

V.3.3-RES-SNGL-SPEC-RAINEVAP SINGLE RESERVOIR REGULATION OPERATION
UTILITY RAINFALL/EVAPORATION

Purpose

Utility RAINEVAP allows the user to account for direct rainfall and evaporation effects on the reservoir.

Input Summary

<u>Keyword</u>	<u>Definition and Format</u>
RAINEVAP <u>1</u> /	Input opening keyword for utility
[<u>PARMS</u>]	Parameter opening keyword for utility: <ul style="list-style-type: none">- only needed if any parameters are entered
[<u>EVAP</u>]	Mid-month (16th day) evaporation curve - intervening daily values are linearly interpolated between two adjacent mid-month values - omit if time series is used: <ul style="list-style-type: none">- number of values = 12- units = IN or MM depending on UNITS specification
[<u>DIST</u>]	Period distribution curve: <ul style="list-style-type: none">- number of values = 24/timeint (timeint is the Operation data time interval)- values real, between 0.0 and 1.0- values must sum to 1.0- default to uniform distribution
[<u>HREA</u>]	This is a constant reservoir surface area option - HREA is the pool elevation at which the surface area will be held constant and used to compute the total amount for all the direct rainfall and evaporation - if omitted the surface area will vary with pool elevation and the surface area corresponding to the previous time step's pool elevation will be used: <ul style="list-style-type: none">- elevations<ul style="list-style-type: none">- real- within ELVSSTOR curve <u>3</u>/
[<u>ENDPARMS</u>]	Parameter ending keyword for utility: <ul style="list-style-type: none">- needed only if PARMS was entered
<u>TIME-SERIES</u> <u>2</u> /	Time series opening keyword for utility
PCPN	Precipitation time series: <ul style="list-style-type: none">S data time interval = Operation data time interval- dimensions = L

Keyword

Definition and Format

	<ul style="list-style-type: none">- units = MM- missing values are not allowed
[EVAP]	Evaporation time series (omit if mid-month evaporation curve is used): <ul style="list-style-type: none">- data time interval = 24- dimensions = L- units = MM- missing values not allowed
[ADDQ]	Time series of volume generated by rain/evaporation on reservoir surface: <ul style="list-style-type: none">S data time interval = Operation data time interval- dimensions = L3- units = CMSD- missing values not allowed
<u>ENDTS</u>	Time series ending keyword
ENDRAIN	Input ending keyword for utility

Notes:

- 1/ No additional carryover is needed for this utility.
- 2/ See 'Time Series Definition' in Section V.3.3-RES-SNGL-SPEC.
- 3/ ELVSSTOR is the elevation versus storage curve defined in the general parameter section.

Input Examples

1. Mid-month evaporation curve is used.

```
RAINEVAP(1)
PARMS
  EVAP  0.06    0.09    0.13    0.15    0.18    0.23 &
        0.24    0.21    0.18    0.13    0.09    0.07
  DIST  0.30    0.40    0.20    0.10
  HREA  150.0
  ENDP
TIME-SERIES
  PCPN  LKTAWAKN  MAP    6
  ADDQ  RAINEVAP  SQME   6
  ENDTs
ENDRAIN
```

2. Evaporation is specified by a time series.

```
RAINEVAP(1)
PARMS
  DIST  0.30    0.40    0.20    0.10
```

```
ENDP
TIME-SERIES
PCPN LKTAWAKN MAP      6
EVAP SABINEUS MAPE    24
ADDQ RAINEVAP SQME     6
ENDTS
ENDRAIN
```

Method

See Section II.4-RES-SNGL for additional information.

1. Generate area-elevation curve from storage-elevation curve.
2. Estimate volume due to direct rainfall and evaporation using area from previous period.
3. Add rainfall/evaporation volume to the reservoir inflow and apply the result to pertinent Scheme used. Correct rainfall/evaporation volume once if the area changes sufficiently.