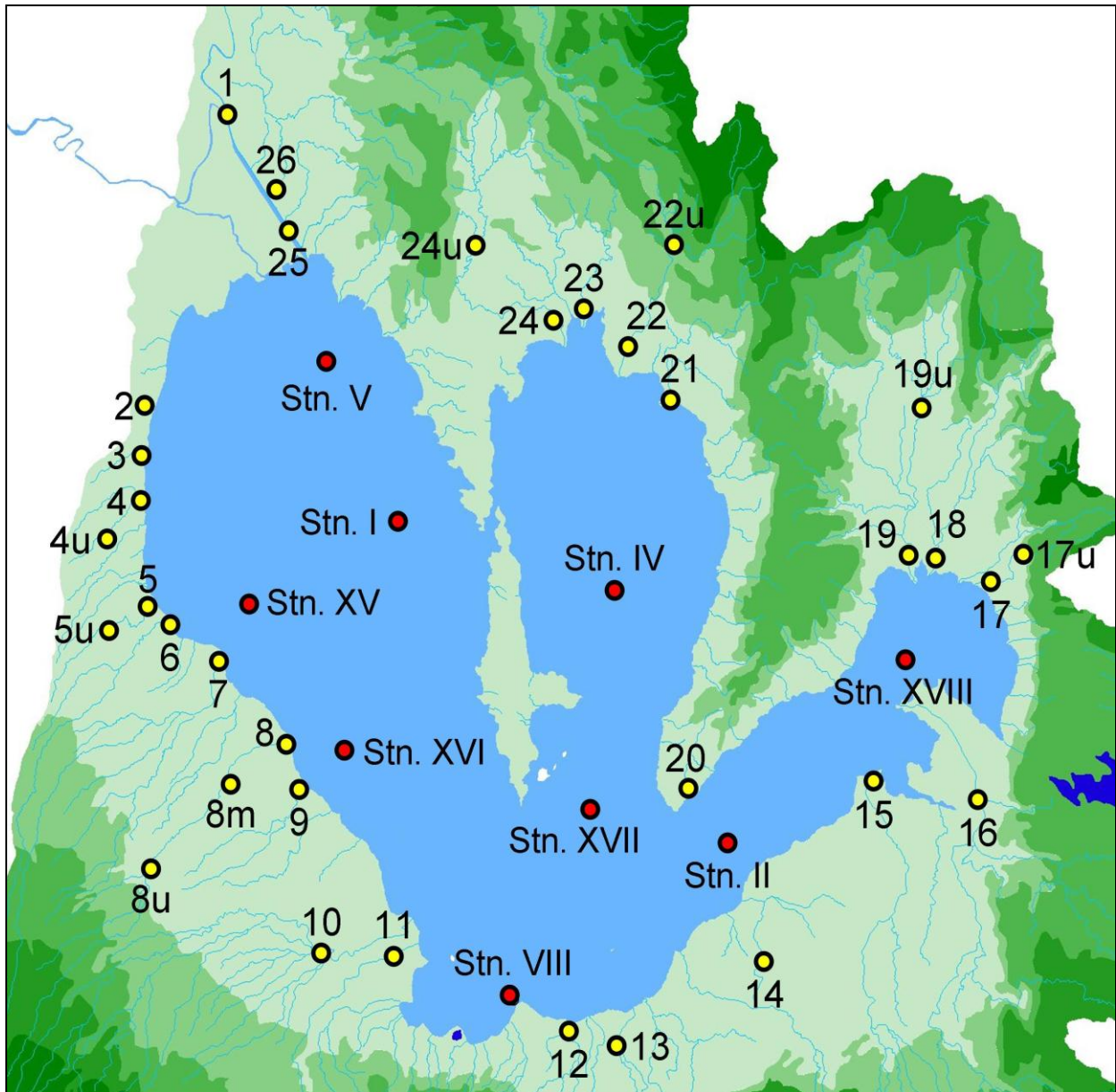




QUARTERLY WATER QUALITY MONITORING REPORT

Laguna Lake and Tributary Rivers
July to September 2013



Sampling Stations and Locations

II. Water Quality Data:

A. Laguna Lake

Location	Water Quality Parameters*								
	BOD (mg/l)			Dissolved Oxygen (mg/l)			Total coliforms (MPN/100ml)**		
	Jul.	Aug.	Sep.	Jul.	Aug.	Sep.	Jul.	Aug.	Sep.
Stn. I (Central West Bay)	3	2	2	8.4	7.0	8.0	13	26	84
Stn. II (East Bay)	2	1	1	7.5	8.0	6.2	33	245	349
Stn. IV (Central Bay)	3	2	1	7.3	7.2	7.8	6	22	49
Stn. V (Northern West Bay)	2	5	2	6.2	6.6	5.5	107	74	280
Stn. VIII (South Bay)	2	3	3	7.6	7.7	9.7	83	83	144
Stn.XV (San Pedro)	2	3	1	6.2	7.1	6.5	66	46	45
Stn.XVI (Sta. Rosa)	2	3	4	9.0	7.2	10.0	29	71	115
Stn.XVII (Sanctuary)	4	3	1	8.6	7.8	9.2	40	86	97
Stn.XVIII (Pagsanjan)	3	2	3	8.7	8.8	9.6	32	116	188

Notes: * DENR Class C Water Quality Criteria:
 Biochemical Oxygen Demand (BOD) - 10 mg/l
 Dissolved Oxygen (DO) - 5 mg/l
 Total Coliforms - 5000 MPN/100 ml

** Based on computed geomean

B. Tributary Rivers

Station	Location	Water Quality Parameters*								
		BOD (mg/l)			Dissolved Oxygen (mg/l)			Total coliforms (MPN/100ml)		
		Jul.	Aug.	Sep.	Jul.	Aug.	Sep.	Jul.	Aug.	Sep.
1	Marikina	18	8	18	0.8	1.2	1.7	2,800,000	-	-
2	Bagumbayan (Taguig)	82	14	11	0.05	0.05	1.5	28,000,000	-	-
3	Buli Creek (Taguig)	175	82	29	0.1	0.1	2.7	11,000,000	-	-
4	Mangagate (Muntinlupa)-Down	40	19	5	0.5	0.1	5.7	24,000,000	-	-
4U	Mangagate (Muntinlupa)-Up	7	10	10	4.5	3.8	3.6	330,000	-	-
5	Tunasan (Muntinlupa)- Down	8	8	12	0.1	0.1	0.8	35,000,000	-	-
5U	Tunasan (Muntinlupa)- Up	305	55	18	3.3	4.2	5.8	490,000	-	-
6	San Pedro River (T2)	18	7	4	0.6	2.0	3.3	5,400,000	-	-
7	Biñan	22	-	-	0.1	-	-	3,500,000	-	-
8	Sta. Rosa- Down	9	6	10	2.4	1.9	3.3	4,900,000	-	-
8M	Sta. Rosa- M	8	16	8	1.4	3.2	2.7	4,600,000	-	-
8U	Sta. Rosa- U	4	3	3	5.4	6.8	7.2	540,000	-	-
9	Cabuyao	16	8	4	0.1	1.7	2.8	4,900,000	-	-
10	San Cristobal River (T3)	21	20	13	0.1	3.1	2.7	24,000,000	-	-
11	San Juan River (T5)	4	16	2	5.5	2.0	4.3	540,000	-	-
12	Los Baños	2	2	1	5.0	3.6	7.0	220,000	-	-
13	Bay River (T9)	2	10	1	5.3	6.6	7.0	230,000	-	-
14	Pila	3	10	2	5.3	4.4	4.8	130,000	-	-
15	Sta. Cruz River (T6)	2	2	2	6.0	10.6	6.0	240,000	-	-
16	Pagsanjan River (T8)	1	1	2	6.6	6.3	6.0	350,000	-	-
17	Pangil- Down	3	2	2	7.3	6.1	6.2	170,000	-	-
17U	Pangil- Up	1	1	1	8.4	8.2	7.5	17,000	-	-
18	Siniloan	2	3	1	3.3	8.1	5.4	170,000	-	-
19	Sta. Maria- Down	3	1	2	5.5	7.7	6.6	130,000	-	-
19U	Sta. Maria- Up	2	1	1	8.5	8.1	8.9	13,000	-	-
20	Jala-jala	-	1	3	-	6.5	4.0	-	-	-
21	Piñilla	3	1	2	2.8	6.6	3.4	170,000	-	-
22	Tanay- Down	2	4	2	4.8	6.4	5.2	1,700,000	-	-
22U	Tanay- Up	1	2	1	8.2	7.8	8.0	1,700	-	-
23	Baras	7	4	3	1.2	4.8	6.3	920,000	-	-
24	Morong- Down	15	15	6	2.4	7.0	5.4	49,000	-	-

24U	Morong- Up	8	21	4	2.0	5.3	4.2	46,000	-	-
25	Manggahan Floodway (Taytay)	8	8	12	0.1	1.5	0.6	330,000	-	-
26	Sapang Baho (Cainta)	-	8	12	-	3.0	1.1	-	-	-

FINDINGS:

A. On Biochemical Oxygen Demand (BOD)

Laguna Lake

- For the 3rd quarter of 2013, all of the nine (9) lake stations passed the 10 mg/L BOD criterion set for Class C waters by the DENR.
- The recorded BOD concentrations for the 3rd quarter ranged only from 1 to 5 mg/L.

Tributary Rivers

- The results of the BOD analysis showed that out of the 34 tributary river stations monitored, only 18 stations consistently conformed to the Class C criterion for BOD and these were Stns. 4u, 8, 8U, 9, 11 to 23.
- During the 3rd quarter, all of the monthly BOD concentrations in Stns. 2, 3, 5U, 7, and 10 failed the 10 mg/L Class C criterion.
- The river stations with monthly BOD concentrations that sometimes either complying or exceeding the Class C criterion were Stns. 1, 5, 6, 8M, 9, 11, 24, 24U, 25 and 26.
- The BOD concentrations for the 3rd quarter of 2013 ranged from 1.0 to 305 mg/L wherein the highest was noted in Stn. 5U in July.

B. On Dissolved Oxygen (D.O.)

Laguna Lake

- For the 3rd quarter of 2013, out of the nine (9) lake stations only 6 stations consistently conformed to the DENR Class C criterion set at a minimum 5 mg/L and these were Stns. I, IV, VIII, XVI, XVII, and XVIII.
- The lowest D.O. concentration computed at 5.5 mg/L was noted in Stn. V in September while the highest concentration of 10.0 mg/L was noted in Stn. XVI in September

Tributary Rivers

- Out of the 34 tributary river stations monitored, only 9 stations consistently passed the Class C criterion for DO and these were Stns. 8U, 13, 15, 16, 17, 17U, 19, 19U and 22U.
- The tributary river stations whose recorded monthly concentrations for DO constantly failed the Class C criterion were Stns. 1, 2, 3, 4U, 5, 6 to 8M, 9, 10, 25 and 26.
- The DO concentrations for the 3rd quarter of 2013 ranged from 0.1 mg/L to 10.6 mg/L wherein the highest concentration was measured in Stn. 15 in August.

C. On Total Coliform (T. Coli)

Laguna Lake

- For the 3rd quarter of 2013, the total coliform as based on monthly geomeans, all of the nine (9) lake stations conformed to the DENR Class C criterion of 5000 MPN/100ml .
- The computed monthly geomeans for T.coli in the lake ranged from 6 to 349 MPN/100ml.

Tributary Rivers

- For 2013, monitoring of total coliforms in the tributary rivers is conducted on a quarterly basis.
- For July, all of the T. coli concentrations in tributary stations failed the DENR Class C criterion of 5000MPN/100ml. Only Stn. 22u complied with the criterion.
- The total coliform concentrations in the tributary river stations ranged from 1,700 to 35,000,000 MPN/100ml.

D. On pH

Laguna Lake

For the 3rd quarter of 2013, no lake station consistently conformed to the DENR Class C criterion set at 6.5 - 8.5.

- Three (3) stations constantly exceeded the maximum criterion and these were stations VIII, XVI and XVII.
- Stns. I and V met the criterion in August and September while Stn. XV in July and August.
- The pH concentrations in the lake ranged from 6.8 to 9.8.

Tributary Rivers

- For the 3rd quarter of 2013, all the tributary river stations consistently met the Class C criterion for pH except Stn. 19U in September and Stn. 22U in July.
- The pH concentrations in tributary rivers ranged from 6.7 to 8.8.

E. On Ammonia

Laguna Lake

- DAO 34 has no Class C criterion for ammonia. For the 3rd quarter of 2013, the lowest concentration of ammonia measured at 0.002 mg/L was noted in Stns. I, II, and XVIII in July while the highest concentration of 0.400 mg/L was measured in Stn. XV in July.

Tributary Rivers

- For the tributary stations, Stn. 2 recorded the highest ammonia concentration at 18.840 mg/L while Stn. 17U measured the lowest ammonia concentration of 0.008 mg/L. Based on the level of ammonia concentrations in tributary stations it showed that those stations with high ammonia concentrations were mostly located in the Western part of the lake.

F. On Nitrate

Laguna Lake

- For the 3rd quarter of 2013, the nitrate concentrations in all of the nine (9) lake stations conformed to the DENR Class C criterion of 10 mg/L.
- The nitrate levels in the lake ranged from 0.002 to 0.783 mg/L.

Tributary Rivers

- For the 3rd quarter of 2013, all the 34 tributary stations conformed to the Class C criterion.
- The highest nitrate concentration measured at 4.808 mg/L was noted in Stn. 11 in August while the lowest nitrate concentration measured at 0.001 mg/L was registered in Stn. 17U also in August.

G. On Inorganic Phosphate

Laguna Lake

- All of the nine (9) lake stations conformed to the DENR Class C criterion set at a maximum of 0.1 mg/L.
- The lowest inorganic concentration measured at 0.002 mg/L was noted in Stns. I, II and IV in July while the highest concentration of 0.084 mg/L was noted in Stn. V in August.

Tributary Rivers

- For tributary rivers the DENR Class C criterion is set at 0.4 mg/L. Out of 34 monitored stations, only 10 stations consistently conformed to the criterion and these were Stns. 14, 16 to 20, 22 and 22U.
- The river stations inorganic phosphate concentrations that sometimes either complying or exceeding the Class C criterion were Stns. 1, 4, 5U, 6, 8, 8M, 9, 10, 13, 15, 21 and 23.
- The tributary stations that constantly failed the criterion were Stns. 2, 3, 4U, 5, 7, 8U, 11, 12, 24 to 26.
- The levels of inorganic phosphate in tributary rivers ranged from 0.009 mg/L to 2.328 mg/L.