoor release of balloons is regulated by the State of Florida and here in Volusia County all disposable plastic and styrofoam containers are prohibited on the beach.

Invertebrates

The area of the beach that is washed with each breaking wave is called the **swash zone**. Many animals live here including the tiny coquina clam and the strange, little mole crab, or "sand flea". Swash zone animals ride to and fro with the tide, quickly burrowing into the sand with each passing wave. Mole crabs and coquina clams are both filter feeders and get their nourishment by straining tiny food particles called **detritus** from the sea water. Ghost crabs burrow in the sand dunes on the backshore of the beach and lagoon. Named because of their pale, gray color and reclusive, nocturnal habits, ghost crabs are scavengers that feed on rotting plants and small food particles washed ashore by the ocean.

Seabirds

Sanderlings and their cousins the sandpipers are common sights along the Volusia County shoreline, especially during winter months. Sanderlings scurry along the beach in small groups, their tiny legs moving in a blur. They dart about at the water's edge, stopping to poke their straight, black beaks into the wet sand, looking for mole crabs and other swash zone creatures. Like many shorebirds, sanderlings are migratory and sometimes fly great distances to breed and nest. Their urgent probing of the sands for food is necessary to build up enough body fat to supply their energy needs during long migratory flights. Sanderlings are larger than the sandpiper but much smaller than the ring billed gulls that are such a familiar sight on Volusia County beaches. Gulls aren't the ablest of feathered fishermen and seem to prefer stealing scraps of food from other birds or scavenging in garbage dumps. Gulls also migrate for breeding and nesting purposes, but non-breeding gulls are seen on our beaches throughout the year.

The brown pelican has made a strong comeback from near extinction during the 1960's and 1970's when the pesticides DDT and Endrin were in common use. Researchers discovered that DDT made the shells of bird eggs brittle, causing the eggs to break when sat upon by nesting parents. The small mangrove islands of the Halifax and Indian River lagoons provide ideal nesting sites for brown pelicans and other bird species.

Conservation

Florida's barrier island ecosystems are increasingly threatened by the impact of human population. Human fascination with life on the waterfront has led to the explosive development of Florida's coastlines. Beach erosion has become a serious problem in Florida as a result of inlet stabilization and the construction of seawalls and other manmade structures. Hotels, condominiums and private homes have destroyed much of the native habitat of coastal dwelling animals. Large crowds of beach visitors have resulted in extensive littering, destruction of dunes and injury or death for birds and other beach animals.

Rigid armoring of the coast accelerates beach erosion by creating edge waves which dissipate energy on the shoreline and stir up sand particles that are removed by littoral drift. For this reason, state law prohibits the construction of new seawalls or bulkheads on Florida beaches. Soft armoring techniques using sand fences and vegetation are encourages by the state to help develop robust dune systems.

The number and use of fishing and pleasure boats has grown exponentially with the population in Florida. The demand for safe access to the open sea has led to an attempt by the Army Corps of Engineers to stabilize barrier island inlets with complex jetty systems. Stabilized inlets collect sand transported by littoral drift, preventing it from being redeposited along the shoreline. Stabilized inlets are believed by some scientists to be the primary cause of beach erosion in Florida.

Pollution of tidal lagoons is increasing with the human population in coastal communities. Along the Halifax and Indian River lagoons, nearby cities pump millions of galloons of treated waste into the lagoons each day. Far more damage, however, is caused by storm water runoff. The large volume of fresh water from rainfall disturbs the natural salt balance of the lagoon. Storm water runoff also washes oil, fertilizers and pesticides from streets and lawns into the river ecosystem.

Each of these factors underscores the need for stringent conservation of our beaches and waterways. The lifeguard can serve a useful role in beach conservation by preventing the destruction of dunes, pollution of ocean waters and injury or marine and barrier island wildlife.

Conservation Zone

County ordinance has established a Conservation Zone for the protection and rehabilitation of the sand dune system on Volusia County beaches. The Conservation Zone is defined as a corridor extending thirty feet seaward from the most seaward toe of the most seaward dune. In the absence of any dune structure, the seawall or other manmade structure is considered the most landward side of the Conservation Zone. Vehicle parking is prohibited in the Conservation Zone. Volusia County Beach Patrol employees are responsible for informing beach visitors of the existence and purpose of the Conservation Zone, and for reporting Conservation Zone violations.

Injured Animals

The Volusia County lifeguard should contact their zone dispatcher to report any injury to animals on the beach. Injured birds are transported by zone personnel toward Ponce Inlet where they are taken to the Marine Science Center.

Sea turtles are protected by the Federal Endangered Species Act and lifeguards must follow special procedures when dealing with dead, injured or stranded specimens. Live sea turtles must be protected from harm until a unit or personnel from MSC arrive on scene. Zone personnel must be notified of dead sea turtles so that the Turtle Patrol can mark them and report the incident to the Florida Department of Environmental Protection.

CHAPTER NINE :
LAW ENFORCEMENT

Lifeguards perform law enforcement functions as required to provide a safe and orderly beach experience for all visitors. Lifeguards must have a thorough knowledge of beach related laws, and they must provide uniform enforcement of all laws without partiality or prejudice. Many complaints received by the Beach Patrol are related to the haphazard enforcement of beach ordinances.

Volusia County lifeguards should enforce laws and regulations using courtesy and tact. The lifeguard should be firm while remaining calm and collected. Never get into a shouting match with a member of the public. Clear communication of the law and its purpose are the best means of avoiding a dispute with the violator. When confronted by continued resistance, reluctance, or antagonism on the part of the violator, the lifeguard should contact the zone dispatcher and request a law enforcement officer. **At no time should law enforcement matters interfere with the lifeguard's supervision of bathers in his or her assigned area.** Upon arrival of a Beach Patrol Officer, the lifeguard should be prepared to give details of the violation he or she has witnessed. If the lifeguard is acting upon information supplied by a beach visitor, they should keep that person near their tower so that Officers will have the opportunity to question the witness.

Unified Beach Code

The Volusia County Unified Beach Code defines county ordinances that pertain to Volusia County beaches. Additional state and federal laws are applicable to beach matters, particularly in regards to endangered species and environmental conservation. The following is a paraphrased summary of county ordinances affecting lifeguard operations on the beach. The revised Volusia County Unified Beach Code shall supersede and statements in this training manual.

Authority to Close or Restrict Use of Beach and Ocean

Any Volusia County lifeguard or Law Enforcement Officer has the authority to temporarily close or restrict the use of the beach or ocean because of crowd conditions, the presence of sharks, electrical storms, tides, currents, wind conditions or other danger to public safety.

Swimming

No person except a lifeguard or other person engaged in a rescue attempt shall swim or bathe more than 300 feet perpendicular from the water's edge, within 300 feet in any direction from a pier or jetty or in an area designated exclusively for personal watercraft when personal watercraft are present.

Use of Rafts, Floats, and Other Flotation Devices

No person shall use any raft, float, boogie board, belly board, or other flotation device of any description, except for a boat, surfboard, wind surfboard, or sailboard, more than 300 feet from water's edge.

Requirement for Safety Devices

Surfboards and boogie boards shall at all times while in the ocean be attached to the user by a surf leash. This does not apply to wind surfboards or sailboards. Boats shall be equipped as provided by applicable law and regulation.

Surfing

No person shall surf in an area of the beach not permitted for surfing. Surfing is prohibited at all times within 300 feet of ocean piers and in areas designated for use by personal watercraft, when personal watercraft are present. During the summer season which begins on the Saturday before Memorial Day and continues through Labor Day, surfing is restricted to the following areas between the hours of 9:30am and 5:30pm.:

1. All the unincorporated area north of the City of Ormond Beach.

2. In the City of Ormond Beach:
a) From a point at the extension of the centerline of the Granada approach to the north city limits of Ormond Beach.
b) From a point south of the extension of Seminole Avenue to a point at the centerline of Cardinal approach.
c) From the centerline of the extension of Harvard Drive south to the city limits.

3. In the City of Daytona Beach:
a) From the centerline of Plaza Approach north to the Daytona/Ormond city limit (south of Harvard Approach).
b) From the centerline of Hartford Approach to the centerline of Seaview Approach.
c) From the **600 ft north/ 700ft south** from the centerline of the Main Street approach excluding the 300ft NO WATER ACTIVITY AREA on north and south of the Main Street Pier.

4. In the City of Daytona Beach Shores:
a) From 1601 South Atlantic Avenue south to the centerline extension of the Botefuhr approach.
b) From 2209 South Atlantic Avenue south to the centerline extension of the Minerva approach.
c) From the south edge of Frank Rendon Park to the centerline extension of the Van Avenue approach, excluding the designated personal watercraft area.

5. All of the unincorporated area between the City of Daytona Beach Shores and the Town of Ponce Inlet, excluding personal watercraft zones.

6. All of the Town of Ponce Inlet, excluding personal watercraft zones.

7. In the City of New Smyrna Beach:
a) From Ponce Inlet to the point at the extension of Esther Street, excluding personal watercraft zones.
b) From the centerline of the extension of 6th Street south to the centerline extension of 24th Avenue.
c) From the south edge of 27th Avenue Park to the Volusia County Line.

8. All of the unincorporated area south of the City of New Smyrna Beach

At all other times of the year, and during the hours from 5:30pm until 9:30am, surfing is permitted in all areas of the ocean, except as noted above.

Sailboats, Wind Surfboards and Sailboards

No person shall operate a sailboat closer than 600 feet from the water's edge, except to go to and from the shore in the most direct means possible and in a safe and reasonable manner. Sailboats must be pulled west of the lifeguard towers while parked on the beach during daylight hours.

Catamarans

The launching of catamarans, sailboats, and sailboards is prohibited on weekends and holidays during the summer season in certain areas of the beach. Large watercraft are a public safety hazard due to the heavy concentration of swimmers and bathers in these areas.

In Daytona Beach, sailboat launching is prohibited between 1601 S. Atlantic Avenue and 505 N. Atlantic Avenue, and between 4201 S. Atlantic Avenue and 3001 S. Atlantic Avenue.

At the discretion of the Zone Supervisor, vessel launching may also be restricted on weekdays if conditions warrant.

Personal Watercraft

No person except a trained Volusia County lifeguard or law enforcement officer shall operate in the ocean or launch from the beach, a personal watercraft except in a designated personal watercraft area, and except in that portion of the ocean no closer than 1,500 feet from the existing shoreline.

Motorized Boats

No person except a lifeguard, law enforcement officer, authorized emergency personnel, or other person actually engaged in a rescue attempt shall launch a motorized boat from the beach or operate such a boat closer than 1,500 feet from the water's edge.

Fishing

It is unlawful for any person to fish in the ocean after having been warned by a Volusia County lifeguard or any law enforcement officer that the health and safety of swimmers is being endangered. It is unlawful for any person on the beach or within 600 feet of shore to intentionally fish for sharks or to fish by those methods commonly known as "chumming" or "blood baiting".

Alcoholic Beverages

The possession of open containers, sale or consumption of alcoholic beverages on the beach is prohibited.

Animals on the Beach

Animals are prohibited on the beach except for service animals accompanying impaired persons.

Open Fires

Open campfires or the use of charcoal except in enclosed grills or stoves on the beach are prohibited. It is unlawful for any person to dispose of any coals, briquettes, embers, or other heated object from any stove or grill other than in a designated receptacle.

Overnight Camping

It is unlawful to camp overnight on the beach.

Glass, Plastic and Styrofoam Containers

It shall be unlawful for any person on the beach to possess or utilize any plastic, Styrofoam, or glass bottle or container outside the confines of any vehicle.

Sound Amplification

No audio device including loudspeakers, television, radio, or musical instrument shall be used on the beach in a manner that makes unreasonable noise. No loudspeaker or other sound amplifying device shall be placed outside of any vehicle.

Removal of Beach Sand

The removal of sand from the beach without a proper permit is prohibited.

Accredited Agency

The Volusia County Beach Patrol is an accredited Law Enforcement Agency, through the Commission for Florida Law Enforcement Accreditation.

CHAPTER TEN :
EMPLOYEE CONDUCT

The Volusia County Beach Patrol expects the highest possible level of professional conduct from division employees. Public image is derived from the competence and demeanor of each employee of the division. The appearance, behavior, or actions of a single employee can irreparably damage the reputation of the entire organization.

The following guidelines are provided to help orient new employees to standard rules and practices. The Volusia County Public Protection Division of Beach Safety Policies and Procedures Manual defines professional practices within the department, and it is the responsibility of each employee to be familiar with its contents.

Lifeguard Rule and Regulations

Public Relations

1. Beach visitors must be treated with courtesy at all times. Every effort should be made to answer questions and be helpful.

2. Laws must be enforced diplomatically and impartially. **Lifeguards must never reprimand or embarrass individuals they assist or rescue.**

3. The Zone Supervisor or their designee should be contacted to handle any dispute with the public which cannot be resolved quickly and amicably. Complaints from the public must be referred to the Zone Supervisor or designee immediately. **Abusive language or indecent gestures towards the public will be grounds for dismissal.**
4. Lifeguards must never enter into a dispute among themselves in view of the public. **Never discredit or belittle the actions of another lifeguard.**
5. The lifeguard must not permit any person, including off-duty lifeguard, to climb on his or her tower, and only authorized personnel should be allowed to use lifeguard equipment. To prevent tripping or other injury, should not permit the public to place towels, shoes, or other objects on the lifeguard tower.
6. No one is allowed in a lifeguard station or dispatch center except with official authorization. The general public is not permitted to use restrooms, telephones or other facilities in a lifeguard station.
7. Lifeguards are not permitted to speak with representatives of the news media without authorization from the Beach Patrol Public Information Officer. All media inquiries should be directed to the P.I.O. or his designee.
8. Only post type earrings on lifeguards are allowed. All other body piercing type jewelry is not to be worn if visible while in uniform.

Neglect of Duty

9. No lifeguard will ever turn his or her back on the water while on duty. This includes when treating a first aid case. Lifeguards should sit in an alert manner, scanning their water frequently while manning a tower. Assuming a supine position on the tower is prohibited.
10. Lifeguards will be on their towers during fair weather, regardless of whether bathers are present or not.
11. Lifeguards are not permitted to carry on long conversations with passersby while on duty. Lifeguards must continue to scan the assigned area while answering questions from the public.
12. Lifeguards must remain at their assigned tower unless relieved by another lifeguard. Lifeguards must not get down from their tower until the relief lifeguard has taken his or her position on the tower and assumed responsibility for the assigned area.
13. Reading, sleeping or other neglect of duty will be grounds for dismissal.
14. Lifeguards are not permitted to sit in vehicles with civilians except with special permission from the Zone Supervisor.
15. Lifeguards are not permitted to baby-sit or otherwise care for children on an individual basis.
16. Lifeguards cannot take responsibility for private property on behalf of the general public.
17. The County of Volusia is a drug free workplace. Drug use on or off duty will be grounds for immediate dismissal.
18. Lifeguards who report for duty under the influence of alcohol or other drugs will be immediately dismissed.
19. Due to the distractive nature and negative public perception lifeguards are only permitted to use cell phones in emergency situations.

Competence

20. The lifeguard must have his or her rescue buoy within reach at all times while on duty.
21. Lifeguards must be at the scene of all emergencies on the beach in their assigned area. All first aid cases, except minor stings or scrapes, must be reported to the zone dispatcher immediately.
22. Lifeguards must relay all flag signals immediately.
23. Prior to moving a portable lifeguard tower, the lifeguard must close and secure the tower umbrella.
24. Lifeguards must secure all equipment properly and prevent the loss, misuse, or destruction of this equipment. Lifeguards are responsible for assigned equipment, and may be required to pay for loss or preventable damage.
25. Noise in and around the station should be eliminated or minimized whenever possible to prevent interference with dispatcher operations.
26. Lifeguards should not use their private vehicles in the performance of duty, unless otherwise instructed to their Zone Supervisor. Lifeguards are permitted to use their vehicles during "hazardous weather conditions" to help keep bathers away from the water.

27. Each lifeguard is required to remove debris from his or her area after notifying the zone dispatcher.
28. Lifeguard towers will be properly equipped at all times. Lifeguards will not close their towers for the day until the closing signal is given by the zone dispatcher.
29. Lifeguards will not be permitted to place their umbrella in such a position that would obstruct their view of the assigned areas.
30. Daily workout drills must be attended by all tower guards scheduled for work that day.

Punctuality

31. Lifeguards shall report to work and be prepared for duty at the designated time. Lifeguards must not be late for duty.
32. A Volusia County lifeguard is given a 1 hour lunch and will be required to be back from the lunch period at the conclusion of 1 hour.
33. **Any employee late for work, or returning late from lunch or relief breaks will be reported to the Zone Supervisor**

Administrative Matters

34. Lifeguards must arrange their personal schedules around the job. If any special days must be taken off, notice must be given one week prior to preparation of the biweekly schedule. No lifeguard will be permitted to take unscheduled days off without permission of the Operational Deputy Chief or his designee.
35. Lifeguards are responsible for checking at the end of each day to determine their tower assignment for the following day.
36. Lifeguards requesting the day off due to illness must speak with the Deputy Chief or his designee before 8:00am. The Volusia County Beach Patrol reserves the right to question whether an employee is sick, and the employee may be required to provide a physician's statement as proof of illness.
37. Any injury or personal illness that occurs on the job must be reported to the Zone Supervisor or their designee. The employee must also file a written report of any job injury.
38. Lifeguards must meet with the Deputy Chief and Zone Supervisor for any incident requiring disciplinary action. Meetings are usually held on the morning following the incident.
39. Resignations must be submitted at least two weeks prior to the last day or work. Failure to give proper notice will jeopardize future employment with this organization.

Off-Duty Behavior

40. **Off duty lifeguards are representatives of the Volusia County Beach Patrol. Any off duty behavior that reflects unfavorably on the organization will result in disciplinary action.**
41. Lifeguards will **obey speed limits and all traffic laws while operating their personal vehicles on the beach.**
42. Lifeguard uniforms are not to be work while off-duty. Special care must be taken during lunch breaks as members of the public may not realize the lifeguard is off-

duty. A s a minimum, the bathing suit uniform should be covered so as to conceal the Beach Patrol "lifeguard" emblem.

GLOSSARY

Anaphylactic shock is a delayed systemic reaction in humans caused by a coelenterate sting.
Asphyxia is death resulting from a lack of oxygen.
Backshore is the part of the beach zone that is nearly horizontal.
Backwash also known as an undertow is created by surging waves on a steeply sloped beach as the water rushes back to the ocean.
Barnacles are filter feeders that sweep fanlike appendages through the water to collect tiny food particles. They are encased in shells that have razor-sharp edges.
Barrier islands are aptly named because they provide a natural defense against hurricanes and other violent storms.
Beach zone is divided into the foreshore, and backshore.
Berm is a flat area on the beach which makes a sharp break in slope between the foreshore and backshore.
Code X- is the symbol and term used in the case of a missing swimmer; rescuer will hold his or her arms above their head in an X shape.
Coelenterates or jellyfish are marine life that have no direct means of propulsion and are dependent on wind and ocean currents for mobility.
Collapsing Waves occur on relatively steep beaches with a bottom slope between eleven and fifteen degrees.
Cross chest carry is executed by placing your arm across the victim's chest and under his or her armpit, grabbing the buoy with your hand.
Cumulonimbus clouds are very dense, vertically developed clouds that produce heavy rains and thunderstorms.
Dash and Splash is a rescue into a tidal pool or shallow slough where the rescue will be minimal, usually used for small children in overhead water.
Deep water waves are waves in a water depth greater than one half the wavelength, they move at a velocity in miles per hour that is 3.5 times the wave period measured in seconds.
Diurnal tides are single tide cycles.
Dry land observations is the practice of preventative lifeguarding where beach visitors are evaluated for swimming competency before they enter the water.
Dune zone begins along the backshore with small plants and grasses accumulating into dune thickets, large shrubs and small trees.
Edge waves are waves which are perpendicular to incoming and outgoing waves; these are created by wave refraction.
Emergency Flag Signal An emergency at a portable lifeguard tower is declared by taking down the tower flag and placing the flag horizontally across the seat of the tower.
Exhausted swimmers are victims of a water accident who may need help exiting the water and are treated by Beach Patrol personnel on the beach but do not require transportation for advanced medical treatment.
Feeder is the main source of supply for the rip current. This water, gathered from the returning force of expended waves, collects and begins to move laterally along the beach.
Fetch is the distance of water over which the wind blows.
Flotsam is large, heavy debris that can be propelled by waves and lateral currents.

Foreshore is the part of the beach zone which slopes toward the sea.
Gravity waves are formed by the wind.
Hawaiian Drag a Hawaiian drag should be used to remove the victim from the water. Stand behind the victim and place your arms under his armpits. Cradle the victim's head using your chest and upper arms. Walk backwards toward the beach, dragging the victim along the vertical axis of his or her body.
Hazardous weather conditions when the zone is threatened by thunderstorms or other violent weather.
Head is the area of the rip current where the neck disperses into deeper water. At this point, the rip channel expands into the open ocean, reducing water pressure in the current until it eventually comes to a stop.
Horns are points on the beach that are created from sand carried horizontally across the nodes of the wave.
Lateral currents move parallel to the beach and are caused by wave refraction.
Lifesaver is a person who has had formal training in swimming skills, personal water safety and basic water rescue, and has the ability to rescue individuals using their training, swimming skills and ingenuity.
Lifeguard is a person who is employed as a professional emergency responder and has the responsibility to prevent incidents within their assigned areas and to rescue individuals using special equipment, established procedures and regularly practiced swimming skills.
Littoral Drift is a current parallel to shore that carries sand down the coast, caused by wave refraction.
Mixed tide is a combination of diurnal and semidiurnal tides.
Neap tides occur during the first and third phases of the lunar cycle when tidal bulges are out of phase, resulting in lower high tides and higher low tides.
Near drowning is a water accident where the victim requires advanced medical treatment, physiological complications from water in the lungs can occur up to 96 hours after the drowning trauma.
Neck is the stream of seaward moving water of a rip current this is where the rip current has its strongest flow and can vary in width up to several hundred yards.
Nematocysts are the microscopic stinging cells used by coelenterates to capture prey, when stimulated these cells eject a fiber coated with a toxic chemical.
Non-Emergency Flag Signal a request for assistance with a non-emergency matter is indicated by holding the tower signal flag horizontally overhead with the cloth end pointed toward the ocean.
Offshore zone in Volusia County consists of a broad, gentle sloping continental shelf.
Osmosis is the tendency of a solution to diffuse until there are equal parts on both sides of a membrane.
Peterson Belts are rescue tubes, are used to assist in the rescue of unconscious victims or in conjunction with a rescue board.
Phase velocity is the ratio of wavelength to wave period.
Plunging Waves are formed when the slope of the ocean bottom is between three and eleven degrees, causing the wave crest to curl over a pocket of air and form a tube.

Portuguese Man-O-War are coelenterates that consists of a purple, gas filled sac which floats above the water. Dark purple tentacles hang below the animal, reaching lengths up to 40 feet.

Preventative lifeguarding is the practice of recognizing hazardous surf and beach conditions, evaluating beach visitors for drowning risk and preventing dangerous situations from occurring.

Protected Area on Volusia County beaches this is the bathing region within 300 feet of a manned lifeguard tower.

Pterygium are deposits in the cornea of the eye, caused by exposure to the sun. These fleshy growths become progressively larger and ultimately block the lens of the eye, interfering with normal vision.

Pulmonary edema is a collection of fluids in the lungs.

Reflection generates an opposing wave of the same frequency, but 180 degrees out of phase with incoming waves.

Rescue Buoy this is the single most important piece of lifeguard equipment. The "maxi-can" or RFD rescue buoy can provide flotation for several adults of average body weight under most surf conditions.

Reverse osmosis in the body occurs when a drowning victim has saltwater in their lungs and the salt draws body fluids into the lungs in attempt to reach an equal state.

Rip Channels are deep cuts in the sandbars that provide "holes in the dam" through which water can move more rapidly out to sea.

Sandbars are ridges of sand lying parallel to the beach at regular intervals from shore, they cause waves to break it the water depth on the sandbar is less than half the height of the wave.

Seiche waves are caused by sudden changes in barometric pressure.

Semidiurnal tides are twice daily tides with equal highs and lows.

Shallow water wave is when the water depth is less than one half the wavelength, these waves are affected by the process of shoaling, breaking, reflection, refraction and diffraction.

Shoaling is caused by the frictional drag of shallow water waves on the ocean bottom, these waves are slowed down while at the same time their wavelength becomes shorter.

Spilling Waves are formed on a gently sloping beach and consist of an over-steepened wave that starts to break at the crest and continues to break as the wave travels toward the beach.

Spring tides occur when tidal bulges from the sun and the moon coincide during full and new moons, producing higher high tides and lower low tides.

Standard of Care requires that lifeguards act in a certain manner when preventing accidents, performing rescues and providing medical treatment in order to be protected from legal consequences. The actions of an individual lifeguard are judged based upon what is expected of someone with the same training and experience, under similar circumstances.

Standing wave or stationary wave is caused by reflection and has higher crests and deeper troughs than either the incoming or outgoing wave.

Surf zone extends from just beyond the breakers to the beach and includes a series of longshore bars with troughs or rip channels.

Surging Waves, these occur on the steepest beaches with slopes greater than fifteen degrees.
Swash zone is the area of the beach that is washed with each breaking wave.
Swell waves that move out of a storm area, they can travel half the distance around the world.
Talk group which is analogous to a radio channel or frequency.
Tidal waves are caused by the gravitational pull of the sun and moon.
Tidal range is the difference in height between successive high and low tides.
Tsunamis are large waves caused by earthquakes or other seismic activity.
Ultraviolet-A rays penetrate deep into the skin causing permanent damage that leads to a wrinkled, leathery skin appearance. Worst of all, this "silent" skin damage can result in deadly melanoma and other skin cancers.
Ultraviolet-B rays are "burning rays" and are responsible for skin sunburns.
Waterspouts are tornadoes over water, and can present a very real danger to boaters and beach visitors.
Wave diffraction occurs when waves sweep past a point of land such as a jetty, causing a circular wave that sets up an interference pattern. This process causes an increase in wave height at the entrance to ocean inlets that can be hazardous to boat operation.
Wave height is the vertical distance measured from crest to trough.
Wavelength is the horizontal distance between a point on a wave and the corresponding point on the following wave.
Wave period is the time it takes for one complete wave, crest to crest, to pass through a fixed point.
Wave refraction causes waves to bend as they approach the shoreline.
Wave steepness is the ratio of wave height to wavelength.
Wet drowning occurs when a victim loses consciousness and the larynx relaxes, allowing water to enter the lungs.

APPENDIX A: Uniform Radio Signals

UNIFORM RADIO SIGNALS

VOLUSIA COUNTY, FLORIDA

SIGNALS

0 Armed/or Caution
(a) Firearm
(b) Other
1 Drunk Driver
2 Drunk
3 Hit & Run - (F) Injury
4 Accident - (F) Injury
5 Murder
6 Escaped Prisoner
7 Dead Person
8 Missing Person
9 Stolen Tag - (a) Lost
10 Stolen Vehicle
11 Abandoned Vehicle
12 Reckless Driver
13 Suspicious Vehicle
(p) Person - (a) Incident
14 Information
(a) Information Not Available
15 Special Detail
16 Obstruction of Highway
(a) Traffic/Congestion
17 Contact Person
(a) Give Name of Reporting Party
18 Felony
19 Misdemeanor
20 Mentally Ill Person
(H) Homicidal
(S) Suicidal
21 B & E (a) Business
(b) Residence
(c) In Progress
22 Disturbance
(a) Fight
(b) Family
23 Pedestrian/Hitchhiker
24 Robbery/Holdup
(a) Purse Snatch
25 Fire - (A) House (B) Brush
(C) Vehicle (F) Multiple Dwelling
(H) Commercial (X) Explosives
26 Drowning
27 Prowler - Trespasser
28 Riot - (a) Civil Disturbance
29 Reckless Operation/Motor Boat
30 Bomb Threat
31 Narcotics
32 Fraud - (a) Worthless Checks
(b) Other
33 A & B (Weapons)
34 Rape - (a) Sex Offense
35 Car Break
36 Shooting - (a) Person Shot
(b) Weapons Complaint
37 Suicide - (a) Attempt
38 Gambling
39 Juvenile Complaint
40 Vandalism
(a) City - County Property
41 Obscene Phone Call
(a) Threatening Call
42 Civil Complaint
(a) Solicitor Complaint
43 Larceny - (a) Auto Accessory
(b) Bike (c) Shoplifter
44 Abduction - (a) Hostage
49 Partner
(a) Pickup Partner at_____
51 False Fire Alarm
(a) False Burglar Alarm
52 Can Handle - All Clear
53 Control Burn
54 Suspicious Fire
55 Fire Under Control
56 Fire Dead Out
57 Injury as Result of fire
(a) Death as Result of Fire
58 Need Help on Fire
(Type Equipment Needed & Where)
59 Mutual Aid
60 S. O. Aircraft
61 Narcotics Investigator
62 Police Photographer
(a) Evidence Technician
63 Fire Investigator
64 Detective
(a) Traffic Homicide Investigator
65 Lifeguard
(a) Marine Patrol
(b) Scuba Diver
66 Electrician - (a) FP&L
67 Fire Department
68 States Attorney
(a) FBI (b) FHP
70 Traffic Light Out
(a) Light Turned Off
71 Traffic Control Device Damaged
(a) Missing
72 Illegal Parking
74 Radar In Service
(a) Out of Service
80 Towed Vehicle
81 Burglar Alarm Sounding
(a) Bug Sounding
82 Fire Alarm Sounding
83 Miscellaneous Service Call (Request)
86 Lost Property - (a) Found
87 Lost Child - (a) Found
88 Noise Complaint
90 Animal Complaint
(a) Animal Bite
92 Sick Person - (a) Injured
(b) Narcotics Overdose
95 BOLO Person/Vehicle
96 Plane Crash - (a) Other Emergency
97 Boat Accident - (a) Other Emergency
98 Dangerous Street Condition
100 Radio Test

TEN SIGNALS

10-1 Receiving Poorly
10-2 Receiving Well
10-3 Stop Transmitting
10-4 O.K.
10-5 Relay to _____
10-6 Busy
10-7 Out of Service
10-8 In Service
10-9 Repeat
10-10 Out of Service, Subject to Call
10-12 Visitor
10-13 Weather & Road Condition
(a) Tide Condition
10-14 Escort
10-15 Prisoner In Custody
10-16 Pick Up Prisoner At _____
10-17 Conduct Investigation
10-19 Return to Station - (a) Gas Car
(b) Court (c) City - County Yard
10-20 Your Location
10-21 Phone Station
10-22 Disregard
10-23 Stand By
10-24 Trouble - Send Help
10-25 In Contact With
10-26 Message Received
10-28 Check Registration
10-29 Check for Wanted - (a) NCIC Check
(p) Person
10-30 Against Rules
10-31 In Pursuit
10-32 Breathalyzer Available
10-33 Emergency Message
10-34 Jail Break - (a) Problem in Jail
10-35 Confidential Information
10-36 Correct Time
10-37 Operator on Duty
10-38 Block Roads (At_____)
10-39 Message Delivered
10-40 O.R. Number & Time
(a) Phone In Reports
10-42 Out of Service at Home
(a) Call Home
10-43 Any Message For
10-45 Phone _____ at _____
10-46 Urgent
10-48 End of Message - Did You Receive
10-49 Serving Warrants
(a) Serving Civil Papers
10-50 Vehicle Stopped for Traffic
(b) Criminal Investigation
10-51 En route
10-52 E.T.A.
10-53 Coming to Your Office
10-54 Negative
10-55 Car Calling to Car
10-56 Meet _____ at _____
10-58 Scramble
10-60 Check Tower Lights
10-61 Change to All County Channel
10-62 Change Radio Channels
(Department Channels)
10-65 Can You Copy
10-66 Cancel
10-68 Need Legal Advice
10-71 Send Ambulance
10-72 Send Rescue Unit
10-75 In Department Vehicle - Off Duty
10-81 Send Wrecker
10-88 What Phone Can You Be Reached
10-96 Unable to Locate
10-97 Arrived at Scene
10-98 Completed Assignment
10-99 Unable to Read
10-100 Alert - Keep In Touch by Phone

Code 1 Routine
Code 2 Expedite
Code 3 Respond Lights & Siren
Code 4 No Further Assistance Needed-
Cancel Responding Units

APPENDIX B: Tower Locations

TOWER LOCATIONS
ZONE 1- North County- 1665 Ocean Shore Blvd.

TOWER	LOCATION	LANDMARK
101	3000 Ocean Shore Blvd.	Betty's A1A Café
102	2460 Ocean Shore Blvd.	Lil Champ/ Chevron
103	2162 Ocean Shore Blvd.	Submarine Watch Tower
104	1900 Ocean Shore Blvd	Bicentennial Park
105	1665 Ocean Shore Blvd	*North County Station*
106	1550 Ocean Shore Blvd	Tom Renick Park
107	1275 Ocean Shore Blvd	Indies House Condo
108	1183 Ocean Shore Blvd	Seawinds Condo
109	1009 Ocean Shore Blvd	Coral Sands Condo
110	815 Ocean Shore Blvd	Standish Approach
111	600 Ocean Shore Blvd	Amsden Approach

TOWER LOCATIONS
ZONE 2- Ormond- 301 Cardinal Approach

TOWER	LOCATION	LANDMARK
213	350 Ocean Shore Blvd.	Neptune Approach
214	175 Ocean Shore Blvd.	Ron Rice's House
215	1 South Atlantic Ave.	Granada Approach
216	125 South Atlantic Ave.	Treasure Cove Motel
217	251 South Atlantic Ave.	Seminole Approach
218	395 South Atlantic Ave.	Rockerfellar Approach
219	507 South Atlantic Ave.	Riverbeach Approach
220	621 South Atlantic Ave.	*Cardinal/ Ormond Station*
221	839 South Atlantic Ave.	Milsap Approach
222	901 South Atlantic Ave.	Harvard Approach
223	2700 North Atlantic Ave.	Plaza Approach
224	2424 North Atlantic Ave.	Best Western/ La Playa
225	2300 North Atlantic Ave.	Williams Approach
226	2000 North Atlantic Ave.	Beachcomber Ocean Front
227	1522 North Atlantic Ave.	Seaview Approach

TOWER LOCATIONS
ZONE 3- Daytona- 11 South Ocean Avenue

TOWER	LOCATION	LANDMARK
329	1306 North Atlantic Ave.	Zelda Approach
330	1024 North Atlantic Ave.	Ocean Sands Motel
331	1000 North Atlantic Ave.	University Approach
332	800 North Atlantic Ave.	Riverview Walkway
333	640 North Atlantic Ave.	Glenview Restrooms
334	600 North Atlantic Ave.	Seabreeze Approach
335	400 North Atlantic Ave.	Boardwalk Beach Resort
336	200 North Atlantic Ave.	Ora Street Approach
337	100 North Atlantic Ave.	Hilton
338	50/11 North Atlantic Ave.	*Main St. Pier/ Daytona*
339	101 South Atlantic Ave.	Harvey Street Approach
340	219 South Atlantic Ave.	I'ntl Speedway Approach
341	401 South Atlantic Ave.	Vermont Approach
342	601 South Atlantic Ave.	Sunsplash Park (Revillo)
343	701 South Atlantic Ave.	Lenox Approach

TOWER LOCATIONS
ZONE 4- Shores- 2201 South Atlantic Avenue

TOWER	LOCATION	LANDMARK
445	905 South Atlantic Ave.	Double Stay
446	1201 South Atlantic Ave.	Silver Beach Approach
447	1303 South Atlantic Ave.	Catalina Motel
448	1601 South Atlantic Ave.	Royal Beach Motel
449	1901 South Atlantic Ave.	
450	2001 South Atlantic Ave.	Botefuhr Approach
451	2043 South Atlantic Ave.	Castaways Motel
452	2119 South Atlantic Ave.	Browning Approach
453	2209 South Atlantic Ave.	*Shores Station*
454	2237 South Atlantic Ave.	Tropical Manor Motel
455	2315 South Atlantic Ave.	Minerva Approach
456	2505 South Atlantic Ave.	Acapulco Inn
457	2555 South Atlantic Ave.	Sherwin Condo
458	2637 South Atlantic Ave.	Florida Shores Approach
459	2701 South Atlantic Ave.	Richards Lane Park

TOWER LOCATIONS

ZONE 5- Dunlawton- 3425 South Atlantic Avenue

TOWER	LOCATION	LANDMARK
561	2987 South Atlantic Ave.	Oceans Five Condo
562	3101 South Atlantic Ave.	Van Avenue Approach
563	3135 South Atlantic Ave.	Hampton Inn
564	3161 South Atlantic Ave.	Seagarden Hotel
565	3229 South Atlantic Ave.	El Portal Approach
566	3301 South Atlantic Ave.	Palm Plaza Approach
567	3333 South Atlantic Ave.	Grand Coquina Condo
568	3425 South Atlantic Ave.	*Dunlawton Station*
569	3601 South Atlantic Ave.	Demotte Approach
570	3647 South Atlantic Ave.	Sunglow Pier North
571	3737 South Atlantic Ave.	Sunglow Pier South
572	3801 South Atlantic Ave.	Emilia Avenue Approach
573	4001 South Atlantic Ave.	Heron/Teal Parking Lot
574	4200 South Atlantic Ave.	Toronita Approach
575	4421 South Atlantic Ave.	Sandcastle Condo
576	4511 South Atlantic Ave.	North Turn
577	4577 South Atlantic Ave.	Winter Haven Parking Lot
578	4703 South Atlantic Ave.	Oceanview Parking Lot
579	4799 South Atlantic Ave.	Inlet Habor Parking Lot
580	4870 South Atlantic Ave.	Beach Street Approach
581	4936 South Atlantic Ave.	
582	5000 South Atlantic Ave.	Ponce Inlet North Jetty
583	N/A	Lighthouse Point Park

TOWER LOCATION
ZONE 6-New Smyrna- 207 Buenos Aires

TOWER	LOCATION	LANDMARK
602	2800 North Atlantic Ave.	Ponce Inlet South Jetty
603	2700 North Atlantic Ave.	300yrds. South of Jetty
604	2601 North Atlantic Ave.	Inlet Condo
605	1667 Cortez Ave.	
606	1300 North Atlantic Ave.	Beachway Approach
607	900-1000 North Atlantic Ave.	Saphire Curve
608	700 North Atlantic Ave.	Crawford Approach
609	505 North Atlantic Ave.	Ester Wall
610	207 ½ Buenos Aries	*New Smyrna Station*
611	701 South Atlantic Ave.	Coconut Palms
612	1300 South Atlantic Ave.	3rd Aveenue Approach
613	1601 South Atlantic Ave.	6th Street
614	2000 South Atlantic Ave.	
615	2401 South Atlantic Ave.	Pelican Condo
616	3001 South Atlantic Ave.	Las Brisas
617	3401 South Atlantic Ave.	24th Street
618	3700 South Atlantic Ave.	27th Street Approach
619	4139 South Atlantic Ave.	Moon Tide Condo
620	4201 South Atlantic Ave.	Mathews Avenue
621	4301 South Atlantic Ave.	Sea Woods Condo
622	4495 South Atlantic Ave.	Hiles Approach
623	4831 South Atlantic Ave.	Ocean View Condo
624	5500 South Atlantic Ave.	Sand Piper Condo
625	6500 South Atlantic Ave.	Bethune Boardwalk

APPENDIX C: Sharks

APPENDIX C: Sharks

In recent years the waters off Volusia County have seen a rise in shark incidents involving bathers. Although the majority of these incidents have taken place in an isolated area on the South side of the South Ponce Inlet jetty in New Smyrna Beach, Lifeguards must be aware that there is a possibility that they may be involved in a shark incident no matter where they are working. If a shark is spotted by you or a person that you deem credible then all bathers should be removed from the water in all adjacent areas. The zone dispatcher should be notified and a beach patrol unit dispatched to help with bather clearing if necessary. The affected area should remain closed for at least fifteen minutes after the last credible sighting. Beach goers that approach your tower and inquire about swimming restrictions should be advised of the sighting. Do not lie or attempt to mislead the public in anyway regarding sharks or shark sightings.

If you witness or are called to a shark incident involving a bather try to stay calm. Treat the victim as you would any other trauma victim. Airway, Breathing, Circulation and control major bleeding is the priority. Call for back-up and advise the nature of the call. It is common to use the call sign 101 when referring to sharks over the 800 Mghz radio. Many news agencies scan Beach radio channels and race to the scene of emergencies hampering rescue efforts.

If you are on a tower that has had recent shark activity you may be asked to speak to news reporters about the incidents. Contact the zone dispatcher and advise of the request. DO NOT make statements to the news media. Refer them to the P.I.O. or zone supervisor. Although sharks and shark incidents make for good news stories they do not represent a significant risk to life in this area. More people die as a result of rip currents on Volusia County beaches than any other cause. The majority of shark incidents in Volusia are minor. Usually appearing more like dog bites rather than what is perceived as a shark attack. Keeping a cool head during any emergency is important, especially shark incidents.

APPENDIX D: Florida State Standardized Beach Flag Warning System