

APPENDIX 1

S-5A Sub-basin Water Quality Summary by WY, Wet Season, and Dry Season

Table A-1.1a. WY1979–WY2016 S5A Sub-basin TP Flow Measurements and Calculations.

Water Year	S5A1OUT (ac-ft)	S5A1OUT (ac-ft) 5 Year Rolling Average	S5ATHRU (ac-ft)	S5ATHRU (ac-ft) 5 Year Rolling Average	G250 (ac-ft)	G250 (ac-ft) 5 Year Rolling Average	EBPS (ac-ft)	EBPS (ac-ft) 5 Year Rolling Average	HGS5OUT (ac-ft)	HGS5OUT (ac-ft) 5 Year Rolling Average	Net Inflow Adjusted (ac-ft)	Net Inflow Adjusted (ac-ft) 5 Year Rolling Average	Net Outflow (ac-ft)	Net Outflow (ac-ft) 5 Year Rolling Average	S5A Sub-basin Runoff (ac-ft)	S5A Sub-basin Runoff (ac-ft) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979	0		35558		0		0		0		35558		0		-35558			
1980	284320		7938		0		0		0		7938		284320		276382		53	
1981	186994		17312		0		0		0		17312		186994		169682		40	
1982	188747		10174		0		0		19532		10174		208279		198105		48	
1983	452248	222462	1519	14500	0		0		8009		1519	14500	460257	227970	458738	213470	63	
1984	321363	286734	2602	7909	0		0		0		2602	7909	321363	292243	318760	284334	56	52
1985	243137	278498	877	6497	0		0		0		877	6497	243137	284006	242261	277509	43	50
1986	302010	301501	3142	3663	0		0		0		3142	3663	302010	307009	298868	303346	53	53
1987	263793	316510	1109	1850	0		0		0		1109	1850	263793	318112	262685	316262	53	54
1988	224018	270864	0	1546	0		0		0		0	1546	224018	270864	224018	269318	47	50
1989	235785	253749	11937	3413	0		0		0		11937	3413	235785	253749	223848	250336	45	48
1990	167116	238545	23158	7869	0		0		7646		23158	7869	174762	240074	151604	232205	40	48
1991	210015	220146	0	7241	0		0		2595		0	7241	212610	222194	212610	214953	53	48
1992	183869	204161	3979	7815	0		0		0		3979	7815	183869	206209	179890	198394	45	46
1993	587273	276812	179721	43759	0		0		0		179721	43759	587273	278860	407552	235101	68	50
1994	281748	286004	444	41461	0		0		0		444	41461	281748	288052	281304	246592	52	52
1995	497690	352119	115468	59923	92369		0		0		115468	59923	590059	371112	474591	311189	73	58
1996	318744	373865	169869	93896	182676		0		0		169869	93896	501420	428874	331551	334977	54	58
1997	177027	372497	54884	104077	118783		0		0		54884	104077	295810	451262	240926	347185	53	60
1998	305364	316115	66816	81496	80306		0		0		66816	81496	385670	410942	318854	329445	62	59
1999	232282	306221	125465	106501	88535		0		0		125465	106501	320817	418755	195352	312255	42	57
2000	395827	285849	91262	101659	9966		0		0		91262	101659	405794	381902	314531	280243	60	54
2001	185143	259129	29254	73536	0		0		105		29254	73536	185249	318668	155994	245131	38	51
2002	269940	277711	2420	63044	0		10019		0		12439	65047	269940	313494	257501	248446	52	51
2003	630083	342655	322085	114097	0		16167		0		338252	119335	630083	362376	291831	243042	50	49
2004	314927	359184	36547	96314	0		19091		0		55639	105369	314927	361199	259289	255829	50	50
2005	405426	361104	51465	88354	0		21544		0		73009	101719	405426	361125	332417	259406	57	49
2006	208421	365760	13679	85239	0		14582		0		28260	101520	208421	365760	180161	264240	43	50
2007	182476	348267	11632	87082	0		9874	16252	0		21506	103333	182476	348267	160970	244933	37	48
2008	125338	247318	252	22715	0		7151	14448	0		7403	37163	125338	247318	117935	210154	44	46
2009	243795	233091	25293	20464	0		12135	13057	0		37428	33521	243795	233091	206366	199570	46	46
2010	293290	210664	9252	12022	0		16069	11962	0		25321	23984	293290	210664	267969	186680	63	47
2011	147243	198428	17965	12879	0		8650	10776	0		26615	23655	147243	198428	120628	174773	38	46
2012	146524	191238	35408	17634	0		4733	9748	0		40141	27382	146524	191238	106383	163856	35	45
2013	199934	206157	10088	19601	0		14358	11189	670		24446	30790	200604	206291	176158	175501	55	48
2014	317101	220818	90320	32606	0		15533	11869	0		105853	44475	317101	220952	211248	176477	54	49
2015	345331	231227	200285	70813	0		7709	10197	0		207994	81010	345331	231361	137338	150351	52	47
2016	320247	265828	132699	93760	0		13296	11126	0		145995	104886	320247	265962	174253	161076	47	49

Table A-1.1b. WY1979–WY2016 S5A Sub-basin TP Load Measurements and Calculations.

Water Year	S5A1OUT (kg)	S5A1OUT (kg) 5 Year Rolling Average	S5ATHRU (kg)	S5ATHRU (kg) 5 Year Rolling Average	G250 (kg)	G250 (kg) 5 Year Rolling Average	EBPS (kg)	EBPS (kg) 5 Year Rolling Average	HGS5OUT (kg)	HGS5OUT (kg) 5 Year Rolling Average	Net Inflow Adjusted Load (kg)	Net Inflow Adjusted Load (kg) 5 Year Rolling Average	Net Outflow Load (kg)	Net Outflow Load (kg) 5 Year Rolling Average	S5A Sub-basin Runoff Load (kg)	S5A Sub-basin Runoff Load (kg) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979	0		5737.92		0		0		0		5737.92		0		-5737.92			
1980	64436		1028.86		0		0		0		1028.86		64436		63407.1		53.4	
1981	37176.5		2319.57		0		0		0		2319.57		37176.5		34857		40.2	
1982	63521.1		1027.85		0		0		2610.7		1027.85		66131.8		65103.9		48.4	
1983	145731	62173	165.37	2056	0		0		1286.68		165.37	2056	147018	62952	146853	60897	63.1	
1984	75588.9	77291	397.74	988	0		0		0		397.74	988	75588.9	78070	75191.2	77082	56.3	52
1985	72998.4	79003	122.92	807	0		0		0		122.92	807	72998.4	79783	72875.5	78976	42.7	50
1986	63205.7	84209	355.06	414	0		0		0		355.06	414	63205.7	84989	62850.7	84575	53.1	53
1987	41064.3	79718	134.19	235	0		0		0		134.19	235	41064.3	79975	40930.1	79740	52.8	54
1988	40773.9	58726	0	202	0		0		0		0	202	40773.9	58726	40773.9	58524	47.4	50
1989	66875.5	56984	2203.85	563	0		0		0		2203.85	563	66875.5	56984	64671.7	56420	45.0	48
1990	29086	48201	4150.02	1369	0		0		1700.17		4150.02	1369	30786.1	48541	26636.1	47172	40.1	48
1991	76297	50819	0	1298	0		0		582.84		0	1298	76879.9	51276	76879.9	49978	53.1	48
1992	35373.9	49681	456.27	1362	0		0		0		456.27	1362	35373.9	50138	34917.6	48776	44.8	46
1993	125767	66680	23535.9	6069	0		0		0		23535.9	6069	125767	67136	102231	61067	68.2	50
1994	66519.4	66609	66.59	5642	0		0		0		66.59	5642	66519.4	67065	66452.9	61423	51.6	52
1995	99123.9	80616	17129.5	8238	15465		0		0		17129.5	8238	114589	83826	97459.4	75588	73.1	58
1996	68900.8	79137	29258.8	14089	24482.8		0		0		29258.8	14089	93383.5	87127	64124.7	73037	53.9	58
1997	32314	78525	12132.7	16425	14368.3		0		0		12132.7	16425	46682.2	89388	34549.5	72963	52.7	60
1998	74525.4	68277	20404.7	15798	11532.7		0		0		20404.7	15798	86058.1	81446	65653.4	65648	61.9	59
1999	45589.4	64091	30767.4	21939	11031.3		0		0		30767.4	21939	56620.7	79467	25853.3	57528	42.5	57
2000	80196.6	60305	24828.9	23478	1340.5		0		0		24828.9	23478	81537.1	72856	56708.2	49378	60.1	54
2001	30192.4	52564	5694.5	18766	0		0		32.05		5694.5	18766	30224.4	60224	24529.9	41459	37.7	51
2002	34538.5	53008	553.13	16450	0		3203.9		0		3757.03	17090	34538.5	57796	30781.5	40705	52.1	51
2003	120991	62302	75944.3	27558	0		6158.88		0		82103.1	29430	120991	64782	38888.1	35352	50.4	49
2004	52904.7	63765	8824.1	23169	0		7048.28		0		15872.4	26451	52904.7	64039	37032.4	37588	50.2	50
2005	113023	70330	14342.5	21072	0		12431.3		0		26773.8	26840	113023	70336	86249.6	43496	56.7	49
2006	56807.5	75653	3514.57	20636	0		8744.62		0		12259.2	28153	56807.5	75653	44548.3	47500	42.9	50
2007	53954.8	79536	3318.9	21189	0		4488.17	7774	0		7807.07	28963	53954.8	79536	46147.7	50573	37.3	48
2008	25626.5	60463	56.32	6011	0		4564.01	7455	0		4620.33	13467	25626.5	60463	21006.2	46997	44.2	46
2009	62672.1	62417	7754.67	5797	0		10165.5	8079	0		17920.1	13876	62672.1	62417	44752	48541	46.5	46
2010	68931.4	53598	1786.86	3286	0		16320	8856	0		18106.9	12143	68931.4	53598	50824.5	41456	62.7	47
2011	24394.6	47116	5964.79	3776	0		4768.52	8061	0		10733.3	11838	24394.6	47116	13661.3	35278	38.1	46
2012	22130.1	40751	7400.93	4593	0		2349.38	7633	0		9750.31	12226	22130.1	40751	12379.8	28525	35.1	45
2013	62524.6	48131	2225.61	5027	0		10986.6	8918	373.71		13212.2	13945	62898.3	48205	49686.2	34261	55.2	48
2014	68033.8	49203	15293.4	6534	0		10373.2	8960	0		25666.6	15494	68033.8	49278	42367.2	33784	54.0	49
2015	61397.7	47696	46496.2	15476	0		4350.96	6566	0		50847.2	22042	61397.7	47771	10550.5	25729	52.0	47
2016	70831.3	56983	24028.6	19089	0		12011.3	8014	0		36039.9	27103	70831.3	57058	34791.4	29955	46.8	49

Table A-1.1c. WY1979–WY2016 S5A Sub-basin TP FWMC Measurements and Calculations

Water Year	S5A1OUT FWMC (ppb)	S5A1OUT (ppb) 5 Year Rolling Average	S5ATHRU FWMC (ppb)	S5ATHRU (ppb) 5 Year Rolling Average	G250 FWMC (ppb)	G250 (ppb) 5 Year Rolling Average	EBPS FWMC (ppb)	EBPS (ppb) 5 Year Rolling Average	HGS5OUT FWMC (ppb)	HGS5OUT (ppb) 5 Year Rolling Average	Net Inflow Adjusted FWMC (ppb)	Net Inflow Adjusted (ppb) 5 Year Rolling Average	Net Outflow FWMC (ppb)	Net Outflow (ppb) 5 Year Rolling Average	S5A Sub-basin Runoff FWMC (ppb)	S5A Sub-basin Runoff (ppb) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979			131								131				131			
1980	184		105								105		184		186		53	
1981	161		109								109		161		167		40	
1982	273		82						108		82		257		266		48	
1983	261	220	88	103					130		88	103	259	215	260	202	63	
1984	191	214	124	102							124	102	191	210	191	214	56	52
1985	243	226	114	103							114	103	243	222	244	226	43	50
1986	170	228	92	100							92	100	170	224	170	226	53	53
1987	126	198	98	103							98	103	126	198	126	198	53	54
1988	148	176		107								107	148	176	148	176	47	50
1989	230	183	150	113							150	113	230	183	234	184	45	48
1990	141	163	145	121						180	145	121	143	163	142	164	40	48
1991	295	188		131								131	293	188	293	189	53	48
1992	156	194	93	129							93	129	156	194	157	195	45	46
1993	174	199	106	124							106	124	174	199	203	206	68	50
1994	191	191	122	116							122	116	191	191	192	198	52	52
1995	161	195	120	110	136						120	110	157	194	166	202	73	58
1996	175	172	140	116	109						140	116	151	166	157	175	54	58
1997	148	170	179	133	98						179	133	128	160	116	167	53	60
1998	198	175	248	162	116						248	162	181	162	167	160	62	59
1999	159	168	199	177	101						199	177	143	152	107	143	42	57
2000	164	169	221	197	109						221	197	163	153	146	139	60	54
2001	132	160	158	201						247	158	201	132	149	127	133	38	51
2002	104	151	185	202			259				245	214	104	145	97	129	52	51
2003	156	143	191	191			309				197	204	156	140	108	117	50	49
2004	136	138	196	190			299				231	210	136	138	116	119	50	50
2005	226	151	226	191			468				297	226	226	151	210	132	57	49
2006	221	169	208	201			486				352	264	221	169	200	146	43	50
2007	240	196	231	210			368	386			294	274	240	196	232	173	37	48
2008	166	198	181	208			517	428			506	336	166	198	144	181	44	46
2009	208	212	249	219			679	504			388	367	208	212	176	193	46	46
2010	191	205	157	205			823	575			580	424	191	205	154	181	63	47
2011	134	188	269	217			447	567			327	419	134	188	92	160	38	46
2012	122	164	169	205			402	574			197	400	122	164	94	132	35	45
2013	254	182	179	205			620	594	452		438	386	254	182	229	149	55	48
2014	174	175	137	182			541	567			197	348	174	175	163	146	54	49
2015	144	166	188	189			458	494			198	271	144	166	62	128	52	47
2016	179	175	147	164			732	551			200	246	179	175	162	142	47	49

Table A-1.2a. Wet Season WY1979–WY2016 S5A Sub-basin Flow Measurements and Calculations.

Water Year	S5A1OUT (ac-ft)	S5A1OUT (ac-ft) 5 Year Rolling Average	S5ATHRU (ac-ft)	S5ATHRU (ac-ft) 5 Year Rolling Average	G250 (ac-ft)	G250 (ac-ft) 5 Year Rolling Average	EBPS (ac-ft)	EBPS (ac-ft) 5 Year Rolling Average	HGS5OUT (ac-ft)	HGS5OUT (ac-ft) 5 Year Rolling Average	Net Inflow Adjusted (ac-ft)	Net Inflow Adjusted (ac-ft) 5 Year Rolling Average	Net Outflow (ac-ft)	Net Outflow (ac-ft) 5 Year Rolling Average	S5A Sub-basin Runoff (ac-ft)	S5A Sub-basin Runoff (ac-ft) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979	0		0		0		0		0		0		0		0			
1980	164204		6425		0		0		0		6425		164204		157779		36	
1981	153771		3646		0		0		0		3646		153771		150125		33	
1982	131431		1716		0		0		11006		1716		142437		140721		35	
1983	303111	150503	1186	2594	0		0		8009		1186	2594	311120	154306	309934	151712	42	
1984	206873	191878	321	2659	0		0		0		321	2659	206873	195681	206552	193022	40	37
1985	178763	194790	633	1500	0		0		0		633	1500	178763	198593	178130	197092	31	36
1986	222061	208448	2160	1203	0		0		0		2160	1203	222061	212251	219901	211048	40	38
1987	172798	216721	1109	1082	0		0		0		1109	1082	172798	218323	171690	217241	36	38
1988	107535	177606	0	845	0		0		0		0	845	107535	177606	107535	176762	27	35
1989	187736	173779	543	889	0		0		0		543	889	187736	173779	187193	172890	36	34
1990	123690	162764	6645	2091	0		0		0		6645	2091	123690	162764	117044	160673	31	34
1991	85203	135393	0	1659	0		0		2401		0	1659	87604	135873	87604	134213	31	32
1992	153227	131478	0	1438	0		0		0		0	1438	153227	131959	153227	130521	34	32
1993	344121	178796	93526	20143	0		0		0		93526	20143	344121	179276	250595	159133	44	35
1994	181464	177541	67	20048	0		0		0		67	20048	181464	178021	181397	157974	34	35
1995	268570	206517	29021	24523	33693		0		0		29021	24523	302263	213736	273242	189213	47	38
1996	230570	235591	39195	32362	68645		0		0		39195	32362	299215	256058	260020	223696	41	40
1997	135945	232134	24027	37167	76958		0		0		24027	37167	212903	267993	188875	230826	37	41
1998	164383	196186	28068	24076	33626		0		0		28068	24076	198009	238771	169942	214695	38	39
1999	106849	181263	52744	34611	54413		0		0		52744	34611	161263	234731	108518	200120	25	38
2000	258231	179196	20517	32910	9966		0		0		20517	32910	268197	227917	247680	195007	46	37
2001	175474	168176	24540	29979	0		0		105		24540	29979	175580	203190	151039	173211	33	36
2002	209609	182909	935	25361	0		6954		0		7888	26751	209609	202532	201721	175780	41	36
2003	394330	228899	182138	56175	0		10824		0		192962	59730	394330	241796	201367	182065	32	35
2004	232465	254022	10228	47672	0		15028		0		25256	54233	232465	256036	207209	201803	38	38
2005	325527	267481	24924	48553	0		16298		0		41222	58374	325527	267502	284306	209128	44	37
2006	161225	264631	10531	45751	0		10943		0		21475	57761	161225	264631	139751	206871	33	38
2007	163023	255314	1806	45926	0		8470	12313	0		10277	58238	163023	255314	152746	197076	33	36
2008	92536	194955	186	9535	0		3894	10927	0		4080	20462	92536	194955	88456	174494	31	36
2009	215845	191631	0	7489	0		11637	10248	0		11637	17738	215845	191631	204208	173893	42	37
2010	217860	170098	7160	3937	0		10266	9042	0		17426	12979	217860	170098	200433	157119	44	37
2011	105906	159034	4928	2816	0		5171	7888	0		10098	10703	105906	159034	95807	148330	31	36
2012	99225	146274	8728	4200	0		3196	6833	0		11924	11033	99225	146274	87301	135241	29	35
2013	164004	160568	2147	4592	0		9999	8054	670		12146	12646	164674	160702	152528	148056	44	38
2014	253205	168040	66669	17926	0		12034	8133	0		78704	26060	253205	168174	174501	142114	41	38
2015	257063	175880	129948	42484	0		6212	7322	0		136160	49806	257063	176014	120903	126208	42	38
2016	173657	189431	102434	61985	0		5126	7313	0		107560	69299	173657	189565	66097	120266	25	36

Table A-1.2b. Wet Season WY1979–WY2016 S5A Sub-basin TP Load Measurements and Calculations.

Water Year	S5A1OUT (kg)	S5A1OUT (kg) 5 Year Rolling Average	S5ATHRU (kg)	S5ATHRU (kg) 5 Year Rolling Average	G250 (kg)	G250 (kg) 5 Year Rolling Average	EBPS (kg)	EBPS (kg) 5 Year Rolling Average	HGS5OUT (kg)	HGS5OUT (kg) 5 Year Rolling Average	Net Inflow Adjusted Load (kg)	Net Inflow Adjusted Load (kg) 5 Year Rolling Average	Net Outflow Load (kg)	Net Outflow Load (kg) 5 Year Rolling Average	S5A Sub-basin Runoff Load (kg)	S5A Sub-basin Runoff Load (kg) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979	0		0		0		0		0		0		0		0			
1980	31292		763		0		0		0		763		31292		30529		36	
1981	31812		391		0		0		0		391		31812		31421		33	
1982	43614		191		0		0		1273		191		44887		44696		35	
1983	85593		126		0		0		1287		126		86880		86754	38680	42	
1984	48324	48127	49	304	0		0		0		49	304	48324	48639	48275	48335	40	37
1985	59049	53678	92	170	0		0		0		92	170	59049	54190	58957	54021	31	36
1986	49465	57209	256	143	0		0		0		256	143	49465	57721	49209	57578	40	38
1987	29630	54412	134	131	0		0		0		134	131	29630	54669	29496	54538	36	38
1988	17651	40824	0	106	0		0		0		0	106	17651	40824	17651	40717	27	35
1989	55301	42219	95	115	0		0		0		95	115	55301	42219	55206	42104	36	34
1990	21361	34682	873	272	0		0		0		873	272	21361	34682	20488	34410	31	34
1991	27825	30353	0	220	0		0		539		0	220	28363	30461	28363	30241	31	32
1992	28804	30188	0	194	0		0		0		0	194	28804	30296	28804	30103	34	32
1993	80068	42672	10107	2215	0		0		0		10107	2215	80068	42780	69961	40565	44	35
1994	42264	40064	13	2199	0		0		0		13	2199	42264	40172	42251	37973	34	35
1995	54991	46790	3343	2693	5485		0		0		3343	2693	60475	47995	57132	45302	47	38
1996	44035	50032	5020	3697	9596		0		0		5020	3697	53630	53049	48610	49352	41	40
1997	24960	49263	4390	4575	10438		0		0		4390	4575	35398	54367	31007	49792	37	41
1998	31080	39466	8397	4233	3762		0		0		8397	4233	34842	45322	26445	41089	38	39
1999	21863	35386	9345	6099	7028		0		0		9345	6099	28891	42647	19546	36548	25	38
2000	54320	35251	3900	6210	1341		0		0		3900	6210	55660	41684	51760	35474	46	37
2001	29470	32339	4140	6034	0		0		32		4140	6034	29503	36859	25362	30824	33	36
2002	25568	32460	249	5206	0		2429		0		2678	5692	25568	34893	22890	29201	41	36
2003	70427	40330	36412	10809	0		4965		0		41377	12288	70427	42010	29050	29722	32	35
2004	40597	44076	1712	9283	0		6191		0		7903	12000	40597	44351	32694	32351	38	38
2005	93949	52002	4556	9414	0		10477		0		15033	14226	93949	52009	78916	37782	44	37
2006	39526	54013	2787	9143	0		6799		0		9586	15315	39526	54013	29941	38698	33	38
2007	52199	59340	400	9173	0		4154	6517	0		4555	15691	52199	59340	47644	43649	33	36
2008	17140	48682	35	1898	0		2569	6038	0		2604	7936	17140	48682	14536	40746	31	36
2009	59636	52490	0	1556	0		9374	6675	0		9374	8230	59636	52490	50262	44260	42	37
2010	52283	44157	1387	922	0		12596	7098	0		13982	8020	52283	44157	38301	36136	44	37
2011	18532	39958	2704	905	0		2887	6316	0		5590	7221	18532	39958	12942	32737	31	36
2012	16515	32821	1795	1184	0		1833	5852	0		3628	7036	16515	32821	12887	25785	29	35
2013	56694	40732	394	1256	0		8826	7103	374		9220	8359	57068	40807	47847	32448	44	38
2014	58505	40506	9977	3251	0		8534	6935	0		18511	10186	58505	40581	39995	30394	41	38
2015	47474	39544	28295	8633	0		3971	5210	0		32265	13843	47474	39619	15208	25776	42	38
2016	27700	41378	17669	11626	0		4494	5531	0		22162	17157	27700	41452	5538	24295	25	36

Table A-1.2c. Wet Season WY1979–WY2016 S5A Sub-basin TP FWMC Measurements and Calculations

Water Year	S5A1OUT FWMC (ppb)	S5A1OUT (ppb) 5 Year Rolling Average	S5ATHRU FWMC (ppb)	S5ATHRU (ppb) 5 Year Rolling Average	G250 FWMC (ppb)	G250 (ppb) 5 Year Rolling Average	EBPS FWMC (ppb)	EBPS (ppb) 5 Year Rolling Average	HGS5OUT FWMC (ppb)	HGS5OUT (ppb) 5 Year Rolling Average	Net Inflow FWMC (ppb)	Net Inflow (ppb) 5 Year Rolling Average	Net Outflow FWMC (ppb)	Net Outflow (ppb) 5 Year Rolling Average	S5A Sub-basin Runoff FWMC (ppb)	S5A Sub-basin Runoff (ppb) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979																		
1980	154		96								96		154		157		36	
1981	168		87								87		168		170		33	
1982	269		90						94		90		255		257		35	
1983	229	205	86	90					130		86		226		227		42	
1984	189	202	124	97							124	97	189	199	189	200	40	37
1985	268	225	117	101							117	101	268	221	268	222	31	36
1986	181	227	96	103							96	103	181	224	181	225	40	38
1987	139	201	98	104							98	104	139	201	139	201	36	38
1988	133	182		109								109	133	182	133	182	27	35
1989	239	192	142	113							142	113	239	192	239	192	36	34
1990	140	166	107	111							107	111	140	166	142	167	31	34
1991	265	183		115					182			115	262	183	262	183	31	32
1992	152	186		124								124	152	185	152	186	34	32
1993	189	197	88	112							88	112	189	196	226	204	44	35
1994	189	187	156	117							156	117	189	186	189	194	34	35
1995	166	192	93	112	132						93	112	162	191	170	200	47	38
1996	155	170	104	110	113						104	110	145	167	152	178	41	40
1997	149	169	148	118	110						148	118	135	164	133	174	37	41
1998	153	162	243	149	91						243	149	143	155	126	154	38	39
1999	166	158	144	146	105						144	146	145	146	146	145	25	38
2000	171	159	154	158	109						154	158	168	147	169	145	46	37
2001	136	155	137	165					247		137	165	136	145	136	142	33	36
2002	99	145	216	179			283				275	190	99	138	92	134	41	36
2003	145	143	162	163			372				174	177	145	139	117	132	32	35
2004	142	138	136	161			334				254	199	142	138	128	128	38	38
2005	234	151	148	160			521				296	227	234	151	225	140	44	37
2006	199	164	215	175			504				362	272	199	164	174	147	33	38
2007	260	196	180	168			398	426			359	289	260	196	253	179	33	36
2008	150	197	153	166			535	458			517	358	150	197	133	183	31	36
2009	224	213		174			653	522			653	437	224	213	200	197	42	37
2010	195	205	157	176			995	617			650	508	195	205	155	183	44	37
2011	142	194	445	234			453	607			449	526	142	194	110	170	31	36
2012	135	169	167	230			465	620			247	503	135	169	120	143	29	35
2013	280	195	149	229			716	656	452		615	523	281	195	254	168	44	38
2014	187	188	121	208			575	641			191	430	187	188	186	165	41	38
2015	150	179	177	212			518	545			192	339	150	179	102	154	42	38
2016	129	176	140	151			711	597			167	282	129	176	68	146	25	36

Table A-1.3a. Dry Season WY1979–WY2016 S5A Sub-basin Flow Measurements and Calculations.

Water Year	S5A1OUT (ac-ft)	S5A1OUT (ac-ft) 5 Year Rolling Average	S5ATHRU (ac-ft)	S5ATHRU (ac-ft) 5 Year Rolling Average	G250 (ac-ft)	G250 (ac-ft) 5 Year Rolling Average	EBPS (ac-ft)	EBPS (ac-ft) 5 Year Rolling Average	HGSSOUT (ac-ft)	HGSSOUT (ac-ft) 5 Year Rolling Average	Net Inflow Adjusted (ac-ft)	Net Inflow Adjusted (ac-ft) 5 Year Rolling Average	Net Outflow (ac-ft)	Net Outflow (ac-ft) 5 Year Rolling Average	S5A Sub-basin Runoff (ac-ft)	S5A Sub-basin Runoff (ac-ft) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979	0		35558		0		0		0		35558		0		-35558			
1980	120116		1513		0		0		0		1513		120116		118602		18	
1981	33224		13666		0		0		0		13666		33224		19557		7	
1982	57316		8458		0		0		8525		8458		65841		57384		13	
1983	149137	71959	333	11906	0		0		0		333	11906	149137	73664	148804	61758	21	
1984	114490	94857	2281	5250	0		0		0		2281	5250	114490	96562	112209	91311	17	15
1985	64374	83708	244	4996	0		0		0		244	4996	64374	85413	64131	80417	11	14
1986	79949	93053	982	2460	0		0		0		982	2460	79949	94758	78967	92299	13	15
1987	90995	99789	0	768	0		0		0		0	768	90995	99789	90995	99021	17	16
1988	116483	93258	0	701	0		0		0		0	701	116483	93258	116483	92557	21	16
1989	48048	79970	11393	2524	0		0		0		11393	2524	48048	79970	36655	77446	9	14
1990	43427	75780	16513	5778	0		0		7646		16513	5778	51072	77310	34560	71532	9	14
1991	124812	84753	0	5581	0		0		194		0	5581	125006	86321	125006	80740	22	16
1992	30642	72682	3979	6377	0		0		0		3979	6377	30642	74250	26662	67873	11	14
1993	243151	98016	86195	23616	0		0		0		86195	23616	243151	99584	156956	75968	25	15
1994	100284	108463	377	21413	0		0		0		377	21413	100284	110031	99907	88618	18	17
1995	229120	145602	86448	35400	58676		0		0		86448	35400	287796	157376	201348	121976	26	20
1996	88175	138274	130674	61535	114031		0		0		130674	61535	202205	172816	71532	111281	13	18
1997	41082	140362	30857	66910	41825		0		0		30857	66910	82908	183269	52051	116359	16	19
1998	140981	119928	38749	57421	46680		0		0		38749	57421	187661	172171	148912	114750	24	19
1999	125432	124958	72720	71890	34122		0		0		72720	71890	159554	184025	86833	112135	17	19
2000	137597	106653	70745	68749	0		0		0		70745	68749	137597	153985	66851	85236	14	17
2001	9669	90952	4714	43557	0		0		0		4714	43557	9669	115478	4955	71920	5	15
2002	60331	94802	1485	37683	0		3065		0		4551	38296	60331	110962	55780	72666	12	14
2003	235753	113756	139947	57923	0		5342		0		145289	59604	235753	120581	90463	60977	18	13
2004	82462	105162	26319	48642	0		4063		0		30382	51136	82462	105162	52079	54026	12	12
2005	79899	93623	26541	39801	0		5246		0		31787	43345	79899	93623	48112	50278	12	12
2006	47196	101128	3147	39488	0		3638		0		6786	43759	47196	101128	40410	57369	10	13
2007	19453	92952	9826	41156	0		1404	3939	0		11230	45095	19453	92952	8223	47858	5	12
2008	32802	52362	66	13180	0		3257	3522	0		3323	16702	32802	52362	29479	35661	13	11
2009	27950	41460	25293	12975	0		498	2809	0		25792	15784	27950	41460	2158	25676	4	9
2010	75430	40566	2092	8085	0		5803	2920	0		7895	11005	75430	40566	67535	29561	19	10
2011	41337	39394	13037	10063	0		3479	2888	0		16517	12951	41337	39394	24820	26443	7	10
2012	47300	44964	26680	13434	0		1538	2915	0		28217	16349	47300	44964	19082	28615	6	10
2013	35930	45589	7941	15009	0		4359	3136	0		12300	18144	35930	45589	23630	27445	10	9
2014	63897	52779	23650	14680	0		3499	3736	0		27149	18416	63897	52779	36747	34363	12	11
2015	88268	55346	70336	28329	0		1497	2874	0		71834	31203	88268	55346	16434	24143	10	9
2016	146590	76397	30265	31774	0		8170	3813	0		38435	35587	146590	76397	108155	40810	22	12

Table A-1.3b. Dry Season WY1979–WY2016 S5A Sub-basin TP Load Measurements and Calculations.

Water Year	S5A1OUT (kg)	S5A1OUT (kg) 5 Year Rolling Average	S5ATHRU (kg)	S5ATHRU (kg) 5 Year Rolling Average	G250 (kg)	G250 (kg) 5 Year Rolling Average	EBPS (kg)	EBPS (kg) 5 Year Rolling Average	HGSSOUT (kg)	HGSSOUT (kg) 5 Year Rolling Average	Net Inflow Adjusted Load (kg)	Net Inflow Adjusted Load (kg) 5 Year Rolling Average	Net Outflow Load (kg)	Net Outflow Load (kg) 5 Year Rolling Average	S5A Sub-basin Runoff Load (kg)	S5A Sub-basin Runoff Load (kg) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979	0		5738		0		0		0		5738		0		-5738			
1980	33144		265		0		0		0		265		33144		32878		18	
1981	5365		1929		0		0		0		1929		5365		3436		7	
1982	19907		837		0		0		1338		837		21245		20408		13	
1983	60138	23711	40	1762	0		0		0		40	1762	60138	23978	60098	22217	21	
1984	27265	29164	348	684	0		0		0		348	684	27265	29431	26917	28747	17	15
1985	13950	25325	31	637	0		0		0		31	637	13950	25593	13919	24955	11	14
1986	13741	27000	99	271	0		0		0		99	271	13741	27268	13642	26997	13	15
1987	11435	25306	0	104	0		0		0		0	104	11435	25306	11435	25202	17	16
1988	23123	17903	0	96	0		0		0		0	96	23123	17903	23123	17807	21	16
1989	11574	14764	2109	448	0		0		0		2109	448	11574	14764	9465	14317	9	14
1990	7725	13520	3277	1097	0		0		1700		3277	1097	9425	13860	6148	12763	9	14
1991	48472	20466	0	1077	0		0		44		0	1077	48516	20815	48516	19738	22	16
1992	6569	19493	456	1168	0		0		0		456	1168	6569	19842	6113	18673	11	14
1993	45698	24008	13429	3854	0		0		0		13429	3854	45698	24357	32270	20503	25	15
1994	24256	26544	54	3443	0		0		0		54	3443	24256	26893	24202	23450	18	17
1995	44133	33826	13786	5545	9980		0		0		13786	5545	54113	35831	40327	30286	26	20
1996	24866	29105	24239	10393	14887		0		0		24239	10393	39753	34078	15514	23685	13	18
1997	7354	29261	7743	11850	3931		0		0		7743	11850	11285	35021	3542	23171	16	19
1998	43446	28811	12008	11566	7770		0		0		12008	11566	51216	36125	39208	24559	24	19
1999	23726	28705	21422	15840	4003		0		0		21422	15840	27730	36819	6307	20980	17	19
2000	25877	25054	20928	17268	0		0		0		20928	17268	25877	31172	4948	13904	14	17
2001	722	20225	1554	12731	0		0		0		1554	12731	722	23366	-832	10635	5	15
2002	8971	20548	304	11243	0		775		0		1079	11398	8971	22903	7892	11505	12	14
2003	50564	21972	39533	16748	0		1194		0		40726	17142	50564	22773	9838	5631	18	13
2004	12308	19688	7112	13886	0		858		0		7970	14452	12308	19688	4338	5237	12	12
2005	19075	18328	9786	11658	0		1954		0		11741	12614	19075	18328	7334	5714	12	12
2006	17281	21640	728	11493	0		1946		0		2674	12838	17281	21640	14608	8802	10	13
2007	1756	20197	2918	12015	0		334	1257	0		3252	13273	1756	20197	-1496	6924	5	12
2008	8487	11781	21	4113	0		1995	1417	0		2016	5531	8487	11781	6471	6251	13	11
2009	3036	9927	7755	4242	0		791	1404	0		8546	5646	3036	9927	-5510	4281	4	9
2010	16648	9442	400	2364	0		3724	1758	0		4124	4123	16648	9442	12524	5319	19	10
2011	5863	7158	3261	2871	0		1882	1745	0		5143	4616	5863	7158	720	2542	7	10
2012	5615	7930	5606	3409	0		516	1782	0		6123	5190	5615	7930	-508	2739	6	10
2013	5831	7399	1832	3771	0		2160	1815	0		3992	5586	5831	7399	1839	1813	10	9
2014	9528	8697	5316	3283	0		1839	2024	0		7156	5307	9528	8697	2373	3390	12	11
2015	13924	8152	18201	6843	0		380	1356	0		18582	8199	13924	8152	-4658	-47	10	9
2016	43131	15606	6360	7463	0		7518	2483	0		13878	9946	43131	15606	29254	5660	22	12

Table A-1.3c. Dry Season WY1979–WY2016 S5A Sub-basin TP FWMC Measurements and Calculations

Year	S5A1OUT FWMC (ppb)	S5A1OUT (ppb) 5 Year Rolling Average	S5ATHRU FWMC (ppb)	S5ATHRU (ppb) 5 Year Rolling Average	G250 FWMC (ppb)	G250 (ppb) 5 Year Rolling Average	EBFS FWMC (ppb)	EBFS (ppb) 5 Year Rolling Average	HGSSOUT FWMC (ppb)	HGSSOUT (ppb) 5 Year Rolling Average	Net Inflow Adjusted FWMC (ppb)	Net Inflow Adjusted (ppb) 5 Year Rolling Average	Net Outflow FWMC (ppb)	Net Outflow (ppb) 5 Year Rolling Average	S5A Sub-basin Runoff FWMC (ppb)	S5A Sub-basin Runoff (ppb) 5 Year Rolling Average	Rainfall (in)	Rainfall (in) 5 Year Rolling Average
1979			131								131				131			
1980	224		142								142		224		225		18	
1981	131		114								114		131		142		7	
1982	282		80						127		80		262		288		13	
1983	327	241	96	113							96	113	327	236	327	223	21	
1984	193	231	124	111							124	111	193	227	194	235	17	15
1985	176	222	104	104							104	104	176	218	176	226	11	14
1986	139	223	82	97							82	97	139	219	140	225	13	15
1987	102	187		101								101	102	187	102	188	17	16
1988	161	154		103								103	161	154	161	155	21	16
1989	195	155	150	112							150	112	195	155	209	158	9	14
1990	144	148	161	131							161	131	150	149	144	151	9	14
1991	315	183		155								155	315	184	315	186	22	16
1992	174	198	93	135							93	135	174	199	186	203	11	14
1993	152	196	126	133							126	133	152	197	167	204	25	15
1994	196	196	115	124							115	124	196	197	196	202	18	17
1995	156	199	129	116	138						129	116	152	198	162	205	26	20
1996	229	181	150	123	106						150	123	159	167	176	177	13	18
1997	145	176	203	145	76						203	145	110	154	55	151	16	19
1998	250	195	251	170	135						251	170	221	168	213	161	24	19
1999	153	187	239	195	95						239	195	141	157	59	133	17	19
2000	152	186	240	217							240	217	152	157	60	113	14	17
2001	61	152	267	240							267	240	61	137		97	5	15
2002	121	147	166	233			205				192	238	121	139	115	112	12	14
2003	174	132	229	228			181				227	233	174	130	88	80	18	13
2004	121	126	219	224			171				213	228	121	126	68	83	12	12
2005	194	134	299	236			302				299	240	194	134	124	98	12	12
2006	297	181	187	220			434				319	250	297	181	293	137	10	13
2007	73	172	241	235			193	256			235	259	73	172		143	5	12
2008	210	179	260	241			497	319			492	312	210	179	178	166	13	11
2009	88	172	249	247			1287	542			269	323	88	172		198	4	9
2010	179	169	155	218			520	586			424	348	179	169	150	207	19	10
2011	115	133	203	221			438	587			252	334	115	133	24	117	7	10
2012	96	138	170	207			272	603			176	322	96	138		117	6	10
2013	132	122	187	193			402	584			263	277	132	122	63	79	10	9
2014	121	129	182	179			426	412			214	266	121	129	52	72	12	11
2015	128	118	210	190			206	349			210	223	128	118		46	10	9
2016	239	143	170	184			746	410			293	231	239	143	219	112	22	12

Table A-1.4a. WY1979–WY2016 Flow, TP Load and FWMC EBWCD and Unadjusted Inflow

WY	EBPS Flow AF	EBPS Flow AF 5 Year Rolling Average	EBPS Load kg	EBPS Load kg 5 Year Rolling Average	EBPS FWMC ppb	EBPS FWMC ppb 5 Year Rolling Average	Net Inflow (AF)	Net Inflow (AF) 5 Year Rolling Average	Net Inflow Load (kg)	Net Inflow Load (kg) 5 Year Rolling Average	Net Inflow FWMC ppb	Net Inflow FWMC ppb 5 Year Rolling Average
1979							0		0			
1980							284320		64436		184	
1981							186994		37177		161	
1982							208279		66132		257	
1983							460257	227970	147018	62952	259	215
1984							321363	292243	75589	78070	191	210
1985							243137	284006	72998	79783	243	222
1986							302010	307009	63206	84989	170	224
1987							263793	318112	41064	79975	126	198
1988							224018	270864	40774	58726	148	176
1989							235785	253749	66876	56984	230	183
1990							174762	240074	30786	48541	143	163
1991							212610	222194	76880	51276	293	188
1992							183869	206209	35374	50138	156	194
1993							587273	278860	125767	67136	174	199
1994	6786		2644		316		281748	288052	66519	67065	191	191
1995	7053		3002		345		590059	371112	114589	83826	157	194
1996	4701		1495		258		501420	428874	93384	87127	151	166
1997	4674		1327		230		295810	451262	46682	89388	128	160
1998	6555	11793	1751	6804	217	419	385670	410942	86058	81446	181	162
1999	1688	12020	881	6993	423	423	320817	418755	56621	79467	143	152
2000	3878	12257	1480	7183	309	427	405794	381902	81537	72856	163	153
2001	848	12635	184	7468	176	436	185249	318668	30224	60224	132	149
2002	13097	13054	3861	7791	239	446	269940	313494	34539	57796	104	145
2003	19883	13415	7567	8127	309	459	630083	362376	120991	64782	156	140
2004	23479	14105	8775	8553	303	461	314927	361199	52905	64039	136	138
2005	26500	14744	14427	8995	441	471	405426	361125	113023	70336	226	151
2006	17932	15670	10668	9582	482	491	208421	365760	56807	75653	221	169
2007	12143	15854	5516	9991	368	509	182476	348267	53955	79536	240	196
2008	8794	15544	5593	10177	516	524	125338	247318	25626	60463	166	198
2009	14924	14883	12489	10294	678	542	243795	233091	62672	62417	208	212
2010	19764	13827	20056	9918	823	551	293290	210664	68931	53598	191	205
2011	10640	13416	5717	9843	436	558	147243	198428	24395	47116	134	188
2012	5301	13558	2703	10324	413	580	146524	191238	22130	40751	122	164
2013	17658	14153	13503	10916	620	588	200604	206291	62898	48205	254	182
2014	19105	14043	12749	10691	541	575	317101	220952	68034	49278	174	175
2015	9481	13089	5347	9130	457	533	345331	231361	61398	47771	144	166
2016	16351	13579	14761	9813	732	553	320247	265962	70831	57058	179	175

Table A-1.4b. WY1979–WY2016 Wet Season Flow, TP Load and FWMC EBWCD and Unadjusted Inflow

WY	EBWCD flow (AF)	EBWCD (ac-ft) 5 Year Rolling Average	EBWCD load (kg)	EBWCD (kg) 5 Year Rolling Average	EBWCD FWMC (ppb)	EBPS (ppb) 5 Year Rolling Average	Net Inflow (AF)	Net Inflow (ac-ft) 5 Year Rolling Average	Net Inflow Load (kg)	Net Inflow Load (kg) 5 Year Rolling Average	Net Inflow FWMC ppb	Net Inflow Load (ppb) 5 Year Rolling Average
1979							0		0			
1980							6425		763		96	
1981							3646		391		87	
1982							1716		191		90	
1983							1186	2594	126	294	86	90
1984							321	2659	49	304	124	97
1985							633	1500	92	170	117	101
1986							2160	1203	256	143	96	103
1987							1109	1082	134	131	98	104
1988							0	845	0	106		109
1989							543	889	95	115	142	113
1990							6645	2091	873	272	107	111
1991							0	1659	0	220		115
1992							0	1438	0	194		124
1993							93526	20143	10107	2215	88	112
1994	4314		2021		380		4382	20911	2034	2603	376	190
1995	4130		1954		383		33151	26212	5297	3488	130	198
1996	3355		1154		279		42550	34722	6174	4723	118	178
1997	2429		846		282		26456	40013	5236	5770	160	174
1998	3821	3610	1146	1424	243	314	31888	27686	9543	5657	243	205
1999	741	2895	291	1078	318	301	53486	37506	9636	7177	146	159
2000	3248	2719	1096	907	274	279	23765	35629	4997	7117	170	167
2001	17	2051	4	677	210	265	24557	32031	4145	6711	137	171
2002	9327	3431	2910	1090	253	260	10262	28792	3159	6296	250	189
2003	13314	5329	6102	2081	372	285	195452	61504	42514	12890	176	176
2004	18480	8877	7739	3570	339	290	28708	56549	9451	12853	267	200
2005	20047	12237	12046	5760	487	332	44971	60790	16602	15174	299	226
2006	13458	14925	8277	7415	499	390	23989	60677	11064	16558	374	273
2007	10418	15143	5105	7854	397	419	12224	61069	5505	17027	365	296
2008	4788	13438	3157	7265	534	451	4974	22973	3192	9163	520	365
2009	14311	12604	11517	8020	652	514	14311	20094	11517	9576	652	442
2010	12626	11120	15480	8707	994	615	19785	15057	16866	9629	691	521
2011	6360	9700	3548	7761	452	606	11287	12516	6252	8667	449	536
2012	3411	8299	2069	7154	492	625	12139	12499	3864	8338	258	514
2013	12298	9801	10847	8692	715	661	14445	14394	11242	9948	631	536
2014	14801	9899	10488	8487	574	646	81470	27825	20465	11738	204	447
2015	7640	8902	4880	6367	518	550	137589	51386	33175	15000	195	347
2016	6303	8891	5522	6761	710	602	108737	70876	23191	18387	173	292

Table A-1.4c. WY1979–WY2016 Dry Season Flow, TP Load and FWMC EBWCD and Unadjusted Inflow

WY	EBWCD flow (AF)	EBWCD (ac-ft) 5 Year Rolling Average	EBWCD load (kg)	EBWCD (kg) 5 Year Rolling Average	EBWCD FWMC (ppb)	EBWCD (ppb) 5 Year Rolling Average	Net Inflow (AF)	Net Inflow (ac-ft) 5 Year Rolling Average	Net Inflow Load (kg)	Net Inflow Load (kg) 5 Year Rolling Average	Net Inflow FWMC (ppb)	Net Inflow Load (ppb) 5 Year Rolling Average
1979							35558		5738		131	
1980							1513		265		142	
1981							13666		1929		114	
1982							8458		837		80	
1983							333	11906	40	1762	96	113
1984							2281	5250	348	684	124	111
1985							244	4996	31	637	104	104
1986							982	2460	99	271	82	97
1987							0	768	0	104		101
1988							0	701	0	96		103
1989							11393	2524	2109	448	150	112
1990							16513	5778	3277	1097	161	131
1991							0	5581	0	1077		155
1992							3979	6377	456	1168	93	135
1993							86195	23616	13429	3854	126	133
1994	2472		623		204		2849	21907	676	3568	192	143
1995	2922		1049		291		89370	36479	14835	5879	135	137
1996	1346		341		205		132019	62882	24579	10795	151	139
1997	2245		481		174		33102	68707	8223	12348	201	161
1998	2734	2344	605	620	179	211	41483	59765	12613	12185	247	185
1999	946	2039	591	613	506	271	73667	73928	22013	16453	242	195
2000	629	1580	383	480	494	312	71375	70329	21312	17748	242	217
2001	831	1477	179	448	175	306	5545	45034	1733	13179	253	237
2002	3771	1782	951	542	205	312	5256	39465	1255	11785	194	236
2003	6569	2549	1465	714	181	312	146516	60472	40998	17462	227	232
2004	4999	3360	1036	803	168	244	31318	52002	8148	14689	211	225
2005	6453	4524	2381	1203	299	205	32994	44326	12167	12860	299	237
2006	4474	5253	2391	1645	433	257	7621	44741	3119	13138	332	252
2007	1726	4844	411	1537	193	255	11552	46000	3329	13552	234	260
2008	4006	4332	2437	1731	493	317	4073	17511	2458	5844	489	313
2009	613	3454	971	1718	1285	541	25906	16429	8726	5960	273	325
2010	7138	3591	4576	2157	520	585	9230	11676	4976	4522	437	353
2011	4280	3553	2169	2113	411	580	17318	13616	5430	4984	254	337
2012	1890	3585	634	2157	272	596	28569	17019	6240	5566	177	326
2013	5360	3856	2656	2201	402	578	13301	18865	4487	5972	273	283
2014	4304	4594	2261	2459	426	406	27954	19274	7577	5742	220	272
2015	1841	3535	467	1637	206	343	72177	31864	18669	8481	210	227
2016	10047	4688	9239	3051	745	410	40312	36463	15599	10514	314	239