

Table D.3.5.1 (1) Booster Pump Station List (1)

Table D.3.3.1 (1) Booster Pump Station East (1)											
No	Name	Capacity cu.m/hr	Const rueted year	Pump					Electric insert number	Others	
				No.	Type	Pump dimension					number
						cu.m/hr	mH	kw			
1	Kushbegi	1000	1987	1	D 320/50	300	42	55	5 (2)	2	Drain
					K 20/30	20	30	4	1		
2	Bobur	600	1976	1	D 200/36	190	29	30	4 (1)	2	Drain
					NCZ			4.5	1		
3	Abdullaev	500	1984	1	K 90/20	90	20	7.5	4 (2)	2	
					K 90/45	90	45	17	1		
4	Uzbekistan-50 year	1000	1984	1	D 320/50	315	50	75	5 (2)	2	Drain
			1988	2	D 320/50 A	300	42	55	1		
					NCS 3			4.5	1		
5	Peoples friendship	1000	1977	1	D 320/50	315	50	75	3	2	Drain
				2	D 320/50 A	300	42	55	1		
					2K 20/30	20	30	4	1		
6	Almazar	1000	1982	1	D 320/50	315	50	75	5 (2)	2	Drain
					NCS 3			4	1		
7	D - 16	1000	1976	1	D 320/50	315	50	75	4 (1)	2	Drain
					K 20/30	20	30	4.5	1		
8	D - 20A	1000	1987	1	D 320/50	300	42	55	5 (2)	2	Drain
				2	D 320/75	300	100	234	1		
					2K 20/30	20	30	4	1		
9	Kara - Kamish 1/2	1000	1971	1	D 320/50	315	50	75	3	2	
				2	D 320/50	300	42	55	1		
10	Kara - Kamish 2/4	300	1976	1	D 200/36	200	36	37	2 (1)	2	Drain
					2K 20/30	20	30	1.5	1		
11	Tansikbaeva	1000	1983	1	D 320/50 A	300	42	55	5 (1)	2	Drain
				2	8K 12			55	(1)		
					NCS 3			4	1		
12	Tashgosmi	1000	1985	1	D 320/50	300	42	55	5 (2)	2	Drain
					2K 20/30	20	30	1.5	1		
13	Ibn Sino	3000	1989	1	200 D 90	750	90	250	6 (2)	2	
14	Al Khorizmy	1000	1988	1	D 320/50	315	50	75	5 (2)	2	Drain
					2K 20/30	20	30	1.5	1		
15	ZIB Snida 1	600	1993	1	D 320/50	315	50	75	3 (1)	2	
16	K - 25	1000	1987	1	D 320/50	315	50	75	4 (1)	2	Drain
				2	D 320/50 A	300	42	55	1		
					K 20/30	20	30	4	1		
17	Central - 17/18	1000	1984	1	D 320/50 A	300	42	55	5 (1)	2	Drain
					NCS 3			4	1		
18	University District	1000	1982	1	D 500/36	310	50	75	1	2	
				2	D 320/50	315	50	75	2(1)		
				3	D 200/70	180	74	75	(1)		
19	Samarkandskaya	400	1997	1	KM 90/35	90	35	17	3	2	Drain
					NCS 3			4	1		
20	Central - 7	1000	1968	1	D 200/95	180	74	75	1	2	Drain
				2	D 320/50	315	50	75	3		
					K 20/30	20	30	4	1		
21	General Petrov	1000	1987	1	D 320/50	315	50	75	3 (1)	2	Drain
				2	D 320/50	300	42	55	2(1)		
					2 K6			4.5	1		

Table D.3.5.1 (2) Booster Pump Station List (2)

No	Name	Capacity cu.m/hr	Const ructed year	Pump					Electric insert number	Others	
				No.	Type	Pump dimension					number
						cu.m/hr	mH	kw			
22	Lafarga	300	1968	1	6K8	150	45	30	2(1)	2	Drain
				2	6K8	150	25	17	1		
					1.5 K6			2.5	1		
23	TTZ - 4	1000	1982	1	D 320/50	315	50	75	5 (2)	2	Drain
					NCS 3			4.5	1		
24	Khumayun	1000	1988	1	D 300/50	300	42	55	4 (1)	2	Drain
					VKS 1/16			4.5	1		
25	Feruza	1000	1987	1	D 320/50	315	50	75	3(1)	2	Drain
				2	D 320/50	300	42	55	2(1)		
					VKS 4/24			4	1		
26	Kh. Olimdjana	600	1983	1	K 90/85	90	85	35	3(1)	2	Drain
				2	K 90/55	90	55	37	2(1)		
				3	K 90/35	90	35	11	5 (2)		
					NCS 3			7.5	1		
27	Jukovskiy	100	1987	1	K 45/30	45	30	7.5	3 (1)	2	Drain
					NCS 3			4	1		
28	Gogol	45	1976	1	K 45/30	45	30	7.5	2 (1)	2	Drain
					NCS 3				1		
29	Sergeli - 2	1000	1984	1	D 320/50	300	42	55	4 (1)	2	Drain
					NCS			4	1		
30	Akhongaranskiy	1000	1989	1	D 320/50	300	42	55	5 (2)	2	Drain
					NCS 3			4	1		
31	Lisunova	1000	1982	1	D 320/50	315	50	75	5 (2)	2	Drain
					NCS 3			4.5	1		
32	Kuylyuk 5	1000	1988	1	D 320/50	300	42	55	5 (1)	2	Drain
					1.5 KV			3	1		
33	Gaidars-Hippodrom	1000	1987	1	D 320/50	300	42	55	5 (2)	2	Drain
					1.5 KV			1.5	1		
34	Pushkina-Salar	1000	1987	1	D 320/50	300	42	55	5 (2)	2	Drain
					NCS 3			7.5	1		
35	Sapernaya-Baranova	1000	1989	1	D 320/50	315	50	75	5 (2)	2	Drain
					VKS 2/26			4.5	1		
36	B - 1	3000	1990	1	300 D 40	750	40	160	6 (2)	2	Drain
					NCS 3				1		
37	SV - 4B	3000	1983	1	ZSO D 40	750	40	160	6 (2)	2	Drain
					NCS 3			5	1		
38	Central - 13	600	1987	1	D 320/50	315	50	75	3 (1)	2	Drain
					NCS			5	1		
39	Central - 14	240	1987	1	6K8	120	30	30	4 (2)	2	Drain
					NCS 3			7.5	1		
40	Central - 5	320	1981	1	8K12	160	70	45	3 (1)	2	Drain
					1.5K6			4	1		
41	Central - 4	320	1981	1	8K12	160	70	45	3 (1)	2	Drain
					1.5K6			4.5	1		
42	SD - 2	1000	1982	1	D 320/50	300	42	55	4 (1)	2	Drain
					1.5K6			4.5	1		
43	SB - 5	1000	1987	1	D 320/50	300	42	55	5 (2)	2	Drain
					3K9			7.5	1		
44	SB - 4	1000	1982	1	D 320/50	315	50	75	5 (2)	2	Drain
					NCS 3				1		

Table D.3.5.1 (3) Booster Pump Station List (3)

No	Name	Capacity cu.m/hr	Const ructed year	Pump					Electric insert number	Others	
				No.	Type	Pump dimension					number
						cu.m/hr	mH	kw			
45	Uigur	600	1991	1	D 320/50	300	42	55	3 (1)	1	Drain
					1.5K6				1		
46	Beruniy	45	1992	1	K45/30	45	30	7.5	2 (1)	1	
47	Chorsu	250	1991	1	K90/35	90	20	11	5 (2)	1	Drain
					VKS1/16				2 (1)		
48	Kafanova	200	1978	1	6K8 30 KV	100	25	11	3 (1)	2	Drain
					1.5K6				1		
49	Bodamzar	90	1988	1	KM90/55	100	32	15	2 (1)	2	
50	Ankhor quay	60	1988	1	3KM6	60	55	15	2 (1)	1	
51	Cherdanzev	45	1993	1	N45/30	45	35	7.5	2 (1)	1	Drain
					4K12			11	1		
52	Chizelnaya	1000	1990	1	D 320/50	300	55	75	5 (2)	2	Drain
					NCS 3				1		
53	Stroitel	1000	1993	1	D 320/50	300	42	55	5 (2)	2	Drain
					VKS2/26			2.5	1		
54	Sergeli - 8	1000	1993	1	D 320/50	315	50	75	5 (2)	2	Drain
					NCS 3			4.5	1		
55	Chilanzar 30	3000	1993	1	D800/57	800	56	200	6 (2)	2	
56	New way	1000	1991	2	D 320/50	300	42	55	2(1)	2	Drain
				3	D 320/50	315	50	75	3(1)		
					NCS 3			4.5	1		
57	Karasu 3	600	1983	1	D200/36	300	22	30	2(1)		
				2	D320/50	300	42	55	2(1)		
58	Kuylyuk 1	1000	1994	1	D320/50	315	50	75	5 (2)	2	Drain
					NCS 3			4.5	1		
59	Tula	40	1989	1	K45/55	40	25	4.5	2 (1)	1	
60	Abidova	80		1	KM90/55	80	80	30	1	2	
61	Murtazayeva	40	1994	1	K20/30	20	30	4	2 (1)	1	
62	Ziye-Said 2	600	1998	1	D320/50	300	42	55	2 (1)	1	
63	Huvaido	200	1976	1	K45/30	45	30	7.5	2 (1)	1	Drain
					26KV				2 (1)		
64	Babaeva	40	1989	1	K45/30			7.5	2 (1)	1	
65	Shaihadze	1000	1996	1	D320/50	315	50	75	2 (1)	2	
			1996	2	D320/50	300	42	55	2 (1)		
66	Pioneer	1000	1995	1	D320/50	315	50	75	5 (2)	2	
67	Gulzhaniy	600	1995	1	D320/50	315	50	75	2 (1)	1	
68	Karasaraiskaya	1000	1997	1	D320/50	315	50	75	5 (2)	2	
69	Farobiy	1000	1997	1	D320/50	315	50	75	5 (2)	2	
70	REVC-4	300	1995	1	D320/50	315	50	75	2 (1)	1	
71	Bobur-2	1000	1998	1	D320/50	315	50	75	4 (1)	2	
72	Turgunbaeva	300	1998	1	D320/50	300	42	55	2 (1)	1	
73	Kukcha	300	1998	1	D320/50	300	42	55	2 (1)	1	
74	Ipakchi	300	1993	1	D320/50	315	50	75	1	1	
			1993	2	D320/50	300	42	55	(1)		
75	Shumilova	160	1998	1	6K8	160	40	30	2 (1)	1	
76	Literaturnaya	160	1998	1	6K8	160	40	30	2 (1)	1	
77	Bulvarnaya	1000	1998	1	D320/70	300	63	90	5 (2)	2	
78	Ankhor-Kosmonavt	500	1998	1	D320/50	315	50	75	3 (1)	2	
79	Beruniy 2	20	1997	1	K20/30	20	30	15	2 (1)	1	
80	Zavskiy	40	1995	1	K40/30	40	30	7.5	2 (1)	1	

Table D.3.5.1 (4) Booster Pump Station List (4)

Table D.3.3.1 (4) Booster Pump Station List (4)											
No	Name	Capacity cu.m/hr	Const ructed year	Pump					Electric insert number	Others	
				No.	Type	Pump dimension					number
						cu.m/hr	mH	kw			
81	Fargona-Yuli	40	1985	1	K40/30	40	30	7.5	2 (1)	1	
82	Central 22	90	1995	1	K90/30	90	30	15	2 (1)	1	
83	Atoi	40	1985	1	K40/20	40	20	5	2 (1)	1	
84	Kara-Su 6	90	1983	1	KM90/45	90	45	20	2 (1)	1	
85	Central 27	300	1989	1	D320/50	315	50	75	2 (1)	1	
86	Sergeli- 3/5	3000	1993	1	D1250/67	1250	67	350	4 (2)	2	
			1993	2	D320/50	315	50	75	3		
87	CVRU	7200	1998	1	D1600/90	1600	90	630	3 (2)	2	
			1998	2	D630/90	500	60	160	3 (2)		
			1998	3	D200/90	200	90	90	3 (1)		
88	Mirzo-Ulugbek	30000	1988	1	24NDC	6500	79	1700	7 (4)	2	
			1988	2	22NDC	4500	55	850	1	1	
89	Mukimiy-Peoples Fr	40	1996	1	K40/30	40	30	7.5	2 (1)	1	
90	5th hospital	160	1998	1	6K8	80	90	30	3 (1)	1	
91	Kalinina-Mavzuk	90	1971	1	K90/30	90	30	15	2 (1)	1	
92	1st city hospital	90	1985	1	K45/30	45	30	7.5	4 (2)	2	

Figure D3-5.2 Materials and Usage Year of Distribution Pipe-line

Diameter (mm)	Total(km)			Each usage Length(km)												over 50years								
				to 5 years			from 5 till 10y			from 10 till 20y			from 20 till 30y			from 30 till 40			from 40 till 50y					
	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total			
19	2.7	0.0	2.7			0.0			0.0	2.4		2.4	0.3		0.3			0.0			0.0			
25	10.7	0.0	10.7			0.0			0.6	7.9		7.9	1.9		1.9	0.3		0.3			0.0			
32	24.8	0.0	24.8			0.0	0.4		5.1	6.9		6.9	7.9		7.9	4.3		4.3			0.2			
38	47.7	0.0	47.7	0.1		0.1	0.6		0.3	8.5		8.5	7.1		7.1	18.9		18.9			12.2			
50	254.1	84.0	338.1	7.1		7.1	1.1		21.9	6.5	28.4	93.9	8.9	102.8	74.2	66.6	140.8	43.1	12.8	2.0	12.8			
63	17.8	0.0	17.8			0.0			0.4	2.6		2.6	5.5		5.5	5.6		5.6			3.7			
75	103.0	11.5	114.5	18.1	0.1	18.2	5.1	0.7	5.8	7.8		7.8	29.7	2.3	32.0	33.7	4.8	38.5	5.9	0.7	2.9	5.6		
100	402.2	209.4	611.6	60.5	4.0	64.5	24.3	15.7	40.0	52.8	13.1	65.9	131.4	84.4	215.8	109.5	60.9	170.4	7.9	13.7	15.8	33.4		
125	17.9	10.3	28.2	2.1		2.1	1.1		1.1	1.2		1.2	5.9	3.9	9.8	4.4	3.0	7.4	2.9	1.0	0.3	2.7		
150	244.0	273.1	517.1	43.8	3.0	46.8	52.1	16.4	68.5	31.2	47.6	78.8	27.0	103.3	130.3	81.4	64.7	146.1	6.4	20.4	26.8	2.1	17.7	19.8
200	218.5	170.3	388.8	18.4	4.0	22.4	42.6	0.8	43.4	68.8	22.4	91.2	38.3	67.5	105.8	38.1	43.7	81.8	6.4	18.5	24.9	5.9	13.4	19.3
250	44.6	41.2	85.8			0.0	1.4		1.4	21.9	2.4	24.3	5.2	6.3	11.5	13.4	4.8	18.2	0.6	5.8	6.4	2.1	21.9	24.0
275	4.8	0.0	4.8	2.1		2.1	1.5		1.5	1.0		1.0			0.0	0.2		0.2					0.0	0.0
300	266.0	247.6	513.6	9.9	3.5	13.4	15.6	8.7	24.3	128.2	60.4	188.6	64.3	72.7	137.0	36.7	70.2	106.9	4.5	19.2	23.7	6.8	12.9	19.7
325	107.9	0.3	108.2	26.5		26.5	26.8		26.8	36.0	0.3	36.3	12.7		12.7	5.9		5.9					0.0	0.0
350	4.5	2.0	6.5	0.1		0.1			0.0	2.3		2.3			1.3	0.6	0.7	1.3				1.5		1.5
400	101.8	32.7	134.5	6.9	0.1	7.0	19.2	0.5	19.7	30.1	3.5	33.6	23.0	14.0	37.0	22.3	8.1	30.4	0.3	0.3	0.6	6.2	6.2	6.2
500	46.8	17.2	64.0	8.4		8.4	10.6		10.6	19.9		19.9	5.0	5.7	10.7	2.6	9.6	12.2	0.3	1.9	2.2		0.0	0.0
600	104.2	74.8	179.0	2.8		2.8	15.4	1.2	16.6	31.9	0.8	32.7	36.0	25.9	61.9	16.0	25.9	41.9	2.1	14.1	16.2	6.9	6.9	6.9
700	30.7	0.0	30.7	7.1		7.1			0.0	2.9		2.9	14.2		14.2	6.5		6.5					0.0	0.0
800	37.0	4.0	41.0	12.1		12.1	6.5		6.5	12.5		12.5	5.8	3.3	9.1		0.7	0.7	0.1				0.0	0.0
900	2.5	17.6	20.1			0.0			0.0	0.3		0.3	2.2	9.0	11.2		2.5	2.5		6.1	6.1		0.0	0.0
1000	94.0	0.0	94.0	8.2		8.2	8.9		8.9	20.2		20.2	39.0		39.0	17.7		17.7					0.0	0.0
1200	161.0	0.7	161.7	4.1		4.1	29.2		29.2	20.0	0.7	20.7	89.4		89.4	18.3		18.3					0.0	0.0
1400	90.2	0.0	90.2	5.9		5.9	3.2		3.2	25.8		25.8	54.6		54.6	0.7		0.7					0.0	0.0
1600	11.6	0.0	11.6			0.0			0.0			0.0	11.6		11.6			0.0					0.0	0.0
1800	3.9	0.0	3.9			0.0			0.0	1.7		1.7	2.2		2.2			0.0					0.0	0.0
Total	2,454.9	1,196.7	3,651.6	244.2	14.7	258.9	265.6	44.0	309.6	544.8	157.7	702.5	719.7	408.5	1,128.2	504.9	366.2	871.1	109.6	101.7	211.3	66.1	101.9	168.0
Rate(%)	67.2	32.8	100.0	94.3	5.7	100.0	85.8	14.2	100.0	77.8	22.4	100.0	83.8	36.2	100.0	58.0	42.0	100.0	51.9	48.1	100.0	39.3	60.7	100.0

Table D.3.5.3 (1) Analysis of Boz-su WTP (1): Water Distribution Pipes

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Temperature		2.5		3	4.5	10	12	14	15	14	13	11	7.5	9.96
2	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
3	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Turbidity		0.7	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.1	1.1	0.7	1.24
6	pH	mg/L	7.72	7.85	7.8	7.8	7.94	7.94	7.8	8.02	7.95	8	7.78	7.96	8.1
7	Chlorine rest		0.37	0.36	0.38	0.36	0.38	0.38	0.36	0.39	0.4	0.34	0.32	0.35	0.36
8	Aluminium rest	mg/L	0	0.016	0.12	0.116	0.124	0.124	0.006	0.072	0.006	0	0	0	0.04
9	Hardness	mg/L	2.25	2.42	2.53	2.55	2.2	2.2	1.93	1.77	1.75	1.75	1.95	2.1	2.08
10	Alkalinity	mg/L	1.68	1.62	1.83	1.91	1.7	1.7	1.62	1.55	1.31	1.31	1.4	1.6	1.44
11	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13	Nitrate	mg/L	1.77	1.77	2.22	0.89	1.99	1.99	1.77	1.33	1.77	1.99	3.98	1.99	1.96
14	Chloride	mg/L	3.45	3.59	3.67	3.61	3.61	3.61	3.52	4.17	3.57	3.04	3.26	3.53	3.48
15	Sulfate	mg/L	16.1	18.2	18.2	18.2	16.3	16.3	13.8	18.2	18.2	16.3	12.4	12.8	15.96
16	Fluorine	mg/L	0.16	0.29	0.28	0.16	0.18	0.18	0.16	0.18	0.16	0.2	0.17	0.18	0.19
17	Iron	mg/L	0.025	0.02	0.02	0.01	0	0	0.08	0.02	0.02	0.02	0.045	0.03	0.03
18	Solid total dissolved	mg/L	101	108	148	152	123	123	117	124	122	124	131	121	124.25
19	Colonies quantity		0	0	0	2	2	2	11	0	0	0	1	0	1.33
20	Coli- index		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
21	Copper	mg/L	0.02	0.01	0.01	0	0	0	0.04	0.08	0.06	0.08	0.025	0.04	0.025
22	Molibdenium	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23	Polyphosphates	mg/L	0	0	0	0	0	0	0.012	0	0	0.02	0.0065	0.0006	0.00
24	Zinc	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
25	Lead	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
26	Arsenic	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
27	Manganese	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
28	BOD	mg/L													0.00
29	Oxygen dissolved	mg/L													0.00
30	SAS														0.00
31	Radiation		1.06*10E-10	0.98*10E-10	0.99*10E-10	1.01*10E-10	0.95*10E-10	0.95*10E-10	1.01*10E-10	0.97*10E-10	0.97*10E-10	1.83*10E-10	1.83*10E-10	1.83*10E-10	
32	Transparency														

Table D.3.5.3 (2) Analysis of Boz-su WTP(2): Sedimentation Basin

No.	Item	Units	month												Average	
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
1	Temperature		2.5	7	20	20	25	20	22	20	22	10	10	8	15	16.58
2	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
3	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Turbidity		7	7	20	20	25	20	22	20	22	10	10	8	15	16.58
6	pH	mg/L	7.78	7.95	7.9	7.9	7.9	7.97	7.86	8.1	8.05	8.05	7.84	8.04	8.18	7.97
7	Chlorine rest		0.01	0.01	0.01	0.01	0.01	0	0.01	0.01	0.08	0.01	0.01	0.01	0.01	0.02
8	Aluminium rest	mg/L	0	0.024	0.224	0.124	0.168	0.096	0.096	0.116	0.096	0	0	0.024	0.024	0.07
9	Hardness	mg/L	2.25	2.42	2.53	2.55	2.25	1.92	1.77	1.77	1.8	1.8	1.79	2	2.1	2.10
10	Alkalinity	mg/L	1.68	1.62	1.83	1.91	1.8	1.62	1.55	1.41	1.41	1.4	1.4	1.6	1.47	1.61
11	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13	Nitrate	mg/L	1.77	2.66	2.66	0.89	2.22	1.99	1.77	1.77	1.99	2.22	3.98	2.22	2.66	2.25
14	Chloride	mg/L	3.16	3.16	3.19	3.15	3.1	3.06	3.24	3.24	2.86	2.76	2.76	2.98	2.8	3.03
15	Sulfate	mg/L	16.1	19.6	19.3	19.3	16.5	13.5	18.5	18.5	18.5	16.7	12.1	15.1	16.5	16.81
16	Fluorine	mg/L	0.16	0.29	0.28	0.16	0.18	0.16	0.18	0.18	0.16	0.2	0.17	0.18	0.18	0.19
17	Iron	mg/L	0.025	0.025	0.01	0.01	0	0.11	0.05	0.05	0.04	0.02	0.03	0.11	0.03	0.04
18	Solid total dissolved	mg/L	107	120	142	156	118	129	115	115	118	120	128	113	126	124.33
19	Colonies quantity		2	0	3	7	29	77	4	4	7	4	8	1	2	12.00
20	Coli- index		<9	<9	<9	<9	230	23	<9	<9	<9	<9	<9	23	9	----
21	Copper	mg/L	0.03	0.02	0.02	0	0	0	0.05	0.06	0.05	0.09	0.035	0.02	0.035	0.03
22	Molibdenium	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23	Polyphosphates	mg/L	0	0	0	0	0	0.01	0	0	0	0.001	0.0065	0.002	0	0.00
24	Zinc	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
25	Lead	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
26	Arsenic	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
27	Manganese	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
28	BOD	mg/L														0.00
29	Oxygen dissolved															0.00
30	SAS															0.00
31	Radiation															
32	Transparency															

Table D.3.5.3 (3) Analysis of Boz-su WTP(3) :Boz-su Canal

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Temperature		2.5	2.5	4	10	12	14	14.5	13.5	12.5	13	10.5	6.5	9.63
2	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
3	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Turbidity		7	26	112	67	92	27	28	30	10	10	8	26	36.92
6	pH	mg/L	7.8	8	7.92	7.96	8.02	8.04	8.18	8.14	8.1	7.88	8.08	8.2	8.03
7	Chlorine rest														0.00
8	Aluminium rest	mg/L	0	0	0	0	0	0	0	0	0	0	0.024	0.024	0.00
9	Hardness	mg/L	2.25	2.42	2.53	2.55	2.25	1.92	1.77	1.8	1.8	1.79	2	2.08	2.10
10	Alkalinity	mg/L	1.68	1.62	1.83	1.91	1.8	1.62	1.55	1.41	1.41	1.4	1.6	1.47	1.61
11	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13	Nitrate	mg/L	1.99	2.66	2.88	1.108	2.66	2.22	1.77	2.22	1.77	3.54	2.22	1.77	2.23
14	Chloride	mg/L	2.86	3.06	3.05	3.06	2.82	2.96	2.87	2.59	2.59	2.54	2.71	2.66	2.81
15	Sulfate	mg/L	16.3	18.8	18.5	18.5	17.1	13.5	19.3	19.3	17.1	12.1	15.6	17.1	16.93
16	Fluorine	mg/L	0.16	0.29	0.28	0.16	0.18	0.16	0.18	0.16	0.2	0.17	0.18	0.18	0.19
17	Iron	mg/L	0.04	0.01	0.01	0	0	0.01	0.05	0.04	0.02	0.03	0.09	0.03	0.03
18	Solid total dissolved	mg/L	108	110	151	142	135	115	117	114	117	120	132	130	124.25
19	Colonies quantity		6	2	8	6	31	12	8	4	2	13	1	3	8.00
20	Coli- index		<500	<500	<500	24000	2300	2300	<500	<500	500	24000	500	2300	-----
21	Copper	mg/L	0.03	0.025	0.02	0	0	0.055	0.08	0.05	0.045	0.035	0.045	0.035	0.04
22	Molibdenium	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23	Polyposphates	mg/L	0	0	0	0.001	0.01	0.01	0	0	0.001	0.0065	0.002	0	0.00
24	Zinc	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
25	Lead	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
26	Arsenic	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
27	Manganese	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
28	BOD	mg/L	0.9093	0.7299	0.7096	1.4835	0.5364	0.4862	1.2522	0.4201	0.5523	0.5513	0.8029	0.6069	0.75
29	Oxygen dissolved		10.4589	10.5091	10.9759	7.6661	8.0801	10.779	6.76	7.4473	7.4347	10.1636	4.4043	4.9316	8.30
30	SAS		0	0	0	0.025	0	0	0.013	0	0	0	0.03	0.013	0.01
31	Radiation														
32	Transparency		>40	>40	8	13	10	34	32	30	>40	>40	>40	35	

Table D.3.5.3 (4) Analysis of Kadirya WTP Water Distribution Pipe

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Temperature		2.5												
2	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
3	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Turbidity		0.7	1.4	1.5	1.5	1.4	1.3	1.4	1.5	1.5	1.1	0.5	0.8	1.18
6	pH	mg/L	7.68	7.86	7.78	7.82	7.94	7.82	7.82	7.94	7.94	7.74	7.98	8.12	7.89
7	Chlorine rest		0.41	0.38	0.42	0.35	0.37	0.4	0.34	0.38	0.33	0.34	0.37	0.32	0.37
8	Aluminium rest	mg/L	0	0.016	0.112	0.116	0.124	0.06	0.072	0.06	0	0	0	0	0.05
9	Hardness	mg/L	2.25	2.42	2.53	2.55	2.2	1.92	1.77	1.75	1.75	1.79	1.95	2.1	2.08
10	Alkalinity	mg/L	1.68	1.62	1.83	1.91	1.7	1.62	1.55	1.31	1.31	1.4	1.6	1.47	1.58
11	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13	Nitrate	mg/L	1.77	2.22	1.99	0.89	2.22	1.77	1.11	1.77	1.99	3.98	1.99	1.77	1.96
14	Chloride	mg/L	3.49	3.59	3.62	3.66	3.61	3.66	4.21	3.57	3.13	3.3	3.58	2.85	3.52
15	Sulfate	mg/L	16.1	18.2	18.2	18.2	16.7	14.6	17.1	17.9	16.5	12.4	12.6	12.6	15.93
16	Fluorine	mg/L	0.16	0.29	0.28	0.16	0.18	0.16	0.18	0.16	0.02	0.17	0.18	0.18	0.19
17	Iron	mg/L	0.02	0.02	0.02	0.01	0	0.05	0.02	0.02	0.02	0.045	0.045	0.02	0.02
18	Solid total dissolved	mg/L	104	107	144	150	108	115	122	124	120	133	124	124	122.92
19	Colonies quantity		0	1	0	1	1	4	2	0	0	1	1	1	1.00
20	Coli- index		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
21	Copper	mg/L	0.02	0.01	0.01	0	0	0.05	0.07	0.07	0.08	0.026	0.04	0.025	0.03
22	Molibdenium	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
23	Polyposphates	mg/L	0	0	0	0	0	0.014	0	0	0.02	0.006	0.006	0	0.00
24	Zinc	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
25	Lead	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
26	Arsenic	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
27	Manganese	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
28	BOD	mg/L													0.00
29	Oxygen dissolved														0.00
30	SAS														0.00
31	Radiation		0.99*10 ⁻¹⁰		0.99*10 ⁻¹⁰	1.0*10 ⁻¹⁰	0.97*10 ⁻¹⁰	0.99*10 ⁻¹⁰	1.0*10 ⁻¹⁰	1.0*10 ⁻¹⁰	0.99*10 ⁻¹⁰	1.83*10 ⁻¹⁰	1.7*10 ⁻¹⁰		1.36*10 ⁻¹⁰
				0.98*10 ⁻¹⁰											

Table D.3.5.3 (5) Analysis of Kibray WTP(1): Water Distribution Pipe(Pure groundwater)

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Date		23	20	25	17	22	22	25	22	25	27	24	23	23.00
2	Temperature		11	10	11	11	13	13	16	17	18	16	16	15	14.25
3	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
6	Turbidity	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
7	pH		7	7.2	7.2	7.4	7.2	7.2	7.35	7.2	7.2	7.55	7.5	7.65	7.32
8	Chlorine rest	mg/L	0.35	0.3	0.3	0.31	0.32	0.32	0.36	0.37	0.39	0.3	0.32	0.31	0.33
9	Hardness	mg/L	4.65	4.5	4	3.8	3.85	4.15	4.25	4.4	4	3.95	3.1	3.25	3.99
10	Alkalinity	mg/L	2.7	2.2	2.2	2.2	2.5	2.4	2.5	2.8	2.2	2	2	2	2.31
11	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
12	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
13	Nitrate	mg/L	14.4	12.85	17.72	13.28	10.63	16.61	20.88	10.63	16.61	11	11.5	17.72	14.49
14	Chloride	mg/L	17.5	18.5	11.5	13	11.5	12	12	12.5	12	15.5	18.83	11	13.82
15	Sulfate	mg/L	63.5	43	54.5	54.5	50	36	22.5	22	87	68.5	38.5	40.5	48.38
16	Fluorine	mg/L	0.17	0.196	0.196	0.196	0.211	0.18	0.152	0.16	0.16	0.17	0.196	0.125	0.18
17	Iron	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
18	Solid total dissolved	mg/L	314	280	292	414	322	332	244	300	200	330	246	200	289.50
19	Colonies quantity		0	0	0	0	0	0	0	0	0	0	0	0	0.00
20	Coli- index		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
21	Copper	mg/L				0							0.15		0.01
22	Molibdenium	mg/L				0							0		0.00
23	Polyposphates	mg/L				0.5							0.57		0.09
24	Zinc	mg/L				0.005							0.01		0.00
25	Lead	mg/L				0.0034							0		0.00
26	Arsenic	mg/L				0							0		0.00
27	Manganesum	mg/L				0							0		0.00
28	Chrome	mg/L				0.01							0.016		0.00
29	Radiation		3.03*10 ⁻¹⁰	2.91*10 ⁻¹⁰	3.11*10 ⁻¹⁰	2.15*10 ⁻¹⁰	2.11*10 ⁻¹⁰	2.82*10 ⁻¹⁰	2.15*10 ⁻¹⁰	3.21*10 ⁻¹⁰	2.99*10 ⁻¹⁰	3.13*10 ⁻¹⁰	2.61*10 ⁻¹⁰	2.42*10 ⁻¹⁰	

Table D.3.5.3 (6) Analysis of Kibray WTP(2): Water Distribution Pipe(Mixed Kadirya water)

1998

No	Definition	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Date		23		20	25	17	22	25	23	22	25	27	24	23
2	Temperature		12	12	12	12	13	14	15	16	16	16	15	16	15
3	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0
4	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0
5	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0
6	Turbidity	mg/L	0	1.16	1.16	1.16	1.45	0	0.87	0	0.87	0	0.3	0	0
7	pH		70.05	7.2	7.1	7.1	7.1	7.1	7.1	7.15	7.05	7.3	7.3	7.45	12.42
8	Chlorine rest	mg/L	0.36	0.33	0.32	0.31	0.35	0.32	0.32	0.38	0.4	0.42	0.32	0.3	0.34
9	Hardness	mg/L	5	5.1	5	5	5.6	5.55	5.9	5	5.85	4.95	5.7	5.65	5.4
10	Alkalinity	mg/L	3	2.5	2.7	2.7	3.3	3.2	3.2	3.8	3.3	3.3	3.3	3	3
11	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Nitrate	mg/L	25.01	18.83	29.9	28.79	26.13	35.88	27.68	21.26	26.13	33.22	35.88	28.79	28.13
14	Chloride	mg/L	9.5	9.5	10	12.5	13.5	15	15	13	12.5	2.5	12.5	14	11.54
15	Sulfate	mg/L	91.5	50	68.5	63.5	66.5	45	59	63.5	78	73.25	78	78	67.90
16	Fluorine	mg/L	0.23	0.28	0.25	0.24	0.23	0.25	0.211	0.198	0.21	0.211	0.25	0.18	0.23
17	Iron	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Solid total dissolved	mg/L	388	348	370	442	484	472	402	422	500	448	428	400	425.33
19	Colonies quantity		0	0	0	0	0	0	0	0	0	0	0	0	0
20	Coli- index		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
21	Copper	mg/L					0.1						0.05		0.01
22	Molibdenium	mg/L					0						0		0.00
23	Polyposphates	mg/L					0.2						0.3		0.04
24	Zinc	mg/L					0						0		0.00
25	Lead	mg/L					0						0		0.00
26	Arsenic	mg/L					0						0		0.00
27	Manganese	mg/L					0						0		0.00
28	Chrom	mg/L					0.014						0.014		0.00
29	Radiation		293.21*10 ⁻¹⁰	2.52*10 ⁻¹⁰	2.41*10 ⁻¹⁰	1.7*10 ⁻¹⁰	1.55*10 ⁻¹⁰	1.94*10 ⁻¹⁰	1.5*10 ⁻¹⁰	1.5*10 ⁻¹⁰	2.51*10 ⁻¹⁰	1.83*10 ⁻¹⁰	1.92*10 ⁻¹⁰	1.55*10 ⁻¹⁰	

Table D.3.5.3 (7) Analysis of South WTP Water Distribution Pipe

1998

No	Definition	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Date		28		25	30	27	27	29	27	29	28	26	28	27.75
2	Temperature		13.5		13	14	16	19	22	22	22	16	16	16	17.63
3	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
6	Turbidity	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0.00
7	pH		6.6	6.65	6.7	6.7	6.5	6.7	7	6.85	6.5	6.65	6.5	6.55	6.67
8	Ammonia	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
9	Nitrite	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00
10	Chloride	mg/L	20.09	17.15	18.6	20.5	20.5	17	18	19.5	24	23	20.5	19.5	19.74
11	Sulfate	mg/L	78.5	55	62.5	55	54.5	54.5	89	77.5	70	77	85	89.5	71.96
12	Nitrate	mg/L	17.27	12.84	18.6	20.16	23.03	33.6	33.22	26.58	31.45	29.68	27.9	26.58	25.08
13	Solid total dissolved	mg/L	459	376	478	333	373	507	406	375	196	438	361	438	395.00
14	Hardness	mg/L	6.4	7.6	7.2	7	6.6	7.4	7.2	7.2	7	7.2	6.8	6.8	7.03
15	Alkalinity	mg/L	53	5	4.5	5	5.7	4.5	4.9	5	4.7	4.4	4.22	4.6	4.82
16	Fluorine	mg/L	0.17	0	0	0.1	0.05	0.03	0.1	0.16	0.07	0.1	0.03	0.1	0.08
17	Iron	mg/L	0	0	0.035	0	0.03	0	0	0.15	0	0	0	0	0.02
18	Zinc	mg/L				0.005						0.01			0.00
19	Colonies quantity		0	0	0	0	0	0	0	0	0	0	0	0	0.00
20	Coli- index		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
21	Copper	mg/L				0.075						0.1			0.01
22	Molibdenium	mg/L				0						0			0.00
23	Polyposphates	mg/L					0.02								0.00
24	Orthophosphates	mg/L					0.005								0.00
25	Lead	mg/L				0.0016							0		0.00
26	Arsenic	mg/L				0							0		0.00
27	Manganesum	mg/L				0							0		0.00
28	Phenol	mg/L					0								0.00
29	Chromic	mg/L	0.012			0.02						0.018			0.00
30	Chlorine rest	mg/L	0.582	0.483	0.496	0.518	0.518	0.416	0.455	0.434	0.453	0.441	0.418	0.42	0.47

Table D.3.5.3 (8) Analysis of Sergeri WTP Water Distribution Pipe

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Date		19	16	16	16	20	11	15	13	10	7	19	13	14
2	Temperature		16	16	16	16	18	16	17	17	18	17	18	17	16
3	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0
4	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0
5	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0
6	Turbidity	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
7	pH		7.3	7.3	7.7	7.65	7.8	7.3	7.3	7.35	7.4	7.35	7.15	7.1	7.39
8	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Chloride	mg/L	21.58	21.83	21.34	22.68	22	20.5	21.87	20.79	19.8	13.13	16.67	14.14	19.69
11	Sulfate	mg/L	75.72	74.89	76.54	67.9	82.71	82.71	57.85	76.54	77.36	51.44	55.14	60.07	69.91
12	Nitrate	mg/L	18.83	18.25	19.49	20.02	21.26	23.04	23.04	20.38	19.49	16.83	18.61	16.83	19.67
13	Solid total dissolved	mg/L	436	416	423	499	435	491	296	485	510	340	383	332	420.50
14	Hardness	mg/L	6.4	6.33	6.4	6.59	6.4	6.2	6.2	6.2	6.4	4.08	4.85	5.71	5.98
15	Alkalinity	mg/L	4.8	4.7	4.7	4.8	4.8	4.7	4.8	4.7	4.7	3.5	4.1	3.7	4.50
16	Fluorine	mg/L	0.5	0.4	0.42	0.38	0.26	0.26	0.26	0.28	0.33	0.32	0.32	0.3	0.34
17	Iron	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Zinc	mg/L				0.005						0.005			0.00
19	Colonies quantity		0	0	0	0	0	0	0	0	0	0	1	0	0
20	Coli- index		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
21	Copper	mg/L				0.01						0.035			0.00
22	Molibdenium	mg/L				0.005						0.005			0.00
23	Polyposphates	mg/L			0.003			0.01			0		0.005		0.00
24	Orthophosphates	mg/L				0.07						0.07			0.01
25	Lead	mg/L				0						0			0.00
26	Arsenic	mg/L				0						0			0.00
27	Manganeseum	mg/L				0						0			0.00
28	Phenol	mg/L				0									0.00
29	Chrome	mg/L			0.003		0.01						0.005		
30	Chlorine rest	mg/L	0.486	0.416	0.347	0.416	0.416	0.396	0.397	0.382	0.46	0.465	0.421	0.319	

Table D.3.5.3 (9) Analysis of Karazov WTP Water Distribution Pipe

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Date		28	13	11	21	21	21	21	21	4	11	13	17	16
2	Temperature		16	14	16	16	17	17	16	21	19	18	18	17	16
3	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0
4	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0
5	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0
6	Turbidity	mg/L	0.08	0	0	0	0.24	0	0	0	0.08	0.16	0	0	0
7	pH		7.3	7.3	7.6	7.7	7.05	7.1	7.1	7.1	7.25	7.35	7.2	7.35	7.2
8	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Chloride	mg/L	22.8	21.34	22.28	23.19	20.5	21	22.39	21.78	21.29	21.29	19	21.2	20.2
11	Sulfate	mg/L	73.66	72.01	73.25	82.3	76.54	79.83	70.78	76.13	74.89	61.31	61.72	72.01	72.87
12	Nitrate	mg/L	32.18	28.79	30.12	29.24	33.67	35.44	35.44	35.44	39.87	37.21	33.67	33.67	33.73
13	Solid total dissolved	mg/L	458	462	460	535	487	483	513	492	484	501	458	487	485.00
14	Hardness	mg/L	6.33	6.73	6.53	7.21	6.4	6.8	6.4	6.6	6.4	6.12	6.12	6.33	6.50
15	Alkalinity	mg/L	5	5	5	5	5	5	5	5	5	5	4.9	4.9	4.97
16	Fluorine	mg/L	0.4	0.44	0.35	0.4	0.26	0.26	0.34	0.28	0.33	0.33	0.36	0.36	0.34
17	Iron	mg/L	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Zinc	mg/L	0	0	0	0.005	0	0	0	0	0	0.005	0	0	0
19	Colonies quantity	0	0	0	0	0	16	0	0	0	0	0	0	0	133
20	Coli- index		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
21	Copper	mg/L				0	0					0.02			0.00
22	Molibdenium	mg/L				0.005						0.005			0.00
23	Polyposphates	mg/L				0.005						0.01			0.00
24	Orthophosphates	mg/L				0						0.01			0.00
25	Lead	mg/L				0.001						0.001			0.00
26	Arsenic	mg/L				0						0			0.00
27	Manganese	mg/L				0						0			0.00
28	Phenol	mg/L				0									0.00
29	Chrom	mg/L			0.015									0.005	
30	Chlorine rest	mg/L	0.347	0.347	0.347	0.382	0.319	0.309	0.343	0.347	0.319	0.361	0.315	0.319	0.34

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Table D.3.5.3 (10) Analysis of Bektemir WTP Water Distribution Pipe

No.	Item	Units	month												Average
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	
1	Date		27	20	18	22	22	22	22	28	28	29		25	17.75
2	Temperature		17	19	10	17	15	15	18	17	17	17		10	11.67
3	Colour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
4	Taste		0	0	0	0	0	0	0	0	0	0	0	0	0.00
5	Odour		0	0	0	0	0	0	0	0	0	0	0	0	0.00
6	Turbidity	mg/L	0.16	0	0.16	0	0.08	0	0	0.2	0.2	0.16		0.16	0.08
7	pH		7.75	7.9	7.85	7.95	7.65	7.65	7.6	7.5	7.5	7.55		7.5	5.77
8	Ammonia	mg/L	0	0	0	0	0	0	0	0	0	0		0	0.00
9	Nitrite	mg/L	0	0	0	0	0	0	0	0	0	0		0	0.00
10	Chloride	mg/L	15.52	14.07	11.16	9.28	10	10	8.85	8.5	7.58	7.58		8.16	7.76
11	Sulfate	mg/L	58	46.09	48.14	37.86	41.15	41.15	42.8	44.03	43.2	43.2		31.68	32.75
12	Nitrate	mg/L	10.63	13.28	14.71	13.28	5.32	5.32	7.53	10.63	10.1	10.1		6.56	7.67
13	Solid total dissolved	mg/L	309	286	292	265	236	236	217	219	202	202		172	183.17
14	Hardness	mg/L	4.26	4.16	4.6	3.5	3.2	3.2	3.2	3.06	3.06	3.06		3.06	2.68
15	Alkalinity	mg/L	2.9	2.9	2.9	2.9	3	3	2.8	2.8	2.7	2.7		2.6	2.13
16	Fluorine	mg/L	0.26	0.24	0.32	0.3	0.15	0.15	0.22	0.2	0.27	0.27		0.28	0.19
17	Iron	mg/L	0	0	0	0	0	0	0	0	0	0		0	0.00
18	Zinc	mg/L	0	0	0	0	0	0	0	0	0	0		0	0.00
19	Colonies quantity		0	3	0	0	0	0	0	5	0	0		0	0.67
20	Coli-index		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	<3
21	Copper	mg/L				0.05									0.00
22	Molibdenium	mg/L				0									0.00
23	Polyposphates	mg/L				0.005				0.005					0.00
24	Orthophosphates	mg/L				0.005				0.005					0.00
25	Lead	mg/L				0									0.00
26	Arsenic	mg/L				0									0.00
27	Manganese	mg/L				0									0.00
28	Phenol	mg/L				0.002									0.00
29	Chrom	mg/L			0.015					0.005					
30	Chlorine rest	mg/L	0.347	0.35	0.382	0.416	0.345		0.412	0.407		0.319		0.354	

Table D.3.5.4 (1) WHO Guidelines (1)
Table 1. Bacteriological quality of drinking water

Organisms	Unit	Guideline value	Organisms	Unit	Guideline value	Organisms	Unit	Guideline value
All water intended for drinking			Treated water entering the distribution system			Treated water in the distribution system		
E.coli or thermotolerant coliform Bacteria	number /100ml	0	E.coli or thermotolerant coliform Bacteria	number /100ml	0	E.coli or thermotolerant coliform Bacteria	number /100ml	0
			Total coliform bacteria	number /100ml	0	Total coliform bacteria	number /100ml	0

Table 2. Chemicals of health significance in drinking-water

A. Inorganic constituents

Constituent	Unit	Guideline value	Constituent	Unit	Guideline value	Constituent	Unit	Guideline value
A. Inorganic constituents			B. Organic constituents			Chlorinated benzenes		
Antimony	mg/L		Chlorinated alkanes			Monochlorobenzene	μg/L	300
Arsenic	mg/L	0.01	Carbon tetrachloride	μg/L	2	1,2-dichlorobenzene	μg/L	1000
Barium	mg/L	0.7	Dichloromethane	μg/L		1,3-dichlorobenzene	μg/L	
Beryllium	mg/L		1,1-dichloroethane	μg/L		1,4-dichlorobenzene	μg/L	300
Boron	mg/L	0.3	1,2-dichloroethane	μg/L	30	Trichlorobenzenes(total)	μg/L	20
Cadmium	mg/L	0.003	1,1,1-trichloroethane	μg/L	2000			
Chromium	mg/L	0.05	Chlorinated ethenes			Miscellaneous		
Copper	mg/L	2	Vinyl chloride	μg/L	5	Di(2-ethylhexyl)adipate	μg/L	80
Cyanide	mg/L	0.07	1,1-dichloroethane	μg/L	30	Di(2-ethylhexyl)phthalate	μg/L	8
Fluoride	mg/L	1.5	1,2-dichloroethane	μg/L	50	Acrylamide	μg/L	0.5
Lead	mg/L	0.05	Trichloroethane	μg/L	70	Epichlorohydrin	μg/L	0.4
Manganese	mg/L	0.1	Tetrachloroethane	μg/L	40	Hexachlorobutadiene	μg/L	0.6
Mercury(total)	mg/L	0.001	Aromatic hydrocarbons			Edetic acid(EDTA)	μg/L	200
Molybdenum	mg/L	0.07	Benzene	μg/L	10	Nitritotriacetic acid	μg/L	200
Nickel	mg/L	0.02	Toluene	μg/L	700	Dialkyltins	μg/L	
Nitrate(as NO ₃)	mg/L	50	Xylenes	μg/L	500	Tributyltin oxide	μg/L	2
Nitrite(as NO ₂)	mg/L	3	Ethylbenzene	μg/L	300			
Selenium	mg/L	0.01	Styrene	μg/L	20			
Uranium	mg/L		Benzof[a]pyrenes	μg/L	0.7			

Table 3.5.4 (2) WHO Guideline (2)

C. Pesticides

Constituent	Unit	Guideline value	Constituent	Unit	Guideline value	Constituent	Unit	Guideline value
Alachlor	μg/L	20	Pyridate	μg/L	100	2-chlorophenol	μg/L	
Aldicarb	μg/L	10	Permethrin	μg/L	20	2,4-dichlorophenol	μg/L	
Aldrin/Dieldrin	μg/L	0.03	Permethrin	μg/L	20	2,4,5-trichlorophenol	μg/L	200
Atrazine	μg/L	2	Propanil	μg/L	20	Formaldehyde	μg/L	900
Bentazone	μg/L	30	Pyridate	μg/L	100	MX	μg/L	
Carbofuran	μg/L	5	Simazine	μg/L	2	Trihalomethanes		
Chlordane	μg/L	0.2	Trifluralin	μg/L	20	Bromoform	μg/L	100
Chlorotoluron	μg/L	30	Chlorophenoxy			Dibromochloromethane	μg/L	100
DDT	μg/L	2	other tan 2,4-D and MCPA 2,4-DB	μg/L	90	Bromodichloromethane	μg/L	60
1,2-dibromo-3-chloropropane	μg/L	1	Dichloroprop	μg/L	100	Chloroform	μg/L	200
2,4-D	μg/L	30	Fenoprop	μg/L	9	Chlorinated acetic acids		
1,2-dichloropropane	μg/L	20	MCPB	μg/L		Monochloroacetic acid	μg/L	
1,3-dichloropropane	μg/L		Mecoprop	μg/L	10	Dichloroacetic acid	μg/L	50
1,3-dichloropropane	μg/L	20	2,4,5-T	μg/L	9	Trichloroacetic acid	μg/L	100
Ethylene dibromine	μg/L		D. Disinfectants and disinfectant by-products			Chloral hydrate		
Heptachlor and epoxide	μg/L	0.03	Constituent	Unit	Guideline value	Chloroacetone	μg/L	10
Hexachlorobenzene	μg/L	1	Disinfectants			Halogenated acetoneitriles		
Isoproturon	μg/L	9	Monochloramine	mg/L	3	Dichloroacetoneitrile	μg/L	90
Lindane	μg/L	2	Di and trichloramine	mg/L	5	Dibromoacetoneitrile	μg/L	100
MCPA	μg/L	2	Chlorine	mg/L		Bromo-chloroacetoneitrile	μg/L	
Methoxychlor	μg/L	20	Chlorine dioxide	mg/L		Trichloroacetoneitrile	μg/L	1
Metolachlor	μg/L	10	Iodine	mg/L		Cynogen chloride(as CN)	μg/L	70
Molinate	μg/L	6	Disinfectant by-products			Chloropicrin	μg/L	
Pendimethalin	μg/L	20	Bromate	μg/L	25			
Pentachlorophenol	μg/L	9	Chlorate	μg/L				
Permethrin	μg/L	20	Chlorite	μg/L	200			
Propanil	μg/L	20	Chlorophenols					

Table D.3.5.4 (3) WHO Guidelines (3)

Table 3 Chemicals not of health significance at concentrations normally found in drinking-water chemical

Constituent	Unit	Guideline value
Asbestos		
Silver		
Tin		

Table 4 Radioactive constituents of drinking-water

Radioactive constituent	Unit	Screening Value
Gross alpha activity	Bq/L	0.1
Gross Beta activity	Bq/L	1

from consumers

Constituent	Unit	Complaint levels	Constituent	Unit	Complaint levels
Physical paramant					
Colour	TCU	15	Organic constituents		
Taste and odour		--	Toluene		24-170
Temperature		--	Xylene		20-1800
Turbidity	NTU	5	Ethylbenzene		2-200
			Styrene		4-2600
Inorganic constituents					
aluminium	mg/L	0.2	Monochlorobenzene		10-120
Ammonia	mg/L	1.5	1,2-dichlorobenzene		1-10
chloride	mg/L	250	1,4-dichlorobenzene		0.3-30
copper	mg/L	1	Trichlorobenzenes(tatal)		5-50
Hardness	mg/L	--	Synthetic detergents		--
Hydrogen sulfide	mg/L	0.05	Disinfectants and disinfectant by-products		
Iron	mg/L	0.3	chlorine		600-1000
Manganese	mg/L	0.1	Chlorophenols		
Dissolved oxygen	mg/L	--	2-chlorophenol		0.1-10
pH	mg/L	--	2,4-chlorophenol		0.3-40
Sodium	mg/L	200	2,4,6-chlorophenol		2-300
Sulfate	mg/L	250			
Total dissolved solids	mg/L	1000			
Zinc	mg/L	3			

Table D.3.5.5 Pipeline Replace Plan

Replacing years	Diameter (mm)	Total		to 10 years		from 10 till 20y		from 20 till 30y		from 30 till 40		from 40 till 50y		over 50years								
		steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total	steel	cast iron	Total						
Pipe-list	19-75	460.8	95.5	556.3	32.5	0.8	33.3	36.1	6.5	42.6	151.9	11.2	163.1	130.6	71.4	202.0	78.1	0.7	78.8	31.6	2.9	34.5
	100-200	882.6	663.1	1,545.7	244.9	43.9	288.8	154.0	83.1	237.1	202.6	259.1	461.7	233.4	172.3	405.7	23.6	53.6	77.2	24.1	51.1	75.2
	250-500	576.4	341.0	917.4	129.0	12.8	141.8	239.4	66.6	306.0	110.2	100.0	210.2	81.7	93.4	175.1	5.7	27.2	32.9	10.4	41.0	51.4
	600-1000	268.4	96.4	364.8	61.0	1.2	62.2	67.8	0.8	68.6	97.2	38.2	135.4	40.2	29.1	69.3	2.2	20.2	22.4	0.0	6.9	6.9
	1200-1800	266.7	0.7	267.4	42.4	0.0	42.4	47.5	0.7	48.2	157.8	0.0	157.8	19.0	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	2,454.9	1,196.7	3,651.6	509.8	58.7	568.5	544.8	157.7	702.5	719.7	408.5	#####	504.9	366.2	871.1	109.6	101.7	211.3	66.1	101.9	168.0
Steel 20years< Cast iron 40years<	Diameter (mm)	0-10		10-20		20-30		30-40		40-50		50-60		60-70								
	19-75	392.2	3.6	395.8	36.1	71.4	107.5	32.5	11.2	43.7												
	100-200	483.7	104.7	588.4	154.0	172.3	326.3	244.9	259.1	504.0												
	250-500	208.0	68.2	276.2	239.4	93.4	332.8	129.0	100.0	229.0												
	600-1000	139.6	27.1	166.7	67.8	29.1	96.9	61.0	38.2	99.2												
	1200-1800	176.8	0.0	176.8	47.5	0.0	47.5	42.4	0.0	42.4												
Total	1,400.3	203.6	1,603.9	544.8	366.2	911.0	509.8	408.5	918.3	0.0	157.7	157.7	0.0	58.7	58.7							
Steel 30years< Cast iron 50years<	Diameter (mm)	0-10		10-20		20-30		30-40		40-50		50-60		60-70								
	19-75	240.3	2.9	243.2	151.9	0.7	152.6	36.1	71.4	107.5	32.5	11.2	43.7									
	100-200	281.1	51.1	332.2	202.6	53.6	256.2	154.0	172.3	326.3	244.9	259.1	504.0									
	250-500	97.8	41.0	138.8	110.2	27.2	137.4	239.4	93.4	332.8	129.0	100.0	229.0									
	600-1000	42.4	6.9	49.3	97.2	20.2	117.4	67.8	29.1	96.9	61.0	38.2	99.2									
	1200-1800	19.0	0.0	19.0	157.8	0.0	157.8	47.5	0.0	47.5	42.4	0.0	42.4									
Total	680.6	101.9	782.5	719.7	101.7	821.4	544.8	366.2	911.0	509.8	408.5	918.3	0.0	58.7	58.7							
Steel 40years< Cast iron 60years<	Diameter (mm)	0-10		10-20		20-30		30-40		40-50		50-60		60-70								
	19-75	109.7	1.4	111.1	130.6	1.5	132.1	151.9	0.7	152.6	36.1	71.4	107.5	32.5	6.5	39.0						
	100-200	47.7	25.5	73.2	233.4	25.6	259.0	202.6	53.6	256.2	154.0	172.3	326.3	244.9	83.1	328.0						
	250-500	16.1	20.5	36.6	81.7	20.5	102.2	110.2	27.2	137.4	239.4	93.4	332.8	129.0	66.6	195.6						
	600-1000	2.2	3.4	5.6	40.2	3.5	43.7	97.2	20.2	117.4	67.8	29.1	96.9	61.0	0.8	61.8						
	1200-1800	0.0	0.0	0.0	19.0	0.0	19.0	157.8	0.0	157.8	47.5	0.0	47.5	42.4	0.7	43.1						
Total	175.7	50.8	226.5	504.9	51.1	556.0	719.7	101.7	821.4	544.8	366.2	911.0	509.8	157.7	667.5	0.0	58.5	568.5	0.0	58.7	58.7	



Figure D.3.5.1 (1) Plants Location in Tashkent City(1)

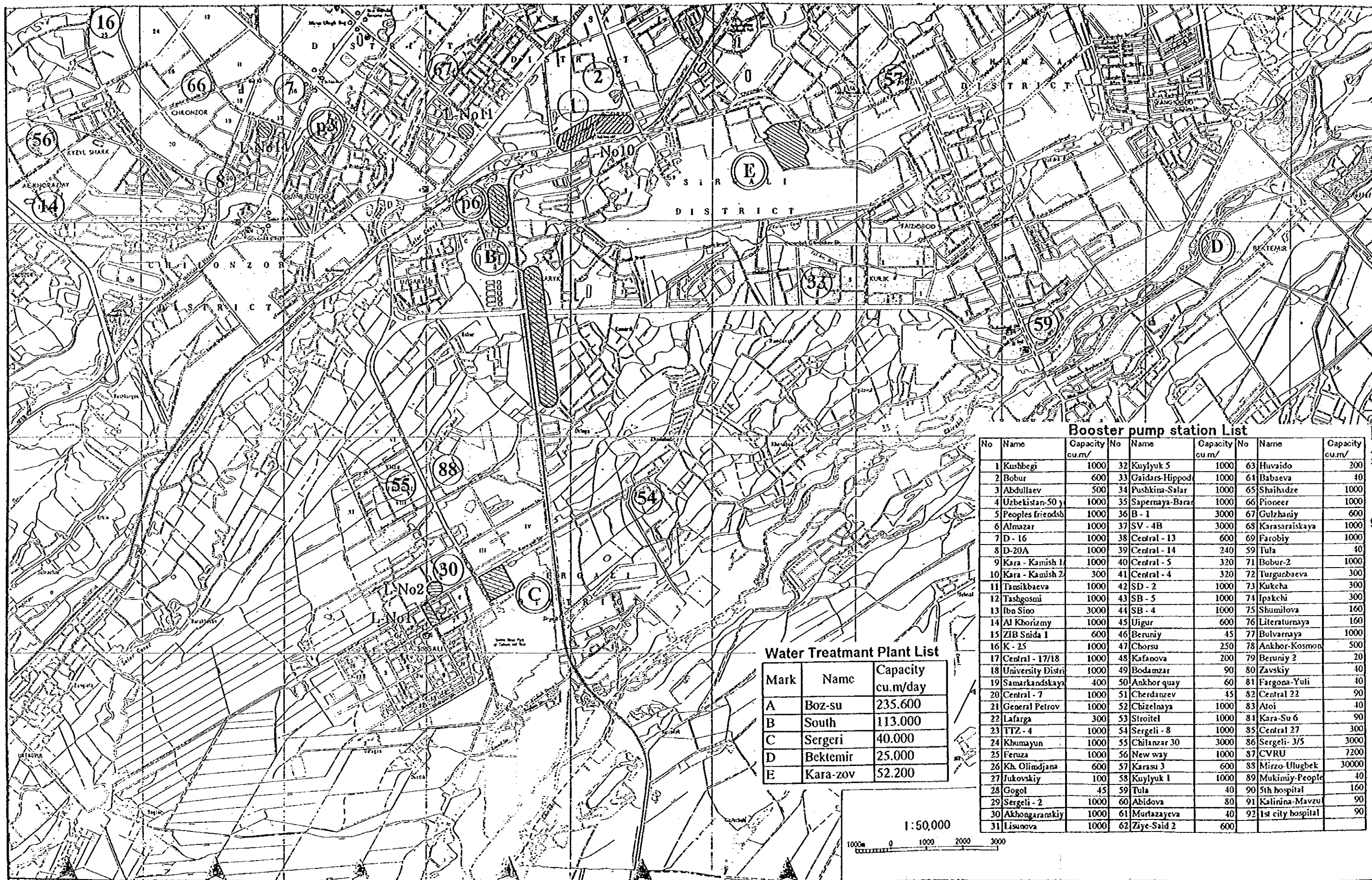


Figure D.3.5.1 (2) Plants Location in Tashkent City(2)

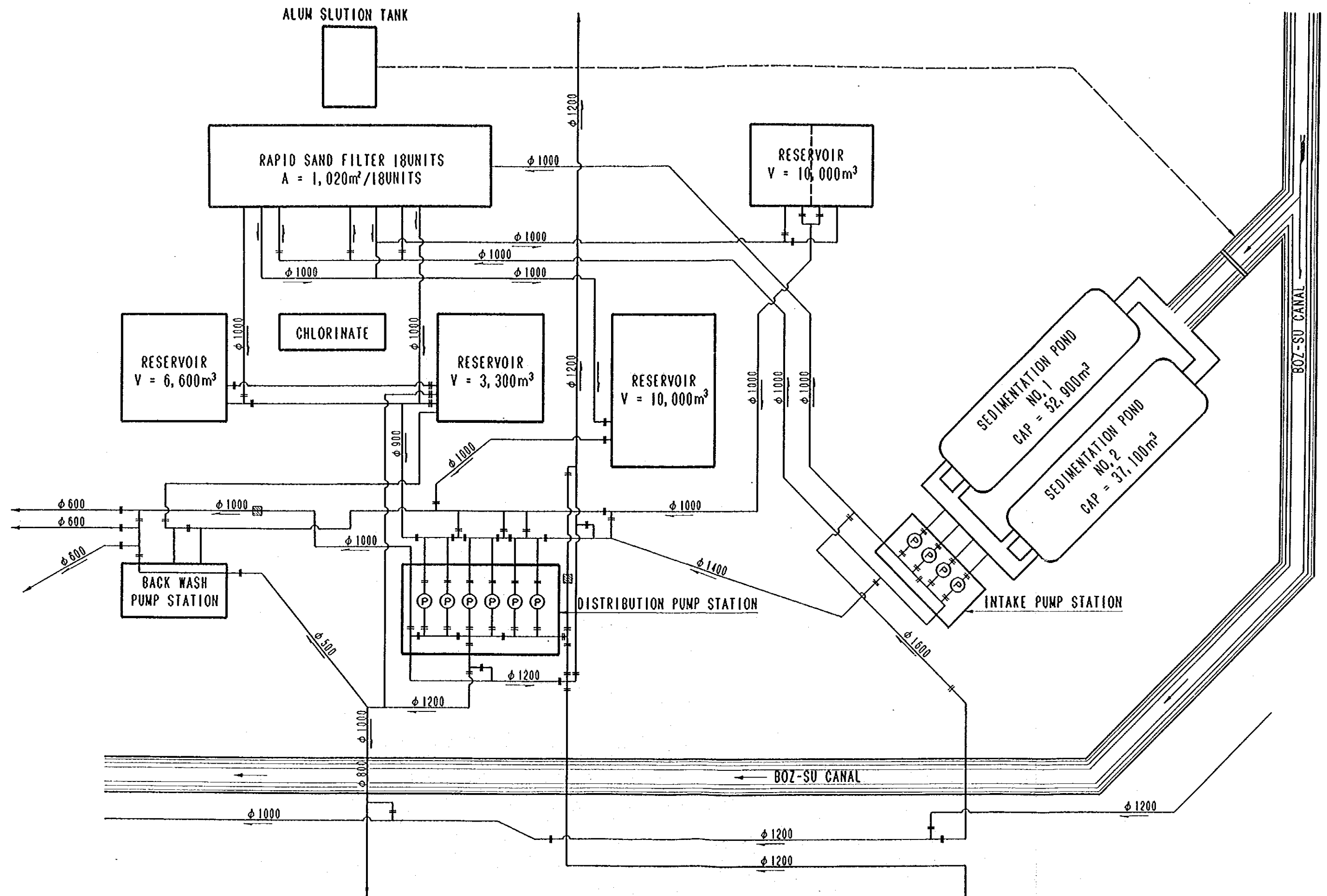


Figure D.3.5.2 Plan of Boz-su WTP

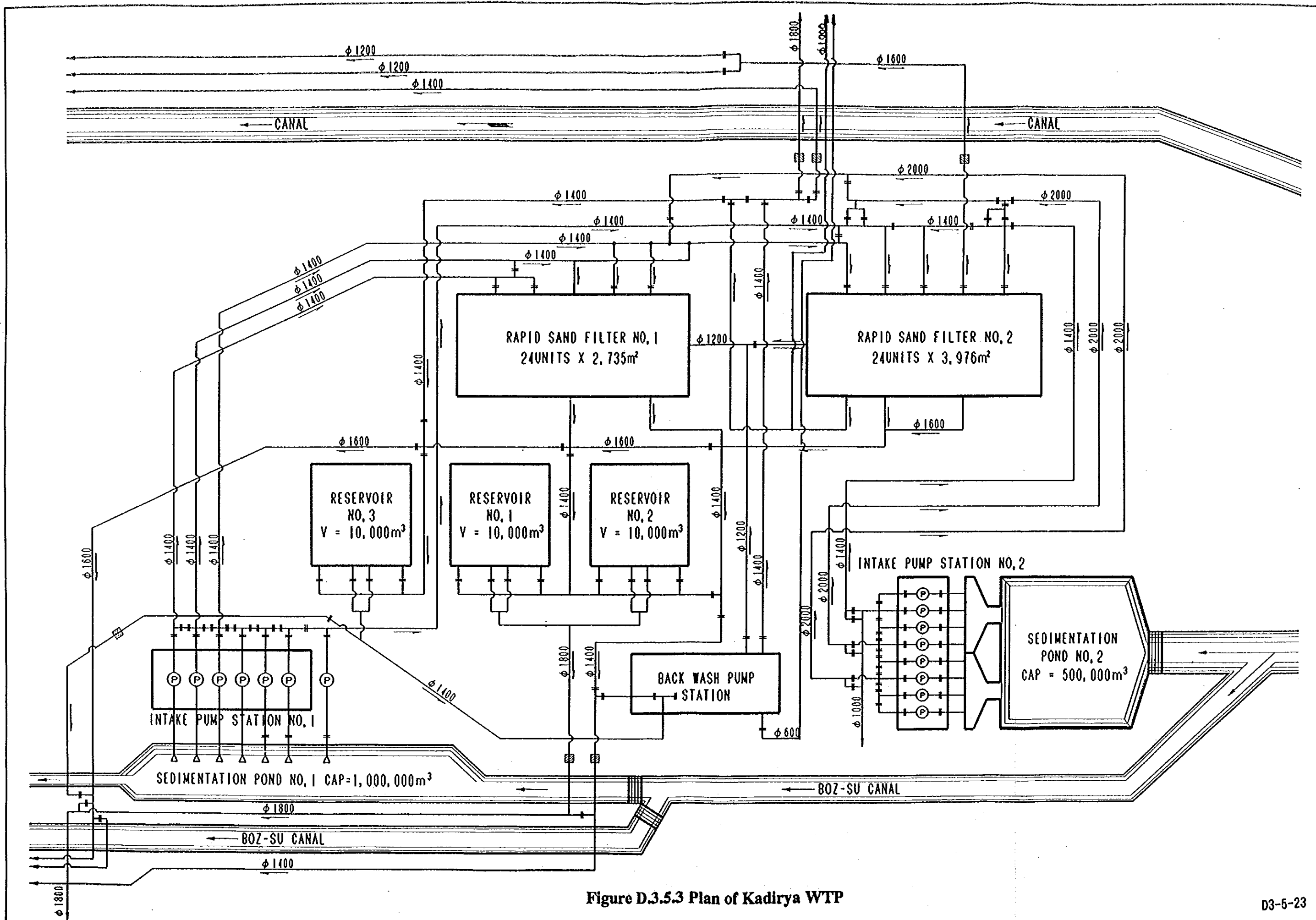


Figure D.3.5.3 Plan of Kadirya WTP

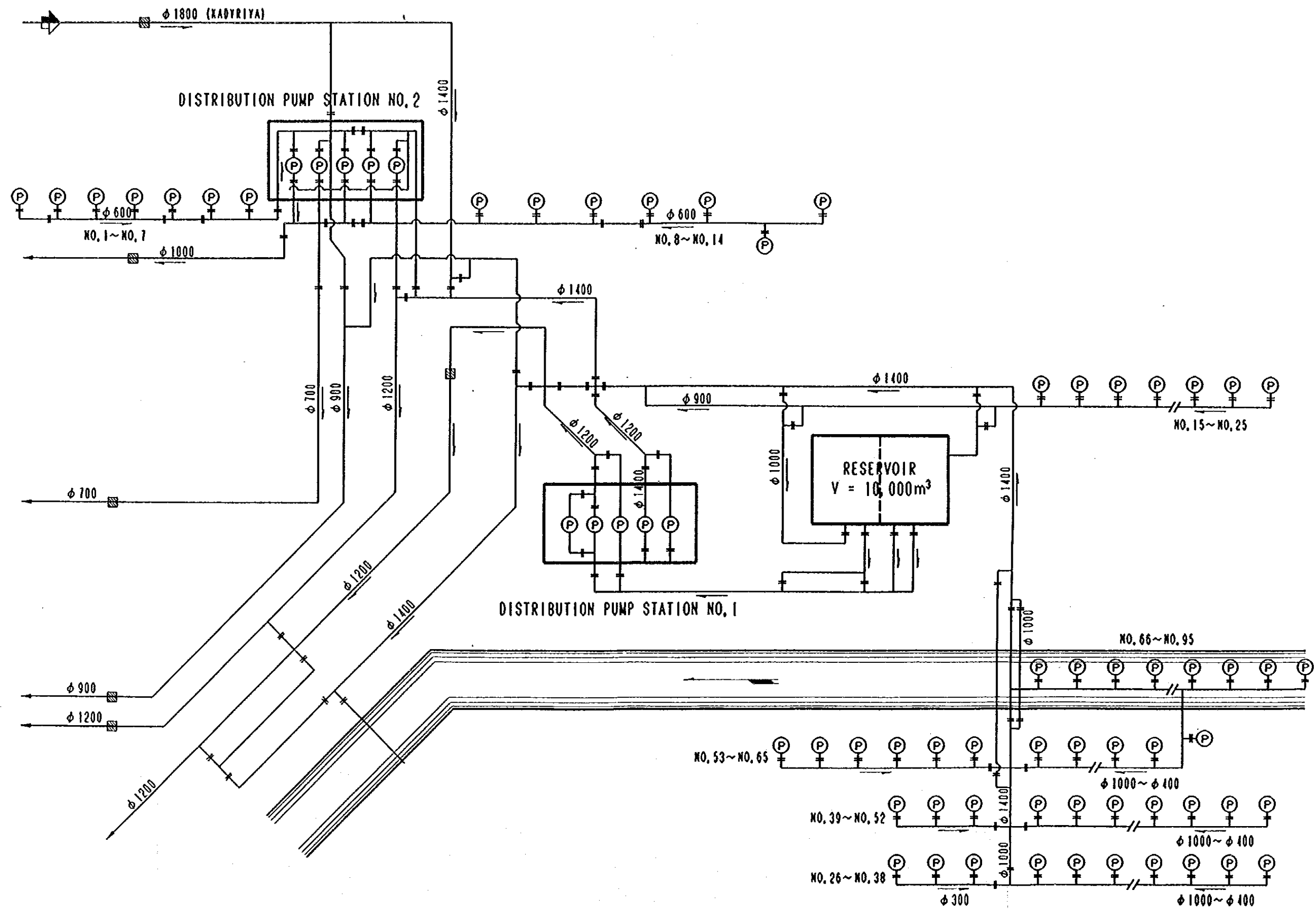
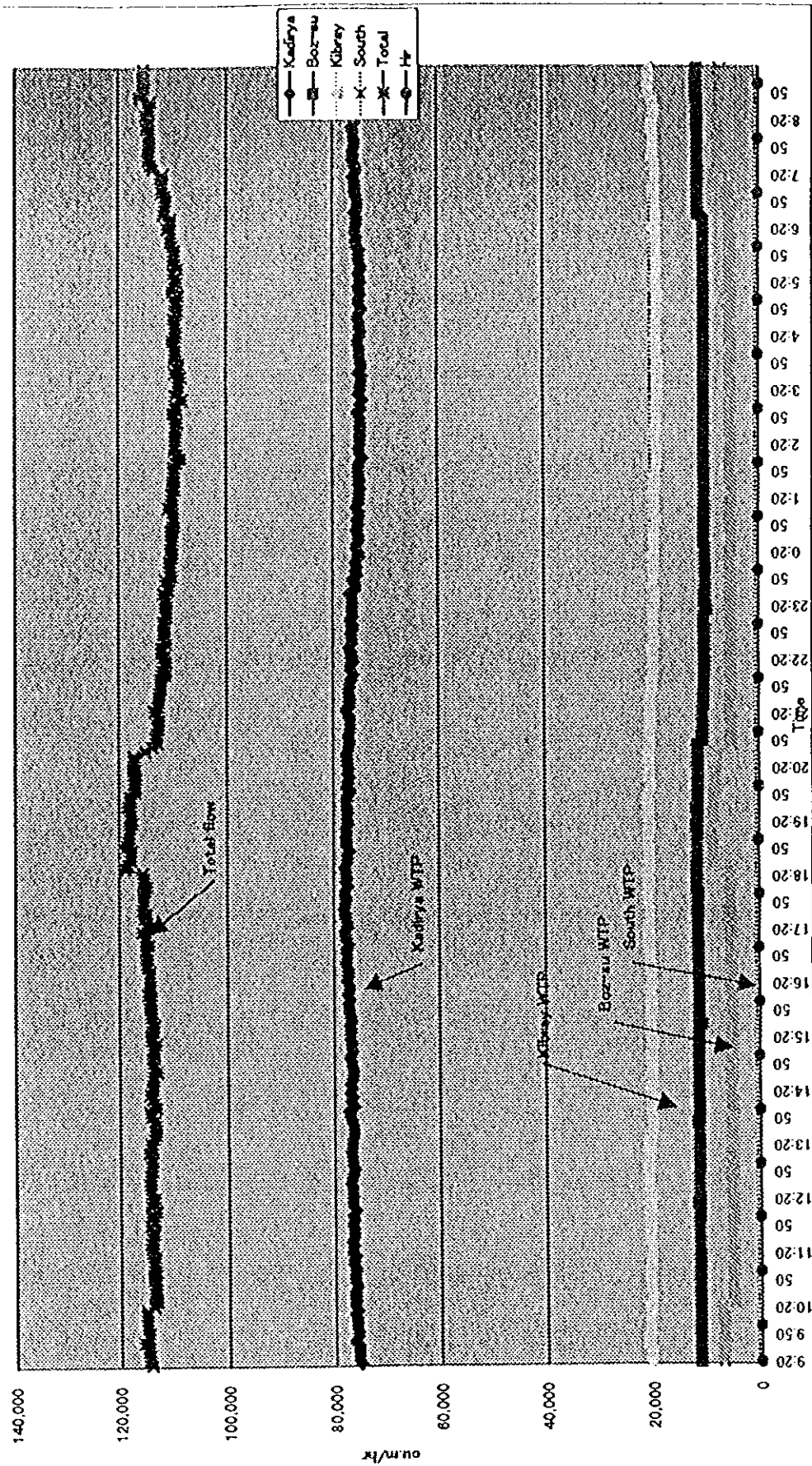


Figure D.3.5.4 Plan of Kibray WTP

Figure D.3.5.5 Flow Data of WTP in Tashkent City



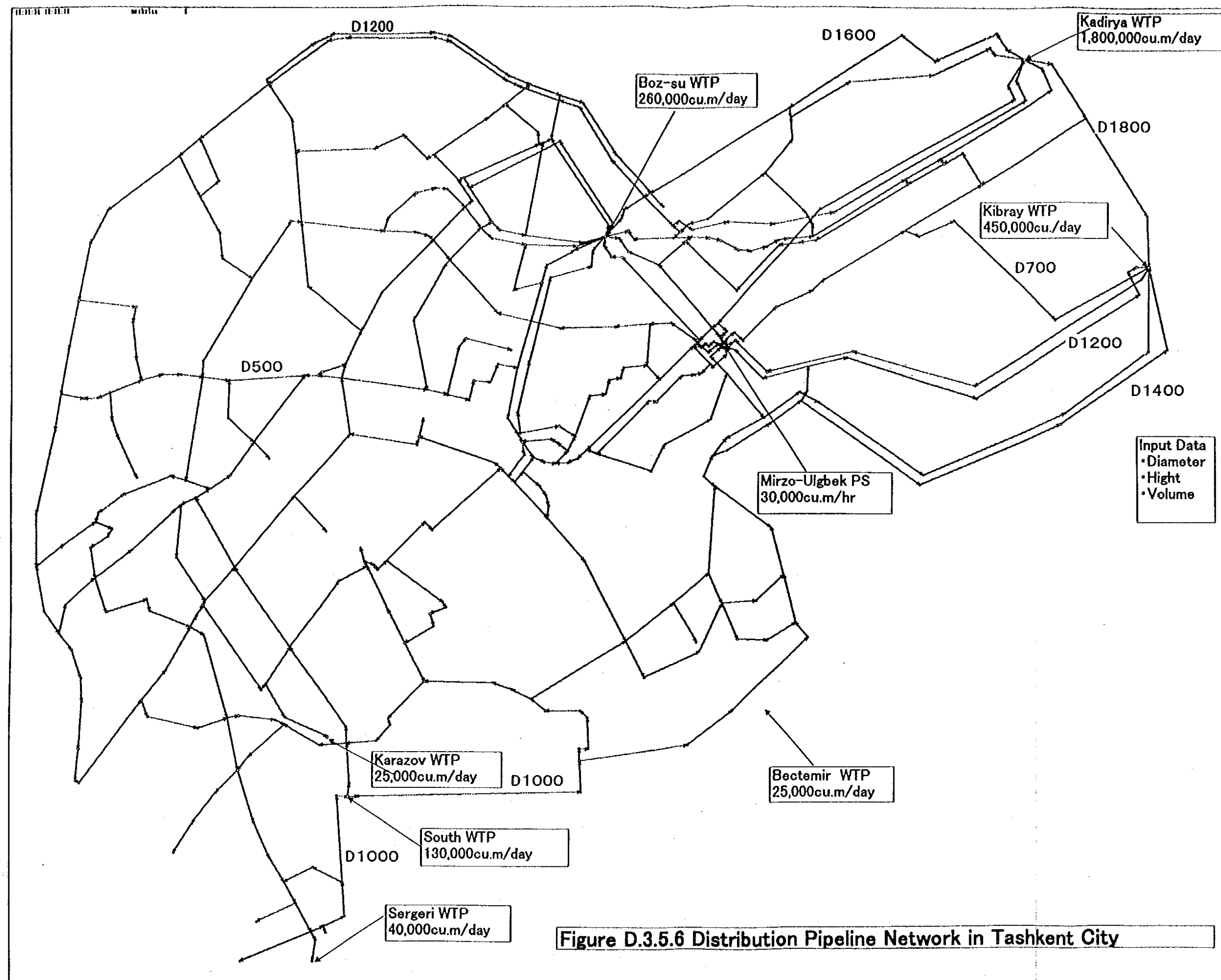
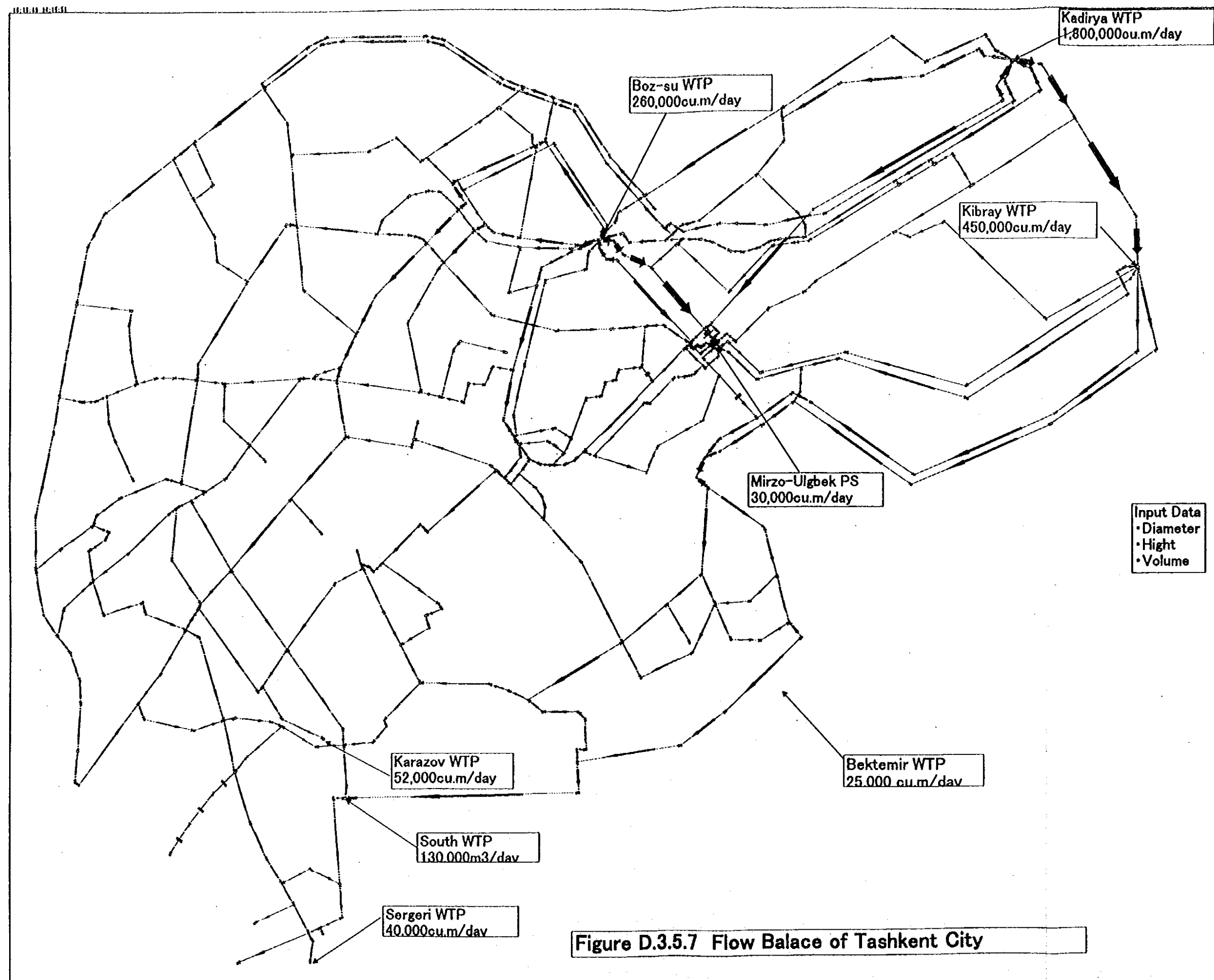


Figure D.3.5.6 Distribution Pipeline Network in Tashkent City



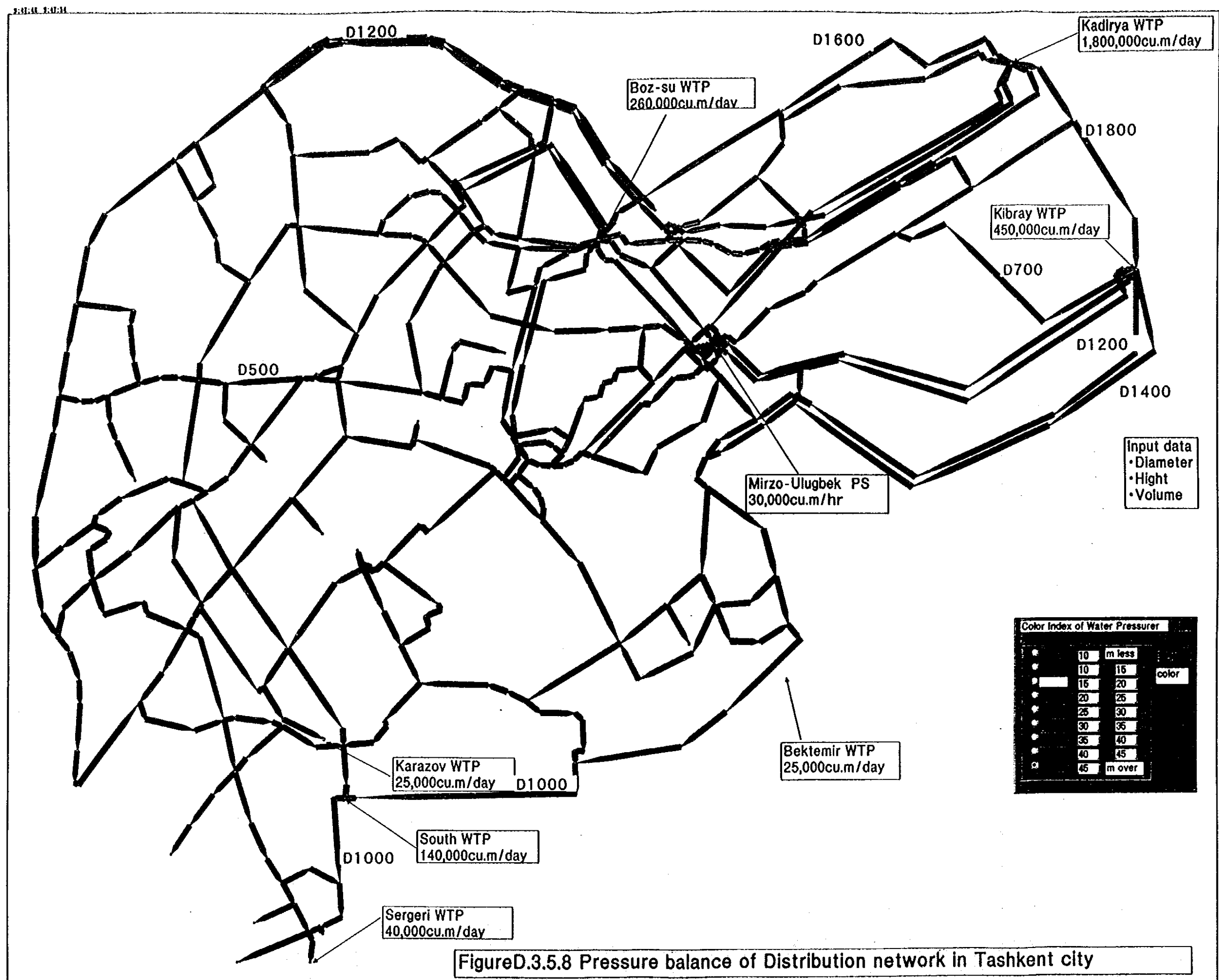
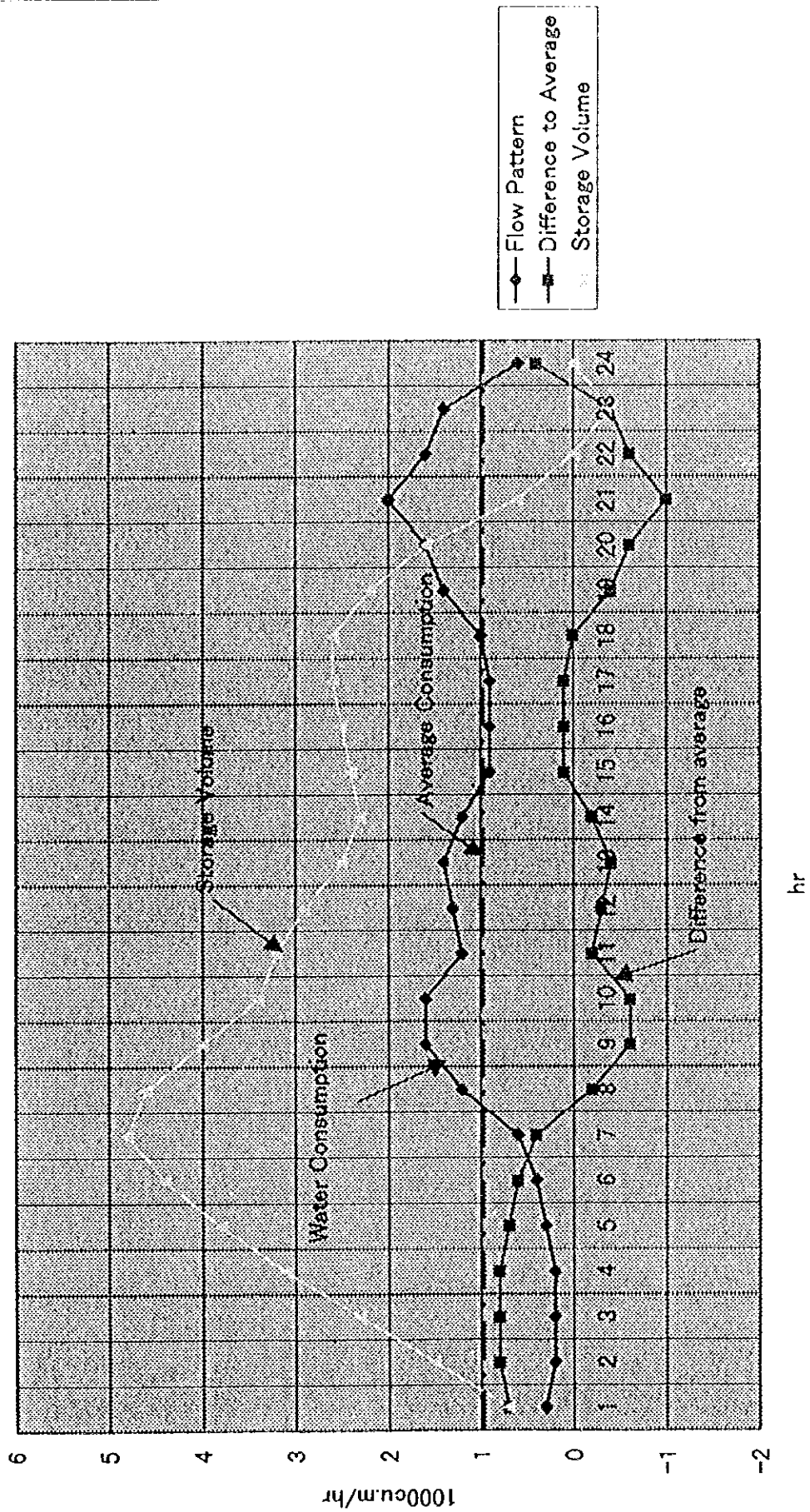


Figure D.3.5.9 Water Consumption and Storage Volume



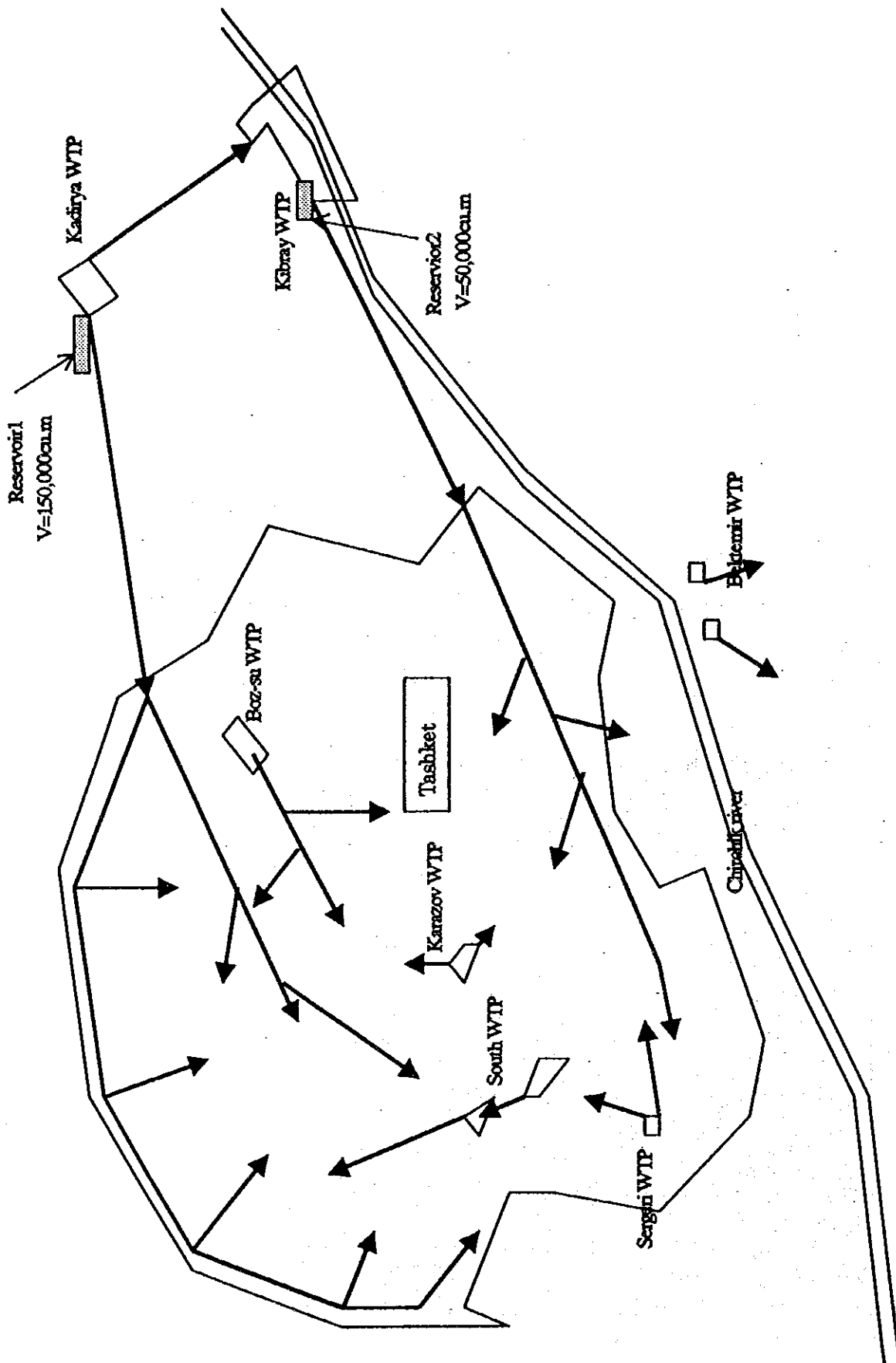


Figure D.3.5.10 Reservoir Location Plan in Tashkent City