Appendix G

Results of Short-Term Well Yield Testing

State Water Resources Control Board (SWRCB) Resolution 88-63 (Sources of Drinking Water Policy) assigns municipal and domestic supply designations to all waters of the state with certain exceptions. One of the exemption criteria to the Sources Policy is that "the water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day". In order to determine where areas of groundwater contamination at Berkeley Lab do not meet the 200 gallon per day (gpd) well yield criteria for consideration as a potential drinking water source, short-term pumping tests were conducted. Results of the testing are summarized in Table G-1. As can be seen in the table, wells screened in the Orinda Formation and/or Mixed Unit generally cannot produce 200 gpd. Wells screened entirely in the Moraga Formation were generally not tested since, the Moraga Formation is relatively permeable, and therefore is expected to produce more than 200 gpd in many areas.

The short term well yield testing procedure was generally as follows:

- Each well was purged until dry or up to a maximum of 20 gallons.
- Ten minutes after completion of purging, 1.4 gallons of water was pumped from the well over a 10 minute period (equivalent to a rate of 200 gpd).
- If 1.4 gallons could not be pumped during the ten minute period, the test was ended, and the well was designated as having a yield less than 200 gpd.
- If the well did not go dry, an additional 1.4 gallons was pumped over a second 10 minute period. If 1.4 gallons could not be pumped without the well going dry, or the water level continued to decline to near the bottom of the well, the well was designated as having a yield less than 200 gpd.

The results are considered highly conservative since 1) testing was conducted over a very short time period (approximately 30 minutes or less), 2) the average pumping rate during the test was much less than 200 gpd, and 3) most wells were tested during the winter (March 2004 and October to December 2004) when the water table level and well yields are at their annual maximums. During the summer and fall when groundwater elevations decline, it is likely that additional wells would not produce 200 gpd, particularly in those areas where the water table drops into the less permeable horizons below the base of the Moraga formation.

Table G-1. Estimated Well Yields

Geologic Unit in Screened/Sandpack Interval Below Water Table	Location	Date Tested	Estimated Short-Term Well Yield	Static Water Column Height (feet)	Water Column After Initial Well Purge (feet)	Water Column at End of Test (feet)	Average Pumping Rate (gpd)
Orinda Formation	MW76-1	3/22/04	<200 gpd	11.7	1.2	0.7	(a)
	MW91-2	4/1/04	<200 gpd	8.2	2.4	0	(a)
	MW91-4	4/2/04	< 200 gpd	35.8	7	0	(a)
	MW91-9	3/23/04	>200 gpd	18.5	17	17.2	175
		5/7/04	>200 gpd	16	14.6	13.5	200
	26-92-11	3/23/04	>200 gpd	18.7	16.9	17	175
		5/7/04	>200 gpd	16.9	12.6	15.3	134
		10/21/04	>200 gpd	12.4	4.9	11.5	200
	51B-93-18A	3/19/04	<200 gpd	36	6.1	4.8	155
	25A-95-15	3/25/04	<200 gpd	11.6	5.6	5.4	96
	58-95-19	3/26/04	<200 gpd	17	2.5	1.4	(a)
	51-96-18	3/24/04	<200 gpd	7.2	3.8	2.5	100
	75-96-20	3/22/04	<200 gpd	39.8	4.5	3.1	168
	64-97-1	3/19/04	<200 gpd	7	2.8	1.9	134
	64-97-2	3/18/04	<200 gpd	17.4	6.2	3.2	122
	75-97-6	12/16/04	<200 gpd	16.6	0	0	(a)
	75-97-7	12/17/04	<200 gpd	22.9	0	0	(a)
	69-97-8	3/17/04	<200 gpd	27.4	7.7	4	103
	25A-98-1	3/24/04	<200 gpd	14.9	7	4.5	155
	25A-98-7	3/24/04	<200 gpd	17.9	4.7	4.3	155
	75-98-14	3/25/04	<200 gpd	24.1	6.5	4.5	183
	76-98-21	3/22/04	<200 gpd	17.4	6	4.8	155
	25A-99-2	3/24/04	<200 gpd	0.5	1.9	1.3	(a)
	71B-99-3R	4/2/04	>200 gpd	25	12.8	22.6	100
	25A-99-5	11/2/04	<200 gpd	17.9	0	0	(a)
	75A-00-7	4/2/04	<200 gpd	14.1	4.6	0	(a)
	51-00-9	3/19/04	<200 gpd	7.5	2	0	(a)
	51-00-10	3/19/04	<200 gpd	7.8	1.2	0	(a)
	SB25A-96-3	3/26/04	>200 gpd	19.2	3	8.9	79
		5/10/04	<200 gpd	17.7	0	0	(a)
	W76-97-3	3/26/04	<200 gpd	12.2	2.9	1.5	96
	SB16-97-11	3/31/04	<200 gpd	3.3	0.9	0	(a)
	SB5A-98-1	3/30/04	<200 gpd	35.5	4.6	0	(a)
	SB16-98-1	3/31/04	<200 gpd	5	0	0	(a)

Table G-1. Estimated Well Yields (continued)

Geologic Unit in Screened/Sandpack Interval Below Water Table	Location	Date Tested	Estimated Short-Term Well Yield	Static Water Column Height (feet)	Water Column After Initial Well Purge (feet)	Water Column at End of Test (feet)	Average Pumping Rate (gpd)
Orinda Formation (continued)	SB44-98-1	3/31/04	>200 gpd	23.2	7.2	14.1	150
		5/10/04	<200 gpd	19.3	0	0	(a)
	SB64-98-8	4/6/04	<200 gpd	9.9	2.8	1.8	100
	SB64-98-17	4/6/04	<200 gpd	17.2	7.55	6.6	100
	SB71B-99-2	11/1/04	<200 gpd	5.5	0	0	(a)
	SB64-99-4	4/6/04	<200 gpd	12.9	1.6	1.4	100
	SB64-00-1	4/6/04	<200 gpd	19.5	9.46	8.1	100
	SB64-00-2	4/6/04	<200 gpd	17.3	6.22	3.4	78
	SB25A-02-1	11/1/04	<200 gpd	8.5	0	0	(a)
	SB75-02-1	3/26/04	<200 gpd	8.5	7.3	5.2	100
	SB77-02-1	12/16/04	<200 gpd	1.4	0	0	(a)
	SB64-03-5	11/1/04	<200 gpd	6.6	1.4	0	(a)
	SB64-03-6	11/3/04	<200 gpd	7.4	0	0	(a)
	SB64-03-7	11/3/04	<200 gpd	3.7	0	0	(a)
	SB64-03-8	11/3/04	<200 gpd	7.7	0	0	(a)
	SB64-03-12	11/1/04	<200 gpd	11.6	0	0	(a)
	SB64-03-13	11/1/04	<200 gpd	21.3	0	0	(a)
	SB76-04-1	11/2/04	>200 gpd	7.1	6.6	6.6	148
		12/2/04	>200 gpd	6.9	6	6.1	150
Mixed Unit and Orinda Formation	16-94-13	3/25/04	>200 gpd	31.1	2	9.4	76
		5/7/04	<200 gpd	28.5	0	1.5	134
	16-95-3	3/22/04	>200 gpd	20	11.9	16.9	168
		12/3/04	>200 gpd	22	0	10.1	200
	7-95-23	4/7/04	<200 gpd	37.1	11	9.7	134
	58-96-11	4/5/04	<200 gpd	10.4	4	0	(a)
	58-00-12	4/6/04	<200 gpd	29.8	2.8	0	(a)
	SB58-96-1	3/31/04	<200 gpd	24.7	7	6.4	100
	SB58-96-2	3/31/04	<200 gpd	12.7	1.6	0	(a)
	SB58-97-1	4/1/04	<200 gpd	14	7.4	0	(a)
	SB58-98-7	4/5/04	<200 gpd	11.5	1.9	0	(a)
	SB58-01-2	3/31/04	<200 gpd	15.6	8	0	(a)
	SB58-02-1	3/31/04	<200 gpd	22	7.4	5.3	100
	SB58-02-2	3/31/04	< 200 gpd	16.9	7.2	4.4	100

Table G-1. Estimated Well Yields (continued)

Geologic Unit in Screened/Sandpack Interval Below Water Table	Location	Date Tested	Estimated Short-Term Well Yield	Static Water Column Height (feet)	Water Column After Initial Well Purge (feet)	Water Column at End of Test (feet)	Average Pumping Rate (gpd)
Mixed Unit	52-93-14	3/25/04	<200 gpd	3.1	0	0	(a)
	7B-95-21	4/7/04	<200 gpd	4.1	1.05	0.94	(a)
	7-95-22	4/7/04	<200 gpd	18.1	7.1	5.7	134
	SB58-95-2	3/30/04	>200 gpd	19.4	13.4	17.2	100
	SB58-97-2	4/1/04	>200 gpd	13.5	12.8	13	100
		12/1/04	>200 gpd	7.7	0	7	148
Moraga and Orinda Formations	5-93-10	3/23/04	>200 gpd	19	15.5	17.4	168
		10/22/04	>200 gpd	13.4	0	12.3	200
		11/29/04	>200 gpd	15.4	0	14.8	150
	58A-94-14	3/25/04	<200 gpd	8.3	6.4	5.5	100
	58-95-18	3/23/04	>200 gpd	9.1	5.3	7.9	168
	SB16-98-1	10/22/04	>200 gpd	11.6	9.8	10.6	100
	SB52A-98-1	3/31/04	<200 gpd	9.1	4.4	0	(a)
Orinda Formation and Great Valley Group	51-96-17	3/23/04	<200 gpd	43.1	5.2	4.2	134
Moraga Formation, Mixed Unit, and Orinda Formation	MW90-2	4/6/04	>200 gpd	15.2	4.5	7.9	100
		12/2/04	<200 gpd	13.9	0	2	168
	25-95-26	3/22/04	>200 gpd	19.3	10.7	11.4	160
		10-21-04	<200 gpd	17.5	0	0	172
	58-95-20	3/23/04	>200 gpd	19.4	9.4	13.2	183
		12/3/04	<200 gpd	17.5	0	0	(a)
	7B-95-24	4/7/04	>200 gpd	26	6.6	8.1	100
Moraga Formation and Mixed Unit	7-92-19	4/2/04	<200 gpd	21.9	3.8	3.9	(a)
	25-95-5	3/22/04	>200 gpd	20.1	20	20	168
	52B-95-13	3/25/04	not determined	10.4	8.7	9	98
		12/1/04	not determined	10.4	7.8	5.9	138
	25-98-10	3/22/04	>200 gpd	15.9	16	13	168
	SB53-96-3	4/5/04	>200 gpd	16.9	11.3	14	100
		10/22/04	>200 gpd	10.6	8.3	6.6	189
Great Valley Group	51-97-16	3/24/04	>200 gpd	7.2	5.6	6.7	118
		5/10/04	<200 gpd	dry			

Table G-1. Estimated Well Yields (continued)

Geologic Unit in Screened/Sandpack Interval Below Water Table	Location	Date Tested	Estimated Short-Term Well Yield	Static Water Column Height (feet)	Water Column After Initial Well Purge (feet)	Water Column at End of Test (feet)	Average Pumping Rate (gpd)
Colluvium, Orinda Formation, and Great Valley Group	51-96-15	3/18/04	>200 gpd	19	12.6	16.9	134
		12/2/04	<200 gpd	19	0	0	(a)
Colluvium and Moraga Formation	58-93-3	3/24/04	>200 gpd	19.6	7.6	9.9	149
Colluvium and Great Valley Group	51-97-13	3/19/04	>200 gpd	34.8	32	33.6	175
	51L-02-1	3/24/04	not determined	11.8	10.3	9.6	168
Fill and/or colluvium and Orinda Formation	46A-92-25	11/3/04	>200 gpd	22.3	0	17.8	200
	56-98-2	3/19/04	>200 gpd	39.2	20.9	24.3	149
	71B-98-13	11/3/04	<200 gpd	13.9	0	0	(a)
	51-00-8	3/18/04	<200 gpd	18.5	4.7	1.6	(a)
	SB69A-99-1	3/26/04	<200 gpd	12.9	3.3	2.8	134
Fill and/or Colluvium	MW90-3	11/2/04	<200 gpd	16.7	0	0	(a)
	51-96-16	3/23/04	<200 gpd	12.3	3.7	2.4	134
	51-96-19	3/18/04	>200 gpd	7.8	7.1	7.5	155
	51-97-3	3/19/04	>200 gpd	36.9	33.5	34.4	175
	SB51L-02-3	3/30/04	<200 gpd	10.3	1.3	0	(a)
	SB51L-03-1	3/30/04	<200 gpd	10.3	2.3	0.9	(a)
	SB51L-03-2	3/30/04	<200 gpd	11.5	1.3	0	(a)
Fill and/or Colluvium	51-97-12	3/19/04	>200 gpd	16.1	9.3	10.5	155
	63-98-18	3/18/04	>200 gpd	17.4	12	14	155

(a) Well went dry when trying to pump 1.4 gallons of water over a 10 minute period. Well yield is less than 200 gpd.