

WATER POLICY INTERIM COMMITTEE

September 13, 2011

GENERAL WATER USE REQUIREMENTS

This Table does not include flow rate but these uses are based on using 35 GPM or less.

PURPOSE	DIVERTED (acre-feet per yr)	CONSUMED (acre-feet per yr)	ASSUMPTIONS
DOMESTIC (in-house use)	.3 AF	.03 AF	- 2.5 persons / household - 100 gpd / household - 10% consumed w/standard drain field ¹
STOCK ➤ Per animal unit ➤ 100 animal units	.017 AF 1.7 AF	.017 AF 1.7 AF	- 100% consumed
LAWN & GARDEN ➤ ¼ acre ➤ ½ acre ➤ 1 acre	Billings / Bozeman 0.6 AF / 0.5 AF 1.2 AF / 1.0 AF 2.4 AF / 2.0AF	Billings / Bozeman 0.5 AF / 0.4 AF 1.0 AF / 0.8 AF 2.0 AF / 1.6 AF	- 80% efficiency - Billings – 24” net irrigation (IWR) - Bozeman – 19” net irrigation (IWR)
IRRIGATION ➤ 1 acre ➤ 4.34 acres ➤ 7 acres ²	1.4 - 2.3 AF 10.0 AF 10.0 AF	.98 – 1.61 AF 7.0 AF 7.0 AF	- Pasture grass - Pertinent climatic area - 70% sprinkler efficiency
COMMERCIAL			- 10% consumed ³ - Does not include landscape water
➤ Restaurants (75 seats) ➤ Motels (100 rms) ➤ Retail / Mini-Mall	.67 AF 5.6 AF .08 AF	.067 AF .56 AF .008 AF	- 8 gpd / patron - 50 gpd / 2-person - 5 retail shops w/ 2 sales persons each - 8 gpd / salesperson

¹ Consumption could vary dramatically with use of community wastewater systems.

² The flow rate necessary for 7 acres of irrigation will vary and may exceed 35 GPM depending on the type of sprinkler system.

³ Consumption could vary dramatically with use of community wastewater systems.

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PURPOSE	DIVERTED (acre-feet per yr)	CONSUMED (acre-feet per yr)	ASSUMPTIONS
INDUSTRIAL			- 100% consumed
➤ Dust control	3.31 AF	3.31 AF	- 2 (3500 gal) trucks = 7000 gpd for 154 days = 1,780,000 gals.
➤ Gravel Operation (crushing/pug mill)	8.4 AF	8.4 AF	- Crusher 360,000 gals. (10 hrs/day for 60 days) - Dust Control 1,300,000 gals. (200 days) - Pug Mill 1,080,000 gals. (10 hrs./day for 60 days)

DEVELOPMENT OPTIONS UNDER 10 AF USING EXEMPT WELLS

(Volumes of water are based on table above but do not include flow rates)

Example 1:

10 lot subdivision with 2.5 persons and ¼ acre lawn and garden per household

Billings

.3 AF/household x 10 homes = 3 AF (in-house use)

.6 AF/household x 10 homes = 6 AF lawn and garden

Total diverted volume = 9 AF

Bozeman

.3 AF/household x 10 = 3 AF (in-house use)

.5 AF/household x 10 = 5 AF lawn and garden

Total diverted volume = 8 AF

Example 2:

6 lot subdivision with 2.5 persons and ½ acre lawn and garden per household

Billings

.3 AF/household x 6 homes = 1.8 AF (in-house use)

1.2 AF/household x 6 homes = 7.2 AF lawn & garden

Total Diverted Volume = 9 AF

Bozeman

.3 AF/household x 6 homes = 1.8 AF (in-house use)

1 AF/household x 6 homes = 6 AF lawn and garden

Total Diverted Volume = 7.8 AF

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Example 3:

20 lot subdivision with 2.5 persons and 3,500ft² (0.08 acres) lawn & garden per household

Billings

.3 AF/household x 20 homes = 6 AF (in-house use)

.19 AF/household x 20 homes = 3.8 AF

Total Diverted Volume = 9.8 AF

Bozeman

.3 AF/household x 20 homes = 6 AF (in-house use)

.16 AF/household x 20 homes = 3.2 AF lawn and garden

Total Diverted Volume = 9.2 AF

Example 4:

Commercial development with a mini-mall, 1 restaurant (75 seats), and ¼ acre lawn & garden

Billings

.08 AF = Mini-mall

.67 AF = Restaurant

.6 AF = lawn and garden

Total Diverted Volume = 1.35 AF

Bozeman

.08 AF = Mini-mall

.67 AF = Restaurant

.5 AF = lawn & garden

Total Diverted Volume = 1.25