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MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Office of the General Manager

205

May 14, 2001

Ms. Teresa Newkirk
California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

Dear Ms. Newkirk:

Response to Public Solicitation of Water Quality Information

In response to the February 28, 2001 public solicitation of water quality information issued by the California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board), Metropolitan submits the enclosed data it has generated on water quality conditions in surface waters within the Colorado River Basin Region of California since July 1997. Pursuant to the Regional Board's request, an electronic file and paper copies are enclosed for each of the following data sets:

- Lake Havasu radiological data (near Whitsett Intake Pumping Plant on the lake);
- Lake Havasu general mineral data (near Whitsett Intake on the lake);
- Lake Havasu trace metals (near Whitsett Intake on the lake);
- Lake Havasu perchlorate data (various sample point locations);
- Lake Havasu coliform results (monthly averages at influent to the Whitsett Intake);
- Pathogen monitoring data (at influent to the Whitsett Intake);
- Pesticide, herbicide, and semi-volatile organic compound data for various source waters and treated waters.

The majority of data was generated by Metropolitan at its Water Quality Laboratory (WQL), which is a certified laboratory under the California Department of Health Services' Environmental Laboratory Accreditation Program. Analyses for the radiologicals, pesticide, herbicide, and semi-volatile organic compounds were conducted by certified commercial laboratories. Metropolitan's WQL maintains a Quality Assurance Manual which details sample collection procedures, sample and data tracking systems, quality assurance protocols, and standard operating procedures for methods used in its laboratory. This document is available upon request.

For questions on the enclosed data or for additional information, please contact:

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Very truly yours,

Stephen N. Arakawa
Manager
Water Resources Management Group

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Enclosures

The Metropolitan Water District of Southern California

Lake Havasu Radiological Data (Jul 1997 to Feb 2001)

(pCi/L)

SAMPLE	Gross alpha		Total Uranium		Gross Beta		Radium 226	
MONTH	Result	error	Result	error	Result	error	Result	error
Jul-97	6.29	2.02						
Aug-97	2.3	1.0						
Sep-97	2.5	0.5						
Oct-97	3.90	0.6						
Nov-97	5.32	1.9						
Dec-97	7.37	2.31						
Jan-98	5.47	1.96						
Feb-98	6.81	2.15						
Mar-98	5.84	2.0						
Apr-98	6.07	2.09						
May-98	4.9	1.9						
Jun-98	4.2	2.1						
Jul-98	7.41	2.19						
Aug-98	6.0	1.7	3	0.9	4.7	1.3	0	0.19
Sep-98	4.65	1.95	3.2	0.87				
Oct-98	6.70	2.2	3.13	0.88	4.86	3.29	0.65	0.23
Nov-98	6.90	2.5	2.65	0.81				
Dec-98	1.97	1.9	3.54	0.91				
Jan-99	5.31	2.1	3.13	0.84	6.24	3.27	0.19	0.11
Feb-99	4.00	2.2	3.18	0.88				
Mar-99	4.50	2.3	3.76	0.94				
Apr-99	6.08	1.91	2.26	0.79	4.23	3.37	0.55	0.25
May-99	4.6	1.5	3.6	0.9				
Jun-99	4.8	1.5	2.68	0.79				
Jul-99	1.10	1.15	3.53	0.86				
Aug-99	2.3	1.3	3.68	1.08				
Sep-99	3.59	1.40	3	0.91				
Oct-99	3.67	1.40	3.36	0.94				
Nov-99	4.67	1.41	2.87	0.84				
Dec-99	6.10	2.10	3.27	0.88				
Jan-00	4.52	1.45	4.02	1.08				
Feb-00	3.51	1.34	4.83	1.17				
Mar-00	4.27	1.46	3.92	1.08				
Apr-00	2.93	1.34	2.96	0.96				
May-00	6.34	1.76	4.33	1.09				
Jun-00	3.87	1.33	3.5	1.13				
Jul-00	3.89	1.47	4.57	1.14				
Aug-00	4.22	1.49	2.42	0.86				
Sep-00	2.7	1.22	3.4	0.99				
Oct-00	4.14	1.42	4.32	1.1				
Nov-00	5.31	1.59	3.29	1.01				
Dec-00	3.57	1.42	3.64	1.05				
Jan-01	4.32	0.9	3.62	1				
Feb-01	3.72	0.94	3.02	0.6				

The Metropolitan Water District of Southern California

Lake Havasu Radiological Data (Jul 1997 to Feb 2001)

(pCi/L)

SAMPLE	Radium 228		Strontium 90		Tritium		Radon 222	
MONTH	Result	error	Result	error	Result	error	Result	error
Jul-97								
Aug-97								
Sep-97								
Oct-97								
Nov-97								
Dec-97								
Jan-98								
Feb-98								
Mar-98								
Apr-98								
May-98								
Jun-98								
Jul-98								
Aug-98	0	0.39	1.14	0.19	40.9	150	51	14
Sep-98								
Oct-98	1.05	0.23	1.95	0.73	50.5	110	18	5
Nov-98								
Dec-98								
Jan-99	1.09	1	0.88	0.35	66.6	110	58	14
Feb-99								
Mar-99								
Apr-99	1.64	0.4	1.26	0.4	36.7	170	51	12
May-99								
Jun-99								
Jul-99								
Aug-99								
Sep-99								
Oct-99								
Nov-99								
Dec-99								
Jan-00								
Feb-00								
Mar-00								
Apr-00								
May-00								
Jun-00								
Jul-00								
Aug-00								
Sep-00								
Oct-00								
Nov-00								
Dec-00								
Jan-01								
Feb-01								

The Metropolitan Water District of Southern California

Lake Havasu Radiological Data (Jul 1997 to Feb 2001)

(pCi/L)

SAMPLE	Gross alpha		Total Uranium		Gross Beta		Radium 226	
MONTH	Result	error	Result	error	Result	error	Result	error
Jul-97	6.29	2.02						
Aug-97	2.3	1.0						
Sep-97	2.5	0.5						
Oct-97	3.90	0.6						
Nov-97	5.32	1.9						
Dec-97	7.37	2.31						
Jan-98	5.47	1.96						
Feb-98	6.81	2.15						
Mar-98	5.84	2.0						
Apr-98	6.07	2.09						
May-98	4.9	1.9						
Jun-98	4.2	2.1						
Jul-98	7.41	2.19						
Aug-98	6.0	1.7	3	0.9	4.7	1.3	0	0.19
Sep-98	4.65	1.95	3.2	0.87				
Oct-98	6.70	2.2	3.13	0.88	4.86	3.29	0.65	0.23
Nov-98	6.90	2.5	2.65	0.81				
Dec-98	1.97	1.9	3.54	0.91				
Jan-99	5.31	2.1	3.13	0.84	6.24	3.27	0.19	0.11
Feb-99	4.00	2.2	3.18	0.88				
Mar-99	4.50	2.3	3.76	0.94				
Apr-99	6.08	1.91	2.26	0.79	4.23	3.37	0.55	0.25
May-99	4.6	1.5	3.6	0.9				
Jun-99	4.8	1.5	2.68	0.79				
Jul-99	1.10	1.15	3.53	0.86				
Aug-99	2.3	1.3	3.68	1.08				
Sep-99	3.59	1.40	3	0.91				
Oct-99	3.67	1.40	3.36	0.94				
Nov-99	4.67	1.41	2.87	0.84				
Dec-99	6.10	2.10	3.27	0.88				
Jan-00	4.52	1.45	4.02	1.08				
Feb-00	3.51	1.34	4.83	1.17				
Mar-00	4.27	1.46	3.92	1.08				
Apr-00	2.93	1.34	2.96	0.96				
May-00	6.34	1.76	4.33	1.09				
Jun-00	3.87	1.33	3.5	1.13				
Jul-00	3.89	1.47	4.57	1.14				
Aug-00	4.22	1.49	2.42	0.86				
Sep-00	2.7	1.22	3.4	0.99				
Oct-00	4.14	1.42	4.32	1.1				
Nov-00	5.31	1.59	3.29	1.01				
Dec-00	3.57	1.42	3.64	1.05				
Jan-01	4.32	0.9	3.62	1				
Feb-01	3.72	0.94	3.02	0.6				

The Metropolitan Water District of Southern California

Lake Havasu Radiological Data (Jul 1997 to Feb 2001)

(pCi/L)

SAMPLE	Radium 228		Strontium 90		Tritium		Radon 222	
MONTH	Result	error	Result	error	Result	error	Result	error
Jul-97								
Aug-97								
Sep-97								
Oct-97								
Nov-97								
Dec-97								
Jan-98								
Feb-98								
Mar-98								
Apr-98								
May-98								
Jun-98								
Jul-98								
Aug-98	0	0.39	1.14	0.19	40.9	150	51	14
Sep-98								
Oct-98	1.05	0.23	1.95	0.73	50.5	110	18	5
Nov-98								
Dec-98								
Jan-99	1.09	1	0.88	0.35	66.6	110	58	14
Feb-99								
Mar-99								
Apr-99	1.64	0.4	1.26	0.4	36.7	170	51	12
May-99								
Jun-99								
Jul-99								
Aug-99								
Sep-99								
Oct-99								
Nov-99								
Dec-99								
Jan-00								
Feb-00								
Mar-00								
Apr-00								
May-00								
Jun-00								
Jul-00								
Aug-00								
Sep-00								
Oct-00								
Nov-00								
Dec-00								
Jan-01								
Feb-01								

The Metropolitan Water District of Southern California

Lake Havasu Water Quality Data

Date	L. Havasu Boron ppm	L. Havasu Bromide ppm	L. Havasu Calcium ppm	L. Havasu Chloride ppm	L. Havasu CO2 ppm	L. Havasu Carbonate ppm	L. Havasu Color
7/7/1997		0.09	76	85	1.5	0	
8/5/1997		0.10	73	82	1.0	1	
9/2/1997	0.11	0.08	71	81	1.0	2	
10/7/1997		0.07	73	80	1.2	1	
11/4/1997		0.07	74	82	1.5	0	5
12/1/1997	0.12	0.06	75	82	1.4	0	
1/6/1998		0.07	75	82	1.7	0	
2/3/1998		0.07	75	77	1.8	0	4
3/2/1998	0.09	0.08	73	75	1.7	0	
4/7/1998		0.07	74	74	1.3	0	
5/5/1998		0.06	75	75	1.3	0	2
6/2/1998	0.11	0.07	74	73	1.9	0	
7/7/1998		0.06	71	73	1.6	0	
8/11/1998		0.08	70	75	0.8	4	7
9/1/1998	0.11	0.07	70	72	1.4	0	
10/13/1998		0.08	72	78	1.5	0	
11/3/1998		0.07	70	73	1.3	0	6
12/1/1998	0.11	0.07	69	71	1.5	0	
1/12/1999		0.07	73	71	1.2	1	
2/2/1999		0.07	72	70	1.4	0	5
3/2/1999	0.13	0.06	73	72	1.4	0	
4/6/1999		0.07	73	72	1.5	0	
5/4/1999		0.07	72	69	1.4	0	5
6/2/1999	0.13	0.07	72	67	1.6	0	
7/20/1999		0.06	73	68	1.8	0	
8/3/1999		0.06	72	69	0.9	2	5
9/8/1999	0.08	0.07	71	67	2.0	0	
10/5/1999		0.07	72	68	1.6	0	
11/2/1999		0.07	70	70	1.4	0	2
12/7/1999	0.08	0.07	73	68	1.4	0	
1/4/2000		0.07	72	69	1.8	0	
1/31/2000		0.06	74	67	1.2	1	3
3/13/2000	0.09	0.06	72	69	1.5	0	
4/3/2000		0.06	73	66	1.3	1	
5/2/2000		0.06	72	66	1.5	0	4
6/6/2000	0.10	0.06	71	65	1.7	0	
7/5/2000		0.05	69	65	1.7	0	
8/1/2000		0.06	69	66	1.7	0	6
9/11/2000	0.08	0.05	68	65	1.8	0	
10/3/2000		0.06	68	65	1.3	0	
11/8/2000		0.07	70	68	1.3	0	10
12/5/2000	0.12	0.07	70	68	1.2	1	
1/10/2001		0.06	73	69	1.1	1	
2/6/2001		0.07	71	68	1.1	1	6
Min	0.08	0.05	68	65	0.8	0	2
Max	0.13	0.10	76	85	2.0	4	10
Avg	0.10	0.07	72	72	1.4	0	5

The Metropolitan Water District of Southern California

Lake Havasu Water Quality Data

Date	L. Havasu Conductivity umho/cm	L. Havasu Fluoride ppm	L. Havasu Bicarbonate ppm	L. Havasu Potassium ppm	L. Havasu Magnesium ppm	L. Havasu Sodium ppm	L. Havasu Nitrate ppm
7/7/1997	956	0.26	163	4.2	27	87	0.5
8/5/1997	993	0.28	161	4.4	27.5	89	0.5
9/2/1997	978	0.29	153	4.3	27.5	93	0.5
10/7/1997	958	0.30	156	4.3	27.5	92	0.6
11/4/1997	972	0.33	159	4.3	27	89	0.8
12/1/1997	952	0.33	163	4.4	26.5	89	0.8
1/6/1998	970	0.34	168	4.3	27	88	0.9
2/3/1998	948	0.35	163	3.9	26.5	85	1.1
3/2/1998	917	0.31	161	4.0	26.5	84	1.1
4/7/1998	917	0.25	161	4.0	25.5	82	1.0
5/5/1998	910	0.33	162	4.1	25	81	1.0
6/2/1998	930	0.30	161	4.1	25	81	0.9
7/7/1998	928	0.29	162	3.9	25.5	84	0.9
8/11/1998	923	0.29	148	4.0	27.5	85	0.5
9/1/1998	918	0.32	159	3.9	26	82	0.6
10/13/1998	925	0.29	160	3.9	26.5	82	0.8
11/3/1998	933	0.31	160	3.9	26	85	0.7
12/1/1998	922	0.31	160	4.0	27.5	87	0.8
1/12/1999	916	0.29	161	3.9	26	82	1.2
2/2/1999	922	0.30	163	3.9	26	81	1.2
3/2/1999	917	0.32	162	4.0	26	81	1.2
4/6/1999	914	0.27	161	4.0	26	83	1.2
5/4/1999	901	0.28	161	4.1	25.5	79	1.0
6/2/1999	898	0.28	159	4.0	25.5	81	1.0
7/20/1999	895	0.29	156	3.9	25	79	1.0
8/3/1999	904	0.31	155	4.0	25.5	80	0.6
9/8/1999	892	0.28	155	3.9	25	79	0.8
10/5/1999	880	0.31	156	4.0	25	79	0.8
11/2/1999	901	0.27	155	4.1	25.5	79	0.9
12/7/1999	898	0.30	160	4.0	25.5	79	1.0
1/4/2000	881	0.28	160	3.8	25.5	79	1.1
1/31/2000	916	0.31	159	3.8	24.5	78	1.2
3/13/2000	911	0.32	160	3.9	26	82	1.3
4/3/2000	896	0.29	160	4.0	25.5	75	1.1
5/2/2000	885	0.31	161	4.1	25.5	74	1.1
6/6/2000	890	0.27	162	4.1	26	77	1.1
7/5/2000	898	0.28	162	4.0	25.5	74	1.0
8/1/2000	895	0.29	162	4.0	25.5	75	1.0
9/11/2000	893	0.28	160	4.1	26	76	0.7
10/3/2000	883	0.28	153	4.0	26.5	75	0.7
11/8/2000	894	0.28	161	4.1	26	78	0.6
12/5/2000	903	0.29	160	3.9	26	78	0.6
1/10/2001	917	0.29	160	4.0	26.5	76	0.8
2/6/2001	910	0.28	161	4.1	26	77	1.1
Min	880	0.25	148	3.8	24.5	74	0.5
Max	993	0.35	168	4.4	27.5	93	1.3
Avg	917	0.30	160	4.0	26.5	81	0.9

The Metropolitan Water District of Southern California

Lake Havasu Water Quality Data

Date	L. Havasu pH	L. Havasu Silica ppm	L. Havasu Sulfate ppm	L. Havasu Alkalinity ppm as CaCO3	L. Havasu TDS ppm	L. Havasu Temp C	L. Havasu Hardness ppm as CaCO3
7/7/1997	8.27	8.8	250	134	620	26	301
8/5/1997	8.44	9.9	247	134	616	29	296
9/2/1997	8.43	9.7	245	129	611	27	291
10/7/1997	8.36	9.3	242	130	608	25	296
11/4/1997	8.25	9.2	249	130	615	18	296
12/1/1997	8.29	9.0	243	134	612	16	296
1/6/1998	8.21	9.6	247	138	618	11	298
2/3/1998	8.18	9.6	236	134	596	13	296
3/2/1998	8.19	9.5	229	132	582	14	291
4/7/1998	8.31	9.1	228	132	578	15	290
5/5/1998	8.33	9.5	232	133	584	20	290
6/2/1998	8.14	9.3	229	132	577	20	288
7/7/1998	8.24	9.3	229	133	578	23	282
8/11/1998	8.51	9.3	236	127	585	28	288
9/1/1998	8.27	8.6	230	130	573	25	282
10/13/1998	8.24	8.9	229	131	582	20	289
11/3/1998	8.30	8.9	230	131	578	19	282
12/1/1998	8.24	8.5	226	131	574	15	286
1/12/1999	8.36	9.0	230	134	578	10	289
2/2/1999	8.30	8.6	230	134	575	10	287
3/2/1999	8.30	8.6	231	133	578	13	289
4/6/1999	8.25	8.4	234	132	582	16	289
5/4/1999	8.29	8.8	225	132	565	18	285
6/2/1999	8.23	8.3	223	130	561	20	285
7/20/1999	8.15	9.2	222	128	560	23	285
8/3/1999	8.47	8.4	226	131	566	28	285
9/8/1999	8.11	9.0	220	127	554	24	280
10/5/1999	8.21	9.0	223	128	559	23	283
11/2/1999	8.25	8.9	227	127	563	19	280
12/7/1999	8.29	9.0	224	131	563	13	287
1/4/2000	8.16	9.0	224	131	564	11	285
1/31/2000	8.36	8.7	221	132	559	12	286
3/13/2000	8.25	8.8	228	131	572	15	287
4/3/2000	8.33	8.0	218	133	553	16	287
5/2/2000	8.24	8.1	217	132	549	20	285
6/6/2000	8.19	8.8	214	133	548	22	284
7/5/2000	8.21	8.8	213	133	541	23	277
8/1/2000	8.19	9.0	214	133	545	24	277
9/11/2000	8.18	8.7	213	131	542	23	277
10/3/2000	8.28	8.9	214	125	539	21	279
11/8/2000	8.30	9.0	220	132	556	18	282
12/5/2000	8.35	8.8	220	133	557	13	282
1/10/2001	8.39	9.5	223	133	563	11	291
2/6/2001	8.41	8.9	222	134	560	15	284
Min	8.11	8.0	213	125	539	10	277
Max	8.51	9.9	250	138	620	29	301
Avg	8.28	9.0	228	132	574	19	287

The Metropolitan Water District of Southern California

Lake Havasu Water Quality Data

Date	L. Havasu TOC ppm	L. Havasu Turbidity NTU
7/7/1997	2.69	1.4
8/5/1997	2.79	0.66
9/2/1997	3.00	0.75
10/7/1997	2.78	0.61
11/4/1997	2.64	2.2
12/1/1997	2.70	2.3
1/6/1998	2.64	1.2
2/3/1998	2.58	1.3
3/2/1998	2.70	1.6
4/7/1998	2.74	1.5
5/5/1998	2.75	0.57
6/2/1998	2.88	1.6
7/7/1998	2.84	1.3
8/11/1998	2.98	0.81
9/1/1998	2.96	1
10/13/1998	3.01	1.7
11/3/1998	2.84	1.5
12/1/1998	2.82	1.5
1/12/1999	2.72	1.8
2/2/1999	2.73	1.2
3/2/1999	2.83	0.99
4/6/1999	2.86	1.9
5/4/1999	2.89	1.2
6/2/1999	2.83	1.2
7/20/1999	2.93	1.4
8/3/1999	2.87	0.76
9/8/1999	2.92	1.7
10/5/1999	2.93	2.6
11/2/1999	2.84	1.5
12/7/1999	2.74	0.91
1/4/2000	2.74	1.31
1/31/2000	2.67	0.9
3/13/2000	2.60	1.4
4/3/2000	2.69	1.8
5/2/2000	2.99	1.1
6/6/2000	2.92	1.3
7/5/2000	3.03	1.2
8/1/2000	2.85	1.6
9/11/2000	2.85	1.7
10/3/2000	2.87	1.9
11/8/2000	3.00	2.9
12/5/2000	2.98	2.3
1/10/2001	3.03	2
2/6/2001	2.95	1.5
Min	2.58	0.57
Max	3.03	2.9
Avg	2.83	1.4

The Metropolitan Water District of Southern California

Lake Havasu Water Quality Data

Date	L. Havasu Boron ppm	L. Havasu Bromide ppm	L. Havasu Calcium ppm	L. Havasu Chloride ppm	L. Havasu CO2 ppm	L. Havasu Carbonate ppm	L. Havasu Color
7/7/1997		0.09	76	85	1.5	0	
8/5/1997		0.10	73	82	1.0	1	
9/2/1997	0.11	0.08	71	81	1.0	2	
10/7/1997		0.07	73	80	1.2	1	
11/4/1997		0.07	74	82	1.5	0	5
12/1/1997	0.12	0.06	75	82	1.4	0	
1/6/1998		0.07	75	82	1.7	0	
2/3/1998		0.07	75	77	1.8	0	4
3/2/1998	0.09	0.08	73	75	1.7	0	
4/7/1998		0.07	74	74	1.3	0	
5/5/1998		0.06	75	75	1.3	0	2
6/2/1998	0.11	0.07	74	73	1.9	0	
7/7/1998		0.06	71	73	1.6	0	
8/11/1998		0.08	70	75	0.8	4	7
9/1/1998	0.11	0.07	70	72	1.4	0	
10/13/1998		0.08	72	78	1.5	0	
11/3/1998		0.07	70	73	1.3	0	6
12/1/1998	0.11	0.07	69	71	1.5	0	
1/12/1999		0.07	73	71	1.2	1	
2/2/1999		0.07	72	70	1.4	0	5
3/2/1999	0.13	0.06	73	72	1.4	0	
4/6/1999		0.07	73	72	1.5	0	
5/4/1999		0.07	72	69	1.4	0	5
6/2/1999	0.13	0.07	72	67	1.6	0	
7/20/1999		0.06	73	68	1.8	0	
8/3/1999		0.06	72	69	0.9	2	5
9/8/1999	0.08	0.07	71	67	2.0	0	
10/5/1999		0.07	72	68	1.6	0	
11/2/1999		0.07	70	70	1.4	0	2
12/7/1999	0.08	0.07	73	68	1.4	0	
1/4/2000		0.07	72	69	1.8	0	
1/31/2000		0.06	74	67	1.2	1	3
3/13/2000	0.09	0.06	72	69	1.5	0	
4/3/2000		0.06	73	66	1.3	1	
5/2/2000		0.06	72	66	1.5	0	4
6/6/2000	0.10	0.06	71	65	1.7	0	
7/5/2000		0.05	69	65	1.7	0	
8/1/2000		0.06	69	66	1.7	0	6
9/11/2000	0.08	0.05	68	65	1.8	0	
10/3/2000		0.06	68	65	1.3	0	
11/8/2000		0.07	70	68	1.3	0	10
12/5/2000	0.12	0.07	70	68	1.2	1	
1/10/2001		0.06	73	69	1.1	1	
2/6/2001		0.07	71	68	1.1	1	6
Min	0.08	0.05	68	65	0.8	0	2
Max	0.13	0.10	76	85	2.0	4	10
Avg	0.10	0.07	72	72	1.4	0	5

The Metropolitan Water District of Southern California
Lake Havasu Water Quality Data

Date	L. Havasu Conductivity umho/cm	L. Havasu Fluoride ppm	L. Havasu Bicarbonate ppm	L. Havasu Potassium ppm	L. Havasu Magnesium ppm	L. Havasu Sodium ppm	L. Havasu Nitrate ppm
7/7/1997	956	0.26	163	4.2	27	87	0.5
8/5/1997	993	0.28	161	4.4	27.5	89	0.5
9/2/1997	978	0.29	153	4.3	27.5	93	0.5
10/7/1997	958	0.30	156	4.3	27.5	92	0.6
11/4/1997	972	0.33	159	4.3	27	89	0.8
12/1/1997	952	0.33	163	4.4	26.5	89	0.8
1/6/1998	970	0.34	168	4.3	27	88	0.9
2/3/1998	948	0.35	163	3.9	26.5	85	1.1
3/2/1998	917	0.31	161	4.0	26.5	84	1.1
4/7/1998	917	0.25	161	4.0	25.5	82	1.0
5/5/1998	910	0.33	162	4.1	25	81	1.0
6/2/1998	930	0.30	161	4.1	25	81	0.9
7/7/1998	928	0.29	162	3.9	25.5	84	0.9
8/11/1998	923	0.29	148	4.0	27.5	85	0.5
9/1/1998	918	0.32	159	3.9	26	82	0.6
10/13/1998	925	0.29	160	3.9	26.5	82	0.8
11/3/1998	933	0.31	160	3.9	26	85	0.7
12/1/1998	922	0.31	160	4.0	27.5	87	0.8
1/12/1999	916	0.29	161	3.9	26	82	1.2
2/2/1999	922	0.30	163	3.9	26	81	1.2
3/2/1999	917	0.32	162	4.0	26	81	1.2
4/6/1999	914	0.27	161	4.0	26	83	1.2
5/4/1999	901	0.28	161	4.1	25.5	79	1.0
6/2/1999	898	0.28	159	4.0	25.5	81	1.0
7/20/1999	895	0.29	156	3.9	25	79	1.0
8/3/1999	904	0.31	155	4.0	25.5	80	0.6
9/8/1999	892	0.28	155	3.9	25	79	0.8
10/5/1999	880	0.31	156	4.0	25	79	0.8
11/2/1999	901	0.27	155	4.1	25.5	79	0.9
12/7/1999	898	0.30	160	4.0	25.5	79	1.0
1/4/2000	881	0.28	160	3.8	25.5	79	1.1
1/31/2000	916	0.31	159	3.8	24.5	78	1.2
3/13/2000	911	0.32	160	3.9	26	82	1.3
4/3/2000	896	0.29	160	4.0	25.5	75	1.1
5/2/2000	885	0.31	161	4.1	25.5	74	1.1
6/6/2000	890	0.27	162	4.1	26	77	1.1
7/5/2000	898	0.28	162	4.0	25.5	74	1.0
8/1/2000	895	0.29	162	4.0	25.5	75	1.0
9/11/2000	893	0.28	160	4.1	26	76	0.7
10/3/2000	883	0.28	153	4.0	26.5	75	0.7
11/8/2000	894	0.28	161	4.1	26	78	0.6
12/5/2000	903	0.29	160	3.9	26	78	0.6
1/10/2001	917	0.29	160	4.0	26.5	76	0.8
2/6/2001	910	0.28	161	4.1	26	77	1.1
Min	880	0.25	148	3.8	24.5	74	0.5
Max	993	0.35	168	4.4	27.5	93	1.3
Avg	917	0.30	160	4.0	26.5	81	0.9

The Metropolitan Water District of Southern California

Lake Havasu Water Quality Data

Date	L. Havasu pH	L. Havasu Silica ppm	L. Havasu Sulfate ppm	L. Havasu Alkalinity ppm as CaCO3	L. Havasu TDS ppm	L. Havasu Temp C	L. Havasu Hardness ppm as CaCO3
7/7/1997	8.27	8.8	250	134	620	26	301
8/5/1997	8.44	9.9	247	134	616	29	296
9/2/1997	8.43	9.7	245	129	611	27	291
10/7/1997	8.36	9.3	242	130	608	25	296
11/4/1997	8.25	9.2	249	130	615	18	296
12/1/1997	8.29	9.0	243	134	612	16	296
1/6/1998	8.21	9.6	247	138	618	11	298
2/3/1998	8.18	9.6	236	134	596	13	296
3/2/1998	8.19	9.5	229	132	582	14	291
4/7/1998	8.31	9.1	228	132	578	15	290
5/5/1998	8.33	9.5	232	133	584	20	290
6/2/1998	8.14	9.3	229	132	577	20	288
7/7/1998	8.24	9.3	229	133	578	23	282
8/11/1998	8.51	9.3	236	127	585	28	288
9/1/1998	8.27	8.6	230	130	573	25	282
10/13/1998	8.24	8.9	229	131	582	20	289
11/3/1998	8.30	8.9	230	131	578	19	282
12/1/1998	8.24	8.5	226	131	574	15	286
1/12/1999	8.36	9.0	230	134	578	10	289
2/2/1999	8.30	8.6	230	134	575	10	287
3/2/1999	8.30	8.6	231	133	578	13	289
4/6/1999	8.25	8.4	234	132	582	16	289
5/4/1999	8.29	8.8	225	132	565	18	285
6/2/1999	8.23	8.3	223	130	561	20	285
7/20/1999	8.15	9.2	222	128	560	23	285
8/3/1999	8.47	8.4	226	131	566	28	285
9/8/1999	8.11	9.0	220	127	554	24	280
10/5/1999	8.21	9.0	223	128	559	23	283
11/2/1999	8.25	8.9	227	127	563	19	280
12/7/1999	8.29	9.0	224	131	563	13	287
1/4/2000	8.16	9.0	224	131	564	11	285
1/31/2000	8.36	8.7	221	132	559	12	286
3/13/2000	8.25	8.8	228	131	572	15	287
4/3/2000	8.33	8.0	218	133	553	16	287
5/2/2000	8.24	8.1	217	132	549	20	285
6/6/2000	8.19	8.8	214	133	548	22	284
7/5/2000	8.21	8.8	213	133	541	23	277
8/1/2000	8.19	9.0	214	133	545	24	277
9/11/2000	8.18	8.7	213	131	542	23	277
10/3/2000	8.28	8.9	214	125	539	21	279
11/8/2000	8.30	9.0	220	132	556	18	282
12/5/2000	8.35	8.8	220	133	557	13	282
1/10/2001	8.39	9.5	223	133	563	11	291
2/6/2001	8.41	8.9	222	134	560	15	284
Min	8.11	8.0	213	125	539	10	277
Max	8.51	9.9	250	138	620	29	301
Avg	8.28	9.0	228	132	574	19	287

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Lake Havasu Water Quality Data

Date	L. Havasu TOC ppm	L. Havasu Turbidity NTU
7/7/1997	2.69	1.4
8/5/1997	2.79	0.66
9/2/1997	3.00	0.75
10/7/1997	2.78	0.61
11/4/1997	2.64	2.2
12/1/1997	2.70	2.3
1/6/1998	2.64	1.2
2/3/1998	2.58	1.3
3/2/1998	2.70	1.6
4/7/1998	2.74	1.5
5/5/1998	2.75	0.57
6/2/1998	2.88	1.6
7/7/1998	2.84	1.3
8/11/1998	2.98	0.81
9/1/1998	2.96	1
10/13/1998	3.01	1.7
11/3/1998	2.84	1.5
12/1/1998	2.82	1.5
1/12/1999	2.72	1.8
2/2/1999	2.73	1.2
3/2/1999	2.83	0.99
4/6/1999	2.86	1.9
5/4/1999	2.89	1.2
6/2/1999	2.83	1.2
7/20/1999	2.93	1.4
8/3/1999	2.87	0.76
9/8/1999	2.92	1.7
10/5/1999	2.93	2.6
11/2/1999	2.84	1.5
12/7/1999	2.74	0.91
1/4/2000	2.74	1.31
1/31/2000	2.67	0.9
3/13/2000	2.60	1.4
4/3/2000	2.69	1.8
5/2/2000	2.99	1.1
6/6/2000	2.92	1.3
7/5/2000	3.03	1.2
8/1/2000	2.85	1.6
9/11/2000	2.85	1.7
10/3/2000	2.87	1.9
11/8/2000	3.00	2.9
12/5/2000	2.98	2.3
1/10/2001	3.03	2
2/6/2001	2.95	1.5
Min	2.58	0.57
Max	3.03	2.9
Avg	2.83	1.4

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	L20688-12	L25397-15	L25703-14	L26652-14	L26850-3	L26864-12	L27346-12	L27785-15	L28526-13	L28736-13
SAMPLE DATE	Limit	21-Jul-97	18-Aug-97	29-Sep-97	27-Oct-97	4-Nov-97	18-Nov-97	16-Dec-97	27-Jan-98	23-Feb-98	30-Mar-98
Aluminum	5					48					
Antimony	2					ND					
Arsenic	0.5					2.8					
Barium	5					104					
Beryllium	0.1					ND					
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					2**					
Copper	10	ND	ND	ND	ND	ND	ND	ND	14	ND	ND
Iron	50					ND					
Lead	1					ND					
Lithium	10					37					
Manganese	5					6					
Mercury	0.2					ND					
Molybdenum	2					5					
Nickel	2					ND					
Selenium	5					ND					
Silver	10					ND					
Strontium	20					1040					
Thallium	1					ND					
Vanadium	1									3	
Zinc	20					ND					

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	L29337-1	L29353-13	L30032-12	L30623-13	L31066-13	L31585-13	L32084-12	L32643-1	L32662-12	L33145-14
SAMPLE DATE	Limit	7-Apr-98	27-Apr-98	26-May-98	22-Jun-98	27-Jul-98	24-Aug-98	28-Sep-98	13-Oct-98	28-Oct-98	23-Nov-98
Aluminum	5	20							11		
Antimony	2	ND							ND		
Arsenic	0.5	2.5							3		
Barium	5	102							94		
Beryllium	0.1	ND							ND		
Cadmium	0.1	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*	ND							ND		
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50	ND							ND		
Lead	1	ND							ND		
Lithium	10	41							39		
Manganese	5	ND							ND		
Mercury	0.2	ND							ND		
Molybdenum	2	5							5		
Nickel	2	2							2		
Selenium	5	ND							ND		
Silver	10	ND							ND		
Strontium	20	1000							912		
Thallium	1	ND							ND		
Vanadium	1										
Zinc	20	ND							ND		

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	M614-34	M843-23	M1304-1	M1317-12	M1977-1	M2471-12	M3074-12	M3558-1	M4143-12	M4826-1	M4839-12
SAMPLE DATE	Limit	22-Feb-99	22-Mar-99	6-Apr-99	26-Apr-99	2-Jun-99	28-Jun-99	26-Jul-99	3-Aug-99	27-Sep-99	4-Oct-99	25-Oct-99
Aluminum	5			51							13	
Antimony	2			ND							ND	
Arsenic	0.5			2.6							2.9	
Barium	5			97							88	
Beryllium	0.1			ND							ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*			ND							ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50			ND							ND	
Lead	1			ND							ND	
Lithium	10			38							34	
Manganese	5			ND							ND	
Mercury	0.2			ND							ND	
Molybdenum	2			5							4	
Nickel	2			3							2	
Selenium	5			ND							ND	
Silver	10			ND							ND	
Strontium	20			962							892	
Thallium	1			ND							ND	
Vanadium	1											
Zinc	20			ND							ND	

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	M5436-1	M6797-1	M7334-14	M8098-12	M8657-1	M9275-1	M11748-1	M12058-1	M12201-7	M12775-1	M12795-1
SAMPLE DATE	Limit	29-Nov-99	31-Jan-00	28-Feb-00	27-Mar-00	3-Apr-00	29-May-00	31-Jul-00	28-Aug-00	25-Sep-00	4-Oct-00	4-Oct-00
Aluminum	5					19					16	
Antimony	2					ND					ND	
Arsenic	0.5					2.8					3	
Barium	5					94					96	
Beryllium	0.1					ND					ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					ND					ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50					ND					ND	
Lead	1					ND					ND	
Lithium	10					32					40	
Manganese	5					ND					ND	
Mercury	0.2					ND					ND	
Molybdenum	2					5					5	
Nickel	2					ND					3	
Selenium	5					ND					ND	
Silver	10					ND					ND	
Strontium	20					942					1000	
Thallium	1					ND					ND	
Vanadium	1										2	
Zinc	20					ND					ND	

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	M13436-12	M14206-7	M14750-1	M15224-8
SAMPLE DATE	Limit	27-Nov-00	19-Dec-00	10-Jan-01	6-Feb-01
Aluminum	5				
Antimony	2				
Arsenic	0.5				
Barium	5				
Beryllium	0.1				
Cadmium	0.1	ND	ND	ND	ND
Chromium	1(2)*				
Copper	10	ND	ND	ND	ND
Iron	50				
Lead	1				
Lithium	10				
Manganese	5				
Mercury	0.2				
Molybdenum	2				
Nickel	2				
Selenium	5				
Silver	10				
Strontium	20				
Thallium	1				
Vanadium	1				
Zinc	20				

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	L20688-12	L25397-15	L25703-14	L26652-14	L26850-3	L26864-12	L27346-12	L27785-15	L28526-13	L28736-13
SAMPLE DATE	Limit	21-Jul-97	18-Aug-97	29-Sep-97	27-Oct-97	4-Nov-97	18-Nov-97	16-Dec-97	27-Jan-98	23-Feb-98	30-Mar-98
Aluminum	5					48					
Antimony	2					ND					
Arsenic	0.5					2.8					
Barium	5					104					
Beryllium	0.1					ND					
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					2**					
Copper	10	ND	ND	ND	ND	ND	ND	ND	14	ND	ND
Iron	50					ND					
Lead	1					ND					
Lithium	10					37					
Manganese	5					6					
Mercury	0.2					ND					
Molybdenum	2					5					
Nickel	2					ND					
Selenium	5					ND					
Silver	10					ND					
Strontium	20					1040					
Thallium	1					ND					
Vanadium	1									3	
Zinc	20					ND					

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	L29337-1	L29353-13	L30032-12	L30623-13	L31066-13	L31585-13	L32084-12	L32643-1	L32662-12	L33145-14
SAMPLE DATE	Limit	7-Apr-98	27-Apr-98	26-May-98	22-Jun-98	27-Jul-98	24-Aug-98	28-Sep-98	13-Oct-98	28-Oct-98	23-Nov-98
Aluminum	5	20							11		
Antimony	2	ND							ND		
Arsenic	0.5	2.5							3		
Barium	5	102							94		
Beryllium	0.1	ND							ND		
Cadmium	0.1	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*	ND							ND		
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50	ND							ND		
Lead	1	ND							ND		
Lithium	10	41							39		
Manganese	5	ND							ND		
Mercury	0.2	ND							ND		
Molybdenum	2	5							5		
Nickel	2	2							2		
Selenium	5	ND							ND		
Silver	10	ND							ND		
Strontium	20	1000							912		
Thallium	1	ND							ND		
Vanadium	1										
Zinc	20	ND							ND		

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	M614-34	M843-23	M1304-1	M1317-12	M1977-1	M2471-12	M3074-12	M3558-1	M4143-12	M4826-1	M4839-12
SAMPLE DATE	Limit	22-Feb-99	22-Mar-99	6-Apr-99	26-Apr-99	2-Jun-99	28-Jun-99	26-Jul-99	3–Aug-99	27-Sep-99	4-Oct-99	25-Oct-99
Aluminum	5			51							13	
Antimony	2			ND							ND	
Arsenic	0.5			2.6							2.9	
Barium	5			97							88	
Beryllium	0.1			ND							ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*			ND							ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50			ND							ND	
Lead	1			ND							ND	
Lithium	10			38							34	
Manganese	5			ND							ND	
Mercury	0.2			ND							ND	
Molybdenum	2			5							4	
Nickel	2			3							2	
Selenium	5			ND							ND	
Silver	10			ND							ND	
Strontium	20			962							892	
Thallium	1			ND							ND	
Vanadium	1											
Zinc	20			ND							ND	

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	M5436-1	M6797-1	M7334-14	M8098-12	M8657-1	M9275-1	M11748-1	M12058-1	M12201-7	M12775-1	M12795-1
SAMPLE DATE	Limit	29-Nov-99	31-Jan-00	28-Feb-00	27-Mar-00	3-Apr-00	29-May-00	31-Jul-00	28-Aug-00	25-Sep-00	4-Oct-00	4-Oct-00
Aluminum	5					19					16	
Antimony	2					ND					ND	
Arsenic	0.5					2.8					3	
Barium	5					94					96	
Beryllium	0.1					ND					ND	
Cadmium	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	1(2)*					ND					ND	
Copper	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iron	50					ND					ND	
Lead	1					ND					ND	
Lithium	10					32					40	
Manganese	5					ND					ND	
Mercury	0.2					ND					ND	
Molybdenum	2					5					5	
Nickel	2					ND					3	
Selenium	5					ND					ND	
Silver	10					ND					ND	
Strontium	20					942					1000	
Thallium	1					ND					ND	
Vanadium	1										2	
Zinc	20					ND					ND	

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Trace Metals - Jul 1997 - Feb 2001

(parts per billion)

SAMPLE ID	Reporting	M13436-12	M14206-7	M14750-1	M15224-8
SAMPLE DATE	Limit	27-Nov-00	19-Dec-00	10-Jan-01	6-Feb-01
Aluminum	5				
Antimony	2				
Arsenic	0.5				
Barium	5				
Beryllium	0.1				
Cadmium	0.1	ND	ND	ND	ND
Chromium	1(2)*				
Copper	10	ND	ND	ND	ND
Iron	50				
Lead	1				
Lithium	10				
Manganese	5				
Mercury	0.2				
Molybdenum	2				
Nickel	2				
Selenium	5				
Silver	10				
Strontium	20				
Thallium	1				
Vanadium	1				
Zinc	20				

* RDL for chromium was changed from 2 ug/L to 1 ug/L beginning September 2000 after analytical methodology was modified.

** Suspected to be a result of positive interference by ICP-MS methodology.

The Metropolitan Water District of Southern California

Lake Havasu Perchlorate Data

September 1997 to April 2001

Sample Site	Depth	Sample Date	Perchlorate (ppb)
Lake Havasu Intake	3M	29-Sep-97	8
Lake Havasu Intake	6M	29-Sep-97	7
Lake Havasu Intake	9M	29-Sep-97	8
Lake Havasu Intake	12M	29-Sep-97	8
Lake Havasu Intake	15M	29-Sep-97	7
Lake Havasu Intake	18M	29-Sep-97	6
Lake Havasu Intake	0.4M	29-Sep-97	9
Lake Havasu at Contact Point	0M	29-Sep-97	6
Lake Havasu at Contact Point	3M	29-Sep-97	6
Lake Havasu at Contact Point	6M	29-Sep-97	7
Lake Havasu at Contact Point	9M	29-Sep-97	7
Lake Havasu at Contact Point	12M	29-Sep-97	7
Lake Havasu at Mesquite Bay	0M	29-Sep-97	7
Lake Havasu at Mesquite Bay	3M	29-Sep-97	6
Lake Havasu at Mesquite Bay	6M	29-Sep-97	6
Lake Havasu at National Wildlife Refuge Buoy Line	3M	29-Sep-97	9
Lake Havasu Intake	3M	27-Oct-97	5
Lake Havasu Intake	6M	27-Oct-97	7
Lake Havasu Intake	9M	27-Oct-97	5
Lake Havasu Intake	12M	27-Oct-97	6
Lake Havasu Intake	15M	27-Oct-97	4
Lake Havasu Intake	18M	27-Oct-97	6
Lake Havasu Intake	0.4M	27-Oct-97	5
Lake Havasu Contact Point	0M	27-Oct-97	5
Lake Havasu Contact Point	3M	27-Oct-97	5
Lake Havasu Contact Point	6M	27-Oct-97	4
Lake Havasu Contact Point	9M	27-Oct-97	5
Lake Havasu Contact Point	12M	27-Oct-97	4
Lake Havasu at Mesquite Bay	0M	27-Oct-97	5
Lake Havasu at Mesquite Bay	3M	27-Oct-97	6
Lake Havasu at Mesquite Bay	6M	27-Oct-97	5
Lake Havasu at National Wildlife Refuge Buoy Line	3M	27-Oct-97	4
Lake Havasu Intake	Inlet Depth	4-Nov-97	6
Lake Havasu Intake	Inlet Depth	2-Dec-97	7
Lake Havasu Intake	Inlet Depth	6-Jan-98	5
Lake Havasu Intake	Inlet Depth	3-Feb-98	6
Lake Havasu Intake	Inlet Depth	2-Mar-98	7
Lake Havasu Intake	Inlet Depth	7-Apr-98	6
Lake Havasu Intake	Inlet Depth	5-May-98	9
Lake Havasu Intake	Inlet Depth	2-Jun-98	6
Lake Havasu Intake	Inlet Depth	7-Jul-98	8
Lake Havasu Intake	Inlet Depth	11-Aug-98	5
Lake Havasu Intake	Inlet Depth	1-Sep-98	5
Lake Havasu Intake	Inlet Depth	13-Oct-98	6
Lake Havasu Intake	Inlet Depth	3-Nov-98	6
Lake Havasu Intake	Inlet Depth	1-Dec-98	6
Lake Havasu Intake	Inlet Depth	5-Jan-99	5

The Metropolitan Water District of Southern California

Lake Havasu Perchlorate Data

September 1997 to April 2001

Sample Site	Depth	Sample Date	Perchlorate (ppb)
Lake Havasu Intake	Inlet Depth	2-Feb-99	7
Lake Havasu Intake	Inlet Depth	2-Mar-99	8
Lake Havasu Intake	Inlet Depth	6-Apr-99	8
Lake Havasu Intake	Inlet Depth	4-May-99	6
Lake Havasu Intake	Inlet Depth	2-Jun-99	5
Lake Havasu Intake	Inlet Depth	20-Jul-99	8
Lake Havasu Intake	Inlet Depth	3-Aug-99	7
Lake Havasu Intake	Inlet Depth	8-Sep-99	6
Lake Havasu Intake	Inlet Depth	5-Oct-99	5
Lake Havasu Intake	Inlet Depth	2-Nov-99	6
Lake Havasu Intake	Inlet Depth	7-Dec-99	5
Lake Havasu Intake	Inlet Depth	4-Jan-00	6
Lake Havasu Intake	Inlet Depth	31-Jan-00	6
Lake Havasu Intake	Inlet Depth	13-Mar-00	7
Lake Havasu Intake	Inlet Depth	3-Apr-00	7
Lake Havasu Intake	Inlet Depth	2-May-00	7
Lake Havasu Intake	Inlet Depth	6-Jun-00	7
Lake Havasu Intake	Inlet Depth	5-Jul-00	8
Lake Havasu Intake	Inlet Depth	1-Aug-00	6
Lake Havasu Intake	Inlet Depth	11-Sep-00	7
Lake Havasu Intake	Inlet Depth	3-Oct-00	5
Lake Havasu Intake	0.4M	8-Nov-00	6
Lake Havasu Intake	0.4M	5-Dec-00	5
Lake Havasu Intake	0.4M	10-Jan-01	5
Lake Havasu Intake	0.4M	6-Feb-01	7
Lake Havasu Intake	0.4M	12-Mar-01	6
Lake Havasu Intake	0.4M	3-Apr-01	7

The Metropolitan Water District of Southern California

Monthly Average Coliform Results For Colorado River Aqueduct

(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform[1]	Number of Samples	Fecal Coliform[1]	Number of Samples	*E. Coli*[1]
1997	July	5	9	5	<2	5	<2
	August	4	9	4	<2	4	<2
	September	5	26	5	2	5	<2
	October	4	15	4	<2	4	<2
	November	4	3	4	<2	4	<2
	December	5	5	5	<2	5	<2
1998	January	4	4	4	2	4	2
	February	4	10	4	<2	4	<2
	March	5	2	5	<2	5	<2
	April	4	<2	4	<2	4	<2
	May	4	<2	4	<2	4	<2
	June	5	<2	5	<2	5	<2
	July	4	5	4	<2	4	<2
	August	4	5	4	<2	4	<2
	September	5	11	5	<2	5	<2
	October	4	9	4	<2	4	<2
	November	4	5	4	<2	4	<2
	December	5	8	5	<2	5	<2
1999	January	4	11	4	9	4	5
	February	4	7	4	<2	4	<2
	March	4	<2	4	<2	4	<2
	April	5	2	5	<2	5	<2
	May	4	5	4	<2	4	<2
	June	5	12	5	<2	5	<2
	July	4	12	4	<2	4	<2
	August	5	13	5	2	5	<2
	September	4	16	4	2	4	<2
	October	4	17	4	<2	4	<2
	November	5	10	5	<2	5	<2
	December	4	5	4	<2	4	<2

[1]Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California

Monthly Average Coliform Results For Colorado River Aqueduct

(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform[1]	Number of Samples	Fecal Coliform[1]	Number of Samples	*E. Coli*[1]
2000	January	4	6	4	<2	4	<2
	February	5	26	5	2	5	2
	March	4	7	4	<2	4	<2
	April	4	11	4	<2	4	<2
	May	5	17	5	<2	5	<2
	June	4	11	4	<2	4	<2
	July	5	21	5	<2	5	<2
	August	5	24	5	<2	5	<2
	September	4	37	4	<2	4	<2
	October	5	6	5	<2	5	<2
	November	4	2	4	<2	4	<2
	December	4	2	4	<2	4	<2
2001	January	5	2	5	<2	5	<2
	February	4	2	4	<2	4	<2
	March	4	13	4	<2	4	<2

[1]Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California

Monthly Average Coliform Results For Colorado River Aqueduct

(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform[1]	Number of Samples	Fecal Coliform[1]	Number of Samples	*E. Coli*[1]
1997	July	5	9	5	<2	5	<2
	August	4	9	4	<2	4	<2
	September	5	26	5	2	5	<2
	October	4	15	4	<2	4	<2
	November	4	3	4	<2	4	<2
	December	5	5	5	<2	5	<2
1998	January	4	4	4	2	4	2
	February	4	10	4	<2	4	<2
	March	5	2	5	<2	5	<2
	April	4	<2	4	<2	4	<2
	May	4	<2	4	<2	4	<2
	June	5	<2	5	<2	5	<2
	July	4	5	4	<2	4	<2
	August	4	5	4	<2	4	<2
	September	5	11	5	<2	5	<2
	October	4	9	4	<2	4	<2
	November	4	5	4	<2	4	<2
	December	5	8	5	<2	5	<2
1999	January	4	11	4	9	4	5
	February	4	7	4	<2	4	<2
	March	4	<2	4	<2	4	<2
	April	5	2	5	<2	5	<2
	May	4	5	4	<2	4	<2
	June	5	12	5	<2	5	<2
	July	4	12	4	<2	4	<2
	August	5	13	5	2	5	<2
	September	4	16	4	2	4	<2
	October	4	17	4	<2	4	<2
	November	5	10	5	<2	5	<2
	December	4	5	4	<2	4	<2

[1]Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California

Monthly Average Coliform Results For Colorado River Aqueduct

(Intake Pumping Plant Influent)

YEAR	MONTH	Number of Samples	Total Coliform[1]	Number of Samples	Fecal Coliform[1]	Number of Samples	*E. Coli*[1]
2000	January	4	6	4	<2	4	<2
	February	5	26	5	2	5	2
	March	4	7	4	<2	4	<2
	April	4	11	4	<2	4	<2
	May	5	17	5	<2	5	<2
	June	4	11	4	<2	4	<2
	July	5	21	5	<2	5	<2
	August	5	24	5	<2	5	<2
	September	4	37	4	<2	4	<2
	October	5	6	5	<2	5	<2
	November	4	2	4	<2	4	<2
	December	4	2	4	<2	4	<2
2001	January	5	2	5	<2	5	<2
	February	4	2	4	<2	4	<2
	March	4	13	4	<2	4	<2

[1]Monthly average coliform results analyzed by Multiple Tube Fermentation method (MPN/100 ml).

The Metropolitan Water District of Southern California
Water Quality Laboratory
Pathogen Monitoring Data for the Colorado River Sanitary Survey
Protozoa

Sample Date	Sample Site (1)	Sample Volume (liters)	% Colorado River Water	Volume of Sample Analyzed (liters)	No. of Giardia sp. Cysts detected	Giardia sp. Detection Limit Per 100 L	No. of Cryptosporidium sp. Oocysts Detected	Cryptosporidium sp. Detection Limit Per 100 L
22-Jul-97	Intake Pump Plant	102.2	100	20.4	0	<5	**1**	**5**
25-Aug-97	Intake Pump Plant	102.2	100	25.6	0	<4	0	<4
22-Sep-97	Intake Pump Plant	102.2	100	27.2	0	<4	0	<4
21-Oct-97	Intake Pump Plant	102.2	100	20.4	0	<5	0	<5
17-Nov-97	Intake Pump Plant	102.2	100	27.3	0	<4	0	<4
15-Dec-97	Intake Pump Plant	102.2	100	40.9	0	<2	0	<2
20-Jan-98	Intake Pump Plant	102.2	100	27.3	**1**	**4**	0	<4
17-Feb-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
17-Mar-98	Intake Pump Plant	102.2	100	8.2	0	<6	0	<6
21-Apr-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
18-May-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
16-Jun-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3
27-Jul-98	Intake Pump Plant	112.8	100	5.6	0	<18	**1**	**18**
24-Aug-98	Intake Pump Plant	102.2	100	25.6	0	<3.9	0	<3.9
28-Sep-98	Intake Pump Plant	102.2	100	30.7	0	<3.3	0	<3.3

(1) Intake Pump Plant Sample collected at the Roto Valve from Lake Havasu – method used = USEPA Method 1623

The Metropolitan Water District of Southern California
Water Quality Laboratory
Pathogen Monitoring Data for the Colorado River Sanitary Survey
Protozoa

Sample Date	Sample Site (1)	Sample Volume (liters)	% Colorado River Water	Volume of Sample Analyzed (liters)	No. of Giardia sp. Cysts detected	Giardia sp. Detection Limit Per 100 L	No. of Cryptosporidium sp. Oocysts Detected	Cryptosporidium sp. Detection Limit Per 100 L
22-Jul-97	Intake Pump Plant	102.2	100	20.4	0	<5	**1**	**5**
25-Aug-97	Intake Pump Plant	102.2	100	25.6	0	< 4	0	< 4
22-Sep-97	Intake Pump Plant	102.2	100	27.2	0	< 4	0	< 4
21-Oct-97	Intake Pump Plant	102.2	100	20.4	0	< 5	0	< 5
17-Nov-97	Intake Pump Plant	102.2	100	27.3	0	< 4	0	< 4
15-Dec-97	Intake Pump Plant	102.2	100	40.9	0	< 2	0	< 2
20-Jan-98	Intake Pump Plant	102.2	100	27.3	**1**	**4**	0	< 4
17-Feb-98	Intake Pump Plant	102.2	100	30.7	0	< 3.3	0	< 3.3
17-Mar-98	Intake Pump Plant	102.2	100	8.2	0	< 6	0	< 6
21-Apr-98	Intake Pump Plant	102.2	100	30.7	0	< 3.3	0	< 3.3
18-May-98	Intake Pump Plant	102.2	100	30.7	0	< 3.3	0	< 3.3
16-Jun-98	Intake Pump Plant	102.2	100	30.7	0	< 3.3	0	< 3.3
27-Jul-98	Intake Pump Plant	112.8	100	5.6	0	< 18	**1**	**18**
24-Aug-98	Intake Pump Plant	102.2	100	25.6	0	< 3.9	0	< 3.9
28-Sep-98	Intake Pump Plant	102.2	100	30.7	0	< 3.3	0	< 3.3

(1) Intake Pump Plant Sample collected at the Roto Valve from Lake Havasu – method used = USEPA Method 1623

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: February 7, 2000

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: Third Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On September 1, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 third quarter pesticide, herbicide, and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the second of two quarters of monitoring which is required every three years. The next monitoring will be conducted in the third quarter of 2000.

ORIGINAL SIGNED BY

Bart Koch Koch 2/8/00

EWC:smh

h:\reports\bk pest herb svoc 3q99.doc

Attachments (2)

cc w/attachments:

J. T. Wicke
M. H. Stewart
M. K. Davis
D. G. Sass
B. Koch
E. W. Crofts
M. S. Dale
Water Quality file

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
THIRD QUARTER 1999

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	Jensen plant effluent
San Jacinto Tunnel	

TABLE 2

PESTICIDE, HERBICIDE, and SVOC DETECTION LIMITS AND MAXIMUM CONTAMINANT LEVELS THIRD QUARTER 1999

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organochlorine Pesticides[#]:						
Aldrin*	0.00005			0.075	0.08	ND
∝-BHC	0.0007				0.01	ND
ß-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
Organochlorine Herbicides[#]:						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
Carbamates Method 632[#]						
Diuron*				1.0	1.0	ND
Carbamates Method 531.1[#]						
Aldicarb*	0.01		0.003[+]	3.0	2	ND
Aldicarb sulfone*			0.002[+]	4.0	2	ND
Aldicarb sulfoxide*			0.004[+]	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND
Fumigant Method 504.1[#]						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
SVOC						
Method 525.2[#]						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
Misc.						
Diquat[#]		0.02	0.02	4.0	4.0	ND
Endothall[#]		0.1	0.1	45.0	45	ND
Glyphosate[#]		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD)[##]		3×10^{-8}	3×10^{-8}	5×10^{-6}	$1.5 - 5 \times 10^{-6}$	ND

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1. California Department of Health Services (CDHS) action levels (www.dhs.cahwnet.gov update January 7,1999).
2. CDHS maximum contaminant level (MCL) (www.dhs.cahwnet.gov update January 7,1999).
3. U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.
4. CDHS required detection limits for purposes of reporting (DLR). www.dhs.cahwnet.gov update January 7,1999.

* CDHS unregulated organic chemicals (www.dhs.cahwnet.gov update January 7,1999)

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

\# Analysis performed by Weck Laboratories.

\## Analysis performed by Quantarra Environmental Services.

** Secondary CDHS MCL

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: April 12, 1999

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: 1998 Annual Pesticide, Herbicide, and Semi-Volatile (SVOC) Monitoring Program

1. On December 8, 1998, samples from seven of Metropolitan's source waters and five treatment plant effluents (Table 1) were collected for the 1998 annual pesticide, herbicide, and SVOC monitoring program. The Jensen Filtration Plant was out of service at the time of sampling and therefore, an effluent sample could not be collected. However, the influent (source water) to the Jensen plant was collected. Table 2 lists the analyses and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.

2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

This represents the 1998 annual monitoring program for pesticides, herbicides, and SVOCs. The next monitoring will be conducted in the first quarter of 1999.

ORIGINAL SIGNED BY
Bart Koch

EWC:lk
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Attachments (2)

cc w/attachments:

J. W. Malinowski
M. D. Beuhler
R. L. Wolfe
J. M. Bruno
M. K. Davis
D. Sass
B. Koch
E. W. Crofts
M. S. Dale
Water Quality file

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
ANNUAL 1998

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	
San Jacinto Tunnel	

TABLE 2

PESTICIDE, HERBICIDE, and SVOC DETECTION
LIMITS AND MAXIMUM CONTAMINANT LEVELS
1998 ANNUAL

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Organochlorine Pesticides #:					
Aldrin*	0.00005			0.075	0.08
α-BHC	0.0007				0.01
β -BHC	0.0003				0.05
δ-BHC				0.5	0.05
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20
Chlordane		0.0001	0.002	0.1	0.10
Chlorothalonil*				5.0	5.0
4,4'-DDD				0.02	0.02
4,4'-DDE				0.01	0.01
4,4'-DDT				0.02	0.02
Dieldrin*	0.00005			0.02	0.02
Endrin		0.002	0.002	0.1	0.1
Heptachlor		0.00001	0.0004	0.01	0.01
Heptachlor epoxide		0.00001	0.0002	0.01	0.01
Hexachlorobenzene		0.001	0.001	0.5	0.5
Hexachlorocyclo-pentadiene		0.05	0.05	1.0	1.0
Methoxychlor		0.04	0.04	10.0	10.0
Propachlor*				0.5	0.5
Toxaphene		0.003	0.003	1.0	1.0
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.1
Organophosphorus Pesticides and Triazine Herbicides #:					
Alachlor		0.002	0.002	1.0	1.0
Atrazine		0.003	0.003	1.0	1.0
Bromacil*				10.0	10.0
Butachlor*				0.38	0.38
Diazinon*	0.014			0.25	0.25
Dimethoate*	0.140			10.0	10.0

TABLE 2
(continued)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Organophosphorus Pesticides and Triazine Herbicides # (continued):					
Metalochlor*					0.5
Metribuzin*					0.5
Molinate		0.02		2.0	2.0
Prometryn*				2.0	2.0
Simazine		0.004	0.004	1.0	1.0
Thiobencarb		0.07(0.001**)		1.0	1.0
Organochlorine Herbicides#:					
Bentazon		0.018		2.0	2.0
Dalapon		0.2	0.2	10.0	10.0
Dicamba*				1.5	0.081
Dinoseb		0.007	0.007	2.0	2.0
Pentachlorophenol		0.001	0.001	0.2	0.2
Picloram		0.5	0.5	1.0	1.0
2,4-D		0.07	0.07	10.0	10.0
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0
Carbamates - Method 632#					
Diuron*				1.0	1.0
Carbamates - Method 531#					
Aldicarb*	0.01		0.003+	3.0	2
Aldicarb sulfone*			0.002+	4.0	2
Aldicarb sulfoxide*			0.004+	3.0	2
Baygon (Propoxur)	0.090				1
Carbofuran		0.018	0.04	5.0	2
Carbaryl*	0.060			5.0	2
3-Hydroxycarbofuran*				3.0	3
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2

TABLE 2
(continued)

Analyte	CDHS Action Level[1] (µg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Fumigants- Method 504 #					
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02
SVOC - Method 525.2 #					
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1
Di(2-etyylhexy)adipate		0.4	0.4	5	5
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3
Misc.					
Diquat#		0.02	0.02	4.0	4.0
Endothall#		0.1	0.1	45.0	45
Glyphosate#		0.7	0.7	25.0	25
Dioxin (2,3,7,8-TCDD)##		3×10^{-8}	3×10^{-8}	5×10^{-6}	$0.48\text{-}1.5 \times 10^{-6}$

1. California Department of Health Services (CDHS) action levels (www.dhs.cahwnet.gov update January 7,1999).
2. CDHS maximum contaminant level (MCL) (www.dhs.cahwnet.gov update January 7,1999).
3. Environmental Protection Agency MCLs, Federal Registers, January 30, 1991, and July 17, 1992.
4. CDHS required detection limits for purposes of reporting (DLR). www.dhs.cahwnet.gov update November 19, 1998.

* CDHS unregulated organic chemicals (www.dhs.cahwnet.gov update January 7,1999)

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

\# Analysis performed by Weck Laboratories.

Analysis performed by Quantarra Environmental Services.

** Secondary CDHS MCL.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: February 13 2001

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: 2000 Annual Pesticide, Herbicide, and Semi-Volatile Organic Compound (VOC) Monitoring Program

On September 11 and 12, 2000, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 2000 annual pesticide, herbicide and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides, organophosphorous pesticides/triazine herbicides, fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC's (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1 and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (USEPA Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide and SVOC monitoring program. The next monitoring will be conducted in the fourth quarter of 2001.

Bart Koch

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cc w/attachments:

E. W. Crofts
M. S. Dale
M. K. Davis
B. Koch
D. G. Sass
M. H. Stewart
M. G. Torobin
J. T. Wicke
Water Quality file

TABLE 1

Sample Locations for Pesticide, Herbicide, and SVOC Monitoring 2000*

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Jensen plant effluent
Lake Havasu near Intake	Mills plant effluent
Lake Mathews headworks**	Skinner plant #1 effluent
Lake Perris	Skinner plant #2 effluent
Lake Skinner outlet conduit	Weymouth plant effluent
San Jacinto Tunnel	

* samples collected September 12, 2000 (Lake Havasu was collected on September 11, 2000)

** sample for endothall analysis was recollected on December 21, 2000 because of sampling problems.

TABLE 2
Pesticide, Herbicide, SVOC Drinking Water Standards and Reporting Levels
Annual 2000

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[1] (mg/L)	USEPA MCL[2] (mg/L)	CDHS DLR[3] (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Organochlorine Pesticides[#]:						
Aldrin*	0.000002			0.075	0.075	ND
∝-BHC	0.000015				0.05	ND
ß-BHC	0.000025				0.05	ND
δ-BHC				0.5	0.5	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.000002			0.02	0.02	ND
Endosulfan I					0.02	ND
Endosulfan II					0.01	ND
Endosulfan sulfate					0.05	ND
Endrin		0.002	0.002	0.1	0.1	ND
Endrin aldehyde					0.05	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Trifluralin					0.01	ND
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.006			0.25	0.25	ND
Dimethoate*	0.001			10.0	10.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[1] (mg/L)	USEPA MCL[2] (mg/L)	CDHS DLR[3] (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND
Prometon					1.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
Organochlorine Herbicides[#]:						
Acifluorfen					0.5	ND
Bentazon		0.018		2.0	2.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4-DB					2.0	ND
3,5-Dichlorobenzoic acid					1.0	ND
Dacthal (DCPA)					0.10	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	1.5	ND
Dichlorprop					0.3	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0	ND
2,4,5-T					0.2	ND
Carbamate Pesticides - Method 531[#]						
Aldicarb*	0.007		0.003[+]	3.0	2.0	ND
Aldicarb sulfone*			0.002[+]	4.0	2.0	ND
Aldicarb sulfoxide*			0.004[+]	3.0	2.0	ND
Baygon (Propoxur)	0.093				5.0	ND
Carbofuran		0.018	0.04	5.0	5.0	ND
Carbaryl*	0.7			5.0	2.0	ND
3-Hydroxycarbofuran*				3.0	2.0	ND
Methiocarb					3.0	ND
Methomyl*				2.0	2.0	ND
Oxamyl		0.2	0.2	20.0	2.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[1] (mg/L)	USEPA MCL[2] (mg/L)	CDHS DLR[3] (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Fumigants- Method 504#						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
SVOC - Method 525.2#						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl) phthalate		0.004	0.006	3	3	ND
Misc.						
Diquat#		0.02	0.02	4.0	4.0	ND
Diuron*				1.0	1.0	ND
Endothall#		0.1	0.1	45.0	45	ND
Glyphosate#		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD)##		3×10^{-8}	3×10^{-8}	5×10^{-6}	5×10^{-6}	ND

1 California Department of Health Services (CDHS) Drinking Water Standards and Action Levels (May 23, 2000 and November 13, 2000, respectively.) (http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm)

2 Federal Registers, January 30, 1991 and July 17, 1992.

3 CDHS required detection limits for purposes of reporting (DLR) (February 18, 2000) (http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm).

* CDHS unregulated organic chemicals (May 23, 2000) (http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm)

** Secondary CDHS MCL

Analysis performed by Weck Laboratories.

Analysis performed by Quantarra Environmental Services.

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: February 13 2001

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: 2000 Annual Pesticide, Herbicide, and Semi-Volatile Organic Compound (VOC) Monitoring Program

On September 11 and 12, 2000, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 2000 annual pesticide, herbicide and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides, organophosphorous pesticides/triazine herbicides, fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC's (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1 and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (USEPA Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide and SVOC monitoring program. The next monitoring will be conducted in the fourth quarter of 2001.

Bart Koch

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cc w/attachments:

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Water Quality file

TABLE 1

Sample Locations for Pesticide, Herbicide, and SVOC Monitoring 2000*

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Jensen plant effluent
Lake Havasu near Intake	Mills plant effluent
Lake Mathews headworks**	Skinner plant #1 effluent
Lake Perris	Skinner plant #2 effluent
Lake Skinner outlet conduit	Weymouth plant effluent
San Jacinto Tunnel	

* samples collected September 12, 2000 (Lake Havasu was collected on September 11, 2000)

** sample for endothall analysis was recollected on December 21, 2000 because of sampling problems.

TABLE 2
Pesticide, Herbicide, SVOC Drinking Water Standards and Reporting Levels
Annual 2000

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[1] (mg/L)	USEPA MCL[2] (mg/L)	CDHS DLR[3] (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Organochlorine Pesticides[#]:						
Aldrin*	0.000002			0.075	0.075	ND
∝-BHC	0.000015				0.05	ND
ß-BHC	0.000025				0.05	ND
δ-BHC				0.5	0.5	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.000002			0.02	0.02	ND
Endosulfan I					0.02	ND
Endosulfan II					0.01	ND
Endosulfan sulfate					0.05	ND
Endrin		0.002	0.002	0.1	0.1	ND
Endrin aldehyde					0.05	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Trifluralin					0.01	ND
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.006			0.25	0.25	ND
Dimethoate*	0.001			10.0	10.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[1] (mg/L)	USEPA MCL[2] (mg/L)	CDHS DLR[3] (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND
Prometon					1.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
Organochlorine Herbicides[#]:						
Acifluorfen					0.5	ND
Bentazon		0.018		2.0	2.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4-DB					2.0	ND
3,5-Dichlorobenzoic acid					1.0	ND
Dacthal (DCPA)					0.10	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	1.5	ND
Dichlorprop					0.3	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0	ND
2,4,5-T					0.2	ND
Carbamate Pesticides - Method 531[#]						
Aldicarb*	0.007		0.003[+]	3.0	2.0	ND
Aldicarb sulfone*			0.002[+]	4.0	2.0	ND
Aldicarb sulfoxide*			0.004[+]	3.0	2.0	ND
Baygon (Propoxur)	0.093				5.0	ND
Carbofuran		0.018	0.04	5.0	5.0	ND
Carbaryl*	0.7			5.0	2.0	ND
3-Hydroxycarbofuran*				3.0	2.0	ND
Methiocarb					3.0	ND
Methomyl*				2.0	2.0	ND
Oxamyl		0.2	0.2	20.0	2.0	ND

Table 2 (cont'd)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[1] (mg/L)	USEPA MCL[2] (mg/L)	CDHS DLR[3] (µg/L)	Minimum Reporting Levels (µg/L)	Analytical Results (µg/L)
Fumigants- Method 504#						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
SVOC - Method 525.2#						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl) phthalate		0.004	0.006	3	3	ND
Misc.						
Diquat#		0.02	0.02	4.0	4.0	ND
Diuron*				1.0	1.0	ND
Endothall#		0.1	0.1	45.0	45	ND
Glyphosate#		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD)##		3×10^{-8}	3×10^{-8}	5×10^{-6}	5×10^{-6}	ND

1 California Department of Health Services (CDHS) Drinking Water Standards and Action Levels (May 23, 2000 and November 13, 2000, respectively.) (http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm)

2 Federal Registers, January 30, 1991 and July 17, 1992.

3 CDHS required detection limits for purposes of reporting (DLR) (February 18, 2000) (http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm).

* CDHS unregulated organic chemicals (May 23, 2000) (http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/chemindex.htm)

** Secondary CDHS MCL

Analysis performed by Weck Laboratories.

Analysis performed by Quantarra Environmental Services.

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: February 7, 2000

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: First Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On March 22, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 first quarter pesticide, herbicide, and SVOC monitoring program. On May 26, 1999, all sites were resampled for SVOC's due to quality control problems. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the first of two quarters of monitoring that are required every three years. The next monitoring will be conducted in the third quarter of 1999.

ORIGINAL SIGNED BY

Bart Koch 2/8/00

EWC:smh

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Attachments

cc w/attachments:

J. T. Wicke
M. H. Stewart
M. K. Davis
B. Koch
D. G. Sass
E. W. Crofts
M. S. Dale
Water Quality file

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
FIRST QUARTER 1999

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	Jensen plant effluent
San Jacinto Tunnel	

TABLE 2

PESTICIDE, HERBICIDE, and SVOC DETECTION LIMITS AND MAXIMUM CONTAMINANT LEVELS FIRST QUARTER 1999

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organochlorine Pesticides[#]:						
Aldrin*	0.00005			0.075	0.08	ND
∝-BHC	0.0007				0.01	ND
ß-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Molinate		0.02		2.0	2.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07 (0.001[**])		1.0	1.0	ND
Organochlorine Herbicides[#]:						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
Carbamates Method 632[#]:						
Diuron*				1.0	1.0	ND
Carbamates Method 531.1[#]:						
Aldicarb*	0.01		0.003[+]	3.0	2	ND
Aldicarb sulfone*			0.002[+]	4.0	2	ND
Aldicarb sulfoxide*			0.004[+]	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Fumigant						
Method 504.1[#]:						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
SVOC						
Method 525.2[#]:						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
Miscellaneous						
Diquat[#]		0.02	0.02	4.0	4.0	ND
Endothall[#]		0.1	0.1	45.0	45	ND
Glyphosate[#]		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD)[##]		3×10^{-8}	3×10^{-8}	5×10^{-6}	5×10^{-6}	ND

---

1 California Department of Health Services (CDHS) action levels (www.dhs.cahwnet.gov update January 7,1999).

2 CDHS maximum contaminant level (MCL) (www.dhs.cahwnet.gov update January 7,1999).

3 U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

4 CDHS required detection limits for purposes of reporting (DLR). www.dhs.cahwnet.gov update January 7,1999.

* CDHS unregulated organic chemicals (www.dhs.cahwnet.gov update January 7,1999)

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

\# Analysis performed by Weck Laboratories.

\## Analysis performed by Quantarra Environmental Services.

** Secondary CDHS MCL.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: February 7, 2000

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: Third Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On September 1, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 third quarter pesticide, herbicide, and SVOC monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547, 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the second of two quarters of monitoring which is required every three years. The next monitoring will be conducted in the third quarter of 2000.

ORIGINAL SIGNED BY

Bart Koch 2/8/00

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Attachments (2)

cc w/attachments:

J. T. Wicke
M. H. Stewart
M. K. Davis
D. G. Sass
B. Koch
E. W. Crofts
M. S. Dale
Water Quality file

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
THIRD QUARTER 1999

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	Jensen plant effluent
San Jacinto Tunnel	

TABLE 2

PESTICIDE, HERBICIDE, and SVOC DETECTION LIMITS AND MAXIMUM CONTAMINANT LEVELS THIRD QUARTER 1999

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organochlorine Pesticides[#]:						
Aldrin*	0.00005			0.075	0.08	ND
∝-BHC	0.0007				0.01	ND
ß-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND
Molinate		0.02		2.0	2.0	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07(0.001**)		1.0	1.0	ND
Organochlorine Herbicides[#]:						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
Carbamates Method 632[#]						
Diuron*				1.0	1.0	ND
Carbamates Method 531.1[#]						
Aldicarb*	0.01		0.003[+]	3.0	2	ND
Aldicarb sulfone*			0.002[+]	4.0	2	ND
Aldicarb sulfoxide*			0.004[+]	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND
Fumigant Method 504.1[#]						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
SVOC						
Method 525.2#						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
Misc.						
Diquat#		0.02	0.02	4.0	4.0	ND
Endothall#		0.1	0.1	45.0	45	ND
Glyphosate#		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD)##		3×10^{-8}	3×10^{-8}	5×10^{-6}	$1.5\text{-}5 \times 10^{-6}$	ND

---

1 California Department of Health Services (CDHS) action levels (www.dhs.cahwnet.gov update January 7,1999).

2 CDHS maximum contaminant level (MCL) (www.dhs.cahwnet.gov update January 7,1999).

3 U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

4 CDHS required detection limits for purposes of reporting (DLR). www.dhs.cahwnet.gov update January 7,1999.

* CDHS unregulated organic chemicals (www.dhs.cahwnet.gov update January 7,1999)

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

\# Analysis performed by Weck Laboratories.

\## Analysis performed by Quantarra Environmental Services.

** Secondary CDHS MCL

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: February 7, 2000

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: First Quarter 1999 Pesticide, Herbicide, and Semi-Volatile Organic Compounds (SVOC) Monitoring Program

On March 22, 1999, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1999 first quarter pesticide, herbicide, and SVOC monitoring program. On May 26, 1999, all sites were resampled for SVOC's due to quality control problems. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established reporting levels. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs or the laboratory's reporting levels in Metropolitan's source or finished waters.**

The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides, and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 531.1, 547; 549.1, 632, 548.1, and 525.2 respectively) were performed by Weck Laboratories. Quantarra Environmental Services performed the analysis for dioxin (Method 1613A).

This sampling is part of Metropolitan's annual pesticide, herbicide, and SVOC monitoring program. This was the first of two quarters of monitoring that are required every three years. The next monitoring will be conducted in the third quarter of 1999.

ORIGINAL SIGNED BY

Bart Koch 2/5/00

EWC:smh
h:\reports\ewc pest 1q99.doc

Attachments

cc w/attachments:

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Water Quality file

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
FIRST QUARTER 1999

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	Jensen plant effluent
San Jacinto Tunnel	

TABLE 2

PESTICIDE, HERBICIDE, and SVOC DETECTION LIMITS AND MAXIMUM CONTAMINANT LEVELS FIRST QUARTER 1999

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organochlorine Pesticides[#]:						
Aldrin*	0.00005			0.075	0.08	ND
∝-BHC	0.0007				0.01	ND
ß-BHC	0.0003				0.05	ND
δ-BHC				0.5	0.05	ND
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20	ND
Chlordane		0.0001	0.002	0.1	0.10	ND
Chlorothalonil*				5.0	5.0	ND
4,4'-DDD				0.02	0.02	ND
4,4'-DDE				0.01	0.01	ND
4,4'-DDT				0.02	0.02	ND
Dieldrin*	0.00005			0.02	0.02	ND
Endrin		0.002	0.002	0.1	0.1	ND
Heptachlor		0.00001	0.0004	0.01	0.01	ND
Heptachlor epoxide		0.00001	0.0002	0.01	0.01	ND
Hexachlorobenzene		0.001	0.001	0.5	0.5	ND
Hexachlorocyclo-Pentadiene		0.05	0.05	1.0	1.0	ND
Methoxychlor		0.04	0.04	10.0	10.0	ND
Propachlor*				0.5	0.5	ND
Toxaphene		0.003	0.003	1.0	1.0	ND
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.5	ND
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Alachlor		0.002	0.002	1.0	1.0	ND
Atrazine		0.003	0.003	1.0	1.0	ND
Bromacil*				10.0	10.0	ND
Butachlor*				0.38	0.38	ND
Diazinon	0.014			0.25	0.25	ND
Dimethoate*	0.140			10.0	10.0	ND
Malathion	0.160				0.5	ND
Metalochlor*					0.5	ND
Metribuzin*					0.5	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Organophosphorus Pesticides and Triazine Herbicides[#]:						
Molinate		0.02		2.0	2.0	ND
Prometryn*				2.0	2.0	ND
Simazine		0.004	0.004	1.0	1.0	ND
Thiobencarb		0.07 (0.001[**])		1.0	1.0	ND
Organochlorine Herbicides[#]:						
Bentazon		0.018		2.0	2.0	ND
Dalapon		0.2	0.2	10.0	10.0	ND
Dicamba*				1.5	0.081	ND
Dinoseb		0.007	0.007	2.0	2.0	ND
Pentachlorophenol		0.001	0.001	0.2	0.2	ND
Picloram		0.5	0.5	1.0	1.0	ND
2,4-D		0.07	0.07	10.0	10.0	ND
2,4,5-T (Silvex)		0.05	0.05	1.0	1.0	ND
Carbamates Method 632[#]:						
Diuron*				1.0	1.0	ND
Carbamates Method 531.1[#]:						
Aldicarb*	0.01		0.003[+]	3.0	2	ND
Aldicarb sulfone*			0.002[+]	4.0	2	ND
Aldicarb sulfoxide*			0.004[+]	3.0	2	ND
Baygon(Propoxur)	0.09				1	ND
Carbofuran		0.018	0.04	5.0	2	ND
Carbaryl*	0.060			5.0	2	ND
3-Hydroxycarbofuran*				3.0	2	ND
Methomyl*				2.0	2	ND
Oxamyl		0.2	0.2	20.0	2	ND

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Laboratory Reporting Level (µg/L)	Analytical Results (µg/L)
Fumigant						
Method 504.1[#]:						
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01	ND
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02	ND
SVOC						
Method 525.2[#]:						
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1	ND
Di(2-ethylhexyl)adipate		0.4	0.4	5	5	ND
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3	ND
Miscellaneous						
Diquat[#]		0.02	0.02	4.0	4.0	ND
Endothall[#]		0.1	0.1	45.0	45	ND
Glyphosate[#]		0.7	0.7	25.0	25	ND
Dioxin (2,3,7,8-TCDD)[##]		3×10^{-8}	3×10^{-8}	5×10^{-6}	5×10^{-6}	ND

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1 California Department of Health Services (CDHS) action levels (www.dhs.cahwnet.gov update January 7,1999).

2 CDHS maximum contaminant level (MCL) (www.dhs.cahwnet.gov update January 7,1999).

3 U.S. Environmental Protection Agency, MCLs, Federal Registers, January 30, 1991 and July 17, 1992.

4 CDHS required detection limits for purposes of reporting (DLR). www.dhs.cahwnet.gov update January 7,1999.

* CDHS unregulated organic chemicals (www.dhs.cahwnet.gov update January 7,1999)

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

\# Analysis performed by Weck Laboratories.

\## Analysis performed by Quantarra Environmental Services.

** Secondary CDHS MCL.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: April 12, 1999

To: Marshall K. Davis, Water Quality Laboratory Manager

From: Bart Koch, Principal Chemist

Subject: 1998 Annual Pesticide, Herbicide, and Semi-Volatile (SVOC) Monitoring Program

1. On December 8, 1998, samples from seven of Metropolitan's source waters and five treatment plant effluents (Table 1) were collected for the 1998 annual pesticide, herbicide, and SVOC monitoring program. The Jensen Filtration Plant was out of service at the time of sampling and therefore, an effluent sample could not be collected. However, the influent (source water) to the Jensen plant was collected. Table 2 lists the analyses and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.

2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOCs (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

This represents the 1998 annual monitoring program for pesticides, herbicides, and SVOCs. The next monitoring will be conducted in the first quarter of 1999.

ORIGINAL SIGNED BY
Bart Koch

EWC:lk
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Attachments (2)

cc w/attachments:

J. W. Malinowski
M. D. Beuhler
R. L. Wolfe
J. M. Bruno
M. K. Davis
D. Sass
B. Koch
E. W. Crofts
M. S. Dale
Water Quality file

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
ANNUAL 1998

Source Waters	Treated Waters
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Mills plant effluent
Lake Havasu near Intake	Skinner plant #1 effluent
Lake Mathews headworks	Skinner plant #2 effluent
Lake Perris	Weymouth plant effluent
Lake Skinner outlet conduit	
San Jacinto Tunnel	

TABLE 2

PESTICIDE, HERBICIDE, and SVOC DETECTION
LIMITS AND MAXIMUM CONTAMINANT LEVELS
1998 ANNUAL

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Organochlorine Pesticides #:					
Aldrin*	0.00005			0.075	0.08
α-BHC	0.0007				0.01
β -BHC	0.0003				0.05
δ-BHC				0.5	0.05
γ-BHC (Lindane)		0.0002	0.0002	0.2	0.20
Chlordane		0.0001	0.002	0.1	0.10
Chlorothalonil*				5.0	5.0
4,4'-DDD				0.02	0.02
4,4'-DDE				0.01	0.01
4,4'-DDT				0.02	0.02
Dieldrin*	0.00005			0.02	0.02
Endrin		0.002	0.002	0.1	0.1
Heptachlor		0.00001	0.0004	0.01	0.01
Heptachlor epoxide		0.00001	0.0002	0.01	0.01
Hexachlorobenzene		0.001	0.001	0.5	0.5
Hexachlorocyclo-pentadiene		0.05	0.05	1.0	1.0
Methoxychlor		0.04	0.04	10.0	10.0
Propachlor*				0.5	0.5
Toxaphene		0.003	0.003	1.0	1.0
Polychlorinated Biphenyls (PCB)		0.0005	0.0005	0.5	0.1
Organophosphorus Pesticides and Triazine Herbicides #:					
Alachlor		0.002	0.002	1.0	1.0
Atrazine		0.003	0.003	1.0	1.0
Bromacil*				10.0	10.0
Butachlor*				0.38	0.38
Diazinon*	0.014			0.25	0.25
Dimethoate*	0.140			10.0	10.0

TABLE 2
(continued)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Organophosphorus Pesticides and Triazine Herbicides # (continued):					
Metalochlor*					0.5
Metribuzin*					0.5
Molinate		0.02		2.0	2.0
Prometryn*				2.0	2.0
Simazine		0.004	0.004	1.0	1.0
Thiobencarb		0.07(0.001**)		1.0	1.0
Organochlorine Herbicides#:					
Bentazon		0.018		2.0	2.0
Dalapon		0.2	0.2	10.0	10.0
Dicamba*				1.5	0.081
Dinoseb		0.007	0.007	2.0	2.0
Pentachlorophenol		0.001	0.001	0.2	0.2
Picloram		0.5	0.5	1.0	1.0
2,4-D		0.07	0.07	10.0	10.0
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0
Carbamates - Method 632#					
Diuron*				1.0	1.0
Carbamates - Method 531#					
Aldicarb*	0.01		0.003+	3.0	2
Aldicarb sulfone*			0.002+	4.0	2
Aldicarb sulfoxide*			0.004+	3.0	2
Baygon (Propoxur)	0.090				1
Carbofuran		0.018	0.04	5.0	2
Carbaryl*	0.060			5.0	2
3-Hydroxycarbofuran*				3.0	3
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2

TABLE 2
(continued)

Analyte	CDHS Action Level[1] (µg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Fumigants- Method 504 #					
Dibromochloropropane (DBCP)		0.0002	0.0002	0.01	0.01
Ethylene dibromide (EDB)		0.00005	0.00005	0.02	0.02
SVOC - Method 525.2 #					
Benzo(a)pyrene		0.0002	0.0002	0.1	0.1
Di(2-etyylhexy)adipate		0.4	0.4	5	5
Di(2-ethylhexyl)phthalate		0.004	0.006	3	3
Misc.					
Diquat#		0.02	0.02	4.0	4.0
Endothall#		0.1	0.1	45.0	45
Glyphosate#		0.7	0.7	25.0	25
Dioxin (2,3,7,8-TCDD)##		3×10^{-8}	3×10^{-8}	5×10^{-6}	$0.48\text{-}1.5 \times 10^{-6}$

1. California Department of Health Services (CDHS) action levels (www.dhs.cahwnet.gov update January 7,1999).
2. CDHS maximum contaminant level (MCL) (www.dhs.cahwnet.gov update January 7,1999).
3. Environmental Protection Agency MCLs, Federal Registers, January 30, 1991, and July 17, 1992.
4. CDHS required detection limits for purposes of reporting (DLR). www.dhs.cahwnet.gov update November 19, 1998.

* CDHS unregulated organic chemicals (www.dhs.cahwnet.gov update January 7,1999)

\+ Effective date of January 1, 1993, has been postponed, Federal Register, May 27, 1992, pending revised MCL.

\# Analysis performed by Weck Laboratories.

Analysis performed by Quantarra Environmental Services.

** Secondary CDHS MCL.

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

February 27, 1998

To: Water Quality Laboratory Manager M. K. Davis MKD

From: Principal Chemist Bart Koch

Subject: Annual Pesticide, Herbicide, and Semi-Volatile Organic Compound (SVOC) Monitoring Program - Third Quarter 1997

1. On September 17 and 18, 1997, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1997 annual pesticide and herbicide and semi-volatile organic compound (SVOC) monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.**

2. The analyses for organochlorine herbicides, organochlorine pesticides; organophosphorous pesticides and triazine herbicides; fumigants, carbamate pesticides, glyphosate, diquat, diuron, endothall, and SVOC (USEPA Methods 515.2, 508, 507, 504.1, 515.1, 531.1, 547, 549.1, 632, 548.1, and 525.2, respectively) were performed by Weck Laboratories. The analysis for dioxin was performed by Quantarra Environmental Services (Method 1613A).

3. This annual sampling was the only sampling for pesticides, herbicides, and SVOCs conducted in 1997. The next annual monitoring will be conducted in the fourth quarter of 1998.

Bart Koch

Bart Koch

BK/EC/saj

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
THIRD QUARTER 1997

Source Waters	**Treated Waters**
Devil Canyon afterbay	Diemer plant effluent
Foothill Pressure Control Structure (PCS)	Jensen plant effluent
Lake Havasu near Intake	Mills plant effluent
Lake Mathews headworks	Skinner plant #1 effluent
Lake Perris	Skinner plant #2 effluent
Lake Skinner outlet conduit	Weymouth plant effluent
San Jacinto Tunnel	

Table 2
(continued)

Analyte	CDHS Action Level[1] (mg/L)	CDHS MCL[2] (mg/L)	USEPA MCL[3] (mg/L)	CDHS DLR[4] (µg/L)	Detection Limits (µg/L)
Organophosphorus Pesticides and Triazine Herbicides # (continued):					
Malathion	0.160				0.5
Metalochlor*					0.5
Metribuzin*					0.5
Molinate		0.02		2.0	2.0
Prometryn*				2.0	2.0
Simazine		0.004	0.004	1.0	1.0
Thiobencarb		0.07	(0.001)**	1.0	1.0
Organochlorine Herbicides#:					
Bentazon		0.018		2.0	2.0
Dalapon		0.2	0.2	10.0	10.0
Dicamba*				1.5	0.081
Dinoseb		0.007	0.007	2.0	2.0
Pentachlorophenol		0.001	0.001	0.2	0.2
Picloram		0.5	0.5	1.0	1.0
2,4-D		0.07	0.07	10.0	10.0
2,4,5-TP (Silvex)		0.05	0.05	1.0	1.0
Carbamates - Method 632#					
Diuron*				1.0	1.0
Carbamates - Method 531#					
Aldicarb*	10		0.003+	3.0	2
Aldicarb sulfone*			0.002+	4.0	2
Aldicarb sulfoxide*			0.004+	3.0	2
Baygon (Propoxur)	0.090			1	2
Carbofuran		0.018	0.04	5.0	2
Carbaryl*	0.060			5.0	2
3-Hydroxycarbofuran*				3.0	2
Methomyl*				2.0	2
Oxamyl		0.2	0.2	20.0	2

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

February 27, 1998

To: Water Quality Laboratory Manager M. K. Davis

From: Principal Chemist Bart Koch

Subject: Annual Pesticide, Herbicide, and Semi-Volatile Organic Compound (SVOC) Monitoring Program - Third Quarter 1997

1. On September 17 and 18, 1997, samples from seven of Metropolitan's source waters and six treatment plant effluents (Table 1) were collected for the 1997 annual pesticide and herbicide and semi-volatile organic compound (SVOC) monitoring program. Table 2 lists the analytes and provides regulatory information, which includes the California Department of Health Services' (CDHS') action levels and maximum contaminant levels (MCLs), U.S. Environmental Protection Agency's (USEPA) MCLs, CDHS' detection limits for purposes of reporting (DLRs), and the laboratories' established detection limits. **No pesticides, herbicides, or SVOCs were detected at or above the DLRs in Metropolitan's source or finished waters.**

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Bart Koch

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BK/EC/saj

TABLE 1

SAMPLE LOCATIONS FOR
PESTICIDE, HERBICIDE, and SVOC MONITORING
THIRD QUARTER 1997

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Lake Skinner outlet conduit	Weymouth plant effluent
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