Wyandotte Creek Subbasin Groundwater Sustainability Plan Draft Basin Setting

Appendix A – Historical Water Budget Estimates

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Basin Setting Appendix A – Historical Annual Water Budget Estimates

This appendix contains detailed annual water budget results for the land and surface water system (**Table A-1**) and for the groundwater system (**Table A-2**).

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Table A-1. Historical Land and Surface Water System Water Budget, 2000-2018.

Component	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Inflows (AFY)																			
Surface Water Inflows	505,700	491,500	513,900	516,200	546,400	515,500	1,945,300	538,500	534,400	520,400	549,800	971,600	699,700	1,188,500	819,000	922,800	1,139,500	6,547,300	809,900
Outside Diversions	*5,900*	*5,900*	*6,000*	*5,900*	*6,000*	*5,800*	*5,600*	*5,400*	*5,800*	*5,700*	*5,600*	*5,400*	*5,700*	*5,700*	*5,600*	*5,700*	*5,700*	*5,600*	*5,700*
Feather River	*456,200*	*463,100*	*470,400*	*464,800*	*506,100*	*469,100*	*1,871,500*	*502,000*	*499,300*	*482,100*	*507,100*	*908,600*	*653,100*	*1,142,000*	*778,600*	*885,300*	*1,086,100*	*6,458,700*	*759,900*
North Honcut Creek	*43,100*	*22,200*	*37,200*	*45,100*	*33,800*	*40,200*	*67,500*	*30,800*	*28,900*	*32,200*	*36,500*	*56,800*	*40,400*	*40,300*	*34,400*	*31,400*	*47,000*	*81,800*	*43,700*
Precipitation Runoff	*400*	*200*	*300*	*400*	*300*	*400*	*700*	*200*	*300*	*400*	*500*	*700*	*400*	*400*	*300*	*400*	*500*	*1,100*	*600*
Applied Water Return Flows	*100*	*100*	*100*	*100*	*0*	*0*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*
Precipitation	137,200	101,400	123,600	151,500	126,700	153,400	210,800	91,600	104,200	111,300	140,200	197,600	111,100	110,900	79,000	93,300	126,600	205,600	108,800
Groundwater Pumping	49,700	48,000	50,000	45,500	49,200	40,400	43,800	53,200	57,300	48,900	44,600	38,900	52,700	51,600	56,900	50,900	43,000	33,300	37,600
Agricultural	*44,100*	*41,900*	*42,900*	*37,900*	*40,900*	*31,500*	*34,400*	*43,700*	*48,100*	*40,600*	*36,700*	*31,400*	*44,600*	*44,000*	*48,000*	*43,300*	*36,100*	*26,800*	*30,900*
Urban and Industrial	*200*	*100*	*400*	*200*	*200*	*500*	*1,200*	*1,100*	*1,400*	*1,000*	*700*	*1,100*	*1,200*	*1,100*	*800*	*400*	*400*	*400*	*400*
Managed Wetlands	*5,500*	*6,000*	*6,600*	*7,500*	*8,100*	*8,500*	*8,200*	*8,400*	*7,800*	*7,300*	*7,200*	*6,400*	*6,900*	*6,400*	*8,200*	*7,200*	*6,400*	*6,100*	*6,300*
Stream Gains from Groundwater	47,500	40,100	40,500	42,600	41,600	43,500	60,700	34,700	32,800	26,800	32,100	48,000	33,800	29,300	18,900	19,200	20,300	47,000	30,800
Total Inflow	***740,100***	***681,000***	***728,000***	***755,800***	***763,900***	***752,800***	***2,260,600***	***718,000***	***728,700***	***707,400***	***766,700***	***1,256,100***	***897,300***	***1,380,300***	***973,800***	***1,086,200***	***1,329,400***	***6,833,200***	***987,100***
Outflows (AFY)																			
Evapotranspiration	88,000	88,100	87,000	92,200	80,400	94,700	86,700	95,800	89,300	92,500	90,200	92,000	92,500	84,500	83,700	73,600	80,200	82,400	81,000
Agricultural	*45,300*	*45,400*	*45,900*	*44,600*	*44,000*	*40,900*	*41,900*	*48,000*	*49,300*	*46,600*	*43,800*	*41,400*	*47,600*	*46,800*	*45,000*	*39,600*	*39,900*	*38,400*	*38,200*
Urban and Industrial	*7,000*	*7,100*	*7,100*	*8,000*	*6,800*	*9,700*	*8,400*	*9,400*	*8,600*	*9,800*	*9,900*	*11,200*	*9,800*	*9,300*	*9,200*	*8,000*	*7,800*	*7,900*	*7,600*
Managed Wetlands	*4,300*	*4,600*	*5,200*	*6,400*	*6,200*	*6,900*	*6,400*	*6,800*	*5,500*	*5,900*	*5,700*	*5,400*	*5,200*	*4,900*	*5,600*	*4,500*	*4,300*	*4,400*	*4,500*
Native Vegetation	*31,400*	*31,000*	*28,800*	*33,100*	*23,500*	*37,200*	*30,000*	*31,600*	*25,900*	*30,100*	*30,800*	*33,900*	*29,800*	*23,400*	*23,900*	*21,400*	*28,100*	*31,600*	*30,700*
Canal Evaporation	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Deep Percolation	80,500	54,900	74,200	82,200	81,100	79,700	123,900	41,000	60,900	53,000	73,500	107,300	55,500	58,100	40,300	51,600	68,600	111,300	47,600
Precipitation	*54,300*	*33,600*	*48,900*	*57,800*	*52,200*	*57,900*	*91,900*	*20,800*	*34,700*	*30,800*	*50,300*	*80,500*	*31,700*	*33,100*	*19,000*	*28,800*	*47,400*	*87,900*	*32,100*
Applied Surface Water	*7,100*	*5,700*	*6,600*	*7,100*	*8,800*	*6,300*	*9,300*	*4,600*	*6,200*	*5,900*	*6,700*	*8,000*	*5,900*	*6,200*	*3,600*	*5,100*	*5,300*	*6,600*	*3,600*
Applied Groundwater	*19,200*	*15,600*	*18,700*	*17,300*	*20,000*	*15,500*	*22,700*	*15,700*	*20,000*	*16,300*	*16,500*	*18,800*	*17,900*	*18,800*	*17,700*	*17,600*	*15,900*	*16,800*	*11,900*
Seepage	7,600	7,600	8,200	8,600	8,900	7,700	14,400	9,100	8,700	9,600	9,000	9,700	9,600	10,200	9,000	9,500	10,800	23,600	8,600
Streams	*1,400*	*1,300*	*1,900*	*2,500*	*2,400*	*1,700*	*8,100*	*2,600*	*2,200*	*3,200*	*2,800*	*3,700*	*3,000*	*3,900*	*4,000*	*4,700*	*6,000*	*18,800*	*3,800*
Lakes	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*
Canals and Drains	*2,600*	*2,700*	*2,600*	*2,500*	*2,900*	*2,400*	*2,600*	*2,900*	*2,900*	*2,800*	*2,600*	*2,400*	*2,900*	*2,700*	*1,400*	*1,200*	*1,200*	*1,200*	*1,200*
Surface Water Outflows	563,300	530,300	559,100	571,600	594,300	570,500	2,036,400	571,000	571,500	551,600	593,800	1,047,200	740,500	1,225,300	842,300	951,400	1,170,100	6,616,100	849,800
Precipitation Runoff	*17,100*	*8,800*	*13,800*	*19,000*	*16,300*	*17,300*	*36,700*	*9,300*	*14,200*	*13,900*	*18,300*	*31,700*	*16,000*	*17,400*	*10,100*	*15,300*	*15,800*	*33,000*	*13,600*
Applied Surface Water Return Flows	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Applied Groundwater Return Flows	*1,800*	*1,800*	*1,700*	*1,700*	*1,800*	*1,800*	*1,900*	*1,800*	*2,000*	*2,000*	*2,000*	*1,900*	*2,100*	*2,000*	*1,700*	*1,300*	*1,200*	*1,100*	*1,000*
Streams	*3,500*	*3,300*	*3,200*	*3,100*	*3,100*	*3,300*	*3,600*	*3,800*	*4,300*	*4,000*	*4,000*	*3,500*	*4,300*	*3,700*	*3,900*	*2,200*	*2,700*	*1,700*	*1,500*
Butte Creek Diversions to Sutter	*540,900*	*516,500*	*540,400*	*547,800*	*573,100*	*548,100*	*1,994,200*	*556,100*	*551,000*	*531,700*	*569,500*	*1,010,100*	*718,100*	*1,202,200*	*826,600*	*932,600*	*1,150,400*	*6,580,300*	*833,600*
Total Outflow	***739,400***	***680,900***	***728,500***	***754,600***	***764,700***	***752,600***	***2,261,400***	***716,900***	***730,400***	***706,700***	***766,500***	***1,256,200***	***898,100***	***1,378,100***	***975,300***	***1,086,100***	***1,329,700***	***6,833,400***	***987,000***
Change in Storage (Inflow - Outflow)	***700***	***100***	***-500***	***1,200***	***-800***	***200***	***-800***	***1,100***	***-1,700***	***700***	***200***	***-100***	***-800***	***2,200***	***-1,500***	***100***	***-300***	***-200***	***100***

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Table A-2. Historical Groundwater System Water Budget, 2000-2018.

Component	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Inflows (AFY)																			
Subsurface Inflows	26,800	26,100	27,800	27,500	27,200	24,900	25,700	25,400	25,800	25,100	25,200	25,400	24,500	23,900	24,300	23,000	21,100	21,400	21,700
Butte Subbasin	*14,800*	*15,100*	*16,800*	*17,100*	*16,900*	*15,200*	*15,700*	*15,300*	*15,800*	*16,000*	*16,300*	*16,200*	*15,100*	*14,500*	*15,100*	*14,200*	*13,100*	*13,200*	*13,000*
North Yuba Subbasin	*3,700*	*3,200*	*2,900*	*2,700*	*2,800*	*2,800*	*2,700*	*2,700*	*2,500*	*2,000*	*2,300*	*2,900*	*3,200*	*2,900*	*2,700*	*2,300*	*2,100*	*2,300*	*2,900*
Sutter Subbasin	*500*	*600*	*900*	*900*	*800*	*500*	*600*	*700*	*700*	*800*	*700*	*500*	*600*	*700*	*800*	*800*	*700*	*600*	*600*
Vina Subbasin	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Foothill Area	*7,700*	*7,200*	*7,200*	*6,800*	*6,700*	*6,400*	*6,700*	*6,700*	*6,800*	*6,300*	*5,800*	*5,800*	*5,700*	*5,700*	*5,600*	*5,700*	*5,400*	*5,400*	*5,200*
Deep Percolation	80,500	54,900	74,200	82,200	81,100	79,700	123,900	41,000	60,900	53,000	73,500	107,300	55,500	58,100	40,300	51,600	68,600	111,300	47,600
Precipitation	*54,300*	*33,600*	*48,900*	*57,800*	*52,200*	*57,900*	*91,900*	*20,800*	*34,700*	*30,800*	*50,300*	*80,500*	*31,700*	*33,100*	*19,000*	*28,800*	*47,400*	*87,900*	*32,100*
Applied Surface Water	*7,100*	*5,700*	*6,600*	*7,100*	*8,800*	*6,300*	*9,300*	*4,600*	*6,200*	*5,900*	*6,700*	*8,000*	*5,900*	*6,200*	*3,600*	*5,100*	*5,300*	*6,600*	*3,600*
Applied Groundwater	*19,200*	*15,600*	*18,700*	*17,300*	*20,000*	*15,500*	*22,700*	*15,700*	*20,000*	*16,300*	*16,500*	*18,800*	*17,900*	*18,800*	*17,700*	*17,600*	*15,900*	*16,800*	*11,900*
Seepage	7,600	7,600	8,200	8,600	8,900	7,700	14,400	9,100	8,700	9,600	9,000	9,700	9,600	10,200	9,000	9,500	10,800	23,600	8,600
Streams	*1,400*	*1,300*	*1,900*	*2,500*	*2,400*	*1,700*	*8,100*	*2,600*	*2,200*	*3,200*	*2,800*	*3,700*	*3,000*	*3,900*	*4,000*	*4,700*	*6,000*	*18,800*	*3,800*
Lakes	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*	*3,600*
Canals and Drains	*2,600*	*2,700*	*2,600*	*2,500*	*2,900*	*2,400*	*2,600*	*2,900*	*2,900*	*2,800*	*2,600*	*2,400*	*2,900*	*2,700*	*1,400*	*1,200*	*1,200*	*1,200*	*1,200*
Total Inflow	***114,900***	***88,600***	***110,200***	***118,300***	***117,200***	***112,300***	***164,000***	***75,500***	***95,400***	***87,700***	***107,700***	***142,400***	***89,600***	***92,200***	***73,600***	***84,100***	***100,500***	***156,300***	***77,900***
Outflows (AFY)																			
Subsurface Outflows	27,900	27,300	27,300	26,700	26,500	26,300	28,500	27,100	25,600	25,000	23,900	23,900	23,600	24,000	23,200	23,800	24,800	25,400	24,100
Butte Subbasin	*16,000*	*14,900*	*14,400*	*14,400*	*14,600*	*14,700*	*15,900*	*14,800*	*13,500*	*12,900*	*12,500*	*13,300*	*13,100*	*13,000*	*12,300*	*13,000*	*13,900*	*14,900*	*14,000*
North Yuba Subbasin	*10,400*	*10,900*	*11,400*	*10,800*	*10,400*	*10,000*	*10,900*	*10,900*	*10,700*	*10,800*	*9,900*	*8,900*	*9,000*	*9,500*	*9,600*	*9,600*	*9,600*	*8,800*	*8,700*
Sutter Subbasin	*500*	*500*	*400*	*400*	*300*	*500*	*400*	*300*	*400*	*200*	*300*	*400*	*400*	*400*	*200*	*200*	*300*	*300*	*400*
Vina Subbasin	*200*	*200*	*200*	*200*	*200*	*200*	*300*	*200*	*200*	*200*	*200*	*200*	*200*	*200*	*200*	*200*	*300*	*300*	*200*
Foothill Area	*900*	*900*	*900*	*900*	*900*	*900*	*1,000*	*900*	*800*	*800*	*900*	*900*	*900*	*900*	*900*	*700*	*700*	*1,100*	*700*
Groundwater Pumping	49,700	48,000	50,000	45,500	49,200	40,400	43,800	53,200	57,300	48,900	44,600	38,900	52,700	51,600	56,900	50,900	43,000	33,300	37,600
Agricultural	*44,100*	*41,900*	*42,900*	*37,900*	*40,900*	*31,500*	*34,400*	*43,700*	*48,100*	*40,600*	*36,700*	*31,400*	*44,600*	*44,000*	*48,000*	*43,300*	*36,100*	*26,800*	*30,900*
Urban and Industrial	*200*	*100*	*400*	*200*	*200*	*500*	*1,200*	*1,100*	*1,400*	*1,000*	*700*	*1,100*	*1,200*	*1,100*	*800*	*400*	*400*	*400*	*400*
Managed Wetlands	*5,500*	*6,000*	*6,600*	*7,500*	*8,100*	*8,500*	*8,200*	*8,400*	*7,800*	*7,300*	*7,200*	*6,400*	*6,900*	*6,400*	*8,200*	*7,200*	*6,400*	*6,100*	*6,300*
Stream Gains from Groundwater	47,500	40,100	40,500	42,600	41,600	43,500	60,700	34,700	32,800	26,800	32,100	48,000	33,800	29,300	18,900	19,200	20,300	47,000	30,800
Total Outflow	***125,100***	***115,400***	***117,800***	***114,800***	***117,300***	***110,200***	***133,000***	***115,000***	***115,700***	***100,700***	***100,600***	***110,800***	***110,100***	***104,900***	***99,000***	***93,900***	***88,100***	***105,700***	***92,500***
Change in Storage (Inflow - Outflow)	***-10,200***	***-26,800***	***-7,600***	***3,500***	***-100***	***2,100***	***31,000***	***-39,500***	***-20,300***	***-13,000***	***7,100***	***31,600***	***-20,500***	***-12,700***	***-25,400***	***-9,800***	***12,400***	***50,600***	***-14,600***

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