# 1.0 Trade Effluent – Current Discharge

## 1.1 Ammoniacal Nitrogen



Monte Carlo Method

File  Base Data  Further Data  Results  Help  About

| | |
|---|---|
| Name of discharge | Muntons Trade Effluent - Current discharge |
| Name of river | River Gipping |
| Name of determinand | Ammoniacal Nitrogen |

**UPSTREAM RIVER DATA**

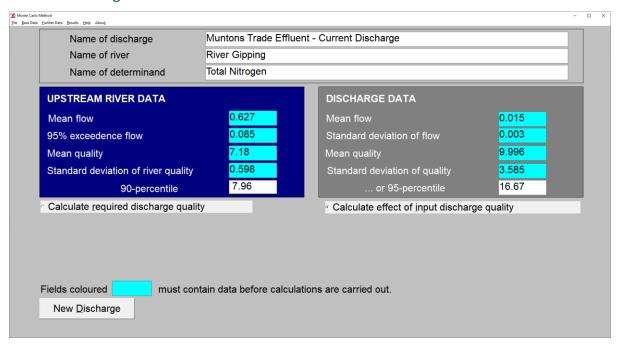| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 0.124 |
| Standard deviation of river quality | 0.070447 |
| 90-percentile | 0.21 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.015 |
| Standard deviation of flow | 0.003 |
| Mean quality | 0.329 |
| Standard deviation of quality | 1.561 |
| ... or 95-percentile | 1.26 |

◉ Calculate effect of input discharge quality

Fields coloured [ ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 0.13 |
| Standard deviation of quality | 0.09 |
| 90-percentile quality | 0.23 |
| 95-percentile quality | 0.28 |
| 99-percentile quality | 0.45 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 0.32 |
| Standard deviation of quality | 0.85 |
| 95-percentile quality | 1.31 |
| 99-percentile quality | 3.97 |
| 99.5-percentile quality | 5.37 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 1.2    BOD (Calculated)

| Monte Carlo Method | | |
|---|---|---|
| File   Base Data   Further Data   Results   Help   About | | |

| Name of discharge | Muntons Trade Effluent - Current Data |
|---|---|
| Name of river | River Gipping |
| Name of determinand | BOD |

**UPSTREAM RIVER DATA**

| Mean flow | 0.627 |
|---|---|
| 95% exceedence flow | 0.085 |
| Mean quality | 3.14 |
| Standard deviation of river quality | 2.172188 |
| 90-percentile | 5.75 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| Mean flow | 0.015 |
|---|---|
| Standard deviation of flow | 0.003 |
| Mean quality | 2.995 |
| Standard deviation of quality | 0.82 |
| ... or 95-percentile | 4.50 |

◦ Calculate effect of input discharge quality

Fields coloured [        ] must contain data before calculations are carried out.

[ New Discharge ]

**RIVER DOWNSTREAM OF DISCHARGE**

| Mean quality | 3.16 |
|---|---|
| Standard deviation of quality | 2.10 |
| 90-percentile quality | 5.53 |
| 95-percentile quality | 7.05 |
| 99-percentile quality | 10.13 |

**DISCHARGE QUALITY**

| Mean quality | 3.03 |
|---|---|
| Standard deviation of quality | 0.82 |
| 95-percentile quality | 4.52 |
| 99-percentile quality | 5.35 |
| 99.5-percentile quality | 5.60 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 1.3 Total Nitrogen

Monte Carlo Method

File  Base Data  Further Data  Results  Help  About

| Name of discharge | Muntons Trade Effluent - Current Discharge |
| Name of river | River Gipping |
| Name of determinand | Total Nitrogen |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 7.18 |
| Standard deviation of river quality | 0.598 |
| 90-percentile | 7.96 |

⊙ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.015 |
| Standard deviation of flow | 0.003 |
| Mean quality | 9.996 |
| Standard deviation of quality | 3.585 |
| ... or 95-percentile | 16.67 |

⊙ Calculate effect of input discharge quality

Fields coloured [      ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 7.33 |
| Standard deviation of quality | 0.61 |
| 90-percentile quality | 8.15 |
| 95-percentile quality | 8.40 |
| 99-percentile quality | 8.89 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 10.15 |
| Standard deviation of quality | 3.56 |
| 95-percentile quality | 16.80 |
| 99-percentile quality | 20.87 |
| 99.5-percentile quality | 22.14 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 1.4    pH

| Monte Carlo Method | | | | | — □ × |
| --- | --- | --- | --- | --- |

File  Base Data  Further Data  Results  Help  About

| Name of discharge | Muntons Trade Effluent - Current Discharge |
| --- | --- |
| Name of river | River Gipping |
| Name of determinand | pH |

**UPSTREAM RIVER DATA**

| | |
| --- | --- |
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 7.79 |
| Standard deviation of river quality | 0.167929 |
| 90-percentile | 8.01 |

⊙ Calculate required discharge quality

**DISCHARGE DATA**

| | |
| --- | --- |
| Mean flow | 0.015 |
| Standard deviation of flow | 0.003 |
| Mean quality | 7.745 |
| Standard deviation of quality | 0.179 |
| ... or 95-percentile | 8.04 |

⊙ Calculate effect of input discharge quality

Fields coloured [    ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
| --- | --- |
| Mean quality | 7.79 |
| Standard deviation of quality | 0.16 |
| 90-percentile quality | 7.99 |
| 95-percentile quality | 8.06 |
| 99-percentile quality | 8.15 |

**DISCHARGE QUALITY**

| | |
| --- | --- |
| Mean quality | 7.75 |
| Standard deviation of quality | 0.18 |
| 95-percentile quality | 8.05 |
| 99-percentile quality | 8.16 |
| 99.5-percentile quality | 8.20 |

Differences between the above values and the corresponding
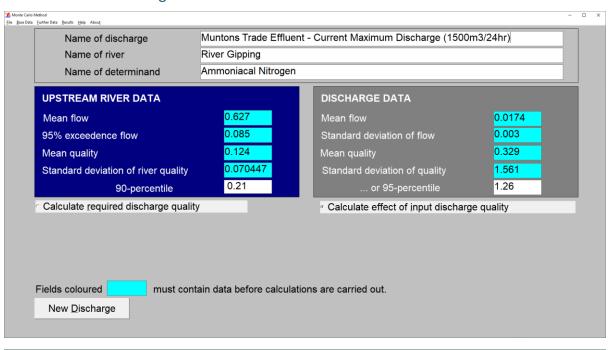input data are due to the effect of the Monte Carlo sample.

## 1.5 Temperature



**Monte Carlo Method**

File  Base Data  Further Data  Results  Help  About

| | |
|---|---|
| Name of discharge | Muntons Trade Effluent - Current Discharge |
| Name of river | River Gipping |
| Name of determinand | Temperature |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 17.3 |
| Standard deviation of river quality | 1.346105 |
| 90-percentile | 19.05 |

◦ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.015 |
| Standard deviation of flow | 0.003 |
| Mean quality | 19.844 |
| Standard deviation of quality | 3.014 |
| ... or 95-percentile | 25.15 |

◦ Calculate effect of input discharge quality

Fields coloured [     ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 17.45 |
| Standard deviation of quality | 1.28 |
| 90-percentile quality | 19.12 |
| 95-percentile quality | 19.64 |
| 99-percentile quality | 20.39 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 19.99 |
| Standard deviation of quality | 3.00 |
| 95-percentile quality | 25.23 |
| 99-percentile quality | 27.73 |
| 99.5-percentile quality | 28.44 |

Differences between the above values and the corresponding input data are due to the effect of the Monte Carlo sample.

## 2.0    Trade Effluent – Maximum Current discharge (1500m3/day)

### 2.1    Ammoniacal Nitrogen

Monte Carlo Method

File   Base Data   Further Data   Results   Help   About

| Name of discharge | Muntons Trade Effluent - Current Maximum Discharge (1500m3/24hr) |
|---|---|
| Name of river | River Gipping |
| Name of determinand | Ammoniacal Nitrogen |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 0.124 |
| Standard deviation of river quality | 0.070447 |
| 90-percentile | 0.21 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.0174 |
| Standard deviation of flow | 0.003 |
| Mean quality | 0.329 |
| Standard deviation of quality | 1.561 |
| ... or 95-percentile | 1.26 |

⦿ Calculate effect of input discharge quality

Fields coloured [        ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 0.14 |
| Standard deviation of quality | 0.09 |
| 90-percentile quality | 0.23 |
| 95-percentile quality | 0.29 |
| 99-percentile quality | 0.47 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 0.32 |
| Standard deviation of quality | 0.85 |
| 95-percentile quality | 1.31 |
| 99-percentile quality | 3.97 |
| 99.5-percentile quality | 5.37 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 2.2    BOD (Calculated)

| Name of discharge | Muntons Trade Effluent - Current Maximum Discharge (1500m3/24hr) |
| Name of river | River Gipping |
| Name of determinand | BOD |

### UPSTREAM RIVER DATA

| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 3.14 |
| Standard deviation of river quality | 2.172188 |
| 90-percentile | 5.75 |

○ Calculate required discharge quality

### DISCHARGE DATA

| Mean flow | 0.0174 |
| Standard deviation of flow | 0.003 |
| Mean quality | 2.995 |
| Standard deviation of quality | 0.82 |
| ... or 95-percentile | 4.50 |

⊙ Calculate effect of input discharge quality

Fields coloured [ ] must contain data before calculations are carried out.

New Discharge

### RIVER DOWNSTREAM OF DISCHARGE

| Mean quality | 3.16 |
| Standard deviation of quality | 2.08 |
| 90-percentile quality | 5.53 |
| 95-percentile quality | 7.03 |
| 99-percentile quality | 9.97 |

### DISCHARGE QUALITY

| Mean quality | 3.03 |
| Standard deviation of quality | 0.82 |
| 95-percentile quality | 4.52 |
| 99-percentile quality | 5.35 |
| 99.5-percentile quality | 5.60 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 2.3 Total Nitrogen

**Monte Carlo Method**

File  Base Data  Further Data  Results  Help  About

| Name of discharge | Muntons Trade Effluent - Current Maximum Discharge (1500m3/24hr) |
|---|---|
| Name of river | River Gipping |
| Name of determinand | Total Nitrogen |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 7.18 |
| Standard deviation of river quality | 0.598 |
| 90-percentile | 7.96 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.0174 |
| Standard deviation of flow | 0.003 |
| Mean quality | 9.996 |
| Standard deviation of quality | 3.585 |
| ... or 95-percentile | 16.67 |

◦ Calculate effect of input discharge quality

Fields coloured [        ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 7.35 |
| Standard deviation of quality | 0.62 |
| 90-percentile quality | 8.17 |
| 95-percentile quality | 8.46 |
| 99-percentile quality | 9.00 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 10.15 |
| Standard deviation of quality | 3.56 |
| 95-percentile quality | 16.80 |
| 99-percentile quality | 20.87 |
| 99.5-percentile quality | 22.14 |

Differences between the above values and the corresponding input data are due to the effect of the Monte Carlo sample.

## 2.4    pH

**Monte Carlo Method**

File  Base Data  Further Data  Results  Help  About

| Name of discharge | Muntons Trade Effluent - Current Maximum Discharge (1500m3/24hr) |
|---|---|
| Name of river | River Gipping |
| Name of determinand | pH |

**UPSTREAM RIVER DATA**

| Mean flow | 0.627 |
|---|---|
| 95% exceedence flow | 0.085 |
| Mean quality | 7.79 |
| Standard deviation of river quality | 0.167929 |
| 90-percentile | 8.01 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| Mean flow | 0.0174 |
|---|---|
| Standard deviation of flow | 0.003 |
| Mean quality | 7.745 |
| Standard deviation of quality | 0.179 |
| ... or 95-percentile | 8.04 |

○ Calculate effect of input discharge quality

Fields coloured [    ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| Mean quality | 7.79 |
|---|---|
| Standard deviation of quality | 0.16 |
| 90-percentile quality | 7.99 |
| 95-percentile quality | 8.05 |
| 99-percentile quality | 8.15 |

**DISCHARGE QUALITY**

| Mean quality | 7.75 |
|---|---|
| Standard deviation of quality | 0.18 |
| 95-percentile quality | 8.05 |
| 99-percentile quality | 8.16 |
| 99.5-percentile quality | 8.20 |

Differences between the above values and the corresponding input data are due to the effect of the Monte Carlo sample.

## 2.5  Temperature



| Monte Carlo Method | | | − □ × |
|---|---|---|---|

File  Base Data  Further Data  Results  Help  About

| Name of discharge | Muntons Trade Effluent - Current Maximum Discharge (1500m3/24hr) |
|---|---|
| Name of river | River Gipping |
| Name of determinand | Temperature |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 17.3 |
| Standard deviation of river quality | 1.346105 |
| 90-percentile | 19.05 |

◦ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.0174 |
| Standard deviation of flow | 0.003 |
| Mean quality | 19.844 |
| Standard deviation of quality | 3.014 |
| ... or 95-percentile | 25.15 |

◦ Calculate effect of input discharge quality

Fields coloured [        ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 17.47 |
| Standard deviation of quality | 1.28 |
| 90-percentile quality | 19.13 |
| 95-percentile quality | 19.63 |
| 99-percentile quality | 20.43 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 19.99 |
| Standard deviation of quality | 3.00 |
| 95-percentile quality | 25.23 |
| 99-percentile quality | 27.73 |
| 99.5-percentile quality | 28.44 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 3.0   Muntons Trade Effluent – Maximum proposed discharge

### 3.1   Ammoniacal Nitrogen

| Name of discharge | Muntons Trade Effluent - Maximum Proposed Discharge (2500m3/24hr) |
| Name of river | River Gipping |
| Name of determinand | Ammoniacal Nitrogen |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 0.124 |
| Standard deviation of river quality | 0.070447 |
| 90-percentile | 0.21 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.0289 |
| Standard deviation of flow | 0.003 |
| Mean quality | 0.329 |
| Standard deviation of quality | 1.561 |
| ... or 95-percentile | 1.26 |

⦿ Calculate effect of input discharge quality

Fields coloured [     ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 0.14 |
| Standard deviation of quality | 0.12 |
| 90-percentile quality | 0.24 |
| 95-percentile quality | 0.30 |
| 99-percentile quality | 0.54 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 0.32 |
| Standard deviation of quality | 0.85 |
| 95-percentile quality | 1.31 |
| 99-percentile quality | 3.97 |
| 99.5-percentile quality | 5.37 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.

## 3.2    BOD (Calculated)

**Monte Carlo Method**

File   Base Data   Further Data   Results   Help   About

| | |
|---|---|
| Name of discharge | Muntons Trade Effluent - Current Maximum Discharge (2500m3/24hr) |
| Name of river | River Gipping |
| Name of determinand | BOD |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 3.14 |
| Standard deviation of river quality | 2.172188 |
| 90-percentile | 5.75 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.0289 |
| Standard deviation of flow | 0.003 |
| Mean quality | 2.995 |
| Standard deviation of quality | 0.82 |
| ... or 95-percentile | 4.50 |

● Calculate effect of input discharge quality

Fields coloured [     ]  must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 3.15 |
| Standard deviation of quality | 2.00 |
| 90-percentile quality | 5.39 |
| 95-percentile quality | 6.94 |
| 99-percentile quality | 9.82 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 3.03 |
| Standard deviation of quality | 0.82 |
| 95-percentile quality | 4.52 |
| 99-percentile quality | 5.35 |
| 99.5-percentile quality | 5.60 |

Differences between the above values and the corresponding
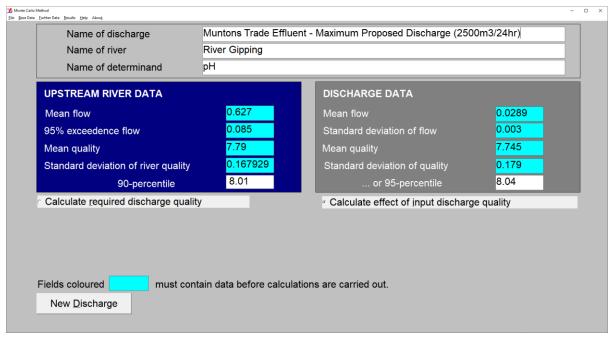input data are due to the effect of the Monte Carlo sample.

## 3.3 Total Nitrogen



**Monte Carlo Method**

File  Base Data  Further Data  Results  Help  About

| | |
|---|---|
| Name of discharge | Muntons Trade Effluent - Maximum Proposed Discharge (2500m3/24hr) |
| Name of river | River Gipping |
| Name of determinand | Total Nitrogen |

**UPSTREAM RIVER DATA**

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 7.18 |
| Standard deviation of river quality | 0.598 |
| 90-percentile | 7.96 |

Calculate required discharge quality

**DISCHARGE DATA**

| | |
|---|---|
| Mean flow | 0.0289 |
| Standard deviation of flow | 0.003 |
| Mean quality | 9.996 |
| Standard deviation of quality | 3.585 |
| ... or 95-percentile | 16.67 |

Calculate effect of input discharge quality

Fields coloured [    ] must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| | |
|---|---|
| Mean quality | 7.46 |
| Standard deviation of quality | 0.70 |
| 90-percentile quality | 8.35 |
| 95-percentile quality | 8.73 |
| 99-percentile quality | 9.69 |

**DISCHARGE QUALITY**

| | |
|---|---|
| Mean quality | 10.15 |
| Standard deviation of quality | 3.56 |
| 95-percentile quality | 16.80 |
| 99-percentile quality | 20.87 |
| 99.5-percentile quality | 22.14 |

Differences between the above values and the corresponding input data are due to the effect of the Monte Carlo sample.

## 3.4    pH

**Monte Carlo Method**

File  Base Data  Further Data  Results  Help  About

| Name of discharge | Muntons Trade Effluent - Maximum Proposed Discharge (2500m3/24hr) |
| Name of river | River Gipping |
| Name of determinand | pH |

**UPSTREAM RIVER DATA**

| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 7.79 |
| Standard deviation of river quality | 0.167929 |
| 90-percentile | 8.01 |

○ Calculate required discharge quality

**DISCHARGE DATA**

| Mean flow | 0.0289 |
| Standard deviation of flow | 0.003 |
| Mean quality | 7.745 |
| Standard deviation of quality | 0.179 |
| ... or 95-percentile | 8.04 |

⦿ Calculate effect of input discharge quality

Fields coloured ▢ must contain data before calculations are carried out.

New Discharge

**RIVER DOWNSTREAM OF DISCHARGE**

| Mean quality | 7.79 |
| Standard deviation of quality | 0.15 |
| 90-percentile quality | 7.98 |
| 95-percentile quality | 8.04 |
| 99-percentile quality | 8.15 |

**DISCHARGE QUALITY**

| Mean quality | 7.75 |
| Standard deviation of quality | 0.18 |
| 95-percentile quality | 8.05 |
| 99-percentile quality | 8.16 |
| 99.5-percentile quality | 8.20 |

Differences between the above values and the corresponding input data are due to the effect of the Monte Carlo sample.

## 3.5    Temperature

**Monte Carlo Method**

File  Base Data  Further Data  Results  Help  About

| | |
|---|---|
| Name of discharge | Muntons Trade Effluent - Maximum Proposed Discharge (2500m3/24hr) |
| Name of river | River Gipping |
| Name of determinand | Temperature |

### UPSTREAM RIVER DATA

| | |
|---|---|
| Mean flow | 0.627 |
| 95% exceedence flow | 0.085 |
| Mean quality | 17.3 |
| Standard deviation of river quality | 1.346105 |
| 90-percentile | 19.05 |

○ Calculate required discharge quality

### DISCHARGE DATA

| | |
|---|---|
| Mean flow | 0.0289 |
| Standard deviation of flow | 0.003 |
| Mean quality | 19.844 |
| Standard deviation of quality | 3.014 |
| ... or 95-percentile | 25.15 |

● Calculate effect of input discharge quality

Fields coloured [    ] must contain data before calculations are carried out.

New Discharge

### RIVER DOWNSTREAM OF DISCHARGE

| | |
|---|---|
| Mean quality | 17.56 |
| Standard deviation of quality | 1.27 |
| 90-percentile quality | 19.24 |
| 95-percentile quality | 19.73 |
| 99-percentile quality | 20.70 |

### DISCHARGE QUALITY

| | |
|---|---|
| Mean quality | 19.99 |
| Standard deviation of quality | 3.00 |
| 95-percentile quality | 25.23 |
| 99-percentile quality | 27.73 |
| 99.5-percentile quality | 28.44 |

Differences between the above values and the corresponding
input data are due to the effect of the Monte Carlo sample.