Table 1: September Ranch Watershed Recharge Estimates

"AVERAGE" Rainfall Years 1996 and 1997

	WY 1996 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 70% ET [a] (inches)**	**Runoff (inches) after ET (CN 62) [b]**	**Recharge (Precip-ET-Runoff)*Area (AF)**	WY 1997 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 70% ET (inches)**	**Runoff (inches) after ET (CN 62)**	**Recharge (Precip-ET-Runoff)*Area (AF)**
OCT	0.00	**0.00**	**0.00**	**0.00**	**0.0**	1.22	**1.04**	**0.31**	**0.00**	**14.5**
NOV	0.09	**0.08**	**0.02**	**0.00**	**1.1**	3.30	**2.80**	**0.84**	**0.00**	**39.3**
DEC	4.87	**4.13**	**1.24**	**0.00**	**58.0**	7.83	**6.65**	**1.99**	**-0.10**	**88.6**
JAN	4.25	**3.61**	**1.08**	**0.00**	**50.6**	8.61	**7.31**	**2.19**	**-0.20**	**93.2**
FEB	7.97	**6.77**	**2.03**	**-0.10**	**90.2**	0.29	**0.25**	**0.07**	**0.00**	**3.5**
MAR	2.06	**1.75**	**0.52**	**0.00**	**24.5**	0.08	**0.07**	**0.02**	**0.00**	**1.0**
APR	1.28	**1.09**	**0.33**	**0.00**	**15.2**	0.10	**0.08**	**0.03**	**0.00**	**1.2**
MAY	1.84	**1.56**	**0.47**	**0.00**	**21.9**	0.05	**0.04**	**0.01**	**0.00**	**0.6**
JUN	0.02	**0.02**	**0.01**	**0.00**	**0.2**	0.04	**0.03**	**0.01**	**0.00**	**0.5**
JUL	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
AUG	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.15	**0.13**	**0.04**	**0.00**	**1.8**
SEP	0.02	**0.02**	**0.01**	**0.00**	**0.2**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
TOTAL	22.40	**19.02**	**5.71**	**-0.10**	**262.0**	21.67	**18.40**	**5.52**	**-0.30**	**244.0**

"BELOW AVERAGE" Rainfall Years 1987 through 1989

	WY 1987 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 85% ET (inches)**	**Runoff (inches) after ET (CN 62)**	**Recharge (Precip-ET-Runoff)*Area (AF)**	WY 1988 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 85% ET (inches)**	**Runoff (inches) after ET (CN 62)**	**Recharge (Precip-ET-Runoff)*Area (AF)**	WY 1989 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 85% ET (inches)**	**Runoff (inches) after ET (CN 62)**	**Recharge (Precip-ET-Runoff)*Area (AF)**
OCT	0.00	**0.00**	**0.00**	**0.00**	**0.0**	1.13	**0.96**	**0.14**	**0.00**	**6.7**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
NOV	0.53	**0.45**	**0.07**	**0.00**	**3.2**	0.76	**0.65**	**0.10**	**0.00**	**4.5**	1.42	**1.21**	**0.18**	**0.00**	**8.5**
DEC	0.98	**0.83**	**0.12**	**0.00**	**5.8**	4.37	**3.71**	**0.56**	**0.00**	**26.0**	4.18	**3.55**	**0.53**	**0.00**	**24.9**
JAN	2.19	**1.86**	**0.28**	**0.00**	**13.0**	1.87	**1.59**	**0.24**	**0.00**	**11.1**	1.37	**1.16**	**0.17**	**0.00**	**8.2**
FEB	4.05	**3.44**	**0.52**	**0.00**	**24.1**	0.58	**0.49**	**0.07**	**0.00**	**3.5**	1.84	**1.56**	**0.23**	**0.00**	**11.0**
MAR	2.65	**2.25**	**0.34**	**0.00**	**15.8**	0.11	**0.09**	**0.01**	**0.00**	**0.7**	2.24	**1.90**	**0.29**	**0.00**	**13.3**
APR	0.36	**0.31**	**0.05**	**0.00**	**2.1**	1.64	**1.39**	**0.21**	**0.00**	**9.8**	0.60	**0.51**	**0.08**	**0.00**	**3.6**
MAY	0.26	**0.22**	**0.03**	**0.00**	**1.5**	0.51	**0.43**	**0.06**	**0.00**	**3.0**	0.35	**0.30**	**0.04**	**0.00**	**2.1**
JUN	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.10	**0.08**	**0.01**	**0.00**	**0.6**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
JUL	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
AUG	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
SEP	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.80	**0.68**	**0.10**	**0.00**	**4.8**
TOTAL	11.02	**9.36**	**1.40**	**0.00**	**65.6**	11.07	**9.40**	**1.41**	**0.00**	**65.9**	12.80	**10.87**	**1.63**	**0.00**	**76.2**

"BELOW AVERAGE" Rainfall Years 1990 through 1991

	WY 1990 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 85% ET (inches)**	**Runoff (inches) after ET (CN 62)**	**Recharge (Precip-ET-Runoff)*Area (AF)**	WY 1991 Precip at San Clemente (inches)	**Precip over SR (84.9%) (inches)**	**Precip - 85% ET (inches)**	**Runoff (inches) after ET (CN 62)**	**Recharge (Precip-ET-Runoff)*Area (AF)**
OCT	1.17	**0.99**	**0.15**	**0.00**	**7.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
NOV	1.23	**1.04**	**0.16**	**0.00**	**7.3**	0.42	**0.36**	**0.05**	**0.00**	**2.5**
DEC	0.08	**0.07**	**0.01**	**0.00**	**0.5**	1.99	**1.69**	**0.25**	**0.00**	**11.8**
JAN	3.19	**2.71**	**0.41**	**0.00**	**19.0**	0.18	**0.15**	**0.02**	**0.00**	**1.1**
FEB	3.61	**3.06**	**0.46**	**0.00**	**21.5**	2.11	**1.79**	**0.27**	**0.00**	**12.6**
MAR	1.82	**1.55**	**0.23**	**0.00**	**10.8**	11.38	**9.66**	**1.45**	**-0.40**	**49.1**
APR	0.58	**0.49**	**0.07**	**0.00**	**3.5**	0.30	**0.25**	**0.04**	**0.00**	**1.8**
MAY	1.06	**0.90**	**0.13**	**0.00**	**6.3**	0.45	**0.38**	**0.06**	**0.00**	**2.7**
JUN	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.01	**0.01**	**0.00**	**0.00**	**0.1**
JUL	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
AUG	0.00	**0.00**	**0.00**	**0.00**	**0.0**	0.03	**0.03**	**0.00**	**0.00**	**0.2**
SEP	0.35	**0.30**	**0.04**	**0.00**	**2.1**	0.00	**0.00**	**0.00**	**0.00**	**0.0**
TOTAL	13.09	**11.11**	**1.67**	**0.00**	**77.9**	16.87	**14.32**	**2.15**	**-0.40**	**81.7**

(a) ET = Evapotranspiration
(b) CN 62 = Curve No. 62, from Soil Conservation Service Technical Release 55, *Urban Hydrology for Small Watersheds*, Second Edition, June 1986.
Based on analysis by Whitson Engineers and peer review by Monterey Bay Engineers, Inc. dated 27 June 1996

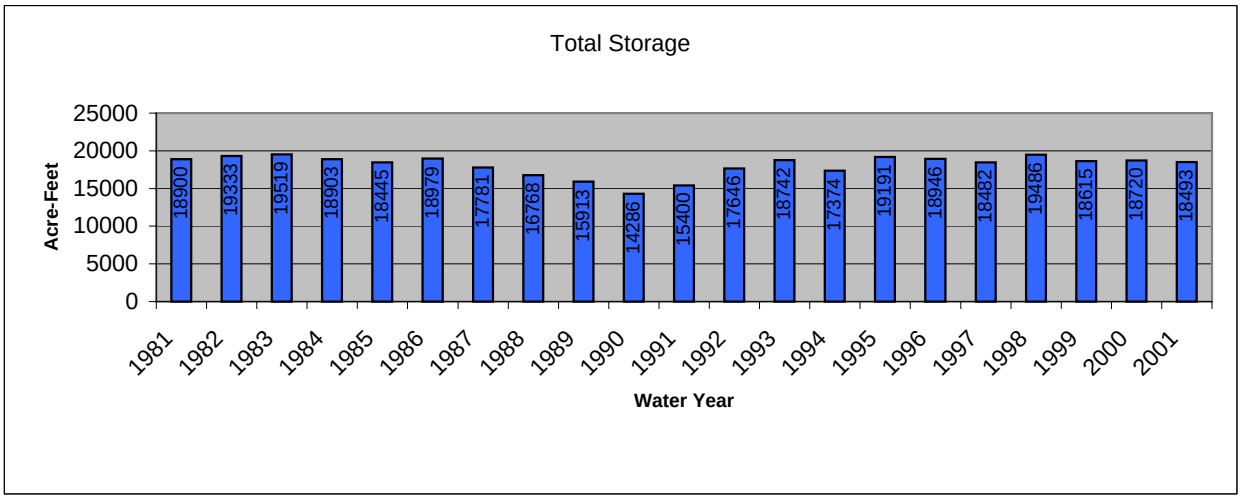
Table 2: September Ranch GIS Storage Volume and Area Estimates

Period		Cross-sectional Area along M-M' (sq. ft.)	GW Storage [Porosity 13.95% QOA1, 7% QOA2] (acre-ft)	Combined Saturated Surface Area (acres)	Surface Area of SR Watershed (acres)
Normal Rainfall Period		13.95%	0.07		
1997_December	Qoa1	0	167	38	
	Qoa2	83434	102	41	
	Totals	*83434*	*269*	*48*	
1998_March	Qoa1	7126	217	47	
	Qoa2	91184	106	43	
	Totals	*98310*	*323*	*52*	
1998_June	Qoa1	3219	220	48	
	Qoa2	90969	106	43	
	Totals	*94187*	*327*	*53*	
1998_September	Qoa1	538	192	44	
	Qoa2	88881	105	42	
	Totals	*89419*	*297*	*50*	*561*
Below Average Rainfall Period					
1998_December	Qoa1	786	183	43	
	Qoa2	87944	104	*34*	
	Totals	88730	287	*49*	
1999_March	Qoa1	2723	193	44	
	Qoa2	89419	105	*36*	
	Totals	92142	297	*50*	
1999_June	Qoa1	226	185	43	
	Qoa2	87610	104	*34*	
	Totals	87836	289	*50*	
1999_September	Qoa1	0	170	39	
	Qoa2	83574	102	*31*	
	Totals	83574	273	*48*	
Other					
1996_November	Qoa1	0	1390	44	
	Qoa2	86566	1499	42	
	Totals	*86566*	*2889*	*51*	

Table 3: Carmel Valley Aquifer Subunit 3 Recharge and Storage Estimates

Monterey Peninsula Water Management District -- Carmel Valley Simulation Model (CVSIM3)
No-Project Simulation with Cal-Am Annual Demand < 15,285 AF and without Los Padres Maintenance Dredging
Selected Monthly Values for Subunit 3 of Carmel Valley Alluvial Aquifer: WY 1958 - 2002
(All Values in Acre-Feet)

Annual Summaries	Total Storage	Surface Inflow	Surface Recharge	Subsurface Inflow	Surface Outflow	Non Cal-Am Pumping	Cal-Am Pumping	Subsurface Outflow	Riparian ET
1981	18900	55915	8176	2781	47740	1028	8409	887	304
1982	19333	164966	7488	2781	157478	980	8013	887	301
1983	19519	362943	7161	2781	355782	972	7783	887	301
1984	18903	40825	7636	2789	33189	1026	8471	889	301
1985	18445	25460	6265	2781	19196	1028	8123	887	309
1986	18979	135799	7451	2781	128348	994	7759	887	302
1987	17781	16692	5476	2781	11216	1034	8312	887	326
1988	16768	9312	6176	2789	3136	1029	8375	889	329
1989	15913	10135	7383	2781	2752	1019	8648	887	328
1990	14286	7950	5396	2781	2554	965	8049	887	329
1991	15400	28360	10370	2781	17990	999	7803	887	305
1992	17646	47628	8999	2788	38629	1026	8287	889	315
1993	18742	125671	9077	2781	116594	1026	8129	887	301
1994	17374	12340	4720	2780	7621	1039	8214	887	329
1995	19191	176795	11368	2781	165428	977	7631	887	301
1996	18946	98549	8090	2997	90459	997	8014	889	301
1997	18482	100324	7085	2781	93240	1025	8426	887	304
1998	19486	286762	7664	2781	279098	972	7508	887	301
1999	18615	53738	5091	2781	48647	1017	8202	887	307
2000	18720	82587	8676	2789	73911	1024	8216	889	302
2001	18493	56898	8718	2781	48180	1027	8347	887	310



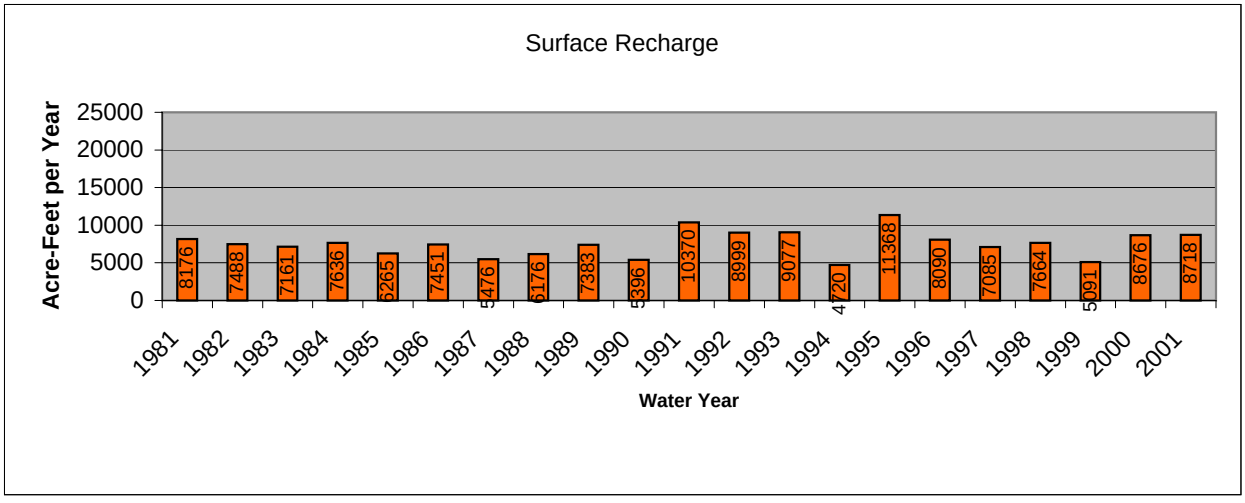


Table 4: Predicted Drawdown in the SRA Based on 57.21 AFY Pumping

Inflow based on precip data from San Clemente Dam (MPWMD), reduced by 15.1% and applied to 561 acres of the SR watershed. Accounting for 70% ET, inflow is 30% of adjusted rainfall over the 561 acre area

Sy =Flow Volume/(Unit delta H * Unit Area) Fetter (p118)
Drawdown delta h = Flow volume /(Sy*Area)
Sy = 0.33 (based on Neumann soln. of 1992 Well C data)
Average Aquifer Area (Acre) in drought year 45 Todd 92, K/J 04
Initial (Normal yr) Aquifer Storage 275 K/J 04

Water Year	Calender Year	Quarter	Flow In [pos] (AF)	Flow Out [neg] (AF)	Total Flow (AF)	Predicted Quarterly Drawdown [negative sign means downward] (ft)	Cumulative Drawdown (ft)
Below Average Precipitation Period 1987 through 1991							
1987							
Oct-Dec	1986	4	9.0	-14.3	-5.3	-0.36	-0.36
Jan-Mar	1987	1	52.9	-14.3	38.6	2.60	2.24
Apr-Jun	1987	2	3.6	-14.3	-10.7	-0.72	1.52
Jul-Sep	1987	3	0.0	-14.3	-14.3	-0.96	0.56
1987 Water Year Annual			**65.5**	**-57.20**	**8.3**		**0.56**
1988							
Oct-Dec	1987	4	37.2	-14.3	22.9	1.54	1.54
Jan-Mar	1988	1	15.3	-14.3	1.0	0.07	1.61
Apr-Jun	1988	2	13.4	-14.3	-0.9	-0.06	1.55
Jul-Sep	1988	3	0.0	-14.3	-14.3	-0.96	0.59
1988 Water Year Annual			**65.9**	**-57.20**	**8.7**		**0.59**
1989							
Oct-Dec	1988	4	**33.4**	-14.3	19.1	1.29	1.29
Jan-Mar	1989	1	**32.5**	-14.3	18.2	1.23	2.51
Apr-Jun	1989	2	**5.7**	-14.3	-8.6	-0.58	1.93
Jul-Sep	1989	3	**4.8**	-14.3	-9.5	-0.64	1.29
1989 Water Year Annual			**76.4**	**-57.20**	**19.2**		**1.29**
1990							
Oct-Dec	1989	4	14.8	-14.3	0.5	0.03	0.03
Jan-Mar	1990	1	51.3	-14.3	37.0	2.49	2.53
Apr-Jun	1990	2	9.8	-14.3	-4.5	-0.30	2.22
Jul-Sep	1990	3	2.1	-14.3	-12.2	-0.82	1.40
1990 Water Year Annual			**78.0**	**-57.20**	**20.8**		**1.40**
1991							
Oct-Dec	1990	4	14.3	-14.3	0.0	0.00	0.00
Jan-Mar	1991	1	62.8	-14.3	48.5	3.27	3.27
Apr-Jun	1991	2	4.6	-14.3	-9.7	-0.65	2.61
Jul-Sep	1991	3	0.2	-14.3	-14.1	-0.95	1.66
1990 Water Year Annual			**81.9**	**-57.20**	**24.7**		**1.66**

Table 4: Predicted Drawdown in the SRA Based on 57.21 AFY Pumping

Water Year	Calender Year	Quarter	Flow In [pos] (AF)	Flow Out [neg] (AF)	Total Flow (AF)	Predicted Quarterly Drawdown [negative sign means downward] (ft)	Cumulative Drawdown (ft)
"Average" or Normal Precipitation Water Years 1996, 1996							
Oct-Dec	1995	4	59.1	-14.3	44.8	3.02	2.95
Jan-Mar	1996	1	165.4	-14.3	151.1	10.18	13.13
Apr-Jun	1996	2	37.4	-14.3	23.1	1.55	14.68
Jul-Sep	1996	3	0.2	-14.3	-14.1	-0.95	13.73
1996 Water Year Annual			**262.1**	**-57.20**	**204.9**		**13.73**
1997							
Oct-Dec	1996	4	142.4	-14.3	128.1	8.63	22.36
Jan-Mar	1997	1	97.6	-14.3	83.3	5.61	27.97
Apr-Jun	1997	2	2.3	-14.3	-12.0	-0.81	27.16
Jul-Sep	1997	3	1.8	-14.3	-12.5	-0.84	26.32
1997 Water Year Annual			**244.0**	**-57.20**	**186.8**		**26.32**

Table 5: SRA / CVA Leakage Calculations.

Summary Results from GIS Mapping and Calculations.

Based on Water levels of water years 1997, 1999 in the SRA with 110 AFY pumping

Flux Q (AFQ)	Water Bearing Zone	Down-gradient Water level (ft - MSL) [Brookdale Well]	Down-gradient height of water h1 (ft) [Brookdale Well]	Upgra-dient Water level (ft - MSL) [Well D]	Upgra-dient height of water h2 (ft) [Well D]	Total Ground-water Leakage Path L (ft)	Total Cross-Section Width W (ft)	GW Gradient I (ft/ft) [Brookdale to Well D]	Cross-Section Area A (sq ft)	Equation	Quarter
Water-Year 1997 - Average Precipitation ~ 21.67" rainfall (San Clemente Res)											
Overall Assumption: No Change in Storage in the SRA. Flux area profile based on Cross-section MM'.											
0.0000	**QOA_1**	39.26	0	41.47	0	1570	1650		0	Dupuit	Oct - Dec 1997
~~**0.0000**~~	**QOA_1**	39.26		41.47		1570			0	Darcy	
-0.0046	**QOA_2**	39.26		41.47		1570		-0.0014	83434	Darcy	
-0.0046	**Total**										
-0.4995	**QOA_1**	44.8	1.8	54.17	11.17	1570	1650			Dupuit	Jan - Mar 1998
~~**-0.3327**~~	**QOA_1**	44.8		54.17		1570			7126	Darcy	
-0.0213	**QOA_2**	44.8		54.17		1570		-0.0060	91184	Darcy	
-0.5208	**Total**										
-0.1026	**QOA_1**	43.22	0.22	48	5	1570	1650		3219	Dupuit	Apr - Jun 1998
~~**-0.0767**~~	**QOA_1**	43.22		48		1570			3219	Darcy	
-0.0108	**QOA_2**	43.22		48		1570		-0.0030	90969	Darcy	
-0.1134	**Total**										
-0.0257	**QOA_1**	42.15	0	45.5	2.5	1570	1650			Dupuit	Jul - Sep 1998
~~**-0.0090**~~	**QOA_1**	42.15		45.5		1570			538	Darcy	
-0.0074	**QOA_2**	42.15		45.5		1570		-0.0021	88881	Darcy	
-0.0331	**Total**										

-0.6278 Total QOA1 flux AFY
-0.0441 Total QOA2 flux AFY
-0.6719 Total Flux AFY **negative sign means discharge from SRA to CVA**

Table 5: SRA / CVA Leakage Calculations.

Summary Results from GIS Mapping and Calculations.

Based on Water levels of water years 1997, 1999 in the SRA with 110 AFY pumping

Flux Q (AFQ)	Water Bearing Zone	Down-gradient Water level (ft - MSL) [Brookdale Well]	Down-gradient height of water h1 (ft) [Brookdale Well]	Upgra-dient Water level (ft - MSL) [Well D]	Upgra-dient height of water h2 (ft) [Well D]	Total Ground-water Leakage Path L (ft)	Total Cross-Section Width W (ft)	GW Gradient I (ft/ft) [Brookdale to Well D]	Cross-Section Area A (sq ft)	Equation	Quarter
Water-Year 1999 - Below Average Precipitation ~ 17.41" Rainfall (San Clemente Res)											
0.0000	**QOA_1**	42.72	0	45.3	0	1570	1650		0	Dupuit	Oct - Dec 1998
~~0.0000~~	**QOA_1**	42.72		45.3		1570			0	Darcy	
-0.0057	**QOA_2**	42.72		45.3		1570		-0.0016	87944	Darcy	
-0.0057	**Total**										
-0.0566	**QOA_1**	43.26	0.26	46.72	3.72	1570	1650			Dupuit	Jan - Mar 1999
~~-0.0469~~	**QOA_1**	43.26		46.72		1570			2723	Darcy	
-0.0077	**QOA_2**	43.26		46.72		1570		-0.0022	89419	Darcy	
-0.0643	**Total**										
-0.0180	**QOA_1**	41.89	0	45.09	2.09	1570	1650			Dupuit	Apr - Jun 1999
~~-0.0036~~	**QOA_1**	41.89		45.09		1570			226	Darcy	
-0.0070	**QOA_2**	41.89		45.09		1570		-0.0020	87610	Darcy	
-0.0249	**Total**										
0.0000	**QOA_1**	35.3	0	41.84	0	1570	1650			Dupuit	Jul - Sep 1999
~~0.0000~~	**QOA_1**	35.3		41.84		1570			0	Darcy	
-0.0136	**QOA_2**	35.3		41.84		1570		-0.0042	83574	Darcy	
-0.0136	**Total**										

-0.0746 Total QOA1 flux AFY
-0.0340 Total QOA2 flux AFY
-0.1085 Total Flux AFY **negative sign means discharge from SRA to CVA**

Table 5: SRA / CVA Leakage Calculations.

Summary Results from GIS Mapping and Calculations.

Based on Water levels of water years 1997, 1999 in the SRA with 110 AFY pumping

Flux Q (AFQ)	Water Bearing Zone	Down-gradient Water level (ft - MSL) [Brookdale Well]	Down-gradient height of water h1 (ft) [Brookdale Well]	Upgra-dient Water level (ft - MSL) [Well D]	Upgra-dient height of water h2 (ft) [Well D]	Total Ground-water Leakage Path L (ft)	Total Cross-Section Width W (ft)	GW Gradient I (ft/ft) [Brookdale to Well D]	Cross-Section Area A (sq ft)	Equation	Quarter
Water-Year 1989 - Drought Year ~ 12.80" Rainfall (San Clemente Res)											
Overall Assumption: Theoretical case of steep groundwater gradient that could have occurred in years 1986 through 1991											
0.0000	**QOA_1**	28	0	37.5	0	750	1650			Dupuit	Jul - Sep 1998
~~0.0000~~	**QOA_1**	28		37.5		750			0	Darcy	
-0.0408	**QOA_2**	28		37.5		750		-0.0127	82314	Darcy	
-0.0408	**Total**										

0.0000 Total QOA1 flux AFY

-0.1631 Total QOA2 flux AFY

-0.1631 Total Flux AFY **negative sign means discharge from SRA to CVA**

Equations Used:

Upper Alluvium QOA_1 Unconfined Groundwater - Dupuit Flux

Equation: $q=K(h_1^2-h_2^2)/2L$ (Dupuit Flux) q=flow per unit width h_1 & h_2 are height of water table above the top of QOA_2 = 43

Equation: $Q=wK(h_1^2-h_2^2)/2L$ Q=total flux, w=width of cross-sectional area feet - MSL

Assumption: K value of QOA_1 >> QOA_2

Older Alluvium QOA_2, Deeper Groundwater with fixed cross-sectional

Equation: Q=KiA (Darcy Flux)

"Range" of Hydraulic Conductivity ($gal/day/ft^2$)

QOA1 K	28.00	(Todd 97)
Minimum QOA2 K	0.14	(Todd 97)
Maximum QOA2 K	1.40	(Freeze and Cherry, not used in calculations above !)

conversion factor - gal/day to AF per qtr = 2.79E-04

Table 6: Areas Tributary to Aquifer Subunits 1 and 2

Township (South)	Range (East)	Section Numbers
16	4	All
17	4	All
16	3	All
17	3	All
17	2	All
16	2	1 – 5, 8-12, 13-17, 20-24, 25-29, 32-36

Table 7: MPWMD 2002 Pumping Data in AQ3 and AQ4

Aquifer Subunit	Total Pumped and Reported to MPWMD (AFA)(excludes Cal-Am)	Total Reported as STATE to SWRCB (AFA)	Total Not Reported to SWRCB (AFA)
3	1,161	513	648
4	786	570	216

Table 8: Summary of Riparian and Pre-1914 Appropriative Water Rights in Carmel River Watershed Aquifer Subunits 3 and 4

Appl Id	Record Type	Status	Owner	ApplFileDate	Permit	Permit Issue Date	Complete Use	License	LicIssueDate	SourName	TribName	POD1	POD2	POD3	POD4	POD5	POD6	POD6	POD7	County	MaxUseAnn	MaxStorage	MaxDir/Div		POD/Direct		Rpt Method	Source Area	QuanDiv	InfoSource	QuanApp	QuanRes	Comments	MPWMD 2002 Production (AF)	Estimated Max Annual Use (AF/yr)
S014459	STATE	Active	ARROYO CARMEL HOMEOWNERS ASSOCIATION	Aug. 3, 1995						CARMEL RIVER	PACIFIC OCEAN	SW	SW	18	16	S	01	E	M	Monterey	20.9				.27	CFS								14.84	20.9
A030442			Berube (JEM Partners)																								WM	AQ3	48.40 Application	41.2	41.2	Note: AppIID A030442 owner is JEM PARTNERS in CARIV data	0	41.2
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	NE	SE	17	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 San Carlos, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		1137
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	NE	SW	17	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ4 Rancho Canada, , portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SE	NW	22	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Pearce, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SW	NW	22	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Cypress, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SW	NW	23	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Schulte, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	NE	SW	23	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Manor #2, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	NW	SW	24	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Begonia #2, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SE	SW	24	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Berwick #8, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SW	SW	24	16	S	01	E	M	Monterey	3900		16.1	CFS									AQ3 Berwick #7, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SW	SW	19	16	S	02	E	M	Monterey	3900		16.1	CFS									AQ3 Scarlett #6, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
A030715	APPLC	Active	CALIFORNIA-AMERICAN WATER COMPANY	Jun. 17, 1998						CARMEL RIVER SUBTERRANEAN STREAM	PACIFIC OCEAN	SW	SW	19	16	S	02	E	M	Monterey	3900		16.1	CFS									AQ3 Scarlett#8, portion of 1,137 AFA Pre-1914 Appropriative Right superior to SR		
S015251	STATE	Active	CARMEL VALLEY RANCH, INC	Jun. 30, 2000						CARMEL RIVER SUB STR	PACIFIC OCEAN	NW	NE	25	16	S	1	E	M	Monterey	281.3	40	1.22	CFS	1.22	CFS							340 AF reserved, Table 13 WRD 1632, 525 AF per Table 12 Riparian, 4/1 to 11/15 primary diversion season,	220.91	281.30
A030065	APPLC	Active	CROW, GEORGE	Feb. 27, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SE	NW	22	16	S	01	E	M	Monterey	3.5		7850	GPD	7850	GPD	WM	AQ3	1.40 Well Report	3.5	1.4	1.4 AFA Reserved - Table 13, WRD 1632, 3.5 AFA riparian per Table 12, 5/1 to 10/01 primary diversion, George and Julia Crow		
S013914	STATE	Active	CROW, JULIA	Jul. 21, 1992						CARMEL RIVER	PACIFIC OCEAN	SE	NW	22	16	S	01	E	M	Monterey	0	0	.155	CFS	.155	CFS							1.4 AFA Reserved - Table 13, WRD 1632, 3.5 AFA riparian per Table 12, 5/1 to 10/01 primary diversion, George and Julia Crow	2.71	1.4
S014408	STATE	Active	CROW, THOMAS	Jul. 5, 1995						CARMEL RIVER	PACIFIC OCEAN	SE	NW	22	16	S	01	E	M	Monterey			.17	CFS	.17	CFS							12.7 AFA Reserved - Table 13, WRD 1632, 7 AFA riparian per Table 12, 5/1 to 10/01 primary diversion	15.46	12.7
A030066	APPLC	Active	CROW, TOM	Feb. 27, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SE	NW	22	16	S	01	E	M	Monterey	12.7		14225	GPD	14225	GPD	WM	AQ3	13.95 Well Report	12.7	12.7	12.7 AFA Reserved - Table 13, WRD 1632, 7 AFA riparian per Table 12, 5/1 to 10/01 primary diversion	7.53	
S014525	STATE	Active	CYPRESS GREENS ASSOCIATES LTD	Dec. 26, 1995						CARMEL RIVER	PACIFIC OCEAN	SW	NW	18	16	S	01	E	M	Monterey	8		.22	CFS	.22	CFS									8
S014524	STATE	Active	CYPRESS GREENS ASSOCIATES LTD	Dec. 26, 1995						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	SE	NW	18	16	N	01	E	M	Monterey			.33	CFS	.33	CFS									0
S014523	STATE	Active	CYPRESS GREENS ASSOCIATES LTD	Dec. 26, 1995						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	SE	NW	18	16	S	01	E	M	Monterey	2		.22	CFS	.22	CFS									2
S014522	STATE	Active	CYPRESS GREENS ASSOCIATES LTD	Dec. 26, 1995						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	NW	SW	18	16	S	01	E	M	Monterey	13		.33	CFS	.33	CFS									13
S014530	STATE	Active	GAMBOA, WILLIAM	Dec. 29, 1995						CARMEL RIVER	PACIFIC OCEAN	NW	SW	18	16	S	01	E	M	Monterey															0
S014529	STATE	Active	GAMBOA, WILLIAM	Dec. 29, 1995						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	NW	SW	18	16	N	01	E	M	Monterey															0
S014526	STATE	Active	GAMBOA, WILLIAM	Dec. 26, 1995						CARMEL RIVER	PACIFIC OCEAN	SW	NW	18	16	S	01	E	M	Monterey															0
S015286	STATE	Active	HACIENDA CARMEL COMMUNITY ASSOCIATION	Aug. 2, 1999						CARMEL RIVER	CARMEL RIVER	NE	SW	17	16	S	01	E	M	Monterey	35.7	0	.05	CFS	.05	CFS							50 AFA Riparian per WRD 1632, Tables 12 & 13, 4/15 to 11/15 (primary diversion)	9	50
S014584	STATE	Active	HOMESTEAD HOMEOWNERS ASSOCIATION	Jun. 6, 1996						CARMEL RIVER	PACIFIC OCEAN	NW	NE	25	16	S	01	E	M	Monterey			.13	CFS	.13	CFS								8.07	94.12 based on max div
S014371	STATE	Active	JEM PARTNERS LLC CA GENERAL PARTNERSHIP	Apr. 3, 1995						CARMEL RIVER	PACIFIC OCEAN	NW	NE	23	16	S	01	E	M	Monterey	48		.18	CFS								Location not consistent with September Ranch	99.37	99.37
A030442A	APPLC	Active	JEM PARTNERS LLC CA GENERAL PARTNERSHIP	May. 5, 1995						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	SW	NW	23	16	S	01	E	M	Monterey	37.2	0	.051	CFS	.051	CFS						Location not consistent with September Ranch		
A030067	APPLC	Active	KAUFMAN, ROY	Feb. 27, 1992	020831	Mar. 29, 1996	******			CARMEL RIVER SUB STR	PACIFIC OCEAN	SW	NW	22	16	S	01	E	M	Monterey	150		.63	CFS	.63	CFS	WM	AQ3	Well Report of Shared Facility 122.05	150.3	160.0	160 AFA reserved per Table 13, 150 AFA Riparian per WRD 1632, Table 12, 4/15 to 11/15 primary diversion		Appears to have riparian right 160.00 although APPLC
S015082	STATE	Active	KOREAN BUDDHIST SAMBOSA TEMPLE	Jun. 16, 2000						CARMEL RIVER	PACIFIC OCEAN	SW	SW	24	16	S	01	E	M	Monterey			11520	GPD	11520	GPD								0.28	12.90 based on max div
S014583	STATE	Active	KOREAN BUDDHIST SAMBOSA TEMPLE	Jun. 6, 1996						CARMEL RIVER	PACIFIC OCEAN	SW	SW	24	16	S	01	E	M	Monterey			.09	CFS	.09	CFS									65.16 based on max div
---			Lutes																										70.00 Protest	--	0.0	0 AFA reserved per Table 13, 70 AFA Riparian per WRD 1632, table 12, 4/1 to 11/15 primary diversion		70.00
S013803	STATE	Active	NICHOLSON, ALOYS	Mar. 26, 1992						UNST	CARMEL RIVER	NE	NW	30	16	S	02	E	M	Monterey	0	0	.303	CFS	.303	CFS							2.2 AFA reserved per Table 13, 2 AF per WRD 1632 - Table 12 Riparian, 5/1 to 10/31 primary diversion season		2.2
---			Odello																										Exhibit: 195.84 Odello,2.1	--	195.9	195.9 AFA reserved per Table 13, 540 AFA Riparian per WRD 1632, table 12, 4/1 to 11/1 primary diversion		
S014390	STATE	Active	PATTERSON, WILLIAM	May. 15, 1995						CARMEL RIVER	PACIFIC OCEAN	NW	SW	22	16	S	01	E	M	Monterey			24480	GPD	24480	GPD									27.42 based on max div

Table 8: Summary of Riparian and Pre-1914 Appropriative Water Rights in Carmel River Watershed Aquifer Subunits 3 and 4

Appl Id	Record Type	Status	Owner	ApplFileDate	Permit	Permit Issue Date	Complete Use	License	LicIssueDate	SourName	TribName	POD1	POD2	POD3	POD4	POD5	POD6	POD6	POD7	County	MaxUseAnn	MaxStorage	MaxDir/Div		POD/Direct		Rpt Method	Source Area	QuanDiv	InfoSource	QuanApp	QuanRes	Comments	MPWMD 2002 Production (AF)	Estimated Max Annual Use (AF/yr)
---			Pt. Sur Corp.																										4.90	Protest	--	0.0	0.0 AFA reserved per Table 13, 4.9 AFA Riparian per WRD 1632, table 12, 1/1 to 12/31		0.00
S015326	STATE	Active	QUAIL LODGE INC	Aug. 7, 2000						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	SE	SE	17	16	S	01	E	M	Monterey	115	0	.89	CFS	.89	CFS							254 AFA Riparian per WRD 1632, Tables 12 & 13, 4/1 to 11/15 (primary diversion)	42.8	254
S015325	STATE	Active	QUAIL LODGE INC	Aug. 7, 2000						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	NW	NE	21	16	S	01	E	M	Monterey	8520	0	.89	CFS	.89	CFS							254 AFA Riparian per WRD 1632, Tables 12 & 13, 4/1 to 11/15 (primary diversion)		
S015324	STATE	Active	QUAIL LODGE INC	Aug. 7, 2000						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	NW	NE	21	16	S	01	E	M	Monterey	57.3		1.34	CFS	1.34	CFS							254 AFA Riparian per WRD 1632, Tables 12 & 13, 4/1 to 11/15 (primary diversion)		
S015323	STATE	Active	QUAIL LODGE INC	Aug. 7, 2000						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	NW	NE	21	16	S	01	E	M	Monterey	8.1		.11	CFS	.11	CFS							254 AFA Riparian per WRD 1632, Tables 12 & 13, 4/1 to 11/15 (primary diversion)		
	Riparian - Dec1632		Quinn Properties																		40												3/1 to 10/15		40
A030111	APPLC	Active	RANCHO CANADA DE LA SEGUNDA, INC	Apr. 22, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	NE	SW	17	16	S	01	E	M	Monterey	700		2.36	CFS	2.36	CFS	WM	AQ4		Well Report	700.0	700.0	700 AFA Riparian per WRD 1632, Tables 12 & 13, 4/15 to 11/15 primary diversion		700
A030111	APPLC	Active	RANCHO CANADA DE LA SEGUNDA, INC	Apr. 22, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SW	SW	17	16	S	01	E	M	Monterey	700		2.36	CFS	2.36	CFS	WM	AQ4					700 AFA Riparian per WRD 1632, Tables 12 & 13, 4/15 to 11/15 primary diversion		
A030111	APPLC	Active	RANCHO CANADA DE LA SEGUNDA, INC	Apr. 22, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	NE	SE	18	16	S	01	E	M	Monterey	700		2.36	CFS	2.36	CFS	WM	AQ4					700 AFA Riparian per WRD 1632, Tables 12 & 13, 4/15 to 11/15 primary diversion		
A030111	APPLC	Active	RANCHO CANADA DE LA SEGUNDA, INC	Apr. 22, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SW	SE	18	16	S	01	E	M	Monterey	700		2.36	CFS	2.36	CFS	WM	AQ4					700 AFA Riparian per WRD 1632, Tables 12 & 13, 4/15 to 11/15 primary diversion		
A030149	APPLC	Active	QUAIL LODGE INC (Rancho San Carlos)	Jun. 30, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SE	SE	17	16	S	01	E	M	Monterey	115	0	.7	CFS	.7	CFS	WM	AQ4		Well Report	150.0		Note: listed owner is Rancho San Carlos on WRD1623 & MPWMD-T13. 268 AFA reserved per Table 13, WRD1632		268
A030150	APPLC	Active	QUAIL LODGE INC (Rancho San Carlos)	Jun. 30, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SE	SE	18	16	S	01	E	M	Monterey	60	0	.3	CFS	.3	CFS	WM	AQ3		Well Report	120.0		Note: listed owner is Rancho San Carlos on WRD1623 & MPWMD-T13. 268 AFA reserved per Table 13, WRD1632		
A030075	APPLC	Active	RANCHO SIN FRNOS LLC	Mar. 11, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SW	NE	22	16	S	01	E	M	Monterey	11.2		.09	CFS	.09	CFS	NA	NA	82.00	Estimate	98.6	82.0	Note: Owner = Porter-Hoover in WRD1632 & MPWMD T13, 82 AFA per Table 13, 30 AFA Riparian per WRD 1632, Table 12, 5/1/ to 10/31 primary diversion		82
S013802	STATE	Active	STERTEN, BETH	Apr. 13, 1992						CARMEL RIVER	PACIFIC OCEAN	NW	NE	22	16	S	01	E	M	Monterey	0	0	.089	CFS	.089	CFS							5.1 AFA per Table 13, 6 AFA Riparian per WRD 1632, Table 12 5/1 to 9/30 (primary diversion)		5.1
---			Syndicate Camp																										0.80	Protest		0.8	0.8 AFA Riparian per WRD 1632, tables 12 & 13, 4/1 to 11/1 primary diversion		0.8
D030555R	SMDOM	Active	TEMPLEMAN, EDWARD	Jul. 30, 1996		Jul. 30, 2006	000589R	Jul. 24, 2001		CARMEL RIVER	PACIFIC OCEAN	NE	SW	22	16	S	01	E	M	Monterey	.2	0	3000	GPD	3000	GPD							0.7 AFA reserved per Table 13 WRD 1632		0.7
A030058	APPLC	Active	WILLIAMS , R & J 1980 JOINT TRUST	Jan. 15, 1992						CARMEL RIVER SUB STR	PACIFIC OCEAN	SE	SE	33	16	S	02	E	M	Monterey	7.6	0	.025	CFS	.025	CFS	WM	AQ3	1.50	Well Report	7.6	1.5	1.5 AFA reserved per Table 13, 38 AFA Riparian per WRD 1632, Table 12 4/1 to 11/1 primary diversion		1.5
D027633R	SMDOM	Active	WISTRICH, HARRY	Jan. 17, 1983				000327R	Jun. 25, 1997	CARMEL RIVER	PACIFIC OCEAN	SW	NE	23	16	S	01	E	M	Monterey	.9	0	4000	GPD	4000	GPD	LU	AQ3	0.88	Well Report	1.5	0.9	0.9 AFA reserved per Table 13, WRD 1632; Appl ID = A027633 in WRD1632 & MPWMD-T13		0.9
S015295	STATE	Active	WOLTER PROPERTIES LIMITED PARTNERSHIP	Sep. 16, 2002						CARMEL RIVER UNDERFLOW	PACIFIC OCEAN	SE	NE	21	16	S	01	E	M	Monterey	96		.42	CFS	.42	CFS							96	
			Subtotal																																3563.67	
			Sum of Other Reported Pumpers (assumed riparian) ir AQ3 from MPWMD data																															648.15	777.78	+20% from actual for unreported/underreported riparians
			Sum of Other Reported Pumpers (assumed riparian) ir AQ4 from MPWMD data																															216.4	216.40	+20% from actual for unreported/ underreported riparians	AQ3 = 60%
			Total Estimated Maximum Annual Use (AFA)																																4557.85	Total	AQ4 = 40%

Table 9: Sustainable Yield Calculations

	Available Groundwater In the SRA[1] (AFY)	Averaged Usage of Other SRA Users (AFY)	Project Sustainable Yield[2] (AFY)
Average Precipitation Period	244 – 262	0.76	243 – 261
Below Average Precipitation	65 - 81	0.76	64 – 80

Notes: 1- Based on total recharge within the September Ranch watershed; 2 – Project sustainable yield is the amount of naturally available groundwater in the SRA minus the current total usage by other SRA users.