# Appendix 2-K

Detailed Water Budget Details

*Los Molinos Subbasin*

Sustainable Groundwater Management Act

# Groundwater Sustainability Plan Appendix 2-K Water Budget

**January 2022**

**Prepared For:**

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# 1 DETAILED HISTORICAL WATER BUDGET

## 1.1 Surface Water System Water Budget Results

### 1.1.1 Inflows

#### 1.1.1.1 *Surface Water Inflow by Water Source Type*

Per the GSP Regulations, surface inflows must be reported by water source type. According to the Regulations (23 CCR § 351(ak)):

> *"Water source type" represents the source from which water is derived to meet the applied beneficial uses, including groundwater, recycled water, reused water, and surface water sources identified as Central Valley Project, the State Water Project, the Colorado River Project, local supplies, and local imported supplies.*

Major surface water inflows to the Los Molinos Subbasin are summarized below according to water source type.

##### 1.1.1.1.1 Local Supplies

Local supply inflows to the Los Molinos Subbasin predominantly include runoff from upgradient small watersheds adjacent to the Subbasin and surface inflows along Sacramento River, Antelope Creek, little Antelope Creek, Dye Creek, Mill Creek and Deer Creek. A portion of these local supplies are diverted by local water rights users for beneficial use within the Subbasin.

##### 1.1.1.1.2 Central Valley Project

There are no significant Central Valley Project (CVP) inflows to the Los Molinos Subbasin.

##### 1.1.1.1.3 Summary of Surface Inflows

The annual volume of surface water inflows is summarized by water source type in **Table 1** and **Figure 1**. Between 1990 and 2018, total surface inflows from all sources averaged approximately 630 thousand acre-feet (taf) per year. These flows were all sourced from local supplies.

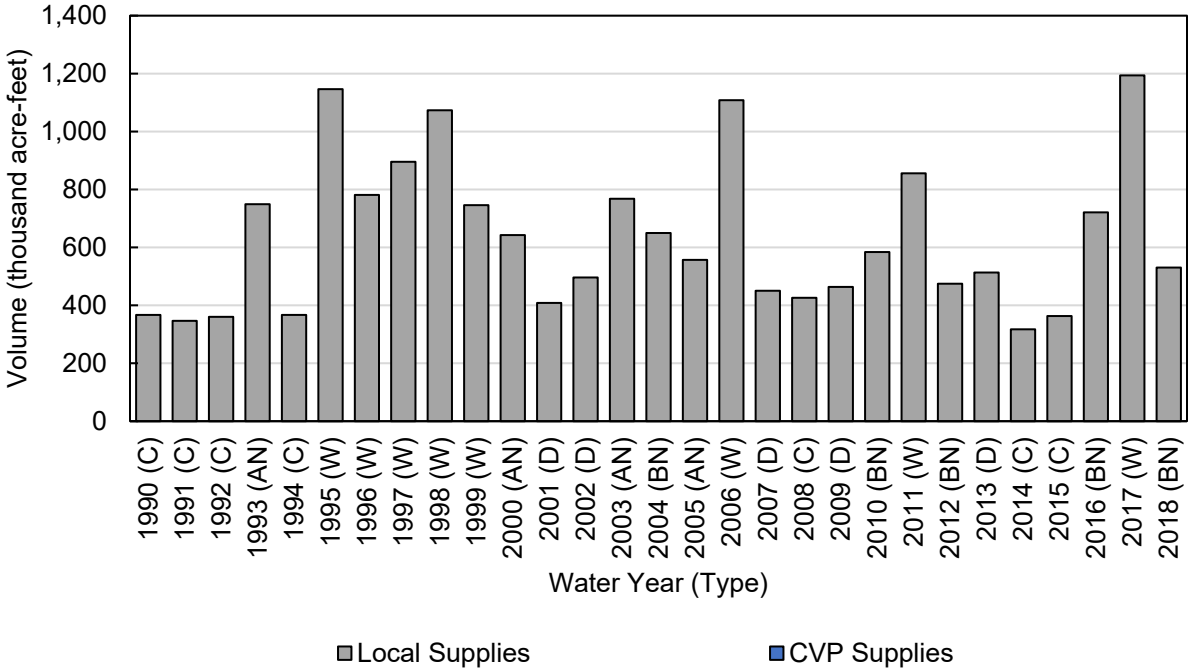


**Figure 1. Los Molinos Subbasin Historical Surface Water Inflows, by Water Source Type**

**Table 1. Los Molinos Subbasin Historical Surface Water Inflows, by Water Source Type (acre-feet)**

| Water Year (Type) | | CVP Supplies | Local Supplies | Total |
|---|---|---|---|---|
| 1990 (C) | | 0 | 370,000 | 370,000 |
| 1991 (C) | | 0 | 350,000 | 350,000 |
| 1992 (C) | | 0 | 360,000 | 360,000 |
| 1993 (AN) | | 0 | 750,000 | 750,000 |
| 1994 (C) | | 0 | 370,000 | 370,000 |
| 1995 (W) | | 0 | 1,100,000 | 1,100,000 |
| 1996 (W) | | 0 | 780,000 | 780,000 |
| 1997 (W) | | 0 | 900,000 | 900,000 |
| 1998 (W) | | 0 | 1,100,000 | 1,100,000 |
| 1999 (W) | | 0 | 750,000 | 750,000 |
| 2000 (AN) | | 0 | 640,000 | 640,000 |
| 2001 (D) | | 0 | 410,000 | 410,000 |
| 2002 (D) | | 0 | 500,000 | 500,000 |
| 2003 (AN) | | 0 | 770,000 | 770,000 |
| 2004 (BN) | | 0 | 650,000 | 650,000 |
| 2005 (AN) | | 0 | 560,000 | 560,000 |
| 2006 (W) | | 0 | 1,100,000 | 1,100,000 |
| 2007 (D) | | 0 | 450,000 | 450,000 |
| 2008 (C) | | 0 | 430,000 | 430,000 |
| 2009 (D) | | 0 | 460,000 | 460,000 |
| 2010 (BN) | | 0 | 580,000 | 580,000 |
| 2011 (W) | | 0 | 860,000 | 860,000 |
| 2012 (BN) | | 0 | 470,000 | 470,000 |
| 2013 (D) | | 0 | 510,000 | 510,000 |
| 2014 (C) | | 0 | 320,000 | 320,000 |
| 2015 (C) | | 0 | 360,000 | 360,000 |
| 2016 (BN) | | 0 | 720,000 | 720,000 |
| 2017 (W) | | 0 | 1,200,000 | 1,200,000 |
| 2018 (BN) | | 0 | 530,000 | 530,000 |
| Average (1990-2018) | | 0 | 630,000 | 630,000 |
| 1990-2018 | W | 0 | 970,000 | 970,000 |
| | AN | 0 | 680,000 | 680,000 |
| | BN | 0 | 590,000 | 590,000 |
| | D | 0 | 470,000 | 470,000 |
| | C | 0 | 360,000 | 360,000 |

#### 1.1.1.2 *Precipitation*

Precipitation estimates for the Los Molinos Subbasin are provided in **Table 2** and **Figure 2** by water use sector. Total precipitation is highly variable between years in the study area, ranging from approximately 150 taf (18.1inches) during average critically dry years to 290 taf (34.8 inches) during average wet years.

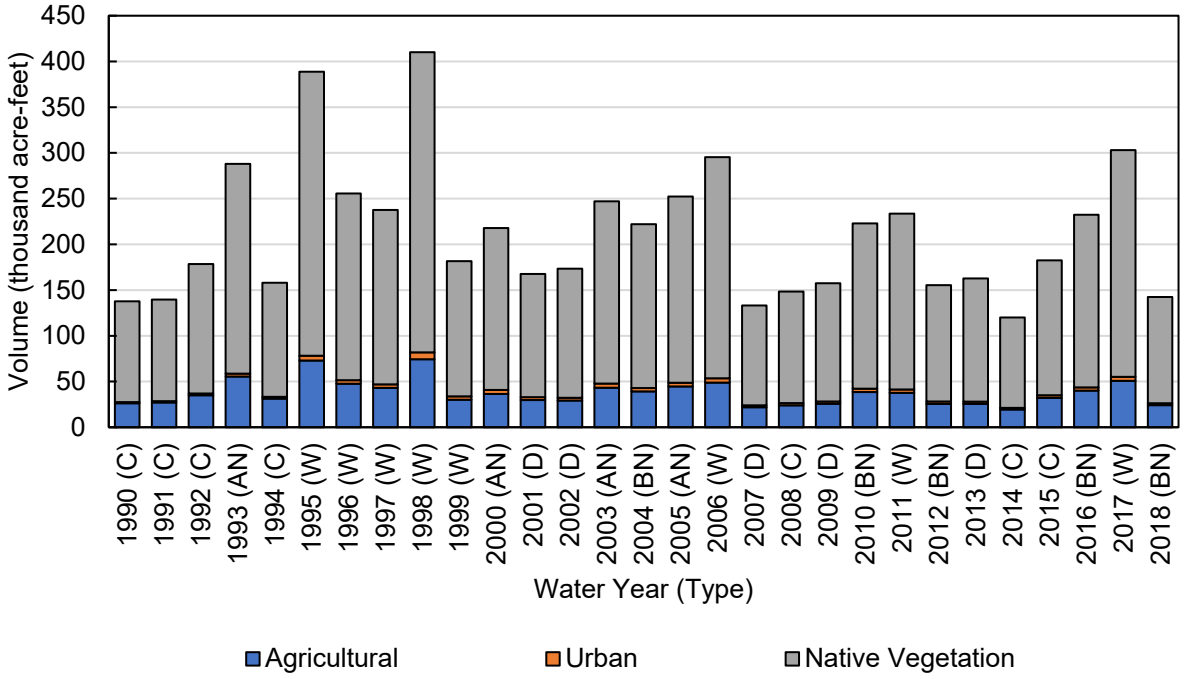


**Figure 2. Los Molinos Subbasin Historical Precipitation, by Water Use Sector**

**Table 2. Los Molinos Subbasin Historical Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 26,000 | 1,300 | 110,000 | 140,000 |
| 1991 (C) | | 27,000 | 1,400 | 110,000 | 140,000 |
| 1992 (C) | | 35,000 | 1,900 | 140,000 | 180,000 |
| 1993 (AN) | | 55,000 | 3,300 | 230,000 | 290,000 |
| 1994 (C) | | 31,000 | 1,900 | 120,000 | 160,000 |
| 1995 (W) | | 73,000 | 5,300 | 310,000 | 390,000 |
| 1996 (W) | | 48,000 | 3,900 | 200,000 | 260,000 |
| 1997 (W) | | 43,000 | 3,900 | 190,000 | 240,000 |
| 1998 (W) | | 74,000 | 7,500 | 330,000 | 410,000 |
| 1999 (W) | | 30,000 | 3,600 | 150,000 | 180,000 |
| 2000 (AN) | | 36,000 | 4,300 | 180,000 | 220,000 |
| 2001 (D) | | 30,000 | 3,200 | 130,000 | 170,000 |
| 2002 (D) | | 29,000 | 3,000 | 140,000 | 170,000 |
| 2003 (AN) | | 43,000 | 4,400 | 200,000 | 250,000 |
| 2004 (BN) | | 39,000 | 3,800 | 180,000 | 220,000 |
| 2005 (AN) | | 45,000 | 4,100 | 200,000 | 250,000 |
| 2006 (W) | | 49,000 | 4,700 | 240,000 | 300,000 |
| 2007 (D) | | 22,000 | 2,100 | 110,000 | 130,000 |
| 2008 (C) | | 24,000 | 2,400 | 120,000 | 150,000 |
| 2009 (D) | | 26,000 | 2,500 | 130,000 | 160,000 |
| 2010 (BN) | | 38,000 | 3,700 | 180,000 | 220,000 |
| 2011 (W) | | 38,000 | 3,600 | 190,000 | 230,000 |
| 2012 (BN) | | 26,000 | 2,600 | 130,000 | 160,000 |
| 2013 (D) | | 26,000 | 2,400 | 130,000 | 160,000 |
| 2014 (C) | | 20,000 | 1,700 | 99,000 | 120,000 |
| 2015 (C) | | 32,000 | 2,800 | 150,000 | 180,000 |
| 2016 (BN) | | 40,000 | 3,500 | 190,000 | 230,000 |
| 2017 (W) | | 51,000 | 4,300 | 250,000 | 300,000 |
| 2018 (BN) | | 24,000 | 2,100 | 120,000 | 140,000 |
| Average (1990-2018) | | 37,000 | 3,300 | 170,000 | 210,000 |
| 1990-2018 | W | 51,000 | 4,600 | 230,000 | 290,000 |
| | AN | 45,000 | 4,000 | 200,000 | 250,000 |
| | BN | 33,000 | 3,100 | 160,000 | 200,000 |
| | D | 26,000 | 2,700 | 130,000 | 160,000 |
| | C | 28,000 | 1,900 | 120,000 | 150,000 |

#### 1.1.1.3 *Groundwater Extraction by Water Use Sector*

Total groundwater extraction in the Los Molinos Subbasin represents a combination of groundwater pumping to support agricultural and urban water demands, including rural residential use, and groundwater uptake by crops, urban vegetation, and native vegetation.

Estimates of groundwater pumping by water use sector are provided in **Figure 3** and **Table 3**. The majority of groundwater pumping in the Los Molinos Subbasin is used to meet agricultural demand, averaging 16 taf per year. Groundwater pumping for urban use is approximately 0.730 taf per year. The total groundwater extraction varies from about 11 taf in above-normal years to 24 taf in critically dry years based on variability in surface water supplies, precipitation, and crop water demand.

When groundwater is near the land surface, groundwater uptake can also be a source of supply for vegetation. Estimates of groundwater uptake by vegetation are provided in **Figure 4** and **Table 4**. The majority of groundwater uptake is consumed directly by agricultural crops and native vegetation, totaling 9 taf and 7.7 af per year, on average.

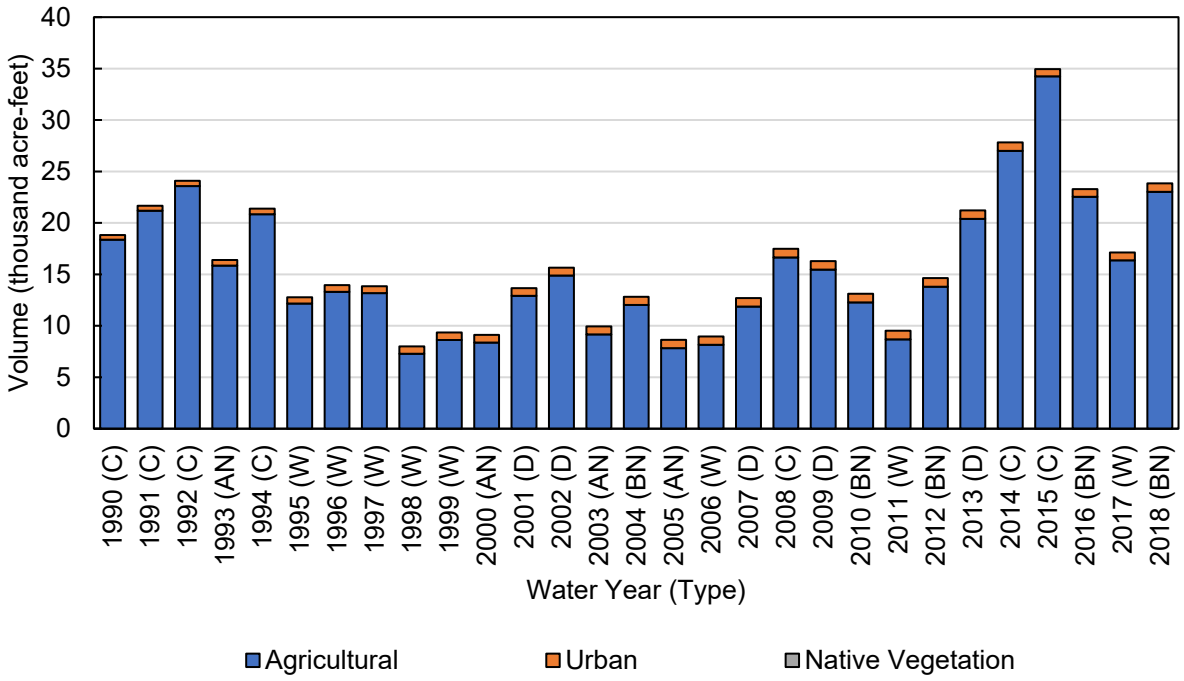


**Figure 3. Los Molinos Subbasin Historical Groundwater Pumping, by Water Use Sector**

**Table 3. Los Molinos Subbasin Historical Groundwater Pumping, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 18,000 | 450 | 0 | 19,000 |
| 1991 (C) | | 21,000 | 480 | 0 | 22,000 |
| 1992 (C) | | 24,000 | 510 | 0 | 24,000 |
| 1993 (AN) | | 16,000 | 530 | 0 | 16,000 |
| 1994 (C) | | 21,000 | 550 | 0 | 21,000 |
| 1995 (W) | | 12,000 | 600 | 0 | 13,000 |
| 1996 (W) | | 13,000 | 640 | 0 | 14,000 |
| 1997 (W) | | 13,000 | 670 | 0 | 14,000 |
| 1998 (W) | | 7,300 | 710 | 0 | 8,000 |
| 1999 (W) | | 8,600 | 740 | 0 | 9,400 |
| 2000 (AN) | | 8,400 | 740 | 0 | 9,100 |
| 2001 (D) | | 13,000 | 740 | 0 | 14,000 |
| 2002 (D) | | 15,000 | 760 | 0 | 16,000 |
| 2003 (AN) | | 9,200 | 780 | 0 | 9,900 |
| 2004 (BN) | | 12,000 | 800 | 0 | 13,000 |
| 2005 (AN) | | 7,800 | 810 | 0 | 8,600 |
| 2006 (W) | | 8,200 | 820 | 0 | 9,000 |
| 2007 (D) | | 12,000 | 820 | 0 | 13,000 |
| 2008 (C) | | 17,000 | 840 | 0 | 17,000 |
| 2009 (D) | | 15,000 | 830 | 0 | 16,000 |
| 2010 (BN) | | 12,000 | 840 | 0 | 13,000 |
| 2011 (W) | | 8,700 | 840 | 0 | 9,500 |
| 2012 (BN) | | 14,000 | 840 | 0 | 15,000 |
| 2013 (D) | | 20,000 | 830 | 0 | 21,000 |
| 2014 (C) | | 27,000 | 820 | 0 | 28,000 |
| 2015 (C) | | 34,000 | 700 | 0 | 35,000 |
| 2016 (BN) | | 23,000 | 740 | 0 | 23,000 |
| 2017 (W) | | 16,000 | 770 | 0 | 17,000 |
| 2018 (BN) | | 23,000 | 830 | 0 | 24,000 |
| Average (1990-2018) | | 16,000 | 730 | 0 | 16,000 |
| 1990-2018 | W | 11,000 | 720 | 0 | 12,000 |
| | AN | 10,000 | 720 | 0 | 11,000 |
| | BN | 17,000 | 810 | 0 | 18,000 |
| | D | 15,000 | 800 | 0 | 16,000 |
| | C | 23,000 | 620 | 0 | 24,000 |

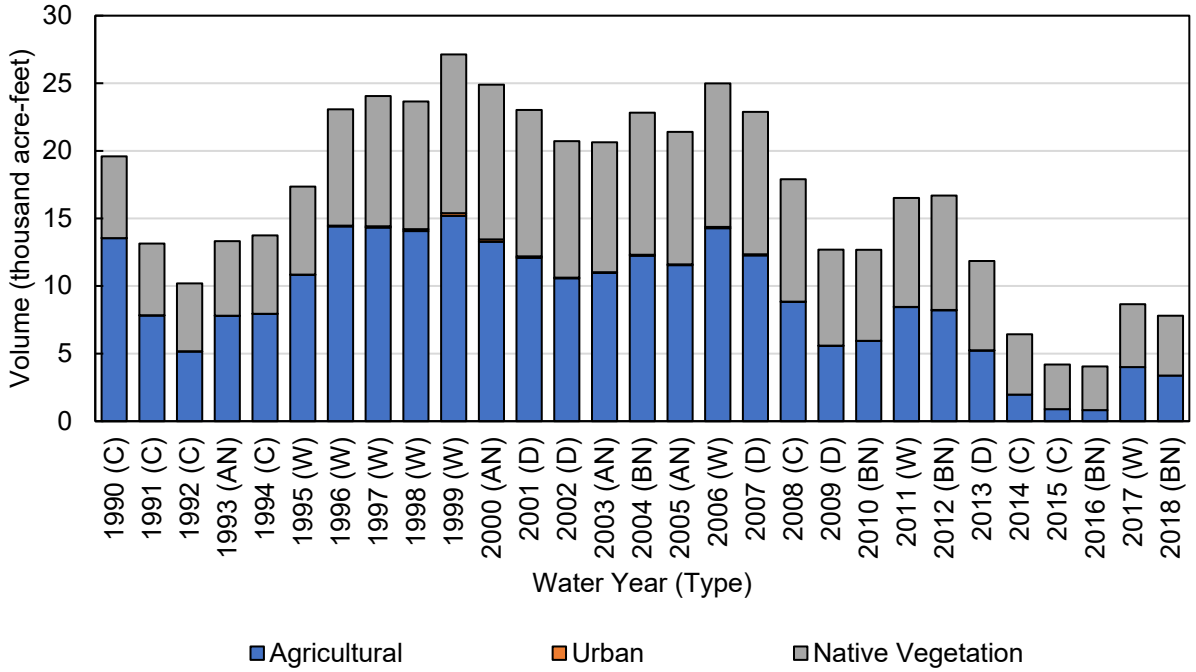


**Figure 1. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector**

**Table 1. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 14,000 | 10 | 6,000 | 20,000 |
| 1991 (C) | | 7,800 | 10 | 5,300 | 13,000 |
| 1992 (C) | | 5,200 | 10 | 5,000 | 10,000 |
| 1993 (AN) | | 7,800 | 10 | 5,500 | 13,000 |
| 1994 (C) | | 7,900 | 10 | 5,800 | 14,000 |
| 1995 (W) | | 11,000 | 20 | 6,500 | 17,000 |
| 1996 (W) | | 14,000 | 60 | 8,600 | 23,000 |
| 1997 (W) | | 14,000 | 100 | 9,600 | 24,000 |
| 1998 (W) | | 14,000 | 140 | 9,400 | 24,000 |
| 1999 (W) | | 15,000 | 200 | 12,000 | 27,000 |
| 2000 (AN) | | 13,000 | 180 | 11,000 | 25,000 |
| 2001 (D) | | 12,000 | 110 | 11,000 | 23,000 |
| 2002 (D) | | 11,000 | 50 | 10,000 | 21,000 |
| 2003 (AN) | | 11,000 | 50 | 9,600 | 21,000 |
| 2004 (BN) | | 12,000 | 70 | 11,000 | 23,000 |
| 2005 (AN) | | 12,000 | 60 | 9,800 | 21,000 |
| 2006 (W) | | 14,000 | 90 | 11,000 | 25,000 |
| 2007 (D) | | 12,000 | 80 | 11,000 | 23,000 |
| 2008 (C) | | 8,800 | 20 | 9,100 | 18,000 |
| 2009 (D) | | 5,600 | 10 | 7,100 | 13,000 |
| 2010 (BN) | | 5,900 | 10 | 6,700 | 13,000 |
| 2011 (W) | | 8,400 | 20 | 8,100 | 17,000 |
| 2012 (BN) | | 8,200 | 20 | 8,500 | 17,000 |
| 2013 (D) | | 5,200 | 10 | 6,600 | 12,000 |
| 2014 (C) | | 2,000 | 0 | 4,500 | 6,400 |
| 2015 (C) | | 890 | 0 | 3,300 | 4,200 |
| 2016 (BN) | | 820 | 0 | 3,200 | 4,100 |
| 2017 (W) | | 4,000 | 0 | 4,700 | 8,700 |
| 2018 (BN) | | 3,400 | 0 | 4,400 | 7,800 |
| Average (1990-2018) | | 9,000 | 50 | 7,700 | 17,000 |
| 1990-2018 | W | 12,000 | 80 | 8,700 | 21,000 |
| | AN | 11,000 | 80 | 9,100 | 20,000 |
| | BN | 6,100 | 20 | 6,700 | 13,000 |
| | D | 9,200 | 50 | 9,000 | 18,000 |
| | C | 6,600 | 10 | 5,600 | 12,000 |

#### 1.1.1.4 *Groundwater Discharge to Surface Waterways*

Groundwater discharge to surface water, as described herein, represents a gain, or increase of flow, in waterways that traverse or flow along the boundary of the Los Molinos Subbasin. Groundwater discharge in the Los Molinos Subbasin is calculated from the Tehama IHM as the net groundwater outflow to water reaches (i.e., groundwater discharge) in excess of groundwater inflows from waterway reaches (i.e., seepage). The total volume of estimated groundwater discharge to surface water is summarized in **Figure 5** and **Table 5**, averaging approximately 2 taf per year.

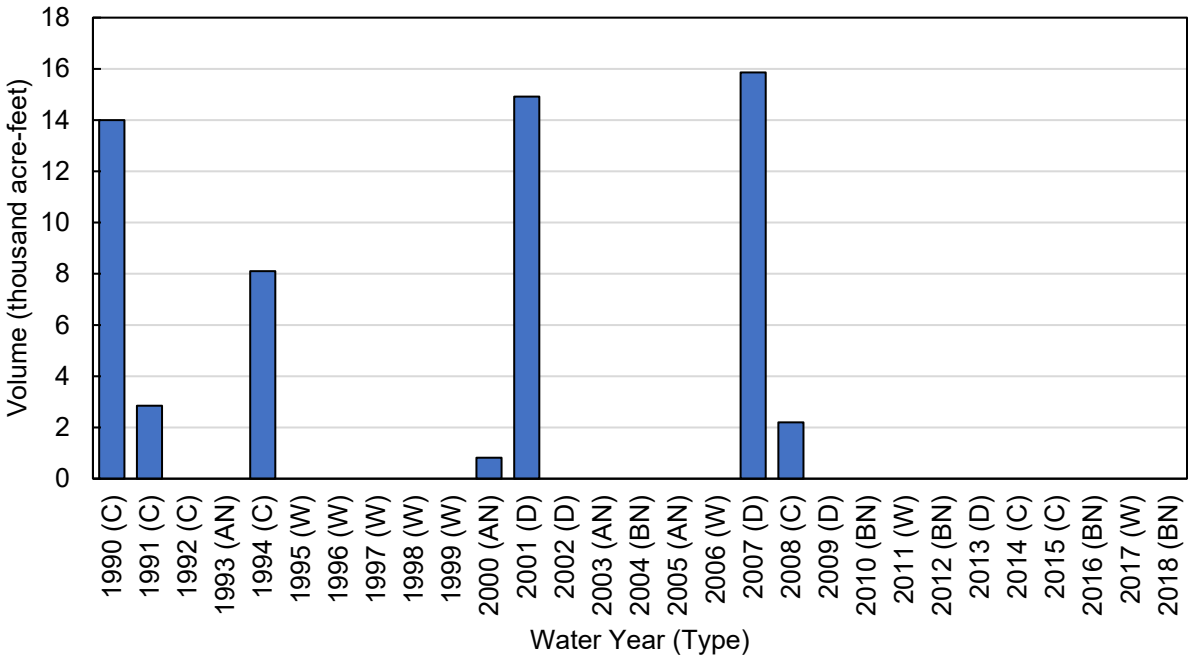


**Figure 5. Los Molinos Subbasin Historical Groundwater Discharge to Surface Water**

**Table 5. Los Molinos Subbasin Historical Groundwater Discharge to Surface Water (acre-feet)**

| Water Year (Type) | | Groundwater Discharge to Surface Water |
|---|---|---|
| 1990 (C) | | 14,000 |
| 1991 (C) | | 2,900 |
| 1992 (C) | | 0 |
| 1993 (AN) | | 0 |
| 1994 (C) | | 8,100 |
| 1995 (W) | | 0 |
| 1996 (W) | | 0 |
| 1997 (W) | | 0 |
| 1998 (W) | | 0 |
| 1999 (W) | | 0 |
| 2000 (AN) | | 820 |
| 2001 (D) | | 15,000 |
| 2002 (D) | | 0 |
| 2003 (AN) | | 0 |
| 2004 (BN) | | 0 |
| 2005 (AN) | | 0 |
| 2006 (W) | | 0 |
| 2007 (D) | | 16,000 |
| 2008 (C) | | 2,200 |
| 2009 (D) | | 0 |
| 2010 (BN) | | 0 |
| 2011 (W) | | 0 |
| 2012 (BN) | | 0 |
| 2013 (D) | | 0 |
| 2014 (C) | | 0 |
| 2015 (C) | | 0 |
| 2016 (BN) | | 0 |
| 2017 (W) | | 0 |
| 2018 (BN) | | 0 |
| Average (1990-2018) | | 2,000 |
| 1990-2018 | W | 0 |
| | AN | 210 |
| | BN | 0 |
| | D | 6,200 |
| | C | 3,900 |

### 1.1.2 Outflows

#### 1.1.2.1 *Evapotranspiration by Water Use Sector*

Evapotranspiration (ET) by water use sector is reported in **Figure 6 through Figure 9**, and **Table 6 through Table 9**. First, total ET is reported, followed by ET from applied water (ET of water actively applied from surface water deliveries or groundwater pumping), ET of groundwater uptake (ET of shallow water extracted directly by vegetation), and ET from precipitation (ET of water supplied through rainfall).

Total ET varies between years, with the lowest observed in 1991, 2001, and 2014, at approximately 150 taf, and greatest in multiple years, at approximately 180 taf. Agricultural ET tends to increase slightly in drier years due to increased climatic demand, while the ET of native vegetation typically decreases due to reduced water supply.

ET of applied water occurs primarily from agricultural land, averaging about 31 taf in above-normal and wet years and about 37 to 42 taf in years classified as below normal, dry, or critical. Urban ET of applied water is lower and relatively constant between years, averaging about 250 af per year. Native vegetation and agricultural crops in the Los Molinos Subbasin also directly consume shallow groundwater to meet a portion of their consumptive use requirements. ET of groundwater uptake by native vegetation, agricultural crops total 9 and 7.7 taf per year, on average, respectively.

ET of precipitation generally follows the pattern of precipitation, with higher volumes occurring in wet years when more precipitation occurs. Across all water use sectors, ET of precipitation in the Los Molinos Subbasin averages about 120 and 130 taf in wet and above-normal years, respectively and 110 taf in dry and critical water years. Much of the total ET of precipitation results from the large acreage of native vegetation in the Los Molinos Subbasin, though significant volumes result from agricultural and urban areas as well.

Evaporation from rivers, streams, and canals in the Los Molinos Subbasin is reported in **Figure 10** and **Table -10**. The total volume is relatively small and constant between years, averaging about 2.1 taf per year. Evaporation from upgradient small watersheds is minimal, and is also not considered to substantially contribute to the subbasin SWS water budget.

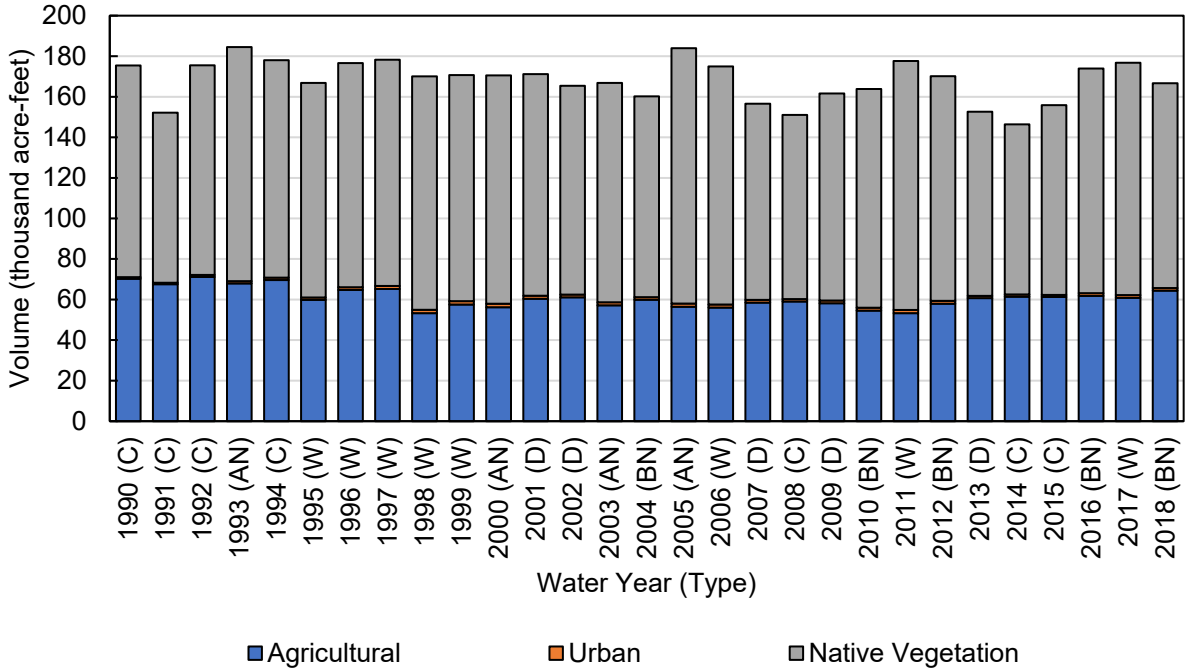


**Figure 6. Los Molinos Subbasin Historical Total Evapotranspiration, by Water Use Sector**

**Table 6. Los Molinos Subbasin Historical Total Evapotranspiration, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 70,000 | 790 | 100,000 | 180,000 |
| 1991 (C) | | 68,000 | 740 | 84,000 | 150,000 |
| 1992 (C) | | 71,000 | 950 | 100,000 | 180,000 |
| 1993 (AN) | | 68,000 | 1,100 | 120,000 | 180,000 |
| 1994 (C) | | 70,000 | 1,100 | 110,000 | 180,000 |
| 1995 (W) | | 60,000 | 1,200 | 110,000 | 170,000 |
| 1996 (W) | | 65,000 | 1,400 | 110,000 | 180,000 |
| 1997 (W) | | 65,000 | 1,500 | 110,000 | 180,000 |
| 1998 (W) | | 53,000 | 1,700 | 120,000 | 170,000 |
| 1999 (W) | | 58,000 | 1,700 | 110,000 | 170,000 |
| 2000 (AN) | | 56,000 | 1,700 | 110,000 | 170,000 |
| 2001 (D) | | 60,000 | 1,500 | 110,000 | 170,000 |
| 2002 (D) | | 61,000 | 1,300 | 100,000 | 170,000 |
| 2003 (AN) | | 57,000 | 1,500 | 110,000 | 170,000 |
| 2004 (BN) | | 60,000 | 1,200 | 99,000 | 160,000 |
| 2005 (AN) | | 56,000 | 1,600 | 130,000 | 180,000 |
| 2006 (W) | | 56,000 | 1,500 | 120,000 | 170,000 |
| 2007 (D) | | 59,000 | 1,300 | 97,000 | 160,000 |
| 2008 (C) | | 59,000 | 1,200 | 91,000 | 150,000 |
| 2009 (D) | | 58,000 | 1,400 | 100,000 | 160,000 |
| 2010 (BN) | | 55,000 | 1,400 | 110,000 | 160,000 |
| 2011 (W) | | 53,000 | 1,600 | 120,000 | 180,000 |
| 2012 (BN) | | 58,000 | 1,500 | 110,000 | 170,000 |
| 2013 (D) | | 61,000 | 1,100 | 91,000 | 150,000 |
| 2014 (C) | | 61,000 | 1,100 | 84,000 | 150,000 |
| 2015 (C) | | 61,000 | 1,100 | 94,000 | 160,000 |
| 2016 (BN) | | 62,000 | 1,300 | 110,000 | 170,000 |
| 2017 (W) | | 61,000 | 1,300 | 110,000 | 180,000 |
| 2018 (BN) | | 64,000 | 1,300 | 100,000 | 170,000 |
| Average (1990-2018) | | 61,000 | 1,300 | 110,000 | 170,000 |
| 1990-2018 | W | 59,000 | 1,500 | 110,000 | 170,000 |
| | AN | 59,000 | 1,500 | 120,000 | 180,000 |
| | BN | 60,000 | 1,300 | 110,000 | 170,000 |
| | D | 60,000 | 1,300 | 100,000 | 160,000 |
| | C | 66,000 | 980 | 95,000 | 160,000 |

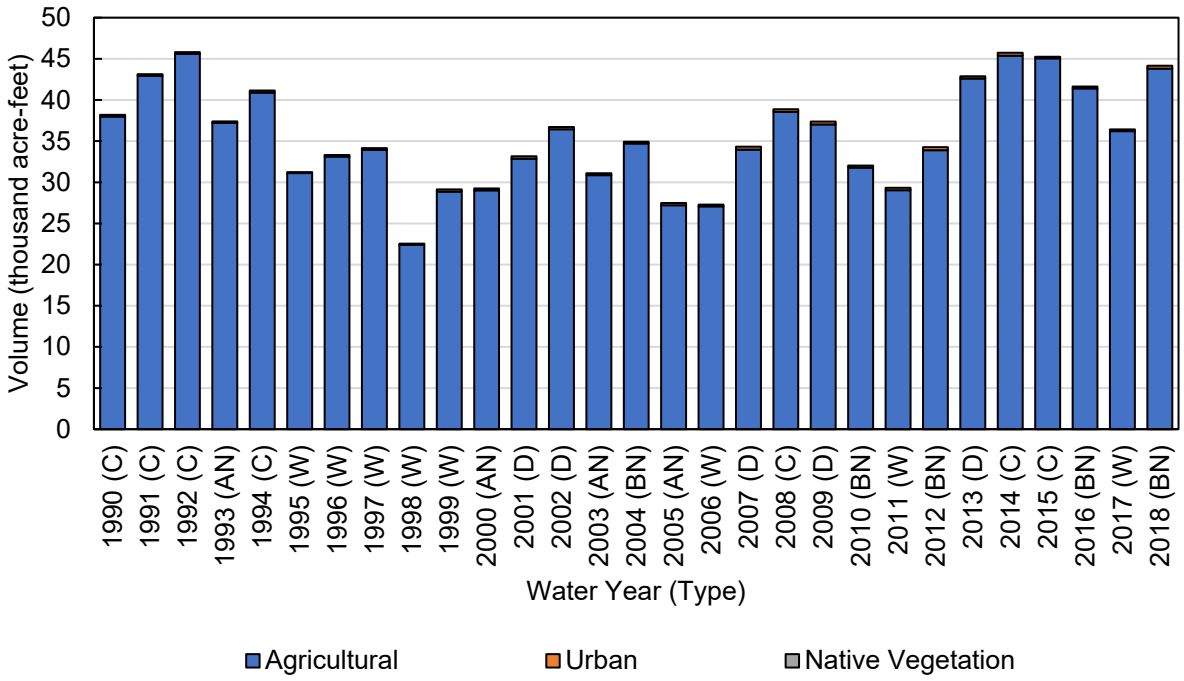


**Figure 7. Los Molinos Subbasin Historical Evapotranspiration of Applied Water, by Water Use Sector**

**Table 7. Los Molinos Subbasin Historical Evapotranspiration of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 38,000 | 210 | 0 | 38,000 |
| 1991 (C) | | 43,000 | 190 | 0 | 43,000 |
| 1992 (C) | | 46,000 | 200 | 0 | 46,000 |
| 1993 (AN) | | 37,000 | 160 | 0 | 37,000 |
| 1994 (C) | | 41,000 | 250 | 0 | 41,000 |
| 1995 (W) | | 31,000 | 120 | 0 | 31,000 |
| 1996 (W) | | 33,000 | 190 | 0 | 33,000 |
| 1997 (W) | | 34,000 | 220 | 0 | 34,000 |
| 1998 (W) | | 22,000 | 140 | 0 | 23,000 |
| 1999 (W) | | 29,000 | 270 | 0 | 29,000 |
| 2000 (AN) | | 29,000 | 240 | 0 | 29,000 |
| 2001 (D) | | 33,000 | 280 | 0 | 33,000 |
| 2002 (D) | | 36,000 | 270 | 0 | 37,000 |
| 2003 (AN) | | 31,000 | 220 | 0 | 31,000 |
| 2004 (BN) | | 35,000 | 210 | 0 | 35,000 |
| 2005 (AN) | | 27,000 | 270 | 0 | 27,000 |
| 2006 (W) | | 27,000 | 220 | 0 | 27,000 |
| 2007 (D) | | 34,000 | 360 | 0 | 34,000 |
| 2008 (C) | | 39,000 | 300 | 0 | 39,000 |
| 2009 (D) | | 37,000 | 340 | 0 | 37,000 |
| 2010 (BN) | | 32,000 | 260 | 0 | 32,000 |
| 2011 (W) | | 29,000 | 300 | 0 | 29,000 |
| 2012 (BN) | | 34,000 | 360 | 0 | 34,000 |
| 2013 (D) | | 43,000 | 280 | 0 | 43,000 |
| 2014 (C) | | 45,000 | 350 | 0 | 46,000 |
| 2015 (C) | | 45,000 | 210 | 0 | 45,000 |
| 2016 (BN) | | 41,000 | 230 | 0 | 42,000 |
| 2017 (W) | | 36,000 | 200 | 0 | 36,000 |
| 2018 (BN) | | 44,000 | 360 | 0 | 44,000 |
| Average (1990-2018) | | 36,000 | 250 | 0 | 36,000 |
| 1990-2018 | W | 30,000 | 210 | 0 | 30,000 |
| | AN | 31,000 | 220 | 0 | 31,000 |
| | BN | 37,000 | 280 | 0 | 37,000 |
| | D | 37,000 | 310 | 0 | 37,000 |
| | C | 42,000 | 240 | 0 | 43,000 |

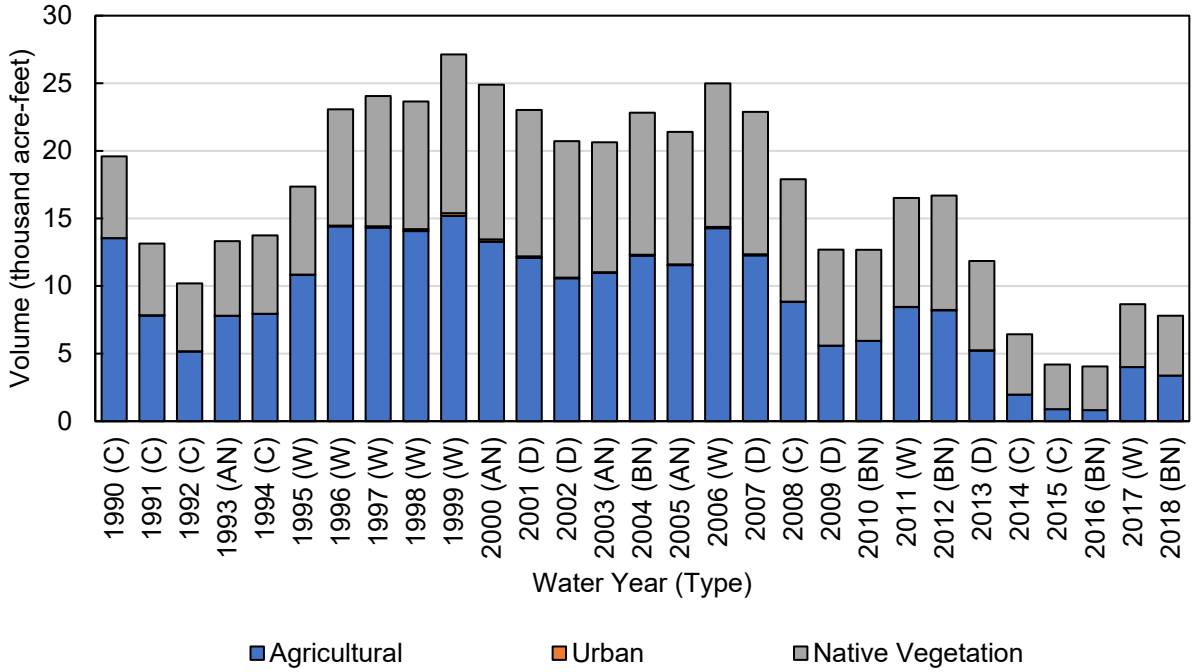


**Figure 2. Los Molinos Subbasin Evapotranspiration of Groundwater Uptake, by Water Use Sector**

**Table 2. Los Molinos Subbasin Evapotranspiration of Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 14,000 | 10 | 6,000 | 20,000 |
| 1991 (C) | | 7,800 | 10 | 5,300 | 13,000 |
| 1992 (C) | | 5,200 | 10 | 5,000 | 10,000 |
| 1993 (AN) | | 7,800 | 10 | 5,500 | 13,000 |
| 1994 (C) | | 7,900 | 10 | 5,800 | 14,000 |
| 1995 (W) | | 11,000 | 20 | 6,500 | 17,000 |
| 1996 (W) | | 14,000 | 60 | 8,600 | 23,000 |
| 1997 (W) | | 14,000 | 100 | 9,600 | 24,000 |
| 1998 (W) | | 14,000 | 140 | 9,400 | 24,000 |
| 1999 (W) | | 15,000 | 200 | 12,000 | 27,000 |
| 2000 (AN) | | 13,000 | 180 | 11,000 | 25,000 |
| 2001 (D) | | 12,000 | 110 | 11,000 | 23,000 |
| 2002 (D) | | 11,000 | 50 | 10,000 | 21,000 |
| 2003 (AN) | | 11,000 | 50 | 9,600 | 21,000 |
| 2004 (BN) | | 12,000 | 70 | 11,000 | 23,000 |
| 2005 (AN) | | 12,000 | 60 | 9,800 | 21,000 |
| 2006 (W) | | 14,000 | 90 | 11,000 | 25,000 |
| 2007 (D) | | 12,000 | 80 | 11,000 | 23,000 |
| 2008 (C) | | 8,800 | 20 | 9,100 | 18,000 |
| 2009 (D) | | 5,600 | 10 | 7,100 | 13,000 |
| 2010 (BN) | | 5,900 | 10 | 6,700 | 13,000 |
| 2011 (W) | | 8,400 | 20 | 8,100 | 17,000 |
| 2012 (BN) | | 8,200 | 20 | 8,500 | 17,000 |
| 2013 (D) | | 5,200 | 10 | 6,600 | 12,000 |
| 2014 (C) | | 2,000 | 0 | 4,500 | 6,400 |
| 2015 (C) | | 890 | 0 | 3,300 | 4,200 |
| 2016 (BN) | | 820 | 0 | 3,200 | 4,100 |
| 2017 (W) | | 4,000 | 0 | 4,700 | 8,700 |
| 2018 (BN) | | 3,400 | 0 | 4,400 | 7,800 |
| Average (1990-2018) | | 9,000 | 50 | 7,700 | 17,000 |
| 1990-2018 | W | 12,000 | 80 | 8,700 | 21,000 |
| | AN | 11,000 | 80 | 9,100 | 20,000 |
| | BN | 6,100 | 20 | 6,700 | 13,000 |
| | D | 9,200 | 50 | 9,000 | 18,000 |
| | C | 6,600 | 10 | 5,600 | 12,000 |

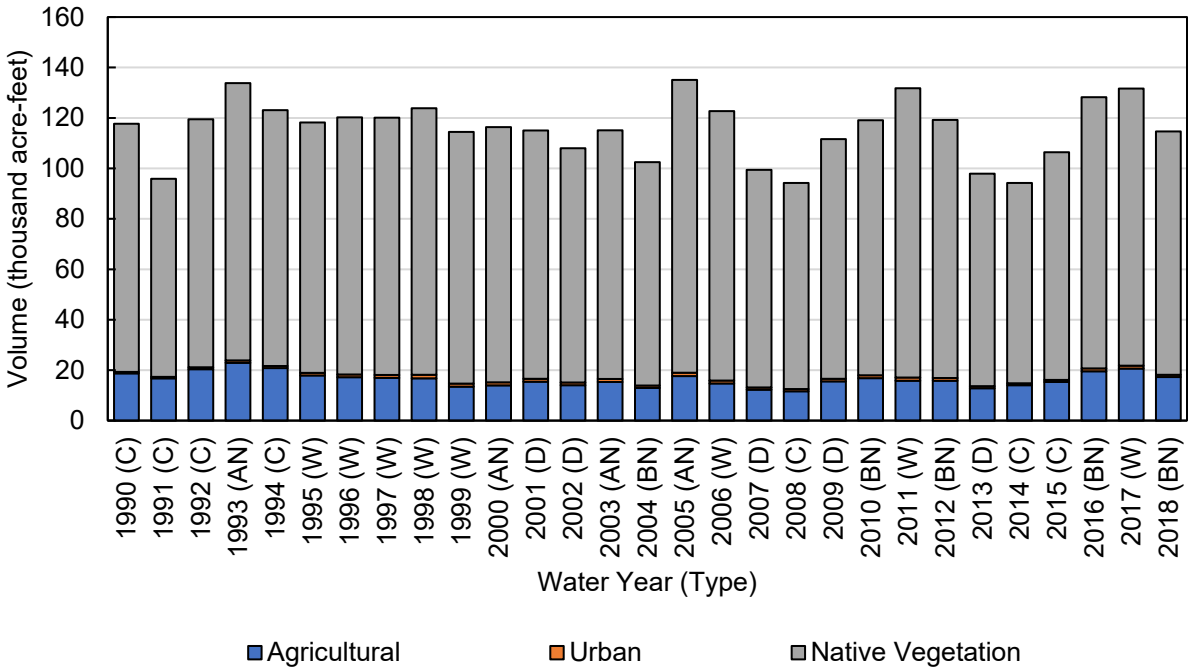


**Figure 9. Los Molinos Subbasin Historical Evapotranspiration of Precipitation, by Water Use Sector**

**Table 9. Los Molinos Subbasin Historical Evapotranspiration of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 19,000 | 570 | 98,000 | 120,000 |
| 1991 (C) | | 17,000 | 540 | 79,000 | 96,000 |
| 1992 (C) | | 20,000 | 740 | 98,000 | 120,000 |
| 1993 (AN) | | 23,000 | 950 | 110,000 | 130,000 |
| 1994 (C) | | 21,000 | 860 | 100,000 | 120,000 |
| 1995 (W) | | 18,000 | 1,000 | 99,000 | 120,000 |
| 1996 (W) | | 17,000 | 1,100 | 100,000 | 120,000 |
| 1997 (W) | | 17,000 | 1,200 | 100,000 | 120,000 |
| 1998 (W) | | 17,000 | 1,400 | 110,000 | 120,000 |
| 1999 (W) | | 13,000 | 1,200 | 100,000 | 110,000 |
| 2000 (AN) | | 14,000 | 1,300 | 100,000 | 120,000 |
| 2001 (D) | | 15,000 | 1,100 | 98,000 | 120,000 |
| 2002 (D) | | 14,000 | 1,000 | 93,000 | 110,000 |
| 2003 (AN) | | 15,000 | 1,200 | 99,000 | 120,000 |
| 2004 (BN) | | 13,000 | 960 | 89,000 | 100,000 |
| 2005 (AN) | | 18,000 | 1,300 | 120,000 | 140,000 |
| 2006 (W) | | 15,000 | 1,200 | 110,000 | 120,000 |
| 2007 (D) | | 12,000 | 890 | 86,000 | 99,000 |
| 2008 (C) | | 12,000 | 840 | 82,000 | 94,000 |
| 2009 (D) | | 16,000 | 1,000 | 95,000 | 110,000 |
| 2010 (BN) | | 17,000 | 1,200 | 100,000 | 120,000 |
| 2011 (W) | | 16,000 | 1,300 | 110,000 | 130,000 |
| 2012 (BN) | | 16,000 | 1,100 | 100,000 | 120,000 |
| 2013 (D) | | 13,000 | 810 | 84,000 | 98,000 |
| 2014 (C) | | 14,000 | 730 | 79,000 | 94,000 |
| 2015 (C) | | 15,000 | 840 | 90,000 | 110,000 |
| 2016 (BN) | | 20,000 | 1,100 | 110,000 | 130,000 |
| 2017 (W) | | 21,000 | 1,100 | 110,000 | 130,000 |
| 2018 (BN) | | 17,000 | 890 | 97,000 | 110,000 |
| Average (1990-2018) | | 16,000 | 1,000 | 98,000 | 120,000 |
| 1990-2018 | W | 17,000 | 1,200 | 110,000 | 120,000 |
| | AN | 17,000 | 1,200 | 110,000 | 130,000 |
| | BN | 16,000 | 1,000 | 99,000 | 120,000 |
| | D | 14,000 | 970 | 91,000 | 110,000 |
| | C | 17,000 | 730 | 90,000 | 110,000 |

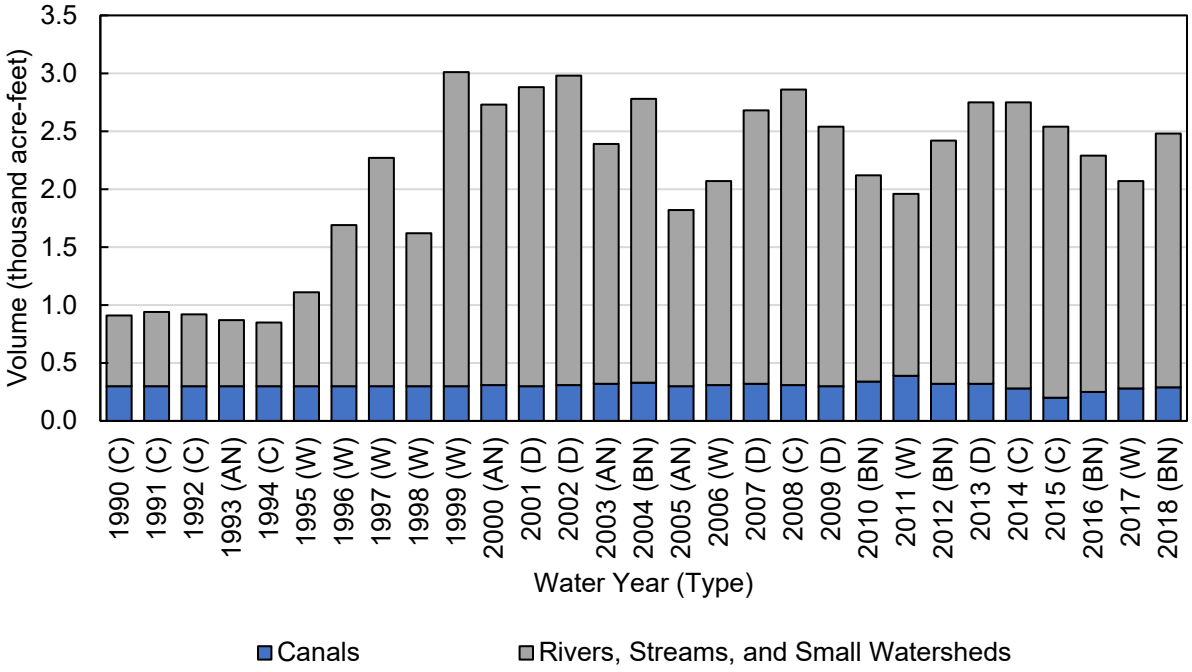


**Figure 10. Los Molinos Subbasin Historical Evaporation of Surface Water Sources**

**Table 10. Los Molinos Subbasin Historical Evaporation of Surface Water Sources, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|---|
| 1990 (C) | | 300 | 610 | 910 |
| 1991 (C) | | 300 | 640 | 940 |
| 1992 (C) | | 300 | 620 | 920 |
| 1993 (AN) | | 300 | 570 | 870 |
| 1994 (C) | | 300 | 550 | 850 |
| 1995 (W) | | 300 | 810 | 1,100 |
| 1996 (W) | | 300 | 1,400 | 1,700 |
| 1997 (W) | | 300 | 2,000 | 2,300 |
| 1998 (W) | | 300 | 1,300 | 1,600 |
| 1999 (W) | | 300 | 2,700 | 3,000 |
| 2000 (AN) | | 310 | 2,400 | 2,700 |
| 2001 (D) | | 300 | 2,600 | 2,900 |
| 2002 (D) | | 310 | 2,700 | 3,000 |
| 2003 (AN) | | 320 | 2,100 | 2,400 |
| 2004 (BN) | | 330 | 2,500 | 2,800 |
| 2005 (AN) | | 300 | 1,500 | 1,800 |
| 2006 (W) | | 310 | 1,800 | 2,100 |
| 2007 (D) | | 320 | 2,400 | 2,700 |
| 2008 (C) | | 310 | 2,600 | 2,900 |
| 2009 (D) | | 300 | 2,200 | 2,500 |
| 2010 (BN) | | 340 | 1,800 | 2,100 |
| 2011 (W) | | 390 | 1,600 | 2,000 |
| 2012 (BN) | | 320 | 2,100 | 2,400 |
| 2013 (D) | | 320 | 2,400 | 2,800 |
| 2014 (C) | | 280 | 2,500 | 2,800 |
| 2015 (C) | | 200 | 2,300 | 2,500 |
| 2016 (BN) | | 250 | 2,000 | 2,300 |
| 2017 (W) | | 280 | 1,800 | 2,100 |
| 2018 (BN) | | 290 | 2,200 | 2,500 |
| Average (1990-2018) | | 300 | 1,800 | 2,100 |
| 1990-2018 | W | 310 | 1,700 | 2,000 |
| | AN | 310 | 1,700 | 2,000 |
| | BN | 310 | 2,100 | 2,400 |
| | D | 310 | 2,500 | 2,800 |
| | C | 280 | 1,400 | 1,700 |

[1] Includes ET of riparian vegetation along rivers and streams.

#### 1.1.2.2 *Surface Water Outflow by Water Source Type*

Surface water outflows from the Los Molinos Subbasin are summarized in **Figure 11** and **Table 11** by water source type. In the Los Molinos Subbasin, local supply outflows primarily include outflows of runoff, tailwater, and net drainage from land surfaces, in addition to runoff from small watersheds and stream outflows to the Sacramento River. Local supply outflows average approximately 620 taf per year, and range from 430 taf or less in dry years 990 taf in wet years. Other surface water outflows that leave the subbasin include outflow of groundwater discharge to the Sacramento River, Antelope Creek, little Antelope Creek, Dye Creek, Mill Creek and Deer Creek. This water travels along each respective waterway as part of the flow in the river or creek.

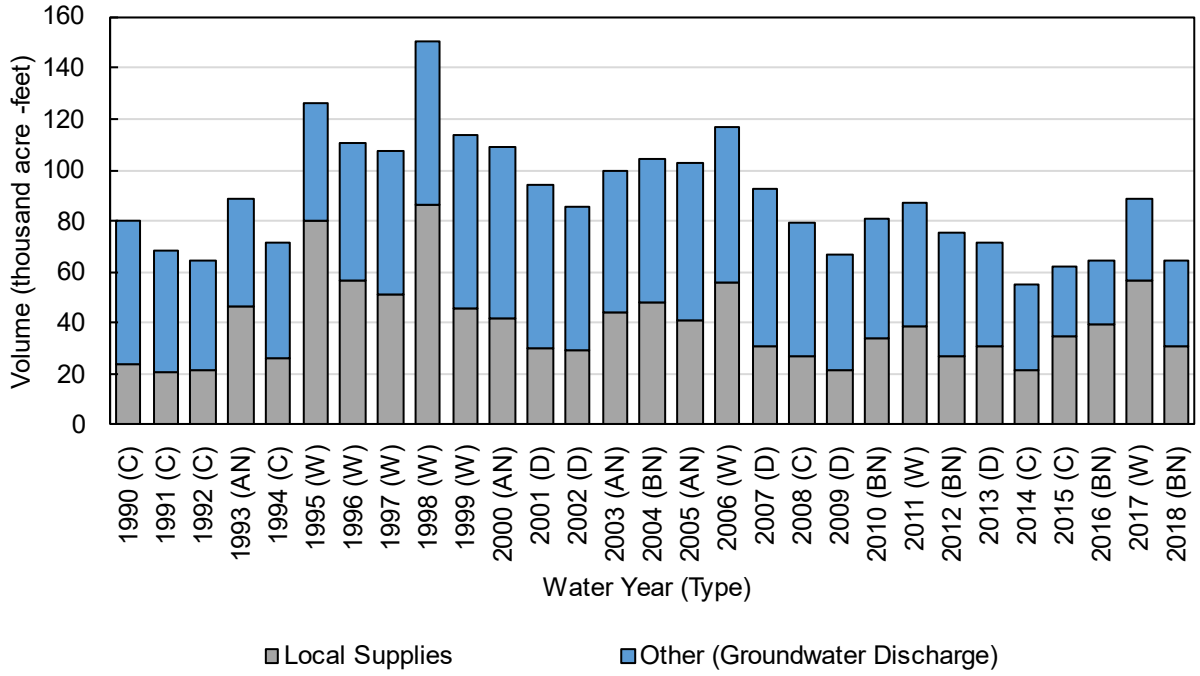


**Figure 11. Los Molinos Subbasin Historical Surface Water Outflows, by Water Source Type**

**Table 11. Los Molinos Subbasin Historical Surface Water Outflows, by Water Source Type (acre-feet)**

| Water Year (Type) | | CVP | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 0 | 330,000 | 14,000 | 340,000 |
| 1991 (C) | | 0 | 320,000 | 2,900 | 330,000 |
| 1992 (C) | | 0 | 340,000 | 0 | 340,000 |
| 1993 (AN) | | 0 | 750,000 | 0 | 750,000 |
| 1994 (C) | | 0 | 330,000 | 8,100 | 340,000 |
| 1995 (W) | | 0 | 1,200,000 | 0 | 1,200,000 |
| 1996 (W) | | 0 | 780,000 | 0 | 780,000 |
| 1997 (W) | | 0 | 890,000 | 0 | 890,000 |
| 1998 (W) | | 0 | 1,200,000 | 0 | 1,200,000 |
| 1999 (W) | | 0 | 710,000 | 0 | 710,000 |
| 2000 (AN) | | 0 | 640,000 | 820 | 640,000 |
| 2001 (D) | | 0 | 380,000 | 15,000 | 400,000 |
| 2002 (D) | | 0 | 470,000 | 0 | 470,000 |
| 2003 (AN) | | 0 | 760,000 | 0 | 760,000 |
| 2004 (BN) | | 0 | 660,000 | 0 | 660,000 |
| 2005 (AN) | | 0 | 560,000 | 0 | 560,000 |
| 2006 (W) | | 0 | 1,100,000 | 0 | 1,100,000 |
| 2007 (D) | | 0 | 410,000 | 16,000 | 420,000 |
| 2008 (C) | | 0 | 400,000 | 2,200 | 410,000 |
| 2009 (D) | | 0 | 420,000 | 0 | 420,000 |
| 2010 (BN) | | 0 | 560,000 | 0 | 560,000 |
| 2011 (W) | | 0 | 810,000 | 0 | 810,000 |
| 2012 (BN) | | 0 | 440,000 | 0 | 440,000 |
| 2013 (D) | | 0 | 480,000 | 0 | 480,000 |
| 2014 (C) | | 0 | 280,000 | 0 | 280,000 |
| 2015 (C) | | 0 | 360,000 | 0 | 360,000 |
| 2016 (BN) | | 0 | 690,000 | 0 | 690,000 |
| 2017 (W) | | 0 | 1,200,000 | 0 | 1,200,000 |
| 2018 (BN) | | 0 | 470,000 | 0 | 470,000 |
| Average (1990-2018) | | 0 | 620,000 | 2,000 | 620,000 |
| 1990-2018 | W | 0 | 990,000 | 0 | 990,000 |
| | AN | 0 | 680,000 | 210 | 680,000 |
| | BN | 0 | 560,000 | 0 | 560,000 |
| | D | 0 | 430,000 | 6,200 | 440,000 |
| | C | 0 | 340,000 | 3,900 | 340,000 |

#### 1.1.2.3 *Deep Percolation of Applied Water*

Estimated deep percolation of applied water (equal to infiltration of applied water in 23 CCR § 354.18(b)(2)) is summarized in **Figure 12** and **Table 12** by water use sector. Deep percolation of applied water is dominated by agricultural irrigation and varies between years, following the pattern of surface water diversions and deliveries to irrigated lands.

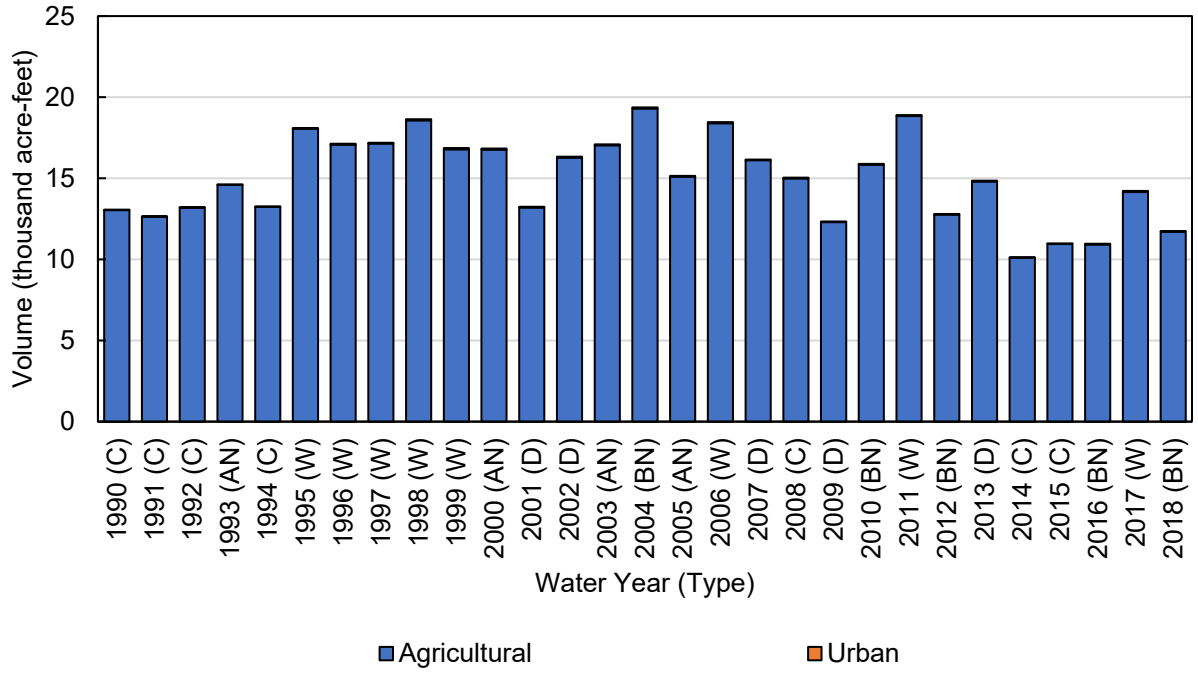


**Figure 12. Los Molinos Subbasin Historical Deep Percolation of Applied Water, by Water Use Sector**

**Table 12. Los Molinos Subbasin Historical Deep Percolation of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 13,000 | 30 | 0 | 13,000 |
| 1991 (C) | | 13,000 | 20 | 0 | 13,000 |
| 1992 (C) | | 13,000 | 30 | 0 | 13,000 |
| 1993 (AN) | | 15,000 | 40 | 0 | 15,000 |
| 1994 (C) | | 13,000 | 30 | 0 | 13,000 |
| 1995 (W) | | 18,000 | 50 | 0 | 18,000 |
| 1996 (W) | | 17,000 | 60 | 0 | 17,000 |
| 1997 (W) | | 17,000 | 50 | 0 | 17,000 |
| 1998 (W) | | 19,000 | 70 | 0 | 19,000 |
| 1999 (W) | | 17,000 | 80 | 0 | 17,000 |
| 2000 (AN) | | 17,000 | 70 | 0 | 17,000 |
| 2001 (D) | | 13,000 | 50 | 0 | 13,000 |
| 2002 (D) | | 16,000 | 60 | 0 | 16,000 |
| 2003 (AN) | | 17,000 | 60 | 0 | 17,000 |
| 2004 (BN) | | 19,000 | 70 | 0 | 19,000 |
| 2005 (AN) | | 15,000 | 60 | 0 | 15,000 |
| 2006 (W) | | 18,000 | 70 | 0 | 18,000 |
| 2007 (D) | | 16,000 | 40 | 0 | 16,000 |
| 2008 (C) | | 15,000 | 50 | 0 | 15,000 |
| 2009 (D) | | 12,000 | 40 | 0 | 12,000 |
| 2010 (BN) | | 16,000 | 60 | 0 | 16,000 |
| 2011 (W) | | 19,000 | 60 | 0 | 19,000 |
| 2012 (BN) | | 13,000 | 40 | 0 | 13,000 |
| 2013 (D) | | 15,000 | 50 | 0 | 15,000 |
| 2014 (C) | | 10,000 | 30 | 0 | 10,000 |
| 2015 (C) | | 11,000 | 40 | 0 | 11,000 |
| 2016 (BN) | | 11,000 | 50 | 0 | 11,000 |
| 2017 (W) | | 14,000 | 70 | 0 | 14,000 |
| 2018 (BN) | | 12,000 | 30 | 0 | 12,000 |
| Average (1990-2018) | | 15,000 | 50 | 0 | 15,000 |
| 1990-2018 | W | 17,000 | 60 | 0 | 17,000 |
| | AN | 16,000 | 60 | 0 | 16,000 |
| | BN | 14,000 | 50 | 0 | 14,000 |
| | D | 15,000 | 50 | 0 | 15,000 |
| | C | 13,000 | 30 | 0 | 13,000 |

#### 1.1.2.4 *Deep Percolation of Precipitation*

Estimated deep percolation of precipitation (equal to infiltration of precipitation in 23 CCR § 354.18(b)(2)) is provided in **Figure 13** and **Table 13** by water use sector. Deep percolation of precipitation to the GWS is highly variable from year to year due to variation in the timing and amount of precipitation, ranging from 22 taf on average annually during critical dry years to about 58 taf on average in wet years.

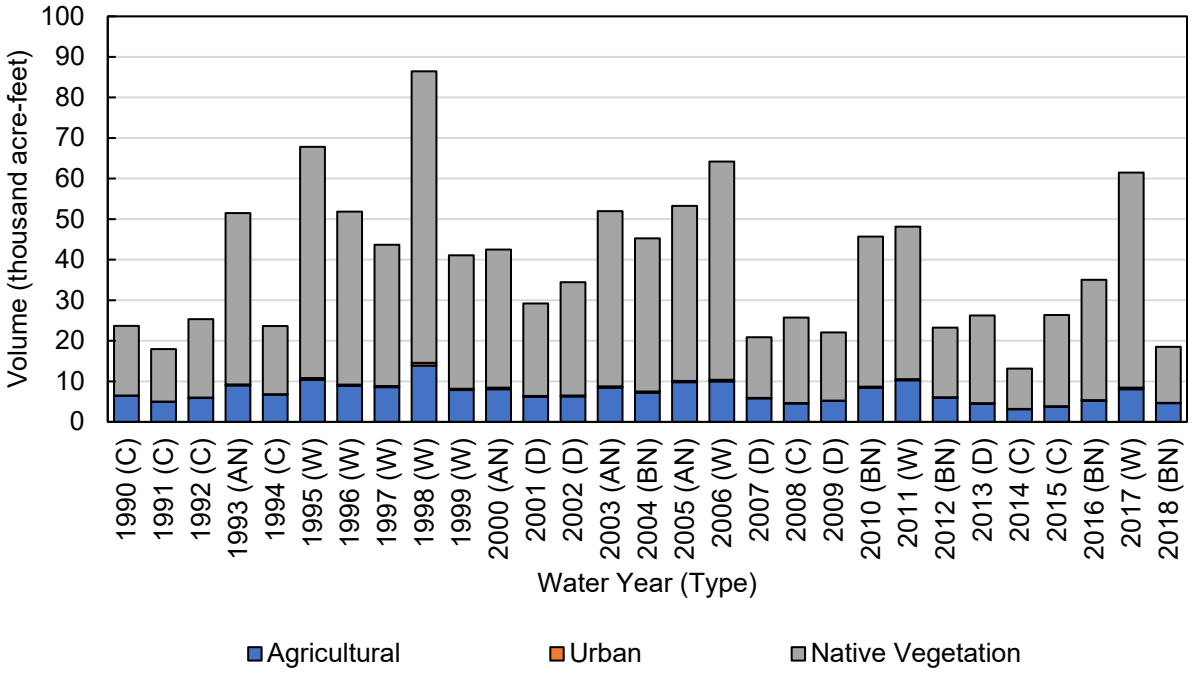


**Figure 13. Los Molinos Subbasin Historical Deep Percolation of Precipitation, by Water Use Sector**

**Table 13. Los Molinos Subbasin Historical Deep Percolation of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 1990 (C) | | 6,400 | 90 | 17,000 | 24,000 |
| 1991 (C) | | 4,900 | 70 | 13,000 | 18,000 |
| 1992 (C) | | 5,900 | 110 | 19,000 | 25,000 |
| 1993 (AN) | | 9,000 | 240 | 42,000 | 52,000 |
| 1994 (C) | | 6,700 | 110 | 17,000 | 24,000 |
| 1995 (W) | | 10,000 | 420 | 57,000 | 68,000 |
| 1996 (W) | | 8,900 | 340 | 43,000 | 52,000 |
| 1997 (W) | | 8,600 | 300 | 35,000 | 44,000 |
| 1998 (W) | | 14,000 | 670 | 72,000 | 86,000 |
| 1999 (W) | | 7,800 | 350 | 33,000 | 41,000 |
| 2000 (AN) | | 8,100 | 360 | 34,000 | 42,000 |
| 2001 (D) | | 6,200 | 210 | 23,000 | 29,000 |
| 2002 (D) | | 6,300 | 230 | 28,000 | 34,000 |
| 2003 (AN) | | 8,400 | 340 | 43,000 | 52,000 |
| 2004 (BN) | | 7,200 | 310 | 38,000 | 45,000 |
| 2005 (AN) | | 9,800 | 310 | 43,000 | 53,000 |
| 2006 (W) | | 10,000 | 400 | 54,000 | 64,000 |
| 2007 (D) | | 5,800 | 110 | 15,000 | 21,000 |
| 2008 (C) | | 4,500 | 140 | 21,000 | 26,000 |
| 2009 (D) | | 5,200 | 110 | 17,000 | 22,000 |
| 2010 (BN) | | 8,400 | 280 | 37,000 | 46,000 |
| 2011 (W) | | 10,000 | 250 | 38,000 | 48,000 |
| 2012 (BN) | | 6,000 | 120 | 17,000 | 23,000 |
| 2013 (D) | | 4,500 | 150 | 22,000 | 26,000 |
| 2014 (C) | | 3,100 | 60 | 9,900 | 13,000 |
| 2015 (C) | | 3,700 | 170 | 22,000 | 26,000 |
| 2016 (BN) | | 5,200 | 210 | 30,000 | 35,000 |
| 2017 (W) | | 8,100 | 370 | 53,000 | 61,000 |
| 2018 (BN) | | 4,600 | 90 | 14,000 | 19,000 |
| Average (1990-2018) | | 7,200 | 240 | 31,000 | 39,000 |
| 1990-2018 | W | 9,700 | 390 | 48,000 | 58,000 |
| | AN | 8,800 | 310 | 41,000 | 50,000 |
| | BN | 6,300 | 200 | 27,000 | 34,000 |
| | D | 5,600 | 160 | 21,000 | 27,000 |
| | C | 5,100 | 110 | 17,000 | 22,000 |

#### 1.1.2.5 *Infiltration of Surface Water*

Estimated infiltration of surface water (seepage) by water source is provided in **Figure 14** and **Table 14.** Seepage in the Los Molinos Subbasin comes from the conveyance of supply delivered to water districts. The total seepage from all canals and diversions averages approximately 12 taf per year. Runoff from upgradient small watersheds also contributes seepage to the Los Molinos Subbasin. The total seepage from rivers, streams and small watersheds average about 23 taf per year, on average.

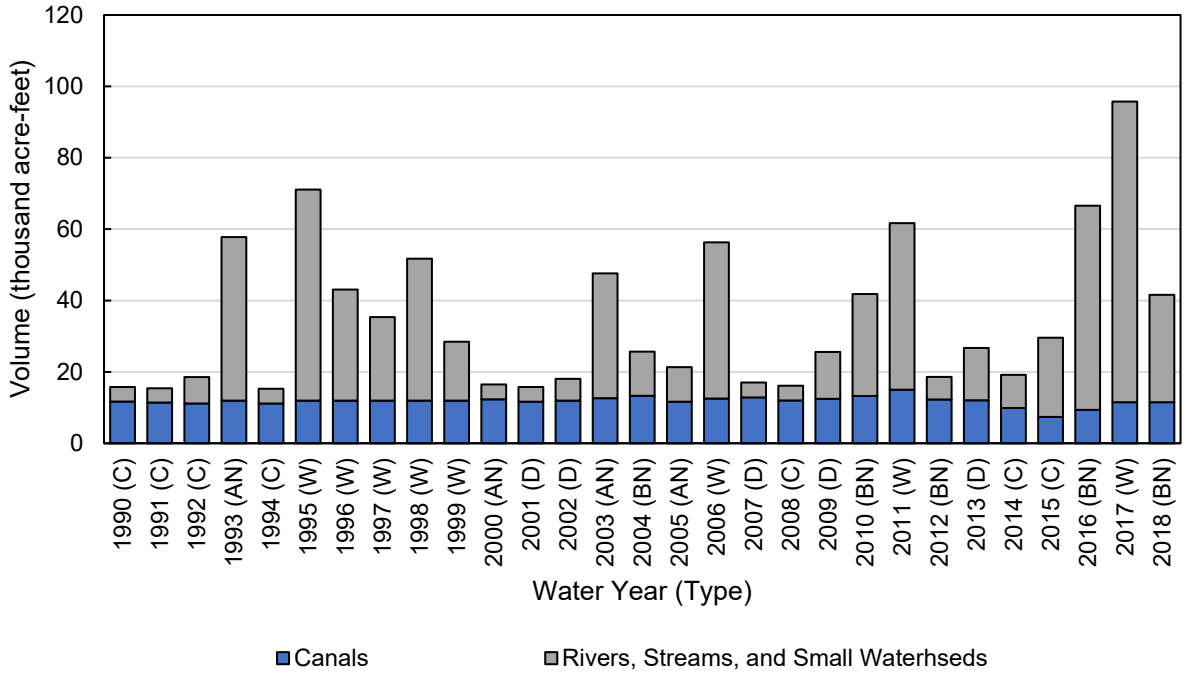


**Figure 14. Los Molinos Subbasin Historical Infiltration of Surface Water, by Water Use Sector**

**Table 14. Los Molinos Subbasin Historical Infiltration of Surface Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|---|
| 1990 (C) | | 12,000 | 4,100 | 16,000 |
| 1991 (C) | | 11,000 | 4,000 | 15,000 |
| 1992 (C) | | 11,000 | 7,400 | 19,000 |
| 1993 (AN) | | 12,000 | 46,000 | 58,000 |
| 1994 (C) | | 11,000 | 4,100 | 15,000 |
| 1995 (W) | | 12,000 | 59,000 | 71,000 |
| 1996 (W) | | 12,000 | 31,000 | 43,000 |
| 1997 (W) | | 12,000 | 23,000 | 35,000 |
| 1998 (W) | | 12,000 | 40,000 | 52,000 |
| 1999 (W) | | 12,000 | 17,000 | 28,000 |
| 2000 (AN) | | 12,000 | 4,200 | 16,000 |
| 2001 (D) | | 12,000 | 4,100 | 16,000 |
| 2002 (D) | | 12,000 | 6,100 | 18,000 |
| 2003 (AN) | | 13,000 | 35,000 | 48,000 |
| 2004 (BN) | | 13,000 | 12,000 | 26,000 |
| 2005 (AN) | | 12,000 | 9,700 | 21,000 |
| 2006 (W) | | 13,000 | 44,000 | 56,000 |
| 2007 (D) | | 13,000 | 4,200 | 17,000 |
| 2008 (C) | | 12,000 | 4,100 | 16,000 |
| 2009 (D) | | 12,000 | 13,000 | 26,000 |
| 2010 (BN) | | 13,000 | 29,000 | 42,000 |
| 2011 (W) | | 15,000 | 47,000 | 62,000 |
| 2012 (BN) | | 12,000 | 6,300 | 19,000 |
| 2013 (D) | | 12,000 | 15,000 | 27,000 |
| 2014 (C) | | 9,900 | 9,300 | 19,000 |
| 2015 (C) | | 7,400 | 22,000 | 30,000 |
| 2016 (BN) | | 9,400 | 57,000 | 67,000 |
| 2017 (W) | | 12,000 | 84,000 | 96,000 |
| 2018 (BN) | | 12,000 | 30,000 | 42,000 |
| Average (1990-2018) | | 12,000 | 23,000 | 35,000 |
| 1990-2018 | W | 12,000 | 43,000 | 55,000 |
| | AN | 12,000 | 24,000 | 36,000 |
| | BN | 12,000 | 27,000 | 39,000 |
| | D | 12,000 | 8,400 | 21,000 |
| | C | 11,000 | 7,900 | 19,000 |

### 1.1.3 Change in Root Zone Storage

Estimates of change in root zone storage are provided in **Figure 15** and **Table 15**. Inter-annual changes in storage within the SWS consist primarily of root zone soil moisture storage changes, are relatively small, and tend to average about -0.630 taf per year.

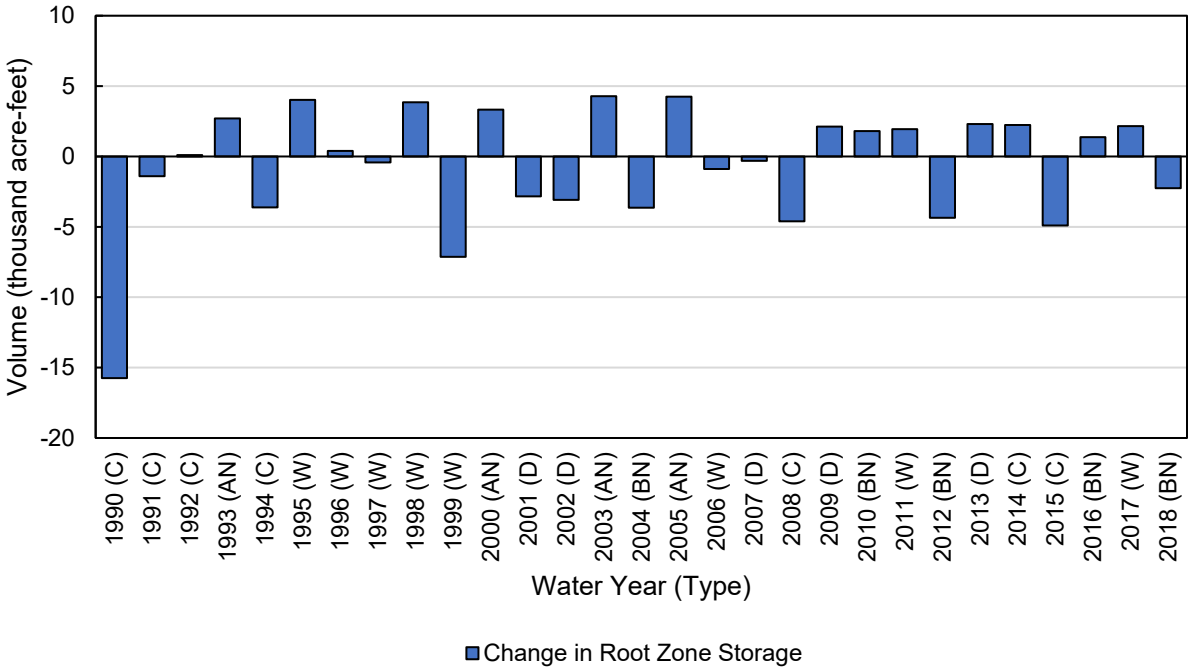


**Figure 15. Los Molinos Subbasin Historical Change in Root Zone Storage**

**Table 15. Los Molinos Subbasin Historical Change in Root Zone Storage (acre-feet)**

| Water Year (Type) | | Change in Root Zone Storage |
|---|---|---|
| 1990 (C) | | -16,000 |
| 1991 (C) | | -1,400 |
| 1992 (C) | | 100 |
| 1993 (AN) | | 2,700 |
| 1994 (C) | | -3,600 |
| 1995 (W) | | 4,000 |
| 1996 (W) | | 400 |
| 1997 (W) | | -420 |
| 1998 (W) | | 3,900 |
| 1999 (W) | | -7,100 |
| 2000 (AN) | | 3,300 |
| 2001 (D) | | -2,800 |
| 2002 (D) | | -3,100 |
| 2003 (AN) | | 4,300 |
| 2004 (BN) | | -3,600 |
| 2005 (AN) | | 4,300 |
| 2006 (W) | | -890 |
| 2007 (D) | | -310 |
| 2008 (C) | | -4,600 |
| 2009 (D) | | 2,100 |
| 2010 (BN) | | 1,800 |
| 2011 (W) | | 1,900 |
| 2012 (BN) | | -4,400 |
| 2013 (D) | | 2,300 |
| 2014 (C) | | 2,200 |
| 2015 (C) | | -4,900 |
| 2016 (BN) | | 1,400 |
| 2017 (W) | | 2,200 |
| 2018 (BN) | | -2,300 |
| Average (1990-2018) | | -630 |
| 1990-2018 | W | 490 |
| | AN | 3,600 |
| | BN | -1,400 |
| | D | -360 |
| | C | -4,000 |

### 1.1.4 Net Recharge from Surface Water System

Net recharge from the SWS is a useful metric that equates only the impacts of the SWS on recharge and extraction from the GWS, providing valuable insight to the combined effects of land surface processes on the underlying GWS. Net recharge from the SWS is calculated as the total groundwater recharge minus the total groundwater extraction and uptake. When calculated for the historical water budget, average net recharge from the SWS represents the average surplus (when positive) or shortage (when negative) of recharge that has resulted from historical cropping, land use practices, and average hydrologic conditions, when comparing groundwater extractions with deep percolation and infiltration from the SWS to the GWS. Net recharge does not include groundwater discharges to surface water and is not a full accounting of all exchanges occurring between the SWS and GWS. Although net recharge is a useful water balance metric,

Groundwater sustainability is not defined by the balance of net recharge from the SWS. Other important factors must be considered in the complete assessment of groundwater sustainability, including but not limited to subsurface groundwater flows and groundwater discharge to surface water. The sustainable yield and management criteria for the Los Molinos Subbasin are described in later sections of the GSP.

Annual values for net recharge from the SWS over the historical water budget period are presented below for the Los Molinos Subbasin. **Figure 16** and **Table 16** show the average net recharge from the SWS over 1990-2018 based on the historical water budget results. Historically, the average net recharge in the Los Molinos Subbasin was approximately 56 taf per year between 1990-2018, indicating net outflows from the SWS to the GWS during the historical water budget period. As illustrated on the cumulative net recharge plot in **Figure 16**, this results in a cumulative net positive recharge (i.e., net discharge from the SWS to the GWS) of about 1.6 maf over the 29-year historical water budget period. Although this means there has historically been more recharge from the SWS to the GWS than extractions and discharges from the GWS to the SWS, this alone does not necessarily mean that groundwater storage is increasing or that the Subbasin groundwater system has been sustainable. The complete Subbasin water budget, including the GWS water budget results, provide an indication of whether total groundwater inflows and outflows are in balance.

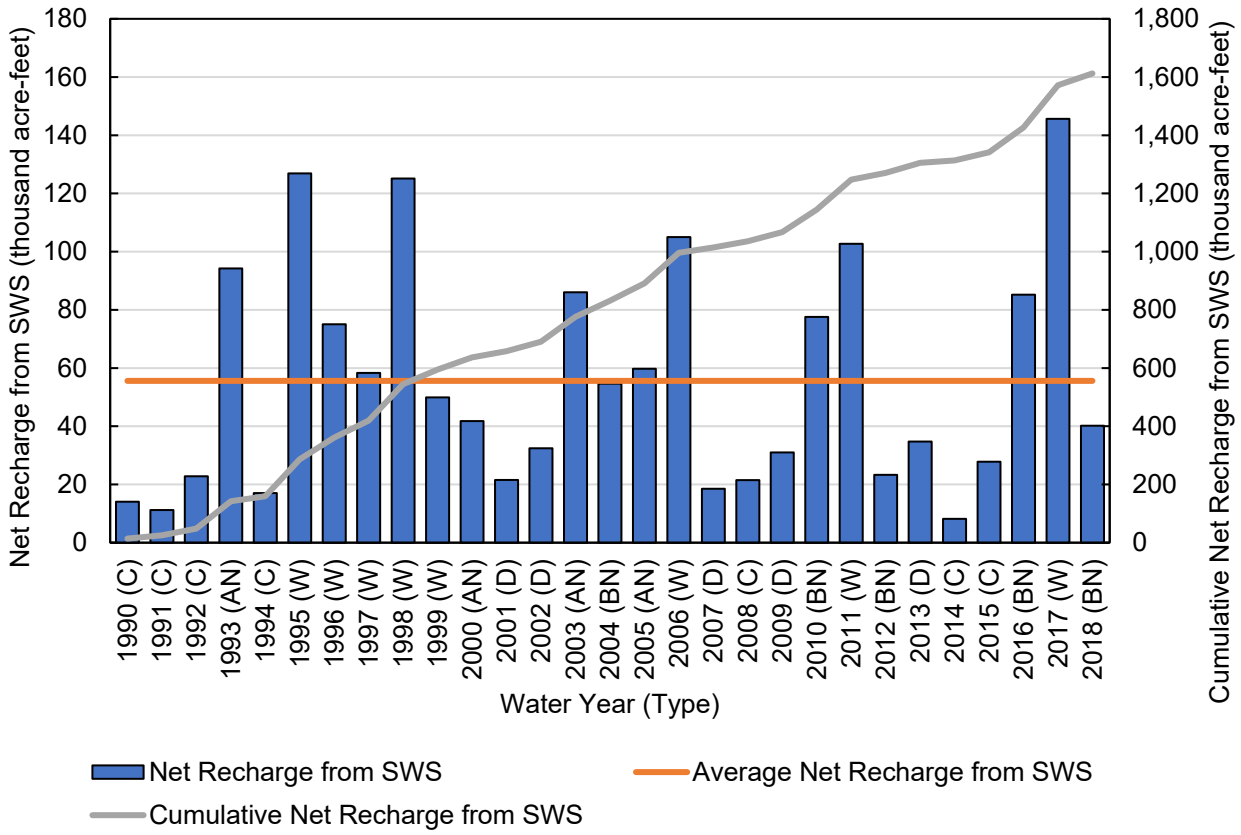


**Figure 16. Los Molinos Subbasin Historical Net Recharge Overview, 1990-2018**

**Table 16. Los Molinos Subbasin Historical Water Budget: Average Net Recharge from SWS in by Water Year Type (acre-feet)**

| Year Type | Number of Years | Deep Perc. of Applied Water (a) | Deep Perc. of Precipitation (b) | Infil. of Surface Water (c) | Groundwater Extraction/ Uptake (d) | Net Recharge from SWS (a+b+c-d) |
|---|---|---|---|---|---|---|
| W | 8 | 17,000 | 58,000 | 55,000 | 32,000 | 99,000 |
| AN | 4 | 16,000 | 50,000 | 36,000 | 31,000 | 70,000 |
| BN | 5 | 14,000 | 34,000 | 39,000 | 30,400 | 56,000 |
| D | 5 | 15,000 | 27,000 | 21,000 | 34,000 | 28,000 |
| C | 7 | 13,000 | 22,000 | 19,000 | 36,000 | 18,000 |
| **Annual Average (1990-2018)** | **29** | **15,000** | **39,000** | **35,000** | **33,000** | **56,000** |

## 1.2 Groundwater System Water Budget Results

Historical water budget results for different components of the GWS are presented in the sections below. Inflows and outflows from the GWS that occur through exchanges with the SWS are discussed in the SWS water budget results, although these components are also noted in the sections below relating to the GWS water budget. In contrast to the SWS water budget, many of the GWS water budget components change in flow direction over time representing inflows during some periods and outflows during other periods, depending on Subbasin conditions. The GWS water budget results are presented with net inflows indicated by positive values and net outflows as negative values.

### 1.1.1 Lateral Subsurface Groundwater Flows

Subsurface groundwater flows to and from the Los Molinos Subbasin occur between the Antelope Subbasin to the north, the Red Bluff Subbasin to the west, the Corning Subbasin to the west and the Vina Subbasin to the south. Additional subsurface groundwater inflows occur from the upland foothill (small watershed) areas adjoining the Los Molinos Subbasin to the east.

#### 1.1.1.1 *Lateral Subsurface Flows to/from Adjacent Subbasins*

Historical lateral subsurface flows occurring from and to adjacent subbasin are summarized in **Figure 17** and **Table 17**. The total historical net subsurface flows to and from all adjacent subbasins averages about -58 taf per year occurring as outflow from the Los Molinos Subbasin. The largest historical subsurface flows occur across the boundary with the Vina Subbasin with somewhat less subsurface flow occurring across the boundaries with Antelope Subbasin. Flows from Red Bluff and Corning Subbasins average positive inflows into the Los Molinos Subbasin.

Historical subsurface flows with the Vina Subbasin and the Antelope Subbasin average about -56 and -4.7 taf, respectively, occurring as outflows from the Los Molinos Subbasin. This makes up the majority of the subsurface flows occurring to the Los Molinos Subbasin. Annual subsurface flows with the Corning Subbasin and the Red Bluff Subbasin to the Los Molinos Subbasin average about 0.450 and 2.2 taf, respectively, occurring as inflows. The magnitudes of the subsurface inflows to the Vina Subbasin are relatively consistent from year to year; however, the inflows/outflows with the other three subbasins are somewhat variable. Historical subsurface flows across the boundary with the Red Bluff and Corning Subbasins generally occur as inflows with some smaller volumes of outflows occurring periodically.

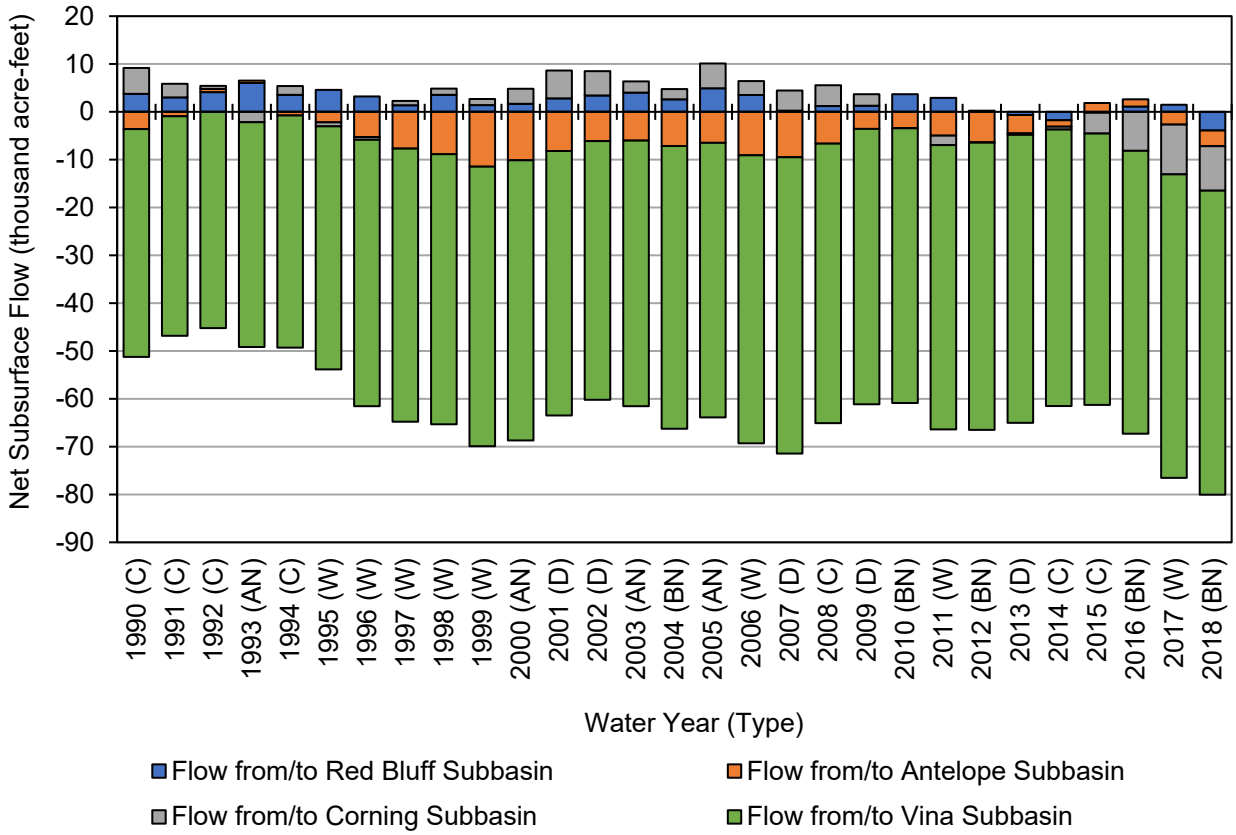


**Figure 17. Los Molinos Subbasin Historical Lateral Subsurface Groundwater Flows to/from Adjacent Subbasins**

**Table 17. Los Molinos Subbasin Historical Lateral Subsurface Groundwater Flows Between Adjacent Subbasins (net flows as acre-feet)**

| Water Year (Type) | | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|---|
| 1990 (C) | | 3,800 | -3,600 | 5,400 | -48,000 | -42,000 |
| 1991 (C) | | 3,000 | -930 | 2,800 | -46,000 | -41,000 |
| 1992 (C) | | 4,100 | 690 | 630 | -45,000 | -40,000 |
| 1993 (AN) | | 6,000 | 480 | -2,200 | -47,000 | -43,000 |
| 1994 (C) | | 3,500 | -770 | 1,800 | -49,000 | -44,000 |
| 1995 (W) | | 4,600 | -2,200 | -830 | -51,000 | -49,000 |
| 1996 (W) | | 3,200 | -5,300 | -580 | -56,000 | -58,000 |
| 1997 (W) | | 1,400 | -7,700 | 900 | -57,000 | -62,000 |
| 1998 (W) | | 3,600 | -8,800 | 1,300 | -56,000 | -60,000 |
| 1999 (W) | | 1,400 | -11,000 | 1,300 | -58,000 | -67,000 |
| 2000 (AN) | | 1,700 | -10,000 | 3,100 | -59,000 | -64,000 |
| 2001 (D) | | 2,800 | -8,200 | 5,800 | -55,000 | -55,000 |
| 2002 (D) | | 3,400 | -6,100 | 5,100 | -54,000 | -52,000 |
| 2003 (AN) | | 4,000 | -6,000 | 2,400 | -56,000 | -55,000 |
| 2004 (BN) | | 2,600 | -7,100 | 2,100 | -59,000 | -62,000 |
| 2005 (AN) | | 4,900 | -6,500 | 5,200 | -57,000 | -54,000 |
| 2006 (W) | | 3,500 | -9,100 | 2,900 | -60,000 | -63,000 |
| 2007 (D) | | 260 | -9,500 | 4,200 | -62,000 | -67,000 |
| 2008 (C) | | 1,200 | -6,700 | 4,400 | -58,000 | -60,000 |
| 2009 (D) | | 1,300 | -3,600 | 2,400 | -58,000 | -57,000 |
| 2010 (BN) | | 3,700 | -3,400 | -6 | -57,000 | -57,000 |
| 2011 (W) | | 2,900 | -5,000 | -1,900 | -59,000 | -63,000 |
| 2012 (BN) | | 240 | -6,400 | -34 | -60,000 | -66,000 |
| 2013 (D) | | -660 | -3,800 | -320 | -60,000 | -65,000 |
| 2014 (C) | | -1,800 | -1,300 | -600 | -58,000 | -62,000 |
| 2015 (C) | | -180 | 1,800 | -4,400 | -57,000 | -59,000 |
| 2016 (BN) | | 1,100 | 1,500 | -8,200 | -59,000 | -65,000 |
| 2017 (W) | | 1,500 | -2,700 | -10,000 | -63,000 | -75,000 |
| 2018 (BN) | | -3,900 | -3,300 | -9,300 | -64,000 | -80,000 |
| Average (1990-2018) | | 2,200 | -4,700 | 450 | -56,000 | -58,000 |
| 1990-2018 | W | 2,800 | -6,500 | -920 | -58,000 | -62,000 |
| | AN | 5,000 | -4,000 | 1,800 | -53,000 | -54,000 |
| | BN | 810 | -2,900 | -3,900 | -60,000 | -66,000 |
| | D | 1,400 | -6,200 | 3,400 | -58,000 | -59,000 |
| | C | 2,000 | -1,500 | 1,400 | -51,000 | -50,000 |

#### 1.1.1.2 *Lateral Subsurface Flows from Upland Areas (Small Watersheds)*

Historical lateral subsurface inflows occurring from upland or foothill areas (small watersheds outside of the Central Valley Floor) to the east of the Los Molinos Subbasin are summarized in **Figure 18** and **Table 18**. This component does not include surface water inflows to the Los Molinos Subbasin which are discussed as part of the SWS water budget. The average historical subsurface inflow from the upland areas is about 2.1 taf per year and varies only very minimally from year to year. The volume of subsurface inflows from upland areas is small relative to the net subsurface inflows occurring between adjacent subbasins.

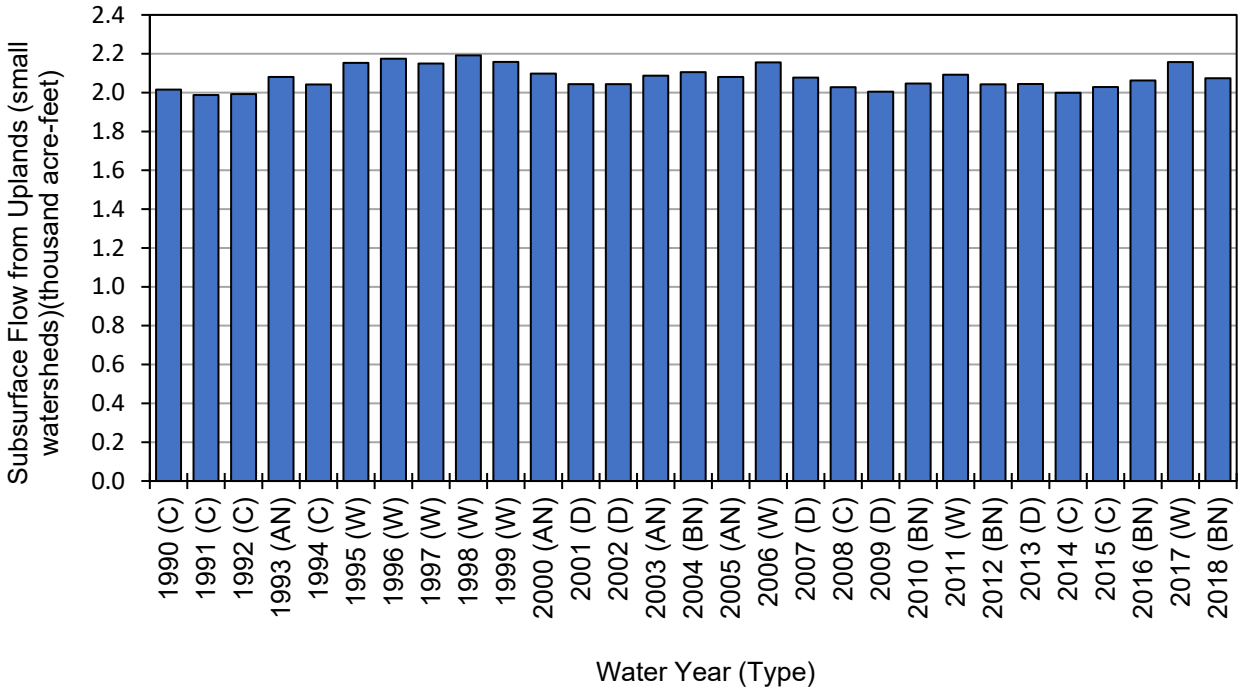


**Figure 18. Los Molinos Subbasin Historical Subsurface Groundwater Inflows from Upland Areas**

**Table 18. Los Molinos Subbasin Historical Subsurface Groundwater Inflows from Adjacent Uplands (small watersheds) (acre-feet)**

| Water Year (Type) | | Subsurface Inflow from Uplands |
|---|---|---|
| 1990 (C) | | 2,000 |
| 1991 (C) | | 2,000 |
| 1992 (C) | | 2,000 |
| 1993 (AN) | | 2,100 |
| 1994 (C) | | 2,000 |
| 1995 (W) | | 2,200 |
| 1996 (W) | | 2,200 |
| 1997 (W) | | 2,100 |
| 1998 (W) | | 2,200 |
| 1999 (W) | | 2,200 |
| 2000 (AN) | | 2,100 |
| 2001 (D) | | 2,000 |
| 2002 (D) | | 2,000 |
| 2003 (AN) | | 2,100 |
| 2004 (BN) | | 2,100 |
| 2005 (AN) | | 2,100 |
| 2006 (W) | | 2,200 |
| 2007 (D) | | 2,100 |
| 2008 (C) | | 2,000 |
| 2009 (D) | | 2,000 |
| 2010 (BN) | | 2,000 |
| 2011 (W) | | 2,100 |
| 2012 (BN) | | 2,000 |
| 2013 (D) | | 2,000 |
| 2014 (C) | | 2,000 |
| 2015 (C) | | 2,000 |
| 2016 (BN) | | 2,100 |
| 2017 (W) | | 2,200 |
| 2018 (BN) | | 2,100 |
| Average (1990-2018) | | 2,100 |
| 1990-2018 | W | 2,200 |
| | AN | 2,100 |
| | BN | 2,100 |
| | D | 2,000 |
| | C | 2,000 |

### 1.1.2 Deep Percolation From the SWS

Deep percolation from the SWS includes infiltration of water below the root zone (deep percolation) from precipitation and applied water. These two water budget components are summarized in the SWS water budget as outflows to the SWS and are presented as aggregated deep percolation inflows to the GWS in **Figure 19** and **Table 19**. The average annual deep percolation from the SWS over the historical water budget period is approximately 54 taf per year. Greater volumes of deep percolation occur during wetter years when infiltration of precipitation is higher.

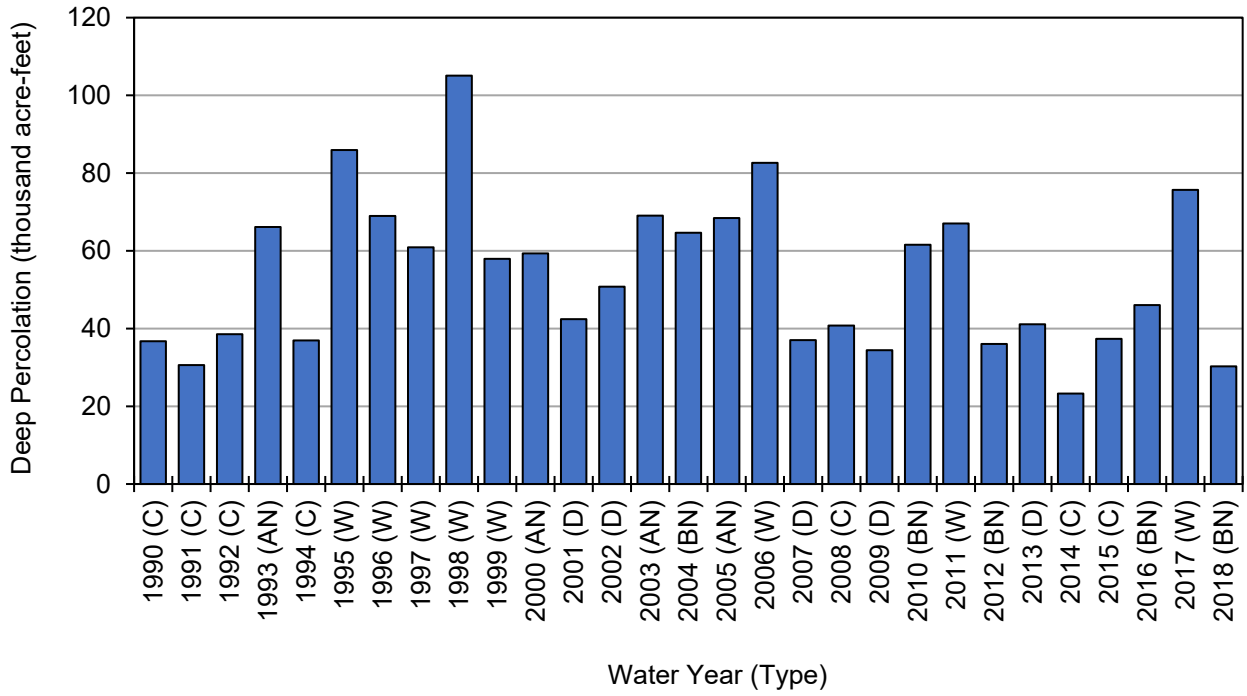


**Figure 19. Los Molinos Subbasin Historical Deep Percolation**

**Table 19. Los Molinos Subbasin Historical Deep Percolation from the SWS (acre-feet)**

| Water Year (Type) | | Deep Percolation from the SWS |
|---|---|---|
| 1990 (C) | | 37,000 |
| 1991 (C) | | 31,000 |
| 1992 (C) | | 39,000 |
| 1993 (AN) | | 66,000 |
| 1994 (C) | | 37,000 |
| 1995 (W) | | 86,000 |
| 1996 (W) | | 69,000 |
| 1997 (W) | | 61,000 |
| 1998 (W) | | 110,000 |
| 1999 (W) | | 58,000 |
| 2000 (AN) | | 59,000 |
| 2001 (D) | | 42,000 |
| 2002 (D) | | 51,000 |
| 2003 (AN) | | 69,000 |
| 2004 (BN) | | 65,000 |
| 2005 (AN) | | 68,000 |
| 2006 (W) | | 83,000 |
| 2007 (D) | | 37,000 |
| 2008 (C) | | 41,000 |
| 2009 (D) | | 34,000 |
| 2010 (BN) | | 62,000 |
| 2011 (W) | | 67,000 |
| 2012 (BN) | | 36,000 |
| 2013 (D) | | 41,000 |
| 2014 (C) | | 23,000 |
| 2015 (C) | | 37,000 |
| 2016 (BN) | | 46,000 |
| 2017 (W) | | 76,000 |
| 2018 (BN) | | 30,000 |
| Average (1990-2018) | | 54,000 |
| 1990-2018 | W | 76,000 |
| | AN | 68,000 |
| | BN | 47,000 |
| | D | 41,000 |
| | C | 35,000 |

### 1.1.3 Net Stream Seepage/Groundwater Discharge to Surface Water

The flow of water between the GWS and SWS through seepage of water from streams and canals and groundwater discharging into streams is discussed as part of the SWS water budget. These components are combined for presentation in the GWS water budget as a net volume of stream seepage (**Figure 20** and **Table 20**). Positive total net seepage values represent a net inflow of water from the SWS to the GWS via stream and canal seepage indicating that the overall volume of stream seepage is greater than the volume of any groundwater discharging into surface waterways. Negative net seepage values represent a net outflow of groundwater from the GWS to the SWS through groundwater discharge to surface water. When net seepage is negative, it means that more groundwater is discharging into the surface waterways than is seeping from surface waterways into the GWS.

In the Los Molinos Subbasin, the historical annual net seepage values are generally positive with an average annual net stream seepage value of 29 taf per year indicating that seepage from surface waterways is providing water to the GWS. The annual net stream seepage values tend to be lower in dry years and higher in wet years corresponding with more net surface water discharge to groundwater in wet years and less surface water discharge in drier years.

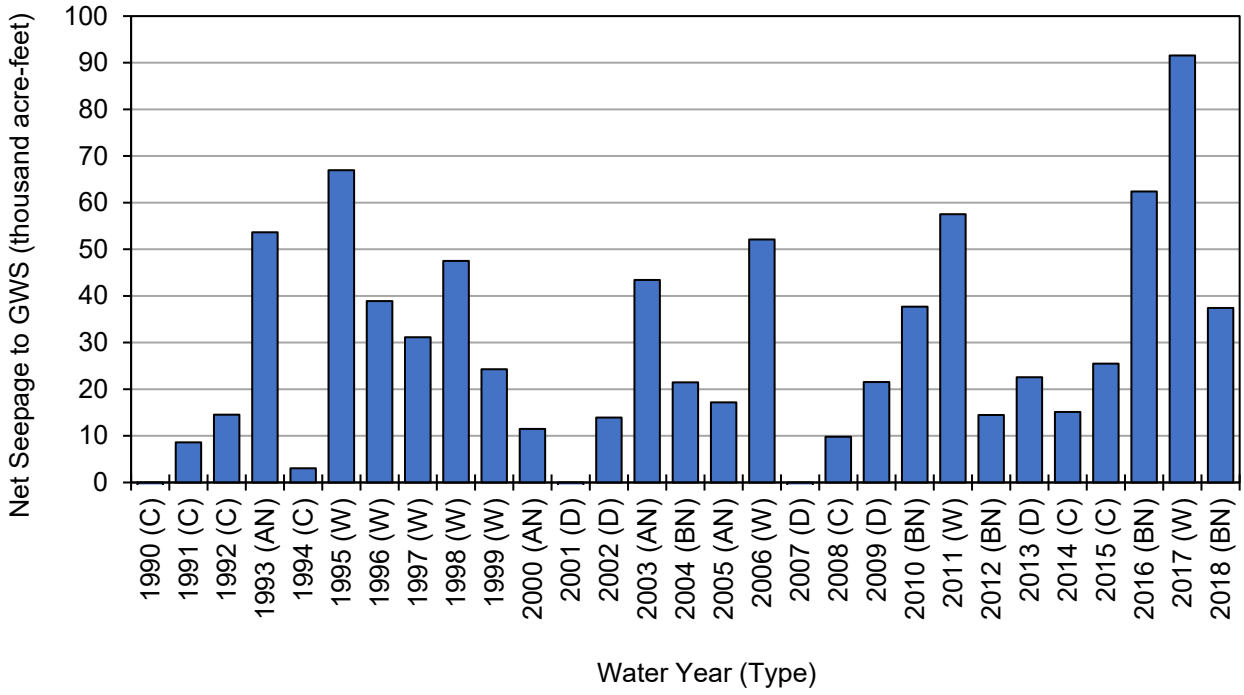


**Figure 20. Los Molinos Subbasin Historical Net Stream Seepage to GWS/ Discharge to Surface Water**

**Table 20. Los Molinos Subbasin Historical Net Stream Seepage (net flows as acre-feet)**

| Water Year (Type) | | Total Net Seepage from Surface Waterways and Canals |
|---|---|---|
| 1990 (C) | | -2,300 |
| 1991 (C) | | 8,600 |
| 1992 (C) | | 15,000 |
| 1993 (AN) | | 54,000 |
| 1994 (C) | | 3,000 |
| 1995 (W) | | 67,000 |
| 1996 (W) | | 39,000 |
| 1997 (W) | | 31,000 |
| 1998 (W) | | 48,000 |
| 1999 (W) | | 24,000 |
| 2000 (AN) | | 11,000 |
| 2001 (D) | | -3,300 |
| 2002 (D) | | 14,000 |
| 2003 (AN) | | 43,000 |
| 2004 (BN) | | 21,000 |
| 2005 (AN) | | 17,000 |
| 2006 (W) | | 52,000 |
| 2007 (D) | | -3,000 |
| 2008 (C) | | 9,800 |
| 2009 (D) | | 22,000 |
| 2010 (BN) | | 38,000 |
| 2011 (W) | | 58,000 |
| 2012 (BN) | | 14,000 |
| 2013 (D) | | 23,000 |
| 2014 (C) | | 15,000 |
| 2015 (C) | | 25,000 |
| 2016 (BN) | | 62,000 |
| 2017 (W) | | 92,000 |
| 2018 (BN) | | 37,000 |
| Average (1990-2018) | | 29,000 |
| 1990-2018 | W | 51,000 |
| | AN | 38,000 |
| | BN | 39,000 |
| | D | 10,000 |
| | C | 11,000 |

Note: negative values indicate net groundwater discharge to surface water

### 1.1.4 Groundwater Extraction

Groundwater extractions are exchanges that occur between the GWS and the SWS. Groundwater extraction from the GWS occurs through groundwater pumping to meet water demands for urban and agricultural needs and also through groundwater (root water) uptake by plants directly from shallow groundwater during times and at locations of sufficiently shallow groundwater conditions. Historical groundwater extractions are summarized in **Figure 21** and **Table 21** and also presented and discussed in the SWS water budget sections. Total groundwater extractions over the historical water budget period average about -33 taf per year. Overall, groundwater uptake represents a slightly larger fraction of the groundwater extractions than groundwater pumping. Groundwater pumping averaged about -16 taf over the historical period and groundwater uptake averaged about -17 taf. In wetter periods, groundwater uptake increases and groundwater pumping decreases. Accordingly, during drier periods groundwater pumping increases and water uptake by plants from shallow groundwater decreases in response to the higher water demands for irrigation and other uses and the greater depths to groundwater that also tend to occur during dry periods.

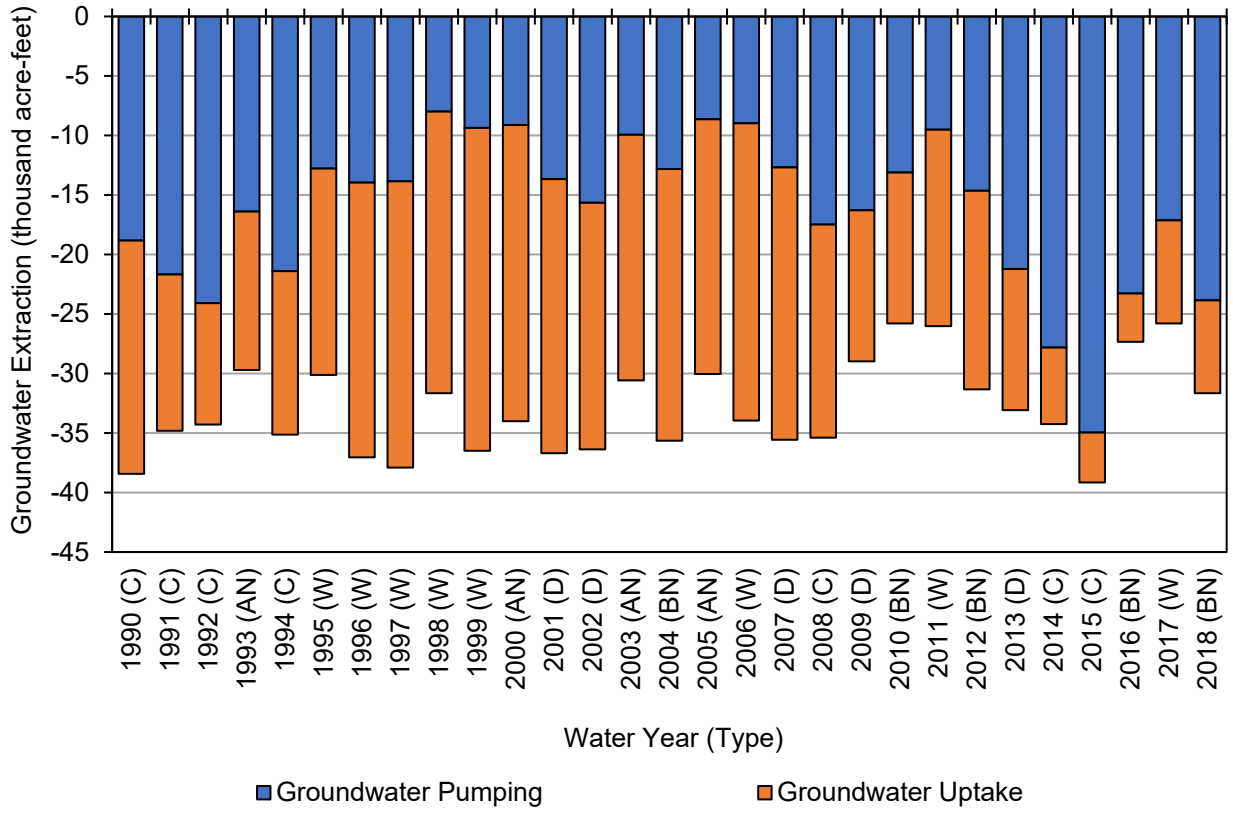


**Figure 21. Los Molinos Subbasin Historical Groundwater Extractions**

**Table 21. Los Molinos Subbasin Historical Groundwater Extractions (acre-feet)**

| Water Year (Type) | | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|---|
| 1990 (C) | | -19,000 | -20,000 | -39,000 |
| 1991 (C) | | -22,000 | -13,000 | -35,000 |
| 1992 (C) | | -24,000 | -10,000 | -34,000 |
| 1993 (AN) | | -16,000 | -13,000 | -29,000 |
| 1994 (C) | | -21,000 | -14,000 | -35,000 |
| 1995 (W) | | -13,000 | -17,000 | -30,000 |
| 1996 (W) | | -14,000 | -23,000 | -37,000 |
| 1997 (W) | | -14,000 | -24,000 | -38,000 |
| 1998 (W) | | -8,000 | -24,000 | -32,000 |
| 1999 (W) | | -9,400 | -27,000 | -36,400 |
| 2000 (AN) | | -9,100 | -25,000 | -34,100 |
| 2001 (D) | | -14,000 | -23,000 | -37,000 |
| 2002 (D) | | -16,000 | -21,000 | -37,000 |
| 2003 (AN) | | -9,900 | -21,000 | -30,900 |
| 2004 (BN) | | -13,000 | -23,000 | -36,000 |
| 2005 (AN) | | -8,600 | -21,000 | -29,600 |
| 2006 (W) | | -9,000 | -25,000 | -34,000 |
| 2007 (D) | | -13,000 | -23,000 | -36,000 |
| 2008 (C) | | -17,000 | -18,000 | -35,000 |
| 2009 (D) | | -16,000 | -13,000 | -29,000 |
| 2010 (BN) | | -13,000 | -13,000 | -26,000 |
| 2011 (W) | | -9,500 | -17,000 | -26,500 |
| 2012 (BN) | | -15,000 | -17,000 | -32,000 |
| 2013 (D) | | -21,000 | -12,000 | -33,000 |
| 2014 (C) | | -28,000 | -6,400 | -34,400 |
| 2015 (C) | | -35,000 | -4,200 | -39,200 |
| 2016 (BN) | | -23,000 | -4,100 | -27,100 |
| 2017 (W) | | -17,000 | -8,700 | -25,700 |
| 2018 (BN) | | -24,000 | -7,800 | -31,800 |
| Average (1990-2018) | | -16,000 | -17,000 | -33,000 |
| 1990-2018 | W | -12,000 | -21,000 | -33,000 |
| | AN | -12,000 | -18,000 | -30,000 |
| | BN | -18,000 | -11,000 | -29,000 |
| | D | -16,000 | -18,000 | -34,000 |
| | C | -24,000 | -12,000 | -36,000 |

### 1.1.5 Vertical Subsurface Flows within the Groundwater System

Vertical subsurface flows within the GWS occur between the Upper and Lower Aquifers and represent an internal flow of water within the GWS. These exchanges between the principal aquifers do not directly affect the total volume of groundwater in storage, but do highlight the net vertical movement of water within the GWS. Historical vertical flows between the Upper Aquifer and Lower Aquifer are summarized in **Figure 22** and **Table 22** and show consistent net overall downward vertical flow from the Upper Aquifer to the Lower Aquifer. On average, vertical flows from the Upper Aquifer to the Lower Aquifer total about 20 taf per year over the historical water budget period. There is considerable year-to-year variability in the magnitude of these flows, which appear to correlate with water year conditions, although they are always in a downward direction.

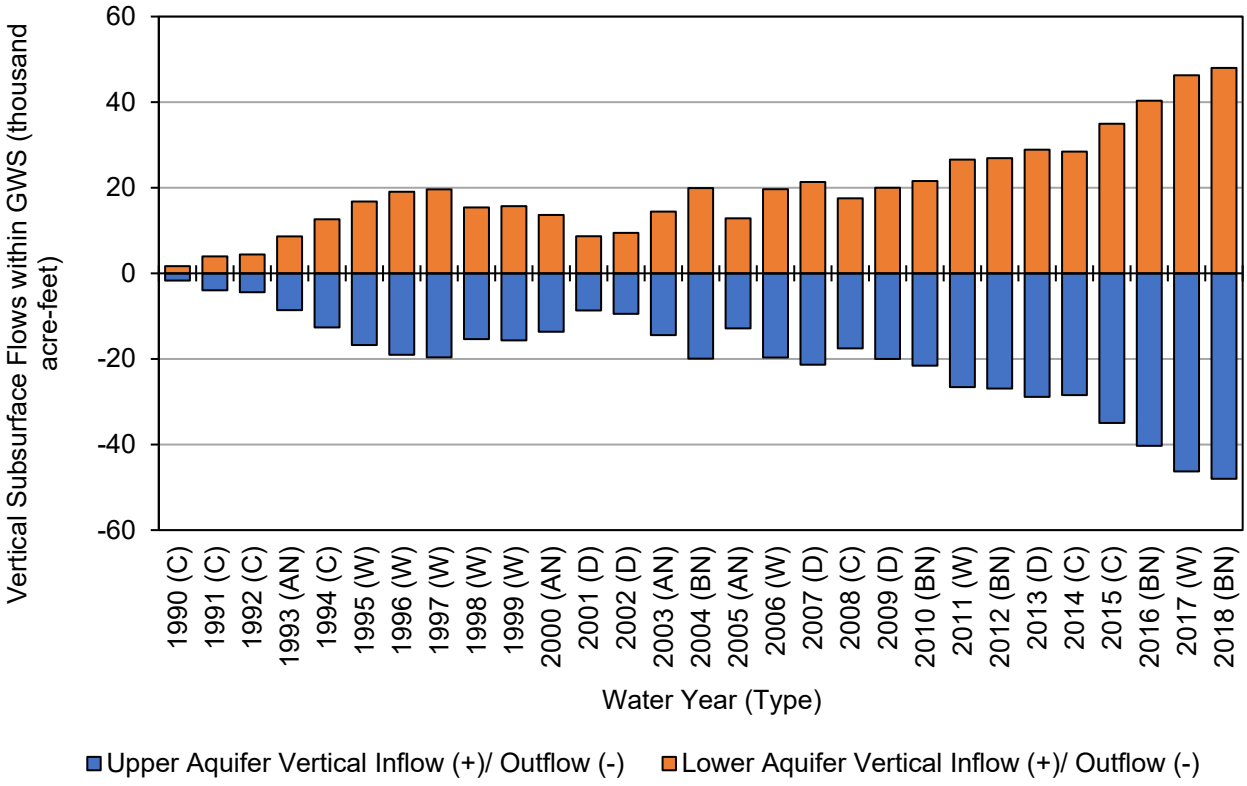


**Figure 3. Los Molinos Subbasin Vertical Subsurface Flow within the GWS**

**Table 3. Los Molinos Subbasin Vertical Subsurface Flows within the GWS (acre-feet)**

| Water Year (Type) | | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|---|
| 1990 (C) | | -1,700 |
| 1991 (C) | | -4,000 |
| 1992 (C) | | -4,400 |
| 1993 (AN) | | -8,600 |
| 1994 (C) | | -13,000 |
| 1995 (W) | | -17,000 |
| 1996 (W) | | -19,000 |
| 1997 (W) | | -20,000 |
| 1998 (W) | | -15,000 |
| 1999 (W) | | -16,000 |
| 2000 (AN) | | -14,000 |
| 2001 (D) | | -8,700 |
| 2002 (D) | | -9,400 |
| 2003 (AN) | | -14,000 |
| 2004 (BN) | | -20,000 |
| 2005 (AN) | | -13,000 |
| 2006 (W) | | -20,000 |
| 2007 (D) | | -21,000 |
| 2008 (C) | | -18,000 |
| 2009 (D) | | -20,000 |
| 2010 (BN) | | -22,000 |
| 2011 (W) | | -27,000 |
| 2012 (BN) | | -27,000 |
| 2013 (D) | | -29,000 |
| 2014 (C) | | -28,000 |
| 2015 (C) | | -35,000 |
| 2016 (BN) | | -40,000 |
| 2017 (W) | | -46,000 |
| 2018 (BN) | | -48,000 |
| Average (1990-2018) | | -20,000 |
| 1990-2018 | W | -22,000 |
| | AN | -12,000 |
| | BN | -31,000 |
| | D | -18,000 |
| | C | -15,000 |

### 1.1.6 Change in Groundwater Storage

Historical change in groundwater storage values for the Los Molinos Subbasin are summarized in **Figure 23** and **Figure 24,** and **Table 23**. Values for total change in storage in the GWS and cumulative change in storage over the historical water budget period are presented in conjunction with the volumes of groundwater storage change within each of the two principal aquifers present in the Subbasin. Over the 29-year historical period, the average total annual change in groundwater storage is about -2.50 taf per year, representing a decrease in groundwater storage. The corresponding cumulative total change in storage over the historical period is about -74 taf. The annual change in storage numbers generally reflect the effects of the water year type with increase in storage occurring during wetter years and decreases in storage occurring during dry years. Within the GWS, the magnitudes of average annual changes in storage are lower in the Lower Aquifer (average -0.280 taf per year) compared to the Upper Aquifer (average -1.8 taf per year).

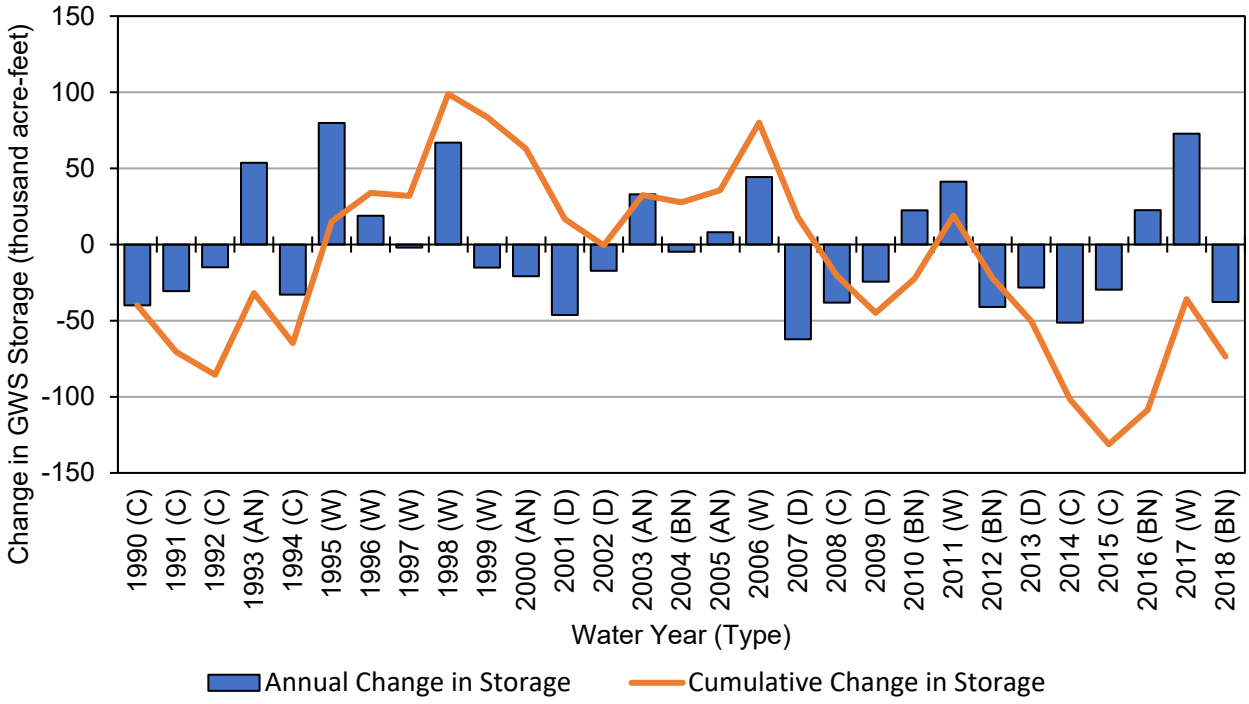


**Figure 23. Los Molinos Subbasin Historical Total Change in Storage within the GWS**

**Table 4. Los Molinos Subbasin Change in Groundwater Storage (acre-feet)**

| Water Year (Type) | | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|---|
| 1990 (C) | | -25,000 | -3,200 | -40,000 | -40,000 |
| 1991 (C) | | -21,000 | -3,400 | -31,000 | -71,000 |
| 1992 (C) | | -9,000 | -1,600 | -15,000 | -86,000 |
| 1993 (AN) | | 48,000 | 6,400 | 54,000 | -32,000 |
| 1994 (C) | | -28,000 | -2,800 | -33,000 | -65,000 |
| 1995 (W) | | 59,000 | 6,800 | 80,000 | 15,000 |
| 1996 (W) | | 4,100 | 1,700 | 19,000 | 34,000 |
| 1997 (W) | | -8,000 | -860 | -2,000 | 32,000 |
| 1998 (W) | | 46,000 | 5,000 | 67,000 | 99,000 |
| 1999 (W) | | -22,000 | -1,500 | -15,000 | 84,000 |
| 2000 (AN) | | -12,000 | -2,200 | -21,000 | 63,000 |
| 2001 (D) | | -33,000 | -5,000 | -46,000 | 17,000 |
| 2002 (D) | | -7,300 | -1,300 | -17,000 | -530 |
| 2003 (AN) | | 24,000 | 3,100 | 33,000 | 32,000 |
| 2004 (BN) | | -1,300 | 580 | -4,700 | 28,000 |
| 2005 (AN) | | 5,600 | 200 | 8,100 | 36,000 |
| 2006 (W) | | 25,000 | 3,800 | 44,000 | 80,000 |
| 2007 (D) | | -47,000 | -6,100 | -62,000 | 18,000 |
| 2008 (C) | | -24,000 | -4,100 | -38,000 | -20,000 |
| 2009 (D) | | -14,000 | -2,500 | -24,000 | -45,000 |
| 2010 (BN) | | 20,000 | 2,600 | 22,000 | -22,000 |
| 2011 (W) | | 26,000 | 4,100 | 41,000 | 19,000 |
| 2012 (BN) | | -33,000 | -3,700 | -41,000 | -22,000 |
| 2013 (D) | | -17,000 | -3,000 | -28,000 | -50,000 |
| 2014 (C) | | -33,000 | -5,300 | -51,000 | -100,000 |
| 2015 (C) | | -14,000 | -1,900 | -30,000 | -130,000 |
| 2016 (BN) | | 22,000 | 3,100 | 23,000 | -110,000 |
| 2017 (W) | | 50,000 | 7,600 | 73,000 | -36,000 |
| 2018 (BN) | | -34,000 | -4,400 | -38,000 | -74,000 |
| Average (1990-2018) | | -1,800 | -280 | -2,500 | |
| 1990-2018 | W | 22,000 | 3,300 | 38,000 | |
| | AN | 14,000 | 1,400 | 32,000 | |
| | BN | -5,100 | -360 | -2,600 | |
| | D | -24,000 | -3,600 | -36,000 | |
| | C | -22,000 | -3,200 | -34,000 | |

Note: positive values indicate increases in groundwater storage, negative values indicate decreases in groundwater storage.

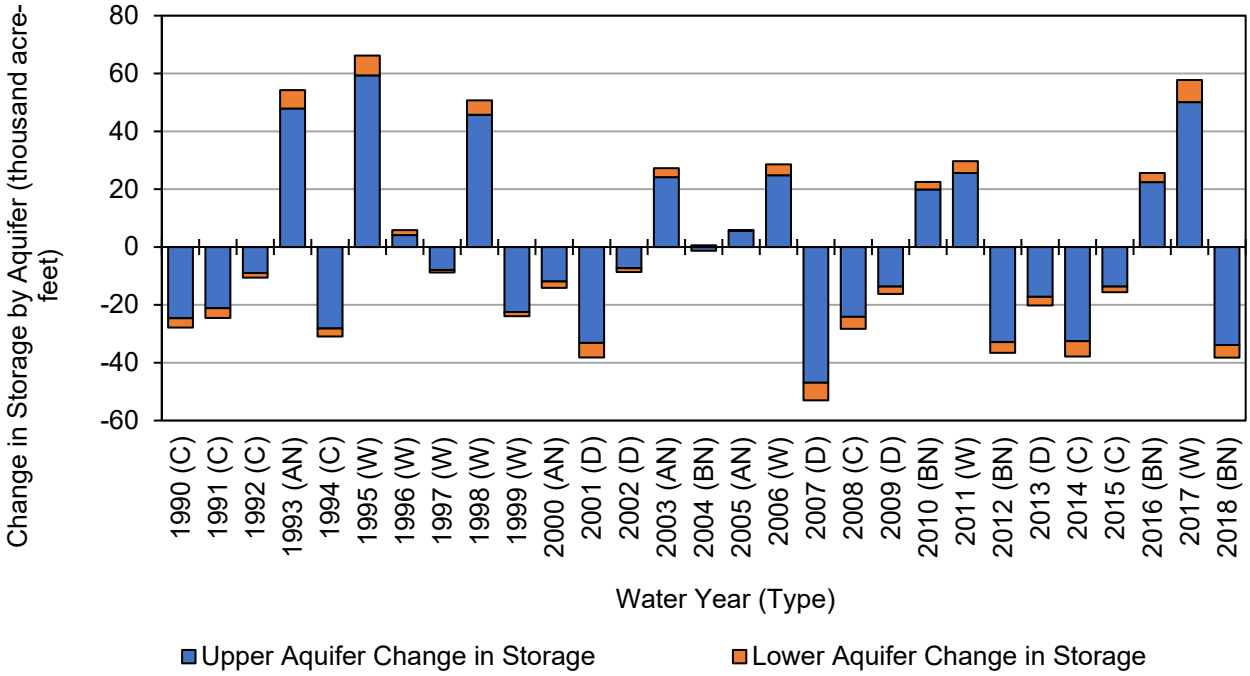


**Figure 4. Los Molinos Subbasin Change in Groundwater Storage by Aquifer**

# 2 DETAILED PROJECTED (CURRENT LAND USE) WATER BUDGET

This section presents the results of the Projected (Current Land Use) scenario. The Current Land Use scenario assumes constant land use conditions based on 2018 conditions.

## 2.3 Surface Water System Water Budget Results

### 2.3.1 Inflows

#### 2.3.1.1 *Surface Water Inflow by Water Source Type*

The projected annual volume of surface water inflows is summarized by water source type in Figure 25 and Table 24. Over the projected (current land use) period, surface water inflows average about 650 taf per year. All inflows of the SWS are local supplies.

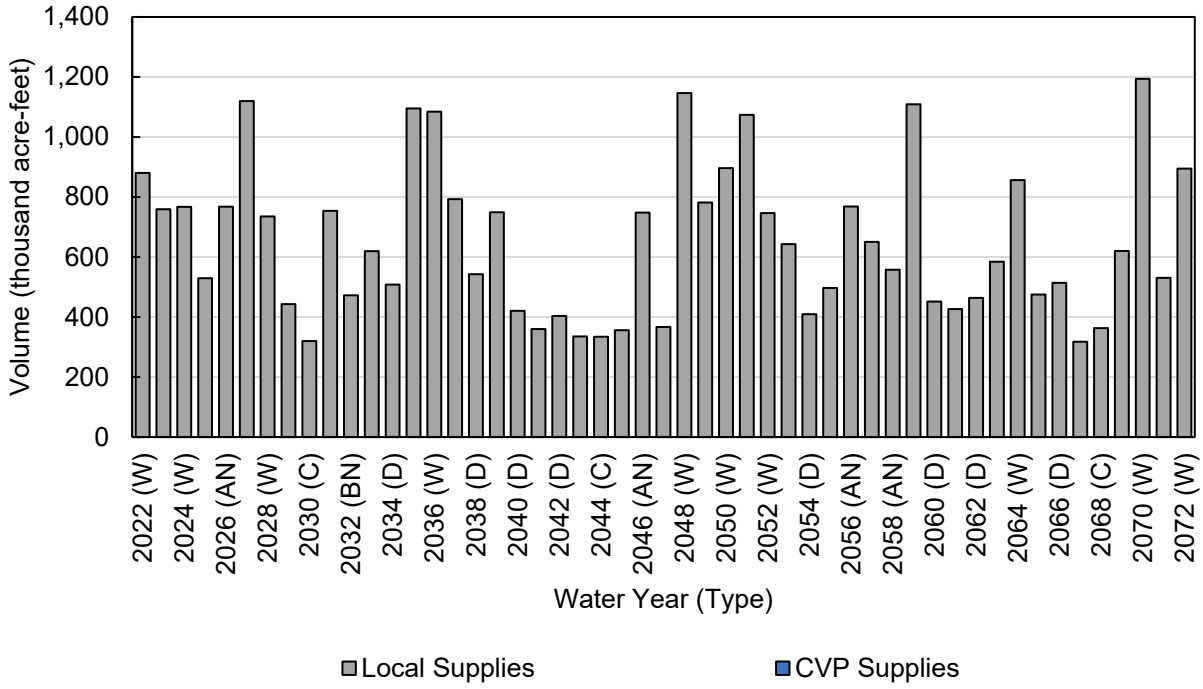


**Figure 25. Los Molinos Subbasin Projected (Current Land Use) Surface Water Inflows, by Water Source Type**

**Table 24. Los Molinos Subbasin Projected (Current Land Use) Surface Water Inflows, by Water Source Type (acre-feet)**

| Water Year (Type) | CVP Supplies | Local Supplies | Total |
|---|---|---|---|
| 2022 (W) | 0 | 880,000 | 880,000 |
| 2023 (W) | 0 | 760,000 | 760,000 |
| 2024 (W) | 0 | 770,000 | 770,000 |
| 2025 (BN) | 0 | 530,000 | 530,000 |
| 2026 (AN) | 0 | 770,000 | 770,000 |
| 2027 (W) | 0 | 1,100,000 | 1,100,000 |
| 2028 (W) | 0 | 740,000 | 740,000 |
| 2029 (C) | 0 | 440,000 | 440,000 |
| 2030 (C) | 0 | 320,000 | 320,000 |
| 2031 (AN) | 0 | 750,000 | 750,000 |
| 2032 (BN) | 0 | 470,000 | 470,000 |
| 2033 (AN) | 0 | 620,000 | 620,000 |
| 2034 (D) | 0 | 510,000 | 510,000 |
| 2035 (W) | 0 | 1,100,000 | 1,100,000 |
| 2036 (W) | 0 | 1,100,000 | 1,100,000 |
| 2037 (W) | 0 | 790,000 | 790,000 |
| 2038 (D) | 0 | 540,000 | 540,000 |
| 2039 (W) | 0 | 750,000 | 750,000 |
| 2040 (D) | 0 | 420,000 | 420,000 |
| 2041 (C) | 0 | 360,000 | 360,000 |
| 2042 (D) | 0 | 400,000 | 400,000 |
| 2043 (C) | 0 | 340,000 | 340,000 |
| 2044 (C) | 0 | 330,000 | 330,000 |
| 2045 (C) | 0 | 360,000 | 360,000 |
| 2046 (AN) | 0 | 750,000 | 750,000 |
| 2047 (C) | 0 | 370,000 | 370,000 |
| 2048 (W) | 0 | 1,100,000 | 1,100,000 |
| 2049 (W) | 0 | 780,000 | 780,000 |
| 2050 (W) | 0 | 900,000 | 900,000 |
| 2051 (W) | 0 | 1,100,000 | 1,100,000 |
| 2052 (W) | 0 | 750,000 | 750,000 |
| 2053 (AN) | 0 | 640,000 | 640,000 |
| 2054 (D) | 0 | 410,000 | 410,000 |
| 2055 (D) | 0 | 500,000 | 500,000 |
| 2056 (AN) | 0 | 770,000 | 770,000 |
| 2057 (BN) | 0 | 650,000 | 650,000 |

| Water Year (Type) | | CVP Supplies | Local Supplies | Total |
|---|---|---|---|---|
| 2058 (AN) | | 0 | 560,000 | 560,000 |
| 2059 (W) | | 0 | 1,100,000 | 1,100,000 |
| 2060 (D) | | 0 | 450,000 | 450,000 |
| 2061 (C) | | 0 | 430,000 | 430,000 |
| 2062 (D) | | 0 | 460,000 | 460,000 |
| 2063 (BN) | | 0 | 580,000 | 580,000 |
| 2064 (W) | | 0 | 860,000 | 860,000 |
| 2065 (BN) | | 0 | 470,000 | 470,000 |
| 2066 (D) | | 0 | 510,000 | 510,000 |
| 2067 (C) | | 0 | 320,000 | 320,000 |
| 2068 (C) | | 0 | 360,000 | 360,000 |
| 2069 (BN) | | 0 | 620,000 | 620,000 |
| 2070 (W) | | 0 | 1,200,000 | 1,200,000 |
| 2071 (BN) | | 0 | 530,000 | 530,000 |
| 2072 (W) | | 0 | 890,000 | 890,000 |
| Average (2022-2072) | | 0 | 650,000 | 650,000 |
| 2022-2072 | W | 0 | 930,000 | 930,000 |
| | AN | 0 | 690,000 | 690,000 |
| | BN | 0 | 550,000 | 550,000 |
| | D | 0 | 470,000 | 470,000 |
| | C | 0 | 360,000 | 360,000 |

#### 2.3.1.2 *Precipitation*

Precipitation estimates for the Red Bluff Subbasin are provided in **Figure 26** and **Table 25**. Total precipitation is highly variable between years in the study area, ranging from approximately 150 taf (18.0 inches) during average critically dry years to 290 taf (34.8inches) during average wet years.

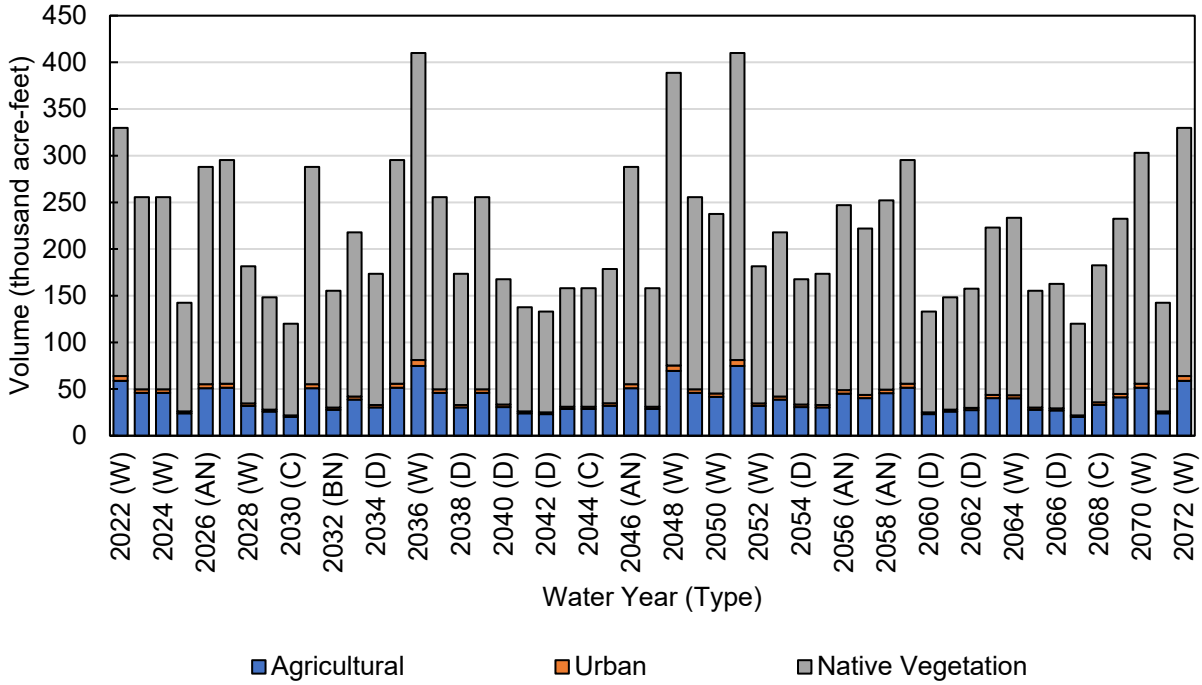


**Figure 26. Los Molinos Subbasin Projected (Current Land Use) Precipitation, by Water Use Sector**

**Table 25. Los Molinos Subbasin Projected (Current Land Use) Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 59,000 | 5,000 | 270,000 | 330,000 |
| 2023 (W) | 46,000 | 3,800 | 210,000 | 260,000 |
| 2024 (W) | 46,000 | 3,800 | 210,000 | 260,000 |
| 2025 (BN) | 24,000 | 2,000 | 120,000 | 140,000 |
| 2026 (AN) | 51,000 | 4,300 | 230,000 | 290,000 |
| 2027 (W) | 51,000 | 4,300 | 240,000 | 300,000 |
| 2028 (W) | 32,000 | 2,800 | 150,000 | 180,000 |
| 2029 (C) | 26,000 | 2,200 | 120,000 | 150,000 |
| 2030 (C) | 20,000 | 1,700 | 98,000 | 120,000 |
| 2031 (AN) | 51,000 | 4,300 | 230,000 | 290,000 |
| 2032 (BN) | 28,000 | 2,300 | 130,000 | 160,000 |
| 2033 (AN) | 39,000 | 3,400 | 180,000 | 220,000 |
| 2034 (D) | 30,000 | 2,600 | 140,000 | 170,000 |
| 2035 (W) | 51,000 | 4,300 | 240,000 | 300,000 |
| 2036 (W) | 75,000 | 6,400 | 330,000 | 410,000 |
| 2037 (W) | 46,000 | 3,800 | 210,000 | 260,000 |
| 2038 (D) | 30,000 | 2,600 | 140,000 | 170,000 |
| 2039 (W) | 46,000 | 3,800 | 210,000 | 260,000 |
| 2040 (D) | 31,000 | 2,600 | 130,000 | 170,000 |
| 2041 (C) | 24,000 | 2,100 | 110,000 | 140,000 |
| 2042 (D) | 23,000 | 2,000 | 110,000 | 130,000 |
| 2043 (C) | 29,000 | 2,400 | 130,000 | 160,000 |
| 2044 (C) | 29,000 | 2,400 | 130,000 | 160,000 |
| 2045 (C) | 32,000 | 2,700 | 140,000 | 180,000 |
| 2046 (AN) | 51,000 | 4,300 | 230,000 | 290,000 |
| 2047 (C) | 29,000 | 2,400 | 130,000 | 160,000 |
| 2048 (W) | 69,000 | 5,900 | 310,000 | 390,000 |
| 2049 (W) | 46,000 | 3,800 | 210,000 | 260,000 |
| 2050 (W) | 42,000 | 3,600 | 190,000 | 240,000 |
| 2051 (W) | 75,000 | 6,400 | 330,000 | 410,000 |
| 2052 (W) | 32,000 | 2,800 | 150,000 | 180,000 |
| 2053 (AN) | 39,000 | 3,400 | 180,000 | 220,000 |
| 2054 (D) | 31,000 | 2,600 | 130,000 | 170,000 |
| 2055 (D) | 30,000 | 2,600 | 140,000 | 170,000 |
| 2056 (AN) | 45,000 | 3,800 | 200,000 | 250,000 |
| 2057 (BN) | 40,000 | 3,400 | 180,000 | 220,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 46,000 | 3,900 | 200,000 | 250,000 |
| 2059 (W) | | 51,000 | 4,300 | 240,000 | 300,000 |
| 2060 (D) | | 23,000 | 2,000 | 110,000 | 130,000 |
| 2061 (C) | | 26,000 | 2,200 | 120,000 | 150,000 |
| 2062 (D) | | 27,000 | 2,300 | 130,000 | 160,000 |
| 2063 (BN) | | 40,000 | 3,400 | 180,000 | 220,000 |
| 2064 (W) | | 40,000 | 3,300 | 190,000 | 230,000 |
| 2065 (BN) | | 28,000 | 2,300 | 130,000 | 160,000 |
| 2066 (D) | | 27,000 | 2,300 | 130,000 | 160,000 |
| 2067 (C) | | 20,000 | 1,700 | 98,000 | 120,000 |
| 2068 (C) | | 33,000 | 2,800 | 150,000 | 180,000 |
| 2069 (BN) | | 41,000 | 3,500 | 190,000 | 230,000 |
| 2070 (W) | | 51,000 | 4,400 | 250,000 | 300,000 |
| 2071 (BN) | | 24,000 | 2,000 | 120,000 | 140,000 |
| 2072 (W) | | 59,000 | 5,000 | 270,000 | 330,000 |
| Average (2022-2072) | | 39,000 | 3,300 | 180,000 | 220,000 |
| 2022-2072 | W | 51,000 | 4,300 | 230,000 | 290,000 |
| | AN | 46,000 | 3,900 | 210,000 | 260,000 |
| | BN | 32,000 | 2,700 | 150,000 | 180,000 |
| | D | 28,000 | 2,400 | 130,000 | 160,000 |
| | C | 27,000 | 2,300 | 120,000 | 150,000 |

#### 2.3.1.3 *Groundwater Extraction by Water Use Sector*

Total groundwater extraction in the Los Molinos Subbasin represents a combination of groundwater pumping to support agricultural and urban water demands, including rural residential use, and groundwater uptake by crops, urban vegetation, and native vegetation.

Estimates of groundwater pumping by water use sector are provided in **Figure 27** and **Table 26**. Virtually all groundwater pumping in the Los Molinos Subbasin is used to meet agricultural demand, averaging 19 taf per year. Groundwater pumping for urban use is approximately 0.910 taf per year. The total groundwater extraction varies from about 17 taf in above-normal years to 27 taf in critically dry years based on variability in surface water supplies, precipitation, and crop water demand.

When groundwater is near the land surface, groundwater uptake can also be a source of supply for vegetation. Estimates of groundwater uptake by vegetation are provided in **Figure 28** and **Table 27**. The majority of groundwater uptake is consumed directly by agricultural crops and native vegetation, totaling 3.3 taf and 3.9 taf per year, on average.

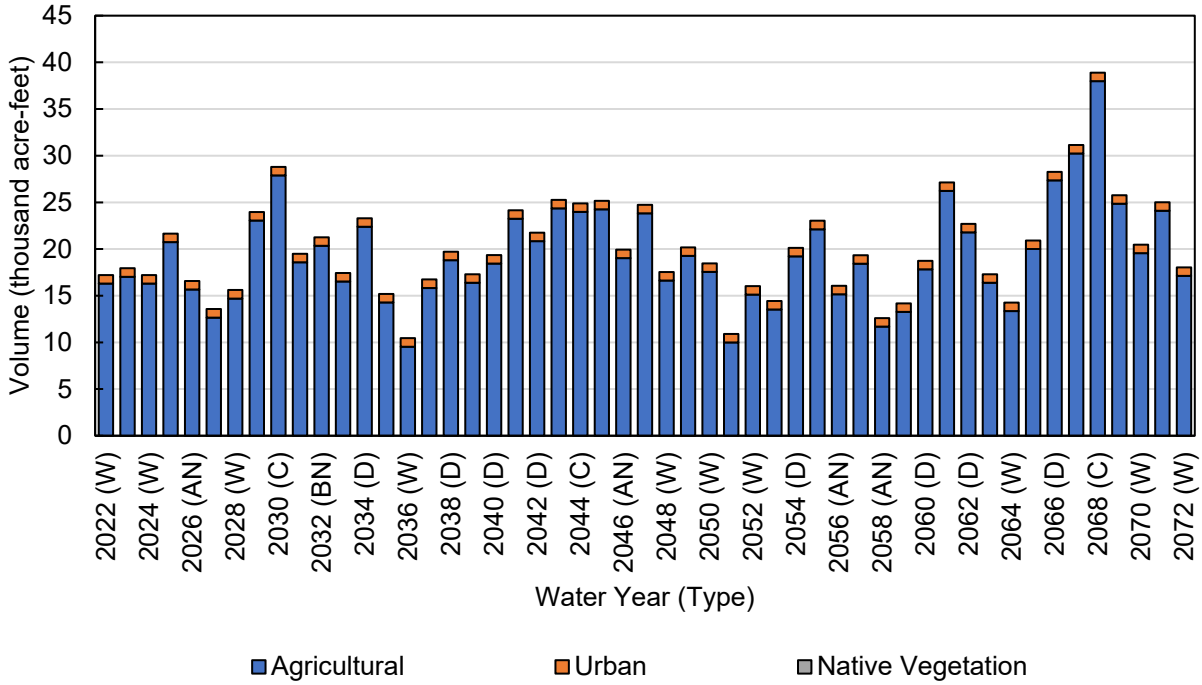


**Figure 27. Los Molinos Subbasin Projected (Current Land Use) Groundwater Pumping, by Water Use Sector**

**Table 26. Los Molinos Subbasin Projected (Current Land Use) Groundwater Pumping, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 16,000 | 910 | 0 | 17,000 |
| 2023 (W) | 17,000 | 910 | 0 | 18,000 |
| 2024 (W) | 16,000 | 910 | 0 | 17,000 |
| 2025 (BN) | 21,000 | 910 | 0 | 22,000 |
| 2026 (AN) | 16,000 | 910 | 0 | 17,000 |
| 2027 (W) | 13,000 | 910 | 0 | 14,000 |
| 2028 (W) | 15,000 | 910 | 0 | 16,000 |
| 2029 (C) | 23,000 | 910 | 0 | 24,000 |
| 2030 (C) | 28,000 | 910 | 0 | 29,000 |
| 2031 (AN) | 19,000 | 910 | 0 | 19,000 |
| 2032 (BN) | 20,000 | 910 | 0 | 21,000 |
| 2033 (AN) | 17,000 | 910 | 0 | 17,000 |
| 2034 (D) | 22,000 | 910 | 0 | 23,000 |
| 2035 (W) | 14,000 | 910 | 0 | 15,000 |
| 2036 (W) | 9,500 | 910 | 0 | 10,000 |
| 2037 (W) | 16,000 | 910 | 0 | 17,000 |
| 2038 (D) | 19,000 | 910 | 0 | 20,000 |
| 2039 (W) | 16,000 | 910 | 0 | 17,000 |
| 2040 (D) | 18,000 | 910 | 0 | 19,000 |
| 2041 (C) | 23,000 | 910 | 0 | 24,000 |
| 2042 (D) | 21,000 | 910 | 0 | 22,000 |
| 2043 (C) | 24,000 | 910 | 0 | 25,000 |
| 2044 (C) | 24,000 | 910 | 0 | 25,000 |
| 2045 (C) | 24,000 | 910 | 0 | 25,000 |
| 2046 (AN) | 19,000 | 910 | 0 | 20,000 |
| 2047 (C) | 24,000 | 910 | 0 | 25,000 |
| 2048 (W) | 17,000 | 910 | 0 | 18,000 |
| 2049 (W) | 19,000 | 910 | 0 | 20,000 |
| 2050 (W) | 18,000 | 910 | 0 | 18,000 |
| 2051 (W) | 10,000 | 910 | 0 | 11,000 |
| 2052 (W) | 15,000 | 910 | 0 | 16,000 |
| 2053 (AN) | 14,000 | 910 | 0 | 14,000 |
| 2054 (D) | 19,000 | 910 | 0 | 20,000 |
| 2055 (D) | 22,000 | 910 | 0 | 23,000 |
| 2056 (AN) | 15,000 | 910 | 0 | 16,000 |
| 2057 (BN) | 18,000 | 910 | 0 | 19,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 12,000 | 910 | 0 | 13,000 |
| 2059 (W) | | 13,000 | 910 | 0 | 14,000 |
| 2060 (D) | | 18,000 | 910 | 0 | 19,000 |
| 2061 (C) | | 26,000 | 910 | 0 | 27,000 |
| 2062 (D) | | 22,000 | 910 | 0 | 23,000 |
| 2063 (BN) | | 16,000 | 910 | 0 | 17,000 |
| 2064 (W) | | 13,000 | 910 | 0 | 14,000 |
| 2065 (BN) | | 20,000 | 910 | 0 | 21,000 |
| 2066 (D) | | 27,000 | 910 | 0 | 28,000 |
| 2067 (C) | | 30,000 | 910 | 0 | 31,000 |
| 2068 (C) | | 38,000 | 910 | 0 | 39,000 |
| 2069 (BN) | | 25,000 | 910 | 0 | 26,000 |
| 2070 (W) | | 20,000 | 910 | 0 | 20,000 |
| 2071 (BN) | | 24,000 | 910 | 0 | 25,000 |
| 2072 (W) | | 17,000 | 910 | 0 | 18,000 |
| Average (2022-2072) | | 19,000 | 910 | 0 | 20,000 |
| 2022-2072 | W | 15,000 | 910 | 0 | 16,000 |
| | AN | 16,000 | 910 | 0 | 17,000 |
| | BN | 21,000 | 910 | 0 | 22,000 |
| | D | 21,000 | 910 | 0 | 22,000 |
| | C | 27,000 | 910 | 0 | 27,000 |

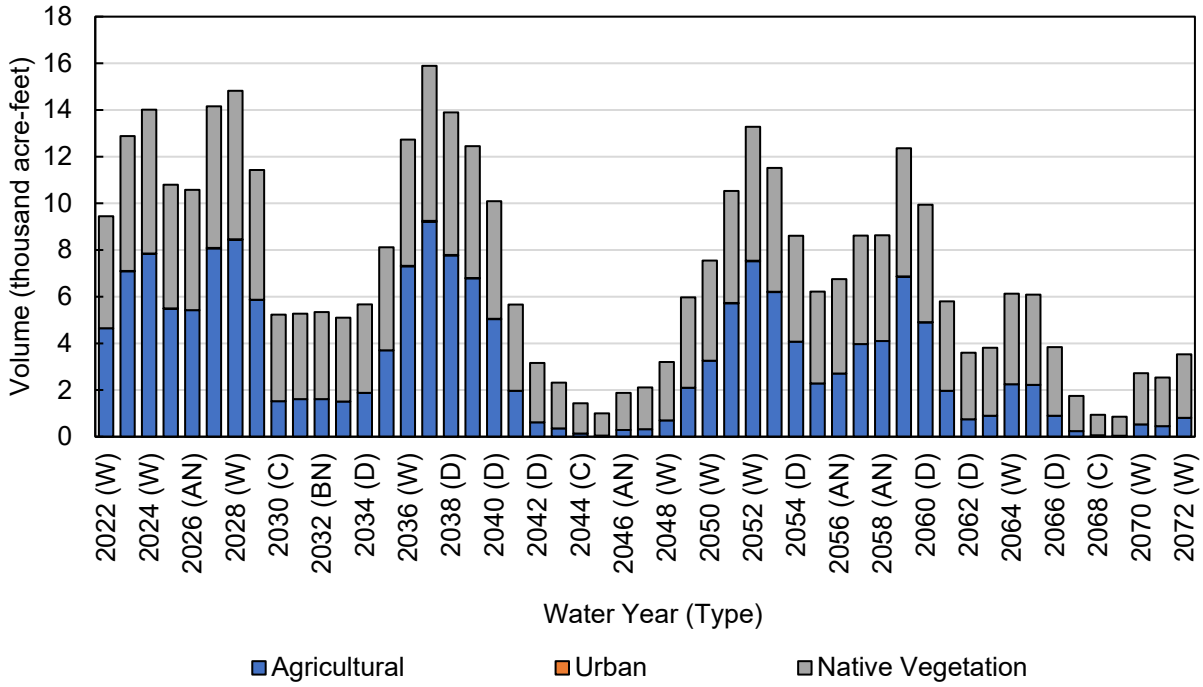


**Figure 5. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector**

**Table 5. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (BN) | 4,700 | 0 | 4,800 | 9,500 |
| 2023 (W) | 7,100 | 10 | 5,800 | 13,000 |
| 2024 (W) | 7,800 | 10 | 6,200 | 14,000 |
| 2025 (W) | 5,500 | 10 | 5,300 | 11,000 |
| 2026 (BN) | 5,400 | 0 | 5,200 | 11,000 |
| 2027 (AN) | 8,100 | 20 | 6,100 | 14,000 |
| 2028 (W) | 8,400 | 20 | 6,400 | 15,000 |
| 2029 (W) | 5,900 | 10 | 5,600 | 11,000 |
| 2030 (C) | 1,500 | 0 | 3,700 | 5,200 |
| 2031 (C) | 1,600 | 0 | 3,700 | 5,300 |
| 2032 (AN) | 1,600 | 0 | 3,700 | 5,300 |
| 2033 (BN) | 1,500 | 0 | 3,600 | 5,100 |
| 2034 (AN) | 1,900 | 0 | 3,800 | 5,700 |
| 2035 (D) | 3,700 | 0 | 4,400 | 8,100 |
| 2036 (W) | 7,300 | 20 | 5,400 | 13,000 |
| 2037 (W) | 9,200 | 40 | 6,600 | 16,000 |
| 2038 (W) | 7,800 | 20 | 6,100 | 14,000 |
| 2039 (D) | 6,800 | 10 | 5,700 | 12,000 |
| 2040 (W) | 5,000 | 10 | 5,000 | 10,000 |
| 2041 (D) | 2,000 | 0 | 3,700 | 5,700 |
| 2042 (C) | 620 | 0 | 2,500 | 3,200 |
| 2043 (D) | 360 | 0 | 2,000 | 2,300 |
| 2044 (C) | 140 | 0 | 1,300 | 1,400 |
| 2045 (C) | 50 | 0 | 950 | 1,000 |
| 2046 (C) | 290 | 0 | 1,600 | 1,900 |
| 2047 (AN) | 320 | 0 | 1,800 | 2,100 |
| 2048 (C) | 700 | 0 | 2,500 | 3,200 |
| 2049 (W) | 2,100 | 0 | 3,900 | 6,000 |
| 2050 (W) | 3,300 | 0 | 4,300 | 7,600 |
| 2051 (W) | 5,700 | 10 | 4,800 | 11,000 |
| 2052 (W) | 7,500 | 20 | 5,700 | 13,000 |
| 2053 (W) | 6,200 | 10 | 5,300 | 12,000 |
| 2054 (AN) | 4,100 | 0 | 4,500 | 8,600 |
| 2055 (D) | 2,300 | 0 | 3,900 | 6,200 |
| 2056 (D) | 2,700 | 0 | 4,000 | 6,800 |
| 2057 (AN) | 4,000 | 0 | 4,700 | 8,600 |
| 2058 (BN) | 4,100 | 0 | 4,500 | 8,600 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2059 (AN) | | 6,900 | 10 | 5,500 | 12,000 |
| 2060 (W) | | 4,900 | 10 | 5,000 | 9,900 |
| 2061 (D) | | 2,000 | 0 | 3,800 | 5,800 |
| 2062 (C) | | 750 | 0 | 2,900 | 3,600 |
| 2063 (D) | | 900 | 0 | 2,900 | 3,800 |
| 2064 (BN) | | 2,300 | 0 | 3,900 | 6,100 |
| 2065 (W) | | 2,200 | 0 | 3,900 | 6,100 |
| 2066 (BN) | | 900 | 0 | 2,900 | 3,800 |
| 2067 (D) | | 240 | 0 | 1,500 | 1,800 |
| 2068 (C) | | 60 | 0 | 880 | 940 |
| 2069 (C) | | 40 | 0 | 820 | 860 |
| 2070 (BN) | | 530 | 0 | 2,200 | 2,700 |
| 2071 (W) | | 450 | 0 | 2,100 | 2,500 |
| 2072 (W) | | 810 | 0 | 2,700 | 3,500 |
| Average (2022-2072) | | 3,300 | 0 | 3,900 | 7,300 |
| 2022-2072 | W | 5,200 | 10 | 4,800 | 10,000 |
| | AN | 3,100 | 0 | 4,000 | 7,100 |
| | BN | 2,100 | 0 | 3,300 | 5,400 |
| | D | 3,100 | 0 | 4,100 | 7,200 |
| | C | 1,300 | 0 | 2,500 | 3,800 |

#### 2.3.1.4 *Groundwater Discharge to Surface Waterways*

Groundwater discharge to surface water, as described herein, represents a gain, or increase of flow, in waterways that traverse or flow along the boundary of the Los Molinos Subbasin. Groundwater discharge in the Los Molinos Subbasin is calculated from the Tehama IHM as the net groundwater outflow to water reaches (i.e., groundwater discharge) in excess of groundwater inflows from waterway reaches (i.e., seepage). The total volume of estimated annual groundwater discharge to surface water is zero throughout the projected period.

### 2.3.2 Outflows

#### 2.3.2.1 *Evapotranspiration by Water Use Sector*

Evapotranspiration (ET) by water use sector is reported in **Figure 29** through **Figure 32**, and **Table 28** through **Table 31**. First, total ET is reported, followed by ET from applied water (ET of water actively applied from surface water deliveries or groundwater pumping), ET of groundwater uptake (ET of shallow water extracted directly by vegetation), and ET from precipitation (ET of water supplied through rainfall).

Total ET varies between years, with the lowest projected average in critically dry and dry years, at approximately 160 taf, and greatest in wet and above normal years, at approximately 180 taf. Agricultural ET tends to increase slightly in drier years due to increased climatic demand, while the ET of native vegetation typically decreases due to reduced water supply.

ET of applied water occurs primarily from agricultural land, averaging about 38 taf in above-normal years and about 44 to 47 taf in years classified as below normal, dry, or critical. Urban ET of applied water is lower and relatively constant between years, averaging less 0.250 to 0.350 taf per year. Native vegetation and agricultural crops in the Los Molinos Subbasin also directly consume shallow groundwater to meet a portion of their consumptive use requirements. ET of groundwater uptake by native vegetation and agricultural crops averages about 3.9 and 3.3 taf per year, respectively.

ET of precipitation generally follows the pattern of precipitation, with higher volumes occurring in wet years when more precipitation occurs. Across all water use sectors, ET of precipitation in the Los Molinos Subbasin averages about 130 taf in wet years and 110 taf in critically dry water years. Much of the total ET of precipitation results from the large acreage of native vegetation and Agricultural land in the Los Molinos Subbasin, though some contribution is from urban areas as well.

Evaporation from rivers, streams, and canals in the Los Molinos Subbasin is reported in **Figure 33** and **Table 32**. The total volume averages 2.2 taf per year. Evaporation from upgradient small watersheds is minimal, and is also not considered to substantially contribute to the subbasin SWS water budget.

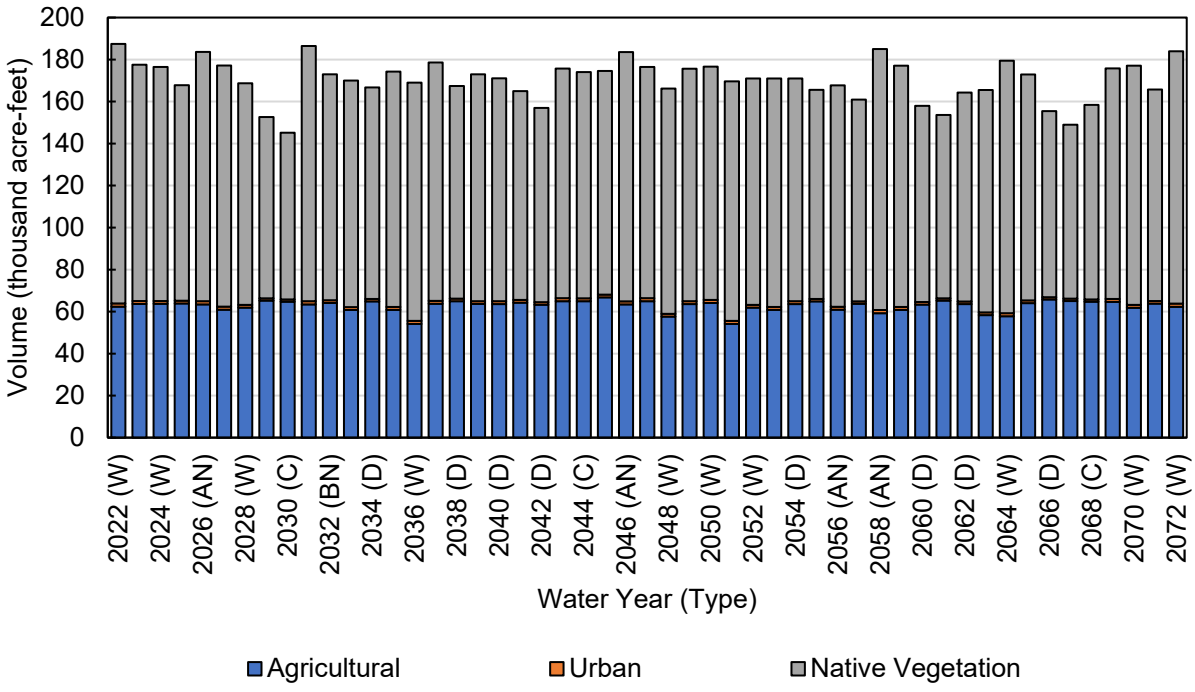


**Figure 29. Los Molinos Subbasin Projected (Current Land Use) Total Evapotranspiration, by Water Use Sector**

**Table 28. Los Molinos Subbasin Projected (Current Land Use) Total Evapotranspiration, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 62,000 | 1,500 | 120,000 | 190,000 |
| 2023 (W) | 64,000 | 1,400 | 110,000 | 180,000 |
| 2024 (W) | 64,000 | 1,300 | 110,000 | 180,000 |
| 2025 (BN) | 64,000 | 1,300 | 100,000 | 170,000 |
| 2026 (AN) | 63,000 | 1,500 | 120,000 | 180,000 |
| 2027 (W) | 61,000 | 1,400 | 110,000 | 180,000 |
| 2028 (W) | 62,000 | 1,300 | 110,000 | 170,000 |
| 2029 (C) | 65,000 | 1,100 | 86,000 | 150,000 |
| 2030 (C) | 65,000 | 1,100 | 79,000 | 150,000 |
| 2031 (AN) | 63,000 | 1,500 | 120,000 | 190,000 |
| 2032 (BN) | 64,000 | 1,300 | 110,000 | 170,000 |
| 2033 (AN) | 61,000 | 1,400 | 110,000 | 170,000 |
| 2034 (D) | 65,000 | 1,200 | 100,000 | 170,000 |
| 2035 (W) | 61,000 | 1,400 | 110,000 | 170,000 |
| 2036 (W) | 54,000 | 1,400 | 110,000 | 170,000 |
| 2037 (W) | 64,000 | 1,400 | 110,000 | 180,000 |
| 2038 (D) | 65,000 | 1,200 | 100,000 | 170,000 |
| 2039 (W) | 64,000 | 1,300 | 110,000 | 170,000 |
| 2040 (D) | 64,000 | 1,300 | 110,000 | 170,000 |
| 2041 (C) | 64,000 | 1,300 | 99,000 | 170,000 |
| 2042 (D) | 63,000 | 1,200 | 92,000 | 160,000 |
| 2043 (C) | 65,000 | 1,400 | 110,000 | 180,000 |
| 2044 (C) | 65,000 | 1,400 | 110,000 | 170,000 |
| 2045 (C) | 67,000 | 1,300 | 110,000 | 170,000 |
| 2046 (AN) | 63,000 | 1,500 | 120,000 | 180,000 |
| 2047 (C) | 65,000 | 1,400 | 110,000 | 180,000 |
| 2048 (W) | 58,000 | 1,300 | 110,000 | 170,000 |
| 2049 (W) | 64,000 | 1,300 | 110,000 | 180,000 |
| 2050 (W) | 64,000 | 1,400 | 110,000 | 180,000 |
| 2051 (W) | 54,000 | 1,400 | 110,000 | 170,000 |
| 2052 (W) | 62,000 | 1,300 | 110,000 | 170,000 |
| 2053 (AN) | 61,000 | 1,400 | 110,000 | 170,000 |
| 2054 (D) | 64,000 | 1,300 | 110,000 | 170,000 |
| 2055 (D) | 65,000 | 1,200 | 100,000 | 170,000 |
| 2056 (AN) | 61,000 | 1,400 | 110,000 | 170,000 |
| 2057 (BN) | 64,000 | 1,100 | 96,000 | 160,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 59,000 | 1,600 | 120,000 | 190,000 |
| 2059 (W) | | 61,000 | 1,400 | 110,000 | 180,000 |
| 2060 (D) | | 63,000 | 1,200 | 93,000 | 160,000 |
| 2061 (C) | | 65,000 | 1,100 | 87,000 | 150,000 |
| 2062 (D) | | 64,000 | 1,300 | 99,000 | 160,000 |
| 2063 (BN) | | 58,000 | 1,300 | 110,000 | 170,000 |
| 2064 (W) | | 58,000 | 1,500 | 120,000 | 180,000 |
| 2065 (BN) | | 64,000 | 1,300 | 110,000 | 170,000 |
| 2066 (D) | | 66,000 | 1,100 | 89,000 | 160,000 |
| 2067 (C) | | 65,000 | 1,100 | 83,000 | 150,000 |
| 2068 (C) | | 65,000 | 1,100 | 93,000 | 160,000 |
| 2069 (BN) | | 65,000 | 1,400 | 110,000 | 180,000 |
| 2070 (W) | | 62,000 | 1,300 | 110,000 | 180,000 |
| 2071 (BN) | | 64,000 | 1,300 | 100,000 | 170,000 |
| 2072 (W) | | 62,000 | 1,500 | 120,000 | 180,000 |
| Average (2022-2072) | | 63,000 | 1,300 | 110,000 | 170,000 |
| 2022-2072 | W | 61,000 | 1,400 | 110,000 | 180,000 |
| | AN | 62,000 | 1,400 | 120,000 | 180,000 |
| | BN | 63,000 | 1,300 | 100,000 | 170,000 |
| | D | 64,000 | 1,200 | 99,000 | 160,000 |
| | C | 65,000 | 1,200 | 96,000 | 160,000 |

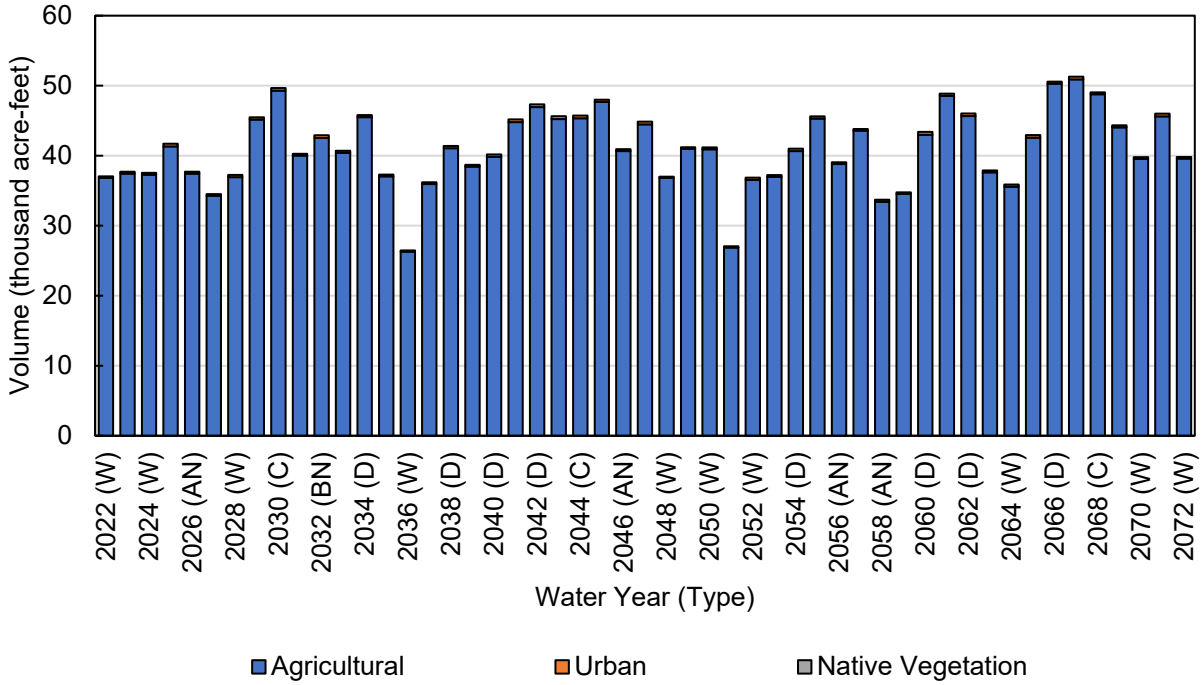


**Figure 30. Los Molinos Subbasin Projected (Current Land Use) Evapotranspiration of Applied Water, by Water Use Sector**

**Table 29. Los Molinos Subbasin Projected (Current Land Use) Evapotranspiration of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 37,000 | 230 | 0 | 37,000 |
| 2023 (W) | 37,000 | 260 | 0 | 38,000 |
| 2024 (W) | 37,000 | 260 | 0 | 38,000 |
| 2025 (BN) | 41,000 | 390 | 0 | 42,000 |
| 2026 (AN) | 37,000 | 260 | 0 | 38,000 |
| 2027 (W) | 34,000 | 240 | 0 | 35,000 |
| 2028 (W) | 37,000 | 320 | 0 | 37,000 |
| 2029 (C) | 45,000 | 310 | 0 | 45,000 |
| 2030 (C) | 49,000 | 370 | 0 | 50,000 |
| 2031 (AN) | 40,000 | 260 | 0 | 40,000 |
| 2032 (BN) | 43,000 | 380 | 0 | 43,000 |
| 2033 (AN) | 40,000 | 290 | 0 | 41,000 |
| 2034 (D) | 46,000 | 310 | 0 | 46,000 |
| 2035 (W) | 37,000 | 240 | 0 | 37,000 |
| 2036 (W) | 26,000 | 180 | 0 | 26,000 |
| 2037 (W) | 36,000 | 260 | 0 | 36,000 |
| 2038 (D) | 41,000 | 310 | 0 | 41,000 |
| 2039 (W) | 38,000 | 250 | 0 | 39,000 |
| 2040 (D) | 40,000 | 340 | 0 | 40,000 |
| 2041 (C) | 45,000 | 390 | 0 | 45,000 |
| 2042 (D) | 47,000 | 390 | 0 | 47,000 |
| 2043 (C) | 45,000 | 390 | 0 | 46,000 |
| 2044 (C) | 45,000 | 390 | 0 | 46,000 |
| 2045 (C) | 48,000 | 330 | 0 | 48,000 |
| 2046 (AN) | 41,000 | 260 | 0 | 41,000 |
| 2047 (C) | 44,000 | 390 | 0 | 45,000 |
| 2048 (W) | 37,000 | 180 | 0 | 37,000 |
| 2049 (W) | 41,000 | 250 | 0 | 41,000 |
| 2050 (W) | 41,000 | 280 | 0 | 41,000 |
| 2051 (W) | 27,000 | 180 | 0 | 27,000 |
| 2052 (W) | 37,000 | 320 | 0 | 37,000 |
| 2053 (AN) | 37,000 | 290 | 0 | 37,000 |
| 2054 (D) | 41,000 | 340 | 0 | 41,000 |
| 2055 (D) | 45,000 | 310 | 0 | 46,000 |
| 2056 (AN) | 39,000 | 260 | 0 | 39,000 |
| 2057 (BN) | 44,000 | 240 | 0 | 44,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 33,000 | 300 | 0 | 34,000 |
| 2059 (W) | | 35,000 | 240 | 0 | 35,000 |
| 2060 (D) | | 43,000 | 390 | 0 | 43,000 |
| 2061 (C) | | 49,000 | 320 | 0 | 49,000 |
| 2062 (D) | | 46,000 | 360 | 0 | 46,000 |
| 2063 (BN) | | 38,000 | 280 | 0 | 38,000 |
| 2064 (W) | | 36,000 | 320 | 0 | 36,000 |
| 2065 (BN) | | 43,000 | 380 | 0 | 43,000 |
| 2066 (D) | | 50,000 | 300 | 0 | 51,000 |
| 2067 (C) | | 51,000 | 380 | 0 | 51,000 |
| 2068 (C) | | 49,000 | 270 | 0 | 49,000 |
| 2069 (BN) | | 44,000 | 290 | 0 | 44,000 |
| 2070 (W) | | 40,000 | 230 | 0 | 40,000 |
| 2071 (BN) | | 46,000 | 390 | 0 | 46,000 |
| 2072 (W) | | 40,000 | 230 | 0 | 40,000 |
| Average (2022-2072) | | 41,000 | 300 | 0 | 41,000 |
| 2022-2072 | W | 36,000 | 250 | 0 | 37,000 |
| | AN | 38,000 | 270 | 0 | 40,000 |
| | BN | 42,000 | 340 | 0 | 42,000 |
| | D | 44,000 | 340 | 0 | 44,000 |
| | C | 47,000 | 350 | 0 | 46,000 |

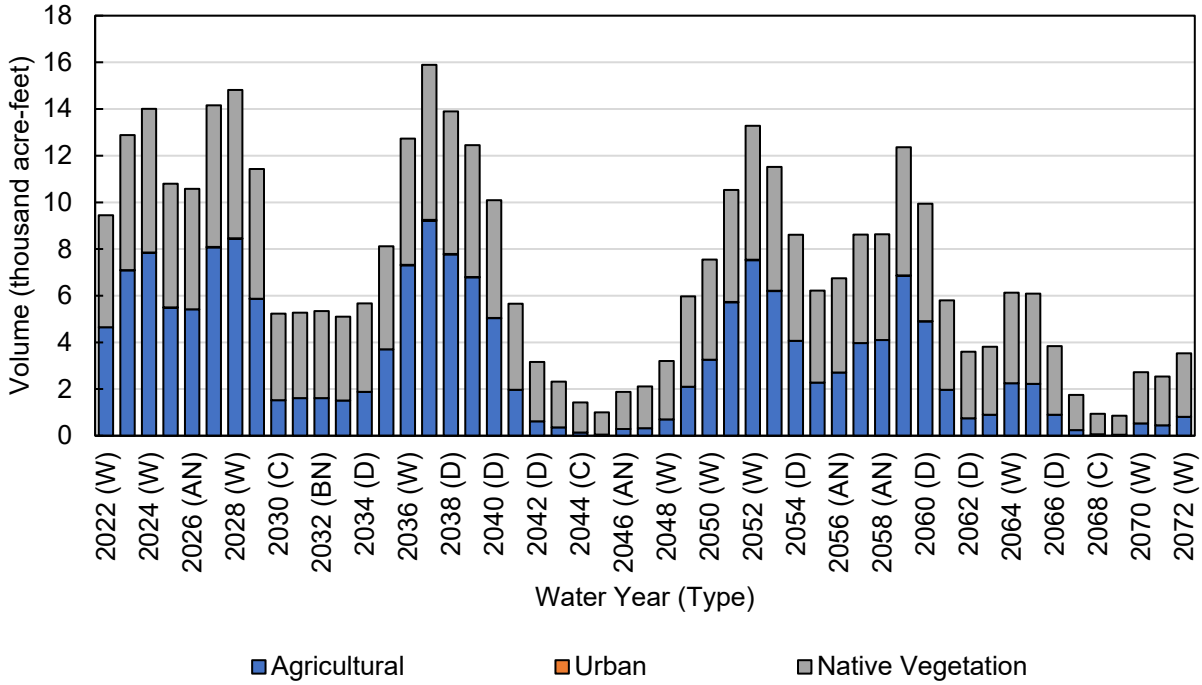


**Figure 31. Los Molinos Subbasin Projected (Current Land Use) Evapotranspiration of Groundwater Uptake, by Water Use Sector**

**Table 30. Los Molinos Subbasin Projected (Current Land Use) Evapotranspiration of Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 4,700 | 0 | 4,800 | 9,500 |
| 2023 (W) | 7,100 | 10 | 5,800 | 13,000 |
| 2024 (W) | 7,800 | 10 | 6,200 | 14,000 |
| 2025 (BN) | 5,500 | 10 | 5,300 | 11,000 |
| 2026 (AN) | 5,400 | 0 | 5,200 | 11,000 |
| 2027 (W) | 8,100 | 20 | 6,100 | 14,000 |
| 2028 (W) | 8,400 | 20 | 6,400 | 15,000 |
| 2029 (C) | 5,900 | 10 | 5,600 | 11,000 |
| 2030 (C) | 1,500 | 0 | 3,700 | 5,200 |
| 2031 (AN) | 1,600 | 0 | 3,700 | 5,300 |
| 2032 (BN) | 1,600 | 0 | 3,700 | 5,300 |
| 2033 (AN) | 1,500 | 0 | 3,600 | 5,100 |
| 2034 (D) | 1,900 | 0 | 3,800 | 5,700 |
| 2035 (W) | 3,700 | 0 | 4,400 | 8,100 |
| 2036 (W) | 7,300 | 20 | 5,400 | 13,000 |
| 2037 (W) | 9,200 | 40 | 6,600 | 16,000 |
| 2038 (D) | 7,800 | 20 | 6,100 | 14,000 |
| 2039 (W) | 6,800 | 10 | 5,700 | 12,000 |
| 2040 (D) | 5,000 | 10 | 5,000 | 10,000 |
| 2041 (C) | 2,000 | 0 | 3,700 | 5,700 |
| 2042 (D) | 620 | 0 | 2,500 | 3,200 |
| 2043 (C) | 360 | 0 | 2,000 | 2,300 |
| 2044 (C) | 140 | 0 | 1,300 | 1,400 |
| 2045 (C) | 50 | 0 | 950 | 1,000 |
| 2046 (AN) | 290 | 0 | 1,600 | 1,900 |
| 2047 (C) | 320 | 0 | 1,800 | 2,100 |
| 2048 (W) | 700 | 0 | 2,500 | 3,200 |
| 2049 (W) | 2,100 | 0 | 3,900 | 6,000 |
| 2050 (W) | 3,300 | 0 | 4,300 | 7,600 |
| 2051 (W) | 5,700 | 10 | 4,800 | 11,000 |
| 2052 (W) | 7,500 | 20 | 5,700 | 13,000 |
| 2053 (AN) | 6,200 | 10 | 5,300 | 12,000 |
| 2054 (D) | 4,100 | 0 | 4,500 | 8,600 |
| 2055 (D) | 2,300 | 0 | 3,900 | 6,200 |
| 2056 (AN) | 2,700 | 0 | 4,000 | 6,800 |
| 2057 (BN) | 4,000 | 0 | 4,700 | 8,600 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 4,100 | 0 | 4,500 | 8,600 |
| 2059 (W) | | 6,900 | 10 | 5,500 | 12,000 |
| 2060 (D) | | 4,900 | 10 | 5,000 | 9,900 |
| 2061 (C) | | 2,000 | 0 | 3,800 | 5,800 |
| 2062 (D) | | 750 | 0 | 2,900 | 3,600 |
| 2063 (BN) | | 900 | 0 | 2,900 | 3,800 |
| 2064 (W) | | 2,300 | 0 | 3,900 | 6,100 |
| 2065 (BN) | | 2,200 | 0 | 3,900 | 6,100 |
| 2066 (D) | | 900 | 0 | 2,900 | 3,800 |
| 2067 (C) | | 240 | 0 | 1,500 | 1,800 |
| 2068 (C) | | 60 | 0 | 880 | 940 |
| 2069 (BN) | | 40 | 0 | 820 | 860 |
| 2070 (W) | | 530 | 0 | 2,200 | 2,700 |
| 2071 (BN) | | 450 | 0 | 2,100 | 2,500 |
| 2072 (W) | | 810 | 0 | 2,700 | 3,500 |
| Average (2022-2072) | | 3,300 | 0 | 3,900 | 7,300 |
| 2022-2072 | W | 5,200 | 10 | 4,800 | 10,000 |
| | AN | 3,100 | 0 | 4,000 | 7,100 |
| | BN | 2,100 | 0 | 3,300 | 5,400 |
| | D | 3,100 | 0 | 4,100 | 7,200 |
| | C | 1,300 | 0 | 2,500 | 3,800 |

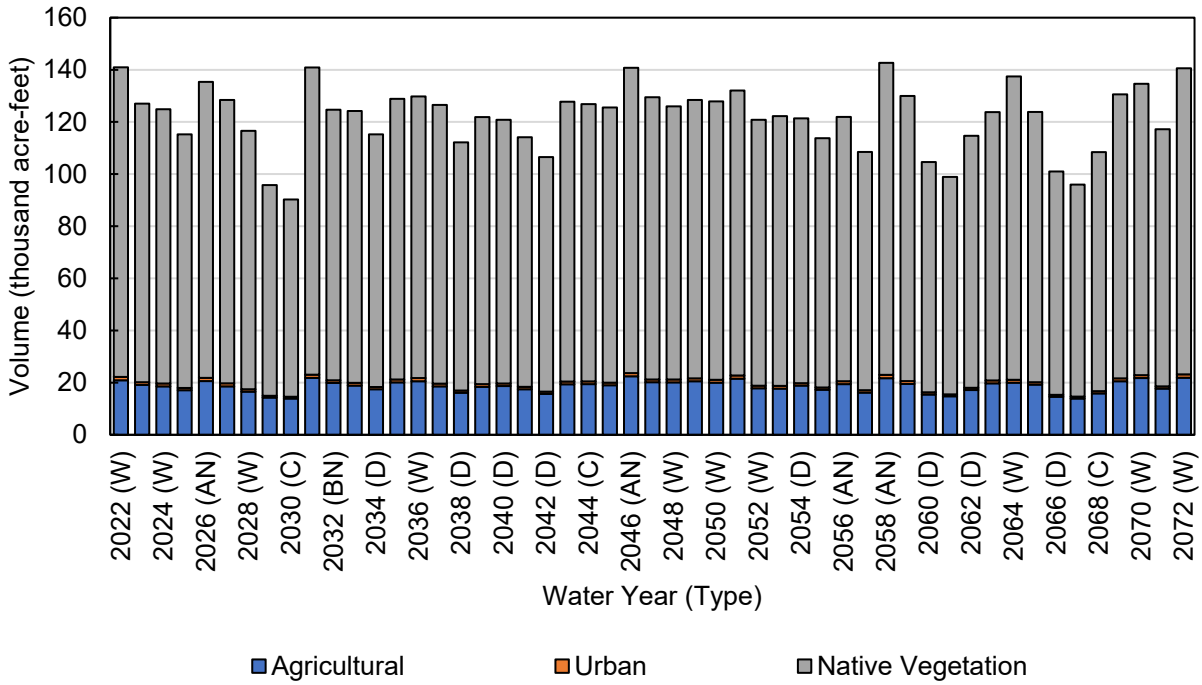


**Figure 32. Los Molinos Subbasin Projected (Current Land Use) Evapotranspiration of Precipitation, by Water Use Sector**

**Table 31. Los Molinos Subbasin Projected (Current Land Use) Evapotranspiration of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 21,000 | 1,300 | 120,000 | 140,000 |
| 2023 (W) | 19,000 | 1,100 | 110,000 | 130,000 |
| 2024 (W) | 19,000 | 1,100 | 110,000 | 120,000 |
| 2025 (BN) | 17,000 | 870 | 97,000 | 120,000 |
| 2026 (AN) | 21,000 | 1,200 | 110,000 | 140,000 |
| 2027 (W) | 19,000 | 1,100 | 110,000 | 130,000 |
| 2028 (W) | 17,000 | 960 | 99,000 | 120,000 |
| 2029 (C) | 14,000 | 730 | 81,000 | 96,000 |
| 2030 (C) | 14,000 | 680 | 76,000 | 90,000 |
| 2031 (AN) | 22,000 | 1,300 | 120,000 | 140,000 |
| 2032 (BN) | 20,000 | 960 | 100,000 | 120,000 |
| 2033 (AN) | 19,000 | 1,100 | 100,000 | 120,000 |
| 2034 (D) | 17,000 | 880 | 97,000 | 120,000 |
| 2035 (W) | 20,000 | 1,100 | 110,000 | 130,000 |
| 2036 (W) | 21,000 | 1,200 | 110,000 | 130,000 |
| 2037 (W) | 19,000 | 1,100 | 110,000 | 130,000 |
| 2038 (D) | 16,000 | 870 | 95,000 | 110,000 |
| 2039 (W) | 18,000 | 1,100 | 100,000 | 120,000 |
| 2040 (D) | 19,000 | 970 | 100,000 | 120,000 |
| 2041 (C) | 18,000 | 900 | 96,000 | 110,000 |
| 2042 (D) | 16,000 | 840 | 90,000 | 110,000 |
| 2043 (C) | 19,000 | 1,000 | 110,000 | 130,000 |
| 2044 (C) | 19,000 | 1,000 | 110,000 | 130,000 |
| 2045 (C) | 19,000 | 990 | 110,000 | 130,000 |
| 2046 (AN) | 22,000 | 1,200 | 120,000 | 140,000 |
| 2047 (C) | 20,000 | 1,000 | 110,000 | 130,000 |
| 2048 (W) | 20,000 | 1,200 | 100,000 | 130,000 |
| 2049 (W) | 21,000 | 1,100 | 110,000 | 130,000 |
| 2050 (W) | 20,000 | 1,100 | 110,000 | 130,000 |
| 2051 (W) | 22,000 | 1,300 | 110,000 | 130,000 |
| 2052 (W) | 18,000 | 970 | 100,000 | 120,000 |
| 2053 (AN) | 18,000 | 1,100 | 100,000 | 120,000 |
| 2054 (D) | 19,000 | 970 | 100,000 | 120,000 |
| 2055 (D) | 17,000 | 880 | 96,000 | 110,000 |
| 2056 (AN) | 19,000 | 1,100 | 100,000 | 120,000 |
| 2057 (BN) | 16,000 | 890 | 91,000 | 110,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 22,000 | 1,300 | 120,000 | 140,000 |
| 2059 (W) | | 19,000 | 1,100 | 110,000 | 130,000 |
| 2060 (D) | | 15,000 | 840 | 88,000 | 100,000 |
| 2061 (C) | | 15,000 | 750 | 83,000 | 99,000 |
| 2062 (D) | | 17,000 | 910 | 97,000 | 110,000 |
| 2063 (BN) | | 20,000 | 1,100 | 100,000 | 120,000 |
| 2064 (W) | | 20,000 | 1,200 | 120,000 | 140,000 |
| 2065 (BN) | | 19,000 | 960 | 100,000 | 120,000 |
| 2066 (D) | | 15,000 | 750 | 86,000 | 100,000 |
| 2067 (C) | | 14,000 | 710 | 81,000 | 96,000 |
| 2068 (C) | | 16,000 | 830 | 92,000 | 110,000 |
| 2069 (BN) | | 21,000 | 1,100 | 110,000 | 130,000 |
| 2070 (W) | | 22,000 | 1,100 | 110,000 | 130,000 |
| 2071 (BN) | | 18,000 | 870 | 99,000 | 120,000 |
| 2072 (W) | | 22,000 | 1,300 | 120,000 | 140,000 |
| Average (2022-2072) | | 19,000 | 1,000 | 100,000 | 120,000 |
| 2022-2072 | W | 20,000 | 1,100 | 110,000 | 130,000 |
| | AN | 20,000 | 1,200 | 110,000 | 130,000 |
| | BN | 19,000 | 960 | 100,000 | 120,000 |
| | D | 17,000 | 880 | 95,000 | 110,000 |
| | C | 17,000 | 870 | 94,000 | 110,000 |

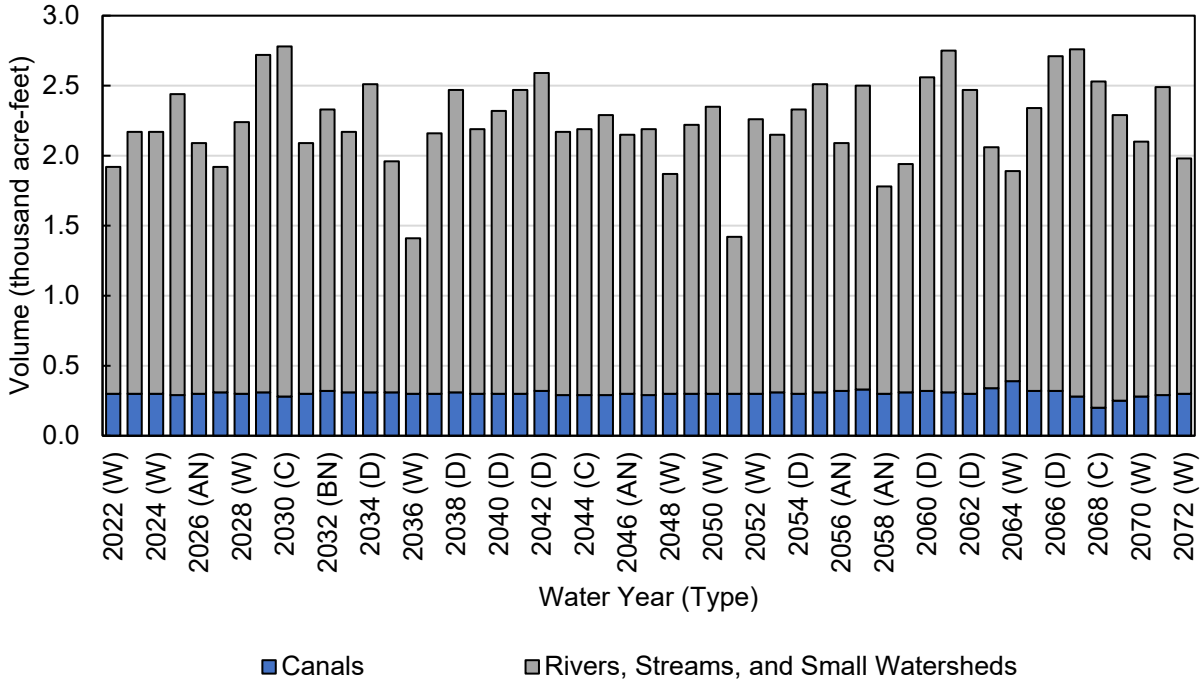


**Figure 33. Los Molinos Subbasin Projected (Current Land Use) Evaporation of Surface Water Sources**

**Table 32. Los Molinos Subbasin Projected (Current Land Use) Evaporation of Surface Water Sources, by Water Use Sector (acre-feet)**

| Water Year (Type) | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|
| 2022 (W) | 300 | 1,600 | 1,900 |
| 2023 (W) | 300 | 1,900 | 2,200 |
| 2024 (W) | 300 | 1,900 | 2,200 |
| 2025 (BN) | 290 | 2,200 | 2,400 |
| 2026 (AN) | 300 | 1,800 | 2,100 |
| 2027 (W) | 310 | 1,600 | 1,900 |
| 2028 (W) | 300 | 1,900 | 2,200 |
| 2029 (C) | 310 | 2,400 | 2,700 |
| 2030 (C) | 280 | 2,500 | 2,800 |
| 2031 (AN) | 300 | 1,800 | 2,100 |
| 2032 (BN) | 320 | 2,000 | 2,300 |
| 2033 (AN) | 310 | 1,900 | 2,200 |
| 2034 (D) | 310 | 2,200 | 2,500 |
| 2035 (W) | 310 | 1,700 | 2,000 |
| 2036 (W) | 300 | 1,100 | 1,400 |
| 2037 (W) | 300 | 1,900 | 2,200 |
| 2038 (D) | 310 | 2,200 | 2,500 |
| 2039 (W) | 300 | 1,900 | 2,200 |
| 2040 (D) | 300 | 2,000 | 2,300 |
| 2041 (C) | 300 | 2,200 | 2,500 |
| 2042 (D) | 320 | 2,300 | 2,600 |
| 2043 (C) | 290 | 1,900 | 2,200 |
| 2044 (C) | 290 | 1,900 | 2,200 |
| 2045 (C) | 290 | 2,000 | 2,300 |
| 2046 (AN) | 300 | 1,900 | 2,200 |
| 2047 (C) | 290 | 1,900 | 2,200 |
| 2048 (W) | 300 | 1,600 | 1,900 |
| 2049 (W) | 300 | 1,900 | 2,200 |
| 2050 (W) | 300 | 2,100 | 2,400 |
| 2051 (W) | 300 | 1,100 | 1,400 |
| 2052 (W) | 300 | 2,000 | 2,300 |
| 2053 (AN) | 310 | 1,800 | 2,200 |
| 2054 (D) | 300 | 2,000 | 2,300 |
| 2055 (D) | 310 | 2,200 | 2,500 |
| 2056 (AN) | 320 | 1,800 | 2,100 |
| 2057 (BN) | 330 | 2,200 | 2,500 |
| 2058 (AN) | 300 | 1,500 | 1,800 |

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|---|
| 2059 (W) | | 310 | 1,600 | 1,900 |
| 2060 (D) | | 320 | 2,200 | 2,600 |
| 2061 (C) | | 310 | 2,400 | 2,800 |
| 2062 (D) | | 300 | 2,200 | 2,500 |
| 2063 (BN) | | 340 | 1,700 | 2,100 |
| 2064 (W) | | 390 | 1,500 | 1,900 |
| 2065 (BN) | | 320 | 2,000 | 2,300 |
| 2066 (D) | | 320 | 2,400 | 2,700 |
| 2067 (C) | | 280 | 2,500 | 2,800 |
| 2068 (C) | | 200 | 2,300 | 2,500 |
| 2069 (BN) | | 250 | 2,000 | 2,300 |
| 2070 (W) | | 280 | 1,800 | 2,100 |
| 2071 (BN) | | 290 | 2,200 | 2,500 |
| 2072 (W) | | 300 | 1,700 | 2,000 |
| Average (2022-2072) | | 300 | 1,900 | 2,200 |
| 2022-2072 | W | 310 | 1,700 | 2,000 |
| | AN | 310 | 1,800 | 2,100 |
| | BN | 310 | 2,000 | 2,400 |
| | D | 310 | 2,200 | 2,500 |
| | C | 280 | 2,200 | 2,500 |

[1] Includes ET of riparian vegetation along rivers and streams.

#### 2.3.2.2 *Surface Water Outflow by Water Source Type*

Surface water outflows from the Los Molinos Subbasin are summarized in **Figure 34** and **Table 33** by water source type. In the Los Molinos Subbasin, local supply outflows primarily include outflows of runoff, tailwater, and net drainage from land surfaces, in addition to runoff from small watersheds and stream outflows to the Sacramento River. Local supply outflows average approximately 610 taf per year, and range on average from 310 taf in critical years up to 910 taf in wet years. Other surface water outflows that leave the subbasin include outflow of groundwater discharge to the Sacramento River, Antelope Creek, Little Antelope Creek, Dye Creek, Mill Creek, and Deer Creek. This water travels along each respective waterway as part of the flow in the river or creek.

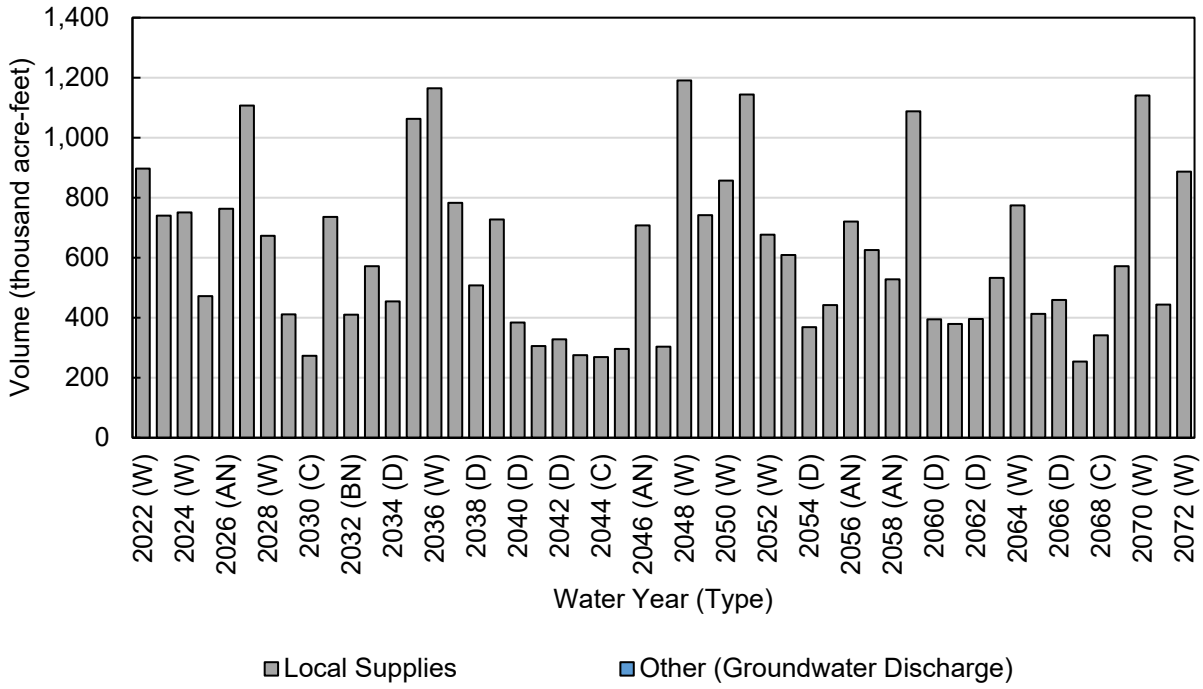


**Figure 34. Los Molinos Subbasin Projected (Current Land Use) Surface Water Outflows, by Water Source Type**

**Table 33. Los Molinos Subbasin Projected (Current Land Use) Surface Water Outflows, by Water Source Type (acre-feet)**

| Water Year (Type) | CVP Supplies | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|
| 2022 (W) | 0 | 900,000 | 0 | 900,000 |
| 2023 (W) | 0 | 740,000 | 0 | 740,000 |
| 2024 (W) | 0 | 750,000 | 0 | 750,000 |
| 2025 (BN) | 0 | 470,000 | 0 | 470,000 |
| 2026 (AN) | 0 | 760,000 | 0 | 760,000 |
| 2027 (W) | 0 | 1,100,000 | 0 | 1,100,000 |
| 2028 (W) | 0 | 670,000 | 0 | 670,000 |
| 2029 (C) | 0 | 410,000 | 0 | 410,000 |
| 2030 (C) | 0 | 270,000 | 0 | 270,000 |
| 2031 (AN) | 0 | 740,000 | 0 | 740,000 |
| 2032 (BN) | 0 | 410,000 | 0 | 410,000 |
| 2033 (AN) | 0 | 570,000 | 0 | 570,000 |
| 2034 (D) | 0 | 450,000 | 0 | 450,000 |
| 2035 (W) | 0 | 1,100,000 | 0 | 1,100,000 |
| 2036 (W) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2037 (W) | 0 | 780,000 | 0 | 780,000 |
| 2038 (D) | 0 | 510,000 | 0 | 510,000 |
| 2039 (W) | 0 | 730,000 | 0 | 730,000 |
| 2040 (D) | 0 | 380,000 | 0 | 380,000 |
| 2041 (C) | 0 | 310,000 | 0 | 310,000 |
| 2042 (D) | 0 | 330,000 | 0 | 330,000 |
| 2043 (C) | 0 | 280,000 | 0 | 280,000 |
| 2044 (C) | 0 | 270,000 | 0 | 270,000 |
| 2045 (C) | 0 | 300,000 | 0 | 300,000 |
| 2046 (AN) | 0 | 710,000 | 0 | 710,000 |
| 2047 (C) | 0 | 300,000 | 0 | 300,000 |
| 2048 (W) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2049 (W) | 0 | 740,000 | 0 | 740,000 |
| 2050 (W) | 0 | 860,000 | 0 | 860,000 |
| 2051 (W) | 0 | 1,100,000 | 0 | 1,100,000 |
| 2052 (W) | 0 | 680,000 | 0 | 680,000 |
| 2053 (AN) | 0 | 610,000 | 0 | 610,000 |
| 2054 (D) | 0 | 370,000 | 0 | 370,000 |
| 2055 (D) | 0 | 440,000 | 0 | 440,000 |
| 2056 (AN) | 0 | 720,000 | 0 | 720,000 |

| Water Year (Type) | | CVP Supplies | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|---|
| 2057 (BN) | | 0 | 630,000 | 0 | 630,000 |
| 2058 (AN) | | 0 | 530,000 | 0 | 530,000 |
| 2059 (W) | | 0 | 1,100,000 | 0 | 1,100,000 |
| 2060 (D) | | 0 | 390,000 | 0 | 390,000 |
| 2061 (C) | | 0 | 380,000 | 0 | 380,000 |
| 2062 (D) | | 0 | 400,000 | 0 | 400,000 |
| 2063 (BN) | | 0 | 530,000 | 0 | 530,000 |
| 2064 (W) | | 0 | 770,000 | 0 | 770,000 |
| 2065 (BN) | | 0 | 410,000 | 0 | 410,000 |
| 2066 (D) | | 0 | 460,000 | 0 | 460,000 |
| 2067 (C) | | 0 | 250,000 | 0 | 250,000 |
| 2068 (C) | | 0 | 340,000 | 0 | 340,000 |
| 2069 (BN) | | 0 | 570,000 | 0 | 570,000 |
| 2070 (W) | | 0 | 1,100,000 | 0 | 1,100,000 |
| 2071 (BN) | | 0 | 440,000 | 0 | 440,000 |
| 2072 (W) | | 0 | 890,000 | 0 | 890,000 |
| Average (2022-2072) | | 0 | 610,000 | 0 | 610,000 |
| 2022-2072 | W | 0 | 910,000 | 0 | 910,000 |
| | AN | 0 | 660,000 | 0 | 660,000 |
| | BN | 0 | 500,000 | 0 | 500,000 |
| | D | 0 | 410,000 | 0 | 410,000 |
| | C | 0 | 310,000 | 0 | 310,000 |

#### 2.3.2.3 *Deep Percolation of Applied Water*

Estimated deep percolation of applied water (equal to infiltration of applied water in 23 CCR § 354.18(b)(2)) is summarized in **Figure 35** and **Table 34** by water use sector. Deep percolation of applied water is dominated by agricultural irrigation and varies between years, following the pattern of surface water diversions and deliveries to irrigated lands.

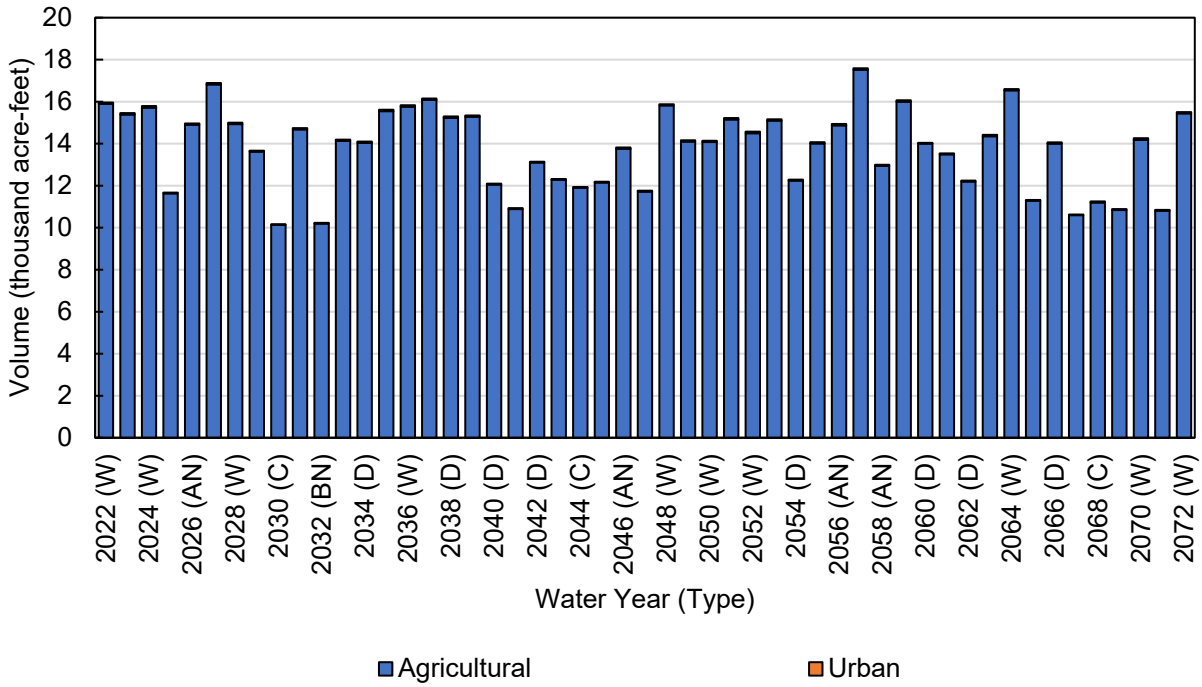


**Figure 35. Los Molinos Subbasin Projected (Current Land Use) Deep Percolation of Applied Water, by Water Use Sector**

**Table 34. Los Molinos Subbasin Projected (Current Land Use) Deep Percolation of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 16,000 | 60 | 0 | 16,000 |
| 2023 (W) | 15,000 | 70 | 0 | 15,000 |
| 2024 (W) | 16,000 | 70 | 0 | 16,000 |
| 2025 (BN) | 12,000 | 40 | 0 | 12,000 |
| 2026 (AN) | 15,000 | 60 | 0 | 15,000 |
| 2027 (W) | 17,000 | 70 | 0 | 17,000 |
| 2028 (W) | 15,000 | 70 | 0 | 15,000 |
| 2029 (C) | 14,000 | 50 | 0 | 14,000 |
| 2030 (C) | 10,000 | 30 | 0 | 10,000 |
| 2031 (AN) | 15,000 | 60 | 0 | 15,000 |
| 2032 (BN) | 10,000 | 40 | 0 | 10,000 |
| 2033 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2034 (D) | 14,000 | 60 | 0 | 14,000 |
| 2035 (W) | 16,000 | 70 | 0 | 16,000 |
| 2036 (W) | 16,000 | 70 | 0 | 16,000 |
| 2037 (W) | 16,000 | 70 | 0 | 16,000 |
| 2038 (D) | 15,000 | 70 | 0 | 15,000 |
| 2039 (W) | 15,000 | 60 | 0 | 15,000 |
| 2040 (D) | 12,000 | 50 | 0 | 12,000 |
| 2041 (C) | 11,000 | 40 | 0 | 11,000 |
| 2042 (D) | 13,000 | 40 | 0 | 13,000 |
| 2043 (C) | 12,000 | 40 | 0 | 12,000 |
| 2044 (C) | 12,000 | 40 | 0 | 12,000 |
| 2045 (C) | 12,000 | 40 | 0 | 12,000 |
| 2046 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2047 (C) | 12,000 | 40 | 0 | 12,000 |
| 2048 (W) | 16,000 | 60 | 0 | 16,000 |
| 2049 (W) | 14,000 | 60 | 0 | 14,000 |
| 2050 (W) | 14,000 | 60 | 0 | 14,000 |
| 2051 (W) | 15,000 | 70 | 0 | 15,000 |
| 2052 (W) | 15,000 | 70 | 0 | 15,000 |
| 2053 (AN) | 15,000 | 60 | 0 | 15,000 |
| 2054 (D) | 12,000 | 50 | 0 | 12,000 |
| 2055 (D) | 14,000 | 60 | 0 | 14,000 |
| 2056 (AN) | 15,000 | 70 | 0 | 15,000 |
| 2057 (BN) | 18,000 | 70 | 0 | 18,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 13,000 | 60 | 0 | 13,000 |
| 2059 (W) | | 16,000 | 70 | 0 | 16,000 |
| 2060 (D) | | 14,000 | 40 | 0 | 14,000 |
| 2061 (C) | | 13,000 | 50 | 0 | 14,000 |
| 2062 (D) | | 12,000 | 40 | 0 | 12,000 |
| 2063 (BN) | | 14,000 | 70 | 0 | 14,000 |
| 2064 (W) | | 17,000 | 60 | 0 | 17,000 |
| 2065 (BN) | | 11,000 | 40 | 0 | 11,000 |
| 2066 (D) | | 14,000 | 60 | 0 | 14,000 |
| 2067 (C) | | 11,000 | 30 | 0 | 11,000 |
| 2068 (C) | | 11,000 | 50 | 0 | 11,000 |
| 2069 (BN) | | 11,000 | 50 | 0 | 11,000 |
| 2070 (W) | | 14,000 | 80 | 0 | 14,000 |
| 2071 (BN) | | 11,000 | 40 | 0 | 11,000 |
| 2072 (W) | | 15,000 | 60 | 0 | 16,000 |
| Average (2022-2072) | | 14,000 | 60 | 0 | 14,000 |
| 2022-2072 | W | 15,000 | 70 | 0 | 15,000 |
| | AN | 14,000 | 60 | 0 | 14,000 |
| | BN | 12,000 | 50 | 0 | 12,000 |
| | D | 13,000 | 50 | 0 | 13,000 |
| | C | 12,000 | 40 | 0 | 12,000 |

#### 2.3.2.4 *Deep Percolation of Precipitation*

Estimated deep percolation of precipitation (equal to infiltration of precipitation in 23 CCR § 354.18(b)(2)) is provided in **Figure 36** and **Table 35** by water use sector. Deep percolation of precipitation to the GWS is highly variable from year to year due to variation in the timing and amount of precipitation, ranging from an average of 20 taf critically dry years to about 55 taf in wet years.

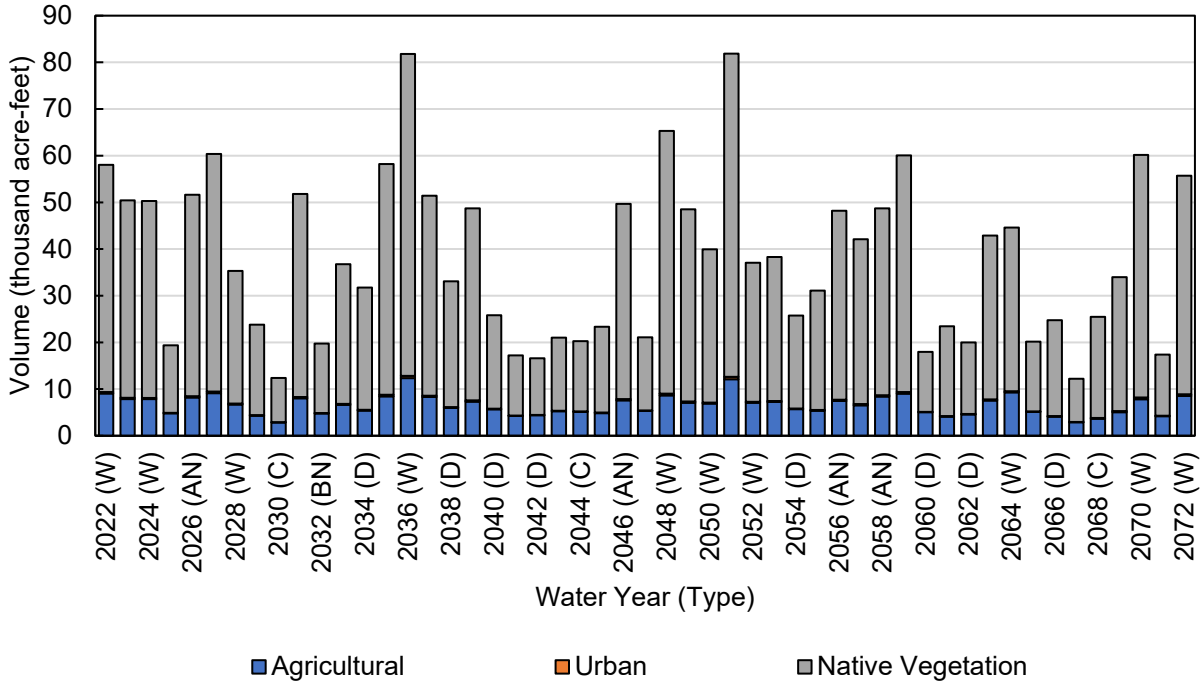


**Figure 36. Los Molinos Subbasin Projected (Current Land Use) Deep Percolation of Precipitation, by Water Use Sector**

**Table 35. Los Molinos Subbasin Projected (Current Land Use) Deep Percolation of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 9,000 | 340 | 49,000 | 58,000 |
| 2023 (W) | 7,900 | 270 | 42,000 | 50,000 |
| 2024 (W) | 7,800 | 270 | 42,000 | 50,000 |
| 2025 (BN) | 4,800 | 90 | 14,000 | 19,000 |
| 2026 (AN) | 8,200 | 280 | 43,000 | 52,000 |
| 2027 (W) | 9,100 | 330 | 51,000 | 60,000 |
| 2028 (W) | 6,700 | 210 | 28,000 | 35,000 |
| 2029 (C) | 4,300 | 120 | 19,000 | 24,000 |
| 2030 (C) | 2,900 | 60 | 9,500 | 12,000 |
| 2031 (AN) | 8,000 | 280 | 44,000 | 52,000 |
| 2032 (BN) | 4,800 | 100 | 15,000 | 20,000 |
| 2033 (AN) | 6,600 | 220 | 30,000 | 37,000 |
| 2034 (D) | 5,400 | 180 | 26,000 | 32,000 |
| 2035 (W) | 8,400 | 330 | 49,000 | 58,000 |
| 2036 (W) | 12,000 | 510 | 69,000 | 82,000 |
| 2037 (W) | 8,300 | 280 | 43,000 | 51,000 |
| 2038 (D) | 6,000 | 180 | 27,000 | 33,000 |
| 2039 (W) | 7,300 | 270 | 41,000 | 49,000 |
| 2040 (D) | 5,700 | 150 | 20,000 | 26,000 |
| 2041 (C) | 4,300 | 90 | 13,000 | 17,000 |
| 2042 (D) | 4,400 | 80 | 12,000 | 17,000 |
| 2043 (C) | 5,300 | 100 | 16,000 | 21,000 |
| 2044 (C) | 5,100 | 100 | 15,000 | 20,000 |
| 2045 (C) | 4,900 | 130 | 18,000 | 23,000 |
| 2046 (AN) | 7,600 | 280 | 42,000 | 50,000 |
| 2047 (C) | 5,300 | 100 | 16,000 | 21,000 |
| 2048 (W) | 8,600 | 390 | 56,000 | 65,000 |
| 2049 (W) | 7,100 | 270 | 41,000 | 49,000 |
| 2050 (W) | 6,900 | 230 | 33,000 | 40,000 |
| 2051 (W) | 12,000 | 510 | 69,000 | 82,000 |
| 2052 (W) | 7,100 | 210 | 30,000 | 37,000 |
| 2053 (AN) | 7,200 | 220 | 31,000 | 38,000 |
| 2054 (D) | 5,700 | 150 | 20,000 | 26,000 |
| 2055 (D) | 5,300 | 180 | 26,000 | 31,000 |
| 2056 (AN) | 7,500 | 280 | 40,000 | 48,000 |
| 2057 (BN) | 6,500 | 260 | 35,000 | 42,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 8,400 | 270 | 40,000 | 49,000 |
| 2059 (W) | | 9,000 | 330 | 51,000 | 60,000 |
| 2060 (D) | | 5,000 | 80 | 13,000 | 18,000 |
| 2061 (C) | | 4,100 | 120 | 19,000 | 23,000 |
| 2062 (D) | | 4,600 | 100 | 15,000 | 20,000 |
| 2063 (BN) | | 7,500 | 250 | 35,000 | 43,000 |
| 2064 (W) | | 9,300 | 230 | 35,000 | 45,000 |
| 2065 (BN) | | 5,100 | 100 | 15,000 | 20,000 |
| 2066 (D) | | 4,100 | 140 | 21,000 | 25,000 |
| 2067 (C) | | 2,900 | 60 | 9,300 | 12,000 |
| 2068 (C) | | 3,700 | 160 | 22,000 | 25,000 |
| 2069 (BN) | | 5,100 | 210 | 29,000 | 34,000 |
| 2070 (W) | | 7,800 | 380 | 52,000 | 60,000 |
| 2071 (BN) | | 4,200 | 90 | 13,000 | 17,000 |
| 2072 (W) | | 8,500 | 330 | 47,000 | 56,000 |
| Average (2022-2072) | | 6,500 | 210 | 31,000 | 38,000 |
| 2022-2072 | W | 8,500 | 320 | 46,000 | 55,000 |
| | AN | 7,600 | 260 | 39,000 | 46,000 |
| | BN | 5,400 | 160 | 22,000 | 28,000 |
| | D | 5,100 | 140 | 20,000 | 25,000 |
| | C | 4,300 | 100 | 16,000 | 20,000 |

#### 2.3.2.5 *Infiltration of Surface Water*

Estimated infiltration of surface water (seepage) by water source is provided in **Figure 37** and **Table 36.** Seepage in the Los Molinos Subbasin comes from the canals that traverse the subbasin, as well as from rivers, streams, and small watersheds. The total seepage from all canals and diversions averages 12 taf per year, on average. The total seepage from rivers, streams and small watersheds average about 48 taf per year.

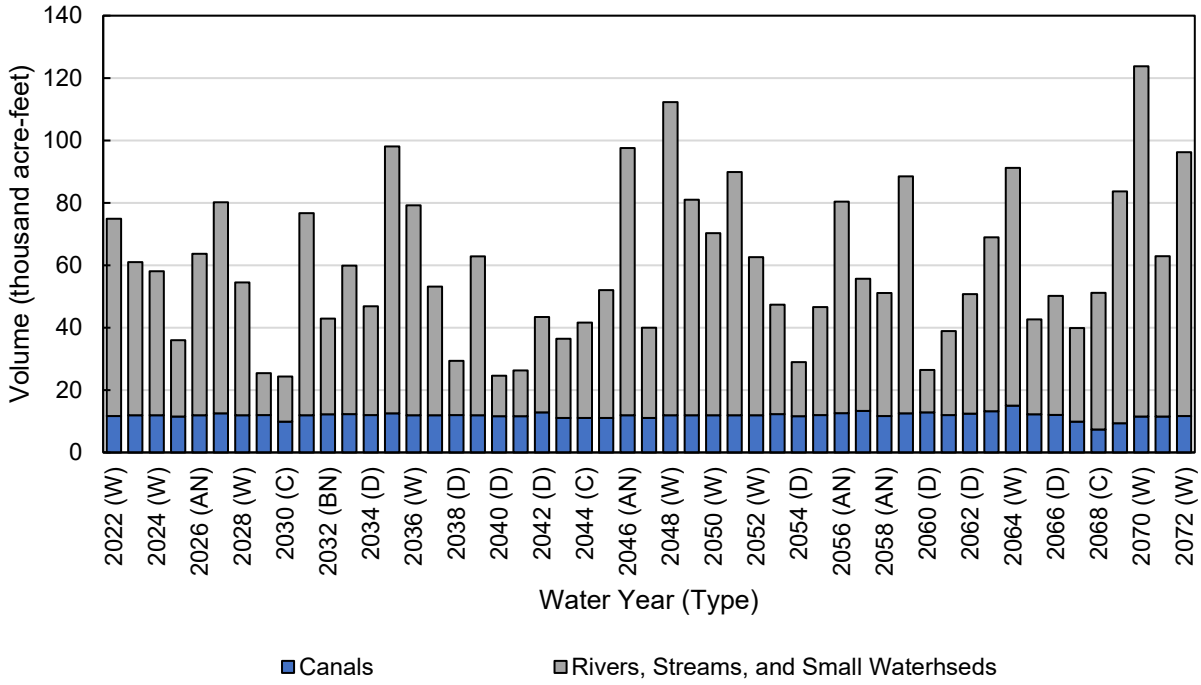


**Figure 37. Los Molinos Subbasin Projected (Current Land Use) Infiltration of Surface Water, by Water Use Sector**

**Table 36. Los Molinos Subbasin Projected (Current Land Use) Infiltration of Surface Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|
| 2022 (W) | 12,000 | 63,000 | 75,000 |
| 2023 (W) | 12,000 | 49,000 | 61,000 |
| 2024 (W) | 12,000 | 46,000 | 58,000 |
| 2025 (BN) | 12,000 | 24,000 | 36,000 |
| 2026 (AN) | 12,000 | 52,000 | 64,000 |
| 2027 (W) | 13,000 | 68,000 | 80,000 |
| 2028 (W) | 12,000 | 43,000 | 55,000 |
| 2029 (C) | 12,000 | 13,000 | 25,000 |
| 2030 (C) | 9,900 | 14,000 | 24,000 |
| 2031 (AN) | 12,000 | 65,000 | 77,000 |
| 2032 (BN) | 12,000 | 31,000 | 43,000 |
| 2033 (AN) | 12,000 | 48,000 | 60,000 |
| 2034 (D) | 12,000 | 35,000 | 47,000 |
| 2035 (W) | 13,000 | 86,000 | 98,000 |
| 2036 (W) | 12,000 | 67,000 | 79,000 |
| 2037 (W) | 12,000 | 41,000 | 53,000 |
| 2038 (D) | 12,000 | 17,000 | 29,000 |
| 2039 (W) | 12,000 | 51,000 | 63,000 |
| 2040 (D) | 12,000 | 13,000 | 25,000 |
| 2041 (C) | 12,000 | 15,000 | 26,000 |
| 2042 (D) | 13,000 | 31,000 | 43,000 |
| 2043 (C) | 11,000 | 25,000 | 36,000 |
| 2044 (C) | 11,000 | 31,000 | 42,000 |
| 2045 (C) | 11,000 | 41,000 | 52,000 |
| 2046 (AN) | 12,000 | 86,000 | 98,000 |
| 2047 (C) | 11,000 | 29,000 | 40,000 |
| 2048 (W) | 12,000 | 100,000 | 110,000 |
| 2049 (W) | 12,000 | 69,000 | 81,000 |
| 2050 (W) | 12,000 | 58,000 | 70,000 |
| 2051 (W) | 12,000 | 78,000 | 90,000 |
| 2052 (W) | 12,000 | 51,000 | 63,000 |
| 2053 (AN) | 12,000 | 35,000 | 47,000 |
| 2054 (D) | 12,000 | 17,000 | 29,000 |
| 2055 (D) | 12,000 | 35,000 | 47,000 |
| 2056 (AN) | 13,000 | 68,000 | 80,000 |
| 2057 (BN) | 13,000 | 42,000 | 56,000 |

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|---|
| 2058 (AN) | | 12,000 | 39,000 | 51,000 |
| 2059 (W) | | 13,000 | 76,000 | 89,000 |
| 2060 (D) | | 13,000 | 14,000 | 26,000 |
| 2061 (C) | | 12,000 | 27,000 | 39,000 |
| 2062 (D) | | 12,000 | 38,000 | 51,000 |
| 2063 (BN) | | 13,000 | 56,000 | 69,000 |
| 2064 (W) | | 15,000 | 76,000 | 91,000 |
| 2065 (BN) | | 12,000 | 30,000 | 43,000 |
| 2066 (D) | | 12,000 | 38,000 | 50,000 |
| 2067 (C) | | 9,900 | 30,000 | 40,000 |
| 2068 (C) | | 7,400 | 44,000 | 51,000 |
| 2069 (BN) | | 9,400 | 74,000 | 84,000 |
| 2070 (W) | | 12,000 | 110,000 | 120,000 |
| 2071 (BN) | | 12,000 | 51,000 | 63,000 |
| 2072 (W) | | 12,000 | 85,000 | 96,000 |
| Average (2022-2072) | | 12,000 | 48,000 | 59,000 |
| 2022-2072 | W | 12,000 | 68,000 | 80,000 |
| | AN | 12,000 | 56,000 | 68,000 |
| | BN | 12,000 | 44,000 | 56,000 |
| | D | 12,000 | 26,000 | 39,000 |
| | C | 11,000 | 27,000 | 38,000 |

### 2.3.3 Change in Root Zone Storage

Estimates of projected change in root zone storage are provided in **Figure 38** and **Table 37**. Inter-annual changes in storage within the SWS consist primarily of root zone soil moisture storage changes, are relatively small, and tend to average near zero over many years.

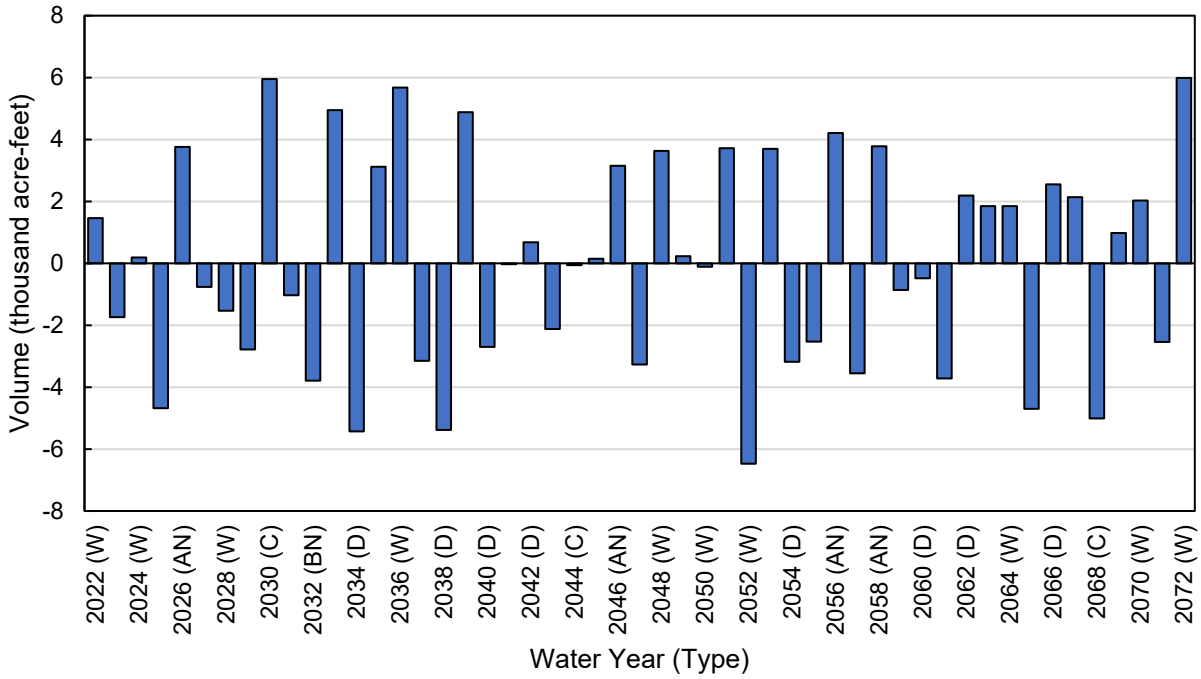


**Figure 38. Los Molinos Subbasin Projected (Current Land Use) Change in Root Zone Storage**

**Table 37. Los Molinos Subbasin Projected (Current Land Use) Change in Root Zone Storage (acre-feet)**

| Water Year (Type) | Change in Root Zone Storage |
|---|---|
| 2022 (W) | 1,500 |
| 2023 (W) | -1,700 |
| 2024 (W) | 190 |
| 2025 (BN) | -4,700 |
| 2026 (AN) | 3,800 |
| 2027 (W) | -760 |
| 2028 (W) | -1,500 |
| 2029 (C) | -2,800 |
| 2030 (C) | 6,000 |
| 2031 (AN) | -1,000 |
| 2032 (BN) | -3,800 |
| 2033 (AN) | 5,000 |
| 2034 (D) | -5,400 |
| 2035 (W) | 3,100 |
| 2036 (W) | 5,700 |
| 2037 (W) | -3,200 |
| 2038 (D) | -5,400 |
| 2039 (W) | 4,900 |
| 2040 (D) | -2,700 |
| 2041 (C) | -30 |
| 2042 (D) | 680 |
| 2043 (C) | -2,100 |
| 2044 (C) | -60 |
| 2045 (C) | 150 |
| 2046 (AN) | 3,200 |
| 2047 (C) | -3,300 |
| 2048 (W) | 3,600 |
| 2049 (W) | 230 |
| 2050 (W) | -110 |
| 2051 (W) | 3,700 |
| 2052 (W) | -6,500 |
| 2053 (AN) | 3,700 |
| 2054 (D) | -3,200 |
| 2055 (D) | -2,500 |
| 2056 (AN) | 4,200 |
| 2057 (BN) | -3,600 |

| Water Year (Type) | | Change in Root Zone Storage |
|---|---|---|
| 2058 (AN) | | 3,800 |
| 2059 (W) | | -860 |
| 2060 (D) | | -480 |
| 2061 (C) | | -3,700 |
| 2062 (D) | | 2,200 |
| 2063 (BN) | | 1,900 |
| 2064 (W) | | 1,900 |
| 2065 (BN) | | -4,700 |
| 2066 (D) | | 2,600 |
| 2067 (C) | | 2,100 |
| 2068 (C) | | -5,000 |
| 2069 (BN) | | 980 |
| 2070 (W) | | 2,000 |
| 2071 (BN) | | -2,500 |
| 2072 (W) | | 6,000 |
| Average (2022-2072) | | 20 |
| 2022-2072 | W | 1,000 |
| | AN | 3,200 |
| | BN | -2,400 |
| | D | -1,600 |
| | C | -880 |

### 2.3.4 Net Recharge from Surface Water System

Net recharge from the SWS is a useful metric that equates only the impacts of the SWS on recharge and extraction from the GWS, providing valuable insight to the combined effects of land surface processes on the underlying GWS. Net recharge from the SWS is calculated as the total groundwater recharge minus the total groundwater extraction. When calculated for the projected (current land use) water budget, average net recharge from the SWS represents the average surplus (when positive) or shortage (when negative) of recharge that has resulted from projected cropping, land use practices, and average hydrologic conditions, when comparing groundwater extractions with deep percolation and infiltration from the SWS to the GWS. Net recharge does not include groundwater discharges to surface water and is not a full accounting of all exchanges occurring between the SWS and GWS. Although net recharge is a useful water balance metric, groundwater sustainability is not defined by the balance of net recharge from the SWS. Other important factors must be considered in the complete assessment of groundwater sustainability, including but not limited to subsurface groundwater flows and groundwater discharge to surface water. The sustainable yield and management criteria for the Los Molinos Subbasin are described in later sections of the GSP.

Annual values for net recharge from the SWS over the projected (current land use) water budget period are presented below for the Los Molinos Subbasin. **Figure 39** and **Table 38** show the average net recharge from

the SWS over 2022-2072 based on the projected (current land use) water budget results. Under current land use conditions, the average net recharge in the Los Molinos Subbasin was projected as approximately 84 taf per year between 2022-2072, indicating net inflows to the GWS from the SWS during the projected (current land use) water budget period. As illustrated on the cumulative net recharge plot in **Figure 40**, this results in a cumulative net positive recharge (i.e., net recharge to the GWS from the SWS) of about 4.3 maf over the 51-year projected (current land use) water budget period. Although this means there is projected to be more recharge from the SWS to the GWS than extractions and discharges from the GWS to the SWS, this alone does not necessarily mean that groundwater storage will increase or that the Subbasin groundwater system will be sustainable. The complete Subbasin water budget, including the GWS water budget results, provide an indication of whether total groundwater inflows and outflows are in balance.

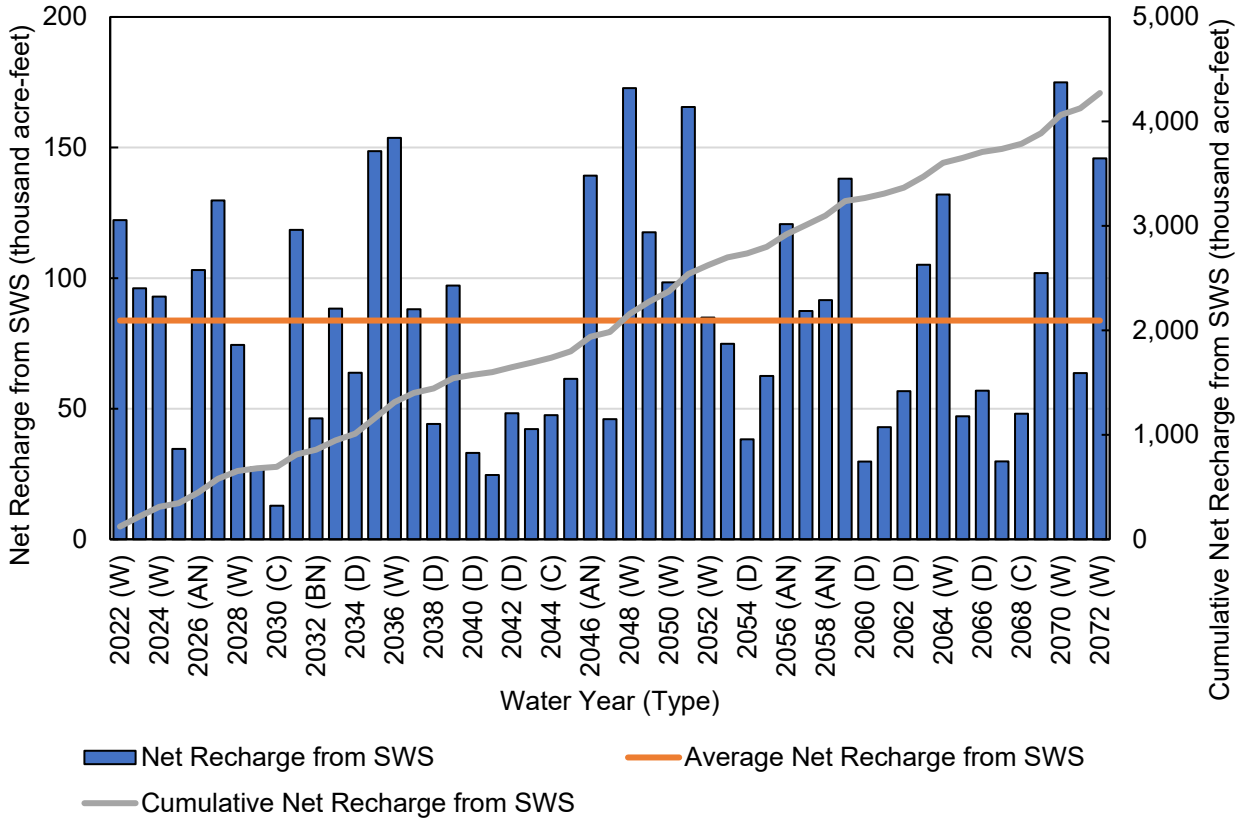


**Figure 39. Los Molinos Subbasin Projected (Current Land Use) Net Recharge Overview**

**Table 38. Projected (Current Land Use) Water Budget: Average Net Recharge from SWS in Los Molinos Subbasin, by Water Year Type (acre-feet)**

| Year Type | Number of Years | Deep Perc. of Applied Water (a) | Deep Perc. of Precipitation (b) | Infil. of Surface Water (c) | Groundwater Extraction/ Uptake (d) | Net Recharge from SWS (a+b+c-d) |
|---|---|---|---|---|---|---|
| W | 18 | 15,000 | 55,000 | 80,000 | 26,000 | 124,000 |
| AN | 7 | 14,000 | 46,000 | 68,000 | 24,000 | 104,000 |
| BN | 7 | 12,000 | 28,000 | 56,000 | 27,000 | 69,000 |
| D | 9 | 13,000 | 25,000 | 39,000 | 29,000 | 48,000 |
| C | 10 | 12,000 | 20,000 | 38,000 | 31,000 | 39,000 |
| Annual Average (2022-2072) | 51 | 14,000 | 38,000 | 60,000 | 27,000 | 85,000 |

## 2.4 Groundwater System Water Budget Results

Projected (Current Land Use) water budget results for different components of the GWS are presented in the sections below. Inflows and outflows from the GWS that occur through exchanges with the SWS are discussed in the SWS water budget results, although these components are also noted in the sections below relating to the GWS water budget. In contrast to the SWS water budget, many of the GWS water budget components change in flow direction over time representing inflows during some periods and outflows during other periods, depending on Subbasin conditions. The GWS water budget results are presented with net inflows indicated by positive values and net outflows as negative values.

### 2.4.1 Lateral Subsurface Groundwater Flows

Subsurface groundwater flows to and from the Los Molinos Subbasin occur between the Antelope Subbasin to the north, the Red Bluff Subbasin to the west, the Corning Subbasin to the west and the Vina Subbasin to the south. Additional subsurface groundwater inflows occur from the upland foothill (small watershed) areas adjoining the Los Molinos Subbasin to the east.

#### 2.4.1.1 *Lateral Subsurface Flows to/from Adjacent Subbasins*

Projected lateral subsurface flows occurring from and to adjacent subbasins are summarized in **Figure 40** and **Table 39**. The total projected net subsurface flows to and from all adjacent subbasins averages about -88 taf per year occurring as outflow from the Los Molinos Subbasin. The largest projected subsurface flows occur across the boundary with the Vina Subbasin with somewhat less subsurface flow occurring across the boundaries with the Antelope and Corning Subbasins. Flows from the Red Bluff Subbasin average positive inflows into the Los Molinos Subbasin.

Projected subsurface flows with the Vina Subbasin, Corning Subbasin, and the Antelope Subbasin average about -7.1, -79, and -2.9 taf, respectively, occurring as outflows from the Los Molinos Subbasin. This makes up the majority of the subsurface flows occurring to the Los Molinos Subbasin. Annual subsurface flows with the Red Bluff Subbasin to the Los Molinos Subbasin average about 0.880 taf, occurring as inflows.

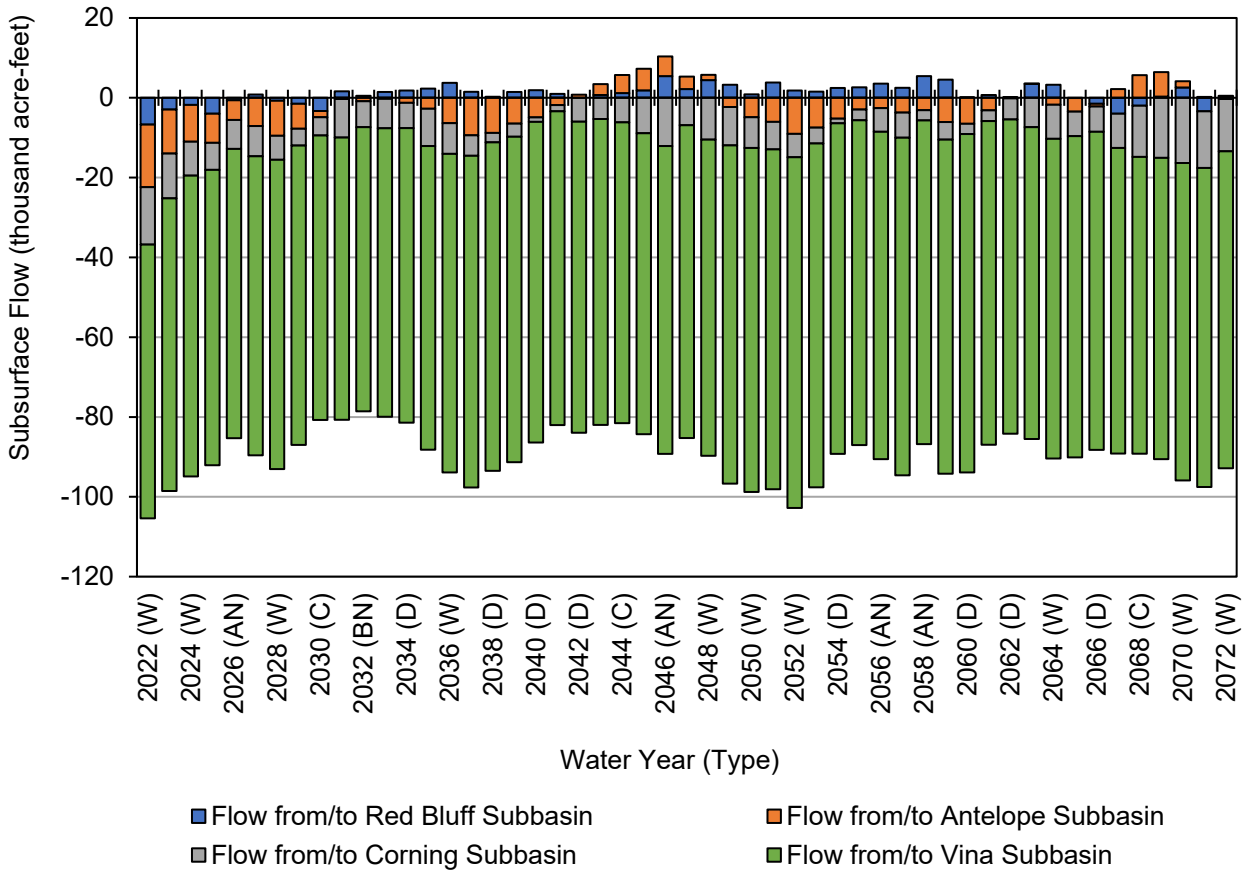


**Figure 40. Los Molinos Subbasin Projected (Current Land Use) Lateral Subsurface Groundwater Flows to/from Adjacent Subbasins**

**Table 39. Los Molinos Subbasin Projected (Current Land Use) Lateral Subsurface Groundwater Flows Between Adjacent Subbasins (net flows as acre-feet)**

| Water Year (Type) | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|
| 2022 (BN) | -6,700 | -16,000 | -14,000 | -69,000 | -110,000 |
| 2023 (W) | -2,900 | -11,000 | -11,000 | -73,000 | -99,000 |
| 2024 (W) | -1,800 | -9,200 | -8,500 | -75,000 | -95,000 |
| 2025 (W) | -4,000 | -7,300 | -6,800 | -74,000 | -92,000 |
| 2026 (BN) | -610 | -4,900 | -7,300 | -73,000 | -85,000 |
| 2027 (AN) | 820 | -7,100 | -7,600 | -75,000 | -89,000 |
| 2028 (W) | -760 | -8,800 | -6,000 | -78,000 | -93,000 |
| 2029 (W) | -1,500 | -6,300 | -4,200 | -75,000 | -87,000 |
| 2030 (C) | -3,300 | -1,600 | -4,500 | -71,000 | -81,000 |
| 2031 (C) | 1,600 | -290 | -9,700 | -71,000 | -79,000 |
| 2032 (AN) | 510 | -850 | -6,500 | -71,000 | -78,000 |
| 2033 (BN) | 1,500 | -260 | -7,400 | -72,000 | -78,000 |
| 2034 (AN) | 1,800 | -1,300 | -6,300 | -74,000 | -80,000 |
| 2035 (D) | 2,300 | -2,800 | -9,300 | -76,000 | -86,000 |
| 2036 (W) | 3,700 | -6,400 | -7,700 | -80,000 | -90,000 |
| 2037 (W) | 1,500 | -9,400 | -5,100 | -83,000 | -96,000 |
| 2038 (W) | 270 | -8,800 | -2,400 | -82,000 | -93,000 |
| 2039 (D) | 1,400 | -6,500 | -3,300 | -82,000 | -90,000 |
| 2040 (W) | 1,900 | -4,900 | -1,200 | -80,000 | -84,000 |
| 2041 (D) | 960 | -1,800 | -1,600 | -79,000 | -81,000 |
| 2042 (C) | -5 | 780 | -6,000 | -78,000 | -83,000 |
| 2043 (D) | 710 | 2,700 | -5,300 | -77,000 | -79,000 |
| 2044 (C) | 1,200 | 4,500 | -6,200 | -75,000 | -76,000 |
| 2045 (C) | 1,900 | 5,400 | -8,900 | -75,000 | -77,000 |
| 2046 (C) | 5,400 | 5,000 | -12,000 | -77,000 | -79,000 |
| 2047 (AN) | 2,200 | 3,100 | -6,900 | -78,000 | -80,000 |
| 2048 (C) | 4,400 | 1,300 | -10,000 | -79,000 | -84,000 |
| 2049 (W) | 3,300 | -2,300 | -9,600 | -85,000 | -93,000 |
| 2050 (W) | 850 | -4,900 | -7,700 | -86,000 | -98,000 |
| 2051 (W) | 3,800 | -6,000 | -6,900 | -85,000 | -94,000 |
| 2052 (W) | 1,800 | -9,100 | -5,800 | -88,000 | -100,000 |
| 2053 (W) | 1,500 | -7,500 | -4,000 | -86,000 | -96,000 |
| 2054 (AN) | 2,500 | -5,200 | -1,200 | -83,000 | -87,000 |
| 2055 (D) | 2,600 | -3,000 | -2,700 | -81,000 | -84,000 |
| 2056 (D) | 3,500 | -2,600 | -5,900 | -82,000 | -87,000 |
| 2057 (AN) | 2,500 | -3,700 | -6,300 | -85,000 | -92,000 |
| 2058 (BN) | 5,400 | -3,100 | -2,600 | -81,000 | -81,000 |
| 2059 (AN) | 4,600 | -6,100 | -4,400 | -84,000 | -90,000 |
| 2060 (W) | 110 | -6,500 | -2,600 | -85,000 | -94,000 |

| Water Year (Type) | | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|---|
| 2061 (D) | | 680 | -3,100 | -2,700 | -81,000 | -86,000 |
| 2062 (C) | | 120 | -150 | -5,300 | -79,000 | -84,000 |
| 2063 (D) | | 3,500 | 110 | -7,400 | -78,000 | -82,000 |
| 2064 (BN) | | 3,300 | -1,700 | -8,500 | -80,000 | -87,000 |
| 2065 (W) | | -57 | -3,400 | -6,100 | -81,000 | -90,000 |
| 2066 (BN) | | -1,500 | -650 | -6,400 | -80,000 | -88,000 |
| 2067 (D) | | -4,000 | 2,200 | -8,600 | -77,000 | -87,000 |
| 2068 (C) | | -2,000 | 5,700 | -13,000 | -74,000 | -84,000 |
| 2069 (C) | | 280 | 6,100 | -15,000 | -76,000 | -84,000 |
| 2070 (BN) | | 2,600 | 1,600 | -16,000 | -80,000 | -92,000 |
| 2071 (W) | | -3,400 | 200 | -14,000 | -80,000 | -97,000 |
| 2072 (W) | | 480 | -290 | -13,000 | -79,000 | -92,000 |
| Average (2022-2072) | | 880 | -2,900 | -7,100 | -79,000 | -88,000 |
| 2022-2072 | W | 1,300 | -5,800 | -8,700 | -80,000 | -93,000 |
| | AN | 2,600 | -2,000 | -7,000 | -77,000 | -84,000 |
| | BN | -100 | -1,300 | -8,900 | -78,000 | -88,000 |
| | D | 870 | -3,300 | -3,800 | -80,000 | -86,000 |
| | C | -320 | 1,100 | -6,200 | -76,000 | -82,000 |

Note: positive values represent net inflows to Los Molinos Subbasin, negative values represent net outflows from Los Molinos Subbasin.

#### 2.4.1.2 *Lateral Subsurface Flows from Upland Areas (Small Watersheds)*

Projected lateral subsurface inflows occurring from upland or foothill areas (small watersheds outside of the Central Valley Floor) to the east of the Los Molinos Subbasin are summarized in **Figure 41** and **Table 40**. This component does not include surface water inflows to the Los Molinos Subbasin which are discussed as part of the SWS water budget. The average projected subsurface inflow from the upland areas is about 2.1 taf per year and varies only very minimally from year to year. The volume of subsurface inflows from upland areas is small relative to the net subsurface inflows occurring between adjacent subbasins.

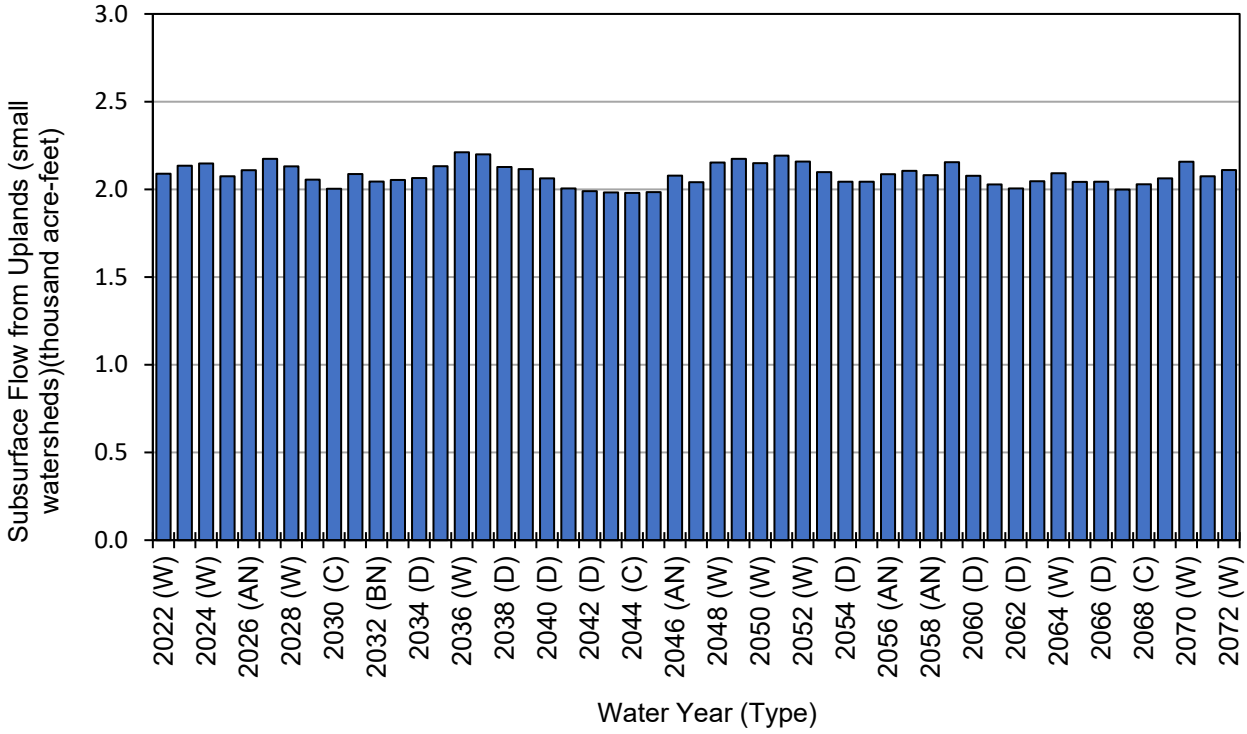


**Figure 41. Los Molinos Subbasin Projected (Current Land Use) Subsurface Groundwater Inflows from Upland Areas**

**Table 40. Los Molinos Subbasin Projected (Current Land Use) Subsurface Groundwater Inflows from Adjacent Uplands (Small Watersheds) (acre-feet)**

| Water Year (Type) | Subsurface Inflow from Uplands |
|---|---|
| 2022 (W) | 270 |
| 2023 (W) | 280 |
| 2024 (W) | 280 |
| 2025 (BN) | 270 |
| 2026 (AN) | 2,100 |
| 2027 (W) | 2,100 |
| 2028 (W) | 2,100 |
| 2029 (C) | 2,100 |
| 2030 (C) | 2,100 |
| 2031 (AN) | 2,200 |
| 2032 (BN) | 2,100 |
| 2033 (AN) | 2,100 |
| 2034 (D) | 2,000 |
| 2035 (W) | 2,100 |
| 2036 (W) | 2,000 |
| 2037 (W) | 2,100 |
| 2038 (D) | 2,100 |
| 2039 (W) | 2,100 |
| 2040 (D) | 2,200 |
| 2041 (C) | 2,200 |
| 2042 (D) | 2,100 |
| 2043 (C) | 2,100 |
| 2044 (C) | 2,100 |
| 2045 (C) | 2,000 |
| 2046 (AN) | 2,000 |
| 2047 (C) | 2,000 |
| 2048 (W) | 2,000 |
| 2049 (W) | 2,000 |
| 2050 (W) | 2,100 |
| 2051 (W) | 2,000 |
| 2052 (W) | 2,200 |
| 2053 (AN) | 2,200 |
| 2054 (D) | 2,100 |
| 2055 (D) | 2,200 |
| 2056 (AN) | 2,200 |
| 2057 (BN) | 2,100 |
| 2058 (AN) | 2,000 |
| 2059 (W) | 2,000 |

| Water Year (Type) | | Subsurface Inflow from Uplands |
|---|---|---|
| 2060 (D) | | 2,100 |
| 2061 (C) | | 2,100 |
| 2062 (D) | | 2,100 |
| 2063 (BN) | | 2,200 |
| 2064 (W) | | 2,100 |
| 2065 (BN) | | 2,000 |
| 2066 (D) | | 2,000 |
| 2067 (C) | | 2,000 |
| 2068 (C) | | 2,100 |
| 2069 (BN) | | 2,000 |
| 2070 (W) | | 2,000 |
| 2071 (BN) | | 2,000 |
| 2072 (W) | | 2,000 |
| Average (2022-2072) | | 2,100 |
| 2022-2072 | W | 2,100 |
| | AN | 2,100 |
| | BN | 2,100 |
| | D | 2,100 |
| | C | 2,000 |

### 2.4.2 Deep Percolation From the SWS

Deep percolation from the SWS includes infiltration of water below the root zone (deep percolation) from precipitation and applied water. These two water budget components are summarized in the SWS water budget as outflows to the SWS and are presented as aggregated deep percolation inflows to the GWS in **Figure 42** and **Table 41**. The average annual deep percolation from the SWS over the projected water budget period is approximately 52 taf per year. Greater volumes of deep percolation occur during wetter years when infiltration of precipitation is higher.

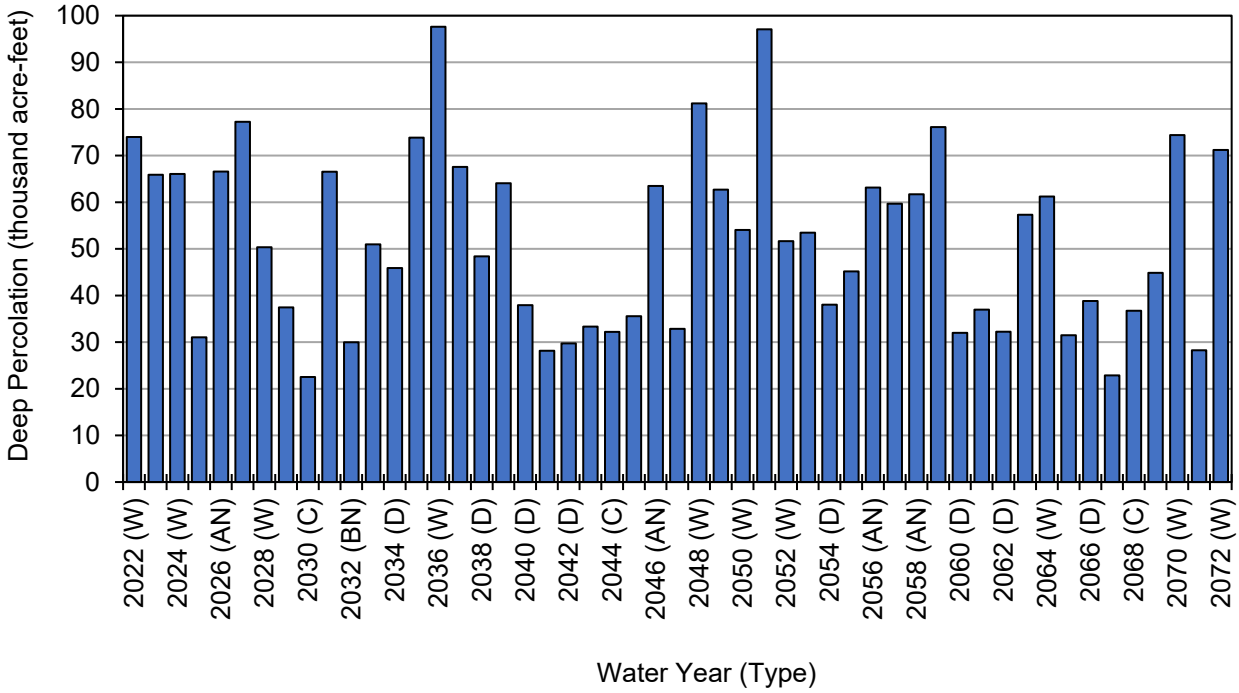


**Figure 42. Los Molinos Subbasin Projected (Current Land Use) Deep Percolation**

**Table 41. Los Molinos Subbasin Projected (Current Land Use) Deep Percolation from the SWS (acre-feet)**

| Water Year (Type) | Deep Percolation from the SWS |
|---|---|
| 2022 (W) | 74,000 |
| 2023 (W) | 66,000 |
| 2024 (W) | 66,000 |
| 2025 (BN) | 31,000 |
| 2026 (AN) | 67,000 |
| 2027 (W) | 77,000 |
| 2028 (W) | 50,000 |
| 2029 (C) | 37,000 |
| 2030 (C) | 23,000 |
| 2031 (AN) | 67,000 |
| 2032 (BN) | 30,000 |
| 2033 (AN) | 51,000 |
| 2034 (D) | 46,000 |
| 2035 (W) | 74,000 |
| 2036 (W) | 98,000 |
| 2037 (W) | 68,000 |
| 2038 (D) | 48,000 |
| 2039 (W) | 64,000 |
| 2040 (D) | 38,000 |
| 2041 (C) | 28,000 |
| 2042 (D) | 30,000 |
| 2043 (C) | 33,000 |
| 2044 (C) | 32,000 |
| 2045 (C) | 36,000 |
| 2046 (AN) | 63,000 |
| 2047 (C) | 33,000 |
| 2048 (W) | 81,000 |
| 2049 (W) | 63,000 |
| 2050 (W) | 54,000 |
| 2051 (W) | 97,000 |
| 2052 (W) | 52,000 |
| 2053 (AN) | 53,000 |
| 2054 (D) | 38,000 |
| 2055 (D) | 45,000 |
| 2056 (AN) | 63,000 |
| 2057 (BN) | 60,000 |
| 2058 (AN) | 62,000 |
| 2059 (W) | 76,000 |

| Water Year (Type) | | Deep Percolation from the SWS |
|---|---|---|
| 2060 (D) | | 32,000 |
| 2061 (C) | | 37,000 |
| 2062 (D) | | 32,000 |
| 2063 (BN) | | 57,000 |
| 2064 (W) | | 61,000 |
| 2065 (BN) | | 31,000 |
| 2066 (D) | | 39,000 |
| 2067 (C) | | 23,000 |
| 2068 (C) | | 37,000 |
| 2069 (BN) | | 45,000 |
| 2070 (W) | | 74,000 |
| 2071 (BN) | | 28,000 |
| 2072 (W) | | 71,000 |
| Average (2022-2072) | | 52,000 |
| 2022-2072 | W | 70,000 |
| | AN | 61,000 |
| | BN | 40,000 |
| | D | 39,000 |
| | C | 32,000 |

### 2.4.3 Net Stream Seepage/Groundwater Discharge to Surface Water

The flow of water between the GWS and SWS through seepage of water from streams and canals and groundwater discharging into streams is discussed as part of the SWS water budget. These components are combined for presentation in the GWS water budget as a net volume of stream seepage (**Figure 43** and **Table 42**). Positive total net seepage values represent a net inflow of water from the SWS to the GWS via stream and canal seepage indicating that the overall volume of stream seepage is greater than the volume of any groundwater discharging into surface waterways. Negative net seepage values represent a net outflow of groundwater from the GWS to the SWS through groundwater discharge to surface water. When net seepage is negative, it means that more groundwater is discharging into the surface waterways than is seeping from surface waterways into the GWS.

In the Los Molinos Subbasin, the projected annual net seepage values are positive with an average annual net stream seepage value of 55 taf per year indicating that surface water seepage is providing considerable recharge to the GWS. The annual net stream seepage values tend to be lower in dry years and higher wet years corresponding with more net surface water discharge to groundwater in wet years and less groundwater discharge in dry years.

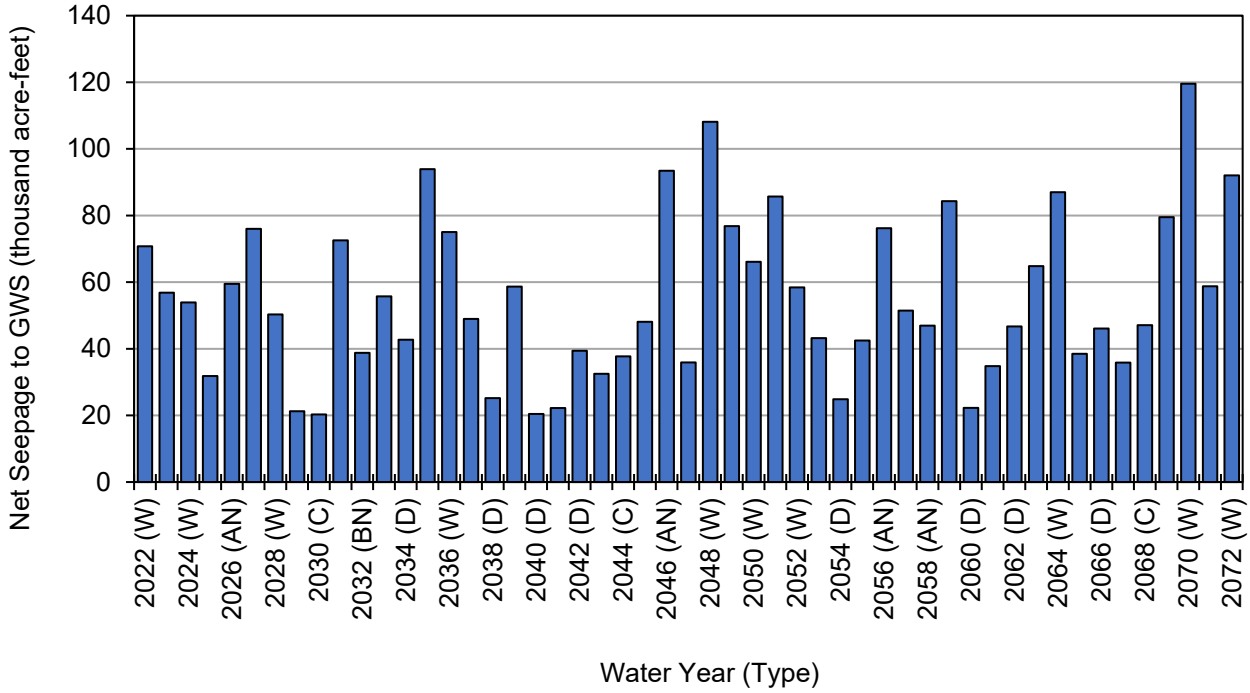


**Figure 43. Los Molinos Subbasin Projected (Current Land Use) Net Stream Seepage to GWS/Discharge to Surface Water**

**Table 42. Los Molinos Subbasin Projected (Current Land Use) Net Stream Seepage (net flows as acre-feet)**

| Water Year (Type) | Total Net Seepage from Surface Waterways and Canals |
|---|---|
| 2022 (W) | 71,000 |
| 2023 (W) | 57,000 |
| 2024 (W) | 54,000 |
| 2025 (BN) | 32,000 |
| 2026 (AN) | 60,000 |
| 2027 (W) | 76,000 |
| 2028 (W) | 50,000 |
| 2029 (C) | 21,000 |
| 2030 (C) | 20,000 |
| 2031 (AN) | 73,000 |
| 2032 (BN) | 39,000 |
| 2033 (AN) | 56,000 |
| 2034 (D) | 43,000 |
| 2035 (W) | 94,000 |
| 2036 (W) | 75,000 |
| 2037 (W) | 49,000 |
| 2038 (D) | 25,000 |
| 2039 (W) | 59,000 |
| 2040 (D) | 20,000 |
| 2041 (C) | 22,000 |
| 2042 (D) | 39,000 |
| 2043 (C) | 33,000 |
| 2044 (C) | 38,000 |
| 2045 (C) | 48,000 |
| 2046 (AN) | 93,000 |
| 2047 (C) | 36,000 |
| 2048 (W) | 110,000 |
| 2049 (W) | 77,000 |
| 2050 (W) | 66,000 |
| 2051 (W) | 86,000 |
| 2052 (W) | 58,000 |
| 2053 (AN) | 43,000 |
| 2054 (D) | 25,000 |
| 2055 (D) | 42,000 |
| 2056 (AN) | 76,000 |
| 2057 (BN) | 51,000 |
| 2058 (AN) | 47,000 |
| 2059 (W) | 84,000 |

| Water Year (Type) | | Total Net Seepage from Surface Waterways and Canals |
|---|---|---|
| 2060 (D) | | 22,000 |
| 2061 (C) | | 35,000 |
| 2062 (D) | | 47,000 |
| 2063 (BN) | | 65,000 |
| 2064 (W) | | 87,000 |
| 2065 (BN) | | 39,000 |
| 2066 (D) | | 46,000 |
| 2067 (C) | | 36,000 |
| 2068 (C) | | 47,000 |
| 2069 (BN) | | 80,000 |
| 2070 (W) | | 120,000 |
| 2071 (BN) | | 59,000 |
| 2072 (W) | | 92,000 |
| Average (2022-2072) | | 55,000 |
| 2022-2072 | W | 76,000 |
| | AN | 64,000 |
| | BN | 52,000 |
| | D | 34,000 |
| | C | 34,000 |

Note: negative values indicate net groundwater discharge to surface water

### 2.4.4 Groundwater Extraction

Groundwater extractions are exchanges that occur between the GWS and the SWS. Groundwater extraction from the GWS occurs through groundwater pumping to meet water demands for urban and agricultural needs and also through groundwater (root water) uptake by plants directly from shallow groundwater during times and at locations of sufficiently shallow groundwater conditions. Projected groundwater extractions are summarized in **Figure 44** and **Table 43** and also presented and discussed in the SWS water budget sections. Total groundwater extractions over the projected water budget period average about -27 taf per year. Overall, groundwater pumping represents a larger fraction (about eight times) of the groundwater extractions than groundwater uptake. Groundwater pumping averaged about -20 taf over the projected period and groundwater uptake averaged about -7.3 taf. In wetter periods, groundwater uptake increases and groundwater pumping decreases. Accordingly, during drier periods groundwater pumping increases and water uptake by plants from shallow groundwater decreases in response to the higher water demands for irrigation and other uses and the greater depths to groundwater that also tend to occur during dry periods.

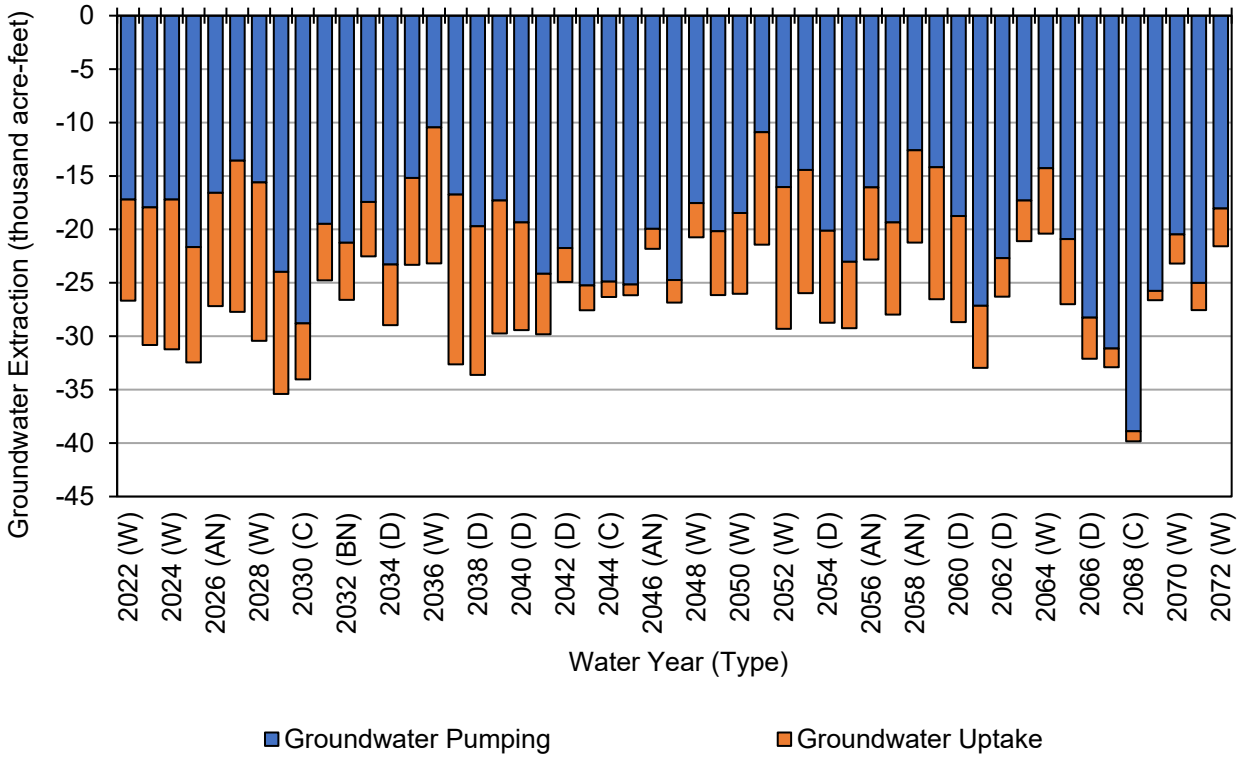


**Figure 44. Los Molinos Subbasin Projected (Current Land Use) Groundwater Extractions**

**Table 43. Los Molinos Subbasin Projected (Current Land Use) Groundwater Extractions (acre-feet)**

| Water Year (Type) | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|
| 2022 (W) | -17,000 | -9,500 | -27,000 |
| 2023 (W) | -18,000 | -13,000 | -31,000 |
| 2024 (W) | -17,000 | -14,000 | -31,000 |
| 2025 (BN) | -22,000 | -11,000 | -32,000 |
| 2026 (AN) | -17,000 | -11,000 | -27,000 |
| 2027 (W) | -14,000 | -14,000 | -28,000 |
| 2028 (W) | -16,000 | -15,000 | -30,000 |
| 2029 (C) | -24,000 | -11,000 | -35,000 |
| 2030 (C) | -29,000 | -5,200 | -34,000 |
| 2031 (AN) | -19,000 | -5,300 | -25,000 |
| 2032 (BN) | -21,000 | -5,300 | -27,000 |
| 2033 (AN) | -17,000 | -5,100 | -23,000 |
| 2034 (D) | -23,000 | -5,700 | -29,000 |
| 2035 (W) | -15,000 | -8,100 | -23,000 |
| 2036 (W) | -10,000 | -13,000 | -23,000 |
| 2037 (W) | -17,000 | -16,000 | -33,000 |
| 2038 (D) | -20,000 | -14,000 | -34,000 |
| 2039 (W) | -17,000 | -12,000 | -30,000 |
| 2040 (D) | -19,000 | -10,000 | -29,000 |
| 2041 (C) | -24,000 | -5,700 | -30,000 |
| 2042 (D) | -22,000 | -3,200 | -25,000 |
| 2043 (C) | -25,000 | -2,300 | -28,000 |
| 2044 (C) | -25,000 | -1,400 | -26,000 |
| 2045 (C) | -25,000 | -1,000 | -26,000 |
| 2046 (AN) | -20,000 | -1,900 | -22,000 |
| 2047 (C) | -25,000 | -2,100 | -27,000 |
| 2048 (W) | -18,000 | -3,200 | -21,000 |
| 2049 (W) | -20,000 | -6,000 | -26,000 |
| 2050 (W) | -18,000 | -7,600 | -26,000 |
| 2051 (W) | -11,000 | -11,000 | -21,000 |
| 2052 (W) | -16,000 | -13,000 | -29,000 |
| 2053 (AN) | -14,000 | -12,000 | -26,000 |
| 2054 (D) | -20,000 | -8,600 | -29,000 |
| 2055 (D) | -23,000 | -6,200 | -29,000 |
| 2056 (AN) | -16,000 | -6,800 | -23,000 |
| 2057 (BN) | -19,000 | -8,600 | -28,000 |
| 2058 (AN) | -13,000 | -8,600 | -21,000 |
| 2059 (W) | -14,000 | -12,000 | -27,000 |

| Water Year (Type) | | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|---|
| 2060 (D) | | -19,000 | -9,900 | -29,000 |
| 2061 (C) | | -27,000 | -5,800 | -33,000 |
| 2062 (D) | | -23,000 | -3,600 | -26,000 |
| 2063 (BN) | | -17,000 | -3,800 | -21,000 |
| 2064 (W) | | -14,000 | -6,100 | -20,000 |
| 2065 (BN) | | -21,000 | -6,100 | -27,000 |
| 2066 (D) | | -28,000 | -3,800 | -32,000 |
| 2067 (C) | | -31,000 | -1,800 | -33,000 |
| 2068 (C) | | -39,000 | -940 | -40,000 |
| 2069 (BN) | | -26,000 | -870 | -27,000 |
| 2070 (W) | | -20,000 | -2,700 | -23,000 |
| 2071 (BN) | | -25,000 | -2,500 | -28,000 |
| 2072 (W) | | -18,000 | -3,500 | -22,000 |
| Average (2022-2072) | | -20,000 | -7,300 | -27,000 |
| 2022-2072 | W | -16,000 | -10,000 | -26,000 |
| | AN | -17,000 | -7,100 | -24,000 |
| | BN | -22,000 | -5,400 | -27,000 |
| | D | -22,000 | -7,200 | -29,000 |
| | C | -27,000 | -3,800 | -31,000 |

### 2.4.5 Vertical Subsurface Flows within the Groundwater System

Vertical subsurface flows within the GWS occur between the Upper and Lower Aquifers and represent an internal flow of water within the GWS. These exchanges between the principal aquifers do not directly affect the total volume of groundwater in storage, but do highlight the net vertical movement of water within the GWS. Projected vertical flows between the Upper Aquifer and Lower Aquifer are summarized in **Figure 45** and **Table 44** and show consistent net overall downward vertical flow from the Upper Aquifer to the lower Aquifer. On average, vertical flows from the Upper Aquifer to the Lower Aquifer total about 58 taf per year over the projected water budget period.

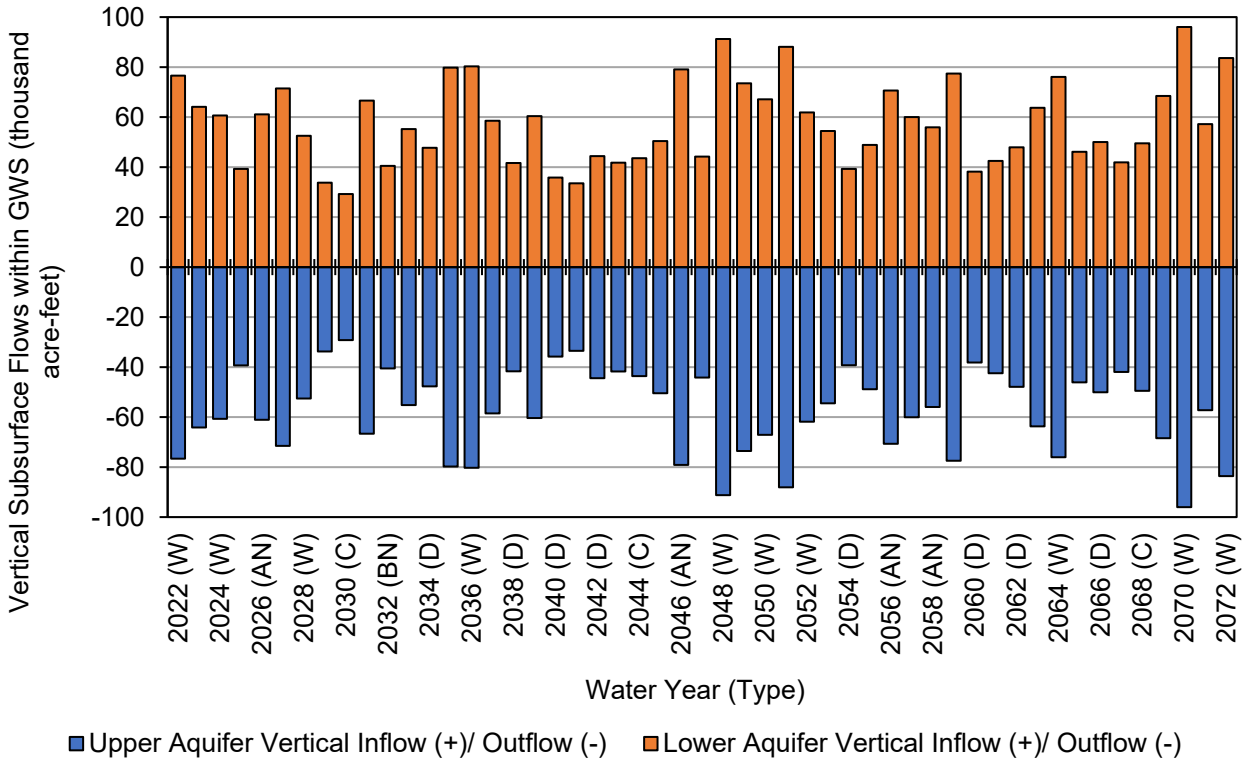


**Figure 45. Los Molinos Subbasin Vertical Subsurface Flow within the GWS**

**Table 44. Los Molinos Subbasin Vertical Subsurface Flows within the GWS (acre-feet)**

| Water Year (Type) | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|
| 2022 (W) | -77,000 |
| 2023 (W) | -64,000 |
| 2024 (W) | -61,000 |
| 2025 (BN) | -39,000 |
| 2026 (AN) | -61,000 |
| 2027 (W) | -71,000 |
| 2028 (W) | -53,000 |
| 2029 (C) | -34,000 |
| 2030 (C) | -29,000 |
| 2031 (AN) | -67,000 |
| 2032 (BN) | -41,000 |
| 2033 (AN) | -55,000 |
| 2034 (D) | -48,000 |
| 2035 (W) | -80,000 |
| 2036 (W) | -80,000 |
| 2037 (W) | -59,000 |
| 2038 (D) | -42,000 |
| 2039 (W) | -60,000 |
| 2040 (D) | -36,000 |
| 2041 (C) | -34,000 |
| 2042 (D) | -44,000 |
| 2043 (C) | -42,000 |
| 2044 (C) | -44,000 |
| 2045 (C) | -50,000 |
| 2046 (AN) | -79,000 |
| 2047 (C) | -44,000 |
| 2048 (W) | -91,000 |
| 2049 (W) | -74,000 |
| 2050 (W) | -67,000 |
| 2051 (W) | -88,000 |
| 2052 (W) | -62,000 |
| 2053 (AN) | -54,000 |
| 2054 (D) | -39,000 |
| 2055 (D) | -49,000 |
| 2056 (AN) | -71,000 |
| 2057 (BN) | -60,000 |
| 2058 (AN) | -56,000 |
| 2059 (W) | -77,000 |
| 2060 (D) | -38,000 |

| Water Year (Type) | | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|---|
| 2061 (C) | | -42,000 |
| 2062 (D) | | -48,000 |
| 2063 (BN) | | -64,000 |
| 2064 (W) | | -76,000 |
| 2065 (BN) | | -46,000 |
| 2066 (D) | | -50,000 |
| 2067 (C) | | -42,000 |
| 2068 (C) | | -49,000 |
| 2069 (BN) | | -68,000 |
| 2070 (W) | | -96,000 |
| 2071 (BN) | | -57,000 |
| 2072 (W) | | -84,000 |
| Average (2022-2072) | | -58,000 |
| 2022-2072 | W | -73,000 |
| | AN | -63,000 |
| | BN | -54,000 |
| | D | -44,000 |
| | C | -41,000 |

### 2.4.6 Change in Groundwater Storage

Projected change in groundwater storage values for the Los Molinos Subbasin are summarized in **Figure 46** and **Figure 47,** and **Table 45**. Values for total change in storage in the GWS and cumulative change in storage over the historical water budget period are presented in conjunction with the volumes of groundwater storage change within each of the two principal aquifers present in the Subbasin. Over the projected period, the average total annual change in groundwater storage is about -1.8 taf per year, representing a decrease in groundwater storage. The corresponding cumulative total change in storage over the projected period is about -93 taf. The annual change in storage numbers generally reflect the effects of the water year type with increase in storage occurring during wetter years and decreases in storage occurring during dry years. Within the GWS, the magnitudes of average annual changes in storage are lower in the Lower Aquifer (average -0.730 taf per year) compared to the Upper Aquifer (average -1.1 taf per year).

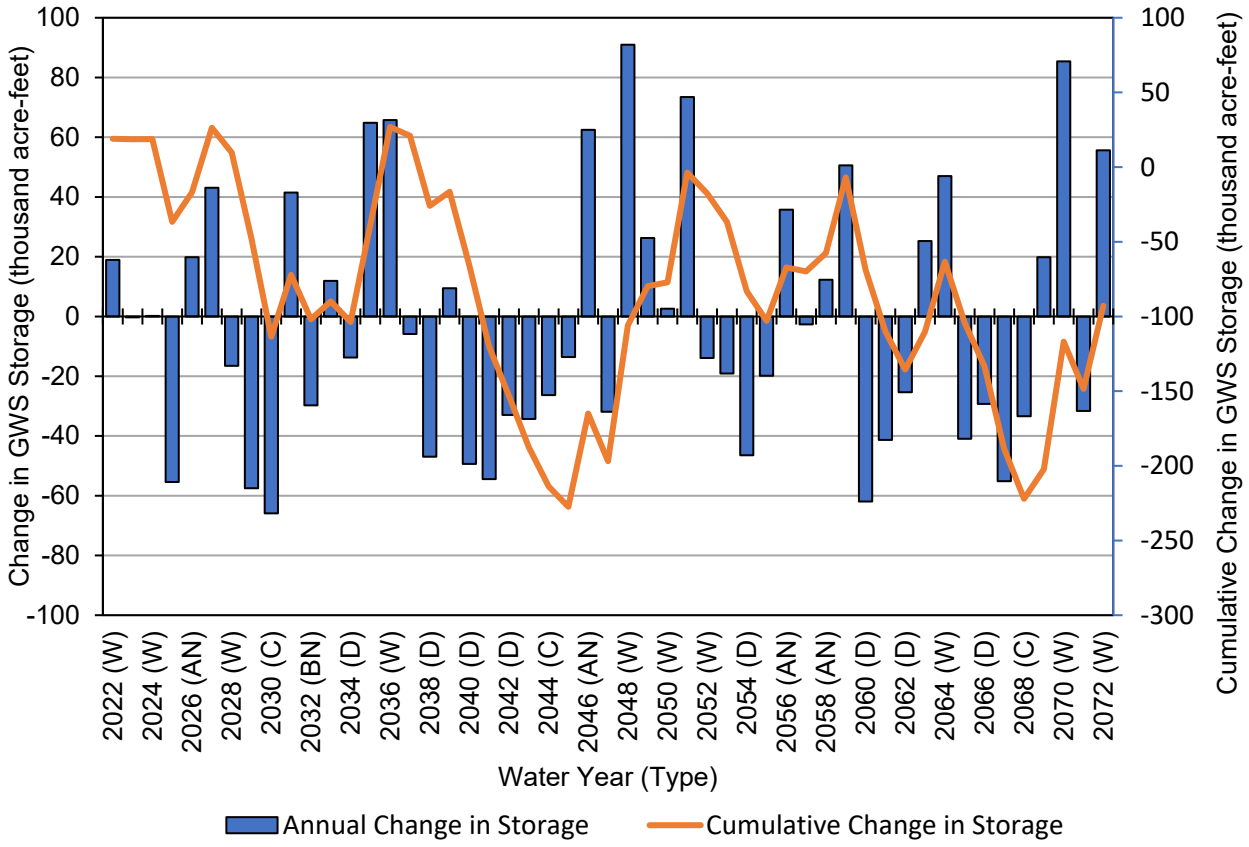


**Figure 46. Los Molinos Subbasin Projected (Current Land Use) Total Change in Storage within the GWS**

**Table 45. Los Molinos Subbasin Projected (Current Land Use) Change in Groundwater Storage (acre-feet)**

| Water Year (Type) | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|
| 2022 (BN) | 9,100 | 9,800 | -110,000 | -100,000 |
| 2023 (W) | -2,300 | 2,000 | -99,000 | -96,000 |
| 2024 (W) | -980 | 1,200 | -95,000 | -93,000 |
| 2025 (W) | -36,000 | -20,000 | -92,000 | -90,000 |
| 2026 (BN) | 13,000 | 7,100 | -85,000 | -83,000 |
| 2027 (AN) | 26,000 | 17,000 | -89,000 | -87,000 |
| 2028 (W) | -11,000 | -5,200 | -93,000 | -91,000 |
| 2029 (W) | -35,000 | -22,000 | -87,000 | -85,000 |
| 2030 (C) | -40,000 | -26,000 | -81,000 | -79,000 |
| 2031 (C) | 27,000 | 15,000 | -79,000 | -77,000 |
| 2032 (AN) | -19,000 | -11,000 | -78,000 | -76,000 |
| 2033 (BN) | 8,300 | 3,600 | -78,000 | -76,000 |
| 2034 (AN) | -8,600 | -5,200 | -80,000 | -78,000 |
| 2035 (D) | 40,000 | 24,000 | -86,000 | -84,000 |
| 2036 (W) | 41,000 | 24,000 | -90,000 | -88,000 |
| 2037 (W) | -4,300 | -1,500 | -96,000 | -94,000 |
| 2038 (W) | -29,000 | -18,000 | -93,000 | -91,000 |
| 2039 (D) | 6,600 | 2,800 | -90,000 | -88,000 |
| 2040 (W) | -30,000 | -19,000 | -84,000 | -82,000 |
| 2041 (D) | -33,000 | -21,000 | -81,000 | -79,000 |
| 2042 (C) | -20,000 | -13,000 | -83,000 | -81,000 |
| 2043 (D) | -21,000 | -14,000 | -79,000 | -77,000 |
| 2044 (C) | -15,000 | -11,000 | -76,000 | -74,000 |
| 2045 (C) | -7,700 | -5,900 | -77,000 | -75,000 |
| 2046 (C) | 39,000 | 23,000 | -79,000 | -77,000 |
| 2047 (AN) | -19,000 | -13,000 | -80,000 | -78,000 |
| 2048 (C) | 57,000 | 34,000 | -84,000 | -82,000 |
| 2049 (W) | 16,000 | 10,000 | -93,000 | -91,000 |
| 2050 (W) | 880 | 1,700 | -98,000 | -96,000 |
| 2051 (W) | 46,000 | 27,000 | -94,000 | -92,000 |
| 2052 (W) | -11,000 | -2,900 | -100,000 | -99,000 |
| 2053 (W) | -11,000 | -7,600 | -96,000 | -94,000 |
| 2054 (AN) | -29,000 | -18,000 | -87,000 | -85,000 |
| 2055 (D) | -12,000 | -7,600 | -84,000 | -82,000 |
| 2056 (D) | 22,000 | 13,000 | -87,000 | -85,000 |
| 2057 (AN) | -1,800 | -880 | -92,000 | -90,000 |
| 2058 (BN) | 8,900 | 3,400 | -81,000 | -79,000 |

| Water Year (Type) | | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|---|
| 2059 (AN) | | 30,000 | 21,000 | -90,000 | -87,000 |
| 2060 (W) | | -39,000 | -23,000 | -94,000 | -92,000 |
| 2061 (D) | | -25,000 | -16,000 | -86,000 | -84,000 |
| 2062 (C) | | -16,000 | -9,700 | -84,000 | -82,000 |
| 2063 (D) | | 17,000 | 8,300 | -82,000 | -80,000 |
| 2064 (BN) | | 28,000 | 19,000 | -87,000 | -85,000 |
| 2065 (W) | | -26,000 | -15,000 | -90,000 | -88,000 |
| 2066 (BN) | | -17,000 | -12,000 | -88,000 | -86,000 |
| 2067 (D) | | -34,000 | -22,000 | -87,000 | -85,000 |
| 2068 (C) | | -20,000 | -14,000 | -84,000 | -82,000 |
| 2069 (C) | | 13,000 | 6,500 | -84,000 | -82,000 |
| 2070 (BN) | | 53,000 | 32,000 | -92,000 | -90,000 |
| 2071 (W) | | -20,000 | -11,000 | -97,000 | -95,000 |
| 2072 (W) | | 36,000 | 20,000 | -92,000 | -90,000 |
| Average (2022-2072) | | -1,100 | -730 | -88,000 | |
| 2022-2072 | W | 20,000 | 13,000 | -93,000 | |
| | AN | 15,000 | 8,200 | -84,000 | |
| | BN | -10,000 | -6,100 | -88,000 | |
| | D | -22,000 | -14,000 | -86,000 | |
| | C | -25,000 | -16,000 | -82,000 | |

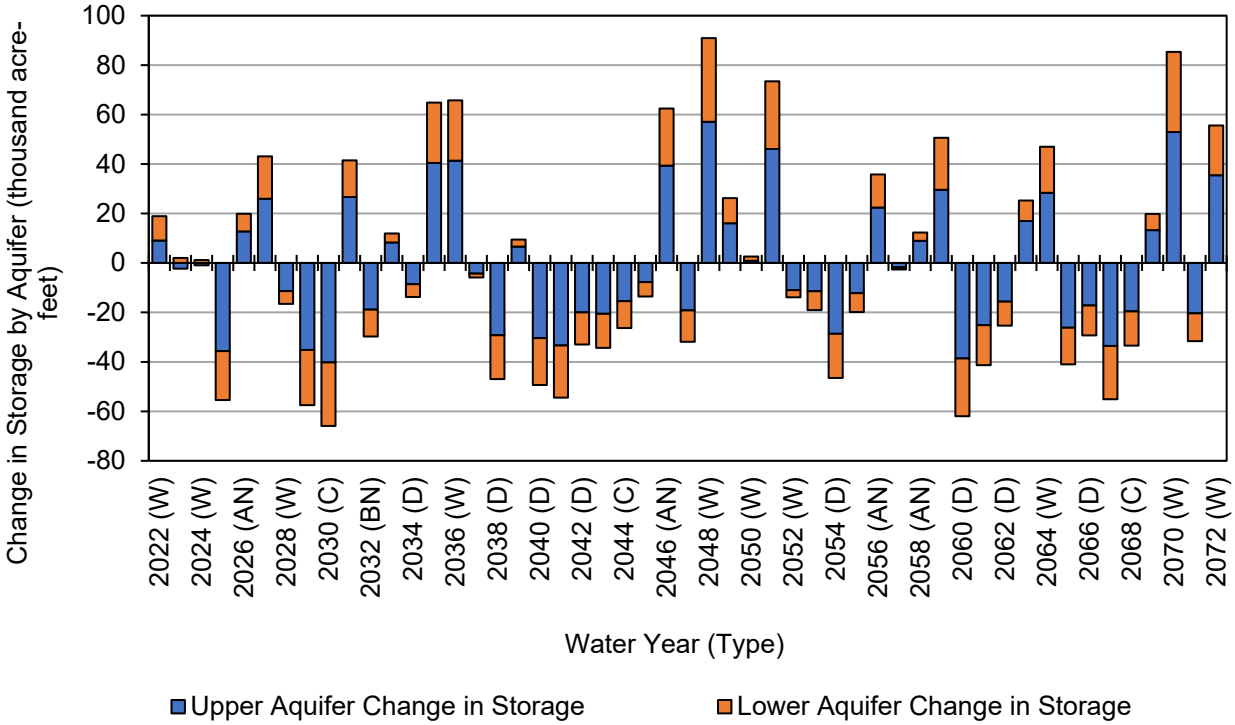


**Figure 47. Los Molinos Subbasin Projected (Current Land Use) Change in Groundwater Storage by Aquifer**

# 3 DETAILED PROJECTED (FUTURE LAND USE) WATER BUDGET

This section presents the results of the Projected (Future Land Use) scenario. The Future Land Use scenario assumes transient land use conditions based on assumed projected development within the Los Molinos Subbasin.

## 3.3 Surface Water System Water Budget Results

### 3.3.1 Inflows

#### 3.3.1.1 *Surface Water Inflow by Water Source Type*

The projected annual volume of surface water inflows is summarized by water source type in **Figure 48** and **Table 46**. Over the projected (future land use) period, surface water inflows average about 650 taf per year. All inflows of the SWS are local supplies.

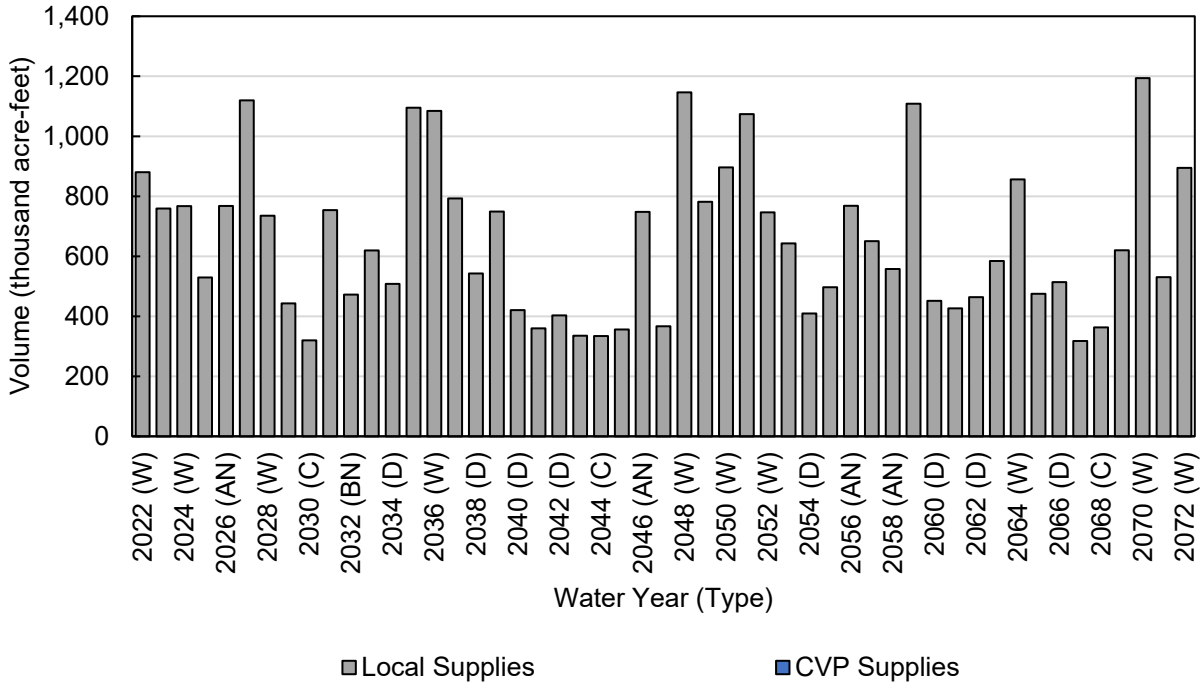


**Figure 48. Los Molinos Subbasin Projected (Future Land Use) Surface Water Inflows, by Water Source Type**

**Table 46. Los Molinos Subbasin Projected (Future Land Use) Surface Water Inflows, by Water Source Type (acre-feet)**

| Water Year (Type) | CVP Supplies | Local Supplies | Total |
|---|---|---|---|
| 2022 (W) | 0 | 880,000 | 880,000 |
| 2023 (W) | 0 | 760,000 | 760,000 |
| 2024 (W) | 0 | 770,000 | 770,000 |
| 2025 (BN) | 0 | 530,000 | 530,000 |
| 2026 (AN) | 0 | 770,000 | 770,000 |
| 2027 (W) | 0 | 1,100,000 | 1,100,000 |
| 2028 (W) | 0 | 740,000 | 740,000 |
| 2029 (C) | 0 | 440,000 | 440,000 |
| 2030 (C) | 0 | 320,000 | 320,000 |
| 2031 (AN) | 0 | 750,000 | 750,000 |
| 2032 (BN) | 0 | 470,000 | 470,000 |
| 2033 (AN) | 0 | 620,000 | 620,000 |
| 2034 (D) | 0 | 510,000 | 510,000 |
| 2035 (W) | 0 | 1,100,000 | 1,100,000 |
| 2036 (W) | 0 | 1,100,000 | 1,100,000 |
| 2037 (W) | 0 | 790,000 | 790,000 |
| 2038 (D) | 0 | 540,000 | 540,000 |
| 2039 (W) | 0 | 750,000 | 750,000 |
| 2040 (D) | 0 | 420,000 | 420,000 |
| 2041 (C) | 0 | 360,000 | 360,000 |
| 2042 (D) | 0 | 400,000 | 400,000 |
| 2043 (C) | 0 | 340,000 | 340,000 |
| 2044 (C) | 0 | 330,000 | 330,000 |
| 2045 (C) | 0 | 360,000 | 360,000 |
| 2046 (AN) | 0 | 750,000 | 750,000 |
| 2047 (C) | 0 | 370,000 | 370,000 |
| 2048 (W) | 0 | 1,100,000 | 1,100,000 |
| 2049 (W) | 0 | 780,000 | 780,000 |
| 2050 (W) | 0 | 900,000 | 900,000 |
| 2051 (W) | 0 | 1,100,000 | 1,100,000 |
| 2052 (W) | 0 | 750,000 | 750,000 |
| 2053 (AN) | 0 | 640,000 | 640,000 |
| 2054 (D) | 0 | 410,000 | 410,000 |
| 2055 (D) | 0 | 500,000 | 500,000 |
| 2056 (AN) | 0 | 770,000 | 770,000 |
| 2057 (BN) | 0 | 650,000 | 650,000 |

| Water Year (Type) | | CVP Supplies | Local Supplies | Total |
|---|---|---|---|---|
| 2058 (AN) | | 0 | 560,000 | 560,000 |
| 2059 (W) | | 0 | 1,100,000 | 1,100,000 |
| 2060 (D) | | 0 | 450,000 | 450,000 |
| 2061 (C) | | 0 | 430,000 | 430,000 |
| 2062 (D) | | 0 | 460,000 | 460,000 |
| 2063 (BN) | | 0 | 580,000 | 580,000 |
| 2064 (W) | | 0 | 860,000 | 860,000 |
| 2065 (BN) | | 0 | 470,000 | 470,000 |
| 2066 (D) | | 0 | 510,000 | 510,000 |
| 2067 (C) | | 0 | 320,000 | 320,000 |
| 2068 (C) | | 0 | 360,000 | 360,000 |
| 2069 (BN) | | 0 | 620,000 | 620,000 |
| 2070 (W) | | 0 | 1,200,000 | 1,200,000 |
| 2071 (BN) | | 0 | 530,000 | 530,000 |
| 2072 (W) | | 0 | 890,000 | 890,000 |
| Average (2022-2072) | | 0 | 650,000 | 650,000 |
| 2022-2072 | W | 0 | 930,000 | 930,000 |
| | AN | 0 | 690,000 | 690,000 |
| | BN | 0 | 550,000 | 550,000 |
| | D | 0 | 470,000 | 470,000 |
| | C | 0 | 360,000 | 360,000 |

#### 3.3.1.2 *Precipitation*

Precipitation estimates for the Los Molinos Subbasin are provided in **Figure 49** and **Table 47**. Total precipitation is highly variable between years in the study area, ranging from approximately 150 taf (18 inches) during average critically dry years to 290 taf (34.8 inches) during average wet years.

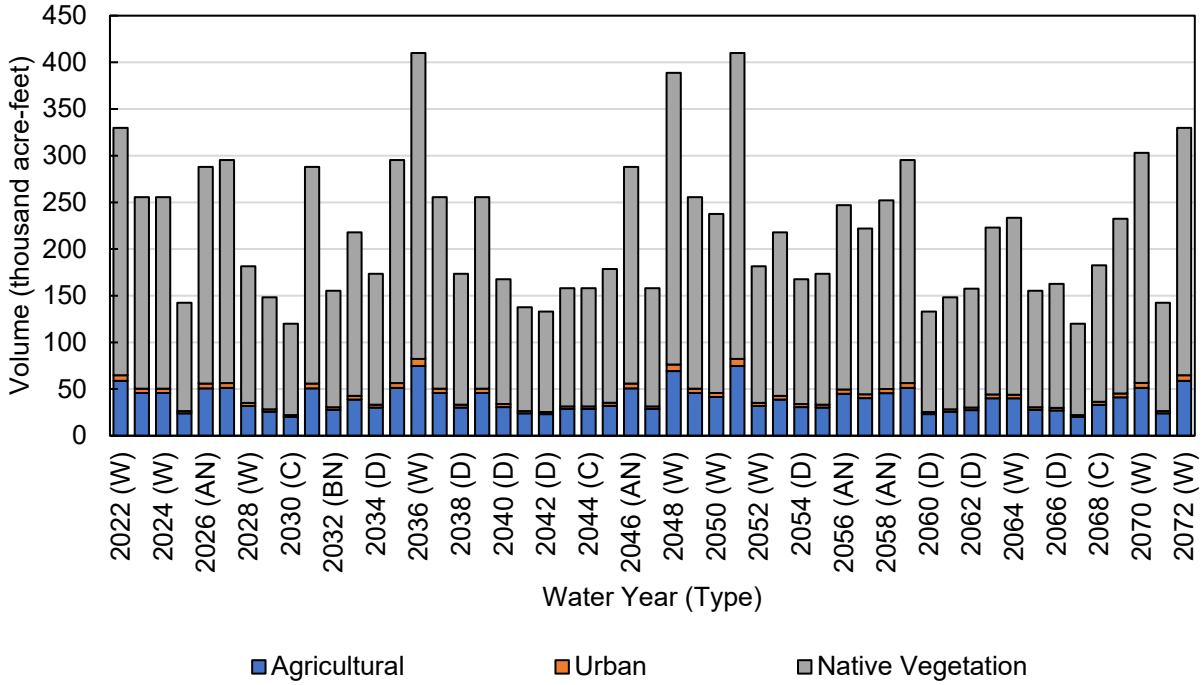


**Figure 49. Los Molinos Subbasin Projected (Future Land Use) Precipitation, by Water Use Sector**

**Table 47. Los Molinos Subbasin Projected (Future Land Use) Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 59,000 | 6,000 | 270,000 | 330,000 |
| 2023 (W) | 46,000 | 4,600 | 210,000 | 260,000 |
| 2024 (W) | 46,000 | 4,600 | 210,000 | 260,000 |
| 2025 (BN) | 24,000 | 2,400 | 120,000 | 140,000 |
| 2026 (AN) | 51,000 | 5,200 | 230,000 | 290,000 |
| 2027 (W) | 51,000 | 5,200 | 240,000 | 300,000 |
| 2028 (W) | 32,000 | 3,300 | 150,000 | 180,000 |
| 2029 (C) | 26,000 | 2,600 | 120,000 | 150,000 |
| 2030 (C) | 20,000 | 2,000 | 98,000 | 120,000 |
| 2031 (AN) | 51,000 | 5,200 | 230,000 | 290,000 |
| 2032 (BN) | 28,000 | 2,800 | 120,000 | 160,000 |
| 2033 (AN) | 39,000 | 4,000 | 180,000 | 220,000 |
| 2034 (D) | 30,000 | 3,100 | 140,000 | 170,000 |
| 2035 (W) | 51,000 | 5,200 | 240,000 | 300,000 |
| 2036 (W) | 75,000 | 7,600 | 330,000 | 410,000 |
| 2037 (W) | 46,000 | 4,600 | 210,000 | 260,000 |
| 2038 (D) | 30,000 | 3,100 | 140,000 | 170,000 |
| 2039 (W) | 46,000 | 4,600 | 210,000 | 260,000 |
| 2040 (D) | 31,000 | 3,100 | 130,000 | 170,000 |
| 2041 (C) | 24,000 | 2,500 | 110,000 | 140,000 |
| 2042 (D) | 23,000 | 2,400 | 110,000 | 130,000 |
| 2043 (C) | 29,000 | 2,900 | 130,000 | 160,000 |
| 2044 (C) | 29,000 | 2,900 | 130,000 | 160,000 |
| 2045 (C) | 32,000 | 3,200 | 140,000 | 180,000 |
| 2046 (AN) | 51,000 | 5,200 | 230,000 | 290,000 |
| 2047 (C) | 29,000 | 2,900 | 130,000 | 160,000 |
| 2048 (W) | 69,000 | 7,000 | 310,000 | 390,000 |
| 2049 (W) | 46,000 | 4,600 | 210,000 | 260,000 |
| 2050 (W) | 42,000 | 4,300 | 190,000 | 240,000 |
| 2051 (W) | 75,000 | 7,600 | 330,000 | 410,000 |
| 2052 (W) | 32,000 | 3,300 | 150,000 | 180,000 |
| 2053 (AN) | 39,000 | 4,000 | 180,000 | 220,000 |
| 2054 (D) | 31,000 | 3,100 | 130,000 | 170,000 |
| 2055 (D) | 30,000 | 3,100 | 140,000 | 170,000 |
| 2056 (AN) | 45,000 | 4,600 | 200,000 | 250,000 |
| 2057 (BN) | 40,000 | 4,100 | 180,000 | 220,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 46,000 | 4,600 | 200,000 | 250,000 |
| 2059 (W) | | 51,000 | 5,200 | 240,000 | 300,000 |
| 2060 (D) | | 23,000 | 2,400 | 110,000 | 130,000 |
| 2061 (C) | | 26,000 | 2,600 | 120,000 | 150,000 |
| 2062 (D) | | 27,000 | 2,700 | 130,000 | 160,000 |
| 2063 (BN) | | 40,000 | 4,100 | 180,000 | 220,000 |
| 2064 (W) | | 40,000 | 3,900 | 190,000 | 230,000 |
| 2065 (BN) | | 28,000 | 2,800 | 120,000 | 160,000 |
| 2066 (D) | | 27,000 | 2,700 | 130,000 | 160,000 |
| 2067 (C) | | 20,000 | 2,000 | 98,000 | 120,000 |
| 2068 (C) | | 33,000 | 3,300 | 150,000 | 180,000 |
| 2069 (BN) | | 41,000 | 4,200 | 190,000 | 230,000 |
| 2070 (W) | | 51,000 | 5,200 | 250,000 | 300,000 |
| 2071 (BN) | | 24,000 | 2,400 | 120,000 | 140,000 |
| 2072 (W) | | 59,000 | 6,000 | 270,000 | 330,000 |
| Average (2022-2072) | | 39,000 | 3,900 | 180,000 | 220,000 |
| 2022-2072 | W | 51,000 | 5,100 | 230,000 | 290,000 |
| | AN | 46,000 | 4,700 | 210,000 | 260,000 |
| | BN | 32,000 | 3,200 | 150,000 | 180,000 |
| | D | 28,000 | 2,900 | 130,000 | 160,000 |
| | C | 27,000 | 2,700 | 120,000 | 150,000 |

#### 3.3.1.3 *Groundwater Extraction by Water Use Sector*

Total groundwater extraction in the Los Molinos Subbasin represents a combination of groundwater pumping to support agricultural and urban water demands, including rural residential use, and groundwater uptake by crops, urban vegetation, and native vegetation.

Estimates of groundwater pumping by water use sector are provided in **Figure 50** and **Table 48**. Virtually all groundwater pumping in the Los Molinos Subbasin is used to meet agricultural demand, averaging 20 taf per year. Groundwater pumping for urban use is approximately 1 taf per year. The total groundwater extraction varies from about 17 taf in wet years to 28 taf in critically dry years based on variability in surface water supplies, precipitation, and crop water demand.

When groundwater is near the land surface, groundwater uptake can also be a source of supply for vegetation. Estimates of groundwater uptake by vegetation are provided in **Figure 51** and **Table 49**. The majority of groundwater uptake is consumed directly by agricultural crops and native vegetation, totaling 0.1 taf and 0.790 taf per year, on average.

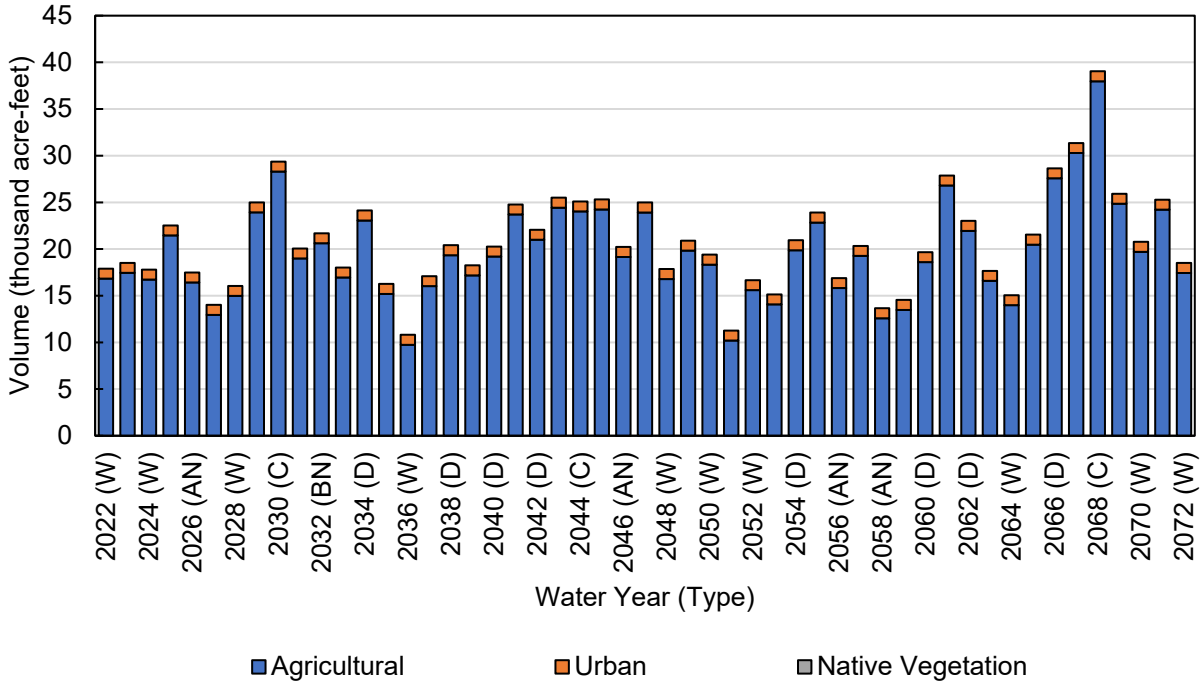


**Figure 50. Los Molinos Subbasin Projected (Future Land Use) Groundwater Pumping, by Water Use Sector**

**Table 48. Los Molinos Subbasin Projected (Future Land Use) Groundwater Pumping, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 17,000 | 1,100 | 0 | 18,000 |
| 2023 (W) | 17,000 | 1,100 | 0 | 19,000 |
| 2024 (W) | 17,000 | 1,100 | 0 | 18,000 |
| 2025 (BN) | 21,000 | 1,100 | 0 | 23,000 |
| 2026 (AN) | 16,000 | 1,100 | 0 | 17,000 |
| 2027 (W) | 13,000 | 1,100 | 0 | 14,000 |
| 2028 (W) | 15,000 | 1,100 | 0 | 16,000 |
| 2029 (C) | 24,000 | 1,100 | 0 | 25,000 |
| 2030 (C) | 28,000 | 1,100 | 0 | 29,000 |
| 2031 (AN) | 19,000 | 1,100 | 0 | 20,000 |
| 2032 (BN) | 21,000 | 1,100 | 0 | 22,000 |
| 2033 (AN) | 17,000 | 1,100 | 0 | 18,000 |
| 2034 (D) | 23,000 | 1,100 | 0 | 24,000 |
| 2035 (W) | 15,000 | 1,100 | 0 | 16,000 |
| 2036 (W) | 9,700 | 1,100 | 0 | 11,000 |
| 2037 (W) | 16,000 | 1,100 | 0 | 17,000 |
| 2038 (D) | 19,000 | 1,100 | 0 | 20,000 |
| 2039 (W) | 17,000 | 1,100 | 0 | 18,000 |
| 2040 (D) | 19,000 | 1,100 | 0 | 20,000 |
| 2041 (C) | 24,000 | 1,100 | 0 | 25,000 |
| 2042 (D) | 21,000 | 1,100 | 0 | 22,000 |
| 2043 (C) | 24,000 | 1,100 | 0 | 26,000 |
| 2044 (C) | 24,000 | 1,100 | 0 | 25,000 |
| 2045 (C) | 24,000 | 1,100 | 0 | 25,000 |
| 2046 (AN) | 19,000 | 1,100 | 0 | 20,000 |
| 2047 (C) | 24,000 | 1,100 | 0 | 25,000 |
| 2048 (W) | 17,000 | 1,100 | 0 | 18,000 |
| 2049 (W) | 20,000 | 1,100 | 0 | 21,000 |
| 2050 (W) | 18,000 | 1,100 | 0 | 19,000 |
| 2051 (W) | 10,000 | 1,100 | 0 | 11,000 |
| 2052 (W) | 16,000 | 1,100 | 0 | 17,000 |
| 2053 (AN) | 14,000 | 1,100 | 0 | 15,000 |
| 2054 (D) | 20,000 | 1,100 | 0 | 21,000 |
| 2055 (D) | 23,000 | 1,100 | 0 | 24,000 |
| 2056 (AN) | 16,000 | 1,100 | 0 | 17,000 |
| 2057 (BN) | 19,000 | 1,100 | 0 | 20,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 13,000 | 1,100 | 0 | 14,000 |
| 2059 (W) | | 13,000 | 1,100 | 0 | 15,000 |
| 2060 (D) | | 19,000 | 1,100 | 0 | 20,000 |
| 2061 (C) | | 27,000 | 1,100 | 0 | 28,000 |
| 2062 (D) | | 22,000 | 1,100 | 0 | 23,000 |
| 2063 (BN) | | 17,000 | 1,100 | 0 | 18,000 |
| 2064 (W) | | 14,000 | 1,100 | 0 | 15,000 |
| 2065 (BN) | | 20,000 | 1,100 | 0 | 22,000 |
| 2066 (D) | | 28,000 | 1,100 | 0 | 29,000 |
| 2067 (C) | | 30,000 | 1,100 | 0 | 31,000 |
| 2068 (C) | | 38,000 | 1,100 | 0 | 39,000 |
| 2069 (BN) | | 25,000 | 1,100 | 0 | 26,000 |
| 2070 (W) | | 20,000 | 1,100 | 0 | 21,000 |
| 2071 (BN) | | 24,000 | 1,100 | 0 | 25,000 |
| 2072 (W) | | 17,000 | 1,100 | 0 | 19,000 |
| Average (2022-2072) | | 20,000 | 1,100 | 0 | 21,000 |
| 2022-2072 | W | 16,000 | 1,100 | 0 | 17,000 |
| | AN | 16,000 | 1,100 | 0 | 17,000 |
| | BN | 21,000 | 1,100 | 0 | 22,000 |
| | D | 21,000 | 1,100 | 0 | 23,000 |
| | C | 27,000 | 1,100 | 0 | 28,000 |

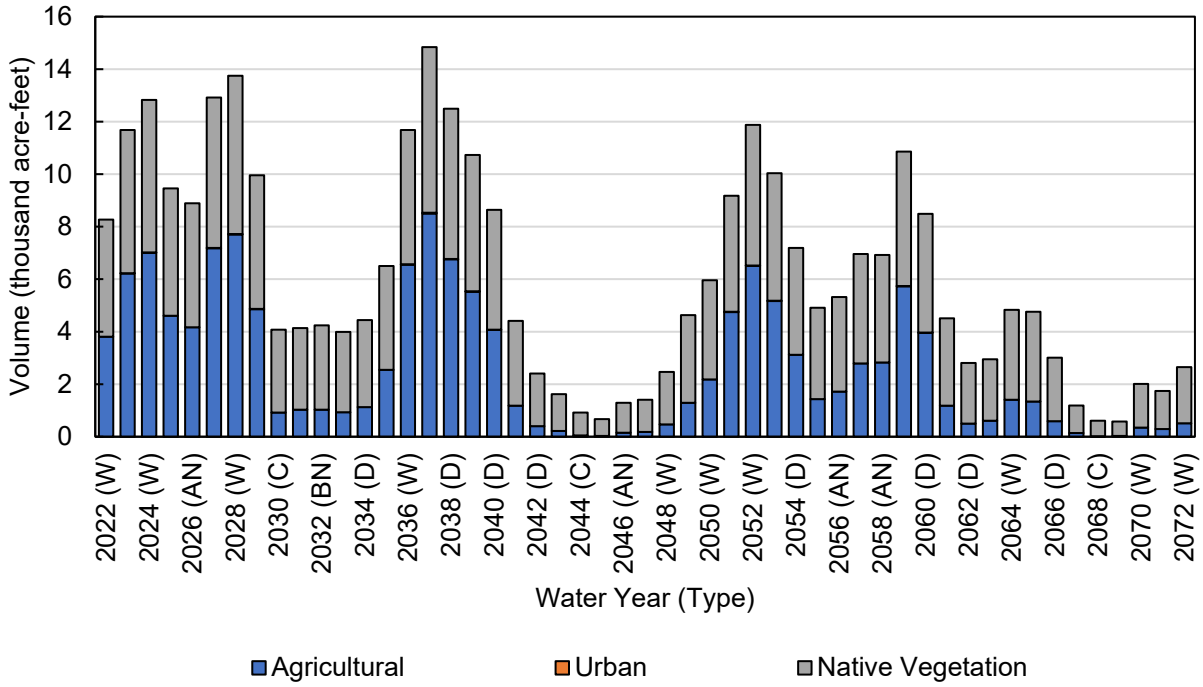


**Figure 51. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector**

**Table 49. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (BN) | 3,800 | 0 | 4,500 | 8,300 |
| 2023 (W) | 6,200 | 10 | 5,500 | 12,000 |
| 2024 (W) | 7,000 | 10 | 5,800 | 13,000 |
| 2025 (W) | 4,600 | 0 | 4,900 | 9,500 |
| 2026 (BN) | 4,200 | 0 | 4,700 | 8,900 |
| 2027 (AN) | 7,200 | 10 | 5,700 | 13,000 |
| 2028 (W) | 7,700 | 20 | 6,000 | 14,000 |
| 2029 (W) | 4,900 | 10 | 5,100 | 10,000 |
| 2030 (C) | 920 | 0 | 3,200 | 4,100 |
| 2031 (C) | 1,000 | 0 | 3,100 | 4,100 |
| 2032 (AN) | 1,000 | 0 | 3,200 | 4,200 |
| 2033 (BN) | 930 | 0 | 3,100 | 4,000 |
| 2034 (AN) | 1,100 | 0 | 3,300 | 4,400 |
| 2035 (D) | 2,600 | 0 | 4,000 | 6,500 |
| 2036 (W) | 6,600 | 10 | 5,100 | 12,000 |
| 2037 (W) | 8,500 | 30 | 6,300 | 15,000 |
| 2038 (W) | 6,800 | 10 | 5,700 | 12,000 |
| 2039 (D) | 5,500 | 10 | 5,200 | 11,000 |
| 2040 (W) | 4,100 | 10 | 4,600 | 8,600 |
| 2041 (D) | 1,200 | 0 | 3,200 | 4,400 |
| 2042 (C) | 400 | 0 | 2,000 | 2,400 |
| 2043 (D) | 220 | 0 | 1,400 | 1,600 |
| 2044 (C) | 50 | 0 | 870 | 920 |
| 2045 (C) | 30 | 0 | 640 | 670 |
| 2046 (C) | 150 | 0 | 1,100 | 1,300 |
| 2047 (AN) | 180 | 0 | 1,200 | 1,400 |
| 2048 (C) | 470 | 0 | 2,000 | 2,500 |
| 2049 (W) | 1,300 | 0 | 3,300 | 4,600 |
| 2050 (W) | 2,200 | 0 | 3,800 | 6,000 |
| 2051 (W) | 4,800 | 10 | 4,400 | 9,200 |
| 2052 (W) | 6,500 | 10 | 5,400 | 12,000 |
| 2053 (W) | 5,200 | 10 | 4,900 | 10,000 |
| 2054 (AN) | 3,100 | 0 | 4,100 | 7,200 |
| 2055 (D) | 1,400 | 0 | 3,500 | 4,900 |
| 2056 (D) | 1,700 | 0 | 3,600 | 5,300 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2057 (AN) | | 2,800 | 0 | 4,200 | 7,000 |
| 2058 (BN) | | 2,800 | 0 | 4,100 | 6,900 |
| 2059 (AN) | | 5,700 | 10 | 5,100 | 11,000 |
| 2060 (W) | | 4,000 | 10 | 4,500 | 8,500 |
| 2061 (D) | | 1,200 | 0 | 3,300 | 4,500 |
| 2062 (C) | | 500 | 0 | 2,300 | 2,800 |
| 2063 (D) | | 610 | 0 | 2,300 | 3,000 |
| 2064 (BN) | | 1,400 | 0 | 3,400 | 4,800 |
| 2065 (W) | | 1,300 | 0 | 3,400 | 4,800 |
| 2066 (BN) | | 590 | 0 | 2,400 | 3,000 |
| 2067 (D) | | 140 | 0 | 1,100 | 1,200 |
| 2068 (C) | | 20 | 0 | 590 | 610 |
| 2069 (C) | | 30 | 0 | 550 | 580 |
| 2070 (BN) | | 350 | 0 | 1,700 | 2,000 |
| 2071 (W) | | 290 | 0 | 1,500 | 1,700 |
| 2072 (W) | | 510 | 0 | 2,100 | 2,700 |
| Average (2022-2072) | | 2,700 | 0 | 3,500 | 6,100 |
| 2022-2072 | W | 4,400 | 10 | 4,400 | 8,800 |
| | AN | 2,300 | 0 | 3,500 | 5,800 |
| | BN | 1,500 | 0 | 2,900 | 4,400 |
| | D | 2,400 | 0 | 3,600 | 6,000 |
| | C | 880 | 0 | 2,100 | 2,900 |

#### 3.3.1.4 *Groundwater Discharge to Surface Waterways*

Groundwater discharge to surface water, as described herein, represents a gain, or increase of flow, in waterways that traverse or flow along the boundary of the Los Molinos Subbasin. Groundwater discharge in the Los Molinos Subbasin is calculated from the Tehama IHM as the net groundwater outflow to water reaches (i.e., groundwater discharge) in excess of groundwater inflows from waterway reaches (i.e., seepage). The total volume of estimated annual groundwater discharge to surface water is zero throughout the projected period.

### 3.3.2 Outflows

#### 3.3.2.1 *Evapotranspiration by Water Use Sector*

Evapotranspiration (ET) by water use sector is reported in **Figure 52** through **Figure 55**, and **Table 50** through **Table 53**. First, total ET is reported, followed by ET from applied water (ET of water actively

applied from surface water deliveries or groundwater pumping), ET of groundwater uptake (ET of shallow water extracted directly by vegetation), and ET from precipitation (ET of water supplied through rainfall).

Total ET varies between years, with the lowest projected averages in critically dry and dry years, at approximately 160 taf, and greatest in wet and above normal years, at approximately 180 taf. Agricultural ET tends to increase slightly in drier years due to increased climatic demand, while the ET of native vegetation typically decreases due to reduced water supply.

ET of applied water occurs primarily from agricultural land, averaging about 37 to 39 taf in above-normal and wet years and about 45 to 47 taf in years classified as below normal, dry, or critical. Urban ET of applied water is lower and averages about 0.350 taf per year. Native vegetation and agricultural crops in the Los Molinos Subbasin also directly consume shallow groundwater to meet a portion of their consumptive use requirements. ET of groundwater uptake by native vegetation and agricultural crops totals 3.5 and 2.7 taf per year, on average.

ET of precipitation generally follows the pattern of precipitation, with higher volumes occurring in wet years when more precipitation occurs. Across all water use sectors, ET of precipitation in the Los Molinos Subbasin averages about 130 taf in wet years and 110 taf in critical water years. Much of the total ET of precipitation results from the large acreage of native vegetation and Agricultural land in the Los Molinos Subbasin, though some contribution is from urban areas as well.

Evaporation from rivers, streams, and canals in the Los Molinos Subbasin is reported in **Figure 56** and **Table 54**. The total volume is relatively small and constant between years, averaging about 2.3 taf per year. Evaporation from upgradient small watersheds is minimal, and is also not considered to substantially contribute to the subbasin SWS water budget.

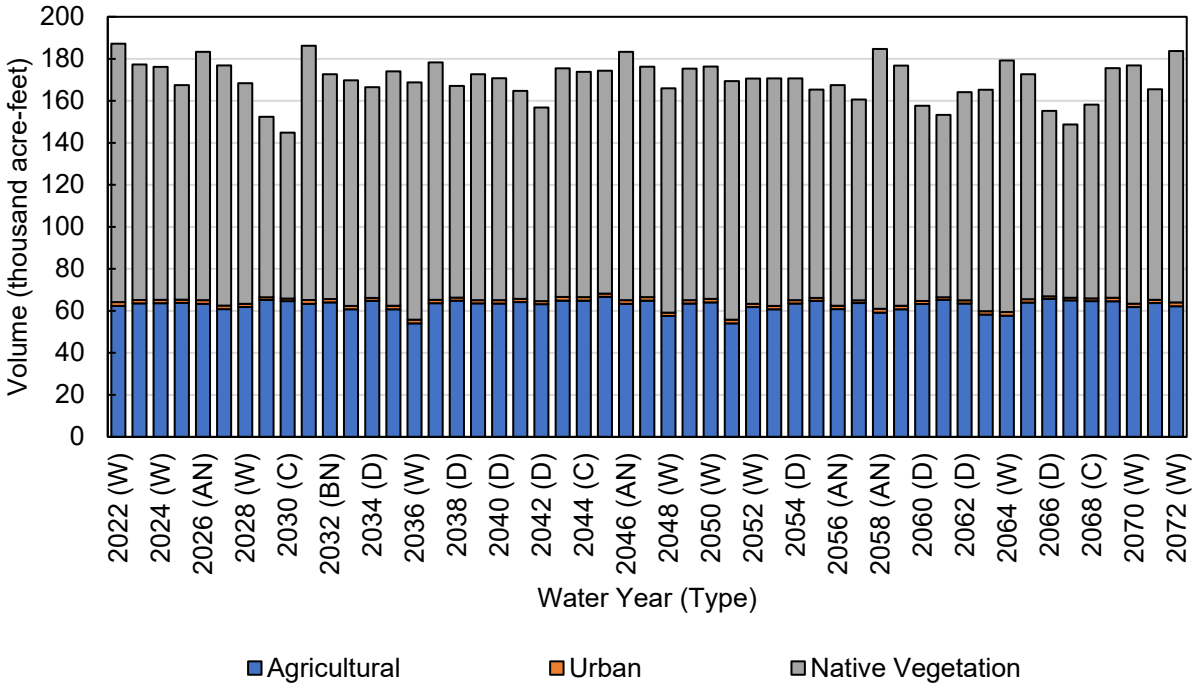

**Figure 52. Los Molinos Subbasin Projected (Future Land Use) Total Evapotranspiration, by Water Use Sector**

**Table 50. Los Molinos Subbasin Projected (Future Land Use) Total Evapotranspiration, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 62,000 | 1,800 | 120,000 | 190,000 |
| 2023 (W) | 64,000 | 1,600 | 110,000 | 180,000 |
| 2024 (W) | 64,000 | 1,600 | 110,000 | 180,000 |
| 2025 (BN) | 64,000 | 1,500 | 100,000 | 170,000 |
| 2026 (AN) | 63,000 | 1,800 | 120,000 | 180,000 |
| 2027 (W) | 61,000 | 1,600 | 110,000 | 180,000 |
| 2028 (W) | 62,000 | 1,600 | 110,000 | 170,000 |
| 2029 (C) | 65,000 | 1,300 | 86,000 | 150,000 |
| 2030 (C) | 65,000 | 1,300 | 79,000 | 140,000 |
| 2031 (AN) | 63,000 | 1,800 | 120,000 | 190,000 |
| 2032 (BN) | 64,000 | 1,600 | 110,000 | 170,000 |
| 2033 (AN) | 61,000 | 1,600 | 110,000 | 170,000 |
| 2034 (D) | 65,000 | 1,400 | 100,000 | 170,000 |
| 2035 (W) | 61,000 | 1,600 | 110,000 | 170,000 |
| 2036 (W) | 54,000 | 1,700 | 110,000 | 170,000 |
| 2037 (W) | 64,000 | 1,600 | 110,000 | 180,000 |
| 2038 (D) | 65,000 | 1,400 | 100,000 | 170,000 |
| 2039 (W) | 64,000 | 1,600 | 110,000 | 170,000 |
| 2040 (D) | 64,000 | 1,600 | 110,000 | 170,000 |
| 2041 (C) | 64,000 | 1,500 | 99,000 | 160,000 |
| 2042 (D) | 63,000 | 1,500 | 92,000 | 160,000 |
| 2043 (C) | 65,000 | 1,700 | 110,000 | 180,000 |
| 2044 (C) | 65,000 | 1,700 | 110,000 | 170,000 |
| 2045 (C) | 67,000 | 1,600 | 110,000 | 170,000 |
| 2046 (AN) | 63,000 | 1,800 | 120,000 | 180,000 |
| 2047 (C) | 65,000 | 1,700 | 110,000 | 180,000 |
| 2048 (W) | 58,000 | 1,600 | 110,000 | 170,000 |
| 2049 (W) | 64,000 | 1,600 | 110,000 | 180,000 |
| 2050 (W) | 64,000 | 1,700 | 110,000 | 180,000 |
| 2051 (W) | 54,000 | 1,700 | 110,000 | 170,000 |
| 2052 (W) | 62,000 | 1,600 | 110,000 | 170,000 |
| 2053 (AN) | 61,000 | 1,600 | 110,000 | 170,000 |
| 2054 (D) | 64,000 | 1,600 | 110,000 | 170,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2055 (D) | | 65,000 | 1,400 | 99,000 | 170,000 |
| 2056 (AN) | | 61,000 | 1,600 | 110,000 | 170,000 |
| 2057 (BN) | | 64,000 | 1,300 | 96,000 | 160,000 |
| 2058 (AN) | | 59,000 | 1,900 | 120,000 | 180,000 |
| 2059 (W) | | 61,000 | 1,600 | 110,000 | 180,000 |
| 2060 (D) | | 63,000 | 1,500 | 93,000 | 160,000 |
| 2061 (C) | | 65,000 | 1,300 | 87,000 | 150,000 |
| 2062 (D) | | 63,000 | 1,500 | 99,000 | 160,000 |
| 2063 (BN) | | 58,000 | 1,600 | 110,000 | 170,000 |
| 2064 (W) | | 58,000 | 1,700 | 120,000 | 180,000 |
| 2065 (BN) | | 64,000 | 1,600 | 110,000 | 170,000 |
| 2066 (D) | | 66,000 | 1,200 | 88,000 | 160,000 |
| 2067 (C) | | 65,000 | 1,300 | 82,000 | 150,000 |
| 2068 (C) | | 65,000 | 1,300 | 92,000 | 160,000 |
| 2069 (BN) | | 65,000 | 1,700 | 110,000 | 180,000 |
| 2070 (W) | | 62,000 | 1,600 | 110,000 | 180,000 |
| 2071 (BN) | | 64,000 | 1,500 | 100,000 | 170,000 |
| 2072 (W) | | 62,000 | 1,800 | 120,000 | 180,000 |
| Average (2022-2072) | | 63,000 | 1,600 | 110,000 | 170,000 |
| 2022-2072 | W | 61,000 | 1,600 | 110,000 | 180,000 |
| | AN | 62,000 | 1,700 | 110,000 | 180,000 |
| | BN | 63,000 | 1,500 | 100,000 | 170,000 |
| | D | 64,000 | 1,500 | 98,000 | 160,000 |
| | C | 65,000 | 1,500 | 96,000 | 160,000 |

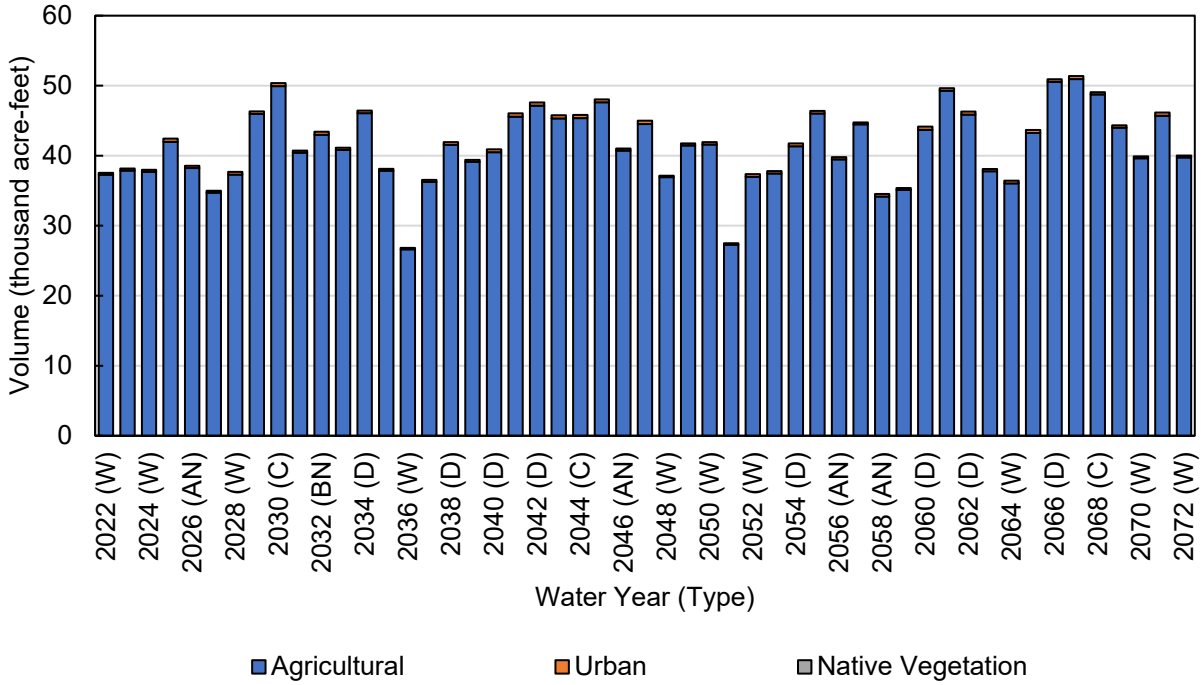


**Figure 53. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Applied Water, by Water Use Sector**

**Table 51. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 37,000 | 280 | 0 | 38,000 |
| 2023 (W) | 38,000 | 310 | 0 | 38,000 |
| 2024 (W) | 38,000 | 300 | 0 | 38,000 |
| 2025 (BN) | 42,000 | 460 | 0 | 42,000 |
| 2026 (AN) | 38,000 | 310 | 0 | 39,000 |
| 2027 (W) | 35,000 | 280 | 0 | 35,000 |
| 2028 (W) | 37,000 | 380 | 0 | 38,000 |
| 2029 (C) | 46,000 | 370 | 0 | 46,000 |
| 2030 (C) | 50,000 | 430 | 0 | 50,000 |
| 2031 (AN) | 40,000 | 310 | 0 | 41,000 |
| 2032 (BN) | 43,000 | 440 | 0 | 43,000 |
| 2033 (AN) | 41,000 | 340 | 0 | 41,000 |
| 2034 (D) | 46,000 | 370 | 0 | 46,000 |
| 2035 (W) | 38,000 | 280 | 0 | 38,000 |
| 2036 (W) | 27,000 | 210 | 0 | 27,000 |
| 2037 (W) | 36,000 | 300 | 0 | 37,000 |
| 2038 (D) | 42,000 | 370 | 0 | 42,000 |
| 2039 (W) | 39,000 | 300 | 0 | 39,000 |
| 2040 (D) | 41,000 | 400 | 0 | 41,000 |
| 2041 (C) | 46,000 | 470 | 0 | 46,000 |
| 2042 (D) | 47,000 | 460 | 0 | 48,000 |
| 2043 (C) | 45,000 | 460 | 0 | 46,000 |
| 2044 (C) | 45,000 | 460 | 0 | 46,000 |
| 2045 (C) | 48,000 | 390 | 0 | 48,000 |
| 2046 (AN) | 41,000 | 300 | 0 | 41,000 |
| 2047 (C) | 45,000 | 460 | 0 | 45,000 |
| 2048 (W) | 37,000 | 210 | 0 | 37,000 |
| 2049 (W) | 41,000 | 300 | 0 | 42,000 |
| 2050 (W) | 42,000 | 330 | 0 | 42,000 |
| 2051 (W) | 27,000 | 210 | 0 | 28,000 |
| 2052 (W) | 37,000 | 380 | 0 | 37,000 |
| 2053 (AN) | 37,000 | 340 | 0 | 38,000 |
| 2054 (D) | 41,000 | 400 | 0 | 42,000 |
| 2055 (D) | 46,000 | 370 | 0 | 46,000 |
| 2056 (AN) | 39,000 | 300 | 0 | 40,000 |
| 2057 (BN) | 44,000 | 280 | 0 | 45,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 34,000 | 350 | 0 | 35,000 |
| 2059 (W) | | 35,000 | 280 | 0 | 35,000 |
| 2060 (D) | | 44,000 | 460 | 0 | 44,000 |
| 2061 (C) | | 49,000 | 370 | 0 | 50,000 |
| 2062 (D) | | 46,000 | 430 | 0 | 46,000 |
| 2063 (BN) | | 38,000 | 330 | 0 | 38,000 |
| 2064 (W) | | 36,000 | 370 | 0 | 36,000 |
| 2065 (BN) | | 43,000 | 440 | 0 | 44,000 |
| 2066 (D) | | 51,000 | 350 | 0 | 51,000 |
| 2067 (C) | | 51,000 | 440 | 0 | 51,000 |
| 2068 (C) | | 49,000 | 320 | 0 | 49,000 |
| 2069 (BN) | | 44,000 | 340 | 0 | 44,000 |
| 2070 (W) | | 40,000 | 270 | 0 | 40,000 |
| 2071 (BN) | | 46,000 | 460 | 0 | 46,000 |
| 2072 (W) | | 40,000 | 270 | 0 | 40,000 |
| Average (2022-2072) | | 41,000 | 350 | 0 | 42,000 |
| 2022-2072 | W | 37,000 | 290 | 0 | 37,000 |
| | AN | 39,000 | 320 | 0 | 40,000 |
| | BN | 43,000 | 390 | 0 | 43,000 |
| | D | 45,000 | 400 | 0 | 44,000 |
| | C | 47,000 | 420 | 0 | 47,000 |

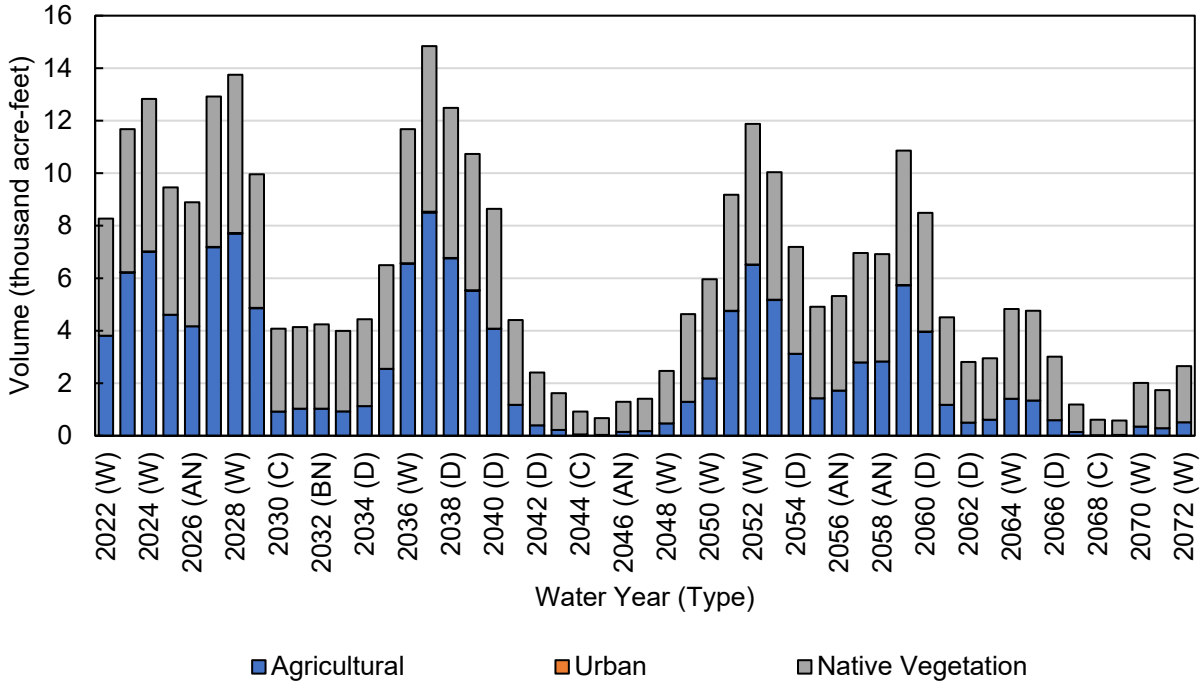


**Figure 54. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Groundwater Uptake, by Water Use Sector**

**Table 52. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 3,800 | 0 | 4,500 | 8,300 |
| 2023 (W) | 6,200 | 10 | 5,500 | 12,000 |
| 2024 (W) | 7,000 | 10 | 5,800 | 13,000 |
| 2025 (BN) | 4,600 | 0 | 4,900 | 9,500 |
| 2026 (AN) | 4,200 | 0 | 4,700 | 8,900 |
| 2027 (W) | 7,200 | 10 | 5,700 | 13,000 |
| 2028 (W) | 7,700 | 20 | 6,000 | 14,000 |
| 2029 (C) | 4,900 | 10 | 5,100 | 10,000 |
| 2030 (C) | 920 | 0 | 3,200 | 4,100 |
| 2031 (AN) | 1,000 | 0 | 3,100 | 4,100 |
| 2032 (BN) | 1,000 | 0 | 3,200 | 4,200 |
| 2033 (AN) | 930 | 0 | 3,100 | 4,000 |
| 2034 (D) | 1,100 | 0 | 3,300 | 4,400 |
| 2035 (W) | 2,600 | 0 | 4,000 | 6,500 |
| 2036 (W) | 6,600 | 10 | 5,100 | 12,000 |
| 2037 (W) | 8,500 | 30 | 6,300 | 15,000 |
| 2038 (D) | 6,800 | 10 | 5,700 | 12,000 |
| 2039 (W) | 5,500 | 10 | 5,200 | 11,000 |
| 2040 (D) | 4,100 | 10 | 4,600 | 8,600 |
| 2041 (C) | 1,200 | 0 | 3,200 | 4,400 |
| 2042 (D) | 400 | 0 | 2,000 | 2,400 |
| 2043 (C) | 220 | 0 | 1,400 | 1,600 |
| 2044 (C) | 50 | 0 | 870 | 920 |
| 2045 (C) | 30 | 0 | 640 | 670 |
| 2046 (AN) | 150 | 0 | 1,100 | 1,300 |
| 2047 (C) | 180 | 0 | 1,200 | 1,400 |
| 2048 (W) | 470 | 0 | 2,000 | 2,500 |
| 2049 (W) | 1,300 | 0 | 3,300 | 4,600 |
| 2050 (W) | 2,200 | 0 | 3,800 | 6,000 |
| 2051 (W) | 4,800 | 10 | 4,400 | 9,200 |
| 2052 (W) | 6,500 | 10 | 5,400 | 12,000 |
| 2053 (AN) | 5,200 | 10 | 4,900 | 10,000 |
| 2054 (D) | 3,100 | 0 | 4,100 | 7,200 |
| 2055 (D) | 1,400 | 0 | 3,500 | 4,900 |
| 2056 (AN) | 1,700 | 0 | 3,600 | 5,300 |
| 2057 (BN) | 2,800 | 0 | 4,200 | 7,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 2,800 | 0 | 4,100 | 6,900 |
| 2059 (W) | | 5,700 | 10 | 5,100 | 11,000 |
| 2060 (D) | | 4,000 | 10 | 4,500 | 8,500 |
| 2061 (C) | | 1,200 | 0 | 3,300 | 4,500 |
| 2062 (D) | | 500 | 0 | 2,300 | 2,800 |
| 2063 (BN) | | 610 | 0 | 2,300 | 3,000 |
| 2064 (W) | | 1,400 | 0 | 3,400 | 4,800 |
| 2065 (BN) | | 1,300 | 0 | 3,400 | 4,800 |
| 2066 (D) | | 590 | 0 | 2,400 | 3,000 |
| 2067 (C) | | 140 | 0 | 1,100 | 1,200 |
| 2068 (C) | | 20 | 0 | 590 | 610 |
| 2069 (BN) | | 30 | 0 | 550 | 580 |
| 2070 (W) | | 350 | 0 | 1,700 | 2,000 |
| 2071 (BN) | | 290 | 0 | 1,500 | 1,700 |
| 2072 (W) | | 510 | 0 | 2,100 | 2,700 |
| Average (2022-2072) | | 2,700 | 0 | 3,500 | 6,100 |
| 2022-2072 | W | 4,400 | 10 | 4,400 | 8,800 |
| | AN | 2,300 | 0 | 3,500 | 5,800 |
| | BN | 1,500 | 0 | 2,900 | 4,400 |
| | D | 2,400 | 0 | 3,600 | 6,000 |
| | C | 880 | 0 | 2,100 | 2,900 |

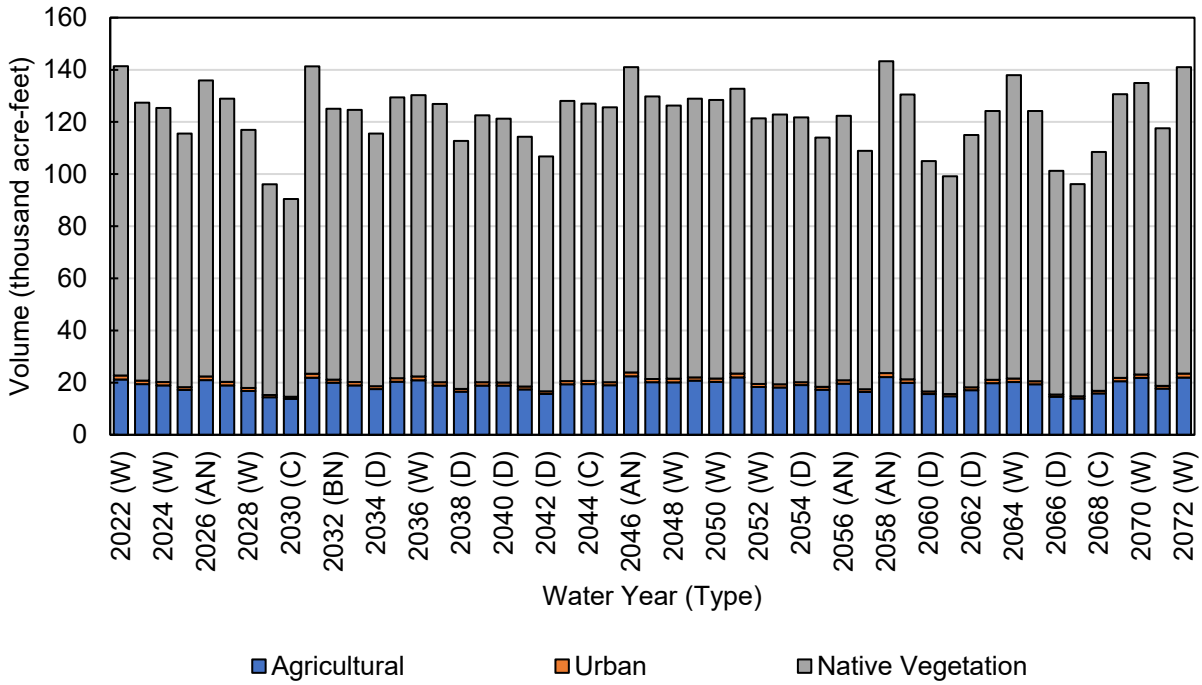


**Figure 55. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Precipitation, by Water Use Sector**

**Table 53. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 21,000 | 1,500 | 120,000 | 140,000 |
| 2023 (W) | 19,000 | 1,300 | 110,000 | 130,000 |
| 2024 (W) | 19,000 | 1,300 | 110,000 | 130,000 |
| 2025 (BN) | 17,000 | 1,000 | 97,000 | 120,000 |
| 2026 (AN) | 21,000 | 1,500 | 110,000 | 140,000 |
| 2027 (W) | 19,000 | 1,400 | 110,000 | 130,000 |
| 2028 (W) | 17,000 | 1,200 | 99,000 | 120,000 |
| 2029 (C) | 14,000 | 870 | 81,000 | 96,000 |
| 2030 (C) | 14,000 | 820 | 76,000 | 90,000 |
| 2031 (AN) | 22,000 | 1,500 | 120,000 | 140,000 |
| 2032 (BN) | 20,000 | 1,100 | 100,000 | 130,000 |
| 2033 (AN) | 19,000 | 1,300 | 100,000 | 120,000 |
| 2034 (D) | 18,000 | 1,100 | 97,000 | 120,000 |
| 2035 (W) | 20,000 | 1,400 | 110,000 | 130,000 |
| 2036 (W) | 21,000 | 1,500 | 110,000 | 130,000 |
| 2037 (W) | 19,000 | 1,300 | 110,000 | 130,000 |
| 2038 (D) | 17,000 | 1,000 | 95,000 | 110,000 |
| 2039 (W) | 19,000 | 1,300 | 100,000 | 120,000 |
| 2040 (D) | 19,000 | 1,200 | 100,000 | 120,000 |
| 2041 (C) | 17,000 | 1,100 | 96,000 | 110,000 |
| 2042 (D) | 16,000 | 1,000 | 90,000 | 110,000 |
| 2043 (C) | 19,000 | 1,200 | 110,000 | 130,000 |
| 2044 (C) | 19,000 | 1,200 | 110,000 | 130,000 |
| 2045 (C) | 19,000 | 1,200 | 110,000 | 130,000 |
| 2046 (AN) | 22,000 | 1,500 | 120,000 | 140,000 |
| 2047 (C) | 20,000 | 1,200 | 110,000 | 130,000 |
| 2048 (W) | 20,000 | 1,400 | 100,000 | 130,000 |
| 2049 (W) | 21,000 | 1,300 | 110,000 | 130,000 |
| 2050 (W) | 20,000 | 1,300 | 110,000 | 130,000 |
| 2051 (W) | 22,000 | 1,500 | 110,000 | 130,000 |
| 2052 (W) | 18,000 | 1,200 | 100,000 | 120,000 |
| 2053 (AN) | 18,000 | 1,300 | 100,000 | 120,000 |
| 2054 (D) | 19,000 | 1,200 | 100,000 | 120,000 |
| 2055 (D) | 17,000 | 1,100 | 96,000 | 110,000 |
| 2056 (AN) | 20,000 | 1,300 | 100,000 | 120,000 |
| 2057 (BN) | 16,000 | 1,100 | 91,000 | 110,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 22,000 | 1,500 | 120,000 | 140,000 |
| 2059 (W) | | 20,000 | 1,400 | 110,000 | 130,000 |
| 2060 (D) | | 16,000 | 1,000 | 88,000 | 110,000 |
| 2061 (C) | | 15,000 | 890 | 84,000 | 99,000 |
| 2062 (D) | | 17,000 | 1,100 | 97,000 | 110,000 |
| 2063 (BN) | | 20,000 | 1,300 | 100,000 | 120,000 |
| 2064 (W) | | 20,000 | 1,400 | 120,000 | 140,000 |
| 2065 (BN) | | 19,000 | 1,100 | 100,000 | 120,000 |
| 2066 (D) | | 15,000 | 890 | 86,000 | 100,000 |
| 2067 (C) | | 14,000 | 840 | 81,000 | 96,000 |
| 2068 (C) | | 16,000 | 990 | 92,000 | 110,000 |
| 2069 (BN) | | 21,000 | 1,300 | 110,000 | 130,000 |
| 2070 (W) | | 22,000 | 1,300 | 110,000 | 130,000 |
| 2071 (BN) | | 18,000 | 1,000 | 99,000 | 120,000 |
| 2072 (W) | | 22,000 | 1,500 | 120,000 | 140,000 |
| Average (2022-2072) | | 19,000 | 1,200 | 100,000 | 120,000 |
| 2022-2072 | W | 20,000 | 1,300 | 110,000 | 130,000 |
| | AN | 21,000 | 1,400 | 110,000 | 130,000 |
| | BN | 19,000 | 1,100 | 100,000 | 120,000 |
| | D | 17,000 | 1,100 | 95,000 | 110,000 |
| | C | 17,000 | 1,000 | 94,000 | 110,000 |

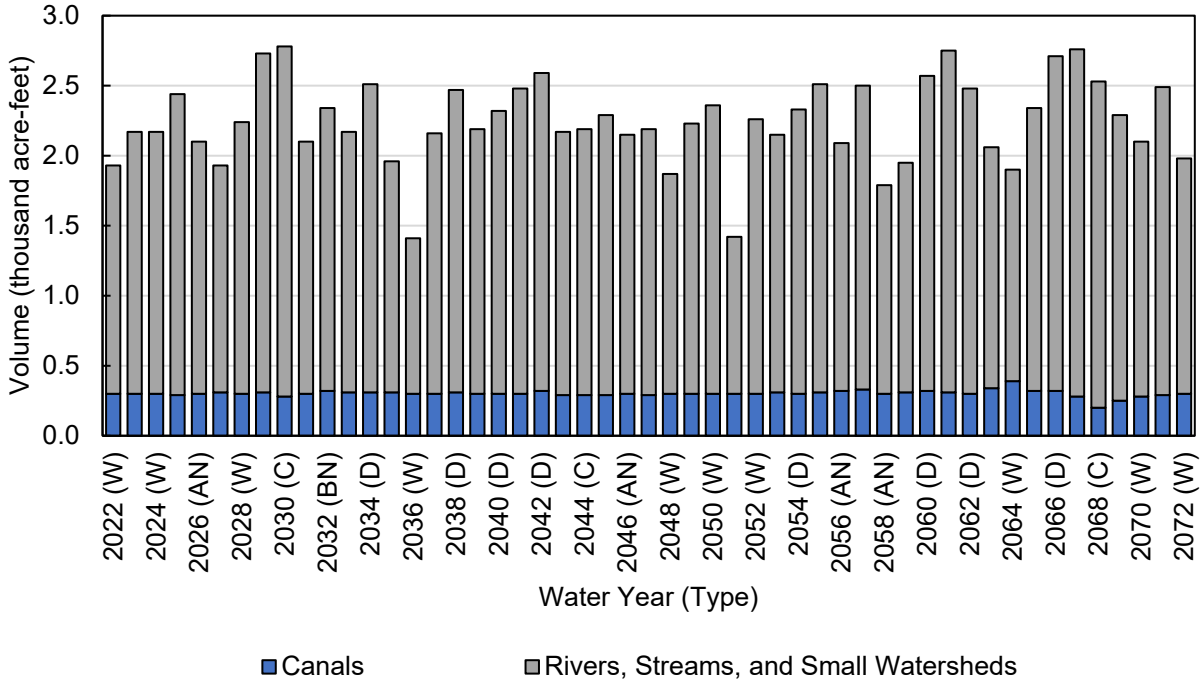


**Figure 56. Los Molinos Subbasin Projected (Future Land Use) Evaporation of Surface Water Sources**

**Table 54. Los Molinos Subbasin Projected (Future Land Use) Evaporation of Surface Water Sources, by Water Use Sector (acre-feet)**

| Water Year (Type) | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|
| 2022 (W) | 300 | 1,600 | 1,900 |
| 2023 (W) | 300 | 1,900 | 2,200 |
| 2024 (W) | 300 | 1,900 | 2,200 |
| 2025 (BN) | 290 | 2,200 | 2,400 |
| 2026 (AN) | 300 | 1,800 | 2,100 |
| 2027 (W) | 310 | 1,600 | 1,900 |
| 2028 (W) | 300 | 1,900 | 2,200 |
| 2029 (C) | 310 | 2,400 | 2,700 |
| 2030 (C) | 280 | 2,500 | 2,800 |
| 2031 (AN) | 300 | 1,800 | 2,100 |
| 2032 (BN) | 320 | 2,000 | 2,300 |
| 2033 (AN) | 310 | 1,900 | 2,200 |
| 2034 (D) | 310 | 2,200 | 2,500 |
| 2035 (W) | 310 | 1,700 | 2,000 |
| 2036 (W) | 300 | 1,100 | 1,400 |
| 2037 (W) | 300 | 1,900 | 2,200 |
| 2038 (D) | 310 | 2,200 | 2,500 |
| 2039 (W) | 300 | 1,900 | 2,200 |
| 2040 (D) | 300 | 2,000 | 2,300 |
| 2041 (C) | 300 | 2,200 | 2,500 |
| 2042 (D) | 320 | 2,300 | 2,600 |
| 2043 (C) | 290 | 1,900 | 2,200 |
| 2044 (C) | 290 | 1,900 | 2,200 |
| 2045 (C) | 290 | 2,000 | 2,300 |
| 2046 (AN) | 300 | 1,900 | 2,200 |
| 2047 (C) | 290 | 1,900 | 2,200 |
| 2048 (W) | 300 | 1,600 | 1,900 |
| 2049 (W) | 300 | 1,900 | 2,200 |
| 2050 (W) | 300 | 2,100 | 2,400 |
| 2051 (W) | 300 | 1,100 | 1,400 |
| 2052 (W) | 300 | 2,000 | 2,300 |
| 2053 (AN) | 310 | 1,800 | 2,200 |
| 2054 (D) | 300 | 2,000 | 2,300 |
| 2055 (D) | 310 | 2,200 | 2,500 |
| 2056 (AN) | 320 | 1,800 | 2,100 |
| 2057 (BN) | 330 | 2,200 | 2,500 |
| 2058 (AN) | 300 | 1,500 | 1,800 |

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|---|
| 2059 (W) | | 310 | 1,600 | 2,000 |
| 2060 (D) | | 320 | 2,300 | 2,600 |
| 2061 (C) | | 310 | 2,400 | 2,800 |
| 2062 (D) | | 300 | 2,200 | 2,500 |
| 2063 (BN) | | 340 | 1,700 | 2,100 |
| 2064 (W) | | 390 | 1,500 | 1,900 |
| 2065 (BN) | | 320 | 2,000 | 2,300 |
| 2066 (D) | | 320 | 2,400 | 2,700 |
| 2067 (C) | | 280 | 2,500 | 2,800 |
| 2068 (C) | | 200 | 2,300 | 2,500 |
| 2069 (BN) | | 250 | 2,000 | 2,300 |
| 2070 (W) | | 280 | 1,800 | 2,100 |
| 2071 (BN) | | 290 | 2,200 | 2,500 |
| 2072 (W) | | 300 | 1,700 | 2,000 |
| Average (2022-2072) | | 300 | 1,900 | 2,300 |
| 2022-2072 | W | 310 | 1,700 | 2,000 |
| | AN | 310 | 1,800 | 2,100 |
| | BN | 310 | 2,100 | 2,400 |
| | D | 310 | 2,200 | 2,500 |
| | C | 280 | 2,200 | 2,500 |

[1] Includes ET of riparian vegetation along rivers and streams.

### 3.3.2.2 *Surface Water Outflow by Water Source Type*

Surface water outflows from the Los Molinos Subbasin are summarized in **Figure 57** and **Table 55** by water source type. In the Los Molinos Subbasin, local supply outflows primarily include outflows of runoff, tailwater, and net drainage from land surfaces, in addition to runoff from small watersheds and stream outflows to the Sacramento River. Local supply outflows average approximately 610 taf per year, and range on average from 310 taf in critically dry years up to 910 taf in wet years. Other surface water outflows that leave the subbasin include outflow of groundwater discharge to the Sacramento River, Antelope Creek, Little Antelope Creek, Dye Creek, Mill Creek, and Deer Creek. This water travels along each respective waterway as part of the flow in the river or creek.

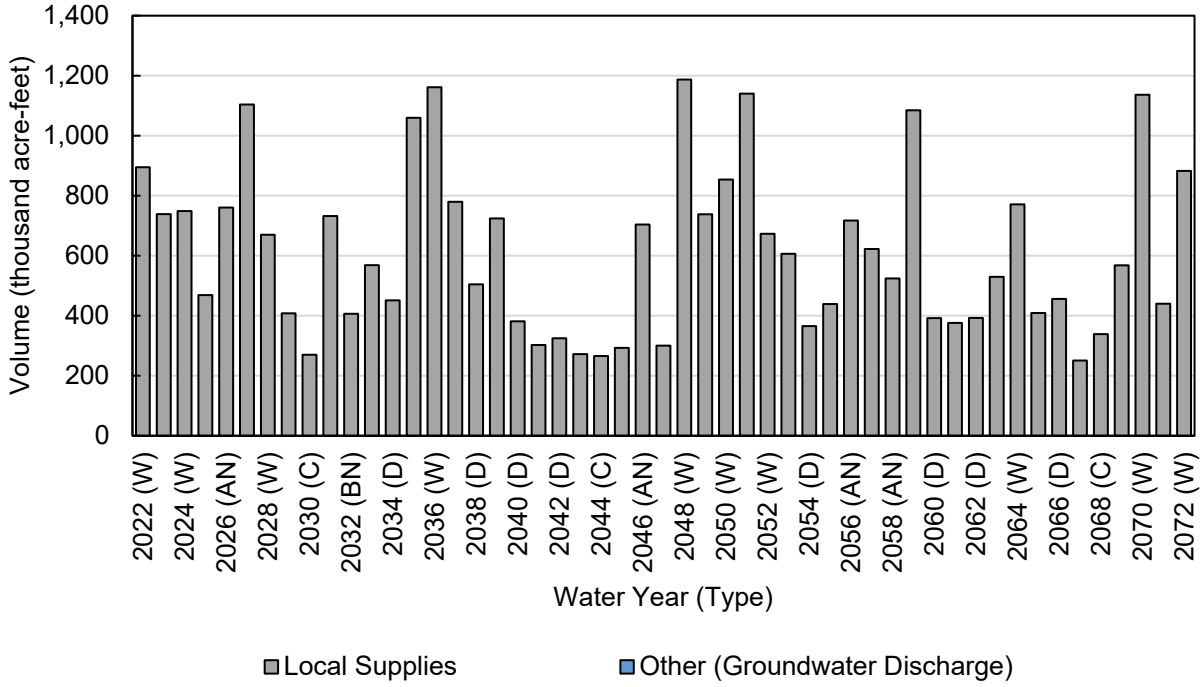


**Figure 57. Los Molinos Subbasin Projected (Future Land Use) Surface Water Outflows, by Water Source Type**

**Table 55. Los Molinos Subbasin Projected (Future Land Use) Surface Water Outflows, by Water Source Type (acre-feet)**

| Water Year (Type) | CVP Supplies | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|
| 2022 (BN) | 0 | 890,000 | 0 | 890,000 |
| 2023 (W) | 0 | 740,000 | 0 | 740,000 |
| 2024 (W) | 0 | 750,000 | 0 | 750,000 |
| 2025 (W) | 0 | 470,000 | 0 | 470,000 |
| 2026 (BN) | 0 | 760,000 | 0 | 760,000 |
| 2027 (AN) | 0 | 1,100,000 | 0 | 1,100,000 |
| 2028 (W) | 0 | 670,000 | 0 | 670,000 |
| 2029 (W) | 0 | 410,000 | 0 | 410,000 |
| 2030 (C) | 0 | 270,000 | 0 | 270,000 |
| 2031 (C) | 0 | 730,000 | 0 | 730,000 |
| 2032 (AN) | 0 | 410,000 | 0 | 410,000 |
| 2033 (BN) | 0 | 570,000 | 0 | 570,000 |
| 2034 (AN) | 0 | 450,000 | 0 | 450,000 |
| 2035 (D) | 0 | 1,100,000 | 0 | 1,100,000 |
| 2036 (W) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2037 (W) | 0 | 780,000 | 0 | 780,000 |
| 2038 (W) | 0 | 500,000 | 0 | 500,000 |
| 2039 (D) | 0 | 720,000 | 0 | 720,000 |
| 2040 (W) | 0 | 380,000 | 0 | 380,000 |
| 2041 (D) | 0 | 300,000 | 0 | 300,000 |
| 2042 (C) | 0 | 320,000 | 0 | 320,000 |
| 2043 (D) | 0 | 270,000 | 0 | 270,000 |
| 2044 (C) | 0 | 270,000 | 0 | 270,000 |
| 2045 (C) | 0 | 290,000 | 0 | 290,000 |
| 2046 (C) | 0 | 700,000 | 0 | 700,000 |
| 2047 (AN) | 0 | 300,000 | 0 | 300,000 |
| 2048 (C) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2049 (W) | 0 | 740,000 | 0 | 740,000 |
| 2050 (W) | 0 | 850,000 | 0 | 850,000 |
| 2051 (W) | 0 | 1,100,000 | 0 | 1,100,000 |
| 2052 (W) | 0 | 670,000 | 0 | 670,000 |
| 2053 (W) | 0 | 610,000 | 0 | 610,000 |
| 2054 (AN) | 0 | 370,000 | 0 | 370,000 |
| 2055 (D) | 0 | 440,000 | 0 | 440,000 |
| 2056 (D) | 0 | 720,000 | 0 | 720,000 |

| Water Year (Type) | | CVP Supplies | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|---|
| 2057 (AN) | | 0 | 620,000 | 0 | 620,000 |
| 2058 (BN) | | 0 | 520,000 | 0 | 520,000 |
| 2059 (AN) | | 0 | 1,100,000 | 0 | 1,100,000 |
| 2060 (W) | | 0 | 390,000 | 0 | 390,000 |
| 2061 (D) | | 0 | 380,000 | 0 | 380,000 |
| 2062 (C) | | 0 | 390,000 | 0 | 390,000 |
| 2063 (D) | | 0 | 530,000 | 0 | 530,000 |
| 2064 (BN) | | 0 | 770,000 | 0 | 770,000 |
| 2065 (W) | | 0 | 410,000 | 0 | 410,000 |
| 2066 (BN) | | 0 | 460,000 | 0 | 460,000 |
| 2067 (D) | | 0 | 250,000 | 0 | 250,000 |
| 2068 (C) | | 0 | 340,000 | 0 | 340,000 |
| 2069 (C) | | 0 | 570,000 | 0 | 570,000 |
| 2070 (BN) | | 0 | 1,100,000 | 0 | 1,100,000 |
| 2071 (W) | | 0 | 440,000 | 0 | 440,000 |
| 2072 (W) | | 0 | 880,000 | 0 | 880,000 |
| Average (2022-2072) | | 0 | 610,000 | 0 | 610,000 |
| 2022-2072 | W | 0 | 910,000 | 0 | 910,000 |
| | AN | 0 | 660,000 | 0 | 660,000 |
| | BN | 0 | 490,000 | 0 | 490,000 |
| | D | 0 | 410,000 | 0 | 410,000 |
| | C | 0 | 310,000 | 0 | 310,000 |

#### 3.3.2.3 *Deep Percolation of Applied Water*

Estimated deep percolation of applied water (equal to infiltration of applied water in 23 CCR § 354.18(b)(2)) is summarized in **Figure 58** and **Table 56** by water use sector. Deep percolation of applied water is dominated by agricultural irrigation and varies between years, following the pattern of surface water diversions and deliveries to irrigated lands.

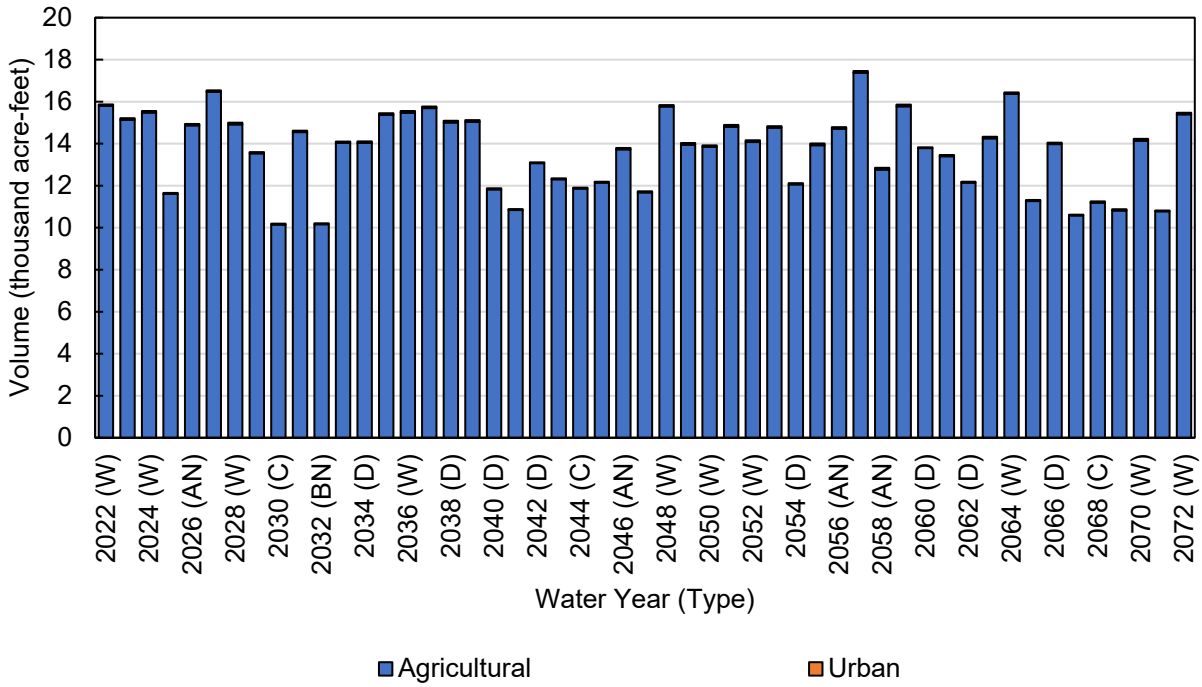


**Figure 58. Los Molinos Subbasin Projected (Future Land Use) Deep Percolation of Applied Water, by Water Use Sector**

**Table 56. Los Molinos Subbasin Projected (Future Land Use) Deep Percolation of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 16,000 | 70 | 0 | 16,000 |
| 2023 (W) | 15,000 | 80 | 0 | 15,000 |
| 2024 (W) | 15,000 | 80 | 0 | 16,000 |
| 2025 (BN) | 12,000 | 50 | 0 | 12,000 |
| 2026 (AN) | 15,000 | 70 | 0 | 15,000 |
| 2027 (W) | 16,000 | 80 | 0 | 17,000 |
| 2028 (W) | 15,000 | 80 | 0 | 15,000 |
| 2029 (C) | 14,000 | 60 | 0 | 14,000 |
| 2030 (C) | 10,000 | 40 | 0 | 10,000 |
| 2031 (AN) | 15,000 | 70 | 0 | 15,000 |
| 2032 (BN) | 10,000 | 50 | 0 | 10,000 |
| 2033 (AN) | 14,000 | 70 | 0 | 14,000 |
| 2034 (D) | 14,000 | 80 | 0 | 14,000 |
| 2035 (W) | 15,000 | 80 | 0 | 15,000 |
| 2036 (W) | 15,000 | 90 | 0 | 16,000 |
| 2037 (W) | 16,000 | 80 | 0 | 16,000 |
| 2038 (D) | 15,000 | 80 | 0 | 15,000 |
| 2039 (W) | 15,000 | 80 | 0 | 15,000 |
| 2040 (D) | 12,000 | 60 | 0 | 12,000 |
| 2041 (C) | 11,000 | 50 | 0 | 11,000 |
| 2042 (D) | 13,000 | 40 | 0 | 13,000 |
| 2043 (C) | 12,000 | 50 | 0 | 12,000 |
| 2044 (C) | 12,000 | 50 | 0 | 12,000 |
| 2045 (C) | 12,000 | 50 | 0 | 12,000 |
| 2046 (AN) | 14,000 | 70 | 0 | 14,000 |
| 2047 (C) | 12,000 | 50 | 0 | 12,000 |
| 2048 (W) | 16,000 | 70 | 0 | 16,000 |
| 2049 (W) | 14,000 | 80 | 0 | 14,000 |
| 2050 (W) | 14,000 | 70 | 0 | 14,000 |
| 2051 (W) | 15,000 | 90 | 0 | 15,000 |
| 2052 (W) | 14,000 | 80 | 0 | 14,000 |
| 2053 (AN) | 15,000 | 70 | 0 | 15,000 |
| 2054 (D) | 12,000 | 60 | 0 | 12,000 |
| 2055 (D) | 14,000 | 80 | 0 | 14,000 |
| 2056 (AN) | 15,000 | 80 | 0 | 15,000 |
| 2057 (BN) | 17,000 | 80 | 0 | 17,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 13,000 | 80 | 0 | 13,000 |
| 2059 (W) | | 16,000 | 80 | 0 | 16,000 |
| 2060 (D) | | 14,000 | 40 | 0 | 14,000 |
| 2061 (C) | | 13,000 | 60 | 0 | 13,000 |
| 2062 (D) | | 12,000 | 50 | 0 | 12,000 |
| 2063 (BN) | | 14,000 | 80 | 0 | 14,000 |
| 2064 (W) | | 16,000 | 70 | 0 | 16,000 |
| 2065 (BN) | | 11,000 | 50 | 0 | 11,000 |
| 2066 (D) | | 14,000 | 70 | 0 | 14,000 |
| 2067 (C) | | 11,000 | 40 | 0 | 11,000 |
| 2068 (C) | | 11,000 | 60 | 0 | 11,000 |
| 2069 (BN) | | 11,000 | 60 | 0 | 11,000 |
| 2070 (W) | | 14,000 | 90 | 0 | 14,000 |
| 2071 (BN) | | 11,000 | 40 | 0 | 11,000 |
| 2072 (W) | | 15,000 | 70 | 0 | 15,000 |
| Average (2022-2072) | | 14,000 | 70 | 0 | 14,000 |
| 2022-2072 | W | 15,000 | 80 | 0 | 15,000 |
| | AN | 14,000 | 70 | 0 | 14,000 |
| | BN | 12,000 | 60 | 0 | 12,000 |
| | D | 13,000 | 60 | 0 | 13,000 |
| | C | 12,000 | 50 | 0 | 12,000 |

#### 3.3.2.4 *Deep Percolation of Precipitation*

Estimated deep percolation of precipitation (equal to infiltration of precipitation in 23 CCR § 354.18(b)(2)) is provided in **Figure 59** and **Table 57** by water use sector. Deep percolation of precipitation to the GWS is highly variable from year to year due to variation in the timing and amount of precipitation, ranging from an average of 20 taf annually during critically dry years to about 55 taf in wet years.

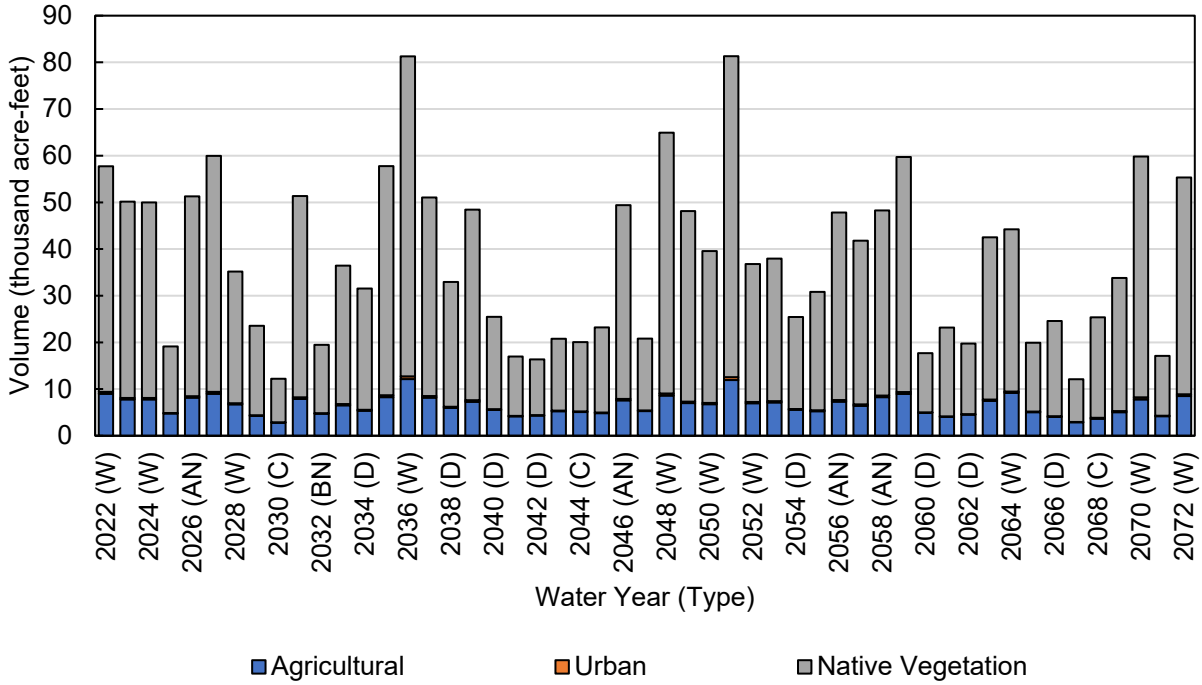


**Figure 59. Los Molinos Subbasin Projected (Future Land Use) Deep Percolation of Precipitation, by Water Use Sector**

**Table 57. Los Molinos Subbasin Projected (Future Land Use) Deep Percolation of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 9,000 | 400 | 48,000 | 58,000 |
| 2023 (W) | 7,800 | 320 | 42,000 | 50,000 |
| 2024 (W) | 7,800 | 320 | 42,000 | 50,000 |
| 2025 (BN) | 4,800 | 100 | 14,000 | 19,000 |
| 2026 (AN) | 8,200 | 330 | 43,000 | 51,000 |
| 2027 (W) | 9,000 | 400 | 51,000 | 60,000 |
| 2028 (W) | 6,700 | 250 | 28,000 | 35,000 |
| 2029 (C) | 4,200 | 140 | 19,000 | 24,000 |
| 2030 (C) | 2,800 | 70 | 9,300 | 12,000 |
| 2031 (AN) | 7,900 | 340 | 43,000 | 51,000 |
| 2032 (BN) | 4,700 | 120 | 15,000 | 19,000 |
| 2033 (AN) | 6,500 | 260 | 30,000 | 36,000 |
| 2034 (D) | 5,400 | 210 | 26,000 | 32,000 |
| 2035 (W) | 8,300 | 390 | 49,000 | 58,000 |
| 2036 (W) | 12,000 | 600 | 69,000 | 81,000 |
| 2037 (W) | 8,200 | 330 | 43,000 | 51,000 |
| 2038 (D) | 6,000 | 220 | 27,000 | 33,000 |
| 2039 (W) | 7,300 | 320 | 41,000 | 48,000 |
| 2040 (D) | 5,500 | 170 | 20,000 | 25,000 |
| 2041 (C) | 4,200 | 110 | 13,000 | 17,000 |
| 2042 (D) | 4,300 | 90 | 12,000 | 16,000 |
| 2043 (C) | 5,300 | 120 | 15,000 | 21,000 |
| 2044 (C) | 5,100 | 120 | 15,000 | 20,000 |
| 2045 (C) | 4,800 | 150 | 18,000 | 23,000 |
| 2046 (AN) | 7,600 | 330 | 41,000 | 49,000 |
| 2047 (C) | 5,300 | 120 | 15,000 | 21,000 |
| 2048 (W) | 8,600 | 470 | 56,000 | 65,000 |
| 2049 (W) | 7,000 | 320 | 41,000 | 48,000 |
| 2050 (W) | 6,800 | 270 | 33,000 | 40,000 |
| 2051 (W) | 12,000 | 610 | 69,000 | 81,000 |
| 2052 (W) | 7,000 | 250 | 30,000 | 37,000 |
| 2053 (AN) | 7,100 | 260 | 31,000 | 38,000 |
| 2054 (D) | 5,600 | 170 | 20,000 | 25,000 |
| 2055 (D) | 5,200 | 210 | 25,000 | 31,000 |
| 2056 (AN) | 7,300 | 330 | 40,000 | 48,000 |
| 2057 (BN) | 6,400 | 310 | 35,000 | 42,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 8,300 | 320 | 40,000 | 48,000 |
| 2059 (W) | | 9,000 | 400 | 50,000 | 60,000 |
| 2060 (D) | | 4,900 | 90 | 13,000 | 18,000 |
| 2061 (C) | | 4,000 | 140 | 19,000 | 23,000 |
| 2062 (D) | | 4,500 | 120 | 15,000 | 20,000 |
| 2063 (BN) | | 7,500 | 290 | 35,000 | 43,000 |
| 2064 (W) | | 9,200 | 270 | 35,000 | 44,000 |
| 2065 (BN) | | 5,100 | 120 | 15,000 | 20,000 |
| 2066 (D) | | 4,000 | 170 | 20,000 | 25,000 |
| 2067 (C) | | 2,900 | 70 | 9,100 | 12,000 |
| 2068 (C) | | 3,600 | 190 | 22,000 | 25,000 |
| 2069 (BN) | | 5,100 | 250 | 29,000 | 34,000 |
| 2070 (W) | | 7,800 | 450 | 52,000 | 60,000 |
| 2071 (BN) | | 4,200 | 100 | 13,000 | 17,000 |
| 2072 (W) | | 8,500 | 390 | 46,000 | 55,000 |
| Average (2022-2072) | | 6,500 | 250 | 31,000 | 38,000 |
| 2022-2072 | W | 8,400 | 380 | 46,000 | 55,000 |
| | AN | 7,600 | 310 | 38,000 | 46,000 |
| | BN | 5,400 | 180 | 22,000 | 28,000 |
| | D | 5,100 | 160 | 20,000 | 25,000 |
| | C | 4,200 | 120 | 15,000 | 20,000 |

#### 3.3.2.5 *Infiltration of Surface Water*

Estimated infiltration of surface water (seepage) by water source is provided in **Figure 60** and **Table 58.** Seepage in the Los Molinos Subbasin comes from the canals that traverse the subbasin, as well as from rivers, streams, and small watersheds. The total seepage from all canals and diversions averages 12 taf per year, on average. The total seepage from rivers, streams and small watersheds average about 51 taf per year.

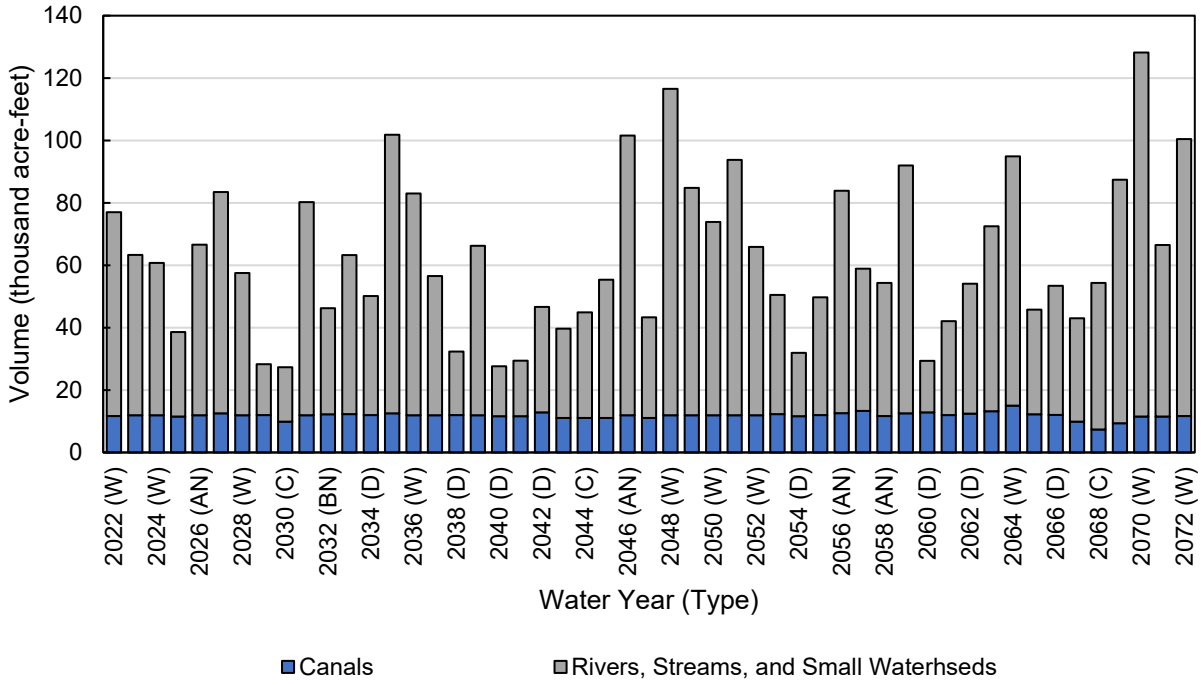


**Figure 60. Los Molinos Subbasin Projected (Future Land Use) Infiltration of Surface Water, by Water Use Sector**

**Table 58. Los Molinos Subbasin Projected (Future Land Use) Infiltration of Surface Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|
| 2022 (W) | 12,000 | 65,000 | 77,000 |
| 2023 (W) | 12,000 | 51,000 | 63,000 |
| 2024 (W) | 12,000 | 49,000 | 61,000 |
| 2025 (BN) | 12,000 | 27,000 | 39,000 |
| 2026 (AN) | 12,000 | 55,000 | 67,000 |
| 2027 (W) | 13,000 | 71,000 | 83,000 |
| 2028 (W) | 12,000 | 46,000 | 58,000 |
| 2029 (C) | 12,000 | 16,000 | 28,000 |
| 2030 (C) | 9,900 | 17,000 | 27,000 |
| 2031 (AN) | 12,000 | 68,000 | 80,000 |
| 2032 (BN) | 12,000 | 34,000 | 46,000 |
| 2033 (AN) | 12,000 | 51,000 | 63,000 |
| 2034 (D) | 12,000 | 38,000 | 50,000 |
| 2035 (W) | 13,000 | 89,000 | 100,000 |
| 2036 (W) | 12,000 | 71,000 | 83,000 |
| 2037 (W) | 12,000 | 45,000 | 57,000 |
| 2038 (D) | 12,000 | 20,000 | 32,000 |
| 2039 (W) | 12,000 | 54,000 | 66,000 |
| 2040 (D) | 12,000 | 16,000 | 28,000 |
| 2041 (C) | 12,000 | 18,000 | 29,000 |
| 2042 (D) | 13,000 | 34,000 | 47,000 |
| 2043 (C) | 11,000 | 29,000 | 40,000 |
| 2044 (C) | 11,000 | 34,000 | 45,000 |
| 2045 (C) | 11,000 | 44,000 | 55,000 |
| 2046 (AN) | 12,000 | 90,000 | 100,000 |
| 2047 (C) | 11,000 | 32,000 | 43,000 |
| 2048 (W) | 12,000 | 100,000 | 120,000 |
| 2049 (W) | 12,000 | 73,000 | 85,000 |
| 2050 (W) | 12,000 | 62,000 | 74,000 |
| 2051 (W) | 12,000 | 82,000 | 94,000 |
| 2052 (W) | 12,000 | 54,000 | 66,000 |
| 2053 (AN) | 12,000 | 38,000 | 51,000 |
| 2054 (D) | 12,000 | 20,000 | 32,000 |
| 2055 (D) | 12,000 | 38,000 | 50,000 |
| 2056 (AN) | 13,000 | 71,000 | 84,000 |
| 2057 (BN) | 13,000 | 46,000 | 59,000 |

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|---|
| 2058 (AN) | | 12,000 | 43,000 | 54,000 |
| 2059 (W) | | 13,000 | 79,000 | 92,000 |
| 2060 (D) | | 13,000 | 17,000 | 29,000 |
| 2061 (C) | | 12,000 | 30,000 | 42,000 |
| 2062 (D) | | 12,000 | 42,000 | 54,000 |
| 2063 (BN) | | 13,000 | 59,000 | 73,000 |
| 2064 (W) | | 15,000 | 80,000 | 95,000 |
| 2065 (BN) | | 12,000 | 34,000 | 46,000 |
| 2066 (D) | | 12,000 | 41,000 | 53,000 |
| 2067 (C) | | 9,900 | 33,000 | 43,000 |
| 2068 (C) | | 7,400 | 47,000 | 54,000 |
| 2069 (BN) | | 9,400 | 78,000 | 87,000 |
| 2070 (W) | | 12,000 | 120,000 | 130,000 |
| 2071 (BN) | | 12,000 | 55,000 | 66,000 |
| 2072 (W) | | 12,000 | 89,000 | 100,000 |
| Average (2022-2072) | | 12,000 | 51,000 | 63,000 |
| 2022-2072 | W | 12,000 | 71,000 | 83,000 |
| | AN | 12,000 | 59,000 | 71,000 |
| | BN | 12,000 | 47,000 | 59,000 |
| | D | 12,000 | 30,000 | 42,000 |
| | C | 11,000 | 30,000 | 41,000 |

### 3.3.3 Change in Root Zone Storage

Estimates of projected change in root zone storage are provided in **Figure 61** and **Table 59**. Inter-annual changes in storage within the SWS consist primarily of root zone soil moisture storage changes, are relatively small, and tend to average near zero over many years.

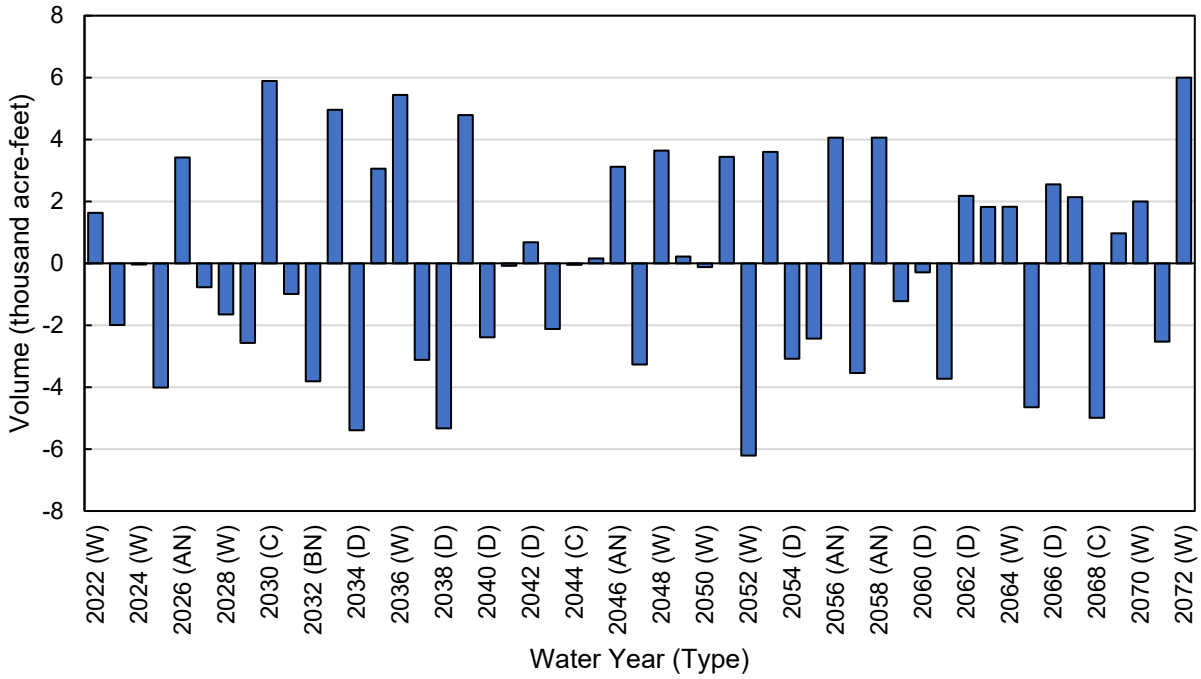


**Figure 61. Los Molinos Subbasin Projected (Future Land Use) Change in Root Zone Storage**

**Table 59. Los Molinos Subbasin Projected (Future Land Use) Change in Root Zone Storage (acre-feet)**

| Water Year (Type) | Change in Root Zone Storage |
|---|---|
| 2022 (W) | 1,600 |
| 2023 (W) | -2,000 |
| 2024 (W) | -40 |
| 2025 (BN) | -4,000 |
| 2026 (AN) | 3,400 |
| 2027 (W) | -770 |
| 2028 (W) | -1,700 |
| 2029 (C) | -2,600 |
| 2030 (C) | 5,900 |
| 2031 (AN) | -990 |
| 2032 (BN) | -3,800 |
| 2033 (AN) | 5,000 |
| 2034 (D) | -5,400 |
| 2035 (W) | 3,100 |
| 2036 (W) | 5,400 |
| 2037 (W) | -3,100 |
| 2038 (D) | -5,300 |
| 2039 (W) | 4,800 |
| 2040 (D) | -2,400 |
| 2041 (C) | -80 |
| 2042 (D) | 680 |
| 2043 (C) | -2,100 |
| 2044 (C) | -50 |
| 2045 (C) | 160 |
| 2046 (AN) | 3,100 |
| 2047 (C) | -3,300 |
| 2048 (W) | 3,600 |
| 2049 (W) | 220 |
| 2050 (W) | -120 |
| 2051 (W) | 3,400 |
| 2052 (W) | -6,200 |
| 2053 (AN) | 3,600 |
| 2054 (D) | -3,100 |
| 2055 (D) | -2,400 |
| 2056 (AN) | 4,100 |
| 2057 (BN) | -3,500 |

| Water Year (Type) | | Change in Root Zone Storage |
|---|---|---|
| 2058 (AN) | | 4,100 |
| 2059 (W) | | -1,200 |
| 2060 (D) | | -290 |
| 2061 (C) | | -3,700 |
| 2062 (D) | | 2,200 |
| 2063 (BN) | | 1,800 |
| 2064 (W) | | 1,800 |
| 2065 (BN) | | -4,700 |
| 2066 (D) | | 2,600 |
| 2067 (C) | | 2,100 |
| 2068 (C) | | -5,000 |
| 2069 (BN) | | 970 |
| 2070 (W) | | 2,000 |
| 2071 (BN) | | -2,500 |
| 2072 (W) | | 6,000 |
| Average (2022-2072) | | 30 |
| 2022-2072 | W | 940 |
| | AN | 3,200 |
| | BN | -2,300 |
| | D | -1,500 |
| | C | -860 |

### 3.3.4 Net Recharge from Surface Water System

Net recharge from the SWS is a useful metric that equates only the impacts of the SWS on recharge and extraction from the GWS, providing valuable insight to the combined effects of land surface processes on the underlying GWS. Net recharge from the SWS is calculated as the total groundwater recharge minus the total groundwater extraction. When calculated for the projected (future land use) water budget, average net recharge from the SWS represents the average surplus (when positive) or shortage (when negative) of recharge that has resulted from projected cropping, land use practices, and average hydrologic conditions, when comparing groundwater extractions with deep percolation and infiltration from the SWS to the GWS. Net recharge does not include groundwater discharges to surface water and is not a full accounting of all exchanges occurring between the SWS and GWS. Although net recharge is a useful water balance metric, groundwater sustainability is not defined by the balance of net recharge from the SWS. Other important factors must be considered in the complete assessment of groundwater sustainability, including but not limited to subsurface groundwater flows and groundwater discharge to surface water. The sustainable yield and management criteria for the Los Molinos Subbasin are described in later sections of the GSP.

Annual values for net recharge from the SWS over the projected (current land use) water budget period are presented below for the Los Molinos Subbasin. **Figure 62** and **Table 60** show the average net recharge from

the SWS over 2022-2072 based on the projected (future land use) water budget results. Under future land use conditions, the average net recharge in the Los Molinos Subbasin was projected as approximately 87 taf per year between 2022-2072, indicating net inflows to the GWS from the SWS during the projected (future land use) water budget period. As illustrated on the cumulative net recharge plot in **Figure 62**, this results in a cumulative net positive recharge (i.e., net recharge to the GWS from the SWS) of about 4.4 maf over the 51-year projected (future land use) water budget period. Although this means there is projected to be more recharge from the SWS to the GWS than extractions and discharges from the GWS to the SWS, this alone does not necessarily mean that groundwater storage will increase or that the Subbasin groundwater system will be sustainable. The complete Subbasin water budget, including the GWS water budget results, provide an indication of whether total groundwater inflows and outflows are in balance.

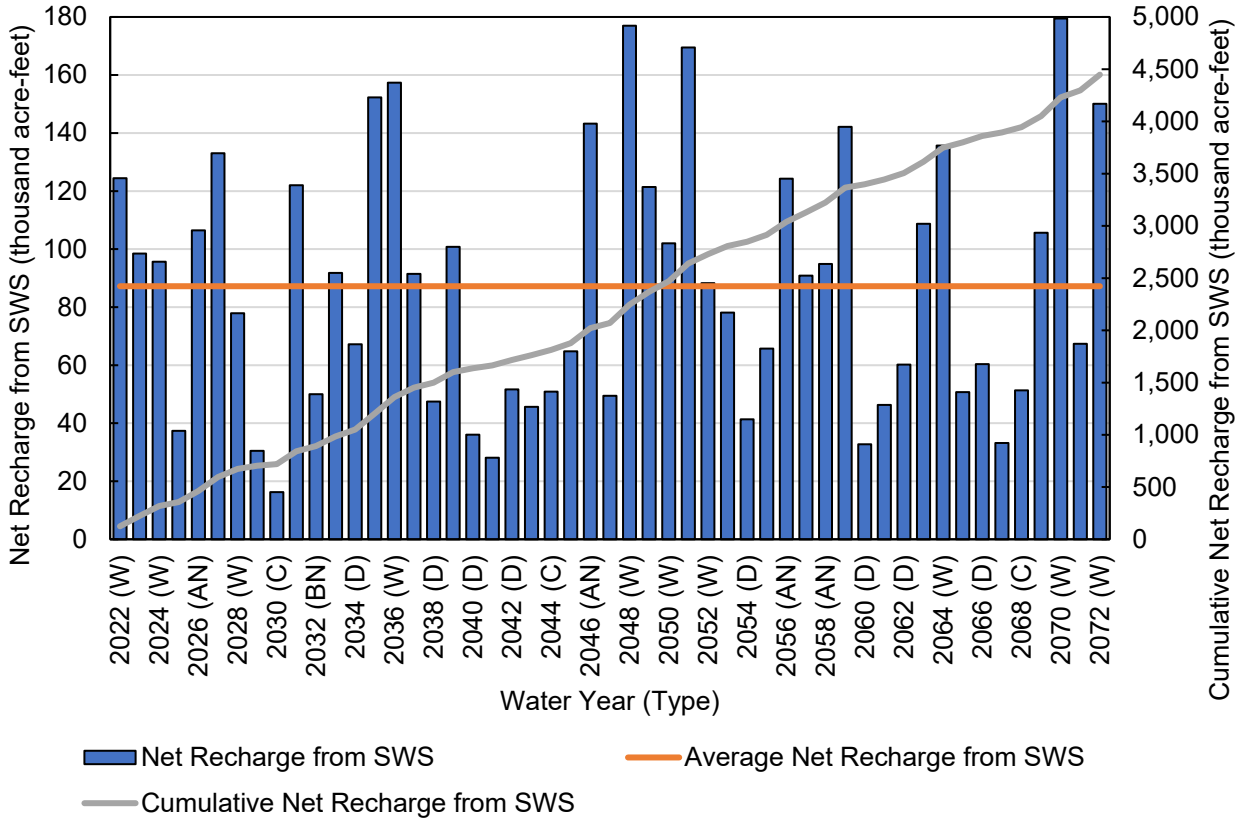


**Figure 62. Los Molinos Subbasin Projected (Future Land Use) Net Recharge Overview**

**Table 60. Los Molinos Subbasin Projected (Future Land Use) Average Net Recharge from SWS, by Water Year Type (acre-feet)**

| Year Type | Number of Years | Deep Perc. of Applied Water (a) | Deep Perc. of Precipitation (b) | Infil. of Surface Water (c) | Groundwater Extraction/ Uptake (d) | Net Recharge from SWS (a+b+c-d) |
|---|---|---|---|---|---|---|
| W | 18 | 15,000 | 55,000 | 83,000 | 26,000 | 127,000 |
| AN | 7 | 14,000 | 46,000 | 72,000 | 23,000 | 109,000 |
| BN | 7 | 12,000 | 28,000 | 59,000 | 27,000 | 72,000 |
| D | 9 | 13,000 | 25,000 | 42,000 | 29,000 | 51,000 |
| C | 10 | 12,000 | 20,000 | 41,000 | 31,000 | 42,000 |
| Annual Average (2022-2072) | 51 | 14,000 | 38,000 | 63,000 | 27,000 | 88,000 |

## 3.4 Groundwater System Water Budget Results

Projected (Future Land Use) water budget results for different components of the GWS are presented in the sections below. Inflows and outflows from the GWS that occur through exchanges with the SWS are discussed in the SWS water budget results, although these components are also noted in the sections below relating to the GWS water budget. In contrast to the SWS water budget, many of the GWS water budget components change in flow direction over time representing inflows during some periods and outflows during other periods, depending on Subbasin conditions. The GWS water budget results are presented with net inflows indicated by positive values and net outflows as negative values.

### 3.4.1 Lateral Subsurface Groundwater Flows

Subsurface groundwater flows to and from the Los Molinos Subbasin occur between the Antelope Subbasin to the north, the Red Bluff Subbasin to the west, the Corning Subbasin to the west and the Vina Subbasin to the south. Additional subsurface groundwater inflows occur from the upland foothill (small watershed) areas adjoining the Los Molinos Subbasin to the east.

#### 3.4.1.1 *Lateral Subsurface Flows to/from Adjacent Subbasins*

Projected lateral subsurface flows occurring from and to adjacent subbasins are summarized in **Figure 63** and **Table 61**. The total projected net subsurface flows to and from all adjacent subbasins averages about -91 taf per year occurring as outflow from the Los Molinos Subbasin. The largest projected subsurface flows occur across the boundary with the Vina Subbasin with somewhat less subsurface flow occurring across the boundaries with the Antelope, Red Bluff, and Corning Subbasins.

Subsurface flows with all adjacent subbasins are projected to occur as outflows from the Los Molinos Subbasin on average. The largest flows from the Los Molinos Subbasin are projected to occur as outflows to the Vina and Corning Subbasins averaging -78 and -8.7 taf per year, respectively. Smaller outflows are projected to occur to the Antelope and Red Bluff Subbasins averaging -2.6 and -2 taf per year, respectively.

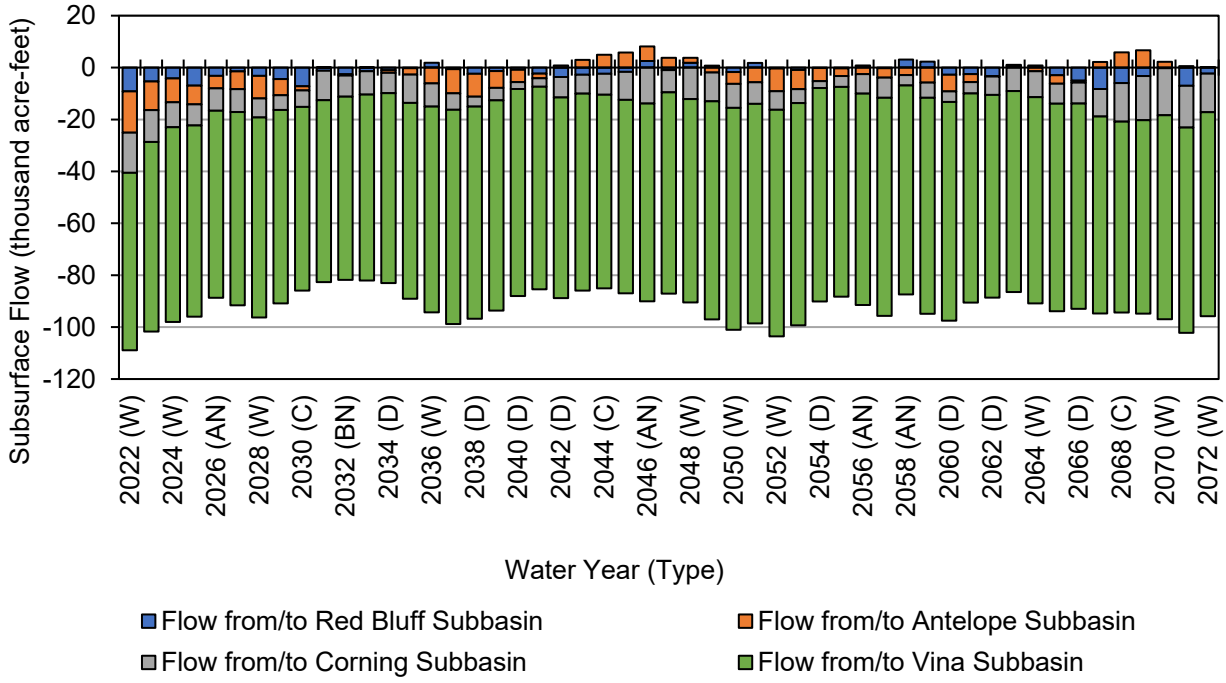


**Figure 63. Los Molinos Subbasin Projected (Future Land Use) Lateral Subsurface Groundwater Flows to/from Adjacent Subbasins**

**Table 61. Los Molinos Subbasin Projected (Future Land Use) Lateral Subsurface Groundwater Flows Between Adjacent Subbasins (net flows as acre-feet)**

| Water Year (Type) | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|
| 2022 (W) | -9,200 | -16,000 | -15,000 | -68,000 | -110,000 |
| 2023 (W) | -5,300 | -11,000 | -12,000 | -73,000 | -100,000 |
| 2024 (W) | -4,200 | -9,200 | -9,600 | -75,000 | -98,000 |
| 2025 (BN) | -6,900 | -7,200 | -8,200 | -74,000 | -96,000 |
| 2026 (AN) | -3,200 | -4,800 | -8,700 | -72,000 | -89,000 |
| 2027 (W) | -1,500 | -6,800 | -8,800 | -74,000 | -92,000 |
| 2028 (W) | -3,200 | -8,700 | -7,300 | -77,000 | -96,000 |
| 2029 (C) | -4,400 | -6,200 | -5,700 | -75,000 | -91,000 |
| 2030 (C) | -7,200 | -1,600 | -6,300 | -71,000 | -86,000 |
| 2031 (AN) | -1,200 | 53 | -11,000 | -70,000 | -83,000 |
| 2032 (BN) | -2,600 | -520 | -8,100 | -71,000 | -82,000 |
| 2033 (AN) | -1,400 | 65 | -9,000 | -72,000 | -82,000 |
| 2034 (D) | -1,100 | -970 | -7,800 | -73,000 | -83,000 |
| 2035 (W) | -240 | -2,500 | -11,000 | -75,000 | -89,000 |
| 2036 (W) | 1,800 | -6,100 | -9,000 | -79,000 | -92,000 |
| 2037 (W) | -630 | -9,300 | -6,300 | -83,000 | -99,000 |
| 2038 (D) | -2,400 | -8,800 | -3,800 | -82,000 | -97,000 |
| 2039 (W) | -1,300 | -6,500 | -4,800 | -81,000 | -94,000 |
| 2040 (D) | -830 | -4,800 | -2,600 | -80,000 | -88,000 |
| 2041 (C) | -2,300 | -1,800 | -3,300 | -78,000 | -85,000 |
| 2042 (D) | -3,600 | 820 | -7,900 | -77,000 | -88,000 |
| 2043 (C) | -2,800 | 3,000 | -7,200 | -76,000 | -83,000 |
| 2044 (C) | -2,400 | 4,900 | -8,100 | -75,000 | -80,000 |
| 2045 (C) | -1,700 | 5,800 | -11,000 | -75,000 | -81,000 |
| 2046 (AN) | 2,600 | 5,600 | -14,000 | -76,000 | -82,000 |
| 2047 (C) | -970 | 3,700 | -8,600 | -78,000 | -83,000 |
| 2048 (W) | 1,900 | 1,900 | -12,000 | -78,000 | -87,000 |
| 2049 (W) | 770 | -1,900 | -11,000 | -84,000 | -96,000 |
| 2050 (W) | -1,700 | -4,600 | -9,200 | -86,000 | -100,000 |
| 2051 (W) | 1,800 | -5,700 | -8,300 | -85,000 | -97,000 |
| 2052 (W) | -350 | -8,800 | -7,100 | -87,000 | -100,000 |
| 2053 (AN) | -940 | -7,400 | -5,400 | -86,000 | -99,000 |
| 2054 (D) | -180 | -5,100 | -2,600 | -82,000 | -90,000 |
| 2055 (D) | -330 | -2,900 | -4,200 | -81,000 | -88,000 |
| 2056 (AN) | 800 | -2,500 | -7,500 | -81,000 | -91,000 |
| 2057 (BN) | -270 | -3,600 | -7,800 | -84,000 | -96,000 |
| 2058 (AN) | 3,100 | -2,900 | -4,000 | -81,000 | -84,000 |
| 2059 (W) | 2,300 | -5,800 | -5,900 | -83,000 | -93,000 |

| Water Year (Type) | | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|---|
| 2060 (D) | | -2,800 | -6,400 | -4,100 | -84,000 | -98,000 |
| 2061 (C) | | -2,500 | -3,100 | -4,400 | -81,000 | -91,000 |
| 2062 (D) | | -3,400 | -76 | -7,100 | -78,000 | -89,000 |
| 2063 (BN) | | 620 | 450 | -9,000 | -77,000 | -85,000 |
| 2064 (W) | | 840 | -1,400 | -10,000 | -79,000 | -90,000 |
| 2065 (BN) | | -3,000 | -3,300 | -7,700 | -80,000 | -94,000 |
| 2066 (D) | | -5,000 | -760 | -8,100 | -79,000 | -93,000 |
| 2067 (C) | | -8,200 | 2,100 | -11,000 | -76,000 | -93,000 |
| 2068 (C) | | -6,000 | 5,900 | -15,000 | -74,000 | -88,000 |
| 2069 (BN) | | -3,200 | 6,600 | -17,000 | -75,000 | -88,000 |
| 2070 (W) | | -230 | 2,200 | -18,000 | -79,000 | -95,000 |
| 2071 (BN) | | -7,000 | 560 | -16,000 | -79,000 | -100,000 |
| 2072 (W) | | -2,400 | 200 | -15,000 | -79,000 | -96,000 |
| Average (2022-2072) | | -2,000 | -2,600 | -8,700 | -78,000 | -91,000 |
| 2022-2072 | W | -1200 | -5500 | -10000 | -79000 | -96000 |
| | AN | -44 | -1700 | -8500 | -77000 | -87000 |
| | BN | -3200 | -990 | -11000 | -77000 | -92000 |
| | D | -2200 | -3200 | -5300 | -80000 | -90000 |
| | C | -3900 | 1300 | -8000 | -76000 | -86000 |

Note: positive values represent net inflows to Los Molinos Subbasin, negative values represent net outflows from Los Molinos Subbasin.

#### 3.4.1.2 *Lateral Subsurface Flows from Upland Areas (Small Watersheds)*

Projected lateral subsurface inflows occurring from upland or foothill areas (small watersheds outside of the Central Valley Floor) to the east of the Los Molinos Subbasin are summarized in **Figure 64** and **Table 62**. This component does not include surface water inflows to the Los Molinos Subbasin which are discussed as part of the SWS water budget. The average projected subsurface inflow from the upland areas is about 2.1 taf per year and varies only very minimally from year to year. The volume of subsurface inflows from upland areas is small relative to the net subsurface inflows occurring between adjacent subbasins.

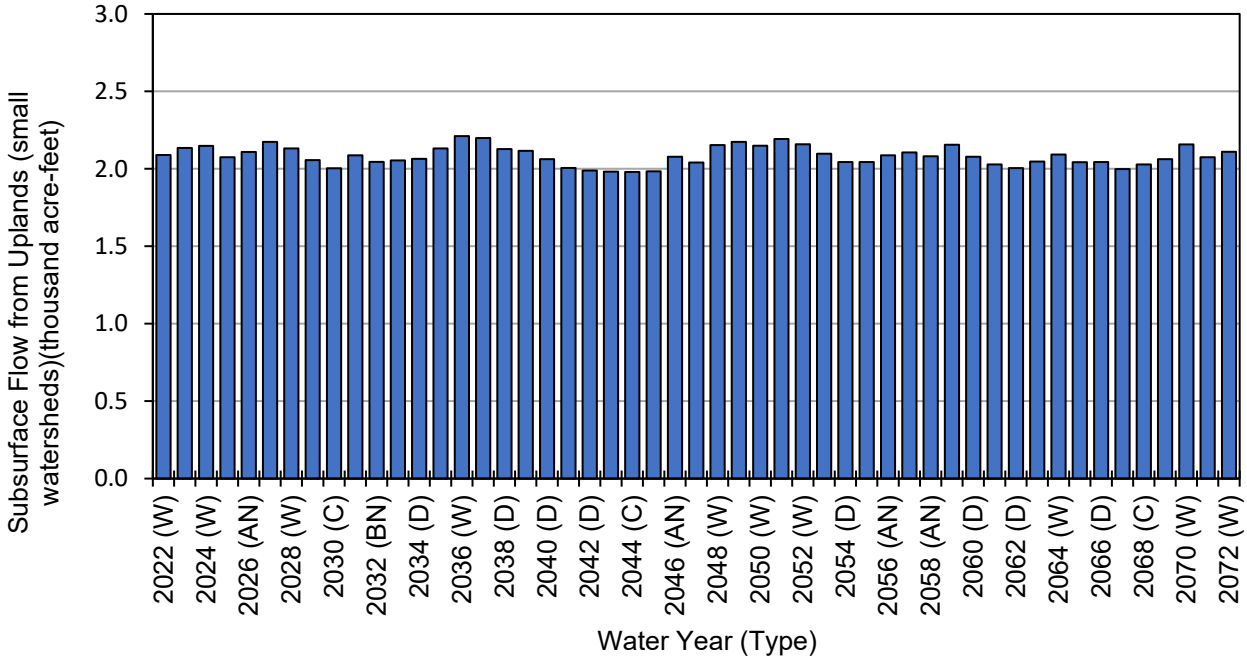


**Figure 64. Los Molinos Subbasin Projected (Future Land Use) Subsurface Groundwater Inflows from Upland Areas**

**Table 62. Los Molinos Subbasin Projected (Future Land Use) Subsurface Groundwater Inflows from Adjacent Uplands (small watersheds) (acre-feet)**

| Water Year (Type) | Subsurface Inflow from Uplands |
|---|---|
| 2022 (W) | 2,100 |
| 2023 (W) | 2,100 |
| 2024 (W) | 2,100 |
| 2025 (BN) | 2,100 |
| 2026 (AN) | 2,100 |
| 2027 (W) | 2,200 |
| 2028 (W) | 2,100 |
| 2029 (C) | 2,100 |
| 2030 (C) | 2,000 |
| 2031 (AN) | 2,100 |
| 2032 (BN) | 2,000 |
| 2033 (AN) | 2,100 |
| 2034 (D) | 2,100 |
| 2035 (W) | 2,100 |
| 2036 (W) | 2,200 |
| 2037 (W) | 2,200 |
| 2038 (D) | 2,100 |
| 2039 (W) | 2,100 |
| 2040 (D) | 2,100 |
| 2041 (C) | 2,000 |
| 2042 (D) | 2,000 |
| 2043 (C) | 2,000 |
| 2044 (C) | 2,000 |
| 2045 (C) | 2,000 |
| 2046 (AN) | 2,100 |
| 2047 (C) | 2,000 |
| 2048 (W) | 2,200 |
| 2049 (W) | 2,200 |
| 2050 (W) | 2,100 |
| 2051 (W) | 2,200 |
| 2052 (W) | 2,200 |
| 2053 (AN) | 2,100 |
| 2054 (D) | 2,000 |
| 2055 (D) | 2,000 |
| 2056 (AN) | 2,100 |
| 2057 (BN) | 2,100 |
| 2058 (AN) | 2,100 |
| 2059 (W) | 2,200 |

| Water Year (Type) | | Subsurface Inflow from Uplands |
|---|---|---|
| 2060 (D) | | 2,100 |
| 2061 (C) | | 2,000 |
| 2062 (D) | | 2,000 |
| 2063 (BN) | | 2,000 |
| 2064 (W) | | 2,100 |
| 2065 (BN) | | 2,000 |
| 2066 (D) | | 2,000 |
| 2067 (C) | | 2,000 |
| 2068 (C) | | 2,000 |
| 2069 (BN) | | 2,100 |
| 2070 (W) | | 2,200 |
| 2071 (BN) | | 2,100 |
| 2072 (W) | | 2,100 |
| Average (2022-2072) | | 2,100 |
| 2022-2072 | W | 2100 |
| | AN | 2100 |
| | BN | 2100 |
| | D | 2100 |
| | C | 2000 |

### 3.4.2 Deep Percolation From the SWS

Deep percolation from the SWS includes infiltration of water below the root zone (deep percolation) from precipitation and applied water. These two water budget components are summarized in the SWS water budget as outflows to the SWS and are presented as aggregated deep percolation inflows to the GWS in **Figure 65** and **Table 63**. The average annual deep percolation from the SWS over the projected water budget period is approximately 51 taf per year. Greater volumes of deep percolation occur during wetter years when infiltration of precipitation is higher.

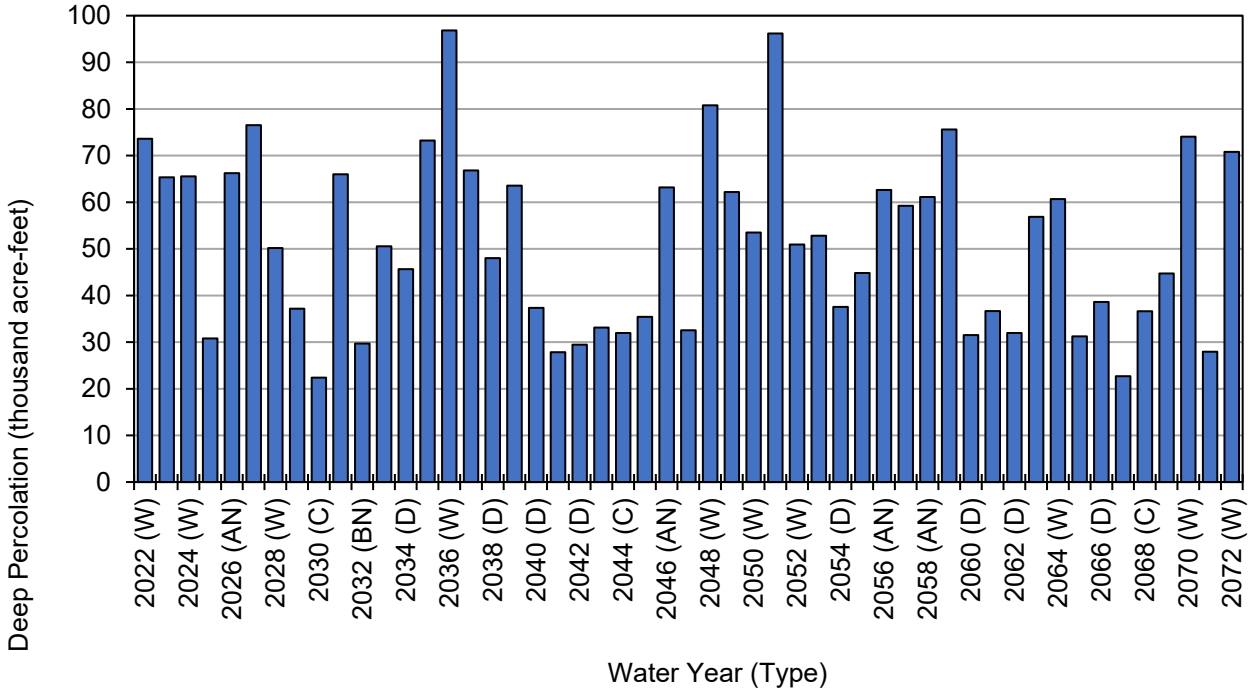


**Figure 65. Los Molinos Subbasin Projected (Future Land Use) Deep Percolation**

**Table 63. Los Molinos Subbasin Projected (Future Land Use) Deep Percolation from the SWS (acre-feet)**

| Water Year (Type) | Deep Percolation from the SWS |
|---|---|
| 2022 (W) | 74,000 |
| 2023 (W) | 65,000 |
| 2024 (W) | 66,000 |
| 2025 (BN) | 31,000 |
| 2026 (AN) | 66,000 |
| 2027 (W) | 77,000 |
| 2028 (W) | 50,000 |
| 2029 (C) | 37,000 |
| 2030 (C) | 22,000 |
| 2031 (AN) | 66,000 |
| 2032 (BN) | 30,000 |
| 2033 (AN) | 51,000 |
| 2034 (D) | 46,000 |
| 2035 (W) | 73,000 |
| 2036 (W) | 97,000 |
| 2037 (W) | 67,000 |
| 2038 (D) | 48,000 |
| 2039 (W) | 64,000 |
| 2040 (D) | 37,000 |
| 2041 (C) | 28,000 |
| 2042 (D) | 29,000 |
| 2043 (C) | 33,000 |
| 2044 (C) | 32,000 |
| 2045 (C) | 35,000 |
| 2046 (AN) | 63,000 |
| 2047 (C) | 33,000 |
| 2048 (W) | 81,000 |
| 2049 (W) | 62,000 |
| 2050 (W) | 53,000 |
| 2051 (W) | 96,000 |
| 2052 (W) | 51,000 |
| 2053 (AN) | 53,000 |
| 2054 (D) | 38,000 |
| 2055 (D) | 45,000 |
| 2056 (AN) | 63,000 |
| 2057 (BN) | 59,000 |
| 2058 (AN) | 61,000 |
| 2059 (W) | 76,000 |

| Water Year (Type) | | Deep Percolation from the SWS |
|---|---|---|
| 2060 (D) | | 32,000 |
| 2061 (C) | | 37,000 |
| 2062 (D) | | 32,000 |
| 2063 (BN) | | 57,000 |
| 2064 (W) | | 61,000 |
| 2065 (BN) | | 31,000 |
| 2066 (D) | | 39,000 |
| 2067 (C) | | 23,000 |
| 2068 (C) | | 37,000 |
| 2069 (BN) | | 45,000 |
| 2070 (W) | | 74,000 |
| 2071 (BN) | | 28,000 |
| 2072 (W) | | 71,000 |
| Average (2022-2072) | | 51,000 |
| 2022-2072 | W | 70,000 |
| | AN | 60,000 |
| | BN | 40,000 |
| | D | 38,000 |
| | C | 32,000 |

### 3.4.3 Net Stream Seepage/Groundwater Discharge to Surface Water

The flow of water between the GWS and SWS through seepage of water from streams and canals and groundwater discharging into streams is discussed as part of the SWS water budget. These components are combined for presentation in the GWS water budget as a net volume of stream seepage (**Figure 66** and Table **64**). Positive total net seepage values represent a net inflow of water from the SWS to the GWS via stream and canal seepage indicating that the overall volume of stream seepage is greater than the volume of any groundwater discharging into surface waterways. Negative net seepage values represent a net outflow of groundwater from the GWS to the SWS through groundwater discharge to surface water. When net seepage is negative, it means that more groundwater is discharging into the surface waterways than is seeping from surface waterways into the GWS.

In the Los Molinos Subbasin, the projected annual net seepage values are always positive with an average annual net stream seepage value of 59 taf per year indicating that surface water seepage is providing considerable recharge to the GWS. The annual net stream seepage values tend to be lower in dry years and higher in wet years corresponding with more net groundwater discharge to surface water in drier years and less groundwater discharge in wetter years.

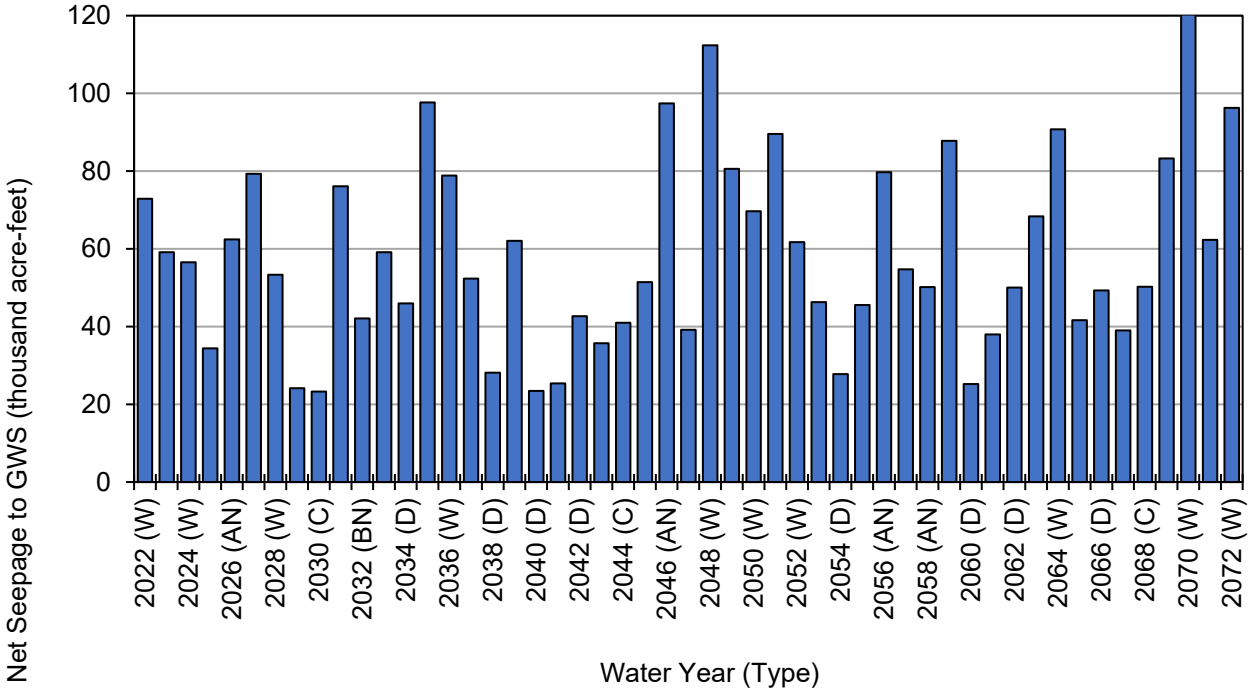


**Figure 66. Los Molinos Subbasin Projected (Future Land Use) Net Stream Seepage to GWS/Discharge to Surface Water**

**Table 64. Los Molinos Subbasin Projected (Future Land Use) Net Stream Seepage (net flows as acre-feet)**

| Water Year (Type) | Total Net Seepage from Surface Waterways and Canals |
|---|---|
| 2022 (W) | 73,000 |
| 2023 (W) | 59,000 |
| 2024 (W) | 57,000 |
| 2025 (BN) | 34,000 |
| 2026 (AN) | 62,000 |
| 2027 (W) | 79,000 |
| 2028 (W) | 53,000 |
| 2029 (C) | 24,000 |
| 2030 (C) | 23,000 |
| 2031 (AN) | 76,000 |
| 2032 (BN) | 42,000 |
| 2033 (AN) | 59,000 |
| 2034 (D) | 46,000 |
| 2035 (W) | 98,000 |
| 2036 (W) | 79,000 |
| 2037 (W) | 52,000 |
| 2038 (D) | 28,000 |
| 2039 (W) | 62,000 |
| 2040 (D) | 23,000 |
| 2041 (C) | 25,000 |
| 2042 (D) | 43,000 |
| 2043 (C) | 36,000 |
| 2044 (C) | 41,000 |
| 2045 (C) | 51,000 |
| 2046 (AN) | 97,000 |
| 2047 (C) | 39,000 |
| 2048 (W) | 110,000 |
| 2049 (W) | 81,000 |
| 2050 (W) | 70,000 |
| 2051 (W) | 90,000 |
| 2052 (W) | 62,000 |
| 2053 (AN) | 46,000 |
| 2054 (D) | 28,000 |
| 2055 (D) | 46,000 |
| 2056 (AN) | 80,000 |
| 2057 (BN) | 55,000 |
| 2058 (AN) | 50,000 |
| 2059 (W) | 88,000 |

| Water Year (Type) | | Total Net Seepage from Surface Waterways and Canals |
|---|---|---|
| 2060 (D) | | 25,000 |
| 2061 (C) | | 38,000 |
| 2062 (D) | | 50,000 |
| 2063 (BN) | | 68,000 |
| 2064 (W) | | 91,000 |
| 2065 (BN) | | 42,000 |
| 2066 (D) | | 49,000 |
| 2067 (C) | | 39,000 |
| 2068 (C) | | 50,000 |
| 2069 (BN) | | 83,000 |
| 2070 (W) | | 120,000 |
| 2071 (BN) | | 62,000 |
| 2072 (W) | | 96,000 |
| Average (2022-2072) | | 59,000 |
| 2022-2072 | W | 79,000 |
| | AN | 67,000 |
| | BN | 55,000 |
| | D | 38,000 |
| | C | 37,000 |

Note: negative values indicate net groundwater discharge to surface water

### 3.4.4 Groundwater Extraction

Groundwater extractions are exchanges that occur between the GWS and the SWS. Groundwater extraction from the GWS occurs through groundwater pumping to meet water demands for urban and agricultural needs and also through groundwater (root water) uptake by plants directly from shallow groundwater during times and at locations of sufficiently shallow groundwater conditions. Projected groundwater extractions are summarized in **Figure 67** and **Table 65** and also presented and discussed in the SWS water budget sections. Total groundwater extractions over the projected water budget period average about -27 taf per year. Overall, groundwater pumping represents a majority of the groundwater extractions than groundwater uptake. Groundwater pumping averages about -21 taf over the projected period and groundwater uptake averaged about -6.1 taf. In wetter periods, groundwater uptake increases and groundwater pumping decreases. Accordingly, during drier periods groundwater pumping increases and water uptake by plants from shallow groundwater decreases in response to the higher water demands for irrigation and other uses and the greater depths to groundwater that also tend to occur during dry periods.

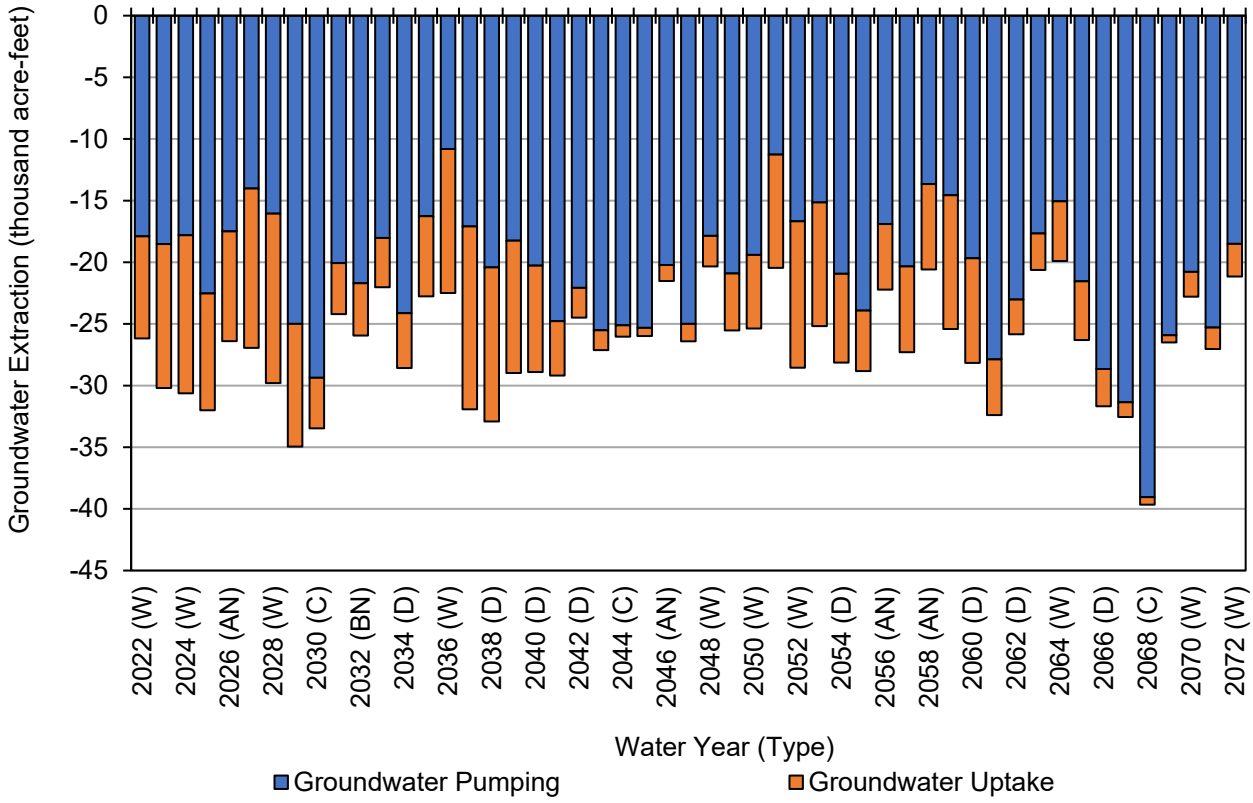


**Figure 67. Los Molinos Subbasin Projected (Future Land Use) Groundwater Extractions**

**Table 65. Los Molinos Subbasin Projected (Future Land Use) Groundwater Extractions (acre-feet)**

| Water Year (Type) | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|
| 2022 (W) | -18,000 | -8,300 | -26,000 |
| 2023 (W) | -19,000 | -12,000 | -30,000 |
| 2024 (W) | -18,000 | -13,000 | -31,000 |
| 2025 (BN) | -23,000 | -9,500 | -32,000 |
| 2026 (AN) | -17,000 | -8,900 | -26,000 |
| 2027 (W) | -14,000 | -13,000 | -27,000 |
| 2028 (W) | -16,000 | -14,000 | -30,000 |
| 2029 (C) | -25,000 | -10,000 | -35,000 |
| 2030 (C) | -29,000 | -4,100 | -33,000 |
| 2031 (AN) | -20,000 | -4,100 | -24,000 |
| 2032 (BN) | -22,000 | -4,200 | -26,000 |
| 2033 (AN) | -18,000 | -4,000 | -22,000 |
| 2034 (D) | -24,000 | -4,400 | -29,000 |
| 2035 (W) | -16,000 | -6,500 | -23,000 |
| 2036 (W) | -11,000 | -12,000 | -22,000 |
| 2037 (W) | -17,000 | -15,000 | -32,000 |
| 2038 (D) | -20,000 | -12,000 | -33,000 |
| 2039 (W) | -18,000 | -11,000 | -29,000 |
| 2040 (D) | -20,000 | -8,600 | -29,000 |
| 2041 (C) | -25,000 | -4,400 | -29,000 |
| 2042 (D) | -22,000 | -2,400 | -24,000 |
| 2043 (C) | -26,000 | -1,600 | -27,000 |
| 2044 (C) | -25,000 | -920 | -26,000 |
| 2045 (C) | -25,000 | -670 | -26,000 |
| 2046 (AN) | -20,000 | -1,300 | -22,000 |
| 2047 (C) | -25,000 | -1,400 | -26,000 |
| 2048 (W) | -18,000 | -2,500 | -20,000 |
| 2049 (W) | -21,000 | -4,600 | -26,000 |
| 2050 (W) | -19,000 | -6,000 | -25,000 |
| 2051 (W) | -11,000 | -9,200 | -20,000 |
| 2052 (W) | -17,000 | -12,000 | -29,000 |
| 2053 (AN) | -15,000 | -10,000 | -25,000 |
| 2054 (D) | -21,000 | -7,200 | -28,000 |
| 2055 (D) | -24,000 | -4,900 | -29,000 |
| 2056 (AN) | -17,000 | -5,300 | -22,000 |
| 2057 (BN) | -20,000 | -7,000 | -27,000 |
| 2058 (AN) | -14,000 | -6,900 | -21,000 |
| 2059 (W) | -15,000 | -11,000 | -25,000 |

| Water Year (Type) | | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|---|
| 2060 (D) | | -20,000 | -8,500 | -28,000 |
| 2061 (C) | | -28,000 | -4,500 | -32,000 |
| 2062 (D) | | -23,000 | -2,800 | -26,000 |
| 2063 (BN) | | -18,000 | -3,000 | -21,000 |
| 2064 (W) | | -15,000 | -4,800 | -20,000 |
| 2065 (BN) | | -22,000 | -4,800 | -26,000 |
| 2066 (D) | | -29,000 | -3,000 | -32,000 |
| 2067 (C) | | -31,000 | -1,200 | -33,000 |
| 2068 (C) | | -39,000 | -620 | -40,000 |
| 2069 (BN) | | -26,000 | -570 | -26,000 |
| 2070 (W) | | -21,000 | -2,000 | -23,000 |
| 2071 (BN) | | -25,000 | -1,700 | -27,000 |
| 2072 (W) | | -19,000 | -2,600 | -21,000 |
| Average (2022-2072) | | -21,000 | -6,100 | -27,000 |
| 2022-2072 | W | -17,000 | -8,800 | -26,000 |
| | AN | -17,000 | -5,800 | -23,000 |
| | BN | -22,000 | -4,400 | -27,000 |
| | D | -23,000 | -6,000 | -29,000 |
| | C | -28,000 | -2,900 | -31,000 |

### 3.4.5 Vertical Subsurface Flows within the Groundwater System

Vertical subsurface flows within the GWS occur between the Upper and Lower Aquifers and represent an internal flow of water within the GWS. These exchanges between the principal aquifers do not directly affect the total volume of groundwater in storage, but do highlight the net vertical movement of water within the GWS. Projected vertical flows between the Upper Aquifer and Lower Aquifer are summarized in **Figure 68** and **Table 66** and show consistent net overall downward vertical flow from the Upper Aquifer to the Lower Aquifer. On average, vertical flows from the Upper Aquifer to the Lower Aquifer total about 62 taf per year over the projected water budget period. There is considerable year-to-year variability in the magnitude of these flows.

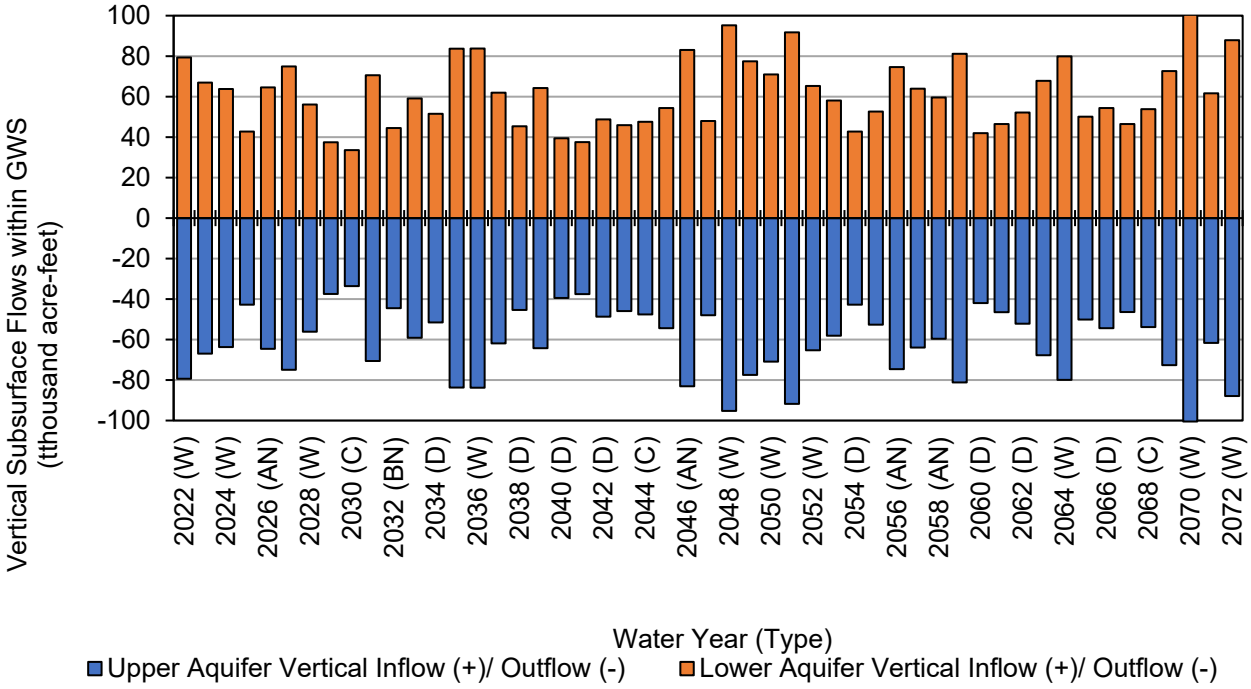


**Figure 68. Los Molinos Subbasin Vertical Subsurface Flow within the GWS**

**Table 66. Los Molinos Subbasin Vertical Subsurface Flows within the GWS (acre-feet)**

| Water Year (Type) | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|
| 2022 (W) | -79,000 |
| 2023 (W) | -67,000 |
| 2024 (W) | -64,000 |
| 2025 (BN) | -43,000 |
| 2026 (AN) | -65,000 |
| 2027 (W) | -75,000 |
| 2028 (W) | -56,000 |
| 2029 (C) | -37,000 |
| 2030 (C) | -34,000 |
| 2031 (AN) | -71,000 |
| 2032 (BN) | -44,000 |
| 2033 (AN) | -59,000 |
| 2034 (D) | -52,000 |
| 2035 (W) | -84,000 |
| 2036 (W) | -84,000 |
| 2037 (W) | -62,000 |
| 2038 (D) | -45,000 |
| 2039 (W) | -64,000 |
| 2040 (D) | -39,000 |
| 2041 (C) | -38,000 |
| 2042 (D) | -49,000 |
| 2043 (C) | -46,000 |
| 2044 (C) | -48,000 |
| 2045 (C) | -54,000 |
| 2046 (AN) | -83,000 |
| 2047 (C) | -48,000 |
| 2048 (W) | -95,000 |
| 2049 (W) | -77,000 |
| 2050 (W) | -71,000 |
| 2051 (W) | -92,000 |
| 2052 (W) | -65,000 |
| 2053 (AN) | -58,000 |
| 2054 (D) | -43,000 |
| 2055 (D) | -53,000 |
| 2056 (AN) | -75,000 |
| 2057 (BN) | -64,000 |
| 2058 (AN) | -60,000 |
| 2059 (W) | -81,000 |
| 2060 (D) | -42,000 |

| Water Year (Type) | | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|---|
| 2061 (C) | | -46,000 |
| 2062 (D) | | -52,000 |
| 2063 (BN) | | -68,000 |
| 2064 (W) | | -80,000 |
| 2065 (BN) | | -50,000 |
| 2066 (D) | | -54,000 |
| 2067 (C) | | -46,000 |
| 2068 (C) | | -54,000 |
| 2069 (BN) | | -73,000 |
| 2070 (W) | | -100,000 |
| 2071 (BN) | | -62,000 |
| 2072 (W) | | -88,000 |
| Average (2022-2072) | | -62,000 |
| 2022-2072 | W | -77,000 |
| | AN | -67,000 |
| | BN | -58,000 |
| | D | -48,000 |
| | C | -45,000 |

### 3.4.6 Change in Groundwater Storage

Projected change in groundwater storage values for the Los Molinos Subbasin are summarized in **Figure 69** and **Figure 70,** and **Table 67**. Values for total change in storage in the GWS and cumulative change in storage over the historical water budget period are presented in conjunction with the volumes of groundwater storage change within each of the two principal aquifers present in the Subbasin. Over the projected period, the average total annual change in groundwater storage is about -2taf per year, representing a decrease in groundwater storage. The corresponding cumulative total change in storage over the projected period is about -88 taf. The annual change in storage numbers generally reflect the effects of the water year type with increase in storage occurring during wetter years and decreases in storage occurring during dry years. Within the GWS, the magnitudes of average annual changes in storage are generally the greater in the Upper Aquifer (average -1.2 taf per year) compared to the Lower Aquifer (average -0.810 taf per year).

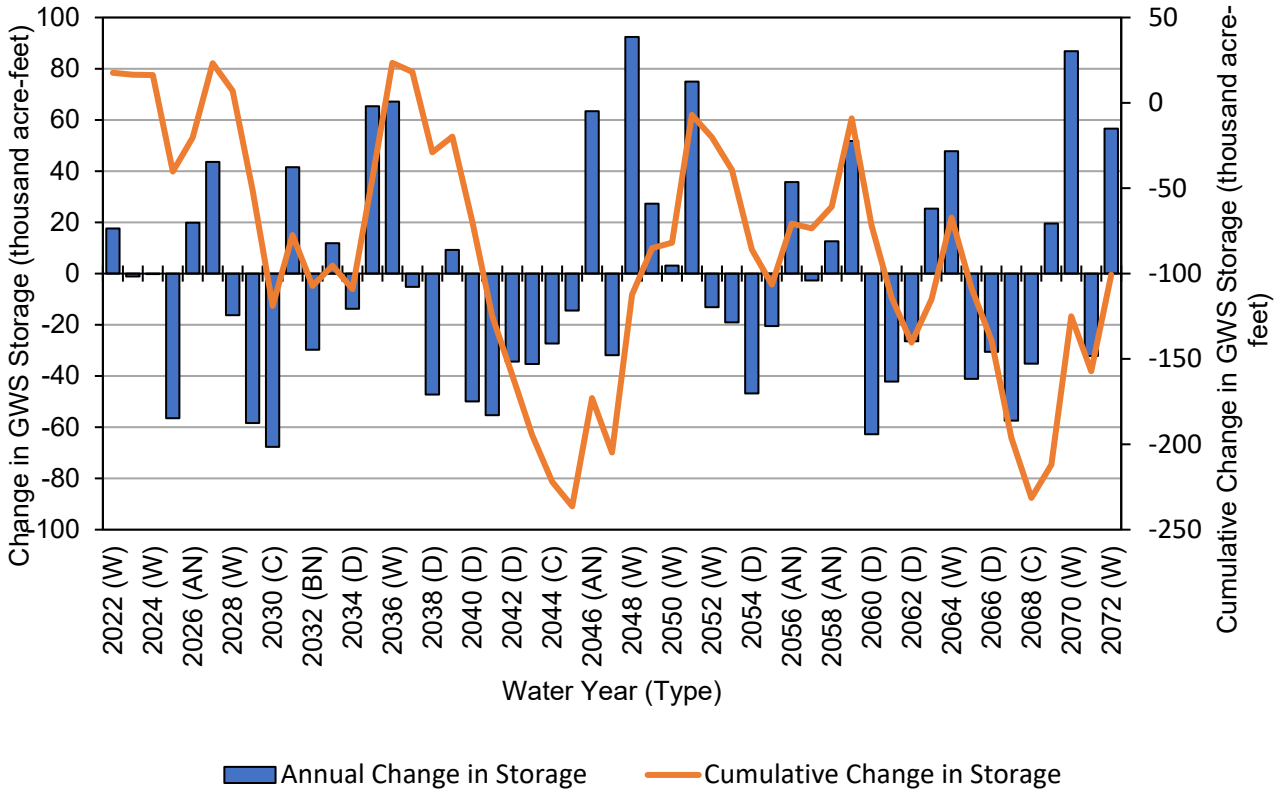


**Figure 69. Los Molinos Subbasin Projected (Future Land Use) Total Change in Storage within the GWS**

**Table 67. Los Molinos Subbasin Projected (Future Land Use) Change in Groundwater Storage (acre-feet)**

| Water Year (Type) | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|
| 2022 (W) | 8,600 | 9,100 | 18,000 | 18,000 |
| 2023 (W) | -2,700 | 1,600 | -1,100 | 16,000 |
| 2024 (W) | -1,000 | 840 | -200 | 16,000 |
| 2025 (BN) | -36,000 | -20,000 | -56,000 | -40,000 |
| 2026 (AN) | 13,000 | 6,900 | 20,000 | -20,000 |
| 2027 (W) | 26,000 | 17,000 | 44,000 | 23,000 |
| 2028 (W) | -11,000 | -5,100 | -16,000 | 7,000 |
| 2029 (C) | -36,000 | -23,000 | -58,000 | -51,000 |
| 2030 (C) | -41,000 | -26,000 | -68,000 | -120,000 |
| 2031 (AN) | 27,000 | 15,000 | 42,000 | -77,000 |
| 2032 (BN) | -19,000 | -11,000 | -30,000 | -110,000 |
| 2033 (AN) | 8,300 | 3,600 | 12,000 | -95,000 |
| 2034 (D) | -8,600 | -5,200 | -14,000 | -110,000 |
| 2035 (W) | 41,000 | 25,000 | 65,000 | -44,000 |
| 2036 (W) | 42,000 | 25,000 | 67,000 | 23,000 |
| 2037 (W) | -3,900 | -1,300 | -5,200 | 18,000 |
| 2038 (D) | -29,000 | -18,000 | -47,000 | -29,000 |
| 2039 (W) | 6,600 | 2,700 | 9,300 | -20,000 |
| 2040 (D) | -31,000 | -19,000 | -50,000 | -70,000 |
| 2041 (C) | -34,000 | -21,000 | -55,000 | -120,000 |
| 2042 (D) | -21,000 | -13,000 | -34,000 | -160,000 |
| 2043 (C) | -21,000 | -14,000 | -35,000 | -190,000 |
| 2044 (C) | -16,000 | -11,000 | -27,000 | -220,000 |
| 2045 (C) | -8,100 | -6,300 | -14,000 | -240,000 |
| 2046 (AN) | 40,000 | 23,000 | 63,000 | -170,000 |
| 2047 (C) | -19,000 | -13,000 | -32,000 | -200,000 |
| 2048 (W) | 58,000 | 34,000 | 92,000 | -110,000 |
| 2049 (W) | 17,000 | 11,000 | 27,000 | -85,000 |
| 2050 (W) | 1,200 | 1,900 | 3,100 | -82,000 |
| 2051 (W) | 47,000 | 28,000 | 75,000 | -7,000 |
| 2052 (W) | -10,000 | -2,600 | -13,000 | -20,000 |
| 2053 (AN) | -11,000 | -7,600 | -19,000 | -39,000 |
| 2054 (D) | -29,000 | -18,000 | -47,000 | -86,000 |
| 2055 (D) | -13,000 | -7,900 | -21,000 | -110,000 |
| 2056 (AN) | 22,000 | 13,000 | 36,000 | -71,000 |
| 2057 (BN) | -1,800 | -900 | -2,700 | -73,000 |
| 2058 (AN) | 9,100 | 3,500 | 13,000 | -61,000 |

| Water Year (Type) | | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|---|
| 2059 (W) | | 30,000 | 21,000 | 52,000 | -9,100 |
| 2060 (D) | | -39,000 | -24,000 | -63,000 | -72,000 |
| 2061 (C) | | -26,000 | -17,000 | -42,000 | -110,000 |
| 2062 (D) | | -16,000 | -10,000 | -26,000 | -140,000 |
| 2063 (BN) | | 17,000 | 8,400 | 25,000 | -110,000 |
| 2064 (W) | | 29,000 | 19,000 | 48,000 | -67,000 |
| 2065 (BN) | | -26,000 | -15,000 | -41,000 | -110,000 |
| 2066 (D) | | -18,000 | -12,000 | -31,000 | -140,000 |
| 2067 (C) | | -35,000 | -22,000 | -57,000 | -200,000 |
| 2068 (C) | | -21,000 | -15,000 | -35,000 | -230,000 |
| 2069 (BN) | | 13,000 | 6,300 | 20,000 | -210,000 |
| 2070 (W) | | 54,000 | 33,000 | 87,000 | -130,000 |
| 2071 (BN) | | -21,000 | -11,000 | -32,000 | -160,000 |
| 2072 (W) | | 36,000 | 21,000 | 57,000 | -100,000 |
| Average (2022-2072) | | -1,200 | -810 | -2,000 | |
| 2022-2072 | W | 20,000 | 13,000 | 34000 | |
| | AN | 15,000 | 8,300 | 24000 | |
| | BN | -11,000 | -6,200 | -17000 | |
| | D | -23,000 | -14,000 | -37000 | |
| | C | -26,000 | 13,000 | -42000 | |

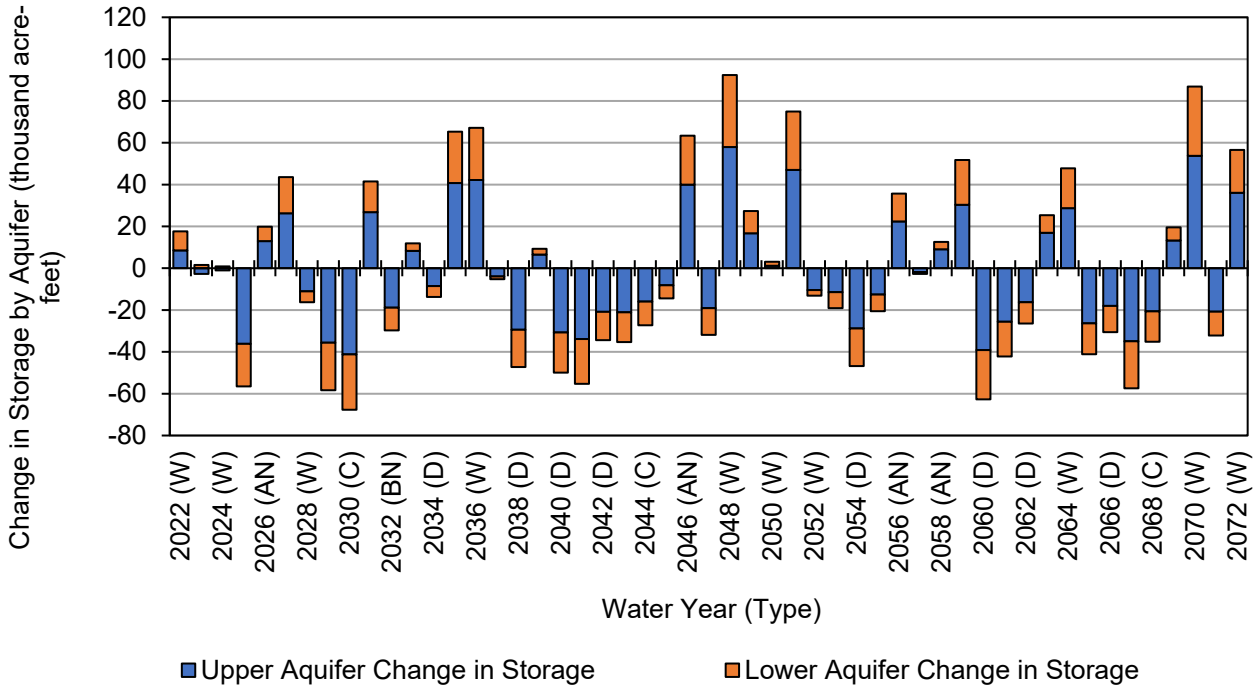


**Figure 70 Los Molinos Subbasin Projected (Future Land Use) Change in Groundwater Storage by Aquifer**

# 4 DETAILED PROJECTED (FUTURE LAND USE WITH CLIMATE CHANGE) WATER BUDGET

This section presents the results of the Projected (Future Land Use with Climate Change) scenario. The Future Land Use with Climate Change scenario assumes transient land use conditions based on assumed projected development and assumed projected climate change within the Los Molinos Subbasin.

## 4.3 Surface Water System Water Budget Results

### 4.3.1 Inflows

#### 4.3.1.1 *Surface Water Inflow by Water Source Type*

The projected annual volume of surface water inflows is summarized by water source type in **Figure 71** and **Table 68**. Over the projected (future land use with climate change) period, surface water inflows average about 710 taf per year. All inflows of the SWS are local supplies.

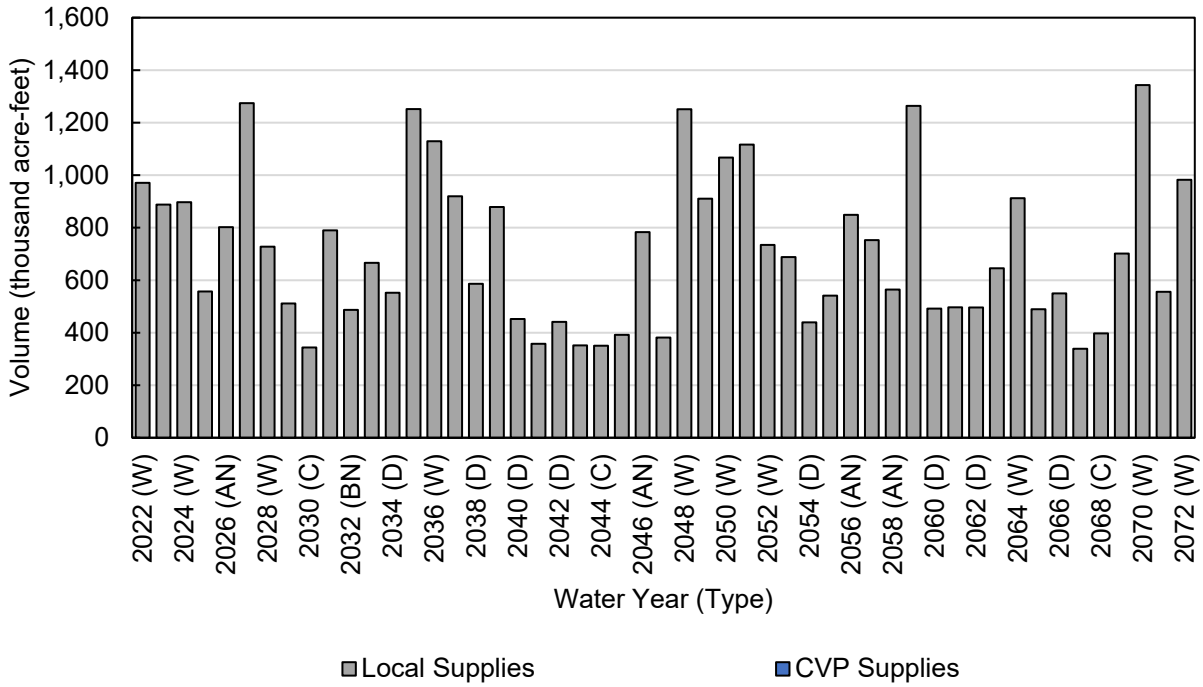


**Figure 71. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Surface Water Inflows, by Water Source Type**

**Table 68. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Surface Water Inflows, by Water Source Type (acre-feet)**

| Water Year (Type) | CVP Supplies | Local Supplies | Total |
|---|---|---|---|
| 2022 (W) | 0 | 970,000 | 970,000 |
| 2023 (W) | 0 | 890,000 | 890,000 |
| 2024 (W) | 0 | 900,000 | 900,000 |
| 2025 (BN) | 0 | 560,000 | 560,000 |
| 2026 (AN) | 0 | 800,000 | 800,000 |
| 2027 (W) | 0 | 1,300,000 | 1,300,000 |
| 2028 (W) | 0 | 730,000 | 730,000 |
| 2029 (C) | 0 | 510,000 | 510,000 |
| 2030 (C) | 0 | 340,000 | 340,000 |
| 2031 (AN) | 0 | 790,000 | 790,000 |
| 2032 (BN) | 0 | 490,000 | 490,000 |
| 2033 (AN) | 0 | 670,000 | 670,000 |
| 2034 (D) | 0 | 550,000 | 550,000 |
| 2035 (W) | 0 | 1,300,000 | 1,300,000 |
| 2036 (W) | 0 | 1,100,000 | 1,100,000 |
| 2037 (W) | 0 | 920,000 | 920,000 |
| 2038 (D) | 0 | 590,000 | 590,000 |
| 2039 (W) | 0 | 880,000 | 880,000 |
| 2040 (D) | 0 | 450,000 | 450,000 |
| 2041 (C) | 0 | 360,000 | 360,000 |
| 2042 (D) | 0 | 440,000 | 440,000 |
| 2043 (C) | 0 | 350,000 | 350,000 |
| 2044 (C) | 0 | 350,000 | 350,000 |
| 2045 (C) | 0 | 390,000 | 390,000 |
| 2046 (AN) | 0 | 780,000 | 780,000 |
| 2047 (C) | 0 | 380,000 | 380,000 |
| 2048 (W) | 0 | 1,300,000 | 1,300,000 |
| 2049 (W) | 0 | 910,000 | 910,000 |
| 2050 (W) | 0 | 1,100,000 | 1,100,000 |
| 2051 (W) | 0 | 1,100,000 | 1,100,000 |
| 2052 (W) | 0 | 730,000 | 730,000 |
| 2053 (AN) | 0 | 690,000 | 690,000 |
| 2054 (D) | 0 | 440,000 | 440,000 |
| 2055 (D) | 0 | 540,000 | 540,000 |
| 2056 (AN) | 0 | 850,000 | 850,000 |
| 2057 (BN) | 0 | 750,000 | 750,000 |

| Water Year (Type) | | CVP Supplies | Local Supplies | Total |
|---|---|---|---|---|
| 2058 (AN) | | 0 | 560,000 | 560,000 |
| 2059 (W) | | 0 | 1,300,000 | 1,300,000 |
| 2060 (D) | | 0 | 490,000 | 490,000 |
| 2061 (C) | | 0 | 500,000 | 500,000 |
| 2062 (D) | | 0 | 500,000 | 500,000 |
| 2063 (BN) | | 0 | 650,000 | 650,000 |
| 2064 (W) | | 0 | 910,000 | 910,000 |
| 2065 (BN) | | 0 | 490,000 | 490,000 |
| 2066 (D) | | 0 | 550,000 | 550,000 |
| 2067 (C) | | 0 | 340,000 | 340,000 |
| 2068 (C) | | 0 | 400,000 | 400,000 |
| 2069 (BN) | | 0 | 700,000 | 700,000 |
| 2070 (W) | | 0 | 1,300,000 | 1,300,000 |
| 2071 (BN) | | 0 | 560,000 | 560,000 |
| 2072 (W) | | 0 | 980,000 | 980,000 |
| Average (2022-2072) | | 0 | 710,000 | 710,000 |
| 2022-2072 | W | 0 | 1,000,000 | 1,000,000 |
| | AN | 0 | 730,000 | 730,000 |
| | BN | 0 | 600,000 | 600,000 |
| | D | 0 | 510,000 | 510,000 |
| | C | 0 | 390,000 | 390,000 |

#### 4.3.1.2 *Precipitation*

Precipitation estimates for the Los Molinos Subbasin are provided in **Figure 72** and **Table 69**. Total precipitation is highly variable between years in the study area, ranging from approximately 160 taf (19.2 inches) during average critically dry years to 310 taf (37.2 inches) during average wet years.

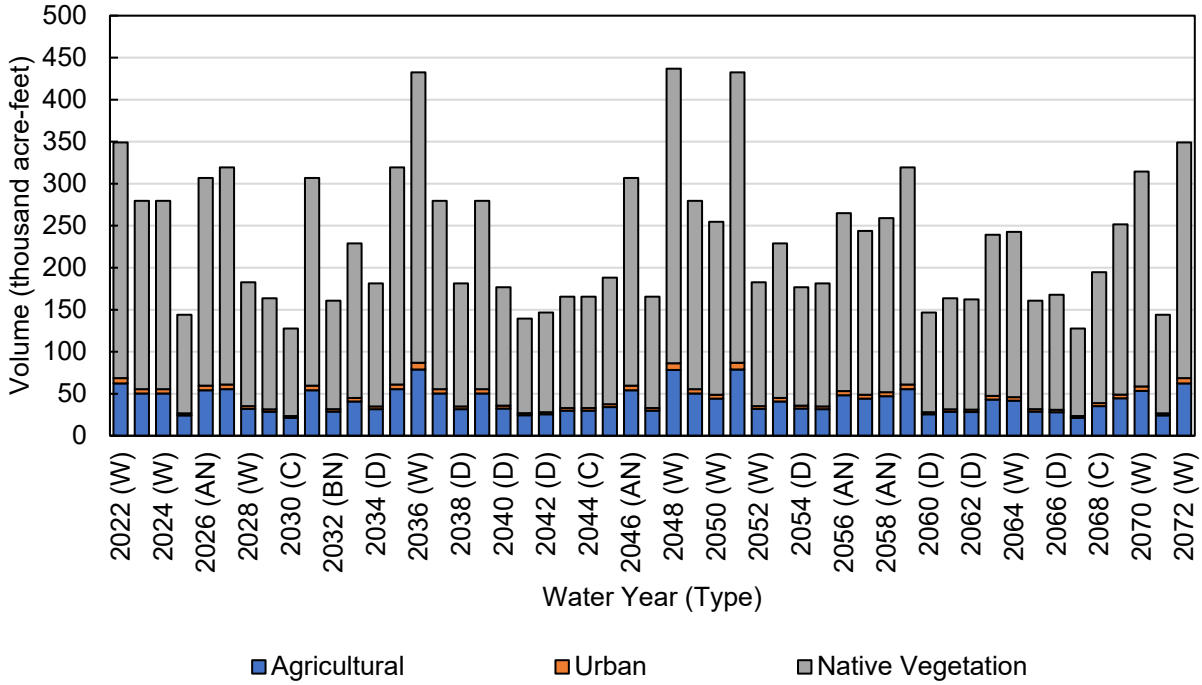


**Figure 72. Los Molinos Subbasin Projected (Future Land Use) Precipitation, by Water Use Sector**

**Table 69. Los Molinos Subbasin Projected (Future Land Use) Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 62,000 | 6,300 | 280,000 | 350,000 |
| 2023 (W) | 50,000 | 5,000 | 220,000 | 280,000 |
| 2024 (W) | 50,000 | 5,000 | 220,000 | 280,000 |
| 2025 (BN) | 24,000 | 2,500 | 120,000 | 140,000 |
| 2026 (AN) | 54,000 | 5,500 | 250,000 | 310,000 |
| 2027 (W) | 56,000 | 5,600 | 260,000 | 320,000 |
| 2028 (W) | 32,000 | 3,300 | 150,000 | 180,000 |
| 2029 (C) | 29,000 | 2,800 | 130,000 | 160,000 |
| 2030 (C) | 21,000 | 2,200 | 100,000 | 130,000 |
| 2031 (AN) | 54,000 | 5,500 | 250,000 | 310,000 |
| 2032 (BN) | 29,000 | 2,900 | 130,000 | 160,000 |
| 2033 (AN) | 41,000 | 4,200 | 180,000 | 230,000 |
| 2034 (D) | 32,000 | 3,200 | 150,000 | 180,000 |
| 2035 (W) | 56,000 | 5,600 | 260,000 | 320,000 |
| 2036 (W) | 79,000 | 8,000 | 350,000 | 430,000 |
| 2037 (W) | 50,000 | 5,000 | 220,000 | 280,000 |
| 2038 (D) | 32,000 | 3,200 | 150,000 | 180,000 |
| 2039 (W) | 50,000 | 5,000 | 220,000 | 280,000 |
| 2040 (D) | 32,000 | 3,300 | 140,000 | 180,000 |
| 2041 (C) | 24,000 | 2,500 | 110,000 | 140,000 |
| 2042 (D) | 25,000 | 2,600 | 120,000 | 150,000 |
| 2043 (C) | 30,000 | 3,000 | 130,000 | 170,000 |
| 2044 (C) | 30,000 | 3,000 | 130,000 | 170,000 |
| 2045 (C) | 34,000 | 3,400 | 150,000 | 190,000 |
| 2046 (AN) | 54,000 | 5,500 | 250,000 | 310,000 |
| 2047 (C) | 30,000 | 3,000 | 130,000 | 170,000 |
| 2048 (W) | 78,000 | 8,000 | 350,000 | 440,000 |
| 2049 (W) | 50,000 | 5,000 | 220,000 | 280,000 |
| 2050 (W) | 44,000 | 4,600 | 210,000 | 250,000 |
| 2051 (W) | 79,000 | 8,000 | 350,000 | 430,000 |
| 2052 (W) | 32,000 | 3,300 | 150,000 | 180,000 |
| 2053 (AN) | 41,000 | 4,200 | 180,000 | 230,000 |
| 2054 (D) | 32,000 | 3,300 | 140,000 | 180,000 |
| 2055 (D) | 32,000 | 3,200 | 150,000 | 180,000 |
| 2056 (AN) | 48,000 | 4,900 | 210,000 | 260,000 |
| 2057 (BN) | 44,000 | 4,500 | 200,000 | 240,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 47,000 | 4,700 | 210,000 | 260,000 |
| 2059 (W) | | 56,000 | 5,600 | 260,000 | 320,000 |
| 2060 (D) | | 25,000 | 2,600 | 120,000 | 150,000 |
| 2061 (C) | | 29,000 | 2,800 | 130,000 | 160,000 |
| 2062 (D) | | 28,000 | 2,800 | 130,000 | 160,000 |
| 2063 (BN) | | 43,000 | 4,300 | 190,000 | 240,000 |
| 2064 (W) | | 42,000 | 4,100 | 200,000 | 240,000 |
| 2065 (BN) | | 29,000 | 2,900 | 130,000 | 160,000 |
| 2066 (D) | | 28,000 | 2,800 | 140,000 | 170,000 |
| 2067 (C) | | 21,000 | 2,200 | 100,000 | 130,000 |
| 2068 (C) | | 35,000 | 3,600 | 160,000 | 190,000 |
| 2069 (BN) | | 45,000 | 4,500 | 200,000 | 250,000 |
| 2070 (W) | | 53,000 | 5,400 | 260,000 | 310,000 |
| 2071 (BN) | | 24,000 | 2,500 | 120,000 | 140,000 |
| 2072 (W) | | 62,000 | 6,300 | 280,000 | 350,000 |
| Average (2022-2072) | | 41,000 | 4,200 | 190,000 | 230,000 |
| 2022-2072 | W | 55,000 | 5,500 | 250,000 | 310,000 |
| | AN | 49,000 | 5,000 | 220,000 | 270,000 |
| | BN | 34,000 | 3,400 | 150,000 | 190,000 |
| | D | 30,000 | 3,000 | 140,000 | 170,000 |
| | C | 28,000 | 2,900 | 130,000 | 160,000 |

#### 4.3.1.3 *Groundwater Extraction by Water Use Sector*

Total groundwater extraction in the Los Molinos Subbasin represents a combination of groundwater pumping to support agricultural and urban water demands, including rural residential use, and groundwater uptake by crops, urban vegetation, and native vegetation.

Estimates of groundwater pumping by water use sector are provided in **Figure 73** and **Table 70**. Virtually all groundwater pumping in the Los Molinos Subbasin is used to meet agricultural demand, averaging 24 taf per year. Groundwater pumping for urban use is approximately 1.1 taf per year. The total groundwater extraction varies from about 21 taf in wet years to 32 taf in critically dry years based on variability in surface water supplies, precipitation, and crop water demand.

When groundwater is near the land surface, groundwater uptake can also be a source of supply for vegetation. Estimates of groundwater uptake by vegetation are provided in **Figure 74** and **Table 71**. The majority of groundwater uptake is consumed directly by agricultural crops and native vegetation, averaging 2 taf and 3.1 taf per year, respectively.

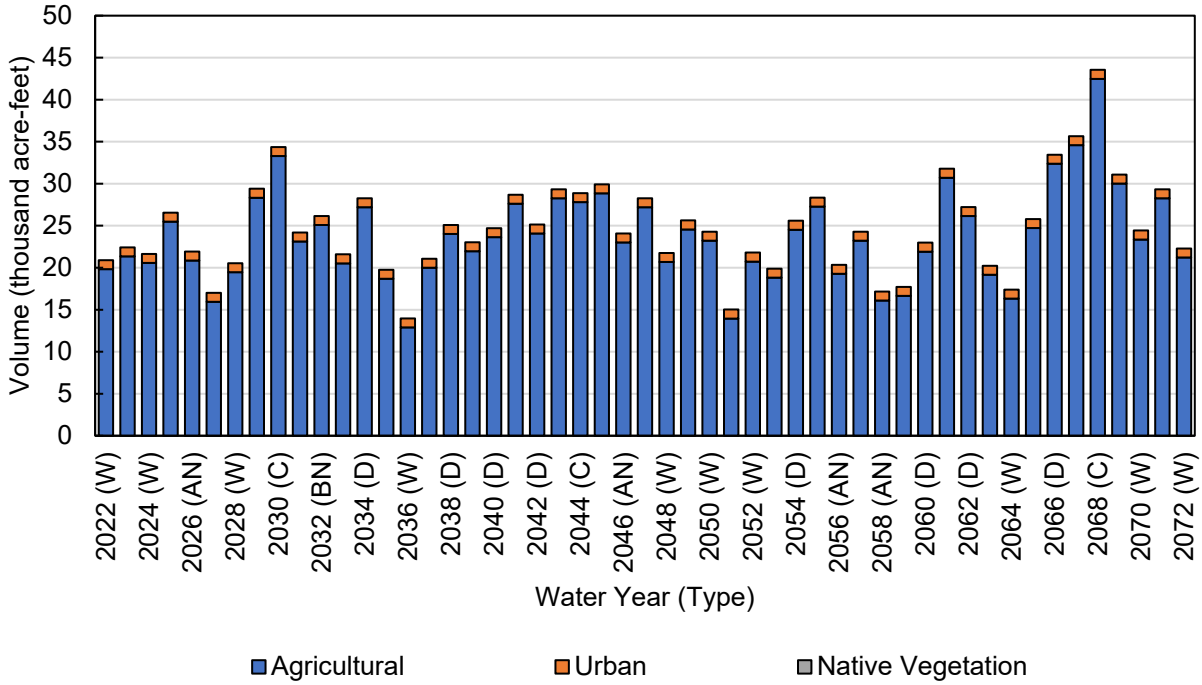


**Figure 73. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Groundwater Pumping, by Water Use Sector**

**Table 70. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Groundwater Pumping, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 20,000 | 1,100 | 0 | 21,000 |
| 2023 (W) | 21,000 | 1,100 | 0 | 22,000 |
| 2024 (W) | 21,000 | 1,100 | 0 | 22,000 |
| 2025 (BN) | 25,000 | 1,100 | 0 | 27,000 |
| 2026 (AN) | 21,000 | 1,100 | 0 | 22,000 |
| 2027 (W) | 16,000 | 1,100 | 0 | 17,000 |
| 2028 (W) | 19,000 | 1,100 | 0 | 21,000 |
| 2029 (C) | 28,000 | 1,100 | 0 | 29,000 |
| 2030 (C) | 33,000 | 1,100 | 0 | 34,000 |
| 2031 (AN) | 23,000 | 1,100 | 0 | 24,000 |
| 2032 (BN) | 25,000 | 1,100 | 0 | 26,000 |
| 2033 (AN) | 21,000 | 1,100 | 0 | 22,000 |
| 2034 (D) | 27,000 | 1,100 | 0 | 28,000 |
| 2035 (W) | 19,000 | 1,100 | 0 | 20,000 |
| 2036 (W) | 13,000 | 1,100 | 0 | 14,000 |
| 2037 (W) | 20,000 | 1,100 | 0 | 21,000 |
| 2038 (D) | 24,000 | 1,100 | 0 | 25,000 |
| 2039 (W) | 22,000 | 1,100 | 0 | 23,000 |
| 2040 (D) | 24,000 | 1,100 | 0 | 25,000 |
| 2041 (C) | 28,000 | 1,100 | 0 | 29,000 |
| 2042 (D) | 24,000 | 1,100 | 0 | 25,000 |
| 2043 (C) | 28,000 | 1,100 | 0 | 29,000 |
| 2044 (C) | 28,000 | 1,100 | 0 | 29,000 |
| 2045 (C) | 29,000 | 1,100 | 0 | 30,000 |
| 2046 (AN) | 23,000 | 1,100 | 0 | 24,000 |
| 2047 (C) | 27,000 | 1,100 | 0 | 28,000 |
| 2048 (W) | 21,000 | 1,100 | 0 | 22,000 |
| 2049 (W) | 25,000 | 1,100 | 0 | 26,000 |
| 2050 (W) | 23,000 | 1,100 | 0 | 24,000 |
| 2051 (W) | 14,000 | 1,100 | 0 | 15,000 |
| 2052 (W) | 21,000 | 1,100 | 0 | 22,000 |
| 2053 (AN) | 19,000 | 1,100 | 0 | 20,000 |
| 2054 (D) | 25,000 | 1,100 | 0 | 26,000 |
| 2055 (D) | 27,000 | 1,100 | 0 | 28,000 |
| 2056 (AN) | 19,000 | 1,100 | 0 | 20,000 |
| 2057 (BN) | 23,000 | 1,100 | 0 | 24,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 16,000 | 1,100 | 0 | 17,000 |
| 2059 (W) | | 17,000 | 1,100 | 0 | 18,000 |
| 2060 (D) | | 22,000 | 1,100 | 0 | 23,000 |
| 2061 (C) | | 31,000 | 1,100 | 0 | 32,000 |
| 2062 (D) | | 26,000 | 1,100 | 0 | 27,000 |
| 2063 (BN) | | 19,000 | 1,100 | 0 | 20,000 |
| 2064 (W) | | 16,000 | 1,100 | 0 | 17,000 |
| 2065 (BN) | | 25,000 | 1,100 | 0 | 26,000 |
| 2066 (D) | | 32,000 | 1,100 | 0 | 33,000 |
| 2067 (C) | | 35,000 | 1,100 | 0 | 36,000 |
| 2068 (C) | | 42,000 | 1,100 | 0 | 44,000 |
| 2069 (BN) | | 30,000 | 1,100 | 0 | 31,000 |
| 2070 (W) | | 23,000 | 1,100 | 0 | 24,000 |
| 2071 (BN) | | 28,000 | 1,100 | 0 | 29,000 |
| 2072 (W) | | 21,000 | 1,100 | 0 | 22,000 |
| Average (2022-2072) | | 24,000 | 1,100 | 0 | 25,000 |
| 2022-2072 | W | 20,000 | 1,100 | 0 | 21,000 |
| | AN | 20,000 | 1,100 | 0 | 21,000 |
| | BN | 25,000 | 1,100 | 0 | 26,000 |
| | D | 26,000 | 1,100 | 0 | 27,000 |
| | C | 31,000 | 1,100 | 0 | 32,000 |

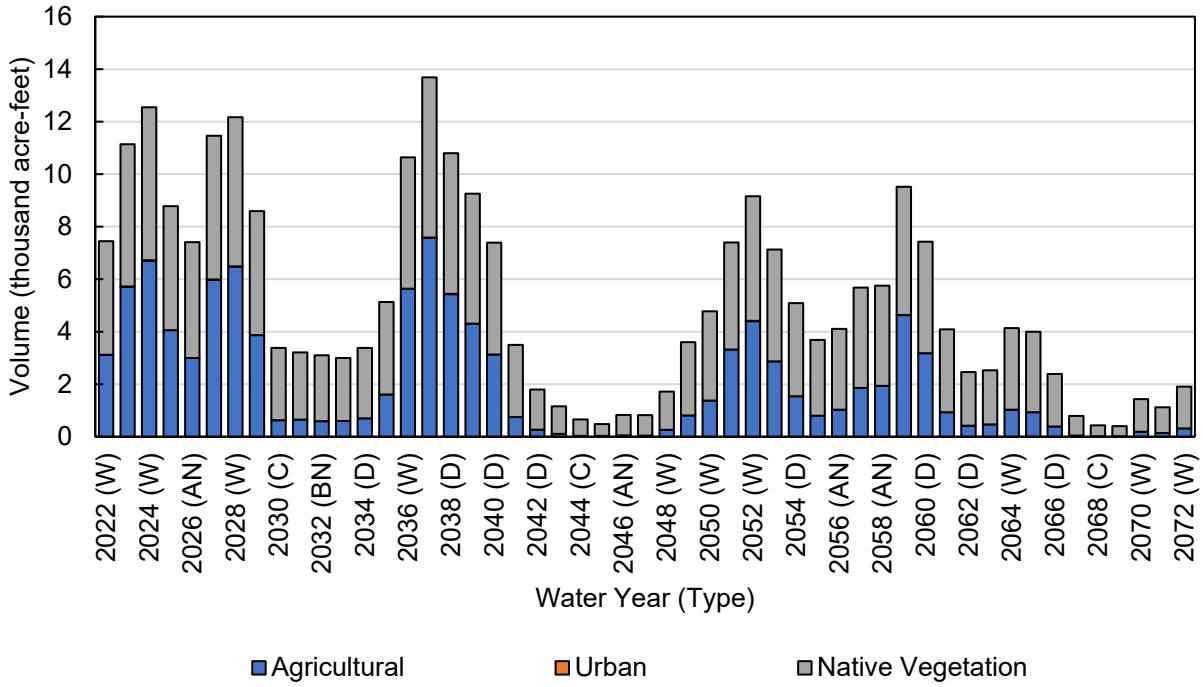


**Figure 74. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector**

**Table 71. Los Molinos Subbasin Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (BN) | 3,100 | 0 | 4,300 | 7,500 |
| 2023 (W) | 5,700 | 10 | 5,400 | 11,000 |
| 2024 (W) | 6,700 | 10 | 5,800 | 13,000 |
| 2025 (W) | 4,100 | 0 | 4,700 | 8,800 |
| 2026 (BN) | 3,000 | 0 | 4,400 | 7,400 |
| 2027 (AN) | 6,000 | 10 | 5,500 | 11,000 |
| 2028 (W) | 6,500 | 10 | 5,700 | 12,000 |
| 2029 (W) | 3,900 | 0 | 4,700 | 8,600 |
| 2030 (C) | 630 | 0 | 2,800 | 3,400 |
| 2031 (C) | 650 | 0 | 2,600 | 3,200 |
| 2032 (AN) | 590 | 0 | 2,500 | 3,100 |
| 2033 (BN) | 600 | 0 | 2,400 | 3,000 |
| 2034 (AN) | 700 | 0 | 2,700 | 3,400 |
| 2035 (D) | 1,600 | 0 | 3,500 | 5,100 |
| 2036 (W) | 5,600 | 10 | 5,000 | 11,000 |
| 2037 (W) | 7,600 | 10 | 6,100 | 14,000 |
| 2038 (W) | 5,400 | 10 | 5,400 | 11,000 |
| 2039 (D) | 4,300 | 0 | 5,000 | 9,300 |
| 2040 (W) | 3,100 | 0 | 4,300 | 7,400 |
| 2041 (D) | 750 | 0 | 2,800 | 3,500 |
| 2042 (C) | 270 | 0 | 1,500 | 1,800 |
| 2043 (D) | 110 | 0 | 1,100 | 1,200 |
| 2044 (C) | 30 | 0 | 630 | 660 |
| 2045 (C) | 30 | 0 | 450 | 480 |
| 2046 (C) | 50 | 0 | 780 | 830 |
| 2047 (AN) | 40 | 0 | 780 | 820 |
| 2048 (C) | 260 | 0 | 1,500 | 1,700 |
| 2049 (W) | 810 | 0 | 2,800 | 3,600 |
| 2050 (W) | 1,400 | 0 | 3,400 | 4,800 |
| 2051 (W) | 3,300 | 0 | 4,100 | 7,400 |
| 2052 (W) | 4,400 | 10 | 4,800 | 9,200 |
| 2053 (W) | 2,900 | 0 | 4,300 | 7,100 |
| 2054 (AN) | 1,500 | 0 | 3,600 | 5,100 |
| 2055 (D) | 800 | 0 | 2,900 | 3,700 |
| 2056 (D) | 1,000 | 0 | 3,100 | 4,100 |
| 2057 (AN) | 1,900 | 0 | 3,800 | 5,700 |
| 2058 (BN) | 1,900 | 0 | 3,800 | 5,800 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2059 (AN) | | 4,600 | 10 | 4,900 | 9,500 |
| 2060 (W) | | 3,200 | 0 | 4,300 | 7,400 |
| 2061 (D) | | 930 | 0 | 3,200 | 4,100 |
| 2062 (C) | | 420 | 0 | 2,000 | 2,500 |
| 2063 (D) | | 470 | 0 | 2,100 | 2,500 |
| 2064 (BN) | | 1,000 | 0 | 3,100 | 4,100 |
| 2065 (W) | | 930 | 0 | 3,100 | 4,000 |
| 2066 (BN) | | 390 | 0 | 2,000 | 2,400 |
| 2067 (D) | | 40 | 0 | 750 | 790 |
| 2068 (C) | | 20 | 0 | 410 | 430 |
| 2069 (C) | | 20 | 0 | 380 | 400 |
| 2070 (BN) | | 190 | 0 | 1,200 | 1,400 |
| 2071 (W) | | 140 | 0 | 980 | 1,100 |
| 2072 (W) | | 320 | 0 | 1,600 | 1,900 |
| Average (2022-2072) | | 2,000 | 0 | 3,100 | 5,200 |
| 2022-2072 | W | 3,500 | 0 | 4,100 | 7,600 |
| | AN | 1,500 | 0 | 3,000 | 4,500 |
| | BN | 1,200 | 0 | 2,500 | 3,700 |
| | D | 1,800 | 0 | 3,200 | 4,900 |
| | C | 650 | 0 | 1,800 | 2,400 |

#### 4.3.1.4 *Groundwater Discharge to Surface Waterways*

Groundwater discharge to surface water, as described herein, represents a gain, or increase of flow, in waterways that traverse or flow along the boundary of the Los Molinos Subbasin. Groundwater discharge in the Los Molinos Subbasin is calculated from the Tehama IHM as the net groundwater outflow to water reaches (i.e., groundwater discharge) in excess of groundwater inflows from waterway reaches (i.e., seepage). The total volume of estimated annual groundwater discharge to surface water is zero throughout the projected period.

### 4.3.2 Outflows

#### 4.3.2.1 *Evapotranspiration by Water Use Sector*

Evapotranspiration (ET) by water use sector is reported in **Figure 75** through **Figure 78**, and **Table 72** through **Table 75**. First, total ET is reported, followed by ET from applied water (ET of water actively applied from surface water deliveries or groundwater pumping), ET of groundwater uptake (ET of shallow water extracted directly by vegetation), and ET from precipitation (ET of water supplied through rainfall).

Total ET varies between years, with the lowest projected average in critically dry and dry years, at approximately 170 taf, and greatest in above normal years, at approximately 190 taf. Agricultural ET tends to increase slightly in drier years due to increased climatic demand, while the ET of native vegetation typically decreases due to reduced water supply.

ET of applied water occurs primarily from agricultural land, averaging about 42 to 44 taf in above-normal and wet years and about 50 to 52 taf in years classified as dry or critical. Urban ET of applied water is lower and averages less than 0.340 taf per year. Native vegetation and agricultural crops in the Los Molinos Subbasin also directly consume shallow groundwater to meet a portion of their consumptive use requirements. ET of groundwater uptake by native vegetation and agricultural crops totals 3.1 and 2 taf per year, on average.

ET of precipitation generally follows the pattern of precipitation, with higher volumes occurring in wet years when more precipitation occurs. Across all water use sectors, ET of precipitation in the Los Molinos Subbasin averages about 130 taf in wet years and 120 taf in critically dry water years. Much of the total ET of precipitation results from the large acreage of native vegetation and Agricultural land in the Los Molinos Subbasin, though some contribution is from urban areas as well.

Evaporation from rivers, streams, and canals in the Los Molinos Subbasin is reported in **Figure 79** and **Table 76**. The total volume is relatively constant between years, averaging 2.5 taf per year. Evaporation from upgradient small watersheds is minimal, and is also not considered to substantially contribute to the subbasin SWS water budget.

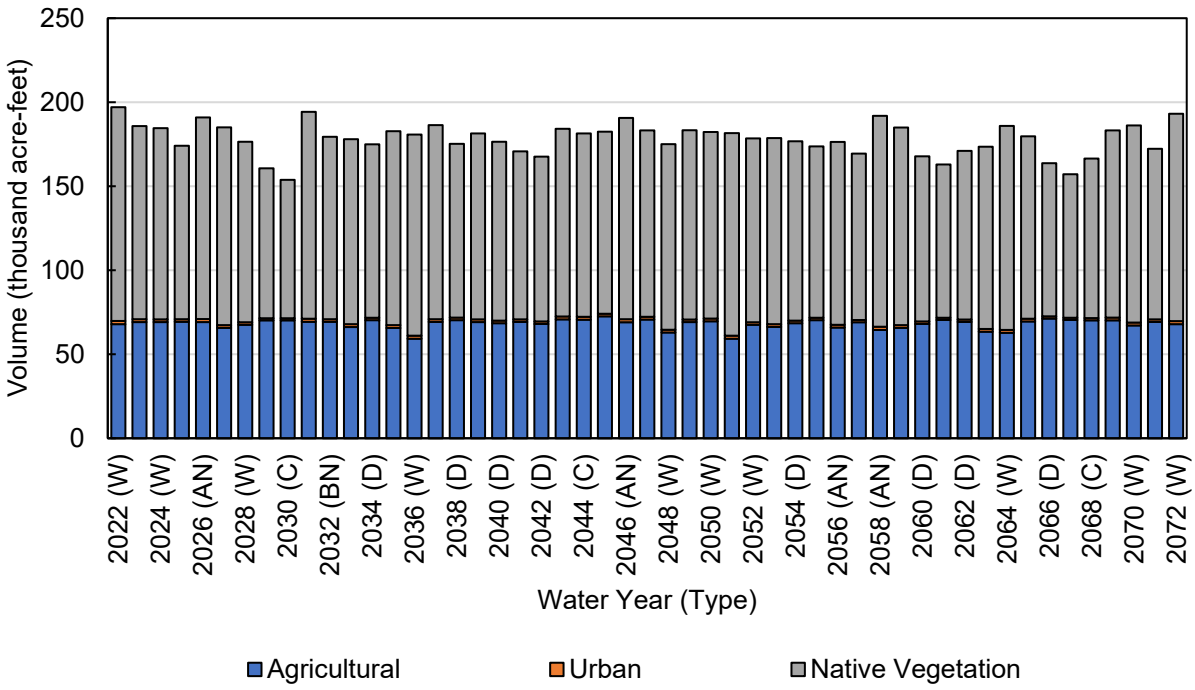


**Figure 75. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Total Evapotranspiration, by Water Use Sector**

**Table 72. Los Molinos Subbasin Projected (Future Land Use) Total Evapotranspiration, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 68,000 | 1,900 | 130,000 | 200,000 |
| 2023 (W) | 69,000 | 1,600 | 120,000 | 190,000 |
| 2024 (W) | 69,000 | 1,600 | 110,000 | 180,000 |
| 2025 (BN) | 69,000 | 1,500 | 100,000 | 170,000 |
| 2026 (AN) | 69,000 | 1,800 | 120,000 | 190,000 |
| 2027 (W) | 66,000 | 1,700 | 120,000 | 190,000 |
| 2028 (W) | 68,000 | 1,600 | 110,000 | 180,000 |
| 2029 (C) | 70,000 | 1,300 | 89,000 | 160,000 |
| 2030 (C) | 70,000 | 1,300 | 82,000 | 150,000 |
| 2031 (AN) | 69,000 | 1,800 | 120,000 | 190,000 |
| 2032 (BN) | 69,000 | 1,600 | 110,000 | 180,000 |
| 2033 (AN) | 66,000 | 1,700 | 110,000 | 180,000 |
| 2034 (D) | 70,000 | 1,400 | 100,000 | 170,000 |
| 2035 (W) | 66,000 | 1,700 | 120,000 | 180,000 |
| 2036 (W) | 59,000 | 1,800 | 120,000 | 180,000 |
| 2037 (W) | 69,000 | 1,600 | 120,000 | 190,000 |
| 2038 (D) | 70,000 | 1,400 | 100,000 | 180,000 |
| 2039 (W) | 69,000 | 1,600 | 110,000 | 180,000 |
| 2040 (D) | 68,000 | 1,600 | 110,000 | 180,000 |
| 2041 (C) | 69,000 | 1,600 | 100,000 | 170,000 |
| 2042 (D) | 68,000 | 1,500 | 98,000 | 170,000 |
| 2043 (C) | 71,000 | 1,700 | 110,000 | 180,000 |
| 2044 (C) | 71,000 | 1,700 | 110,000 | 180,000 |
| 2045 (C) | 73,000 | 1,600 | 110,000 | 180,000 |
| 2046 (AN) | 69,000 | 1,800 | 120,000 | 190,000 |
| 2047 (C) | 71,000 | 1,700 | 110,000 | 180,000 |
| 2048 (W) | 63,000 | 1,600 | 110,000 | 180,000 |
| 2049 (W) | 69,000 | 1,600 | 110,000 | 180,000 |
| 2050 (W) | 70,000 | 1,600 | 110,000 | 180,000 |
| 2051 (W) | 59,000 | 1,800 | 120,000 | 180,000 |
| 2052 (W) | 68,000 | 1,600 | 110,000 | 180,000 |
| 2053 (AN) | 66,000 | 1,700 | 110,000 | 180,000 |
| 2054 (D) | 68,000 | 1,600 | 110,000 | 180,000 |
| 2055 (D) | 70,000 | 1,400 | 100,000 | 170,000 |
| 2056 (AN) | 66,000 | 1,600 | 110,000 | 180,000 |
| 2057 (BN) | 69,000 | 1,400 | 99,000 | 170,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 65,000 | 1,900 | 130,000 | 190,000 |
| 2059 (W) | | 66,000 | 1,700 | 120,000 | 180,000 |
| 2060 (D) | | 68,000 | 1,500 | 98,000 | 170,000 |
| 2061 (C) | | 70,000 | 1,300 | 91,000 | 160,000 |
| 2062 (D) | | 69,000 | 1,500 | 100,000 | 170,000 |
| 2063 (BN) | | 63,000 | 1,600 | 110,000 | 170,000 |
| 2064 (W) | | 63,000 | 1,800 | 120,000 | 190,000 |
| 2065 (BN) | | 70,000 | 1,600 | 110,000 | 180,000 |
| 2066 (D) | | 71,000 | 1,300 | 91,000 | 160,000 |
| 2067 (C) | | 70,000 | 1,300 | 85,000 | 160,000 |
| 2068 (C) | | 70,000 | 1,300 | 95,000 | 170,000 |
| 2069 (BN) | | 70,000 | 1,600 | 110,000 | 180,000 |
| 2070 (W) | | 67,000 | 1,700 | 120,000 | 190,000 |
| 2071 (BN) | | 69,000 | 1,500 | 100,000 | 170,000 |
| 2072 (W) | | 68,000 | 1,800 | 120,000 | 190,000 |
| Average (2022-2072) | | 68,000 | 1,600 | 110,000 | 180,000 |
| 2022-2072 | W | 66,000 | 1,700 | 120,000 | 180,000 |
| | AN | 67,000 | 1,700 | 120,000 | 190,000 |
| | BN | 69,000 | 1,600 | 110,000 | 180,000 |
| | D | 69,000 | 1,500 | 100,000 | 170,000 |
| | C | 71,000 | 1,500 | 98,000 | 170,000 |

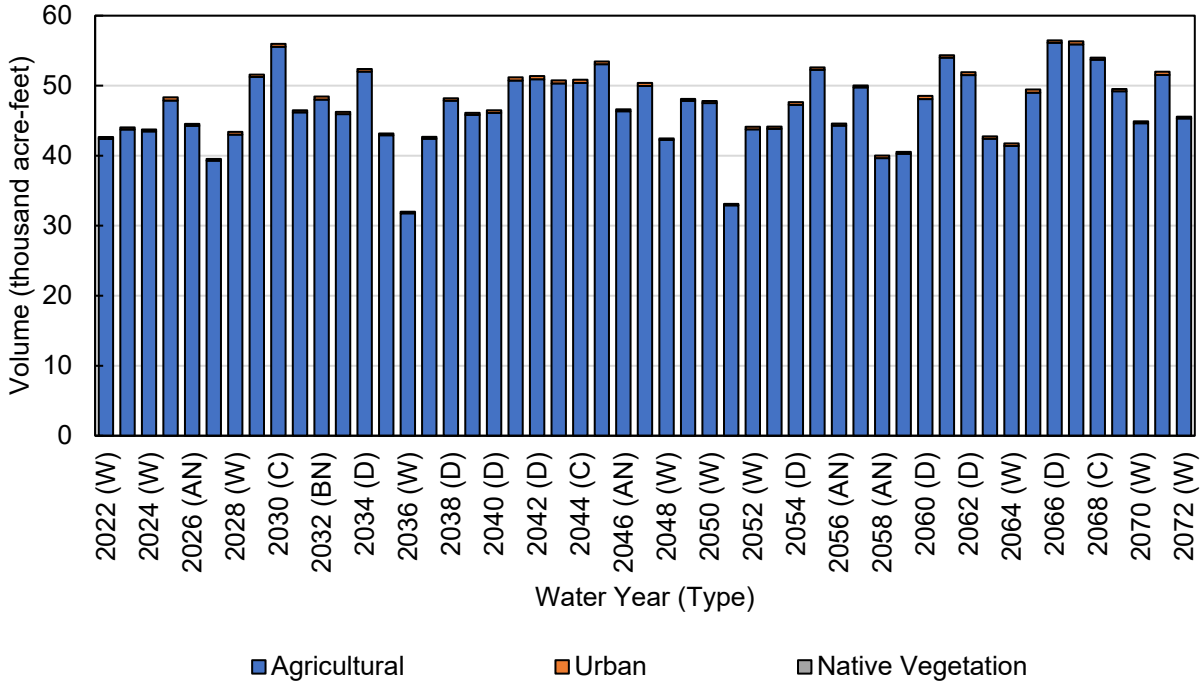


**Figure 76. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evapotranspiration of Applied Water, by Water Use Sector**

**Table 73. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evapotranspiration of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 42,000 | 270 | 0 | 43,000 |
| 2023 (W) | 44,000 | 290 | 0 | 44,000 |
| 2024 (W) | 43,000 | 280 | 0 | 44,000 |
| 2025 (BN) | 48,000 | 460 | 0 | 48,000 |
| 2026 (AN) | 44,000 | 290 | 0 | 45,000 |
| 2027 (W) | 39,000 | 270 | 0 | 40,000 |
| 2028 (W) | 43,000 | 380 | 0 | 43,000 |
| 2029 (C) | 51,000 | 350 | 0 | 52,000 |
| 2030 (C) | 56,000 | 420 | 0 | 56,000 |
| 2031 (AN) | 46,000 | 290 | 0 | 46,000 |
| 2032 (BN) | 48,000 | 440 | 0 | 48,000 |
| 2033 (AN) | 46,000 | 330 | 0 | 46,000 |
| 2034 (D) | 52,000 | 360 | 0 | 52,000 |
| 2035 (W) | 43,000 | 270 | 0 | 43,000 |
| 2036 (W) | 32,000 | 210 | 0 | 32,000 |
| 2037 (W) | 42,000 | 280 | 0 | 43,000 |
| 2038 (D) | 48,000 | 360 | 0 | 48,000 |
| 2039 (W) | 46,000 | 280 | 0 | 46,000 |
| 2040 (D) | 46,000 | 380 | 0 | 46,000 |
| 2041 (C) | 51,000 | 470 | 0 | 51,000 |
| 2042 (D) | 51,000 | 450 | 0 | 51,000 |
| 2043 (C) | 50,000 | 450 | 0 | 51,000 |
| 2044 (C) | 50,000 | 440 | 0 | 51,000 |
| 2045 (C) | 53,000 | 380 | 0 | 53,000 |
| 2046 (AN) | 46,000 | 290 | 0 | 47,000 |
| 2047 (C) | 50,000 | 440 | 0 | 50,000 |
| 2048 (W) | 42,000 | 190 | 0 | 42,000 |
| 2049 (W) | 48,000 | 280 | 0 | 48,000 |
| 2050 (W) | 48,000 | 310 | 0 | 48,000 |
| 2051 (W) | 33,000 | 210 | 0 | 33,000 |
| 2052 (W) | 44,000 | 380 | 0 | 44,000 |
| 2053 (AN) | 44,000 | 330 | 0 | 44,000 |
| 2054 (D) | 47,000 | 390 | 0 | 48,000 |
| 2055 (D) | 52,000 | 360 | 0 | 53,000 |
| 2056 (AN) | 44,000 | 290 | 0 | 45,000 |
| 2057 (BN) | 50,000 | 270 | 0 | 50,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 40,000 | 350 | 0 | 40,000 |
| 2059 (W) | | 40,000 | 270 | 0 | 41,000 |
| 2060 (D) | | 48,000 | 450 | 0 | 49,000 |
| 2061 (C) | | 54,000 | 350 | 0 | 54,000 |
| 2062 (D) | | 52,000 | 420 | 0 | 52,000 |
| 2063 (BN) | | 42,000 | 320 | 0 | 43,000 |
| 2064 (W) | | 41,000 | 360 | 0 | 42,000 |
| 2065 (BN) | | 49,000 | 440 | 0 | 49,000 |
| 2066 (D) | | 56,000 | 350 | 0 | 56,000 |
| 2067 (C) | | 56,000 | 430 | 0 | 56,000 |
| 2068 (C) | | 54,000 | 310 | 0 | 54,000 |
| 2069 (BN) | | 49,000 | 320 | 0 | 50,000 |
| 2070 (W) | | 45,000 | 270 | 0 | 45,000 |
| 2071 (BN) | | 52,000 | 460 | 0 | 52,000 |
| 2072 (W) | | 45,000 | 260 | 0 | 46,000 |
| Average (2022-2072) | | 47,000 | 340 | 0 | 47,000 |
| 2022-2072 | W | 42,000 | 280 | 0 | 43,000 |
| | AN | 44,000 | 310 | 0 | 46,000 |
| | BN | 48,000 | 390 | 0 | 48,000 |
| | D | 50,000 | 390 | 0 | 50,000 |
| | C | 52,000 | 400 | 0 | 52,000 |

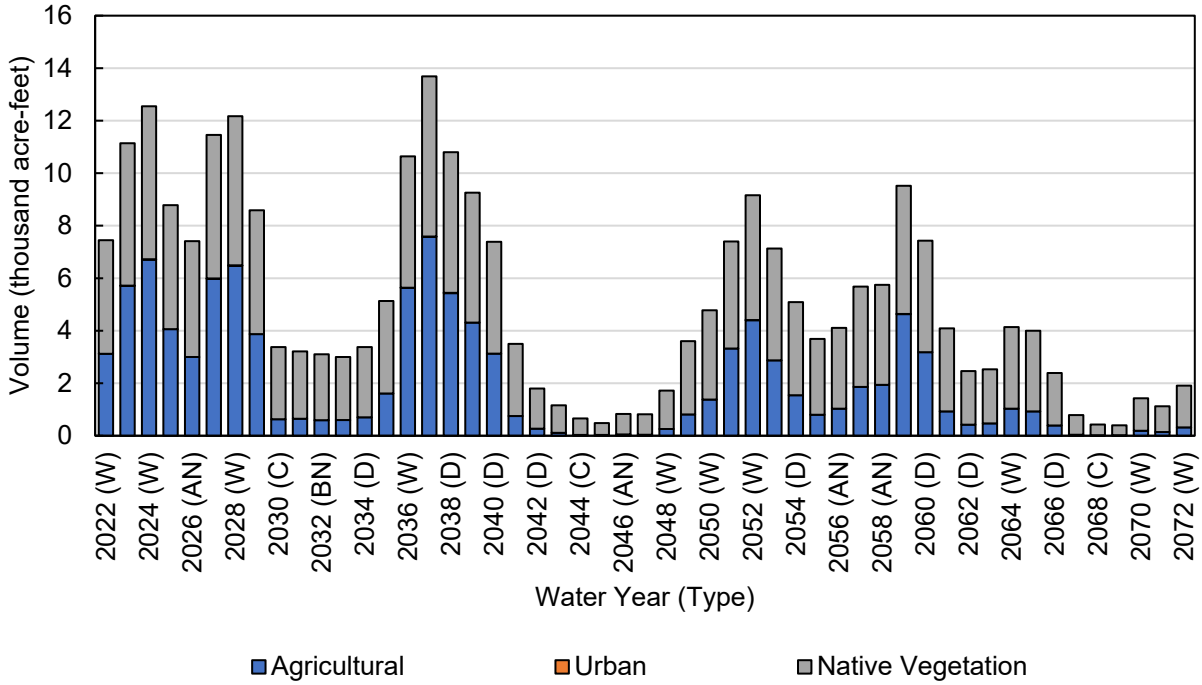


**Figure 77. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evapotranspiration of Groundwater Uptake, by Water Use Sector**

**Table 74. Los Molinos Subbasin Projected (Future Land Use) Evapotranspiration of Groundwater Uptake, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 3,100 | 0 | 4,300 | 7,500 |
| 2023 (W) | 5,700 | 10 | 5,400 | 11,000 |
| 2024 (W) | 6,700 | 10 | 5,800 | 13,000 |
| 2025 (BN) | 4,100 | 0 | 4,700 | 8,800 |
| 2026 (AN) | 3,000 | 0 | 4,400 | 7,400 |
| 2027 (W) | 6,000 | 10 | 5,500 | 11,000 |
| 2028 (W) | 6,500 | 10 | 5,700 | 12,000 |
| 2029 (C) | 3,900 | 0 | 4,700 | 8,600 |
| 2030 (C) | 630 | 0 | 2,800 | 3,400 |
| 2031 (AN) | 650 | 0 | 2,600 | 3,200 |
| 2032 (BN) | 590 | 0 | 2,500 | 3,100 |
| 2033 (AN) | 600 | 0 | 2,400 | 3,000 |
| 2034 (D) | 700 | 0 | 2,700 | 3,400 |
| 2035 (W) | 1,600 | 0 | 3,500 | 5,100 |
| 2036 (W) | 5,600 | 10 | 5,000 | 11,000 |
| 2037 (W) | 7,600 | 10 | 6,100 | 14,000 |
| 2038 (D) | 5,400 | 10 | 5,400 | 11,000 |
| 2039 (W) | 4,300 | 0 | 5,000 | 9,300 |
| 2040 (D) | 3,100 | 0 | 4,300 | 7,400 |
| 2041 (C) | 750 | 0 | 2,800 | 3,500 |
| 2042 (D) | 270 | 0 | 1,500 | 1,800 |
| 2043 (C) | 110 | 0 | 1,100 | 1,200 |
| 2044 (C) | 30 | 0 | 630 | 660 |
| 2045 (C) | 30 | 0 | 450 | 480 |
| 2046 (AN) | 50 | 0 | 780 | 830 |
| 2047 (C) | 40 | 0 | 780 | 820 |
| 2048 (W) | 260 | 0 | 1,500 | 1,700 |
| 2049 (W) | 810 | 0 | 2,800 | 3,600 |
| 2050 (W) | 1,400 | 0 | 3,400 | 4,800 |
| 2051 (W) | 3,300 | 0 | 4,100 | 7,400 |
| 2052 (W) | 4,400 | 10 | 4,800 | 9,200 |
| 2053 (AN) | 2,900 | 0 | 4,300 | 7,100 |
| 2054 (D) | 1,500 | 0 | 3,600 | 5,100 |
| 2055 (D) | 800 | 0 | 2,900 | 3,700 |
| 2056 (AN) | 1,000 | 0 | 3,100 | 4,100 |
| 2057 (BN) | 1,900 | 0 | 3,800 | 5,700 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 1,900 | 0 | 3,800 | 5,800 |
| 2059 (W) | | 4,600 | 10 | 4,900 | 9,500 |
| 2060 (D) | | 3,200 | 0 | 4,300 | 7,400 |
| 2061 (C) | | 930 | 0 | 3,200 | 4,100 |
| 2062 (D) | | 420 | 0 | 2,000 | 2,500 |
| 2063 (BN) | | 470 | 0 | 2,100 | 2,500 |
| 2064 (W) | | 1,000 | 0 | 3,100 | 4,100 |
| 2065 (BN) | | 930 | 0 | 3,100 | 4,000 |
| 2066 (D) | | 390 | 0 | 2,000 | 2,400 |
| 2067 (C) | | 40 | 0 | 750 | 790 |
| 2068 (C) | | 20 | 0 | 410 | 430 |
| 2069 (BN) | | 20 | 0 | 380 | 400 |
| 2070 (W) | | 190 | 0 | 1,200 | 1,400 |
| 2071 (BN) | | 140 | 0 | 980 | 1,100 |
| 2072 (W) | | 320 | 0 | 1,600 | 1,900 |
| Average (2022-2072) | | 2,000 | 0 | 3,100 | 5,200 |
| 2022-2072 | W | 3,500 | 0 | 4,100 | 7,600 |
| | AN | 1,500 | 0 | 3,000 | 4,500 |
| | BN | 1,200 | 0 | 2,500 | 3,700 |
| | D | 1,800 | 0 | 3,200 | 4,900 |
| | C | 650 | 0 | 1,800 | 2,400 |

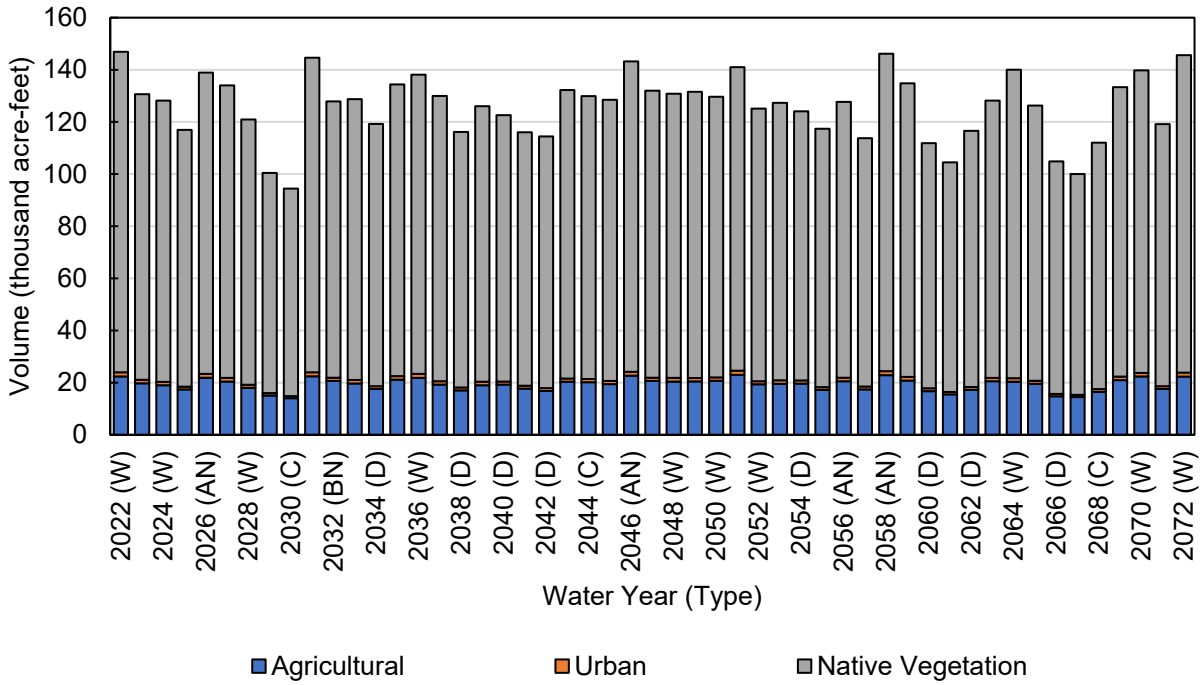


**Figure 78. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evapotranspiration of Precipitation, by Water Use Sector**

**Table 75. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evapotranspiration of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 22,000 | 1,600 | 120,000 | 150,000 |
| 2023 (W) | 20,000 | 1,300 | 110,000 | 130,000 |
| 2024 (W) | 19,000 | 1,300 | 110,000 | 130,000 |
| 2025 (BN) | 17,000 | 1,000 | 99,000 | 120,000 |
| 2026 (AN) | 22,000 | 1,500 | 120,000 | 140,000 |
| 2027 (W) | 20,000 | 1,400 | 110,000 | 130,000 |
| 2028 (W) | 18,000 | 1,200 | 100,000 | 120,000 |
| 2029 (C) | 15,000 | 920 | 84,000 | 100,000 |
| 2030 (C) | 14,000 | 850 | 80,000 | 94,000 |
| 2031 (AN) | 22,000 | 1,500 | 120,000 | 140,000 |
| 2032 (BN) | 21,000 | 1,200 | 110,000 | 130,000 |
| 2033 (AN) | 20,000 | 1,300 | 110,000 | 130,000 |
| 2034 (D) | 18,000 | 1,100 | 100,000 | 120,000 |
| 2035 (W) | 21,000 | 1,400 | 110,000 | 130,000 |
| 2036 (W) | 22,000 | 1,600 | 110,000 | 140,000 |
| 2037 (W) | 19,000 | 1,300 | 110,000 | 130,000 |
| 2038 (D) | 17,000 | 1,100 | 98,000 | 120,000 |
| 2039 (W) | 19,000 | 1,300 | 110,000 | 130,000 |
| 2040 (D) | 19,000 | 1,200 | 100,000 | 120,000 |
| 2041 (C) | 18,000 | 1,100 | 97,000 | 120,000 |
| 2042 (D) | 17,000 | 1,100 | 97,000 | 110,000 |
| 2043 (C) | 20,000 | 1,300 | 110,000 | 130,000 |
| 2044 (C) | 20,000 | 1,200 | 110,000 | 130,000 |
| 2045 (C) | 19,000 | 1,200 | 110,000 | 130,000 |
| 2046 (AN) | 23,000 | 1,500 | 120,000 | 140,000 |
| 2047 (C) | 21,000 | 1,200 | 110,000 | 130,000 |
| 2048 (W) | 20,000 | 1,400 | 110,000 | 130,000 |
| 2049 (W) | 20,000 | 1,300 | 110,000 | 130,000 |
| 2050 (W) | 21,000 | 1,300 | 110,000 | 130,000 |
| 2051 (W) | 23,000 | 1,600 | 120,000 | 140,000 |
| 2052 (W) | 19,000 | 1,200 | 100,000 | 130,000 |
| 2053 (AN) | 20,000 | 1,300 | 110,000 | 130,000 |
| 2054 (D) | 20,000 | 1,200 | 100,000 | 120,000 |
| 2055 (D) | 17,000 | 1,100 | 99,000 | 120,000 |
| 2056 (AN) | 21,000 | 1,300 | 110,000 | 130,000 |
| 2057 (BN) | 17,000 | 1,100 | 95,000 | 110,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 23,000 | 1,500 | 120,000 | 150,000 |
| 2059 (W) | | 21,000 | 1,400 | 110,000 | 130,000 |
| 2060 (D) | | 17,000 | 1,100 | 94,000 | 110,000 |
| 2061 (C) | | 16,000 | 940 | 88,000 | 100,000 |
| 2062 (D) | | 17,000 | 1,100 | 98,000 | 120,000 |
| 2063 (BN) | | 21,000 | 1,300 | 110,000 | 130,000 |
| 2064 (W) | | 20,000 | 1,400 | 120,000 | 140,000 |
| 2065 (BN) | | 20,000 | 1,200 | 110,000 | 130,000 |
| 2066 (D) | | 15,000 | 930 | 89,000 | 100,000 |
| 2067 (C) | | 14,000 | 870 | 85,000 | 100,000 |
| 2068 (C) | | 17,000 | 1,000 | 95,000 | 110,000 |
| 2069 (BN) | | 21,000 | 1,300 | 110,000 | 130,000 |
| 2070 (W) | | 22,000 | 1,400 | 120,000 | 140,000 |
| 2071 (BN) | | 18,000 | 1,100 | 100,000 | 120,000 |
| 2072 (W) | | 22,000 | 1,600 | 120,000 | 150,000 |
| Average (2022-2072) | | 19,000 | 1,200 | 110,000 | 130,000 |
| 2022-2072 | W | 21,000 | 1,400 | 110,000 | 130,000 |
| | AN | 21,000 | 1,400 | 110,000 | 140,000 |
| | BN | 19,000 | 1,200 | 100,000 | 120,000 |
| | D | 17,000 | 1,100 | 98,000 | 120,000 |
| | C | 17,000 | 1,100 | 97,000 | 120,000 |

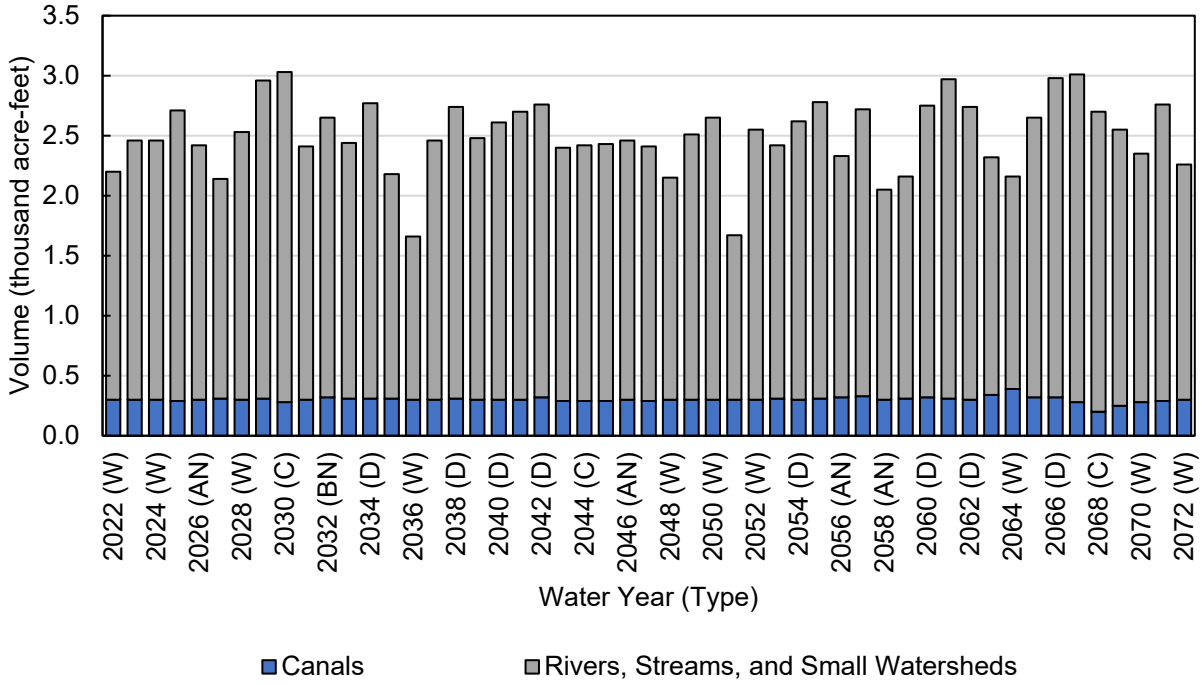


**Figure 79. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evaporation of Surface Water Sources**

**Table 76. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Evaporation of Surface Water Sources, by Water Use Sector (acre-feet)**

| Water Year (Type) | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|
| 2022 (W) | 300 | 1,900 | 2,200 |
| 2023 (W) | 300 | 2,200 | 2,500 |
| 2024 (W) | 300 | 2,200 | 2,500 |
| 2025 (BN) | 290 | 2,400 | 2,700 |
| 2026 (AN) | 300 | 2,100 | 2,400 |
| 2027 (W) | 310 | 1,800 | 2,100 |
| 2028 (W) | 300 | 2,200 | 2,500 |
| 2029 (C) | 310 | 2,700 | 3,000 |
| 2030 (C) | 280 | 2,800 | 3,000 |
| 2031 (AN) | 300 | 2,100 | 2,400 |
| 2032 (BN) | 320 | 2,300 | 2,700 |
| 2033 (AN) | 310 | 2,100 | 2,400 |
| 2034 (D) | 310 | 2,500 | 2,800 |
| 2035 (W) | 310 | 1,900 | 2,200 |
| 2036 (W) | 300 | 1,400 | 1,700 |
| 2037 (W) | 300 | 2,200 | 2,500 |
| 2038 (D) | 310 | 2,400 | 2,700 |
| 2039 (W) | 300 | 2,200 | 2,500 |
| 2040 (D) | 300 | 2,300 | 2,600 |
| 2041 (C) | 300 | 2,400 | 2,700 |
| 2042 (D) | 320 | 2,400 | 2,800 |
| 2043 (C) | 290 | 2,100 | 2,400 |
| 2044 (C) | 290 | 2,100 | 2,400 |
| 2045 (C) | 290 | 2,100 | 2,400 |
| 2046 (AN) | 300 | 2,200 | 2,500 |
| 2047 (C) | 290 | 2,100 | 2,400 |
| 2048 (W) | 300 | 1,900 | 2,200 |
| 2049 (W) | 300 | 2,200 | 2,500 |
| 2050 (W) | 300 | 2,400 | 2,700 |
| 2051 (W) | 300 | 1,400 | 1,700 |
| 2052 (W) | 300 | 2,300 | 2,600 |
| 2053 (AN) | 310 | 2,100 | 2,400 |
| 2054 (D) | 300 | 2,300 | 2,600 |
| 2055 (D) | 310 | 2,500 | 2,800 |
| 2056 (AN) | 320 | 2,000 | 2,300 |
| 2057 (BN) | 330 | 2,400 | 2,700 |
| 2058 (AN) | 300 | 1,800 | 2,100 |

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds[1] | Total |
|---|---|---|---|---|
| 2059 (W) | | 310 | 1,900 | 2,200 |
| 2060 (D) | | 320 | 2,400 | 2,800 |
| 2061 (C) | | 310 | 2,700 | 3,000 |
| 2062 (D) | | 300 | 2,400 | 2,700 |
| 2063 (BN) | | 340 | 2,000 | 2,300 |
| 2064 (W) | | 390 | 1,800 | 2,200 |
| 2065 (BN) | | 320 | 2,300 | 2,700 |
| 2066 (D) | | 320 | 2,700 | 3,000 |
| 2067 (C) | | 280 | 2,700 | 3,000 |
| 2068 (C) | | 200 | 2,500 | 2,700 |
| 2069 (BN) | | 250 | 2,300 | 2,600 |
| 2070 (W) | | 280 | 2,100 | 2,400 |
| 2071 (BN) | | 290 | 2,500 | 2,800 |
| 2072 (W) | | 300 | 2,000 | 2,300 |
| Average (2022-2072) | | 300 | 2,200 | 2,500 |
| 2022-2072 | W | 310 | 2,000 | 2,300 |
| | AN | 310 | 2,100 | 2,400 |
| | BN | 310 | 2,300 | 2,600 |
| | D | 310 | 2,400 | 2,800 |
| | C | 280 | 2,400 | 2,700 |

[1] Includes ET of riparian vegetation along rivers and streams.

#### 4.3.2.2 *Surface Water Outflow by Water Source Type*

Surface water outflows from the Los Molinos Subbasin are summarized in **Figure 80** and **Table 77** by water source type. In the Los Molinos Subbasin, local supply outflows primarily include outflows of runoff, tailwater, and net drainage from land surfaces, in addition to runoff from small watersheds and stream outflows to the Sacramento River. Local supply outflows average approximately 670 taf per year, and range on average from 340 taf in critically dry years up to 1 maf in wet years. Other surface water outflows that leave the subbasin include outflow of groundwater discharge to the Sacramento River, Antelope Creek, Little Antelope Creek, Dye Creek, Mill Creek, and Deer Creek. This water travels along each respective waterway as part of the flow in the river or creek.

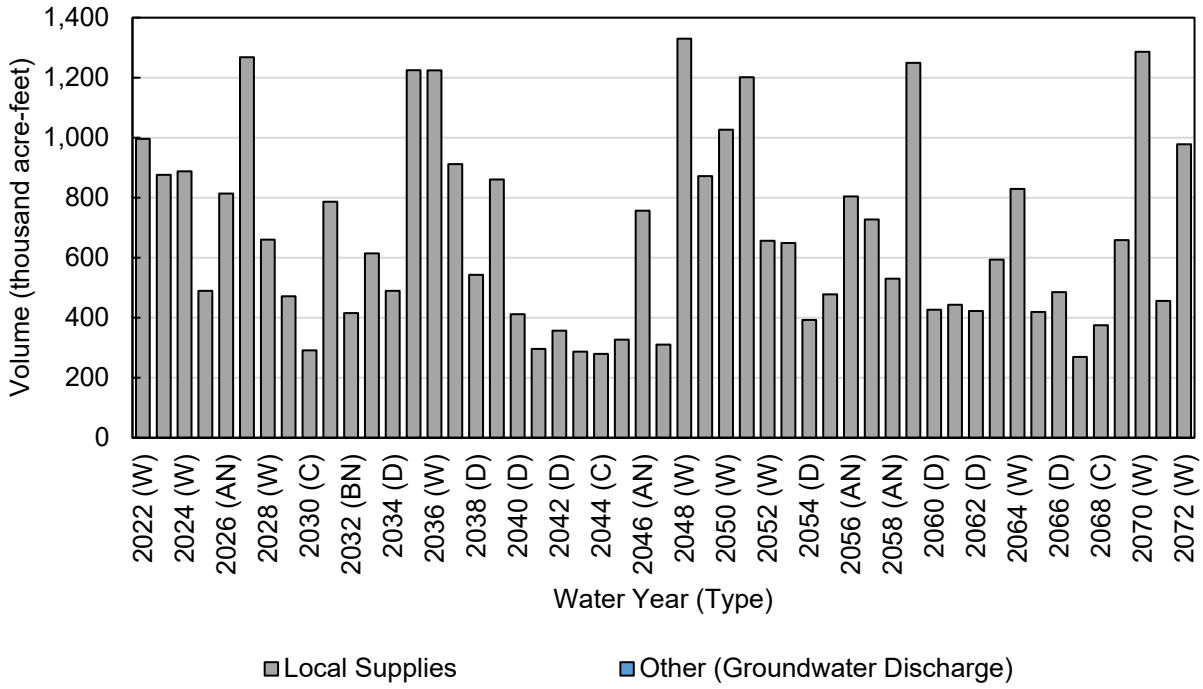


**Figure 80. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Surface Water Outflows, by Water Source Type**

**Table 77. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Surface Water Outflows, by Water Source Type (acre-feet)**

| Water Year (Type) | CVP Supplies | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|
| 2022 (W) | 0 | 1,000,000 | 0 | 1,000,000 |
| 2023 (W) | 0 | 880,000 | 0 | 880,000 |
| 2024 (W) | 0 | 890,000 | 0 | 890,000 |
| 2025 (BN) | 0 | 490,000 | 0 | 490,000 |
| 2026 (AN) | 0 | 810,000 | 0 | 810,000 |
| 2027 (W) | 0 | 1,300,000 | 0 | 1,300,000 |
| 2028 (W) | 0 | 660,000 | 0 | 660,000 |
| 2029 (C) | 0 | 470,000 | 0 | 470,000 |
| 2030 (C) | 0 | 290,000 | 0 | 290,000 |
| 2031 (AN) | 0 | 790,000 | 0 | 790,000 |
| 2032 (BN) | 0 | 420,000 | 0 | 420,000 |
| 2033 (AN) | 0 | 610,000 | 0 | 610,000 |
| 2034 (D) | 0 | 490,000 | 0 | 490,000 |
| 2035 (W) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2036 (W) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2037 (W) | 0 | 910,000 | 0 | 910,000 |
| 2038 (D) | 0 | 540,000 | 0 | 540,000 |
| 2039 (W) | 0 | 860,000 | 0 | 860,000 |
| 2040 (D) | 0 | 410,000 | 0 | 410,000 |
| 2041 (C) | 0 | 300,000 | 0 | 300,000 |
| 2042 (D) | 0 | 360,000 | 0 | 360,000 |
| 2043 (C) | 0 | 290,000 | 0 | 290,000 |
| 2044 (C) | 0 | 280,000 | 0 | 280,000 |
| 2045 (C) | 0 | 330,000 | 0 | 330,000 |
| 2046 (AN) | 0 | 760,000 | 0 | 760,000 |
| 2047 (C) | 0 | 310,000 | 0 | 310,000 |
| 2048 (W) | 0 | 1,300,000 | 0 | 1,300,000 |
| 2049 (W) | 0 | 870,000 | 0 | 870,000 |
| 2050 (W) | 0 | 1,000,000 | 0 | 1,000,000 |
| 2051 (W) | 0 | 1,200,000 | 0 | 1,200,000 |
| 2052 (W) | 0 | 660,000 | 0 | 660,000 |
| 2053 (AN) | 0 | 650,000 | 0 | 650,000 |
| 2054 (D) | 0 | 390,000 | 0 | 390,000 |
| 2055 (D) | 0 | 480,000 | 0 | 480,000 |
| 2056 (AN) | 0 | 800,000 | 0 | 800,000 |

| Water Year (Type) | | CVP Supplies | Local Supplies | Other (Groundwater Discharge) | Total |
|---|---|---|---|---|---|
| 2057 (BN) | | 0 | 730,000 | 0 | 730,000 |
| 2058 (AN) | | 0 | 530,000 | 0 | 530,000 |
| 2059 (W) | | 0 | 1,200,000 | 0 | 1,200,000 |
| 2060 (D) | | 0 | 430,000 | 0 | 430,000 |
| 2061 (C) | | 0 | 440,000 | 0 | 440,000 |
| 2062 (D) | | 0 | 420,000 | 0 | 420,000 |
| 2063 (BN) | | 0 | 590,000 | 0 | 590,000 |
| 2064 (W) | | 0 | 830,000 | 0 | 830,000 |
| 2065 (BN) | | 0 | 420,000 | 0 | 420,000 |
| 2066 (D) | | 0 | 490,000 | 0 | 490,000 |
| 2067 (C) | | 0 | 270,000 | 0 | 270,000 |
| 2068 (C) | | 0 | 370,000 | 0 | 370,000 |
| 2069 (BN) | | 0 | 660,000 | 0 | 660,000 |
| 2070 (W) | | 0 | 1,300,000 | 0 | 1,300,000 |
| 2071 (BN) | | 0 | 460,000 | 0 | 460,000 |
| 2072 (W) | | 0 | 980,000 | 0 | 980,000 |
| Average (2022-2072) | | 0 | 670,000 | 0 | 670,000 |
| 2022-2072 | W | 0 | 1,000,000 | 0 | 1,000,000 |
| | AN | 0 | 710,000 | 0 | 710,000 |
| | BN | 0 | 540,000 | 0 | 540,000 |
| | D | 0 | 450,000 | 0 | 450,000 |
| | C | 0 | 340,000 | 0 | 340,000 |

#### 4.3.2.3 *Deep Percolation of Applied Water*

Estimated deep percolation of applied water (equal to infiltration of applied water in 23 CCR § 354.18(b)(2)) is summarized in **Figure 81** and **Table 78** by water use sector. Deep percolation of applied water is dominated by agricultural irrigation and varies between years, following the pattern of surface water diversions and deliveries to irrigated lands.

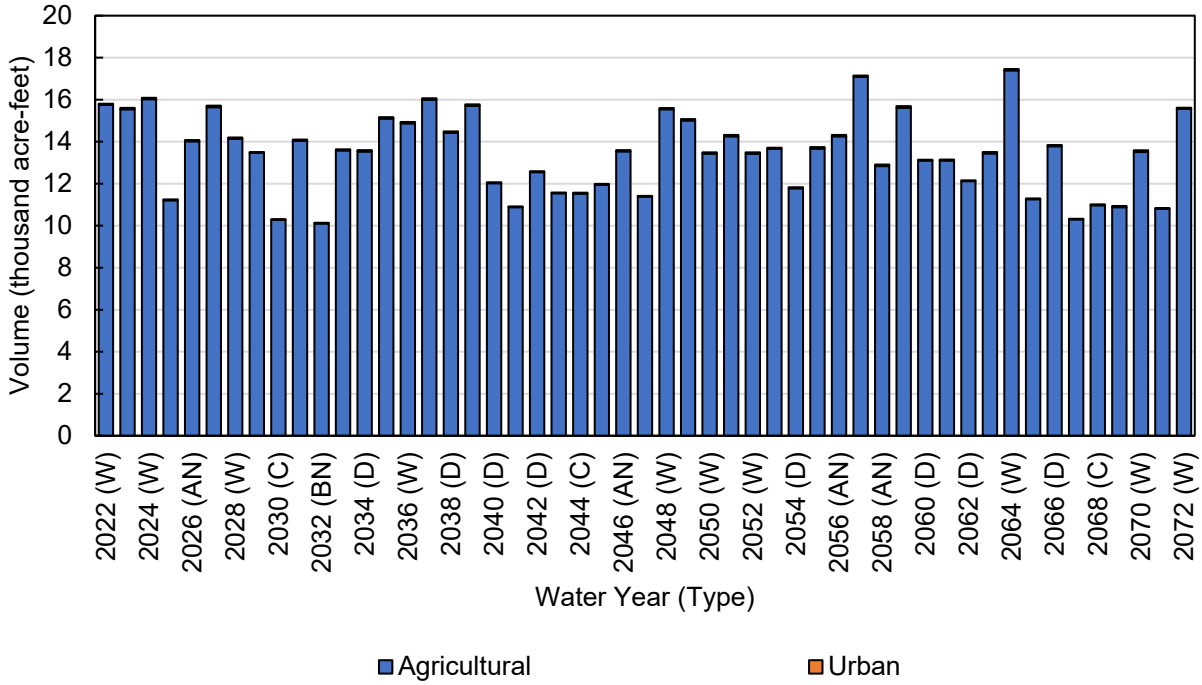


**Figure 81. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Deep Percolation of Applied Water, by Water Use Sector**

**Table 78. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Deep Percolation of Applied Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 16,000 | 60 | 0 | 16,000 |
| 2023 (W) | 16,000 | 70 | 0 | 16,000 |
| 2024 (W) | 16,000 | 70 | 0 | 16,000 |
| 2025 (BN) | 11,000 | 40 | 0 | 11,000 |
| 2026 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2027 (W) | 16,000 | 80 | 0 | 16,000 |
| 2028 (W) | 14,000 | 70 | 0 | 14,000 |
| 2029 (C) | 13,000 | 50 | 0 | 14,000 |
| 2030 (C) | 10,000 | 30 | 0 | 10,000 |
| 2031 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2032 (BN) | 10,000 | 40 | 0 | 10,000 |
| 2033 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2034 (D) | 14,000 | 70 | 0 | 14,000 |
| 2035 (W) | 15,000 | 70 | 0 | 15,000 |
| 2036 (W) | 15,000 | 70 | 0 | 15,000 |
| 2037 (W) | 16,000 | 70 | 0 | 16,000 |
| 2038 (D) | 14,000 | 70 | 0 | 14,000 |
| 2039 (W) | 16,000 | 70 | 0 | 16,000 |
| 2040 (D) | 12,000 | 50 | 0 | 12,000 |
| 2041 (C) | 11,000 | 40 | 0 | 11,000 |
| 2042 (D) | 13,000 | 40 | 0 | 13,000 |
| 2043 (C) | 12,000 | 40 | 0 | 12,000 |
| 2044 (C) | 12,000 | 40 | 0 | 12,000 |
| 2045 (C) | 12,000 | 50 | 0 | 12,000 |
| 2046 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2047 (C) | 11,000 | 40 | 0 | 11,000 |
| 2048 (W) | 16,000 | 60 | 0 | 16,000 |
| 2049 (W) | 15,000 | 70 | 0 | 15,000 |
| 2050 (W) | 13,000 | 60 | 0 | 13,000 |
| 2051 (W) | 14,000 | 70 | 0 | 14,000 |
| 2052 (W) | 13,000 | 70 | 0 | 13,000 |
| 2053 (AN) | 14,000 | 60 | 0 | 14,000 |
| 2054 (D) | 12,000 | 50 | 0 | 12,000 |
| 2055 (D) | 14,000 | 70 | 0 | 14,000 |
| 2056 (AN) | 14,000 | 70 | 0 | 14,000 |
| 2057 (BN) | 17,000 | 70 | 0 | 17,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 13,000 | 70 | 0 | 13,000 |
| 2059 (W) | | 16,000 | 80 | 0 | 16,000 |
| 2060 (D) | | 13,000 | 40 | 0 | 13,000 |
| 2061 (C) | | 13,000 | 50 | 0 | 13,000 |
| 2062 (D) | | 12,000 | 40 | 0 | 12,000 |
| 2063 (BN) | | 13,000 | 70 | 0 | 14,000 |
| 2064 (W) | | 17,000 | 70 | 0 | 17,000 |
| 2065 (BN) | | 11,000 | 40 | 0 | 11,000 |
| 2066 (D) | | 14,000 | 60 | 0 | 14,000 |
| 2067 (C) | | 10,000 | 30 | 0 | 10,000 |
| 2068 (C) | | 11,000 | 50 | 0 | 11,000 |
| 2069 (BN) | | 11,000 | 60 | 0 | 11,000 |
| 2070 (W) | | 14,000 | 80 | 0 | 14,000 |
| 2071 (BN) | | 11,000 | 40 | 0 | 11,000 |
| 2072 (W) | | 16,000 | 60 | 0 | 16,000 |
| Average (2022-2072) | | 13,000 | 60 | 0 | 14,000 |
| 2022-2072 | W | 15,000 | 70 | 0 | 15,000 |
| | AN | 14,000 | 60 | 0 | 14,000 |
| | BN | 12,000 | 50 | 0 | 12,000 |
| | D | 13,000 | 50 | 0 | 13,000 |
| | C | 12,000 | 40 | 0 | 12,000 |

#### 4.3.2.4 *Deep Percolation of Precipitation*

Estimated deep percolation of precipitation (equal to infiltration of precipitation in 23 CCR § 354.18(b)(2)) is provided in **Figure 82** and **Table 79** by water use sector. Deep percolation of precipitation to the GWS is variable from year to year due to variation in the timing and amount of precipitation, ranging from 19 taf annually in average critically dry years to about 52 taf in wet years.

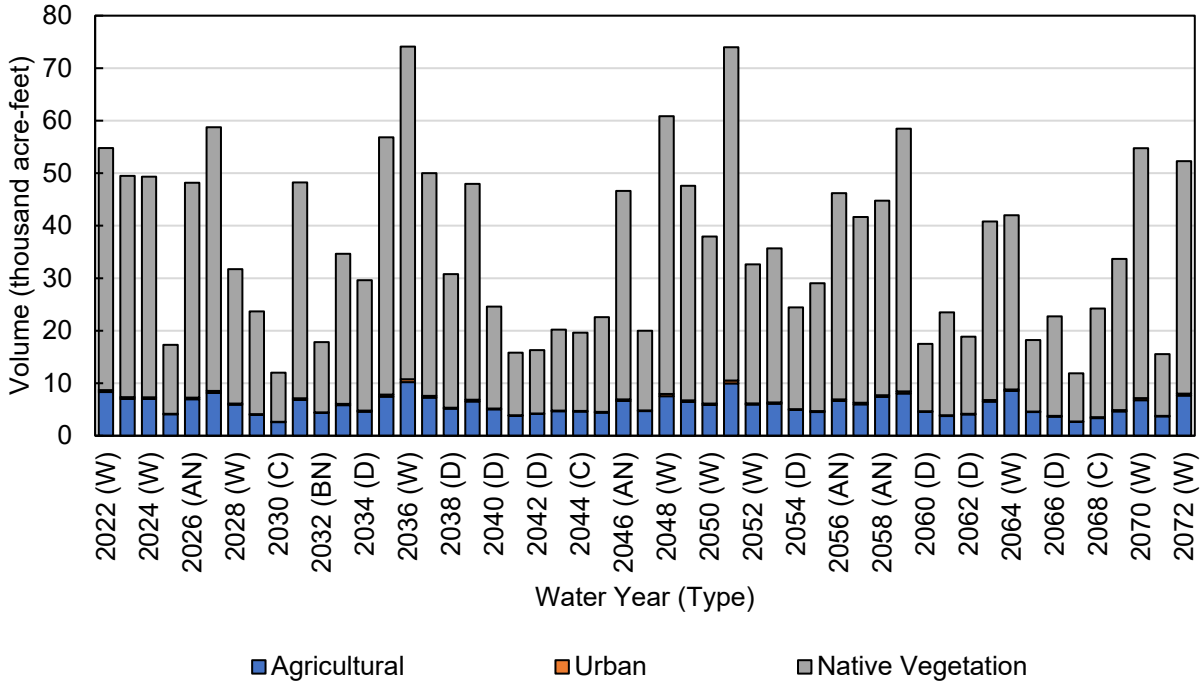


**Figure 82. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Deep Percolation of Precipitation, by Water Use Sector**

**Table 79. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Deep Percolation of Precipitation, by Water Use Sector (acre-feet)**

| Water Year (Type) | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|
| 2022 (W) | 8,300 | 370 | 46,000 | 55,000 |
| 2023 (W) | 7,000 | 330 | 42,000 | 49,000 |
| 2024 (W) | 7,000 | 330 | 42,000 | 49,000 |
| 2025 (BN) | 4,100 | 90 | 13,000 | 17,000 |
| 2026 (AN) | 6,900 | 310 | 41,000 | 48,000 |
| 2027 (W) | 8,100 | 390 | 50,000 | 59,000 |
| 2028 (W) | 5,900 | 220 | 26,000 | 32,000 |
| 2029 (C) | 4,000 | 140 | 20,000 | 24,000 |
| 2030 (C) | 2,600 | 70 | 9,400 | 12,000 |
| 2031 (AN) | 6,800 | 320 | 41,000 | 48,000 |
| 2032 (BN) | 4,400 | 100 | 13,000 | 18,000 |
| 2033 (AN) | 5,800 | 250 | 29,000 | 35,000 |
| 2034 (D) | 4,600 | 200 | 25,000 | 30,000 |
| 2035 (W) | 7,400 | 390 | 49,000 | 57,000 |
| 2036 (W) | 10,000 | 540 | 63,000 | 74,000 |
| 2037 (W) | 7,300 | 330 | 42,000 | 50,000 |
| 2038 (D) | 5,100 | 200 | 25,000 | 31,000 |
| 2039 (W) | 6,500 | 330 | 41,000 | 48,000 |
| 2040 (D) | 5,000 | 160 | 19,000 | 25,000 |
| 2041 (C) | 3,800 | 100 | 12,000 | 16,000 |
| 2042 (D) | 4,100 | 90 | 12,000 | 16,000 |
| 2043 (C) | 4,700 | 120 | 15,000 | 20,000 |
| 2044 (C) | 4,600 | 120 | 15,000 | 20,000 |
| 2045 (C) | 4,400 | 150 | 18,000 | 23,000 |
| 2046 (AN) | 6,600 | 310 | 40,000 | 47,000 |
| 2047 (C) | 4,700 | 120 | 15,000 | 20,000 |
| 2048 (W) | 7,500 | 440 | 53,000 | 61,000 |
| 2049 (W) | 6,400 | 330 | 41,000 | 48,000 |
| 2050 (W) | 5,900 | 260 | 32,000 | 38,000 |
| 2051 (W) | 10,000 | 550 | 63,000 | 74,000 |
| 2052 (W) | 5,900 | 220 | 26,000 | 33,000 |
| 2053 (AN) | 6,100 | 250 | 29,000 | 36,000 |
| 2054 (D) | 4,900 | 160 | 19,000 | 24,000 |
| 2055 (D) | 4,500 | 200 | 24,000 | 29,000 |
| 2056 (AN) | 6,600 | 320 | 39,000 | 46,000 |
| 2057 (BN) | 6,000 | 300 | 35,000 | 42,000 |

| Water Year (Type) | | Agricultural | Urban | Native Vegetation | Total |
|---|---|---|---|---|---|
| 2058 (AN) | | 7,400 | 290 | 37,000 | 45,000 |
| 2059 (W) | | 8,100 | 390 | 50,000 | 58,000 |
| 2060 (D) | | 4,600 | 100 | 13,000 | 17,000 |
| 2061 (C) | | 3,800 | 140 | 20,000 | 23,000 |
| 2062 (D) | | 4,100 | 110 | 15,000 | 19,000 |
| 2063 (BN) | | 6,500 | 280 | 34,000 | 41,000 |
| 2064 (W) | | 8,500 | 260 | 33,000 | 42,000 |
| 2065 (BN) | | 4,500 | 100 | 14,000 | 18,000 |
| 2066 (D) | | 3,600 | 160 | 19,000 | 23,000 |
| 2067 (C) | | 2,700 | 70 | 9,200 | 12,000 |
| 2068 (C) | | 3,400 | 180 | 21,000 | 24,000 |
| 2069 (BN) | | 4,600 | 250 | 29,000 | 34,000 |
| 2070 (W) | | 6,800 | 400 | 48,000 | 55,000 |
| 2071 (BN) | | 3,700 | 90 | 12,000 | 16,000 |
| 2072 (W) | | 7,700 | 370 | 44,000 | 52,000 |
| Average (2022-2072) | | 5,800 | 240 | 30,000 | 36,000 |
| 2022-2072 | W | 7,500 | 360 | 44,000 | 52,000 |
| | AN | 6,600 | 290 | 37,000 | 43,000 |
| | BN | 4,800 | 170 | 21,000 | 26,000 |
| | D | 4,500 | 150 | 19,000 | 24,000 |
| | C | 3,900 | 120 | 15,000 | 19,000 |

#### 4.3.2.5 *Infiltration of Surface Water*

Estimated infiltration of surface water (seepage) by water source is provided in **Figure 83** and **Table 80.** Seepage in the Los Molinos Subbasin comes from the canals that traverse the subbasin, as well as from rivers, streams, and small watersheds. The total seepage from all canals and diversions averages about 12 taf per year. Runoff from upgradient small watersheds also contributes seepage to the Los Molinos Subbasin. The total seepage from rivers, streams and small watersheds average about 59 taf per year.

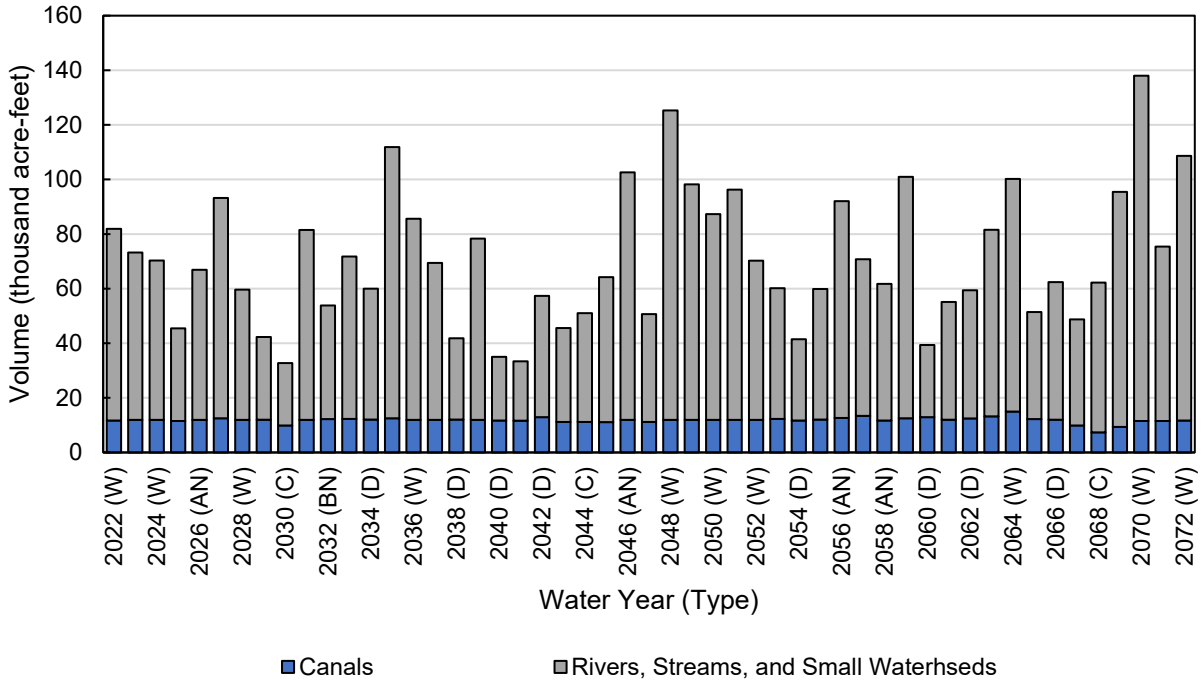


**Figure 83. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Infiltration of Surface Water, by Water Use Sector**

**Table 80. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Infiltration of Surface Water, by Water Use Sector (acre-feet)**

| Water Year (Type) | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|
| 2022 (W) | 12,000 | 70,000 | 82,000 |
| 2023 (W) | 12,000 | 61,000 | 73,000 |
| 2024 (W) | 12,000 | 58,000 | 70,000 |
| 2025 (BN) | 12,000 | 34,000 | 45,000 |
| 2026 (AN) | 12,000 | 55,000 | 67,000 |
| 2027 (W) | 13,000 | 81,000 | 93,000 |
| 2028 (W) | 12,000 | 48,000 | 60,000 |
| 2029 (C) | 12,000 | 30,000 | 42,000 |
| 2030 (C) | 9,900 | 23,000 | 33,000 |
| 2031 (AN) | 12,000 | 70,000 | 81,000 |
| 2032 (BN) | 12,000 | 42,000 | 54,000 |
| 2033 (AN) | 12,000 | 59,000 | 72,000 |
| 2034 (D) | 12,000 | 48,000 | 60,000 |
| 2035 (W) | 13,000 | 99,000 | 110,000 |
| 2036 (W) | 12,000 | 74,000 | 86,000 |
| 2037 (W) | 12,000 | 58,000 | 69,000 |
| 2038 (D) | 12,000 | 30,000 | 42,000 |
| 2039 (W) | 12,000 | 66,000 | 78,000 |
| 2040 (D) | 12,000 | 23,000 | 35,000 |
| 2041 (C) | 12,000 | 22,000 | 33,000 |
| 2042 (D) | 13,000 | 44,000 | 57,000 |
| 2043 (C) | 11,000 | 34,000 | 46,000 |
| 2044 (C) | 11,000 | 40,000 | 51,000 |
| 2045 (C) | 11,000 | 53,000 | 64,000 |
| 2046 (AN) | 12,000 | 91,000 | 100,000 |
| 2047 (C) | 11,000 | 40,000 | 51,000 |
| 2048 (W) | 12,000 | 110,000 | 130,000 |
| 2049 (W) | 12,000 | 86,000 | 98,000 |
| 2050 (W) | 12,000 | 75,000 | 87,000 |
| 2051 (W) | 12,000 | 84,000 | 96,000 |
| 2052 (W) | 12,000 | 58,000 | 70,000 |
| 2053 (AN) | 12,000 | 48,000 | 60,000 |
| 2054 (D) | 12,000 | 30,000 | 41,000 |
| 2055 (D) | 12,000 | 48,000 | 60,000 |
| 2056 (AN) | 13,000 | 79,000 | 92,000 |
| 2057 (BN) | 13,000 | 57,000 | 71,000 |

| Water Year (Type) | | Canals | Rivers, Streams, and Small Watersheds | Total |
|---|---|---|---|---|
| 2058 (AN) | | 12,000 | 50,000 | 62,000 |
| 2059 (W) | | 13,000 | 88,000 | 100,000 |
| 2060 (D) | | 13,000 | 26,000 | 39,000 |
| 2061 (C) | | 12,000 | 43,000 | 55,000 |
| 2062 (D) | | 12,000 | 47,000 | 59,000 |
| 2063 (BN) | | 13,000 | 68,000 | 82,000 |
| 2064 (W) | | 15,000 | 85,000 | 100,000 |
| 2065 (BN) | | 12,000 | 39,000 | 51,000 |
| 2066 (D) | | 12,000 | 50,000 | 62,000 |
| 2067 (C) | | 9,900 | 39,000 | 49,000 |
| 2068 (C) | | 7,400 | 55,000 | 62,000 |
| 2069 (BN) | | 9,400 | 86,000 | 95,000 |
| 2070 (W) | | 12,000 | 130,000 | 140,000 |
| 2071 (BN) | | 12,000 | 64,000 | 75,000 |
| 2072 (W) | | 12,000 | 97,000 | 110,000 |
| Average (2022-2072) | | 12,000 | 59,000 | 71,000 |
| 2022-2072 | W | 12,000 | 79,000 | 92,000 |
| | AN | 12,000 | 65,000 | 77,000 |
| | BN | 12,000 | 56,000 | 68,000 |
| | D | 12,000 | 39,000 | 51,000 |
| | C | 11,000 | 38,000 | 49,000 |

### 4.3.3 Change in Root Zone Storage

Estimates of projected change in root zone storage are provided in **Figure 84** and **Table 81**. Inter-annual changes in storage within the SWS consist primarily of root zone soil moisture storage changes, are relatively small, and tend to average near zero over many years.

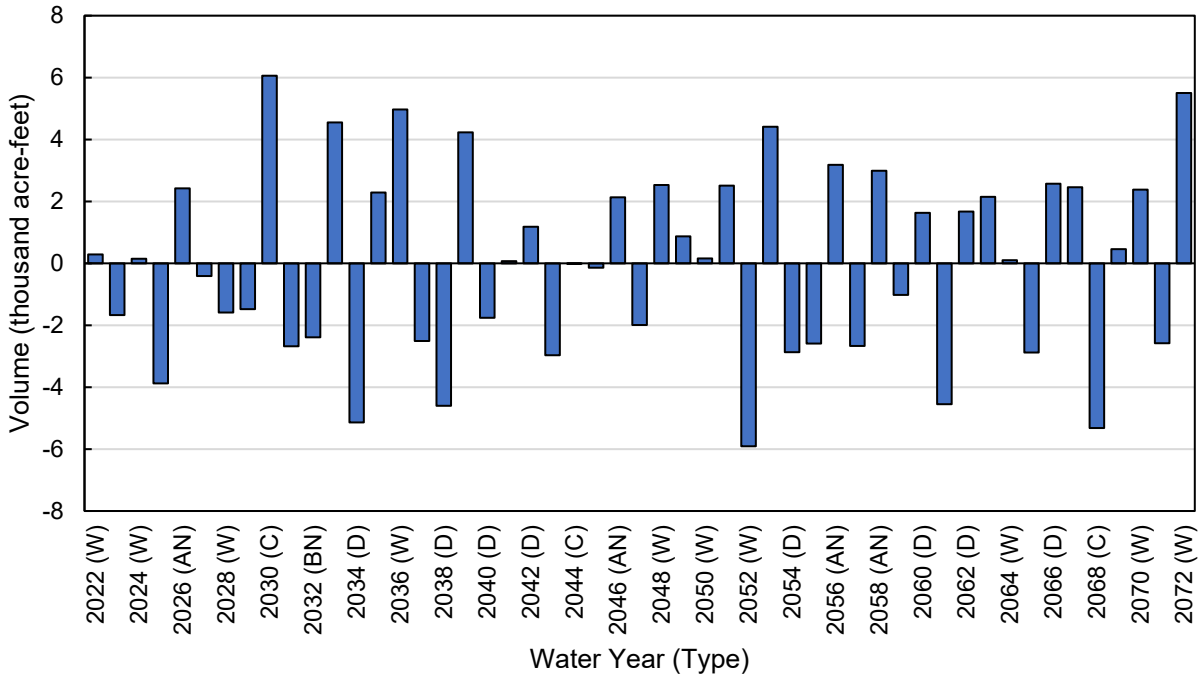


**Figure 84. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Change in Root Zone Storage**

**Table 81. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Change in Root Zone Storage (acre-feet)**

| Water Year (Type) | Change in Root Zone Storage |
|---|---|
| 2022 (W) | 290 |
| 2023 (W) | -1,700 |
| 2024 (W) | 150 |
| 2025 (BN) | -3,900 |
| 2026 (AN) | 2,400 |
| 2027 (W) | -410 |
| 2028 (W) | -1,600 |
| 2029 (C) | -1,500 |
| 2030 (C) | 6,100 |
| 2031 (AN) | -2,700 |
| 2032 (BN) | -2,400 |
| 2033 (AN) | 4,600 |
| 2034 (D) | -5,100 |
| 2035 (W) | 2,300 |
| 2036 (W) | 5,000 |
| 2037 (W) | -2,500 |
| 2038 (D) | -4,600 |
| 2039 (W) | 4,200 |
| 2040 (D) | -1,800 |
| 2041 (C) | 70 |
| 2042 (D) | 1,200 |
| 2043 (C) | -3,000 |
| 2044 (C) | -10 |
| 2045 (C) | -140 |
| 2046 (AN) | 2,100 |
| 2047 (C) | -2,000 |
| 2048 (W) | 2,500 |
| 2049 (W) | 870 |
| 2050 (W) | 160 |
| 2051 (W) | 2,500 |
| 2052 (W) | -5,900 |
| 2053 (AN) | 4,400 |
| 2054 (D) | -2,900 |
| 2055 (D) | -2,600 |
| 2056 (AN) | 3,200 |
| 2057 (BN) | -2,700 |

| Water Year (Type) | | Change in Root Zone Storage |
|---|---|---|
| 2058 (AN) | | 3,000 |
| 2059 (W) | | -1,000 |
| 2060 (D) | | 1,600 |
| 2061 (C) | | -4,600 |
| 2062 (D) | | 1,700 |
| 2063 (BN) | | 2,200 |
| 2064 (W) | | 100 |
| 2065 (BN) | | -2,900 |
| 2066 (D) | | 2,600 |
| 2067 (C) | | 2,500 |
| 2068 (C) | | -5,300 |
| 2069 (BN) | | 460 |
| 2070 (W) | | 2,400 |
| 2071 (BN) | | -2,600 |
| 2072 (W) | | 5,500 |
| Average (2022-2072) | | 10 |
| 2022-2072 | W | 720 |
| | AN | 2,400 |
| | BN | -1,700 |
| | D | -1,100 |
| | C | -790 |

### 4.3.4 Net Recharge from Surface Water System

Net recharge from the SWS is a useful metric that equates only the impacts of the SWS on recharge and extraction from the GWS, providing valuable insight to the combined effects of land surface processes on the underlying GWS. Net recharge from the SWS is calculated as the total groundwater recharge minus the total groundwater extraction. When calculated for the projected (future land use with climate change) water budget, average net recharge from the SWS represents the average surplus (when positive) or shortage (when negative) of recharge that has resulted from projected cropping, land use practices, and average hydrologic conditions, when comparing groundwater extractions with deep percolation and infiltration from the SWS to the GWS. Net recharge does not include groundwater discharges to surface water and is not a full accounting of all exchanges occurring between the SWS and GWS. Although net recharge is a useful water balance metric, groundwater sustainability is not defined by the balance of net recharge from the SWS. Other important factors must be considered in the complete assessment of groundwater sustainability, including but not limited to subsurface groundwater flows and groundwater discharge to surface water. The sustainable yield and management criteria for the Los Molinos Subbasin are described in later sections of the GSP.

Annual values for net recharge from the SWS over the projected (future land use with climate change) water budget period are presented below for the Los Molinos Subbasin. **Figure 85** and **Table 82** show the average net recharge from the SWS over 2022-2072 based on the projected (future land use with climate change) water budget results. Under future land use conditions with climate change, the average net recharge in the Los Molinos Subbasin was projected as approximately 90 taf per year between 2022-2072, indicating net inflows from the SWS to the GWS during the projected (future land use with climate change) water budget period. As illustrated on the cumulative net recharge plot in **Figure 85**, this results in a cumulative net positive recharge (i.e., net loss from the GWS to the SWS) of about 4.6 maf over the 51-year projected (future land use with climate change) water budget period. Although this means there is projected to be more recharge from the SWS to the GWS than extractions, this alone does not necessarily mean that groundwater storage will increase or that the Subbasin groundwater system will not be sustainable. The complete Subbasin water budget, including the GWS water budget results, provide an indication of whether total groundwater inflows and outflows are in balance.

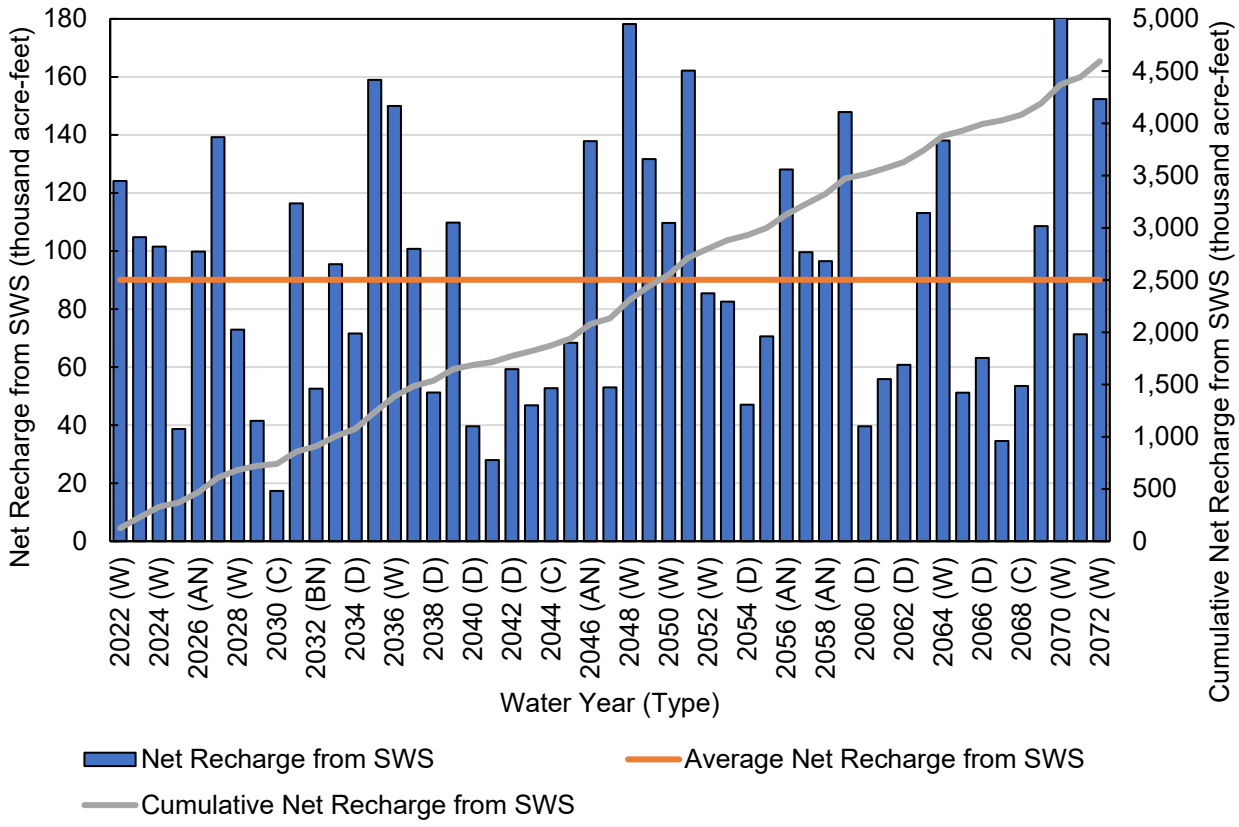


**Figure 85. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Net Recharge Overview**

**Table 82. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Average Net Recharge from SWS by Water Year Type (acre-feet)**

| Year Type | Number of years | Deep Perc. of Applied Water (a) | Deep Perc. of Precipitation (b) | Infil. of Surface Water (c) | Groundwater Extraction/ Uptake (d) | Net Recharge from SWS (a+b+c-d) |
|---|---|---|---|---|---|---|
| W | 18 | 15,000 | 52,000 | 92,000 | 28,000 | 131,000 |
| AN | 7 | 14,000 | 43,000 | 77,000 | 26,000 | 108,000 |
| BN | 7 | 12,000 | 26,000 | 68,000 | 30,000 | 76,000 |
| D | 9 | 13,000 | 24,000 | 51,000 | 32,000 | 56,000 |
| C | 10 | 12,000 | 19,000 | 49,000 | 34,000 | 46,000 |
| Annual Average (2022-2072) | 51 | 14,000 | 36,000 | 71,000 | 30,000 | 91,000 |

## 4.4 Groundwater System Water Budget Results

Projected (Future Land Use with climate change) water budget results for different components of the GWS are presented in the sections below. Inflows and outflows from the GWS that occur through exchanges with the SWS are discussed in the SWS water budget results, although these components are also noted in the sections below relating to the GWS water budget. In contrast to the SWS water budget, many of the GWS water budget components change in flow direction over time representing inflows during some periods and outflows during other periods, depending on Subbasin conditions. The GWS water budget results are presented with net inflows indicated by positive values and net outflows as negative values.

### 4.4.1 Lateral Subsurface Groundwater Flows

Subsurface groundwater flows to and from the Los Molinos Subbasin occur between the Antelope Subbasin to the north, the Red Bluff Subbasin to the west, the Corning Subbasin to the west and the Vina Subbasin to the south. Additional subsurface groundwater inflows occur from the upland foothill (small watershed) areas adjoining the Los Molinos Subbasin to the east.

#### 4.4.1.1 *Lateral Subsurface Flows to/from Adjacent Subbasins*

Projected lateral subsurface flows occurring from and to adjacent subbasins are summarized in **Figure 86** and **Table 83**. The total projected net subsurface flows to and from all adjacent subbasins averages about -95 taf per year occurring as outflow from the Los Molinos Subbasin. The largest projected subsurface flows occur across the boundary with the Vina Subbasin with somewhat less subsurface flow occurring across the boundaries with the Antelope, Red Bluff, and Corning Subbasins.

Subsurface flows with all adjacent subbasins are projected to occur as outflows from the Los Molinos Subbasin on average. The largest flows from the Los Molinos Subbasin are projected to occur as outflows to

the Vina and Corning Subbasins averaging -78 and -11 taf per year, respectively. Smaller outflows are projected to occur to the Antelope and Red Bluff Subbasins averaging -1.9 and -3.7 taf per year, respectively.

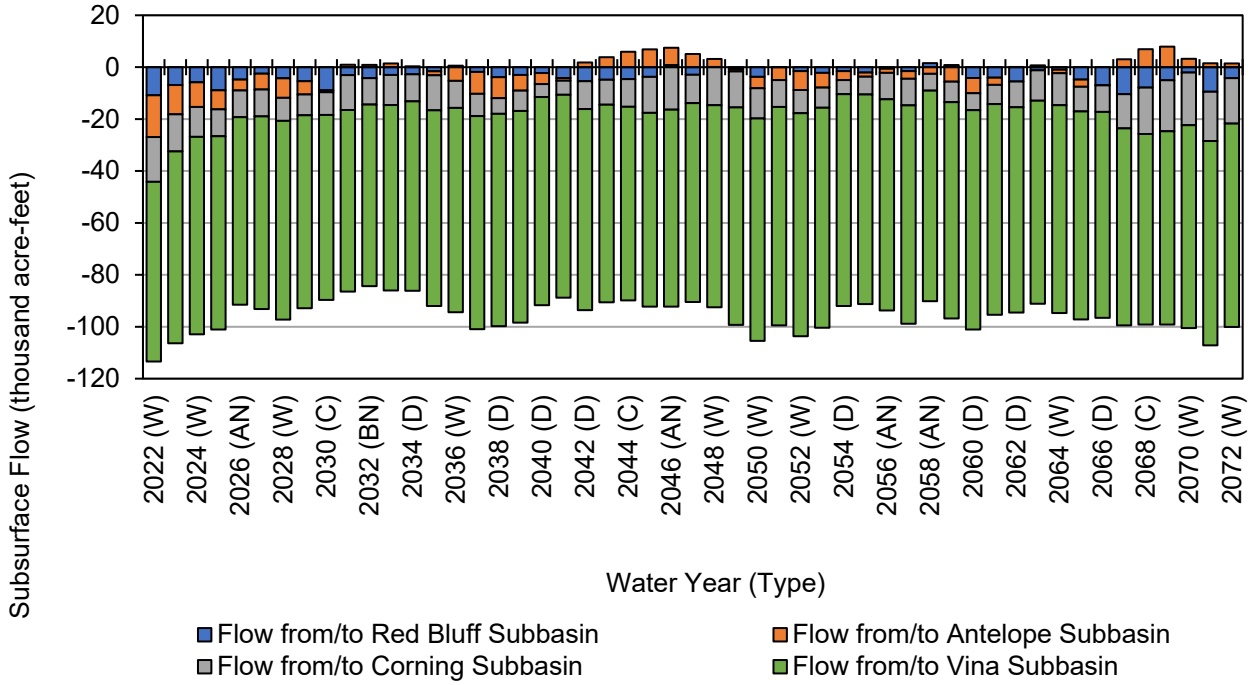


**Figure 86. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Lateral Subsurface Groundwater Flows to/from Adjacent Subbasins**

**Table 83. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Lateral Subsurface Groundwater Flows Between Adjacent Subbasins (net flows as acre-feet)**

| Water Year (Type) | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|
| 2022 (W) | -11,000 | -16,000 | -17,000 | -69,000 | -110,000 |
| 2023 (W) | -6,900 | -11,000 | -14,000 | -74,000 | -110,000 |
| 2024 (W) | -5,800 | -9,500 | -12,000 | -76,000 | -100,000 |
| 2025 (BN) | -8,900 | -7,400 | -10,000 | -74,000 | -100,000 |
| 2026 (AN) | -4,800 | -4,200 | -10,000 | -72,000 | -92,000 |
| 2027 (W) | -2,500 | -6,100 | -10,000 | -74,000 | -93,000 |
| 2028 (W) | -4,300 | -7,500 | -8,900 | -77,000 | -97,000 |
| 2029 (C) | -5,400 | -5,100 | -8,000 | -74,000 | -93,000 |
| 2030 (C) | -8,900 | -760 | -8,700 | -71,000 | -90,000 |
| 2031 (AN) | -3,100 | 930 | -13,000 | -70,000 | -86,000 |
| 2032 (BN) | -4,200 | 900 | -10,000 | -70,000 | -83,000 |
| 2033 (AN) | -3,000 | 1,500 | -12,000 | -71,000 | -85,000 |
| 2034 (D) | -2,700 | 330 | -10,000 | -73,000 | -86,000 |
| 2035 (W) | -1,600 | -1,600 | -14,000 | -75,000 | -92,000 |
| 2036 (W) | 610 | -5,300 | -10,000 | -79,000 | -94,000 |
| 2037 (W) | -1,800 | -8,500 | -8,600 | -82,000 | -100,000 |
| 2038 (D) | -3,900 | -8,000 | -6,000 | -82,000 | -100,000 |
| 2039 (W) | -3,000 | -6,100 | -7,800 | -82,000 | -98,000 |
| 2040 (D) | -2,300 | -4,200 | -5,000 | -80,000 | -92,000 |
| 2041 (C) | -4,200 | -1,000 | -5,400 | -78,000 | -89,000 |
| 2042 (D) | -5,400 | 1,800 | -11,000 | -77,000 | -92,000 |
| 2043 (C) | -4,800 | 3,800 | -9,700 | -76,000 | -87,000 |
| 2044 (C) | -4,600 | 6,000 | -11,000 | -75,000 | -84,000 |
| 2045 (C) | -3,700 | 6,900 | -14,000 | -75,000 | -85,000 |
| 2046 (AN) | 830 | 6,600 | -16,000 | -76,000 | -85,000 |
| 2047 (C) | -3,000 | 5,100 | -11,000 | -77,000 | -85,000 |
| 2048 (W) | 110 | 3,100 | -15,000 | -78,000 | -89,000 |
| 2049 (W) | -760 | -890 | -14,000 | -84,000 | -99,000 |
| 2050 (W) | -3,800 | -4,400 | -12,000 | -86,000 | -110,000 |
| 2051 (W) | -17 | -5,000 | -10,000 | -84,000 | -99,000 |
| 2052 (W) | -1,500 | -7,200 | -8,900 | -86,000 | -100,000 |
| 2053 (AN) | -2,200 | -5,700 | -7,800 | -85,000 | -100,000 |
| 2054 (D) | -1,500 | -3,500 | -5,400 | -82,000 | -92,000 |
| 2055 (D) | -2,000 | -1,600 | -6,800 | -81,000 | -91,000 |
| 2056 (AN) | -570 | -1,600 | -10,000 | -81,000 | -94,000 |
| 2057 (BN) | -1,500 | -2,900 | -10,000 | -84,000 | -99,000 |
| 2058 (AN) | 1,600 | -2,500 | -6,500 | -81,000 | -89,000 |
| 2059 (W) | 810 | -5,600 | -7,900 | -83,000 | -96,000 |

| Water Year (Type) | | Red Bluff | Antelope | Corning | Vina | Total |
|---|---|---|---|---|---|---|
| 2060 (D) | | -4,200 | -5,800 | -6,500 | -85,000 | -100,000 |
| 2061 (C) | | -4,000 | -2,800 | -7,400 | -81,000 | -95,000 |
| 2062 (D) | | -5,500 | 88 | -9,900 | -79,000 | -94,000 |
| 2063 (BN) | | -1,200 | 690 | -12,000 | -78,000 | -90,000 |
| 2064 (W) | | -960 | -1,400 | -12,000 | -80,000 | -95,000 |
| 2065 (BN) | | -4,800 | -2,800 | -9,500 | -80,000 | -97,000 |
| 2066 (D) | | -6,900 | -58 | -10,000 | -79,000 | -97,000 |
| 2067 (C) | | -10,000 | 3,100 | -13,000 | -76,000 | -96,000 |
| 2068 (C) | | -7,900 | 6,900 | -18,000 | -73,000 | -92,000 |
| 2069 (BN) | | -5,000 | 7,900 | -20,000 | -74,000 | -91,000 |
| 2070 (W) | | -2,100 | 3,200 | -20,000 | -78,000 | -97,000 |
| 2071 (BN) | | -9,500 | 1,500 | -19,000 | -79,000 | -110,000 |
| 2072 (W) | | -4,200 | 1,500 | -18,000 | -78,000 | -99,000 |
| Average (2022-2072) | | -3,700 | -1,900 | -11,000 | -78,000 | -95,000 |
| 2022-2072 | W | -2,700 | -4,900 | -12,000 | -79,000 | -99,000 |
| | AN | -1,600 | -720 | -11,000 | -77,000 | -90,000 |
| | BN | -5,000 | -300 | -13,000 | -77,000 | -95,000 |
| | D | -3,800 | -2,300 | -7,900 | -80,000 | -94,000 |
| | C | -5,700 | 2,200 | -11,000 | -76,000 | -90,000 |

Note: positive values represent net inflows to Los Molinos Subbasin, negative values represent net outflows from Los Molinos Subbasin.

#### 4.4.1.2 *Lateral Subsurface Flows from Upland Areas (Small Watersheds)*

Projected lateral subsurface inflows occurring from upland or foothill areas (small watersheds outside of the Central Valley Floor) to the east of the Los Molinos Subbasin are summarized in **Figure 87** and **Table 84**. This component does not include surface water inflows to the Los Molinos Subbasin which are discussed as part of the SWS water budget. The average projected subsurface inflow from the upland areas is about 2.1 taf per year and varies only very minimally from year to year. The volume of subsurface inflows from upland areas is small relative to the net subsurface inflows occurring between adjacent subbasins.

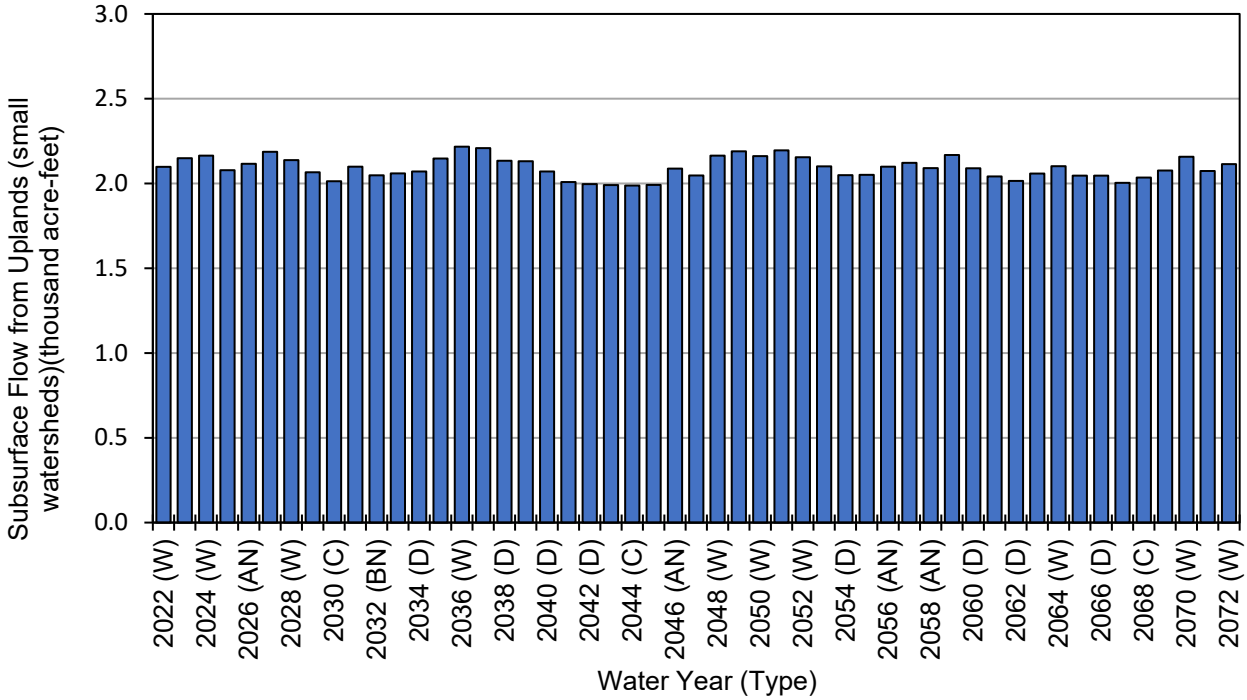


**Figure 87. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Subsurface Groundwater Inflows from Upland Areas**

**Table 84. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Subsurface Groundwater Inflows from Adjacent Uplands (small watersheds) (acre-feet)**

| Water Year (Type) | Subsurface Inflow from Uplands |
|---|---|
| 2022 (W) | 2,100 |
| 2023 (W) | 2,100 |
| 2024 (W) | 2,200 |
| 2025 (BN) | 2,100 |
| 2026 (AN) | 2,100 |
| 2027 (W) | 2,200 |
| 2028 (W) | 2,100 |
| 2029 (C) | 2,100 |
| 2030 (C) | 2,000 |
| 2031 (AN) | 2,100 |
| 2032 (BN) | 2,000 |
| 2033 (AN) | 2,100 |
| 2034 (D) | 2,100 |
| 2035 (W) | 2,100 |
| 2036 (W) | 2,200 |
| 2037 (W) | 2,200 |
| 2038 (D) | 2,100 |
| 2039 (W) | 2,100 |
| 2040 (D) | 2,100 |
| 2041 (C) | 2,000 |
| 2042 (D) | 2,000 |
| 2043 (C) | 2,000 |
| 2044 (C) | 2,000 |
| 2045 (C) | 2,000 |
| 2046 (AN) | 2,100 |
| 2047 (C) | 2,000 |
| 2048 (W) | 2,200 |
| 2049 (W) | 2,200 |
| 2050 (W) | 2,200 |
| 2051 (W) | 2,200 |
| 2052 (W) | 2,200 |
| 2053 (AN) | 2,100 |
| 2054 (D) | 2,000 |
| 2055 (D) | 2,100 |
| 2056 (AN) | 2,100 |
| 2057 (BN) | 2,100 |
| 2058 (AN) | 2,100 |
| 2059 (W) | 2,200 |

| Water Year (Type) | | Subsurface Inflow from Uplands |
|---|---|---|
| 2060 (D) | | 2,100 |
| 2061 (C) | | 2,000 |
| 2062 (D) | | 2,000 |
| 2063 (BN) | | 2,100 |
| 2064 (W) | | 2,100 |
| 2065 (BN) | | 2,000 |
| 2066 (D) | | 2,000 |
| 2067 (C) | | 2,000 |
| 2068 (C) | | 2,000 |
| 2069 (BN) | | 2,100 |
| 2070 (W) | | 2,200 |
| 2071 (BN) | | 2,100 |
| 2072 (W) | | 2,100 |
| Average (2022-2072) | | 2,100 |
| 2022-2072 | W | 2,200 |
| | AN | 2,100 |
| | BN | 2,100 |
| | D | 2,100 |
| | C | 2,000 |

### 4.4.2 Deep Percolation From the SWS

Deep percolation from the SWS includes infiltration of water below the root zone (deep percolation) from precipitation and applied water. These two water budget components are summarized in the SWS water budget as outflows to the SWS and are presented as aggregated deep percolation inflows to the GWS in **Figure 88** and **Table 85**. The average annual deep percolation from the SWS over the projected water budget period is approximately 49 taf per year. Greater volumes of deep percolation occur during wetter years when infiltration of precipitation is higher.

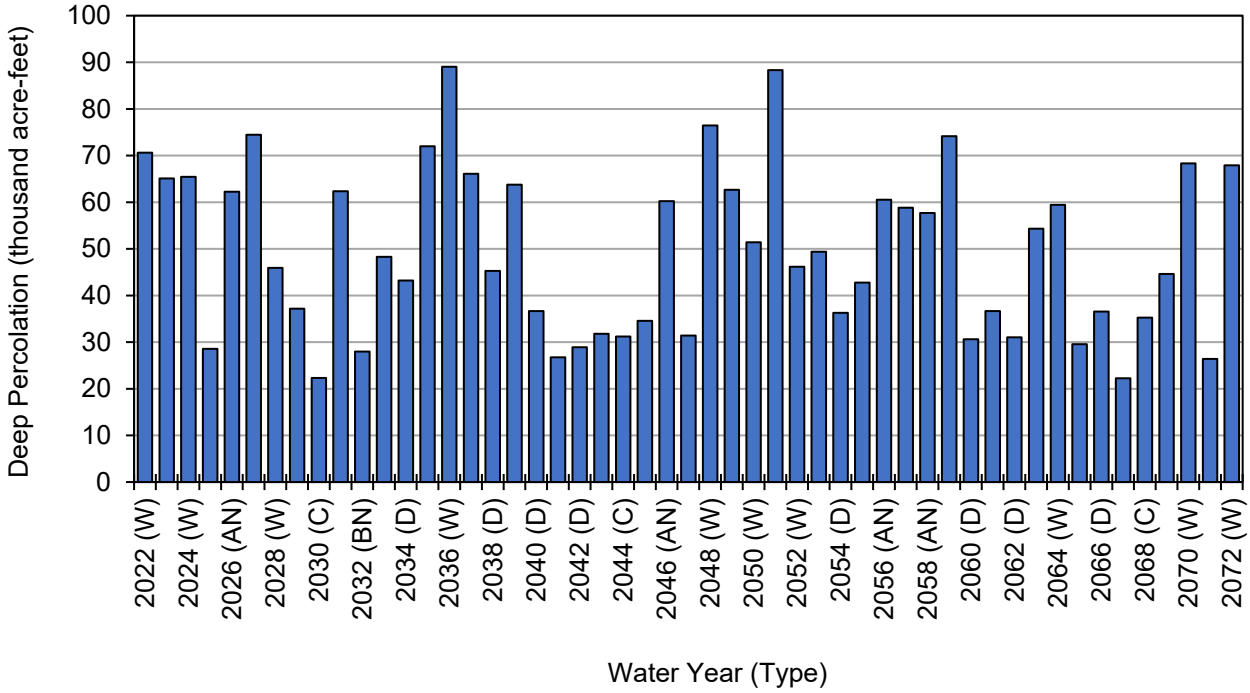


**Figure 88. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Deep Percolation**

**Table 85. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Deep Percolation from the SWS (acre-feet)**

| Water Year (Type) | Deep Percolation from the SWS |
|---|---|
| 2022 (W) | 71,000 |
| 2023 (W) | 65,000 |
| 2024 (W) | 65,000 |
| 2025 (BN) | 29,000 |
| 2026 (AN) | 62,000 |
| 2027 (W) | 74,000 |
| 2028 (W) | 46,000 |
| 2029 (C) | 37,000 |
| 2030 (C) | 22,000 |
| 2031 (AN) | 62,000 |
| 2032 (BN) | 28,000 |
| 2033 (AN) | 48,000 |
| 2034 (D) | 43,000 |
| 2035 (W) | 72,000 |
| 2036 (W) | 89,000 |
| 2037 (W) | 66,000 |
| 2038 (D) | 45,000 |
| 2039 (W) | 64,000 |
| 2040 (D) | 37,000 |
| 2041 (C) | 27,000 |
| 2042 (D) | 29,000 |
| 2043 (C) | 32,000 |
| 2044 (C) | 31,000 |
| 2045 (C) | 35,000 |
| 2046 (AN) | 60,000 |
| 2047 (C) | 31,000 |
| 2048 (W) | 76,000 |
| 2049 (W) | 63,000 |
| 2050 (W) | 51,000 |
| 2051 (W) | 88,000 |
| 2052 (W) | 46,000 |
| 2053 (AN) | 49,000 |
| 2054 (D) | 36,000 |
| 2055 (D) | 43,000 |
| 2056 (AN) | 61,000 |
| 2057 (BN) | 59,000 |
| 2058 (AN) | 58,000 |
| 2059 (W) | 74,000 |

| Water Year (Type) | | Deep Percolation from the SWS |
|---|---|---|
| 2060 (D) | | 31,000 |
| 2061 (C) | | 37,000 |
| 2062 (D) | | 31,000 |
| 2063 (BN) | | 54,000 |
| 2064 (W) | | 59,000 |
| 2065 (BN) | | 30,000 |
| 2066 (D) | | 37,000 |
| 2067 (C) | | 22,000 |
| 2068 (C) | | 35,000 |
| 2069 (BN) | | 45,000 |
| 2070 (W) | | 68,000 |
| 2071 (BN) | | 26,000 |
| 2072 (W) | | 68,000 |
| Average (2022-2072) | | 49,000 |
| 2022-2072 | W | 67,000 |
| | AN | 57,000 |
| | BN | 39,000 |
| | D | 37,000 |
| | C | 31,000 |

### 4.4.3 Net Stream Seepage/Groundwater Discharge to Surface Water

The flow of water between the GWS and SWS through seepage of water from streams and canals and groundwater discharging into streams is discussed as part of the SWS water budget. These components are combined for presentation in the GWS water budget as a net volume of stream seepage (**Figure 89** and Table **86**). Positive total net seepage values represent a net inflow of water from the SWS to the GWS via stream and canal seepage indicating that the overall volume of stream seepage is greater than the volume of any groundwater discharging into surface waterways. Negative net seepage values represent a net outflow of groundwater from the GWS to the SWS through groundwater discharge to surface water. When net seepage is negative, it means that more groundwater is discharging into the surface waterways than is seeping from surface waterways into the GWS.

In the Los Molinos Subbasin, the projected annual net seepage values are always positive with an average annual net stream seepage value of 67 taf per year indicating that surface water seepage is providing considerable recharge to the GWS. The annual net stream seepage values tend to be lower in dry years and higher in wet years corresponding with more net groundwater discharge to surface water in drier years and less groundwater discharge in wetter years.

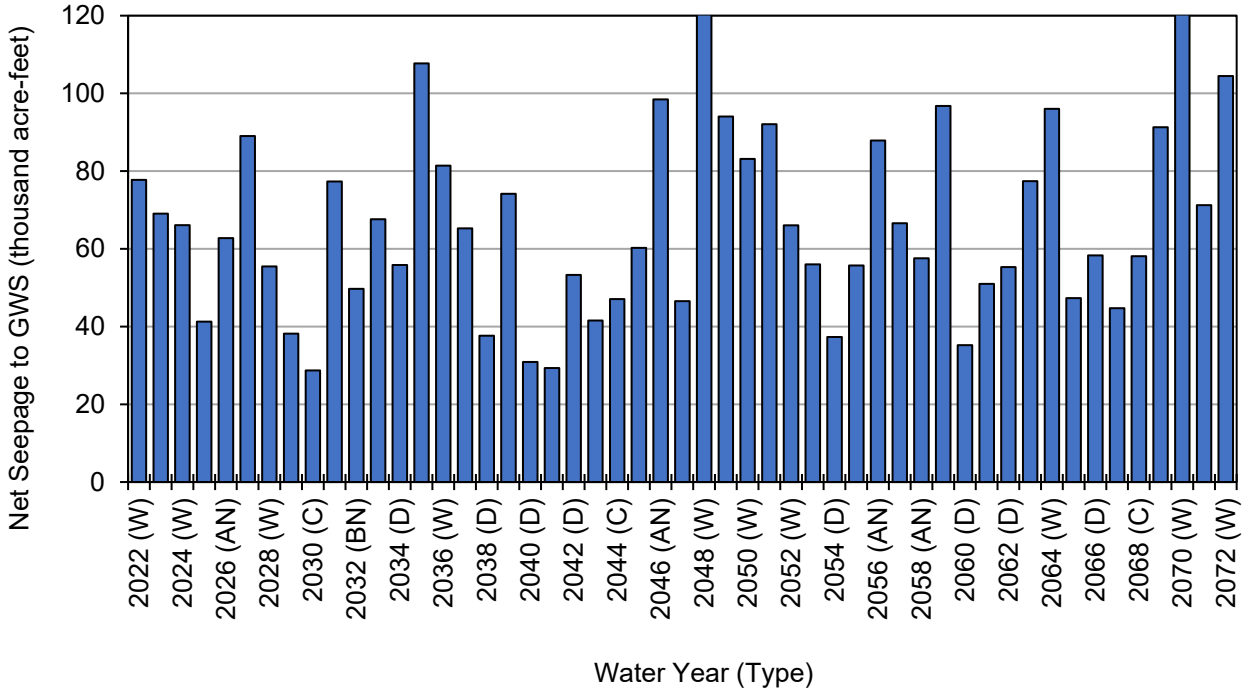


**Figure 89. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Net Stream Seepage to GWS/Discharge to Surface Water**

**Table 86. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Net Stream Seepage (net flows as acre-feet)**

| Water Year (Type) | Total Net Seepage from Surface Waterways and Canals |
|---|---|
| 2022 (W) | 78,000 |
| 2023 (W) | 69,000 |
| 2024 (W) | 66,000 |
| 2025 (BN) | 41,000 |
| 2026 (AN) | 63,000 |
| 2027 (W) | 89,000 |
| 2028 (W) | 55,000 |
| 2029 (C) | 38,000 |
| 2030 (C) | 29,000 |
| 2031 (AN) | 77,000 |
| 2032 (BN) | 50,000 |
| 2033 (AN) | 68,000 |
| 2034 (D) | 56,000 |
| 2035 (W) | 110,000 |
| 2036 (W) | 81,000 |
| 2037 (W) | 65,000 |
| 2038 (D) | 38,000 |
| 2039 (W) | 74,000 |
| 2040 (D) | 31,000 |
| 2041 (C) | 29,000 |
| 2042 (D) | 53,000 |
| 2043 (C) | 42,000 |
| 2044 (C) | 47,000 |
| 2045 (C) | 60,000 |
| 2046 (AN) | 98,000 |
| 2047 (C) | 47,000 |
| 2048 (W) | 120,000 |
| 2049 (W) | 94,000 |
| 2050 (W) | 83,000 |
| 2051 (W) | 92,000 |
| 2052 (W) | 66,000 |
| 2053 (AN) | 56,000 |
| 2054 (D) | 37,000 |
| 2055 (D) | 56,000 |
| 2056 (AN) | 88,000 |
| 2057 (BN) | 67,000 |
| 2058 (AN) | 58,000 |
| 2059 (W) | 97,000 |

| Water Year (Type) | | Total Net Seepage from Surface Waterways and Canals |
|---|---|---|
| 2060 (D) | | 35,000 |
| 2061 (C) | | 51,000 |
| 2062 (D) | | 55,000 |
| 2063 (BN) | | 77,000 |
| 2064 (W) | | 96,000 |
| 2065 (BN) | | 47,000 |
| 2066 (D) | | 58,000 |
| 2067 (C) | | 45,000 |
| 2068 (C) | | 58,000 |
| 2069 (BN) | | 91,000 |
| 2070 (W) | | 130,000 |
| 2071 (BN) | | 71,000 |
| 2072 (W) | | 100,000 |
| Average (2022-2072) | | 66,000 |
| 2022-2072 | W | 87,000 |
| | AN | 73,000 |
| | BN | 64,000 |
| | D | 47,000 |
| | C | 45,000 |

Note: negative values indicate net groundwater discharge to surface water

### 4.4.4 Groundwater Extraction

Groundwater extractions are exchanges that occur between the GWS and the SWS. Groundwater extraction from the GWS occurs through groundwater pumping to meet water demands for urban and agricultural needs and also through groundwater (root water) uptake by plants directly from shallow groundwater during times and at locations of sufficiently shallow groundwater conditions. Projected groundwater extractions are summarized in **Figure 90** and **Table 87** and also presented and discussed in the SWS water budget sections. Total groundwater extractions over the projected water budget period average about -30 taf per year. Overall, groundwater pumping represents a majority of the groundwater extractions than groundwater uptake. Groundwater pumping averages about -25 taf over the projected period and groundwater uptake averages about -5.1 taf. In wetter periods, groundwater uptake increases and groundwater pumping decreases. Accordingly, during drier periods groundwater pumping increases and water uptake by plants from shallow groundwater decreases in response to the higher water demands for irrigation and other uses and the greater depths to groundwater that also tend to occur during dry periods.

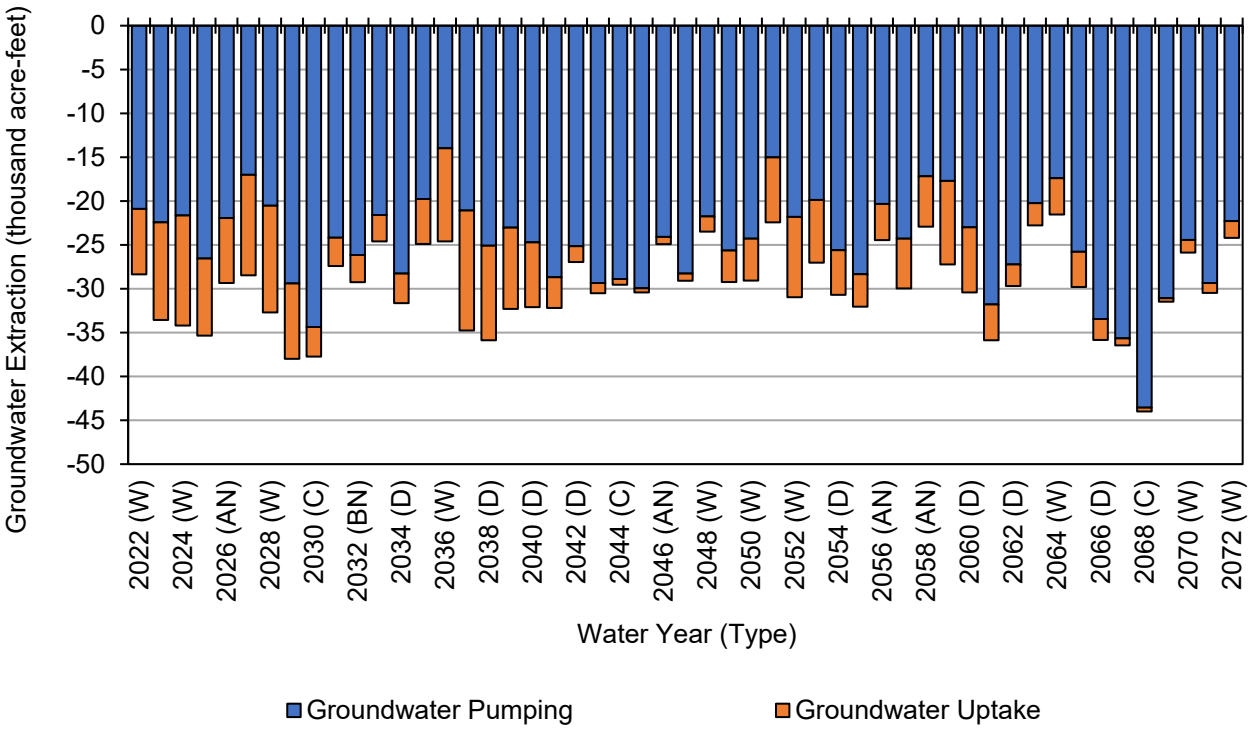


**Figure 90. Los Molinos Subbasin Projected (Future Land Use) Groundwater Extractions**

**Table 87. Los Molinos Subbasin Projected (Future Land Use) Groundwater Extractions (acre-feet)**

| Water Year (Type) | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|
| 2022 (W) | -21,000 | -7,500 | -28,000 |
| 2023 (W) | -22,000 | -11,000 | -34,000 |
| 2024 (W) | -22,000 | -13,000 | -34,000 |
| 2025 (BN) | -27,000 | -8,800 | -35,000 |
| 2026 (AN) | -22,000 | -7,400 | -29,000 |
| 2027 (W) | -17,000 | -11,000 | -28,000 |
| 2028 (W) | -21,000 | -12,000 | -33,000 |
| 2029 (C) | -29,000 | -8,600 | -38,000 |
| 2030 (C) | -34,000 | -3,400 | -38,000 |
| 2031 (AN) | -24,000 | -3,200 | -27,000 |
| 2032 (BN) | -26,000 | -3,100 | -29,000 |
| 2033 (AN) | -22,000 | -3,000 | -25,000 |
| 2034 (D) | -28,000 | -3,400 | -32,000 |
| 2035 (W) | -20,000 | -5,100 | -25,000 |
| 2036 (W) | -14,000 | -11,000 | -25,000 |
| 2037 (W) | -21,000 | -14,000 | -35,000 |
| 2038 (D) | -25,000 | -11,000 | -36,000 |
| 2039 (W) | -23,000 | -9,300 | -32,000 |
| 2040 (D) | -25,000 | -7,400 | -32,000 |
| 2041 (C) | -29,000 | -3,500 | -32,000 |
| 2042 (D) | -25,000 | -1,800 | -27,000 |
| 2043 (C) | -29,000 | -1,200 | -31,000 |
| 2044 (C) | -29,000 | -660 | -30,000 |
| 2045 (C) | -30,000 | -480 | -30,000 |
| 2046 (AN) | -24,000 | -830 | -25,000 |
| 2047 (C) | -28,000 | -820 | -29,000 |
| 2048 (W) | -22,000 | -1,700 | -23,000 |
| 2049 (W) | -26,000 | -3,600 | -29,000 |
| 2050 (W) | -24,000 | -4,800 | -29,000 |
| 2051 (W) | -15,000 | -7,400 | -22,000 |
| 2052 (W) | -22,000 | -9,200 | -31,000 |
| 2053 (AN) | -20,000 | -7,100 | -27,000 |
| 2054 (D) | -26,000 | -5,100 | -31,000 |
| 2055 (D) | -28,000 | -3,700 | -32,000 |
| 2056 (AN) | -20,000 | -4,100 | -24,000 |
| 2057 (BN) | -24,000 | -5,700 | -30,000 |
| 2058 (AN) | -17,000 | -5,800 | -23,000 |
| 2059 (W) | -18,000 | -9,500 | -27,000 |

| Water Year (Type) | | Groundwater Pumping | Groundwater Uptake | Total |
|---|---|---|---|---|
| 2060 (D) | | -23,000 | -7,400 | -30,000 |
| 2061 (C) | | -32,000 | -4,100 | -36,000 |
| 2062 (D) | | -27,000 | -2,500 | -30,000 |
| 2063 (BN) | | -20,000 | -2,500 | -23,000 |
| 2064 (W) | | -17,000 | -4,100 | -22,000 |
| 2065 (BN) | | -26,000 | -4,000 | -30,000 |
| 2066 (D) | | -33,000 | -2,400 | -36,000 |
| 2067 (C) | | -36,000 | -800 | -36,000 |
| 2068 (C) | | -44,000 | -430 | -44,000 |
| 2069 (BN) | | -31,000 | -400 | -31,000 |
| 2070 (W) | | -24,000 | -1,400 | -26,000 |
| 2071 (BN) | | -29,000 | -1,100 | -30,000 |
| 2072 (W) | | -22,000 | -1,900 | -24,000 |
| Average (2022-2072) | | -25,000 | -5,100 | -30,000 |
| 2022-2072 | W | -21,000 | -7,600 | -28,000 |
| | AN | -21,000 | -4,500 | -26,000 |
| | BN | -26,000 | -3,700 | -30,000 |
| | D | -27,000 | -4,900 | -32,000 |
| | C | -32,000 | -2,400 | -34,000 |

### 4.4.5 Vertical Subsurface Flows within the Groundwater System

Vertical subsurface flows within the GWS occur between the Upper and Lower Aquifers and represent an internal flow of water within the GWS. These exchanges between the principal aquifers do not directly affect the total volume of groundwater in storage, but do highlight the net vertical movement of water within the GWS. Projected vertical flows between the Upper Aquifer and Lower Aquifer are summarized in **Figure 91** and **Table 88** and show consistent net overall downward vertical flow from the Upper Aquifer to the Lower Aquifer. On average, vertical flows from the Upper Aquifer to the Lower Aquifer total about 64 taf per year over the projected water budget period. There is considerable year-to-year variability in the magnitude of these flows.

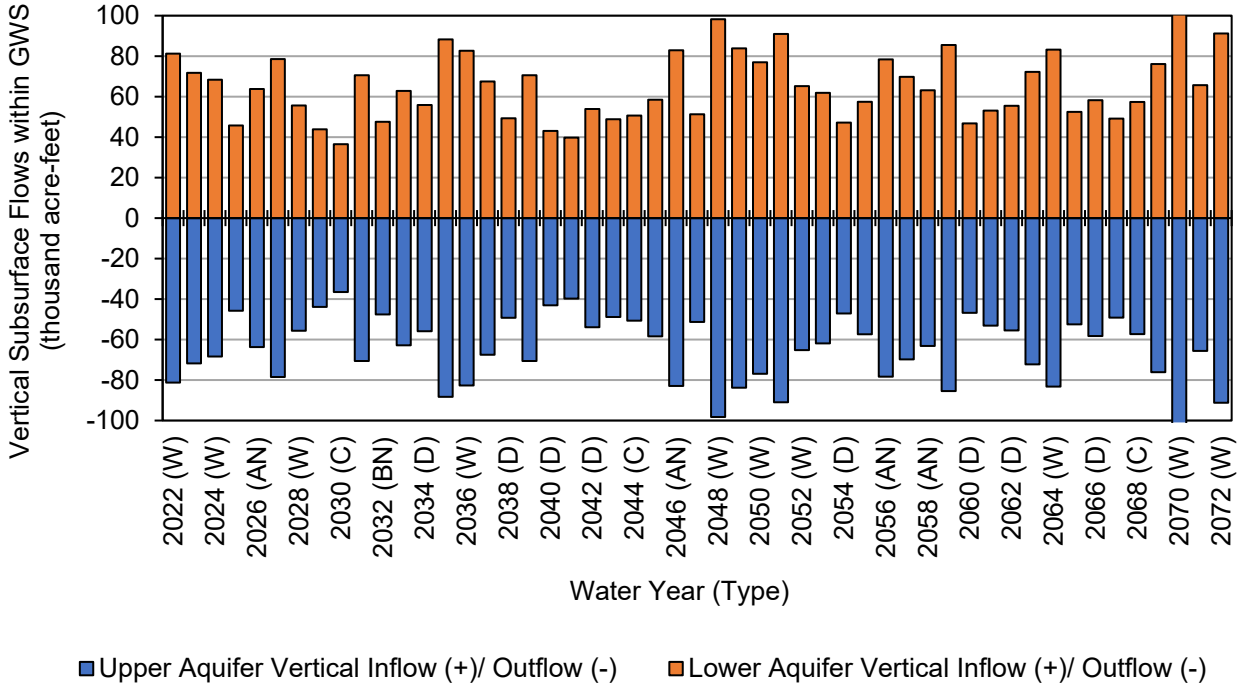


**Figure 91. Los Molinos Subbasin Vertical Subsurface Flow within the GWS**

**Table 88. Los Molinos Subbasin Vertical Subsurface Flows within the GWS (acre-feet)**

| Water Year (Type) | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|
| 2022 (W) | -81,000 |
| 2023 (W) | -72,000 |
| 2024 (W) | -68,000 |
| 2025 (BN) | -46,000 |
| 2026 (AN) | -64,000 |
| 2027 (W) | -79,000 |
| 2028 (W) | -56,000 |
| 2029 (C) | -44,000 |
| 2030 (C) | -37,000 |
| 2031 (AN) | -71,000 |
| 2032 (BN) | -48,000 |
| 2033 (AN) | -63,000 |
| 2034 (D) | -56,000 |
| 2035 (W) | -88,000 |
| 2036 (W) | -83,000 |
| 2037 (W) | -68,000 |
| 2038 (D) | -49,000 |
| 2039 (W) | -71,000 |
| 2040 (D) | -43,000 |
| 2041 (C) | -40,000 |
| 2042 (D) | -54,000 |
| 2043 (C) | -49,000 |
| 2044 (C) | -51,000 |
| 2045 (C) | -58,000 |
| 2046 (AN) | -83,000 |
| 2047 (C) | -51,000 |
| 2048 (W) | -98,000 |
| 2049 (W) | -84,000 |
| 2050 (W) | -77,000 |
| 2051 (W) | -91,000 |
| 2052 (W) | -65,000 |
| 2053 (AN) | -62,000 |
| 2054 (D) | -47,000 |
| 2055 (D) | -57,000 |
| 2056 (AN) | -78,000 |
| 2057 (BN) | -70,000 |
| 2058 (AN) | -63,000 |
| 2059 (W) | -85,000 |
| 2060 (D) | -47,000 |

| Water Year (Type) | | Upper Aquifer to (-) / from (+) Lower Aquifer |
|---|---|---|
| 2061 (C) | | -53,000 |
| 2062 (D) | | -55,000 |
| 2063 (BN) | | -72,000 |
| 2064 (W) | | -83,000 |
| 2065 (BN) | | -52,000 |
| 2066 (D) | | -58,000 |
| 2067 (C) | | -49,000 |
| 2068 (C) | | -57,000 |
| 2069 (BN) | | -76,000 |
| 2070 (W) | | -100,000 |
| 2071 (BN) | | -66,000 |
| 2072 (W) | | -91,000 |
| Average (2022-2072) | | -65,000 |
| 2022-2072 | W | -80,000 |
| | AN | -69,000 |
| | BN | -61,000 |
| | D | -52,000 |
| | C | -49,000 |

### 4.4.6 Change in Groundwater Storage

Projected change in groundwater storage values for the Los Molinos Subbasin are summarized in **Figure 92** and **Figure 93,** and **Table 89**. Values for total change in storage in the GWS and cumulative change in storage over the projected water budget period are presented in conjunction with the volumes of groundwater storage change within each of the two principal aquifers present in the Subbasin. Over the projected period, the average total annual change in groundwater storage is about -2.3 taf per year, representing a decrease in groundwater storage. The corresponding cumulative total change in storage over the projected period is about -101 taf. The annual change in storage numbers generally reflect the effects of the water year type with increase in storage occurring during wetter years and decreases in storage occurring during dry years. Within the GWS, the magnitudes of average annual changes in storage are generally similar in the Lower Aquifer (average -1 taf per year) compared to the Upper Aquifer (average -1.4 taf per year.

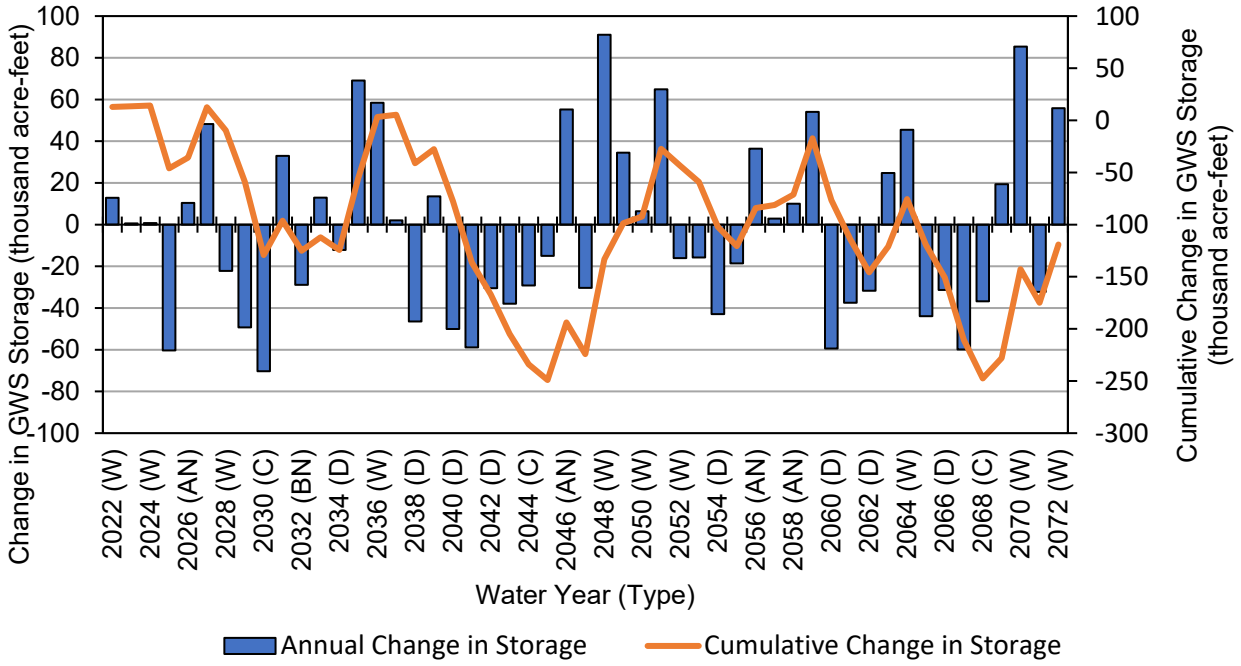


**Figure 92. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Total Change in Storage within the GWS**

**Table 89. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Change in Groundwater Storage (acre-feet)**

| Water Year (Type) | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|
| 2022 (W) | 5,700 | 7,100 | 13,000 | 13,000 |
| 2023 (W) | -1,800 | 2,400 | 560 | 13,000 |
| 2024 (W) | -500 | 1,300 | 770 | 14,000 |
| 2025 (BN) | -38,000 | -22,000 | -60,000 | -46,000 |
| 2026 (AN) | 7,500 | 3,000 | 10,000 | -36,000 |
| 2027 (W) | 29,000 | 19,000 | 48,000 | 13,000 |
| 2028 (W) | -15,000 | -7,700 | -22,000 | -9,600 |
| 2029 (C) | -30,000 | -19,000 | -49,000 | -59,000 |
| 2030 (C) | -43,000 | -28,000 | -70,000 | -130,000 |
| 2031 (AN) | 22,000 | 11,000 | 33,000 | -96,000 |
| 2032 (BN) | -18,000 | -11,000 | -29,000 | -130,000 |
| 2033 (AN) | 9,000 | 3,900 | 13,000 | -110,000 |
| 2034 (D) | -7,900 | -4,300 | -12,000 | -120,000 |
| 2035 (W) | 43,000 | 26,000 | 69,000 | -55,000 |
| 2036 (W) | 37,000 | 22,000 | 58,000 | 3,300 |
| 2037 (W) | 400 | 1,600 | 2,000 | 5,300 |
| 2038 (D) | -29,000 | -17,000 | -46,000 | -41,000 |
| 2039 (W) | 9,200 | 4,400 | 14,000 | -28,000 |
| 2040 (D) | -31,000 | -19,000 | -50,000 | -78,000 |
| 2041 (C) | -36,000 | -23,000 | -59,000 | -140,000 |
| 2042 (D) | -18,000 | -12,000 | -31,000 | -170,000 |
| 2043 (C) | -23,000 | -15,000 | -38,000 | -200,000 |
| 2044 (C) | -17,000 | -12,000 | -29,000 | -230,000 |
| 2045 (C) | -8,500 | -6,600 | -15,000 | -250,000 |
| 2046 (AN) | 35,000 | 20,000 | 55,000 | -190,000 |
| 2047 (C) | -18,000 | -12,000 | -30,000 | -220,000 |
| 2048 (W) | 57,000 | 34,000 | 91,000 | -130,000 |
| 2049 (W) | 21,000 | 14,000 | 35,000 | -99,000 |
| 2050 (W) | 2,800 | 3,500 | 6,400 | -92,000 |
| 2051 (W) | 41,000 | 24,000 | 65,000 | -27,000 |
| 2052 (W) | -12,000 | -4,300 | -16,000 | -43,000 |
| 2053 (AN) | -9,400 | -6,300 | -16,000 | -59,000 |
| 2054 (D) | -26,000 | -16,000 | -43,000 | -100,000 |
| 2055 (D) | -12,000 | -6,900 | -19,000 | -120,000 |
| 2056 (AN) | 23,000 | 14,000 | 36,000 | -84,000 |
| 2057 (BN) | 1,400 | 1,500 | 2,900 | -81,000 |
| 2058 (AN) | 7,100 | 2,900 | 10,000 | -71,000 |

| Water Year (Type) | | Upper Aquifer | Lower Aquifer | Total Annual Change | Total Cumulative Change |
|---|---|---|---|---|---|
| 2059 (W) | | 32,000 | 22,000 | 54,000 | -17,000 |
| 2060 (D) | | -37,000 | -22,000 | -59,000 | -77,000 |
| 2061 (C) | | -23,000 | -14,000 | -37,000 | -110,000 |
| 2062 (D) | | -19,000 | -12,000 | -32,000 | -150,000 |
| 2063 (BN) | | 16,000 | 8,400 | 25,000 | -120,000 |
| 2064 (W) | | 27,000 | 18,000 | 45,000 | -76,000 |
| 2065 (BN) | | -28,000 | -16,000 | -44,000 | -120,000 |
| 2066 (D) | | -19,000 | -13,000 | -31,000 | -150,000 |
| 2067 (C) | | -36,000 | -24,000 | -60,000 | -210,000 |
| 2068 (C) | | -22,000 | -15,000 | -37,000 | -250,000 |
| 2069 (BN) | | 13,000 | 6,100 | 19,000 | -230,000 |
| 2070 (W) | | 53,000 | 33,000 | 85,000 | -140,000 |
| 2071 (BN) | | -21,000 | -12,000 | -32,000 | -170,000 |
| 2072 (W) | | 36,000 | 20,000 | 56,000 | -120,000 |
| Average (2022-2072) | | -1,400 | -960 | -2,300 | |
| 2022-2072 | W | 20,000 | 12,000 | 34,000 | |
| | AN | 13,000 | 6,900 | 20,000 | |
| | BN | -11,000 | -5,400 | -17,000 | |
| | D | -22,000 | -14,000 | -36,000 | |
| | C | -26,000 | -19,000 | -42,000 | |

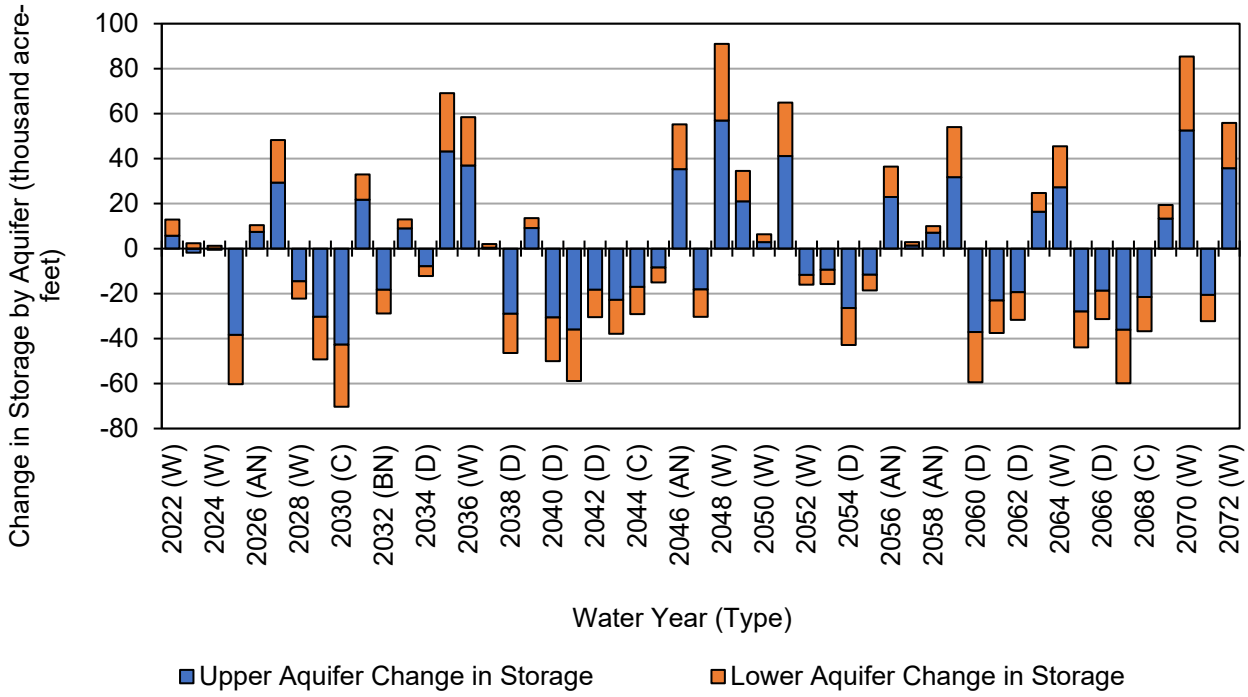


**Figure 93. Los Molinos Subbasin Projected (Future Land Use with Climate Change) Change in Groundwater Storage by Aquifer**