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29 **4. HISTORICAL, CURRENT, AND PROJECTED WATER SUPPLIES (§ 354.1818c)**

30 **4.1. Land Use, Population, and Demand Trends**

31 **4.1.1. Historical and Current Land Use**

32 In the Solano Subbasin water use sectors include agricultural, native vegetation, and urban land use. The  
33 urban land use class includes urban and semi-agricultural<sup>1</sup> lands as well as industrial land, which covers  
34 only a small area in the Subbasin. Total agricultural acreage in the Subbasin has gradually decreased 12  
35 percent since the mid-1990s to 2017, corresponding to increases in urban and native vegetation  
36 acreage. On average, agricultural, native vegetation, and urban lands covered approximately  
37 219,000 acres, 110,000 acres, and 25,000 acres, respectively, between 1991 and 2017.

38 Agricultural land uses are further summarized in **Table 4-1** and on **Figure 4-1** based on analyses of  
39 available land use data as described in **Appendix 5-C**. Crops grown in the Subbasin have remained  
40 relatively diverse over time. Since the 1990s, the total acreage of grain, hay, and miscellaneous field and  
41 truck crops has generally declined 32 percent, while pasture, alfalfa, vineyard, and orchard acreage has  
42 increased 82 percent. Historical land use information was compiled through an analysis of DWR land use  
43 mapping data in combination with data from annual County Agricultural Commissioner Crop Reports.  
44 Land use data sources and feedback provided by GSA representatives and GSA Boards, Advisory  
45 Committees including the Solano Subbasin GSA Technical Advisory Committee, , and other stakeholders  
46 such as local RCDs, were reviewed to confirm the annual patterns in crop acreage. The acreage values in  
47 **Table 4-1** and **Figure 4-1** differ slightly from values reported in the **Section 5** water budget results, which  
48 were derived from the Solano Integrated Hydrologic Model (Solano IHM), because of differences in how  
49 model elements align with the Subbasin boundary.

50 *Table 4-1: Summary of Solano Subbasin Historic and Current Land Use Areas<sup>1</sup>*

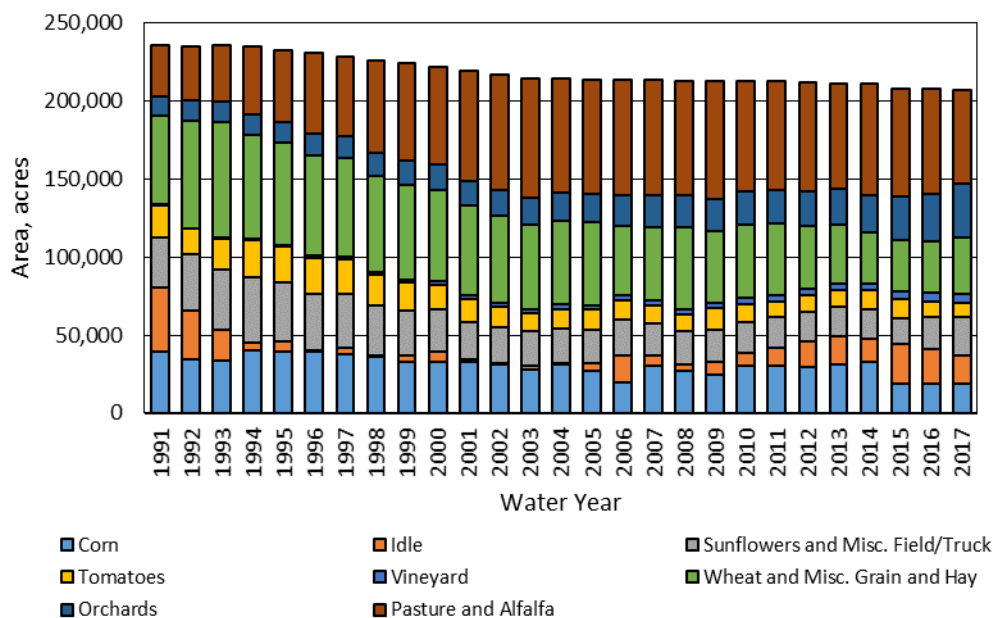
Land Use	Area (acres)		% Change
	1991	2017	
Alfalfa	16,566	32,220	94
Almonds	1,284	15,581	1113
Corn	39,534	19,165	-52
Misc. Orchard	6,977	6,911	-1
Pasture	15,813	28,086	78
Sunflowers and Misc. Field/Truck	31,800	24,266	-24
Tomatoes	20,451	9,476	-54
Vineyard	717	5,738	700
Walnuts	4,469	11,618	160
Wheat and Misc. Grain and Hay	56,932	36,042	-37

<sup>1</sup> As defined in the DWR crop mapping metadata, semi-agricultural land use subclasses include farmsteads, livestock feed lot operations, dairies, poultry farms, and miscellaneous semi-agricultural land use incidental to agriculture (small roads, ditches, non-planted areas of cropped fields (DWR, 2016c).

Land Use	Area (acres)		% Change
	1991	2017	
<b>Subtotal: Irrigated Land</b>	<b>194,543</b>	<b>189,103</b>	<b>-3</b>
Idle	41,276	18,017	-56
<b>Subtotal: Agricultural Land</b>	<b>235,820</b>	<b>207,120</b>	<b>-12</b>
Urban	17,968	32,456	81
Native, Riparian, Water	100,628	114,839	14
<b>Total Acres in Solano Subbasin</b>	<b>354,415</b>	<b>354,415</b>	<b>0</b>

Note: The data presented in this table are developed from the best available land use information for the Subbasin. As described in Appendix 5B, the Solano IHM implements this land use data configuration onto the model element grid. Because the Solano IHM element grid does not perfectly align with the Subbasin boundaries, the data presented in this table may slightly differ from the reported land use values in the Solano IHM.

51



52 *Figure 4-1: Solano Subbasin Agricultural Land Use Changes*

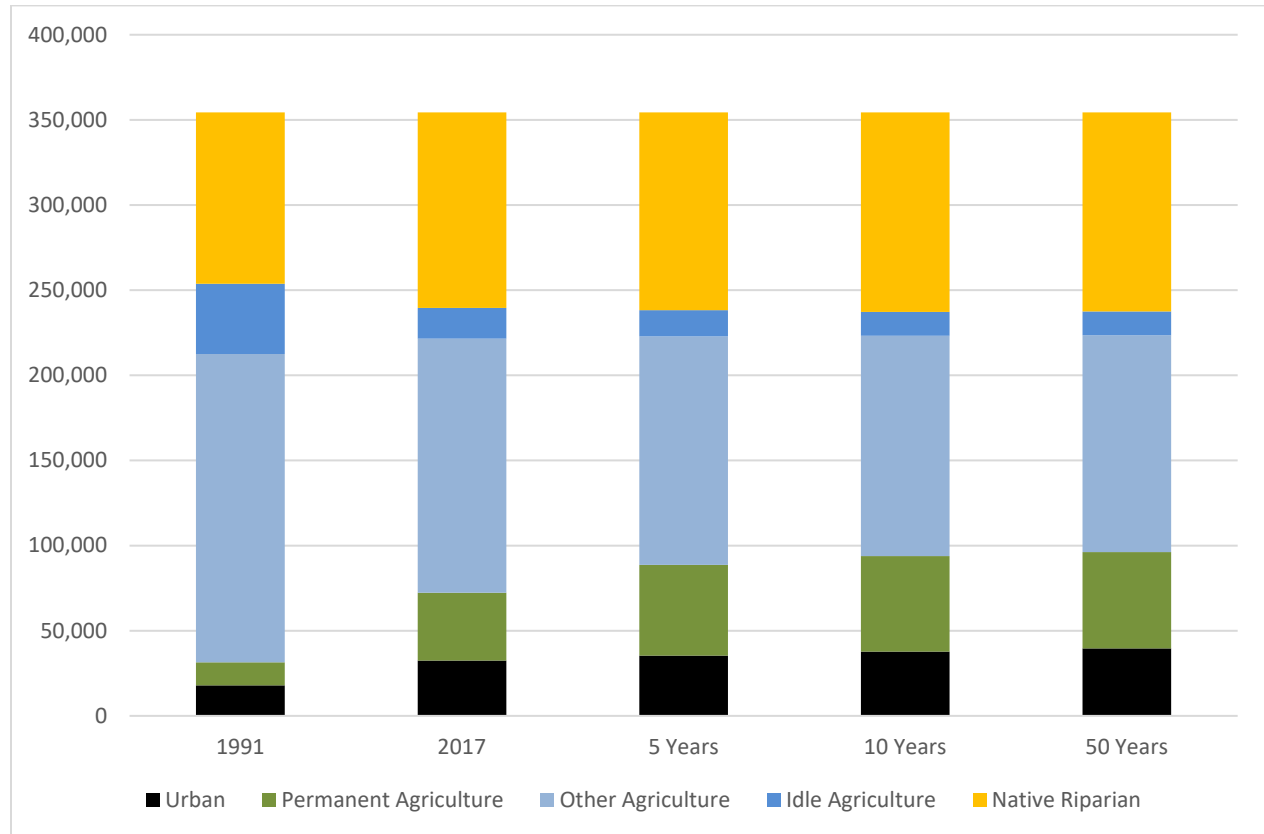
53 **4.1.2. Future Land Use Projections**

54 GSA representatives provided estimates of projected land uses in the Subbasin for planning horizons  
 55 including the next 5, 10, and 50 years for consideration in the GSP development, as shown in **Table 4-2**  
 56 and on **Figure 4-2**. These projections were ground-truthed by additional community members and GSA  
 57 Advisory Committee members through outreach and engagement efforts and were based on  
 58 consideration of historical land use trends, existing planning for urban expansion, and native vegetation  
 59 conservation over time. In general, the Subbasin anticipates increases in urban acreage and decreases in  
 60 irrigated land with minimal changes in native vegetation area. Although the overall agricultural area is  
 61 anticipated to decrease in the future, the GSAs expect increases in acreages for permanent crop types  
 62 within the irrigated land sub-category. The permanent crops category includes vineyard, almond,  
 63 walnut, and other miscellaneous orchard crops.

64 *Table 4-2: Solano Collaborative Current and Future Land Use Projections*

Land Use	Area (acres)				
	1991	2017	5 Years	10 Years	50 Years
Alfalfa	16,566	32,220	30,131	29,624	29,624
Almonds	1,284	15,581	23,747	25,791	26,234
Corn	39,534	19,165	18,657	18,157	17,907
Misc. Orchard	6,977	6,911	9,367	9,627	9,276
Pasture	15,813	28,086	28,322	28,322	28,250
Sunflowers and Misc. Field/Truck	31,800	24,266	20,026	19,126	19,006
Tomatoes	20,451	9,476	8,420	7,420	6,920
Vineyard	717	5,738	8,515	8,543	8,557
Walnuts	4,469	11,618	11,706	12,099	12,492
Wheat and Misc. Grain and Hay	56,932	36,042	28,619	26,774	25,557
<b>Subtotal: Irrigated Land</b>	<b>194,543</b>	<b>189,103</b>	<b>187,510</b>	<b>185,483</b>	<b>183,824</b>
Idle	41,276	18,017	15,362	14,028	13,998
<b>Subtotal: Agricultural Land</b>	<b>235,820</b>	<b>207,120</b>	<b>202,872</b>	<b>199,511</b>	<b>197,822</b>
Urban	17,968	32,456	35,387	37,760	39,678
Native, Riparian, Water	100,628	114,839	116,153	117,142	116,913
<b>Total Acres in Solano Subbasin</b>	<b>354,413</b>	<b>354,413</b>	<b>354,413</b>	<b>354,413</b>	<b>354,413</b>

Note: Some totals may not equal the sum of components because of rounding.



65 *Figure 4-2: Solano Collaborative Land Use Projections*

66 **4.1.3. Future Population Trends and Projections**

67 Predicting future population is uncertain, particularly over a 25-year period, because there are many  
 68 factors that influence population including economic conditions, drought, water use as impacted by  
 69 changes in water use efficiency technologies, land use policies, and the fact that city boundaries and  
 70 service area boundaries may not be the same or that the Solano County boundary is different from the  
 71 Solano Subbasin boundary. Projections to 2040 published in 2018 by the Association of Bay Area  
 72 Governments (ABAG) are used for the portion of the Solano Subbasin within Solano County and the  
 73 2013 projections prepared by Sacramento Area Council of Governments (SACOG) are used for the  
 74 Sacramento County portion of the Solano Subbasin.

75 ABAG’s *Plan Bay Area Projections 2040* contained projections for individual cities within Solano County,  
 76 for unincorporated Solano County, as well as total County-wide population projections. Released in  
 77 November 2018, ABAG forecasts population, households, and employment for the San Francisco Bay  
 78 Area for 2010, 2015, 2020, 2025, 2030, 2035, and 2040. Growth rates from 2035 to 2040 were utilized  
 79 for population projections from 2040 to 2045. Using a geographic information system (GIS), the 2010  
 80 Census populations were extracted for the portions of the City of Dixon, City of Rio Vista, the City of  
 81 Vacaville, and Unincorporated Solano County overlying the Solano Subbasin to obtain the 2010 Solano  
 82 County population within the Solano Subbasin. The population projections then applied the ABAG

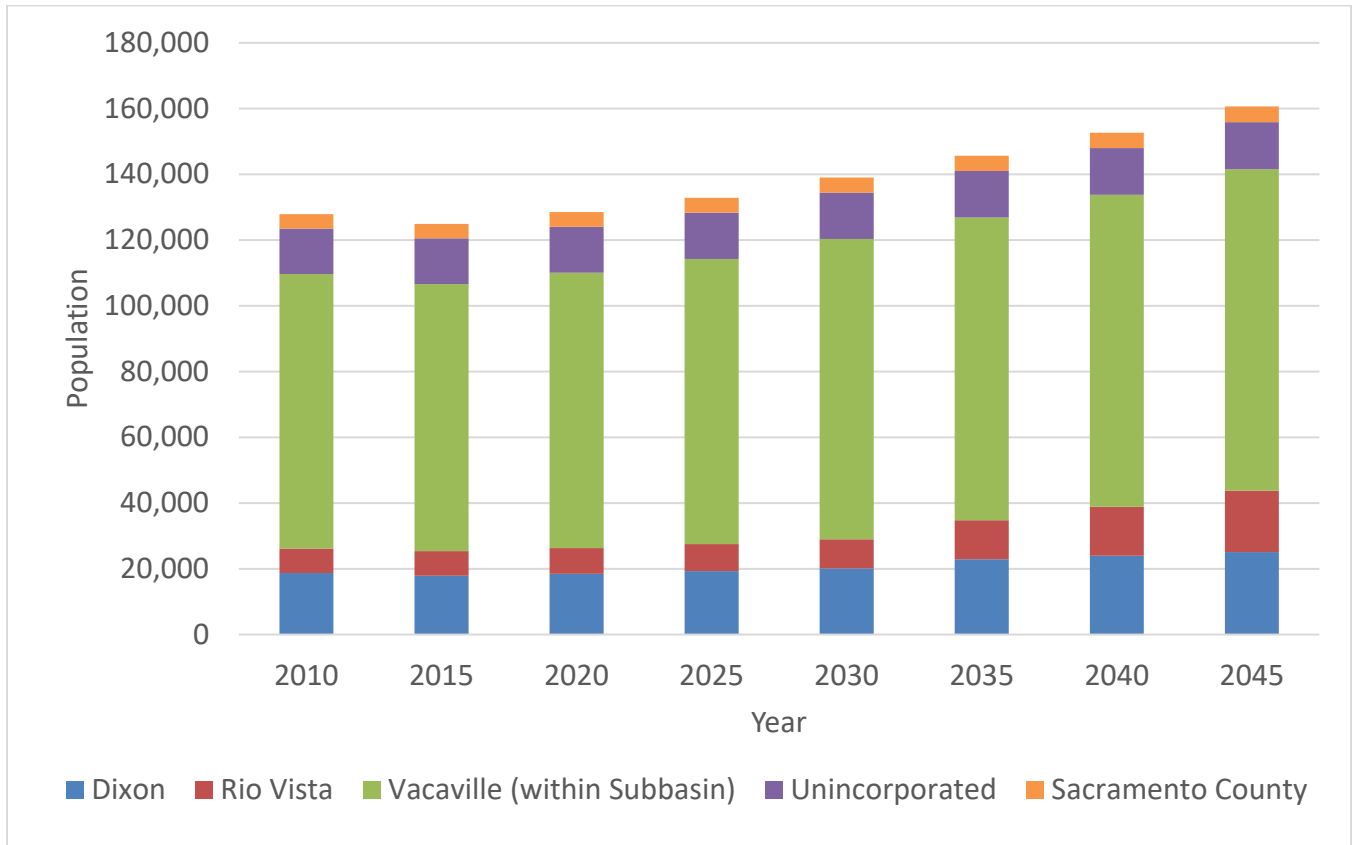
83 growth rates for each area to the extracted 2010 populations to estimate the future populations  
84 through 2045 for the portions of Solano County within the Solano Subbasin.

85 For the small portion of Sacramento County located within the Solano Subbasin, the 2010 Census data  
86 were used as a basis to estimate population growth. The SACOG population growth rate of 1.28% for  
87 Sacramento County for the period from 2008/2010 to 2035 was applied to the 2010 Census data to  
88 develop population estimates through 2045. For the unincorporated portion of the Solano Subbasin a  
89 historic growth rate of 0.46% was used per the Department of Finance’s records of growth rate for  
90 Solano County. This growth rate was applied to 2010 Census data and extrapolated to the year 2045.

91 The results of the population projections for the Solano Subbasin are presented in tabular form in  
92 **Table 4-3** and graphically on **Figure 4-3**. The Solano Subbasin population estimates calculated in this  
93 section are considered when projecting Solano Subbasin water demands and analyzing future supplies.

94 *Table 4-3: Solano Collaborative Population Estimates*

	2010	2015	2020	2025	2030	2035	2040	2045
Dixon	18,693	17,903	18,473	19,288	20,108	22,879	23,958	25,089
Rio Vista	7,493	7,483	7,844	8,226	8,857	11,876	14,894	18,680
Vacaville (within Subbasin)	83,488	81,232	83,765	86,760	91,375	92,089	94,903	97,802
Unincorporated Within Solano Subbasin	13,848	13,912	13,976	14,040	14,105	14,169	14,235	14,300
<b>Solano County Within Solano Subbasin</b>	<b>123,522</b>	<b>120,529</b>	<b>124,058</b>	<b>128,314</b>	<b>134,445</b>	<b>141,013</b>	<b>147,990</b>	<b>155,872</b>
Sacramento County Within Solano Subbasin	4,351	4,407	4,463	4,520	4,578	4,637	4,696	4,756
<b>Total Solano Subbasin Population</b>	<b>127,873</b>	<b>124,935</b>	<b>128,521</b>	<b>132,834</b>	<b>139,023</b>	<b>145,649</b>	<b>152,686</b>	<b>160,628</b>



95 *Figure 4-3: Solano Subbasin Population Projections*

96 **4.1.4. Future Water Demand Projections**

97 Projected water demands in the Subbasin are anticipated to change as a result of changing land use  
 98 conditions and population with additional potential changes in demand resulting from changing climate  
 99 conditions. Average projected future water demands are summarized by key water use sector in  
 100 **Table 4-4** in relation to current water demands. The water demands presented in **Table 4-4** are in units  
 101 of acre-feet per year (AFY) derived from results for historical and future scenarios of the Solano  
 102 Integrated Hydrologic Model (Solano IHM) developed for use in preparing the GSP. All water demand  
 103 values are rounded to two significant figures. Future Solano IHM scenarios consider changing land use  
 104 and population growth and anticipated changes in management of water use (e.g., efficiency). The  
 105 Solano IHM and the development of historical and future model runs is described later in the GSP. The  
 106 complete water budget for the Subbasin including all Subbasin inflows and outflows are presented in  
 107 **Section 5** and also described in the Solano IHM documentation report (**Appendix 5-B**).

*Table 4-4: Solano Subbasin Water Demand Estimates (AFY) Year/Period*

	Urban Demand <sup>2</sup> (AFY)	Agricultural Demand (AFY)	Native Vegetation Demand (AFY)	Climate Change Demand Increases <sup>3</sup> (AFY)
1991-2018 Historical Average <sup>1</sup>	34,000	660,000	110,000	Not applicable
2020 (2020-2024)	41,000	640,000	99,000	53,000
2025 (2025-2029)	43,000	620,000	120,000	52,000
2030 (2030-2034)	45,000	630,000	110,000	54,000
2035 (2035-2039)	46,000	620,000	120,000	51,000
2040 (2040-2072)	47,000	620,000	120,000	53,000

<sup>1</sup>1991-2018 average demands are provided for historical context relative to future demands.  
<sup>2</sup>Urban Demand is water demand for Dixon, Rio Vista, Vacaville, and for small public water systems and other domestic uses.  
<sup>3</sup>Overall increase in demand under the 2070 climate change condition analyzed (see **Section 5** for more detail).

108

109 **4.2. Water Supplies and Utilization by Sector (§354.18c3 and c2A)**

110 **4.2.1. State Water Project**

111 Solano County Water Agency (SCWA) has a long-term master water supply contract with DWR for water  
 112 supply from the State Water Project (SWP) that currently expires in 2035 but is renewable. SCWA is a  
 113 North of Delta SWP Contractor and receives SWP water via the North Bay Aqueduct (NBA), which is  
 114 owned and operated by DWR to deliver wholesale water supply for municipal and industrial uses from  
 115 the Barker Slough Pumping Plant in the Delta to Napa and Solano Counties. SCWA’s contract with DWR  
 116 includes a maximum allocation of 47,756 AFY, known as Table A Water. Supplemental SWP water, called  
 117 Advanced Table A Water is available to SCWA under specific conditions. Additional supplemental water,  
 118 Settlement Water (SW), is also available from year to year with some restrictions. For the purposes of  
 119 the Solano Subbasin GSP, the SWP supply that is available is limited to Table A Water and North of Delta  
 120 Allocation for Table A described as follows.

121 **Table A Water**

122 Each SWP contractor’s State Water Supply Contract (SWP Contract) contains a Table A, which lists the  
 123 maximum amount of annual allocated water supply an agency may request each year throughout the  
 124 life of the contract. The Table A amounts in each contractor’s SWP Contract ramp up over time, based  
 125 on projections at the time the contracts were signed and consideration of future increases in population  
 126 and water demand, until they reach a maximum Table A amount. Table A amounts are used in  
 127 determining each contractor’s proportionate share, or “allocation,” of the total SWP water supply that  
 128 DWR determines to be available each year. SCWA’s Table A contract amount reached its maximum  
 129 allocation in 2015. **Table 4-5** below shows SCWA’s active Participating Agencies’ Table A maximum  
 130 water amounts available. For the purposes of this GSP, Vacaville is the only agency within the subbasin  
 131 that receives SWP water and not all of Vacaville resides in the subbasin. Approximately 88% of



132 Vacaville’s population lives within the subbasin. Vacaville and Fairfield numbers include the permanent  
133 Table A transfer from the Kern County Water Agency that began in 2001; the 5,756 acre-feet (AF)  
134 transfer is split evenly between the two cities.

135 *Table 4-5: SCWA Participating Agency Maximum SWP Table A Amount (AF)*

SCWA Participating Agency	Maximum Table A Water Amounts (AF) <sup>1</sup>
City of Vacaville <sup>2</sup>	8,978
City of Benicia	17,200
City of Fairfield	14,678
Suisun City (Solano Irrigation District)	1,300
City of Vallejo	5,600
<b>TOTAL</b>	<b>47,756</b>
<sup>1</sup> Maximum amounts available regardless of how much of the population falls within the subbasin boundary. <sup>2</sup> Recipient of SWP in Solano Subbasin. Not all of Vacaville is located within the subbasin boundary.	

136 The cities of Dixon and Rio Vista had rights to obtain a specified portion of SCWA Table A supply (1,500  
137 AF each) in the future. Currently, this allocation is used by Benicia (1,125 AF), Fairfield (750 AF), and  
138 Vallejo (1,125 AF). **Table 4-6** summarizes historical SWP deliveries to the City of Vacaville within the  
139 subbasin. Historically, Vacaville has received an average of 5,396 AFY with an average reliability of 60%  
140 of maximum Table A amounts.

141 *Table 4-6: Historical SWP Deliveries – City of Vacaville*

Water Year (Type)	SWP Deliveries to City of Vacaville (AF)
1991 (C)	4,453
1992 (C)	4,265
1993 (AN)	4,416
1994 (C)	4,573
1995 (W)	5,508
1996 (W)	6,017
1997 (W)	5,967
1998 (W)	5,426
1999 (W)	4,576
2000 (AN)	4,105
2001 (D)	3,665

Water Year (Type)	SWP Deliveries to City of Vacaville (AF)
2002 (D)	6,468
2003 (AN)	4,339
2004 (BN)	7,117
2005 (AN)	6,729
2006 (W)	5,909
2007 (D)	7,446
2008 (C)	7,376
2009 (D)	6,510
2010 (BN)	7,816
2011 (W)	6,368
2012 (BN)	6,731
2013 (D)	7,548
2014 (C)	2,499
2015 (C)	1,010
2016 (BN)	3,890
2017 (W)	4,698
2018 (BN)	7,318
<i>W = Wet</i> <i>AN = Above Normal</i> <i>BN = Below Normal</i> <i>D = Dry</i> <i>C = Critical</i>	

142 **North of Delta Allocation**

143 As a result of the North of Delta Settlement (December 31, 2013), DWR issues a separate SWP annual  
 144 allocation for SCWA, Napa, and Yuba City (“the North of Delta (NOD) Contractors”), defined as the NOD  
 145 Allocation. The NOD Allocation cannot exceed the Annual Table A Water amounts, but the NOD  
 146 Allocation amounts to an additional increment of annual allocation above the Table A Water amounts  
 147 allocated each year.

148 Since the implementation of the NOD Allocation starting in 2014, SCWA has received an additional  
 149 increment of: 0% (2014), 5% (2015), and 15% (2016 as of April 1). A recent analysis performed by DWR  
 150 estimates that SCWA could receive an additional 11,000 AF in approximately 50 percent of years  
 151 compared to actual Table A water deliveries.<sup>2</sup> The actual additional allocation varies each year and is  
 152 less in drier years. Reliability of SWP allocations can be found in **Section 4.2.4** of this report.

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<sup>2</sup> California Department of Water Resources State Water Project Analysis Office, *Initial Study/Proposed Negative Declaration State Water Project Supply Allocation Settlement Agreement*. Prepared by AECOM. July 2013.

153 **4.2.2. Solano Project**

154 The Solano Project is a federal facility owned by the Bureau of Reclamation (USBR) and operated by the  
155 Solano Irrigation District that stores water in Lake Berryessa for delivery to agriculture and municipal  
156 and industrial users throughout Solano County. SCWA has a long-term master water supply agreement  
157 with USBR that currently expires in 2025 but is renewable. The Solano Project first delivered water in  
158 1959. The major facilities associated with the Solano Project are:

- 159 • Monticello Dam, which captures water from Putah Creek in Lake Berryessa which has a capacity  
160 of 1.55 million acre-feet of water;
- 161 • Putah Diversion Dam, which diverts water out of Lower Putah Creek just downstream of  
162 Monticello Dam; and
- 163 • Putah South Canal, which delivers water to local agencies. The Putah South Canal is 33 miles  
164 long, concrete lined and has a diversion capacity of 956 cubic feet per second and an operating  
165 capacity of about 800 cubic feet per second.

166 The annual firm yield of the Solano Project is 207,350 AFY. Solano Project water is designated for  
167 Agricultural (AG) and Municipal and Industrial (M&I) uses allocated to Participating Agencies as  
168 indicated in **Table 4-7**.

169 *Table 4-7: SCWA Participating Agency Maximum Solano Project Allocation (AF)*

Participating Agency	Maximum Allocation (AFY)	Use
City of Fairfield	9,200	M&I
City of Suisun	1,600	M&I
City of Vacaville <sup>1</sup>	5,750	M&I
City of Vallejo	14,600	M&I
Solano Irrigation District <sup>1</sup>	141,000	AG+M&I
Maine Prairie Water District <sup>1</sup>	15,000	AG
University of California - Davis	4,000	AG
California State Prison - Solano <sup>1</sup>	1,200	AG+M&I
SCWA	15,000	Operating Loss
<b>TOTAL</b>	<b>207,350</b>	

<sup>1</sup>Recipient of Solano Project in Solano Subbasin

170 **Table 4-8** summarizes historical Solano Project inflows within the subbasin. These inflows are variable  
171 and correspond with water year type and available capacity within Lake Berryessa. Reliability projections  
172 of these surface inflows can be found in **Section 4.2.4** of this report. Historically, the Solano project has  
173 delivered an average of approximately 187 thousand acre-ft (TAF) per year.

174 *Table 4-8 Historical Solano Project Surface Inflows (AF)*

Water Year (Type)	Putah South Canal
1991 (C)	141,624
1992 (C)	156,767
1993 (AN)	192,299
1994 (C)	205,100
1995 (W)	178,055
1996 (W)	188,746
1997 (W)	216,823
1998 (W)	187,781
1999 (W)	204,735
2000 (AN)	204,734
2001 (D)	196,428
2002 (D)	198,860
2003 (AN)	180,692
2004 (BN)	207,668
2005 (AN)	173,078
2006 (W)	166,118
2007 (D)	199,920
2008 (C)	214,435
2009 (D)	192,017
2010 (BN)	174,352
2011 (W)	177,947
2012 (BN)	189,575
2013 (D)	217,064
2014 (C)	188,614
2015 (C)	185,521
2016 (BN)	161,965
2017 (W)	145,543
2018 (BN)	132,728

175 **4.2.3. Groundwater Extraction**

176 Groundwater extraction contributes to Subbasin inflows through the transfer of groundwater with  
 177 agricultural, native vegetation, and urban lands. For native vegetation, groundwater pumping is  
 178 considered to be zero, although where the depth to groundwater is shallow, considerable volumes of  
 179 groundwater can be taken up directly by plant roots. The majority of groundwater pumping is used to  
 180 meet agricultural demands with lesser amounts of pumping for urban uses, including domestic well and  
 181 other residential uses. Groundwater extractions vary from year to year based on variability of surface  
 182 water supplies. A summary of historical groundwater extractions by different entities in the Subbasin are  
 183 presented in **Table 4-9**. Between 1991 and 2018, the average annual total groundwater extraction was  
 184 estimated to be approximately 181 TAF per year with about 167 TAF of that total being private  
 185 groundwater pumping, which includes agricultural pumping and some relatively smaller amounts of

186 urban pumping for areas not served by the larger water providers in the Subbasin. Private groundwater  
187 extractions are unmetered pumping by private wells including for small public water systems and  
188 domestic, agricultural, and industrial uses. , Approximately 14 TAF of pumping has historically occurred  
189 by the larger cities within the Subbasin for urban uses, and about 5 TAF by SID for serving both  
190 agricultural and urban needs. More detailed estimates of groundwater extraction are included in  
191 **Section 5.**

192 *Table 4-9: Historical Groundwater Extraction (AF)*

Water Year (Type)	City of Vacaville Groundwater Extraction <sup>1</sup>	Dixon Groundwater Extraction <sup>1</sup>	Rio Vista Groundwater Extraction <sup>1</sup>	SID District Groundwater Extraction <sup>1</sup>	Groundwater Extraction (Private) <sup>2</sup>	Total Groundwater Extraction <sup>2</sup>
1991 (C)	4,239	2,220	1,135	6,394	150,985	164,973
1992 (C)	4,113	2,337	1,150	5,924	164,572	178,096
1993 (AN)	4,259	2,409	1,198	2,723	155,333	165,922
1994 (C)	4,411	2,526	1,263	4,415	191,358	203,973
1995 (W)	4,138	2,609	1,098	3,971	151,894	163,710
1996 (W)	3,176	2,699	1,082	3,672	178,821	189,450
1997 (W)	3,417	2,831	1,440	4,843	219,667	232,198
1998 (W)	3,836	2,982	1,374	4,062	135,899	148,153
1999 (W)	3,989	3,138	1,519	4,657	168,044	181,347
2000 (AN)	4,443	3,268	1,609	5,784	160,364	175,468
2001 (D)	6,455	3,315	1,699	5,272	188,472	205,213
2002 (D)	6,439	3,341	1,841	6,703	206,377	224,701
2003 (AN)	7,032	3,356	1,909	4,365	166,664	183,326
2004 (BN)	6,534	3,393	2,037	4,775	195,476	212,215
2005 (AN)	6,694	3,534	2,156	4,533	134,226	151,143
2006 (W)	6,566	3,877	2,268	5,204	137,687	155,602
2007 (D)	6,445	4,282	2,361	5,703	204,692	223,483
2008 (C)	6,002	4,353	2,389	4,609	184,279	201,632
2009 (D)	4,728	4,083	2,375	4,243	175,020	190,449
2010 (BN)	4,641	3,741	2,325	3,882	130,491	145,080
2011 (W)	5,297	3,557	2,292	4,066	119,349	134,561
2012 (BN)	5,208	3,621	2,274	4,879	167,650	183,632
2013 (D)	5,199	3,873	2,440	5,329	172,206	189,047
2014 (C)	5,110	3,355	2,542	11,314	171,307	193,628
2015 (C)	5,476	2,988	2,069	3,590	185,043	199,166
2016 (BN)	4,739	3,755	1,970	6,754	158,680	175,898
2017 (W)	5,056	4,010	2,047	5,305	130,845	147,263
2018 (BN)	-	-	-	-	-	157,533

<sup>1</sup> Reported groundwater extractions for 1991-2017 are based on metered pumping records as summarized in Preliminary Surface Water System Water Budget TM (Appendix 5-C).

<sup>2</sup> Estimated from Solano IHM; private groundwater pumping estimates are based on total groundwater pumping from Solano IHM minus reported pumping for Vacaville, Dixon, Rio Vista, and SID.

193 **4.2.4. Water Supply Projections**

194 **4.2.4.1. State Water Project Projections**

195 Change in water supply each year depends on allocation availability from SWP, Solano Project, and  
196 additional water sources. The Solano collaborative does not anticipate major changes to supply  
197 availability or sources for the planning horizon of this document. Additional water sources contributing  
198 to the groundwater system are discussed in **Section 5** and are expected to vary with water year type  
199 over the planning horizon.

200 For the purpose of the 2020 Urban Water Management Plan, SCWA provided the SWP reliability data in  
201 **Table 4-10** which are consistent with values being used in the City of Vacaville 2020 UWMP  
202 development. Total SWP reliability projections are for the entirety of SCWA. Only projected allocations  
203 to the City of Vacaville are relevant for the purposes of this GSP.

204 *Table 4-10: SCWA SWP Table A Supply Reliability Assumptions (AF)*

DWR (SWP) Table A Supply	% of Table A Amount <sup>1</sup>	2020	2025	2030	2035	2040-2045
<b>Average Water Year</b>	83%	39,637	39,637	39,637	39,637	39,637
<b>Single Dry Year</b>	15%	7,163	7,163	7,163	7,163	7,163
<b>Multiple-Dry Year</b>						
<b>Year 1</b>	45%	21,490	21,490	21,490	21,490	21,490
<b>Year 2</b>	30%	14,327	14,327	14,327	14,327	14,327
<b>Year 3</b>	15%	7,163	7,163	7,163	7,163	7,163
<b>Year 4</b>	15%	7,163	7,163	7,163	7,163	7,163
<b>Year 5</b>	30%	14,327	14,327	14,327	14,327	14,327
<sup>1</sup> This percentage is derived from the Final State Water Project Delivery Capability Report 2019 dated August 26,2020 and includes 10% NOD allocations for additional reliability.						

205 **4.2.4.2. Solano Project Projections**

206 SCWA has provided direction to water retailers for assumptions of future Solano Project Reliability as  
207 shown in **Table 4-11**. These reliability projections are based on an analysis of surface water inflows by  
208 water year type from 1906 to 2019. It is estimated that in future multiple dry years the reliability of this  
209 water source is approximately 93%.

210 *Table 4-11: Estimated Solano Project Reliability*

Solano Project Supply <sup>1</sup>	2025	2030	2035	2040-2045
Average Water Year <sup>2</sup>	205,986	205,986	205,986	205,986
% of Contract Amount <sup>2</sup>	99%	99%	99%	99%
Single Dry Year <sup>3</sup>	204,326	204,326	204,326	204,326
% of Contract Amount <sup>3</sup>	99%	99%	99%	99%
Multi-Dry Year <sup>4</sup>	192,375	192,375	192,375	192,375
% of Contract Amount <sup>4</sup>	93%	93%	93%	93%
<sup>1</sup> SCWA's Total Participating Agency Contract Amounts equal 207,350 AF and includes 15,000 AF of canal losses. <sup>2</sup> Based on average percent allocation (including canal losses) during Average Years over the study's historic hydrologic period of 1906 through 2019, rounded to the nearest whole percent. <sup>3</sup> Based on the average percent allocation (including canal losses) during Single Dry Years over the historic hydrologic period of 1906 through 2019, rounded to the nearest whole percent. <sup>4</sup> Supplies shown are average percent allocation (including canal losses) over four consecutive dry years, based on a repeat of the historic five-year dry period with low inflow to Lake Berryessa of 1990-1994, rounded to the nearest whole percent.				

211 Projections of future Solano Project water supplies utilize maximum Solano Project allocations and a  
 212 multi-dry year reliability factor of 93%, based on analysis of historical reliability of the Project. The value  
 213 used for future modeling scenarios over the 50-year projected planning horizon (see **Section 5** for  
 214 description of the projected period) is approximately 188,000 acre-ft/year, which is based on Solano  
 215 Project supplies for the historical years used in developing the projected model scenarios.