53:171 Water Resources Engineering
Lesson 23: Waves & Runup

**Significant Wave Height**

![Graph showing wind velocity over water vs. fetch distance.](image)

**FIGURE 7.14**
Significant wave heights and minimum wind durations (From T. Saville, Jr., E. W. McClendon, and A. L. Cochran, Freeboard Allowance for Waters in Inland Reservoirs, *J. Waterways and Harbors Div., ASCE*, pp. 93–124, May 1962.) For metric version see Appendix B.

**Design Wave Height**

<table>
<thead>
<tr>
<th>$z'/z_w$</th>
<th>1.67</th>
<th>1.40</th>
<th>1.27</th>
<th>1.12</th>
<th>1.07</th>
<th>1.02</th>
<th>1.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of waves &gt; $z'$</td>
<td>0.4</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

* After Saville, McClendon, and Cochran.
Effective Fetch

有效风速

Wind Speed Over Water

表7.3
风速在陆地与水中的关系

<table>
<thead>
<tr>
<th>Fetch, mi (km)</th>
<th>0.5 (0.8)</th>
<th>1 (1.6)</th>
<th>2 (3.2)</th>
<th>4 (6.5)</th>
<th>6 (9.7)</th>
<th>8 (12.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{water}/V_{land}$</td>
<td>1.08</td>
<td>1.13</td>
<td>1.21</td>
<td>1.28</td>
<td>1.31</td>
<td>1.31</td>
</tr>
</tbody>
</table>

Figure 7.16