CHAPTER III WATER POLLUTION MECHANISM IN PRAHOVA RIVER

3.1 General

A simulation model based on Streeter-Phelps Equation was applied to the Prahova River to identify the pollution mechanism for the prediction of the pollution condition by changes of pollution loads in the basin, and to examine the effect of countermeasures in controlling the pollution as well as to predict the future water quality.

3.2 BOD Pollution Analysis by Simulation Model

The Streeter-Phelps Model that is widely applied for non-estuary rivers to estimate BOD is consisted of two (2) equations mentioned below.

$$L = \left(L_u - \frac{L_a}{2.31k_r} \right) \bullet 10^{-k_r t} + \frac{L_a}{2.31k_r}$$

$$D_L = \frac{k_1}{k_2 - k_r} \left(L_u - \frac{L_a}{2.31k_r} \right) \bullet \left(10^{-k_r t} - 10^{-k_2 t} \right) + \frac{k_1}{2.31k_2} \bullet \left(\frac{L_a}{k_r} + \frac{D_B}{k_1} \right) \bullet \left(1 - 10^{-k_2 t} \right) + D_u 10^{-k_2 t}$$

L : Biochemical demand of carbonaceous oxygen (mg/ℓ)
D : Dissolved oxygen deficit (mg/ℓ)
Subscript u : Upper reach point L : Lower reach point
kr : BOD purification rate ($=k1 + k3$) (ℓ/day)
$k1$: Removal rate of BOD with consumption of DO (ℓ/day)
$k2$: Re-aeration rate
$k3$: Removal rate of BOD without consumption of DO
La : BOD added from river bed (mg/ℓ/day)
DB : DO supply or consumption except re-aeration
t : traveling time (day)

3.3 Modeling of Prahova River Basin

3.3.1 Division of the Basin

In consideration of existing water quality observation points prepared by the Romanian Waters Authority, supplemental observation points set by the JICA Study Team and water intake facilities and junctions of rivers, 23 model points are established in the Prahova River and the basin is divided into 23 model blocks for pollution analysis as indicated in Fig. C.3.1 and tabulated below. Schematic diagram is shown in Fig. C.3.2.

No.	Code of point	Name of Point	River	Distance * (Km)	Area of Model Block(km^2)	Remarks
1	180-190	Predeal	Prahova	-	101.85	Uppermost Point of Prahova
2	195	Amonte Sinaia	-ditto-	11.2 (180)	104.36	
3	A	Posada	-ditto-	13.2 (195)	123.99	
4	200	Cornu	-ditto-	17.8 (A)	112.24	
5	Dam1	Paltinu Dam	Doftana	-	333.03	Uppermost point of Doftana
6	B	Ac. Voila	-ditto-	7.0 (Dam1)	32.80	
7	C	Cimpina	-ditto-	8.8 (B)	48.46	Confluence with Prahova
8	217	Nedelea	Prahova	18.6 (200)	76.01	
9	220	Tinosu	-ditto-	28.2 (217)	49.34	
10	E	Finari	-dtto-	16.2 (220)	150.09	Confluence with Teleajen
11	M	Baicoi	Dimbu	-	35.31	Uppermost point of Dimbu
12	250	Goga	-ditto-	28.3 (M)	152.00	Lowest point of Dimbu
13	Dam2	Maneciu Dam	Teleajen	-	243.30	Uppermost point of Teleajen
14	J	Piatra	-ditto-	14.0 (Dam2)	223.35	
15	240	Gura Vitiorei	-ditto-	5.8 (J)	25.29	
16	K	Sipotu	-ditto-	19.9 (K)	479.31	
17	L	Coslegi	-ditto-	17.6 (L)	206.73	Teleajen River upstream of confluence with Dimbu
18	260	Moara Domneasca	-ditto-	5.0 (L)	38.36	Lowest point of Teleajen
19	270	Gherghita	Prahova	8. 0 (E) 13.1 (260)	273.37	
20	275	Sangeru	Cricovul Sarat		112.85	Uppermost point of Cricovul Sarat
21	O	Popesti	-ditto-	18.7 (275)	370.65	
22	280	Ciorani	-ditto-	33.7 (O)	112.89	Lowest point of Cricovul Sarat
23	H	Adincata	Prahova	21.8 (270) 5.4 (H)	268.03	Lowest point of Prahova

Note : *Distance measured from the point in parentheses

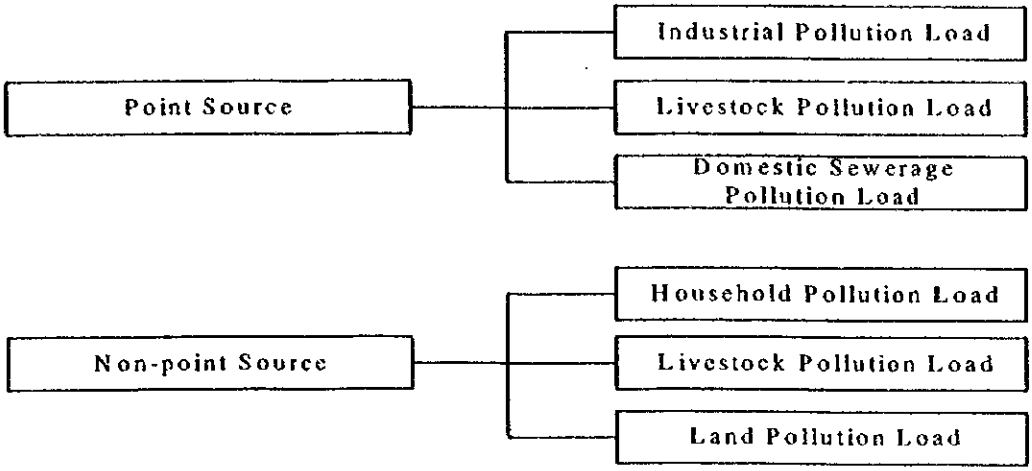
3.3.2 Classification of Pollution Load

Pollution load in the Prahova River Basin can be classified into point sources and non-point sources as explained below.

Point source consists of pollution load coming from 84 effluent channels of pollution sources related to industrial and livestock farm activities explained in Appendix E as wells as from 15 domestic sewerage such as Predeal, Azuga, Busteni, Sinaia, Breaza, Cimpina, Baicoi, Plopeni, Slanic, Valenii de Munte, Boldesti Scaieni, Urlati, Ploiesti, Floresti and Maneciu explained in Appendix D.

Non-point source is composed of pollution load coming from household, livestock farm and land. Household pollution load comes from households in the areas which are not covered by the domestic sewerage system mentioned above and wastewater is treated by simple septic tank and/or latrine..

Livestock farm pollution load included in the non-point source is coming from farms excluding large scale which are registered in the King II Database. Land pollution load is load washed during storms from forest, upland field and urban/built-up areas.



3.3.3 Pollution Load Generated/Effluent

(1) Point Source

Pollution Load from each channels of industrial, livestock farm and domestic sewerage is obtained as the product of annual flow rate and annual average BOD concentration observed by the Romanian Waters Prahova Office and stored in the King II Database.

(2) Non-point Source

(a) Household

Pollution load from household is calculated as follows.

$$Llpg = \sum Llpgm$$

$$Llpgm = Gl \cdot Pm \cdot Rlmp$$

Where,

Llpg : Household pollution load generated in a model block of model point P (model block p)

Llpgm : Household pollution load generated in municipality M partially or totally included in a model block P

Pm : Population of municipality M

Rlmp : Ratio of urban/built-up area of municipality M included in the model block P to total urban/built-up area of municipality M (Refer to Table A.2.6)

Gl : Unit load of household (g/person/day)

As unit load, in consideration of difference of living standard in municipalities in the Prahova River Basin, two types of unit load of household are applied.

(unit g/person/day)

Municipality	Gray Water	Black Water	Total
City	34.0	8.0	42.0
Town & commune	27.2	6.4	33.6

In pollution load in black water, it is assumed that 50 % of load is flowed out from septic tank/latrine.

(b) Livestock Farm

Pollution load from livestock farm is calculated as follows.

$$L2pg = \sum L2pgm$$

$$L2pgm = (G2c \cdot Cm + G2p \cdot Ppm) \cdot R2mp$$

Where,

- L2pg : Livestock farm pollution load generated in a model block P
- L2pgm : Livestock pollution load generated in municipality M partially or totally included in a model block P
- Cm : Number of cattle in municipality M
- Ppm : Number of pigs in Municipality M
- R2mp : Ratio of area of municipality M included partially or totally in the model block P to total area of M (Refer to Table A.2.5)
- G2c : Unit load of cattle, 640 g/head/day
- G2p : Unit load of pig, 200 g/head/day

(c) Land

Pollution load from land is calculated as follows.

$$L3pg = G3 \cdot af + G3u \cdot Au + G3b \cdot Ab$$

Where,

- L3pg : Land pollution load generated in a model block P
- Af : Total area of forest and fallow land in a model block P
- Au : Total area of agricultural land, pastureland and orchard in a model block P
- Ab : Area of urban/built-up zone
- G3f : Unit load for Af, 7.5 g/ha/day
- G3u : Unit load for Au, 85.75 g/ha/day
- G3b : Unit load for Ab, 670 g/ha/day

Regarding land use for each model block, refer to Table A.2.3.

3.3.4 Runoff of Pollution Load

Pollution load effluent of point sources and also generated pollution load of non-point sources are decreased by natural purification effects such as deoxigenation, deposition and filtration, while flowing in small channels/drains before entering a main river. In general, this phenomena is modeled by multiplying runoff coefficient to pollution load effluent and/or generated pollution load.

In the Prahova River Basin, there are many secondary rivers and thus in some cases pollution load flows long time in these rivers and reduced mostly before entering main river course shown in Fig. C.3.1 in which the Streeter-Phelps Model is applied. In consideration of reduction characteristics in the Prahova River, the coefficient of runoff to the main river course (Cr) is defined as the product of Cra which is removal of load in drains or on-site before entering secondary rivers and Crb in the secondary rivers. Crb is assumed to be proportional to distance in the secondary rivers and becomes 1.0, if distance is equal to 0. The value of runoff coefficient for each of pollution sources is explained hereunder.

(1) Point Source

Pollution load from point source flows directly into main rivers or secondary rivers. Therefore, Cra is equivalent to 1.0. The distance from the respective point sources to the main rivers, which is measured along the secondary river, is tabulated in Table C.3.1.

(2) Non-points Source

(a) Household

$$L1pr = \sum L1pgm \cdot C1ra \cdot C1rbpm$$

Where,

L1pr : Household pollution load runoff to the main river from a model block P

L1pgm : Household pollution load generated in municipality M partially or totally included in a model block P

C1ra : 0.6 for cities and towns, 0.2 for communes

C1rbpm : Function of distance from the urban/built-up area of municipality M located in a model block P to the main river

(b) Livestock

$$L2pr = \sum L2pgm \cdot C2ra \cdot C2rbpm$$

Where,

L2pr : Livestock pollution load runoff to the main river from model block P

L2pgm : Livestock pollution load generated in municipality M partially or totally included in a model block P

C2ra : 0.1 both for cattle and pigs

C2rbpm: Function of distance from the municipality M located in a model block P to the main river

(c) Land

$$L3pr = (G3f \cdot Af \cdot G3raf + G3u \cdot Au \cdot G3rau + G3b \cdot Ab \cdot Crab) \cdot C3rbp$$

Where,

L3pr : Land pollution load runoff to the main river from model block P

C3raf : 0.2 for forest and fallow land

C3rau : 0.2 for agricultural land, pasture land and

C3rab : 0.6 for urban/built-up zone

C3rbp : Function of distance of model block P to the main river

As for G3f, G3u, G3b, Af, Au, Ab, please refer to 3.3.3

3.4 Simulation Method

(1) Structure of BOD Pollution Simulation Model

Simulation structure of simulation model for the Prahova River is shown in Fig. C.3.3. The pollution load runoff which is calculated through the method mentioned above is assumed to flow into the middle points of the main river between the considered model point and the point upstream.

(2) Application of Streeter-Phelps Model

According to the observation conducted in the Prahova River, it can be concluded that DO is saturated in river water of all the course of the Prahova River and therefore, dissolved oxygen deficit need not be calculated. Also, it is concluded that there is little materials deposited on the river bed of the Prahova River and thus supply of BOD from river bed is disregarded.

(a) Kr

The comprehensive removal rate of BOD, which plays most important role in the water quality of the Prahova River, is calculated as follows.

$$Kr_T = Kr_{20} \cdot \theta^{(T-20)}$$

Where,

Kr_T : Comprehensive removal rate at temperature T° C

Kr_{20} : Comprehensive removal rate at 20 ° C

θ : BOD removal speed, 1.041 based on Gotaas, H.B.

T : Temperature (° C)

(b) Velocity

The velocity of each modeling point is estimated to compute the traveling time t in the Streeter-Phelps Model. During the supplemental water quality observation made by the JICA Study Team, discharge observation was also conducted with cross-sectioning. The velocity at model point was obtained from discharge based on the relation between velocity and discharge.

(3) Crb

Crb in runoff coefficient is calculated from distance L (Km) as mentioned below.

$$Crb = 0.99 \cdot 10^{-L}$$

(4) Calibration Condition

Calibration and/or parameters setting was made to attain average BOD concentration during September, October and November for (3) years from 1995 to 1997. Evaluation points for calibration are selected from those in the Prahova River set by the Romanian Waters. The discharge or flow rate at each model points is also average of data observed by the Romanian Waters Authority during same period for river BOD. The discharge at main points is tabulated below.

Pollution load from point sources are estimated as the product of actual annual wastewater flow rare and average BOD concentration for three (3) from 1995 to 1997. To obtain pollution load from non-point sources, latest population in municipalities, heads of cattle and pigs and area of land use data were used.

(Unit : m^3/s)

Point Code	Point Name	River	Discharge
A	Posada	Prahova	5.40
200	Cornu	-ditto-	7.05
217	Nedelea	-ditto-	9.00
220	Tinosu	-ditto-	9.49
H	Adincata	-ditto-	20.77
B	Ac. Voila	Doftana	3.42
J	Piatra	-Teleajen-	2.27
240	Gura Vitioarei	-ditto-	2.06
260	Moara Domneasca	-ditto-	9.08
250	Goga	Dimbu	1.85
280	Ciorani	Cricovul Sarat	1.06

3.5 Result

Judging form simulated BOD concentration in evaluation points which is computed by the model mentioned above, it is concluded that the established simulation model simulates well the BOD pollution mechanism of the Prahova River so as to examine the effect of countermeasures in controlling the pollution as well as to predict the future water quality.

3.5.1 Pollution Load

Table C.3.1 tabulates present pollution load runoff from each point source. Tables C.3.2, C.3.3 and C.3.4 indicate present pollution load runoff from household, livestock and land, respectively. Fig. C.3.4 shows pollution load generated (point source) and/or effluent (non-

point source) and pollution load runoff in each model block.

Present pollution load effluent from the point source and generated pollution load from the non-point sources totals 107.6 ton per day. The following table tabulates pollution load generated and/or effluent in four (4) major subbasins.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.790	6.760	0.405	0.044	8.999
	(3.73%)	(42.02%)	(1.32%)	(0.35%)	(8.36%)
Industry	5.362	2.056	1.817	0.001	9.236
	(11.16%)	(12.78%)	(5.90%)	(0.01%)	(8.58%)
Livestock Farm	0.873	0.000	0.232	0.000	1.106
	(1.82%)	(0.00%)	(0.75%)	(0.00%)	(1.03%)
Point Source	8.025	8.816	2.455	0.058	19.341
Sub-total	(16.71%)	(54.79%)	(7.96%)	(0.36%)	(18.06%)
Non-point Source 1.	5.242	2.071	5.211	2.210	14.735
(Septic/latrine)	(10.91%)	(12.87%)	(16.91%)	(17.45%)	(13.69%)
Non-point Source 2	26.750	3.395	18.324	7.958	56.426
(Livestock)	(55.68%)	(21.10%)	(59.46%)	(62.83%)	(52.43%)
Non-point Source 3	8.023	1.807	4.829	2.453	17.112
(Land)	(16.70%)	(11.23%)	(15.67%)	(19.36%)	(15.90%)
Total	48.041	16.088	30.819	12.679	107.614

As far as pollution load generated/effluent is concerned, non-point pollution load of livestock occupies 52.43 % of total pollution load generated/effluent, then followed by 18.06 % of point load composed of industrial, livestock farm and domestic sewerage

Following table indicates pollution load runoff to the main rivers. Total load runoff in the Prahova River Basin is estimated to be 33.3 ton/day. Regarding pollution load runoff, load related to the point source is as high as 58.0 %

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.790	6.760	0.404	0.044	8.998
	(12.85%)	(62.41%)	(5.99%)	(2.44%)	(27.02%)
Industry	5.361	2.056	1.809	0.001	9.236
	(38.49%)	(18.98%)	(26.82%)	(0.06%)	(27.70%)
Livestock Farm	0.851	0.000	0.226	0.000	1.077
	(6.11%)	(0.00%)	(3.35%)	(0.01%)	(3.23%)
Point Source	8.002	8.816	2.439	0.045	19.302
Sub-total	(57.46%)	(81.39%)	(36.17%)	(2.51%)	(57.95%)
Non-point Source 1.	1.565	1.002	1.409	0.502	4.477
(Septic/latrine)	(11.24%)	(9.25%)	(20.90%)	(27.77%)	(13.44%)
Non-point Source 2	2.496	0.338	1.752	0.761	5.347
(Livestock)	(17.92%)	(3.12%)	(25.98%)	(42.17%)	(16.05%)
Non-point Source 3	1.864	0.676	1.144	0.498	4.180
(Land)	(13.38%)	(6.24%)	(16.96%)	(27.55%)	(12.55%)
Total	13.927	10.831	6.743	1.806	33.306

Out of four (4) major river basin, pollution road runoff to the Prahova Main River occupies 41.8 % of total pollution load runoff and that of the Dimbu River is 32.5 % and in these two (2) basins, share of the point sources in each basin are 57.5 % and 81.4 %, respectively.

In the Prahova Main River, pollution load runoff is largest at the model point 220 as indicated in Fig. C.3.4. The pollution runoff at 220 model point is 5.4 ton/day (38.9 % of total load

runoff in the Prahova Main River Basin) and 5.1 ton/day is from point source including those from S.C. Petrobrazi S.A.(code 4051), Comporsa Stancesti (4082) and F.E. Ploiesti (4047).

In the all of the Prahova River Basin, the largest volume of load runoff flows into the model point of 250 in the Dimbu River. At the 250 point, 8.8 ton/day equivalent of 81.4 % of total pollution load runoff in the basin flows into the river, which mainly comes from R.A.G.C.Ploiesti (domestic sewerage of Ploiesti, code 4162) and S.C.Astra Romana S.A. (4158).

3.5.2 BOD Concentration in Prahova River

Fig. C.3.5 shows simulated BOD concentration which is considered to be in good agreement with the observed one. Fig. C.3.6 indicates load balance in the Prahova River.

(1) Prahova Main River

Water quality is below 7 mg/l (Category II of National Standard). upstream of 217 Point (Nedelea). However, at 220 Points, BOD concentration increases and falls in category D (12 mg/l) due to the inflow of large volume of pollution load runoff mentioned above.

(2) Dimbu River

Due to large volume of BOD inflow at 250 point as explained in 3.5.1, BOD concentration at this point is 38.3 mg/l exceeding far the National Standard Category III and is worst in the Prahova River.

(3) Teleajen River

BOD concentration at 260 Point located after junction with the Dimbu River, BOD is as high as 15.7 mg/l.

(4) Cricovul Sarat River

BOD concentration is high and exceeding the National Standard III, though pollution load runoff is not much in this river.

CHAPTER IV RIVER WATER POLLUTION IN THE FUTURE

4.1 General

Applying the BOD simulation model explained in Chapter III, the water quality of the baseline case without undertaking any countermeasures in the year of 2015 is estimated. Prior to the 2015 case, the present baseline BOD concentration is also computed as the base for comparison, using the same discharge for the 2015 case, since the discharge and the pollution load are different from those for the calibration case mentioned in 3.5 and 3.6.

Following the baseline cases, the case, in which the permissible limit of wastewater effluent to lower the river BOD concentration within the Romanian river water standard is set in accordance with the Government Decision NTPA-001, was studied using the standard river flow rate as stipulated NTPA-001.

Then, using larger standard flow rate, which is more practical to the Prahova River, the permissible limit of wastewater effluent to river in 2015 is studied.

After that, for the case with proposed permissible limit and standard discharge, the BOD concentration in the years of 2005 and 2010 was estimated based on the implementation schedule.

In addition to the above, the water quality without measures and the permissible limit for the cases in which the economic growth is higher or lower than the average case were studies so as to estimate influence of the economic growth to water pollution control cost.

4.2 Baseline River Water Quality

4.2.1 Calculation Condition

(1) Pollution Load

Pollution load is estimated for the present baseline and the future baseline cases.

As explained in Chapter III, the pollution sources of BOD can be classified into point source and non-point source. Basically, the same present pollution load for calibration of present condition is used for the present baseline excluding the point source of domestic sewerage and S.C. Romfosfochim SA. As for the domestic sewerage, effluent discharge and BOD concentration is adjusted in consideration of increase in industrial wastewater and domestic wastewater which flow into domestic sewerage system as explained in detail in Appendix D, while the pollution load from S.C. Romfosfochim SA. is 0, since it was closed in August 1997.

The future pollution load in the year of 2015 was obtained based on the projection of socioeconomic condition as tabulated below.

Index	1998-2000 (%)	2001 - 2015 (%)	Ratio of 2015 to present
Population	0.0	0.5	1.08
GDP	0.0	4.2	1.85
Industry production	0.0	3.5	1.68
Livestock	0.0	0.0	1.00
Number of tourist	0.0	5.0	2.08

Regarding land use, no change is considered from the past trend of the land use. Therefore, pollution load from point source and non-point sources excluding livestock farm and land is estimated as mentioned below.

(a) Point Source

(i) Industrial and Livestock Farm

Regarding industrial load, following increasing ratio is applied to each of effluent channel of pollutant sources in consideration of present treatment method of pollutant sources as explained in detail in Appendix E.

Classification	Discharge	BOD Concentration	BOD Load
Factory w/treatment	1.68	1.61	2.70
Hotel w/treatment	2.08	1.95	4.06
Factory without treatment	1.68	1.0	1.68

(ii) Domestic Sewerage

As for the domestic sewerage in 15 municipalities, BOD load in the year of 2015 is obtained in consideration of increase of discharge and BOD concentration from industrial pollutant sources discharging into sewerage system as wells as increase of population covered by the sewerage system. Following table tabulates increasing ratio of BOD load from domestic sewerage.

Area	Present Load (kg/d)	2015 Load (kg/d)	Ratio
Ploiesti City	6,466	12,857	1.99
Cimpina City	521	1,167	2.24
Prahova Valley	1,108	1,988	1.79
Others	714	1,400	1.96
Total	8,808	17,412	1.98

Note : Prahova Valley includes Predeal, Azuga, Sinaia and Breaza and others covers Baicoi, Slanic, Valenii de Munte, Boldesti Scaieni, Urlati, Plopeni, Floresti, Maneciu and Busteni.

(b) Non-point Source

As mentioned above, non-point source only from household will be increased by 1.08 times from present pollution loads due to increase of population.

(2) Discharge of Prahova River

River flow rate fluctuates throughout the year and accordingly, river water quality also always varies depending on river flow rate. Hence, it is necessary to determine a

standard river flow rate for the assessment of river water quality. If the standard river flow rate is determined too small, dilution effects of the river water is under-estimated. As a result, the water pollution control cost required to attain the target river water quality will be over-estimated, although the river water quality with a high probability can be assured.

The standard river flow rate, which shall be decided in due consideration to the attained ratio of target river water quality, river water use categories, and improved river water quality by wastewater treatment.

In the NTPA-001, which stipulates effluent limits in wastewater discharging into rivers, the standard flow rate is defined as a yearly minimum monthly mean discharge with 95 % probability (hereinafter referred to as NTPA-001 .95% discharge). Regarding BOD, the effluent limit stipulated in the NTPA-001 is 20 mg/L. However, in case that river water quality standards stipulated in STAS 4706/88 cannot be attained under the condition of effluent limit of 20 mg/L and 95 % probability discharge, the effluent limit will be lowered so as to attain the river water quality standards in accordance with the NTPA-001.

The yearly minimum monthly discharge may be too small to be the standard river flow rate which requires high cost to control water quality. Therefore, in addition to the NTPA – 001 95 % discharge, water quality corresponding to 50 % (182nd day), 75% (274th day) and 95 % (347th day) flow rates of average flow regime is estimated so as to propose a new standard .river flow rate.

Table C.4.1 tabulates existing river flow rates and those in the year of 2015 with 50 %, 75 % and 95 % as well as NTPA-001 95 % at respective model points. The flow rates in the year of 2015 is obtained from water balance calculation considering increase and/or decrease of withdrawal for and return flow from domestic, industrial and irrigation water at each model point. For the 95% average flow regime and NTPA-001 95 % flow rate, water is assumed to be released from the Paltinu and Maneciu dams to supply necessary domestic/industrial water and taken at the Voila and the Valenii de Munte intakes, respectively as explained in Appendix B.

4.2.2 Result

(1) Pollution Load

Fig. C.4.1 shows present pollution load generated (point source) and/or effluent (non-point source) and pollution load runoff in each model block, while Fig. C.4.2 indicates those in 2015.

Following table summarizes baseline present load generated and/or load effluent in major four (4) subbasins in the Prahova River.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.700	6.649	0.410	0.050	8.808
	(3.55%)	(41.62%)	(1.34%)	(0.39%)	(8.22%)
Industry	5.362	2.056	1.537	0.001	8.956
	(11.18%)	(12.87%)	(5.03%)	(0.01%)	(8.36%)
Livestock Farm	0.873	0.000	0.232	0.000	1.106
	(1.77%)	(0.00%)	(0.76%)	(0.00%)	(1.03%)
Point Source	7.935	8.705	2.179	0.051	18,870
	(16.55%)	(54.48%)	(7.13%)	(0.40%)	(17.61%)
Non-point Source 1.	5.242	2.071	5.211	2.210	14.735
(Septic/latrine)	(10.93%)	(12.96%)	(17.06%)	(17.44%)	(13.75%)
Non-point Source 2	26.750	3.395	18.324	7.958	56.426
(Livestock)	(55.79%)	(21.25%)	(59.99%)	(62.80%)	(52.66%)
Non-point Source 3	8.023	1.807	4.829	2.453	17.112
(Land)	(16.73%)	(11.31%)	(15.81%)	(19.35%)	(15. 97%)
Total	47.951	15.978	30.543	12.672	107.143

And following table tabulates baseline present load runoff to the main river in the same four (4) subbasins.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.700	6.649	0.408	0.050	8.808
	(12.29%)	(62.03%)	(6.29%)	(2.73%)	(26.81%)
Industry	5.361	2.056	1.537	0.001	8.955
	(38.74%)	(19.18%)	(23.73%)	(0.06%)	(27.26%)
Livestock Farm	0.851	0.000	0.226	0.000	1.077
	(6.15%)	(0.00%)	(3.49%)	(0.00%)	(3.28%)
Point Source	7.912	8.705	2.170	0.051	18.838
	(57.18%)	(81.20%)	(33.52%)	(2.80%)	(57.36%)
Non-point Source 1.	1.565	1.002	1.409	0.502	4.477
(Septic/latrine)	(11.31%)	(9.34%)	(21.76%)	(27.69%)	(13.63%)
Non-point Source 2	2.496	0.338	1.752	0.761	5.347
(Livestock)	(18.04%)	(3.15%)	(27.06%)	(42.04%)	(16.28%)
Non-point Source 3	1.864	0.676	1.144	0.498	4.180
(Land)	(13.47%)	(6.30%)	(17.66%)	(27.47%)	(12.73%)
Total	13.837	10.720	6.474	1.811	32.843

Following table tabulates baseline load generated and/or effluent in the year of 2015. In this year, total load is estimated to be 130.4 ton/day, increases form the present baseline, by 21.7 %.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	3.045	11.900	0.695	0.086	15.726
	(5.18%)	(47.88%)	(2.06%)	(0.67%)	(12.06%)
Industry	14.430	5.517	4.120	0.003	24.070
	(24.55%)	(22.20%)	(12.18%)	(0.02%)	(18.47%)
Livestock Farm	0.873	0.000	0.232	0.000	1.106
	(1.49%)	(0.00%)	(0.69%)	(0.00%)	(0.85%)
Point Source	18.348	17.417	5.048	0.089	40.902
	(31.21%)	(70.07%)	(14.92%)	(0.69%)	(31.38%)
Non-point Source 1.	5.662	2.237	5.628	2.387	15.914
(Septic/latrine)	(9.63%)	(9.00%)	(16.64%)	(18.52%)	(12.21%)
Non-point Source 2	26.750	3.395	18.324	7.958	56.426
(Livestock)	(45.51%)	(13.66%)	(54.17%)	(61.76%)	(43.29%)
Non-point Source 3	8.023	1.807	4.829	2.453	17.112
(Land)	(13.65%)	(7.27%)	(14.28%)	(19.03%)	(13.13%)
Total	58.783	24.855	33.829	12.887	130.354

Baseline load runoff in the year of 2015 is summarized in the following table. The load runoff in 2015 to the main river will be 55.2 ton/day, increases by 68.2 % from the present one due to the increase of the point sources. The share of the point source in the total load runoff, which is 57.2 % in baseline present, will be 75.2 % in the year of 2015.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	3.045	11.900	0.695	0.086	15.723
	(12.49%)	(60.99%)	(7.32%)	(4.56%)	(28.47%)
Industry	14.427	5.517	4.119	0.003	24.066
	(59.19%)	(28.28%)	(43.57%)	(0.15%)	(43.57%)
Livestock Farm	0.851	0.000	0.226	0.000	1.077
	(3.49%)	(0.00%)	(2.39%)	(0.00%)	(1.95%)
Point Source	18.323	17.417	5.037	0.089	40.866
	(75.18%)	(89.26%)	(53.28%)	(4.71%)	(73.99%)
Non-point Source 1.	1.690	1.082	1.522	0.542	4.835
(Septic/latrine)	(6.93%)	(5.54%)	(16.10%)	(28.66%)	(8.76%)
Non-point Source 2	2.496	0.338	1.752	0.761	5.347
(Livestock)	(10.24%)	(1.73%)	(18.53%)	(40.29%)	(9.68%)
Non-point Source 3	1.864	0.676	1.144	0.498	4.180
(Land)	(7.65%)	(3.46%)	(12.10%)	(26.33%)	(7.57%)
Total	24.373	19.512	9.454	1.890	55.229

(2) BOD Concentration in Prahova River

(a) NTPA-001 95 % Discharge

Fig. C.4.3 indicates present baseline BOD concentrations under the present NTPA-001 discharge together with observed BOD concentration. Fig. C.4.4 shows simulated baseline BOD concentration in the year of 2015 together with present baseline BOD concentration.

Following table tabulates comparison of BOD concentration present and in the year of 2015 under the NTPA-001 95 % discharge at the reference points of the Prahova River. In this flow condition, only 200 point, upstream of Cimpina of the Prahova River falls in category III and other five (5) points exceed category III even at present condition.

Model Point	Name of Point	River Name	Present	Future
200	-	Prahova	11.5 (III)	16.3 (D)
217	Nedelea	-ditto-	19.9 (D)	35.2 (D)
220	Prahova	-ditto-	27.7 (D)	49.4 (D)
H	Adincata	-ditto-	30.6 (D)	42.4 (D)
260	Moara	Teleajen	46.2 (D)	56.3 (D)
280	Ciorani	Cricovul Sarat	61.3 (D)	33.1 (D)

Note: Alphabet in parentheses indicates BOD category.

(b) 50 %, 75 % and 95 % Flow Rates of Average Flow Regime

Fig. C.4.5 indicates present baseline BOD concentrations corresponding to 50 %, 75 % and 95 % flow rates of average flow regime together with observed BOD concentration. Fig. C.4.6 shows simulated baseline BOD concentration in the year of 2015 together with present baseline BOD concentration.

Following table tabulates comparison of BOD concentration present and in the year of 2015 at the reference points of the Prahova River. Water quality will be extremely worsened in the middle and lower reaches of the Prahova Main River and Teleajen River due to decrease of discharge in addition to the increase of load runoff of point source even under comparatively larger discharge than NTPA-001 95 % discharge.

(Unit : mg/l)

Model Point	Name of Point	River Name	Present			Year 2015		
			50%	75 %	95 %	50 %	75 %	95 %
200	-	Prahova	4.3 (I)	5.6 (II)	7.3 (III)	6.2 (II)	8.1 (III)	10.5 (III)
217	Nedelea	-ditto-	7.4 (III)	10.5 (III)	15.8 (D)	12.4 (D)	18.8 (D)	27.2 (D)
220	Prahova	-ditto-	15.2 (D)	19.7 (D)	24.3 (D)	29.6 (D)	38.5 (D)	43.9 (D)
H	Adincata	-ditto-	14.2 (D)	17.7 (D)	20.9 (D)	23.5 (D)	28.9 (D)	32.1 (D)
260	Moara	Teleajen	18.2 (D)	24.3 (D)	26.7 (D)	30.1 (D)	39.7 (D)	40.2 (D)
280	Ciorani	Cricovul Sarat	11.0 (III)	14.9 (D)	18.0 (D)	10.6 (III)	13.5 (D)	18.0 (D)

Note: Alphabet in parentheses indicates BOD category.

4.3 River Water Quality under Implementation of Permissible Limit in 2015

4.3.1 Calculation Condition

According to the Government Decision NTPA - 001, permissible limit of the wastewater effluents to the river is 20 mg/l in BOD. In case that river water quality stipulated in STAS 4706/88 cannot be attained under the condition of effluent limit of 20 mg/L, the effluent limit is lowered to 10 mg/L and 5 mg/L so as to attain the river water quality standards in the representative points of the Prahova River.

4.3.2 Target River Water Quality

Domestic and industrial water is mostly extracted from Doftana River and upper Teleajen River (upstream of Valenii de Munte) and Azuga River. Such river water will have no pollution problems even in future. Other river water uses are for industrial, irrigation and miscellaneous purposes in the middle and downstream reaches of Prahova Main, Teleajen and Cricovul Sarat rivers. Further, the water pollution of the Prahova River affects the irrigation water use in the Ialomita River which is located just downstream of the confluence of Prahova River.

In consideration to the existing water use situation of Prahova River, the target river water quality is determined for the following six (6) principal stations based on the national standards of surface water quality stipulated in STAS 4706/88.

(1) Prahova Main River : Cimpina (200), Nedelea (217), Prahova (220)

(2) Teleajen River : Moara (260)

(3) Cricovul Sarat River : Ciorani (280)

(4) Prahova River : Adincata (H)

The water quality at Cimpina Station represents the quality in the Prahova valley. Water quality shall be below 5 mg/l in BOD for water contact recreation use in the Prahova valley (category I).

Industrial water of Petrobrazi and F.E. Ploiesti is taken from the Nedelea Weir in addition to irrigation water. Hence, the river water quality at Nedelea shall meet the requirement of industrial water use of which BOD limit is 7 mg/l (category II). Further, the river water quality at Prahova Station represents that of the middle and downstream reaches in Prahova Main where irrigation and other miscellaneous water uses exist, then, the water quality shall be below 12 mg/l (category III).

In the middle and downstream reaches of Teleajen River, only irrigation and other miscellaneous water is extracted. Accordingly, the water quality at Moara shall be below 12 mg/l in BOD (category III).

The river water quality at Ciorani represents that of the middle and downstream reaches of the Cricovul Sarat where some irrigation and miscellaneous water is taken. The river water quality shall be below 12 in BOD (category III).

The river water quality at Adincata shall be below 12 mg/l in BOD to meet the requirement of irrigation and other miscellaneous water uses in the Ialomia River (category III).

The target river water quality of the above six (6) stations are summarized in the following table.

St. No.	St. Name	Station Location	Water Use	Category	BOD (mg/l)
200	Cimpina	Exit of Prahova Valley	Water Contact Recreation	I	< 5
217	Nedelea	Upstream of Nedelea Weir	Industry/Irrigation	II	< 7
220	Prahova	Downstream of Nedelea Weir	Irrigation/Miscellaneous	III	< 12
260	Moara	Teleajen Downstream	Irrigation/Miscellaneous	III	< 12
280	Ciorani	Cricovul Sarat Downstream	Irrigation/Miscellaneous	III	< 12
H	Adincata	Upstream of Ialomita Junction	Irrigation/Miscellaneous	III	< 12

4.3.3 Result

(1) Pollution Load

Fig. C.4.7 shows pollution load generated (point source) and/or effluent (non-point source) and pollution load runoff which is computed in condition that effluent BOD concentration limit from pollution sources, namely sewerage, industry and livestock farm is 20 mg/L, 10 mg/L and 5 mg/L.

Following table summarizes generated load and/or load effluent in major four (4) subbasins in the Prahova River for effluent limit of 20 mg/L.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.028	3.316	0.343	0.052	4.739
	(2.29%)	(28.71%)	(1.14%)	(0.40%)	(4.77%)
Industry	3.330	0.771	0.988	0.000	5,090
	(7.43%)	(6.69%)	(3.28%)	(0.00%)	(5.13%)
Livestock Farm	0.016	0.000	0.008	0.000	0.024
	(0.03%)	(0.00%)	(0.03%)	(0.00%)	(0.02%)
Point Source	4.373	4.087	1.340	0.053	9.853
Sub-total	(9.76%)	(35.46%)	(4.45%)	(0.41%)	(9.62%)
Non-point Source 1.	5.662	2.237	5.628	2.387	15.914
(Septic/latrine)	(12.64%)	(19.41%)	(18.69%)	(18.57%)	(16.02%)
Non-point Source 2	26.750	3.395	18.324	7.958	56.426
(Livestock)	(59.70%)	(29.45%)	(60.83%)	(61.93%)	(56.82%)
Non-point Source 3	8.023	1.807	4.829	2.453	17.112
(Land)	(17.91%)	(15.68%)	(16.03%)	(19.09%)	(17.23%)
Total	44.808	24.855	30.121	12.850	99.304

Generated load and/or load effluent from point source in the Prahova River Basin is reduced to 9.9 ton/day (75.9 % reduce) from 40.9 ton/day of baseline case and due to reduction of point load form point source, total load will be 99.3 ton/day from 130.4 ton/day of the baseline case.

Load runoff in the year of 2015 for the case of permissible limit of 20 mg/L is summarized in the following table. The load runoff in 2015 in the Prahova River Basin will be 24.2 ton/day, decreases by 56.2 % from the baseline. The share of the point source in the total load runoff, which is 74.0 % in baseline case, will be 40.7 %.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.028	3.316	0.341	0.052	4.736
	(9.86%)	(53.64%)	(5.92%)	(2.81%)	(19.58%)
Industry	3.327	0.771	0.988	0.000	5,086
	(31.93%)	(12.47%)	(17.17%)	(0.02%)	(21.01%)
Livestock Farm	0.015	0.000	0.008	0.000	0.023
	(0.14%)	(0.00%)	(0.14%)	(0.01%)	(0.10%)
Point Source	4.370	4.087	1.336	0.053	9.845
Subtotal	(41.94%)	(66.11%)	(23.23%)	(2.84%)	(40.67%)
Non-point Source 1.	1.690	1.082	1.522	0.542	4.835
(Septic/latrine)	(16.22%)	(17.50%)	(26.45%)	(29.23%)	(19.97%)
Non-point Source 2	2.496	0.338	1.752	0.761	5.347
(Livestock)	(23.96%)	(5.46%)	(30.45%)	(41.09%)	(22.09%)
Non-point Source 3	1.864	0.676	1.144	0.498	4.180
(Land)	(17.88%)	(10.93%)	(19.88%)	(26.85%)	(17.27%)
Total	10.420	6.182	5.753	1.853	24.208

Regarding the load generated and/or effluent for the permissible limit of 10 mg/l and 5 mg/l, refer to Tables C.4.2 and C.4.3, respectively.

(2) BOD Concentration in Prahova River

(a) NTPA-001 95 % Discharge

Fig. C.4.8 and following table indicate BOD concentrations in 2015 under NTPA – 001 95% discharge, when the permissible limit is changed to 20 mg/l, 10 mg/l and 5 mg/l.

. (Unit : mg/l)

Model Point	Point Name	River Name	20 mg/l	10 mg/l	5 mg/l
200	-	Prahova	9.3 (III)	7.6 (III)	6.6 (II)
217	Nedelea	-ditto-	20.3 (D)	16.1 (D)	13.9 (D)
220	Prahova	-ditto-	14.2 (D)	9.6 (III)	7.3 (III)
H	Adincata	-ditto-	17.5 (D)	13.9 (D)	12.0 (III)
260	Moara	Teleajen	22.8 (D)	17.5 (D)	14.8 (D)
280	Ciorani	Cricovul Sarat	32.1 (D)	31.4 (D)	31.0 (D)

Note: Alphabet in parentheses indicates BOD category.

For the NTPA-001 discharge, when the permissible limit is set to be 5 mg/l, BOD concentration of Adincata falls in category III. However, the water in the upstream and middle reaches will exceed the BOD standards set from the water use.

(2) 50 %, 75 % and 95 % Flow Rate of Average Flow Regime

Fig. C.4.9 and following table indicate BOD concentration in 2015 under implementation of permissible limit of 20 mg/l corresponding to 50 %, 75 % and 95 % flow rates of average flow regime.

Water quality will be extremely improved for the 50 % flow rate when concentration of wastewater is lowered to the permissible limit 20 mg/l. For this flow condition, BOD in the Prahova Valley attains category I and those of downstream of the Prahova River and the Cricovul Sarat are in the category III, while that for the Teleajen River exceeds a little the limit of category III.

For the case of 75 % flow rate, water quality of downstream reaches of all the rivers exceeds the limit of category III, while those for the Prahova Valley and Nedelea fall in the category II and III, respectively.

When the flow is reduced to 95 % flow rate, water quality will be worse exceeding limit of category III including the Nedelea.

(Unit : mg/l)

Model Point	Point Name	River Name	50 %	75 %	95 %
200	-	Prahova	3.6 (I)	4.6 (II)	6.0 (III)
217	Nedelea	-ditto-	7.4 (III)	11.3 (III)	16.5 (D)
220	Prahova	-ditto-	9.9 (III)	12.5 (D)	14.2 (D)
H	Adincata	-ditto-	10.1 (III)	12.3 (D)	13.6 (D)
260	Moara	Teleajen	12.4 (D)	16.1 (D)	16.3 (D)
280	Ciorani	Cricovul Sarat	10.3 (III)	13.1 (D)	17.4 (D)

Note: Alphabet in parentheses indicates BOD category.

The following table tabulates the cases in which the permissible limit is assumed to be 10 mg/L and the probable discharge is 75 % and 95 %. For the assumed permissible limit of 10 mg/L, water quality is improved and attains category III at Adincata point even in the 95 % discharge. However, in the points, where discharge is low, water quality is difficult to attain target water quality such as in Nedelea.

(Unit : mg/l)

Model Point	Point Name	River Name	75 %	95 %
200	-	Prahova	3.8 (I)	4.9 (I)
217	Nedelea	-ditto-	8.9 (III)	13.0 (D)
220	Prahova	-ditto-	8.7 (III)	9.9 (III)
H	Adiocata	-ditto-	9.7 (III)	10.8 (III)
260	Moara	Teleajen	12.3 (D)	12.5 (D)
280	Ciorani	Cricovul Sarat	12.9 (D)	17.1 (D)

Note: Alphabet in parentheses indicates BOD category.

4.4 River Water Quality in 2005 and 2010

Based on the water quality analysis mentioned above, the master plan to improve the Prahova water environment is proposed based on the case in which the standard flow rate is 50 % of the average flow regime and the permissible limit of wastewater effluent of 20 mg/l.

The master plan intends to develop the sewerage system and industrial wastewater treatments so as to lower the wastewater quality by the permissible limit to river (NTPA-001) and sewerage system (NTPA-002) and thus satisfy the surface water standards in the Prahova River by the year of 2015.

To attain this objective, the implementation program in three (3) phases, namely first phase (2001-2005), second phase (2006-2010) and third phase (2011-2015) was established. Here, explained are the load generated/effluent and runoff load at 2005, the end of first phase and 2010, the end of second phase and river water quality at representative model points.

4.4.1 Implementation Program

The implementation program for the sewerage system and industrial wastewater treatment plants at the end of each phase is as follows.

(a) Sewerage System

The sewerage system to be developed in the master plan includes those in 16 municipalities, namely Predeal, Azuga, Busteni, Sinaia, Comarnic, Breaza, Cimpina, Baicoi, Plopeni, Slanic, Valenii de Munte, Boldesti Scaieni, Urlati, Ploiesti, Floresti and Maneciu.

In 2005, at the end of the first phase, the rehabilitation of treatment plants in 12 municipalities excluding Predeal, Azuga, Busteni and Comarnic are completed and the construction of treatment plant is undertaken only in Ploiesti City.

In 2010, at the end of the second phase, the extension of sewer is in progress in 14 municipalities excluding Floresti and Maneciu. Regarding treatment plants, construction of those in Azuga, Busteni and Comarnic are completed and those in Cimpina and Ploiesti are under construction.

(b) Industrial Wastewater Treatment Plants

By the end of 2005, rehabilitation of treatment plants in eight (8) factories of petroleum refinery is completed so as that the wastewater from these factories is lowered to 20 mg/l.

By the end of 2010, rehabilitation and/or construction of new treatment plant are

completed so as that all the industrial wastewater is lowered to or below 100 mg/l.

4.4.2 Result

(1) Pollution Load

Tables C.4.4 and C.4.5 tabulates pollution load in 2005 baseline and with project, while Tables C.4.6 and C.4.7 indicates pollution load in 2010 baseline and with project.

The following table tabulates load generated and/or effluent in 2005 with project and percentage of load cut to baseline load.

(unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	2.177	5.164	0.365	0.068	7.774
	(8.29)	(39.81)	(32.48)	(6.41)	(32.79)
Industry	2.742	0.604	0.826	0.002	4.173
	(67.29)	(81.20)	(65.56)	(3.36)	(70.18)
Livestock Farm	0.873	0.000	0.232	0.000	1.106
	0.00	-	0.00	0.00	0.00
Point Source	5.792	5.768	1.424	0.070	13.053
Sub-total	(50.20)	(51.08)	(55.12)	(6.33)	(51.05)
Non-point Source	40.146	7.325	28.494	12.676	88.641
Total	45.938	13.092	29.918	12.746	101.694
	(11.28)	(31.51)	(5.52)	(0.04)	(11.81)

Note : Figures in parentheses indicate load cut percentage

The following table indicates load runoff in 2005 with project and percentage of load cut to baseline load. Rehabilitation and/or construction of treatment system for sewerage and industry can reduce 33.4 % of runoff load.

(unit: t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	2.177	5.164	0.363	0.068	7.771
	(8.29)	(39.81)	(32.64)	(6.41)	(32.79)
Industry	2.740	0.604	0.825	0.002	4.171
	(67.31)	(81.20)	(65.58)	(3.36)	(70.19)
Livestock Farm	0.851	0.000	0.226	0.000	1.077
	0.00	0.00	0.00	0.00	0.00
Point Source	5.768	5.768	1.414	0.070	13.020
Sub-total	(50.30)	(51.08)	(55.29)	(6.33)	(51.11)
Non-point Source	5.964	2.040	4.339	1.773	14.116
Total	11.732	7.808	5.753	1.843	27.136
	(33.23)	(43.54)	(23.31)	(0.26)	(33.41)

The same table of load generated and/or effluent in 2010 is shown below.

(Unit : t/day)

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.541	4.411	0.470	0.090	6.512
	(50.34)	(58.75)	(31.27)	(6.80)	(55.32)
Industry	3.195	0.720	0.985	0.002	4.903
	(71.99)	(83.49)	(69.77)	(28.32)	(74.24)
Livestock Farm	0.078	0.000	0.036	0.000	0.113
	(91.12)	-	(84.62)	0.00	(89.74)
Point Source	4.814	5.131	1.491	0.092	11.528
Sub-total	(68.71)	(56.43)	(53.03)	23.77	(56.77)
Non-point Source	40.283	7.378	28.630	12.734	89.024
Total	45.096	12.509	30.121	12.826	100.552
	(18.99)	(44.24)	(8.18)	(0.06)	(18.74)

The load runoff in 2010 with project and percentage of load cut to baseline load are shown in the following table. The projects including rehabilitation and/or construction of treatment system for sewerage and industry can reduce 47.4 % of runoff load in the Prahova River Basin.

Type	Prahova Main	Dimbu	Teleajen	Cricovul Sarat	Total
Sewerage	1.541	4.411	0.467	0.090	6.509
	(50.34)	(58.75)	(31.40)	(6.80)	(55.33)
Industry	3.193	0.720	0.984	0.002	4.899
	(72.00)	(83.49)	(69.79)	(28.32)	(74.25)
Livestock Farm	0.075	0.000	0.035	0.000	0.110
	(91.23)	-	(84.58)	0.00	(89.82)
Point Source	4.809	5.131	1.486	0.092	11.518
Sub-total	(68.69)	(65.92)	(64.32)	(7.28)	(66.79)
Non-point Source	5.973	2.040	4.340	1.786	14.139
Total	10.781	7.171	5.826	1.878	25.656
	(49.46)	(58.05)	(31.50)	(0.38)	(47.44)

(2) BOD Concentration

The estimated BOD concentration in the years of 2005 and 2010 with project is tabulated below. Due to progress of the rehabilitation and/or construction of treatment system, the water quality will be greatly improved and even in the year of 2005, the BOD concentration will be improved to category III in the most of the river points as tabulated below.

(Unit : mg/l)

Model Point	Point Name	River Name	Present	2005	2010	2015
200	-	Prahova	4.3 (I)	4.8 (I)	4.2 (I)	3.6 (I)
217	Nedelea	-ditto-	7.4 (III)	8.3 (III)	7.9 (III)	7.4 (III)
220	Prahova	-ditto-	15.2 (D)	11.3 (III)	10.2 (III)	9.9 (III)
H	Adincata	-ditto-	14.2 (D)	11.2 (III)	10.7 (III)	10.1 (III)
260	Moara	Teleajen	18.2 (D)	13.8 (D)	13.4 (D)	12.4 (D)
280	Ciorani	Cricovul Sarat	11.0 (III)	10.6 (III)	10.7 (III)	10.3 (III)

Note: Alphabet in parentheses indicates BOD category.

4.5 Impact of Economic Growth to River Water Quality

4.5.1 Calculation Condition

The National Commission for Economic Forecasting has predicted that the annual growth rate of the country will reach 2.7 % at the minimum and 4.3 % at the maximum, averaging 3.5 % in 2000. Hence, the pollution load and water quality mentioned above was obtained applying 3.5 % average growth rate for general industry together with annual growth rate of 0.5 % for population, 5.0 % for tourism industry and 0.0 % for livestock industry which are assumed based on the projection of the government and discussion with governmental officials.

The analysis hereunder is made to assess the variation of the projected river water quality and as a result, change of the required water pollution control cost, when the growth rate of the general industry, which has the greatest influence to river water quality among the population, tourism industry and livestock industry, changes to low growth (2.7 %) or to high growth (4.3 %).

4.5.2 Result

(1) Pollution Load

Table C.4.8 tabulates pollution load in 2015 baseline under low growth rate, while Table C.4.9 shows that in 2015 under low growth rate and permissible limit of effluent channels to rivers is assumed to be 20 mg/L.

Table C.4.10 tabulates pollution load in 2015 baseline under high growth rate, while Table C.4.11 and C.4.12 indicates the sama pollution load but the permissible limit is assumed to be 20 mg/L and 10 mg/L, respectively.

Following table compares baseline pollution loads runoff of average, low growth rate and high growth rate in 2015. Compared with the average case, the load runoff for low growth rate decreases 10%, while that for high growth rate increases also around 10 %.

Source	Average	Low Growth		High Growth	
	Load (1) (kg/day)	Load (2) (kg/day)	(2)/(1)	Load (3) (kg/day)	(3)/(1)
Sewerage	15,723	14,928	0.949	16,659	1.060
Industry	24,066	19,363	0.805	30,146	1.253
Livestock Farm	1,077	1,077	1.000	1,077	1.000
Point Source Sub-total	40,866	35,369	0.865	47,882	1.172
Non-point Sub-total	14,362	14,362	1.000	14,362	1.000
Total	55,229	49,732	0.900	62,245	1.127

(2) BOD Concentration

Following table tabulates BOD concentration for low growth rate baseline and case of permissible limit of 20 mg/L

(Unit : mg/l)

Model Point	Point Name	River Name	Baseline	Limit 20 mg/l
200	-	Prahova	5.9 (II)	3.4 (I)
217	Nedelea	-ditto-	11.1 (III)	7.0 (II)
220	Prahova	-ditto-	25.5 (D)	9.3 (III)
H	Adincata	-ditto-	21.1 (D)	9.9 (III)
260	Moara	Teleajen	27.3 (D)	12.2 (D)
280	Ciorani	Cricovul Sarat	10.5 (III)	10.3 (III)

Note: Alphabet in parentheses indicates BOD category.

Following table indicates BOD concentration for high growth rate baseline and cases of permissible limit of 20 mg/L and 10 mg/L

(Unit : mg/l)

Model Point	Point Name	River Name	Baseline	Limit 20 mg/l	Limit 10 mg/l
200	-	Prahova	6.6 (II)	3.7 (I)	3.0 (I)
217	Nedelea	-ditto-	14.1 (D)	8.0 (III)	6.3 (II)
220	Prahova	-ditto-	34.9 (D)	10.4 (III)	7.2 (III)
H	Adincata	-ditto-	26.8 (D)	10.5 (III)	8.3 (III)
260	Moara	Teleajen	33.9 (D)	12.8 (D)	9.8 (III)
280	Ciorani	Cricovul Sarat	10.6 (III)	10.3 (D)	10.1 (III)

Note: Alphabet in parentheses indicates BOD category.

To attain the target water quality, all the wastewater of the sewerage systems and industrial establishments should be treated as low as 20 mg/L in the case of low growth rates, while the wastewater should be treated to 20 mg/L also in the case of high growth rate, since 10 mg/L limit may bring about too clean river water compared with target water quality.

CHAPTER V AQUATIC LIFE

5.1 General

The Ialomita River, together with its tributaries, represents one of the most important hydrological areas (10,430 km) in Romania. It springs in the Bucegi Mountains, in the region of Mecetul Turcesc, at a height of 2,395 m, then it flows into the Danube opposite Piua Pietrii (8 m height).

The Ialomita River Basin can be classified into three (3) areas it crosses: mountain, hill and plain. The first two (2) areas cover one third of its length, and the last, two thirds. The mountain area is between the Bucura Top (Peak) in the Bucegi Massif and Moroieni. The hill area extends between Moroieni and upstream Targoviste, and covers a sector of about 55 km.The plain area, extending between Targoviste and the river mouth, covers the longest sector of the river, over 300 km.

The Ialomita River has a length of 412 km and gathers 118 flowing tributaries. The most important tributaries are Cricovul Dulce - 71 km and the Prahova - 169 km. The Prahova River springs in the Carpathian Mountains near Predeal Town and it flows into Ialomita River opposite Patru Frati.

Since middle of 1960's, industrialization started in most of towns along the Ialomita and the Prahova rivers except Ploiesti City which had been developed as the center of petroleum industry in the middle of 19th century. Due to this development, various fish species that lived in these two (2) rivers had not been seen any more, whilst some new species started to live.

In this chapter, the results of study on aquatic life in the Ialomita and the Prahova rivers are described as an important aspects of water pollution. In Romania, researches on the benthonic and the ichthyological fauna started in 1962 and several authors had described those in the Ialomita and the Prahova rivers.

Based on these reports, the benthonic and the ichthyological fauna in 1960's, when the pollution was not serious, is first described. Then, existing fauna are explained based on the sampling survey and the interview survey conducted in August 1998 and the change of species from the 1960's is described as the conclusion.

5.2 Aquatic Fauna in 1960's

5.2.1 Benthonic Fauna

(1) Ialomita River

The first studies regarding the degree of saprobity of the Ialomita River were performed by the researchers: Simona Marcoci, Gh Bonciu from the Research Institute for the Environment Engineering.

Subsequently, researches on the benthonic fauna on the Ialomita River, which stressed upon the vital complexity of the river in correlation with the environmental factors, were performed between 1963 and 1965 by a staff managed by Gh. Brezeanu, Margareta Baltag and V. Zinevici and resumed in 1996 by the same staff, within the

Biology Institute In Bucharest.

As regards the Springs, the biocoenoses which appear are phytophilous and lithophilous The lithophilous biocoenosis is made up of Chironomidae, and the phytophilous biocoenosis is made up of Nematodes, Oligochaeta, Hidracarians, Plecoptera, Odonata, Trichoptera, Simuliidae, Collembola, Chironomidae. In this section the species characteristic to oligo-ß mesosaprobic area prevailed, and the purity degree was 94%.

Surpassing Cheile Tatarului, the nature lotic of the river is interrupted by the dam from Scropoasa, where the specific biotope habitat is lenitic. On the seacoast of the lake, on the sandy clay bottom there were found Gastropoda *(Pisidium sp.)*. In the same lake area there develops a bioderm with numerous benthonic organisms Nematoda and Chironomidae.

Downstream the lake and the power station (hydroelectric station), the river has a poor fauna, which is recovered after 3-4 km, where the flow and stream variations are lessened. In this area, the biocoenoses keep the quantitative structure of upstream sector.

As for as the station placed downstream Teis, on the gravel-sand faces, even if one can find the same groups of organisms, their number is smaller. The benthonic fauna is made up of Oligochaeta, Hydracarians, Chironomidae, Simuliidae. The purity degree downstream Teis was of 59%, and downstream Targoviste 47%, the river water being included in the β-mesosaprobic category to α-mesosaprobic, the impurity being moderate to high. This difference is due to the evacuation of the industrial and domestic waters belonging to the town of Targoviste.

Downstream Targoviste, to the river mouth, there starts the plain area of the river (over 300 km). In this area the river crosses a region rich in oil-wells and gathers, directly or indirectly, by its tributaries - Ialomicioara, Cricovul Dulce, Prahova Sarata, important industrial and domestic evacuations.

The silt-sandy facies contains a high degree of organic substances and it is dominated by a poor biocoenosis, made up of Oligochaeta. The purity degree in this section was of 50%.

Opposite Dridu, Ialomita receives its main tributary the Prahova River, impurified by industrial and domestic waters, which contributes to the maintaining of its salubrity state. The purity degree of Ialomita, after the confluence with the Prahova River, is of 39%; the river water is included in the α-mesosaprobic category, high impurity; the bottom fauna is made up of Nemadoda, and Oligochaeta (*Tubifex tubifex*), the other species being present in rare samples.

Up to the river mouth, on an itinerary of 96 km, the Ialomita River does not have any other impurity source, the action of self-epuration standing out very clearly. The purity degree allowed higher values of 71%, the dominant species being those typical of the β-mesosaprobic waters moderate impurity.

The systematic list of the macrobenthos in the Ialomita River in 1968 is tabulated in Table C.5.1 and location map of the Ialomita and the Prahova rivers is shown in Fig. C.5.1.

(2) Prahova River

Upstream Azuga, the river is included in the oligosaprobic - β -mesosaprobic category. The next section, up to Banesti, corresponds to the β-mesosaprobic area.

Downstream Sinaia, after gathering industrial and city waters, the river has a purity degree characteristic to the moderate pollution waters towards high β-mesosaprobic to α-mesosaprobic. In this section numerous and various species of Oligochaeta, Gastropoda, Amphypoda, Hydracarians and Insecta are present.

On the itinerary Banesti – Floresti, downstream Brazi, after the confluence with the Teleajen River, there takes place the decrease in the diversity of the systematic groups and the increase in the number of the species characteristic to a water richer in organic substances. This section is included In the β-mesosaprobic to α-mesosaprobic area. Moderate to high impurity. Before Brazi, as well as before the confluence with the Teleajen River, the Palanca station, the benthonic biocoenoes ere represented by species characteristic to typical of moderate impurity β-mesosaprobic water.

The systematic list of the macrobenthos in the Prahova River in 1968 is tabulated in Table C.5.2.

5.2.2 Ichthyological Fauna

In the beginning of 1960's, Dr.P.Banarascu distinguished five (5) areas of pisicultural layers for mountain rivers mentioned below and described ichthyological fauna in the Ialomita and the Prahova rivers based on this classification.

(1) Classification

- Trout area (*Salmo truta fario*);
- Umber or grayling area (*Thymallus thymallus* or *Barbus meridionalis peteny*);
- Broad snout area (*Chondrostoma nasus*);
- Barbel area (*Barbus barbus*);
- Carp area (*Cyprinus carpio*).

(a) Trout Area (*Salmo truta fario*)

The rivers in this region are characterized by a temperature up to 20°C and the stream of water is very quick. The fish species which live in this region are: *Salmo truta fario* (the trout), *Cotus gobio* (the groundling), *Phoxinus phoxinus* (the minnow), *Noemacheilus barbatulus* (the loach). Downstream this region the following species penetrate: *Barbus meridionalis peteny, Thimallus thimallus, Alburnoides bipunctatus, Cobitis romanica, Cobitis aurata.*

(b) Grayling Area (*Thymallus thymallus or Barbus meridionalis petrny*), downstream the trout area, at about 400 m height, the riverbed is stony cobbles – pebbles.

In this area it is possible to appear the species of the trout area: *Phixinus phoxinus* (the minnow), *Noemacheilus barbatulus* (the roach), *Cottus gobio, Alburnoides bipunctatus, Gobio uranoscopus frici, Cobitis romanica, Cobitis aurata.*

In the downstream section there also penetrate: *Chondrostoma nasus, Leuciscus cephalus, Leuciscus leuciscus, Barbus barbus, Gobio gobio.*

(c) Broad snout Area (*Chondrostoma nasus*) – typical of the areas with stony bottom and sandy.

The following species are present: *Chondrostoma nasus* (the broad snout), *Leuciscus cephalus* (the chub; the dace), *Vimba vimba* (the hake; the codling), *Leuciscus leuciscus*. There can be present: *Esox lucius* (the pike), *Lota lota* (the burleot), *Rhutillus sericeus* (the rhodeus), rarely *Perca fluviatilis* (the perch) and *Rutilus rutilus* (the roach).

(d) Barbel Area (*Barbus barbus*) typical of the large rivers, with a sandy and movable bed.

There can also be met: *Chondrostoma nasus, Leuciscus cephalus, Alburnus alburnus* (the bleak). In the large rivers: *Silurus glanis* (the sheat fish), *Lota lota* (the burbot), *Esox lucius* (the pike) and *Aspro zigel* (the blenny).

Among the small size species, the most characteristic ones are *Gobio gobio and G. kesleri.*

There also can be met the following species: *Cyprinus carpio* (the carp), *Abramis brama* (the bream), *Rutilus rutilus* (the roach), *Blicca bjoerkna, Leuciscus idus* (the cisco; the lake herring), *Perca fluviatilis* (the perch), *Acerina cernua* (the pope, the ruff, the black-tail), as well as *Lepomis gibbosus, Ichtalurus nebulosus, Cobitis taenia, Gobio albipinnaratus, Aspius aspius* (the rapacious carp).

(e) Carp Area (*Cyprinus carpio*)

This area is characterized by deep water, low transparence silt-sandy or clay riverbed. The following species are present: *Cyprinus carpio* (the carp), *Silurus glabis* (the sheat fish), *Leuciscus idus* (the cisco).

(2) Ialomita River

(a) *Salmo truta fario* lives down to upstream Pietrosita (Fig. C.5.2 (1)); *Noemacheilus barbatulus* (the loach) from Pietrosita to Targoviste (Fig. C.5.2 (2)); *Phoxinus phoxinus* to downstream Targoviste (Fig. C.5.2 (3)); *Cottus gobio gobio* (the miller's thumb) down to upstream Pietrosita (Fig. C.5.2 (4)).

(b) *Thymallus thymallus*_– is absent in the Ialomita Rivers (Fig. C.5.2 (5)); *Alburnoides bipunctatus bipunctatus* (the sunfish) lives between Targoviste and confluence with the Prahova River (Fig.C.5.2 (6)); *Gobio gobio obtusirostris* upstream Targoviste to confluence with the Prahova River; *Gobio uranoscopus frici* - endemic in the Danube area, 10 km upstream Targoviste (Fig. C.5.2 (7)); *Gobio albibipinnatus* from Tandarei; *Barbus meridionalis* from Pietrosita to the

confluence with the Prahova River (Fig. C.5.2 (8)).

(c) *Chondrostoma nasus*– absent in the whole Ialomita hydrologiol area (Fig. C.5.2 (9)); *Leuciscus (Squalius) cephalus* upstream Pucioasa to the confluence with the Prahova River (Fig. C.5.2 (10)); *Leuciscus idus* (the cisco) – at the flow into the Danube (Fig. C.5.2 (11)); *Rhodeus sericeus amarus* (the rhodeus) from Dridu to the Danube (Fig. C.5.2 (12)); *Barbus barbus* (the barbel) from Pucioasa to the confluence with the Prahova River, then, from Slobozia to the river mouth (Fig. C.5.2 (13)). *Cobitis taenia* – where the river flows into the Danube (Fig. C.5.2 (14)).

(d) *Aspius aspius* (the rapacious carp) – from the Danube to river mouth (Fig. C.5.2 (15)); *Leucispus delineatus* (fish fry) - from Targoviste to the river mouth (Fig. C.5.2 (16)); *Alburnus alburnus* (the bleak) - from Targoviste confluence with the Prahova River (Fig. C.5.2 (17)); *Abramis brama* (the bream) – where the river flows into the Danube (Fig. C.5.2 (18)); *Pelecus cultratus* – from Dridu to the river mouth (Fig. C.5.2 (19)).

(e) *Cyprinus carpio*– from Tandarei to the river mouth (Fig. C.5.2 (20)); *Bilcca bjoerkna* (the Romanian freshwater fish) – at the confluence with the Danube (Fig. C.5.2 (21)); *Carassius carassius* (the crucian) – in the Ialomita hydrological area (according to the data supplied by Professor Dr. Zemiankovski), (Fig. C.5.2 (22)); *Carassius auratus gibelio* (the crucian carp) – from Tandarei (Fig. C.5.2 (23)); *Rutilus rutilus* (the roach) – from Tandarei (Fig. C.5.2 (24)); *Silurus glanis* (the sheat fish) – on the inferior and partly middle water way of the Ialomita River (Fig. C.5.2 (25)); *Esox lucius* (the pike) – at the confluence with Danube (Fig. C.5.2 (26)); *Acerina schraetser* - at the confluence with the Danube (Fig. C.5.2 (27)); *Misgurnus fossilis* (the loach; the eel) - at the confluence with the Danube (Fig. C.5.2 (28)).

(3) Prahova River

(a) *Salmo truta fario* - up to Azuga (Fig. C.5.2 (1)); *Noemacheilus barbatulus* (the loach) between Busteni and Sinaia (Fig. C.5.2 (2)). *Phoxinus phoxinus* – up to downstrem Sinaia (Fig. C.5.2 (3)); *Barbus meridionalis* - at Cimpina (Fig. C.5.2 (8)).

5.3 Existing Aquatic Fauna

5.3.1 Observation of Benthonic Fauna

Sampling observation of the benthonic fauna is made in end of August 1998. The result is tabulated in Table C.5.3 for the Ialomita River and C.5.4 for the Prahova River. The sampling points and its characteristics are explained hereunder.

(1) Ialomita River

(a) Site No. 1 Padina 750 – 1.5 km from the spring

(i) Substratum in sample area: boulders-cobbles;

(ii) Water width in sample area 5-7 m;

(iii) Water clarity: clear and bright;

(iv) Depth in sample area 15-25 cm;

(v) Total organisms on sample 19;

(vi) Biocoenosis is made up: Oligochaeta, Amphiopoda, Collembola, Ephemeroptera, Plecoptera, Trichoptera, Ceratopogonidae, Chironomidae;

(vii) The purity degree after Knopp' Method 94%, oligosaprobical category;

(viii) After Belgian Biotic Index: 8-7 biotic index, Class II slightly polluted.

(b) Site No. 2 Branesti upstream Targoviste

(i) Substratum in sample area: cobbles;

(ii) Water width in sample area 20-25 m;

(iii) Water clarity: clear;

(iv) Depth in sample area 15-50 cm;

(v) Total organisms on sample 120;

(vi) Biocoenosis is made up: Oligochaeta, Collembola, Ephemeroptera, Trichoptera, Chironomidae;

(vii) The purity degree after Knopp' Method 46%, β-mesosaprobic - α-mesosaprobic

(viii) After Belgian Biotic Index 6-5 biotic index, Class III moderately polluted-critical situation.

(c) Site No. 3 Sacuieni downstream Targoviste

(i) Substratum in sample area: sand;

(ii) Water width in sample area 10-15 m;

(iii) Water clarity: cloudy;

(iv) Depth in sample area 15-40 cm;

(v) Total organisms on sample 61;

(vi) Biocoenosis is made up: Oligochaeta, Ephemeroptera, Chironomidae;

(vii) The purity degree after Knopp' Method 14%, α-mesosaprobic - polisaprobic;

(viii) After Belgian Biotic Index 2-0 biotic index, Class V very heavily polluted.

(d) Site No. 4 Silistea Snagov

(i) Substratum in sample area: sand;

(ii) Water width in sample area 15-20 m;

(iii) Water clarity: clear;

(iv) Depth in sample area 15-50 cm;

(v) Total organisms on sample 48;

(vi) Biocoenosis is made up: Oligochaeta, Ephemeroptera, Chironomidae;

(vii) The purity degree after Knopp' Method 36%, β-mesosaprobic - α-mesosaprobic-

(viii) After Belgian Biotic Index 6-5 biotic index, Class III, moderately polluted-critical situation.

(e) Site No. 5 Ciochina

(i) Substratum in sample area: silt;

(ii) Water width in sample area 15-20 m;

(iii) Water clarity: turbid;

(iv) Depth in sample area 50-80 cm;

(v) Total organisms on sample 61;

(vi) Biocoenosis is made up: Oligochaeta, Chironomidae;

(vii) The purity degree after Knopp' Method 20%, α-mesosaprobic - polisaprobic;

(viii) After Belgian Biotic Index 6-5 biotic index, Class V, very heavily polluted.

(f) Site No. 6 Tandarei

(i) Substratum in sample area: silt;

(ii) Water width in sample area 15-20 m;

(iii) Water clarity: turbid;

(iv) Depth in sample area 80-100 cm;

(v) Total organisms on sample 50;

(vi) Biocoenosis is made up: Oligochaeta, Chironomidae;

(vii) The purity degree after Knopp' Method 20%, α-mesosaprobic - polisaprobic;

(viii) After Belgian Biotic Index 6-5 biotic index, Class V, very heavily polluted.

(2) Prahova River

(a) Site No. 1 Prahova 1.5 km from the spring

(i) Substratum in sample area: cobbles - pebbles;

(ii) Water width in sample area 2-3 m;

(iii) Water clarity: clear and bright;

(iv) Depth in sample area 7-10 cm;

(v) Total organisms on sample 107;

(vi) Biocoenosis is made up: Oligochaeta, Hirudinea, Gastropoda, Amphiopoda, Collembola, Ephemeroptera, Trichoptera, Simulidae, Chironomidae;

(vii) The purity degree after Knopp' Method 75%, β-mesosaprobic;

(viii) After Belgian Biotic Index: 6-5 biotic index, Class III moderately polluted.

(b) Site No. 2 5-7 km downstream Comarnic

(i) Substratum in sample area: cobbles - pebiles;

(ii) Water widh in sample area 10-15 m;

(iii) Water clarity: cloudy;

(iv) Depth in sample area 50-80 cm;

(v) Total organisms on sample 36;

(vi) Biocoenosis is made up: Collembola, Ephemeroptera, Simulidae, Chironomidae;

(vii) The purity degree after Knopp' Method 66%, β-mesosaprobic;

(viii) After Belgian Biotic Index 6-5 biotic index, Class III moderately polluted-critical situation.

(c) Site No. 3 Tinosu

(i) Substratum in sample area: gravel;

(ii) Water width in sample area 14-18 m;

(iii) Water clarity: cloudy;

(iv) Depth in sample area 1-1,2 m;

(v) Total organisms on sample 86;

(vi) Biocoenosis is made up: Oligochaeta, Ephemeroptera;

(vii) The purity degree after Knopp' Method 28%, α-mesosaprobic;

(viii) After Belgian Biotic Index 4-3 biotic index, Class IV heavily polluted.

(d) Site No. 4 Adincata

(i) Substratum in sample area: silt - sand;

(ii) Water width in sample area 40-50 m;

(iii) Water clarity: turbid;

(vi) Depth in sample area 50-90 cm;

(v) Total organisms on sample 48;

(vi) Biocoenosis is made up: Oligochaeta, Gastropoda, Chironomidae;

(vii) The purity degree after Knopp' Method 45%, β-mesosaprobic - α-mesosaprobic;

(viii) After Belgian Biotic Index 6-5 biotic index, Class III, moderately polluted-critical situation.

5.3.2 Conclusion

(1) Benthonic Fauna

(a) Ialomita River

(i) At the stations located in the upper reaches, i.e. Padina station and Pietrosita station, species characteristic to oligo-β-mesosaprobic water were recorded in 1962 as well as in 1998, the water purity degree being almost the same (94%).

(ii) At the stations located downstream Laculete and Branesti, due to the increase of water pollution by industrial and domestic wastewater discharge in Pietrosita city, Moroieni city, Doicesti city and Fieni city, the water purity degree decreases to 46% and the benthic fauna is dominated by species characteristic to β-mesosaprobic water. This condition indicates a moderate water impurity.

(iii) The benthic fauna at the station located upstream Targoviste city was scarce in both 1962 and 1998, being composed of mainly *Oligochaeta* and *Chironomidae*. Very low values (14%) of the water purity degree were recorded, which is characteristic to α-mesosaprobic water and indicates a moderate to high water impurity.

(iv) At the stations located in Dridu and Silistea-Snagov, downstream the confluence with Prahova River, although the benthic fauna continues to be dominated mainly by *Oligochaeta* and *Chironomidae*, the purity degree

increases due to the natural purification up to 36%~39%. This condition is characteristic to β and α-mesosaprobic water and indicates a moderate to high water impurity.

(v) The last section being studied is the station located downstream Slobozia City. Due to the high pollution load generated by the industrial, agricultural and domestic wastewater discharge, the water purity degree decreased from 71% in 1962 to 20% at present. This condition is characteristic to α-mesosaprobic-polisaprobic water and indicates a high to strong water impurity.

(b) Prahova River

(i) Similar to the Ialomita River, the benthonic fauna at the station located in Predeal town is dominated by species characteristic to the low to moderate oligo-β-mesosaprobic water pollution. The purity degree is high, i.e. 75%.

(ii) After the confluence with the Teleajen River, receiving the wastewater discharged by the oil refineries in the area, the station located in Tinosu recorded in both 1962 and 1968 the lowest values of the water purity degree (28%). The water in this section of the Prahova River is α-mesosaprobic, which indicates a high water impurity.

(iii) Due to the natural purification and the reducing of pollution sources, at the stations located in Dridu and Adincata benthonic fauna includes insects too. The water purity degree is between 40%~45%, being thus characteristic to moderate to high water impurity.

(2) Ichthyological Fauna

(a) Ialomita River

At present, the number of species in the Ialomita River has decreased considerably compared to the situation in the '60s, due to the water pollution following the industrialization. Especially, species which are not resistant to water pollution have completely disappeared in the lower reaches. However, due to recent decrease in activity of some factories and livestock farms, fish seedling is reported on the lower reaches of the Ialomita River.

(b) Prahova River

In the middle and lower reaches of Prahova River there are no bibliographical data regarding the ichthyological fauna, while on the upper reaches, same species that found in 1960's can be met.

REFERENCES

1) Banarascu, P., "Pisces Osteichties XII (Fish Vertebrate XII) ", Editura Academiei, Bucharest, 1964

TABLES

Table C.1.1 Name and Location of Periodical Observation Points

Site Code	River Name	Site	Distance from River Head (km)	Remarks
180	Prahova	Predeal	5.0	
195	Prahova	amonte Sinaia	15.0	
200	Prahova	Cornu	53.0	
217	Prahova	Nedelea	73.0	
220	Prahova	Tinosu	105.0	
270	Prahova	Gherghita	-	
290*	Prahova	Adincata	140.0	
190	Azuga	Azuga	21.0	
205	Doftana	amonte Traisteni	1.0	
230	Teleajen	Cheia	10.0	
240	Teleajen	Gura Vitioarei	58.0	
260	Teleajen	Moara Domneasca	110.0	
250	Dimbu	Goga	37.0	
275	Cricovul Sarat	Sangeru	10.0	
280	Cricovul Sarat	Ciorani	88.0	
300	Ialomita	Cosiereni	156.0**	

* The observation was made in 1995 but stopped in 1996 and 1997.

** Measured from the river head of the Prahova Main River.

TableC.1.2. River Water Quality at Monitring Station(1995-1997)

Point No.	Clasification	Dischrge (m^3/s)	Temperature (°C)	BOD (mg/l)	COD (mg/l)	SS (mg/l)	CN^- (mg/l)	Phenol (mg/l)	Oil (mg/l)	Cd (mg/l)
180	average	1.61	6.6	3.84	2.09	75.67	-	-	0.00	-
	minimum	0.14	0.0	2.20	1.20	25.00	-	-	0.00	-
	maximum	7.62	18.0	5.40	2.8	165.00	-	-	0.00	-
195	average	2.16	7.3	4.34	2.41	89.19	0.01	0.001	0.00	0.000
	minimum	0.25	0.0	3.40	1.90	32.00	0.00	0.000	0.00	0.000
	maximum	10.90	20.0	6.30	3.50	141.00	0.02	0.002	0.10	0.000
200	average	8.96	9.1	6.21	3.42	169.15	0.01	0.009	0.09	0.000
	minimum	2.50	0.0	3.20	1.80	38.00	0.00	0.000	0.00	0.000
	maximum	32.60	23.0	13.50	5.90	1218.00	0.01	0.020	3.03	0.003
217	average	8.33	10.2	6.23	3.50	138.52	0.01	0.016	0.61	0.000
	minimum	0.31	1.0	4.50	2.50	40.50	0.00	0.013	0.00	0.000
	maximum	29.60	26.0	9.20	6.10	600.00	0.01	0.019	5.50	0.000
220	average	10.98	11.4	18.02	11.00	324.39	0.03	0.087	6.03	0.004
	minimum	4.75	0.0	8.30	4.40	93.00	0.00	0.000	0.00	0.001
	maximum	31.40	28.0	50.10	33.40	581.00	0.13	0.360	17.17	0.007
270	average	-	12.6	25.13	15.90	294.64	0.05	-	4.12	0.005
	minimum	-	1.0	12.10	7.00	91.00	0.02	-	1.30	0.000
	maximum	-	28.0	52.30	35.90	876.00	0.21	-	9.99	0.009
290	average	18.72	-	4.74	5.27	130.49	-	-	-	-
	minimum	12.50	-	0.80	4.40	21.70	-	-	-	-
	maximum	25.70	-	11.60	6.10	513.60	-	-	-	-
300	average	17.09	-	5.20	5.6	177.13	-	-	-	-
	minimum	2.90	-	2.40	4.60	28.40	-	-	-	-
	maximum	37.20	-	10.20	7.20	742.60	-	-	-	-
190	average	1.21	5.7	3.32	1.84	66.97	-	-	0.00	-
	minimum	0.12	0.5	1.80	1.00	16.00	-	-	0.00	-
	maximum	4.82	14.0	4.50	2.40	117.00	-	-	0.00	-
205	average	4.16	6.7	3.37	1.83	73.28	-	-	0.00	-
	minimum	1.20	0.0	1.50	0.90	25.00	-	-	0.00	-
	maximum	7.80	19.0	5.00	2.90	133.00	-	-	0.00	-
230	average	0.80	7.6	3.69	2.02	64.58	-	-	0.00	-
	minimum	0.20	0.0	1.50	0.90	14.00	-	-	0.00	-
	maximum	2.29	18.0	4.80	2.50	112.00	-	-	0.00	-
240	average	3.80	10.9	6.08	3.38	200.93	0.01	0.011	0.02	0.001
	minimum	0.49	0.0	4.70	2.30	41.00	0.00	0.000	0.00	0.000
	maximum	12.30	28.0	6.70	3.70	1788.00	0.01	0.020	0.40	0.003
260	average	8.68	12.5	22.22	13.81	335.28	0.04	0.052	6.27	-
	minimum	5.69	1.0	6.40	3.50	81.00	0.00	0.000	0.00	-
	maximum	19.30	29.0	42.20	28.10	1049.00	0.33	0.220	22.46	-
250	average	2.58	13.0	34.70	22.64	305.09	0.01	0.118	15.08	0.008
	minimum	0.72	1.0	13.50	8.40	109.00	0.00	0.000	2.30	0.000
	maximum	32.00	28.0	54.40	36.30	1121.00	0.02	0.300	60.40	0.030
275	average	0.25	9.1	15.65	9.21	307.32	-	0.050	1.04	0.000
	minimum	0.06	0.0	4.10	2.30	120.00	-	0.000	0.00	0.000
	maximum	1.38	25.0	77.10	41.30	1521.00	-	0.187	15.60	0.000
280	average	0.99	11.6	17.62	10.64	327.88	0.03	0.044	3.25	0.002
	minimum	0.17	1.0	6.70	3.10	56.00	0.00	0.000	0.00	0.000
	maximum	6.00	33.0	38.00	25.20	1772.00	0.16	0.180	17.30	0.007

Table C.1.3 National Standard of River Water Quality (1/2)

Parameter	Admissible Value Quality category			Method of Analysis
	I	II	III	
Color	Colorless			*
Odor	Odorless			*
pH	6.5~8.5			STAS 6323-75
Ammonium(ionised NH_4), mg/l	1	3	10	STAS 8683-70
Ammonia (non-ionised NH_3), mg/l	0.1	0.3	0.5	STAS 8683-70
Nitrate(NO_3), mg/l	10	30	-	STAS 8900/1-71
Nitrite (NO_2), mg/l	1	3	-	STAS 9800/2-71
Calcium , mg/l	150	200	300	STAS 3662-62
Chlorine(free residualCl_2), mg/l	0.005			STAS 6364-78
Chloride, mg/l	250	300	300	STAS 8663-70
Carbon Dioxide(free), mg/l	50			STAS 3263-61
Phenol(steem extraction,CH_6OH_5), mg/l	0.001	0.02	0.05	STAS 7167-65
Iron(total), mg/l	0.3	1	1	STAS 8634-70
Phosphorus, mg/l	0.1			STAS 10064-75
Hydrogen Sulfide and sulfide(S^{2-}),mg/l	not present	not present	0.1	STAS 7510-66
Magnesium, mg/l	50	100	200	STAS 6674-77
Manganese , mg/l	0.1	0.3	0.8	STAS 8662-70
Dissolved Oxygen, mg/l	6	5	4	STAS 6536-88
Petroleum products , mg/l	0.1			STAS 7877-87
Total dissolved solids, mg/l	750	1000	1200	STAS 9187-84
Sodium, mg/l	100	200	200	STAS 8295-69
BOD, mg/l	5	7	12	STAS 6560-82
COD(Mn), mg/l	10	15	25	STAS 9877-74
COD(Cr), mg/l	10	20	30	STAS 6954-82
Sulfate, mg/l	200	400	400	STAS 8601-70
Silver, mg/l	0.01			STAS 8190-68
Arsenic, mg/l	0.01			STAS 7885-67
Barium , mg/l	1.0			STAS 10258-75
Cadmium ,mg/l	0.003			STAS 7852-80

Table C.1.3 National Standard of River Water Quality (2/2)

Parameter			Admissible Value Quality category I	II	III	Method of Analysis
Cyanide , mg/l			0.01			STAS 7685-79
Cobalt, mg/l			1			STAS 8288-69
Chromium	hexavalent , mg/l		0.5			STAS 6323-75
	trivalent, mg/l		0.05			STAS 7844-67
Copper, mg/l			0.05			
Anionic Detergents, mg/l			0.5			STAS 7795-80
Fluoride, mg/l			0.5*			STAS 8910-71
Polycyclic aromatic hydrocarbons, mg/l			0.0002			**
Mercury, mg/l			0.001			STAS 8045-79
Molybdenum, mg/l			0.05			STAS 11422-84
Nickel, mg/l			0.1			STAS 7987-67
Pesticides	herbicides	triazine, mg/l	0.001			**
		trizinone, mg/l	0.001			**
		toluidine, mg/l	0.001			**
	insecticides	organochorine mg/l	0.0001			STAS 12650-88
		organophosphorus, mg/l	not present			**
		organometallic, mg/l	not present			**
	nitro-derivatives,mg/l		not present			**
Lead, mg/l			0.05			STAS 8637-79
Selenium, mg/l			0.01			STAS 12663-88
Zinc, mg/l			0.03			STAS 8314-87
Total Coliforms, mg/l			100000			STAS 3001-83

Notes: The quality conditions for waters of category III correspond to requirement related to the biological processes which ensure self purification.

* For surface waters in category I used for centralized portable water supply, the admissible maximum is 1.2mg/l.

** Method of analysis conforms with instruction of the National Water Council.

(Source: STAS 4706)

Table C.2.1 Location of Supplementary Water Quality Analysis in Prahova River(1/2)

Site No.	River Name	Water Classification	Sampling Site	Remarks	Code No.	Latitude	Longitude
1	Prahova	Main River	Predeal	Periodical Point	180	25°34'142"	45°27'169"
2	Prahova	Main River	amonte Sinaia	Periodical Point	195	25°34'095"	45°22'960"
3	Prahova	Main River	Comu	Periodical Point	200	25°43'137"	45°07'754"
4	Prahova	Main River	Nedelea	Periodical Point	217	25°48'314"	44°58'586"
5	Prahova	Main River	Tinosu	Periodical Point	220	26°05'318"	44°47'779"
6	Prahova	Main River	Gherghita	Periodical Point	270	26°16'095"	44°48'587"
7	Prahova	Main River	Posada	Supplementary Point	A	25°37'255"	45°16'281"
8	Prahova	Main River	Finari	Supplementary Point	E	26°11'504"	44°48'290"
9	Prahova	Main River	ADINCATA	Supplementary Analysis Point	H	26°26'638"	44°45'615"
10	Prahova	Factory Effluent	S.C.BERE.S.A. /Azuga	Beer	4006	25°32'980"	45°26'213"
11	Prahova	Factory Effluent	Hospital/Azuga	Hospital	4010	25°33'265"	45°25'516"
12	Prahova	Factory Effluent	S.C.HARTIA.S.A. /Busteni	Paper/Pulp	4014	25°32'300"	45°24'477"
13	Prahova	Factory Effluent	S.C.PETROUTILAJ /Cimpina	Petro-industry	4292	25°43'143"	45°07'601"
14	Prahova	Factory Effluent	S.C.VICTORIA.S.A. /Floresti	Tire	4039	25°46'840"	45°02'163"
15	Prahova	Factory Effluent	RENEL /Ploiesti /Termal Plant	Thermal Plant	4047	26°00'518"	44°51'093"
16	Prahova	Factory Effluent	S.C.PETROBRAZI.S.A. /Brazi	Petro-industry	4051	26°01'185"	44°49'589"
17	Prahova	Sewerage Effluent	Predeal town		4317	25°34'039"	45°28'639"
18	Prahova	Sewerage Effluent	Busteni town		4011	25°32'123"	45°24'725"
19	Prahova	Sewerage Effluent	Sinaia town		4018	25°33'768"	45°19'062"
20	Prahova	Sewerage Effluent	COSILIUL LOCAL Poiana Campina		4032	25°43'143"	45°07'601"
21	Prahova	Sewerage Effluent	Breaza town		4028	25°41'221"	45°10'085"
22	Prahova	Sewerage Effluent	Cimpina towm		4034	25°44'862"	45°06'300"
23	Prahova	Stock Farm Effluent	F.P.Comporsa/Stancesti		4082	25°52'923"	44°51'594"
24	Prahova	Stock Farm Effluent	F.P.SancaSRL/Gherghita		4123	26°16'162"	44°48'530"
25	Azuga	Tributary	Azuga	Periodical Point	190	25°35'500"	45°26'684"
26	Azuga	Factory Effluent	S.C.POSTAV.S.A./Azuga	Textile	4007	25°32'965"	45°26'462"
27	Azuga	Factory Effluent	S.C.SINTER.REF.S.A. /Azuga	Refractory Materials Factory	4004	25°35'497"	45°26'681"
28	Azuga	Sewerage Effluent	Azuga town		4008	25°33'266"	45°26'866"
29	Doftana	Tributary	amonte Traisteni	Periodical Point	205	25°43'125"	45°11'275"
30	Doftana	Tributary	Ac.Voila	Supplementary Point	B	25°45'040"	45°11'364"
31	Doftana	Tributary	CIMPINA	Supplementary Point	C	25°45'101"	45°06'233"
32	Doftana	Factory Effluent	S.C.STEAUA.ROMANA.S.A. /Campina	Petrochemical	4035	25°46'125"	45°08'123"
33	Teleajen	Tributary	Cheia	Periodical Point	230	25°54'998"	45°27'987"

Table C.2.1 Location of Supplementary Water Quality Analysis in Prahova River(2/2)

Site No.	River Name	Water Classification	Sampling Site	Remarks	Code No.	Latitude	Longitude
34	Teleajen	Tributary	Gura Vitioarei	Periodical Point	240	26°02'251"	45°09'771"
35	Teleajen	Tributary	Moara Domneasca	Periodical Point	260	26°09'519"	44°50'770"
36	Teleajen	Tributary	Piatra	Supplementary Point	J	26°02'860"	45°12'820"
37	Teleajen	Tributary	Sipotu	Supplementary Point	K	26°00'948"	44°59'775"
38	Teleajen	Tributary	Coslegi	Supplementary Point	L	26°09'136"	44°54'063"
39	Teleajen	Factory Effluent	SALINA Slanic	Salt	4582	25°56'094"	45°13'447"
40	Teleajen	Factory Effluent	S.C.GES.S.A. /Boldesti Scaieni	Glass Ware	4022	26°00'373"	44°59'903"
41	Teleajen	Factory Effluent	S.C.CAHIRO.S.A. /Boldesti caleni	Paper	4102	26°00'642"	45°00'425"
42	Teleajen	Factory Effluent	S.C.ARPACOR.S.A./Bucov	Rubber	4112	26°02'610"	44°55'705"
43	Teleajen	Factory Effluent	S.C.REALS S..A../Pleasa	Refractory Ceramic	4106	26°02'053"	44°58'690"
44	Teleajen	Factory Effluent	S.C.SOCERAM S..A..	Building Materials	4103	26°02'053"	44°58'690"
45	Teleajen	Factory Effluent	S.C.PETROTEL.S.A. /Ploiesti	Petrochemical	4148	26°05'896"	44°57'266"
46	Teleajen	Factory Effluent	S.C.MATIZOL.S.A./Berceni	Isolation Materials	4150	26°06'495"	44°56'884"
47	Teleajen	Factory Effluent	S.C.ROMFOSFOCHIM.S.A. /Valea Calugareasca	Chemical Products	4117	26°08'895"	44°55'713"
48	Teleajen	Sewerage Effluent	Cheia Town		4086	25°56'472"	45°26'503"
49	Teleajen	Sewerage Effluent	Valenii de Munte town		4506	26°02'213"	45°09'923"
50	Teleajen	Sewerage Effluent	Maneciu de Ungureni village		4088	26°00'721"	45°18'222"
51	Teleajen	Sewerage Effluent	Boldesti Scaieni town		4517	26°00'892"	44°59'884"
52	Teleajen	Sewerage Effluent	Slanic		4127	25°56'889"	45°12'024"
53	Teleajen	Stock Farm Effluent	F.V.si F.P.Agros /Scaieni		4577	26°00'300"	44°51'642"
54	Dimbu	Tributary	Goga	Periodical Point	250	26°08'472"	44°53'143"
55	Dimbu	Tributary	Baicoi town	Supplementary Point	M	25°54'025"	44°45'027"
56	Dimbu	Factory Effluent	S.C.DACIA.S.A. /Ploiesti	Metal Works /Repair	4147	26°03'396"	44°55'973"
57	Dimbu	Factory Effluent	24 IANUARIE. /Ploiesti	Metal Works	4141	26°01'796"	44°56'995"
58	Dimbu	Factory Effluent	S.C.ASTRA.LOMANA. /Ploiesti	Petrochemical	4158	26°03'749"	44°55'482"
59	Dimbu	Sewerage Effluent	Baicoi town		4041	25°54'025"	44°45'027"
60	Dimbu	Sewerage Effluent	Ploiesti city		4162	26°03'740"	44°55'362"
61	Cricovul Sarat	Tributary	Singeru	Periodical Point	275	26°20'128"	45°07'758"
62	Cricovul Sarat	Tributary	Ciorani	Periodical Point	280	26°24'125"	44°41'157"
63	Cricovul Sarat	Tributary	Popesti	Supplementary Point	O	26°13'720"	45°01'173"
64	Cricovul Sarat	Sewerage Effluent	Urlati town		4374	26°13'652"	44°58'713"
65	Cricovul Sarat	Nonpoint Source Effuent	Valea Dulce	Model Point of Non-Point Source		26°12'168"	45°06'830"

Table C.2.2 Points of Third Supplementary Water Quality Analysis in Prahova River(1/2)

Site No.	River Name	Water Classification	Sampling Site	Remarks	Code No.
1	Prahova	Main River	Predeal	Periodical Point	180
2	Prahova	Main River	amonte Sinaia	Periodical Point	195
3	Prahova	Main River	Cornu	Periodical Point	200
4	Prahova	Main River	Nedelea	Periodical Point	217
5	Prahova	Main River	Tinosu	Periodical Point	220
6	Prahova	Main River	Gherghita	Periodical Point	270
7	Prahova	Main River	Posada	Supplementary Point	A
8	Prahova	Main River	Finari	Supplementary Point	B
9	Prahova	Main River	Adincata	Supplementary Point	H
10	Prahova	Factory Inflow	S.C.BERE.S.A. /Azuga	S.C.BERE.S.A. /Azuga	4006
11	Prahova	Factory Effluent	S.C.BERE.S.A. /Azuga	S.C.BERE.S.A. /Azuga	4006
12	Prahova	Factory Effluent	Hospital /Azuga	Hospital	4010
13	Prahova	Factory Inflow-1	I.R.A. Campina	Land Transport	4575
14	Prahova	Factory Inflow-2	I.R.A. Campina	Land Transport	4575
15	Prahova	Factory Effluent	I.R.A. Campina	Land Transport	4575
16	Prahova	Factory Effluent-1	S.C.PETROUTILAJ /Cimpina	Petro-industry	4292
17	Prahova	Factory Effluent-2	S.C.PETROUTILAJ /Cimpina	Petro-industry	4292
18	Prahova	Factory Effluent-1	S.C.VICTORIA S.A.	Tire	4039
19	Prahova	Factory Effluent-2	S.C.VICTORIA S.A.	Tire	4039
20	Prahova	Factory Effluent	RENEL /Ploiesti/ Termal Plant	Thermal Plant	4047
21	Prahova	Factory Inflow-1	S.C.PETROBRAZI S.A.	Petroindustry	4051
22	Prahova	Factory Inflow-2	S.C.PETROBRAZI S.A.	Petroindustry	4051
23	Prahova	Factory Effluent-1	S.C.PETROBRAZI S.A.	Petroindustry	4051
24	Prahova	Factory Effluent-2	S.C.PETROBRAZI S.A.	Petroindustry	4051
25	Prahova	Factory Effluent-3	S.C.PETROBRAZI S.A.	Petroindustry	4051
26	Prahova	Factory Effluent-4	S.C.PETROBRAZI S.A.	Petroindustry	4051
27	Prahova	Factory Effluent-5	S.C.PETROBRAZI S.A.	Petroindustry	4051
28	Prahova	Sewerage Inflow	Predeal Town		4317
29	Prahova	Sewerage Effluent	Predeal Town		4317
30	Prahova	Sewerage Effluent	Busteni Town		4011
31	Prahova	Sewerage Inflow	Sinaia Town		4018
32	Prahova	Sewerage Effluent	Sinaia Town		4018
33	Prahova	Sewerage Effluent	CONSILIUL LOCAL		4032
34	Prahova	Sewerage inflow	Breaza Town		4028
35	Prahova	Sewerage Effluent	Breaza Town		4028
36	Prahova	Sewerage Inflow	Cimpina City		4034
37	Prahova	Sewerage Effluent	Cimpina City		4034
38	Prahova	Stock Farm Inflow	F.P.Comporsa/Stancesti		4082
39	Prahova	Stock Farm Effluent	F.P.Comporsa/Stancesti		4082
40	Prahova	Stock Farm Inflow	F.P.SancaSRL/Gherghita		4123
41	Prahova	Stock Farm Effluent	F.P.SancaSRL/Gherghita		4123
42	Azuga	Tributary	Azuga	Periodical Analysis	190
43	Azuga	Factory Effluent	S.C.SINTER REF.S.A. /Azuga	Refractory Materials Factory	4004
44	Azuga	Sewerage Effluent	Azuga town		4008
45	Doftana	Tributary	amonte Traisteni	Periodical Point	205
46	Doftana	Tributary	Ac.Voila	Supplementary Point	B
47	Doftana	Tributary	Cimpina	Supplementary Point	C
48	Doftana	Factory Inflow-1	S.C.STEAUA ROMANA	Petrochemical	4035
49	Doftana	Factory Inflow-2	S.C.STEAUA ROMANA	Petrochemical	4035
50	Doftana	Factory Inflow-3	S.C.STEAUA ROMANA	Petrochemical	4035
51	Doftana	Factory Effluent	S.C.STEAUA ROMANA	Petrochemical	4035
52	Teleajen	Tributary	Cheia	Periodical Point	230
53	Teleajen	Tributary	Gura Vitioarei	Periodical Point	240
54	Teleajen	Tributary	Moara Domneasca	Periodical Point	260
55	Teleajen	Tributary	Piatra	Supplementary Point	J

Table C.2.2 Points of Third Supplementary Water Quality Analysis in Prahova River(2/2)

Site No.	River Name	Water Classification	Sampling Site	Remarks	Code No.
56	Teleajen	Tributary	Sipotu	Supplementary Point	K
57	Teleajen	Tributary	Coslegi	Supplementary Point	L
58	Teleajen	Factory Effluent	SALINA Slanic	Salt	4582
59	Teleajen	Factory Inflow	S.C.GES.S.A. /Boldesti	Glass Ware	4022
60	Teleajen	Factory Effluent	S.C.GES.S.A. /Boldesti	Glass Ware	4022
61	Teleajen	Factory Inflow	S.C.CAHIRO.S.A./Boldesti	Paper	4102
62	Teleajen	Factory Effluent	S.C.CAHIRO.S.A./Boldesti	Paper	4102
63	Teleajen	Factory Effluent	S.C.ARPACOR.S.A./Bucov	Rubber	4112
64	Teleajen	Factory Inflow	S.C.REALS S..A./Pleasa	Refractory Ceramic	4106
65	Teleajen	Factory Effluent	S.C.REALS S..A./Pleasa	Refractory Ceramic	4106
66	Teleajen	Factory Effluent	S.C.SOCERAM S..A.	Building Materials	4103
67	Teleajen	Factory Effluent	S.C.PETROTEL.S.A./Ploiesti	Petrochemical	4148
68	Teleajen	Factory Inflow	S.C.MATIZOL S.A./Berceni	Isolation Materials	4150
69	Teleajen	Factory Effluent	S.C.MATIZOL.S.A./Berceni	Isolation Materials	4150
70	Teleajen	Factory Effluent	S.C.ROMFOSFOCHIM.S.A./	Chemical Products	4117
71	Teleajen	Sewerage Inflow	Cheia Town		4086
72	Teleajen	Sewerage Effluent	Cheia Town		4086
73	Teleajen	Sewerage Inflow	Maneciu Ungureni Village		4088
74	Teleajen	Sewerage Effluent	Maneciu Ungureni Village		4088
75	Teleajen	Sewerage Inflow	Valenii de Munte Town		4506
76	Teleajen	Sewerage Effluent	Valenii de Munte Town		4506
77	Teleajen	Sewerge Inflow	Plopeni Town		4578
78	Teleajen	Sewerge Effluent	Plopeni Town		4578
79	Teleajen	Sewerage Inflow	Boldesti Scaieni Town		4517
80	Teleajen	Sewerage Effluent	Boldesti Scaieni Town		4517
81	Teleajen	Sewerage Inflow	Slanic Town		4127
82	Teleajen	Sewerage Effluent	Slanic Town		4127
83	Teleajen	Stock Farm Inflow	F.V.si F.P.Agros/Scaieni		4577
84	Teleajen	Stock Farm Effluent	F.V.si F.P.Agros/Scaieni		4577
85	Dimbu	Tributary	Goga	Periodical Point	250
86	Dimbu	Tributary	Baicoi town	Supplemen-tary Point	M
87	Dimbu	Factory Infflow	COCA COLA Ploiesti	Food Products and Beverages	4311
88	Dimbu	Factory Effluent	COCA COLA Ploiesti	Food Products and Beverages	4311
89	Dimbu	Factory Effluent	S.C.Vega Ploiesiti	Petro chemical	4137
90	Dimbu	Factory Effluent	FEROEMAIL Ploiesti	Metal Products Fabricated	4146
91	Dimbu	Factory Infflow	I.N.C.A.F. Ploiesti	Food Products and Beverages	4143
92	Dimbu	Factory Effluent	I.N.C.A.F. Ploiesti	Food Products and Beverages	4143
93	Dimbu	Factory Effluent	S.C.DACIA.S.A./Ploiesti	Metal Works/ Repair	4147
94	Dimbu	Factory Effluent	24 IANUARIE./Ploiesti	Metal Works	4141
95	Dimbu	Factory Inflow	S.C.ASTRA ROMANA/	Petrochemical	4158
96	Dimbu	Factory Effluent	S.C.ASTRA ROMANA/	Petrochemical	4158
97	Dimbu	Sewerage Inflow	Baicoi Town		4041
98	Dimbu	Sewerage Effluent	Baicoi Town		4041
99	Dimbu	Sewerage Inflow	Ploiesti City		4162
100	Dimbu	Sewerage Effluent	Ploiesti City		4162
101	Cricovul Sarat	Tributary	Singeru	Periodical Point	275
102	Cricovul Sarat	Tributary	Ciorani	Periodical Point	280
103	Cricovul Sarat	Tributary	Popesti	Supplementary Point	O
104	Cricovul Sarat	Sewerage Inflow	Urlati Town		4374
105	Cricovul Sarat	Sewerage Effluent	Urlati Town		4374

Table C.2.3 Results of Supplemmentary Water Quality Analysis (First Time) (1/5)

Site No.	1	2	3	4	5	6	7	8	9	10	11	12	13
River Name	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova
Water Classification	Main River	Main River	Main River	Main River	Main River	Main River	Main River	Main River	Main River	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent
Sampling Site	Predeal	amonte Sinaia	Cornu	Nedelea	Tinosu	Gherghita	Posada	Finari	Adincata	S.C.BERE.S. A. /Azuga	Hospital /Azuga	S.C.HARTIA S.A.	S.C.PETROUTILA J /Cimpina
Remarks	Periodical Point	Periodical Point	Periodical Point	Periodical Point	Periodical Point	Periodical Point	Supplemen-tary Point	Supplemen-tary Point	Supplemen-tary Point	S.C.BERE.S. A. /Azuga	Hospital	Paper/Pulp	Petro-industry
Code No.	180	195	200	217	220	270	A	E	H	4006	4010	4014	4292
Sampling Date	1998/2/9	1998/2/9	1998/2/9	1998/2/11	1998/2/9	1998/2/11	1998/2/11	1998/2/9	1998/2/11	1998/2/10	1998/2/10	1998/2/10	1998/2/11
Discharge(m^3/s)	0.78	2.24	5.28	14.15	12.52	23.10	5.32	13.02	28.24	0.02	0.00	0.12	0.07
WaterTemperature(℃)	1.1	2.7	3.8	5.7	5.6	5.7	3.7	5.1	5.5	2.7	11.7	3.5	9.8
Color	Colorless	Colorless	Brown	LightBeige	LightBeige	LightBeige	Colorless	LightBeige	LightBeige	Beige	Beige	Colorless	Beige
Odor	Ordorless	Ordorless	Ordorless	Oderless	Oil	Oil	Oderless	Oil	Oderless	Domestic	Domestic	Oderless	Domestic
EC(mS/cm)	0.31	0.28	0.92	0.73	1.27	1.55	0.31	1.28	1.59	0.28	1.08	0.25	1.21
Turbidity	5	25	321	147	230	149	14	253	121	66	417	14	111
pH	8.08	8.11	7.46	8.16	8.00	7.78	7.39	8.05	7.92	7.11	9.57	8.07	7.88
NH4+ (mg/l)	1.24	0.59	0.67	0.95	1.47	2.04	0.39	1.93	1.34	3.86	19.32	0.10	3.09
NO3- (mg/l)	1.10	1.10	1.10	0.50	1.60	0.70	0.30	1.60	0.80	0.50	0.20	0.20	0.80
NO2- (mg/l)	0.08	0.06	0.08	0.06	0.22	0.06	0.06	0.42	0.10	0.10	3.00	0.88	0.58
Cl-(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
PO43- (mg/l)	0.46	0.24	0.22	0.10	0.34	0.68	0.10	0.52	0.32	0.74	4.98	0.24	1.72
Disolved O_2 (mg/l)	12.87	11.90	11.62	11.64	16.03	9.79	10.04	12.81	8.96	4.35	5.83	10.66	8.26
Petroleum (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD (mg/l)	1.64	5.21	4.93	4.49	12.95	12.14	3.41	12.63	8.93	257.78	298.39	4.91	197.98
COD(Mn) (mg/l)	1.91	2.23	2.39	3.03	3.67	4.47	3.51	3.99	3.19	48.59	52.51	3.76	36.77
SS (mg/l)	57	77	328	88	146	81	41	132	93	79	2411	23	102
Cadmium (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr6+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr3+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Anionic Detergents	-	-	-	-	-	-	-	-	-	-	-	-	-
Hg (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni2+ (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-

Table C.2.3 Results of Supplemmentary Water Quality Analysis (First Time) (2/5)

Site No.	14	15	16	17	18	19	20	21	22	23	24	25	26
River Name	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Azuga	Azuga
Water Classification	Factory Effluent	Factory Effluent	Factory Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Stock Farm Effluent	Stock Farm Effluent	Tributary	Factory Effluent
Sampling Site	S.C.VICTORIA.S.A	RENEL /Ploiesti/	S.C.PETROBRAZ I. S.A /Brazi	Predeal town	Busteni town	Sinaia town	CONSILIUL LOCAL	Breaza town	Cimpina city	F.P.Compors a/Stancesti	F.P.SancaSR L/Gherghita	Azuga	S.C.POSTA V.S.A./Azug
Remarks	Tire	Thermal Plant	Petro-industry									Periodical Analysis	Textile
Code No.	4039	4047	4051	4317	4011	4018	4032	4028	4034	4082	4123	190	4007
Sampling Date	1998/2/11	1998/2/9	1998/2/9	1998/2/9	1998/2/10	1998/2/10	1998/2/11	1998/2/11	1998/2/12	1998/2/9	1998/2/11	1998/2/9	1998/2/10
Discharge(m^3/s)	0.07	0.64	0.56	0.05	0.11	0.27	0.01	0.04	0.15	0.06	0.02	0.68	0.03
WaterTemperature(°C)	20.8	9.4	12.4	5.0	4.9	7.0	8.3	8.4	10.2	8.6	8.5	0.3	3.8
Color	Beige	LightBeige	LightBeige	Colorless	LightBeige	LightBeige	LightBeige	LightBeige	Beige	Beige	Gray	Colorless	Gray
Odor	Domestic	Oil	Oil	Domestic	Domestic	Domestic	Domestic	Domestic	Oil	Specific	Specific	Odorless	Domestic
EC(mS/cm)	0.61	1.19	1.61	0.35	0.21	0.38	0.47	0.73	0.48	6.11	2.00	0.26	0.59
Turbidity	43	149	131	22	27	122	27	44	100	800<	475	3	200
pH	7.93	7.78	7.72	7.56	7.86	7.60	7.21	6.90	7.72	6.88	7.06	7.96	7.28
NH4+ (mg/l)	0.70	1.19	2.58	9.02	0.64	12.88	2.60	6.44	1.03	566.63	72.12	0.44	2.96
NO3- (mg/l)	0.80	1.50	2.40	1.00	0.10	0.00	0.50	0.90	0.10	6.40	7.60	1.10	0.60
NO2- (mg/l)	0.10	0.08	0.05	0.28	0.10	0.08	0.26	1.80	0.10	14.00	0.20	0.02	0.50
Cl-(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
PO43- (mg/l)	0.24	0.20	0.44	2.90	1.12	3.78	1.12	4.32	3.94	32.40	12.40	0.08	0.74
Disolved O_2 (mg/l)	6.16	19.84	10.44	9.55	10.11	9.76	5.81	6.61	6.10	1.13	3.20	13.93	2.44
Petroleum (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD (mg/l)	2.04	34.56	55.37	12.83	3.13	45.98	11.66	10.37	60.47	2367.23	378.77	0.96	56.03
COD(Mn) (mg/l)	4.15	18.38	27.18	7.03	5.32	11.28	5.75	10.55	16.79	407.73	231.84	0.95	20.06
SS (mg/l)	71	86	154	121	44	133	48	73	123	1833	999	68	123
Cadmium (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr6+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr3+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Anionic Detergents	-	-	-	-	-	-	-	-	-	-	-	-	-
Hg (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni2+ (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-

Table C.2.3 Results of Supplementary Water Analysis (First Time) (3/5)

Site No.	27	28	29	30	31	32	33	34	35	36	37	38	39
River Name	Azuga	Azuga	Doftana	Doftana	Doftana	Doftana	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen
Water Classification	Factory Effluent	Sewerage Effluent	Tributary	Tributary	Tributary	Factory Effluent	Tributary	Tributary	Tributary	Tributary	Tributary	Tributary	Factory Effluent
Sampling Site	S.C.SINTER. REF.S.A.	Azuga town	amonte Traisteni	Ac.Voila	Cimpina	S.C.STEAUA ROMANA	Cheia	Gura Vitioarei	Moara Domneasca	Piatra	Sipotu	Coslegi	SALINA Slanic
Remarks	Refractory Materials Factory		Periodical Point	Supplementary Point	Supplementary Point	Petro-chemical	Periodical Point	Periodical Point	Periodical Point	Supplementary Point	Supplementary Point	Supplementary Point	Salt
Code No.	4004	4008	205	B	C	4035	230	240	260	J	K	L	4582
Sampling Date	1998/2/9	1998/2/10	1998/2/12	1998/2/12	1998/2/12	1998/2/12	1998/2/10	1998/2/10	1998/2/12	1998/2/10	1998/2/11	1998/2/12	1998/2/11
Discharge(m^3/s)	0.12	0.02	0.49	5.75	5.95	0.27	0.50	3.28	8.73	2.70	4.88	5.03	0.01
WaterTemperature(°C	0.4	4.5	4.7	3.4	4.5	9.6	1.7	3.9	6.8	3.5	3.0	4.6	4.6
Color	Colorless	Gray	Colorless	Colorless	Beige	LightBeige	Colorless	LightBeige	Beige	LightBeige	LightBeige	LightBeige	Colorless
Odor	Domestic	Domestic	Odorless	Odorless	Odorless	Oil	Oderless	Oderless	Oderless	Oderless	Oderless	Odorless	Oderless
EC(mS/cm)	0.26	0.36	0.32	0.32	0.51	1.12	2.62	1.66	0.19	1.53	0.18	0.23	0.20
Turbidity	9	70	15	39	124	20	2	75	172	116	130	612	130
pH	7.95	6.80	8.18	8.08	8.23	7.23	7.05	8.18	8.12	8.40	8.22	8.13	8.46
NH4+ (mg/l)	0.57	10.56	3.61	0.52	0.26	1.03	0.39	1.13	2.71	0.93	1.39	1.29	10.30
NO3- (mg/l)	1.00	0.20	0.50	0.20	0.50	0.60	1.90	2.50	1.00	0.00	1.10	0.80	0.00
NO2- (mg/l)	0.04	0.58	0.08	0.02	0.18	0.64	0.02	0.08	0.04	0.08	0.06	0.24	0.10
Cl-(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
PO43- (mg/l)	0.12	4.46	0.12	0.10	0.16	0.06	1.80	0.16	0.64	0.16	1.12	0.34	2.96
Disolved O_2 (mg/l)	13.01	8.14	9.57	10.34	10.13	6.60	12.19	11.98	8.50	12.34	12.20	10.90	8.50
Petroleum (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD (mg/l)	3.94	26.38	2.63	3.27	1.78	5.07	0.79	0.90	17.34	2.89	6.47	10.89	18.77
COD(Mn) (mg/l)	3.83	10.97	1.29	1.85	3.39	7.91	0.93	3.13	5.81	3.29	2.87	9.68	9.59
SS (mg/l)	117	118	10	7	91	34	18	37	99	56	66	369	70
Cadmium (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr6+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr3+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Anionic	-	-	-	-	-	-	-	-	-	-	-	-	-
Hg (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni2+ (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-

Table C.2.3 Results of Supplementary Water Quality Analysis (First Time) (4/5)

Site No.	40	41	42	43	44	45	46	47	48	49	50	51	52
River Name	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen
Water Classification	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent
Sampling Site	S.C.GES.S.A. /Boldesti	S.C.CAHIRO .S.A./Boldes	S.C.ARPACO R.S.A./Bucov	S.C.REALS S.A./Pleas	S.C.SOCERA M S.A.	S.C.PETROTE L.S.A./Ploiesti	S.C.MATIZO L.S.A./Berc	S.C.ROMFO SFOCHIM.S.	Cheia Village	Valenii de Munte town	Maneciu Ungureni Village	Boldesti Scaieni	Slanic
Remarks	Glass Ware	Paper	Rubber	Refractory Ceramic	Building Materials	Petro-chemical	Isolation Materials	Chemical Products					
Code No.	4022	4102	4112	4106	4103	4148	4150	4117	4086	4506	4088	4517	4127
Sampling Date	1998/2/11	1998/2/11	1998/2/12	1998/2/12	1998/2/12	1998/2/12	1998/2/12	1998/2/12	1998/2/10	1998/2/10	1998/2/10	1998/2/11	1998/2/11
Discharge(m^3/s)	0.03	0.02	0.01	0.05	0.04	0.64	0.04	0.08	0.32	0.05	0.03	0.08	0.01
WaterTemperature(°C)	11.4	13.3	11.1	14.0	9.8	16.2	12.6	4.3	3.6	7.5	4.1	10.5	4.5
Color	LightBeige	LightGray	Colorless	Colorless	Colorless	Beige	LightBeige	Yellowish	Colorless	LightBeige	LightBeige	Colorless	Colorless
Odor	Domestic	Specific	Odorless	Odorless	Odorless	Oil	Specific	Specific	Odorless	Domestic	Domestic	Domestic	Domestic
EC(mS/cm)	0.18	0.18	2.30	4.68	1.95	1.33	1.76	1.99	5.23	1.23	8.13	0.17	2.16
Turbidity	82	525	9	42	2	67	87	137	1	58	144	21	26
pH	7.50	7.55	8.23	7.92	7.93	8.77	7.64	7.13	8.60	7.38	8.55	7.67	7.80
NH4+ (mg/l)	10.30	4.89	1.00	7.98	0.41	0.90	1.96	7.21	1.42	14.94	43.79	6.95	4.12
NO3- (mg/l)	1.20	3.50	0.70	0.10	2.00	0.50	1.00	0.20	2.20	1.60	1.40	1.50	0.30
NO2- (mg/l)	4.20	3.00	0.36	4.40	0.36	0.14	0.42	1.80	0.08	2.20	0.12	1.30	0.20
Cl-(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
PO43- (mg/l)	4.62	0.30	0.28	3.30	0.06	0.08	0.08	2.40	0.40	5.18	2.08	2.38	1.06
Disolved O_2 (mg/l)	1.50	3.40	7.70	3.57	8.00	7.05	5.70	7.69	10.30	8.60	7.40	4.20	8.00
Petroleum (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD (mg/l)	3.48	35.25	5.62	6.49	1.54	8.10	17.69	50.16	1.72	3.85	65.28	8.20	9.24
COD(Mn) (mg/l)	9.91	24.78	2.82	5.00	1.45	5.81	12.59	23.90	2.30	8.77	27.43	5.43	5.11
SS (mg/l)	58	153	12	23	11	108	52	124	47	79	76	43	49
Cadmium (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr6+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr3+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Anionic Detergents	-	-	-	-	-	-	-	-	-	-	-	-	-
Hg (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni2+ (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-

Table C.2.3 Results of Supplementary Water Quality Analysis (First Time) (5/5)

Site No.	53	54	55	56	57	58	59	60	61	62	63	64	65
River Name	Teleajen	Dimbu	Dimbu	Dimbu	Dimbu	Dimbu	Dimbu	Dimbu	Cricovul Sarat	Cricovul Sarat	Cricovul Sarat	Cricovul Sarat	Cricovul Sarat
Water Classification	Stock Farm Effluent	Tributary	Tributary	Factory Effluent	Factory Effluent	Factory Effluent	Sewerage Effluent	Sewerage Effluent	Tributary	Tributary	Tributary	Sewerage Effluent	Model Point of non-point Source
Sampling Site	F.V.si.F.P.Agros/Scaieni	Goga	Balcoi town	S.C.DACIA.S.A./Ploiesti	24 IANUARIE./	S.C.ASTRA ROMANA/	Baicoi town	Ploiesti city	Singeru	Ciorani	Popesti	Urlati town	Valea Dulce
Remarks		Periodical Point	Supplementary Point	Metal Works/ Repair	Metal Works	Petrochemical			Periodical Point	Periodical Point	Supplementary Point		Supplementary point
Code No.	4577	250	M	4147	4141	4158	4941	4162	275	280	O	4374	
Sampling Date	1998/2/11	1998/2/11	1998/2/10	1998/2/10	1998/2/10	1998/2/10	1998/2/10	1998/2/10	1998/2/12	1998/2/11	1998/2/12	1998/2/12	1998/2/17
Discharge(m^3/s)	0.12	1.68	0.02	0.22	0.25	0.34	0.01	1.58	0.03	3.85	2.43	0.07	0.08
WaterTemperature(°C	30.0	13.1	9.0	7.3	10.0	18.0	3.0	14.6	3.2	1.7	2.1	10.6	7.0
Color	Brown	LightBeige	LightBeige	Colorless	LightBeige	LightBeige	Colorless	LightBeige	Beige	LightBeige	Beige	Beige	Brown
Odor	Domestic	Oil	Domestic	Odorless	Odorless	Oil	Odorless	Domestic	Odorless	Odorless	Odorless	Specific	Odorless
EC(mS/cm)	79.1	1.31	0.77	0.91	0.82	0.96	3.33	0.97	0.51	4.69	0.38	0.12	11.50
Turbidity	670	35	40	10	37	29	11	61	710	800<	800<	165	800<
pH	6.81	7.85	7.44	7.64	7.71	7.48	7.92	7.78	8.55	8.17	8.23	7.91	8.19
NH4+ (mg/l)	8.11	2.83	19.83	2.78	9.02	1.55	1.08	16.74	1.47	1.34	2.94	7.34	1.93
NO3- (mg/l)	0.30	0.90	1.20	1.50	1.40	2.70	1.60	1.60	0.80	1.00	0.70	0.50	0.80
NO2- (mg/l)	4.60	1.00	0.36	0.80	0.18	0.36	0.10	0.40	0.30	0.10	0.04	0.20	0.10
Cl-(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
PO43- (mg/l)	5.80	0.32	5.00	0.32	1.82	0.22	0.34	6.14	0.20	0.22	0.12	8.96	0.40
Disolved O_2 (mg/l)	0.10	6.96	5.50	7.30	8.20	4.20	9.90	2.90	11.10	13.56	12.00	3.10	10.10
Petroleum (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
BOD (mg/l)	252.79	(7.14*)	13.71	1.20	0.54	26.06	9.31	48.65	14.41	8.66	28.75	104.83	29.59
COD(Mn) (mg/l)	199.87	6.07	9.40	3.91	5.64	11.28	4.38	9.40	10.01	5.11	23.90	30.68	24.59
SS (mg/l)	1229	75	67	32	29	101	30	73	193	593	148	116	7799
Cadmium (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr6+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr3+ (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Anionic Detergents	-	-	-	-	-	-	-	-	-	-	-	-	-
Hg (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni2+ (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-

* It shoud be checked.

Table C.2.4 Results of Supplementary Water Quality Analysis (Second Time) (1/5)

Site No.	1	2	3	4	5	6	7	8	9	10	11	12	13
River Name	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova
Water Classification	Main River	Main River	Main River	Main River	Main River	Main River	Main River	Main River	Main River	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent
Sampling Site	Predeal	amonte Sinaia	Cornu	Nedelea	Tinosu	Gherghita	Posada	Finari	Adincata	S.C.BERE.S. A. /Azuga	Hospital /Azuga	S.C.HARTIA. S.A.	S.C.PETROUTILA J /Cimpina
Remarks	Periodical Point	Periodical Point	Periodical Point	Periodical Point	Periodical Point	Periodical Point	Supplementary Point	Supplementary Point	Supplementary Point	S.C.BERE.S. A. /Azuga	Hospital	Paper/Pulp	Petro-industry
Code No.	180	195	200	217	220	270	A	E	H	4006	4010	4014	4292
Sampling Date	1998/3/2	1998/3/2	1998/3/3	1998/3/4	1998/3/2	1998/3/5	1998/3/3	1998/3/2	1998/3/5	1998/3/3	1998/3/3	1998/3/3	1998/3/4
Discharge(m^3/s)	1.34	5.08	9.24	14.60	16.60	32.63	8.88	21.68	32.92	0.02	0.02	0.13	0.02
WaterTemperature(°C)	2.0	4.2	6.9	7.1	8.6	9.8	5.4	9.4	9.2	5.3	13.7	6.4	12.1
Color	Colorless	Colorless	LightBeige	LightBeige	LightBeige	LightBeige	Colorless	LightBeige	LightBeige	Gray	Gray	LightBeige	Colorless
Odor	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless	Domestic	Domestic	Odorless	Oil
EC(mS/cm)	0.30	0.26	0.45	0.69	0.71	1.50	0.28	0.73	1.47	0.29	0.51	0.23	1.09
Turbidity	10	31	216	336	255	172	25	347	207	81	83	147	141
pH	6.54	7.90	8.36	8.46	8.04	7.97	8.34	8.14	8.30	7.28	7.58	7.54	8.07
NH4+ (mg/l)	1.00	1.06	0.46	0.95	1.75	1.44	0.39	1.57	0.28	2.32	6.57	0.75	6.18
NO3- (mg/l)	0.30	0.30	0.50	0.40	0.80	2.30	0.50	0.90	1.40	0.80	0.40	0.40	0.90
NO2- (mg/l)	0.02	0.04	0.08	0.08	0.08	0.60	0.08	0.08	0.96	0.04	0.02	0.08	1.12
Cl-(mg/l)	24.82	14.18	49.64	156.21	165.20	212.73	24.81	134.73	205.64	17.73	35.45	39.01	183.64
Phenol (mg/l)	0.000	0.000	0.003	0.000	0.220	0.040	-	-	-	0.000	0.000	0.001	0.007
PO43- (mg/l)	0.30	0.18	0.20	0.04	0.26	0.40	0.30	0.12	0.28	2.00	2.74	0.22	2.84
Disolved O_2 (mg/l)	13.80	11.75	11.42	13.36	12.10	9.80	11.95	14.10	10.30	11.49	5.46	12.05	8.11
Petroleum (mg/l)	0.00	0.00	0.40	3.10	6.20	9.40	0.00	3.40	5.10	4.30	1.20	1.80	11.70
BOD (mg/l)	1.67	4.53	3.95	1.85	8.50	5.54	2.66	7.06	4.10	49.60	24.71	7.43	16.52
COD(Mn) (mg/l)	1.56	3.09	2.53	1.72	4.09	2.45	1.16	4.73	2.29	25.31	11.08	5.10	6.64
SS (mg/l)	9	44	134	108	168	130	37	171	162	114	128	151	126
Cadmium (mg/l)	0.000	0.000	0.005	0.006	0.037	0.006	-	-	-	0.000	0.000	0.000	0.008
Cyanide (mg/l)	0.000	0.000	0.010	0.018	0.007	0.005	-	-	-	0.000	0.000	0.000	0.002
Cr6+ (mg/l)	0.000	0.000	0.016	0.000	0.000	0.000	-	-	-	0.000	0.000	0.000	0.043
Cr3+ (mg/l)	0.000	0.000	0.007	0.000	0.000	0.000	-	-	-	0.001	0.000	0.000	0.010
Copper (mg/l)	0.000	0.000	0.000	0.021	0.000	0.015	-	-	-	0.000	0.000	0.000	0.009
Anionic Detergents	0.000	0.015	0.280	0.112	0.211	0.146	-	-	-	0.004	0.730	0.006	0.002
Hg (mg/l)	0.000	0.000	0.000	0.000	0.000	0.000	-	-	-	0.000	0.000	0.000	0.000
Ni2+ (mg/L)	0.000	0.000	0.080	0.000	0.050	0.000	-	-	-	0.000	0.000	0.000	0.040
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	0.000	0.000	0.000	0.017	0.000	0.010	-	-	-	0.000	0.000	0.030	0.034
Zinc (mg/l)	0.000	0.000	0.030	0.010	0.020	0.030	-	-	-	0.003	0.010	0.002	0.018

Table C.2.4 Results of Supplementary Water Quality Analysis (Second Time) (2/5)

Site No.	14	15	16	17	18	19	20	21	22	23	24	25	26
River Name	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Prahova	Azuga	Azuga
Water Classification	Factory Effluent	Factory Effluent	Factory Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Stock Farm Effluent	Stock Farm Effluent	Tributary	Factory Effluent
Sampling Site	S.C.VICTORIA.S.A.	RENEL /Ploiesti/	S.C.PETROBRAZI. S.A. /Brazi	Predeal town	Busteni town	Sinaia town	CONSILIUL LOCAL	Breaza town	Cimpina city	F.P.Comporsa/Stancesti	F.P.SancaSRL/Gherghita	Azuga	S.C.POSTAV.S.A./Azug
Remarks	Tire	Thermal Plant	Petro-industry									Periodical Analysis	Textile
Code No.	4039	4047	4051	4317	4011	4018	4032	4028	4034	4082	4123	190	4007
Sampling Date	1998/3/4	1998/3/2	1998/3/2	1998/3/2	1998/3/3	1998/3/3	1998/3/4	1998/3/4	1998/3/4	1998/3/2	1998/3/5	1998/3/2	1998/3/3
Discharge(m^3/s)	0.10	0.77	0.54	0.03	0.11	0.09	0.003	0.02	0.19	0.10	0.00	1.96	0.03
WaterTemperature(°C)	21.8	10.2	14.3	4.8	6.0	5.3	8.5	9.8	12.1	11.2	9.3	2.3	5.9
Color	Colorless	LightBeige	LightBeige	Colorless	Brown	Colorless	LightGray	Gray	Colorless	Gray	Gray	Colorless	Gray
Odor	Odorless	Specific	Oil	Odorless	Domestic	Domestic	Domestic	Domestic	Domestic	Specific	Specific	Odorless	Domestic
EC(mS/cm)	0.59	1.12	0.21	0.39	0.19	0.27	5.66	0.69	0.51	4.37	2.55	0.23	0.38
Turbidity	11	224	94	35	699	45	32	81	101	800<	319	3	353
pH	8.17	7.87	7.56	6.81	8.18	8.23	7.33	7.77	7.17	7.32	7.54	7.83	6.77
NH4+ (mg/l)	0.26	2.01	9.02	5.28	1.08	0.82	5.98	16.23	9.14	376.04	96.59	0.85	2.16
NO3- (mg/l)	1.60	0.70	1.70	0.60	0.40	0.60	0.90	0.20	0.20	0.80	1.70	0.30	0.70
NO2- (mg/l)	0.06	0.08	0.38	0.14	0.10	0.08	0.30	1.00	1.04	0.80	0.30	0.00	0.18
Cl-(mg/l)	92.18	460.92	191.46	49.64	20.18	24.81	141.82	85.09	63.82	1283.52	670.91	9.64	49.64
Phenol (mg/l)	0.003	0.003	0.820	0.000	0.000	0.000	0.000	0.000	0.002	-	-	0.000	0.011
PO43- (mg/l)	0.08	0.20	0.30	1.40	0.48	0.40	1.80	7.18	3.90	31.60	27.80	0.14	0.34
Disolved O_2 (mg/l)	7.11	11.40	8.60	11.20	11.79	11.26	6.53	5.79	5.22	4.70	1.90	13.33	8.68
Petroleum (mg/l)	4.40	6.40	9.50	0.40	6.10	2.80	7.00	2.80	6.20	6.30	9.10	0.00	10.60
BOD (mg/l)	1.23	9.82	20.41	7.54	4.90	2.30	6.07	9.50	10.54	2504.16	284.68	0.39	21.89
COD(Mn) (mg/l)	1.02	3.29	14.62	5.06	2.20	1.40	3.93	6.50	7.55	381.66	59.36	0.68	11.08
SS (mg/l)	44	115	145	54	203	33	97	110	125	1969	313	5	146
Cadmium (mg/l)	0.000	0.000	0.008	0.000	0.000	0.000	0.009	0.043	0.019	-	-	0.000	0.000
Cyanide (mg/l)	0.000	0.000	0.017	0.000	0.004	0.001	0.010	0.009	0.009	-	-	0.000	0.002
Cr6+ (mg/l)	0.000	0.000	0.006	0.000	0.000	0.000	0.008	0.050	0.050	-	-	0.000	0.060
Cr3+ (mg/l)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.009	-	-	0.000	0.002
Copper (mg/l)	0.030	0.000	0.002	0.000	0.000	0.007	0.003	0.007	0.016	-	-	0.000	0.008
Anionic Detergents	0.009	0.014	0.352	0.003	0.004	0.010	0.032	0.026	0.042	-	-	0.000	0.209
Hg (mg/l)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	-	-	0.000	0.000
Ni2+ (mg/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.083	0.060	-	-	0.000	0.000
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	0.008	0.002	0.003	0.003	0.002	0.000	0.000	0.012	0.040	-	-	0.000	0.000
Zinc (mg/l)	0.007	0.007	0.016	0.000	0.001	0.002	0.007	0.008	0.032	-	-	0.000	0.005

Table C.2.4 Results of Supplementary Water Quality Analysis (Second Time) (3/5)

Site No.	27	28	29	30	31	32	33	34	35	36	37	38	39
River Name	Azuga	Azuga	Doftana	Doftana	Doftana	Doftana	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen
Water Classification	Factory Effluent	Sewerage Effluent	Tributary	Tributary	Tributary	Factory Effluent	Tributary	Tributary	Tributary	Tributary	Tributary	Tributary	Factory Effluent
Sampling Site	S.C.SINTER. REF.S.A.	Azuga town	amonte Traisteni	Ac.Voila	Cimpina	S.C.STEAUA ROMANA	Cheia	Gura Vitioarei	Moara Domneasca	Piatra	Sipotu	Coslegi	SALINA Slanic
Remarks	Refractory Materials Factory		Periodical Point	Supplementary Point	Supplementary Point	Petro-chemical	Periodical Point	Periodical Point	Periodical Point	Supplementary Point	Supplementary Point	Supplementary Point	Salt
Code No.	4004	4008	205	B	C	4035	230	240	260	J	K	L	4582
Sampling Data	1998/3/2	1998/3/2	1998/3/5	1998/3/5	1998/3/4	1998/3/4	1998/3/2	1998/3/2	1998/3/2	1998/3/2	1998/3/3	1998/3/2	1998/3/3
Discharge(m^3/s)	0.09	0.30	1.59	4.39	2.20	0.08	0.58	6.68	26.43	7.08	10.72	9.13	0.08
WaterTemperature(℃	2.6	5.1	5.1	5.3	4.7	8.1	3.0	8.0	9.3	6.5	3.6	9.5	6.5
Color	Colorless	Gray	Colorless	Colorless	Colorless	Colorless	Colorless	Beige	LightBeige	LightBeige	Beige	LightBeige	LightBeige
Odor	Odorless	Domestic	Odorless	Odorless	Odorless	Oil	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless
EC(mS/cm)	0.24	0.34	0.26	0.30	0.60	1.91	0.25	0.95	1.44	0.75	0.95	1.50	0.68
Turbidity	4	78	140	40	235	11	60	624	107	132	334	90	63
pH	7.84	7.88	8.32	8.44	8.19	8.03	7.75	8.10	7.99	8.22	8.13	8.15	7.85
NH4+ (mg/l)	0.95	5.80	0.28	0.49	0.95	1.00	0.95	1.37	7.65	1.03	9.14	1.42	20.61
NO3- (mg/l)	0.20	0.20	0.30	0.50	0.40	0.70	0.50	0.70	2.80	0.40	1.40	0.70	0.60
NO2- (mg/l)	0.00	2.00	0.02	0.02	0.06	0.06	0.00	0.06	0.36	0.02	0.34	0.06	0.04
Cl-(mg/l)	28.36	24.81	14.82	14.82	99.27	248.19	12.61	83.18	269.46	56	134.73	312	354.55
Phenol (mg/l)	0.000	0.000	0.000	-	-	0.098	0.000	0.001	0.019	-	-	-	0.000
PO43- (mg/l)	0.14	1.42	0.28	0.16	0.28	0.24	0.14	0.24	0.42	0.28	0.24	0.32	3.60
Disolved O_2 (mg/l)	13.88	9.42	14.61	11.87	13.16	10.63	12.45	11.50	11.30	11.89	12.95	12.30	7.23
Petroleum (mg/l)	0.80	3.30	0.00	0.00	1.90	6.40	0.00	0.80	8.50	0.70	3.50	6.60	1.10
BOD (mg/l)	1.07	14.99	1.68	1.01	2.85	15.99	1.19	10.16	3.73	3.61	4.70	3.36	16.64
COD(Mn) (mg/l)	0.84	8.51	0.94	0.87	2.20	11.80	1.00	7.47	2.97	2.65	3.19	2.65	9.11
SS (mg/l)	49	77	13	11	89	63	9	200	72	75	135	101	36
Cadmium (mg/l)	0.000	0.000	0.000	-	-	0.007	0.000	0.005	0.004	-	-	-	0.000
Cyanide (mg/l)	0.000	0.000	0.000	-	-	0.002	0.000	0.001	0.002	-	-	-	0.000
Cr6+ (mg/l)	0.000	0.000	0.000	-	-	0.000	0.000	0.000	0.040	-	-	-	0.000
Cr3+ (mg/l)	0.000	0.008	0.000	-	-	0.000	0.000	0.000	0.008	-	-	-	0.000
Copper (mg/l)	0.000	0.000	0.000	-	-	0.037	0.000	0.000	0.042	-	-	-	0.000
Anionic	0.007	0.011	0.000	-	-	0.349	0.000	0.031	0.841	-	-	-	0.002
Hg (mg/l)	0.000	0.000	0.000	-	-	0.000	0.000	0.000	0.000	-	-	-	0.000
Ni2+ (mg/L)	0.000	0.010	0.000	-	-	0.000	0.000	0.000	0.000	-	-	-	0.000
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	0.000	0.000	0.000	-	-	0.017	0.000	0.000	0.009	-	-	-	0.000
Zinc (mg/l)	0.000	0.007	0.000	-	-	0.027	0.000	0.002	0.020	-	-	-	0.000

Table C.2.4 Results of Supplementary Water Quality Analysis (Second Time) (4/5)

Site No.	40	41	42	43	44	45	46	47	48	49	50	51	52
River Name	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen	Teleajen
Water Classification	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Factory Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent	Sewerage Effluent
Sampling Site	S.C.GES.S.A. /Boldesti	S.C.CAHIRO .S.A./Boldes	S.C.ARPACO R.S.A./Bucov	S.C.REALS S..A./Pleas	S.C.SOCERA M S..A.	S.C.PETROTE L.S.A./Ploiesti	S.C.MATIZO L.S.A./Berc	S.C.ROMFO SFOCHIM.S.	Cheia Village	Valenii de Munte town	Maneciu Un-gureni Village	Boldesti Scaieni	Slanic
Remarks	Glass Ware	Paper	Rubber	Refractory Ceramic	Building Materials	Petro-chemical	Isolation Materials	Chemical Products					
Code No.	4022	4102	4112	4106	4103	4148	4150	4117	4086	4506	4088	4517	4127
Sampling Date	1998/3/3	1998/3/3	1998/3/4	1998/3/4	1998/3/4	1998/3/4	1998/3/4	1998/3/4	1998/3/2	1998/3/2	1998/3/2	1998/3/3	1998/3/5
Discharge(m^3/s)	0.01	0.02	0.01	0.03	0.03	0.60	0.03	0.02	0.05	0.05	0.01	0.07	0.01
WaterTemperature(°C)	10.6	14.1	10.9	16.2	10.4	18.9	14.4	6.9	5.0	9.0	7.0	11.6	6.6
Color	LightBeige	Gray	Colorless	Beige	Colorless	Beige	Beige	LightBeige	Colorless	LightBeige	LightBeige	Colorless	LightBeige
Odor	Domestic	Specific	Odorless	Odorless	Odorless	Oil	Specific	Specific	Odorless	Domestic	Domestic	Domestic	Domestic
EC(mS/cm)	1.69	1.86	2.77	2.51	1.92	1.20	1.82	2.19	0.51	0.72	0.52	1.64	0.35
Turbidity	81	382	22	41	8	62	143	25	2	81	187	11	300
pH	7.33	7.72	7.80	7.91	7.96	7.84	7.54	7.29	7.86	7.72	7.46	7.86	7.89
NH4+ (mg/l)	12.88	1.80	1.44	8.63	0.95	1.08	4.64	6.44	0.82	14.17	21.89	7.34	4.76
NO3- (mg/l)	0.90	3.90	6.50	1.20	6.90	0.70	0.90	1.30	0.40	1.00	0.40	1.30	0.20
NO2- (mg/l)	2.40	5.60	3.20	0.20	0.30	0.18	3.60	0.00	0.02	2.70	0.20	0.88	0.04
Cl-(mg/l)	214.14	212.73	269.12	238.19	225.46	212.73	390.00	460.92	25.09	35.45	70.91	312.00	283.64
Phenol (mg/l)	0.000	0.002	0.000	0.000	0.000	0.048	0.012	0.000	0.000	0.006	0.000	0.013	0.000
PO43- (mg/l)	4.74	0.72	0.36	4.20	0.40	0.26	0.56	0.64	0.20	5.86	9.66	3.56	2.02
Disolved O_2 (mg/l)	2.50	7.40	7.78	2.33	8.20	5.70	4.75	8.10	10.60	7.77	9.00	3.80	9.28
Petroleum (mg/l)	5.50	5.30	3.70	2.50	1.90	9.20	1.40	2.60	0.20	3.20	5.10	5.60	7.20
BOD (mg/l)	10.01	24.80	7.35	4.62	1.11	9.71	19.46	18.19	0.68	16.40	38.79	8.61	9.81
COD(Mn) (mg/l)	7.35	21.74	3.81	3.29	0.68	4.90	16.55	10.76	0.92	10.44	20.88	3.91	4.74
SS (mg/l)	136	337	42	32	6	141	121	153	12	76	51	48	99
Cadmium (mg/l)	0.000	0.000	0.000	0.000	0.000	0.009	0.001	0.002	0.000	0.002	0.000	0.003	0.004
Cyanide (mg/l)	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.000	0.002	0.000	0.004	0.002
Cr6+ (mg/l)	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.008	0.000	0.006	0.000	0.008	0.040
Cr3+ (mg/l)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.002	0.000	0.003	0.008
Copper (mg/l)	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.030	0.000	0.004	0.000	0.000	0.000
Anionic Detergents	0.009	0.040	0.011	0.005	0.006	0.205	0.046	0.008	0.089	0.029	0.087	0.043	0.024
Hg (mg/l)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ni2+ (mg/L)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.005	0.000	0.007	0.030
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	0.008	0.020	0.010	0.000	0.000	0.006	0.003	0.000	0.001	0.000	0.002	0.020	0.000
Zinc (mg/l)	0.002	0.001	0.003	0.000	0.000	0.003	0.007	0.020	0.004	0.007	0.006	0.008	0.000

Table C.2.4 Results of Supplementary Water Quality Analysis (Second Time) (5/5)

Site No.	53	54	55	56	57	58	59	60	61	62	63	64	65
River Name	Teleajen	Dimbu	Dimbu	Dimbu	Dimbu	Dimbu	Dimbu	Dimbu	Cricovul Sarat	Cricovul Sarat	Cricovul Sarat	Cricovul Sarat	Cricovul Sarat
Water Classification	Stock Farm Effluent	Tributary	Tributary	Factory Effluent	Factory Effluent	Factory Effluent	Sewerage Effluent	Sewerage Effluent	Tributary	Tributary	Tributary	Sewerage Effluent	Model Point of non-point Source
Sampling Site	F.V.si.F.P.Agros/Scaieni	Goga	Baicoi town	S.C.DACIA.S.A./Ploiesti	24 IANUARIE./	S.C.ASTRA ROMANA/	Baicoi town	Ploiesti city	Singeru	Ciorani	Popesti	Urlati town	Valea Dulce
Remarks		Periodical Point	Supplementary Point	Metal Works/ Repair	Metal Works	Petrochemical			Periodical Point	Periodical Point	Supplementary Point		Supplementary point
Code No.	4577	250	M	4147	4141	4158	4941	4162	275	280	O	4374	
Sampling Date	1998/3/3	1998/3/5	1998/3/4	1998/3/4	1998/3/4	1998/3/4	1998/3/4	1998/3/4	1998/3/5	1998/3/5	1998/3/5	1998/3/5	1998/3/5
Discharge(m^3/s)	0.03	1.94	0.08	0.19	0.46	0.00	0.04	1.94	0.17	1.35	0.92	0.05	0.09
WaterTemperature(°C	29.1	13.7	8.0	11.7	15.4	20.4	12.0	16.4	8.9	9.1	10.0	12.9	7.6
Color	Brown	Beige	LightBeige	Colorless	Colorless	LightBeige	Gray	LightBeige	Beige	LightBeige	LightBeige	Brown	Beige
Odor	Domestic	Product	Odorless	Odorless	Oil	Oil	Domestic	Domestic	Odorless	Odorless	Odorless	Domestic	Odorless
EC(mS/cm)	67.7	1.27	5.37	1.15	1.14	1.18	0.63	1.21	5.73	4.74	4.81	1.21	9.90
Turbidity	460	73	10	13	11	38	73	103	800<	361	209	583	373
pH	6.69	7.83	8.55	8.79	7.66	7.66	7.65	7.94	8.10	8.35	8.17	7.08	8.10
NH4+ (mg/l)	81.13	3.61	2.32	3.61	1.67	8.26	13.39	20.30	0.26	0.31	0.08	25.76	0.18
NO3- (mg/l)	1.40	2.50	1.40	0.60	0.60	0.20	2.80	0.90	1.20	2.00	2.80	0.80	0.90
NO2- (mg/l)	0.20	0.90	0.14	0.38	0.72	0.18	0.14	0.04	0.08	0.42	0.14	0.02	0.10
Cl-(mg/l)	3722.77	184.37	1701.84	191.46	205.64	212.73	177.27	163.09	1418.2	1315.16	1347.29	283.64	3190.95
Phenol (mg/l)	-	0.180	-	0.000	0.000	0.064	0.000	0.004	0.000	0.000	-	0.005	-
PO43- (mg/l)	9.96	1.16	0.18	1.28	0.78	0.14	4.18	5.64	0.16	0.24	0.12	0.77	0.10
Disolved O_2 (mg/l)	0.14	5.17	20.40	20.30	6.60	6.70	3.30	3.70	11.27	13.10	11.30	2.36	11.50
Petroleum (mg/l)	7.40	6.40	3.40	4.50	4.10	12.70	4.60	16.30	0.20	1.50	1.90	7.90	0.80
BOD (mg/l)	231.49	14.92	5.22	4.93	4.05	15.97	14.55	33.45	5.76	3.21	3.94	72.82	3.40
COD(Mn) (mg/l)	55.96	8.54	2.84	2.45	2.21	10.76	8.54	10.76	3.32	3.32	2.68	37.20	3.48
SS (mg/l)	2864	87	57	22	18	114	128	183	258	152	113	152	153
Cadmium (mg/l)	-	0.010	-	0.007	0.016	0.000	0.025	0.040	0.000	0.002	-	0.010	-
Cyanide (mg/l)	-	0.020	-	0.001	0.002	0.001	0.010	0.005	0.000	0.007	-	0.006	-
Cr6+ (mg/l)	-	0.060	-	0.050	0.000	0.000	0.042	0.080	0.000	0.000	-	0.000	-
Cr3+ (mg/l)	-	0.000	-	0.030	0.000	0.000	0.008	0.030	0.000	0.000	-	0.000	-
Copper (mg/l)	-	0.020	-	0.000	0.023	0.000	0.019	0.028	0.000	0.000	-	0.001	-
Anionic Detergents	-	1.21	-	0.075	0.009	0.893	0.186	2.982	0.000	0.044	-	0.750	-
Hg (mg/l)	-	0.000	-	0.000	0.000	0.000	0.000	0.003	0.000	0.000	-	0.000	-
Ni2+ (mg/L)	-	0.000	-	0.000	0.030	0.008	0.060	0.080	0.000	0.000	-	0.002	-
Organochlorine	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (mg/l)	-	0.050	-	0.030	0.016	0.006	0.024	0.068	0.000	0.000	-	0.000	-
Zinc (mg/l)	-	0.023	-	0.008	0.031	0.010	0.020	0.050	0.000	0.005	-	0.003	-