

**No.20 Derek**

# Information on Existing Water Sources (Aragatsotn)

Study for Improvement of  
Rural Water Supply and  
Sewage Systems in RA

No.20 Community Derek  
District Aragats  
Marz Aragatsotn

No.20 Community Derek  
District Aragats  
Marz Aragatsotn  
Sampling date 04/Aug/2007

No	Water source	Latitude			Longitude			Atitude (m)	Yield(L/sec)		
		deg	min	sec	deg	min	sec		Min	Max	At site
1	Spring	40	42	29.8	44	19	18.2	2155	8	14	12.0
2											
3											
4											
5											
6											
7											
8											
9											
10											

*Notes:*

<i>Latitude, Longitude, Atitude:</i>	<i>Measured at site</i>
<i>Yield (Min, Max):</i>	<i>Interviewed to the Community</i>
<i>Yield (at site):</i>	<i>Measured / estimated at site in summer of 2007</i>

Users Acceptance for water quality	Acceptable
Notes	The spring intake is in a destroyed condition. The flow does not fully enter the transmission pipe.
Alternative sources if any	There is a 10l/sec capacity prospective spring at 3km distance from the Community.

	Parameters analysed	Units	No.1	Guidelines	
				WHO	Armenia
a	pH		7.8	6.5-8	6.0 - 9.0
b	Temperature	Deg.C	9.8		
c	TDS	Mg/L	125	1000	1000
1	Al:Aluminum	Mg/L	0.01	0.10	0.50
2	B:Boron	Mg/L	n.d	0.70	0.50
3	Cl:Chloride	Mg/L	6	250	350
4	Cr:Chrome	Mg/L	<0.01	0.05	0.05
5	Cu:Copper	Mg/L	n.d	2	1
6	F:Fluoride	Mg/L	0.02	1.50	
7	Hardness	Mg/L	250	500	700
8	Fe:Iron	Mg/L	n.d	0.30	0.30
9	Mn:Manganese	Mg/L	n.d	0.40	0.10
10	Mo:Molibdenum	Mg/L	n.d	0.070	0.250
11	Ni:Nickel	Mg/L	n.d	0.020	0.100
12	Nitrate(NO3+)	Mg/L	1.8	50.0	45.0
13	SO4:Sulfate	Mg/L	4.0	250.0	500.0
14	Zn:Zink	Mg/L	n.d	3.0	5.0
15	As:Arsenic	Mg/L	n.d	0.0	0.1
16	Ba:Barium	Mg/L	<0.01	0.70	0.10
17	Be:Berillium	Mg/L	0.00005	NA	0.00020
18	Cd:Cadmium	Mg/L	n.d	0.0030	0.0010
19	Pb:Lead	Mg/L	<0.001	0.010	0.030
20	Hg:Mercury	Mg/L	n.d	0.00100	0.00050
21	Se:Selenium	Mg/L	<0.001	0.010	0.010
22	Sr:Strontium	Mg/L	<0.7	NA	7.0
23	CN:Cyanide	Mg/L	n.d	0.070	0.035
24	Coli form bacteria	bacteria per 100 ml		-	0
25	Thermo-tolerant coli form bacteria	bacteria per 100 ml		0	0
26	Total bacteria	bacteria per 1 ml		-	50



No. 20 Marz Aragatsotn Community Derek**1. ACCESSIBILITY TO THE SITE**

No.	Structures	Access by vehicle	Machine construction	Remarks
1	Intake	Fair	Possible	
2	Transmission pipeline	Possible	Possible	Pipeline is generally along or close to the road
3	Reservoir	Difficult	Possible	No reservoir

**2. INTAKE STRUCTURE**

No.	Water source	N	E	El. (m)	Year	Material	Volume (l/s)	Rehabilitation Necessity (Y/N)
1	Spring	40°42'29.8"	44°19'18.2"	2,155	1976	reinforced concrete	12.0	Yes

**3. TRANSMISSION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Flow rate (l/s)	Year	Leakage	Rehabilitation Necessity (Y/N)
1	600	150	cast iron	4.5	1976	Little	Yes
	200	125	cast iron		1976	Little	Yes
2	1,200	150	cast iron	4.5	1976	Little	Yes

**4. RESERVOIR**

No.	N	E	El. (m)	Material	Shape	Dimension (m)	Volume (m3)	Rehabilitation Necessity (Y/N)
1	No							

**5. CHLORINATION EQUIPMENT**

No.	Existence (Y/N)	Location	Chlorine type	Chlorine duration
1	No			

**6. DISTRIBUTION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Year	Leakage	Rehabilitation Necessity (Y/N)
1	2,300	125	cast iron	1976	Little	Yes
2	200	100	cast iron	1976	Little	Yes
3	1,100	65	cast iron	1976	Little	Yes
4	150	100	Steel	1976	Little	Yes

**7. PUMP STATION**

Existence (Y/N)	Power source	Type	Capacity (l/s)	Pump head (m)	Tank cap. (m3)	House size (m)	Rehabilitation Necessity (Y/N)
No							

**8. PUBLIC TAPS**

No. of taps	Old one (year)	New one (year)	Valves (Y/N)	Valve rate (%)	Rehabilitation Necessity (Y/N)
120	1976	1987	No	0	Yes

**9. DRAINAGE SYSTEM**

Existence (Y/N)	Rehabilitation Necessity (Y/N)	Remarks
No	Yes	

**Questionnaire on Existing Water Supply Conditions  
by Socio-Economic Survey**

<b>Marz</b>	<b>Aragatsotn</b>
<b>Number and Name of Community</b>	<b>No.20 Derek</b>
<b>District</b>	<b>Aragats</b>

No.	Question	Answer
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**A: Baseline Data**

A1	Actual population in 2001	563
A2	Actual population in 2007	562
A3	Number of households	124
A4.1	Elderly people	28
A4.2	Population in labor force (age from 16 to 62)	360
A4.3	Children	120
A5.1	Pensioners	40
A5.2	Unemployed	1
A5.3	Receiving benefits	20
A6	Average monthly income of household (AMD)	30,000
A7	Number of medical ambulance staion/first and health post	absent
A8	Number of beds in each medical ambulance staion	0
A9	Number of school	absent
A10	Number of pupils	0

**B: Budget**

B1	Annual Budget of the community 2004, in thousand AMD	900
	Annual Budget of the community 2005, in thousand AMD	2,500
	Annual Budget of the community 2006, in thousand AMD	500
	Annual Budget of the community 2007, in thousand AMD	1,300
	Annual Budget of the community 2008, in thousand AMD	is not planned.
B2	Amount spent in drinking water sector 2004, in thousand AMD	0
	Amount spent in drinking water sector 2005, in thousand AMD	0
	Amount spent in drinking water sector 2006, in thousand AMD	0
	Amount spent in drinking water sector 2007, in thousand AMD	180
	Amount spent in drinking water sector 2008, in thousand AMD	is not planned.

**C: Socio-Economic Survey**

C1	Major industries of the community:	dairy, meat, cereals
C2	Is there any community activities carrying out by women? 1-Yes, 2-No	no

**D: Water Usage and Water Demand Survey**

D1	Does the community hold water use permit? 1-Yes, 2-No	no
D2	Water use permit number	-
D3	Date of expiry of water use permit	-
D4	Planned date of obtaining water use permit	is not planned
D5	Present condition of the water supply volume of Domestic use	sufficient
D6	Present condition of the water supply volume of Irrigation water	insufficient
D7	Number of house connection to drinking water system	100
D8	How many house connection household set the water meter	0
D9	Number of public taps	0
D10.1	How is the regime of water supply in your community in the dry season?	24 hrs
D10.2	How is the regime of water supply in your community in the wet season?	24 hrs
D11	What time of day water is given?	-
D12	Are you pleased with duration of domestic water supply?	very pleased
D13	Are hours of water supply convenient?	-
D14.1	How long the taps are open to provide the domestic water (cooking, washing, foodstuffs, dishes, Landry, bathing, etc) of each household a day?	-

No.	Question	Answer
D14.2	Estimate quantity of domestic water use of each household (litter per day)	according to the supplied
D15.1	How long the taps are open to provide the each household for filling	-
D15.2	Estimate quantity of water for filling containers of each household (litter per	according to the supplied
D16	Drinking water monthly water fee per household	0
D17	How often do you usually pay water fees?	-
D18	Water fee structure 1-Flat rate, 2 Having water tariff	-
D19	Where do you acquire the irrigation water?	spring
D20	Are you satisfied with irrigation water supply volume?	is not sufficient

**E: Present Operation and Maintenance Works**

E1	Name of responsible for water supply	Qloyan Huro
E2	Position	2-nd class specialist
E3	Telephone	with the help of administration head
E4	Quantity and present condition of the water supply facilities: spring/ intake	1 deteriorated
E5	Quantity and present condition of the water supply facilities:	2 deteriorated
E6	Quantity and present condition of the water supply facilities: DRR(Daily Regulatory Reservoir)	absent
E7	Quantity and present condition of the water supply facilities: net/distribution pipes	partially repaired
E8	Quantity and present condition of the water supply facilities: public tap	absent
E9	Quantity and present condition of the water supply facilities: pump	absent
E10	Who is the owner of the water supply facilities?	community
E11	Who is engaged in the water supply facilities repairing works?	residents
E12	How do you repair the water supply facilities?	by ourselves
E13	Who is in charge of the repair work in the community?	specialist in the community with fee
E14	How you prepare O&M costs?	community budget
E15	Please indicate the O&M cost breakdown per year for water supply	
	Electricity (AMD)	0
	Labor cost (AMD)	360,000
	Repair cost(AMD)	0
	Others(AMD)	0
	Total (AMD)	360,000
E16	Do the residents participate in the O&M works?	manpower
E17	What kind of OM method is preferable to you?	resident participation

**F: Initial Environmental Examination (IEE)**







F1	Are any of the following areas located inside or around the project site?	
F1.1	National park, protected area designated by the government (coast line, water lands, reserved are for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or proposed areas.	yes
F1.2	Virgin forests, tropical forests	absent
F1.3	Ecological improvement habits areas (coral reef, mangrove wetland, tidal	yes
F1.4	Habit of valuable species protected by domestic laws or international treaties	absent
F1.5	Likely salts cumulus or soil erosion areas on a massive scale	absent
F1.6	Remarkable desertification trend areas	absent
F1.7	Archaeological historical or cultural valuable areas	absent
F1.8	Living areas of ethic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas	absent

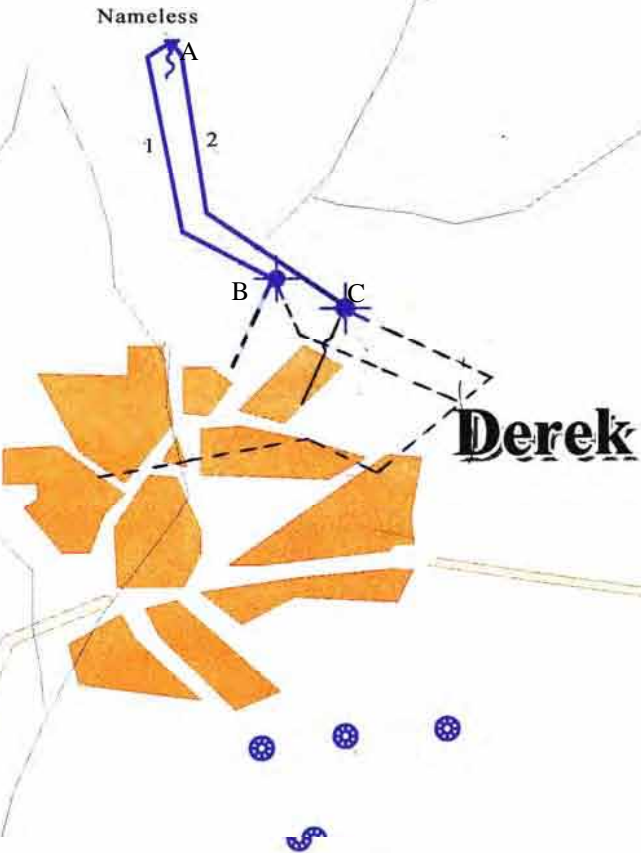
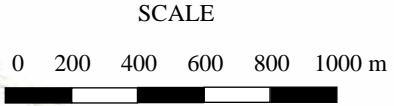
	N	E	H (m)
A	40°42'29.8"	44°19'18.2"	2155
B	40°42'16.5"	44°19'24.5"	2152
C	40°42'14.6"	44°19'28.7"	2152



Pipeline length (m)	Pipe diameter (mm)	Material
<b>TRANSMISSION PIPELINE</b>		
1. 800		
600	150	Cast iron
200	125	
2. 1200		
1200	150	Cast iron
<b>DISTRIBUTION PIPELINE</b>		
2300	125	Cast iron
200	100	
1100	65	
150	100	Steel

**LEGENDS**

-  Spring intake
-  Newly constructed spring
-  Borehole
-  Regulation chamber
-  Transmission pipeline
-  Distribution pipeline



Aragatsotn Marz		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
No.	Community	
20	Derek	JICA STUDY TEAM 2007

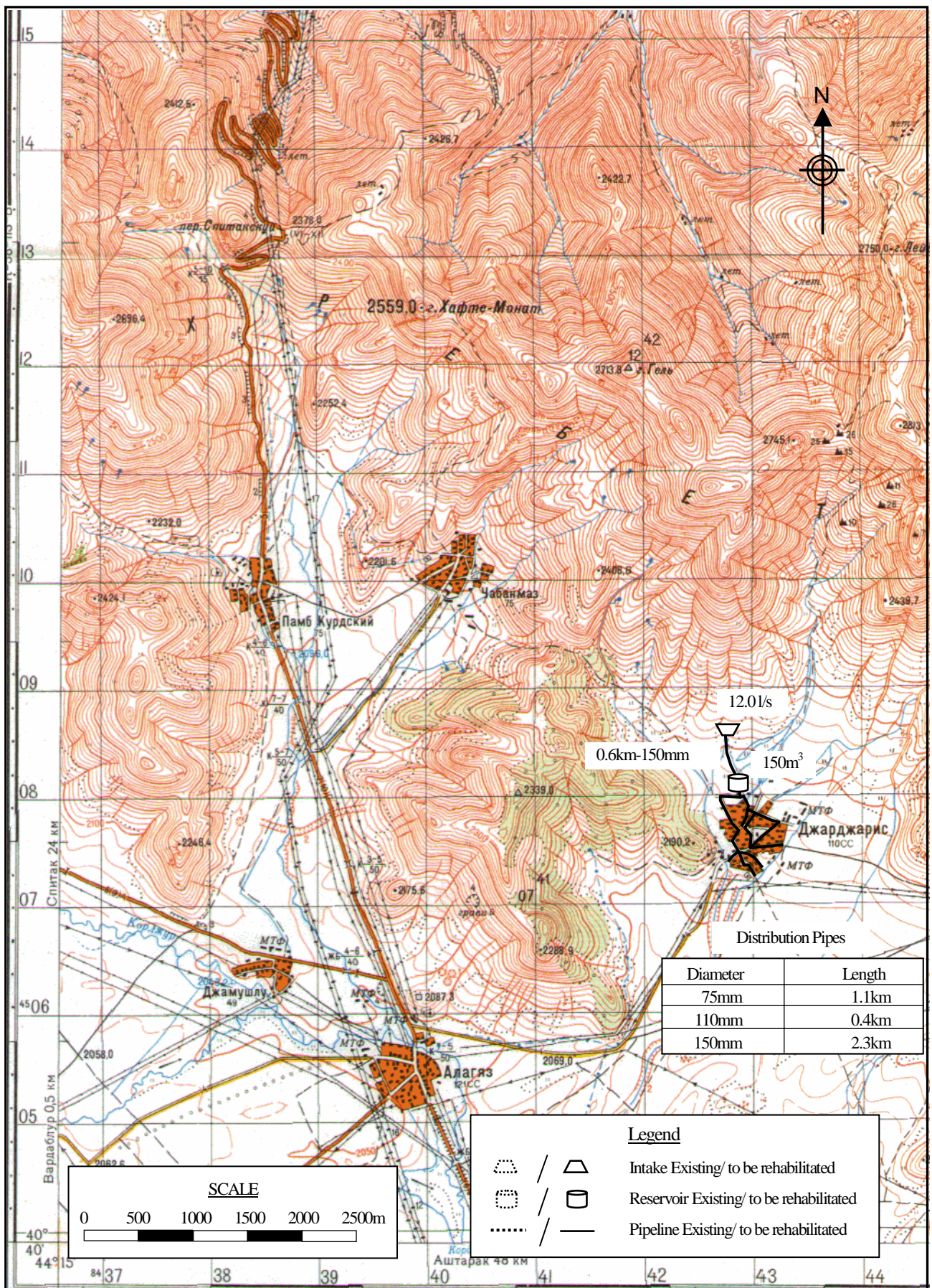
Marz : **Aragatsotn**  
Name : **Derek**

No.20

No.	Item	Quantity	Unit	Water demand (m3/d)
<b>A. WATER DEMAND</b>				
1	Population	562	persons	56.2
2	Factory	-	nos	0.0
3	School (pupils)	-	pupils	0.0
4	Medical Ambulance Station	-	nos	-
5	Policlinic	-	nos	-
6	Livestocks (87lit/household)	124	household	10.8
	Sub-total			67.0
	Unaccounted for water (20%)			13.4
1	Average Daily Water Demand			80.4 m3/day
2	Maximum Daily Water Demand			96.5 m3/day
3	Maximum Hourly Water Demand			13.1 m3/hr
<b>B. WATER SUPPLY PLAN</b>				
	1 Water source type	Nr.	Total vol.	
	a Spring	1	12.0	lit/sec
				1036.8 m3/day
	Total			1036.8 m3/day
	2 Required reservoir volume			157 m3

<b>C. WATER SUPPLY FACILITIES REHABILITATION PLAN</b>				
No	Item	Quantity	Unit	
1	Intake			
	1m3	1	nos	
	2m3		nos	
	3m3		nos	
	4m3		nos	
2	Transmission pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter		m	
	110mm diameter		m	
	150mm diameter	600	m	
	200mm diameter		m	
	250mm diameter		m	
3	Reservoir			
	150m3 capacity	1	nos	
4	Distribution pipe			
	50mm diameter		m	
	75mm diameter	1,100	m	
	90mm diameter		m	
	110mm diameter	400	m	
	150mm diameter	2,300	m	
	200mm diameter		m	
	250mm diameter		m	
5	House connection	24	nos	
6	Water meter installation	124	nos	
7	Public tap	2	nos	
8	Chlorination	1	nos	
9	Pumps	-	nos	





Water Supply Facilities Rehabilitation Plan		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
Marz	Aragatsotn	
No. 20	Derek	JICA STUDY TEAM



STUDY FOR IMPROVEMENT OF  
RURAL WATER SUPPLY AND  
SEWAGE SYSTEMS IN RA

Marz : **Aragatsotn**  
No. : **20**  
Name : **Derek**

No	Item	Specification	Quantity	Unit	Unit Price	Total
1	Intake	1m3	1	nos	367,700	367,700
		2m3		nos	545,000	
		3m3		nos	669,100	
		4m3		nos	805,100	
	Sub-total					367,700
2	Transmission Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm		m	8,040	
		110mm		m	9,680	
		150mm	600	m	13,140	7,884,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					7,884,000
3	Reservoir	50m3		nos	8,363,900	
		100m3		nos	12,968,300	
		150m3	1	nos	18,804,500	18,804,500
		200m3		nos	22,524,600	
		250m3		nos	25,952,800	
		300m3		nos	29,630,400	
		350m3		nos	33,528,700	
		400m3		nos	36,388,000	
		450m3		nos	39,392,500	
		500m3		nos	42,520,900	
	Sub-total					18,804,500
4	Distribution Pipe	50mm		m	5,520	
		75mm	1,100	m	7,160	7,876,000
		90mm		m	8,040	
		110mm	400	m	9,680	3,872,000
		150mm	2,300	m	13,140	30,222,000
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					41,970,000
5	House Connection		24	nos	74,000	1,776,000
6	Water Meter Installation		124	nos	80,000	9,920,000
7	Public Tap		2	nos	90,000	180,000
8	Chlorilation Equipment		1	nos	500,000	500,000
9	Pump Replacement			nos	10,000,000	
10	Drainage and Sewerage concrete surfa		1,520	m	3,600	5,472,000
<b>Total</b>					<b>AMD</b>	<b>86,874,200</b>
					Equivalent to USD	284,349
					Equivalent to JPY	29,998,783
					<b>AMD</b>	<b>USD</b>
	Investment Cost per household		124	HH	700,598	2,293
	Investment Cost per person		562	persons	154,580	506





**No.21 Dian**

# Information on Existing Water Sources (Aragatsotn)

Study for Improvement of  
Rural Water Supply and  
Sewage Systems in RA

No.21 Community Dian  
District Talin  
Marz Aragatsotn

No.21 Community Dian  
District Talin  
Marz Aragatsotn  
Sampling date 25/Aug/2007

No	Water source	Latitude			Longitude			Atitude (m)	Yield(L/sec)		
		deg	min	sec	deg	min	sec		Min	Max	At site
1	Spring	40	23	55.7	44	4	41.9	2,337	1.5	4.0	2.0
2	Spring	40	23	38.9	44	4	50.8	2,245	2.0	5.0	2.5
3											
4											
5											
6											
7											
8											
9											
10											
<i>Notes:</i>											
<i>Latitude, Longitude, Atitude:</i>		<i>Measured at site</i>									
<i>Yield (Min, Max):</i>		<i>Interviewed to the Community</i>									
<i>Yield (at site):</i>		<i>Measured / estimated at site in summer of 2007</i>									

Users Acceptnce for water quality	Not acceptable
Notes	Flow of these springs is divided between No.13 Baysz and this Dian communities. The community has not house-connections, residents use 2 public taps.
Alternative sources if any	No alternative water sources are available

	Parameters analysed	Units				Guidelines	
						WHO	Armenia
a	pH		8.1			6.5-8	6.0 - 9.0
b	Temperature	Deg.C	10.8				
c	TDS	Mg/L	47			1000	1000
1	Al:Aluminum	Mg/L	0.02			0.10	0.50
2	B:Boron	Mg/L	<0.2			0.70	0.50
3	Cl:Chloride	Mg/L	5			250	350
4	Cr:Chrome	Mg/L	<0.01			0.05	0.05
5	Cu:Copper	Mg/L	n.d			2	1
6	F:Fluoride	Mg/L	0.20			1.50	
7	Hardness	Mg/L	110			500	700
8	Fe:Iron	Mg/L	n.d			0.30	0.30
9	Mn:Manganese	Mg/L	0.10			0.40	0.10
10	Mo:Molibdenum	Mg/L	n.d			0.070	0.250
11	Ni:Nickel	Mg/L	n.d			0.020	0.100
12	Nitrate(NO3+)	Mg/L	3.1			50.0	45.0
13	SO4:Sulfate	Mg/L	4.0			250.0	500.0
14	Zn:Zink	Mg/L	n.d			3.0	5.0
15	As:Arsenic	Mg/L	n.d			0.0	0.1
16	Ba:Barium	Mg/L	<0.01			0.70	0.10
17	Be:Berillium	Mg/L	0.00005			NA	0.00020
18	Cd:Cadmium	Mg/L	n.d			0.0030	0.0010
19	Pb:Lead	Mg/L	0.001			0.010	0.030
20	Hg:Mercury	Mg/L	<0.0002			0.00100	0.00050
21	Se:Selenium	Mg/L	n.d			0.010	0.010
22	Sr:Strontium	Mg/L	<0.7			NA	7.0
23	CN:Cyanide	Mg/L	n.d			0.070	0.035
24	Coli form bacteria	bacteria per 100 ml				-	0
25	Thermo-tolerant coli form bacteria	bacteria per 100 ml				0	0
26	Total bacteria	bacteria per 1 ml				-	50





No. 21 Marz Aragatsotn Community Dian**1. ACCESSIBILITY TO THE SITE**

No.	Structures	Access by vehicle	Machine construction	Remarks
1	Intake	Difficult	Difficult	
2	Transmission pipeline	Difficult	Difficult	Pipeline is mostly far from the road
3	Reservoir			No reservoir

**2. INTAKE STRUCTURE**

No.	Water source	N	E	El. (m)	Year	Material	Volume (l/s)	Rehabilitation Necessity (Y/N)
1	Spring	40°23'55.7"	44°04'41.9"	2,337	1970	reinforced concrete	2.0	Yes
2	Spring	40°23'38.9"	44°04'50.8"	2,245	1970	reinforced concrete	2.5	Yes

**3. TRANSMISSION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Flow rate (l/s)	Year	Leakage	Rehabilitation Necessity (Y/N)
1	900	65	Steel	1.8	1975	Little	Yes
2	600	100	Steel	2.25	1975	Little	Yes
3	4,500	100	Steel	1.8	1975	Medium	Yes

**4. RESERVOIR**

No.	N	E	El. (m)	Material	Shape	Dimension (m)	Volume (m3)	Rehabilitation Necessity (Y/N)
1	No							

**5. CHLORINATION**

No.	Existence (Y/N)	Location	Chlorine type	Chlorine duration
1	Yes	Intake	Liquid	once a year

**6. DISTRIBUTION PIPELINE**

No.	Pipeline length (m)	Pipe diameter	Material	Year	Leakage	Rehabilitation Necessity (Y/N)
1	400	100	Steel	1975	Medium	Yes
2	300	50	Steel	1975	Medium	Yes

**7. PUMP STATION**

Existence (Y/N)	Power source	Type	Capacity (l/s)	Pump head (m)	Tank cap. (m3)	House size (m)	Rehabilitation Necessity (Y/N)
No							

**8. PUBLIC TAPS**

No. of taps	Old one (year)	New one (year)	Valves (Y/N)	Valve rate (%)	Rehabilitation Necessity (Y/N)
2	1975		No	0	Yes

**9. DRAINAGE SYSTEM**

Existence	Rehabilitation	Remarks
No	Yes	

## Questionnaire on Existing Water Supply Conditions by Socio-Economic Survey

<b>Marz</b>	<b>Aragatsotn</b>
<b>Number and Name of Community</b>	<b>No.21 Dian</b>
<b>District</b>	<b>Talin</b>

No.	Question	Answer
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### A: Baseline Data

A1	Actual population in 2001	127
A2	Actual population in 2007	153
A3	Number of households	28
A4.1	Elderly people	14
A4.2	Population in labor force (age from 16 to 62)	68
A4.3	Children	57
A5.1	Pensioners	17
A5.2	Unemployed	49
A5.3	Receiving benefits	7
A6	Average monthly income of household (AMD)	25,000
A7	Number of medical ambulance staion/first and health post	absent
A8	Number of beds in each medical ambulance staion	0
A9	Number of school	1
A10	Number of pupils	36

### B: Budget

B1	Annual Budget of the community 2004, in thousand AMD	1,300
	Annual Budget of the community 2005, in thousand AMD	1,400
	Annual Budget of the community 2006, in thousand AMD	1,400
	Annual Budget of the community 2007, in thousand AMD	900
	Annual Budget of the community 2008, in thousand AMD	is not planned.
B2	Amount spent in drinking water sector 2004, in thousand AMD	0
	Amount spent in drinking water sector 2005, in thousand AMD	0
	Amount spent in drinking water sector 2006, in thousand AMD	0
	Amount spent in drinking water sector 2007, in thousand AMD	0
	Amount spent in drinking water sector 2008, in thousand AMD	is not planned.

### C: Socio-Economic Survey

C1	Major industries of the community:	dairy, meat, cereals
C2	Is there any community activities carrying out by women? 1-Yes, 2-No	no

### D: Water Usage and Water Demand Survey

D1	Does the community hold water use permit? 1-Yes, 2-No	yes
D2	Water use permit number	1219
D3	Date of expiry of water use permit	02.11.06-02.11.09
D4	Planned date of obtaining water use permit	
D5	Present condition of the water supply volume of Domestic use	insufficient
D6	Present condition of the water supply volume of Irrigation water	absent
D7	Number of house connection to drinking water system	4
D8	How many house connection household set the water meter	0
D9	Number of public taps	4
D10.1	How is the regime of water supply in your community in the dry season?	24 hrs
D10.2	How is the regime of water supply in your community in the wet season?	24 hrs
D11	What time of day water is given?	-
D12	Are you pleased with duration of domestic water supply?	mainly displeased
D13	Are hours of water supply convenient?	-
D14.1	How long the taps are open to provide the domestic water (cooking, washing, foodstuffs, dishes, Landry, bathing, etc) of each household a day?	-

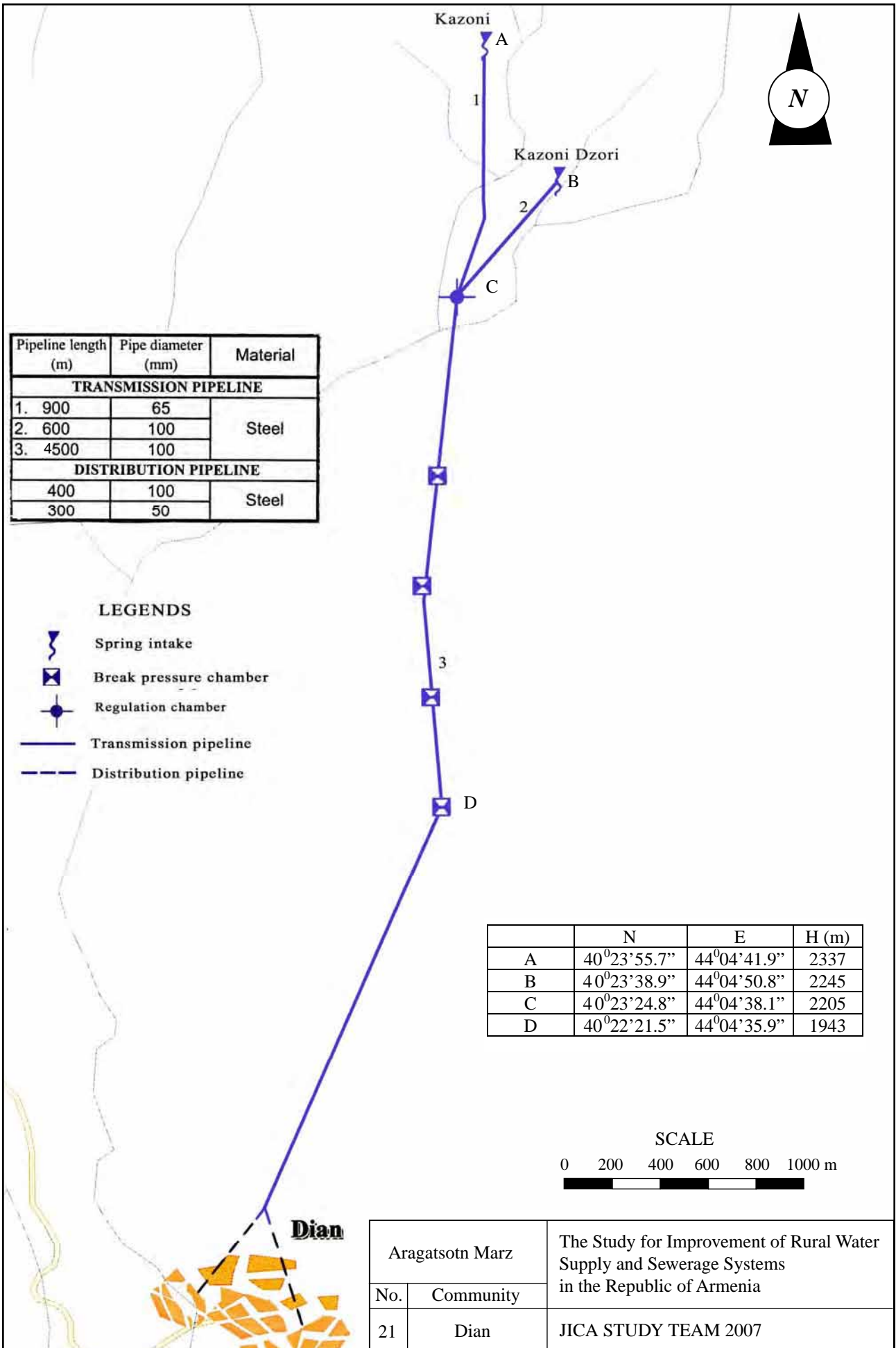
No.	Question	Answer
D14.2	Estimate quantity of domestic water use of each household (litter per day)	300
D15.1	How long the taps are open to provide the each household for filling	-
D15.2	Estimate quantity of water for filling containers of each household (litter per	300
D16	Drinking water monthly water fee per household	0
D17	How often do you usually pay water fees?	-
D18	Water fee structure 1-Flat rate, 2 Having water tariff	-
D19	Where do you acquire the irrigation water?	absent
D20	Are you satisfied with irrigation water supply volume?	is not sufficient

### E: Present Operation and Maintenance Works

E1	Name of responsible for water supply	nobody
E2	Position	-
E3	Telephone	-
E4	Quantity and present condition of the water supply facilities: spring/ intake	5 deteriorated
E5	Quantity and present condition of the water supply facilities:	1 deteriorated
E6	Quantity and present condition of the water supply facilities: DRR(Daily Regulatory Reservoir)	absent
E7	Quantity and present condition of the water supply facilities: net/distribution pipes	deteriorated
E8	Quantity and present condition of the water supply facilities: public tap	deteriorated
E9	Quantity and present condition of the water supply facilities: pump	absent
E10	Who is the owner of the water supply facilities?	community
E11	Who is engaged in the water supply facilities repairing works?	community
E12	How do you repair the water supply facilities?	by ourselves
E13	Who is in charge of the repair work in the community?	volunteers from community
E14	How you prepare O&M costs?	no collection
E15	Please indicate the O&M cost breakdown per year for water supply	
	Electricity (AMD)	0
	Labor cost (AMD)	0
	Repair cost(AMD)	0
	Others(AMD)	0
	Total (AMD)	0
E16	Do the residents participate in the O&M works?	manpower
E17	What kind of OM method is preferable to you?	resident participation

### F: Initial Environmental Examination (IEE)

F1	Are any of the following areas located inside or around the project site?	
F1.1	National park, protected area designated by the government (coast line, water lands, reserved are for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or proposed areas.	absent
F1.2	Virgin forests, tropical forests	absent
F1.3	Ecological improvement habits areas (coral reef, mangrove wetland, tidal	absent
F1.4	Habit of valuable species protected by domestic laws or international treaties	absent
F1.5	Likely salts cumulus or soil erosion areas on a massive scale	absent
F1.6	Remarkable desertification trend areas	absent
F1.7	Archaeological historical or cultural valuable areas	absent
F1.8	Living areas of ethic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas	absent



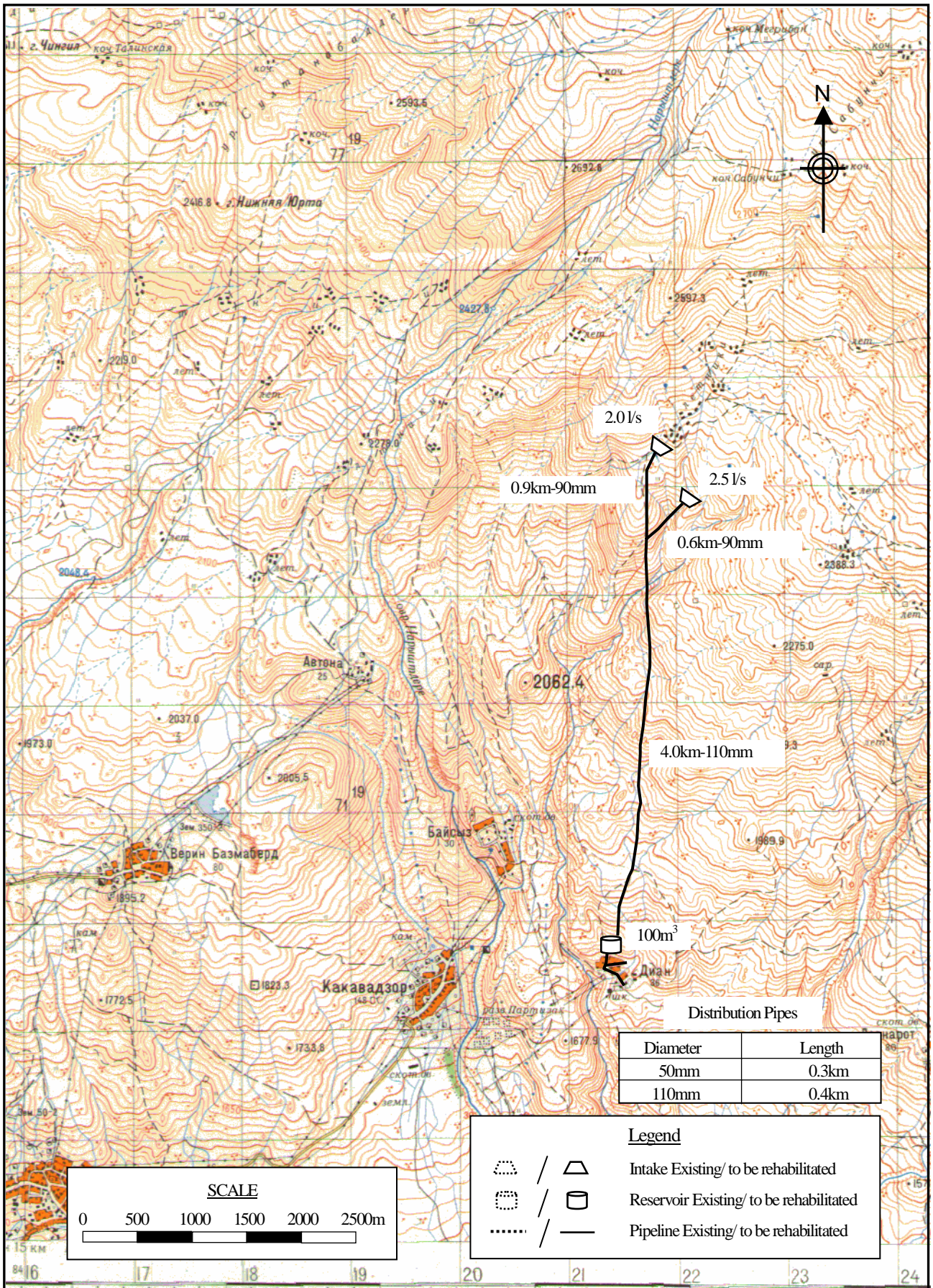
Marz : **Aragatsotn**  
Name : **Dian**

No.21

No.	Item	Quantity	Unit	Water demand (m3/d)
<b>A. WATER DEMAND</b>				
	1 Population	153	persons	15.3
	2 Factory	-	nos	0.0
	3 School (pupils)	36	pupils	0.4
	4 Medical Ambulance Station	-	nos	-
	5 Polyclinic	-	nos	-
	6 Livestocks (87lit/household)	28	household	2.4
	Sub-total			18.1
	Unaccounted for water (20%)			3.6
1	Average Daily Water Demand			21.7 m3/day
2	Maximum Daily Water Demand			26.1 m3/day
3	Maximum Hourly Water Demand			6.4 m3/hr
<b>B. WATER SUPPLY PLAN</b>				
	1 Water source type	Nr.	Total vol.	
	a Spring	2	4.5 lit/sec	388.8 m3/day
	Total			388.8 m3/day
	2 Required reservoir volume			76 m3

<b>C. WATER SUPPLY FACILITIES REHABILITATION PLAN</b>				
No	Item	Quantity	Unit	
1	Intake			
	1m3	2	nos	
	2m3		nos	
	3m3		nos	
	4m3		nos	
2	Transmission pipe			
	50mm diameter		m	
	75mm diameter		m	
	90mm diameter	1,500	m	
	110mm diameter	4,000	m	
	150mm diameter		m	
	200mm diameter		m	
	250mm diameter		m	
3	Reservoir			
	100m3 capacity	1	nos	
4	Distribution pipe			
	50mm diameter	300	m	
	75mm diameter		m	
	90mm diameter		m	
	110mm diameter	400	m	
	150mm diameter		m	
	200mm diameter		m	
	250mm diameter		m	
5	House connection	24	nos	
6	Water meter installation	28	nos	
7	Public tap	1	nos	
8	Chlorination	1	nos	
9	Pumps	-	nos	





Water Supply Facilities Rehabilitation Plan		The Study for Improvement of Rural Water Supply and Sewerage Systems in the Republic of Armenia
Marz	Aragatsotn	
No. 21	Dian	JICA STUDY TEAM

STUDY FOR IMPROVEMENT OF  
RURAL WATER SUPPLY AND  
SEWAGE SYSTEMS IN RA

Marz : **Aragatsotn**

No. : **21**

Name : **Dian**

No	Item	Specification	Quantity	Unit	Unit Price	Total
1	Intake	1m3	2	nos	367,700	735,400
		2m3		nos	545,000	
		3m3		nos	669,100	
		4m3		nos	805,100	
	Sub-total					735,400
2	Transmission Pipe	50mm		m	5,520	
		75mm		m	7,160	
		90mm	1,500	m	8,040	12,060,000
		110mm	4,000	m	9,680	38,720,000
		150mm		m	13,140	
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					50,780,000
3	Reservoir	50m3		nos	8,363,900	
		100m3	1	nos	12,968,300	12,968,300
		150m3		nos	18,804,500	
		200m3		nos	22,524,600	
		250m3		nos	25,952,800	
		300m3		nos	29,630,400	
		350m3		nos	33,528,700	
		400m3		nos	36,388,000	
		450m3		nos	39,392,500	
		500m3		nos	42,520,900	
	Sub-total					12,968,300
4	Distribution Pipe	50mm	300	m	5,520	1,656,000
		75mm		m	7,160	
		90mm		m	8,040	
		110mm	400	m	9,680	3,872,000
		150mm		m	13,140	
		200mm		m	19,440	
		250mm		m	27,040	
	Sub-total					5,528,000
5	House Connection		24	nos	74,000	1,776,000
6	Water Meter Installation		28	nos	80,000	2,240,000
7	Public Tap		1	nos	90,000	90,000
8	Chlorilation Equipment		1	nos	500,000	500,000
9	Pump Replacement			nos	10,000,000	
10	Drainage and Sewerage concrete surfa		280	m	3,600	1,008,000
Total					AMD	75,625,700
					Equivalent to USD	247,531
					Equivalent to JPY	26,114,530
					AMD	USD
Investment Cost per household			28	HH	2,700,918	8,840
Investment Cost per person			153	persons	494,286	1,618





