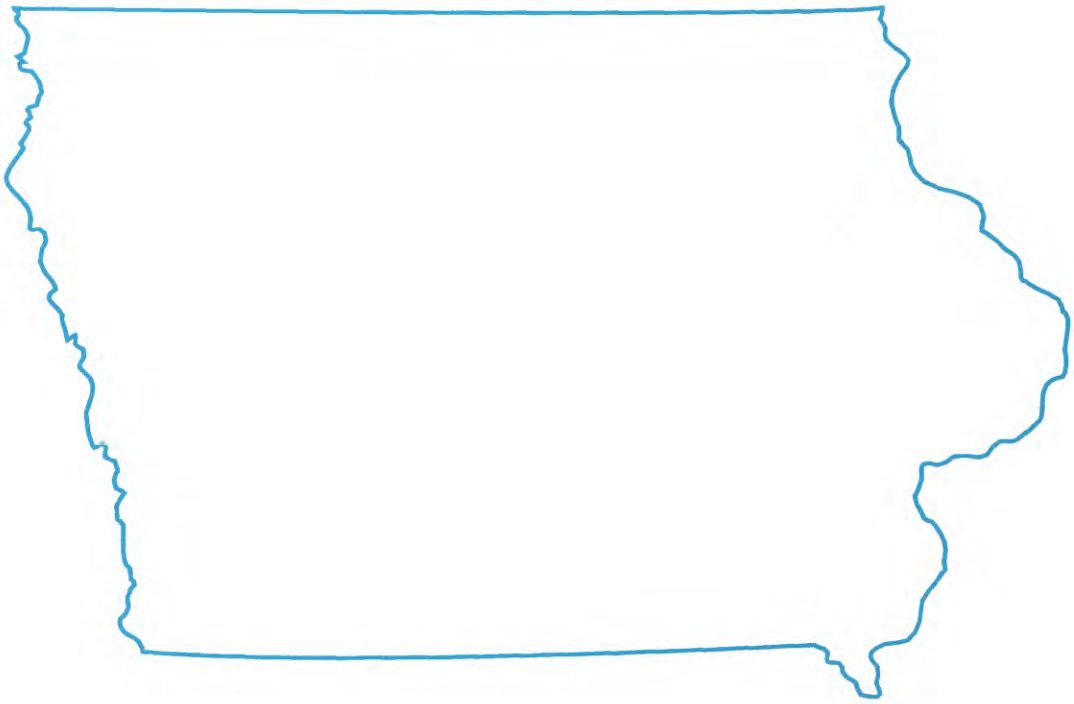
# Water Resources Data
# Iowa
# Water Year 1993



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-93-1
Prepared in cooperation with the Iowa Department of
Natural Resources (Geological Survey Bureau),
Iowa Department of Transportation and with
Federal agencies

# CALENDAR FOR WATER YEAR 1993

## 1992

### OCTOBER

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

### NOVEMBER

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | | | | | |

### DECEMBER

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

## 1993

### JANUARY

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | | | | | | |

### FEBRUARY

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | | | | | | |

### MARCH

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |

### APRIL

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | |

### MAY

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

### JUNE

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

### JULY

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

### AUGUST

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | | | | |

### SEPTEMBER

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | | |

# CONVERSION FACTORS AND VERTICAL DATUM

| Multiply | By | To obtain |
|---|---|---|
| | *Length* | |
| inch (in.) | $2.54 \times 10^{1}$ | millimeter |
| | $2.54 \times 10^{-2}$ | meter |
| foot (ft) | $3.048 \times 10^{-1}$ | meter |
| mile (mi) | $1.609 \times 10^{0}$ | kilometer |
| | *Area* | |
| acre | $4.047 \times 10^{3}$ | square meter |
| | $4.047 \times 10^{-1}$ | square hectometer |
| | $4.047 \times 10^{-3}$ | square kilometer |
| square mile ($mi^2$) | $2.590 \times 10^{0}$ | square kilometer |
| | *Volume* | |
| gallon (gal) | $3.785 \times 10^{0}$ | liter |
| | $3.785 \times 10^{0}$ | cubic decimeter |
| | $3.785 \times 10^{-3}$ | cubic meter |
| million gallons (Mgal) | $3.785 \times 10^{3}$ | cubic meter |
| | $3.785 \times 10^{-3}$ | cubic hectometer |
| cubic foot ($ft^3$) | $2.832 \times 10^{1}$ | cubic decimeter |
| | $2.832 \times 10^{-2}$ | cubic meter |
| cubic–foot–per–second day [($ft^3$/s) d] | $2.447 \times 10^{3}$ | cubic meter |
| | $2.447 \times 10^{-3}$ | cubic hectometer |
| acre–foot (acre–ft) | $1.233 \times 10^{3}$ | cubic meter |
| | $1.233 \times 10^{-3}$ | cubic hectometer |
| | $1.233 \times 10^{-6}$ | cubic kilometer |
| | *Flow* | |
| cubic foot per second ($ft^3$/s) | $2.832 \times 10^{1}$ | liter per second |
| | $2.832 \times 10^{1}$ | cubic decimeter per second |
| | $2.832 \times 10^{-2}$ | cubic meter per second |
| gallon per minute (gal/min) | $6.309 \times 10^{-2}$ | liter per second |
| | $6.309 \times 10^{-2}$ | cubic decimeter per second |
| | $6.309 \times 10^{-5}$ | cubic meter per second |
| million gallons per day (Mgal/d) | $4.381 \times 10^{1}$ | cubic decimeter per second |
| | $4.381 \times 10^{-2}$ | cubic meter per second |
| | *Mass* | |
| ton (short) | $9.072 \times 10^{-1}$ | megagram or metric ton |

*Sea level:* In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first–order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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