

**Table D.3.7 Construction Cost of Planned Sewerage System (1/3)**

Unit : 1000us\$

	without Extension		with Extension	
	Treatment Plant	Sewer Pipe	Treatment Plant	Sewer Pipe
<b>1 Predeal</b>				
Civil Work & Building	-	-	-	54
Mechanical Work & Equipment	-	-	-	-
Electrical Work & Control System	-	-	-	-
Indirect Cost (20% of the above)	-	-	-	11
Sub-total of the above	-	-	-	64
VAT(22% of Sub-total)	-	-	-	14
<b>Total</b>	-	-	-	<b>79</b>
<b>2 Azuga</b>				
Civil Work & Building	215	27	227	35
Mechanical Work & Equipment	52	-	248	-
Electrical Work & Control System	150	-	129	-
Indirect Cost (20% of the above)	83	5	121	7
Sub-total of the above	688	32	724	42
VAT(22% of Sub-total)	151	7	159	9
<b>Total</b>	<b>839</b>	<b>39</b>	<b>884</b>	<b>51</b>
<b>3 Busteni</b>				
Civil Work & Building	376	688	516	855
Mechanical Work & Equipment	62	-	384	-
Electrical Work & Control System	238	-	267	-
Indirect Cost (20% of the above)	135	138	233	171
Sub-total of the above	1,022	825	1,401	1,026
VAT(22% of Sub-total)	225	182	308	226
<b>Total</b>	<b>1,246</b>	<b>1,007</b>	<b>1,709</b>	<b>1,251</b>
<b>4 Sinaia</b>				
Civil Work & Building	216	-	233	148
Mechanical Work & Equipment	32	-	156	-
Electrical Work & Control System	516	-	454	-
Indirect Cost (20% of the above)	153	-	168	30
Sub-total of the above	941	-	1,011	177
VAT(22% of Sub-total)	207	-	222	39
<b>Total</b>	<b>1,148</b>	<b>-</b>	<b>1,233</b>	<b>216</b>
<b>5 Cernic</b>				
Civil Work & Building	-	-	213	334
Mechanical Work & Equipment	-	-	198	-
Electrical Work & Control System	-	-	109	-
Indirect Cost (20% of the above)	-	-	104	67
Sub-total of the above	-	-	624	401
VAT(22% of Sub-total)	-	-	137	88
<b>Total</b>	<b>-</b>	<b>-</b>	<b>761</b>	<b>490</b>

**Table D.3.7 Construction Cost of Planned Sewerage System (2/3)**

Unit : 1000us\$

	without Extension		with Extension	
	Treatment Plant	Sewer Pipe	Treatment Plant	Sewer Pipe
<b>6 Breaza</b>				
Civil Work & Building	19	-	21	140
Mechanical Work & Equipment	4	-	22	-
Electrical Work & Control System	-	-	-	-
Indirect Cost (20% of the above)	5	-	9	28
Sub-total of the above	46	-	52	168
VAT(22% of Sub-total)	10	-	11	37
<b>Total</b>	<b>56</b>	<b>-</b>	<b>64</b>	<b>205</b>
<b>7 Cimpina</b>				
Civil Work & Building	646	-	785	650
Mechanical Work & Equipment	134	-	742	-
Electrical Work & Control System	938	-	935	-
Indirect Cost (20% of the above)	344	-	493	130
Sub-total of the above	2,429	-	2,955	780
VAT(22% of Sub-total)	534	-	650	172
<b>Total</b>	<b>2,963</b>	<b>-</b>	<b>3,605</b>	<b>952</b>
<b>8 Baicoi</b>				
Civil Work & Building	116	-	154	354
Mechanical Work & Equipment	78	-	471	-
Electrical Work & Control System	152	-	166	-
Indirect Cost (20% of the above)	69	-	158	71
Sub-total of the above	713	-	949	425
VAT(22% of Sub-total)	157	-	209	94
<b>Total</b>	<b>870</b>	<b>-</b>	<b>1,158</b>	<b>519</b>
<b>9 Plopeni</b>				
Civil Work & Building	336	-	349	64
Mechanical Work & Equipment	143	-	675	-
Electrical Work & Control System	440	-	374	-
Indirect Cost (20% of the above)	184	-	280	13
Sub-total of the above	1,615	-	1,678	77
VAT(22% of Sub-total)	355	-	369	17
<b>Total</b>	<b>1,970</b>	<b>-</b>	<b>2,047</b>	<b>94</b>
<b>10 Slanic</b>				
Civil Work & Building	24	-	28	215
Mechanical Work & Equipment	22	-	122	-
Electrical Work & Control System	-	-	-	-
Indirect Cost (20% of the above)	9	-	30	43
Sub-total of the above	150	-	181	258
VAT(22% of Sub-total)	33	-	40	57
<b>Total</b>	<b>184</b>	<b>-</b>	<b>221</b>	<b>315</b>

**Table D.3.7 Construction Cost of Planned Sewerage System (3/3)**

Unit : 1000us\$

	without Extension		with Extension	
	Treatment Plant	Sewer Pipe	Treatment Plant	Sewer Pipe
<b>11 Valenii De Munte</b>				
Civil Work & Building	7	-	11	256
Mechanical Work & Equipment	2	-	19	-
Electrical Work & Control System	-	-	-	-
Indirect Cost (20% of the above)	2	-	6	51
Sub-total of the above	22	-	35	307
VAT(22% of Sub-total)	5	-	8	68
<b>Total</b>	<b>26</b>	<b>-</b>	<b>43</b>	<b>375</b>
<b>12 Boldesti Scaieni</b>				
Civil Work & Building	4	-	5	172
Mechanical Work & Equipment	3	-	15	-
Electrical Work & Control System	-	-	-	-
Indirect Cost (20% of the above)	1	-	4	34
Sub-total of the above	21	-	24	206
VAT(22% of Sub-total)	5	-	5	45
<b>Total</b>	<b>26</b>	<b>-</b>	<b>29</b>	<b>252</b>
<b>13 Urlati</b>				
Civil Work & Building	46	-	61	310
Mechanical Work & Equipment	33	-	197	-
Electrical Work & Control System	-	-	-	-
Indirect Cost (20% of the above)	16	-	52	62
Sub-total of the above	233	-	309	372
VAT(22% of Sub-total)	51	-	68	82
<b>Total</b>	<b>284</b>	<b>-</b>	<b>377</b>	<b>453</b>
<b>14 Ploiesti</b>				
Civil Work & Building	5,414	-	5,547	1,962
Mechanical Work & Equipment	1,082	-	5,046	-
Electrical Work & Control System	3,702	-	3,119	-
Indirect Cost (20% of the above)	2,039	-	2,742	392
Sub-total of the above	16,040	-	16,454	2,355
VAT(22% of Sub-total)	3,529	-	3,620	518
<b>Total</b>	<b>19,569</b>	<b>-</b>	<b>20,074</b>	<b>2,873</b>

**Table D.3.8 Rehabilitation Cost of Existing Sewerage Treatment Plant (1/3)**

City/Town	Unit	Primary Sedimentation Tank	Aeration Tank	Secondary Sedimentation Tank	Piping & Plumbing	Electric & Control Facilities	Total	
<b>1 Predeal</b>								
Required rehabilitation level	%	0%	0%	0%	0%	0%		
Required rehabilitation cost	1000us\$	-	-	-	-	-	-	
Indirect cost(20%of the above)	1000us\$							
Sub-total of the above	1000us\$							
VAT(22% of sub-total)	1000us\$							
Total	1000us\$						-	
<b>2 Azuga</b>								
Required rehabilitation level	%							
Required rehabilitation cost	1000us\$							
Indirect cost(20%of the above)	1000us\$	No treatment plant is provided.						
Sub-total of the above	1000us\$							
VAT(22% of sub-total)	1000us\$							
Total	1000us\$							
<b>3 Busteni</b>								
Required rehabilitation level	%							
Required rehabilitation cost	1000us\$							
Indirect cost(20%of the above)	1000us\$	No treatment plant is provided.						
Sub-total of the above	1000us\$							
VAT(22% of sub-total)	1000us\$							
Total	1000us\$							
<b>4 Sinaia</b>								
Required rehabilitation level	%	0%	50%	0%	50%	50%		
Required rehabilitation cost	1000us\$	-	19.1	-	7.2	68.8	95.0	
Indirect cost(20%of the above)	1000us\$	-	3.8	-	1.4	13.8	19.0	
Sub-total of the above	1000us\$	-	22.9	-	8.6	82.6	114.0	
VAT(22% of sub-total)	1000us\$	-	5.0	-	1.9	18.2	25.1	
Total	1000us\$	-	27.9	-	10.5	100.7	139.1	
<b>5 Comarnic</b>								
Required rehabilitation level	%							
Required rehabilitation cost	1000us\$							
Indirect cost(20%of the above)	1000us\$	No treatment plant is provided.						
Sub-total of the above	1000us\$							
VAT(22% of sub-total)	1000us\$							
Total	1000us\$							

**Table D.3.8 Rehabilitation Cost of Existing Sewerage Treatment Plant (2/3)**

City/Town	Unit	Primary Sedimentation Tank	Aeration Tank	Secondary Sedimentation Tank	Piping & Plumbing	Electric & Control Facilities	Total
<b>6 Breaza</b>							
Required rehabilitation level	%	50%	50%	50%	50%	50%	
Required rehabilitation cost	1000us\$	65.7	31.8	1.1	37.0	171.0	306.6
Indirect cost(20%of the above)	1000us\$	13.1	6.4	0.2	7.4	34.2	61.3
Sub-total of the above	1000us\$	78.9	38.2	1.3	44.4	205.2	367.9
VAT(22% of sub-total)	1000us\$	17.4	8.4	0.3	9.8	45.1	80.9
Total	1000us\$	96.2	46.6	1.6	54.1	250.3	448.8
<b>7 Cimpna</b>							
Required rehabilitation level	%	50%	50%	50%	50%	50%	
Required rehabilitation cost	1000us\$	62.5	26.5	8.5	36.6	109.0	243.1
Indirect cost(20%of the above)	1000us\$	12.5	5.3	1.7	7.3	21.8	48.6
Sub-total of the above	1000us\$	75.1	31.8	10.2	43.9	130.8	291.7
VAT(22% of sub-total)	1000us\$	16.5	7.0	2.2	9.7	28.8	64.2
Total	1000us\$	91.6	38.8	12.4	53.5	159.6	355.9
<b>8 Baicoi</b>							
Required rehabilitation level	%	100%	100%	100%	100%	100%	
Required rehabilitation cost	1000us\$	245.9	31.8	65.7	257.6	99.4	700.5
Indirect cost(20%of the above)	1000us\$	49.2	6.4	13.1	51.5	19.9	140.1
Sub-total of the above	1000us\$	295.1	38.2	78.9	309.1	119.3	840.6
VAT(22% of sub-total)	1000us\$	64.9	8.4	17.4	68.0	26.2	184.9
Total	1000us\$	360.1	46.6	96.2	377.1	145.5	1,025.5
<b>9 Plopeni</b>							
Required rehabilitation level	%	50%	100%	50%	50%	50%	
Required rehabilitation cost	1000us\$	184.5	46.6	76.3	115.3	88.2	510.9
Indirect cost(20%of the above)	1000us\$	36.9	9.3	15.3	23.1	17.6	102.2
Sub-total of the above	1000us\$	221.3	56.0	91.6	138.3	105.8	613.1
VAT(22% of sub-total)	1000us\$	48.7	12.3	20.1	30.4	23.3	134.9
Total	1000us\$	270.0	68.3	111.7	168.8	129.1	748.0
<b>10 Slanic</b>							
Required rehabilitation level	%	100%	100%	100%	100%	100%	
Required rehabilitation cost	1000us\$	131.4	21.2	44.5	147.9	53.6	398.7
Indirect cost(20%of the above)	1000us\$	26.3	4.2	8.9	29.6	10.7	79.7
Sub-total of the above	1000us\$	157.7	25.4	53.4	177.5	64.3	478.4
VAT(22% of sub-total)	1000us\$	34.7	5.6	11.8	39.0	14.2	105.2
Total	1000us\$	192.4	31.0	65.2	216.5	78.5	583.6

**Table D.3.8 Rehabilitation Cost of Existing Sewerage Treatment Plant (3/3)**

City/Town	Unit	Primary Sedimentation Tank	Aeration Tank	Secondary Sedimentation Tank	Piping & Plumbing	Electric & Control Facilities	Total
<b>11 Valenii De Munte</b>							
Required rehabilitation level	%	100%	100%	100%	100%	100%	
Required rehabilitation cost	1000us\$	125.1	27.6	125.1	208.3	76.2	562.2
Indirect cost(20%of the above)	1000us\$	25.0	5.5	25.0	41.7	15.2	112.4
Sub-total of the above	1000us\$	150.1	33.1	150.1	250.0	91.4	674.7
VAT(22% of sub-total)	1000us\$	33.0	7.3	33.0	55.0	20.1	148.4
Total	1000us\$	183.1	40.4	183.1	305.0	111.6	823.1
<b>12 Boldesti Scaieni</b>							
Required rehabilitation level	%	0%	50%	0%	50%	50%	
Required rehabilitation cost	1000us\$	-	42.4	-	15.9	77.9	136.2
Indirect cost(20%of the above)	1000us\$	-	8.5	-	3.2	15.6	27.2
Sub-total of the above	1000us\$	-	50.9	-	19.1	93.5	163.4
VAT(22% of sub-total)	1000us\$	-	11.2	-	4.2	20.6	36.0
Total	1000us\$	-	62.1	-	23.3	114.0	199.4
<b>13 Urlati</b>							
Required rehabilitation level	%	50%	50%	50%	50%	50%	
Required rehabilitation cost	1000us\$	123.0	18.0	1.1	53.3	65.2	260.5
Indirect cost(20%of the above)	1000us\$	24.6	3.6	0.2	10.7	13.0	52.1
Sub-total of the above	1000us\$	147.6	21.6	1.3	63.9	78.2	312.6
VAT(22% of sub-total)	1000us\$	32.5	4.8	0.3	14.1	17.2	68.8
Total	1000us\$	180.0	26.4	1.6	78.0	95.5	381.4
<b>14 Ploiesti</b>							
Required rehabilitation level	%	50%	0%	0%	50%	50%	
Required rehabilitation cost	1000us\$	258.7	-	-	97.0	439.6	795.2
Indirect cost(20%of the above)	1000us\$	51.7	-	-	19.4	87.9	159.0
Sub-total of the above	1000us\$	310.4	-	-	116.4	527.5	954.3
VAT(22% of sub-total)	1000us\$	68.3	-	-	25.6	116.0	209.9
Total	1000us\$	378.7	-	-	142.0	643.5	1,164.2
<b>G.Total</b>		<b>1,752.1</b>	<b>388.0</b>	<b>471.8</b>	<b>1,428.8</b>	<b>1,828.4</b>	<b>5,869.0</b>

**Table D.3.9 Operation and Maintenance Cost of Planned Swearage System**

without Extension

City/Town	Treatment Plant					Sewer System	
	Design Discharge (m <sup>3</sup> /day)	Manpower Cost (us\$/m <sup>3</sup> )	Chemical Cost (us\$/m <sup>3</sup> )	Electricity Cost (us\$/m <sup>3</sup> )	Total of O&M Cost (us\$/day)	Annual O&M Cost (1000us\$/year)	Annual O&M Cost (1000us\$/year)
1 Predeal	2,627	0.0100	0.0095	0.0159	93.0	33.9	3.8
2 Azuga	2,445	0.0100	0.0095	0.0159	86.6	31.6	3.5
3 Busteni	3,888	0.0100	0.0095	0.0159	137.6	50.2	5.6
4 Sinaia	10,990	0.0050	0.0095	0.0159	334.1	121.9	13.5
5 Comarnic	0	0	0	0	0.0	0.0	0.0
6 Breaza	6,826	0.0060	0.0095	0.0159	214.3	78.2	8.7
7 Cimpina	25,212	0.0024	0.0095	0.0119	600.0	219.0	24.3
8 Baicoi	3,966	0.0100	0.0095	0.0159	140.4	51.2	5.7
9 Plopeni	10,558	0.0050	0.0095	0.0159	321.0	117.2	13.0
10 Slanic	1,071	0.0170	0.0095	0.0159	45.4	16.6	1.8
11 Valenii de Munte	1,521	0.0170	0.0095	0.0159	64.5	23.5	2.6
12 Boldesti Scaieni	3,110	0.0100	0.0095	0.0159	110.1	40.2	4.5
13 Urlati	2,601	0.0100	0.0095	0.0159	92.1	33.6	3.7
14 Ploiesti	161,827	0.0012	0.0095	0.0119	3,657.3	1,334.9	148.3
<b>Total</b>	<b>236,642</b>					<b>2,152.2</b>	<b>239.1</b>

with Extension

City/Town	Treatment Plant					Sewer System	
	Design Discharge (m <sup>3</sup> /day)	Manpower Cost (us\$/m <sup>3</sup> )	Chemical Cost (us\$/m <sup>3</sup> )	Electricity Cost (us\$/m <sup>3</sup> )	Total of O&M Cost (us\$/day)	Annual O&M Cost (1000us\$/year)	Annual O&M Cost (1000us\$/year)
1 Predeal	2,851	0.0100	0.0095	0.0159	100.9	36.8	4.1
2 Azuga	2,575	0.0100	0.0095	0.0159	91.2	33.3	3.7
3 Busteni	5,331	0.0060	0.0095	0.0159	167.4	61.1	6.8
4 Sinaia	11,802	0.0050	0.0095	0.0159	358.8	131.0	14.6
5 Comarnic	2,169	0.0100	0.0095	0.0159	76.8	28.0	3.1
6 Breaza	7,793	0.0060	0.0095	0.0159	244.7	89.3	9.9
7 Cimpina	30,681	0.0024	0.0095	0.0119	730.2	266.5	29.6
8 Baicoi	5,279	0.0060	0.0095	0.0159	165.8	60.5	6.7
9 Plopeni	10,973	0.0050	0.0095	0.0159	333.6	121.8	13.5
10 Slanic	1,287	0.0170	0.0095	0.0159	54.6	19.9	2.2
11 Valenii de Munte	2,480	0.0100	0.0095	0.0159	87.8	32.0	3.6
12 Boldesti Scaieni	3,499	0.0100	0.0095	0.0159	123.9	45.2	5.0
13 Urlati	3,456	0.0100	0.0095	0.0239	150.0	54.7	6.1
14 Ploiesti	166,009	0.0012	0.0095	0.0119	3,751.8	1,369.4	152.2
<b>Total</b>	<b>256,185</b>					<b>2,349.6</b>	<b>261.1</b>

**Table D.3.10 Project Cost of Planned Sewerage System**

without Extension		Unit : 1000us\$					
Municipalities	Construction Cost				Annual O&M Cost		
	Rehabilitation Cost	Treatment Plant	Sewer	Total	Treatment Plant	Sewer	Total
1 Predeal	-	-	-	-	34	4	38
2 Azuga	-	839	39	878	32	4	35
3 Busteni	-	1,246	1,007	2,253	50	6	56
4 Sinaia	139	1,148	-	1,287	122	14	135
5 Comarnic	-	-	-	-	-	-	-
6 Breaza	449	56	-	505	78	9	87
7 Cimpina	356	2,963	-	3,319	219	24	243
8 Baicoi	1,025	870	-	1,896	51	6	57
9 Plopeni	748	1,970	-	2,718	117	13	130
10 Slanic	584	184	-	767	17	2	18
11 Valenii de Munte	823	26	-	849	24	3	26
12 Boldesti Scaieni	199	26	-	225	40	4	45
13 Urlati	381	284	-	665	34	4	37
14 Ploiesti	1,164	19,569	-	20,733	1,335	148	1,483
15 Floresti	116	230	-	345	19	2	21
16 Maneciu	39	78	-	117	6	1	7
<b>Total</b>	<b>6,024</b>	<b>29,487</b>	<b>1,046</b>	<b>36,557</b>	<b>2,178</b>	<b>242</b>	<b>2,420</b>

with Extension		Unit : 1000us\$					
Municipalities	Construction Cost				Annual O&M Cost		
	Rehabilitation Cost	Treatment Plant	Sewer	Total	Treatment Plant	Sewer	Total
1 Predeal	-	-	79	79	37	4	41
2 Azuga	-	884	51	935	33	4	37
3 Busteni	-	1,709	1,251	2,960	61	7	68
4 Sinaia	139	1,233	216	1,588	131	15	146
5 Comarnic	-	761	490	1,251	28	3	31
6 Breaza	449	64	205	717	89	10	99
7 Cimpina	356	3,605	952	4,913	267	30	296
8 Baicoi	1,025	1,158	519	2,702	61	7	67
9 Plopeni	748	2,047	94	2,889	122	14	135
10 Slanic	584	221	315	1,119	20	2	22
11 Valenii de Munte	823	43	375	1,241	32	4	36
12 Boldesti Scaieni	199	29	252	480	45	5	50
13 Urlati	381	377	453	1,212	55	6	61
14 Ploiesti	1,164	20,074	2,873	24,112	1,369	152	1,522
15 Floresti	116	230	-	345	19	2	21
16 Maneciu	39	78	-	117	6	1	7
<b>Total</b>	<b>6,024</b>	<b>32,512</b>	<b>8,124</b>	<b>46,660</b>	<b>2,375</b>	<b>264</b>	<b>2,639</b>





**Table D.4.2 Phased Program of Sewerage Wastewater Reduction (BOD Load)**

Municipalities	Existing (1997/2000)			Future (2005)			Future (2010)			Future (2015)								
	Baseline			With Project			Baseline			Baseline								
	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)			
Predeal	25.9	9.7	22	28.3	10.6	26	0	26	30.6	11.3	30	0	30	33.0	11.9	34	0	34
Azuga	23.9	144.0	297	25.9	146.8	328	0	328	27.8	149.3	359	311	48	29.8	151.5	390	338	52
Busteni	35.5	143.0	439	44.2	153.0	585	0	585	53.0	159.6	730	638	92	61.7	164.3	876	769	107
Sinaia	87.7	39.6	300	104.0	51.2	460	109	351	120.3	59.7	621	109	512	136.6	66.2	781	545	236
Comarnic	0.0	0.0	0	0.0	0.0	0	0	0	16.7	172.9	250	221	29	25.1	172.9	375	332	43
Breaza	59.0	9.9	50	69.4	11.7	70	0	70	79.8	13.1	90	0	90	90.2	14.1	110	0	110
Cimpina	214.0	28.2	521	261.1	36.5	823	75	748	308.1	42.2	1,124	444	680	355.2	46.5	1,426	812	614
Baicoi	33.7	63.0	183	42.8	73.1	271	149	122	52.0	79.8	358	149	209	61.1	84.5	446	340	106
Plopeni	83.5	36.6	264	98.2	40.6	345	111	234	112.9	43.6	425	111	314	127.6	45.9	506	287	219
Slanic	10.6	16.4	15	12.0	18.0	19	0	19	13.5	19.2	22	0	22	14.9	20.2	26	0	26
Valenii de Munte	14.6	21.8	27	19.3	25.0	42	9	33	24.0	27.2	56	15	41	28.7	28.6	71	21	50
Boldesti Seaceni	26.3	33.6	76	31.0	39.3	105	51	54	35.8	43.6	135	73	62	40.5	46.9	164	94	70
Urleti	24.5	23.4	50	29.7	28.3	73	5	68	34.8	31.7	95	5	90	40.0	34.1	118	49	69
Ploiesti	1,518.0	49.3	6,466	1,652.5	58.2	8,308	3,266	5,042	1,786.9	65.7	10,151	5,969	4,182	1,921.4	72.2	11,993	8,675	3,320
Floresti	24.6	33.1	70	26.8	35.6	82	13	69	29.0	37.8	95	13	82	31.2	39.7	107	53	54
Maneciu	9.3	33.1	27	9.8	35.8	30	5	25	10.3	37.8	34	5	29	10.8	39.7	37	18	19
<b>Total</b>	<b>2,191.1</b>	<b>8,808</b>	<b>8,808</b>	<b>2,455.0</b>	<b>11,566</b>	<b>11,566</b>	<b>3,793</b>	<b>7,774</b>	<b>2,735.6</b>	<b>14,576</b>	<b>14,576</b>	<b>8,064</b>	<b>6,512</b>	<b>3,007.8</b>	<b>17,460</b>	<b>17,460</b>	<b>12,331</b>	<b>5,129</b>
<b>Ave. BOD(mg/l)</b>	<b>46.5</b>			<b>54.5</b>			<b>36.7</b>		<b>61.7</b>			<b>27.6</b>		<b>67.2</b>			<b>19.7</b>	

Table D.4.3 Investment Program for Sewerage Development

(Unit : US\$ 1,000)

Municipalities	1st Phase (2001 - 2000)				2nd Phase (2006 - 2010)				3rd Phase (2011 - 2015)				Total				2016 - Annual O&M (E+R+1st+2nd+3rd)
	Sewer		T.P.		Sewer		T.P.		Sewer		T.P.		Sewer		T.P.		
	Exten.	Rehabili. Const.	O&M (E)		Exten.	Rehabili. Const.	O&M (E+R+1st)		Exten.	Rehabili. Const.	O&M (E+R+1st+2nd)		Exten.	Rehabili. Const.	Plant	Const.	
Predcal	-	-	203	-	40	-	203	-	40	-	204	-	79	-	-	79	41
Azuga	-	-	15	-	26	884	15	-	26	-	183	-	51	-	884	935	37
Busteni	-	-	21	-	626	1,709	21	-	626	-	333	-	1,251	-	1,709	2,960	68
Sinaia	-	139	395	-	108	-	461	-	108	1,233	464	-	216	139	1,233	1,588	146
Comarnic	-	-	-	-	245	761	-	-	245	-	148	-	490	-	761	1,251	31
Breaza	-	449	438	-	103	-	460	-	103	64	470	-	205	449	64	718	99
Clujpina	-	356	513	-	476	1,803	647	-	476	1,803	662	-	952	356	3,605	4,913	297
Baitcoi	-	1,025	231	-	260	-	277	-	260	1,158	286	-	519	1,025	1,158	2,702	68
Plopeni	-	748	490	-	47	-	551	-	47	2,047	555	-	94	748	2,047	2,889	136
Slanic	-	584	87	-	158	-	102	-	158	221	104	-	315	584	221	1,120	22
Valenii de Munte	-	823	161	-	188	-	174	-	188	43	176	-	375	823	43	1,241	36
Boldesti Scateni	-	199	220	-	126	-	238	-	126	29	242	-	252	199	29	480	50
Urlati	-	381	245	-	227	-	258	-	227	377	269	-	453	381	377	1,211	61
Ploiesti	-	1,164	2,776	6,691	1,437	6,691	4,145	-	1,437	6,691	5,536	-	2,873	1,164	20,074	24,111	1,521
Floresti	-	116	74	-	-	-	83	-	-	230	85	-	-	116	230	346	21
Maneciu	-	39	25	-	-	-	28	-	-	78	28	-	-	39	78	117	7
<b>Total</b>	-	6,023	5,892	6,691	4,063	11,848	7,661	-	4,063	13,974	9,742	-	8,125	6,023	32,513	45,661	2,641

Note : Exten.: Extension, Rehabili.: Rehabilitation, Const.: Construction, T.P.: Treatment Plant

O&M : Operation and Maintenance Cost

(E) for Existing Facilities

(E+R+1st) for Existing Facilities, Rehabilitated Facilities and 1st. Phase Constructed Facilities

(E+R+1st+2nd) for Existing Facilities, Rehabilitated Facilities, 1st+2nd phases Constructed Facilities

(E+R+1st+2nd+3rd) for Existing Facilities, Rehabilitated Facilities, 1st+2nd+3rd phases Constructed Facilities

**Table D.4.4 Future Sewerage Influent Quality by Economic Growth Rate**

with sewer extension (Growth Rate : 2.7%)

Municipality	Major Industry		Gross Domestic		Groundwater		Average Quality/Load		
	Discharge (l/s)	BOD (mg/l)	Discharge (l/s)	BOD (mg/l)	Discharge (l/s)	BOD (mg/l)	Total Discharge(l/s)	Ave.BOD (mg/l)	BOD Load (kg/d)
Predeal	0.0	0.0	25.9	200.0	7.2	0.0	33.0	156.6	447
Azuga	0.8	9.1	22.5	200.0	6.4	0.0	29.6	152.2	390
Busteni	7.7	190.0	43.4	200.0	10.6	0.0	61.7	164.3	876
Sinaia	61.9	176.3	56.2	200.0	15.2	0.0	133.2	166.2	1,913
Comarnic	0.0	0.0	21.7	200.0	3.4	0.0	25.1	173.0	375
Breaza	28.9	63.4	45.7	200.0	11.9	0.0	86.5	126.8	948
Cimpina	107.1	183.6	197.9	200.0	37.0	0.0	342.0	173.2	5,118
Balcoi	19.4	57.2	32.5	200.0	7.6	0.0	59.5	127.7	657
Plopeni	71.4	29.4	37.1	200.0	10.1	0.0	118.6	80.3	823
Slanic	0.0	0.0	11.8	200.0	3.1	0.0	14.9	158.2	204
Valenii de Munte	0.9	75.4	22.4	200.0	5.2	0.0	28.5	159.6	393
Boldesti Scaieni	15.2	73.0	18.5	200.0	4.8	0.0	38.6	124.8	416
Urlati	3.8	332.7	28.5	200.0	7.1	0.0	39.5	176.7	602
Ploiesti	251.1	124.2	1,225.9	200.0	412.5	0.0	1,889.4	146.3	23,877

with sewer extension (Growth Rate : 3.5%)

Municipality	Major Industry		Gross Domestic		Groundwater		Average Quality/Load		
	Discharge (l/s)	BOD (mg/l)	Discharge (l/s)	BOD (mg/l)	Discharge (l/s)	BOD (mg/l)	Total Discharge(l/s)	Ave.BOD (mg/l)	BOD Load (kg/d)
Predeal	0.0	0.0	25.9	200.0	7.2	0.0	33.0	156.6	447
Azuga	0.9	10.1	22.5	200.0	6.4	0.0	29.8	151.6	390
Busteni	7.7	190.0	43.4	200.0	10.6	0.0	61.7	164.3	876
Sinaia	65.3	182.8	56.2	200.0	15.2	0.0	136.6	169.6	2,002
Comarnic	0.0	0.0	21.7	200.0	3.4	0.0	25.1	173.0	375
Breaza	32.6	68.2	45.7	200.0	11.9	0.0	90.2	125.9	982
Cimpina	120.3	202.0	197.9	200.0	37.0	0.0	355.2	179.9	5,519
Balcoi	21.0	65.4	32.5	200.0	7.6	0.0	61.1	128.7	680
Plopeni	80.4	32.5	37.1	200.0	10.1	0.0	127.6	78.7	867
Slanic	0.0	0.0	11.8	200.0	3.1	0.0	14.9	158.2	204
Valenii de Munte	1.1	83.1	22.4	200.0	5.2	0.0	28.7	159.3	395
Boldesti Scaieni	17.1	80.2	18.5	200.0	4.8	0.0	40.5	125.5	439
Urlati	4.3	367.1	28.5	200.0	7.1	0.0	40.0	182.3	630
Ploiesti	283.1	137.1	1,225.9	200.0	412.5	0.0	1,921.4	147.8	24,537

with sewer extension (Growth Rate : 4.3%)

Municipality	Major Industry		Gross Domestic		Groundwater		Average Quality/Load		
	Discharge (l/s)	BOD (mg/l)	Discharge (l/s)	BOD (mg/l)	Discharge (l/s)	BOD (mg/l)	Total Discharge(l/s)	Ave.BOD (mg/l)	BOD Load (kg/d)
Predeal	0.0	0.0	25.9	200.0	7.2	0.0	33.0	156.6	447
Azuga	1.0	10.7	22.5	200.0	6.4	0.0	29.8	151.3	390
Busteni	7.7	190.0	43.4	200.0	10.6	0.0	61.7	164.3	876
Sinaia	68.9	192.3	56.2	200.0	15.2	0.0	140.2	174.6	2,115
Comarnic	0.0	0.0	21.7	200.0	3.4	0.0	25.1	173.0	375
Breaza	36.4	71.4	45.7	200.0	11.9	0.0	94.0	124.8	1,014
Cimpina	134.1	214.8	197.9	200.0	37.0	0.0	369.0	185.3	5,908
Balcoi	24.5	67.8	32.5	200.0	7.6	0.0	64.6	126.2	704
Plopeni	90.0	34.5	37.1	200.0	10.1	0.0	137.3	76.7	910
Slanic	0.0	0.0	11.8	200.0	3.1	0.0	14.9	158.2	204
Valenii de Munte	1.2	88.3	22.4	200.0	5.2	0.0	28.8	159.2	396
Boldesti Scaieni	19.1	85.1	18.5	200.0	4.8	0.0	42.5	125.5	461
Urlati	4.7	416.0	28.5	200.0	7.1	0.0	40.4	189.9	662
Ploiesti	316.8	152.2	1,225.9	200.0	412.5	0.0	1955.1	150.1	25,349

**Table D.4.5 Sewerage Wastewater Reduction (BOD Load) by Economic Growth Rate**

Municipalities	Existing (1997/2000)			2015 (Growth Rate:2.7%)			2015 (Growth Rate:3.5%)			2015 (Growth Rate:4.3%)					
	Baseline			With Project			Baseline			With Project					
	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)	Q (l/s)	Cont. (mg/l)	Load (kg/d)
Predeal	25.9	9.7	22	33.0	11.9	34	33.0	11.9	34	33.0	11.9	34	33.0	11.9	34
Azuga	23.9	144.0	297	29.6	152.1	389	29.8	151.5	390	338	51	338	29.9	151.4	391
Busteni	35.5	143.0	439	61.7	164.2	876	61.7	164.3	876	769	107	769	61.7	164.2	876
Simina	87.7	39.6	300	133.2	66.8	768	136.6	66.2	781	545	236	545	140.2	65.5	794
Comarnic	0.0	0.0	0	25.1	172.9	375	25.1	172.9	375	332	43	332	25.1	172.9	375
Breaza	59.0	9.9	50	86.5	14.2	106	90.2	14.1	110	0	106	0	94.0	14.0	113
Cimpina	214.0	28.2	521	342.0	47.1	1,390	355.2	46.5	1,426	799	591	812	369.0	46.7	1,487
Baicoi	33.7	63.0	183	59.5	83.9	431	61.1	84.5	446	329	103	340	64.6	82.9	463
Plopeni	83.5	36.6	264	118.6	46.7	479	127.6	45.9	506	274	205	287	137.3	44.6	529
Slanic	10.6	16.4	15	14.9	20.0	26	14.9	20.2	26	0	26	0	14.9	20.0	26
Valenii de Munte	14.6	21.8	27	28.5	28.5	70	28.7	28.6	71	21	49	21	28.8	28.5	71
Boldesti Scaeni	26.3	33.6	76	38.6	46.7	156	40.5	46.9	164	89	67	94	42.5	47.0	173
Urlati	24.5	23.4	50	39.5	34.0	116	40.0	34.1	118	48	68	49	40.4	34.0	119
Plotesti	1,518.0	49.3	6,466	1,899.4	72.6	11,845	1,921.4	72.2	11,993	8,580	3,265	8,673	1,955.1	71.8	12,134
Floresti	24.6	33.1	70	31.0	39.9	107	31.2	39.7	107	53	54	53	31.2	39.7	107
Maneciu	9.3	33.1	27	10.8	39.7	37	10.8	39.7	37	18	19	18	10.8	39.7	37
<b>Total</b>	<b>2,191.1</b>		<b>8,808</b>	<b>2,941.9</b>		<b>17,205</b>	<b>3,007.8</b>		<b>17,460</b>	<b>12,331</b>	<b>5,129</b>	<b>12,331</b>	<b>3,078.5</b>		<b>17,727</b>
<b>Ave. BOD(mg/l)</b>		<b>46.5</b>		<b>67.7</b>		<b>67.7</b>	<b>67.2</b>		<b>67.2</b>		<b>19.7</b>		<b>66.6</b>		<b>19.7</b>

**Table D.4.6 Required Project Cost by Economic Growth Rate**

with sewer extension (2015)

Municipalities	Growth Rate (2.7%)					Growth Rate (3.5%)					Growth Rate (4.3%)							
	Design Discharge (m <sup>3</sup> /day)	Rehabilitation of Existing Plant (1000US\$)	Treatment Plant (1000US\$)	Sewer (1000US\$)	Total (1000US\$)	Annual O&M Cost (1000US\$)	Design Discharge (m <sup>3</sup> /day)	Rehabilitation of Existing Plant (1000US\$)	Treatment Plant (1000US\$)	Sewer (1000US\$)	Total (1000US\$)	Annual O&M Cost (1000US\$)	Design Discharge (m <sup>3</sup> /day)	Rehabilitation of Existing Plant (1000US\$)	Treatment Plant (1000US\$)	Sewer (1000US\$)	Total (1000US\$)	Annual O&M Cost (1000US\$)
1 Predeal	2,851	-	-	79	79	41	2,851	-	-	79	79	41	2,851	-	-	79	79	41
2 Azuga	2,561	-	879	51	930	37	2,575	-	884	51	935	37	2,583	-	887	51	938	37
3 Busteni	5,331	-	1,709	1,251	2,960	68	5,331	-	1,709	1,251	2,960	68	5,331	-	1,709	1,251	2,960	68
4 Sinaia	11,508	139	1,202	216	1,557	142	11,802	139	1,233	216	1,588	146	12,113	139	1,266	216	1,621	150
5 Comarnic	2,169	-	761	490	1,251	31	2,169	-	761	490	1,251	31	2,169	-	761	490	1,251	31
6 Breaza	7,474	449	61	205	715	95	7,793	449	64	205	718	99	8,122	449	67	205	721	103
7 Cimpina	29,549	356	3,472	952	4,780	285	30,681	356	3,605	952	4,913	296	31,882	356	3,746	952	5,054	308
8 Baicoi	5,141	1,025	1,128	519	2,672	65	5,279	1,025	1,158	519	2,702	67	5,581	1,025	1,224	519	2,768	71
9 Plopeni	10,247	748	1,912	94	2,754	126	10,973	748	2,047	94	2,889	135	11,863	748	2,213	94	3,055	146
10 Slanic	1,287	584	221	315	1,120	22	1,287	584	221	315	1,120	22	1,287	584	221	315	1,120	22
11 Valenii de Munte	2,462	823	43	375	1,241	36	2,480	823	43	375	1,241	36	2,488	823	43	375	1,241	36
12 Boldesti Seateni	3,335	199	28	252	479	48	3,499	199	29	252	480	50	3,672	199	30	252	481	52
13 Urleti	3,413	381	372	453	1,206	60	3,456	381	377	453	1,211	61	3,491	381	381	453	1,215	62
14 Ploiesti	163,244	1,164	19,740	2,873	23,777	1,497	166,009	1,164	20,074	2,873	24,111	1,522	168,921	1,164	20,426	2,873	24,463	1,549
15 Floresti	2,696	116	230	-	346	21	2,696	116	230	-	346	21	2,696	116	230	-	346	21
16 Maneciu	933	39	78	-	117	7	933	39	78	-	117	7	933	39	78	-	117	7
<b>Total</b>	<b>254,201</b>	<b>6,023</b>	<b>31,835</b>	<b>8,125</b>	<b>45,983</b>	<b>2,581</b>	<b>259,814</b>	<b>6,023</b>	<b>32,513</b>	<b>8,125</b>	<b>46,661</b>	<b>2,639</b>	<b>265,983</b>	<b>6,023</b>	<b>33,282</b>	<b>8,125</b>	<b>47,430</b>	<b>2,703</b>

## **FIGURES**

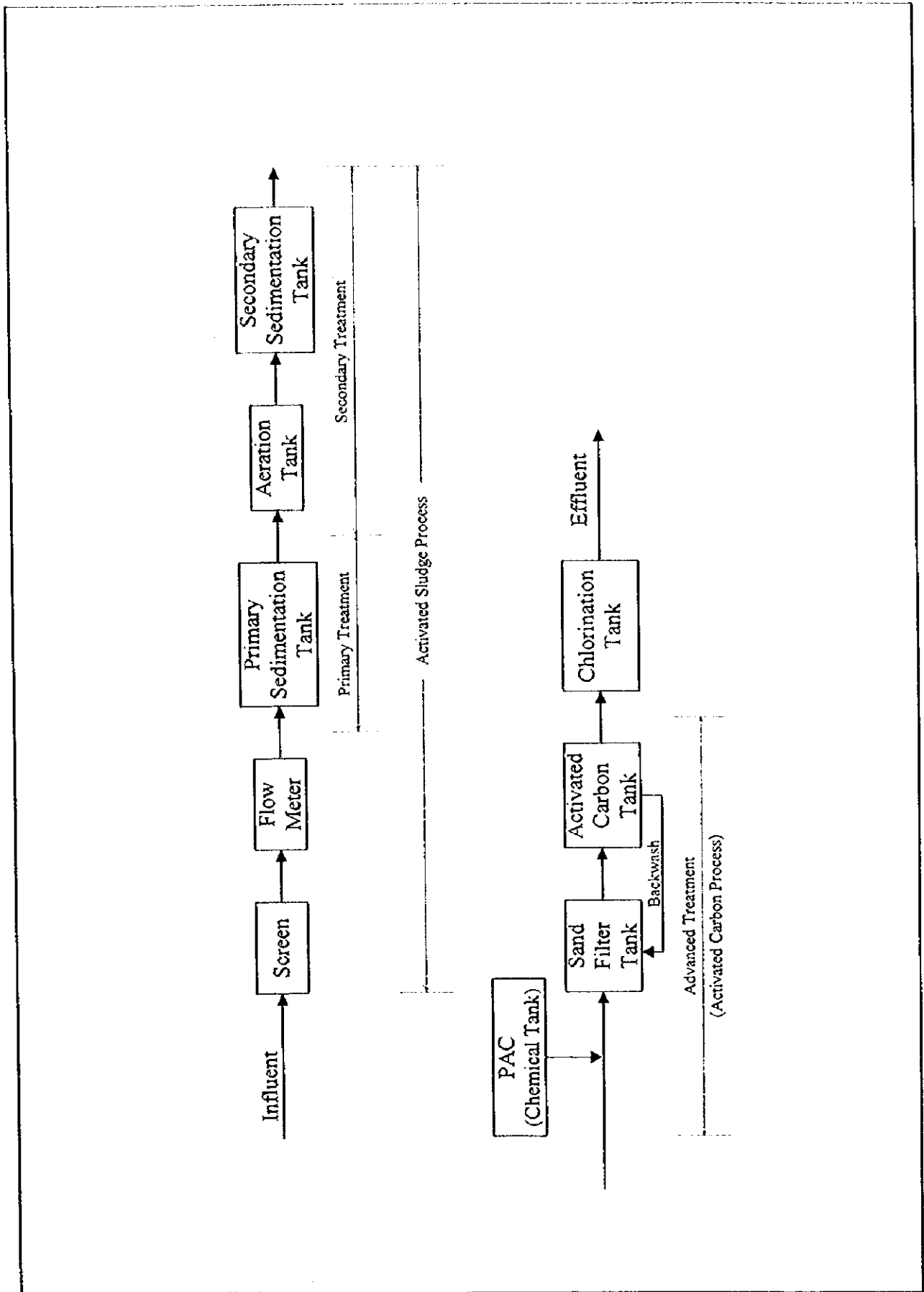
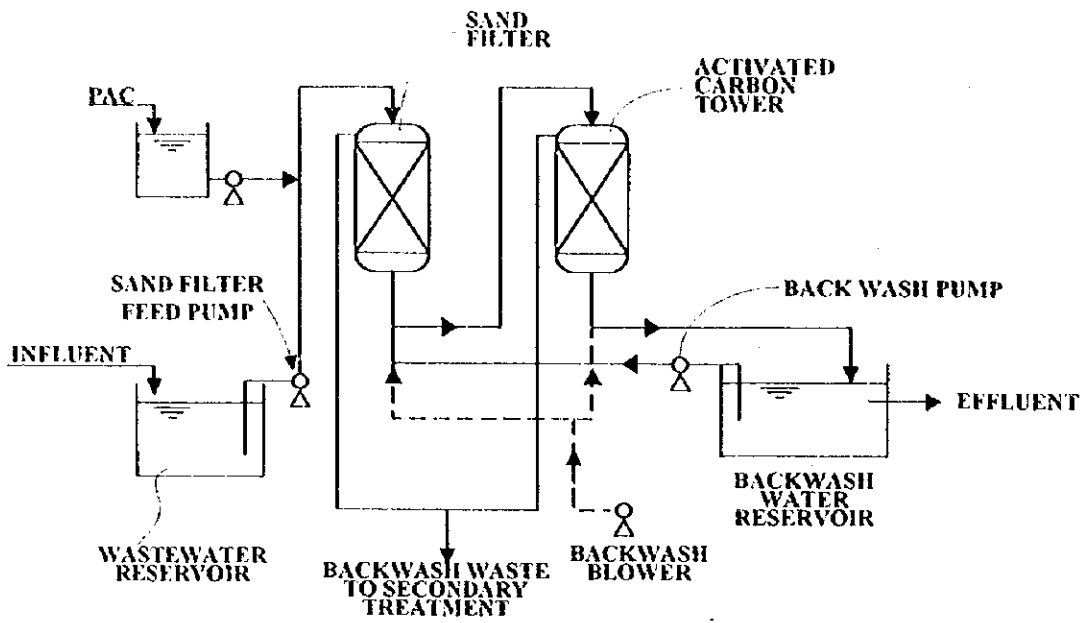
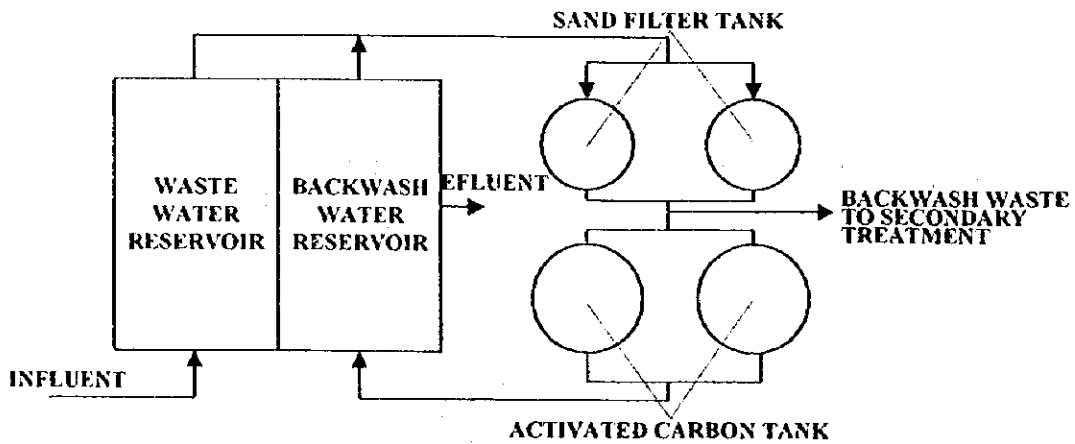


Fig. D.2.1 Wastewater Flow of Advanced Water Pollution Control





**FLOW SHEET**

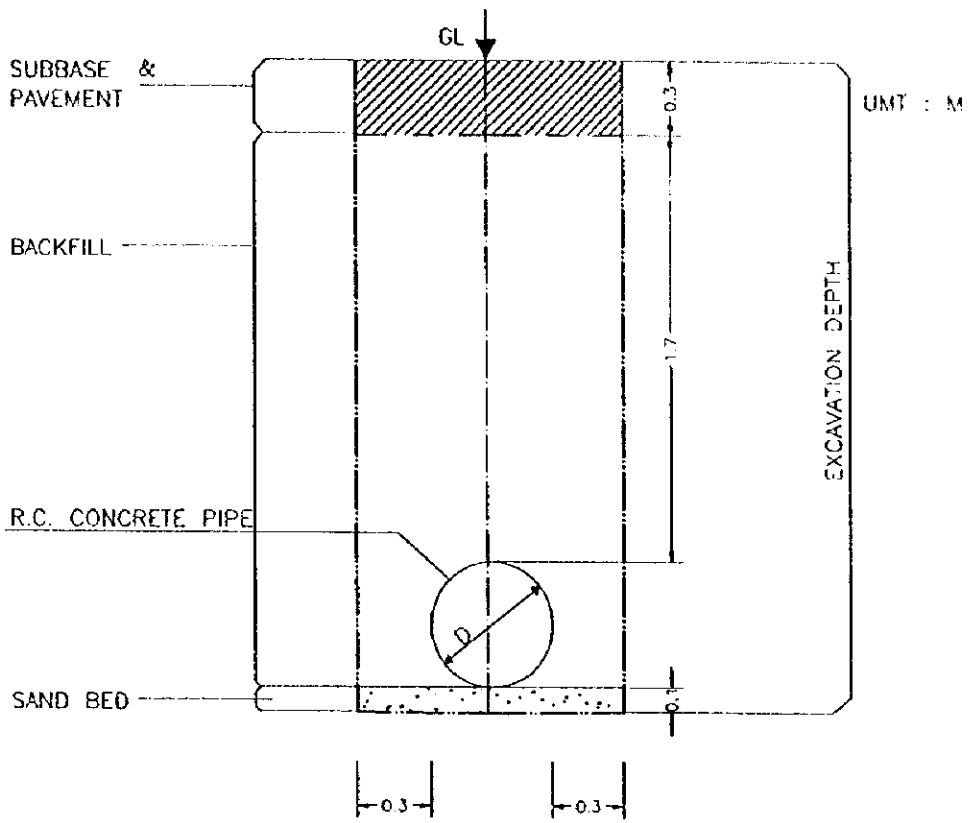


**LAYOUT**

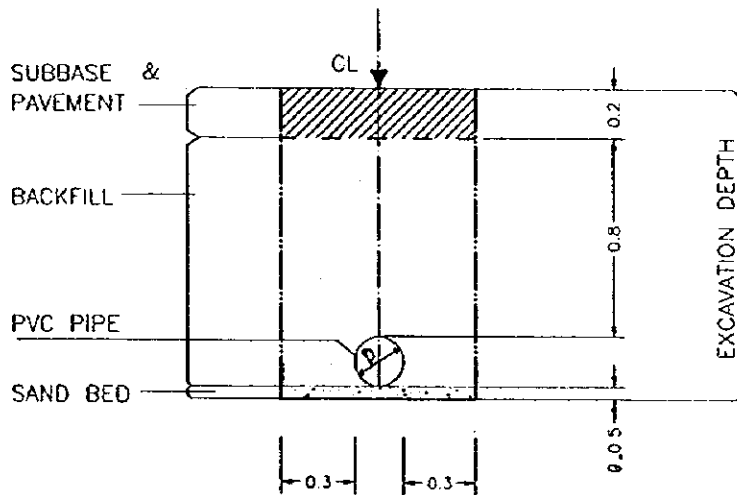
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WATER ENVIRONMENT MANAGEMENT ON  
THE PRAHOVA RIVER BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. D.2.2 Advanced Treatment Plant



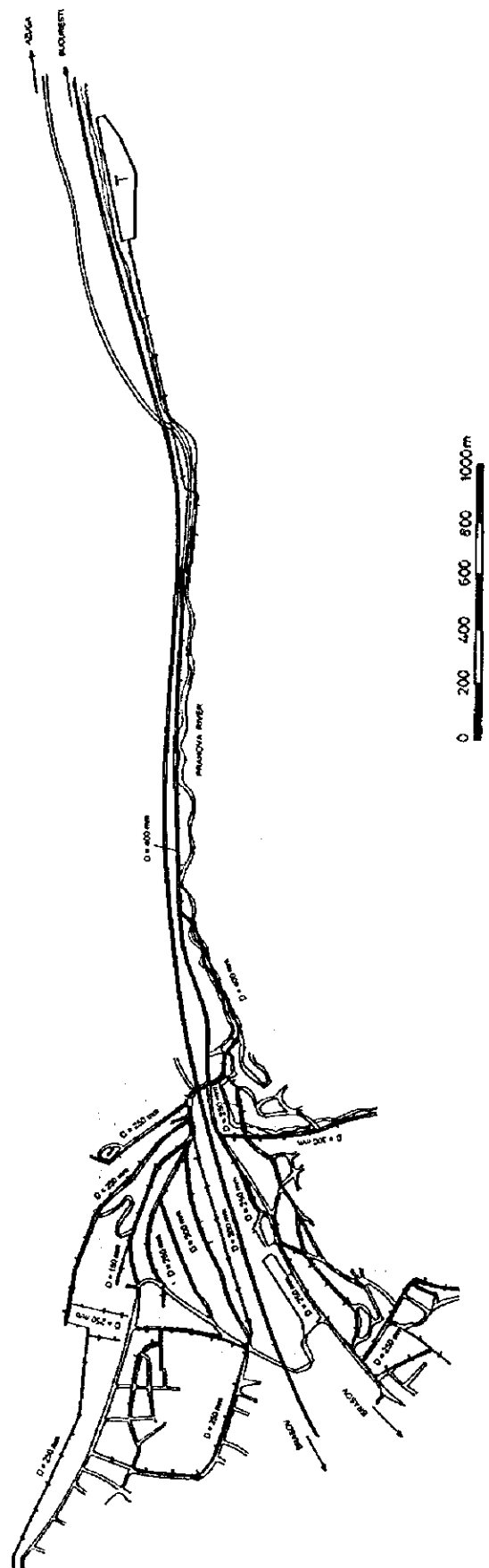
MAIN SEWER



SECONDARY SEWER

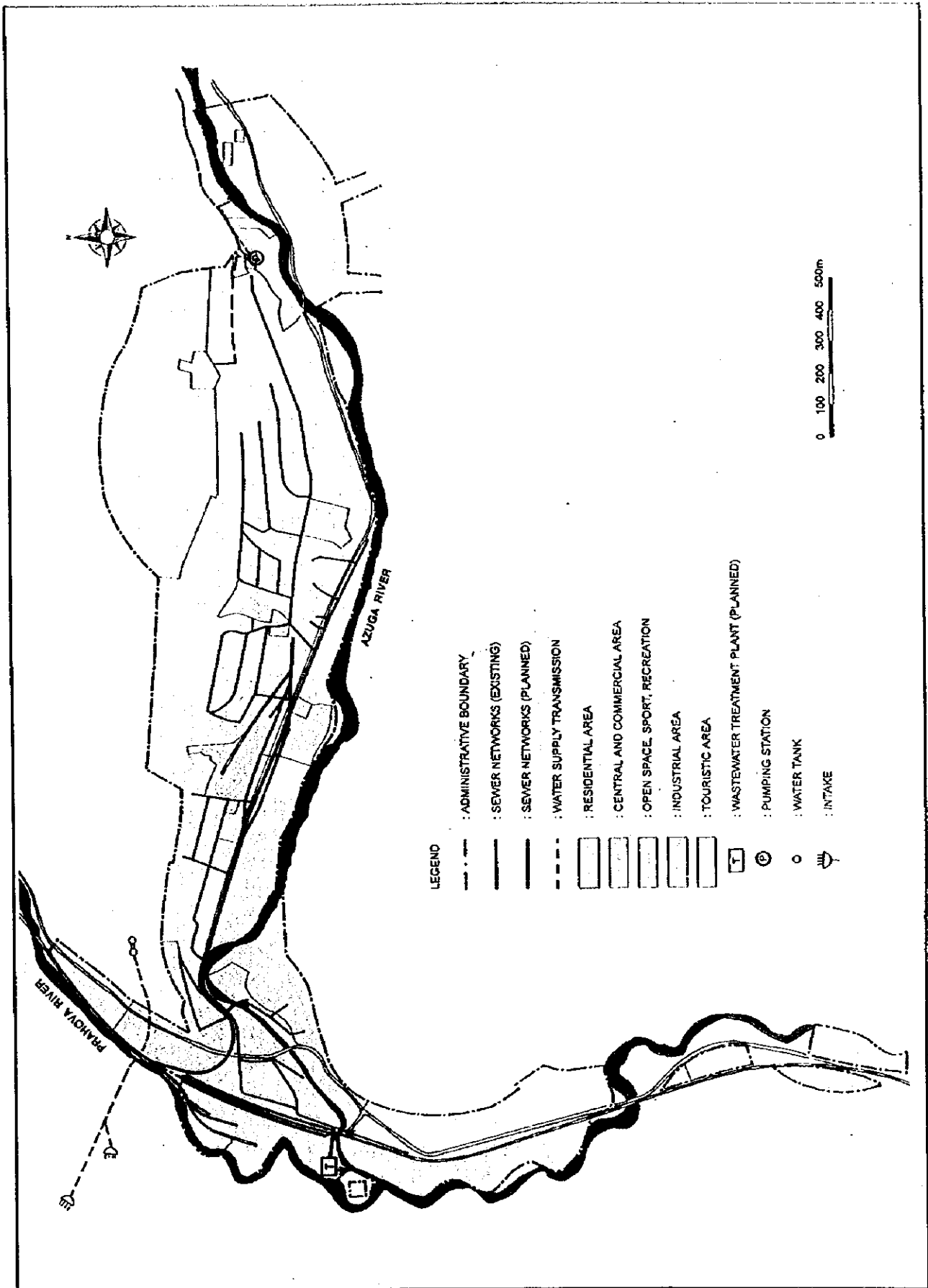
**LEGEND**

- RAILWAY
- SEWER NETWORKS (EXISTING)
- - - SEWER NETWORKS (PLANNED)
- WASTEWATER TREATMENT (EXISTING)



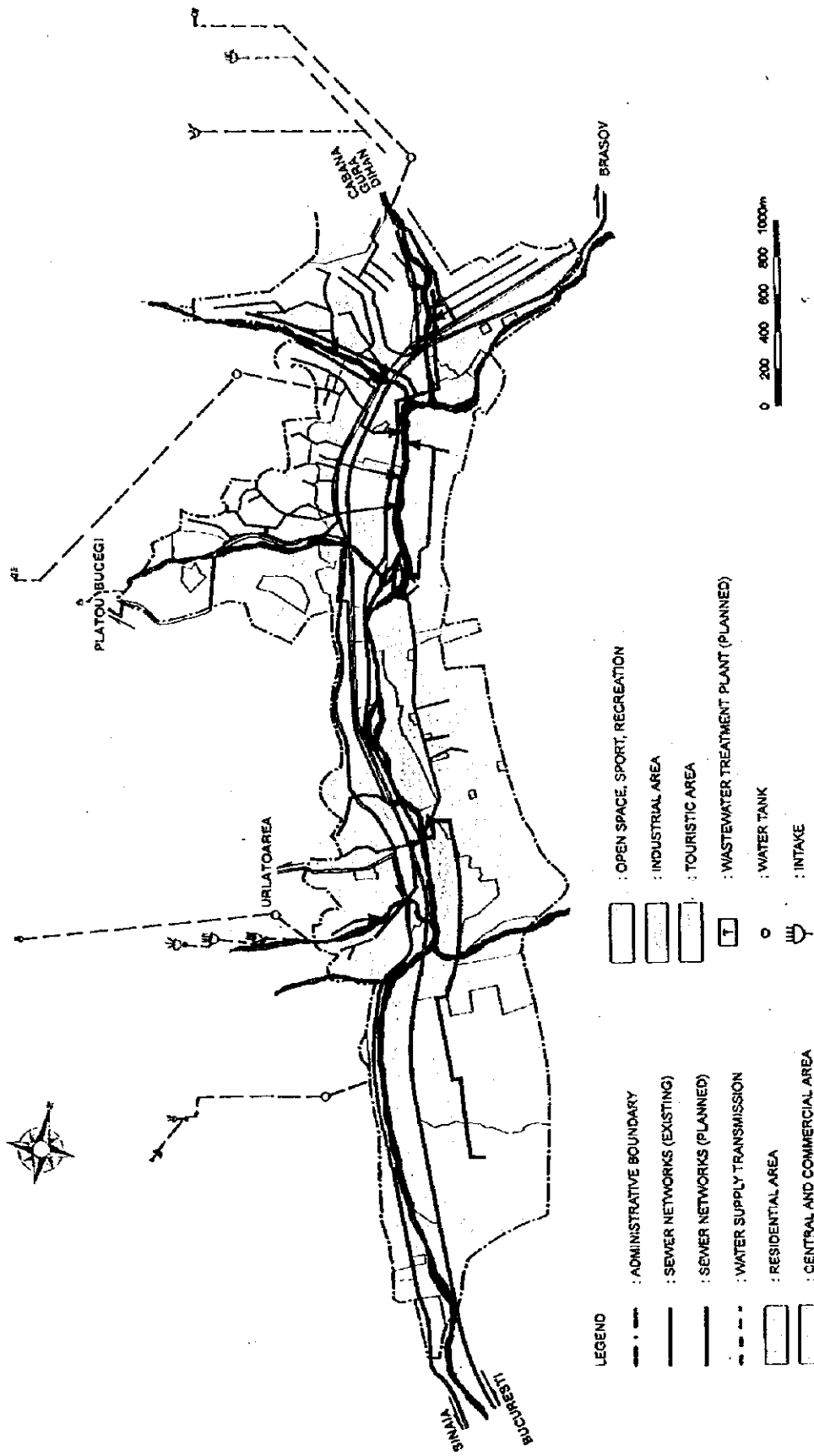
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**Fig. D.3.2 Existing and Planned  
 Sewer Networks (1/14)  
 Predeal Town**



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 THE PRAHOVA RIVER BASIN  
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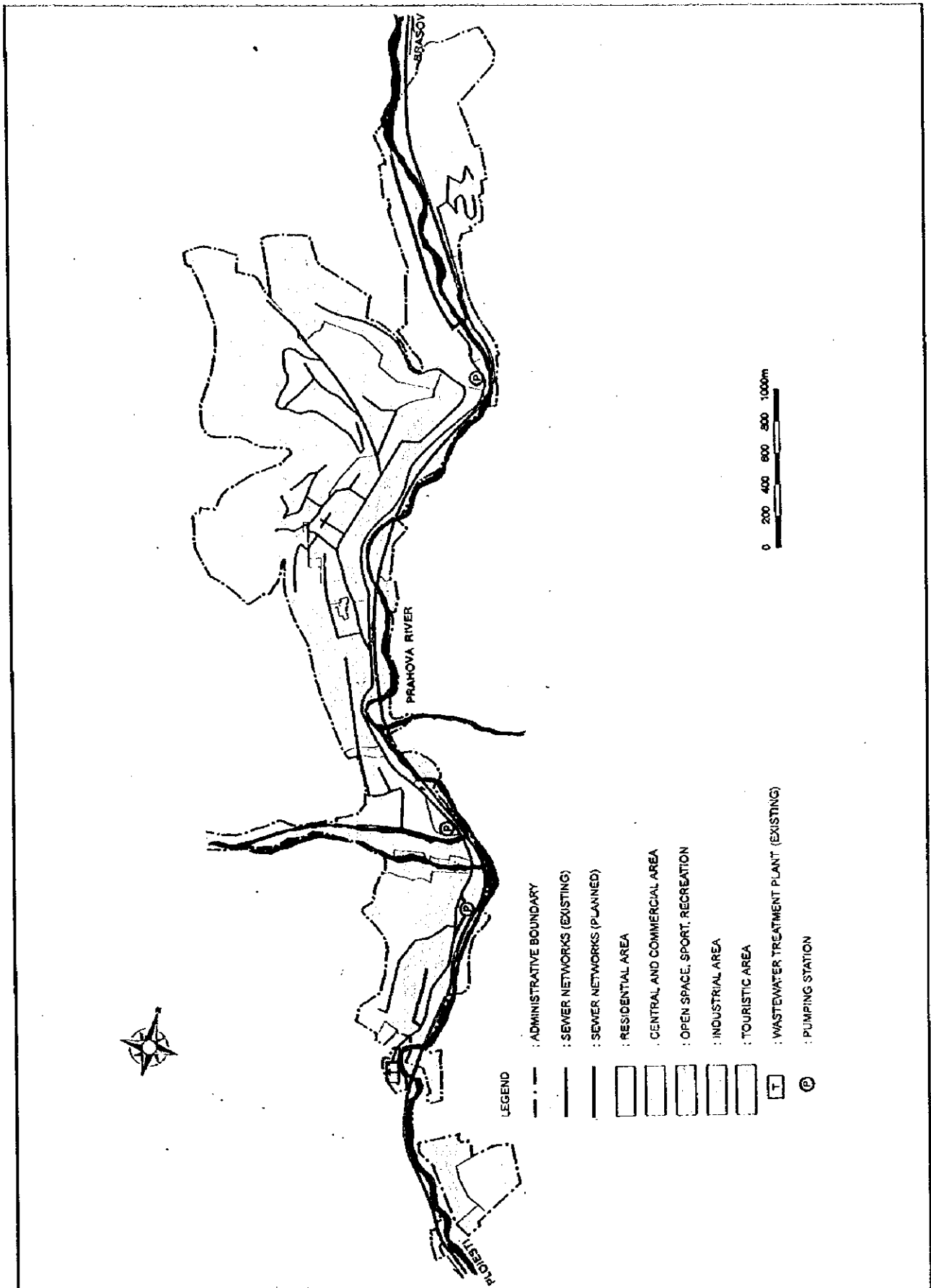
**Fig. D.3.2 Existing and Planned  
 Sewer Networks (2/14)  
 Azuga Town**



STUDY ON THE MASTER PLAN FOR  
WATER ENVIRONMENT MANAGEMENT ON  
THE PRAHOVA RIVER BASIN

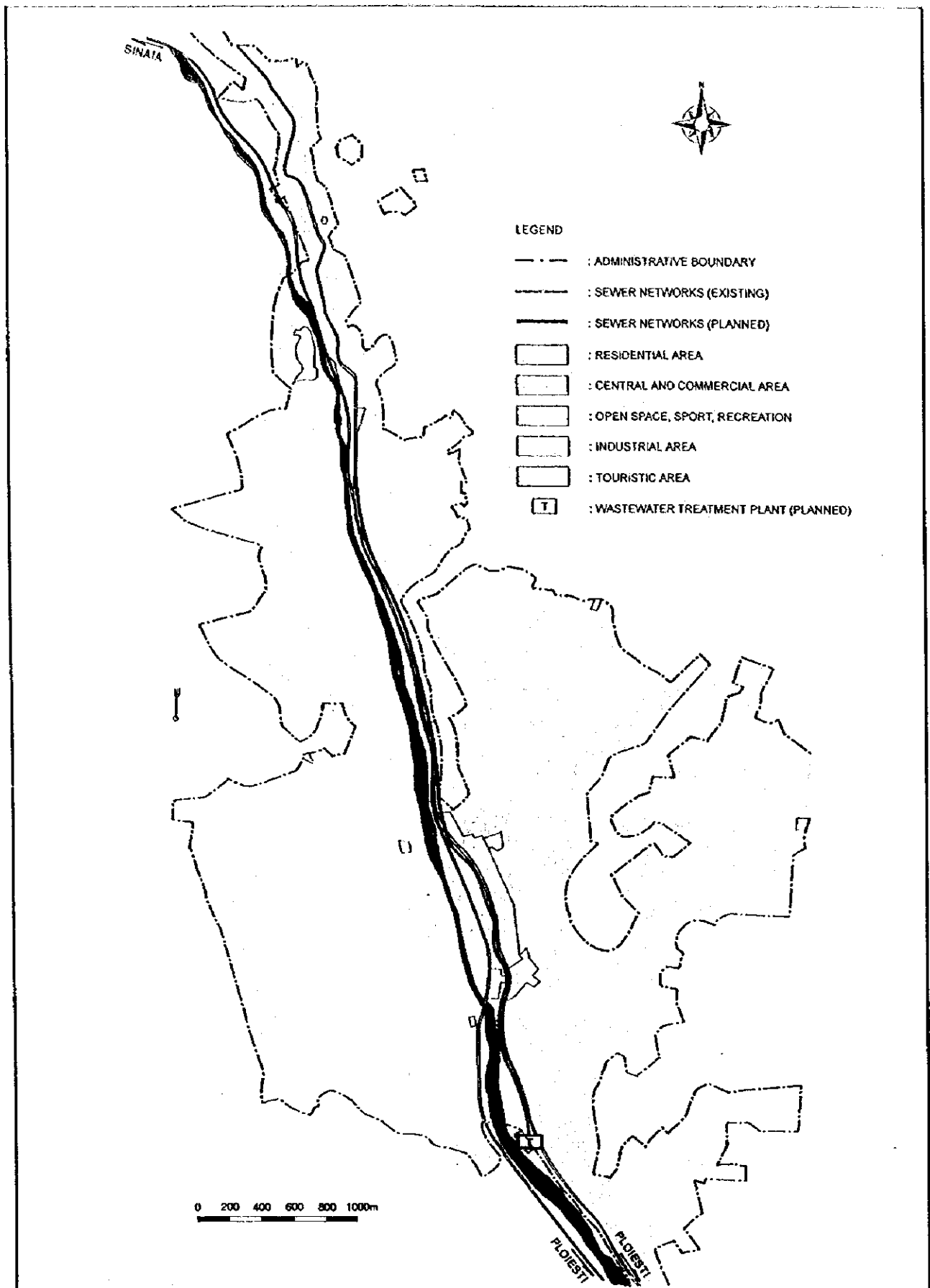
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. D.3.2 Existing and Planned  
Sewer Networks (3/14)  
Busteni Town



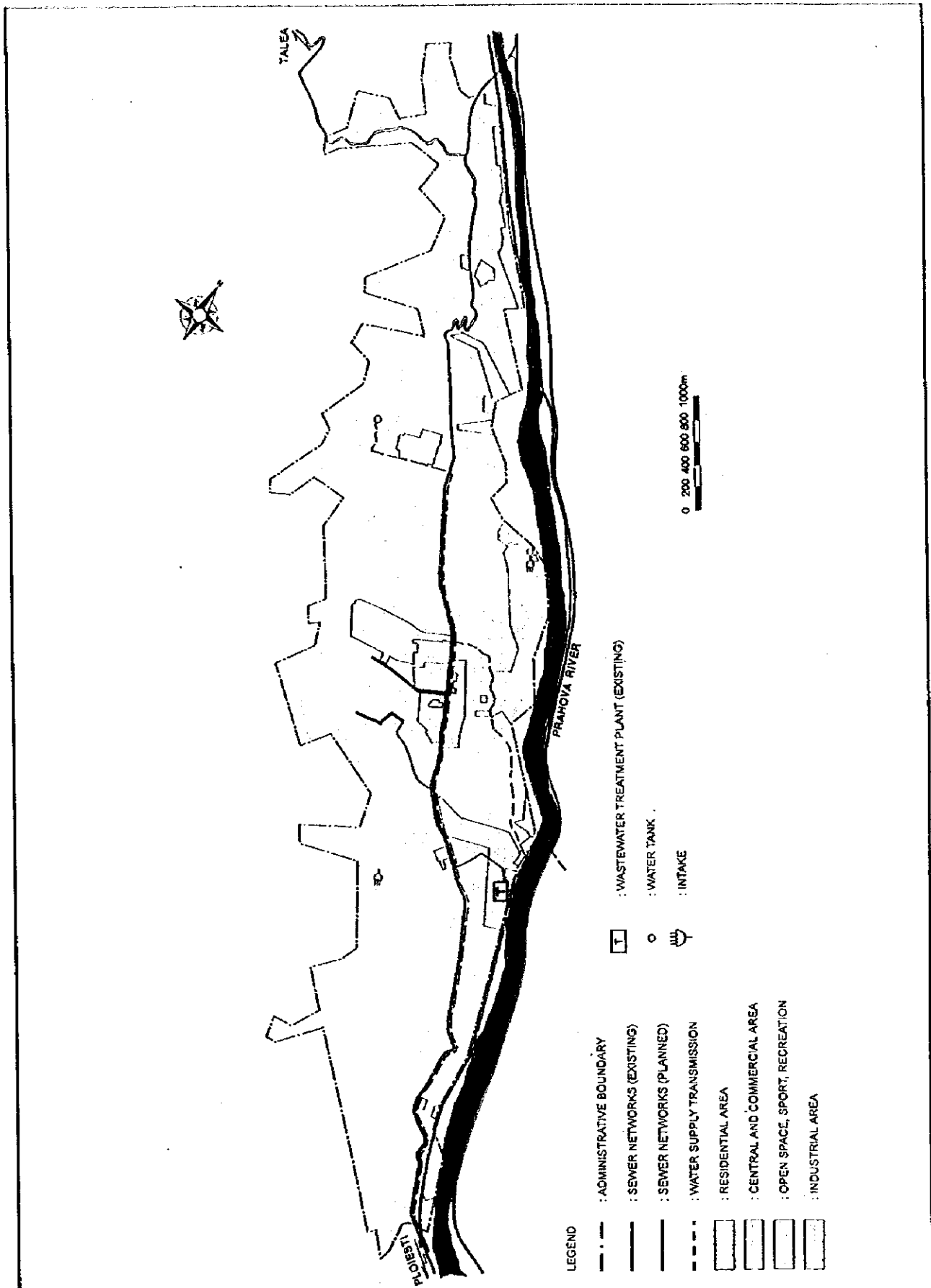
STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN  
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**Fig. D.3.2 Existing and Planned  
 Sewer Networks (4/14)  
 Sinaia Town**



STUDY ON THE MASTER PLAN FOR  
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 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.2 Existing and Planned  
 Sewer Networks (5/14)  
 Comarnic Town**



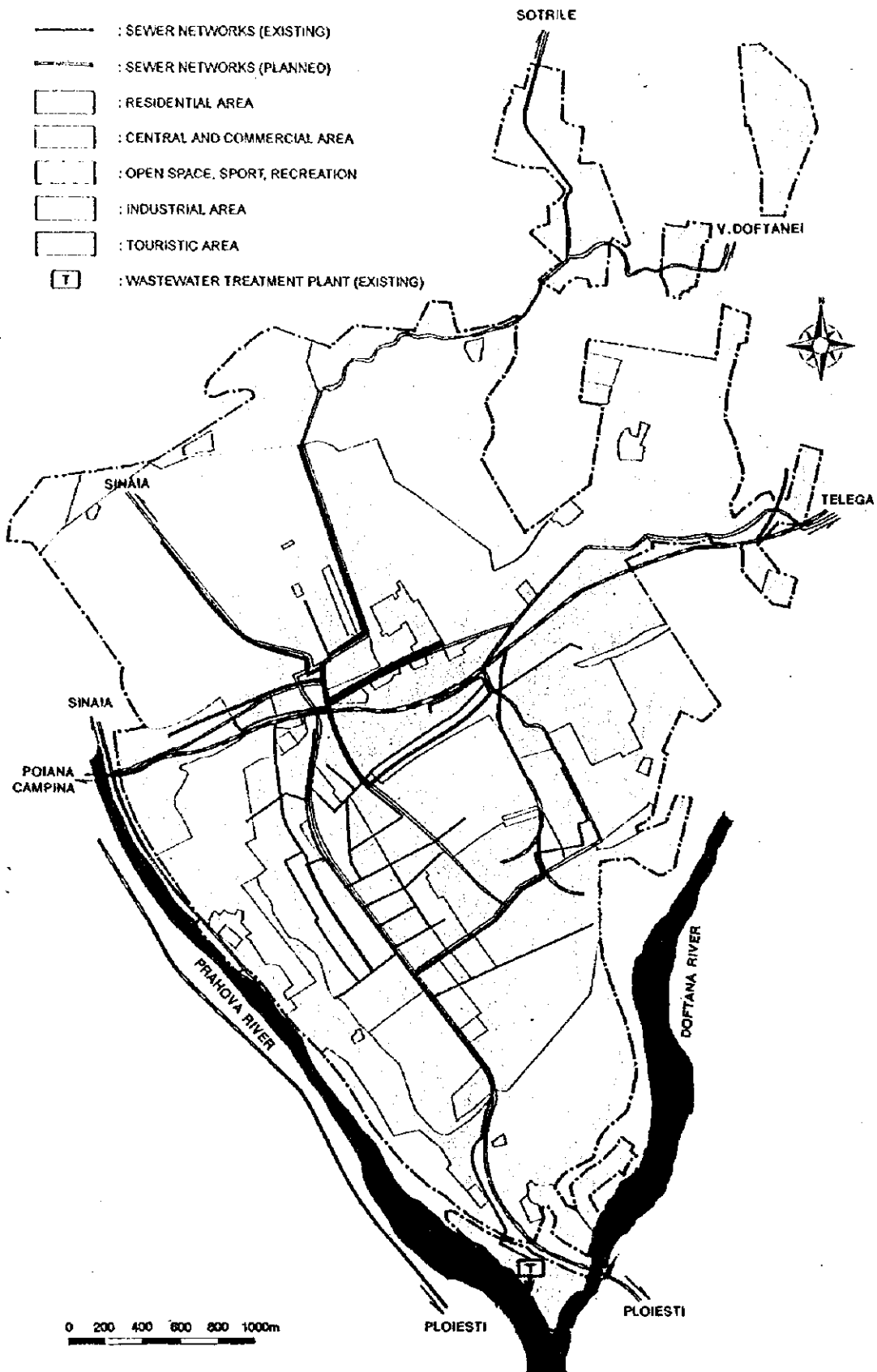
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 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.2 Existing and Planned  
 Sewer Networks (6/14)  
 Breaza Town**



LEGEND

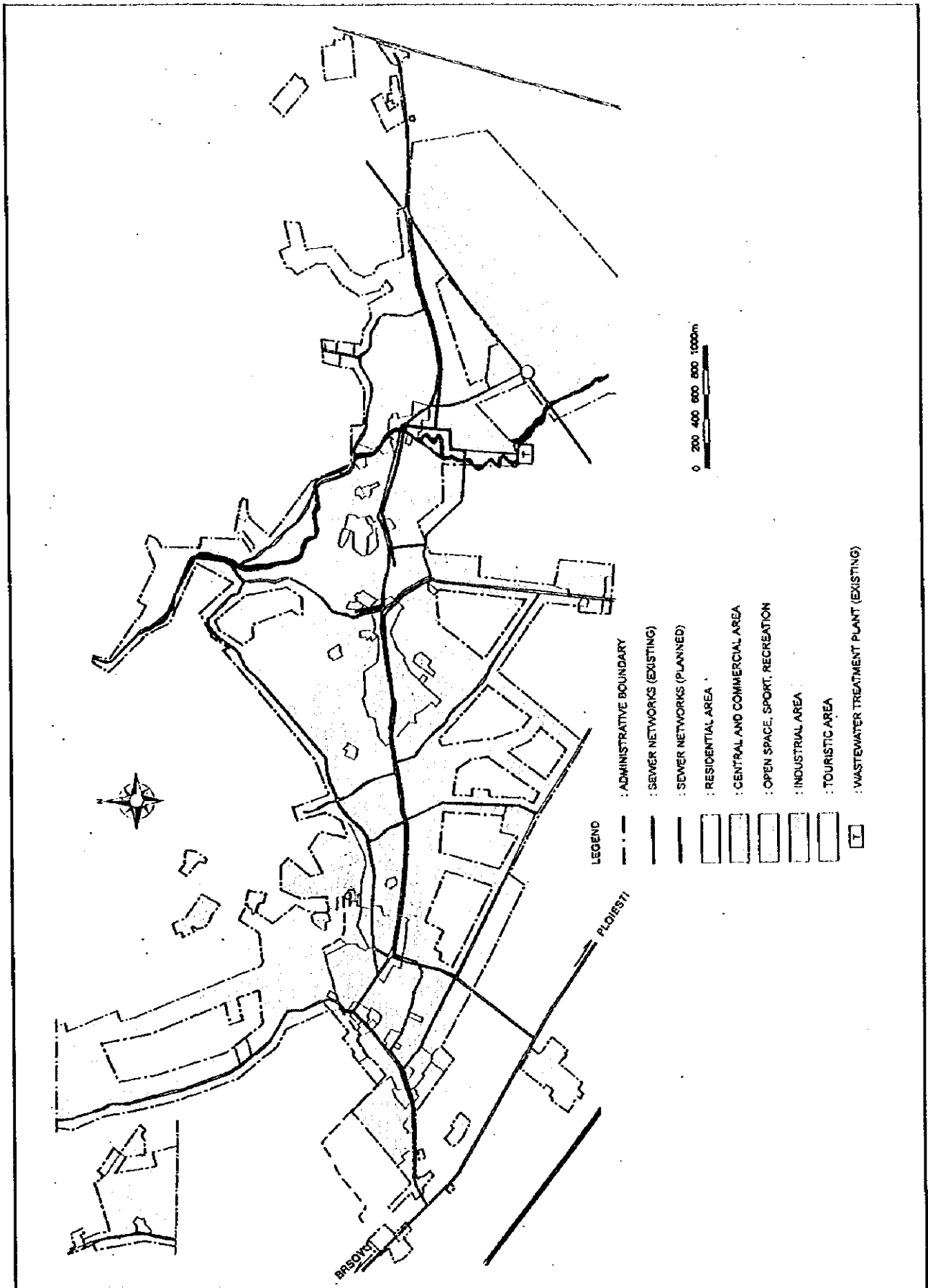
- : ADMINISTRATIVE BOUNDARY
- : SEWER NETWORKS (EXISTING)
- - - : SEWER NETWORKS (PLANNED)
- [ ] : RESIDENTIAL AREA
- [ ] : CENTRAL AND COMMERCIAL AREA
- [ ] : OPEN SPACE, SPORT, RECREATION
- [ ] : INDUSTRIAL AREA
- [ ] : TOURISTIC AREA
- [ T ] : WASTEWATER TREATMENT PLANT (EXISTING)



STUDY ON THE MASTER PLAN FOR  
WATER ENVIRONMENT MANAGEMENT ON  
THE PRAHOVA RIVER BASIN

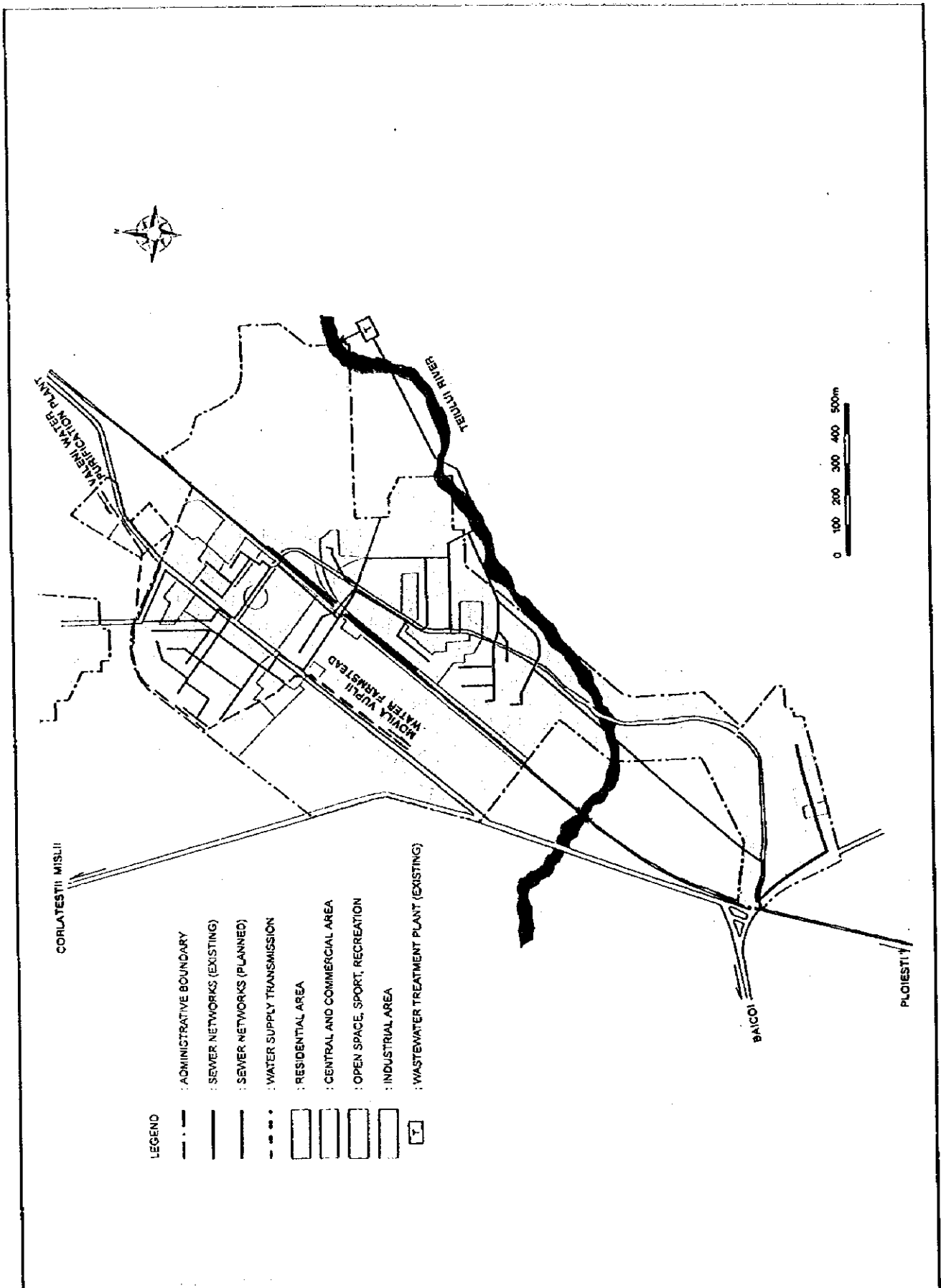
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**Fig. D.3.2 Existing and Planned  
Sewer Networks (7/14)  
Cimpina City**



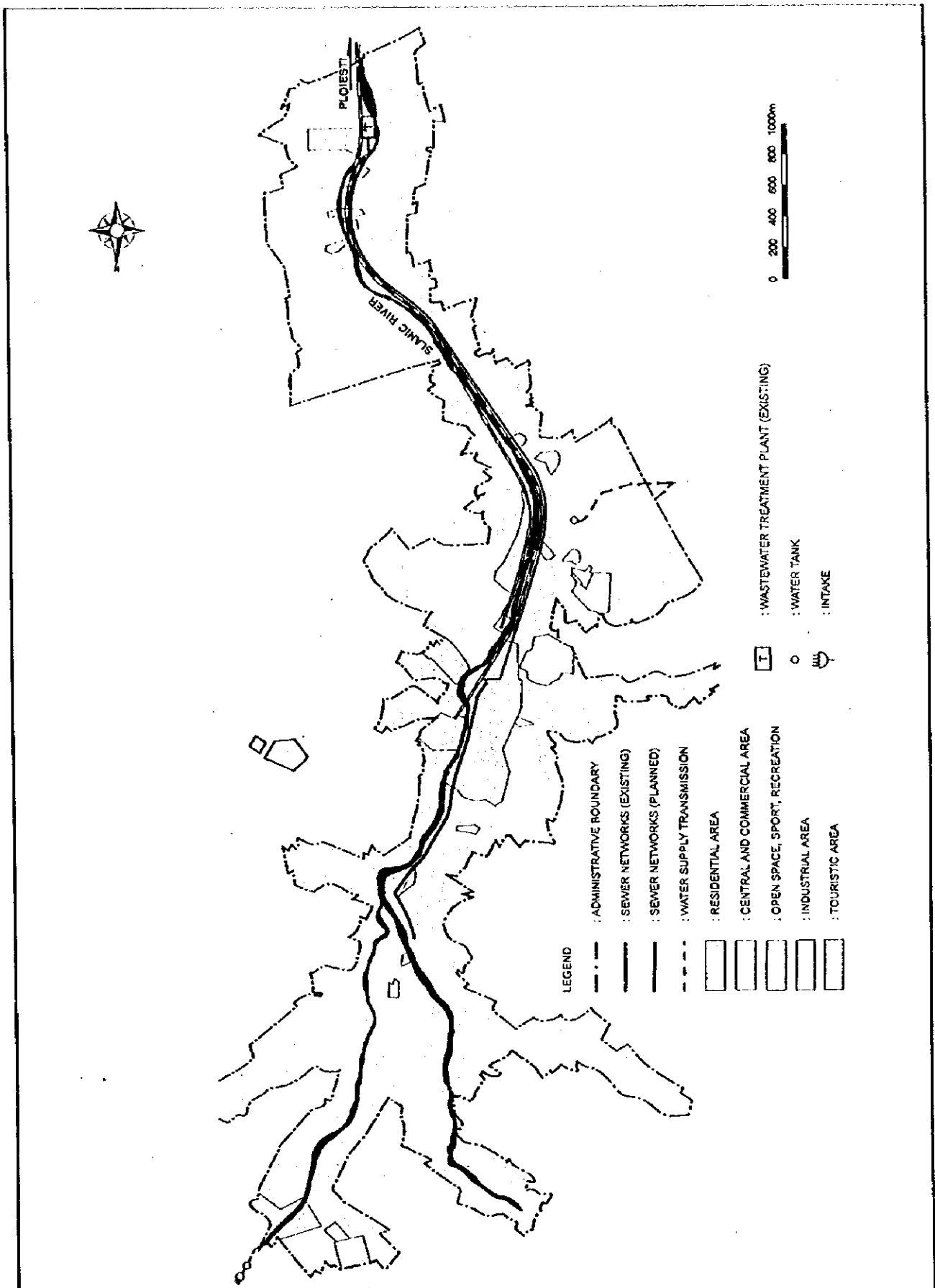
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**Fig. D.3.2 Existing and Planned  
 Sewer Networks (8/14)  
 Baicoi Town**



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 THE PRAHOVA RIVER BASIN  
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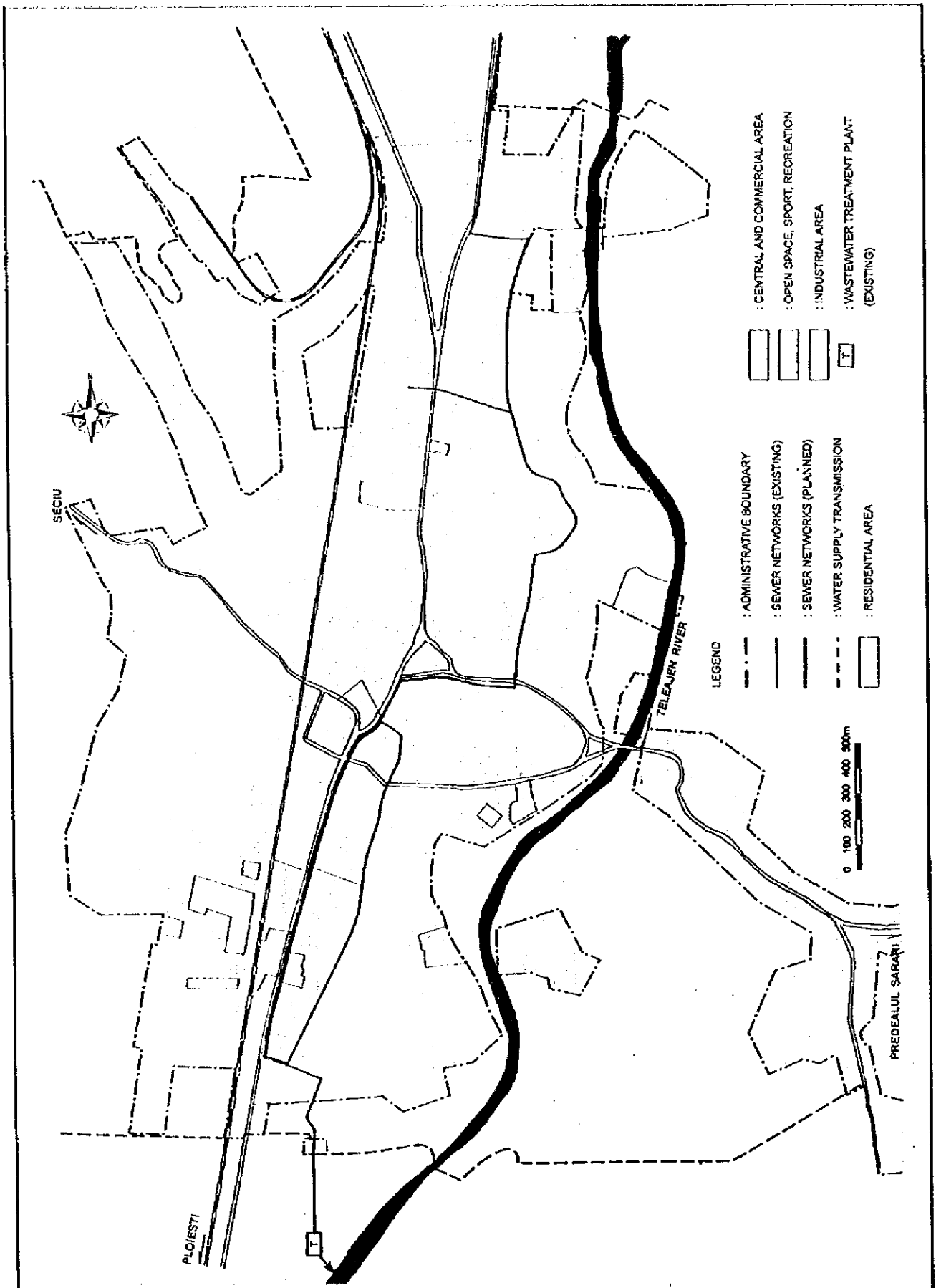
**Fig. D.3.2 Existing and Planned  
 Sewer Networks (9/14)  
 Ploeni Town**



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WATER ENVIRONMENT MANAGEMENT ON  
THE PRAHOVA RIVER BASIN

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




**Fig. D.3.2 Existing and Planned  
Sewer Networks (10/14)  
Slanic Town**

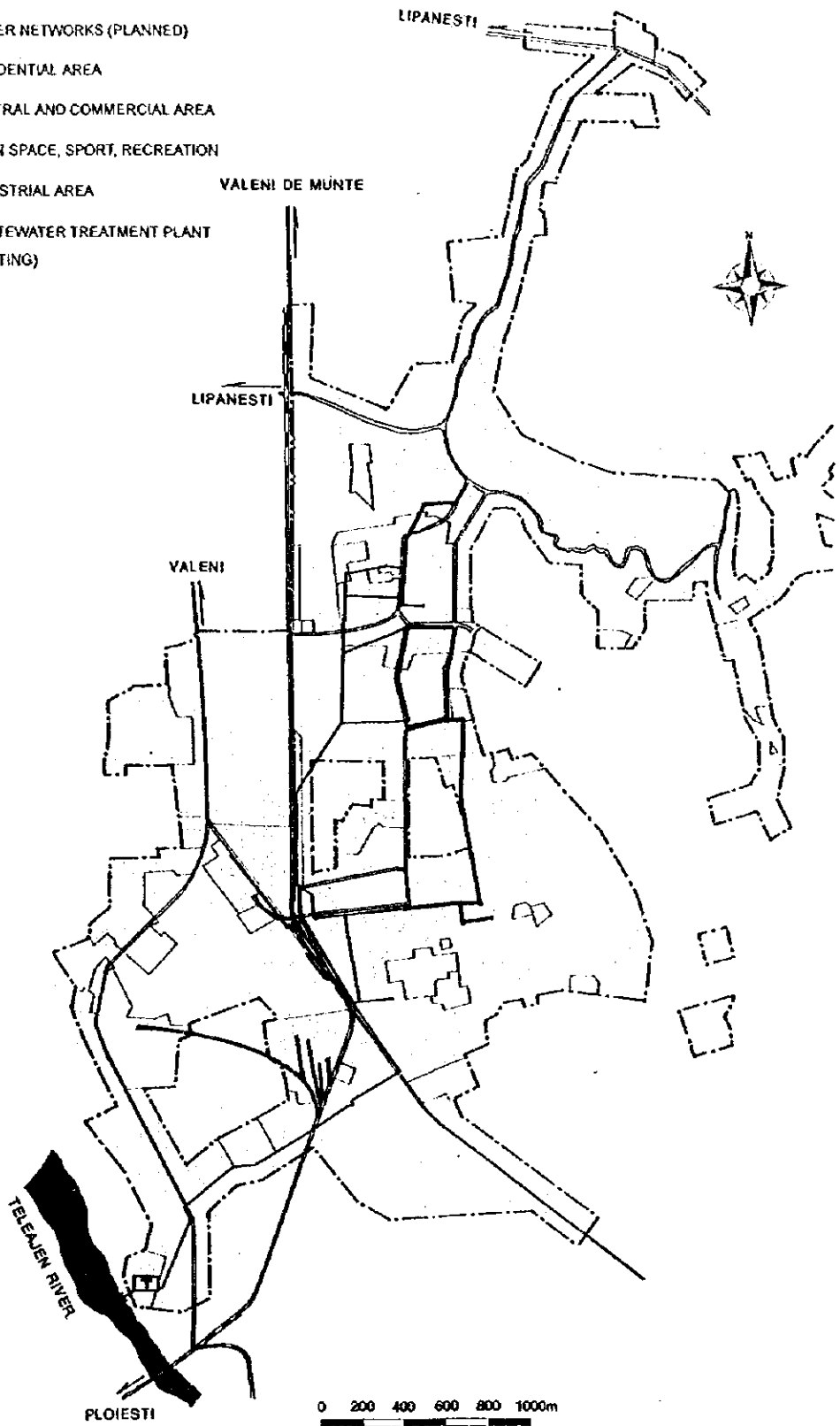


STUDY ON THE MASTER PLAN FOR  
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 THE PRAHOVA RIVER BASIN  
 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.2 Existing and Planned  
 Sewer Networks (11/14)  
 Valenii de Munte Town**

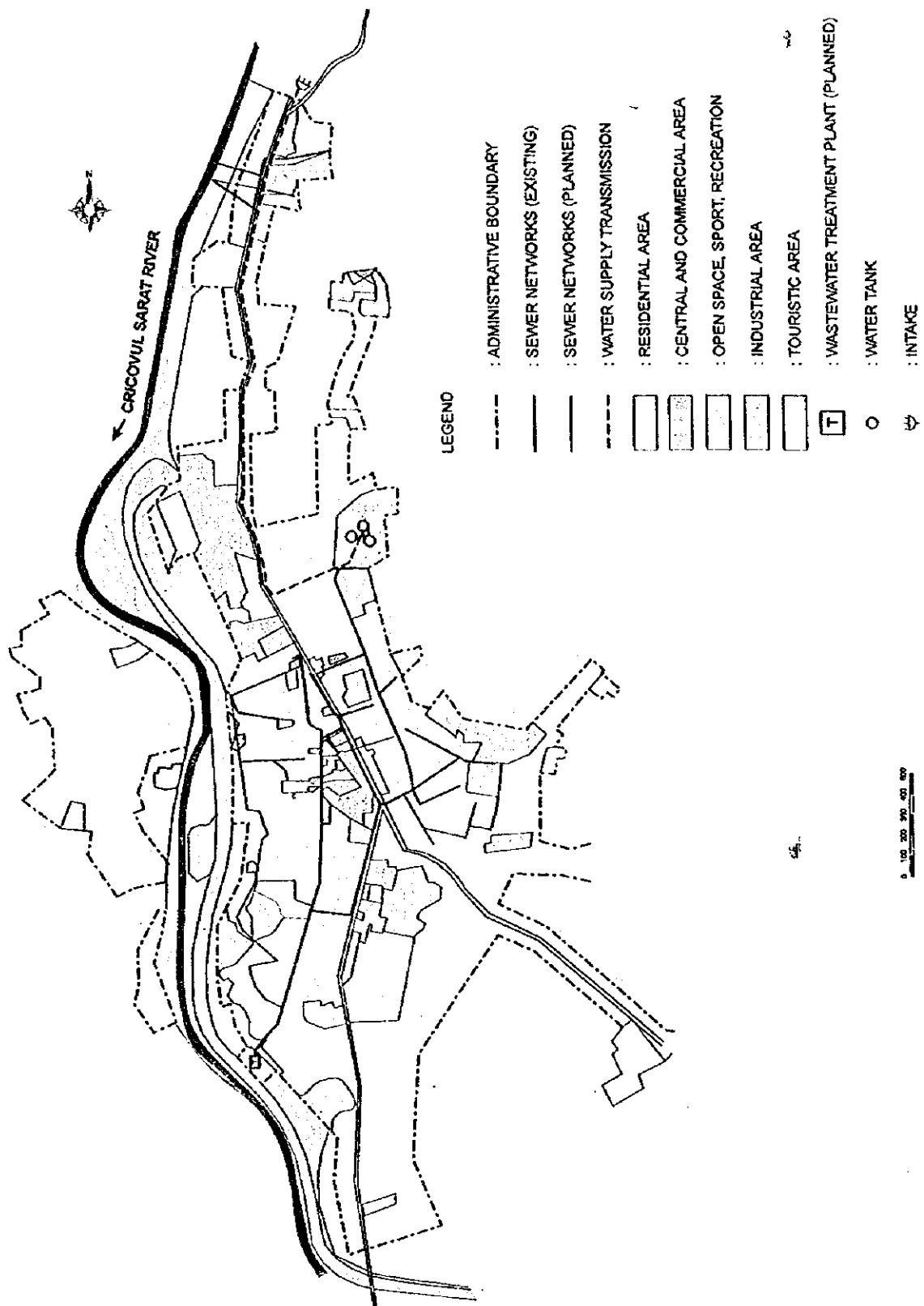
LEGEND

-  : ADMINISTRATIVE BOUNDARY
-  : SEWER NETWORKS (EXISTING)
-  : SEWER NETWORKS (PLANNED)
-  : RESIDENTIAL AREA
-  : CENTRAL AND COMMERCIAL AREA
-  : OPEN SPACE, SPORT, RECREATION
-  : INDUSTRIAL AREA
-  : WASTEWATER TREATMENT PLANT (EXISTING)



STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN  
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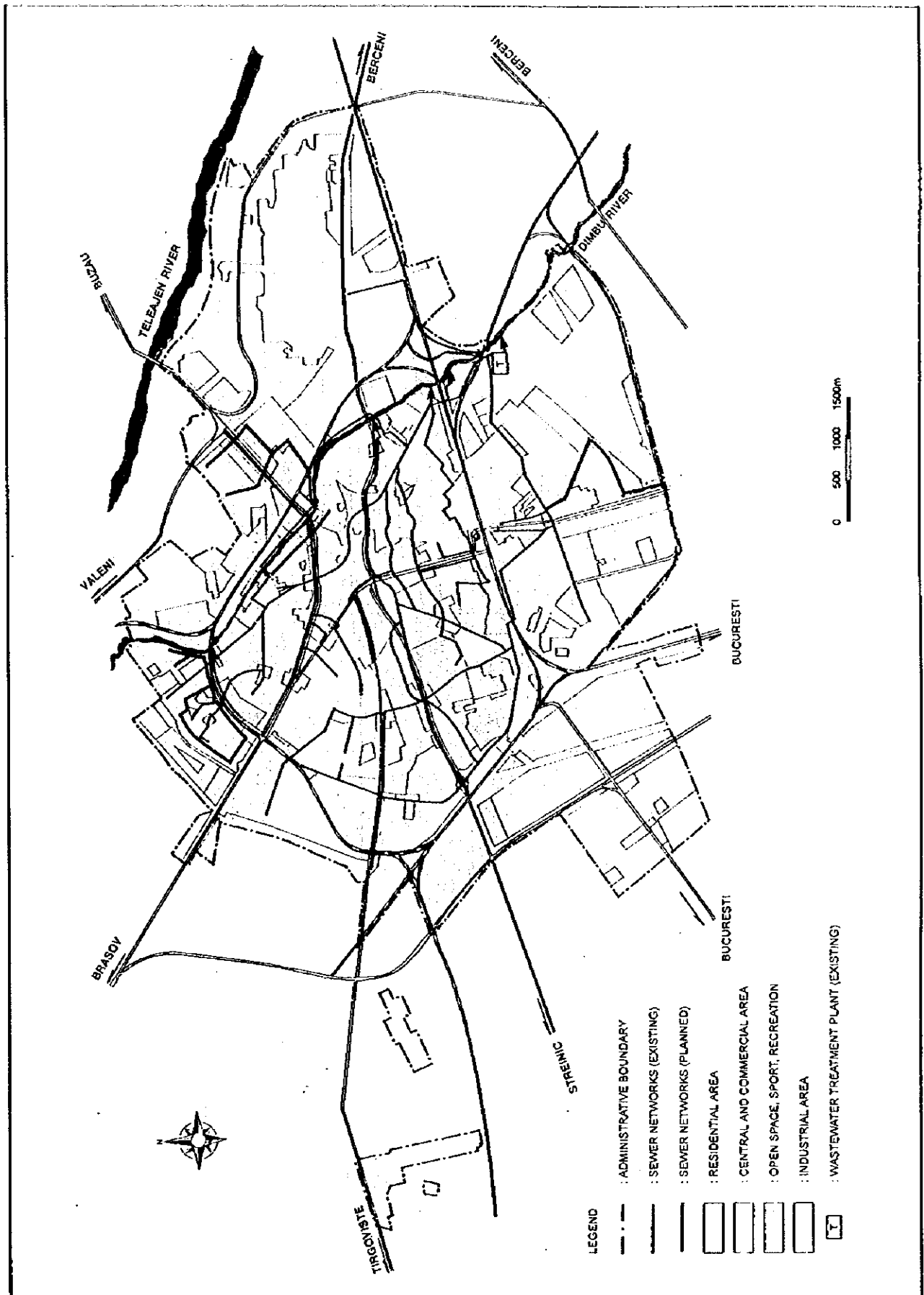
**Fig. D.3.2 Existing and Planned  
 Sewer Networks (12/14)  
 Boldesti Scaieni Town**



STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN

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**Fig. D.3.2 Existing and Planned  
 Sewer Networks (13/14)  
 Uralti Town**



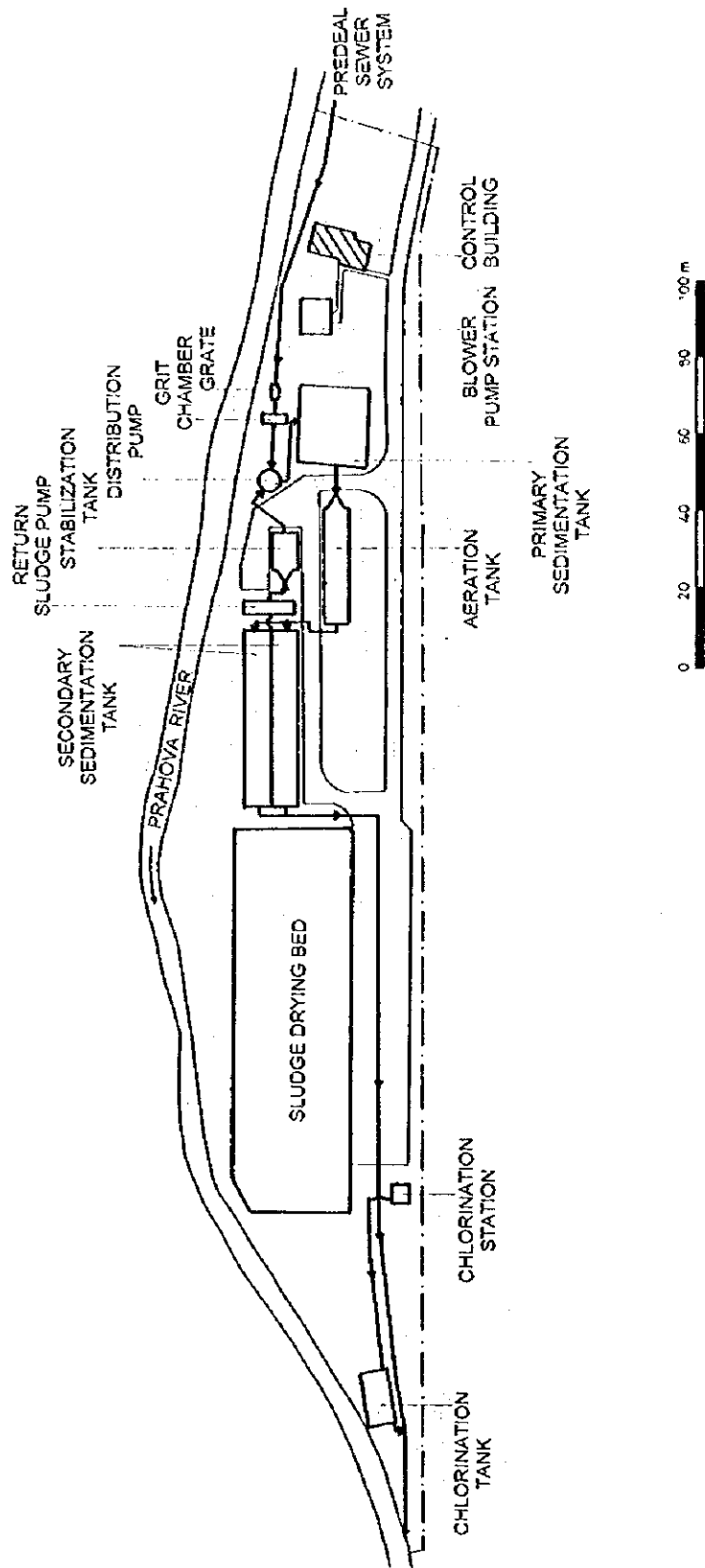
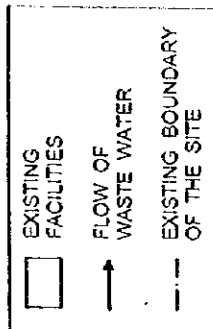
STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN

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**Fig. D.3.2 Existing and Planned  
 Sewer Networks (14/14)  
 Ploiesti City**



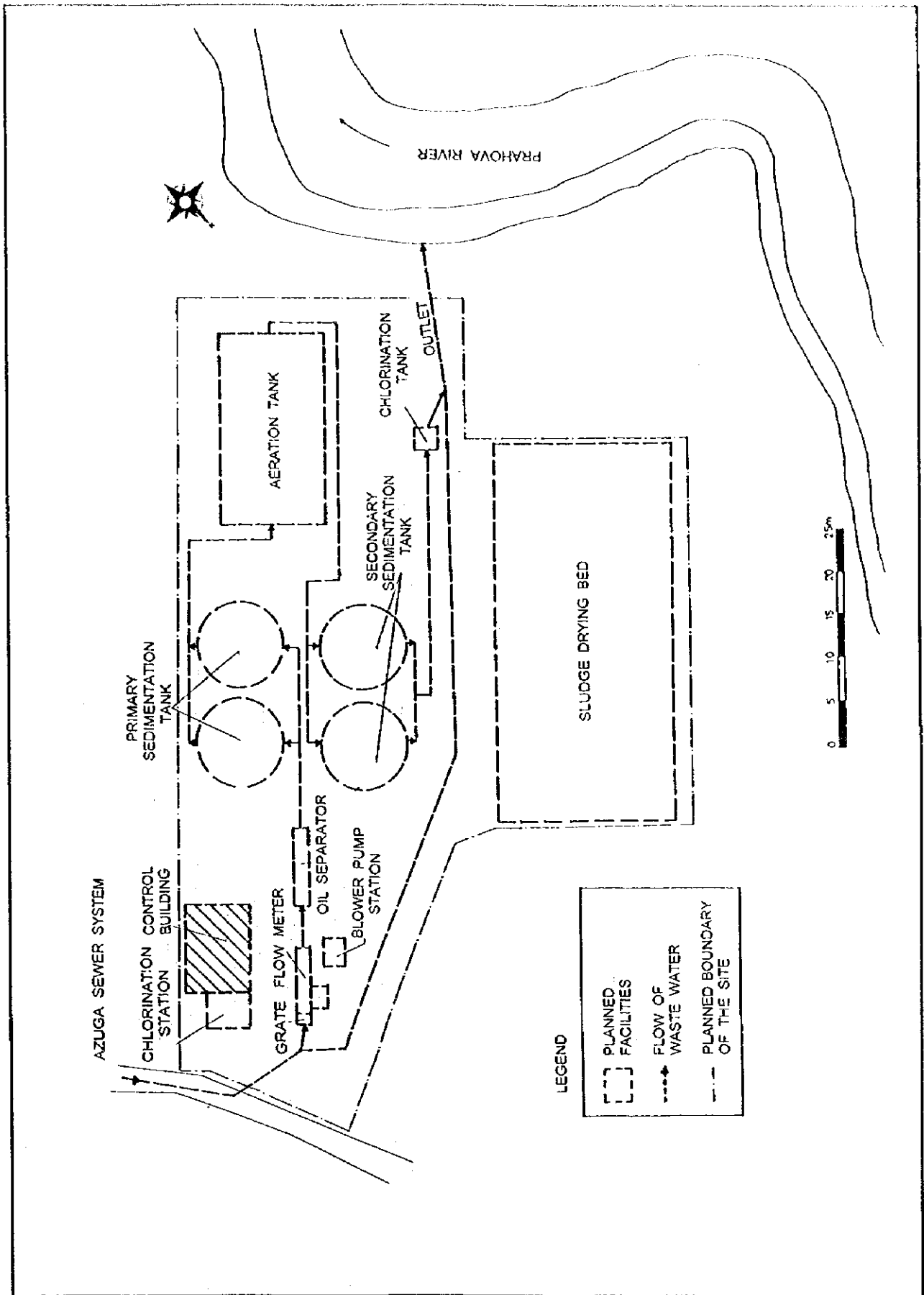
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WATER ENVIRONMENT MANAGEMENT ON  
THE PRAHOVA RIVER BASIN

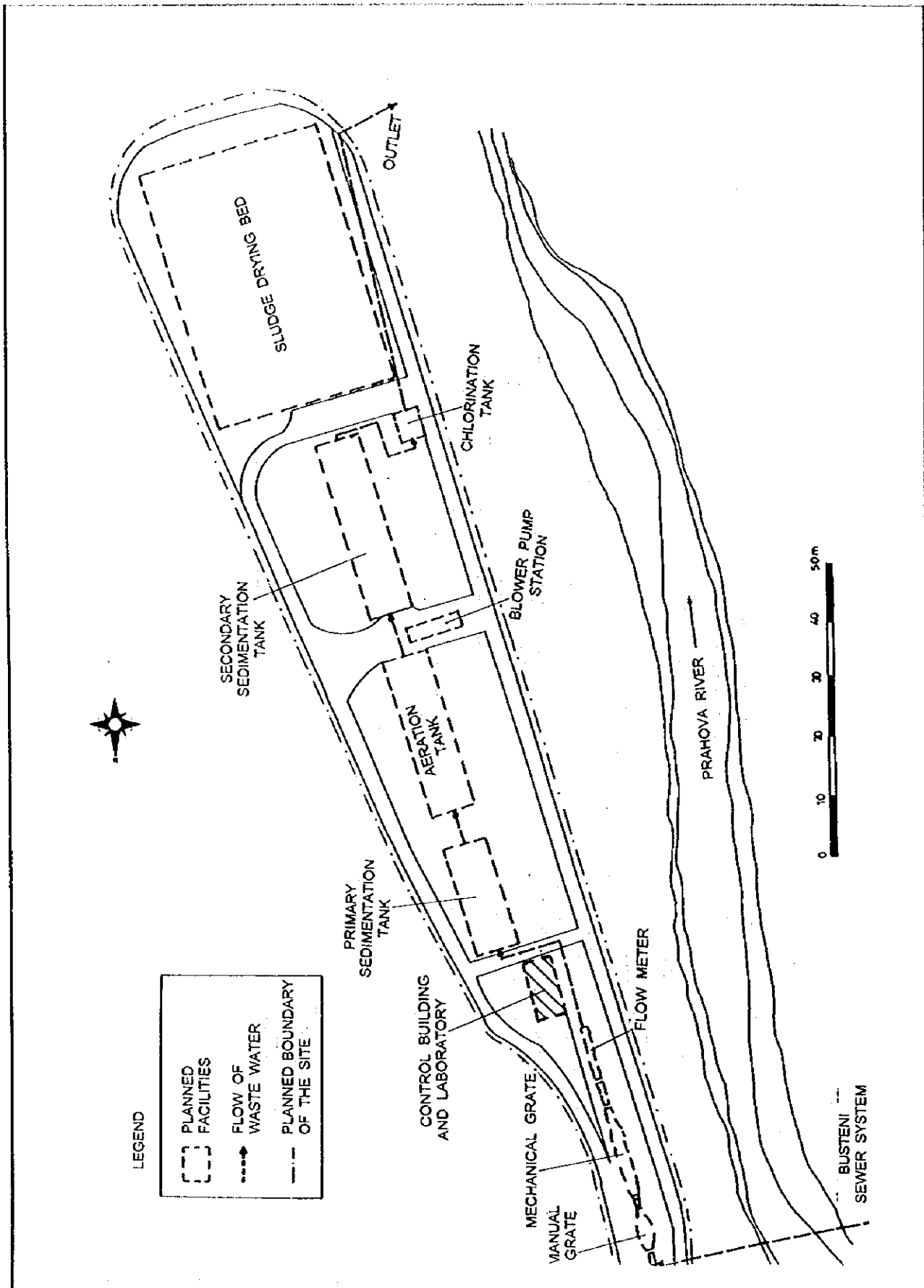
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**Fig. D.3.3** Layout of Sewerage  
Treatment Plant (1/14)  
Predeal Town



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 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN  
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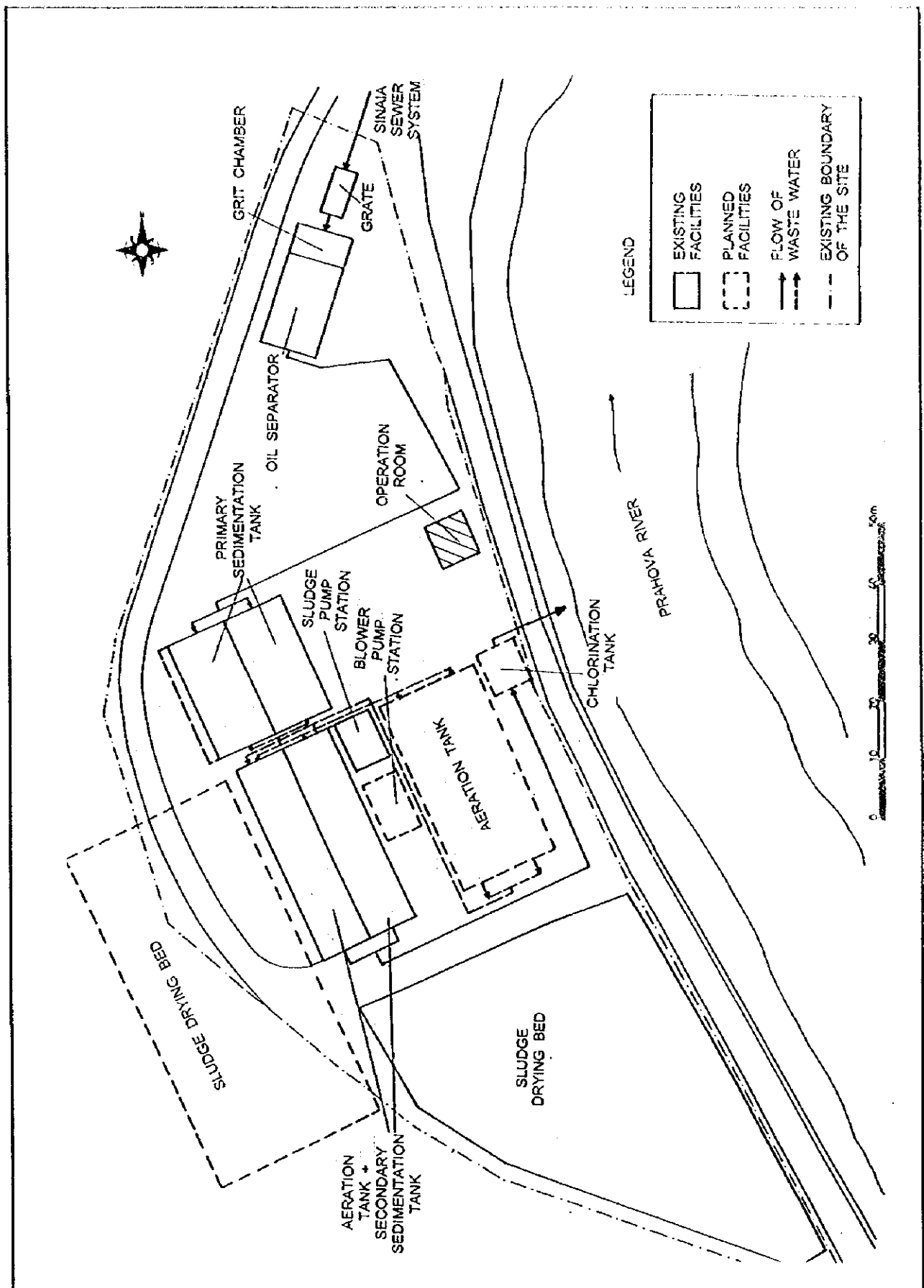
**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (2/14)  
 Azuga Town



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 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN

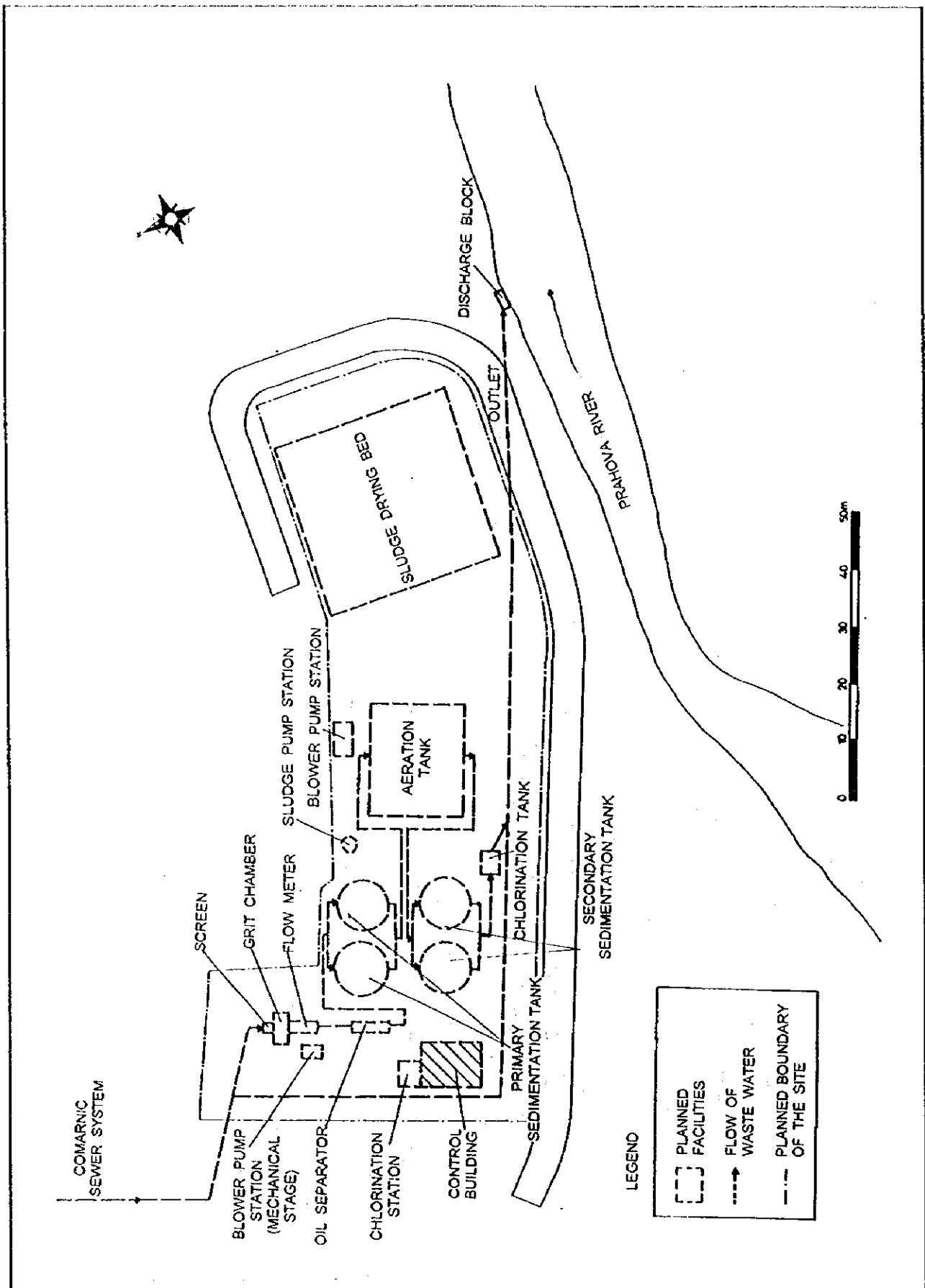
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**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (3/14)  
 Busteni Town



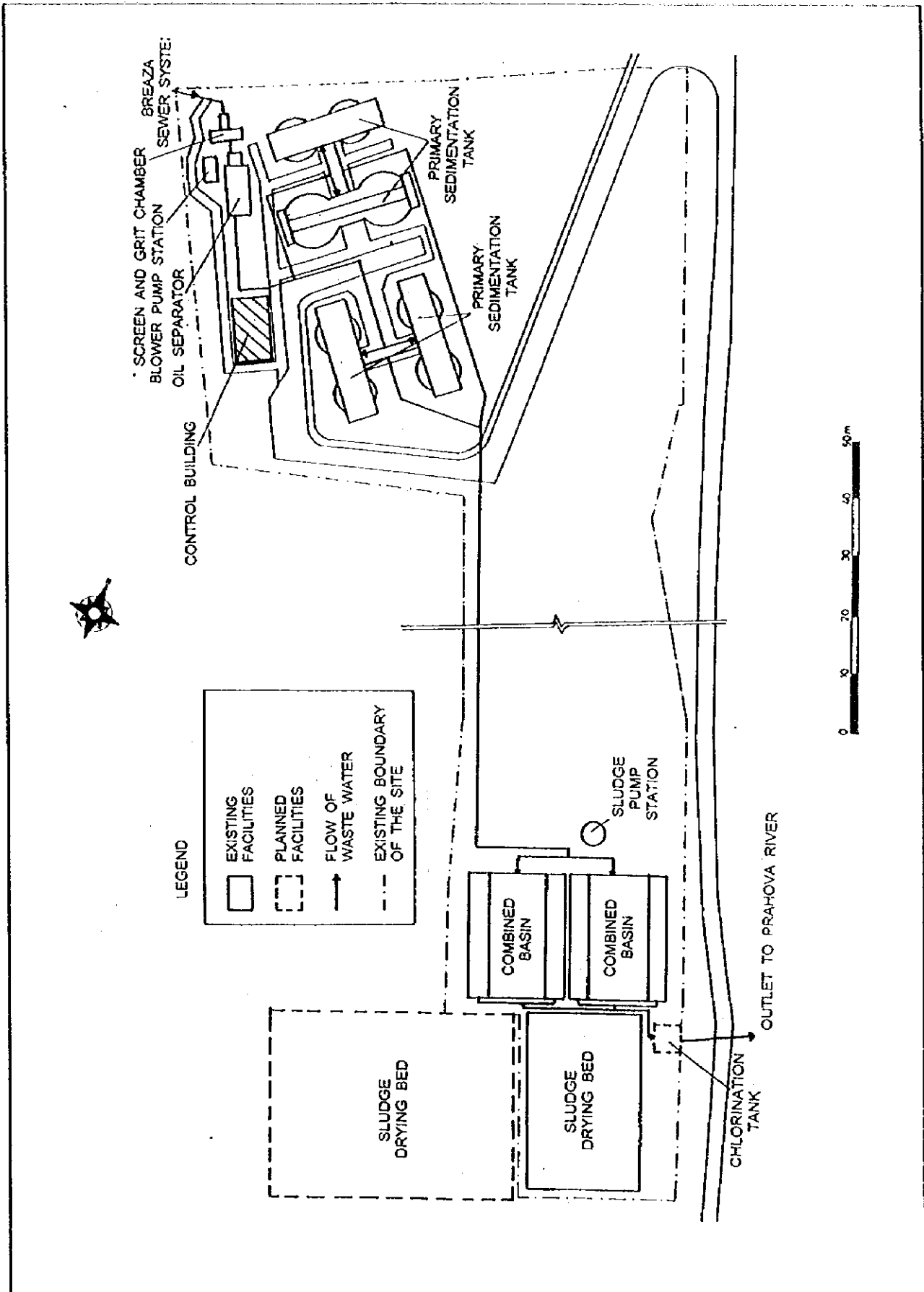
STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN  
 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (4/14)  
 Sinaia Town



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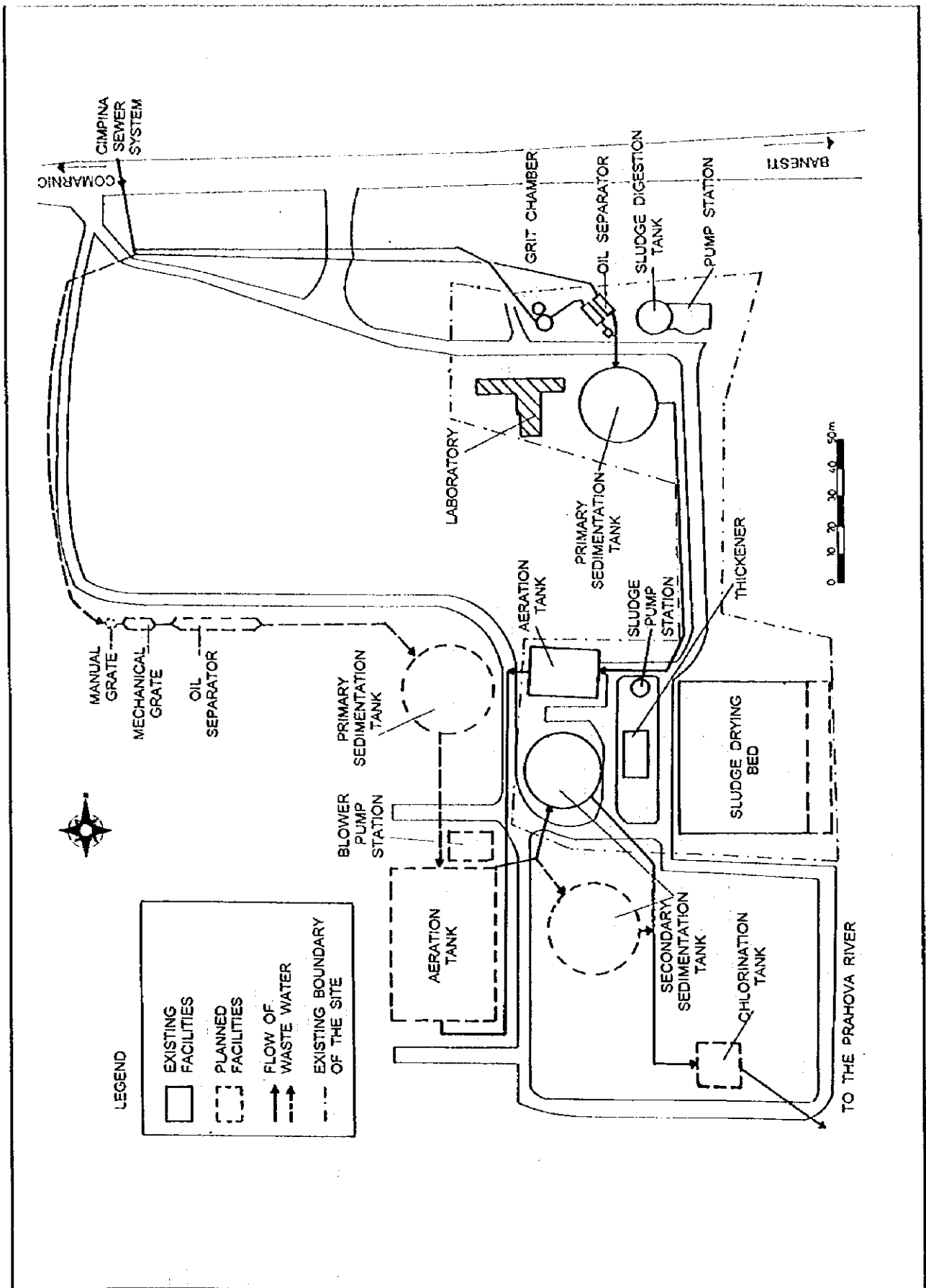
**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (5/14)  
 Comarnic Town



STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN

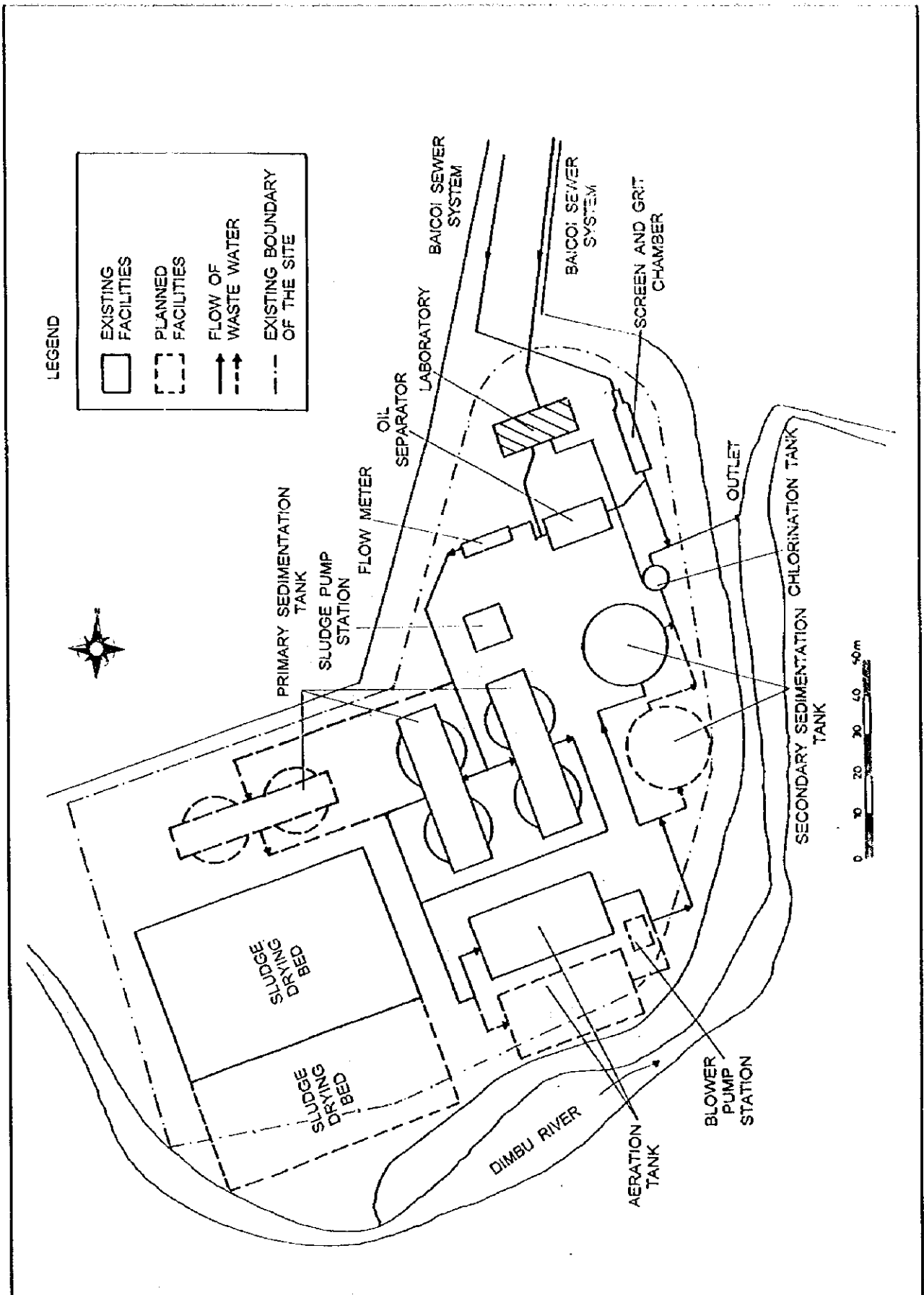
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**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (6/14)  
 Breza Town



STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN  
 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.3** Layout of Sewerage Treatment Plant (7/14) Cimpina City

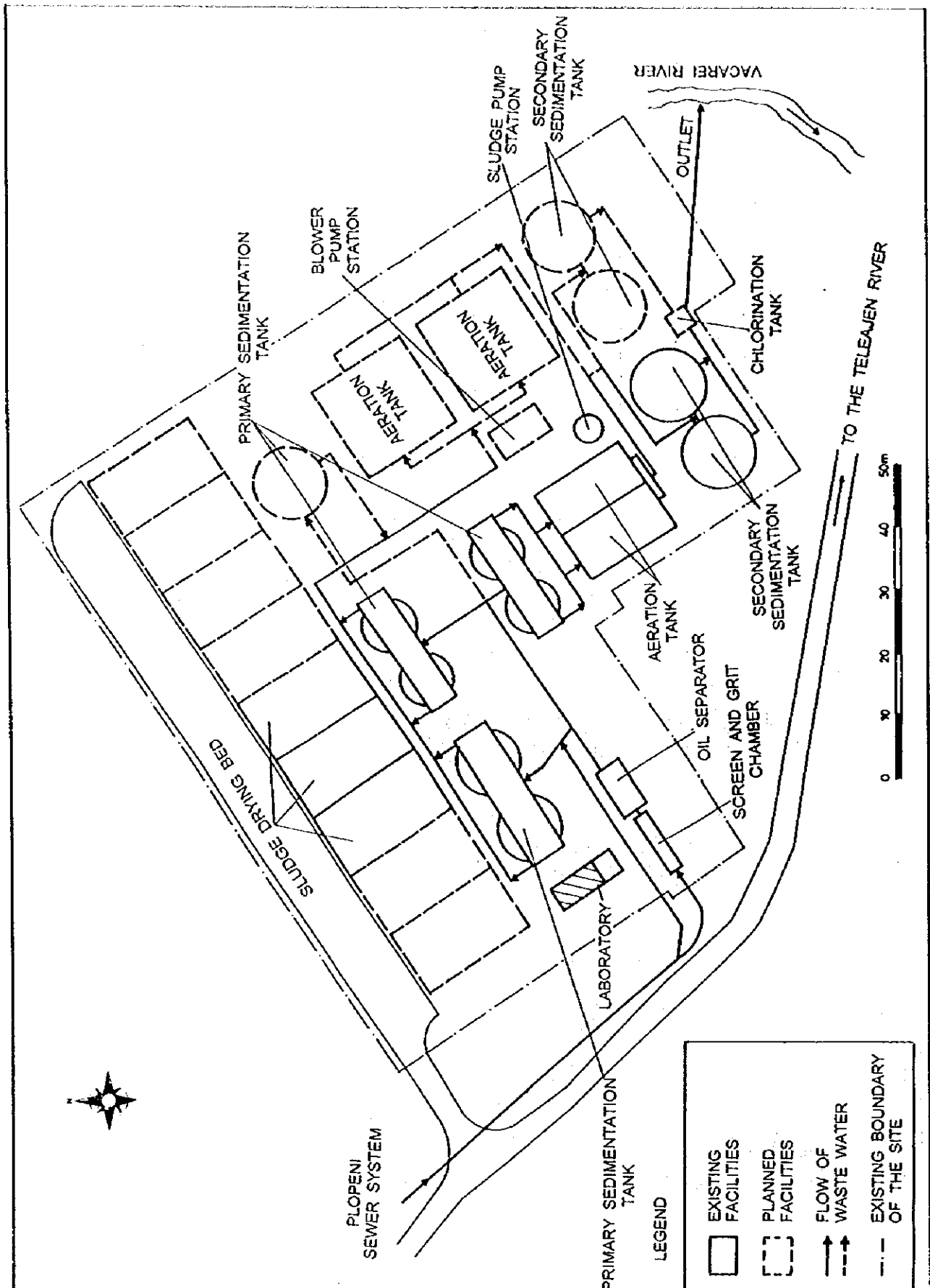


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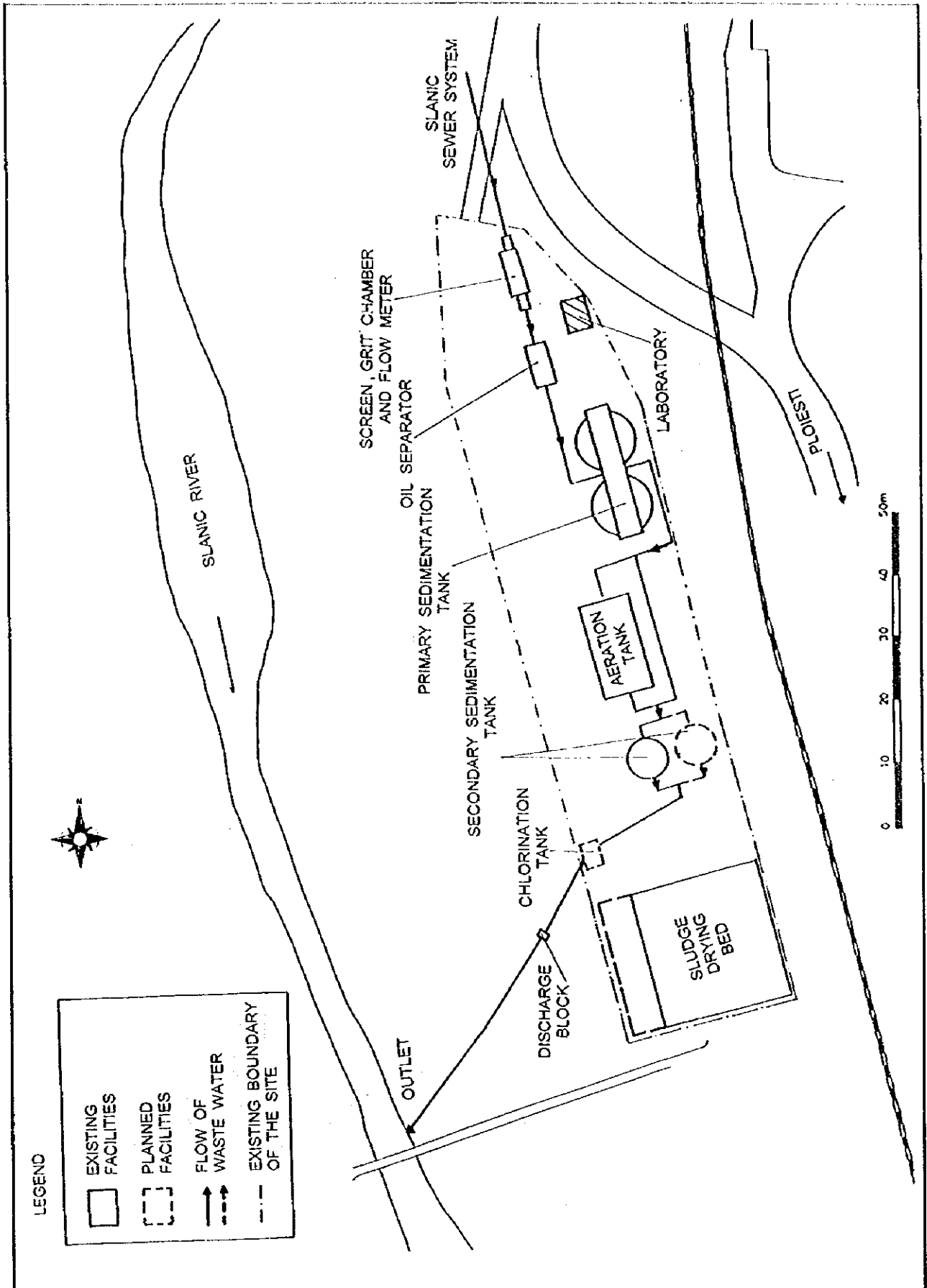
**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (8/14)  
 Baicoi Town



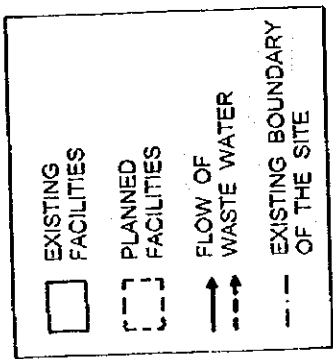


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 THE PRAHOVA RIVER BASIN  
 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (9/14)  
 Plopeni Town

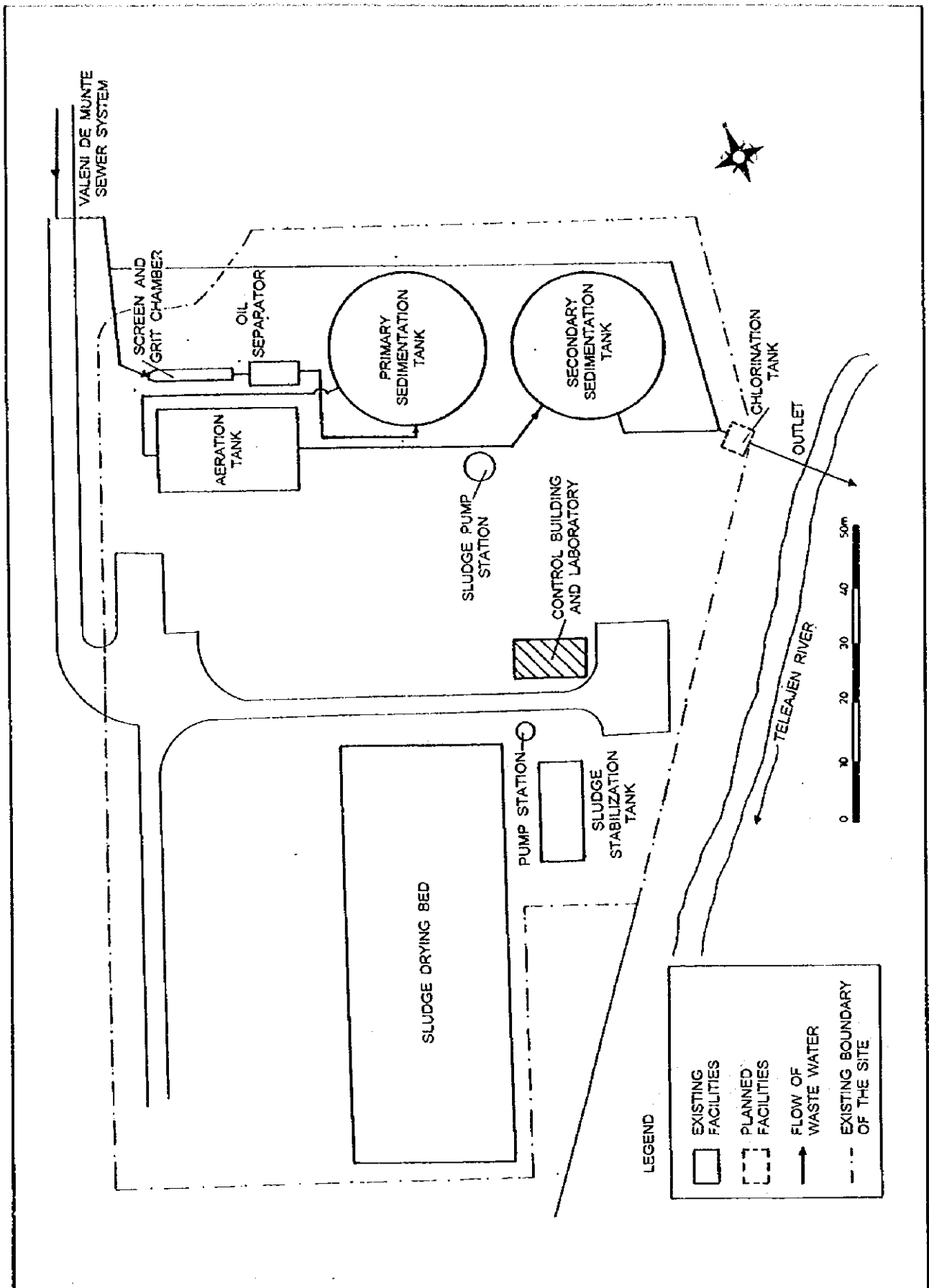


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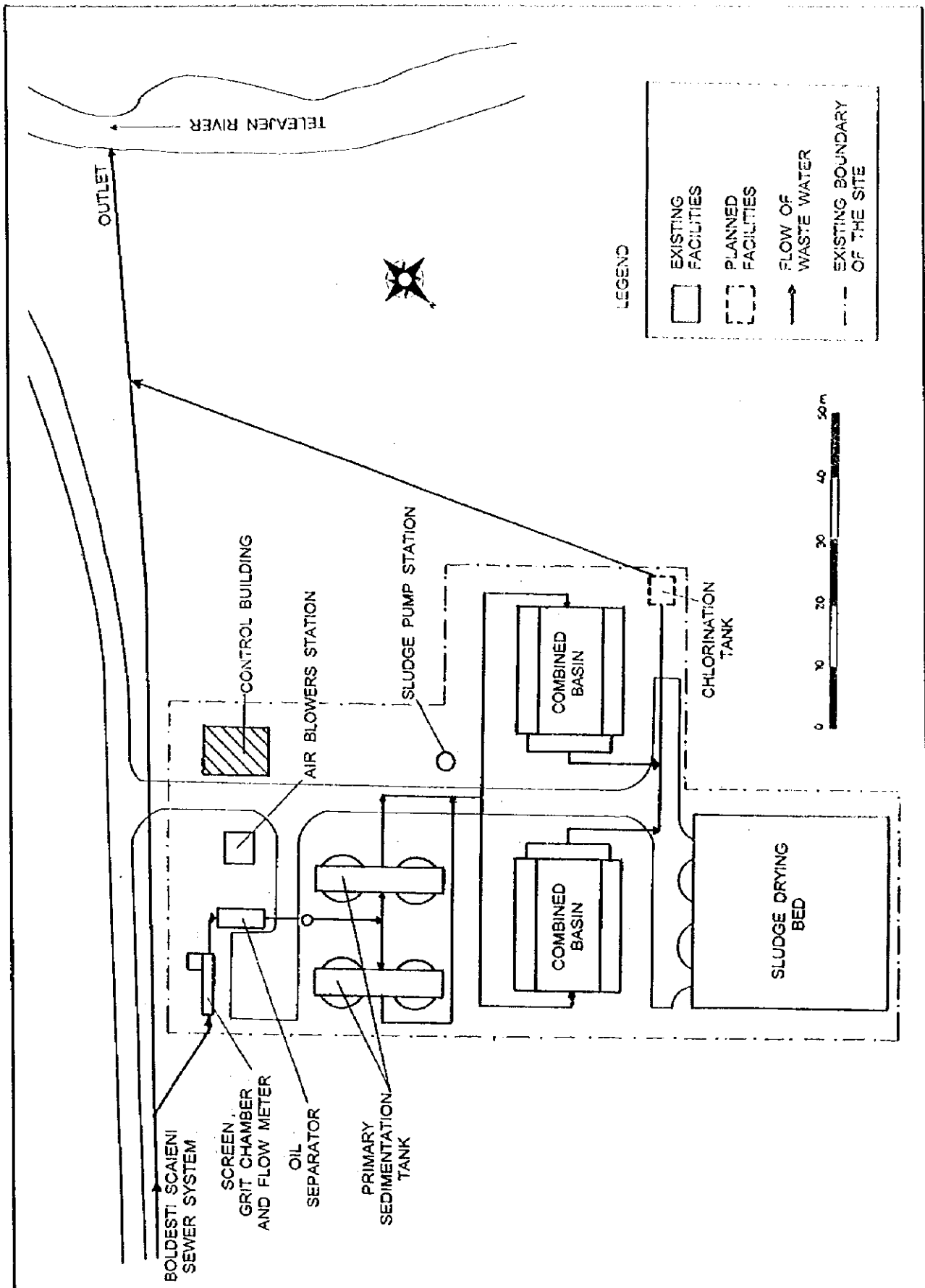
STUDY ON THE MASTER PLAN FOR  
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 JAPAN INTERNATIONAL COOPERATION AGENCY

**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (10/14)  
 Slanic Town



STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
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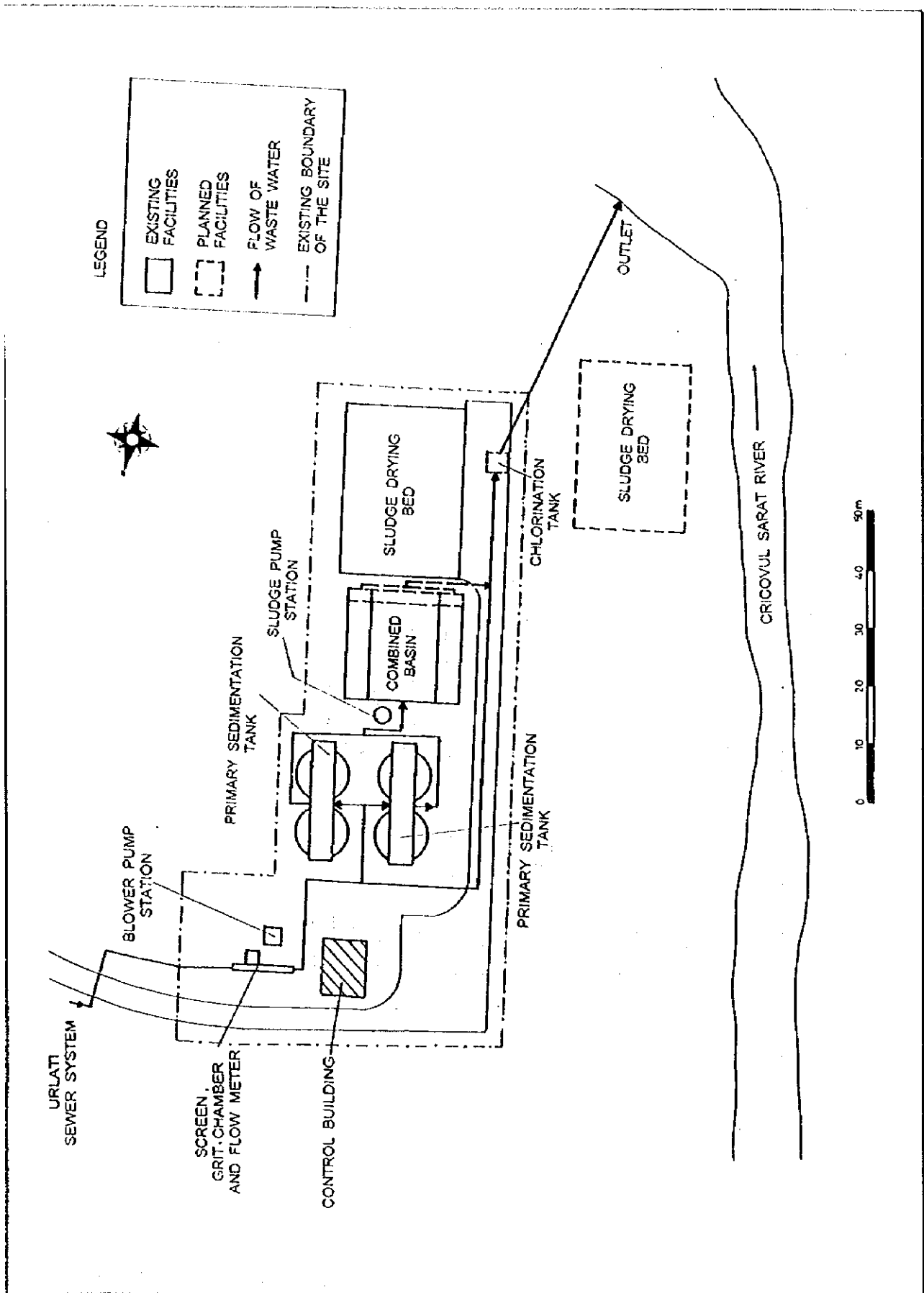
**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (11/14)  
 Valenii de Munte Town



STUDY ON THE MASTER PLAN FOR  
 WATER ENVIRONMENT MANAGEMENT ON  
 THE PRAHOVA RIVER BASIN

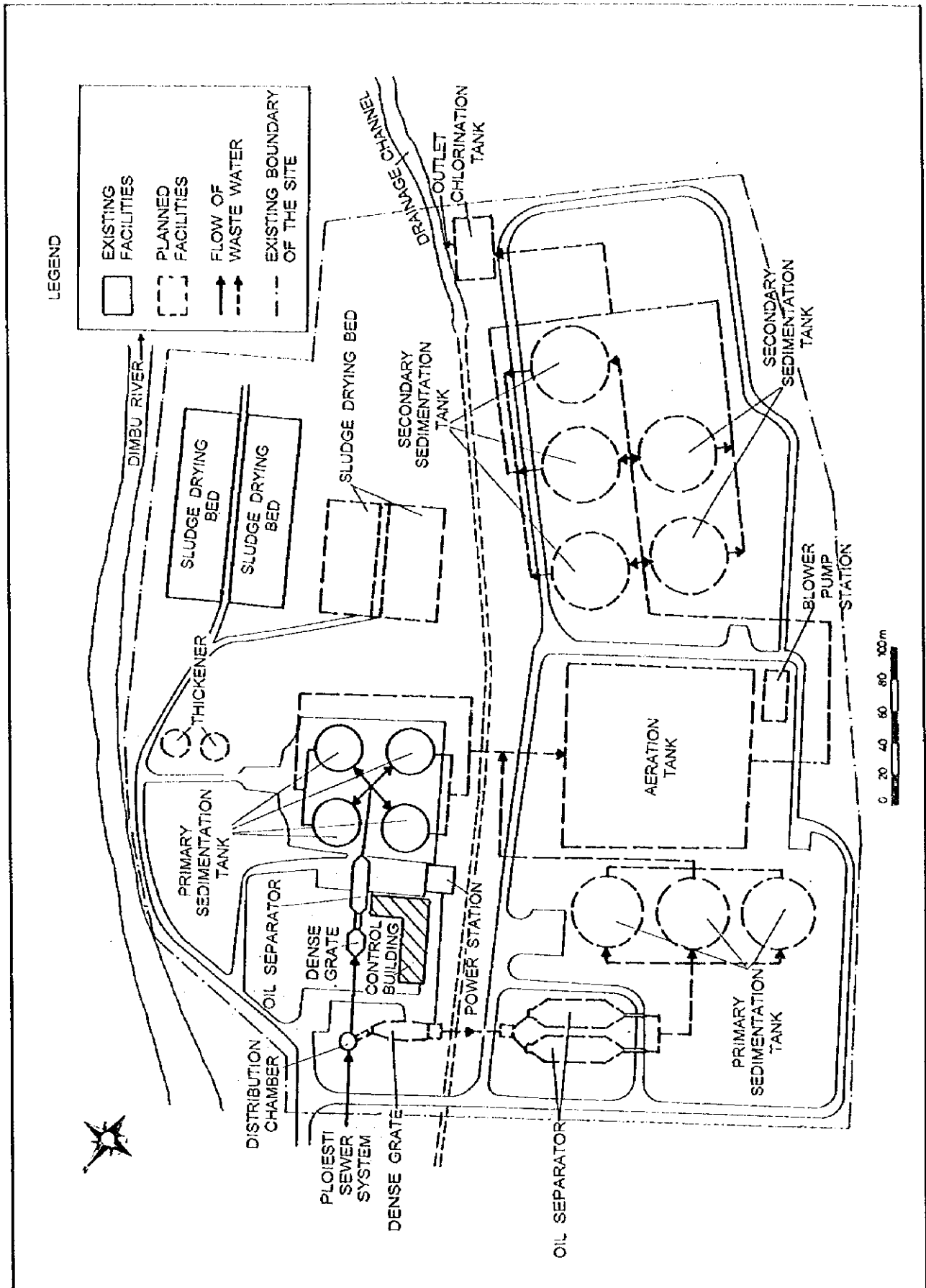
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**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (12/14)  
 Boldesti Scaieni Town



STUDY ON THE MASTER PLAN FOR  
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**Fig. D.3.3** Layout of Sewerage  
 Treatment Plant (13/14)  
 Urlati Town



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WATER ENVIRONMENT MANAGEMENT ON  
THE PRAHOVA RIVER BASIN

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**Fig. D.3.3** Layout of Sewerage  
Treatment Plant (14/14)  
Ploiesti City



**ATTACHMENT**





# QUESTIONNAIRE ON SEWERAGE SYSTEM

(PLEASE FILL THE BLANK WITH THE 1996 DATA)

Municipal Name \_\_\_\_\_

Company \_\_\_\_\_

Respondent \_\_\_\_\_

Tel \_\_\_\_\_

## 1. THE INFORMATION ABOUT COMPANY WHICH IS RESPONSIBLE WITH SEWERAGE SYSTEM

- 1) the name of company
- 2) the number of staffs
- 3) the main job

## 2. POPULATION AND AREA IN THE MUNICIPALITY

	population	household	area(ha)
flush toilet to sewer system			
flush toilet to septic tank			
latrine			
none exists			
total			

## 3. DISCHARGE SYSTEM

Combined system or Separate system

## 4. CHARGE SYSTEM

	number	charge (lei/m <sup>3</sup> )	total income
household			
industry			
any other			

## 5. PIPE

- 1) construction year from to
- 2) construction cost
- 3) details

	diameter(m)	length(m)	any trouble
pipe for wastewater			
pipe for rain			

## 6. THE MAIN FACTORY

- 1) the number of industry

	Sewer Service Area		no-sewerage area	total
	into sewer pipe	into river		
Oil/Natural Gas Well				
Thermal Power Station				
Steel Industry				
Machine Industry				
Oil Refinery				
Wood/Paper/Pulp Industry				
Glass Industry				
Petrochemical Industry				
Cement Industry				
Plumbic Industry				
Food Industry				
Electric Industry				
Any others				

- 2) average quantity of each factory discharging into the sewer pipe

factory name	quantity(m <sup>3</sup> /day)	factory name	quantity(m <sup>3</sup> /day)

- 3) average effluent quality of each factory discharging into the sewer pipe(mg/l)

parameter	standard	factory 1	factory 2	factory 3	factory 4
factory name					
pH					
BOD <sub>5</sub>					
COD(Cr/Mn)					
SS					
extracted substract					
heavy metals					
any other					

- 4) penalty for exceeding the standard quality into the sewer system

**7. TREATMENT PLANT**

- 1) designed year
- 2) completion year
- 3) construction cost
- 4) process (flow chart)
- 5) average quantity of influent(m<sup>3</sup>/day)

	designed value		actual value	
	Max. daily	Mean daily	Max. daily	Mean daily
quantity/capita/day (a)				
service population (b)				
industrial quantity (c)				
total quantity (d)=(a)*(b)+(c)				

- 6) the average quality (mg/l)

	influent quality	effluent	
		standard	quality
pH			
BOD5			
COD(Cr/Mn)			
SS			
extracted substract			
heavy metals			
any other			

- 7) the trouble for operation the treatment plant
- 8) exact discharge point (please show the point and landmark on the map)

**9. OPERATION AND MAINTENANCE**

- 1) operation and maintenance cost (lei/month)

	staff number	maintenance cost		repair cost
		utility	personal expense	
pipe				
treatment plant				

- 2) annual budge in 1996 for sewerage section
- 3) organization chart

## 9. THE FUTURE PLAN

- 1) rehabilitation and development plan

	pipe		treatment plant	
	rehabilitation	development	rehabilitation	development
target year				
contents				
cost				
any other				

- 2) designed value

	mean daily	maximum daily
quantity/capita/day		
service population		
industrial quantity		

- 3) flow chart

- 4) any other

## 10. THE AREA WHERE THE SEWERAGE SYSTEM DOES NOT COVER

- 1) any problem at present
- 2) future plan
- (a) extension of sewer pipe
- (b) any other treatment
- (c) no plan

## 11. THE DOCUMENTS WHICH WE WANT TO BORROW

- 1) the future plan for sewerage treatment system
- 2) the layout of the existing treatment plant
- 3) the sewer network map at present
- 4) the other relevant documents

## 12. ANY OTHER COMMENTS

**THANK YOU VERY MUCH FOR YOUR COOPERATION WITH ANSWERING THIS QUESTIONNAIRE**









JICA