**ESS 132 Week 9 Discussion tasks**

Construct a unit hydrograph using the provided data for a drainage basin of 558,000,000 m2:

Total volume of runoff = Total depth of precipitation =

Depth of runoff = Constant infiltration rate =

|  |  |  |  |
| --- | --- | --- | --- |
| Time  (hrs) | Streamflow  (m3/sec) | Direct runoff i.e. event flow  (m3/sec) | Unit hydrograph  (m3/sec per 1cm rainfall) |
| 0 | 100 |  |  |
| 1 | 100 |  |  |
| 2 | 200 |  |  |
| 3 | 500 |  |  |
| 4 | 1100 |  |  |
| 5 | 700 |  |  |
| 6 | 500 |  |  |
| 7 | 400 |  |  |
| 8 | 300 |  |  |
| 9 | 200 |  |  |
| 10 | 100 |  |  |
| 11 | 100 |  |  |

|  |  |  |
| --- | --- | --- |
| Time (hrs) | Precipitation (cm) | Effective precipitation i.e.  runoff (cm) |
| 0-1 | 1 |  |
| 1-2 | 2 |  |
| 2-3 | 2 |  |
| 3-4 | 1 |  |

Using your unit hydrograph for a new storm:

Assuming that 25% of the rain infiltrates and that infiltration rate is constant for the whole storm, work out how much runoff there would be for each 2 hour time interval (to match the 2 hour time interval to the unit hydrograph):

|  |  |  |  |
| --- | --- | --- | --- |
| Time (hrs) | Rainfall rate (cm/hr) | Total rainfall for time interval (cm) | Total runoff for time interval (cm) |
| 0-2 | 1 |  |  |
| 2-4 | 0.5 |  |  |
| 4-6 | 2 |  |  |
| 6-8 | 2.5 |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Time (hrs) | Pulse 1 (m3/sec) | Pulse 2 (m3/sec) | Pulse 3 (m3/sec) | Pulse 4 (m3/sec) | Total event flow i.e. runoff (m3/sec) | Total streamflow (m3/sec) |
| 0 |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |
| 13 |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |