

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
<b>DOMESTIC</b> (in-house use)	.3 AF	.03 AF	- 2.5 persons / household - 100 gpd / household - 10% consumed w/standard drain field <sup>1</sup>
<b>STOCK</b> ➤ Per animal unit ➤ 100 animal units	.017 AF 1.7 AF	.017 AF 1.7 AF	- 100% consumed
<b>LAWN &amp; GARDEN</b> ➤ 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)
<b>IRRIGATION</b> ➤ 1 acre ➤ 4.34 acres ➤ 7 acres <sup>2</sup>	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
<b>COMMERCIAL</b>			- 10% consumed <sup>3</sup> - 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

<sup>1</sup> Consumption could vary dramatically with use of community wastewater systems.

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

<sup>3</sup> 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
<b>INDUSTRIAL</b>			- 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 3,500ft<sup>2</sup> (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**