

DNRC WATER CALCULATION GUIDE

Volume Standards in ARM 36.12.115

Domestic Use for one household (up to 5 people).....1 AF/YR
Lawn, garden, shrubbery, and shelterbelts.....2.5 AF/acre

Stockwater: An animal unit (AU) is a measurement of livestock numbers. A cow and calf pair is one animal unit. Weaned animals are counted as one animal unit each.

$$1 \text{ AU} = 15 \text{ GPD} = 0.017 \text{ AF/YEAR}$$

$$\text{Number of AUs} \times 0.017 = \text{AF/YEAR}$$

$$\text{Number of AUs} \times 0.017 \div 365 \times \text{Days} = \text{AF/Period of Use}$$

Irrigation: See AF/acre irrigation standards per climatic area in ARM 36.12.115.

Deviations outside the standards will require information supporting the requested amount.

Animal Unit Equivalents Defined in ARM 36.12.102

1 Beef Cow.....1 AU	3 Pigs.....1 AU
1 Dairy Cow.....1.5 AU	5 Sheep.....1 AU
1 Horse.....1.5 AU	300 Chickens.....1 AU

Water Conversion Table

Abbreviations

GPM = Gallons Per Minute CFS = Cubic Feet per Second AF = Acre-Feet MI = Miner's Inch

Conversions

1 Cubic foot of water equals	7.48 Gallons
1 AF of water equals	1 foot of water on 1 acre
	325,851 Gallons
	43,560 Cubic feet
1 CFS equals	448.8 GPM
	1.98 AF per day
	40 Miner's inches
1 GPM equals	1,440 Gallons per 24-hour day
	1.61 AF per year
1 Surface Acre equals	Size of area in square feet \div 43,560 sq ft

QUICK CONVERSIONS

$$\text{MI} \times 11.22 = \text{GPM}$$

$$\text{CFS} \times 40 = \text{MI}$$

$$\text{MI} \div 40 = \text{CFS}$$

$$\text{CFS} \times 448.8 = \text{GPM}$$

$$\text{MI} \times 0.0495 = \text{AF/DAY}$$

$$\text{CFS} \times 1.98 = \text{AF/DAY}$$

$$\text{GPM} \div 11.22 = \text{MI}$$

$$\text{AF/DAY} \div 1.98 = \text{CFS}$$

$$\text{GPM} \div 448.8 = \text{CFS}$$

$$\text{AF/DAY} \times 226.67 = \text{GPM}$$

$$\text{GPM} \div 226.67 = \text{AF/DAY}$$

$$\text{AF/DAY} \div 0.0495 = \text{MI}$$

Planning Guide for Water Use			
Type of Animal	Number of AU	Type of Animal	Number of AU
1 Bison.....	1.5 AU	5 Deer.....	1 AU
1 Horse.....	1.5 AU	50 Geese.....	1 AU
1 Elk.....	1 AU	50 Ducks.....	1 AU
2 Emus.....	1 AU	100 Turkeys.....	1 AU
2 Ostrich.....	1 AU	100 Rabbits.....	1 AU
3 Llamas.....	1 AU	125 Prairie Dogs.....	1 AU
TYPE OF USE			GALLONS PER DAY
<u>Camps/ Parks:</u> .....Construction, semipermanent (per worker)			.....50
.....Overnight with flush toilets (per person)			.....25
.....Trailers w/ individual bath, no sewer connection (per trailer)			.....25
.....Trailers with individual baths connected to sewer (per person)			.....50
<u>Dwellings:</u> .....Cottages (seasonal) (per resident)			.....50
..... Multiple-family apartments (per resident)			.....60
..... Single family (per resident)			.....100
..... Hotels / Motels (two persons per room)			.....60
<u>Institutions:</u> .....Hospitals (per bed)			.....250-400
.....Other (per person)			.....75-125
.....Churches (per person)			.....20
<u>Laundromats:</u> (gallons per day per customer) .....			.....50
<u>Picnic Facilities</u>.....With bathhouse /flush toilets (per person)			.....20
.....With toilet facilities only (per person)			.....10
<u>Restaurants:</u> (per patron) .....			.....10
<u>Schools:</u> (per person) .....			.....15-25
<u>Road Service Stations:</u> (per vehicle) .....			.....10
<u>Department Stores:</u> (per toilet room).....			.....400
<u>Workers:</u> .....Construction (per person per shift)			.....50
..... Offices (per person per shift)			.....15
.....Factories: (per person per shift)			.....15-35
<u>Swimming Pools:</u> (per swimmer.....			.....10
(include capacity and evaporation of pool)			
<u>Country Club:</u> (per user present).....			.....25