

APPENDIX C - ADDITIONAL NUTRIENT SOURCE DATA SUMMARIZED

Nitrogen Fluxes - NO_x, NH₃, and Organic N by Source Type

Table C-1. Santa Barbara subregion nitrogen flux in MT N Km⁻² Year⁻¹. Values in parenthesis represent only urea and not the total organic nitrogen component.

	Total Nitrogen	Nitrate + Nitrite	Ammonia	Organic N (Urea only)
Upwelling	-21	-19.9	-1.1	NA
Effluent	0.1	NA	0.1	NA
Riverine Runoff	0.07	0.009	0.003	0.05
Atmospheric Deposition	0.4	0.2	0.2	NA

NA = not analyzed for this source

Table C-2. Ventura subregion nitrogen flux in MT N Km⁻² Year⁻¹. Values in parenthesis represent only urea and not the total organic nitrogen component.

	Total Nitrogen	Nitrate + Nitrite	Ammonia	Organic N (Urea only)
Upwelling	-107	-99.5	-7.5	NA
Effluent	0.5	0.04	0.4	0.07
Riverine Runoff	0.4	0.3	0.01	0.09
Atmospheric Deposition	0.4	0.2	0.2	NA

NA = not analyzed for this source

Table C-3. Santa Monica Bay subregion nitrogen flux in MT N Km⁻² Year⁻¹. Values in parenthesis represent only urea and not the total organic nitrogen component.

	Total Nitrogen	Nitrate + Nitrite	Ammonia	Organic N (Urea only)
Upwelling	10.2	10.8	-0.5	NA
Effluent	9.9	1.3	8.4	(0.1)
Riverine Runoff	0.1	0.0001	0.01	0.09
Atmospheric Deposition	0.8	0.6	0.2	NA

NA = not analyzed for this source

Table C-4. San Pedro subregion nitrogen flux in MT N Km⁻² Year⁻¹. Values in parenthesis represent only urea and not the total organic nitrogen component.

	Total Nitrogen	Nitrate + Nitrite	Ammonia	Organic N (Urea only)
Upwelling	23.8	22.1	1.7	NA
Effluent	12.6	0.5	12	(0.1)
Riverine Runoff	1.2	0.6	0.1	0.5
Atmospheric Deposition	0.8	0.6	0.2	NA

NA = not analyzed for this source

Table C-5. North San Diego subregion nitrogen flux in MT N Km⁻² Year⁻¹. Values in parenthesis represent only urea and not the total organic nitrogen component.

	Total Nitrogen	Nitrate + Nitrite	Ammonia	Organic N (Urea only)
Upwelling	36.8	33.6	3.2	NA
Effluent	1.4	0.006	1.4	NA
Riverine Runoff	0.6	0.2	0.03	0.3
Atmospheric Deposition	0.4	0.2	0.2	NA

NA = not analyzed for this source

Table C-6. San Diego subregion nitrogen flux in MT N Km⁻² Year⁻¹. Values in parenthesis represent only urea and not the total organic nitrogen component.

	Total Nitrogen	Nitrate + Nitrite	Ammonia	Organic N (Urea only)
Upwelling	2.3	1.7	0.6	NA
Effluent	7.4	0.2	7.1	(0.06)
Riverine Runoff	6.0	1.4	0.3	4.3
Atmospheric Deposition	0.4	0.2	0.2	NA

NA = not analyzed for this source

Phosphorus fluxes - Phosphate(PO_4) and Other P- by Source Type

Table C-7. Santa Barbara subregion Phosphorus Flux – PO_4 and Other P - in $\text{MT P Km}^{-2} \text{Year}^{-1}$).

	Total Phosphorus	Phosphate	Other P
Upwelling	NA	-5.7	NA
Effluent	NA	NA	NA
Riverine Runoff	0.02	0.003	0.01
Atmospheric Deposition	NA	0.04	NA

NA = not analyzed for this source

Table C-8. Phosphorus Flux (in $\text{MT P Km}^{-2} \text{Year}^{-1}$) for each form in the Ventura subregion.

	Total Phosphorus	Phosphate	Other P
Upwelling	NA	-29	NA
Effluent	NA	NA	NA
Riverine Runoff	0.1	0.05	0.05
Atmospheric Deposition	NA	0.04	NA

NA = not analyzed for this source

Table C-9. Phosphorus Flux (in $\text{MT P Km}^{-2} \text{Year}^{-1}$) for each form in the Santa Monica Bay subregion.

	Total Phosphorus	Phosphate	Other P
Upwelling	NA	3.1	NA
Effluent	0.6	0.4	NA
Riverine Runoff	0.03	0.009	0.02
Atmospheric Deposition	NA	0.04	NA

Table C-10. Phosphorus Flux (in MT P Km⁻² Year⁻¹) for each form in the San Pedro subregion.

	Total Phosphorus	Phosphate	Other P
Upwelling	NA	6.3	NA
Effluent	0.3	0.1	0.2
Riverine Runoff	0.2	0.09	0.1
Atmospheric Deposition	NA	0.04	NA

Table C-11. Phosphorus Flux (in MT P Km⁻² Year⁻¹) for each form in the North San Diego subregion.

	Total Phosphorus	Phosphate	Other P
Upwelling	NA	9.7	NA
Effluent	NA		NA
Riverine Runoff	0.1	0.04	0.06
Atmospheric Deposition	NA	0.04	NA

Table C-12. Phosphorus Flux (in MT P Km⁻² Year⁻¹) for each form in the San Diego subregion.

	Total Phosphorus	Phosphate	Other P
Upwelling	NA	0.5	NA
Effluent	0.5	0.22	0.3
Riverine Runoff	1.5	0.4	1.1
Atmospheric Deposition	NA	0.04	NA

Nutrient Loads for Each POTW Agency

Table C-13. Nitrogen Load (MT N Year⁻¹) for each form of nitrogen in POTW effluent.

	Total Nitrogen	Nitrate	Nitrite	Ammonia	Urea
City of Los Angeles, Hyperion Treatment Plant	15,370	2,134	ND	13,250	154.9
Los Angeles County Sanitation District, Joint Pollution Control Plant	13,420	ND	61.2	13,100	69.4
Orange County Sanitation District, Treatment Plant no. 2	7,711	425.5	372.6	6,486	88.0
City of San Diego, Point Loma Wastewater Treatment Plant	6,895	83.7	5.6	6,161	64.9

ND = not detected

Table C-14. Phosphorus Flux for each form of nitrogen in POTW effluent.

	Total Phosphorus	Phosphate	Other Phosphorus
City of Los Angeles, Hyperion Treatment Plant	986.2	729.7	256.5
Los Angeles County Sanitation District, Joint Pollution Control Plant	224.5	105.1	119.4
Orange County Sanitation District, Treatment Plant no. 2	360.7	160.5	200.2
City of San Diego, Point Loma Wastewater Treatment Plant	578.1	290.5	287.6

Upwelling Fluxes Presented as Separate Lateral and Vertical Fluxes

Table C-15. Upwelling Fluxes for each region (in MT N Km⁻² Year⁻¹).

	Total Flux of N	Lateral Flux of N	Vertical Flux of N
Santa Barbara	-21.0	-37.6	16.6
Ventura	-107.1	-12.5	-94.6
Santa Monica Bay	10.2	-0.6	10.8
San Pedro	23.8	-8.6	32.4
North San Diego	36.7	6.7	30.0
San Diego	2.4	-3.6	6.0