APPENDIX F-4 – SANTA MARGARITA RIVER WMA RECEIVING WATER WET WEATHER LOADS

Receiving Water Wet Weather Loads

During the 2016-2017 monitoring year, receiving water monitoring was conducted at mass loading station (MLS) locations by Riverside County and San Diego County Copermittees. Loads were calculated for each MLS location to evaluate the total amount of pollutants transported within a waterbody. Calculation methods and load results are described for Riverside County and San Diego County below.

Receiving Water Wet Weather Loads for Riverside County

Receiving water monitoring was conducted by the Riverside County Copermittees at three MLS locations during up to three wet weather events. Flow-weighted composite samples were collected and analyzed for chemical and bacteriological parameters. As required by the monitoring and reporting program (MRP), instantaneous wet weather loads were calculated for each MLS location. Instantaneous pollutant loads were estimated by multiplying the concentration of each monitored constituent by the average instantaneous flow for the monitoring event. The average instantaneous flow represents the average of all five-minute instantaneous flow measurements taken for the event. The concentration of the constituent used represents one of the following values:

- For detected constituents – the measured or estimated value (J-flagged result) reported by the contract laboratory,
- For detected constituents with a result reported above the upper method detection limit (e.g., bacterial indicators) – the upper detection limit, plus 1 unit.
- For constituents not detected – half the laboratory method detection limit (MDL) was used to approximate a non-zero value to calculate wet weather instantaneous loads.

Wet weather flow in SMR receiving waters continued for multiple days, whereas monitoring was limited to the early first flush portion of the hydrograph. Flow data was not collected after the monitoring window, and flow response in the receiving water after monitoring ceased is unknown. Therefore, wet weather events loads were not based on event volumes.

The 2016-2017 instantaneous wet weather loads for MLS locations in Riverside County are presented for each monitoring event in Table 1.

Table F4-1. 2016-2017 Receiving Water Wet Weather Loads for Riverside County

Analyte	Units	902ADB848 W1	902ADB848 W2	902LMC778 W1	902LMC778 W2	902LMC778 W3	902LTC777 W1	902LTC777 W2	902LTC777 W3
Event	-	12/16/2016	1/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017
Average Instantaneous Flow	cfs	2.18	20.45	3.65	19.99	54.98	0.52	46.16	91.76
Fecal Indicator Bacteria									
E. coli	MPN/sec	6.17E+04	6.37E+06	3.10E+06	7.92E+06	3.74E+08	4.15E+04	5.23E+06	4.42E+08
Enterococcus	MPN/sec	2.47E+05	4.63E+06	2.27E+06	2.83E+06	2.65E+08	7.41E+04	1.70E+07	4.42E+08
Fecal Coliform	MPN/sec	6.17E+04	6.37E+06	9.30E+06	1.25E+07	3.74E+08	4.15E+04	1.05E+07	4.42E+08
Total Coliform	MPN/sec	3.08E+06	2.20E+07	1.65E+07	7.92E+07	4.67E+08	2.37E+05	9.15E+07	4.16E+09
Nutrients									
Ammonia as N	lbs/sec	1.63E-05	3.06E-05	5.47E-06	8.99E-05	8.24E-05	7.84E-07	6.92E-05	4.87E-04
Ammonia as N (Unionized)	lbs/sec	6.80E-06	6.38E-05	1.14E-05	6.24E-05	8.24E-05	1.63E-06	1.44E-04	2.86E-04
Nitrate as N	lbs/sec	5.44E-05	8.94E-04	1.00E-04	6.24E-04	1.51E-03	1.63E-06	1.15E-03	2.75E-03
Nitrite as N	lbs/sec	8.16E-07	2.68E-06	3.65E-06	1.62E-05	5.49E-05	6.86E-08	2.88E-05	1.20E-04
Total Kjeldahl Nitrogen	lbs/sec	8.16E-05	1.40E-03	1.39E-04	1.25E-03	4.80E-03	2.06E-05	2.42E-03	9.16E-03
Total Nitrogen	lbs/sec	1.36E-04	2.30E-03	2.51E-04	1.87E-03	6.18E-03	1.96E-05	3.46E-03	1.20E-02
Dissolved Phosphorus	lbs/sec	1.63E-05	8.30E-04	1.25E-05	3.00E-04	1.27E-03	4.25E-06	7.20E-04	2.41E-03
Total Phosphorus	lbs/sec	2.85E-05	7.41E-04	1.62E-04	7.11E-04	2.23E-03	3.92E-05	1.07E-03	3.67E-03
General Chemistry									
Biochemical Oxygen Demand	lbs/sec	5.44E-04	2.55E-03	1.14E-03	2.50E-03	6.86E-03	2.29E-04	4.03E-02	1.15E-02
Chemical Oxygen Demand	lbs/sec	2.99E-03	9.58E-02	1.32E-03	6.74E-02	2.16E-01	3.27E-04	8.93E-02	3.61E-01
Dissolved Organic Carbon	lbs/sec	1.28E-03	1.66E-02	1.14E-03	5.87E-03	1.89E-02	2.03E-04	2.22E-02	3.55E-02
Total Organic Carbon	lbs/sec	1.63E-03	1.66E-02	1.53E-03	8.86E-03	2.33E-02	2.42E-04	3.17E-02	4.24E-02
Oil & Grease	lbs/sec	2.72E-04	1.28E-03	2.96E-04	2.50E-03	4.12E-03	4.25E-05	4.03E-03	1.55E-02
Surfactants (MBAS)	lbs/sec	6.80E-06	3.19E-05	2.73E-05	3.12E-05	8.58E-05	1.63E-06	1.44E-04	1.43E-04
Sulfate	lbs/sec	8.84E-03	3.45E-02	1.48E-02	5.12E-02	1.51E-01	8.49E-03	4.90E-01	2.12E-01
Total Dissolved Solids	lbs/sec	4.08E-02	2.30E-01	9.80E-02	3.62E-01	9.61E-01	4.57E-02	2.56E+00	1.55E+00
Total Suspended Solids	lbs/sec	3.40E-04	1.28E-02	3.19E-03	2.12E-01	8.24E-01	8.17E-05	1.38E-01	1.26E+00
Total Metals									
Arsenic	lbs/sec	4.89E-07	2.04E-06	3.42E-07	3.12E-06	1.13E-05	2.94E-08	3.17E-06	1.26E-05
Cadmium	lbs/sec	8.16E-09	7.66E-08	1.37E-08	1.87E-07	5.49E-07	1.96E-09	1.73E-07	9.74E-07

Table F4-1. 2016-2017 Receiving Water Wet Weather Loads for Riverside County

Analyte	Units	902ADB848	902ADB848	902LMC778	902LMC778	902LMC778	902LTC777	902LTC777	902LTC777
		W1	W2	W1	W2	W3	W1	W2	W3
Event	-	12/16/2016	1/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017
Chromium	lbs/sec	8.16E-08	3.06E-06	3.42E-07	1.50E-05	4.80E-05	1.31E-08	5.47E-06	6.30E-05
Chromium VI	lbs/sec	1.63E-09	NS	2.73E-09	NS	NS	1.40E-08	NS	NS
Copper	lbs/sec	2.99E-07	7.28E-06	1.48E-06	1.50E-05	5.15E-05	1.11E-07	1.79E-05	7.45E-05
Iron	lbs/sec	1.77E-05	1.66E-03	1.00E-04	1.50E-02	5.49E-02	2.84E-06	4.61E-03	6.30E-02
Lead	lbs/sec	1.36E-08	6.38E-07	2.28E-07	4.62E-06	1.54E-05	3.27E-09	2.88E-06	1.72E-05
Manganese	lbs/sec	2.18E-06	1.92E-05	1.82E-05	3.37E-04	1.17E-03	2.52E-06	1.24E-03	1.89E-03
Mercury	lbs/sec	3.74E-09	3.51E-08	6.27E-09	3.43E-08	1.89E-07	8.98E-10	7.92E-08	3.15E-07
Nickel	lbs/sec	3.40E-07	3.06E-06	2.96E-07	7.24E-06	2.20E-05	7.51E-08	7.20E-06	3.15E-05
Selenium	lbs/sec	7.34E-07	3.19E-06	4.56E-07	1.12E-06	3.09E-06	6.21E-08	3.17E-06	4.01E-06
Silver	lbs/sec	8.16E-09	7.66E-08	1.37E-08	7.49E-08	2.06E-07	1.96E-09	1.73E-07	3.44E-07
Thallium	lbs/sec	3.40E-08	3.19E-07	5.70E-08	3.12E-07	8.58E-07	8.17E-09	7.20E-07	1.43E-06
Zinc	lbs/sec	3.26E-07	5.36E-06	6.38E-06	6.24E-05	1.99E-04	7.84E-08	4.32E-05	3.04E-04
Dissolved Metals									
Arsenic	lbs/sec	4.21E-07	1.53E-06	3.19E-07	1.37E-06	6.18E-06	2.94E-08	2.59E-06	8.02E-06
Cadmium	lbs/sec	8.16E-09	7.66E-08	1.37E-08	7.49E-08	2.06E-07	1.96E-09	1.73E-07	3.44E-07
Chromium	lbs/sec	1.22E-07	1.15E-06	2.51E-07	1.37E-06	2.40E-06	2.29E-08	2.59E-06	5.16E-06
Chromium VI	lbs/sec	1.63E-09	NS	2.73E-09	NS	NS	1.40E-08	NS	NS
Copper	lbs/sec	2.58E-07	6.38E-06	1.14E-06	3.49E-06	1.37E-05	1.11E-07	9.80E-06	2.18E-05
Iron	lbs/sec	5.85E-06	1.66E-04	4.10E-06	2.37E-05	3.78E-05	5.23E-07	5.47E-06	1.49E-04
Lead	lbs/sec	1.36E-08	5.11E-07	2.28E-08	1.25E-07	3.43E-07	3.27E-09	2.88E-07	5.73E-07
Manganese	lbs/sec	3.40E-07	6.77E-06	7.75E-06	3.12E-06	8.58E-06	1.50E-06	7.20E-06	1.43E-05
Mercury	lbs/sec	3.74E-09	3.51E-08	6.27E-09	3.43E-08	9.44E-08	8.98E-10	7.92E-08	1.58E-07
Nickel	lbs/sec	3.26E-07	2.43E-06	2.51E-07	1.25E-06	3.78E-06	8.17E-08	5.76E-06	5.73E-06
Selenium	lbs/sec	6.39E-07	3.32E-06	4.33E-07	9.98E-07	2.40E-06	7.19E-08	3.46E-06	2.86E-06
Silver	lbs/sec	8.16E-09	7.66E-08	1.37E-08	7.49E-08	2.06E-07	1.96E-09	1.73E-07	3.44E-07
Thallium	lbs/sec	3.40E-08	3.19E-07	5.70E-08	3.12E-07	8.58E-07	8.17E-09	7.20E-07	1.43E-06
Zinc	lbs/sec	2.58E-07	1.92E-06	3.87E-06	3.74E-06	1.03E-05	5.23E-08	5.19E-06	6.87E-05
Organophosphorus Pesticides									
Aspon	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Atrazine	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Azinphos-ethyl	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07

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Analyte	Units	902ADB848	902ADB848	902LMC778	902LMC778	902LMC778	902LTC777	902LTC777	902LTC777
		W1	W2	W1	W2	W3	W1	W2	W3
Event	-	12/16/2016	1/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017
Azinphos-methyl	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Bolstar	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Carbophenothion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Chlorfenvinphos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Chlorpyrifos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Chlorpyrifos Methyl	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Coumaphos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Crotoxyphos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Demeton-o	lbs/sec	NS	NS	NS	NS	8.58E-08	NS	NS	NS
Demeton-s	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Diazinon	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Dichlofenthion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Dichlorvos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Dichrotophos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Dimethoate	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Dioxathion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Disulfoton	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
EPN	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Ethion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Ethoprop	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Ethyl Parathion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Famphur	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Fenitrothion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Fensulfothion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Fenthion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Fonophos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Leptophos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Malathion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Merphos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Methyl Parathion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Mevinphos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07

Table F4-1. 2016-2017 Receiving Water Wet Weather Loads for Riverside County

Analyte	Units	902ADB848	902ADB848	902LMC778	902LMC778	902LMC778	902LTC777	902LTC777	902LTC777
		W1	W2	W1	W2	W3	W1	W2	W3
Event	-	12/16/2016	1/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017
Monocrotophos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Naled	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Phorate	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Phosmet	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Phosphamidon	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Ronnel	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Simazine	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Stirofos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Sulfotepp	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
TEPP	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Terbufos	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Thionazin	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Tokuthion	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Trichlorfon	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Trichloronate	lbs/sec	3.40E-09	3.19E-08	5.70E-09	3.12E-08	8.58E-08	8.17E-10	7.20E-08	1.43E-07
Pyrethroids									
Bifenthrin	lbs/sec	3.87E-11	3.64E-10	6.49E-11	3.56E-10	1.75E-08	9.31E-12	1.33E-08	4.24E-08
Cyfluthrin	lbs/sec	4.62E-11	4.34E-10	7.75E-11	4.24E-10	1.17E-09	1.11E-11	9.80E-10	1.95E-09
Cyhalothrin-lambda	lbs/sec	1.01E-08	3.58E-08	1.21E-08	1.14E-07	3.78E-07	7.84E-10	2.22E-07	5.38E-07
Cypermethrin	lbs/sec	2.92E-11	2.75E-10	4.90E-11	2.68E-10	7.38E-10	7.02E-12	6.19E-10	1.23E-09
Deltamethrin	lbs/sec	2.99E-11	2.81E-10	5.01E-11	2.75E-10	7.55E-10	7.19E-12	6.34E-10	1.26E-09
Esfenvalerate/Fenvalerate	lbs/sec	5.78E-11	5.43E-10	9.68E-11	5.30E-10	1.46E-09	1.39E-11	1.22E-09	2.43E-09
Fenpropathrin (Danitol)	lbs/sec	2.04E-11	1.92E-10	3.42E-11	1.87E-10	5.15E-10	4.90E-12	1.04E-09	8.59E-10
Permethrin	lbs/sec	2.85E-11	2.68E-10	4.78E-11	2.62E-10	7.21E-10	6.86E-12	6.05E-10	1.20E-09
Carbamates									
3-Hydroxycarbofuran	lbs/sec	8.16E-08	NS	1.37E-07	1.25E-06	2.06E-06	1.96E-08	1.73E-06	3.44E-06
Aldicarb	lbs/sec	2.11E-08	NS	3.53E-08	1.93E-07	5.32E-07	5.06E-09	4.47E-07	8.88E-07
Aldicarb Sulfone	lbs/sec	3.74E-08	NS	6.27E-08	3.43E-07	9.44E-07	8.98E-09	7.92E-07	1.58E-06
Aldicarb Sulfoxide	lbs/sec	2.18E-08	NS	3.65E-08	2.00E-07	5.49E-07	5.23E-09	4.61E-07	9.16E-07
Carbaryl	lbs/sec	4.96E-08	NS	8.32E-08	4.55E-07	1.25E-06	1.19E-08	1.05E-06	2.09E-06
Carbofuran	lbs/sec	4.42E-08	NS	7.40E-08	4.06E-07	1.12E-06	1.06E-08	9.36E-07	1.86E-06

Table F4-1. 2016-2017 Receiving Water Wet Weather Loads for Riverside County

Analyte	Units	902ADB848	902ADB848	902LMC778	902LMC778	902LMC778	902LTC777	902LTC777	902LTC777
		W1	W2	W1	W2	W3	W1	W2	W3
Event	-	12/16/2016	1/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017	11/21/2016	12/16/2016	2/18/2017-2/19/2017
Methiocarb	lbs/sec	8.84E-08	NS	1.48E-07	8.11E-07	2.23E-06	2.12E-08	1.87E-06	3.72E-06
Methomyl	lbs/sec	2.58E-08	NS	4.33E-08	2.37E-07	6.52E-07	6.21E-09	5.47E-07	1.09E-06
Oxamyl	lbs/sec	2.58E-08	NS	4.33E-08	2.37E-07	6.52E-07	6.21E-09	5.47E-07	1.09E-06
Propoxur	lbs/sec	5.10E-08	NS	8.54E-08	4.68E-07	1.29E-06	1.23E-08	1.08E-06	2.15E-06

NS – not sampled
lbs/sec – pounds per second
MPN/sec – most probable number per second

Receiving Water Wet Weather Loads for San Diego County

Flow monitoring equipment was installed at the SMR-MLS-2 in San Diego County at the beginning of the monitoring year remained on site for the duration of the monitoring year. Stream flow rates were determined using stream stage (i.e., stream height). Flow sensors continuously measured stream stage and relayed that information to the flow meter. Flow rates were calculated using site-specific rating curves. The annual hydrograph is presented in Figure 1. Receiving water monitoring was conducted at the MLS location during two wet weather events and two dry weather events. Dates monitored have been identified using a sun (dry weather events) and a rain drop (wet weather events) on Figure 1. The hydrograph and hyetograph for each of the monitored storm events are presented in Figure 2.

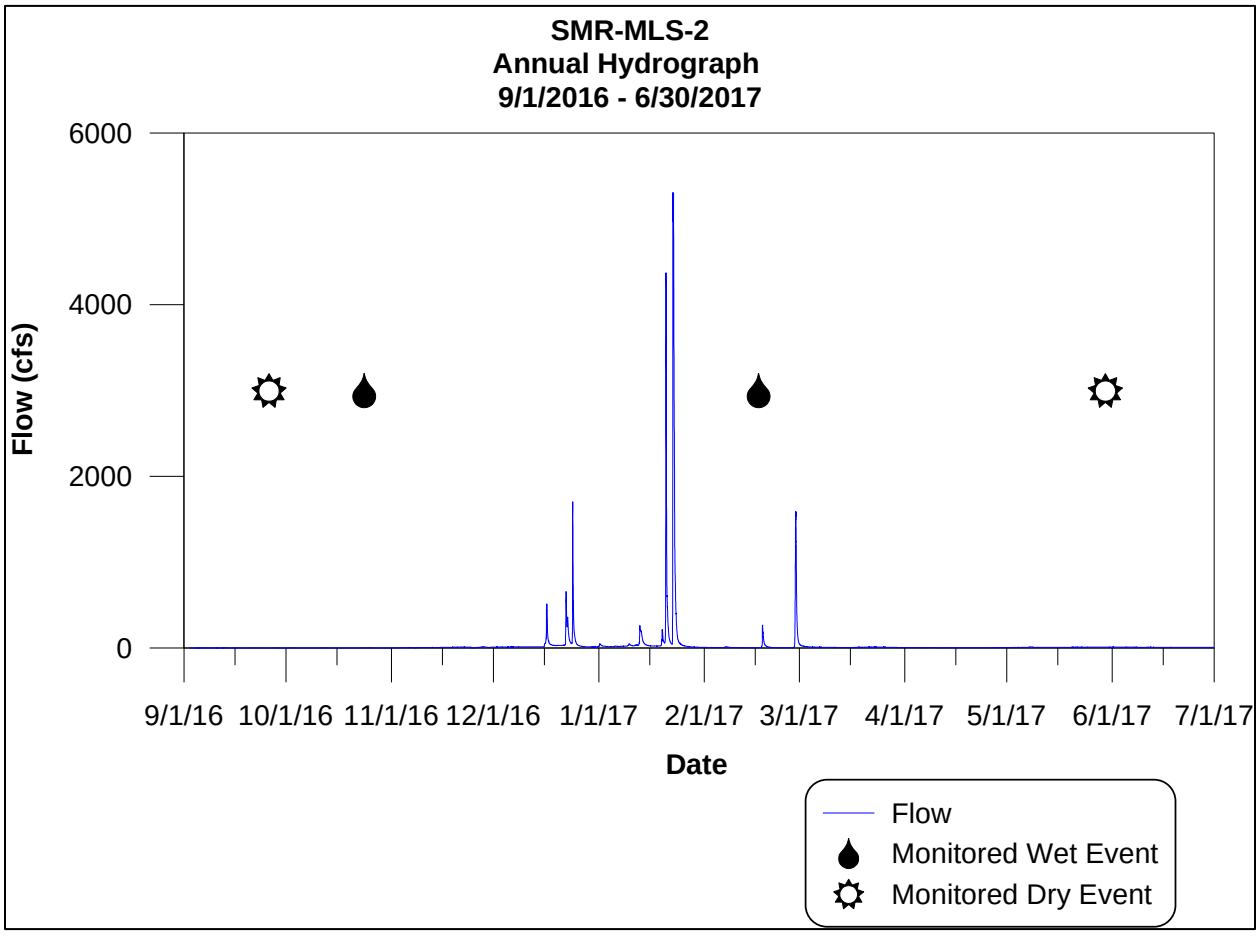

Figure F4-1. 2016-2017 Annual Hydrograph for SMR-MLS-2

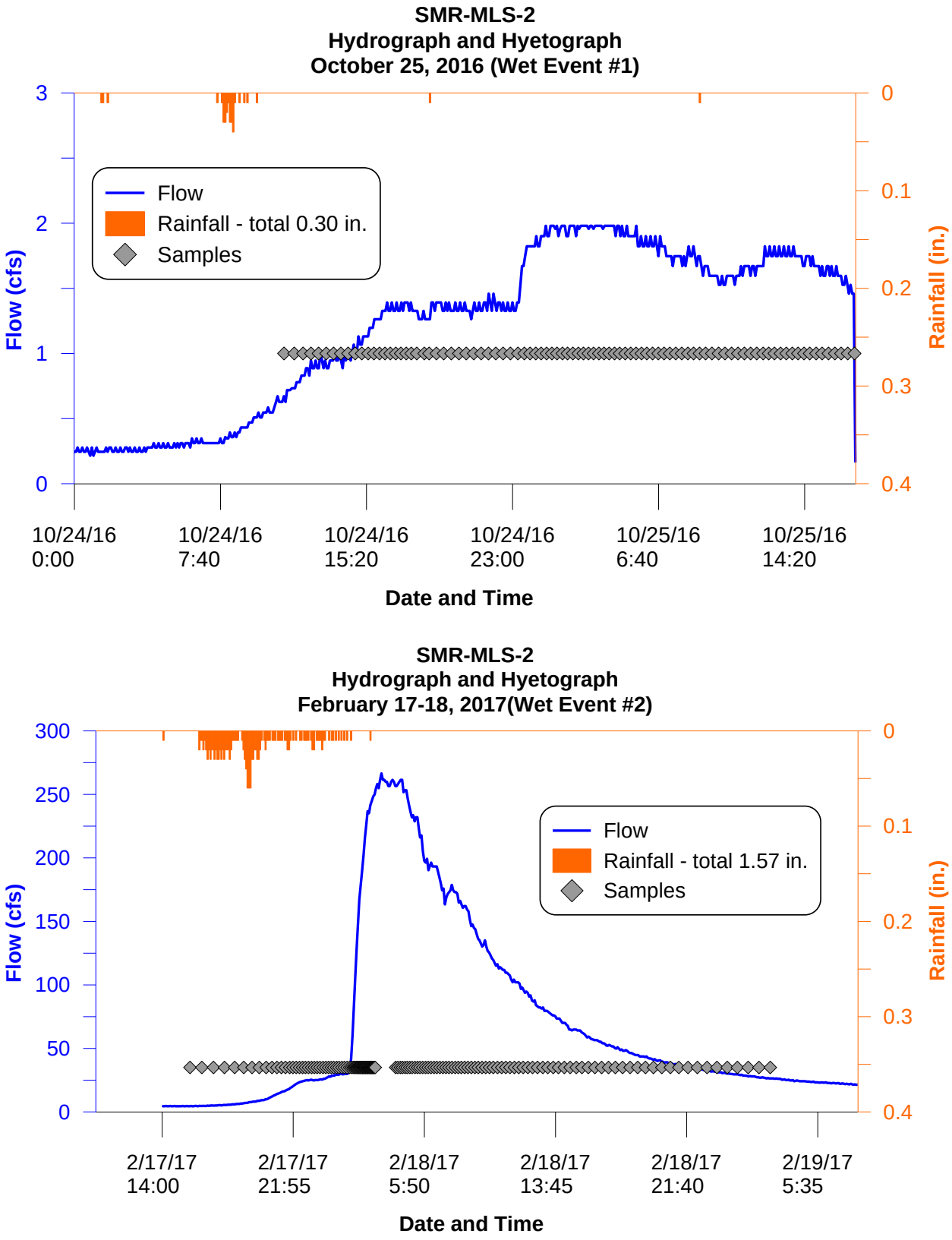

Figure F4-2. Wet Weather Event Hydrographs for SMR-MLS-2

During monitored wet weather events, flow-weighted composite samples were collected at SMR-MLS-2 and analyzed for chemical and bacteriological parameters. Wet weather loads were calculated for monitoring events by multiplying the concentration of each monitored constituent by the cumulative discharge volume measured at SMR-MLS-2 for the event. The concentration of the constituent used represents one of the following values:

- For detected constituents – the measured or estimated value (J-flagged result) reported by the contract laboratory,
- For detected constituents with a result reported above the upper method detection limit (e.g., bacterial indicators) – the upper detection limit, plus 1 unit.
- For constituents not detected – half the constituent reporting limit (RL) was used to approximate a non-zero value to calculate wet weather instantaneous loads.

The 2016-2017 annual wet weather loads was estimated by multiplying the event mean concentration (EMC) for each monitored constituent (e.g., the mean wet event 1 and wet event 2 constituent results) by the cumulative discharge volume measured at SMR-MLS-2, which included all wet weather events during the 2016-2017 wet season with a measured flow response in the receiving water. The SMR-MLS-2 wet weather event loads and the annual wet weather load for the 2016-2017 compliance year are presented in Table 2.

Table F4-2. 2016-2017 Receiving Water Wet Weather Loads for San Diego County at SMR-MLS-2

Analyte	Unit	SMR-MLS-2		
Event	-	Wet 1 (10/25/2016)	Wet 2 (2/18/2017-2/19/2017)	2016-2017 Annual Wet Weather Load*
Volume	cf	170,819	11,359,850	581,108,267
Bacteriological				
Enterococcus	MPN	1.45E+10	1.61E+14	4.14E+15
Fecal Coliform	MPN	5.32E+09	7.72E+13	1.98E+15
Total Coliform	MPN	8.22E+10	5.15E+14	1.33E+16
Nutrients				
Ammonia as N	lbs	0.533	70.916	2,721
Nitrate as N	lbs	1.493	1,772.910	47,886
Nitrite as N	lbs	0.107	9.928	435
Total Kjeldahl Nitrogen	lbs	2.133	992.830	29,022
Total Nitrogen (calc)	lbs	3.732	2,775.669	77,343
Dissolved Phosphorus	lbs	0.235	113.466	3,301
Total Phosphorus	lbs	0.416	340.399	9,414
General Chemistry				
Biochemical Oxygen Demand	lbs	11	3,546	108,831
Chemical Oxygen Demand	lbs	203	21,275	888,786
Dissolved Organic Carbon	lbs	38	4,255	174,130
Total Organic Carbon	lbs	35	4,893	185,013
Oil & Grease	lbs	27	1,773	90,692
Surfactants (MBAS)	lbs	0	18	907
Total Dissolved Solids	lbs	9,597	304,941	24,124,199
Total Suspended Solids	lbs	75	78,008	2,122,204

Table F4-2. 2016-2017 Receiving Water Wet Weather Loads for San Diego County at SMR-MLS-2

Analyte	Unit	SMR-MLS-2		
Event	-	Wet 1 (10/25/2016)	Wet 2 (2/18/2017-2/19/2017)	2016-2017 Annual Wet Weather Load*
Total Metals				
Antimony	lbs	0.001	0.277	9.3
Arsenic	lbs	0.011	2.908	92.5
Cadmium	lbs	0.001	0.085	3.1
Chromium	lbs	0.001	12.056	309.8
Copper	lbs	0.006	10.637	281.7
Lead	lbs	0.001	3.049	79.0
Nickel	lbs	0.006	5.177	142.4
Selenium	lbs	0.004	0.652	23.9
Zinc	lbs	0.027	33.331	897.9
Dissolved Metals				
Antimony	lbs	0.001	0.255	8.5
Arsenic	lbs	0.011	1.135	47.2
Cadmium	lbs	0.001	0.035	1.8
Chromium	lbs	0.000	0.227	6.5
Copper	lbs	0.005	1.560	48.6
Lead	lbs	0.001	0.071	3.6
Nickel	lbs	0.006	0.695	27.6
Selenium	lbs	0.005	0.347	16.7
Zinc	lbs	0.027	2.198	101.6
Organophosphorus Pesticides				
Chlorpyrifos	lbs	5.33E-05	3.55E-03	0.18
Diazinon	lbs	5.33E-05	3.55E-03	0.18
Malathion	lbs	5.33E-05	3.55E-03	0.18
Pyrethroids				
Allethrin	lbs	1.07E-05	7.09E-04	0.04
Bifenthrin	lbs	1.07E-05	1.25E-02	0.34
Cyfluthrin	lbs	1.07E-05	1.84E-03	0.07
Cyhalothrin, Total Lambda	lbs	1.07E-05	7.09E-04	0.04
Cypermethrin	lbs	1.07E-05	7.09E-04	0.04
Danitol (Fenpropathrin)	lbs	1.07E-05	1.63E-03	0.06
Deltamethrin/Tralomethrin	lbs	1.07E-05	7.09E-04	0.04
Esfenvalerate	lbs	1.07E-05	7.09E-04	0.04
Fenvalerate	lbs	1.07E-05	7.09E-04	0.04
Fluvalinate	lbs	1.07E-05	1.21E-03	0.05
Permethrin	lbs	2.13E-05	1.42E-03	0.07
Prallethrin	lbs	1.07E-05	7.09E-04	0.04
Resmethrin	lbs	5.33E-05	3.55E-03	0.18

NS – not sampled
lbs – pounds
MPN– most probable number
*Product of the cumulative annual wet weather discharge and the annual event mean concentration (EMC) (e.g., product of event 1 and event 2 constituent results).