Problem Statement:
From the following date, estimate the unit waste disposal rate per week for a residential area consisting of 1200 homes. The average occupancy is 3.5 persons per home. The observation location is a local transfer station that receives all of the wastes collected for disposal. The observation period was one week.

Data:
- Number of compactor truck loads = 9
- Average size of compactor truck = 20 yd$^3$
- Number of flatbed loads = 7
- Average flatbed volume = 2 yd$^3$
- Number of loads from individual residents’ private cars and trucks = 20
- Estimated average volume per domestic vehicle = 8 ft$^3$

Solution:

Step 1: Setup a computation table to estimate the total weight of waste disposed during this week.

<table>
<thead>
<tr>
<th>Waste Source</th>
<th>Number of Loads</th>
<th>Average Volume, yd$^3$</th>
<th>Specific Weight, lb/yd$^3$</th>
<th>Total Weight, lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compactor Truck</td>
<td>9</td>
<td>20</td>
<td>500</td>
<td>90,000</td>
</tr>
<tr>
<td>Flatbed Truck</td>
<td>7</td>
<td>2</td>
<td>225</td>
<td>3,150</td>
</tr>
<tr>
<td>Private Vehicle</td>
<td>20</td>
<td>0.3</td>
<td>150</td>
<td>900</td>
</tr>
<tr>
<td><strong>Total, lb/week</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>94,050</strong></td>
</tr>
</tbody>
</table>

*based on estimates of average vehicle volume and weight

Step 2: Determine the unit waste disposal rate.

Unit or Per Capita Disposal Rate = \( \frac{94,050 \text{ lb/wk}}{200 \text{ homes} \times 3.5 \text{ persons/home} \times 7 \text{ days/wk}} \)

Unit or Per Capita Disposal Rate = 3.2 lb/capita·day