DATA BOOK

CHAPTER 7 ENVIRONMENT

БАЙГАЛЬ ОРЧИНД НӨЛӨӨЛӨХ БАЙДЛЫН ЕРӨНХИЙ ҮНЭЛГЭЭНИЙ ДҮГНЭЛТ

1998 оны 05 сарын 22

Улаанбаатар хот

Төслийн дугаар

98071

ТӨСЛИЙН ТОВЧ ТОДОРХОЙЛОЛТ

Төслийн нэр	Алтай хотын усан хангамжийг сайжруулах төсөл
Байршил:	Говь-Алтай аймаг. Алтай хот
Төсөл хэрэгжүүлэгч:	Дэд бүтцийн хөгжлийн яам
Төсөл хэрэгжүүлэгчийн хаяг:	
Төслийн хүчин чадал, товч тодорхойлолт:	Утас: Факс: Төсөлд тусгагдсанаар: Алтай хотын усан хангамжийн эх үүсвэр, чанар, хүрэлцээ хангамж, геологийн болон гидрогеологийн нөхцөл байдлыг тодорхойлох, усны менежементийн асуудлыг боловсруулах, газрын доорхи усны түвшин түүний нөөц, чанар байдалд судалгаа хийж, хотын хүн амын унд-ахуйн усан хангамжийг сайжруулах асуудлыг оновчтой шийдвэрлэх.

ЕРӨНХИЙ ҮНЭЛГЭЭНИЙ ДҮГНЭЛТ

Говь-Алтай аймгийн Алтай хотын усан хангамжийг сайжруулах төслийн байгаль орчны урьдчилсан үнэлгээний тайланд Улсын Их Хурлын 1998 оны 1 дүгээр сарын 22-ны өдрийн тогтоолоор батлагдсан "Байгаль орчинд нөлөөлөх байдлын үнэлгээний тухай" хуулийн дагуу ерөнхий үнэлгээ хийсний үндсэн дээр уг төсөл байгаль орчинд нөлөөлөх байдлын нарийвчилсан үнэлгээ хийлгэх шаардлагатай гэж үзэв.

НАРИЙВЧИЛСАН ҮНЭЛГЭЭ ХИЙЛГЭХ ҮНДЭСЛЭЛ

1. Байгаль орчинд нөлөөлөх байдлын нарийвчилсан үнэлгээ хийлгэсний үндсэн дээр байгаль орчныг хамгаалах арга хэмжээг тодотгон төлөвлөж хэрэгжүүлэх

2. Төсөл хэрэгжих орчмын нутаг дэвсгэрт байгаль орчны бохирдол болон бусад асуудлаар онцгой анхаарах тохиолдол гараагүй боловч уг төсөл хэрэгжсэнээр үүсч болох нөлөөллүүдийг нарийвчилсан үнэлгээний үндсэн дээр тодруулах

3. Хотын төвийн хүн амд шаардагдах усны хэмжээ, түүнийг хэрхэн хангах эх үүсвэрийг тодорхойлох талаар мэргэжлийн байгууллагын дүгнэлт гаргуулах ба хэрэгжүүлэх арга замыг тодорхойлох

БУСАД АСУУДАЛ

1. Цаашид судалгаа, шинжилгээг явуулах, нарийвчилсан үнэлгээ хийхтэй холбогдуулж орон нутгийн засаг захиргааны болон байгаль орчны хяналтын байгууллагаас тавигдах нэмэлт шаардлагыг цаг тухайд нь ханган биелүүлж байх

2. Байгаль орчныг хамгаалах болон байгалийн нөөц баялгийг зохистой ашиглах, байгаль орчныг хамгаалахтай холбогдсон хууль тогтоомжийг биелүүлэх асуудлаар байгаль орчны болон эрүүл ахуй, халдвар судлалын хяналтын байгууллага, тэдгээрийн ажилтнуудтай байнга хамтран ажиллах

3. Ахуй-үйлдвэрлэлээс гарах хатуу, шингэн хаягдлаас ус хангамжийн эх үүсвэрт нөлөөлөх нөлөөллийг тогтоох

4. Нарийвчилсан үнэлгээний тайланд шүүмж хийлгэж, дүгнэлт шийдвэр гаргуулах

ЕРӨНХИЙ ҮНЭЛГЭЭ ХИЙСЭН: Л.ДОЛГОРМАА

БАЙГАЛЬ ОРЧИНД НӨЛӨӨЛӨХ БАЙДЛЫН НАРИЙВЧИЛСАН ҮНЭЛГЭЭНИЙ ЧИГЛЭЛ-ХУВААРЬ

1998-05-22

Ажлын агуулга	Хугацаа	Тайлбар
1.Төсөл хэрэгжих орчны суурь нөхцөл байдал болон байгаль орчныг хамгаалах талаар авах арга хэмжээг тодорхойлох чиглэлээр дараахь нэмэлт судалгаа хийж дүгнэлт гаргуулах:	1998 оны 6 дугаар сараас	
а. Усны асуудлаар		
-хөрсний болон гүний усны төлөв байдлыг тодорхойлж, үйлдвэрлэл-ахуйн зориулалтаар ашиглах усны хүрэлцээ, хангамжийг мэргэжлийн байгууллагын тооцоо, дүгнэлтийн үндсэн дээр тодорхойлох		
-усан хангамжийн эх үүсвэрийг ус хэрэглээний балансын тооцоонд тулгуурлан оновчтой сонгон авах		
-усан хангамжийн асуудлыг авч үзэхтэй холбогдуулан ахуй-үйлдвэрлэлээс гарах бохир усны хэмжээ, найрлагыг нарийвчлан тогтоож, байгаль орчныг бохирдуулах-гүйгээр зайлуулах арга замыг тодорхойлох		
-газрын дорхи усны түвшний хэлбэлзлийг тодорхойлох		
-усны шинж чанарыг тодорхой үе шаттайгаар хийсэн шинжилгээний дүнд тулгуурлан тогтоох		
-усны чанарыг сайжруулах, хатуулгийг багасгах боломжийг судлан тогтоох		
б. Хөрсний асуудлаар		
- усан хангамжийн асуудлыг судлахтай холбогдуулан ус зүйн судалгаа явуулах үед гарч болох газрын элэгдэл, эвдрэлийн байдлыг тодорхойлох		
-хөрсний судалгаа, шинжилгээ явуулах хугацаа, арга замыг тогтоох		

в. Ургамал, амьтны асуудлаар Усан хангамтийн асуудлыг шийдвэрлэх үйл ажиллагааны явцад ховор болон нэн ховор ургамал, амьтны тархалтыг тогтоох, ховор болон нэн ховор ургамлын талаар мэргэжлийн байгууллагын дүгнэлт гаргуулах, тэдгээрийг хамгаалах арга хэмжээг хамтад нь авч үзэх г. Түүх, соёлын дурсгалт зүйлсийн асуудлаар -түүх, соёлын дурсгалт зүйлсийн талаар мэргэжлийн байгууллагын дүгнэлт гаргуулах -дээрх асуудлаар нутгийн иргэдээс мэдээлэл судалгаа авч нарийвчилсан үнэлгээний тайланд хавсаргах		
2. Байгаль орчныг хамгаалах төлөвлөгөө, орчны хяналт-шинжилгээний хөтөлбөр боловсруулах	Нариийвчил-сан үнэл-гээний хүрээнд	
3. "Байгаль орчинд нөлөөлөх байдлын үнэлгээний тухай" хуулийн дагуу хийсэн нарийвчилсан үнэлгээний тайланг БОЯ-нд ирүүлж, шүүмж хийлгэн шийдвэр гаргуулах	1998 оны 3 дугаар улирал	

ЗААВАЛ ХЭРЭГЖҮҮЛЭХ ШААРДЛАГАТАЙ ДЭЭР ДУРДСАН АРГА ХЭМЖЭЭГ ЦАГ ХУГАЦААНД НЬ ХАНГАН БИЕЛҮҮЛЭЭГҮЙ ТОХИОЛДОЛД УИХ-ЫН 1998 ОНЫ 1 ДҮГЭЭР САРЫН 22-НЫ ТОГТООЛООР БАТАЛСАН "БАЙГАЛЬ ОРЧИНД НӨЛӨӨЛӨХ БАЙДЛЫН ҮНЭЛГЭЭНИЙ ТУХАЙ" ХУУЛИЙН 12 ДУГААР ЗҮЙЛИЙН ДАГУУ ХАРИУЦЛАГА НОГДУУЛАХ БОЛНО.

Хянасан: Байгаль орчны хяналтын
Улсын ерөнхий байцаагч Ц.ДАМДИН

Ерөнхий үнэлгээ хийсэн:
БОЯ-ны БХЗГ-ын
Ахлах мэргэжилтэн,
Улсын ахлах байцаагч Л. ДОЛГОРМАА

Conclusion on Environmental
Impact Assessment (EIA)

22 may 1998	Ulaanbaatar
Project No	98701
Briet information	
Project name :	The study on groundwater Development for Altai city in Mongolia
Location :	Gobi-Altai Aimag, Altai City
Project executor	Ministry of infrastructure Development
Address :	
	Tel :
	Fax :
Project capacity,	
Bret introduction :	Project considered : To clarity water supply resource of Altai city, water quality, water sufficiency and supply ; and geological and hydrogeological condition ; elaborate the water management problems, to study groundwater level, its resources and guality ; to resolve groundwater development for the drinking & domestic purposes.

Conclusion on general assessment

On the base of the general assessment in accordance with the "Environmental Impact Assessment" Low, proven by the state Ikh Mural's resolution (22 Jan,1998) in the Initial Environmental Examination (IEE) chapter of the study report on Groundwater Development for Altai City, it is considered to conduct the detailed Environmental Impact Assessment.

Basis of the detailed EIA

1. On the Basis of the detailed EIA nature nad environmental protection procedure and plan shall be clarified and implemented.

2. In the project implementation area there was not occasion on pollution of nature and environment and other cases. But it is necessary to clarify unexpected impacts during the project implementation on the basis of detailed EIA.

3. To get conclusion from the professional organization for clarifying of water demand for the people of city capital and supply resources and to clarify an implementation procedure.

Other

1. In accordance with the further study and conducting the detailed assessment, an additional request from the Local government and nature & environmental inspection organizations has to be executed in time.

2. To cooperate with the nature and environment and health and epidomology inspection organization and their staffs in accordance with the nature and environmental protection; sustainable development for nature resources and implementation of nature&environment protection lows and regulations.

3 To determine the impact of solid and liquid waste from the household and industry to water supply resources.

4. To get an analyse and recommendation for the report of the detailed EIA.

general assessment done by: L.Dolgarmaa

Items and schedule for the

detailed EIA

22 may 1998

Items	Date	Common
1. Below-mentioned additional study has to be done to clarify basic condition of project area and nature and environment projection procedure :	From June '98	
a. Water		
- to clarify surface and groundwater condition and industrial and domestic water sufficiency and supply on the base of assessment and conclusion of the professional organization.		
- to select the source of water supply on base of water use balance		
- in consideration with the water supply shady, to determine quantity and quality domestic and industrial sewage water ; and methods to remove it without advent effect to the nature & environment.		
- to study groundwater level change		
- to catty out water quality analysis in a varieties phases of study		
- to study the possibility of water greatly improving methods ie to decrease hardness.		
b. soil		
- to determine land erosion, in connection to the g hydrographical study in a farina of water supply study		
- to clarity the date and method of soil study		

c. Flora and fauna - During the groundwater development and implementation of water supply improvement, to determine the distribution of rare and endangered fauna and flora to get recommendation from professional get organization on rate and endangered fauna & flora and to consider their protection procedure with the study		
d. Historical and wltural property - To get a conclusion on the historical and cultural property from the professional organizations		
2. To make a nature and environment protection plan and environmental monitoring program	In a frame of the detailed assessment	
3. To send a report, made in accordance with the "Environmental Impact Assessment " low, to the ministry of Nature & Environment and to get a recommendation	3rd quarter of 1998 The end of September	

In case of not implementing above-mention necessary procedures, there shall be Bearing responsibly in accordance with the Chapter 12 of "Environmental Impact Assessment " law.

Checked out : State general inspector, of Nature and Environmental Monitoring — Ts. Damdin

General Assessment done : Senior Inspector — L. Dolgormaa

DATA BOOK

CHAPTER 8 WATER QUALITY

Annex VIII-1 (1/20) Analysis Results for Wells (Phase 1) in 1997

Item No.	Item	Unit	23-Jun-97 SW-1	23-Jun-97 SW-2	23-Jun-97 SW-3	23-Jun-97 SW-4	26-Jun-97 SW-5	23-Jun-97 SW-6	23-Jun-97 SW-7	23-Jun-97 SW-8
1	pH		7.9	7.4	7.9	8.1	7.8	8.6	8.5	7.9
2	Temperature	℃	4.5	-2	-5.5	-4.5	-	-3	-3.5	4
3	Odor	dilution factor								
4	Taste	dilution factor								
5	Color	mg/l Pt scale	6	4	2	20	20	10	20	10
6	Turbidity	kaolin (JIS)	1	2	0.5	15	1	3	15	5
7	Conductivity	mS/m(at 25℃)	276	115.4	238	295	174.7	52.5	71.7	84.1
8	Hardness	mg$CaCO_3$/l	2500	425	890	690	177.5	210	792.5	315
9	Dry Residue	mg/l	1988	1706	3214	880	412	840	2024	284
10	COD($KMn0_4$, alkali)	mg O_2/l	6	4.8	6.2	1.5	5.1	2	2	4
11	Nitrite	mg NO_2/l	0.24	0.14	0.25	0.34	0.05	0.3	0.17	0.028
12	Nitrate	mg NO_3/l	5.5	9.8	4.1	3.9	0.5	2	5.8	0.21
13	Ammonium	mg NH_4/l	0.44	<0.2	0.24	0.24	<0.2	0.24	0.35	1.29
14	Orthophosphate	mg $P0_4$/l	0.14	0.05	0.1	0.07	<0.05	<0.05	0.38	0.12
15	Bicarbonate	mg HCO_3/l	305	256	262	342	293	207	403	433
16	Carbonate	mg CO_3/l	0.61	0.16	0.52	1.08	0.29	2.07	3.20	0.86
17	Chloride	mg Cl/l	2	19.9	0.8	14	18	16	1.9	1.4
18	Sulfate	mg SO_4/l	140	47	95	45	<5	22	150	36
19	Sodium*	mg Na/l	49.3	47.4	54.6	52	54.8	56.2	53.6	52
20	Potassium	mg K/l	8.5	4.1	7	9	10	1.7	>10	6.1
21	Calcium	mg Ca/l	100	48	47	33	22	22	27	38
22	Magnesium	mg Mg/l	540	74	138	146	29	37	174	53
23	Copper	mg Cu/l	0.14	0.18	0.13	0.20	0.16	0.12	0.11	0.15
24	Iron	mg Fe/l	0.09	0.04	0.06	0.05	0.14	0.07	0.03	0.32
25	Manganese	mg Mn/l	0.6	0.1	<0.1	0.2	0.2	0.15	0.3	0.5
26	Zinc	mg Zn/l								
27	Lead	mg Pb/l								
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.01	<0.01	<0.01	0.01			
29	Cadmium	mg Cd/l								
30	Arsenic	mg As/l								
31	Cyanide	mg CN/l	<0.01	<0.01	<0.01	<0.01	0.2			
32	Mercury	mg Hg/l								
33	Fluoride	mg F/l						0.4	0.7	0.62
34	Silica	mg SiO_2/l	14	13	11	11		9	11	12
35	Molybdenum**	mg Mo/l	0.03	0.03	0.05	0.03	0.04	0.02	0.03	0.03
36	Beryllium	mg Be/l								
37	Aluminum	mg Al/l	0.01	<0.01	0.08	0.02		<0.01	0.11	<0.01
38	Total Coliforms	No. in 1l	2380	180	180	23		<9	23	960
39	General Bacteria	No. in 1 ml								
40	Residual Chlorine	mg ClO/l								
41	BOD	mg O_2/l								
42	SS	mg SS/l								
43	Acidity	mg $CaCO_3$/l	125	100	125	130	0	95	205	160
44	Alkalinity	mg $CaCO_3$/l	250	210	215	280	240	170	330	355

* Flame Emission Spectrometric Method
** Colorimetry in Ulaanbaatar

Annex VIII-1 (2/20) Analysis Results for Wells (Phase 2) in 1997

Item No.	Item	Unit	16-Jul-97 SW-1	16-Jul-97 SW-2	16-Jul-97 SW-3	16-Jul-97 SW-4	16-Jul-97 SW-5	16-Jul-97 SW-6	16-Jul-97 SW-7	16-Jul-97 SW-8
1	pH		7.8	8	7.7	8	7.7	8.3	8.1	7.7
2	Temperature	°C	7	6	6	5	4	2.5	2	8
3	Odor	dilution factor								
4	Taste	dilution factor								
5	Color	mg/l Pt scale	20	6	10	20	4	20	20	20
6	Turbidity	kaolin (JIS)	3	1	<1	3	10	5	3	5
7	Conductivity	mS/m(at 25°C)	284	100	243	288	143	46	282	83
8	Hardness	mg$CaCO_3$/l	1625	370	730	780	450	200	950	660
9	Dry Residue	mg/l	174	424	1084	120	1752	3610	1260	430
10	COD($KMnO_4$,alkali)	mg O_2/l	–	–	–	–	–	–	6.7	4.6
11	Nitrite	mg NO_2/l	0.2	0.5	0.01	0.06	0.04	0.25	0.01	2
12	Nitrate	mg NO_3/l	5.5	5.4	5.3	8.4	1	4	4	0.6
13	Ammonium	mg NH_4/l	0.43	0.4	0.25	0.38	0.55	0.37	0.28	1.6
14	Orthophosphate	mg $P0_4$/l	0.3	0.15	0.1	0.1	0.5	<0.05	0.2	0.4
15	Bicarbonate	mg HCO_3/l	329	220	281	354	140	207	738	470
16	Carbonate	mg CO_3/l	0.66	0.55	0.35	0.89	0.18	1.04	2.33	0.74
17	Chloride	mg Cl/l	18	16	17	17	18	6.1	19	10
18	Sulfate	mg SO_4/l	420	100	240	300	99	36		37
19	Sodium*	mg Na/l	49.1	47	54.2	52.3	54.5	56	53.3	52.1
20	Potassium	mg K/l	10	4	7	9	6	3	10	7
21	Calcium	mg Ca/l	150	45	36	28	19	25	28	25
22	Magnesium	mg Mg/l	300	62	154	170	97	33	211	143
23	Copper	mg Cu/l	0.1	0.1	<0.1	0.1	0.2	0.2	0.2	0.1
24	Iron	mg Fe/l	0.3	0.2	0.1	0.35	<0.02	0.1	0.1	1.3
25	Manganese	mg Mg/l	0.8	0	0.2	0.1	0.8	0.1	0.2	0.4
26	Zinc	mg Zn/l								
27	Lead	mg Pb/l								
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.05	0.02	0.02	0.04	0.03	0.02	0.01
29	Cadmium	mg Cd/l								
30	Arsenic	mg As/l								
31	Cyanide	mg CN/l	0.5	0.03	0.1	0.1	2.5	0.05	0.05	0.06
32	Mercury	mg Hg/l								
33	Fluolide	mg F/l	<0.01	<0.01	<0.01	<0.01	0.3	<0.01	<0.01	<0.01
34	Silica	mg SiO_2/l	14	14	12	13	1.1	7	11	15
35	Molybdenum**	mg Mo/l	0.02	0.03	0.05	0.03	0.04	0.02	0.03	0.03
36	Beryllium	mg Be/l								
37	Aluminum	mg Al/l	0.1	<0.01	<0.01	0.03	0.1	0.03	<0.01	0.02
38	Total Coliforms	No. in 1l	>2380	960	230	>2380	2380	<9	230	960
39	General Bacteria	No. in 1 ml								
40	Residual Chlorine	mg ClO/l								
41	BOD	mg O_2/l								
42	SS	mg SS/l								
43	Acidity	mg $CaCO_3$/l	90	45	55	50	45	95	105	100
44	Alkalinity	mg $CaCO_3$/l	270	180	230	290	115	170	805	385

* Flame Emission Spectrometric Method
** Colorimetry in Ulaanbaatar

Annex VIII-1 (3/20) Analysis Result for Wells (Phase 3) in 1997

Item No.	Item	Unit	23-Jul-97 SW-1	23-Jul-97 SW-2	23-Jul-97 SW-3	23-Jul-97 SW-4	23-Jul-97 SW-5	23-Jul-97 SW-6	23-Jul-97 SW-7	23-Jul-97 SW-8
1	pH		7.4	8.1	7.8	8.1	8.4	8.6	8.1	7.6
2	Temperature	℃	5.5	3.7	7	5	3.5	2.4	3.5	5.5
3	Odor	dilution factor	<1	<1	<1	<1	<1	<1	1	<1
4	Taste	dilution factor								
5	Color	mg/l Pt scale	4	2	2	6	5	20	20	5
6	Turbidity	kaolin (JIS)	5	1	0.5	3	0.5	3	3	0.5
7	Conductivity	mS/m(at 25℃)	436	186.7	360	450	224	91.3	524	134.7
8	Hardness	mg$CaCO_3$/l	1375	575	1825	3375	550	300	1150	1850
9	Dry Residue	mg/l	344	480	1686	1490	350	1660	2844	776
10	COD($KMnO_4$,alkali)	mg O_2/l	–	–	–	–	7	4	3.5	8
11	Nitrite	mg NO_2/l	0.06	0.01	0.03	0	0.02	0.05	<0.01	0.03
12	Nitrate	mg NO_3/l	9.6	9.8	9.6	28	0.8	5.6	6	0.5
13	Ammonium	mg NH_4/l	0.6	0.3	0.35	0.35	1.2	0.45	0.45	1.2
14	Orthophosphate	mg $P0_4$/l	0.22	0.08	0.03	0.08	0.04	0.04	0.18	0.41
15	Bicarbonate	mg HCO_3/l	427	281	244	311	153	214	1007	397
16	Carbonate	mg CO_3/l	0.27	0.89	0.49	0.98	0.96	2.14	3.18	0.40
17	Chloride	mg Cl/l	15	17	17	17	17	5	17	9
18	Sulfate	mg SO_4/l	1000	190	400	500	220	40	500	40
19	Sodium*	mg Na/l	49	47	54	52.1	54.2	56.1	53.1	52.2
20	Potassium	mg K/l	9	4	7	8	6	1	10	7
21	Calcium	mg Ca/l	238	67	260	60	28	27	42	80
22	Magnesium	mg Mg/l	188.4	97.8	234	774	116	56	251	396
23	Copper	mg Cu/l	0.12	0.08	0.4	0.17	0.11	0.12	0.1	0.11
24	Iron	mg Fe/l	0.17	0.1	0.14	0.12	0.03	0.06	0.07	0.51
25	Manganese	mg Mg/l	<0.1	0.1	0.2	0.5	0.5	0.3	<0.1	0.6
26	Zinc	mg Zn/l								
27	Lead**	mg Pb/l	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.02
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.01	<0.01	0.02	0.01	<0.01	0.01	<0.01
	Chromium**	mg Cr/l	0.03	0.05	0.05	0.02	0.04	0.02	0.03	0.02
29	Cadmium**	mg Cd/l	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.02
30	Arsenic**	mg As/l	0.02	0.01	0.03	0.01	0.02	0.01	0.02	0.01
31	Cyanide	mg CN/l	0.3	0.04	0.04	0.1	0.09	0.02	0.01	0.06
32	Mercury**	mg Hg/l	0.003	0.003	0.005	0.002	0.003	0.002	0.003	0.001
33	Fluoride	mg F/l	0.04	0.04	0.05	0.02	0.06	<0.01	0.01	<0.01
34	Silica	mg SiO_2/l	2.3	5.2	3.5	5.2	1.3	5.4	5.2	2.7
35	Molybdenum**	mg Mo/l	0.02	0.03	0.05	0.03	0.04	0.02	0.028	0.028
36	Beryllium**	mg Be/l	0.001	<0.001	0.003	0.026	0.0033	<0.001	<0.001	0.0042
37	Aluminum	mg Al/l	<0.01	0.01	0.03	0.02	0.02	<0.01	<0.01	0.01
38	Total Coliforms	No. in 1l	>2380	960	>2380	960	94	23	960	10
39	General Bacteria	No. in 1 ml								
40	Residual Chlorine	mg ClO/l								
41	BOD	mg O_2/l								
42	SS	mg SS/l								
43	Acidity	mg $CaCO_3$/l	110	80	70	80	57.5	92.5	70	90
44	Alkalinity	mg $CaCO_3$/l	350	230	200	255	125	175	825	325

* Flame Emission Spectrometric Method
** Colorimetry in Ulaanbaatar

Annex VIII-1 (4/20) Analysis Results for Water Supply System (Phase 1) in 1997

Item No.	Item	Unit	25-Jun-97 DR-1 Reservoir1	26-Jun-97 DR-2 Reservoir2	25-Jun-97 DT-1 Hospital	25-Jun-97 DT-2 Government	25-Jun-97 DT-3 Hotel	25-Jun-97 DT-4 School	25-Jun-97 DT-5 Apartment	26-Jun-97 DW-1 Water wagon1	26-Jun-97 DW-2 Water wagon2	25-Jun-97 DG-1 Stock water 1	25-Jun-97 DG-2 Stock water 2	25-Jun-97 DG-3 Stock water 3	25-Jun-97 DG-4 Stock water 4	25-Jun-97 DG-5 Stock water5
1	pH		6.2	8.3	8.3	8.4	7.9	8	8.2	8.4	8.4	8.2	8	8.3	8.3	8.3
2	Temperature	°C	3	4.5	17.5	17	18	9	9	9	9	19	19.4	19.7	19.7	19.4
3	Oder	dilution factor														
4	Taste	dilution factor														
5	Color	mg/l Pt scale	<1	<1	2	<1	<1	20	<1	2	<1	2	4	<1	<1	<1
6	Turbidity	kaolin (JIS)	<1	<1	<1	<1	<1	5	6	<1	<1	2	2	<1	<1	<1
7	Conductivity	mS/m(at 25°C)	60	59	54	58	54	54	56	58	58	60	58	58	54	53
8	Hardness	mg$CaCO_3$/l	265	240	220	220	220	215	230	240	240	230	225	265	285	220
9	Dry Residue	mg/l	752	624	166	414	608	760	1238	2520	614	2051	208	694	544	940
10	COD($KMnO_4$,alkali)	mg O_2/l	<1	<1	1	1	<1	2	1	<1	1	3	3	<1	2.8	1.4
11	Nitrite	mg NO_2/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01
12	Nitrate	mg NO_3/l	4	3.1	4.9	4.6	4.7	4.5	4.1	4.2	3	4.2	4.1	4.1	4.9	2
13	Ammonium	mg NH_4/l														
14	Orthophosphate	mg PO_4/l														
15	Bicarbonate	mg HCO_3/l	217	250	214	250	244	220	244	244	244	238	223	226	220	214
16	Carbonate	mg CO_3/l	0.86	1.25	1.70	2.50	0.77	0.69	1.25	1.94	1.94	1.50	0.89	1.79	1.74	1.70
17	Chloride	mg Cl/l	9	10	3	9	6	6	8	8	14	10	9	11	9	7
18	Sulfate	mg SO_4/l														
19	Sodium	mg Na/l														
20	Potassium	mg K/l	3.3	3	2.5	3.2	2.6	2.8	3.2	3.4	3.9	4.3	3.8	3.2	3.2	3.2
21	Calcium	mg Ca/l	24	21	30	26	26	26	27	20	26	29	11	24	27	24
22	Magnesium	mg Mg/l	49	45	35	37	37	36	39	46	42	38	47	49	52	38
23	Copper	mg Cu/l	0.11	0.16	0.61	0.03	0.32	0.67	0.13	2	<0.1	0.17	0.14	2	0.14	1.5
24	Iron	mg Fe/l	0.12	0.15	0.08	0.12	0.06	0.05	0.04	0.06	0.03	0.03	0.05	0.04	0.03	0.02
25	Manganese	mg Mn/l	0.1	0.1	<0.1	<0.1	<0.1	0.4	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Zinc	mg Zn/l														
27	Lead*	mg Pb/l		0.05		0.036							0.041			
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.02	0.02	0.02	0.05	0.02	0.03	0.02	0.01	0.04	0.02	0.02	0.02	0.01
29	Cadmium*	mg Cd/l		0.039		0.028							0.026			
30	Arsenic*	mg As/l		0.033		0.035							0.024			
31	Cyanide	mg CN/l	0.05	0.05	0.05	0.06	0.05	0.04	0.05	0.05	0.05	0.75	0.05	0.05	0.05	0.05
32	Mercury*	mg Hg/l		0.01		0.01							0.01			
33	Fluoride	mg F/l	0.2	0.05	0.54	0.52	0.82	0.88	0.62	<0.05	<0.05	0.74	0.7	0.69	0.61	<0.05
34	Silica	mg SiO_2/l														
35	Molybdenum	mg Mo/l														
36	Beryllium	mg Be/l														
37	Aluminum	mg Al/l														
38	Total Coliforms	No. in 1l	7	7	4	<3	-	-	-	7	-	11	28	11	3	3
39	General Bacteria	No. in 1 ml	300	700	500	580	-	-	-	720	-	290	1000	950	780	850
40	Residual Chlorine	mg Cl0/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			<0.02	<0.02		<0.02	<0.02
41	BOD	mg O_2/l														
42	SS	mg SS/l														
43	Acidity	mg $CaCO_3$/l	65	45	100	85	78	85	100	60	80	65	60	53	55	53
44	Alkalinity	mg $CaCO_3$/l	178	205	175	205	200	180	200	200	200	195	183	185	180	175

* Colorimetry in Ulaanbaatar

Annex VIII-1 (5/20) Analysis Results for Water Supply System (Phase 2) in 1997

Item No.	Item	Unit	17-Jul-97 DR-1 Reservoir1	17-Jul-97 DR-2 Reservoir2	16-Jul-97 DT-1 Hospital	16-Jul-97 DT-2 Government	17-Jul-97 DT-3 Hotel	17-Jul-97 DT-4 School	17-Jul-97 DT-5 Apart	17-Jul-97 DW-1 Water wagon1	17-Jul-97 DW-2 Water wagon2	17-Jul-97 DG-1 Stock water 1	17-Jul-97 DG-2 Stock water 2	17-Jul-97 DG-3 Stock water 3	17-Jul-97 DG-4 Stock water 4	17-Jul-97 DG-5 Stock water5
1	pH		8.2	8.3	8.2	8.2	8.2	6.1	8.2	8.2	8.3	8.2	8.3	7.8	8.3	8.3
2	Temperature	°C	5	5	20	20	15	10	14.5	6	7	12	15	16	15	16
3	Odor	dilution factor														
4	Taste	dilution factor														
5	Color	mg/l Pt scale	4	3	<1	6	<1	<1	2	5	2	2	2	5	20	<1
6	Turbidity	kaolin (JIS)	<1	<1	<1	1	<1	<1	<1	<1	<1	2	<1	1	3	<1
7	Conductivity	mS/m(at 25°C)	58	54	57	57	55	57	57	58	59	55	58	63	60	57
8	Hardness	mg$CaCO_3$/l	310	250	250	250	250	250	280	300	300	250	300	230	320	240
9	Dry Residue	mg/l	274	440	450	304	140	800	568	146	612	248	190	196	148	190
10	COD($KMnO_4$,alkali)	mg O_2/l	<1	<1	2	1	3	<1	<1	<1	<1	<1	<1	<1	1	<1
11	Nitrite	mg NO_2/l	<0.01	<0.01	0.01	0.13	0.01	<0.01	0.02	0.01	0.01	0.02	<0.01	0.5	0.25	0.01
12	Nitrate	mg NO_3/l	5	4.5	0.4	5	5	0.4	5	4.9	5	4	4	9	5	5
13	Ammonium	mg NH_4/l														
14	Orthophosphate	mg PO_4/l														
15	Bicarbonate	mg HCO_3/l	226	232	275	232	220	262	177	275	214	275	214	305	250	275
16	Carbonate	mg CO_3/l	0.90	1.16	1.73	1.46	1.39	0.83	1.12	1.09	1.35	0.87	1.70	0.77	1.99	2.18
17	Chloride	mg Cl/l	10	8	9	9	8	10	6	9	7	6	7	15	10	10
18	Sulfate	mg SO_4/l	58.2													
19	Sodium	mg Na/l														
20	Potassium	mg K/l														
21	Calcium	mg Ca/l	27	24	23	22	25	38	24	23	70	24	22	23	25	27
22	Magnesium	mg Mg/l	70	55	46	47	45	37	53	58	30	46	59	41	62	41
23	Copper	mg Cu/l	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.1	0.2	0.2	0.2	0.2
24	Iron	mg Fe/l	0.1	0.14	0.1	0.1	0.25	0.1	0.1	0.13	0.91	0.2	0.21	0.3	0.3	0.1
25	Manganese	mg Mn/l	0.2	0.2	<0.1	<0.1	0.1	0.1	<0.1	0.1	0.7	<0.1	<0.1	0.1	0.2	0.1
26	Zinc	mg Zn/l														
27	Lead	mg Pb/l														
28	Chromium(VI)	mg Cr(VI)/l	0.03	0.03	0.03	0.01	0.02	0.03	0.03	0.03	0.02	0.02	0.03	0.01		0.04
29	Cadmium	mg Cd/l														
30	Arsenic	mg As/l														
31	Cyanide	mg CN/l	0.06	0.03	0.04	0.04	0.04	0.06	0.03	0.03	0.06	0.04	0.05	0.05	0.06	0.04
32	Mercury	mg Hg/l														
33	Fluoride	mg F/l	0.1	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<0.05
34	Silica	mg SiO_2/l														
35	Molybdenum	mg Mo/l														
36	Beryllium	mg Be/l														
37	Aluminum	mg Al/l														
38	Total Coliforms	No. in 1l	7	21	7	4		<3		11		11	21	11	4	7
39	General Bacteria	No. in 1 ml	143	250	500	250		300		200		300	250	430	700	143
40	Residual Chlorine	mg ClO/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
41	BOD	mg O_2/l														
42	SS	mg SS/l														
43	Acidity	mg $CaCO_3$/l	60	50	35	55	70	65	35	80	60	30	55	40	50	60
44	Alkalinity	mg $CaCO_3$/l	185	190	225	190	180	215	145	225	175	225	175	250	205	225

Annex VIII-1 (6/20) Analysis Results for Water Supply System (Phase 3) in 1997

Item No.	Item	Unit	24-Jul-97 DR-1 Reservoir1	24-Jul-97 DR-2 Reservoir2	24-Jul-97 DT-1 Hospital	24-Jul-97 DT-2 Government	24-Jul-97 DT-3 Hotel	24-Jul-97 DT-4 School	24-Jul-97 DT-5 Apartment	24-Jul-97 DW-1 Water wagon1	24-Jul-97 DW-2 Water wagon2	24-Jul-97 DG-1 Stock water 1	24-Jul-97 DG-2 Stock water 2	24-Jul-97 DG-3 Stock water 3	24-Jul-97 DG-4 Stock water 4	24-Jul-97 DG-5 Stock water5
1	pH		8.3	8.2	8.1	8.2	8.1	8.1	8.2	9.1	8.5	8.2	8.3	8.2	8.3	8.3
2	Temperature	℃	4.5	4	12	5	7	10	8.5	5	7	8	18	16.5	9.8	16
3	Odor	dilution factor	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	1	1	1
4	Taste	dilution factor	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	1	1	<1
5	Color	mg/l Pt scale	4	4	2	2	2	4	2	2	4	4	4	4	2	2
6	Turbidity	kaolin (JIS)	2	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	1	<1	<1
7	Conductivity	mS/m(at 25℃)	88	64	88	93	73	68	86	94	85	86	63	64	75	64
8	Hardness	mg$CaCO_3$/l	300	300	288	188	300	450	450	313	238	250	250	375	313	275
9	Dry Residue	mg/l	394	296	570	216		434	218	922	810	528	322	396	156	468
10	COD($KMnO_4$,alkali)	mg O_2/l	2	<1	2	2	1.5	2	1.5	2.2	2	2	<1	2	3.5	2.8
11	Nitrite	mg NO_2/l	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01
12	Nitrate	mg NO_3/l	7.4	8.8	7	7	8	9	8.2	9.2	4	8	8.2	9.4	7	9
13	Ammonium	mg NH_4/l	0.2	0.2				0.2	0.2		0.2					
14	Orthophosphate	mg PO_4/l														
15	Bicarbonate	mg HCO_3/l	244	250	250	244	244	244	275	366	268	256	256	256	275	244
16	Carbonate	mg CO_3/l	1.22	1.00	1.00	0.97	0.97	0.97	1.38	11.57	2.68	1.28	2.03	1.62	1.73	1.94
17	Chloride	mg Cl/l	8	8	8	9	8	13	13	10	8	8	8	7	6	7.5
18	Sulfate		60	65												
19	Sodium	mg Na/l														
20	Potassium	mg K/l														
21	Calcium	mg Ca/l	30	30	26	26	29	35	22	40	28	44	28	52	32	27
22	Magnesium	mg Mg/l	54	54	53	25	55	87	95	51	40	34	43	59	56	42
23	Copper	mg Cu/l	0.1	0.1	<0.1	0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
24	Iron	mg Fe/l	0.09	0.1	0.1	0.11	0.1	0.09	0.09	0.1	0.11	0.12	0.08	0.05	0.01	0.09
25	Manganese	mg Mn/l	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.15							
26	Zinc	mg Zn/l	0.48	0.27												
27	Lead*	mg Pb/l		0.05		0.04										
28	Chromium(VI)	mg Cr(VI)/l	0.04	0.03	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
	Chromium*	mg Cr/l		0.1		0.008										
29	Cadmium*	mg Cd/l		0.03		0.03										
30	Arsenic*	mg As/l		0.03		0.03										
31	Cyanide	mg CN/l	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.02
32	Mercury*	mg Hg/l		0.01		0.01										
33	Fluolide	mg F/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
34	Silica	mg SiO_2/l														
35	Molybdenum	mg Mo/l														
36	Beryllium	mg Be/l														
37	Aluminum	mg Al/l														
38	Total Coliforms	No. in 1l	39	9	3			4	4	14	11	4	7	460	15	43
39	General Bacteria	No. in 1 ml	1000	150	400			350	150	250	300	300	500	100	700	500
40	Residual Chlorine	mg Cl0/l	0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
41	BOD	mg O_2/l														
42	SS	mg SS/l														
43	Acidity	mg $CaCO_3$/l	35	35	38	28	43	63	65	30	35	35	50	65	80	30
44	Alkalinity	mg $CaCO_3$/l	200	205	205	200	200	200	225	300	220	210	210	210	225	200

* Colorimetry in Ulaanbaatar

Annex VIII-1 (7/20) Analysis Results for Water Supply System (Phase 4) in 1997

Item No.	Item	Unit	25-Jul-97 DR-1 Reservoir1	25-Jul-97 DR-2 Reservoir2	25-Jul-97 DT-1 Hospital	DT-2 Government	25-Jul-97 DT-3 Hotel	DT-4 School	25-Jul-97 DT-5 Apartment	DW-1 Water wagon1	DW-2 Water wagon2	25-Jul-97 DG-1 Stock water 1	25-Jul-97 DG-2 Stock water 2	25-Jul-97 DG-3 Stock water 3	25-Jul-97 DG-4 Stock water 4	25-Jul-97 DG-5 Stock water5
1	pH											9.9	9.4	11.6	15.3	16.5
2	Temperature	℃	5.2	5.2	16.4		7		5.7							
3	Odor	dilution factor														
4	Taste	dilution factor														
5	Color	mg/l Pt scale														
6	Turbidity	kaolin (JIS)										72.4	72.9	69.2	63.8	61.4
7	Conductivity	mS/m(at 25℃)	88.5	92.5	61		82.4		85.5							
8	Hardness	mg$CaCO_3$/l														
9	Dry Residue	mg/l														
10	COD($KMnO_4$,alkali)	mg O_2/l														
11	Nitrite	mg NO_2/l														
12	Nitrate	mg NO_3/l														
13	Ammonium	mg NH_4/l														
14	Orthophosphate	mg PO_4/l														
15	Bicarbonate	mg HCO_3/l														
16	Carbonate	mg CO_3/l														
17	Chloride	mg Cl/l														
18	Sulfate	mg SO_4/l														
19	Sodium	mg Na/l														
20	Potassium	mg K/l														
21	Calcium	mg Ca/l														
22	Magnesium	mg Mg/l														
23	Copper	mg Cu/l														
24	Iron	mg Fe/l														
25	Manganese	mg Mn/l														
26	Zinc	mg Zn/l														
27	Lead	mg Pb/l														
28	Chromium(VI)	mg Cr(VI)/l														
29	Cadmium	mg Cd/l														
30	Arsenic	mg As/l														
31	Cyanide	mg CN/l														
32	Mercury	mg Hg/l														
33	Fluolide	mg F/l														
34	Silica	mg SiO_2/l														
35	Molybdenum	mg Mo/l														
36	Beryllium	mg Be/l														
37	Aluminum	mg Al/l										3	4	7	21	4
38	Total Coliforms	No. in 1l	7	4	<3		3		3			102	240	533	345	486
39	General Bacteria	No. in 1 ml	220	102	42		30		22			<0.1	0.15	0.1	0.1	0.15
40	Residual Chlorine	mg ClO/l	0.7	0.1	<0.1		<0.1		0.1							
41	BOD	mg O_2/l														
42	SS	mg SS/l														
43	Acidity	mg $CaCO_3$/l														
44	Alkalinity	mg $CaCO_3$/l														

Annex VIII-1 (8/20) Analysis Results for Rivers (Phase 1) in 1997

Item No.	Item	Unit	26-Jun-97 R-1 Hadaasan	R-2 Mandaliin	26-Jun-97 R-3 Esuitiin	26-Jun-97 R-4 Hanginaagiin
1	pH		8.4		8.6	9.3
2	Temperature	℃	14		12.5	2
3	Odor	dilution factor				
4	Taste	dilution factor				
5	Color	mg/l Pt scale	20		10	
6	Turbidity	kaolin (JIS)	10		<1	10
7	Conductivity	mS/m(at 25℃)	1999		528	128
8	Hardness	mg$CaCO_3$/l	300		445	450
9	Dry Residue	mg/l	1054		127	
10	COD($KMnO_4$,alkali)	mg O_2/l	-		4	-
11	Nitrite	mg NO_2/l	0.01		0.01	<0.01
12	Nitrate	mg NO_3/l	0.2		0.3	0.2
13	Ammonium	mg NH_4/l				0.34
14	Orthophosphate	mg $P0_4$/l				
15	Bicarbonate	mg HCO_3/l	345		1098	
16	Carbonate	mg CO_3/l	3.45		13.82	
17	Chloride	mg Cl/l	1.6		18	9
18	Sulfate	mg SO_4/l				
19	Sodium	mg Na/l				
20	Potassium	mg K/l	9		10	7.5
21	Calcium	mg Ca/l	<1		20	27
22	Magnesium	mg Mg/l	72		95	92
23	Copper	mg Cu/l	0.18		0.14	0.1
24	Iron	mg Fe/l	0.19		0.06	0.05
25	Manganese	mg Mn/l	16		0.1	0.2
26	Zinc	mg Zn/l				
27	Lead	mg Pb/l				
28	Chromium(VI)	mg Cr(VI)/l	0.01		0.01	
29	Cadmium	mg Cd/l				
30	Arsenic	mg As/l				
31	Cyanide	mg CN/l	0.06		0.09	0.8
32	Mercury	mg Hg/l				
33	Fluoride	mg F/l	0.22		0.19	
34	Silica	mg SiO_2/l				
35	Molybdenum	mg Mo/l				
36	Beryllium	mg Be/l				
37	Aluminum	mg Al/l				
38	Total Coliforms	No. in 1l	960		>2380	
39	General Bacteria	No. in 1 ml				
40	Residual Chlorine	mg ClO/l				
41	BOD	mg O_2/l				
42	SS	mg SS/l				
43	Acidity	mg $CaCO_3$/l	40		750	
44	Alkalinity	mg $CaCO_3$/l	283		900	

Annex VIII-1 (9/20) Analysis Results for Rivers (Phase 2) in 1997

Item No.	Item	Unit	17-Jul-97 R-1 Hadaasan	R-2 Mandaliin	R-3 Esuitiin	17-Jul-97 R-4 Hanginaariin
1	pH		8.9			8.7
2	Temperature	℃	15			10
3	Odor	dilution factor				
4	Taste	dilution factor				
5	Color	mg/l Pt scale	20			5
6	Turbidity	kaolin (JIS)	5			1
7	Conductivity	mS/m(at 25℃)	1830			102
8	Hardness	mg$CaCO_3$/l	6875			410
9	Dry Residue	mg/l	4960			1016
10	COD($KMnO_4$,alkali)	mg O_2/l	–			–
11	Nitrite	mg NO_2/l	0.02			0.01
12	Nitrate	mg NO_3/l	0.5			5.6
13	Ammonium	mg NH_4/l				
14	Orthophosphate	mg $P0_4$/l				
15	Bicarbonate	mg HCO_3/l	329			403
16	Carbonate	mg CO_3/l	10.41			6.38
17	Chloride	mg Cl/l				15
18	Sulfate	mg SO_4/l				
19	Sodium	mg Na/l				
20	Potassium	mg K/l				
21	Calcium	mg Ca/l	0			22
22	Magnesium	mg Mg/l	1650			85
23	Copper	mg Cu/l	0.2			0.1
24	Iron	mg Fe/l	0.13			0.42
25	Manganese	mg Mn/l	19			0.2
26	Zinc	mg Zn/l				
27	Lead	mg Pb/l				
28	Chromium(VI)	mg Cr(VI)/l	0.03			0.01
29	Cadmium	mg Cd/l				
30	Arsenic	mg As/l				
31	Cyanide	mg CN/l	0.5			0.05
32	Mercury	mg Hg/l				
33	Fluoride	mg F/l	<0.05			0.05
34	Silica	mg SiO_3/l				
35	Molybdenum	mg Mo/l				
36	Beryllium	mg Be/l				
37	Aluminum	mg Al/l				
38	Total Coliforms	No. in 1l	2380			960
39	General Bacteria	No. in 1 ml				
40	Residual Chlorine	mg ClO/l				
41	BOD	mg O_2/l				
42	SS	mg SS/l				
43	Acidity	mg $CaCO_3$/l	95			160
44	Alkalinity	mg $CaCO_3$/l	270			330

Annex VIII-1 (10/20) Analysis Results for Rivers (Phase 3) in 1997

Item No.	Item	Unit	23-Jul-97 R-1 Hadaasan	R-2 Mandaliin	R-3 Esuitiin	23-Jul-97 R-4 Hanginaariin
1	pH		8.7			8.1
2	Temperature	℃	22			8.5
3	Odor	dilution factor	<1			1
4	Taste	dilution factor				
5	Color	mg/l Pt scale	5			6
6	Turbidity	kaolin (JIS)	<1			1
7	Conductivity	mS/m(at 25℃)	1746			141
8	Hardness	mg$CaCO_3$/l	8195			425
9	Dry Residue	mg/l	1724			1058
10	COD($KMnO_4$)	mg O_2/l	–			–
11	Nitrite	mg NO_2/l	<0.01			<0.01
12	Nitrate	mg NO_3/l	0.7			9.6
13	Ammonium	mg NH_4/l	0.4			0.23
14	Orthophosphate	mg PO_4/l				
15	Bicarbonate	mg HCO_3/l	238			458
16	Carbonate	mg CO_3/l	4.73			1.82
17	Chloride	mg Cl/l	1			15
18	Sulfate	mg SO_4/l				
19	Sodium	mg Na/l				
20	Potassium	mg K/l				
21	Calcium	mg Ca/l	296			58
22	Magnesium	mg Mg/l	1789			67
23	Copper	mg Cu/l	0.19			0.1
24	Iron	mg Fe/l	0.09			0.07
25	Manganese	mg Mn/l				
26	Zinc	mg Zn/l				
27	Lead	mg Pb/l				
28	Chromium(VI)	mg Cr(VI)/l	0.02			0.001
29	Cadmium	mg Cd/l				
30	Arsenic	mg As/l				
31	Cyanide	mg CN/l	0.8			0.01
32	Mercury	mg Hg/l				
33	Fluoride	mg F/l	0.05			0.04
34	Silica	mg SiO_2/l				
35	Molybdenum	mg Mo/l				
36	Beryllium	mg Be/l				
37	Aluminum	mg Al/l				
38	Total Coliforms	No. in 1l	2380			>2380
39	General Bacteria	No. in 1 ml				
40	Residual Chlorine	mg ClO/l				
41	BOD	mg O_2/l				
42	SS	mg SS/l				
43	Acidity	mg $CaCO_3$/l	80			78
44	Alkalinity	mg $CaCO_3$/l	195			375

Annex VIII-1 (11/19) Analysis Results for Sewerage System (Phase 1) in 1997

Item No.	Item	Unit	26-Jun-97 S-1	26-Jun-97 S-2	26-Jun-97 S-3
1	pH		8.4	8.3	8.9
2	Temperature	°C	5.5	9	15
3	Odor	dilution factor			
4	Taste	dilution factor			
5	Color	mg/l Pt scale	60	20	20
6	Turbidity	kaolin (JIS)	30	5	20
7	Conductivity	mS/m(at 25°C)	130	102	100
8	Hardness	mg$CaCO_3$/l	170	163	175
9	Dry Residue	mg/l	1486	4120	412
10	COD($K_2Cr_2O_7$)	mg O_2/l	161.4	112.2	138
11	Nitrite	mg NO_2/l	0.02	0.38	0.07
12	Nitrate	mg NO_3/l	0.07	2.6	0.08
13	Ammonium	mg NH_4/l			
14	Orthophosphate	mg $P0_4$/l			
15	Bicarbonate	mg HCO_3/l			
16	Carbonate	mg CO_3/l			
17	Chloride	mg Cl/l	10	8	6
18	Sulfate	mg SO_4/l			
19	Sodium	mg Na/l			
20	Potassium	mg K/l	10	10	10
21	Calcium	mg Ca/l	28	34	37
22	Magnesium	mg Mg/l	24	18.6	19.8
23	Copper	mg Cu/l	0.01	0.14	0.08
24	Iron	mg Fe/l	0.25	0.29	0.34
25	Manganese	mg Mn/l	0.55	0.2	0.1
26	Zinc	mg Zn/l			
27	Lead	mg Pb/l			
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.01	0.03
29	Cadmium	mg Cd/l			
30	Arsenic	mg As/l			
31	Cyanide	mg CN/l	0.08	0.07	0.09
32	Mercury	mg Hg/l			
33	Fluolide	mg F/l	0.2	0.16	0.18
34	Silica	mg SiO_3/l			
35	Molybdenum	mg Mo/l			
36	Beryllium	mg Be/l			
37	Aluminum	mg Al/l			
38	Total Coliforms	No. in 1l	100000	100000	10000
39	General Bacteria	No. in 1 ml	600000	200000	60000
40	Residual Chlorine	mg ClO/l			
41	BOD	mg O_2/l	20	21.4	20.5
42	SS	mg SS/l	708	572	424
43	Acidity	mg $CaCO_3$/l	140	170	210
44	Alkalinity	mg $CaCO_3$/l	270	355	330

nnex VIII-1 (12/20) Analysis Results for Sewerage System (Phase 2) in 199

Item No.	Item	Unit	18-Jul-97 S-1	18-Jul-97 S-2	18-Jul-97 S-3
1	pH		8.4	8.1	8.7
2	Temperature	℃	7	11	12.5
3	Odor	dilution factor			
4	Taste	dilution factor			
5	Color	mg/l Pt scale	60	20	40
6	Turbidity	kaolin (JIS)	10	10	10
7	Conductivity	mS/m(at 25℃)	109	80	84
8	Hardness	mg$CaCO_3$/l	270	270	270
9	Dry Residue	mg/l			
10	COD($K_2Cr_2O_7$)	mg O_2/l	102.7	113.8	139.9
11	Nitrite	mg NO_2/l	0.01	0.35	0.3
12	Nitrate	mg NO_3/l	0.2	3.8	2.4
13	Ammonium	mg NH_4/l			
14	Orthophosphate	mg $P0_4$/l			
15	Bicarbonate	mg HCO_3/l			
16	Carbonate	mg CO_3/l			
17	Chloride	mg Cl/l	15	10	10
18	Sulfate	mg SO_4/l			
19	Sodium	mg Na/l			
20	Potassium	mg K/l			
21	Calcium	mg Ca/l	33	27	30
22	Magnesium	mg Mg/l	45	49	47
23	Copper	mg Cu/l	0.5	0.1	<0.1
24	Iron	mg Fe/l	0.36	0.25	0.26
25	Manganese	mg Mn/l	0.2	<0.05	<0.05
26	Zinc	mg Zn/l			
27	Lead	mg Pb/l			
28	Chromium(VI)	mg Cr(VI)/l	0.03	<0.01	<0.01
29	Cadmium	mg Cd/l			
30	Arsenic	mg As/l			
31	Cyanide	mg CN/l	0.28	0.07	0.09
32	Mercury	mg Hg/l			
33	Fluolide	mg F/l			
34	Silica	mg SiO_2/l			
35	Molybdenum	mg Mo/l			
36	Beryllium	mg Be/l			
37	Aluminum	mg Al/l			
38	Total Coliforms	No. in 1l	1000000	1000000	100000
39	General Bacteria	No. in 1 ml			
40	Residual Chlorine	mg ClO/l			
41	BOD	mg O_2/l	20.5	22.8	22.3
42	SS	mg SS/l	247	283	255
43	Acidity	mg $CaCO_3$/l	180	75	105
44	Alkalinity	mg $CaCO_3$/l	400	250	325

Annex VIII-1 (13/20) Analysis Results for Sewerage System (Phase 3) in 1997

Item No.	Item	Unit	24-Jul-97 S-1	24-Jul-97 S-2	24-Jul-97 S-3
1	pH		8.6	9	9.3
2	Temperature	°C	7	15	16
3	Odor	dilution factor	16	4	4
4	Taste	dilution factor			
5	Color	mg/l Pt scale	50	100	140
6	Turbidity	kaolin (JIS)	40	80	80
7	Conductivity	mS/m(at 25°C)	155	114	108
8	Hardness	mg$CaCO_3$/l	475	350	425
9	Dry Residue	mg/l	2800	3200	2000
10	COD($K_2Cr_2O_7$)	mg O_2/l	163	115	144
11	Nitrite	mg NO_2/l	0.01	0.3	0.28
12	Nitrate	mg NO_3/l	<0.1	2.8	2.1
13	Ammonium	mg NH_4/l	-	-	-
14	Orthophosphate	mg $P0_4$/l	1.55	1.8	1.7
15	Bicarbonate	mg HCO_3/l			
16	Carbonate	mg CO_3/l			
17	Chloride	mg Cl/l	12	10	9
18	Sulfate	mg SO_4/l			
19	Sodium	mg Na/l			
20	Potassium	mg K/l			
21	Calcium	mg Ca/l	48	37	40
22	Magnesium	mg Mg/l	85	62	78
23	Copper	mg Cu/l	0.21	0.1	0.11
24	Iron	mg Fe/l	0.15	0.21	0.17
25	Manganese	mg Mn/l			
26	Zinc	mg Zn/l			
27	Lead	mg Pb/l			
28	Chromium(VI)	mg Cr(VI)/l	0.03	0.03	0.01
29	Cadmium	mg Cd/l			
30	Arsenic	mg As/l			
31	Cyanide	mg CN/l	0.06	0.05	0.05
32	Mercury	mg Hg/l			
33	Fluolide	mg F/l	0.04	0.03	0.03
34	Silica	mg SiO_2/l			
35	Molybdenum	mg Mo/l			
36	Beryllium	mg Be/l			
37	Aluminum	mg Al/l			
38	Total Coliforms	No. in 1l	1000000	1000000	100000
39	General Bacteria	No. in 1 ml			
40	Residual Chlorine	mg ClO/l			
41	BOD	mg O_2/l	21	23.5	2.5
42	SS	mg SS/l	211	444	171
43	Acidity	mg $CaCO_3$/l			
44	Alkalinity	mg $CaCO_3$/l			

Annex VIII-1 (14/20) Analysis Results for Sewerage System (Phase 4) in 1997

Item No.	28-Jul-97				
	Item	Unit	S-1	S-2	S-3
10	COD($KMnO_4$ Alkali)	mg O_2/l	80	60	25
13	Ammonium	mg NH_4/l	100	45	18
Item No.	30-Jul-97				
	Item	Unit	S-1	S-2	S-3
10	COD($KMnO_4$ Alkali)	mg O_2/l	27	17	21
13	Ammonium	mg NH_4/l	70	45	40

Annex VIII-1 (15/20) Phase 3 (analyzed in Japan:the test method for tap water) in 1997

Item	Unit	DR-1	DG-1	SW-6
Pb	mg/l	<0.005	<0.005	<0.005
Cd	mg/l	<0.001	<0.001	<0.001
Cr(VI)	mg/l	<0.04	<0.04	<0.04
As	mg/l	<0.005	<0.005	<0.005
SO_4	mg/l	240	98	70
Mg	mg/l	37	35	29
Hg	mg/l	<0.0005	<0.0005	<0.0005

Annex VIII-1 (16/20) Reanalyses of Heavy Metals in Well Water of Altai City in 1998

Item	Laboratory	Unit	Mongolian Standard	Samples (Sampling:May 30th 1998)	
				SW-6 Kharzat well	SW-8 school well
Lead	#	mg/l	0.03	0.0006	0.0004
	##	mg/l		<0.005	-
Cadmium	#	mg/l	0.01	0.0024	not detected
	##	mg/l		<0.001	-
Arsenic	###	mg/l	0.05	0.009	0.025
	##	mg/l		<0.005	-
Total Chromium	##	mg/l	0.05	<0.004	-

#: Central Laboratory of Environmental Monitoring (Atomic Absorption Spectroscopy (Graphite Furnace))
##: Shizukan Kensa Center (Japan: Analysis Method of Drinking Water in Japan)
###: Institute Chemistry and Chemical Technology of Mongolian Academy of Science (Colorimetry)

Annex VIII-1 (17/20) Reanalyses of Heavy Metals in Drinking Water of Altai City in 1998

Item	Laboratory	Unit	Mongolian Standard	Samples (Sampling:May 30th 1998)				
				DT-1 hospital	DT-2 government house	DT-3 apartment near hotel	DT-4 high school	DT-5 apartment (Ms. Tunga)
Lead	#	mg/l	0.03	0.0001	0.0004	not detected	not detected	not detected
	##	mg/l		<0.005	-	<0.005	-	-
Cadmium	#	mg/l	0.01	not detected	not detected	not detected	not detected	not detected
	##	mg/l		<0.001	-	<0.001	-	-
Arsenic	###	mg/l	0.05	0.03	0.01	not detected	0.01	0.02
	##	mg/l		<0.005	-	<0.005	-	-
Total Chromium	##	mg/l	0.05	<0.004	-	<0.004	-	-

Item	Laboratory	Unit	Mongolian Standard	Samples (Sampling:May 30th 1998)			
				DR-1 reservoir	DR-2 reservoir	DW-1 water wagon	DW-2 water wagon
Lead	#	mg/l	0.03	0.0002	not detected	0.0001	not detected
	##	mg/l		<0.005	-	-	<0.005
Cadmium	#	mg/l	0.01	not detected	not detected	not detected	not detected
	##	mg/l		<0.001	-	-	<0.001
Arsenic	###	mg/l	0.05	0.015	0.02	0.03	0.02
	##	mg/l		<0.005	-	-	<0.005
Total Chromium	##	mg/l	0.05	<0.004	-	-	<0.004

#: Central Laboratory of Environmental Monitoring (Atomic Absorption Spectroscopy (Graphite Furnace))
##: Shizukan Kensa Center (Japan: Analysis Methods of Drinking Water in Japan)
###: Institute Chemistry and Chemical Technology of Mongolian Academy of Science (Colorimetry)

nnex VIII-1 (18/20) Water Quality Analysis for New Test Well of Altai City (Health Care Center of Gobi-Altai) in 1998

	Parameter	Unit	A1	A2	A3	A4	B1	B2	B3	B4	B5	B6
	Sampling date		8th Sep	6th Aug	13th Oct.	5th Oct.	17th Sep	15th Aug.	6th July	2nd July	19th July	24th Sep.
1	pH		7.7	7.2	7.2	6.5	8.1	7.8	7.56	7.8	8	8.36
2	Temparature	Deg. C	4.2	9.1	2.2	1.8	4.2	7.2	7.8	4	3.5	2.2
3	Odor		1	4	1	1	1	1	2	2	1	1
4	Taste		2	2	1	1	2	2	2	2	1	1
5	Colour	Pt-unit	20	50	2	2	2	2	50	50	2	1.5
6	Turbidity	NTU	0.5	1.5	1	0.5	0.5	1.5	1	1	1.5	0.5
7	Conductivity	mS/m	213	470	164.3	350	159.2	214	156.7	(58)	44.3	59.9
8	Dry Residue	mg/l	2000	7600	1200	2400	1400	2100	2800	2400	400	800
9	COD	mg/l	-	-	-	-	-	-	-	-	-	-
10	Nitrite Ion	mg/l	0.03	0.003	0.006	0.008	0.05	0.007	0.003	0.005	0.002	0.005
11	Nitrate Ion	mg/l	0.3	10	8	0.1	0.8	0.1	1.5	6	4	0.1
12	Ammonium Ion	mg/l	1.5	0.7	0.6	0.3	1	0.7	0.2	0.15	0.3	1.2
13	Orthphosphate	mg/l	0.05	0	0.3	0.06	0.6	0.75	0.2	0.05	0.2	0.25
14	Cyanide	mg/l	0.008	0.01	0.01	0.02	nd	0.15	0.04	1	nd	nd
15	Biocarbonate Ion	mg/l	134	420	232	265	135	200	135	160	147	200
16	Carbonate Ion	mg/l	0.3	0.3	0.2	0.0	0.9	0.6	0.2	0.5	0.7	0.2
17	Hardness	mg $CaCO_3$/l	1000	3725	362.5	1875	875	845	1950	900	225	257.5
18	Chloride Ion	mg/l	15	8	8	7	16	15	3	17	11	10
19	Sulfate Ion	mg/l	400	600	360	650	300	600	400	360	80	50
20	Sodium Ion	mg/l	-	-	-	-	-	-	-	-	-	-
21	Potassium Ion	mg/l	6	2.8	6.5	7	4.5	6.8	7	6	1.7	4
22	Calcium Ion	mg/l	20	272	24	80	60	40	385	100	12	6
23	Magnesium Ion	mg/l	228	730	73	402	174	179	237	156	47	58
24	Copper	mg/l	0.02	0.01	0.01	0.01	0.1	0.2	0.002	0.001	0.1	0
25	Iron	mg/l	0.3	5	0.1	0.25	0.05	0.2	0.03	0.15	0.05	0.2
26	Manganese	mg/l	0.3	8.5	0.4	0.01	0.1	0.2	0.8	0.2	0.2	0.6
27	Zinc	mg/l	-	-	-	-	-	-	-	-	-	-
28	Lead	mg/l	-	-	-	-	-	-	-	-	-	-
29	Chromium(VI)	mg/l	0.04	0.03	0.02	0.04	0.03	0.01	0.04	0.004	0.01	0.03
30	Cadmium	mg/l	-	-	-	-	-	-	-	-	-	-
31	Arsenic	mg/l	-	-	-	-	-	-	-	-	-	-
32	Mercury	mg/l	-	-	-	-	-	-	-	-	-	-
33	Fluoride	mg/l	1.7	1.7	0.8	1.7	0.7	1.8	0.75	1.8	1.8	0.8
34	Silica	mg/l	2.9	3	2.2	2.5	2	3	2.9	3	2.7	0.5
35	Molybdenum	mg/l	-	-	-	-	-	-	0.01	-	-	-
36	Beryllium	mg/l	-	-	-	-	-	-	-	-	-	-
37	Aluminum	mg/l	nd	0.03	0.01	0.01	0.02	nd	0.01	nd	0.25	nd
38	Total Colliforms	No/l	92	23	27	10	27	27	960	90	21	10
39	General Bacteria		-	-	-	-	-	-	-	-	-	-
40	Residual Chlorine	mg/l	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
41	BOD	mg/l	-	-	-	-	-	-	-	-	-	-
42	SS	mg/l	-	-	-	-	-	-	-	-	-	-
43	Acidity	mg $CaCO_3$/l	275	250	225	240	175	155	250	27	210	225
44	Alkalinity	mg $CaCO_3$/l	100	325	175	200	100	150	100	120	110	150

Annex VIII-1 (19/20) Analyses of Some elements in New Test Well Water of Altai City in 1998

Item	Laboratory	Unit	New Test Well									
			A1	A2	A3	A4	B1	B2	B3	B4	B5	B6
Chloride	#	mg/l	200	2200	240	475	235	1000	1750	1500	110	95
Sulfate	#	mg/l	316	2810	336	331	303	1150	3060	910	42	59
Fluoride	#	mg/l	0.79	-	1.29	1.52	0.8	-	-	-	-	0.37
Lead	##	mg/l	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Lead	###	mg/l	-	-	-	-	-	-	-	-	<0.005	<0.005
Cadmium	##	mg/l	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	###	mg/l	-	-	-	-	-	-	-	-	<0.001	<0.001
Chromium	###	mg/l	-	-	-	-	-	-	-	-	<0.04	<0.04
Arsenic	####	mg/l	0.012	0.035	0.01	0.012	0.02	0.015	0.01	0.01	0.015	0.021
Arsenic	###	mg/l	-	-	-	-	-	-	-	-	<0.005	<0.005
Molybdenum	####	mg/l	0.035	0.024	0.03	0.038	0.029	0.03	0.02	0.04	0.03	0.02
Beryllium	####	mg/l	<0.005	<0.003	<0.003	<0.004	<0.005	<0.004	<0.003	<0.003	<0.003	<0.004
Sodium	####	mg/l	68.9	69	83.1	75.3	69.1	71.2	68.3	57.3	59.5	55.9
Potassium	####	mg/l	5.3	6.5	5.3	6.5	5.6	5.4	7.3	6.6	3	2.8

#: Chemical Laboratory of drinking water and food products
##: Central Laboratory of Geology
###: Shizukan Kensa Center (Japan: Analysis Methods of Drinking Water in Japan)
####: Institute Chemistry & Chemical Technology of Mongolian Academy of Science
nd: not detected

Annex VIII-1 (20/20) Elements Analyses for New Test Well Water of Altai City in 1998

Element	Unit	New Test Well									
		A1	A2	A3	A4	B1	B2	B3	B4	B5	B6
S	mg/l	41	275	32	4	22	136	302	134	15	nd
Cl	mg/l	3.6	132	nd	nd	nd	9	155	24	2	nd
K	mg/l	4.2	7.3	6.5	2.4	3	7	8	7	4	2
Ca	mg/l	43	427	44	15	31	70	291	115	18	6
Fe	mg/l	3.1	8.3	1.4	1.1	1.7	1.7	9	1.8	2	2
Mn	mg/l	nd	0.36	nd	nd	nd	nd	0.51	nd	nd	nd
Ni	mg/l	1.3	0.17	0.13	0.08	nd	0.08	0.15	nd	nd	nd
Cu	mg/l	0.12	0.16	0.23	0.11	nd	0.15	nd	0.11	0.09	0.13
Zn	mg/l	0.37	0.59	0.32	0.73	0.18	0.62	1.5	0.32	0.13	nd
Br	mg/l	0.3	2	nd	0.2	nd	0.6	2.1	0.9	0.1	0.3
Sr	mg/l	0.7	11.1	0.6	nd	1	2.1	11.8	5.9	0.5	nd

Using ED-TRXRF Technique: Nuclear Physics Research Center

nd: not detected

Annex VIII-2 (1/5) Element Analysis Result with Energy Dispersive Total X-ray Fluorescence Techique for Wells in 1997

(a) Phase 1

Element	Unit	Concentration							
		22-Jun-93	22-Jun-93	22-Jun-93	22-Jun-93	25-Jun-93	22-Jun-93	22-Jun-93	22-Jun-93
		SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
S	mg S/l	1260	353	571	(7350)	271	54	706	130
Cl	mg Cl/l	28	36	100	(2230)	71	16	214	35
K	mg K/l	16	5	7.7	(80)	3.1	2.5	31	17
Ca	mg Ca/l	135	52	68	(923)	18	24	34	38
Cr	mg Cr/l	0.13	0.2	0.11	(1.7)	0.32	0.05	0.12	0.07
Mn	mg Mn/l	0.07	<0.1	<0.08	(<0.9)	0.6	0.19	0.14	0.73
Fe	mg Fe/l	1	1.46	0.92	(25.7)	10.9	2.55	1.65	1.74
Ni	mg Ni/l	<0.05	0.08	<0.07	(0.5)	<0.07	0.02	0.12	0.08
Cu	mg Cu/l	0.12	0.13	0.07	(1.63)	0.11	0.06	0.08	0.24
Zn	mg Zn/l	0.47	0.16	0.37	(5.2)	0.1	0.43	0.48	1.15
As	mg As/l	<0.01	<0.1	<0.02	<0.015	<0.04	<0.045	<0.1	<0.09
Se	mg Se/l	<0.04	<0.06	<0.06	(<0.26)	<0.065	<0.01	<0.055	<0.015
Br	mg Br/l	0.42	0.08	0.31	(2.7)	0.14	0.05	0.56	0.12
Sr	mg Sr/l	4.17	1.19	6.17	(27.5)	0.51	0.59	0.43	0.53
Cd	mg Cd/l								
Hg	mg Hg/l	<0.09	0.2	0.13	0.1	0.07	0.16	<0.18	<0.17
Pb	mg Pb/l	0.04	<0.12	0.23	0.16	0.09	0.15	<0.18	0.12

(b) Phase 2

Element	Unit	Concentration							
		15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93
		SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
S	mg S/l	1290	289	684	765	257	65	544	79
Cl	mg Cl/l	14	<3	58	139	18	6	57	22
K	mg K/l	13.2	3.7	8.6	12.2	5.1	5	19.4	6.7
Ca	mg Ca/l	148	45	69	87	18	24	22	33
Cr	mg Cr/l	0.12	0.13	0.11	0.08	<0.08	<0.05	<0.05	<0.07
Mn	mg Mn/l	0.13	<0.04	<0.04	<0.05	0.54	0.43	<0.04	0.8
Fe	mg Fe/l	1.08	0.58	0.48	1.22	7.5	4.9	0.6	2.27
Ni	mg Ni/l	<0.04	<0.04	0.04	0.07	<0.04	0.06	<0.02	<0.03
Cu	mg Cu/l	<0.04	0.05	0.05	<0.04	<0.04	0.15	0.05	<0.02
Zn	mg Zn/l	0.48	0.23	0.14	0.32	0.06	0.33	0.24	0.7
As	mg As/l	<0.05	<0.07	<0.04	<0.07	<0.08	<0.04	<0.02	<0.03
Se	mg Se/l	<0.05	<0.07	<0.03	<0.06	<0.05	<0.02	<0.02	<0.03
Br	mg Br/l	0.37	0.17	0.69	0.7	0.72	0.21	0.8	0.16
Sr	mg Sr/l	4.1	1.1	5.5	3	0.4	0.5	0.5	0.6
Cd	mg Cd/l	<1.6	<1.2	<0.7	<1.3	<1.2	<0.7	<1.6	<1.3
Hg	mg Hg/l	<0.11	0.11	0.11	0.12	<0.09	0.08	0.12	0.09
Pb	mg Pb/l	0.13	0.08	0.18	0.26	0.21	2.11	<0.1	<0.08

(c) Phase 3

Element	Unit	Concentration							
		22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
		SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
S	mg S/l	1530	401	704	707	390	151	758	107
Cl	mg Cl/l	25	10	138	140	25	19	236	17
K	mg K/l	15	6	8.6	11.1	8.6	3.2	21.4	7
Ca	mg Ca/l	159	56	70	83	23	32	29	36
Cr	mg Cr/l	0.15	0.2	0.17	0.13	0.27	0.17	<0.06	0.09
Mn	mg Mn/l	<0.1	<0.08	<0.08	0.08	0.61	0.25	0.06	0.84
Fe	mg Fe/l	0.59	0.75	0.95	0.81	7.28	2.5	0.62	1.72
Ni	mg Ni/l	<0.07	<0.06	<0.06	<0.05	<0.05	0.07	0.05	<0.04
Cu	mg Cu/l	0.06	<0.07	<0.06	<0.05	<0.07	<0.03	<0.07	0.04
Zn	mg Zn/l	0.21	0.58	0.22	0.9	0.28	0.6	0.23	1.25
As	mg As/l	<0.1	<0.09	<0.09	<0.09	<0.13	<0.04	<0.1	<0.06
Se	mg Se/l	<0.08	<0.06	<0.06	<0.06	<0.1	<0.03	<0.05	<0.04
Br	mg Br/l	0.48	0.48	0.64	0.68	1.51	0.45	1.81	0.42
Sr	mg Sr/l	3.68	0.92	5.27	2.8	0.44	0.89	0.57	0.69
Cd	mg Cd/l	<1.9	<2	<1.7	<1.5	<2.2	<1.0	<1.7	<1.2
Hg	mg Hg/l	<0.16	<0.13	<0.14	0.14	0.29	0.15	0.17	<0.08
Pb	mg Pb/l	0.12	0.14	<0.12	<0.11	0.28	<0.06	<0.11	<0.07

Annex VIII-2 (2/5) Element Analysis Result with Energy Dispersive Total X-ray Fluorescence Techique for Water Supply System in 1997

(a) Phase 1

Element	Unit	Concentration													
		24-Jun-93	25-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	25-Jun-93	25-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93
		DR-1	DR-2	DT-1	DT-2	DT-3	DT-4	DT-5	DW-1	DW-2	DG-1	DG-2	DG-3	DG-4	DG-5
S	mg S/l	125	109	332	91				86		125	107	120	70	84
Cl	mg Cl/l	122	73	330	8				2		111	105	110	40	99
K	mg K/l	4	4	18	9.5				5.9		4	4.2	3.5	3.1	4.2
Ca	mg Ca/l	27	31	38	29				26		27	12	30	28	35
Cr	mg Cr/l	0.15	0.2	0.21	0.03				0.05		0.1	0.11	0.07	0.09	0.32
Mn	mg Mn/l	<0.04	<0.1	<0.07	0.03				<0.02		<0.05	0.06	<0.04	<0.04	0.04
Fe	mg Fe/l	0.52	0.75	1.15	0.6				0.58		0.42	0.35	0.42	0.44	0.59
Ni	mg Ni/l	<0.06	0.05	<0.09	0.05				0.03		<0.05	0.03	<0.03	<0.04	0.03
Cu	mg Cu/l	0.04	<0.06	0.2	0.4				0.16		<0.05	<0.03	0.05	0.06	0.09
Zn	mg Zn/l	0.11	0.17	0.28	1.28				0.43		0.18	0.06	0.12	0.26	0.26
As	mg As/l	<0.04	<0.08	<0.06	<0.03				<0.04		<0.07	<0.03	<0.05	<0.05	<0.03
Se	mg Se/l	<0.03	<0.06	<0.05	<0.02				<0.04		<0.05	<0.02	<0.03	<0.05	<0.03
Br	mg Br/l	0.12	0.14	0.34	0.09				0.11		0.3	0.12	0.15	0.12	0.28
Sr	mg Sr/l	0.55	0.59	0.58	0.52				0.58		0.58	0.19	0.58	0.59	0.59
Cd	mg Cd/l														
Hg	mg Hg/l	0.09	<0.16	<0.1	0.07				0.07		<0.11	0.05	0.05	<0.11	0.07
Pb	mg Pb/l	0.08	<0.15	0.15	0.06				0.09		<0.09	0.08	0.06	<0.07	0.05

(b) Phase 2

Element	Unit	Concentration													
		16-Jul-93	16-Jul-93	15-Jul-93	15-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93
		DR-1	DR-2	DT-1	DT-2	DT-3	DT-4	DT-5	DW-1	DW-2	DG-1	DG-2	DG-3	DG-4	DG-5
S	mg S/l	124	113	72	101	101	104	74	114	106	122	108	91	107	80
Cl	mg Cl/l	89	95	48	86	89	84	23	121	86	97	90	43	91	61
K	mg K/l	4.2	3.4	2.2	2.9	3.7	3.3	3.1	3.7	7.2	3.9	3.4	2.5	2.9	6.7
Ca	mg Ca/l	30	30	23	21	28	29	26	30	26	30	28	14	24	22
Cr	mg Cr/l	0.11	0.06	0.09	0.17	0.07	0.08	0.12	0.27	0.09	0.07	<0.06	<0.08	0.11	<0.1
Mn	mg Mn/l	<0.06	<0.04	<0.06	<0.05	<0.04	<0.02	<0.06	<0.02	<0.02	<0.03	<0.04	<0.05	<0.02	<0.04
Fe	mg Fe/l	0.4	0.42	0.7	0.54	0.4	0.62	0.37	1.06	0.43	0.56	0.34	0.47	0.54	0.34
Ni	mg Ni/l	0.03	<0.03	0.04	0.03	<0.03	<0.03	<0.03	<0.02	<0.04	<0.02	<0.04	<0.03	<0.03	
Cu	mg Cu/l	0.05	0.04	0.06	0.12	<0.04	0.05		0.1	<0.04	0.07	<0.03	0.04	0.05	<0.05
Zn	mg Zn/l	0.11	0.14	0.22	0.41	0.43	0.21	0.18	0.3	0.21	0.17	0.07	0.13	0.41	0.07
As	mg As/l	<0.02	0.05	<0.03	0.03	<0.04	<0.03		<0.02	<0.09	<0.03	<0.05	<0.03	<0.03	<0.05
Se	mg Se/l	<0.02	<0.03	<0.02	<0.02	<0.03	<0.02		<0.02	<0.07	<0.02	<0.04	<0.02	<0.02	<0.04
Br	mg Br/l	0.14	0.23	0.08	0.1	0.3	0.1	0.11	0.11	0.12	0.13	0.12		0.07	0.07
Sr	mg Sr/l	0.54	0.58	0.52	0.53	0.62	0.42	0.54	0.6	0.53	0.58	0.54	0.27	0.45	0.42
Cd	mg Cd/l	<1.1	<1.2	<0.8	<1.2	<0.8	<1.0	<1.7	<1.0	<0.6	<1.1	<0.9	<1.5	<0.8	<1.2
Hg	mg Hg/l	<0.08	<0.08	0.17	0.06	<0.07	0.13	<0.13	0.11	<0.06	0.05	<0.06	0.14	<0.03	<0.07
Pb	mg Pb/l	<0.07	<0.08	0.12	<0.03	0.27	0.09	<0.1	0.08	<0.06	0.07	<0.06	<0.07	<0.03	<0.06

Annex VIII-2 (3/5) Element Analysis Result with Energy Dispersive Total X-ray Fluorescence Techique for Water Supply System in 1997

(c) Phase 3

		Concentration													
		23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93
Element	Unit	DR-1	DR-2	DT-1	DT-2	DT-3	DT-4	DT-5	DW-1	DW-2	DG-1	DG-2	DG-3	DG-4	DG-5
S	mg S/l	91	98	86	87	100	96	97	94	103	95	90	109	90	118
Cl	mg Cl/l	79	39	59	98	103	38	90	66	33	65	14	105	62	83
K	mg K/l	4	3.5	2.8	3.9	3.2	3.2	3.4	3		4	3.4	3.9	2.7	3.9
Ca	mg Ca/l	30	30	26	29	30	28	29	25	28	33	32	30	28	31
Cr	mg Cr/l	0.08	<0.08	0.14	0.12	0.09	0.16	0.07	0.07	0.13	0.16	0.09	<0.07	0.09	0.07
Mn	mg Mn/l	<0.03	<0.05	<0.02	<0.04	<0.04	0.04	<0.06	<0.04		<0.06	<0.04	<0.05	<0.06	<0.02
Fe	mg Fe/l	0.28	0.64	0.59	0.74	0.38	0.58	0.36	0.34	0.59	0.55	0.51	0.53	0.32	0.57
Ni	mg Ni/l	0.05	<0.05	<0.03	<0.04	<0.04	<0.05	<0.03	<0.02	<0.05	<0.05	<0.04	<0.05	<0.03	<0.02
Cu	mg Cu/l	0.14	0.13	0.06	0.05	0.05	0.09	<0.03	<0.04	<0.06	0.08	0.05	0.05	0.03	0.31
Zn	mg Zn/l	0.48	0.27	0.21	0.2	0.29	0.7	0.1	0.25	0.11	0.35	0.26	0.57	0.23	0.14
As	mg As/l	<0.06	<0.08	<0.04	<0.03	<0.05	<0.06	<0.03	<0.03	<0.06	<0.09	<0.08	<0.06	<0.05	<0.03
Se	mg Se/l	<0.03	<0.04	<0.03	<0.03	<0.03	<0.04	<0.02	<0.02	<0.05	<0.07	<0.05	<0.04	<0.04	<0.02
Br	mg Br/l	0.15	0.18	0.14	0.14	0.14	0.17	0.17	0.25		0.22	0.14	0.13	0.12	0.18
Sr	mg Sr/l	0.61	0.53	0.55	0.55	0.63	0.56	0.51	0.6	0.64	0.61	0.63	0.5	0.58	0.63
Cd	mg Cd/l	<0.6	<0.6	<0.3	<0.7	<1.2	<0.8	<0.7	<1.1	<1.8	<1	<1.4	<1.2	<1.2	<0.7
Hg	mg Hg/l	0.08	0.14	0.1	<0.06	<0.08	0.13	0.12	0.06	<0.12	0.18	0.2	0.1	<0.08	0.07
Pb	mg Pb/l	0.15	<0.09	0.14	<0.05	<0.08	<0.08	<0.05	0.09	<0.18	0.18	0.1	0.07	<0.06	<0.04

Annex VIII-2 (4/5) Element Analysis Result with Energy Dispersive Total X-ray Fluorescence Techique for Rivers and Sewerage System in 199

(a) Phase 1

Element	Unit	Concentration 25-Jun-93 R-1	R-2	R-3 25-Jun-93	R-4 25-Jun-93	Concentration S-1 25-Jun-93	S-2 25-Jun-93	S-3 25-Jun-93
S	mg S/l	10700		2220	412	191	245	186
Cl	mg Cl/l	10100		1120	303	261	228	212
K	mg K/l	29		20	17	18	20	20
Ca	mg Ca/l	548		58	48	40	43	43
Cr	mg Cr/l	0.33		0.14	0.18	0.14	0.12	0.13
Mn	mg Mn/l	<0.31		<0.08	0.1	0.08	0.09	0.09
Fe	mg Fe/l	2.45		0.65	0.7	0.7	0.53	0.58
Ni	mg Ni/l	<0.14		<0.07	<0.05	<0.03	<0.04	<0.04
Cu	mg Cu/l	<0.15		<0.09	0.06	<0.05	0.05	0.04
Zn	mg Zn/l	<0.23		0.12	0.15	0.13	0.14	0.17
As	mg As/l	<0.4		<0.15	<0.05	<0.07	<0.05	<0.04
Se	mg Se/l	<0.3		<0.07	<0.04	<0.04	<0.03	<0.03
Br	mg Br/l	5.85		1.41	0.53	0.3	0.12	0.15
Sr	mg Sr/l	27.8		2.71	1.25	0.83	0.82	0.94
Cd	mg Cd/l	<9		<2	<1.6	<1.9	<1	<1
Hg	mg Hg/l	0.5		<0.16	0.12	0.15	0.13	0.1
Pb	mg Pb/l	<0.3		<0.18	<0.08	<0.05	<0.09	<0.07

(b) Phase 2

Element	Unit	Concentration 16-Jul-93 R-1	R-2	R-3	R-4 16-Jul-93	Concentration S-1 17-Jul-93	S-2 17-Jul-93	S-3 17-Jul-93
S	mg S/l	5730			316	231	184	180
Cl	mg Cl/l	5420			160	265	160	173
K	mg K/l	17			7.3	16	8.1	7.6
Ca	mg Ca/l	312			49	41	33	30
Cr	mg Cr/l	<0.27			<0.06	0.11	0.1	0.06
Mn	mg Mn/l	<0.17			<0.05	<0.07	0.07	<0.03
Fe	mg Fe/l	0.47			0.29	0.7	0.79	0.71
Ni	mg Ni/l	<0.11			<0.03	<0.04	<0.03	<0.04
Cu	mg Cu/l	<0.13			0.05	0.11	0.05	0.04
Zn	mg Zn/l	0.43			0.17	0.19	0.1	0.12
As	mg As/l	0.23			<0.04	<0.04	<0.03	0.03
Se	mg Se/l	<0.2			<0.03	<0.03	<0.03	<0.02
Br	mg Br/l	3.3			0.21	0.12	0.12	0.07
Sr	mg Sr/l	19.2			0.93	0.7	0.52	0.53
Cd	mg Cd/l	<4			<1.5	<2.2	<0.4	1
Hg	mg Hg/l	0.37			<0.1	<0.14	0.14	0.16
Pb	mg Pb/l	<0.6			0.11	<0.09	<0.05	<0.05

(c) Phase 3

Element	Unit	Concentration 22-Jul-93 R-1	R-2	R-3	R-4 22-Jul-93	Concentration S-1 23-Jul-93	S-2 23-Jul-93	S-3 23-Jul-93
S	mg S/l	5320			286	206	215	195
Cl	mg Cl/l	4770			152	195	197	195
K	mg K/l	17			8.6	11.3	12.5	9.1
Ca	mg Ca/l	305			48	39	36	40
Cr	mg Cr/l	0.23			0.13	0.11	0.1	0.1
Mn	mg Mn/l	<0.14			<0.07	0.04	<0.08	<0.06
Fe	mg Fe/l	0.74			0.65	0.65	0.64	0.58
Ni	mg Ni/l	<0.13			<0.06	<0.06	0.04	<0.05
Cu	mg Cu/l	<0.12			<0.05	0.17	<0.05	0.08
Zn	mg Zn/l	<0.13			0.18	0.54	0.23	0.27
As	mg As/l	<0.23			<0.07	<0.08	<0.1	<0.1
Se	mg Se/l	<0.17			<0.04	<0.05	<0.05	<0.05
Br	mg Br/l	3			0.21	0.27	0.22	0.28
Sr	mg Sr/l	16.7			0.87	0.79	0.64	0.71
Cd	mg Cd/l	<4			<2.5	<0.9	<2.1	<2.5
Hg	mg Hg/l	<0.3			0.14	0.13	0.15	0.18
Pb	mg Pb/l	<0.3			<0.07	<0.09	<0.07	0.12

Annex VIII-2 (5/5) Elements Analyses for New Test Well Water of Altai City in 1998

Element	Unit	New Test Well									
		A1	A2	A3	A4	B1	B2	B3	B4	B5	B6
S	mg/l	41	275	32	4	22	136	302	134	15	nd
Cl	mg/l	3.6	132	nd	nd	nd	9	155	24	2	nd
K	mg/l	4.2	7.3	6.5	2.4	3	7	8	7	4	2
Ca	mg/l	43	427	44	15	31	70	291	115	18	6
Fe	mg/l	3.1	8.3	1.4	1.1	1.7	1.7	9	1.8	2	2
Ni	mg/l	1.3	0.17	0.13	0.08	nd	0.08	0.15	nd	nd	nd
Cu	mg/l	0.12	0.16	0.23	0.11	nd	0.15	nd	0.11	0.09	0.13
Zn	mg/l	0.37	0.59	0.32	0.73	0.18	0.62	1.5	0.32	0.13	nd
Br	mg/l	0.3	2	nd	0.2	nd	0.6	2.1	0.9	0.1	0.3
Sr	mg/l	0.7	11.1	0.6	nd	1	2.1	11.8	5.9	0.5	nd

Using ED-TRXRF Technique: Nuclear Physics Research Center

nd: not detected

Annex VIII-3 (1/4) Comparison between Two methods on Other Metal Components for Wells

(a) Phase 1

Item No.	Item	Unit	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
			22-Jun-93	22-Jun-93	22-Jun-93	22-Jun-93	25-Jun-93	22-Jun-93	22-Jun-93	22-Jun-93
23	Copper	mg Cu/l	0.14	0.18	0.13	0.20	0.16	0.12	0.11	0.15
23'	Copper*	mg Cu/l	0.12	0.13	0.07	0.16	0.11	0.06	0.08	0.24
24	Iron	mg Fe/l	0.09	0.04	0.06	0.05	0.14	0.07	0.03	0.32
24'	Iron*	mg Fe/l	1	1.46	0.92		10.9	2.55	1.65	1.73
25	Manganese	mg Mn/l	0.6	0.1	<0.1	0.2	0.2	0.15	0.3	0.5
25'	Manganese*	mg Mn/l	0.07	<0.1	<0.07		0.6	0.19	0.14	0.73

(b) Phase 2

Item No.	Item	Unit	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
			15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93	15-Jul-93
23	Copper	mg Cu/l	0.1	0.1	<0.1	0.1	0.2	0.2	0.2	0.1
23'	Copper*	mg Cu/l	<0.04	0.05	0.05	<0.04	<0.04	0.15	0.05	<0.02
24	Iron	mg Fe/l	0.3	0.2	0.1	0.35	<0.02	0.1	0.1	1.3
24'	Iron*	mg Fe/l	1.08	0.58	0.48	1.22	7.5	4.9	0.6	2.27
25	Manganese	mg Mn/l	0.8	0	0.2	0.1	0.8	0.1	0.2	0.4
25'	Manganese*	mg Mn/l	0.13	<0.04	<0.04	<0.05	0.54	0.43	<0.04	0.8

(c) Phase 3

Item No.	Item	Unit	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
			22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93	22-Jul-93
23	Copper	mg Cu/l	0.12	0.08	0.4	0.17	0.11	0.12	0.1	0.11
23'	Copper*	mg Cu/l	0.06	<0.07	<0.06	<0.05	<0.07	<0.03	<0.07	0.04
24	Iron	mg Fe/l	0.17	0.1	0.14	0.12	0.03	0.06	0.07	0.51
24'	Iron*	mg Fe/l	0.59	0.75	0.95	0.81	7.28	2.5	0.62	1.72
25	Manganese	mg Mn/l	<0.1	0.1	0.2	0.5	0.5	0.3	<0.1	0.6
25'	Manganese*	mg Mn/l	<0.1	<0.08	<0.08	0.08	0.61	0.25	0.06	0.84
27	Lead*	mg Pb/l	0.12	0.14	<0.12	<0.11	0.28	<0.06	<0.11	<0.07
27'	Lead**	mg Pb/l	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.02
28	Chromium*	mg Cr/l	0.15	0.2	0.17	0.13	0.27	0.17	<0.06	0.09
28'	Chromium**	mg Cr/l	0.03	0.05	0.05	0.02	0.04	0.02	0.03	0.02
29	Cadmium*	mg Cd/l	<1.9	<2	<1.7	<1.5	<2.2	<1.0	<1.7	<1.2
29'	Cadmium**	mg Cd/l	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.02
30	Arsenic*	mg As/l	<0.1	<0.09	<0.09	<0.09	<0.13	<0.03	<0.1	<0.06
30'	Arsenic**	mg As/l	0.02	0.01	0.03	0.01	0.02	0.01	0.02	0.01
32	Mercury*	mg Hg/l	<0.16	<0.13	<0.14	0.14	0.29	0.15	0.17	<0.08
32'	Mercury**	mg Hg/l	0.003	0.003	0.005	0.002	0.003	0.002	0.003	0.001

* Values Obtained from Energy Dispersive Total Reflection X-ray Fluorescence Technique
** Colorimetry in Ulaanbaatar

Annex VIII-3 (2/4) Comparison between Two Methods on Other Metal Components for Water Supply System

(a) Phase 1

Item No.	Item	Unit	DR-1	DR-2	DT-1	DT-2	DT-3	DT-4	DT-5	DW-1	DW-2	DG-1	DG-2	DG-3	DG-4	DG-5
			24-Jun-93	25-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	25-Jun-93	25-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93	24-Jun-93
23	Copper	mg Cu/l	0.11	0.16	0.61	0.03	0.32	0.67	0.13	2	<0.1	0.17	0.14	2	0.14	1.5
23'	Copper*	mg Cu/l	0.04	<0.06	0.2	0.4				0.16		<0.05	<0.03	0.05	0.06	0.09
24	Iron	mg Fe/l	0.12	0.15	0.08	0.12	0.06	0.05	0.04	0.06	0.03	0.03	0.05	0.04	0.03	0.02
24'	Iron*	mg Fe/l	0.52	0.75	1.15	0.6				0.58		0.42	0.35	0.42	0.44	0.59
25	Manganese	mg Mn/l	0.1	0.1	<0.1	<0.1	<0.1	0.4	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25'	Manganese*	mg Mn/l	<0.04	<0.1	<0.07	0.03				<0.02		<0.05	0.08	<0.04	<0.04	0.04
27	Lead*	mg Pb/l	0.08	<0.15	0.15	0.08				0.09		<0.09	0.09	0.06	<0.07	0.05
27'	Lead**	mg Pb/l		0.05		0.036							0.041			
29	Cadmium*	mg Cd/l														
29'	Cadmium**	mg Cd/l		0.039		0.028							0.026			
30	Arsenic*	mg As/l	<0.04	<0.08	<0.06	<0.06				<0.04		<0.07	<0.03	<0.05	<0.05	<0.03
30'	Arsenic**	mg As/l		0.033		0.035							0.024			
32	Mercury*	mg Hg/l	0.09	<0.16	<0.1	0.07				0.07		<0.11	0.05	0.05	<0.11	0.07
32'	Mercury**	mg Hg/l		0.01		0.01							0.01			

(b) Phase 2

Item No.	Item	Unit	DR-1	DR-2	DT-1	DT-2	DT-3	DT-4	DT-5	DW-1	DW-2	DG-1	DG-2	DG-3	DG-4	DG-5
			16-Jul-93	16-Jul-93	15-Jul-93	15-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	16-Jul-93	
23	Copper	mg Cu/l	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.1	0.2	0.2	0.2	0.2
23'	Copper*	mg Cu/l	0.05	0.04	0.06	0.12	<0.04	0.05		0.1	<0.04	0.07	<0.03	0.04	0.05	<0.05
24	Iron	mg Fe/l	0.1	0.14	0.1	0.1	0.25	0.1	0.1	0.13	0.81	0.2	0.21	0.3	0.3	0.1
24'	Iron*	mg Fe/l	0.4	0.42	0.7	0.54	0.4	0.62	0.37	1.06	0.43	0.56	0.34	0.47	0.54	0.34
25	Manganese	mg Mn/l	0.2	0.2	<0.1	<0.1	0.1	0.1	<0.1	0.1	0.7	<0.1	<0.1	0.1	0.2	0.1
25'	Manganese*	mg Mn/l	<0.06	<0.04	<0.06	<0.05	<0.04	<0.02	<0.06	<0.05	<0.04	<0.03	<0.04	<0.05	<0.02	<0.04
27	Lead*	mg Pb/l	<0.07	<0.08	0.12	<0.03	0.27	0.09	<0.1	0.08	<0.06	0.07	<0.06	<0.07	<0.03	<0.06
27'	Lead**	mg Pb/l														
29	Cadmium*	mg Cd/l	<1.1	<1.2	<0.8	<1.2	<0.8	<1.0	<1.7	<1.0	<0.6	<1.1	<0.9	<1.5	<0.8	<1.2
29'	Cadmium**	mg Cd/l														
30	Arsenic*	mg As/l	<0.02	0.05	<0.03	0.03	<0.04	<0.03		<0.02	<0.09	<0.03	<0.05	<0.03	<0.03	<0.05
30'	Arsenic**	mg As/l														
32	Mercury*	mg Hg/l	<0.08	<0.08	0.17	0.06	<0.07	0.13	<0.13	0.11	<0.06	0.05	<0.08	0.14	<0.03	<0.07
32'	Mercury**	mg Hg/l														

(c) Phase 3

Item No.	Item	Unit	DR-1	DR-2	DT-1	DT-2	DT-3	DT-4	DT-5	DW-1	DW-2	DG-1	DG-2	DG-3	DG-4	DG-5
			23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93	23-Jul-93
23	Copper	mg Cu/l	0.1	0.1	<0.1	0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
23'	Copper*	mg Cu/l	0.14	0.13	0.06	0.05	0.05	0.09	<0.03	<0.04	<0.06	0.08	0.05	0.05	0.03	0.31
24	Iron	mg Fe/l	0.09	0.1	0.1	0.11	0.1	0.09	0.09	0.1	0.11	0.12	0.08	0.05	0.01	0.09
24'	Iron*	mg Fe/l	0.28	0.64	0.59	0.74	0.38	0.58	0.36	0.34	0.59	0.55	0.51	0.53	0.32	0.57
25	Manganese	mg Mn/l	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.15							
25'	Manganese*	mg Mn/l	<0.03	<0.05	<0.02	<0.04	<0.04	0.04	<0.06	<0.04		<0.06	<0.04	<0.05	<0.06	<0.02
27	Lead*	mg Pb/l	0.15	<0.09	0.14	<0.05	<0.08	<0.08	<0.05	0.09	<0.18	0.18	0.1	0.07	<0.06	<0.04
27'	Lead**	mg Pb/l		0.05		0.04										
29	Cadmium*	mg Cd/l	<0.6	<0.6	<0.3	<0.7	<1.2	<0.8	<0.7	<1.1	<1.8	<1	<1.4	<1.2	<1.2	<0.7
29'	Cadmium**	mg Cd/l		0.03		0.03										
30	Arsenic*	mg As/l	<0.06	<0.08	<0.04	<0.03	<0.05	<0.06	<0.03	<0.03	<0.06	<0.09	<0.08	<0.06	<0.05	<0.03
30'	Arsenic**	mg As/l		0.03		0.03										
32	Mercury*	mg Hg/l	0.08	0.14	0.1	<0.06	<0.08	0.13	0.12	0.06	<0.12	0.18	0.2	0.1	<0.08	0.07
32'	Mercury**	mg Hg/l		0.01		0.01										

* Energy Dispersive Total Reflection X-ray Fluorescence Technique
** Colorimetry in Ulaanbaatar

Annex VIII-3 (3/4) Comparison between Two Methods on Other Metal Components for Rivers

(a) Phase 1

Item No.	Item	Unit	R-1	R-2	R-3	R-4
			25-Jun-93		25-Jun-93	25-Jun-93
23	Copper	mg Cu/l	0.18		0.14	0.1
23'	Copper*	mg Cu/l	<0.15		<0.09	0.06
24	Iron	mg Fe/l	0.19		0.06	0.05
24'	Iron*	mg Fe/l	2.45		0.65	0.7
25	Manganese	mg Mn/l	16		0.1	0.2
25'	Manganese*	mg Mn/l	<0.31		<0.08	0.1

(b) Phase 2

Item No.	Item	Unit	R-1	R-2	R-3	R-4
			16-Jul-93			16-Jul-93
23	Copper	mg Cu/l	0.2			0.1
23'	Copper*	mg Cu/l	<0.13			0.05
24	Iron	mg Fe/l	0.13			0.42
24'	Iron*	mg Fe/l	0.47			0.29
25	Manganese	mg Mn/l	19			0.2
25'	Manganese*	mg Mn/l	<0.17			<0.05

(c) Phase 3

Item No.	Item	Unit	R-1	R-2	R-3	R-4
			22-Jul-93			22-Jul-93
23	Copper	mg Cu/l	0.19			0.1
23'	Copper*	mg Cu/l	<0.12			<0.05
24	Iron	mg Fe/l	0.09			0.07
24'	Iron*	mg Fe/l	0.74			0.65
25	Manganese	mg Mn/l				
25'	Manganese*	mg Mn/l	<0.14			<0.07

* Values Obtained from Energy Dispersive Total Reflection X-ray Fluorescence Technique

Annex VIII-3 (4/4) Comparison between Two Methods on Other Metal Components for Sewerage System

(a) Phase 1

Item No.	Item	Unit	S-1 25-Jun-93	S-2 25-Jun-93	S-3 25-Jun-93
23	Copper	mg Cu/l	0.01	0.14	0.08
23'	Copper*	mg Cu/l	<0.05	0.05	0.04
24	Iron	mg Fe/l	0.25	0.29	0.34
24'	Iron*	mg Fe/l	0.7	0.53	0.58
25	Manganese	mg Mn/l	0.55	0.2	0.1
25'	Manganese*	mg Mn/l	0.08	0.09	0.09

(b) Phase 2

Item No.	Item	Unit	S-1 17-Jul-93	S-2 17-Jul-93	S-3 17-Jul-93
23	Copper	mg Cu/l	0.5	0.1	<0.1
23'	Copper*	mg Cu/l	0.11	0.05	0.04
24	Iron	mg Fe/l	0.36	0.25	0.26
24'	Iron*	mg Fe/l	0.7	0.79	0.71
25	Manganese	mg Mn/l	0.2	<0.05	<0.05
25'	Manganese*	mg Mn/l	<0.07	0.07	<0.03

(c) Phase 3

Item No.	Item	Unit	S-1 23-Jul-93	S-2 23-Jul-93	S-3 23-Jul-93
23	Copper	mg Cu/l	0.21	0.1	0.11
23'	Copper*	mg Cu/l	0.17	<0.05	0.08
24	Iron	mg Fe/l	0.15	0.21	0.17
24'	Iron*	mg Fe/l	0.65	0.64	0.58
25	Manganese	mg Mn/l			
25'	Manganese*	mg Mn/l	0.04	<0.08	<0.06

* Values Obtained from Energy Dispersive Total Reflection X-ray Fluorescence Technique

Annex VIII-4 (1/18) Water Quality for SW-1 in 1997

Item No.	Item	Unit	SW-1			Mongolian	WHO	
			23-Jun-97	16-Jul-97	23-Jul-97	Standard	(health)	(complain)
1	pH		7.9	7.8	7.4	6.5-8.5		
2	Temperature	°C	4.5	7	5.5			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	6	[illegible]	4			≦15
6	Turbidity	kaolin (JIS)	1	3	5			
7	Conductivity	mS/m(at 25°C)	276	284	436			
8	Hardness###	$mgCaCO_3/l$	[illegible]	[illegible]	[illegible]	≦350		
9	Dry Residue###	mg/l	[illegible]	[illegible]	[illegible]	≦1000		≦1000
10	COD($KMn0_4$, alkali)	mg O_2/l	6	-	-			
11	Nitrite	mg NO_2/l	0.24	0.2	0.06		≦3	
12	Nitrate	mg NO_3/l	5.5	5.5	9.6	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.44	0.43	0.6			≦1.5
14	Orthophosphate	mg $P0_4/l$	0.14	0.3	0.22	≦3.5		
15	Bicarbonate	mg HCO_3/l	305	329	427			
16	Carbonate	mg CO_3/l	0.61	0.66	0.27			
17	Chloride*	mg Cl/l	28	14	25	≦350		≦250
18	Sulfate#	mg SO_4/l	[illegible]	[illegible]	[illegible]	≦500		≦250
19	Sodium***	mg Na/l	49.3	49.1	49			
20	Potassium*	mg K/l	16	13.2	15			
21	Calcium	mg Ca/l	100	[illegible]	[illegible]	≦100		
22	Magnesium##	mg Mg/l	[illegible]	[illegible]	[illegible]	≦30		
23	Copper*	mg Cu/l	0.12	<0.04	0.06	≦1	≦2	≦1
24	Iron	mg Fe/l	0.09	0.3	0.12	≦0.3		≦0.3
25	Manganese*	mg Mn/l	0.07	[illegible]	<0.1	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.47	0.48	0.21	≦5		≦5
27	Lead**	mg Pb/l			0.02	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.01	<0.01			
	Chromium**	mg Cr/l			0.03	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			[illegible]	≦0.01	≦0.003	
30	Arsenic*	mg As/l	<0.01	<0.05	<0.1	≦0.05	≦0.01	
	Arsenic**	mg As/l			0.02			
31	Cyanide	mg CN/l	<0.01	[illegible]	[illegible]	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			[illegible]		≦0.001	
33	Fluoride	mg F/l		<0.01	0.04	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	14	14	2.3			
35	Molybdenum**	mg Mo/l	0.03	0.02	0.02	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.001			
37	Aluminum	mg Al/l	0.01	0.1	<0.01	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	[illegible]	[illegible]	[illegible]	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3/l$	125	90	110			
44	Alkalinity	mg $CaCO_3/l$	250	270	350			
	Nickel*	mg Ni/l	<0.05	<0.04	<0.07		≦0.02	
	Selenium*	mg Se/l	<0.04	<0.05	<0.08	≦0.001	≦0.01	
	Strontium*	mg Sr/l	[illegible]	[illegible]	[illegible]	≦2		
	Bromine*	mg Br/l	0.42	0.37	0.46			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value

Annex VIII-4 (1/18) Water Quality for SW-1 in 1997

Item No.	Item	Unit	SW-1 23-Jun-97	SW-1 16-Jul-97	SW-1 23-Jul-97	Mongolian Standard	WHO (health)	WHO (complain)
1	pH		7.9	7.8	7.4	6.5-8.5		
2	Temperature	°C	4.5	7	5.5			
3	Odor	dilution factor	–		<1	≦2		
4	Taste	dilution factor	–			≦2		
5	Color	mg/l Pt scale	6	20	4			≦15
6	Turbidity	kaolin (JIS)	1	3	5			
7	Conductivity	mS/m(at 25°C)	276	284	436			
8	Hardness###	$mgCaCO_3/l$	1400	1420	1770	≦350		
9	Dry Residue###	mg/l	1796	1825	2257	≦1000		≦1000
10	COD($KMnO_4$, alkali)	mg O_2/l	6	–	–			
11	Nitrite	mg NO_2/l	0.24	0.2	0.06		≦3	
12	Nitrate	mg NO_3/l	5.5	5.5	9.6	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.44	0.43	0.6			≦1.5
14	Orthophosphate	mg PO_4/l	0.14	0.3	0.22	≦3.5		
15	Bicarbonate	mg HCO_3/l	305	329	427			
16	Carbonate	mg CO_3/l	0.61	0.66	0.27			
17	Chloride*	mg Cl/l	28	14	25	≦350		≦250
18	Sulfate#	mg SO_4/l	1170	1180	1430	≦500		≦250
19	Sodium***	mg Na/l	49.3	49.1	49			
20	Potassium*	mg K/l	16	13.2	15			
21	Calcium	mg Ca/l	100	150	236	≦100		
22	Magnesium##	mg Mg/l	276	250	282	≦30		
23	Copper*	mg Cu/l	0.12	<0.04	0.06	≦1	≦2	≦1
24	Iron	mg Fe/l	0.09	0.3	0.12	≦0.3		≦0.3
25	Manganese*	mg Mn/l	0.07	0.13	<0.1	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.47	0.48	0.21	≦5		≦5
27	Lead**	mg Pb/l			0.02	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.01	<0.01			
	Chromium**	mg Cr/l			0.03	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.02	≦0.01	≦0.003	
30	Arsenic*	mg As/l	<0.01	<0.05	<0.1	≦0.05	≦0.01	
	Arsenic**	mg As/l			0.02			
31	Cyanide	mg CN/l	<0.01	0.5	0.3	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			0.003		≦0.001	
33	Fluoride	mg F/l		<0.01	0.04	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	14	14	2.3			
35	Molybdenum**	mg Mo/l	0.03	0.02	0.02	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.001			
37	Aluminum	mg Al/l	0.01	0.1	<0.01	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	2380	>2380	>2380	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3/l$	125	90	110			
44	Alkalinity	mg $CaCO_3/l$	250	270	350			
	Nickel*	mg Ni/l	<0.05	<0.04	<0.07		≦0.02	
	Selenium*	mg Se/l	<0.04	<0.05	<0.08	≦0.001	≦0.01	
	Strontium*	mg Sr/l	4.17	4.1	3.68	≦2		
	Bromine*	mg Br/l	0.42	0.37	0.46			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value

Annex VIII-4 (2/18) Water Quality for SW-2 in 1997

Item No.	Item	Unit	SW-2 23-Jun-97	SW-2 16-Jul-97	SW-2 23-Jul-97	Mongolian Standard	WHO (health)	WHO (complain)
1	pH		7.4	8	8.1	6.5-8.5		
2	Temperature	℃	-2	6	3.7			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	4	6	2			≦15
6	Turbidity	kaolin (JIS)	2	1	1			
7	Conductivity	mS/m(at 25℃)	115.4	100	186.7			
8	Hardness###	$mgCaCO_3/l$	[redacted]	[redacted]	[redacted]	≦350		
9	Dry Residue###	mg/l	707	574	746	≦1000		≦1000
10	COD($KMnO_4$, alkali)	$mg\ O_2/l$	4.8	-	-			
11	Nitrite	$mg\ NO_2/l$	0.14	0.5	0.01		≦3	
12	Nitrate	$mg\ NO_3/l$	9.8	5.4	9.8	≦44.3	≦50	
13	Ammonium	$mg\ NH_4/l$	<0.2	0.4	0.3			≦1.5
14	Orthophosphate	$mg\ PO_4/l$	0.05	0.15	0.08	≦3.5		
15	Bicarbonate	$mg\ HCO_3/l$	256	220	281			
16	Carbonate	$mg\ CO_3/l$	0.16	0.55	0.89			
17	Chloride*	mg Cl/l	36	16	10	≦350		≦250
18	Sulfate#	$mg\ SO_4/l$	340	280	380	≦500		≦250
19	Sodium***	mg Na/l	47.4	47	47			
20	Potassium*	mg K/l	5	3.7	6			
21	Calcium	mg Ca/l	46	45	67	≦100		
22	Magnesium##	mg Mg/l	[redacted]	[redacted]	[redacted]	≦30		
23	Copper*	mg Cu/l	0.13	0.05	<0.07	≦1	≦2	≦1
24	Iron	mg Fe/l	0.04	0.2	0.1	≦0.3		≦0.3
25	Manganese*	mg Mn/l	<0.1	<0.04	<0.08	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.16	0.23	0.58	≦5		≦5
27	Lead**	mg Pb/l			0.01	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.05	0.01			
	Chromium**	mg Cr/l			0.05	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			[redacted]	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.01	≦0.05	≦0.01	
31	Cyanide	mg CN/l	<0.01	0.03	0.04	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			[redacted]		≦0.001	
33	Fluoride	mg F/l		<0.01	0.04	0.7-1.5	≦1.5	
34	Silica	$mg\ SiO_2/l$	13	14	5.2			
35	Molybdenum**	mg Mo/l	0.03	0.03	0.03	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			<0.001			
37	Aluminum	mg Al/l	<0.01	<0.01	0.01	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	[redacted]	[redacted]	[redacted]	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	$mg\ CaCO_3/l$	100	45	80			
44	Alkalinity	$mg\ CaCO_3/l$	210	180	230			
	Nickel*	mg Ni/l	0.08	<0.04	<0.06		≦0.02	
	Selenium*	mg Se/l	<0.06	<0.07	<0.06	≦0.001	≦0.01	
	Strontium*	mg Sr/l	1.19	1.1	0.92	≦2		
	Bromine*	mg Br/l	0.08	0.17	0.48			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value
~ Turbidimetric method

Annex VIII-4 (2/18) Water Quality for SW-2 in 1997

Item No.	Item	Unit	SW-2			Mongolian Standard	WHO	
			23-Jun-97	16-Jul-97	23-Jul-97		(health)	(complain)
1	pH		7.4	8	8.1	6.5-8.5		
2	Temperature	℃	-2	6	3.7			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	4	6	2			≦15
6	Turbidity	kaolin (JIS)	2	1	1			
7	Conductivity	mS/m(at 25℃)	115.4	100	186.7			
8	Hardness###	mg$CaCO_3$/l	520	400	540	≦350		
9	Dry Residue###	mg/l	707	574	746	≦1000		≦1000
10	COD($KMnO_4$, alkali)	mg O_2/l	4.8	-	-			
11	Nitrite	mg NO_2/l	0.14	0.5	0.01		≦3	
12	Nitrate	mg NO_3/l	9.8	5.4	9.8	≦44.3	≦50	
13	Ammonium	mg NH_4/l	<0.2	0.4	0.3			≦1.5
14	Orthophosphate	mg PO_4/l	0.05	0.15	0.08	≦3.5		
15	Bicarbonate	mg HCO_3/l	256	220	281			
16	Carbonate	mg CO_3/l	0.16	0.55	0.89			
17	Chloride*	mg Cl/l	36	16	10	≦350		≦250
18	Sulfate#	mg SO_4/l	340	280	380	≦500		≦250
19	Sodium***	mg Na/l	47.4	47	47			
20	Potassium*	mg K/l	5	3.7	6			
21	Calcium	mg Ca/l	46	45	67	≦100		
22	Magnesium##	mg Mg/l	97	68	88	≦30		
23	Copper*	mg Cu/l	0.13	0.05	<0.07	≦1	≦2	≦1
24	Iron	mg Fe/l	0.04	0.2	0.1	≦0.3		≦0.3
25	Manganese*	mg Mn/l	<0.1	<0.04	<0.08	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.16	0.23	0.58	≦5		≦5
27	Lead**	mg Pb/l			0.01	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.05	0.01			
	Chromium**	mg Cr/l			0.05	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.02	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.01	≦0.05	≦0.01	
31	Cyanide	mg CN/l	<0.01	0.03	0.04	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			0.003		≦0.001	
33	Fluoride	mg F/l		<0.01	0.04	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	13	14	5.2			
35	Molybdenum**	mg Mo/l	0.03	0.03	0.03	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			<0.001			
37	Aluminum	mg Al/l	<0.01	<0.01	0.01	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	180	960	960	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	100	45	80			
44	Alkalinity	mg $CaCO_3$/l	210	180	230			
	Nickel*	mg Ni/l	0.08	<0.04	<0.06		≦0.02	
	Selenium*	mg Se/l	<0.06	<0.07	<0.06	≦0.001	≦0.01	
	Strontium*	mg Sr/l	1.19	1.1	0.92	≦2		
	Bromine*	mg Br/l	0.08	0.17	0.48			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value
~ Turbidimetric method

Annex VIII-4 (3/18) Water Quality for SW-3 in 1997

Item No.	Item	Unit	SW-3			Mongolian	WHO	
			23-Jun-97	16-Jul-97	23-Jul-97	Standard	(health)	(complain)
1	pH		7.9	7.7	7.8	6.5-8.5		
2	Temperature	℃	-5.5	6	7			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	2	10	2			≦15
6	Turbidity	kaolin (JIS)	0.5	<1	0.5			
7	Conductivity	mS/m(at 25℃)	238	243	360			
8	Hardness###	mg$CaCO_3$/l				≦350		
9	Dry Residue###	mg/l				≦1000		≦1000
10	COD($KMnO_4$, alkali)	mg O_2/l	6.2	-	-			
11	Nitrite	mg NO_2/l	0.25	0.01	0.03		≦3	
12	Nitrate	mg NO_3/l	4.1	5.3	9.6	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.24	0.25	0.35			≦1.5
14	Orthophosphate	mg PO_4/l	0.1	0.1	0.03	≦3.5		
15	Bicarbonate	mg HCO_3/l	262	281	244			
16	Carbonate	mg CO_3/l	0.52	0.35	0.49			
17	Chloride*	mg Cl/l	100	58	138	≦350		≦250
18	Sulfate#	mg SO_4/l				≦500		≦250
19	Sodium***	mg Na/l	54.6	54.2	54			
20	Potassium*	mg K/l	7	7	7			
21	Calcium	mg Ca/l	47	36		≦100		
22	Magnesium##	mg Mg/l				≦30		
23	Copper*	mg Cu/l	0.07	0.05	<0.06	≦1	≦2	≦1
24	Iron	mg Fe/l	0.06	0.1	0.14	≦0.3		≦0.3
25	Manganese*	mg Mn/l	<0.08	<0.04	<0.08	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.37	0.14	0.22	≦5		≦5
27	Lead**				0.02	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.02	<0.01			
	Chromium**				0.05	≦0.05	≦0.05	
29	Cadmium				0.01	≦0.01	≦0.003	
30	Arsenic**				0.03	≦0.05	≦0.01	
31	Cyanide	mg CN/l	<0.01	0.1	0.04	≦0.1	≦0.07	
32	Mercury**						≦0.001	
33	Fluoride	mg F/l		<0.01	0.05	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	11	12	3.5			
35	Molybdenum**	mg Mo/l	0.05	0.05	0.05	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.003			
37	Aluminum	mg Al/l	0.08	<0.01	0.03	≦0.5		≦0.2
38	Total Coliforms	No. in 1l				(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	125	55	70			
44	Alkalinity	mg $CaCO_3$/l	215	230	200			
	Nickel*	mg Ni/l	<0.07	0.04	<0.06		≦0.02	
	Selenium*	mg Se/l	<0.06	<0.03	<0.06	≦0.001	≦0.01	
	Strontium*	mg Sr/l				≦2		
	Bromine*	mg Br/l	0.31	0.69	0.64			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value

Annex VIII-4 (3/18) Water Quality for SW-3 in 1997

Item No.	Item	Unit	SW-3			Mongolian Standard	WHO (health)	WHO (complain)
			23-Jun-97	16-Jul-97	23-Jul-97			
1	pH		7.9	7.7	7.8	6.5-8.5		
2	Temperature	℃	-5.5	6	7			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	2	10	2			≦15
6	Turbidity	kaolin (JIS)	0.5	<1	0.5			
7	Conductivity	mS/m(at 25℃)	238	243	360			
8	Hardness###	mg$CaCO_3$/l	800	873	970	≦350		
9	Dry Residue###	mg/l	1047	1138	1338	≦1000		≦1000
10	COD($KMnO_4$, alkali)	mg O_2/l	6.2	-	-			
11	Nitrite	mg NO_2/l	0.25	0.01	0.03		≦3	
12	Nitrate	mg NO_3/l	4.1	5.3	9.6	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.24	0.25	0.35			≦1.5
14	Orthophosphate	mg PO_4/l	0.1	0.1	0.03	≦3.5		
15	Bicarbonate	mg HCO_3/l	262	281	244			
16	Carbonate	mg CO_3/l	0.52	0.35	0.49			
17	Chloride*	mg Cl/l	100	58	138	≦350		≦250
18	Sulfate#	mg SO_4/l	540	650	670	≦500		≦250
19	Sodium***	mg Na/l	54.6	54.2	54			
20	Potassium*	mg K/l	7	7	7			
21	Calcium	mg Ca/l	47	36	260	≦100		
22	Magnesium##	mg Mg/l	165	188	77	≦30		
23	Copper*	mg Cu/l	0.07	0.05	<0.06	≦1	≦2	≦1
24	Iron	mg Fe/l	0.06	0.1	0.14	≦0.3		≦0.3
25	Manganese*	mg Mn/l	<0.08	<0.04	<0.08	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.37	0.14	0.22	≦5		≦5
27	Lead**				0.02	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.02	<0.01			
	Chromium**				0.05	≦0.05	≦0.05	
29	Cadmium				0.01	≦0.01	≦0.003	
30	Arsenic**				0.03	≦0.05	≦0.01	
31	Cyanide	mg CN/l	<0.01	0.1	0.04	≦0.1	≦0.07	
32	Mercury**				0.005		≦0.001	
33	Fluoride	mg F/l		<0.01	0.05	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	11	12	3.5			
35	Molybdenum**	mg Mo/l	0.05	0.05	0.05	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.003			
37	Aluminum	mg Al/l	0.08	<0.01	0.03	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	180	230	>2380	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	125	55	70			
44	Alkalinity	mg $CaCO_3$/l	215	230	200			
	Nickel*	mg Ni/l	<0.07	0.04	<0.06		≦0.02	
	Selenium*	mg Se/l	<0.06	<0.03	<0.06	≦0.001	≦0.01	
	Strontium*	mg Sr/l	6.17	5.5	5.27	≦2		
	Bromine*	mg Br/l	0.31	0.69	0.64			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value

Annex VIII-4 (4/18) Water Quality for SW-4 in 1997

Item No.	Item	Unit	SW-4 23-Jun-97	SW-4 16-Jul-97	SW-4 23-Jul-97	Mongolian Standard	WHO (health)	WHO (complain)
1	pH		8.1	8	8.1	6.5-8.5		
2	Temperature	℃	-4.5	5	5			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	[illegible]	20	6			≦15
6	Turbidity	kaolin (JIS)	15	3	3			
7	Conductivity	mS/m(at 25℃)	295	288	450			
8	Hardness###	mgCaCO3/l	[illegible]	[illegible]	[illegible]	≦350		
9	Dry Residue###	mg/l	[illegible]	[illegible]	[illegible]	≦1000		≦1000
10	COD(KMn0$_4$, alkali)	mg O_2/l	1.5	-	-			
11	Nitrite	mg NO_2/l	0.34	0.06	0		≦3	
12	Nitrate	mg NO_3/l	3.9	8.4	28	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.24	0.38	0.35			≦1.5
14	Orthophosphate	mg $P0_4$/l	0.07	0.1	0.08	≦3.5		
15	Bicarbonate	mg HCO_3/l	342	354	311			
16	Carbonate	mg CO_3/l	1.08	0.89	0.98			
17	Chloride*	mg Cl/l		139	140	≦350		≦250
18	Sulfate#	mg SO_4/l	401	[illegible]	[illegible]	≦500		≦250
19	Sodium***	mg Na/l	52	52.3	52.1			
20	Potassium*	mg K/l	9	12.2	11.1			
21	Calcium	mg Ca/l	33	28	60	≦100		
22	Magnesium	mg Mg/l	[illegible]	[illegible]	[illegible]	≦30		
23	Copper*	mg Cu/l		<0.04	<0.05	≦1	≦2	≦1
24	Iron	mg Fe/l	0.05	[illegible]	0.12	≦0.3		≦0.3
25	Manganese*	mg Mn/l		<0.05	0.08	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l		0.32	0.9	≦5		≦5
27	Lead**	mg Pb/l			0.01	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.02	0.02			
	Chromium**	mg Cr/l			0.02	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.01	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.01	≦0.05	≦0.01	
31	Cyanide	mg CN/l	<0.01	0.1	0.1	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			[illegible]		≦0.001	
33	Fluoride	mg F/l		<0.01	0.02	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	11	13	5.2			
35	Molybdenum**	mg Mo/l	0.03	0.03	0.03	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.026			
37	Aluminum	mg Al/l	0.02	0.03	0.02	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	[illegible]	[illegible]	[illegible]	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	130	50	80			
44	Alkalinity	mg $CaCO_3$/l	280	290	255			
	Nickel*	mg Ni/l		0.07	<0.05		≦0.02	
	Selenium*	mg Se/l		<0.06	<0.06	≦0.001	≦0.01	
	Strontium*	mg Sr/l		[illegible]	[illegible]	≦2		
	Bromine*	mg Br/l		0.7	0.68			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value
~ Turbidimetric method

Annex VIII-4 (4/18) Water Quality for SW-4 in 1997

Item No.	Item	Unit	SW-4 23-Jun-97	SW-4 16-Jul-97	SW-4 23-Jul-97	Mongolian Standard	WHO (health)	WHO (complain)
1	pH		8.1	8	8.1	6.5-8.5		
2	Temperature	℃	-4.5	5	5			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	20	20	6			≦15
6	Turbidity	kaolin (JIS)	15	3	3			
7	Conductivity	mS/m(at 25℃)	295	288	450			
8	Hardness###	mg$CaCO_3$/l	690	1140	1050	≦350		
9	Dry Residue###	mg/l	1025	1402	1341	≦1000		≦1000
10	COD($KMnO_4$, alkali)	mg O_2/l	1.5	-	-			
11	Nitrite	mg NO_2/l	0.34	0.06	0		≦3	
12	Nitrate	mg NO_3/l	3.9	8.4	28	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.24	0.38	0.35			≦1.5
14	Orthophosphate	mg PO_4/l	0.07	0.1	0.08	≦3.5		
15	Bicarbonate	mg HCO_3/l	342	354	311			
16	Carbonate	mg CO_3/l	1.08	0.89	0.98			
17	Chloride*	mg Cl/l		139	140	≦350		≦250
18	Sulfate#	mg SO_4/l	401	730	680	≦500		≦250
19	Sodium***	mg Na/l	52	52.3	52.1			
20	Potassium*	mg K/l	9	12.2	11.1			
21	Calcium	mg Ca/l	33	28	60	≦100		
22	Magnesium	mg Mg/l	146	257	215	≦30		
23	Copper*	mg Cu/l		<0.04	<0.05	≦1	≦2	≦1
24	Iron	mg Fe/l	0.05	0.35	0.12	≦0.3		≦0.3
25	Manganese*	mg Mn/l		<0.05	0.08	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l		0.32	0.9	≦5		≦5
27	Lead**	mg Pb/l			0.01	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	<0.01	0.02	0.02			
	Chromium**	mg Cr/l			0.02	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.01	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.01	≦0.05	≦0.01	
31	Cyanide	mg CN/l	<0.01	0.1	0.1	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			0.002		≦0.001	
33	Fluoride	mg F/l		<0.01	0.02	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	11	13	5.2			
35	Molybdenum**	mg Mo/l	0.03	0.03	0.03	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.026			
37	Aluminum	mg Al/l	0.02	0.03	0.02	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	23	>2380	960	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	130	50	80			
44	Alkalinity	mg $CaCO_3$/l	280	290	255			
	Nickel*	mg Ni/l		0.07	<0.05		≦0.02	
	Selenium*	mg Se/l		<0.06	<0.06	≦0.001	≦0.01	
	Strontium*	mg Sr/l		3	2.8	≦2		
	Bromine*	mg Br/l		0.7	0.68			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value
~ Turbidimetric method

Annex VIII-4 (5/18) Water Quality for SW-5 in 1997

Item No.	Item	Unit	SW-5			Mongolian	WHO	
			23-Jun-97	16-Jul-97	23-Jul-97	Standard	(health)	(complain)
1	pH		7.6	7.7	8.4	6.5-8.5		
2	Temperature	℃		4	3.5			
3	Odor	dilution factor			<1	≦2		
4	Taste	dilution factor				≦2		
5	Color	mg/l Pt scale		4	5			≦15
6	Turbidity	kaolin (JIS)	1	10	0.5			
7	Conductivity	mS/m(at 25℃)	174.7	143	224			
8	Hardness###	mgCaCO$_3$/l		300		≦350		
9	Dry Residue###	mg/l	685	498	658	≦1000		≦1000
10	COD(KMn0$_4$, alkali)	mg O$_2$/l	5.1	–	7			
11	Nitrite	mg NO$_2$/l	0.05	0.04	0.02		≦3	
12	Nitrate	mg NO$_3$/l	0.5	1	0.8	≦44.3	≦50	
13	Ammonium	mg NH$_4$/l	<0.2	0.55	1.2			≦1.5
14	Orthophosphate	mg P0$_4$/l	<0.05	0.5	0.04	≦3.5		
15	Bicarbonate	mg HCO$_3$/l	0	55	70			
16	Carbonate	mg CO$_3$/l	0.29	0.18	0.96			
17	Chloride*	mg Cl/l	18	18	25	≦350		≦250
18	Sulfate#	mg SO$_4$/l	280	270	380	≦500		≦250
19	Sodium***	mg Na/l	54.8	54.5	54.2			
20	Potassium*	mg K/l	3.1	5.1	8.6			
21	Calcium	mg Ca/l	22	19	26	≦100		
22	Magnesium##	mg Mg/l				≦30		
23	Copper*	mg Cu/l	0.11	<0.04	<0.07	≦1	≦2	≦1
24	Iron	mg Fe/l	0.14	<0.02	0.03	≦0.3		≦0.3
25	Manganese*	mg Mn/l				≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.1	0.06	0.28	≦5		≦5
27	Lead**	mg Pb/l			0.02	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.04	0.01			
	Chromium**	mg Cr/l			0.04	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.02	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.02	≦0.05	≦0.01	
31	Cyanide	mg CN/l			0.09	≦0.1	≦0.07	
32	Mercury**	mg Hg/l					≦0.001	
33	Fluoride	mg F/l		0.3	0.06	0.7-1.5	≦1.5	
34	Silica	mg SiO$_2$/l		1.1	1.3			
35	Molybdenum**	mg Mo/l	0.04	0.04	0.04	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.0033			
37	Aluminum	mg Al/l		0.1	0.02	≦0.5		≦0.2
38	Total Coliforms	No. in 1l				(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg CaCO$_3$/l	0	45	57.5			
44	Alkalinity	mg CaCO$_3$/l	240	115	125			
	Nickel*	mg Ni/l	<0.07	<0.04	<0.05		≦0.02	
	Selenium*	mg Se/l	<0.065	<0.05	<0.1	≦0.001	≦0.01	
	Strontium*	mg Sr/l	0.51	0.4	0.44	≦2		
	Bromine*	mg Br/l	0.14	0.72	1.51			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value
~ Turbidimetric method

Annex VIII-4 (5/18) Water Quality for SW-5 in 1997

Item No.	Item	Unit	SW-5			Mongolian Standard	WHO (health)	WHO (complain)
			23-Jun-97	16-Jul-97	23-Jul-97			
1	pH		7.6	7.7	8.4	6.5-8.5		
2	Temperature	℃		4	3.5			
3	Odor	dilution factor			<1	≦2		
4	Taste	dilution factor				≦2		
5	Color	mg/l Pt scale	20	4	5			≦15
6	Turbidity	kaolin (JIS)	1	10	0.5			
7	Conductivity	mS/m(at 25℃)	174.7	143	224			
8	Hardness###	mg$CaCO_3$/l	510	300	430	≦350		
9	Dry Residue###	mg/l	685	498	658	≦1000		≦1000
10	COD($KMn0_4$, alkali)	mg O_2/l	5.1	-	7			
11	Nitrite	mg NO_2/l	0.05	0.04	0.02		≦3	
12	Nitrate	mg NO_3/l	0.5	1	0.8	≦44.3	≦50	
13	Ammonium	mg NH_4/l	<0.2	0.55	1.2			≦1.5
14	Orthophosphate	mg $P0_4$/l	<0.05	0.5	0.04	≦3.5		
15	Bicarbonate	mg HCO_3/l	0	55	70			
16	Carbonate	mg CO_3/l	0.29	0.18	0.96			
17	Chloride*	mg Cl/l	18~	18	25	≦350		≦250
18	Sulfate#	mg SO_4/l	280	270	380	≦500		≦250
19	Sodium***	mg Na/l	54.8	54.5	54.2			
20	Potassium*	mg K/l	3.1	5.1	8.6			
21	Calcium	mg Ca/l	22	19	26	≦100		
22	Magnesium##	mg Mg/l	110	81	88	≦30		
23	Copper*	mg Cu/l	0.11	<0.04	<0.07	≦1	≦2	≦1
24	Iron	mg Fe/l	0.14	<0.02	0.03	≦0.3		≦0.3
25	Manganese*	mg Mn/l	0.6	0.54	0.61	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.1	0.06	0.28	≦5		≦5
27	Lead**	mg Pb/l			0.02	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l	0.01	0.04	0.01			
	Chromium**	mg Cr/l			0.04	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.02	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.02	≦0.05	≦0.01	
31	Cyanide	mg CN/l	0.2	2.5	0.09	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			0.003		≦0.001	
33	Fluoride	mg F/l		0.3	0.06	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l		1.1	1.3			
35	Molybdenum**	mg Mo/l	0.04	0.04	0.04	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			0.0033			
37	Aluminum	mg Al/l		0.1	0.02	≦0.5		≦0.2
38	Total Coliforms	No. in 1l		2380	94	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	0	45	57.5			
44	Alkalinity	mg $CaCO_3$/l	240	115	125			
	Nickel*	mg Ni/l	<0.07	<0.04	<0.05		≦0.02	
	Selenium*	mg Se/l	<0.065	<0.05	<0.1	≦0.001	≦0.01	
	Strontium*	mg Sr/l	0.51	0.4	0.44	≦2		
	Bromine*	mg Br/l	0.14	0.72	1.51			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value
~ Turbidimetric method

Annex VIII-4 (6/18) Water Quality for SW-6 in 1997

Item No.	Item	Unit	SW-6			Mongolian	WHO	
			23-Jun-97	16-Jul-97	23-Jul-97	Standard	(health)	(complain)
1	pH		[illegible]	8.3	[illegible]	6.5-8.5		
2	Temperature	℃	-3	2.5	2.4			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	10	[illegible]	[illegible]			≦15
6	Turbidity	kaolin (JIS)	3	5	3			
7	Conductivity	mS/m(at 25℃)	52.5	46	91.3			
8	Hardness###	$mgCaCO_3/l$	134	116	230	≦350		
9	Dry Residue###	mg/l	279	270	396	≦1000		≦1000
10	COD($KMn0_4$, alkali)	mg O_2/l	2	-	4			
11	Nitrite	mg NO_2/l	0.3	0.25	0.05		≦3	
12	Nitrate	mg NO_3/l	2	4	5.6	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.24	0.37	0.45			≦1.5
14	Orthophosphate	mg $P0_4/l$	<0.05	<0.05	0.04	≦3.5		
15	Bicarbonate	mg HCO_3/l	207	207	214			
16	Carbonate	mg CO_3/l	2.07	1.04	2.14			
17	Chloride*	mg Cl/l	16	6	19	≦350		≦250
18	Sulfate#	mg SO_4/l	57	58	140	≦500		≦250
19	Sodium***	mg Na/l	56.2	56	56.1			
20	Potassium*	mg K/l	2.5	5	3.2			
21	Calcium	mg Ca/l	22	25	27	≦100		
22	Magnesium##	mg Mg/l	19	13	[illegible]	≦30		
23	Copper*	mg Cu/l	0.06	0.15	<0.03	≦1	≦2	≦1
24	Iron	mg Fe/l	0.07	0.1	0.06	≦0.3		≦0.3
25	Manganese*	mg Mn/l	[illegible]	[illegible]	[illegible]	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.43	0.33	0.6	≦5		≦5
27	Lead**	mg Pb/l			0.01	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l		0.03	<0.01			
	Chromium**	mg Cr/l			0.02	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.01	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.01	≦0.05	≦0.01	
31	Cyanide	mg CN/l		0.05	0.02	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			[illegible]		≦0.001	
33	Fluoride	mg F/l	0.4	<0.01	<0.01	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	9	7	5.4			
35	Molybdenum**	mg Mo/l	0.02	0.02	0.02	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			<0.001			
37	Aluminum	mg Al/l	<0.01	0.03	<0.01	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	<9	<9	[illegible]	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3/l$	95	95	92.5			
44	Alkalinity	mg $CaCO_3/l$	170	170	175			
	Nickel*	mg Ni/l	0.02	0.06	0.07		≦0.02	
	Selenium*	mg Se/l	<0.01	<0.02	<0.03	≦0.001	≦0.01	
	Strontium*	mg Sr/l	0.59	0.5	0.89	≦2		
	Bromine*	mg Br/l	0.05	0.21	0.45			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value

Annex VIII-4 (6/18) Water Quality for SW-6 in 1997

Item No.	Item	Unit	SW-6			Mongolian	WHO	
			23-Jun-97	16-Jul-97	23-Jul-97	Standard	(health)	(complain)
1	pH		8.6	8.3	8.6	6.5-8.5		
2	Temperature	℃	-3	2.5	2.4			
3	Odor	dilution factor	-		<1	≦2		
4	Taste	dilution factor	-			≦2		
5	Color	mg/l Pt scale	10	20	20			≦15
6	Turbidity	kaolin (JIS)	3	5	3			
7	Conductivity	mS/m(at 25℃)	52.5	46	91.3			
8	Hardness###	mg$CaCO_3$/l	134	116	230	≦350		
9	Dry Residue###	mg/l	279	270	396	≦1000		≦1000
10	COD($KMn0_4$, alkali)	mg O_2/l	2	--	4			
11	Nitrite	mg NO_2/l	0.3	0.25	0.05		≦3	
12	Nitrate	mg NO_3/l	2	4	5.6	≦44.3	≦50	
13	Ammonium	mg NH_4/l	0.24	0.37	0.45			≦1.5
14	Orthophosphate	mg $P0_4$/l	<0.05	<0.05	0.04	≦3.5		
15	Bicarbonate	mg HCO_3/l	207	207	214			
16	Carbonate	mg CO_3/l	2.07	1.04	2.14			
17	Chloride*	mg Cl/l	16	6	19	≦350		≦250
18	Sulfate#	mg SO_4/l	57	58	140	≦500		≦250
19	Sodium***	mg Na/l	56.2	56	56.1			
20	Potassium*	mg K/l	2.5	5	3.2			
21	Calcium	mg Ca/l	22	25	27	≦100		
22	Magnesium##	mg Mg/l	19	13	38	≦30		
23	Copper*	mg Cu/l	0.06	0.15	<0.03	≦1	≦2	≦1
24	Iron	mg Fe/l	0.07	0.1	0.06	≦0.3		≦0.3
25	Manganese*	mg Mn/l	0.19	0.43	0.25	≦0.1	≦0.5	≦0.1
26	Zinc*	mg Zn/l	0.43	0.33	0.6	≦5		≦5
27	Lead**	mg Pb/l			0.01	≦0.03	≦0.01	
28	Chromium(VI)	mg Cr(VI)/l		0.03	<0.01			
	Chromium**	mg Cr/l			0.02	≦0.05	≦0.05	
29	Cadmium**	mg Cd/l			0.01	≦0.01	≦0.003	
30	Arsenic**	mg As/l			0.01	≦0.05	≦0.01	
31	Cyanide	mg CN/l		0.05	0.02	≦0.1	≦0.07	
32	Mercury**	mg Hg/l			0.002		≦0.001	
33	Fluoride	mg F/l	0.4	<0.01	<0.01	0.7-1.5	≦1.5	
34	Silica	mg SiO_2/l	9	7	5.4			
35	Molybdenum**	mg Mo/l	0.02	0.02	0.02	≦0.25	≦0.07	
36	Beryllium**	mg Be/l			<0.001			
37	Aluminum	mg Al/l	<0.01	0.03	<0.01	≦0.5		≦0.2
38	Total Coliforms	No. in 1l	<9	<9	23	(<3 in 1l)	(<1 in 100 ml)	
43	Acidity	mg $CaCO_3$/l	95	95	92.5			
44	Alkalinity	mg $CaCO_3$/l	170	170	175			
	Nickel*	mg Ni/l	0.02	0.06	0.07		≦0.02	
	Selenium*	mg Se/l	<0.01	<0.02	<0.03	≦0.001	≦0.01	
	Strontium*	mg Sr/l	0.59	0.5	0.89	≦2		
	Bromine*	mg Br/l	0.05	0.21	0.45			

* ED-TRXRF
** Colorimetry in Ulaanbaatar
*** Flame emission spectrometric method
# Calculated from the correlation between results from gravimetric method and from ED-TRXRF method
Calculated from charge balance
Calculated value