

RECORDS USE: A NECESSITY FOR ADMINISTRATION OF  
PROTECTED BEACH OPERATIONS

Richard D. Baker discusses the importance of record keeping and staff and visitor education at protected beaches. Mr. Baker is a high school social studies teacher and has been a lifeguard and park ranger. His paper is based on records compiled at the Chincoteague District Protected Beach, Assateague Island National Seashore.

The administration of a protected beach operation, especially on an ocean beach, necessitates good record keeping for intelligent administration. It is not possible here to go into the general subject of the administration of protected beach operations, for the subject is too large. It is also not possible to go into records and all that record keeping entails. However, it will perhaps be instructive to show how an examination of records compiled at the Chincoteague District Protected Beach at Assateague Island National Seashore first indicated a problem; and then provided, upon more careful examination, an answer to the problem. It should be pointed out to those unfamiliar with protected beach operations that proper use of records in this area is not a common occurrence. One of the reasons one must assume as being responsible for this lack of proper use is ignorance by administrators of that which may be accomplished.

Rescues for the 1967, 1968 and 1969 seasons at the Chincoteague District Protected Beach will be examined. Beach data and charts pertinent to the rescues, and relative to the problem to be examined, will be presented. During the 1967 season there were twenty-five rescue cases. A cursory examination of data shows that twenty-two of these rescues occurred on a right to left littoral current. The problem is thus presented. Why were twenty-two out of twenty-five rescues occurring on a right to left littoral? Was there a reason for this or was it coincidence? Was there a particular hazard present on the right to left littoral that was not present on the left to right littoral? Can we make our lifeguards aware of this hazard? Can we make the visitors aware of this hazard? Can we prevent the occurrence of a rescue situation when the hazard is present? The administrative need to know as much as possible about this problem is adequately established.

**1967 SEASON**

**LITTORAL CURRENT DIRECTION**

|              | R to L    | L to R    | Rescues for Month |
|--------------|-----------|-----------|-------------------|
| June         | 13        | 16        | 2                 |
| July         | 23        | 7         | 11                |
| August       | 21        | 10        | 12                |
| <b>Total</b> | <b>57</b> | <b>33</b> | <b>25</b>         |

**LITTORAL CURRENT CORRELATED WITH RESCUES**

| Littoral Rescues | R to L | L to R | Questionable |
|------------------|--------|--------|--------------|
|                  | 22     | 1      | 2            |

**WAVE HEIGHT ON DAYS OF RESCUES AND ASSISTS**

| Date         | No. of Rescues | Assists   | Wave Height in Feet    |
|--------------|----------------|-----------|------------------------|
| 6-17         | 1              |           | 1½ - 3                 |
| 6-18         | 1              | 1         | 1 - 1½                 |
| 6-24         | 1              | 1         | 2                      |
| 7- 3         | 4              | 4         | 2 - 4                  |
| 7- 9         | 5              | 3         | 1½ - 2                 |
| 7-24         |                | 1         | 1 - 2                  |
| 7-25         |                | 1         | 1 - 2                  |
| 7-29         | 1              |           | to 5                   |
| 7-30         |                | 1         | to 5                   |
| 8- 4         | 2              |           | 1 - 3                  |
| 8- 5         | 2              |           | 3                      |
| 8- 7         | 3              |           | 3                      |
| 8-17         | 2              |           | 1 - 2½                 |
| 8-28         | 2              |           | 2 - 4                  |
| <b>Total</b> | <b>25</b>      | <b>13</b> | <b>Average 2½ Feet</b> |

Average wave period for the season was about 8 seconds.

The average wave height for the entire season was two and one-half feet. Wave height estimates were taken daily when the waves peaked up over the bar or as they peaked nearing the face, but not just before breaking on the face.

**RESCUES RELATIVE TO TIDAL CHANGE**

After Low Tide — (0:08; 0:08; 0:30; 1:18; 1:18; 1:29; 1:48; 1:48; 2:10; 2:10; 2:14).

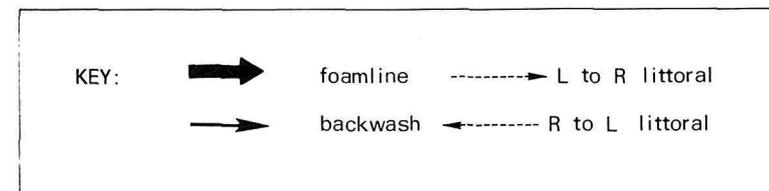
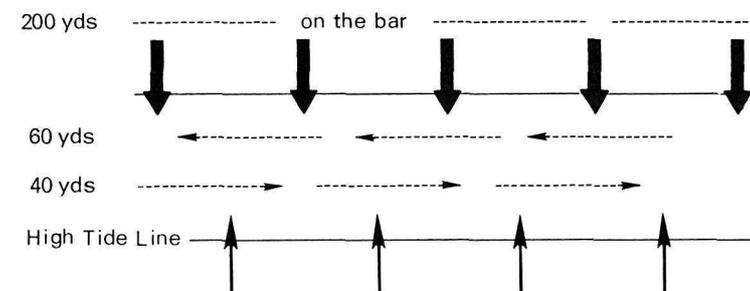
Before Low Tide — (0:12; 0:22; 0:24; 1:00; 1:07; 1:30; 1:30; 1:30; 1:30).

After High Tide — (1:18; 3:18).

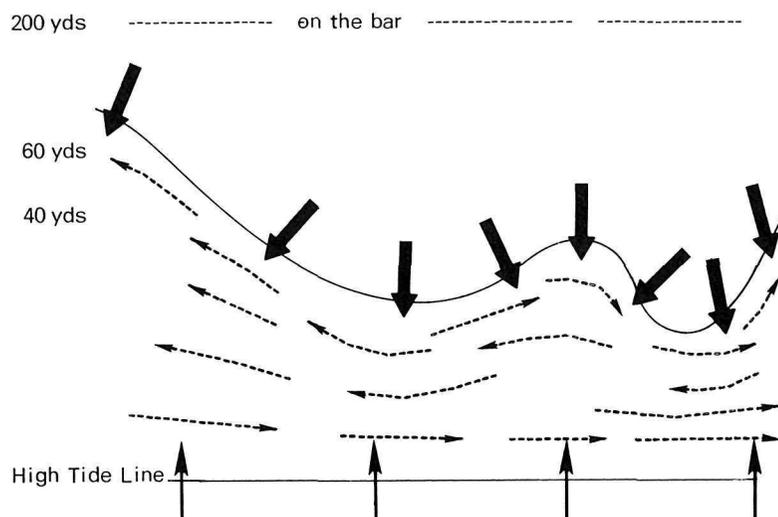
Before High Tide — (0:57; 2:15; 3:30).

During the season of 1967 the beach manifested three different profiles. The Phase II Intermediary Profile was dominant the latter part of July and the early part of August. Phase I was dominant prior to that time and Phase III became dominant thereafter.

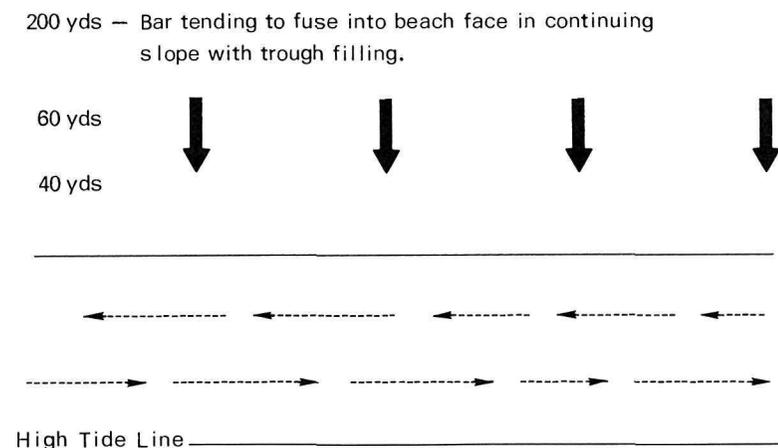
**PHASE I WINTER PROFILE**



### PHASE II INTERMEDIARY PROFILE

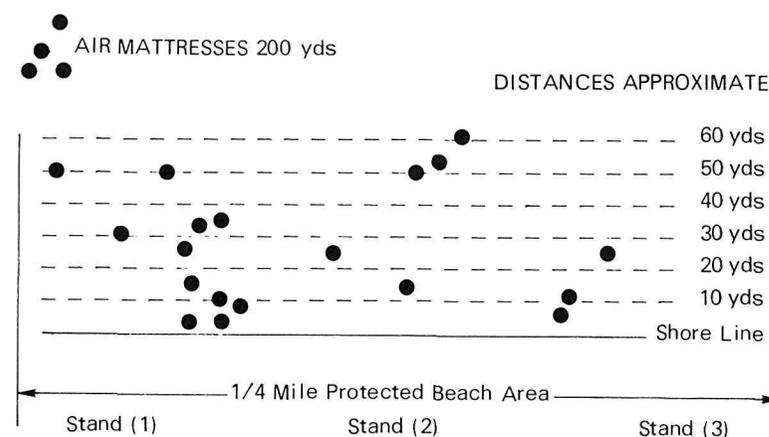


### PHASE III APPROACHING SUMMER PROFILE



With the elimination of rescue cases involving the use of air mattresses in the non-protected area, twenty-one rescue cases remain. One of these involved a person in the non-protected area who was too tired to swim in from the sandbar. Two of the twenty cases remaining involved one who was an exceedingly poor swimmer and one who was a non-swimmer, both of whom walked in over their heads. Of the remaining eighteen cases, five were the result of allowing people to swim to the sandbar in the protected area, which led to exhaustion for four of the five cases involved, and the fifth was a nonswimmer who had been pushed out

### 1967 SEASON RESCUE DISTRIBUTION CHART



by his father. Thirteen cases remain, and of these the primary hazard for six was backwash. Seven cases remain and of these one was the result of a littoral current while six were the results of an offsetting current.

Our data seem to give the general indication that daily wave height, which averaged for all rescues that which it averaged for the season, was not of prime importance. Further investigation confirms this. However, correlation of tidal times with rescues shows the following similarities. Five out of the six cases caused by backwash occurred nearer high tide than low tide, and cases involving offsetting currents occurred nearer low tide than near high tide. This information is, of course, generally to be expected. After applying what we now know to our Profiles and Rescue Distribution Chart, we are led to the following conclusions.

Backwash is most significant at high tide because the steepness of the beach face provides the necessary topography whereon the backwash may respond with a strong gravitational flow. This action, in conjunction with the seaward movement in the trough behind the breaking wave, is significant enough at times to move a person into deep water. This is especially so if, as may occur in surf beat, a smaller crest follows, or if the wave period is unusually long. An average gradient of the beach face reads with a drop of 2'3" at 20' and 3'8" at 30', for example. This is steep enough to set up a good backwash.

As low tide approaches, and until the tide has again significantly risen, beach topography in the offshore zone is more significant in effecting the circulation pattern in the surf zone. Thus, on right to left littorals in the Phase II Intermediary Profile, offsetting currents were common near number one stand. The current, once it passed the apex point of the sandbar, expanded into the wider area. This current was influenced by the foamline from the bar-break. This offsetting current was the main hazard in this area under the described conditions. On left to right littorals no offsetting current was present in this area, but there was one present in the area between number two and number three stands between the apexes of the sandbar. There was also an offset here on right to left littorals.

Right to left littorals occurred on fifty-seven days as compared to thirty-three days for left to right littorals. The area near the number one stand was by far the heaviest visitor use area in comparison to the area between numbers two and three stands. Consequently, more people were subject to the particular hazard present in the heavy use area, which was, for offsetting currents, right to left.

The twenty-five rescue cases for the 1967 season have been examined and the reasons for their occurrence explained. After the experience that occurred when people were allowed to swim to the sandbar, on a calm day when the bar was quite accessible, swimming to the sandbar was prohibited. It was determined that the deplorable judgment of so many visitors made this a sound decision. In addition to the rescues on that day there were three assists, and lifeguards were constantly busy ordering obviously poor swimmers to go back to shore and not attempt to swim out. This all occurred within about a thirty-minute period and it was realized that the situation could quickly get out of hand if enough people wished to try to swim out. At one point, four of the five lifeguards were simultaneously involved in rescues or assists.

The use of floats, although prohibited in the protected area for the purpose of not encouraging poor or nonswimmers to use these devices, was still allowed in nonprotected areas. The main hazard here was offshore wind, and all lifeguards and rangers remained conscious of the possibility of similar situations recurring. Posters were developed to make float users safety conscious.

Little can be done about preventing nonswimmers from going over their heads other than by somehow reaching those who need to be reached with basic information about ocean beaches. Many people are absolutely amazed to find "holes" in the beach. Usually they are referring to runnels or ridge and trough formations.

In these cases, where backwash is repeatedly strong enough to prevent a poor swimmer from reaching shore—and this does happen in spite of those who claim "the next crest will bring the person back to shore"—it is unlikely that we can prevent this from happening and still let people go in the water. The best thing here is for lifeguards to be aware of the presence of the hazard.

Littoral and offsetting currents present a problem different from backwash in that people who often can swim under negligible current conditions are unable to understand what is happening, or to simply swim to shore as they would ordinarily. Again, education of the public is called for, as well as the necessity for lifeguards to be aware of the hazard so that they may anticipate trouble. Sometimes a swimmer who is simply confused by the current can be quickly directed out of it. If he takes the advice, it is an educational experience for him.

#### 1968 SEASON

During the 1968 season the beach stayed in a Phase I Profile all summer. The hazards were thus reduced. Only two rescues occurred all summer.

#### 1969 SEASON

The beach topography during the 1969 season was different from that of the previous two years. Because of the difference in topography and because sixteen rescues occurred, no attempt shall be made in this study to present an analysis.

Maintenance and use of records in protective beach operations is often approached rather lightly. It is difficult to see the justification for such an approach. Particularly it is inappropriate for those concerned with environmental education, such as National Seashores and the National Park Service personnel therein employed, to approach lifeguard operations with traditional attitudes in that area of work. New ground needs to be broken concerning the acquisition of knowledge in this area if "environmental education" is not to be just a slogan, and only intelligent and serious administrative effort can bring this about. The National Park Service, as the administrative agency of the National Seashores, of all agencies engaged in protective beach operations, is particularly well suited to carry out this type of work so that the public, through knowledge and intelligent beach use, may reap the rewards.