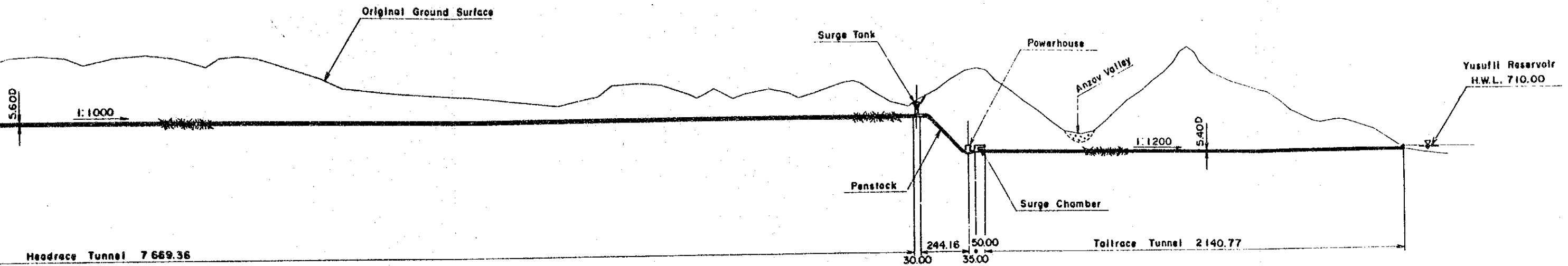
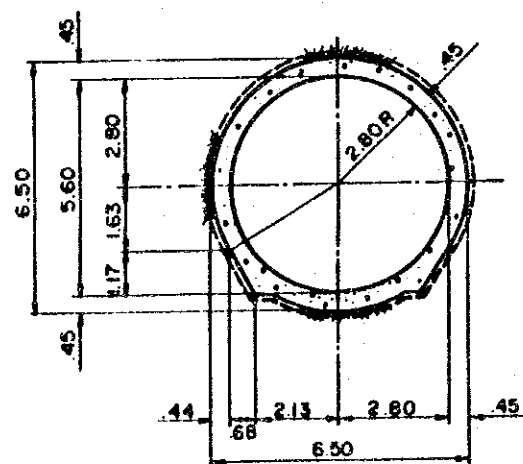


# PROFILE

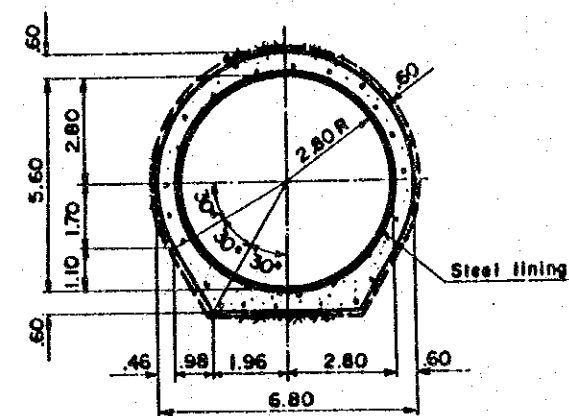


## TYPICAL SECTION OF TUNNEL

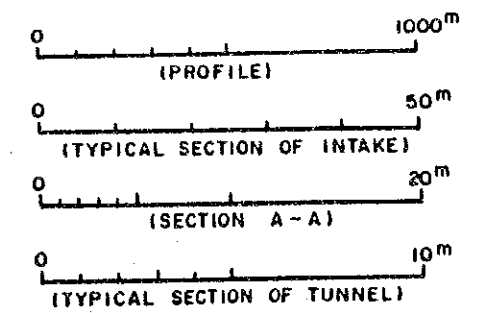
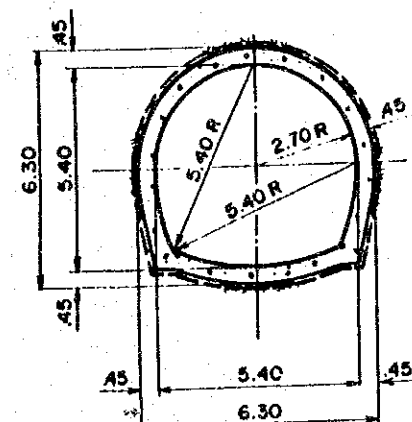
### HEADRACE



### PENSTOCK



### TAILRACE TUNNEL

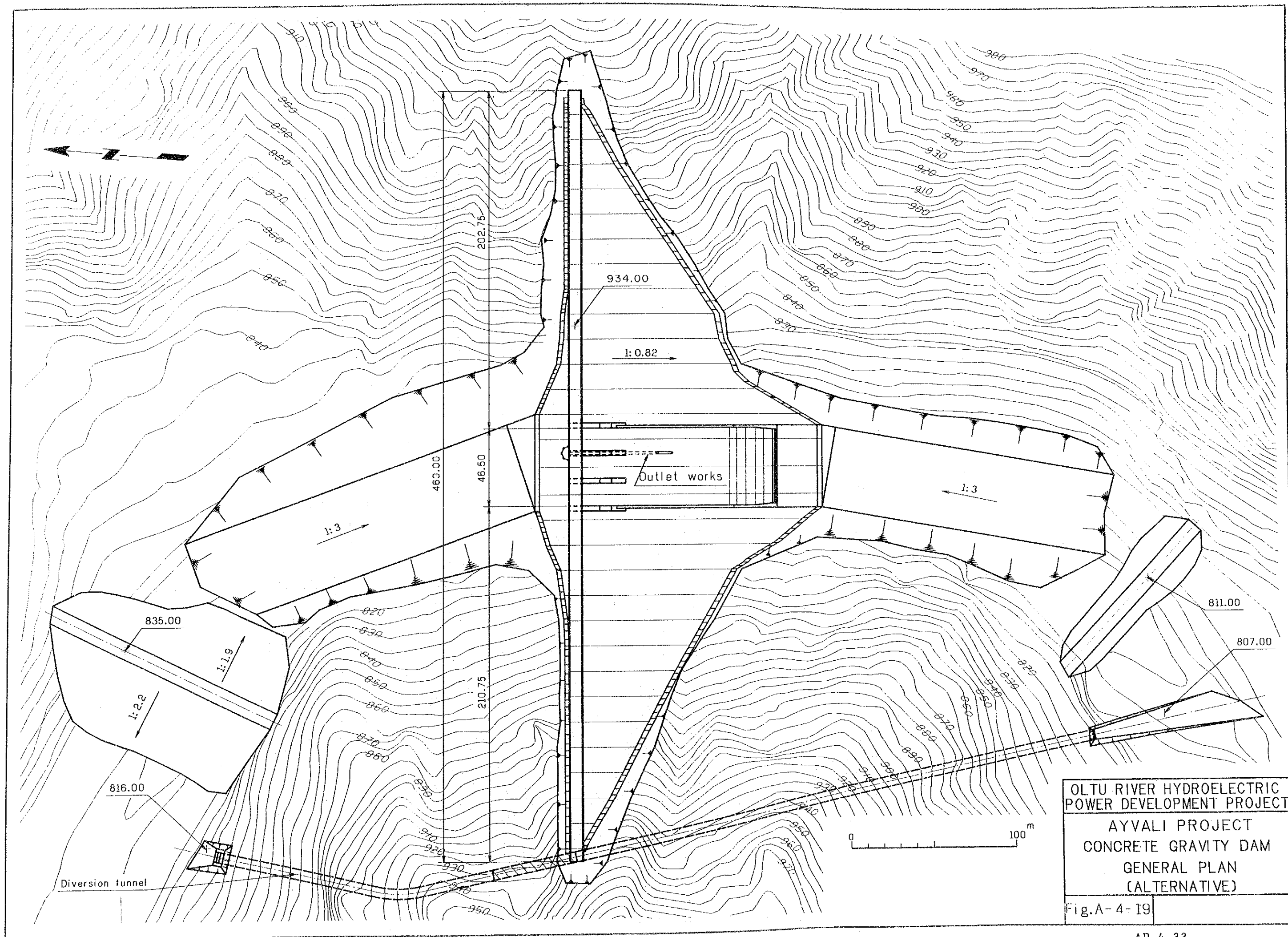


OLTU RIVER HYDROELECTRIC  
POWER DEVELOPMENT PROJECT

AYVALI PROJECT  
WATERWAY  
PROFILE AND SECTIONS  
(ALTERNATIVE)

Fig. A-4-18

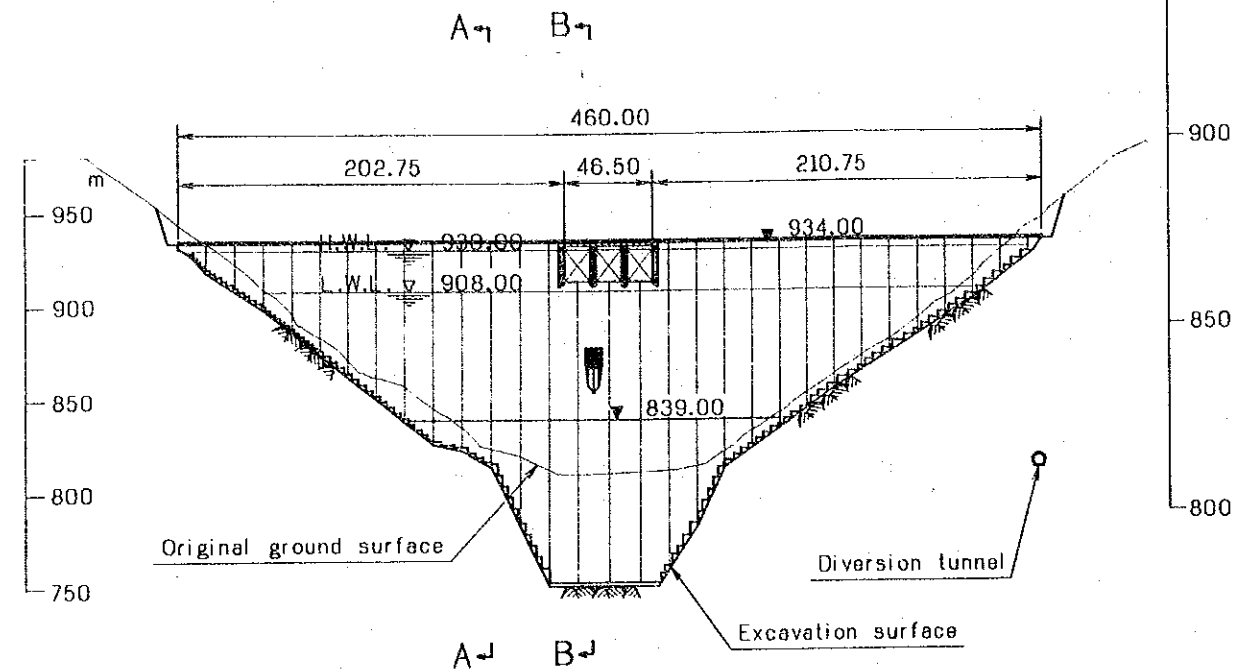
AP-4-32



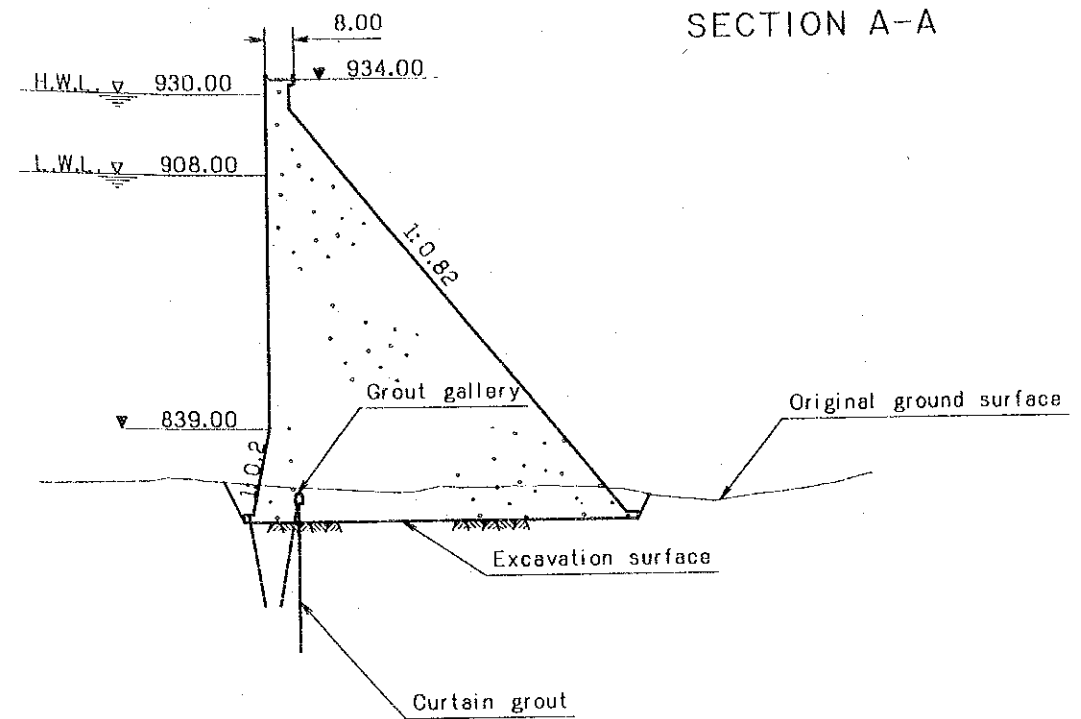
OLTU RIVER HYDROELECTRIC  
POWER DEVELOPMENT PROJECT  
AYVALI PROJECT  
CONCRETE GRAVITY DAM  
GENERAL PLAN  
(ALTERNATIVE)

Fig.A-4-19

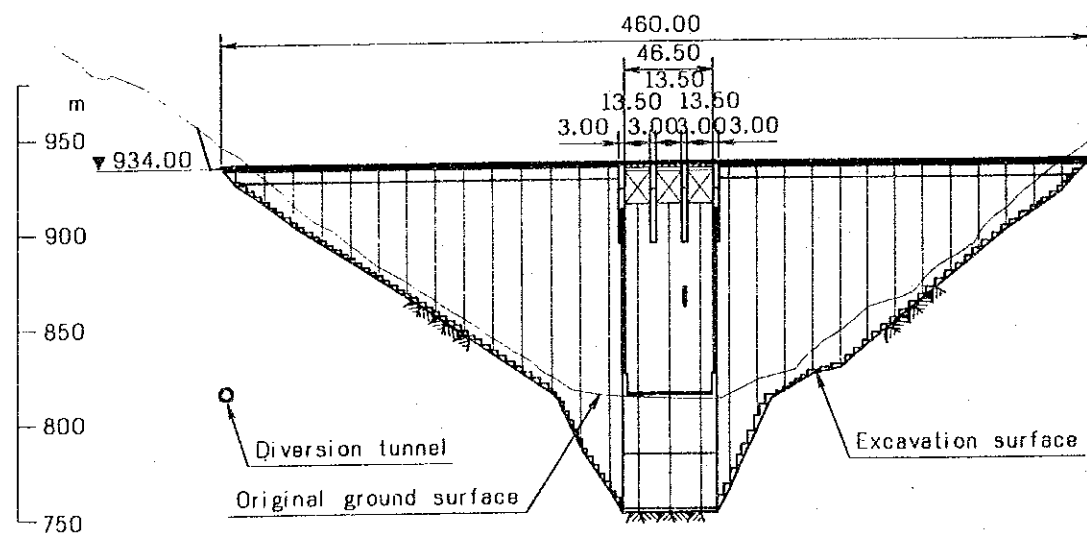
# PROFILE OF DAM (UP-STREAM)



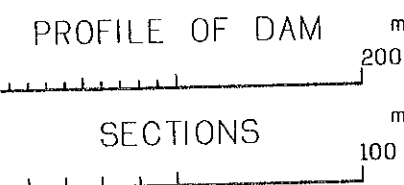
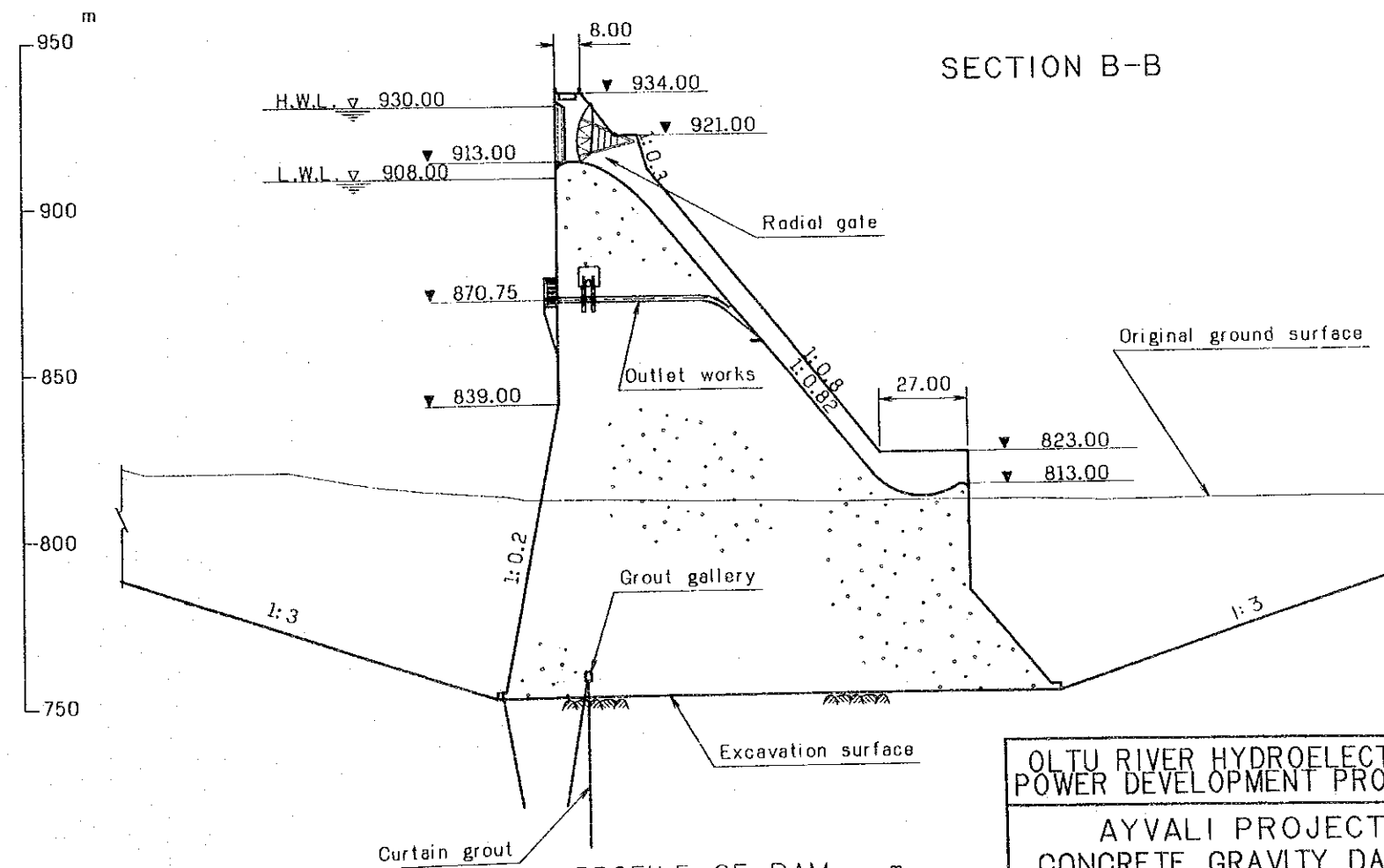
## SECTION A-A



# PROFILE OF DAM (DOWN-STREAM)



## SECTION B-B

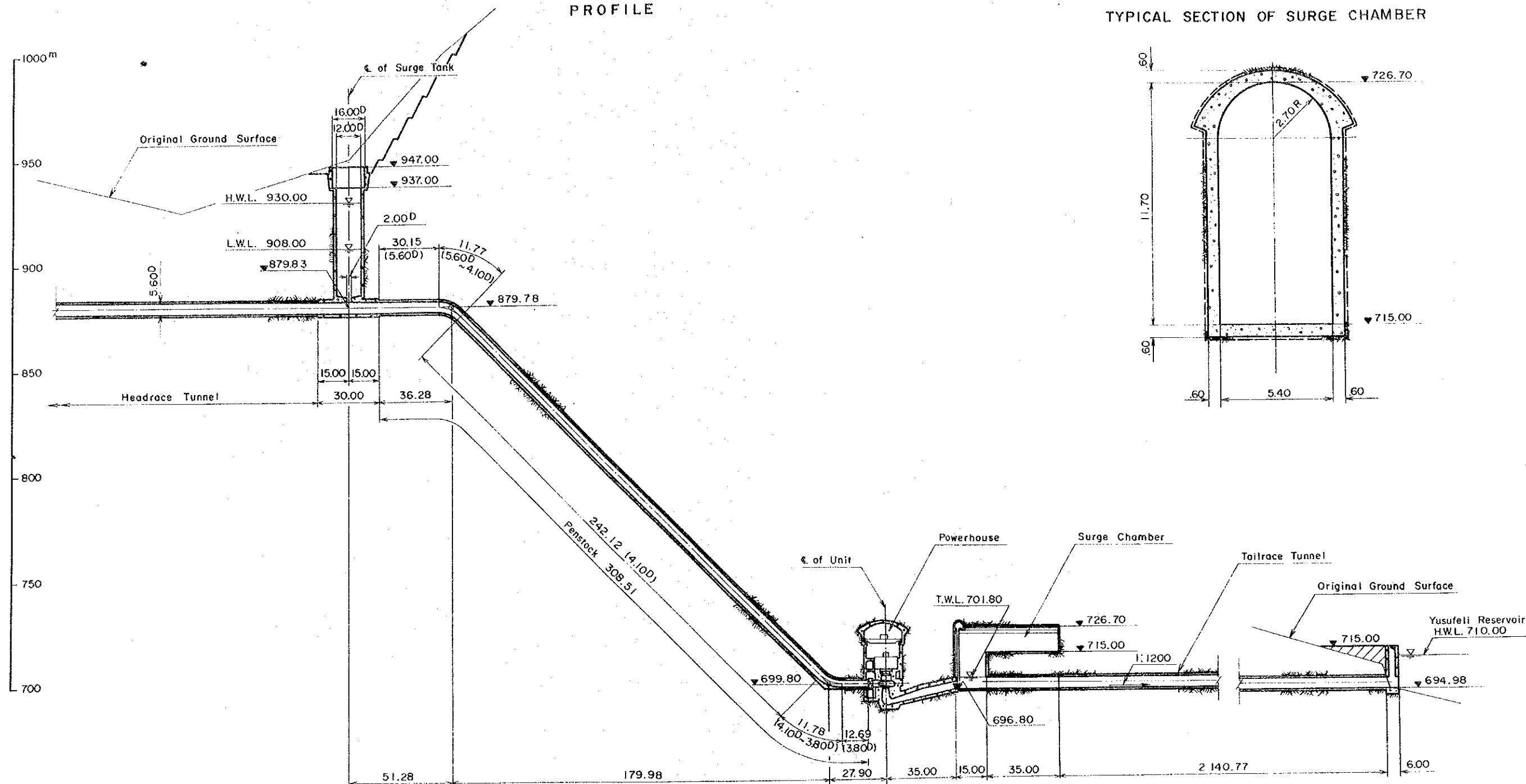


OLTU RIVER HYDROELECTRIC  
POWER DEVELOPMENT PROJECT

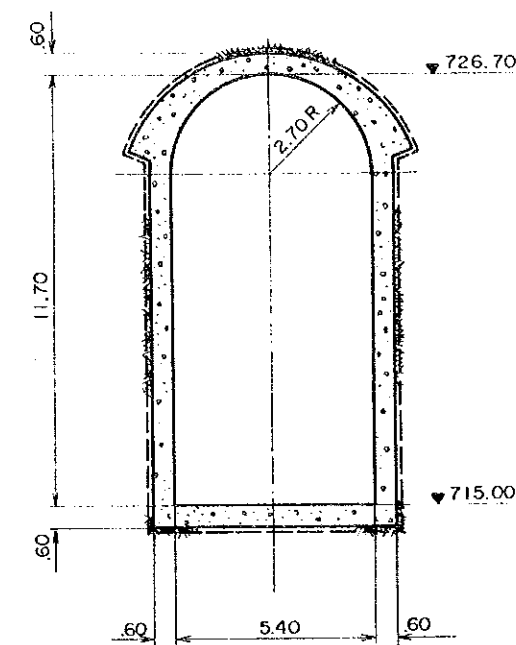
AYVALI PROJECT  
CONCRETE GRAVITY DAM  
PROFILE AND SECTIONS  
(ALTERNATIVE)

Fig.A-4-20

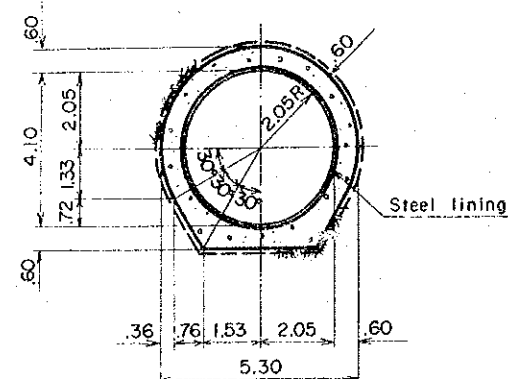
PROFILE



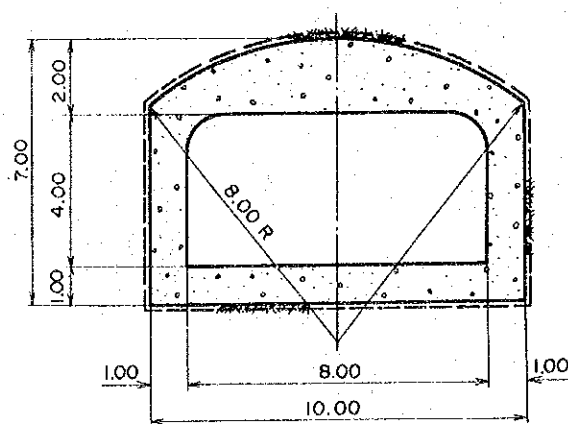
TYPICAL SECTION OF SURGE CHAMBER



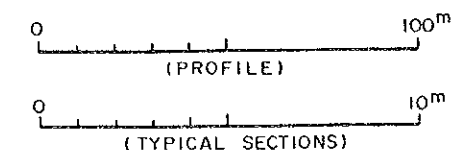
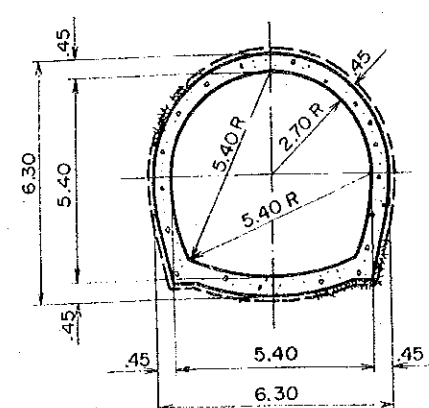
TYPICAL SECTION OF PENSTOCK



TYPICAL SECTION OF DRAFT TUNNEL



TYPICAL SECTION OF TAILRACE TUNNEL



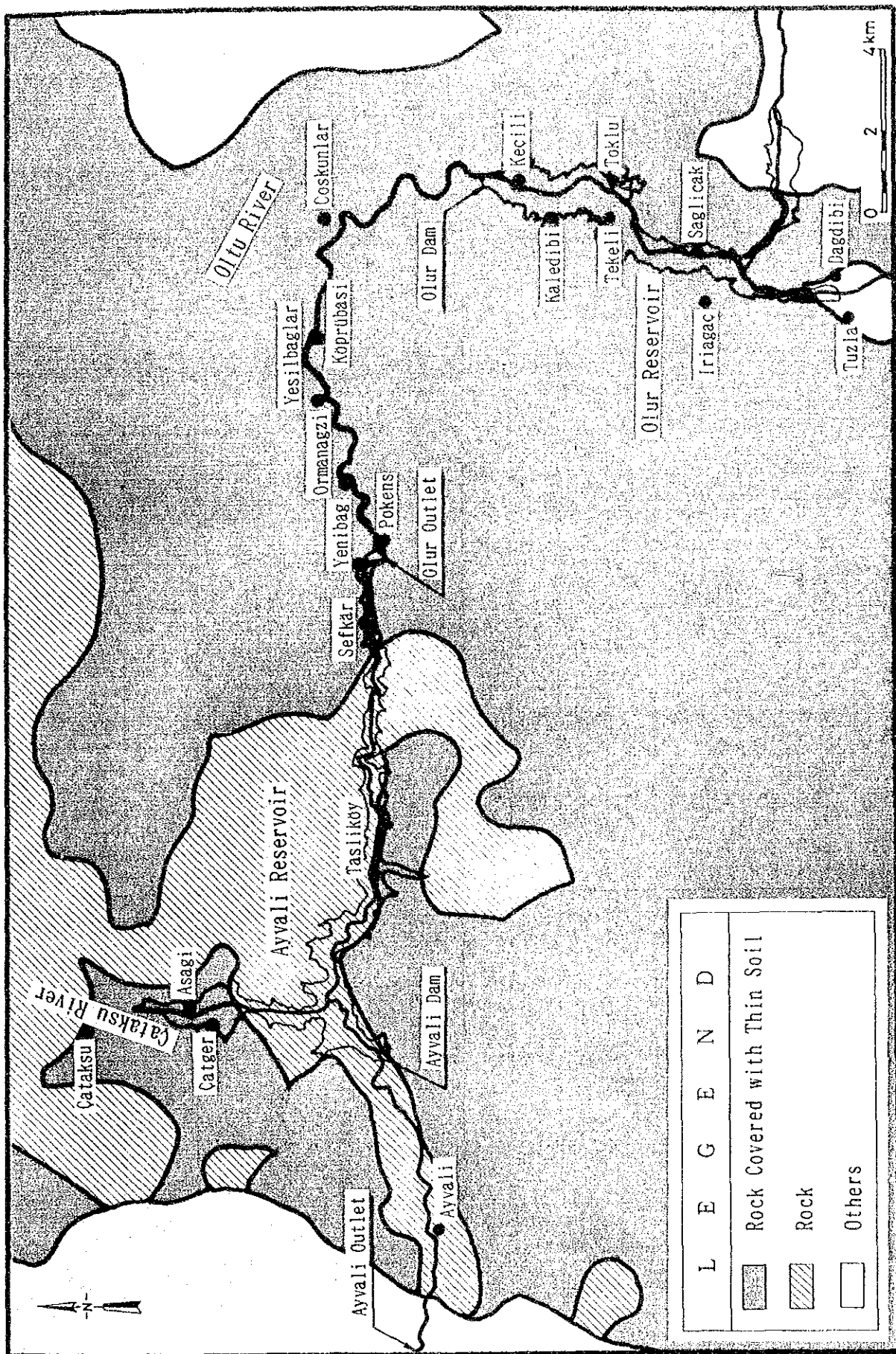
OLTU RIVER HYDROELECTRIC  
POWER DEVELOPMENT PROJECT

AYVALI PROJECT  
PENSTOCK AND SURGE CHAMBER  
PROFILE AND SECTIONS  
(ALTERNATIVE)

Fig. A-4-21

## **A-5 Environment**

Appendix A-5-1	Composition of the Ground at Planned and Surrounding Area
Appendix A-5-2	Distribution of Mineral Resources in Erzurum Province <sup>2)</sup>
Appendix A-5-3	Location of Closed Salt Mine
Appendix A-5-4	Composition of Vegetation at Planned Area and Surrounding Area
Appendix A-5-5	Species and Cover Degree of Plants in Planned Area
Appendix A-5-6	Animals Inhabited in Planned and Surrounding Area
Appendix A-5-7	Distribution of Trout ( <i>Salmo trutta macrostigma</i> ) in Turkey <sup>11)</sup>
Appendix A-5-8	Species of Aquatic Insects Collected in Oltu River
Appendix A-5-9	Setting Volume and Species of Plankton in Tortum Lake
Appendix A-5-10	Class of Inland Water Quality
Appendix A-5-11	Result of Water Quality Survey in Oltu River and Tortum River
Appendix A-5-12	Vertical Distribution of Water Temperature at Tortum Lake in Summer
Appendix A-5-13	Distribution of Recreational Facilities <sup>5), 10)</sup>
Appendix A-5-14	Location of Ruin
Appendix A-5-15	Life Style of Residents (Result of Hearing Survey)
Appendix A-5-16	Actual Condition of Population in 5 Districts <sup>7)</sup>
Appendix A-5-17	Movement of Population in Some Villages <sup>7)</sup>
Appendix A-5-18	Population Distribution in Main Industries of Erzurum Province <sup>7)</sup>
Appendix A-5-19	Production Classified by Industry <sup>10)</sup>
Appendix A-5-20	Number of Livestock in 5 Districts
Appendix A-5-21	Catch of Fish in Erzurum Province <sup>9)</sup>
Appendix A-5-22	Situation of Land Utilization in 5 Districts <sup>10)</sup>
Appendix A-5-23(1)	Situation of Land Utilization in Olur Area
Appendix A-5-23(2)	Situation of Land Utilization in Ayvali Area
Appendix A-5-24(1)	Agricultural Products at Water Reducing Area Between Olur Dam and Outlet
Appendix A-5-24(2)	Agricultural Products at Water Reducing Area Between Ayvali Dam and Outlet
Appendix A-5-25	Distribution of Public Facilities in Planned Area <sup>10)</sup>
Appendix A-5-26	Kind of Fuel in Daily Life of Residents <sup>10)</sup>



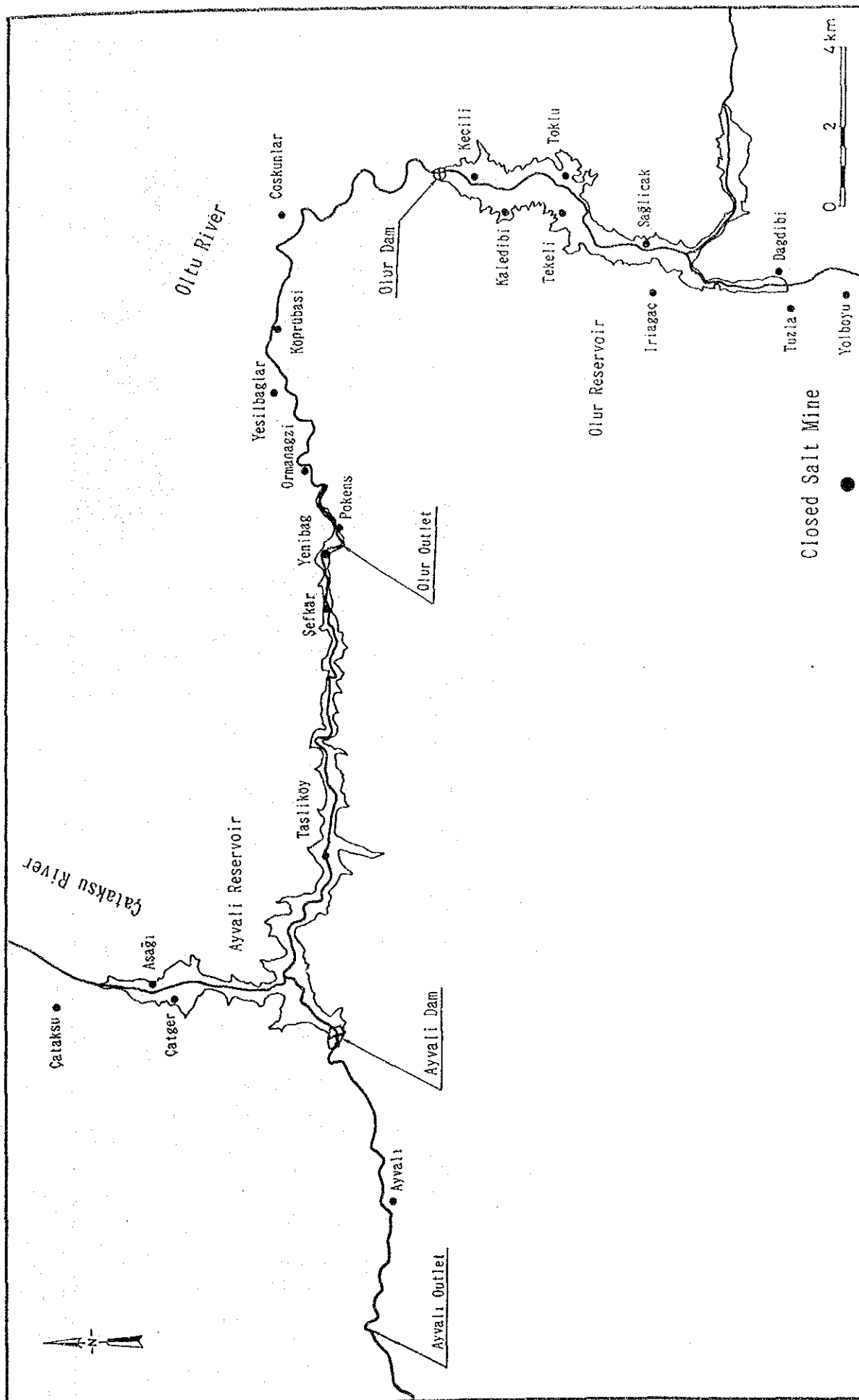
Appendix A-5-1 Composition of the Ground at Planned and Surrounding Area

Appendix A-5-2 Distribution of Mineral Resources in Erzurum Province 2)

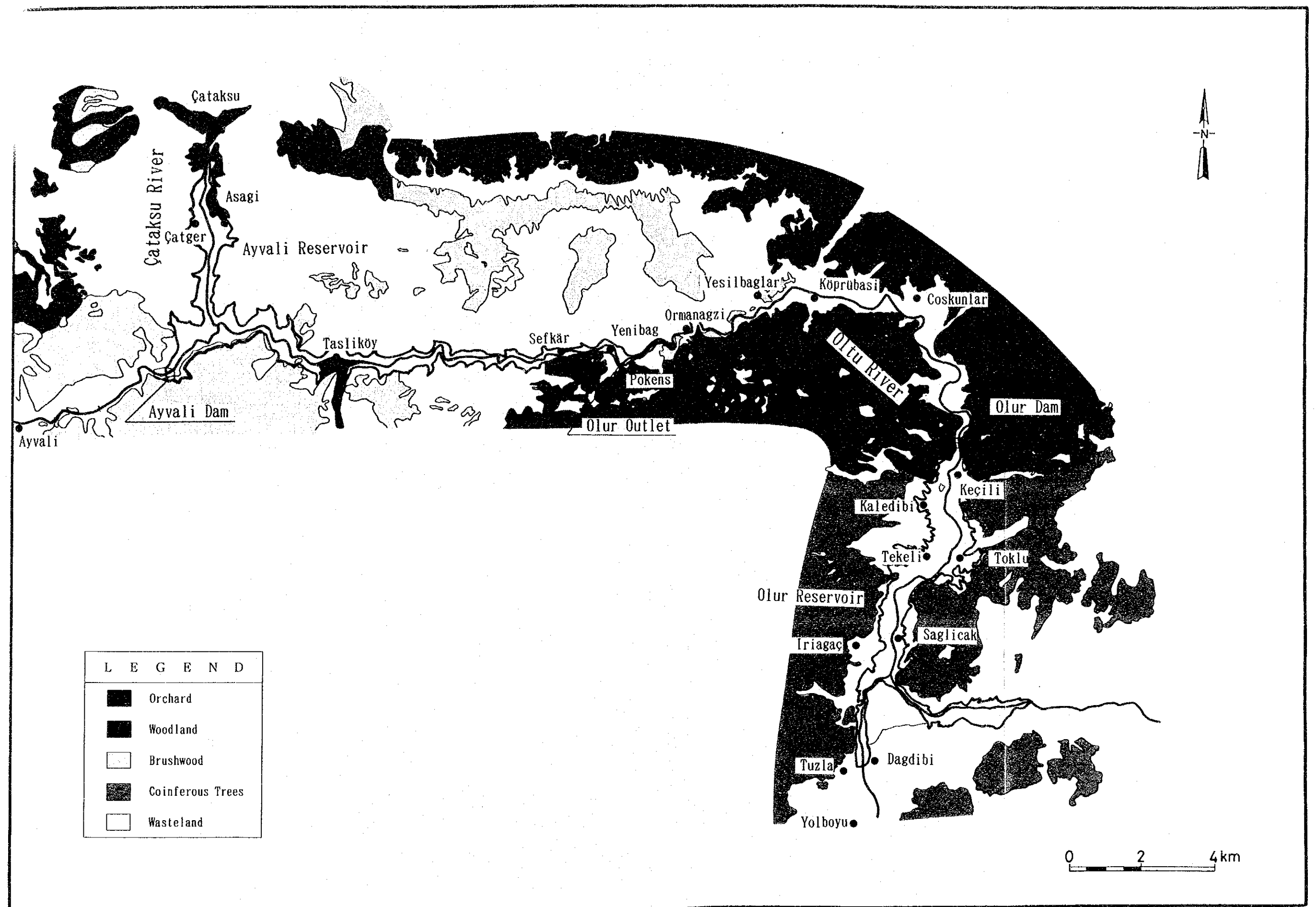
Province and Districts	Erzurum Province			Narman			Oltu			Olur			Senkaya			Tortum		
Total Number of Villages	1034			43			64			40			69			60		
Number of Villages that have No Mineral or Natural Resources	905			36			47			36			51			54		
Owner of the Resource and Status of the Work	A*	B*	C*	A*	B*	C*	A*	B*	C*	A*	B*	C*	A*	B*	C*	A*	B*	C*
Total	22	18	124	1	1	10	2	2	14	1	-	5	7	-	20	1	2	3
Lignite	7	7	53	-	-	2	2	-	6	-	-	2	1	-	6	1	-	1
Chromium	-	5	5	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Sulphur	2	-	6	1	-	1	-	-	1	-	-	-	-	-	2	-	-	-
Copper	8	-	20	-	-	2	-	-	1	1	-	-	3	-	8	-	-	1
Iron	2	-	6	-	-	-	-	-	1	-	-	-	1	-	1	-	-	1
Others	3	6	34	-	1	3	-	2	5	-	-	3	2	-	3	-	2	-

\* A: Public  
B: Private Sector  
C: Out of Operation





Appendix A-5-3 Location of Closed Salt Mine





Appendix A-5-5 Species and Cover Degree of Plants in Planned Area

Olur p/s Upper Part (1050m)

Order	Class	Species	Coverage(%)
—	—	Unidentified	15
Campanulatae	Compositae	Centaurea solstitialis	15
—	—	Xeranthemum annuum	5
Glumiflorae	Gramineae	Poaceae sp.	1
Campanulatae	Compositae	Asteraceae sp.	+
Rhoeadales	Cruciferae	Brassicaceae sp.	+

Olur p/s Middle Part (1030m)

Order	Class	Species	Coverage(%)
Campanulatae	Compositae	Centaurea solstitialis	25
Rhamnales	Rhamnaceae	Ziayphus jujuba	10
Geraniales	Zygophyllaceae	Tribulus terrestris	10
—	—	Xeranthemum annuum	5
Centrospermae	Amaranthaceae	Amaranthus sp.	5
Centrospermae	Portulacaceae	Portulaca olearaca	+
Rhoeadales	Cruciferae	Brasaicaceae sp.	+
—	—	Unidentified	+

Olur p/s Bottom Part (1018m)

Order	Class	Species	Coverage(%)
Glumiflorae	Gramineae	Poaceae sp.	70
Salicales	Salicaceae	Salix sp.	30
—	—	Unidentified	20
—	—	Unidentified	5
—	—	Unidentified	5
Campanulatae	Compositae	Astragalus sp.	5
Campanulatae	Compositae	Xanthium strumarium	4
Umbelliflorae	Umbelliferae	Apiaceas sp.	1
Equisetales	Equisetaceae	Equisetum sp.	1
—	—	Unidentified	1
—	—	Unidentified	1
Liliiflorae	Juncaceae	Juncaceae sp.	+
Rosales	Leguminosae	Lotus corniculatus	+
Plantaginales	Plantaginaceae	Plantago lanceolata	+
—	—	Palioaria dysenterica	+
—	—	Unidentified	+

Olur Dam Upper Part (1100m)

Order	Class	Species	Coverage(%)
—	—	Xeranthemum annum	20
—	—	Unidentified	5
Geraniales	Euphorbiaceae	Euphorbia sp.	+
Glumiflorae	Gramineae	Poaceae sp.	+
Tubiflorae	Labiatae	Lamiaceae sp.	+
Centrospermae	Caryophyllaceae	Dianthue sp.	+
—	—	Actemisia sp.	+
—	—	Algssum sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Olur Dam Middle Part (1010m)

Order	Class	Species	Coverage(%)
—	—	Xeranthemum annum	35
Glumiflorae	Gramineae	Dactylis sp.	10
Tubiflorae	Labiatae	Lamiaceae sp.	+
—	—	Bryngrum sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Olur Dam Botton Part (1000m)

Order	Class	Species	Coverage(%)
Campanulatae	Compositae	Centaurea solstitalis	35
Geraniales	Zygophyllaceae	Tribulus terrestris	25
Plantaginales	Plantaginaceae	Plantago lanceolata	10
—	—	Unidentified	5
Rubiales	Rubiaceae	Rubiaceae sp.	1
—	—	Unidentified	1
Centrospermae	Amaranthaceae	Amaranthus sp.	+
Centrospermae	Portulacaceae	Portulaca oleraca	+
Campanulatae	Compositae	Asteraceae sp.	+
Malvales	Malvaceae	Malva sp.	+
Polygonales	Polygonaceae	Polygonum sp.	+

Ayvali p/s Upper Part (800m)

Order	Class	Species	Coverage(%)
Ranales	Berberidaceae	Berberis sp.	15
Campanulatae	Compositae	Asteraceae sp.	10
Glumiflorae	Gramineae	Poaceae sp.	5
Rhamnales	Rhamnaceae	Zizyphus jujuba	5
Rhoeadales	Capparidaceae	Cleome sp.	+
—	—	Xeranthemum annum	+
—	—	Artemisia sp.	+
Tubiflorae	Labiatae	Tenorium polium	+
—	—	Unidentified	+
—	—	Unidentified	+

Ayvali p/s Middle Part

Order	Class	Species	Coverage(%)
Geraniales	Zygophyllaceae	Tribulus terrestris	15
—	—	Xeranthemum annum	10
—	Rhamnaceae	Zizyphus jujuba	9
—	—	Unidentified	8
—	—	Unidentified	8
Glumiflorae	Gramineae	Poaceae sp.	7
—	—	Unidentified	5

Ayvali p/s Bottom Part

Order	Class	Species	Coverage(%)
Glumiflorae	Gramineae	Poaceae sp.	20
Campanulatae	Compositae	Artemisia sp.	15
Ranales	Ranunculaceae	Clematis orientalis	10
—	—	Unidentified	10
Campanulatae	Compositae	Asteraceae sp.	5
Tubiflorae	Polemoniaceae	Cuscuta sp.	5
—	—	Xeranthemum annum	5
—	—	Unidentified	3
Campanulatae	Compositae	Asteraceae sp.	+
Rhoeadales	Resedaceae	Reseda sp.	+
Rosales	Leguminosae	Fabaceae sp.	+
Ranales	Ranunculaceae	Clematis orientalis	+
—	—	Unidentified	+

Ayvali Dam Upper Part (900m ~940m)

Order	Class	Species	Coverage(%)
—	—	Unidentified	25
—	—	Xeranthemum annum	20
Rosales	Rosaceae	Rosaceae sp.	5
—	—	Unidentified	1
Tubiflorae	Labiatae	Lamiaceae sp.	+
Tubiflorae	Labiatae	Salvia sp.	+
Campanulatae	Compositae	Asteraceae sp.	+
Campanulatae	Compositae	Carthamus sp.	+
Campanulatae	Compositae	Helichrysum sp.	+
Glumiflorae	Gramineae	Poaceae sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Ayvali Dam Middle Part

Order	Class	Species	Coverage(%)
—	—	Unidentified	15
Glumiflorae	Gramineae	Poaceae sp.	5
Tubiflorae	Labiatae	Lamiaceae sp.	+
Tubiflorae	Labiatae	Salvia sp.	+
Campanulatae	Compositae	Hieracium sp.	+
—	—	Consolida sp.	+
—	—	Coasnia sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Ayvali Dam Bottom Part

Order	Class	Species	Coverage(%)
Glumiflorae	Gramineae	Poaceae sp.	35
—	—	Unidentified	30
Rosales	Leguminosae	Trifolium sp.	25
Umbelliflorae	Umbelliferae	Apiaceae sp.	15
Tubiflorae	Convolvulaceae	Convolvulus sp.	+
—	—	Unidentified	+

Appendix A-5-5 Species and Cover Degree of Plants in Planned Area

Olur p/s Upper Part (1050m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
キキョウ目 (Campanulatae)	キク科 (Compositae)	Unidentified	15
—	—	Centaurea solstitialis	15
—	—	Xeranthemum annum	5
顕花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	1
キキョウ目 (Campanulatae)	キク科 (Compositae)	Asteraceae sp.	+
ケシ目 (Rhoeadales)	アブラナ科 (Cruciferae)	Brassicaceae sp.	+

Olur p/s Middle Part (1030m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
キキョウ目 (Campanulatae)	キク科 (Compositae)	Centaurea solstitialis	25
クロウメモドキ目 (Rhamnales)	クロウメモドキ科 (Rhamnaceae)	Ziayphus jujuba	10
フウロソウ目 (Geraniales)	ハマビシ科 (Zygophyllaceae)	Tribulus terrestris	10
—	—	Xeranthemum annum	5
中心子目 (Centrospermae)	ヒユ科 (Amaranthaceae)	Amaranthus sp.	5
中心子目 (Centrospermae)	スベリヒユ科 (Portulacaceae)	Portulaca olearaca	+
ケシ目 (Rhoeadales)	アブラナ科 (Cruciferae)	Brasacaceae sp.	+
—	—	Unidentified	+

Olur p/s Bottom Part (1018m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
顕花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	70
ヤナギ目 (Salicales)	ヤナギ科 (Salicaceae)	Salix sp.	30
—	—	Unidentified	20
—	—	Unidentified	5
—	—	Unidentified	5
キキョウ目 (Campanulatae)	キク科 (Compositae)	Astragalus sp.	5
キキョウ目 (Campanulatae)	キク科 (Compositae)	Xanthium strumarium	4
傘形花目 (Umbelliflorae)	セリ科 (Umbelliferae)	Apiaceas sp.	1
トクサ目 (Equisetales)	トクサ科 (Equisetaceae)	Equisetum sp.	1
—	—	Unidentified	1
—	—	Unidentified	1
ユリ目 (Liliiflorae)	イグサ科 (Juncaceae)	Juncaceae sp.	+
バラ目 (Rosales)	マメ科 (Leguminosae)	Lotus corniculatus	+
オオバコ目 (Plantaginales)	オオバコ科 (Plantaginaceae)	Plantago lanceolata	+
—	—	Palioaria dysenterica	+
—	—	Unidentified	+



Olur Dam Upper Part (1100m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
—	—	Xeranthemum annum	20
—	—	Unidentified	5
フウロソウ目 (Geraniales)	トウダイグサ科 (Euphorbiaceae)	Euphorbia sp.	+
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	+
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Lamiaceae sp.	+
中心子目 (Centrospermae)	ナデシコ科 (Caryophyllaceae)	Dianthus sp.	+
—	—	Actemisia sp.	+
—	—	Algssum sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Olur Dam Middle Part (1010m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
—	—	Xeranthemum annum	35
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Dactylis sp.	10
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Lamiaceae sp.	+
—	—	Eryngium sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Olur Dam Bottom Part (1000m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
キキョウ目 (Campanulatae)	キク科 (Compositae)	Centaurea solstitialis	35
フウロソウ目 (Geraniales)	ハマビシ科 (Zygophyllaceae)	Tribulus terrestris	25
オオバコ目 (Plantaginales)	オオバコ科 (Plantaginaceae)	Plantago lanceolata	10
—	—	Unidentified	5
アカネ目 (Rubiales)	アカネ科 (Rubiaceae)	Rubiaceae sp.	1
—	—	Unidentified	1
中心子目 (Centrospermae)	ヒユ科 (Amaranthaceae)	Amaranthus sp.	+
中心子目 (Centrospermae)	スベリヒユ科 (Portulacaceae)	Portulaca oleraca	+
キキョウ目 (Campanulatae)	キク科 (Compositae)	Asteraceae sp.	+
アオイ目 (Malvales)	アオイ科 (Malvaceae)	Malva sp.	+
タデ目 (Polygonales)	タデ科 (Polygonaceae)	Polygonum sp.	+

Ayvali p/s Upper Part (800m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
キンボウゲ目 (Ranales)	メギ科 (Berberidaceae)	Berberis sp.	15
キキョウ目 (Campanulatae)	キク科 (Compositae)	Asteraceae sp.	10
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	5
クロウメモドキ目 (Rhamnales)	クロウメモドキ科 (Rhamnaceae)	Zizyphus jujuba	5
ケシ目 (Rhoeadales)	フウチョウソウ科 (Capparidaceae)	Cleome sp.	+
—	—	Xeranthemum annuum	+
—	—	Artemisia sp.	+
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Tenorium polium	+
—	—	Unidentified	+
—	—	Unidentified	+

Ayvali p/s Middle Part

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
フウロソウ目 (Geraniales)	ハマビシ科 (Zygophyllaceae)	Tribulus terrestris	15
—	—	Xeranthemum annuum	10
クロウメモドキ目 (Rhamnales)	クロウメモドキ科 (Rhamnaceae)	Zizyphus jujuba	9
—	—	Unidentified	8
—	—	Unidentified	8
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	7
—	—	Unidentified	5

Ayvali p/s Bottom Part

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	20
キキョウ目 (Campanulatae)	キク科 (Compositae)	Artemisia sp.	15
キンボウゲ目 (Ranales)	キンボウゲ科 (Ranunculaceae)	Clematis orientalis	10
—	—	Unidentified	10
キキョウ目 (Campanulatae)	キク科 (Compositae)	Asteraceae sp.	5
管状花目 (Tubiflorae)	ハナシノブ科 (Polemoniaceae)	Cuscuta sp.	5
—	—	Xeranthemum annuum	5
—	—	Unidentified	3
キキョウ目 (Campanulatae)	キク科 (Compositae)	Asteraceae sp.	+
ケシ目 (Rhoeadales)	モクセイソウ科 (Resedaceae)	Reseda sp.	+
バラ目 (Rosales)	マメ科 (Leguminosae)	Fabaceae sp.	+
キンボウゲ目 (Ranales)	キンボウゲ科 (Ranunculaceae)	Clematis orientalis	+
—	—	Unidentified	+

Ayvali Dam Upper Part (900m ~940m)

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
—	—	Unidentified	25
—	—	Xeranthemum annum	20
バラ目 (Rosales)	バラ科 (Rosaceae)	Rosaceae sp.	5
—	—	Unidentified	1
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Lamiaceae sp.	+
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Salvia sp.	+
キキョウ目 (Campanulatae)	キク科 (Compositae)	Asteraceae sp.	+
キキョウ目 (Campanulatae)	キク科 (Compositae)	Carthamus sp.	+
キキョウ目 (Campanulatae)	キク科 (Compositae)	Helichrysum sp.	+
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Ayvali Dam Middle Part

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
—	—	Unidentified	15
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	5
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Lamiaceae sp.	+
管状花目 (Tubiflorae)	シソ科 (Labiatae)	Salvia sp.	+
キキョウ目 (Campanulatae)	キク科 (Compositae)	Hieracium sp.	+
—	—	Consolida sp.	+
—	—	Coasinia sp.	+
—	—	Unidentified	+
—	—	Unidentified	+

Ayvali Dam Bottom Part

目 (Order)	科 (Class)	種 (Species)	植被率 (%)
穎花目 (Glumiflorae)	イネ科 (Gramineae)	Poaceae sp.	35
—	—	Unidentified	30
バラ目 (Rosales)	バラ科 (Leguminosae)	Trifolium sp.	25
傘形花目 (Umbelliflorae)	セリ科 (Umbelliferae)	Apiaceae sp.	15
管状花目 (Tubiflorae)	ヒルガオ科 (Convolvulaceae)	Convolvulus sp.	+
—	—	Unidentified	+

# Appendix A-5-6 Animals Inhabited in Planned and Surrounding Area

## (1) Mammal \*1 (Vicinity of Olur Dam Site)

(1991.7.23)

Common Name	Scientific Name	Habitat *2	Seasonality	Number	Relation to Resident
Cow		a	—	many	economical
Cattle		"	—	"	"
Goat		a, b	—	"	—
Rabbit		a, b, c	Spring-Autumn	"	—
Wolf		a, b	Winter, Summer	rare	—
Marten		"	"	"	—
Bear		b	"	"	—
Fox		"	"	"	—
Wild Goat		"	none	some	—
Badger		c	—	rare	economical *3
Water Sable		"	—	"	"

\*1 The Wild Goat hunting is forbidden

\*2 a: Flat land

b: Mountainous region

c: Riverside

\*3 Their leather is available

## (2) Reptile and Amphibian (Vicinity of Olur Dam Site)

(1991.7.23)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Snake		a, b, c	Summer	many	—
Water Snake		c	"	"	—
Lizard		a, b, c	"	"	—
Frog		a, c	"	"	—

Appendix A-5-6 Animals Inhabited in Planned and Surrounding Area (Continue)

(1991.7.23)

(3) Bird (Vicinity of Olur Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Sparrow		a	—	many	—
Mag-pia		a, c	—	"	—
Parrot		"	—	rare	—
Crow		a	—	many	—
Owl		b	—	"	—
Eagle		"	—	rare	—
Stork		a, c	—	some	—
Partridge		b	Summer	"	—
Falcon		"	—	rare	—
Sparrow-hawk		"	—	"	—
Peregrine falcon		"	—	"	—
Duck		c	—	many	—
Wild duck		"	Summer	rare	—
Goose		"	—	some	—
Wild goose		"	Summer	rare	—
Pigeon		"	—	many	—
Chicken		a	—	"	—
Turkey		"	—	"	—
Woodpecker		a, b	—	some	—

Appendix A-5-6 Animals Inhabited in Planned and Surrounding Area (Continue)

(1991.7.23)

(4) Insect and others (Vicinity of Olur Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Spider		a, b, c	—	many	—
Centipede		"	—	"	—
Grasshopper		"	—	"	—
Ant		"	Summer	"	—
Glowworm		"	Spring, Autumn	some	—
(Gelinbocepi)		"	"	many	—
Housefly		"	"	"	—
Mosquito		a, c	Spring-Autumn	"	—
Butterfly		a, b, c	"	"	—
Dragonfly		"	"	"	—
Scorpion		a, b	Summer	some	—
Hooked-head		"	"	"	—
Scorpion		"	"	"	—
Long tailed		"	"	"	—
Scorpion		"	"	"	—

(1991.7.23)

(5) Fish (Vicinity of Olur Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Carp		Riverside	December-February	many *1	economical *2

\*1: The villagers say the number is decreasing due to turbidity.

\*2: But no professional fishing activity for carp.

Appendix A-5-6 Animals Inhabited in Planned and Surrounding Area (Continue)

(1991.7.27)

(6) Mammal (Vicinity of Ayvali Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Cow		a	—	many	economical
Cattle		"	—	"	"
Goat		a, b	—	"	"
Rabbit		a, b, c	—	"	—
Wolf		a, b	Spring-Autumn	rare	—
Marten		"	Winter, Summer	"	—
Bear		"	"	"	—
Fox		b	"	"	—
Wild Goat		"	"	"	—
Badger		"	none	some	—
Water Sable		c	—	many	economical
		"	—	"	"

(1991.7.27)

(7) Reptile and Amphibian (Vicinity of Ayvali Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Snake		a, b, c	Summer	many	—
Water snake		c	"	"	—
Lizard		a, b, c	"	"	—
Frog		a, c	"	"	—

Appendix A-5-6 Animals Inhabited in Planned and Surrounding Area (Continue)

(1991.7.27)

(8) Bird (Vicinity of Ayvali Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Sparrow		a	—	many	—
Mag-pie		a, c	—	"	—
Crow		a	—	"	—
Owl		b	—	"	—
Eagle		"	—	rare	—
Partridge		"	Summer	"	—
Falcon		"	—	"	—
Sparrow-hawk		"	—	"	—
Peregrine falcon		"	—	"	—
Duck		c	—	many	—
Wild duck		"	Summer	rare	—
Goose		"	—	some	—
Wild goose		"	Summer	rare	—
Pigeon		a	—	many	—
Chicken		"	—	"	—
Turkey		"	—	"	—
Woodpecker		a, b	—	some	—



Appendix A-5-6 Animals Inhabited in Planned and Surrounding Area (Continue)

(1991.7.27)

(9) Insect and others (Vicinity of Ayvali Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Spider		a, b, c,	—	many	—
Centipede		"	—	"	—
Grasshopper		"	Summer	"	—
Ant		"	Spring, Autumn	"	—
Glowworm		"	"	some	—
(Gelinbocepi)		"	"	many	—
Housefly		"	"	"	—
Mosquito		a, c	Spring-Autumn	"	—
Butterfly		a, b, c	"	"	—
Dragonfly		"	"	"	—
Scorpion		a, b	Summer	some	—
Hooked-head		"	"	"	—
Scorpion		"	"	"	—
Long tailed		"	"	"	—
Scorpion		"	"	"	—

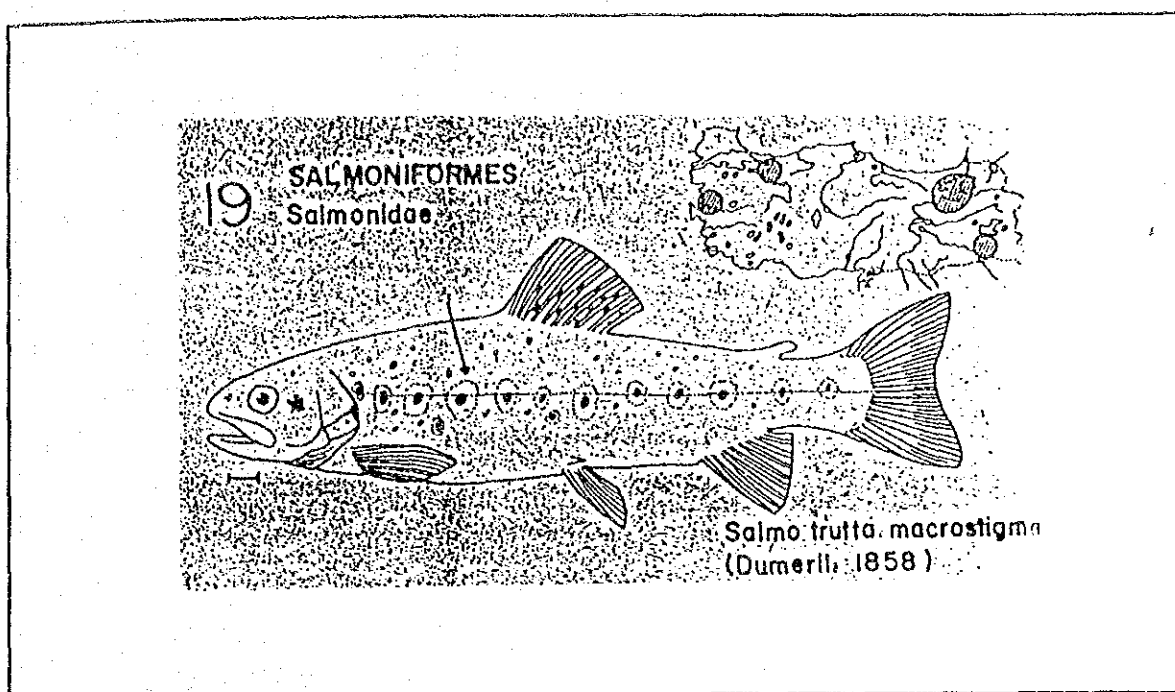
(1991.7.27)

(10) Fish (Vicinity of Ayvali Dam Site)

Common Name	Scientific Name	Habitat	Seasonality	Number	Relation to Resident
Carp		Riverside	December-February	many	economical

\*1: The villagers say the number is decreasing due to turbidity.

\*2: But no professional fishing activity for carp.



Appendix A-5-7 Distribution of Trout (*Salmo trutta macrostigma*) in Turkey <sup>11)</sup>

Appendix A-5-8 Species of Aquatic Insects Collected in Oltu River

Species (動物名)			Ayvali Res.	Ayvali Dam	Olur Res.	Olur P/S
Arthropoda (節足動物)	Trichoptera (トビケラ目)	Hydropsychidae (シマトビケラ科)	18	7	15	2
		Psychomyidae (クダトビケラ科)		1		
	Coleoptera (甲虫目)	Dryopidae (マルゲムシ科)			1	
	Ephemeroptera (カゲロウ目)	Ephemerellidae (マダラカゲロウ科)			4	1
		Caenidae (ヒメシロカゲロウ科)			1	
		Ecdyonuridae (ヒラタカゲロウ科)				1
Mollusca (軟体動物)	Megagastropoda (中腹足目)	Valvatidae (ミシタダミ科)			1	2
		Hydrobilidae (イヅマデガイ科)				1
	Basommatophora (基眼目)	Planorbidae (ヒラマキガイ科)				1

## Appendix A-5-9 Setting Volume and Species of Plankton in Tortum Lake

		Surface layer	Middle layer
Settling Volume (ml/ℓ) (沈 殿 量)		0.048	0.093
出            種	Diatoms (珪 藻 類) (cells/ml)		
	<u>Cyclotella</u> sp.	542.8	86.0
	<u>Navicula</u> sp.	0.2	0.2
	Dinoflagellate (渦 鞭 毛 藻 類) (cells/ml)		
	<u>Ceratium</u> <u>hirundinella</u>	4.2	0.2
	Green Algae (緑 藻 類) (cells/ml)		
	<u>Chlorella</u> sp.	0.6	—
	<u>Dictyosphaerium</u> sp.	0.8	—
	Euglenophyta (ユーグレナ藻類) (cells/ml)		
	<u>Phacus</u> sp.	54.8	0.2
	<u>Trachelomonas</u> sp.	48.7	0.6
	Spirotrichia (有鐘纖毛虫類) (ind./ml)	—	0.9

Appendix A-5-10 Class of Inland Water Quality.

Water Quality Parameters	Water Quality Classes			
	I	II	III	IV
A) Physical and inorganic chemical parameters				
1-Temperature (°C)	25	25	30	> 30
2-pH	6.5~8.5	6.5~8.5	6.0~9.0	6.0~9.0
3-Dissolved oxygen (mg/l)	8	6	3	< 3
4-Oxygen saturation (%)	90	70	40	< 40
5-Cl (mg/l)	25	200	400	> 400
6-SO <sub>4</sub> (mg/l)	200	200	400	> 400
7-NH <sub>4</sub> -N (mg/l)	0.2	1	2	> 2
8-NO <sub>2</sub> -N (mg/l)	0.002	0.01	0.05	> 0.05
9-NO <sub>3</sub> -N (mg/l)	5	10	20	> 20
10-PO <sub>4</sub> -P (mg/l)	0.02	0.16	0.65	> 0.65
11-Total dissolved solids (mg/l)	500	1500	5000	> 5000
12-Color	5	50	300	> 300
13-Na (mg/l)	125	125	250	> 250
B) Organic parameters				
1-COD (mg/l)	25	50	70	> 70
2-BOD (mg/l)	4	8	20	> 20
3-Organic carbon (mg/l)	5	8	12	> 12
4-Total K-N (mg/l)	0.5	1.5	5	> 5
5-Emulsified oil & grease (mg/l)	0.02	0.3	0.5	> 0.5
6-Methylene blue active substances (mg/l)	0.05	0.2	1	> 1.5
7-Phenolic substance (mg/l)	0.002	0.01	0.1	> 0.1
8-Mineral oils and derivatives (mg/l)	0.02	0.1	0.5	> 0.5
9-Total pesticide (mg/l)	0.001	0.01	0.1	> 0.1
C) Inorganic pollution parameters				
1-Hg (μg/l)	0.1	0.5	2	> 2
2-Cd (μg/l)	3	5	10	> 10
3-Pb (μg/l)	10	20	50	> 50
4-As (μg/l)	20	50	100	> 100
5-Cu (μg/l)	20	50	200	> 200
6-Cr(Total) (μg/l)	20	50	200	> 200
7-Cr (+6) (μg/l)	< N.D.	20	50	> 50
8-Co (μg/l)	10	20	200	> 200
9-Ni (μg/l)	20	50	200	> 200
10-Zn (μg/l)	200	500	2000	> 2000
11-CN (μg/l)	10	50	100	> 100
12-F (μg/l)	1000	1500	2000	> 2000
13-Cl <sub>2</sub> (μg/l)	10	10	50	> 50
14-S (μg/l)	2	2	10	> 10
15-Fe (μg/l)	300	1000	5000	> 5000
16-Mn (μg/l)	100	500	3000	> 3000
17-B (μg/l)	1000	1000	1000	> 1000
18-Se (μg/l)	10	10	20	> 20
19-Ba (μg/l)	1000	2000	2000	> 2000
20-Al (mg/l)	0.3	0.3	1	> 1
21-Ci (pCi/l)				
α	1	10	10	> 10
β	10	100	100	> 100
D) Bacteriological parameters				
1-Fecal coliforms (MPN/100ml)	10	200	2000	> 2000
2-Total coliforms (MPN/100ml)	100	20000	100000	> 100000



# Appendix A-5-11 Result of Water Quality Survey in Oltu River and Tortum River

## (1) Oltu River

(1991. 7. 31)

Parameter	Unit	Oltu Dam Site	Oltu P Outlet	Ayvali Dam Site	Ayvali Outlet
Time	—	13:27	13:54	14:15	14:28
Temp.	°C	25.4	25.6	26.7	27.3
pH	—	8.05	8.19	8.22	8.27
Trancep.	cm	< 4	< 4	< 4	< 4
DO	mg/l	7.26	7.22	7.20	8.65
SS	"	817.0	721.0	343.0	803.0
COD	"	24.0	28.0	32.0	24.0
NH <sub>4</sub> <sup>+</sup> -N	"	< 0.01	< 0.01	< 0.01	< 0.01
NO <sub>2</sub> <sup>-</sup> -N	"	0.018	0.014	0.019	0.017
NO <sub>3</sub> <sup>-</sup> -N	"	< 0.001	< 0.001	< 0.001	< 0.001
Kjeldahl-N	"	0.560	0.224	0.336	0.224
T - P	"	1.02	0.58	2.08	1.24

## (2) Tortum River

(1991. 7. 31)

Parameter	Unit	Tortum Lake Upper Layer	Tortum Lake Middle Layer	Tortum Lake Inlet	Tortum Lake Outlet
Time	—	10:35	10:50	9:30	11:58
Temp.	°C	23.5	7.1	19.7	22.8
pH	—	8.38	7.95	8.15	8.46
Trancep.	cm	160(TR)	—	< 4	> 12
DO	mg/l	8.29	8.94	7.85	8.11
SS	"	10.0	23.0	118.0	18.0
COD	"	8.0	8.0	16.0	12.0
NH <sub>4</sub> <sup>+</sup> -N	"	< 0.01	1.20	1.58	< 0.01
NO <sub>2</sub> <sup>-</sup> -N	"	0.005	0.007	0.009	0.006
NO <sub>3</sub> <sup>-</sup> -N	"	< 0.001	< 0.001	< 0.001	< 0.001
Kjeldahl-N	"	0.336	1.008	0.560	0.556
T - P	"	< 0.01	< 0.01	< 0.01	< 0.01

Note 1) Standard Method in Turkey was adapted for the chemical analysis.

Note 2) In general, K-N is measured as the sum of Organic-N and NH<sub>4</sub>-N.

According to the relation between NH<sub>4</sub>-N value of the lake water analysis, such Concentration of NH<sub>4</sub>-N are larger than K-N. Therefore, NH<sub>4</sub>-N value adapted in this report is the one included in K-N.

Appendix A-5-12 Vertical Distribution of Water Temperature at Tortum Lake in  
Summer

(Depth: 85 m )

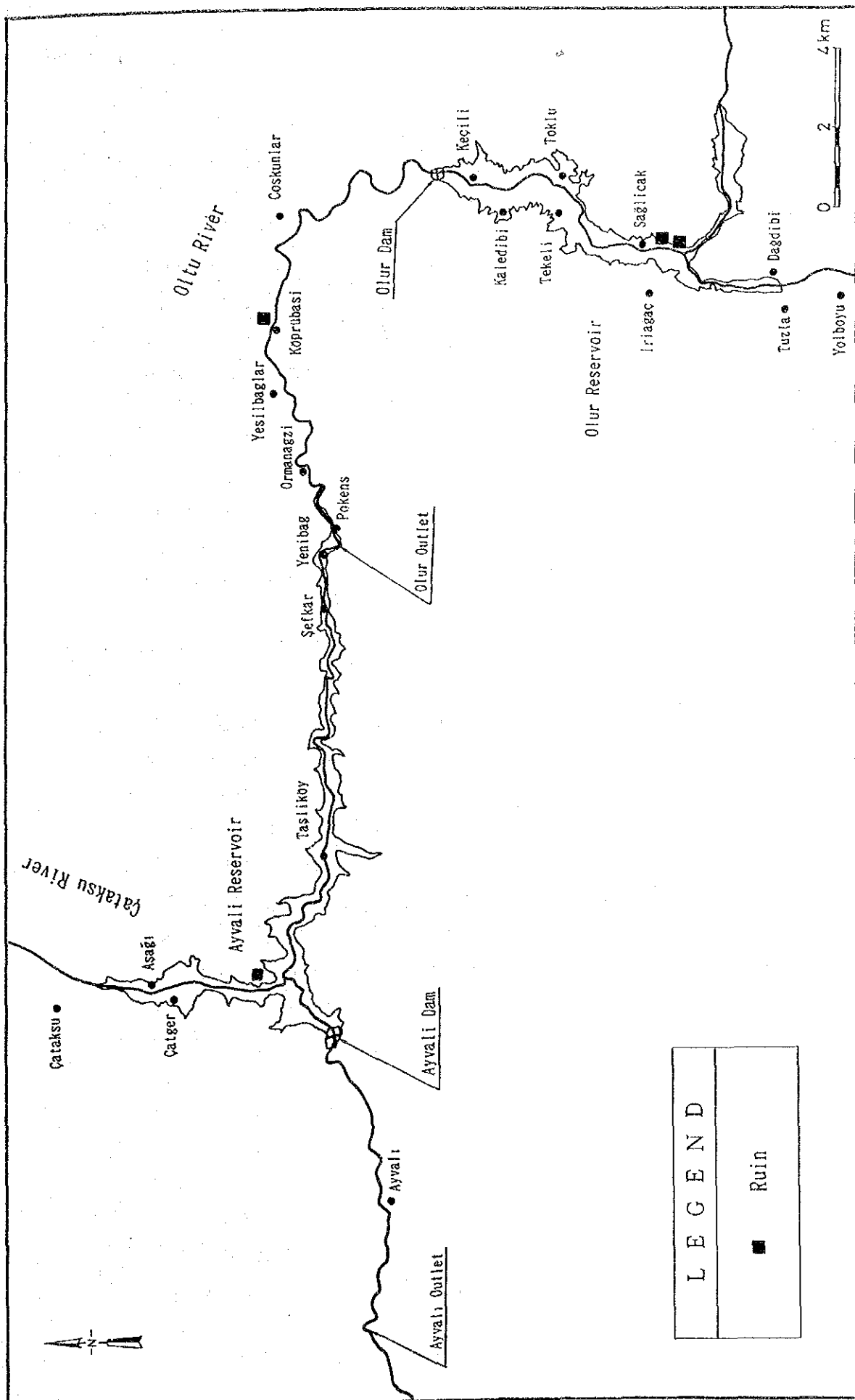
Depth (m)	Tempreture (°C)
0	25.4
1	24.3
2	23.7
3	23.1
4	21.1
5	19.1
6	18.1
7	16.1
8	14.3
9	12.4
10	10.5
11	10.1
12	9.1
13	8.4
14	7.2
15	7.1
16	7.1
17	7.1

Appendix A-5-13 Distribution of Recreational Facilities 5). 10)

(Number of Villages)

Item	Narman	Oltu	Olur	Senkaya	Tortum
Hunting Region	—	—	1	1	1
Available Forest to Tourists	—	—	—	1	—
Old Work of Art	1	1	7	21	—
Healing Lukwarm	—	—	—	5	2
Healing Mineral Spring	1	2	—	9	2
Visited Places	3	—	1	15	10
Others	1	—	—	3	6
Historical and Natural Places	5	3	8	40	18
Total Number of Villages	43	64	40	69	60





Appendix A-5-14 Distribution of Ruin

## Appendix A-5-15 Life Style of Residents (Result of Hearing Survey)

### 1. Survey Items

Hearing Survey was planned at the 4 villages in the project area.

Survey Items are shown as follows.

- 1) Agriculture
- 2) Stock raising
- 3) Other activities
- 4) Situation of labor power
- 5) General merchandise
- 6) Fuels
- 7) Electricity
- 8) Food and drinking water
- 9) Drainage
- 10) Education
- 11) Regional transportation

### 2. Survey Result

#### (1) Ormanagzi

- 1) No information about Agricultural Area.  
Kind of crops. For all information apply the map.
- 2) stock raising  
(Olur Agricultural Office)
- 3) Nothing only agricultural facilities.
- 4) 16% of the people working at abroad, especially Europe, nearly all off the people deal with agriculture.
- 5) The production is limited and they are taking goods from Oltu such as vegetation, milk and cheese.
- 6) cool and wood. Cool is supplied from Balkaya and wood is supplied from forest which is near to villages.
- 7) Electricity is present. The network is insufficient.
- 8) They are eating what they are producing. They are buying only milk and cheese from Oltu District.
- 9) No drainage system.
- 10) 100% Attendance. (176 student in elementary schools)

The 80% of student who finished the elementary schools are going to secondary school. They are very keen on education. Some of them go to University and others do the family jobs.

11) They have only one way road Oltu Artvin road.

This is an international road which is connected to Iran.

The number of cars crossing the road in one day is between 50-60.

(2) Koprubasi

1) Available from Olur Agriculture Office.

2) ———

3) Api Culture, 20 hives. This is consumed by villagers. Kilm production for themselves.

4) The 20% of them are the workers an Ankesa, Amasya and Samsun. And the remains are dealing only agricultural works.

5) The productions, which they produce, are not sufficient to their needs. So they are taking their necessities from Olur and Yesilboglar by using road.

6) Wood cutting from forest. They buy gasoline from Coskinler.

7) They have electrification, but not sufficient.

8) They eat what they produce but they buy something from Olur and Yesilbeglar They are taking waters from 3 difference spring.

9) No treatment system.

10) The attendant to elementary schools is 100%.

The attendant to the secondary school is not good. There are 10 students in elementary school and 4 students in secondary schools and 4 students in high school.

11) They are using same road. And number of car crossing this road is nearly about 100.

(3) Taslikoy

1) Olur Agriculture Office.

2) ———

3) Honey production and kilim production are present but for only villager needs.

4) The 65% of the people are dealing with farming and 35% of them are dealing with feeding of animal. And subproducts of animals (milk, cheese, skin, fresh butter) are sold a near markets.

Only one person is dealing with fishing in this village.

- 5) The amount of selling things is greater than the amount of other necessities. And they sell good in Oltu.
- 6) They use wood as fuel coming from forest.
- 7) Electrification is present but not sufficient.
- 8) No drainage system.
- 9) They eat what they produce in village. But during recent years due to damage coming from insects the amount of product drops especially in fruits. (walnut and quince)  
They are taking water from 5 different springs. But they have also water networks.
- 10) There are 5 elementary schools are 1 secondary schools. The attendance to elementary school is 100% whereas the attendance to secondary school is very low due to absence in teacher number.
- 11) One road but they have also another road which connects them to the upper quarters.

Number of cars crossing main road is 100.

#### (4) Çataksu

- 1) The agricultural area is approximately equal to 70000 de. Of which 250 he is irrigatable.  
Every product (crops, fruits) is produced in Çataksu. (We observed apricots quince, clover, poplar, corn, oleaster, willow, apple) They gain 150-200 million TV / year from walnut trees.
- 2) Available from Olur Agriculture Office.
- 3) —
- 4) —
- 5) —
- 6) —
- 7) —
- 8) —
- 9) —
- 10) —
- 11) —

- \* There is a mark on the road about "Hunting is prohibited in this Area" on the entrance of Çataksu road.
- \* In tributaries of Çataksu the trout is present. But not in main river. In Çataksu river only Carps is present. (The villagers of Taslikoy gave this information)

Appendix A-5-16 Actual Condition of Population in 5 Districts <sup>7)</sup>

Item	Olur	Oltu	Tortum	Narman	Senkaya
Population	19, 074	43, 397	46, 987	25, 005	36, 370
Increase Rate(%/y)	-8. 85	11. 46	5. 34	-1. 33	-11. 70
Density (per km <sup>2</sup> )	23	31	24	29	25

Source: Population census in 1985

Appendix A-5-17 Movement of Population in Some Villages <sup>7)</sup>

Village	Year						
	1955	1960	1965	1970	1975	1980	1985
Ormanagzi	1, 222	1, 334	1, 481	1, 614	1, 547	1, 431	1, 380
Köprübasi	174	193	203	211	201	224	168
Çataksu	673	861	918	978	962	990	915
Taslıköy	495	956	1, 072	1, 155	1, 242	1, 310	1, 212

Source : State Institute of Statistics, Population Census in 1985

Appendix A-5-18 Population Distribution in Main Industries  
of Erzurum Province <sup>7)</sup>

Grope	Male	Femal	Total
Scientific and Technical	9,281	3,212	12,493
Goverment	1,461	26	1,487
Clerical	7,403	1,591	8,994
Sales	9,752	192	9,544
Service	13,293	588	13,881
Agriculturel, Forestry and Fisheries	117,252	144,891	262,143
Manufacturung and Transport	52,708	837	53,545
Unknown	1	46	47
Unemployed	11,034	897	11,931
Erzurum Total	222,230	152,235	374,465

Appendix A-5-19 Production Classified by Industry <sup>10)</sup>

(Million TL)

Industry	1975	1976	1977	1978
Agriculture	2,327.8	3,369.8	4,370.4	6,005.6
Plant and animal	2,290.5	3,330.6	4,290.6	5,890.1
Forestry	37.2	39.1	79.6	115.2
Fishery	0.1	0.1	0.2	0.3
Industry	476.9	523.2	685.3	1,124.1
Mining	45.6	55.5	74.5	99.7
Production Industry	375.8	295.5	509.2	871.6
Electricity, Gas, Water	55.5	72.2	101.6	152.8
Construction	250.7	294.0	437.0	666.4
Trade	528.4	660.2	861.7	1,315.5
Transportation and Communication	421.3	538.8	711.3	1,086.1
Financial	162.6	218.4	287.8	366.6
Income from Buildings	237.8	296.5	407.3	642.5
Services	250.7	313.6	403.4	612.0
Bank service expenses	- 81.0	- 108.5	- 148.9	- 183.6
Sum of Industries	4,575.2	6,106.0	8,021.3	11,635.2



Appendix A-5-20 Number of Livestock in 5 Districts

(Unit: head)

Kind of Livestock		Oltu	Olur	Narman	Senkaya	Tortum
Breeding in Pasture	Cattle	13,360	19,715	10,655	43,215	40,634
	Water buffalo	25	250	23	368	80
	Sheep	48,350	41,210	63,500	72,750	84,050
	Goat	24,310	16,853	3,210	25,625	10,520
Breeding in Barn	Cattle	—	1	—	—	—
	Apiculture	4,670	2,176	1,100	4,727	3,295
	Poultry	7,370	19,720	—	11,860	8,010

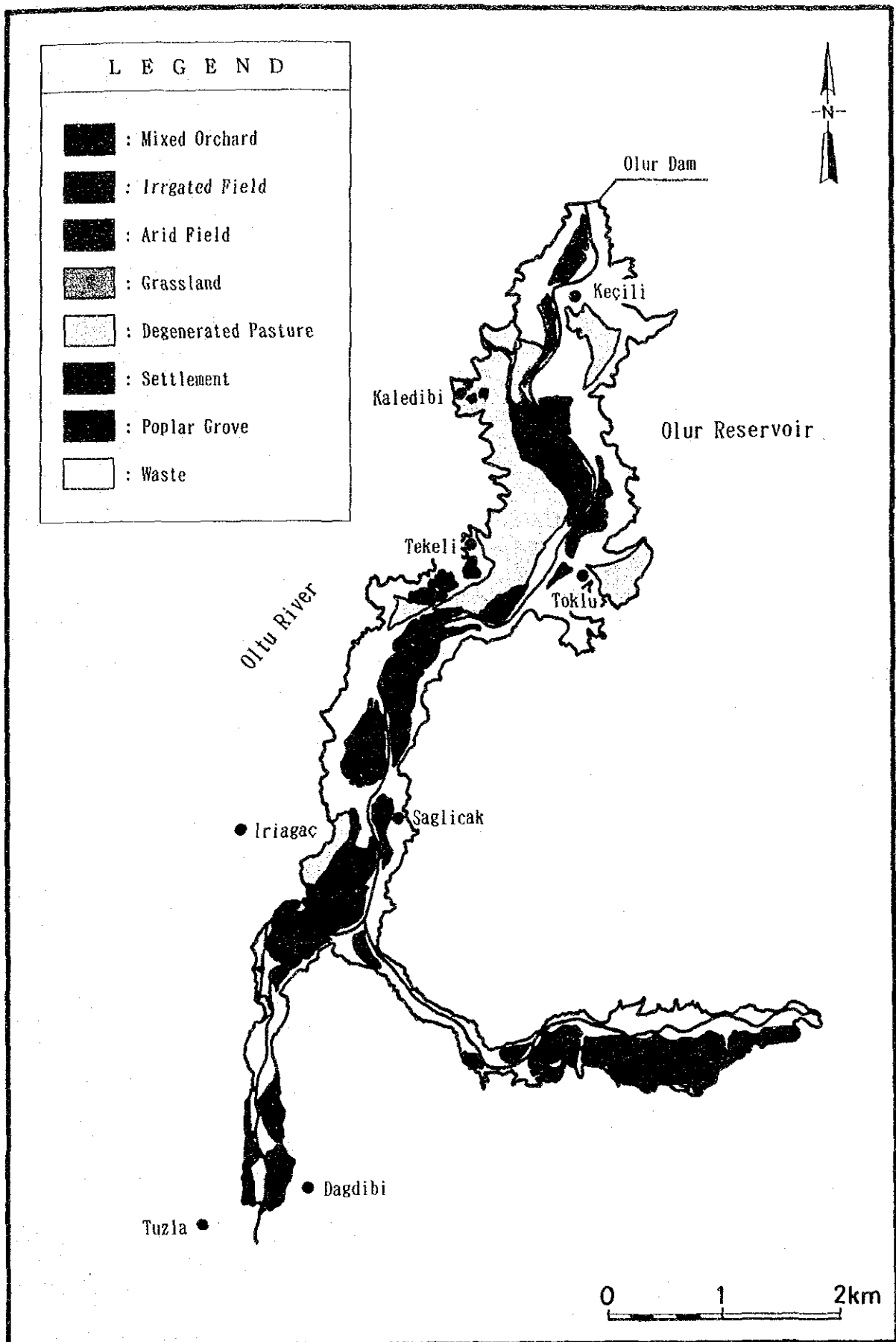
Appendix A-5-21 Catch of Fish in Erzurum Province. <sup>9)</sup>

Fish	Quantity (Unit : t/year)
Trout	1.20
Black Fish	26.00
Rock Fish	4.80
Freshwater Grey Mullet	2.40
Rudd	0.75
Carp	111.90
Sheat Fish	8.50
Others	6.70

Appendix A-5-22 Situation of Land Utilization in 5 Districts <sup>10)</sup>

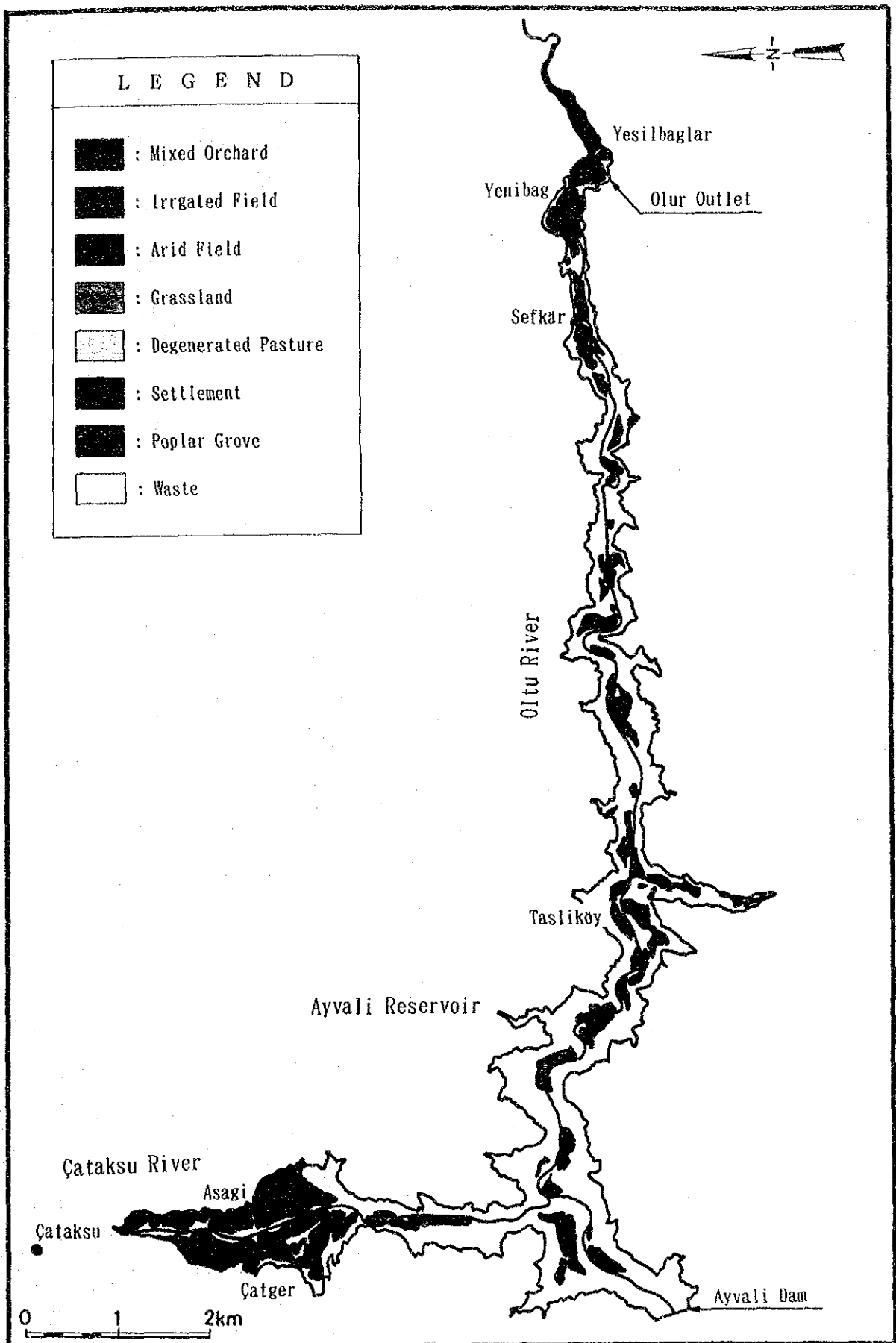
(Unit: ha)

Districts Type	Olur	Narman	Oltu	Senkaya	Torlum
Pasture	24,540	54,750	25,990	68,411	59,280
Meadow	379,693	450,590	758,015	589,133	1,093,755
Forest	160,025	19,300	224,645	362,525	129,351
Brushwood	75,425	—	38,850	34,850	51,675
Dry Agriculture with Fallowing	73,477	127,684	46,483	123,270	104,093
Dry Agriculture without Fallowing	—	69,288	94,140	800	1,000
Irrigated Field	3,620	47,090	37,575	38,762	28,321
Garden	11,650	—	1,700	4,652	30,295
Vineyard	20	—	1,900	—	—
Housing Land	5,624	2,895	5,240	7,825	6,422
Water Surface Area	107	—	1,250	10	8,210
River Bed	2,634	3,270	12,525	5,664	8,976
Swamp	620	—	—	54	2,800
Rocky Place	57,105	36,000	123,110	17,615	140,520
Others Uncultivated Area	— 66,090	— 42,165	5,900 148,025	140,520 31,172	— 166,928
Total Area	794,570	811,880	1,378,530	1,253,973	1,667,751



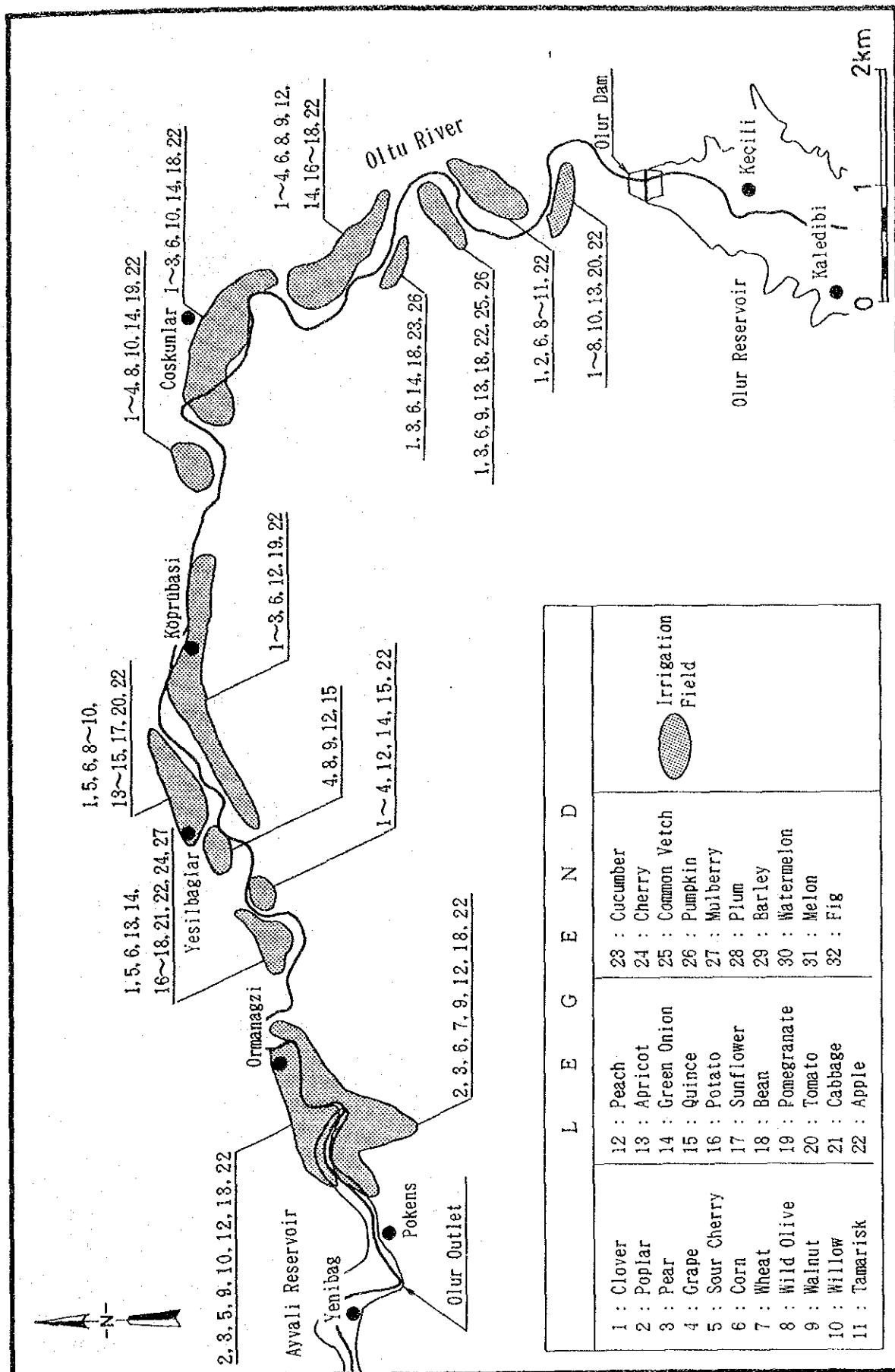
Appendix A-5-23(1) Situation of Land Utilization in Olur Area.

Source: Report on Expropriation Values for Power Stages of Olur Tributary of Çoruh River, 1991

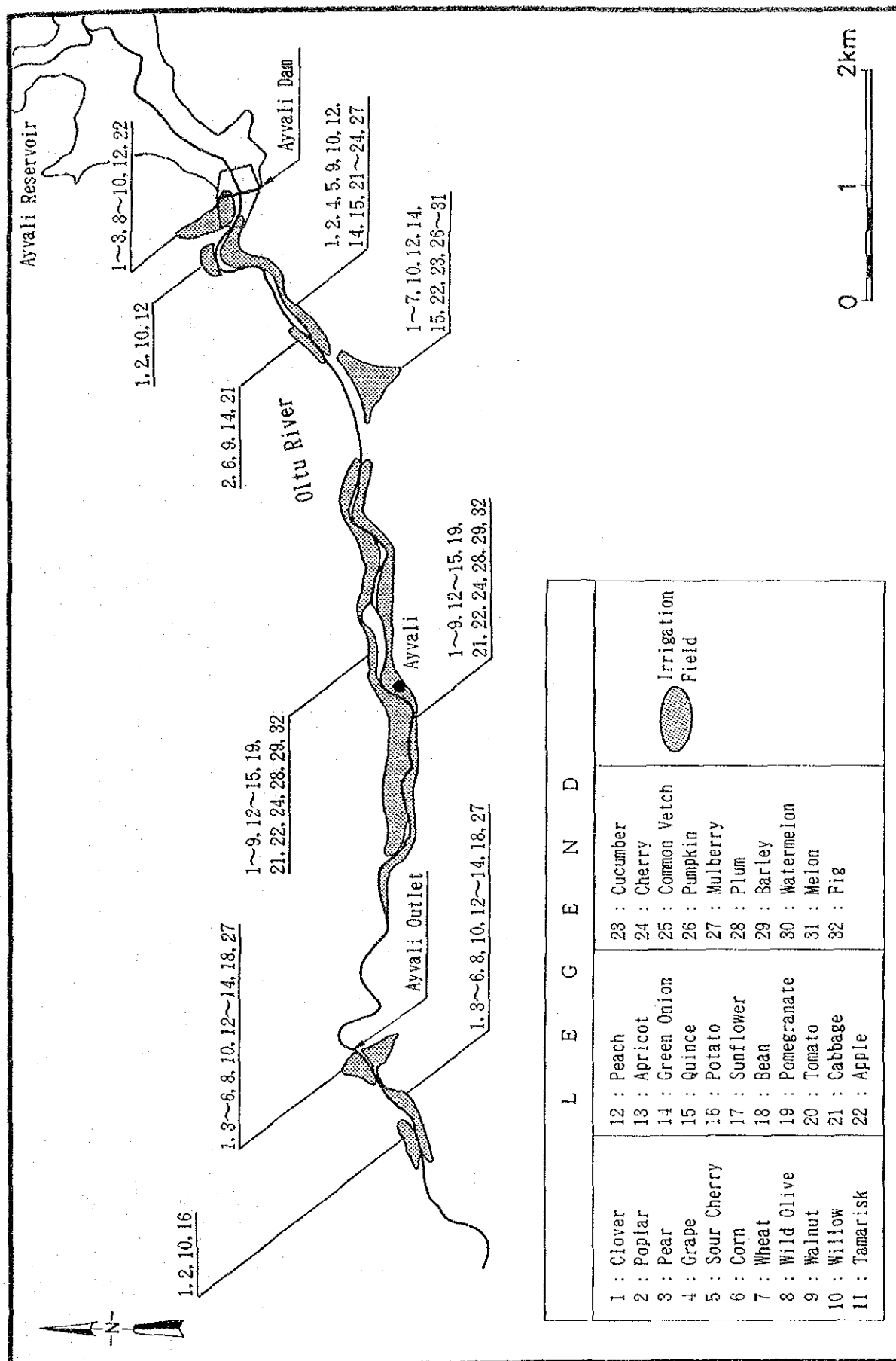


Appendix A-5-23(2) Situation of Land Utilization in Ayvali Area.

Source: Report on Expropriation Values for Power  
Stages of Oltu Tributary of Çoruh River, 1991



Appendix A-5-24(1) Agricultural Products at Water Reducing Area Between Olur Dam and Outlet



Appendix A-5-24(2) Agricultural Products at Water Reducing Area Between Ayvali Dam and Outlet

Appendix A-5-25 Distribution of Public Facilities in Plannd Area 10)

	School	Mosque	Post Office	Town Hall	Store	Petrol Office	Spring	Police Station	Grave	Ruin	Recreation Facilities	Health Center
Olur Reservoir Area												
Yolboyu	○	○	○	○	○	○			○		○	
Dagdibi	○	○	○	○	○				○		○	○
Iriagaç	○	○	○	○	○		○		○			
Saglicak	○	○		○					○			
Tekeli	○	○	○	○			○		○			
Toklu	○	○		○			○		○			
Tuzla	○	○		○	○		○		○			
Kaledibi	○	○	○	○			○		○			
Olur Dam Site ~ P/S												
Coskunlar	○	○	○	○	○	○			○	○		○
Köprübaşı	○	○	○	○			○		○			
Yasılbaglar	○	○	○	○	○		○		○	○		○
Ormaragzi	○	○	○	○					○			
Ayvalı Reservoir Area												
Taslıkoy	○	○	○					○	○	○		○
Çataksu	○	○	○		○				○			○

○: Public Facilities exist

Appendix A-5-26 Kind of Fuel in Daily Life of Residents <sup>10)</sup>

Administrative Sector	Erzurum		Oltu	
Total Number of Villages	1,034		64	
Choice	A	B	A	B
Coal	13	69	—	12
Wood	147	246	37	14
Petroleum	1	1	—	—
Dried Dunk	872	595	26	2
Others	1	3	1	2

A : First Choice  
B : Second Choise



## Reference

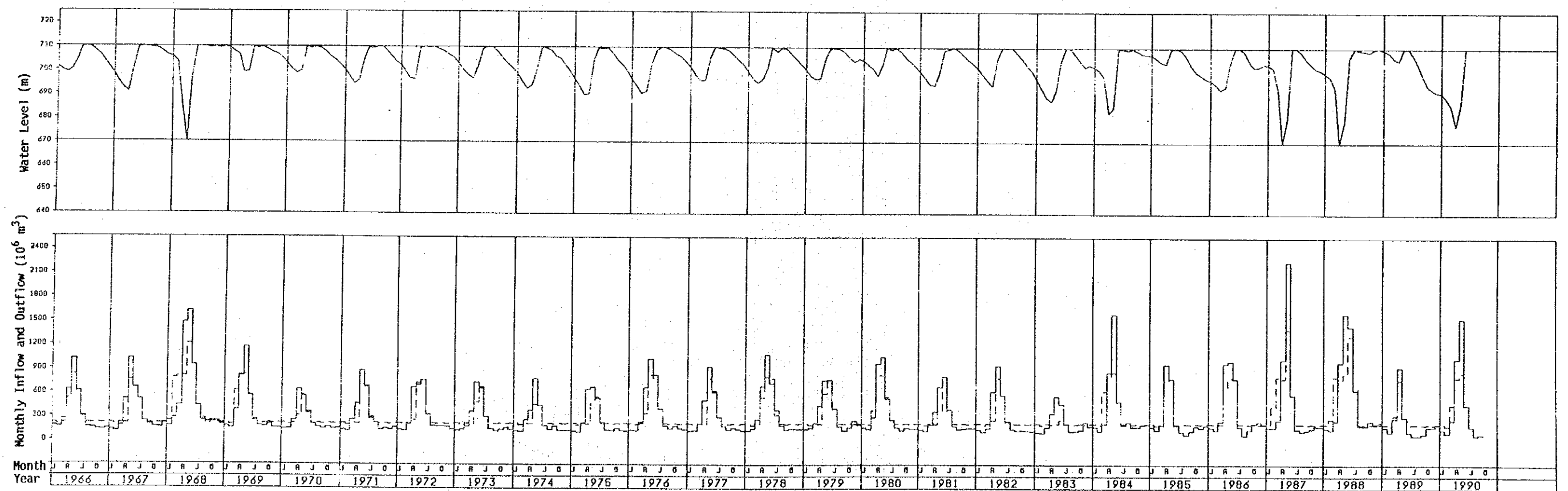
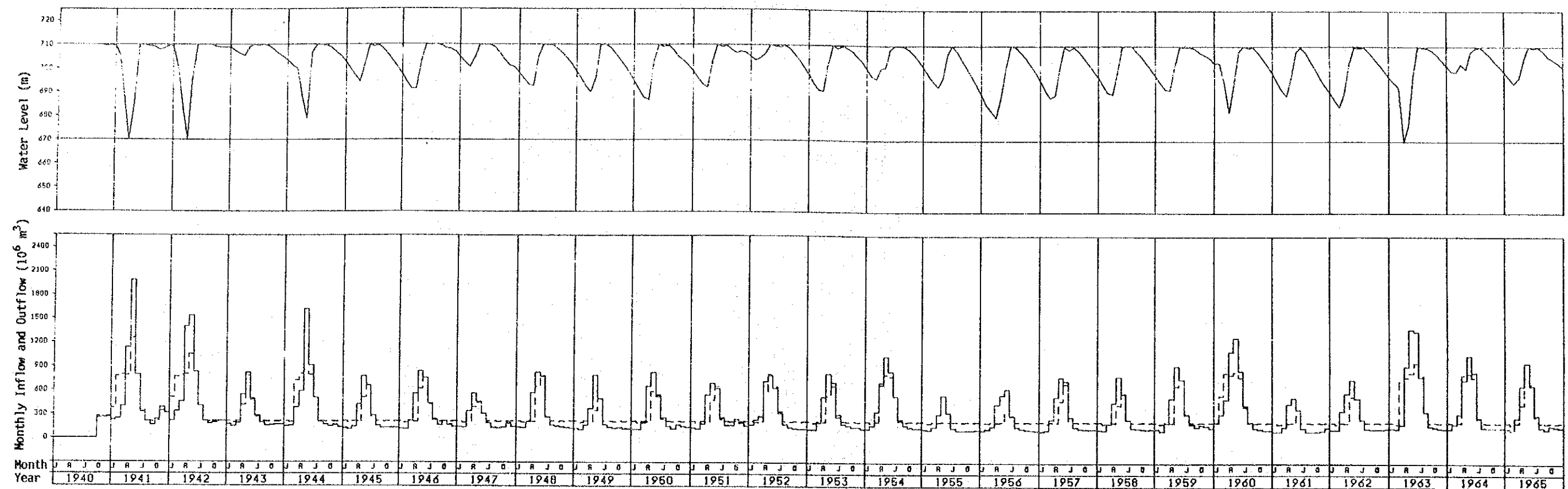
- 1) Soil Distribution Inventory Report of Erzurum Province
- 2) Known Ore and Mineral Resources of Turkey; General Directorate of Mineral and Exploration
- 3) City Woodland; Published by Prof. Dr. Ibrahim ATAY
- 4) Çoruh-Oltu River Master Plan Report, EIE, June-1990
- 5) Fresh Water Fish and Production Techniques; Published by Prof. Dr. Dogan ATAY, 1987
- 6) Hunting Seasons Between 1989 and 1990 with the decision of Main Hunting Comission
- 7) Census of Population in 1985 for the Province of Erzurum
- 8) Report on Expropriation Value for Power Stages of Oltu Tributary of Çoruh river; The Directorate of the Project Division of Dams and HPPs (1991)
- 9) Economical Investigation about Turkish Fresh Water Product (1983). Published by Ministry of Agriculture and Forestry
- 10) Inventory Study for the Subdistricts of Erzurum Province, Published by Ministry of Agriculture and Forestry
- 11) Turkey Fresh Water Fish Catalogue

## **A-6 Reservoir Operation Study**

# Summary of Operation Study of Yusufeli Reservoir

Unit: 10<sup>6</sup> m<sup>3</sup>

YEAR	INFLOW	POWER DISCHARGE	SPIII
1940	6263.12	5927.76	410.51
1941	6487.00	6168.84	268.82
1942	3593.27	3640.41	0.57
1943	5172.55	5143.96	8.69
1944	3246.60	3343.53	0.0
1945	3807.04	3715.24	1.07
1946	2910.08	3054.97	0.0
1947	3672.01	3588.06	0.0
1948	2863.86	2948.48	0.0
1949	3304.28	3267.49	0.0
1950	3318.27	3264.04	0.0
1951	4055.90	4060.88	0.0
1952	3430.30	3396.23	0.0
1953	4330.11	4501.70	0.12
1954	2302.39	2530.76	7.73
1955	2876.00	2746.33	0.0
1956	3345.85	3341.80	0.0
1957	3151.78	3132.71	1.33
1958	3686.87	3635.56	0.0
1959	5533.71	5524.00	2.20
1960	2404.40	2633.79	0.0
1961	3336.19	3188.01	0.0
1962	5821.22	5554.55	162.40
1963	4300.44	4372.81	0.0
1964	3884.91	3896.70	0.0
1965	3924.50	3910.69	0.0
1966	3928.19	3825.83	0.0
1967	6330.97	5768.37	538.48
1968	4469.17	4551.46	2.73
1969	3057.47	3110.27	0.0
1970	3603.56	3531.01	2.72
1971	3725.48	3720.47	1.57
1972	3230.54	3317.61	2.88
1973	3000.39	3003.78	0.0
1974	3141.90	3161.03	0.0
1975	4106.38	4029.15	0.0
1976	3564.48	3586.31	0.0
1977	4144.10	4122.86	0.0
1978	3594.01	3635.56	0.0
1979	4270.57	4268.54	0.0
1980	3462.89	3420.42	0.0
1981	3484.99	3562.37	0.0
1982	2556.08	2581.95	0.0
1983	4593.25	4454.94	0.0
1984	3349.78	3636.23	0.0
1985	4211.71	4141.88	0.0
1986	5520.15	4937.53	547.24
1987	6152.67	5463.66	530.62
1988	2847.99	3297.89	0.13
1989	4446.00	3943.20	3.91
AVERAGE	3920.29	3870.41	49.87



Yusufeli Reservoir Operation

# Total Energy Generation of Yusufeli Project

Unit: GWh

NO.	Month Year	< OCT >	< NOV >	< DEC >	< JAN >	< FEB >	< MAR >	< APR >	< MAY >	< JUN >	< JUL >	< AUG >	< SEP >	< TOTAL >
1	1940	133.79	129.39	133.72	185.17	360.76	332.21	328.15	401.76	388.68	173.85	107.11	103.25	2777.86
2	1941	106.47	187.67	160.37	248.06	350.00	326.69	342.90	401.76	387.67	200.88	107.47	103.82	2903.76
3	1942	106.92	103.36	106.81	106.47	95.57	105.22	204.47	389.36	246.01	133.79	107.30	103.29	1808.58
4	1943	105.92	101.78	104.45	103.51	95.94	332.35	345.64	388.48	388.67	254.40	107.35	103.52	2431.95
5	1944	106.17	101.92	104.29	102.86	91.56	99.91	97.91	249.01	335.97	133.54	106.84	102.34	1632.30
6	1945	104.46	99.80	101.70	100.03	88.73	97.43	97.57	302.84	375.58	214.21	120.41	103.45	1806.20
7	1946	106.54	103.80	105.36	104.16	93.10	191.82	191.82	227.44	155.30	107.12	106.28	101.56	1505.11
8	1947	103.57	99.40	101.90	100.57	92.68	98.21	98.20	317.20	388.72	133.82	106.93	102.63	1743.83
9	1948	105.02	100.44	102.33	100.65	89.25	97.32	95.26	168.13	246.14	107.12	106.17	101.52	1419.34
10	1949	103.50	98.70	100.29	98.23	86.92	95.10	96.17	289.10	271.39	120.15	106.75	102.13	1568.44
11	1950	104.45	100.21	102.35	100.89	89.70	98.17	97.79	237.10	323.14	120.14	106.83	102.64	1583.40
12	1951	105.88	102.54	105.37	104.52	97.67	105.15	295.56	401.40	323.07	160.29	107.02	102.75	2011.22
13	1952	104.91	100.13	101.88	100.06	88.66	97.16	96.97	262.42	348.90	133.49	107.13	103.08	1644.80
14	1953	105.58	101.07	103.12	101.56	90.74	101.29	321.79	391.39	387.14	267.86	120.40	103.47	2195.42
15	1954	106.04	101.49	103.54	101.94	90.59	98.78	95.90	102.94	103.17	106.86	103.38	100.30	1216.93
16	1955	101.79	96.56	97.60	95.27	87.20	91.63	90.48	99.48	164.61	147.05	106.72	102.15	1280.53
17	1956	104.13	99.20	100.72	98.48	87.07	95.86	96.23	235.22	361.06	119.91	106.73	102.20	1606.81
18	1957	104.26	99.53	101.37	99.59	88.27	96.63	95.80	208.20	284.90	120.51	106.92	102.41	1508.37
19	1958	104.59	99.90	101.80	100.27	88.97	97.53	97.27	328.07	375.26	160.39	107.05	103.28	2623.30
20	1959	105.83	101.86	104.38	103.80	260.81	373.88	360.65	401.01	386.57	214.01	107.22	103.28	1764.14
21	1960	105.52	100.74	102.50	100.58	88.93	96.82	95.44	103.62	154.46	106.72	105.24	100.94	1260.61
22	1961	101.44	96.26	97.79	96.10	85.22	95.16	97.20	262.97	258.51	120.25	106.69	102.10	1519.69
23	1962	104.22	99.56	101.53	100.11	89.22	312.06	315.18	369.99	388.80	401.32	173.67	103.43	2559.10
24	1963	106.10	101.73	103.98	102.66	95.34	102.75	388.24	401.44	386.06	133.66	106.90	102.32	2131.40
25	1964	104.84	100.34	102.57	101.31	90.23	99.81	210.07	382.89	369.28	146.97	106.88	102.42	1897.61
26	1965	104.91	100.87	103.37	102.53	92.07	102.03	249.05	401.69	297.78	147.17	106.85	102.31	1910.83
27	1966	104.77	100.06	102.03	100.52	89.24	97.57	96.95	366.74	323.63	254.34	120.41	103.72	1859.97
28	1967	106.65	102.44	105.37	117.42	359.16	333.89	346.68	401.76	388.80	214.29	133.70	103.81	2713.97
29	1968	120.34	103.87	107.31	106.76	95.78	297.31	380.65	401.46	284.65	120.31	107.07	103.00	2228.52
30	1969	105.95	101.93	104.31	103.11	92.13	101.84	151.60	280.48	168.16	107.28	106.73	102.37	1526.10
31	1970	104.86	100.58	102.85	101.53	90.34	99.67	99.00	343.02	336.11	133.69	107.47	103.48	1722.60
32	1971	105.84	101.37	103.77	102.63	94.67	100.43	125.11	347.61	375.73	160.68	107.21	103.25	1828.29
33	1972	106.09	102.01	104.42	102.99	91.87	100.84	98.57	323.58	323.58	147.33	106.94	102.29	1622.93
34	1973	104.38	99.96	102.18	100.64	89.28	98.44	97.32	221.76	219.87	106.99	106.11	101.83	1448.76
35	1974	104.22	99.45	101.23	99.43	88.09	96.64	97.59	250.94	271.45	107.21	106.63	101.90	1524.77
36	1975	104.08	99.50	101.26	99.51	91.50	97.18	157.69	401.58	387.38	200.73	107.09	102.92	1950.43
37	1976	105.61	101.48	103.71	102.21	90.99	100.06	99.32	384.22	310.66	146.94	106.92	102.67	1754.79
38	1977	105.08	100.73	102.81	101.25	90.31	100.07	257.75	389.00	386.96	159.88	107.19	102.99	2004.01
39	1978	105.32	100.85	103.05	101.80	90.48	100.48	99.25	290.22	374.93	200.43	106.85	102.45	1776.66
40	1979	104.76	101.25	104.75	104.09	96.48	177.84	388.08	401.66	271.59	120.22	106.90	102.44	2080.07
41	1980	104.74	100.41	102.72	101.48	90.35	99.13	97.59	182.06	387.03	187.19	107.16	102.97	1662.55
42	1981	105.39	101.06	103.47	102.29	91.10	99.45	123.06	389.21	285.05	120.48	106.86	102.24	1729.65
43	1982	104.30	99.58	101.32	99.30	87.74	95.60	93.40	101.20	127.63	107.42	106.68	101.86	1226.03
44	1983	103.92	100.12	103.37	102.75	95.16	277.26	346.06	400.79	245.69	107.10	107.14	103.58	2092.95
45	1984	106.44	102.63	105.96	105.59	94.66	104.19	369.33	387.76	103.78	106.42	104.58	99.47	1791.02
46	1985	101.79	97.81	100.47	99.81	89.17	98.44	318.37	389.11	388.55	107.07	105.63	100.54	1996.77
47	1986	103.33	100.30	103.84	103.39	203.86	342.01	321.21	397.58	285.15	106.97	105.74	101.07	2274.45
48	1987	103.39	99.42	102.25	101.49	127.87	344.60	319.11	388.96	388.80	334.27	107.03	103.39	2520.58
49	1988	107.02	103.93	120.34	106.83	95.68	157.14	376.58	147.23	103.26	104.80	102.43	96.87	1622.11
50	1989	98.54	94.67	97.49	96.69	85.77	194.32	342.61	400.64	227.43	89.39	36.82	43.17	1807.55
TOTAL		5283.62	5122.66	5245.34	5322.89	5667.40	7467.15	10104.46	15026.03	15042.61	7736.88	5397.52	5060.10	93076.62
AVE		105.67	102.45	104.91	106.46	113.35	149.34	202.09	312.52	300.85	154.74	107.95	101.20	1861.53
MAX		133.79	167.67	160.37	248.06	360.76	373.88	388.24	401.76	388.80	401.32	173.67	103.82	2903.76
MIN		98.54	94.67	97.49	95.27	85.22	91.63	90.48	99.48	103.17	89.39	36.82	43.17	1216.93

# Firm Energy Generation of Yusufeli Project

Unit: GWh

NO.	Month	< OCT >	< NOV >	< DEC >	< JAN >	< FEB >	< MAR >	< APR >	< MAY >	< JUN >	< JUL >	< AUG >	< SEP >	< TOTAL >
1	1940	100.44	97.20	100.44	100.44	90.35	85.68	82.25	100.44	97.20	100.44	100.44	97.20	1152.53
2	1941	100.44	97.20	100.44	100.44	87.54	84.72	85.87	100.44	97.20	100.44	100.44	97.20	1152.38
3	1942	100.44	97.20	100.44	100.44	90.72	98.03	86.58	97.16	97.20	100.44	100.44	97.20	1182.60
4	1943	100.44	97.20	100.44	100.44	90.72	99.67	97.20	100.44	97.20	100.44	100.44	97.20	1169.52
5	1944	100.44	97.20	100.44	100.44	87.83	96.07	97.20	100.44	97.20	100.44	100.44	97.20	1181.82
6	1945	100.44	97.20	100.44	100.44	90.72	96.07	97.20	100.44	97.20	100.44	100.44	97.20	1174.73
7	1946	100.44	97.20	100.44	100.44	92.09	97.20	97.20	100.44	97.20	100.44	100.44	97.20	1182.60
8	1947	100.44	97.20	100.44	100.44	88.58	95.91	94.38	100.44	97.20	100.44	100.44	97.20	1180.73
9	1948	100.44	97.20	100.44	100.44	85.23	92.74	95.69	100.44	97.20	100.44	100.44	97.20	1173.11
10	1949	100.44	97.20	100.44	100.44	89.22	97.14	97.20	100.44	97.20	100.44	100.44	97.20	1164.47
11	1950	100.44	97.20	100.44	100.44	93.96	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1177.80
12	1951	100.44	97.20	100.44	100.44	87.73	95.69	96.86	100.44	97.20	100.44	100.44	97.20	1185.84
13	1952	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1173.96
14	1953	100.44	97.20	100.44	100.44	84.26	87.85	87.55	99.03	97.20	100.44	100.44	97.20	1182.60
15	1954	100.44	97.20	100.44	100.44	85.45	93.83	95.78	100.44	97.20	100.44	100.44	97.20	1139.99
16	1955	100.44	97.20	100.44	100.44	87.16	94.92	95.16	100.44	97.20	100.44	100.44	97.20	1166.44
17	1956	100.44	97.20	100.44	100.44	88.18	96.22	97.20	100.44	97.20	100.44	100.44	97.20	1179.24
18	1957	100.44	97.20	100.44	100.44	93.96	93.86	90.25	100.44	97.20	100.44	100.44	97.20	1175.57
19	1958	100.44	97.20	100.44	100.44	88.12	95.20	94.64	100.44	97.20	100.44	100.44	97.20	1172.31
20	1959	100.44	97.20	100.44	100.44	82.80	92.83	97.19	100.44	97.20	100.44	100.44	97.20	1172.20
21	1960	100.44	97.20	100.44	100.44	88.54	87.95	78.98	92.60	97.20	100.44	100.44	97.20	1155.57
22	1961	100.44	97.20	100.44	100.44	93.96	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1141.37
23	1962	100.44	97.20	100.44	100.44	90.72	99.52	97.20	100.44	97.20	100.44	100.44	97.20	1185.84
24	1963	100.44	97.20	100.44	100.44	88.56	96.28	96.82	100.44	97.20	100.44	100.44	97.20	1180.95
25	1964	100.44	97.20	100.44	100.44	92.52	85.27	86.80	100.44	97.20	100.44	100.44	97.20	1182.60
26	1965	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1175.89
27	1966	100.44	97.20	100.44	100.44	90.16	99.31	97.20	100.44	97.20	100.44	100.44	97.20	1158.83
28	1967	100.44	97.20	100.44	100.44	93.96	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1182.60
29	1968	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1182.60
30	1969	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1180.91
31	1970	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1185.82
32	1971	100.44	97.20	100.44	100.44	88.62	97.53	97.20	100.44	97.20	100.44	100.44	97.20	1182.60
33	1972	100.44	97.20	100.44	100.44	86.91	94.94	97.20	100.44	97.20	100.44	100.44	97.20	1177.59
34	1973	100.44	97.20	100.44	100.44	90.39	95.72	97.20	100.44	97.20	100.44	100.44	97.20	1171.81
35	1974	100.44	97.20	100.44	100.44	90.72	99.88	97.20	100.44	97.20	100.44	100.44	97.20	1176.18
36	1975	100.44	97.20	100.44	100.44	90.11	99.89	97.20	100.44	97.20	100.44	100.44	97.20	1182.04
37	1976	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1181.44
38	1977	100.44	97.20	100.44	100.44	93.96	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1182.60
39	1978	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1185.84
40	1979	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1180.15
41	1980	100.44	97.20	100.44	100.44	86.40	93.46	91.70	100.44	97.20	100.44	100.44	97.20	1181.16
42	1981	100.44	97.20	100.44	100.44	93.96	95.08	86.93	100.44	97.20	100.44	100.44	97.20	1164.13
43	1982	100.44	97.20	100.44	100.44	88.46	97.53	97.20	100.44	97.20	100.44	100.44	97.20	1170.22
44	1983	100.44	97.20	100.44	100.44	90.72	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1182.60
45	1984	100.44	97.20	100.44	100.44	88.46	97.53	97.20	100.44	97.20	100.44	100.44	97.20	1176.51
46	1985	100.44	97.20	100.44	100.44	90.72	87.83	80.56	99.40	97.20	100.44	100.44	97.20	1152.30
47	1986	100.44	97.20	100.44	100.44	92.97	88.05	80.05	97.28	97.20	100.44	100.44	97.20	1152.14
48	1987	100.44	97.20	100.44	100.44	100.44	100.44	97.20	100.44	97.20	100.44	100.44	96.72	1182.12
49	1988	100.44	97.20	100.44	100.44	93.59	87.99	85.81	100.44	97.20	89.39	36.82	43.17	1006.80
50	1989	97.68	93.53	96.16	95.01	83.59	87.99	85.81	100.44	97.20	89.39	36.82	43.17	1006.80
TOTAL		5019.21	4854.01	5009.51	4988.18	4490.22	4805.48	4703.93	5005.23	4859.99	5010.92	4958.35	4805.48	58510.62
AVE		100.38	97.08	100.19	99.76	89.80	96.11	94.08	100.10	97.20	100.22	99.17	96.11	1170.21
MAX		100.44	97.20	100.44	100.44	93.96	100.44	97.20	100.44	97.20	100.44	100.44	97.20	1185.84
MIN		97.68	93.53	96.16	92.99	82.80	84.72	78.98	92.60	97.20	89.39	36.82	43.17	1006.80

# Monthly Peak Power of Yusufeli Project

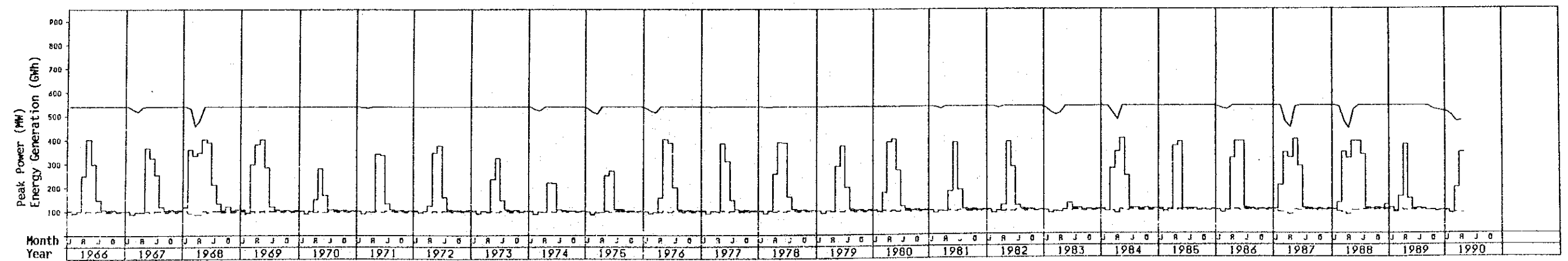
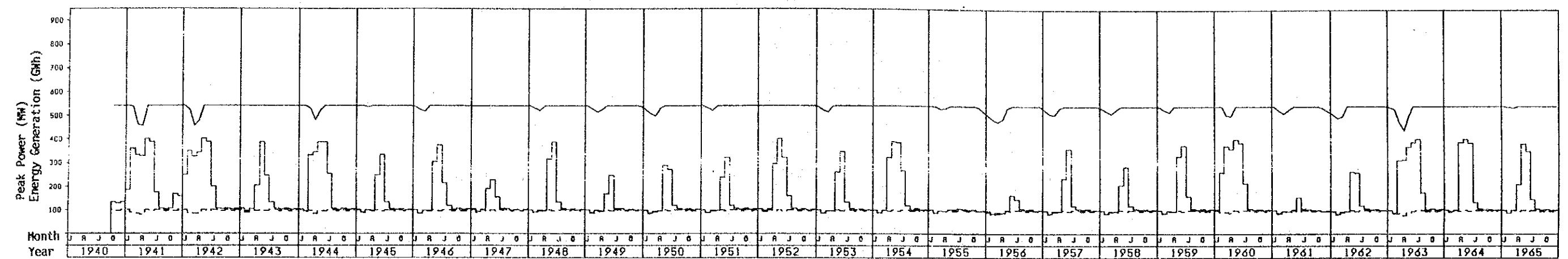
Unit: MW

Month	< OCT >	< NOV >	< DEC >	< JAN >	< FEB >	< MAR >	< APR >	< MAY >	< JUN >	< JUL >	< AUG >	< SEP >	< TOTAL >
NO. Year													
1 1940	540.00	540.00	540.00	540.00	537.81	460.67	456.96	540.00	540.00	540.00	540.00	540.00	6315.44
2 1941	540.00	540.00	540.00	540.00	521.09	455.50	477.06	540.00	540.00	540.00	540.00	540.00	6313.65
3 1942	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
4 1943	540.00	540.00	540.00	540.00	540.00	527.02	480.97	522.35	540.00	540.00	540.00	540.00	6390.34
5 1944	540.00	540.00	540.00	540.00	540.00	535.84	540.00	540.00	540.00	540.00	540.00	540.00	6475.84
6 1945	540.00	540.00	540.00	536.74	522.78	516.50	540.00	540.00	540.00	540.00	540.00	540.00	6436.02
7 1946	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
8 1947	540.00	540.00	540.00	540.00	529.24	522.59	540.00	540.00	540.00	540.00	540.00	540.00	6451.83
9 1948	540.00	540.00	540.00	540.00	527.26	515.66	524.32	540.00	540.00	540.00	540.00	540.00	6427.23
10 1949	540.00	540.00	538.81	522.74	507.30	498.61	531.63	540.00	540.00	540.00	540.00	540.00	6379.09
11 1950	540.00	540.00	540.00	540.00	531.10	522.24	540.00	540.00	540.00	540.00	540.00	540.00	6453.34
12 1951	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
13 1952	540.00	540.00	540.00	536.99	522.20	514.47	538.09	540.00	540.00	540.00	540.00	540.00	6431.75
14 1953	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
15 1954	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6455.25
16 1955	540.00	540.00	517.83	499.95	484.26	472.34	486.38	532.44	540.00	540.00	540.00	540.00	6227.99
17 1956	540.00	540.00	540.00	524.64	508.62	504.47	532.11	540.00	540.00	540.00	540.00	540.00	6389.84
18 1957	540.00	540.00	540.00	533.30	518.82	510.33	528.66	540.00	540.00	540.00	540.00	540.00	6411.11
19 1958	540.00	540.00	540.00	538.58	524.88	517.31	540.00	540.00	540.00	540.00	540.00	540.00	6440.77
20 1959	540.00	540.00	540.00	540.00	540.00	504.64	501.40	540.00	540.00	540.00	540.00	540.00	6406.04
21 1960	540.00	540.00	540.00	540.00	524.50	511.83	525.78	540.00	540.00	540.00	540.00	540.00	6422.11
22 1961	540.00	532.34	519.36	506.31	492.89	499.07	539.93	540.00	540.00	540.00	540.00	540.00	6329.89
23 1962	540.00	540.00	540.00	537.36	527.02	472.84	438.76	497.83	540.00	540.00	540.00	540.00	6253.82
24 1963	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
25 1964	540.00	540.00	540.00	540.00	535.68	535.06	540.00	540.00	540.00	540.00	540.00	540.00	6470.74
26 1965	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
27 1966	540.00	540.00	540.00	540.00	527.12	517.62	537.89	540.00	540.00	540.00	540.00	540.00	6442.63
28 1967	540.00	540.00	540.00	540.00	531.73	458.44	482.22	540.00	540.00	540.00	540.00	540.00	6332.38
29 1968	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
30 1969	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
31 1970	540.00	540.00	540.00	540.00	536.63	533.94	540.00	540.00	540.00	540.00	540.00	540.00	6470.60
32 1971	540.00	540.00	540.00	540.00	540.00	539.89	540.00	540.00	540.00	540.00	540.00	540.00	6479.88
33 1972	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
34 1973	540.00	540.00	540.00	540.00	527.48	524.38	540.00	540.00	540.00	540.00	540.00	540.00	6451.86
35 1974	540.00	540.00	540.00	532.07	517.30	510.42	540.00	540.00	540.00	540.00	540.00	540.00	6419.79
36 1975	540.00	540.00	540.00	532.66	519.46	514.62	540.00	540.00	540.00	540.00	540.00	540.00	6426.75
37 1976	540.00	540.00	540.00	540.00	540.00	537.02	540.00	540.00	540.00	540.00	540.00	540.00	6477.01
38 1977	540.00	540.00	540.00	540.00	540.00	537.04	540.00	540.00	540.00	540.00	540.00	540.00	6473.39
39 1978	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
40 1979	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
41 1980	540.00	540.00	540.00	540.00	536.79	529.75	540.00	540.00	540.00	540.00	540.00	540.00	6466.54
42 1981	540.00	540.00	540.00	540.00	540.00	532.25	540.00	540.00	540.00	540.00	540.00	540.00	6472.25
43 1982	540.00	540.00	540.00	531.04	514.26	502.47	509.47	540.00	540.00	540.00	540.00	540.00	6377.24
44 1983	540.00	540.00	540.00	540.00	540.00	511.20	482.96	540.00	540.00	540.00	540.00	540.00	6394.16
45 1984	540.00	540.00	540.00	535.04	526.54	524.38	540.00	540.00	540.00	540.00	540.00	540.00	6445.96
46 1985	540.00	540.00	540.00	540.00	540.00	472.19	447.54	534.39	540.00	540.00	540.00	540.00	6314.11
47 1986	540.00	540.00	540.00	540.00	540.00	473.40	444.70	522.99	540.00	540.00	540.00	540.00	6295.37
48 1987	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6277.31
49 1988	540.00	540.00	540.00	540.00	540.00	473.07	476.73	540.00	540.00	480.59	197.95	239.85	5518.33
50 1989	525.15	519.63	517.00	510.82	497.56	473.07	476.73	540.00	540.00	540.00	540.00	540.00	320376.75
TOTAL	26985.15	26966.76	26932.99	26818.23	26499.74	25835.97	26133.01	26909.98	27000.00	26940.58	26657.95	26697.16	320376.75
AVE	539.70	539.34	538.66	536.36	529.99	516.72	522.66	538.20	540.00	538.81	533.16	533.94	6407.53
MAX	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	540.00	6480.00
MIN	525.15	519.63	517.00	499.95	484.26	455.50	438.76	497.83	540.00	480.59	197.95	239.85	5518.33

## Unit = MM

AP-6-6





Energy Generation of Yusufeli Project

Site : OLU RIVER OLUR PROJECT (MASA210)

HMAX : 1105.00  
 HMIN : 1077.00  
 HNWL : 1095.67  
 HTWL : 929.00  
 QMAX : 48.00  
 QMIN : 11.95

VMAX : 0.20000E+09  
 VMIN : 0.31018E+00  
 SMAX : 2314.81  
 SMIN : 0.00

KST = 1  
 KMAX = 600  
 DELTS = 50.00  
 DELTA = 1.00

NP = 1  
 NDAN = 1  
 TPEAK = 6.00  
 QMAX = 48.00  
 QMIN = 11.95  
 TPEAK = 0.0  
 QMAX = 0.0  
 QMIN = 0.0

WZN = 0.013  
 WZD = 4.600  
 WZL = 9600.0  
 TZN = 0.012  
 TZD = 3.600  
 TZL = 450.0  
 HLOSS = 12.00

MET = 2  
 MEG = 2  
 MEH = 3

G/QMAX ( EATERT ) 0.0 1.00000 1.00000 1.00000

PT/PTMAX (EATERG ) 0.0 1.00000 1.00000 1.00000

HE/HES ( EATERH ) 0.87929 0.88600 1.00000 0.89500 1.06032 0.89500

RANK = 4  
 1 -9999.00 -9999.00 0.0 0.39736670+02 -0.42796390+05  
 2 1080.00 119.21 0.14477740+01 -0.30743090+04 0.16316890+07  
 3 1095.67 1303.39 0.36717910+01 -0.79719960+04 0.43280210+07  
 4 9999.00 9999.00 0.0 0.0 0.0

RARE = 6  
 1 -9999.00 -9999.00 0.0 0.16600000+02 -0.17013000+05  
 2 1030.00 85.00 0.12900000+01 -0.26189000+04 0.13289910+07  
 3 1050.00 1371.00 -0.90000010-01 0.30640000+03 -0.22112400+06  
 4 1070.00 3683.00 -0.95500010+00 0.21954500+04 -0.12520690+07  
 5 1090.00 6536.00 0.36100000+01 -0.76370010+04 0.40416250+07



NO.	20	10m	11m	12m	13m	20m	30m	40m	50m	60m	70m	80m	90m
1	1940	13.82	13.26	11.05	9.91	10.63	15.53	57.26	114.03	40.30	20.12	11.29	8.17
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
2	1941	12.48	20.94	12.74	11.03	12.05	17.85	44.90	146.86	74.95	27.04	13.54	11.06
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
3	1942	13.05	12.92	11.54	9.93	9.57	10.42	27.22	69.72	33.52	17.36	9.95	6.57
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
4	1943	8.80	10.50	9.15	8.48	8.98	17.03	40.79	121.54	51.20	25.40	13.56	11.01
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
5	1944	11.62	12.53	9.58	9.08	8.42	9.60	21.64	68.08	66.47	20.95	10.23	7.64
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
6	1945	8.87	9.70	8.76	8.36	8.26	10.14	26.98	85.66	97.97	33.84	23.76	15.39
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
7	1946	20.48	17.11	13.56	12.74	12.42	21.42	39.82	38.06	31.58	17.61	7.91	8.66
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
8	1947	9.51	14.33	10.40	9.13	8.63	8.68	30.85	83.31	90.94	22.59	13.21	13.82
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
9	1948	11.90	11.23	10.11	8.54	8.21	10.04	18.45	89.88	43.45	12.55	8.52	8.12
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
10	1949	10.07	9.27	8.24	7.65	8.06	12.84	40.54	89.18	50.48	19.87	10.44	7.88
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
11	1950	14.38	12.25	10.51	9.95	9.28	14.55	34.49	75.81	59.20	21.65	11.50	13.43
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
12	1951	22.35	16.44	13.37	11.85	12.64	13.52	56.54	92.46	65.25	29.86	15.27	12.10
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
13	1952	11.07	11.32	11.29	10.33	10.39	11.64	32.55	88.00	64.05	26.58	15.41	11.10
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
14	1953	10.56	11.30	10.21	9.69	10.00	14.24	32.53	99.73	93.12	57.29	21.18	14.93
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
15	1954	14.36	12.80	11.54	9.83	9.04	10.72	22.62	63.15	32.06	7.25	3.79	3.81
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
16	1955	6.74	7.28	8.19	7.44	9.31	11.01	27.46	49.79	53.87	24.00	12.53	10.55
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
17	1956	12.13	10.50	10.09	9.32	10.13	16.42	37.40	81.98	49.02	21.65	9.76	9.73
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
18	1957	11.34	12.73	10.75	9.79	9.38	11.43	21.89	45.57	46.12	18.63	9.67	9.92
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
19	1958	10.21	9.58	8.89	9.04	8.03	11.40	32.31	74.64	49.27	18.16	14.36	12.44
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
20	1959	14.71	15.27	12.01	11.05	11.84	14.48	44.18	76.75	43.21	27.26	17.22	12.63
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
21	1960	8.15	7.47	7.30	6.20	5.88	6.29	13.72	28.92	15.52	3.57	1.74	1.22
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
22	1961	3.55	4.68	5.59	4.61	4.71	9.39	25.52	49.79	26.98	12.15	5.14	4.15
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
23	1962	4.11	5.05	4.44	5.03	4.81	6.36	50.96	122.94	88.28	46.27	31.03	10.91
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
24	1963	17.24	15.27	10.54	8.26	7.23	11.66	49.02	101.13	72.52	20.27	7.82	7.18
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
25	1964	7.40	7.23	7.21	5.52	5.36	14.17	40.06	52.83	34.24	18.27	9.22	6.70
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
26	1965	12.67	9.19	8.43	8.59	8.75	10.42	40.79	73.00	23.34	7.84	4.72	5.97
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
27	1966	7.51	6.91	5.82	5.45	4.56	6.03	16.24	84.49	32.79	35.25	16.00	9.22
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
28	1967	9.91	9.92	9.39	8.21	7.63	14.87	126.80	137.95	76.64	24.93	12.39	10.33
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
29	1968	10.84	12.44	8.87	6.69	6.11	12.74	55.08	103.48	24.31	7.37	7.09	6.70
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)

Our Project

30	1969	11.29	8.34	8.28	6.81	6.37	9.32	43.45	34.55	11.88	9.06	4.58	5.66
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
31	1970	6.55	5.97	4.61	4.49	3.59	7.46	20.48	65.03	31.33	5.66	13.94	4.22
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
32	1971	6.22	6.87	6.62	5.54	6.12	7.68	41.76	55.65	43.45	14.59	6.65	9.73
		(31)	(30)	(31)	(31)	(29)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
33	1972	10.42	9.92	7.84	7.46	8.86	9.48	28.91	58.46	43.21	14.76	4.23	5.51
		(31)	(30)	(31)	(31)	(28)	(31)	(31)	(31)	(30)	(31)	(31)	(30)
34	1973	9.41	9.07	6.10	4.79	4.84	8.48	16.20	59.87	18.93	5.24	4.84	9.75
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
35	1974	4.82	5.19	6.22	5.82	4.63	7.04	27.46	32.44	20.56	7.37	3.24	4.85
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
36	1975	7.25	6.94	3.85	4.53	4.55	11.43	41.03	97.38	50.24	20.95	8.99	8.95
		(31)	(30)	(31)	(31)	(29)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
37	1976	12.34	11.37	10.46	7.65	8.93	11.60	38.45	77.98	28.55	9.88	5.20	7.71
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
38	1977	9.06	8.50	7.24	7.18	9.64	14.53	39.44	100.90	35.16	7.08	3.90	5.08
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
39	1978	7.08	7.78	7.40	7.08	8.09	9.92	38.12	61.10	45.69	18.07	5.11	4.85
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
40	1979	11.92	17.13	11.73	9.60	8.97	14.66	67.74	58.55	10.05	3.32	5.30	4.68
		(31)	(30)	(31)	(31)	(29)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
41	1980	6.57	6.46	6.06	5.65	5.76	7.53	25.39	49.31	69.05	8.52	5.65	5.51
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
42	1981	6.73	8.27	7.28	5.68	5.13	6.57	45.91	56.75	10.22	3.35	2.63	5.29
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
43	1982	6.12	5.83	5.53	5.00	5.00	6.16	12.46	30.50	14.74	2.88	1.50	2.50
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
44	1983	7.50	13.19	8.25	7.17	6.39	10.64	47.84	95.58	27.01	11.20	13.40	9.45
		(31)	(30)	(31)	(31)	(29)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
45	1984	8.59	9.68	8.21	7.13	7.85	9.74	53.63	43.31	10.03	5.34	2.60	5.94
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
46	1985	9.22	7.29	7.77	6.72	7.77	12.88	54.78	56.00	43.60	9.41	1.93	6.60
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
47	1986	11.87	12.31	8.03	6.91	10.66	9.74	50.15	130.30	30.59	7.50	5.60	6.83
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
48	1987	7.63	8.98	6.93	6.47	7.81	11.44	50.28	89.82	81.87	38.08	11.18	10.88
		(31)	(30)	(31)	(31)	(29)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
49	1988	13.78	10.77	8.63	7.08	6.30	15.74	51.11	15.90	4.32	2.19	1.89	3.54
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)
50	1989	8.88	8.47	8.55	5.44	5.48	13.99	58.44	86.65	24.70	10.63	4.37	5.17
		(31)	(30)	(31)	(31)	(28)	(31)	(30)	(31)	(30)	(31)	(31)	(30)

COEFFW= 0.4881345E-02 COEFFT= 0.7206392E-03 HLOSS= 0.1200000E+02

HEGMAX= 0.1546699E+03 PTMAX = 0.6511723E+05 PMAX= 0.6500000E+02

SHY = 0.1666699E+03 SHL = 0.1200000E+02 SHE = 0.1546699E+03 SETG = 0.8950000E+00 PINST= 0.6511722E+02

## CASE \* OLTU RIVER FEASIBILITY STUDY

* KST	=	1
* KMAX	=	600
* IMAX	=	49
* DELTS	=	50.0 (TD)
* LMAX	=	38
* DELTQ	=	1.0 (TD)
* QMIO	=	11.95 (TD)

333Y	3Y1	* HLST =1105.00 (M)	* SLST =	2314.8 (TD)
333Y	3Y1	* HLST =1105.00 (M)	* SLST =	2314.8 (TD)
333Y	3Y1	* HLST =1105.00 (M)	* SLST =	2314.8 (TD)

行番号	77°N	8	11°	* IMAX	=	49	(TD,M)	3	4	150.0(1080.6)	5	200.0(1084.5)
1	0.0(1077.0)	2	1			50.0(1077.0)	3	100.0(1077.0)	4	400.0(1084.7)	10	450.0(1085.4)
6	250.0(1082.3)	7	1			300.0(1083.1)	8	350.0(1083.9)	9	450.0(1084.7)	10	450.0(1085.4)
11	500.0(1086.2)	12	1			550.0(1086.9)	13	600.0(1087.5)	14	650.0(1088.2)	15	700.0(1088.8)
16	750.0(1089.5)	17	1			800.0(1090.1)	18	850.0(1090.7)	19	900.0(1091.3)	20	950.0(1091.9)
21	1000.0(1092.4)	22	1			1050.0(1093.0)	23	1100.0(1093.5)	24	1150.0(1094.1)	25	1200.0(1094.6)
26	1250.0(1095.1)	27	1			1300.0(1095.6)	28	1350.0(1096.2)	29	1400.0(1096.9)	30	1450.0(1097.5)
31	1500.0(1098.0)	32	1			1550.0(1098.6)	33	1600.0(1099.1)	34	1650.0(1099.6)	35	1700.0(1100.1)
36	1750.0(1100.5)	37	1			1800.0(1101.0)	38	1850.0(1101.4)	39	1900.0(1101.8)	40	1950.0(1102.2)
41	2000.0(1102.7)	42	1			2050.0(1103.0)	43	2100.0(1103.4)	44	2150.0(1103.8)	45	2200.0(1104.2)
46	2250.0(1104.5)	47	1			2300.0(1104.9)	48	2350.0(1105.3)	49	2400.0(1105.7)		

試料名	試料番号	試料重量 (g)	試料体積 (cm <sup>3</sup> )	試料密度 (g/cm <sup>3</sup> )	試料組成 (%)	試料特性													
1	11.9	2	12.0	3	13.0	4	14.0	5	15.0	6	16.0	7	17.0	8	18.0	9	19.0	10	20.0
11	21.0	12	22.0	13	23.0	14	24.0	15	25.0	16	26.0	17	27.0	18	28.0	19	29.0	20	30.0
21	31.0	22	32.0	23	33.0	24	34.0	25	35.0	26	36.0	27	37.0	28	38.0	29	39.0	30	40.0
31	41.0	32	42.0	33	43.0	34	44.0	35	45.0	36	46.0	37	47.0	38	48.0	39	49.0	40	50.0

Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	QIN (M3/SD)	QQ (M3/SD)	GOUT (M3/SD)	P (MW)	E (GWH)	T (CH)	ETG (M3/S)	QCR (M3/S)	QUP (M3/S)	LOSS (CM)	SUIT (M)	
1	1940	10	31	1104.9	2300.9	428.5	(13.82)	434.0	(14.00)	0.0	65.00	14.90	0.895	45.44	45.44	12.00	1104.95
2		11	30	1104.9	2307.3	397.9	(13.26)	390.0	(13.00)	0.0	65.00	13.40	0.895	45.40	45.40	12.00	1104.92
3		12	31	1104.7	2279.4	342.6	(11.05)	370.4	(11.95)	0.0	65.00	12.75	0.895	45.31	45.31	12.00	1104.85
4		1	31	1104.9	1904.5	307.1	(9.91)	682.0	(22.00)	0.0	65.00	23.27	0.895	45.72	45.72	12.00	1103.31
5		2	28	1091.8	942.0	297.6	(10.63)	1260.0	(45.00)	0.0	65.00	41.17	0.895	47.74	47.74	12.00	1096.82
6		3	31	1077.0	0.0	481.5	(15.53)	1423.0	(45.90)	0.0	57.77	42.69	0.890	46.22	46.22	12.00	1084.38
7		4	30	1083.9	350.2	1717.8	(57.26)	1364.5	(45.48)	0.0	55.30	39.73	0.888	45.58	45.58	12.00	1080.47
8		5	31	1105.0	2314.8	3535.0	(114.03)	1482.2	(47.61)	81.8	64.32	47.85	0.894	47.81	47.81	12.00	1094.47
9		6	30	1104.9	2307.5	1209.0	(40.30)	1200.0	(40.00)	0.0	65.00	41.27	0.895	45.36	45.36	12.00	1104.97
10		7	31	1104.8	2290.4	623.8	(20.12)	620.0	(20.00)	0.0	65.00	21.31	0.895	45.38	45.38	12.00	1104.89
11		8	31	1104.5	2247.7	349.9	(11.29)	372.0	(12.00)	0.0	65.00	12.77	0.895	45.44	45.44	12.00	1104.68
12		9	30	1103.6	2117.1	245.1	(8.17)	360.0	(12.00)	0.0	65.00	12.36	0.895	45.45	45.45	12.00	1104.04
						828.0	(27.11)	829.8	(27.43)	6.8	63.53	26.96	0.894	1396.1	1396.1	12.00	1099.39
13	1941	10	31	1103.6	2124.1	386.9	(12.48)	372.0	(12.00)	0.0	65.00	12.73	0.895	45.58	45.58	12.00	1103.59
14		11	30	1104.9	2300.8	628.2	(20.94)	450.0	(15.00)	0.0	65.00	15.46	0.895	45.39	45.39	12.00	1104.26
15		12	31	1104.8	2292.8	395.0	(12.74)	403.0	(13.00)	0.0	65.00	13.90	0.895	45.22	45.22	12.00	1104.87
16		1	31	1101.0	1797.7	341.9	(11.03)	837.0	(27.00)	0.0	65.00	28.53	0.895	45.77	45.77	12.00	1102.90
17		2	28	1090.7	847.2	337.5	(12.05)	1288.0	(46.00)	0.0	65.00	41.97	0.895	47.87	47.87	12.00	1095.81
18		3	30	1077.0	0.0	553.5	(17.85)	1400.2	(45.17)	0.0	57.42	41.83	0.889	46.13	46.13	12.00	1083.83
19		4	30	1077.0	0.0	1347.1	(44.90)	1344.0	(44.80)	0.0	53.15	38.09	0.886	45.01	45.01	12.00	1077.00
20		5	31	1105.0	2314.8	4552.5	(146.86)	1465.4	(47.27)	767.1	62.03	46.13	0.893	47.27	47.27	12.00	1091.00
21		6	30	1105.0	2314.8	2248.4	(74.95)	1355.6	(45.19)	876.5	65.00	46.80	0.895	45.19	45.19	12.00	1105.00
22		7	31	1104.9	2295.1	838.3	(27.04)	837.0	(27.00)	0.0	65.00	28.73	0.895	45.45	45.45	12.00	1104.93
23		8	31	1104.8	2291.1	419.7	(13.54)	403.0	(13.00)	0.0	65.00	13.85	0.895	45.39	45.39	12.00	1104.85
24		9	30	1104.5	2248.5	331.7	(11.06)	358.5	(11.95)	0.0	65.00	12.35	0.895	45.29	45.29	12.00	1104.68
						1031.7	(33.79)	876.1	(28.95)	137.0	63.13	28.37	0.894	1393.1	1393.1	12.00	1098.56
25	1942	10	31	1104.7	2274.3	404.4	(13.05)	370.4	(11.95)	0.0	65.00	12.76	0.895	45.29	45.29	12.00	1104.62
26		11	30	1104.9	2300.4	387.7	(12.92)	360.0	(12.00)	0.0	65.00	12.41	0.895	45.24	45.24	12.00	1104.81
27		12	31	1104.8	2287.8	357.9	(11.54)	370.4	(11.95)	0.0	65.00	12.78	0.895	45.23	45.23	12.00	1104.85
28		1	31	1104.3	2223.6	307.8	(9.93)	372.0	(12.00)	0.0	65.00	12.81	0.895	45.30	45.30	12.00	1104.58
29		2	28	1103.8	2155.4	267.8	(9.57)	336.0	(12.00)	0.0	65.00	11.54	0.895	45.44	45.44	12.00	1104.10
30		3	31	1103.5	2105.5	322.9	(10.42)	372.0	(12.00)	0.0	65.00	12.74	0.895	45.56	45.56	12.00	1103.66
31		4	30	1098.6	1552.9	816.6	(27.32)	1362.4	(45.41)	0.0	65.00	45.90	0.895	46.31	46.31	12.00	1101.04
32		5	31	1105.0	2309.5	2161.2	(69.72)	1395.0	(45.00)	0.0	65.00	47.04	0.895	46.26	46.26	12.00	1101.79
33		6	30	1105.0	2308.8	1005.6	(33.52)	990.0	(33.00)	0.0	65.00	34.08	0.895	45.32	45.32	12.00	1104.96
34		7	31	1104.9	2298.9	538.2	(17.36)	527.0	(17.00)	0.0	65.00	18.14	0.895	45.32	45.32	12.00	1104.92
35		8	31	1104.3	2216.3	308.4	(9.95)	370.4	(11.95)	0.0	65.00	12.75	0.895	45.32	45.32	12.00	1104.59
36		9	30	1103.0	2039.5	197.2	(6.57)	358.5	(11.95)	0.0	65.00	12.27	0.895	45.57	45.57	12.00	1103.63
						589.6	(19.31)	598.7	(19.68)	0.0	65.00	20.43	0.895	1384.1	1384.1	12.00	1103.96
37	1943	10	31	1102.1	1934.1	272.9	(8.80)	370.4	(11.95)	0.0	65.00	12.60	0.895	45.88	45.88	12.00	1102.54
38		11	30	1101.7	1889.2	315.0	(10.50)	358.5	(11.95)	0.0	65.00	12.14	0.895	46.05	46.05	12.00	1101.93
39		12	31	1101.0	1800.9	283.7	(9.15)	372.0	(12.00)	0.0	65.00	12.56	0.895	46.21	46.21	12.00	1101.36
40		1	31	1100.0	1691.6	262.7	(8.48)	372.0	(12.00)	0.0	65.00	12.49	0.895	46.47	46.47	12.00	1100.48
41		2	29	1092.7	1024.1	260.4	(8.98)	928.0	(32.00)	0.0	65.00	30.35	0.895	47.71	47.71	12.00	1096.34
42		3	31	1080.5	146.8	528.0	(17.03)	1404.7	(45.31)	0.0	59.13	42.82	0.887	46.56	46.56	12.00	1086.61
43		4	30	1077.0	17.0	1223.6	(40.79)	1350.0	(45.00)	0.0	54.24	38.79	0.887	45.30	45.30	12.00	1078.76
44		5	31	1105.0	2314.3	3767.6	(121.54)	1465.0	(47.26)	0.0	62.03	46.14	0.893	47.27	47.27	12.00	1091.00
45		6	30	1105.0	2314.8	1536.1	(51.20)	1360.1	(45.34)	159.2	65.00	46.80	0.895	45.34	45.34	12.00	1105.00
46		7	31	1104.9	2306.3	787.5	(25.40)	775.0	(25.00)	0.0	65.00	26.67	0.895	45.34	45.34	12.00	1104.97
47		8	31	1104.9	2303.0	420.4	(13.56)	403.0	(13.00)	0.0	65.00	13.86	0.895	45.35	45.35	12.00	1104.93
48		9	30	1104.6	2258.9	330.3	(11.01)	358.5	(11.95)	0.0	65.00	12.36	0.895	45.25	45.25	12.00	1104.76
						832.4	(27.20)	793.1	(26.06)	13.3	63.37	25.63	0.894	1405.1	1405.1	12.00	1098.22

# Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H.	S	GIN	GG	GOUT	P	E	T	ETG	QCR	QUP	LOSS	SUIT
				(M)	(M3/SD)	(M3/SD)	(M3/SD)	(M3/SD)	(MW)	(GWH)	(H)		(M3/S)	(M3/S)	(M)	(CM)
49	1944	10	31	1104.5	2240.3	360.1( 11.62)	370.4( 11.95)	0.0	65.00	12.75	6.3	0.895	45.32	45.32	12.00	1104.54
50		11	30	1104.6	2254.8	376.0( 12.53)	360.0( 12.00)	0.0	65.00	12.39	6.4	0.895	45.32	45.32	12.00	1104.52
51		12	31	1104.0	2181.2	286.9( 9.58)	370.4( 11.95)	0.0	65.00	12.73	6.3	0.895	45.38	45.38	12.00	1104.31
52		1	31	1103.4	2090.8	281.6( 9.08)	372.0( 12.00)	0.0	65.00	12.74	6.3	0.895	45.55	45.55	12.00	1103.70
53		2	28	1102.6	1992.0	235.8( 8.42)	334.6( 11.95)	0.0	65.00	11.41	6.3	0.895	45.75	45.75	12.00	1102.97
54		3	31	1100.6	1761.8	297.6( 9.60)	527.0( 17.00)	0.0	65.00	17.82	8.8	0.895	46.14	46.14	12.00	1101.61
55		4	30	1093.0	1054.9	649.3( 21.64)	1350.0( 45.00)	0.0	65.00	44.29	22.7	0.895	47.56	47.56	12.00	1096.84
56		5	31	1100.1	1700.4	210.4( 6.808)	1457.0( 47.00)	0.0	65.00	47.45	23.5	0.895	47.90	47.90	12.00	1096.55
57		6	30	1104.9	2300.6	1994.1( 66.47)	1380.0( 46.00)	0.0	65.00	46.73	24.0	0.895	46.07	46.07	12.00	1102.48
58		7	31	1105.0	2309.0	649.3( 20.95)	620.0( 20.00)	0.0	65.00	21.33	10.6	0.895	45.34	45.34	12.00	1104.93
59		8	31	1104.4	2235.1	317.2( 10.23)	370.4( 11.95)	0.0	65.00	12.76	6.3	0.895	45.31	45.31	12.00	1104.70
60		9	30	1103.4	2090.2	289.3( 7.64)	358.5( 11.95)	0.0	65.00	12.29	6.3	0.895	45.49	45.49	12.00	1103.89
						649.8( 21.32)	655.9( 21.56)	0.0	65.00	22.06		0.895	1397.	1397.	12.00	1102.59
61	1945	10	31	1102.5	1986.9	275.0( 8.87)	370.4( 11.95)	0.0	65.00	12.63	6.3	0.895	45.76	45.76	12.00	1102.95
62		11	30	1102.0	1917.9	291.0( 9.70)	358.5( 11.95)	0.0	65.00	12.17	6.2	0.895	45.95	45.95	12.00	1102.26
63		12	31	1101.1	1817.3	271.4( 8.76)	372.0( 12.00)	0.0	65.00	12.57	6.2	0.895	46.16	46.16	12.00	1101.55
64		1	31	1100.1	1704.3	259.0( 8.36)	372.0( 12.00)	0.0	65.00	12.50	6.2	0.895	46.43	46.43	12.00	1100.61
65		2	28	1099.1	1599.7	231.4( 8.26)	336.0( 12.00)	0.0	65.00	11.22	6.2	0.895	46.73	46.73	12.00	1099.60
66		3	31	1086.8	549.2	314.2( 10.14)	1364.0( 44.00)	0.0	65.33	43.57	22.2	0.894	47.58	47.58	12.00	1092.97
67		4	30	1077.0	0.0	809.3( 26.98)	1354.5( 45.15)	0.0	56.21	39.88	23.7	0.888	45.82	45.82	12.00	1081.92
68		5	31	1094.7	1211.4	2655.4( 85.66)	1438.7( 46.41)	0.0	58.71	43.64	24.0	0.890	46.45	46.45	12.00	1085.86
69		6	30	1105.0	2314.8	2939.0( 97.97)	1399.5( 46.65)	424.6	66.65	46.80	24.0	0.895	46.65	46.65	12.00	1099.86
70		7	31	1104.8	2288.9	1049.2( 33.84)	1054.0( 34.00)	0.0	65.00	36.15	17.9	0.895	45.48	45.48	12.00	1104.91
71		8	31	1104.8	2291.9	736.6( 23.76)	713.0( 23.00)	0.0	65.00	24.49	12.2	0.895	45.42	45.42	12.00	1104.83
72		9	30	1104.8	2287.9	461.8( 15.39)	450.0( 15.00)	0.0	65.00	15.47	7.9	0.895	45.37	45.37	12.00	1104.82
						857.8( 28.14)	798.6( 26.18)	35.4	63.60	25.92		0.894	1404.	1404.	12.00	1098.51
73	1946	10	31	1104.9	2294.5	634.8( 20.48)	620.0( 20.00)	0.0	65.00	21.29	10.6	0.895	45.43	45.43	12.00	1104.83
74		11	30	1104.9	2296.3	513.4( 17.11)	510.0( 17.00)	0.0	65.00	17.51	9.0	0.895	45.43	45.43	12.00	1104.86
75		12	31	1105.0	2313.7	420.4( 13.56)	403.0( 13.00)	0.0	65.00	13.86	6.9	0.895	45.37	45.37	12.00	1104.93
76		1	31	1104.9	2305.7	395.0( 12.74)	403.0( 13.00)	0.0	65.00	13.87	6.9	0.895	45.32	45.32	12.00	1104.96
77		2	28	1104.8	2289.4	347.7( 12.42)	364.0( 13.00)	0.0	65.00	12.53	6.9	0.895	45.30	45.30	12.00	1104.88
78		3	31	1104.9	2301.5	663.9( 21.42)	651.0( 21.00)	0.0	65.00	23.37	11.1	0.895	45.39	45.39	12.00	1104.86
79		4	30	1104.8	2288.9	1194.6( 39.82)	1200.0( 40.00)	0.0	65.00	41.15	21.1	0.895	45.49	45.49	12.00	1104.86
80		5	31	1105.0	2310.0	1180.0( 38.06)	1147.0( 37.00)	0.0	65.00	39.34	19.5	0.895	45.48	45.48	12.00	1104.89
81		6	30	1105.0	2311.2	947.5( 31.58)	930.0( 31.00)	0.0	65.00	31.96	16.4	0.895	45.40	45.40	12.00	1104.97
82		7	31	1105.0	2309.2	546.1( 17.61)	527.0( 17.00)	0.0	65.00	18.12	9.0	0.895	45.37	45.37	12.00	1104.97
83		8	31	1103.9	2161.7	245.1( 7.91)	372.0( 12.00)	0.0	65.00	12.78	6.3	0.895	45.40	45.40	12.00	1104.43
84		9	30	1103.0	2047.6	259.7( 8.66)	358.5( 11.95)	0.0	65.00	12.26	6.3	0.895	45.62	45.62	12.00	1103.46
						612.3( 20.11)	623.8( 20.50)	0.0	65.00	21.42		0.895	1381.	1381.	12.00	1104.74
85	1947	10	31	1102.3	1962.4	294.7( 9.51)	372.0( 12.00)	0.0	65.00	12.66	6.3	0.895	45.83	45.83	12.00	1102.69
86		11	30	1102.9	2030.8	429.9( 14.33)	360.0( 12.00)	0.0	65.00	12.25	6.3	0.895	45.85	45.85	12.00	1102.62
87		12	31	1102.5	1982.7	322.3( 10.40)	370.4( 11.95)	0.0	65.00	12.61	6.3	0.895	45.83	45.83	12.00	1102.70
88		1	31	1101.8	1893.8	283.1( 9.13)	372.0( 12.00)	0.0	65.00	12.62	6.3	0.895	45.99	45.99	12.00	1102.15
89		2	29	1099.0	1593.0	250.2( 8.63)	551.0( 19.00)	0.0	65.00	18.49	9.8	0.895	46.49	46.49	12.00	1100.40
90		3	31	1084.6	393.0	269.2( 8.68)	1468.6( 47.37)	0.0	62.56	46.52	24.0	0.893	47.40	47.40	12.00	1091.81
91		4	30	1077.0	0.0	925.6( 30.85)	1314.8( 43.83)	0.0	55.51	38.38	23.0	0.888	45.63	45.63	12.00	1080.80
92		5	31	1094.0	1140.7	2582.8( 83.51)	1436.8( 46.33)	0.0	58.47	43.46	24.0	0.890	46.39	46.39	12.00	1085.49
93		6	30	1105.0	2314.8	2728.1( 90.94)	1402.8( 46.76)	140.0	65.00	46.80	24.0	0.895	46.76	46.76	12.00	1099.49
94		7	31	1105.0	2312.0	700.2( 22.59)	682.0( 22.00)	0.0	65.00	23.43	11.6	0.895	45.41	45.41	12.00	1104.99
95		8	31	1104.9	2297.8	409.5( 13.21)	403.0( 13.00)	0.0	65.00	13.83	6.9	0.895	45.44	45.44	12.00	1104.93
96		9	30	1104.9	2306.5	414.6( 13.82)	390.0( 13.00)	0.0	65.00	13.41	6.9	0.895	45.38	45.38	12.00	1104.91
						800.8( 26.28)	760.3( 24.94)	11.7	63.46	24.54		0.894	1404.	1404.	12.00	1098.58



\*\*\* OPTIMAL SCHEDULE \*\*\*

Olur Project

NO.	YEAR	MON	DAY	H	S	GIN	GG	GOUT	P	E	T	ETG	QCR	GUP	LOSS	SUII
				(M)	(M3/SD)	(M3/SD)	(M3/SD)	(M3/SD)	(MW)	(GWH)	(CH)		(M3/S)	(M3/S)	(M)	
97	1948	10	31	1104.9	2296.5	368.7( 11.90)	370.4( 11.95)	0.0	65.00	12.77	6.3	0.895	45.26	45.26	12.00	1104.91
98		11	30	1104.7	2271.7	336.8( 11.23)	360.0( 12.00)	0.0	65.00	12.41	6.4	0.895	45.25	45.25	12.00	1104.78
99		12	31	1104.3	2213.3	313.5( 10.71)	372.0( 12.00)	0.0	65.00	12.50	6.4	0.895	45.33	45.33	12.00	1104.49
100		1	31	1103.5	2106.1	264.8( 8.54)	372.0( 12.00)	0.0	65.00	12.75	6.3	0.895	45.50	45.50	12.00	1103.88
101		2	28	1102.7	2001.5	230.0( 8.21)	334.6( 11.95)	0.0	65.00	11.42	6.3	0.895	45.73	45.73	12.00	1103.07
102		3	31	1101.4	1847.0	311.3( 10.04)	465.0( 15.00)	0.0	65.00	15.76	7.8	0.895	46.02	46.02	12.00	1102.02
103		4	30	1092.2	984.2	553.5( 18.45)	147.0( 47.00)	0.0	65.00	46.25	23.7	0.895	47.56	47.56	12.00	1096.82
104		5	31	1104.9	2305.8	2786.3( 89.88)	147.0( 47.00)	0.0	65.00	48.30	24.0	0.895	47.06	47.06	12.00	1098.59
105		6	30	1104.9	2303.0	1303.5( 43.45)	120.0( 43.00)	0.0	65.00	44.29	22.7	0.895	45.44	45.44	12.00	1104.93
106		7	31	1104.9	2300.7	389.1( 12.55)	370.4( 11.95)	0.0	65.00	12.73	6.3	0.895	45.39	45.39	12.00	1104.91
107		8	31	1104.0	2172.2	264.1( 8.52)	372.0( 12.00)	0.0	65.00	12.80	6.4	0.895	45.34	45.34	12.00	1104.44
108		9	30	1103.0	2040.5	243.7( 8.12)	360.0( 12.00)	0.0	65.00	12.31	6.3	0.895	45.61	45.61	12.00	1103.47
						613.8( 20.08)	627.8( 20.65)	0.0	65.00	21.22		0.895	1393.1	1393.1	12.00	1103.02
109	1949	10	31	1102.4	1974.4	312.2( 10.07)	370.4( 11.95)	0.0	65.00	12.61	6.3	0.895	45.83	45.83	12.00	1102.71
110		11	30	1101.8	1891.0	278.0( 9.27)	360.0( 12.00)	0.0	65.00	12.21	6.3	0.895	46.00	46.00	12.00	1102.10
111		12	31	1100.8	1775.8	255.3( 8.24)	370.4( 11.95)	0.0	65.00	12.50	6.2	0.895	46.24	46.24	12.00	1101.26
112		1	31	1099.5	1641.1	237.3( 7.65)	372.0( 12.00)	0.0	65.00	12.46	6.2	0.895	46.57	46.57	12.00	1100.13
113		2	28	1098.4	1532.1	225.6( 8.06)	334.6( 11.95)	0.0	65.00	11.12	6.1	0.895	46.92	46.92	12.00	1098.94
114		3	31	1092.8	1030.3	397.9( 12.84)	89.0( 29.00)	0.0	65.00	29.23	14.5	0.895	47.99	47.99	12.00	1095.58
115		4	30	1090.5	832.0	1216.3( 40.54)	140.0( 47.00)	0.0	62.44	44.61	23.8	0.893	47.37	47.37	12.00	1091.62
116		5	31	1103.7	2131.6	2764.6( 89.19)	147.7( 47.02)	0.0	65.00	47.89	23.8	0.895	47.48	47.48	12.00	1097.07
117		6	30	1105.0	2310.3	1514.4( 50.48)	130.0( 44.00)	0.0	65.00	45.16	23.2	0.895	45.60	45.60	12.00	1104.32
118		7	31	1105.0	2314.8	616.0( 19.87)	59.0( 19.00)	1.5	65.00	20.22	10.0	0.895	45.44	45.44	12.00	1104.98
119		8	31	1104.5	2247.4	323.7( 10.44)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.35	45.35	12.00	1104.76
120		9	30	1103.5	2109.7	236.5( 7.88)	358.5( 11.95)	0.0	65.00	12.30	6.3	0.895	45.46	45.46	12.00	1104.01
						698.1( 22.88)	684.3( 22.48)	0.1	64.79	22.75		0.895	1410.1	1410.1	12.00	1100.62
121	1950	10	31	1104.0	2177.1	445.8( 14.38)	370.4( 11.95)	0.0	65.00	12.69	6.3	0.895	45.53	45.53	12.00	1103.76
122		11	30	1104.1	2184.4	367.4( 12.25)	358.5( 11.95)	0.0	65.00	12.30	6.3	0.895	45.45	45.45	12.00	1104.04
123		12	31	1103.7	2139.9	325.9( 10.51)	370.4( 11.95)	0.0	65.00	12.70	6.3	0.895	45.49	45.49	12.00	1103.90
124		1	31	1103.2	2076.4	308.4( 9.95)	372.0( 12.00)	0.0	65.00	12.72	6.3	0.895	45.61	45.61	12.00	1103.29
125		2	28	1102.7	2000.1	259.7( 9.38)	336.0( 12.00)	0.0	65.00	11.45	6.3	0.895	45.76	45.76	12.00	1102.95
126		3	31	1096.9	1386.2	450.9( 14.55)	1034.0( 34.00)	0.0	65.00	35.22	17.5	0.895	46.68	46.68	12.00	1099.75
127		4	30	1092.3	992.1	1034.6( 34.49)	143.4( 47.78)	0.0	64.20	46.22	24.0	0.894	47.79	47.79	12.00	1094.60
128		5	31	1101.6	1877.5	2350.2( 75.81)	145.7( 47.00)	0.0	65.00	47.69	23.7	0.895	47.66	47.66	12.00	1096.99
129		6	30	1104.8	2290.0	1776.0( 59.20)	134.0( 44.97)	0.0	65.00	45.89	23.5	0.895	45.86	45.86	12.00	1103.24
130		7	31	1104.8	2289.2	671.2( 21.63)	551.0( 21.00)	0.0	65.00	22.39	11.1	0.895	45.37	45.37	12.00	1104.82
131		8	31	1104.6	2253.0	356.4( 11.50)	372.0( 12.00)	0.0	65.00	12.81	6.4	0.895	45.29	45.29	12.00	1104.69
132		9	30	1104.8	2281.9	403.0( 13.43)	358.5( 11.95)	0.0	65.00	12.35	6.3	0.895	45.28	45.28	12.00	1104.66
						729.1( 23.92)	706.9( 23.21)	0.0	64.93	23.70		0.895	1399.1	1399.1	12.00	1102.24
133	1951	10	31	1104.8	2284.5	692.9( 22.35)	685.0( 22.00)	0.0	65.00	23.51	11.7	0.895	45.26	45.26	12.00	1104.78
134		11	30	1104.9	2296.0	493.1( 16.44)	480.0( 16.00)	0.0	65.00	16.45	8.4	0.895	45.51	45.51	12.00	1104.83
135		12	31	1104.9	2307.6	414.6( 13.37)	405.0( 13.00)	0.0	65.00	13.83	6.9	0.895	45.46	45.46	12.00	1104.91
136		1	31	1102.3	1961.9	367.4( 11.85)	713.0( 23.00)	0.0	65.00	24.32	12.1	0.895	45.73	45.73	12.00	1103.65
137		2	29	1092.4	994.5	366.6( 12.64)	1334.0( 46.00)	0.0	65.00	43.79	23.2	0.895	47.53	47.53	12.00	1097.35
138		3	31	1077.0	0.0	419.0( 13.52)	1412.9( 45.58)	0.0	57.63	42.52	23.7	0.888	46.18	46.18	12.00	1084.68
139		4	30	1083.8	342.9	1696.1( 56.54)	1350.0( 45.00)	0.0	55.27	39.49	23.7	0.888	45.57	45.57	12.00	1080.41
140		5	31	1100.5	1746.0	2866.3( 92.46)	145.7( 47.00)	0.0	62.79	46.27	23.8	0.893	47.45	47.45	12.00	1092.16
141		6	30	1105.0	2309.5	1957.6( 65.25)	1380.0( 46.00)	0.0	65.00	46.75	24.0	0.895	46.05	46.05	12.00	1102.73
142		7	31	1105.0	2314.8	925.6( 29.86)	899.0( 29.00)	0.3	65.00	30.92	15.3	0.895	45.36	45.36	12.00	1104.98
143		8	31	1104.9	2302.5	473.4( 15.27)	465.0( 15.00)	0.0	65.00	16.00	7.9	0.895	45.34	45.34	12.00	1104.96
144		9	30	1104.8	2289.6	363.0( 12.10)	360.0( 12.00)	0.0	65.00	12.41	6.4	0.895	45.25	45.25	12.00	1104.87
						919.6( 30.14)	911.3( 29.96)	0.0	63.39	29.66		0.894	1399.1	1399.1	12.00	1099.19

# Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H	S	GIN	QA	QOUT	P	E	T	ETG	GCR	QUP	LOSS	SUII
				(M)	(M3/S)	(M3/SD)	(M3/SD)	(M3/SD)	(MW)	(GWH)	(H)		(M3/S)	(M3/S)	(M)	(M)
145	1952	10	31	1104.6	2252.6	343.3	372.0	0.0	65.00	12.82	6.4	0.895	45.27	45.27	12.00	1104.69
146		11	30	1104.4	2232.2	339.7	358.5	0.0	65.00	12.34	6.3	0.895	45.33	45.33	12.00	1104.49
147		12	31	1104.3	2211.7	349.9	370.4	0.0	65.00	12.77	6.3	0.895	45.37	45.37	12.00	1104.34
148		1	31	1103.9	2159.8	320.1	372.0	0.0	65.00	12.77	6.3	0.895	45.44	45.44	12.00	1104.07
149		2	28	1102.7	2002.8	291.0	448.0	0.0	65.00	15.30	8.4	0.895	45.67	45.67	12.00	1103.28
150		3	31	1091.3	903.0	360.9	1459.9	0.0	65.00	17.94	23.8	0.895	47.51	47.51	12.00	1096.99
151		4	30	1086.1	498.1	976.5	1376.9	0.0	60.55	42.66	23.5	0.892	46.91	46.91	12.00	1088.73
152		5	31	1100.5	1743.4	2728.1	1476.3	0.0	63.55	47.27	24.0	0.894	47.63	47.63	12.00	1093.30
153		6	30	1104.9	2300.8	1921.4	1350.0	0.0	65.00	45.75	23.5	0.895	46.03	46.03	12.00	1102.68
154		7	31	1104.9	2297.6	823.8	806.0	0.0	65.00	27.73	13.8	0.895	45.34	45.34	12.00	1104.89
155		8	31	1104.8	2289.8	477.8	465.0	0.0	65.00	15.99	7.9	0.895	45.38	45.38	12.00	1104.85
156		9	30	1104.5	2247.1	333.1	360.0	0.0	65.00	12.39	6.4	0.895	45.33	45.33	12.00	1104.67
						772.1	767.9	0.0	64.51	25.47		0.895	1397.1	1397.1	12.00	1101.41
157	1953	10	31	1104.1	2195.7	327.3	370.4	0.0	65.00	12.74	6.3	0.895	45.37	45.37	12.00	1104.33
158		11	30	1104.0	2173.2	339.0	360.0	0.0	65.00	12.36	6.3	0.895	45.45	45.45	12.00	1104.06
159		12	31	1103.6	2117.6	316.4	372.0	0.0	65.00	12.75	6.3	0.895	45.53	45.53	12.00	1103.77
160		1	31	1103.0	2046.1	300.5	372.0	0.0	65.00	12.71	6.3	0.895	45.66	45.66	12.00	1103.29
161		2	28	1096.2	1346.1	280.1	980.0	0.0	65.00	32.72	18.0	0.895	46.72	46.72	12.00	1099.62
162		3	31	1083.6	330.0	441.4	1457.0	0.0	61.33	45.54	23.9	0.892	47.10	47.10	12.00	1089.93
163		4	30	1077.0	0.0	976.5	1302.7	0.0	55.20	37.89	22.9	0.888	45.55	45.55	12.00	1080.31
164		5	31	1099.4	1635.5	3091.6	1450.8	0.0	60.23	44.78	24.0	0.891	46.83	46.83	12.00	1088.22
165		6	30	1105.0	2314.8	2793.6	1379.0	0.0	721.7	46.80	24.0	0.895	45.97	45.97	12.00	1102.22
166		7	31	1105.0	2314.8	1776.0	1401.0	0.0	65.00	48.36	24.0	0.895	45.19	45.19	12.00	1105.00
167		8	31	1104.9	2299.8	656.7	651.0	0.0	65.00	28.34	11.1	0.895	45.47	45.47	12.00	1104.95
168		9	30	1104.6	2252.0	448.0	480.0	0.0	65.00	16.46	8.4	0.895	45.49	45.49	12.00	1104.72
						978.9	881.3	89.6	63.48	28.79		0.894	1395.1	1395.1	12.00	1099.20
169	1954	10	31	1105.0	2314.8	445.1	372.0	2.1	65.00	12.79	6.3	0.895	45.38	45.38	12.00	1104.78
170		11	30	1104.9	2307.2	384.0	390.0	0.0	65.00	13.45	6.9	0.895	45.25	45.25	12.00	1104.97
171		12	31	1104.9	2294.7	357.9	370.4	0.0	65.00	12.78	6.4	0.895	45.21	45.21	12.00	1104.90
172		1	31	1104.4	2227.5	304.9	372.0	0.0	65.00	12.81	6.4	0.895	45.29	45.29	12.00	1104.62
173		2	28	1103.8	2144.8	253.2	336.0	0.0	65.00	11.53	6.3	0.895	45.44	45.44	12.00	1104.07
174		3	31	1103.5	2104.4	332.4	372.0	0.0	65.00	12.73	6.3	0.895	45.57	45.57	12.00	1103.62
175		4	30	1100.6	1756.1	678.5	1020.0	0.0	65.00	34.57	17.7	0.895	46.02	46.02	12.00	1102.02
176		5	31	1104.9	2303.1	1957.6	1400.3	0.0	65.00	47.41	23.5	0.895	46.07	46.07	12.00	1102.75
177		6	30	1105.0	2314.8	961.9	930.0	4.0	65.00	31.95	16.4	0.895	45.40	45.40	12.00	1104.96
178		7	31	1103.8	2148.2	224.9	370.4	0.0	65.00	12.74	6.3	0.895	45.37	45.37	12.00	1104.40
179		8	31	1101.6	1875.2	117.4	370.4	0.0	65.00	12.61	6.3	0.895	45.83	45.83	12.00	1102.71
180		9	30	1099.3	1616.8	114.4	358.5	0.0	65.00	12.03	6.2	0.895	46.48	46.48	12.00	1100.44
						511.0	555.2	0.5	65.00	18.95		0.895	1387.1	1387.1	12.00	1103.68
181	1955	10	31	1097.5	1448.4	208.9	370.4	0.0	65.00	12.27	6.1	0.895	47.09	47.09	12.00	1098.36
182		11	30	1095.7	1306.9	218.3	358.5	0.0	65.00	11.74	6.0	0.895	47.63	47.63	12.00	1096.59
183		12	31	1094.5	1190.4	253.9	370.4	0.0	64.59	12.01	6.0	0.895	47.91	47.91	12.00	1095.11
184		1	31	1093.0	1050.6	230.7	370.4	0.0	63.84	11.90	6.0	0.894	47.70	47.70	12.00	1093.75
185		2	29	1092.1	974.0	269.9	346.5	0.0	63.06	11.04	6.0	0.894	47.52	47.52	12.00	1092.56
186		3	31	1091.8	944.2	341.2	370.4	0.0	62.66	11.75	6.0	0.893	47.42	47.42	12.00	1091.96
187		4	30	1097.0	1405.0	823.8	358.5	0.0	64.26	11.57	6.0	0.894	47.80	47.80	12.00	1094.38
188		5	31	1103.0	2040.3	1543.4	999.0	0.0	65.00	30.08	14.9	0.895	46.62	46.62	12.00	1099.96
189		6	30	1104.9	2300.5	1616.1	1340.6	0.0	65.00	45.89	23.5	0.895	45.57	45.57	12.00	1103.93
190		7	31	1105.0	2310.4	743.9	713.0	0.0	65.00	24.52	12.2	0.895	45.36	45.36	12.00	1104.93
191		8	31	1105.0	2307.7	388.4	370.4	0.0	65.00	12.74	6.3	0.895	45.38	45.38	12.00	1104.96
192		9	30	1104.5	2249.8	316.4	358.5	0.0	65.00	12.36	6.3	0.895	45.26	45.26	12.00	1104.74
						579.6	518.9	0.0	64.45	17.32		0.895	1426.1	1426.1	12.00	1098.44

\*\*\* OPTIMAL SCHEDULE \*\*\*

Olur Project

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	GIN (M3/SD)	QA (M3/SD)	GOUT (M3/SD)	P (MW)	E (GWH)	T (H)	ETG (M3/S)	QCR (M3/S)	GUP (M3/S)	LOSS (M)	SULLI (CM)
193	1956	10	31	1104.5	2247.2	376.0( 12.13)	370.4( 11.95)	0.0	65.00	12.75	6.3	0.895	45.32	45.32	12.00	1104.53
194		11	30	1104.2	2200.6	315.0( 10.50)	360.4( 12.00)	0.0	65.00	12.38	6.3	0.895	45.37	45.37	12.00	1104.35
195		12	31	1103.8	2142.9	312.7( 10.09)	370.4( 11.95)	0.0	65.00	12.71	6.3	0.895	45.47	45.47	12.00	1103.97
196		1	31	1103.1	2059.7	288.8( 9.32)	372.0( 12.00)	0.0	65.00	12.72	6.3	0.895	45.62	45.62	12.00	1103.44
197		2	28	1102.7	2007.4	283.7( 10.13)	336.0( 12.00)	0.0	65.00	11.45	6.3	0.895	45.77	45.77	12.00	1102.92
198		3	31	1102.1	1926.6	509.0( 16.42)	589.0( 19.00)	0.0	65.00	20.01	9.9	0.895	45.92	45.92	12.00	1102.38
199		4	30	1100.0	1696.2	1121.9( 37.40)	1345.9( 44.86)	0.0	65.00	45.34	23.3	0.895	46.31	46.31	12.00	1101.04
200		5	31	1104.0	2181.4	1921.4( 61.98)	1426.0( 46.00)	0.0	65.00	48.12	23.9	0.895	46.23	46.23	12.00	1102.03
201		6	30	1105.0	2314.8	1470.7( 49.02)	1320.0( 44.00)	1.5	65.00	45.26	23.2	0.895	45.50	45.50	12.00	1104.52
202		7	31	1105.0	2313.9	671.2( 21.65)	651.0( 21.00)	0.0	65.00	22.38	11.1	0.895	45.37	45.37	12.00	1105.00
203		8	31	1104.4	2225.5	302.7( 9.76)	370.4( 11.95)	0.0	65.00	12.75	6.3	0.895	45.32	45.32	12.00	1104.68
204		9	30	1103.8	2143.2	291.8( 9.73)	358.5( 11.95)	0.0	65.00	12.31	6.3	0.895	45.45	45.45	12.00	1104.06
						655.4( 21.51)	655.8( 21.56)	0.1	65.00	22.35		0.895	1388.	1388.	12.00	1103.57
205	1957	10	31	1103.6	2116.1	351.4( 11.34)	370.4( 11.95)	0.0	65.00	12.68	6.3	0.895	45.56	45.56	12.00	1103.65
206		11	30	1103.7	2136.4	381.8( 12.73)	360.0( 12.00)	0.0	65.00	12.32	6.3	0.895	45.57	45.57	12.00	1103.63
207		12	31	1103.4	2099.0	333.1( 10.75)	370.4( 11.95)	0.0	65.00	12.68	6.3	0.895	45.59	45.59	12.00	1103.56
208		1	31	1102.9	2031.9	303.4( 9.79)	370.4( 11.95)	0.0	65.00	12.65	6.3	0.895	45.70	45.70	12.00	1103.16
209		2	28	1102.3	1960.1	262.7( 9.38)	334.6( 11.93)	0.0	65.00	11.38	6.3	0.895	45.85	45.85	12.00	1102.62
210		3	31	1102.2	1943.2	354.3( 11.43)	370.4( 11.95)	0.0	65.00	12.58	6.2	0.895	45.96	45.96	12.00	1102.26
211		4	30	1104.4	2233.4	656.7( 21.89)	360.0( 12.00)	0.0	65.00	46.42	23.0	0.895	45.66	45.66	12.00	1103.31
212		5	31	1104.8	2286.3	1412.6( 45.57)	1348.0( 43.48)	0.0	65.00	46.51	23.8	0.895	45.29	45.29	12.00	1104.61
213		6	30	1104.9	2303.7	1383.6( 46.12)	1350.0( 45.00)	0.0	65.00	46.51	23.8	0.895	45.29	45.29	12.00	1104.86
214		7	31	1104.9	2302.1	577.4( 18.63)	558.0( 18.00)	0.0	65.00	19.22	9.5	0.895	45.28	45.28	12.00	1104.92
215		8	31	1104.3	2210.8	299.8( 9.67)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.34	45.34	12.00	1104.58
216		9	30	1103.7	2134.3	297.6( 9.92)	358.5( 11.95)	0.0	65.00	12.30	6.3	0.895	45.47	45.47	12.00	1103.97
						551.2( 18.10)	543.4( 17.84)	0.0	65.00	18.65		0.895	1385.	1385.	12.00	1103.76
217	1958	10	31	1103.2	2072.3	316.4( 10.21)	370.4( 11.95)	0.0	65.00	12.67	6.3	0.895	45.62	45.62	12.00	1103.45
218		11	30	1102.6	1999.7	287.4( 9.58)	358.5( 11.95)	0.0	65.00	12.22	6.3	0.895	45.76	45.76	12.00	1102.93
219		12	31	1101.9	1904.9	275.7( 8.89)	370.4( 11.95)	0.0	65.00	12.58	6.2	0.895	45.95	45.95	12.00	1102.26
220		1	31	1101.1	1814.6	280.1( 9.04)	370.4( 11.95)	0.0	65.00	12.52	6.2	0.895	46.18	46.18	12.00	1101.49
221		2	28	1100.1	1703.5	224.9( 8.03)	336.0( 12.00)	0.0	65.00	11.59	6.2	0.895	46.43	46.43	12.00	1100.60
222		3	31	1099.9	1684.2	353.5( 11.40)	370.4( 12.00)	0.0	65.00	12.45	6.2	0.895	46.61	46.61	12.00	1100.00
223		4	30	1095.6	1297.4	969.2( 32.31)	1350.0( 45.00)	0.0	65.00	44.55	22.8	0.895	47.27	47.27	12.00	1097.76
224		5	31	1104.0	2177.9	2313.9( 74.64)	1424.7( 45.96)	0.0	65.00	47.37	23.5	0.895	46.92	46.92	12.00	1099.81
225		6	30	1104.9	2300.3	1478.0( 49.27)	1339.8( 44.66)	0.0	65.00	45.90	23.5	0.895	45.54	45.54	12.00	1104.46
226		7	31	1105.0	2314.8	562.8( 18.16)	527.0( 17.00)	0.3	65.00	18.11	9.0	0.895	45.40	45.40	12.00	1104.95
227		8	31	1104.9	2305.3	445.1( 14.36)	434.0( 14.00)	0.0	65.00	14.91	7.4	0.895	45.40	45.40	12.00	1104.97
228		9	30	1104.9	2304.0	373.1( 12.44)	358.5( 11.95)	0.0	65.00	12.35	6.3	0.895	45.27	45.27	12.00	1104.93
						656.7( 21.53)	634.3( 20.86)	0.0	65.00	21.41		0.895	1400.	1400.	12.00	1102.30
229	1959	10	31	1104.8	2286.7	456.0( 14.71)	465.0( 15.00)	0.0	65.00	16.02	7.9	0.895	45.29	45.29	12.00	1104.86
230		11	30	1104.8	2293.2	458.1( 15.27)	450.0( 15.00)	0.0	65.00	15.45	7.9	0.895	45.43	45.43	12.00	1104.82
231		12	31	1104.9	2295.3	372.5( 12.01)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.38	45.38	12.00	1104.86
232		1	31	1104.7	2267.4	342.6( 11.05)	370.4( 11.95)	0.0	65.00	12.77	6.3	0.895	45.25	45.25	12.00	1104.76
233		2	29	1104.6	2264.1	343.3( 11.84)	346.5( 11.95)	0.0	65.00	11.94	6.3	0.895	45.28	45.28	12.00	1104.65
234		3	31	1097.4	1441.0	448.7( 14.48)	1271.0( 41.00)	0.0	65.00	42.81	21.2	0.895	46.31	46.31	12.00	1101.01
235		4	30	1096.3	1350.9	1325.3( 44.18)	1410.0( 47.00)	0.0	65.00	46.07	23.6	0.895	47.74	47.74	12.00	1106.84
236		5	31	1105.0	2314.1	2379.3( 76.75)	1407.1( 45.39)	0.0	65.00	47.09	23.4	0.895	46.61	46.61	12.00	1100.64
237		6	30	1104.9	2304.1	1396.3( 43.21)	1290.0( 45.00)	0.0	65.00	44.36	22.8	0.895	45.36	45.36	12.00	1104.96
238		7	31	1104.8	2291.7	845.6( 27.28)	837.0( 27.00)	0.0	65.00	28.76	14.3	0.895	45.41	45.41	12.00	1104.88
239		8	31	1105.0	2309.0	533.8( 17.22)	496.0( 16.00)	0.0	65.00	17.01	8.4	0.895	45.48	45.48	12.00	1104.90
240		9	30	1105.0	2314.8	378.9( 12.63)	357.2( 11.91)	0.0	65.00	12.25	6.3	0.895	45.47	45.47	12.00	1104.98
						765.0( 25.05)	755.9( 24.76)	0.0	65.00	25.61		0.895	1395.	1395.	12.00	1103.51

# Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	GIN (M3/SD)	QQ (M3/SD)	QOUT (M3/SD)	P (MW)	E (GWH)	T (H)	ETG (M3/S)	GCR (M3/S)	QUP (M3/S)	LOSS (M)	SULL (M)
241	1960	10	31	1104.2	2199.4	252.5( 8.15)	359.6( 11.60)	0.0	65.00	12.31	6.1	0.895	45.58	45.58	12.00	1104.59
242		11	30	1103.2	2065.1	234.2( 7.47)	356.9( 11.90)	0.0	65.00	12.52	6.2	0.895	45.84	45.84	12.00	1103.67
243		12	31	1102.0	1920.9	226.3( 7.30)	370.4( 11.95)	0.0	65.00	12.45	6.2	0.895	46.15	46.15	12.00	1102.59
244		1	31	1100.5	1742.6	192.1( 6.20)	370.4( 11.95)	0.0	65.00	12.45	6.2	0.895	46.43	46.43	12.00	1101.23
245		2	28	1098.8	1572.6	164.6( 5.88)	334.6( 11.95)	0.0	65.00	11.17	6.1	0.895	46.72	46.72	12.00	1099.84
246		3	31	1096.9	1397.3	195.1( 6.29)	369.8( 11.93)	0.0	65.00	12.21	6.1	0.895	47.25	47.25	12.00	1097.84
247		4	30	1097.5	1450.5	411.7( 13.72)	353.1( 11.77)	0.0	64.49	11.61	6.0	0.895	47.45	47.08	12.00	1097.18
248		5	31	1102.5	1976.5	896.5( 28.92)	361.2( 11.65)	0.0	64.98	12.09	6.0	0.895	46.62	46.60	12.00	1099.98
249		6	30	1103.3	2083.6	465.5( 15.52)	343.5( 11.45)	0.0	65.00	11.71	6.0	0.895	45.78	45.78	12.00	1102.88
250		7	31	1101.2	1823.9	110.8( 3.57)	350.5( 11.31)	0.0	63.96	11.90	6.0	0.895	45.23	45.23	12.00	1102.24
251		8	31	1098.1	1507.5	54.1( 1.74)	352.2( 11.36)	0.0	63.24	11.76	6.0	0.895	46.71	45.44	12.00	1099.65
252		9	30	1094.4	1185.5	36.6( 1.22)	345.8( 11.53)	0.0	62.81	11.30	6.0	0.895	47.72	46.11	12.00	1096.29
						269.2( 8.83)	355.7( 11.70)	0.0	64.54	11.93		0.895	1415.	1405.	12.00	1100.65
253	1961	10	31	1091.6	925.1	110.0( 3.55)	364.6( 11.76)	0.0	62.64	11.65	6.0	0.894	47.59	47.05	12.00	1093.01
254		11	30	1088.9	707.1	140.5( 4.68)	357.5( 11.92)	0.0	61.55	11.20	6.1	0.892	47.15	47.15	12.00	1090.25
255		12	31	1086.3	509.9	173.3( 5.59)	370.4( 11.95)	0.0	59.84	11.38	6.1	0.891	46.73	46.73	12.00	1087.62
256		1	31	1082.9	282.2	142.8( 4.61)	370.4( 11.95)	0.0	57.89	11.13	6.2	0.890	46.25	46.25	12.00	1084.58
257		2	28	1077.0	79.5	131.8( 4.71)	334.6( 11.95)	0.0	54.96	9.70	6.3	0.887	45.49	45.49	12.00	1079.93
258		3	31	1077.0	0.0	291.0( 9.39)	370.1( 11.94)	0.0	53.15	10.49	6.4	0.886	45.01	45.01	12.00	1077.00
259		4	30	1084.8	404.0	745.6( 25.52)	358.3( 11.95)	0.0	55.56	10.47	6.3	0.888	45.65	45.65	12.00	1080.88
260		5	31	1098.8	1570.5	1543.4( 49.79)	370.4( 11.95)	0.0	62.54	11.73	6.1	0.893	47.39	47.39	12.00	1091.78
261		6	30	1102.7	2008.0	809.3( 26.98)	358.5( 11.95)	0.0	65.00	12.06	6.2	0.895	46.39	46.39	12.00	1100.75
262		7	31	1102.6	1994.8	376.7( 12.15)	370.4( 11.95)	0.0	65.00	12.61	6.3	0.895	45.84	45.84	12.00	1102.66
263		8	31	1100.7	1764.6	139.5( 5.14)	370.4( 11.95)	0.0	65.00	12.53	6.2	0.895	46.13	46.13	12.00	1101.63
264		9	30	1098.2	1516.9	124.5( 4.15)	358.5( 11.95)	0.0	65.00	11.96	6.1	0.895	46.77	46.77	12.00	1099.44
						397.4( 13.02)	362.9( 11.93)	0.0	60.68	11.41		0.892	1410.	1409.	12.00	1090.79
265	1962	10	31	1095.3	1267.3	127.5( 4.11)	370.4( 11.95)	0.0	65.00	12.15	6.0	0.895	47.58	47.58	12.00	1096.76
266		11	30	1093.1	1059.2	151.5( 5.05)	358.5( 11.95)	0.0	64.14	11.55	6.0	0.894	47.77	47.77	12.00	1094.19
267		12	31	1090.4	824.9	137.7( 4.44)	372.0( 12.00)	0.0	62.52	11.78	6.1	0.893	47.39	47.39	12.00	1091.74
268		1	31	1087.7	610.2	155.8( 5.03)	370.4( 11.95)	0.0	60.75	11.50	6.1	0.892	46.96	46.96	12.00	1089.03
269		2	28	1084.9	410.4	134.7( 4.81)	334.6( 11.95)	0.0	58.97	10.18	6.2	0.890	46.52	46.52	12.00	1086.27
270		3	31	1077.0	0.0	197.2( 6.36)	607.1( 19.59)	0.0	55.59	17.74	10.3	0.888	45.66	45.66	12.00	1080.93
271		4	30	1081.0	175.5	1528.9( 50.96)	1350.3( 45.01)	0.0	54.40	38.88	23.8	0.887	45.34	45.34	12.00	1079.02
272		5	31	1105.0	2314.8	3811.2( 122.94)	1475.2( 47.59)	190.8	63.36	47.14	24.0	0.894	47.59	47.59	12.00	1093.02
273		6	30	1105.0	2314.8	2648.3( 88.28)	1355.6( 45.19)	1276.3	65.00	46.80	24.0	0.895	45.19	45.19	12.00	1105.00
274		7	31	1105.0	2314.8	1434.4( 46.27)	1395.0( 45.00)	18.3	65.00	47.94	23.8	0.895	45.40	45.40	12.00	1105.00
275		8	31	1104.9	2295.0	961.9( 31.03)	961.0( 31.00)	0.0	65.00	33.05	16.4	0.895	45.36	45.36	12.00	1104.93
276		9	30	1104.5	2246.5	327.3( 10.91)	360.0( 12.00)	0.0	65.00	12.39	6.4	0.895	45.33	45.33	12.00	1104.69
						968.0( 31.68)	775.9( 25.43)	123.8	62.06	25.09		0.893	1410.	1410.	12.00	1094.21
277	1963	10	31	1105.0	2307.8	534.5( 17.24)	465.0( 15.00)	0.0	65.00	16.00	7.9	0.895	45.33	45.33	12.00	1104.73
278		11	30	1105.0	2314.3	458.1( 15.27)	450.0( 15.00)	0.0	65.00	15.46	7.9	0.895	45.42	45.42	12.00	1104.97
279		12	31	1104.7	2268.9	326.6( 10.54)	372.0( 12.00)	0.0	65.00	12.78	6.3	0.895	45.40	45.40	12.00	1104.84
280		1	31	1103.6	2122.1	256.1( 8.26)	403.0( 13.00)	0.0	65.00	13.84	6.9	0.895	45.43	45.43	12.00	1104.14
281		2	29	1092.7	1026.7	209.6( 7.23)	1305.0( 45.00)	0.0	65.00	43.17	22.9	0.895	47.15	47.15	12.00	1098.16
282		3	31	1077.0	0.0	361.5( 11.66)	1387.6( 44.76)	0.0	58.07	41.78	23.2	0.890	46.29	46.29	12.00	1084.86
283		4	30	1080.5	145.4	1470.7( 49.02)	1322.2( 44.07)	0.0	54.23	37.99	23.4	0.887	45.30	45.30	12.00	1078.74
284		5	31	1101.1	1811.0	3135.2( 101.13)	1463.8( 47.22)	0.0	61.89	46.03	24.0	0.893	47.24	47.24	12.00	1090.78
285		6	30	1105.0	2314.8	2175.7( 72.52)	1372.1( 45.74)	285.5	65.00	46.80	24.0	0.895	45.74	45.74	12.00	1103.04
286		7	31	1104.9	2302.0	628.2( 20.27)	620.0( 20.00)	0.0	65.00	21.30	10.6	0.895	45.41	45.41	12.00	1104.95
287		8	31	1103.8	2153.3	242.4( 7.82)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.44	45.44	12.00	1104.37
288		9	30	1102.6	1995.0	215.5( 7.18)	358.5( 11.95)	0.0	65.00	12.24	6.3	0.895	45.68	45.68	12.00	1103.22
						834.5( 27.35)	824.1( 27.14)	23.8	63.27	26.68		0.894	1397.	1397.	12.00	1098.90

# Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	GIN (M3/SD)	GG (M3/SD)	GOUT (M3/SD)	P (MW)	E (GWH)	T (H)	ETG	GCR (M3/S)	GUP (M3/S)	LOSS (M)	SUII (M)
289	1964	10	31	1101.4	1846.1	229.3( 7.40)	370.4( 11.95)	0.0	65.00	12.55	6.2	0.895	46.03	46.03	12.00	1101.99
290		11	30	1100.1	1703.1	216.9( 7.23)	358.5( 11.95)	0.0	65.00	12.05	6.2	0.895	46.39	46.39	12.00	1100.73
291		12	31	1098.6	1556.0	223.4( 7.21)	370.4( 11.95)	0.0	65.00	12.35	6.1	0.895	46.80	46.80	12.00	1099.37
292		1	31	1096.4	1356.6	171.1( 5.52)	370.4( 11.95)	0.0	65.00	12.20	6.1	0.895	47.35	47.35	12.00	1097.50
293		2	28	1094.3	1172.0	150.0( 5.36)	334.6( 11.95)	0.0	64.69	10.87	6.0	0.895	47.95	47.80	12.00	1095.33
294		3	31	1095.0	1240.2	139.2( 14.17)	370.4( 11.95)	0.0	64.39	11.98	6.0	0.895	47.84	47.80	12.00	1094.66
295		4	30	1103.0	2046.9	1201.7( 40.06)	390.0( 13.00)	0.0	65.00	12.97	6.7	0.895	46.90	46.90	12.00	1099.02
296		5	31	1105.0	2309.5	1637.8( 52.83)	1364.0( 44.00)	0.0	65.00	46.80	23.2	0.895	45.47	45.47	12.00	1103.99
297		6	30	1104.3	2210.6	1027.3( 34.24)	1110.0( 37.00)	0.0	65.00	38.00	19.5	0.895	45.53	45.53	12.00	1104.61
298		7	31	1104.8	2291.4	566.4( 18.27)	465.0( 15.00)	0.0	65.00	15.93	7.9	0.895	45.55	45.55	12.00	1104.55
299		8	31	1104.1	2186.3	285.9( 9.22)	370.4( 11.95)	0.0	65.00	12.71	6.3	0.895	45.47	45.47	12.00	1104.46
300		9	30	1102.8	2013.3	200.9( 6.70)	358.5( 11.95)	0.0	65.00	12.26	6.3	0.895	45.63	45.63	12.00	1103.42
						529.2( 17.35)	519.4( 17.05)	0.0	64.92	17.56		0.895	141.1	141.1	12.00	1100.80
301	1965	10	31	1102.9	2027.9	392.8( 12.67)	370.4( 11.95)	0.0	65.00	12.62	6.3	0.895	45.80	45.80	12.00	1102.81
302		11	30	1102.2	1943.6	275.7( 9.19)	358.5( 11.95)	0.0	65.00	12.19	6.3	0.895	45.88	45.88	12.00	1102.53
303		12	31	1101.3	1832.8	261.2( 8.43)	372.0( 12.00)	0.0	65.00	12.59	6.2	0.895	46.11	46.11	12.00	1101.73
304		1	31	1100.3	1728.7	266.3( 8.59)	370.4( 11.95)	0.0	65.00	12.46	6.2	0.895	46.38	46.38	12.00	1100.80
305		2	28	1099.5	1637.8	245.1( 8.75)	336.0( 12.00)	0.0	65.00	11.24	6.2	0.895	46.64	46.64	12.00	1099.90
306		3	31	1099.0	1588.1	322.9( 10.42)	372.0( 12.00)	0.0	65.00	12.39	6.1	0.895	46.84	46.84	12.00	1099.22
307		4	30	1097.6	1455.8	123.6( 40.79)	1350.0( 45.00)	0.0	65.00	44.69	22.9	0.895	47.12	47.12	12.00	1098.26
308		5	31	1105.0	2314.5	2263.0( 73.00)	1395.0( 45.00)	0.0	65.00	46.90	23.3	0.895	46.40	46.40	12.00	1101.27
309		6	30	1105.0	2308.4	700.2( 23.34)	690.0( 23.00)	0.0	65.00	23.73	12.2	0.895	45.36	45.36	12.00	1104.98
310		7	31	1103.9	2160.0	243.1( 7.84)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.38	45.38	12.00	1104.42
311		8	31	1102.0	1916.0	146.4( 4.72)	370.4( 11.95)	0.0	65.00	12.63	6.3	0.895	45.77	45.77	12.00	1102.93
312		9	30	1100.3	1722.2	179.1( 5.97)	358.5( 11.95)	0.0	65.00	12.08	6.2	0.895	46.28	46.28	12.00	1101.12
						543.3( 17.81)	559.5( 18.39)	0.0	65.00	18.85		0.895	140.4	140.4	12.00	1101.66
313	1966	10	31	1098.9	1577.4	232.9( 7.51)	370.4( 11.95)	0.0	65.00	12.37	6.1	0.895	46.74	46.74	12.00	1099.57
314		11	30	1097.2	1425.0	207.4( 6.91)	358.5( 11.95)	0.0	65.00	11.85	6.1	0.895	47.19	47.19	12.00	1098.08
315		12	31	1095.0	1235.1	180.6( 5.82)	370.4( 11.95)	0.0	65.00	12.09	6.0	0.895	47.79	47.79	12.00	1096.03
316		1	31	1092.8	1033.6	188.9( 5.45)	370.4( 11.95)	0.0	63.93	11.91	6.0	0.894	47.72	47.72	12.00	1093.89
317		2	28	1090.4	826.5	127.5( 4.56)	334.6( 11.95)	0.0	62.43	10.58	6.1	0.893	47.37	47.37	12.00	1091.61
318		3	31	1088.1	642.6	187.0( 6.03)	370.4( 11.95)	0.0	60.90	11.52	6.1	0.892	46.99	46.99	12.00	1089.25
319		4	30	1089.7	767.3	487.3( 16.24)	358.5( 11.95)	0.0	60.66	11.12	6.1	0.892	46.94	46.94	12.00	1088.89
320		5	31	1104.9	2294.4	2619.2( 84.49)	1085.0( 35.00)	0.0	65.00	35.69	17.7	0.895	47.42	47.42	12.00	1097.27
321		6	30	1104.9	2301.9	983.7( 32.79)	960.0( 32.00)	0.0	65.00	33.01	16.9	0.895	45.36	45.36	12.00	1104.88
322		7	31	1104.8	2288.7	1092.8( 35.25)	1085.0( 35.00)	0.0	65.00	37.27	18.5	0.895	45.42	45.42	12.00	1104.86
323		8	31	1104.9	2299.2	496.1( 16.00)	465.0( 15.00)	0.0	65.00	15.97	7.9	0.895	45.41	45.41	12.00	1104.85
324		9	30	1104.2	2201.3	276.5( 9.22)	358.5( 11.95)	0.0	65.00	12.34	6.3	0.895	45.32	45.32	12.00	1104.54
						588.5( 19.19)	540.6( 17.72)	0.0	63.99	17.98		0.894	141.9	141.9	12.00	1097.81
325	1967	10	31	1103.7	2129.8	307.1( 9.91)	370.4( 11.95)	0.0	65.00	12.70	6.3	0.895	45.49	45.49	12.00	1103.92
326		11	30	1103.2	2065.9	297.6( 9.92)	360.0( 12.00)	0.0	65.00	12.31	6.3	0.895	45.63	45.63	12.00	1103.41
327		12	31	1102.5	1986.4	291.0( 9.39)	370.4( 11.95)	0.0	65.00	12.62	6.3	0.895	45.79	45.79	12.00	1102.86
328		1	31	1101.6	1869.0	254.6( 8.21)	372.0( 12.00)	0.0	65.00	12.61	6.3	0.895	46.01	46.01	12.00	1102.06
329		2	29	1091.6	930.2	221.2( 7.63)	1160.0( 40.00)	0.0	65.00	38.00	20.2	0.895	47.63	47.63	12.00	1096.60
330		3	31	1077.0	0.0	461.1( 14.87)	1390.8( 44.86)	0.0	57.72	44.76	23.3	0.890	46.20	46.20	12.00	1084.32
331		4	30	1105.0	2314.8	3803.9( 126.80)	1418.1( 47.27)	67.9	62.03	44.60	24.0	0.893	47.27	47.27	12.00	1091.00
332		5	31	1105.0	2314.8	4276.4( 137.95)	1400.8( 45.19)	2863.6	65.00	48.36	24.0	0.895	45.19	45.19	12.00	1105.00
333		6	30	1105.0	2314.8	2299.3( 76.64)	1363.9( 45.46)	919.1	65.00	46.80	24.0	0.895	45.46	45.46	12.00	1105.00
334		7	31	1104.8	2291.7	772.9( 24.93)	775.0( 25.00)	0.0	65.00	26.82	13.2	0.895	45.42	45.42	12.00	1104.92
335		8	31	1104.8	2284.7	384.0( 12.39)	370.4( 11.95)	0.0	65.00	12.76	6.3	0.895	45.29	45.29	12.00	1104.81
336		9	30	1104.3	2220.3	310.0( 10.33)	358.5( 11.95)	0.0	65.00	12.34	6.3	0.895	45.31	45.31	12.00	1104.56
						1139.9( 37.41)	809.2( 26.63)	320.9	64.15	26.79		0.894	139.9	139.9	12.00	1100.70

\*\*\* OPTIMAL SCHEDULE \*\*\*

Olur Project

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	GIN (M3/SD)	GA (M3/SD)	QOUT (M3/SD)	P (MW)	E (GWH)	T (H)	ETG (M3/S)	QCR (M3/S)	GUP (M3/S)	LOSS (M)	SUUI (M)
337	1968	10	31	1104.0	2177.8	336.1( 10.84)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.42	45.42	12.00	1104.17
338		11	30	1104.1	2190.9	373.1( 12.44)	358.5( 11.95)	0.0	65.00	12.31	6.3	0.895	45.45	45.45	12.00	1104.06
339		12	31	1103.4	2093.9	275.0( 8.87)	372.0( 12.00)	0.0	65.00	12.74	6.3	0.895	45.54	45.54	12.00	1103.75
340		1	31	1102.1	1929.3	207.4( 6.69)	372.0( 12.00)	0.0	65.00	12.66	6.3	0.895	45.82	45.82	12.00	1102.73
341		2	28	1096.9	1400.4	171.1( 6.11)	700.0( 25.00)	0.0	65.00	23.35	12.8	0.895	46.76	46.76	12.00	1099.49
342		3	31	1083.7	333.9	395.0( 12.74)	1400.9( 47.12)	0.0	61.57	45.78	24.0	0.892	47.16	47.16	12.00	1090.30
343		4	30	1087.4	592.1	1652.4( 55.08)	1390.5( 46.35)	0.0	58.52	42.08	24.0	0.890	46.40	46.40	12.00	1085.56
344		5	31	1105.0	2314.8	3207.9(103.48)	1472.6( 47.50)	5.8	65.00	48.12	23.9	0.895	47.75	47.75	12.00	1096.22
345		6	30	1105.0	2307.9	729.4( 24.31)	720.0( 24.00)	0.0	65.00	24.72	12.7	0.895	45.44	45.44	12.00	1104.98
346		7	31	1103.8	2144.9	228.5( 7.37)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.43	45.43	12.00	1104.36
347		8	31	1102.4	1974.4	219.8( 7.09)	370.4( 11.95)	0.0	65.00	12.64	6.3	0.895	45.72	45.72	12.00	1103.11
348		9	30	1101.0	1802.2	200.9( 6.70)	358.5( 11.95)	0.0	65.00	12.13	6.2	0.895	46.11	46.11	12.00	1103.72
						666.4( 21.81)	693.0( 22.81)	0.5	64.17	22.66		0.894	1402.	1402.	12.00	1100.04
349	1969	10	31	1100.7	1774.3	349.9( 11.29)	370.4( 11.95)	0.0	65.00	12.47	6.2	0.895	46.36	46.36	12.00	1100.87
350		11	30	1099.7	1664.6	250.2( 8.34)	358.5( 11.95)	0.0	65.00	12.02	6.2	0.895	46.54	46.54	12.00	1100.24
351		12	31	1098.6	1551.0	256.8( 8.28)	370.4( 11.95)	0.0	65.00	12.33	6.1	0.895	46.86	46.86	12.00	1099.16
352		1	31	1096.8	1391.5	211.0( 6.81)	370.4( 11.95)	0.0	65.00	12.22	6.1	0.895	47.30	47.30	12.00	1097.69
353		2	28	1095.0	1235.3	178.4( 6.37)	334.6( 11.95)	0.0	64.94	10.91	6.0	0.895	47.85	47.85	12.00	1095.88
354		3	31	1094.1	1153.0	288.8( 9.32)	370.4( 11.95)	0.0	64.33	11.97	6.0	0.894	47.82	47.82	12.00	1094.54
355		4	30	1103.1	2061.6	1303.5( 43.45)	390.0( 13.00)	0.0	65.00	12.94	6.6	0.895	47.02	47.02	12.00	1098.62
356		5	31	1105.0	2314.8	1070.9( 34.55)	806.0( 26.00)	0.3	65.00	27.67	13.7	0.895	45.45	45.45	12.00	1104.07
357		6	30	1104.9	2296.4	356.4( 11.88)	358.5( 11.95)	0.0	65.00	12.36	6.3	0.895	45.26	45.26	12.00	1104.94
358		7	31	1104.1	2185.8	280.8( 9.06)	370.4( 11.95)	0.0	65.00	12.75	6.3	0.895	45.33	45.33	12.00	1104.47
359		8	31	1102.1	1937.2	142.0( 4.58)	370.4( 11.95)	0.0	65.00	12.64	6.3	0.895	45.72	45.72	12.00	1103.11
360		9	30	1100.4	1733.9	169.7( 5.66)	358.5( 11.95)	0.0	65.00	12.09	6.2	0.895	46.24	46.24	12.00	1101.26
						404.9( 13.30)	402.4( 13.21)	0.0	64.94	13.53		0.895	1413.	1413.	12.00	1100.40
361	1970	10	31	1098.7	1559.3	203.0( 6.55)	370.4( 11.95)	0.0	65.00	12.36	6.1	0.895	46.75	46.75	12.00	1099.53
362		11	30	1096.6	1378.6	179.1( 5.97)	358.5( 11.95)	0.0	65.00	11.82	6.1	0.895	47.31	47.31	12.00	1097.66
363		12	31	1094.1	1150.9	142.8( 4.61)	370.4( 11.95)	0.0	64.70	12.04	6.0	0.895	47.95	47.95	12.00	1095.36
364		1	31	1091.5	919.6	139.1( 4.49)	370.4( 11.95)	0.0	63.21	11.82	6.0	0.894	47.55	47.55	12.00	1092.79
365		2	28	1088.7	685.6	100.6( 3.59)	334.6( 11.95)	0.0	61.44	10.47	6.1	0.892	47.13	47.13	12.00	1090.08
366		3	31	1086.8	546.0	231.4( 7.46)	370.4( 11.95)	0.0	59.91	11.39	6.1	0.891	46.75	46.75	12.00	1087.73
367		4	30	1090.1	798.0	614.5( 20.48)	358.5( 11.95)	0.0	60.36	11.08	6.1	0.892	46.86	46.86	12.00	1088.43
368		5	31	1105.0	2310.7	2015.9( 65.03)	496.0( 16.00)	0.0	65.00	16.34	8.1	0.895	47.35	47.35	12.00	1097.52
369		6	30	1104.9	2304.5	940.0( 31.33)	930.0( 31.00)	0.0	65.00	32.10	16.5	0.895	45.20	45.20	12.00	1104.95
370		7	31	1103.3	2088.5	175.5( 5.66)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.43	45.43	12.00	1104.14
371		8	31	1103.7	2130.5	432.1( 13.94)	370.4( 11.95)	0.0	65.00	12.67	6.3	0.895	45.60	45.60	12.00	1103.50
372		9	30	1101.7	1883.5	126.7( 4.22)	358.5( 11.95)	0.0	65.00	12.20	6.3	0.895	45.84	45.84	12.00	1102.68
						441.7( 14.44)	421.6( 13.87)	0.0	63.72	13.92		0.894	1419.	1419.	12.00	1097.03
373	1971	10	31	1100.0	1698.4	192.8( 6.22)	370.4( 11.95)	0.0	65.00	12.47	6.2	0.895	46.35	46.35	12.00	1100.87
374		11	30	1098.5	1544.5	206.0( 6.87)	358.5( 11.95)	0.0	65.00	11.94	6.1	0.895	46.82	46.82	12.00	1099.28
375		12	31	1096.6	1379.4	203.3( 6.62)	370.4( 11.95)	0.0	65.00	12.21	6.1	0.895	47.33	47.33	12.00	1097.58
376		1	31	1094.4	1180.8	171.9( 5.54)	370.4( 11.95)	0.0	64.78	12.05	6.0	0.895	47.98	47.98	12.00	1095.52
377		2	29	1092.6	1011.8	177.5( 6.12)	346.5( 11.95)	0.0	63.66	11.11	6.0	0.894	47.66	47.66	12.00	1093.48
378		3	31	1091.0	878.8	238.0( 7.68)	370.4( 11.95)	0.0	62.56	11.73	6.1	0.893	47.40	47.40	12.00	1091.80
379		4	30	1100.7	1768.6	1252.7( 41.76)	358.5( 11.95)	0.0	64.93	11.69	6.0	0.895	47.85	47.85	12.00	1095.86
380		5	31	1104.9	2305.3	1725.1( 55.65)	1178.0( 38.00)	0.0	65.00	40.13	19.9	0.895	45.80	45.80	12.00	1102.81
381		6	30	1104.9	2302.5	1303.5( 43.45)	1290.0( 43.00)	0.0	65.00	44.28	22.7	0.895	45.45	45.45	12.00	1104.92
382		7	31	1104.9	2300.0	452.4( 14.59)	434.0( 14.00)	0.0	65.00	14.90	7.4	0.895	45.44	45.44	12.00	1104.90
383		8	31	1103.5	2114.9	206.0( 6.65)	370.4( 11.95)	0.0	65.00	12.71	6.3	0.895	45.48	45.48	12.00	1104.22
384		9	30	1102.9	2033.0	291.8( 9.73)	358.5( 11.95)	0.0	65.00	12.24	6.3	0.895	45.68	45.68	12.00	1103.23
						535.3( 17.57)	514.7( 16.88)	0.0	64.66	17.29		0.895	1421.	1421.	12.00	1099.54

# Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	GIN (M3/SD)	GO (M3/SD)	GOUT (M3/SD)	P (MW)	E (GWH)	T (H)	ETG (M3/S)	GCR (M3/S)	QUP (M3/S)	LOSS (M)	SUILL (M)
385	1972	10	31	1102.5	1977.7	322.9( 10.42)	370.4( 11.95)	0.0	65.00	12.61	6.3	0.895	45.83	45.83	12.00	1102.69
386		11	30	1102.0	1915.3	297.6( 9.92)	358.5( 11.95)	0.0	65.00	12.17	6.2	0.895	45.97	45.97	12.00	1102.22
387		12	31	1100.9	1787.9	243.1( 7.84)	370.4( 11.95)	0.0	65.00	12.51	6.2	0.895	46.20	46.20	12.00	1101.41
388		1	31	1099.6	1648.8	231.4( 7.46)	370.4( 11.95)	0.0	65.00	12.42	6.2	0.895	46.54	46.54	12.00	1100.22
389		2	28	1098.7	1562.4	248.1( 8.86)	334.6( 11.95)	0.0	65.00	11.14	6.1	0.895	46.86	46.86	12.00	1099.14
390		3	31	1097.9	1485.1	293.9( 9.48)	370.4( 11.95)	0.0	65.00	12.27	6.1	0.895	47.11	47.11	12.00	1098.29
391		4	30	1101.8	1896.9	867.4( 28.91)	450.0( 15.00)	0.0	65.00	15.05	7.7	0.895	46.65	46.65	12.00	1099.84
392		5	31	1105.0	2311.0	1812.3( 58.46)	1307.3( 44.75)	0.0	65.00	47.42	23.5	0.895	45.64	45.64	12.00	1103.39
393		6	30	1104.6	2254.7	1296.3( 43.21)	1336.3( 44.54)	0.0	65.00	45.90	23.5	0.895	45.42	45.42	12.00	1104.77
394		7	31	1105.0	2314.8	457.5( 14.76)	372.0( 12.00)	4.7	65.00	12.75	6.3	0.895	45.50	45.50	12.00	1104.79
395		8	31	1103.1	2054.8	131.1( 4.23)	370.4( 11.95)	0.0	65.00	12.17	6.3	0.895	45.48	45.48	12.00	1104.04
396		9	30	1101.4	1846.6	165.3( 5.51)	358.5( 11.95)	0.0	65.00	12.17	6.2	0.895	45.96	45.96	12.00	1102.23
						530.6( 17.42)	537.5( 17.66)	0.4	65.00	18.26		0.895	1402.	1402.	12.00	1101.92
397	1973	10	31	1100.6	1760.6	291.8( 9.41)	370.4( 11.95)	0.0	65.00	12.48	6.2	0.895	46.32	46.32	12.00	1101.00
398		11	30	1099.8	1672.8	272.1( 9.07)	358.5( 11.95)	0.0	65.00	12.02	6.2	0.895	46.55	46.55	12.00	1100.21
399		12	31	1098.0	1491.6	189.2( 6.10)	370.4( 11.95)	0.0	65.00	12.31	6.1	0.895	46.94	46.94	12.00	1098.88
400		1	31	1095.3	1269.6	148.5( 4.79)	370.4( 11.95)	0.0	65.00	12.14	6.0	0.895	47.62	47.62	12.00	1096.64
401		2	28	1093.2	1070.4	135.4( 4.84)	334.6( 11.95)	0.0	64.18	10.79	6.0	0.894	47.78	47.78	12.00	1094.27
402		3	31	1092.0	962.2	262.7( 8.48)	370.4( 11.95)	0.0	63.09	11.80	6.0	0.894	47.52	47.52	12.00	1092.60
403		4	30	1093.4	1085.0	485.9( 16.20)	358.5( 11.95)	0.0	63.14	11.43	6.0	0.894	47.53	47.53	12.00	1092.68
404		5	31	1104.8	2281.8	1855.9( 59.87)	651.0( 21.00)	0.0	65.00	21.66	10.8	0.895	46.88	46.88	12.00	1099.07
405		6	30	1105.0	2314.8	567.9( 18.93)	510.0( 17.00)	8.8	65.00	17.59	9.0	0.895	45.22	45.22	12.00	1104.88
406		7	31	1103.3	2085.7	162.4( 5.24)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.42	45.42	12.00	1104.16
407		8	31	1101.4	1845.6	150.0( 4.84)	370.4( 11.95)	0.0	65.00	12.58	6.2	0.895	45.93	45.93	12.00	1102.35
408		9	30	1100.7	1765.5	292.5( 9.75)	358.5( 11.95)	0.0	65.00	12.08	6.2	0.895	46.51	46.51	12.00	1101.02
						401.2( 13.13)	399.5( 13.12)	0.7	64.62	13.30		0.895	1419.	1419.	12.00	1098.98
409	1974	10	31	1098.4	1537.1	149.3( 4.82)	370.4( 11.95)	0.0	65.00	12.36	6.1	0.895	46.74	46.74	12.00	1099.55
410		11	30	1096.1	1333.1	155.8( 5.19)	358.5( 11.95)	0.0	65.00	11.79	6.0	0.895	47.43	47.43	12.00	1097.25
411		12	31	1094.1	1155.5	192.8( 6.22)	370.4( 11.95)	0.0	64.59	12.01	6.0	0.894	47.91	47.80	12.00	1095.10
412		1	31	1092.0	965.6	180.6( 5.82)	370.4( 11.95)	0.0	63.40	11.84	6.0	0.894	47.60	47.60	12.00	1093.08
413		2	28	1089.6	760.6	129.6( 4.63)	334.6( 11.95)	0.0	61.92	10.52	6.1	0.893	47.24	47.24	12.00	1090.82
414		3	31	1087.6	608.0	218.3( 7.04)	370.4( 11.95)	0.0	60.49	11.47	6.1	0.892	46.89	46.89	12.00	1088.62
415		4	30	1093.2	1069.3	823.8( 27.46)	358.5( 11.95)	0.0	61.66	11.24	6.1	0.892	47.18	47.18	12.00	1090.42
416		5	31	1100.0	1696.4	1005.6( 32.44)	370.4( 11.95)	0.0	65.00	12.13	6.0	0.895	47.62	47.62	12.00	1096.61
417		6	30	1102.2	1940.7	616.7( 20.56)	358.5( 11.95)	0.0	65.00	12.08	6.2	0.895	46.29	46.29	12.00	1101.10
418		7	31	1100.8	1779.5	228.5( 7.37)	370.4( 11.95)	0.0	65.00	12.51	6.2	0.895	46.18	46.18	12.00	1101.48
419		8	31	1098.0	1491.6	100.6( 3.24)	370.4( 11.95)	0.0	65.00	12.35	6.1	0.895	46.79	46.79	12.00	1099.57
420		9	30	1095.3	1266.2	145.6( 4.85)	358.5( 11.95)	0.0	65.00	11.74	6.0	0.895	47.62	47.62	12.00	1096.62
						328.9( 10.80)	363.5( 11.95)	0.0	63.92	11.84		0.894	1433.	1433.	12.00	1095.83
421	1975	10	31	1093.7	1114.6	224.9( 7.25)	370.4( 11.95)	0.0	64.31	11.96	6.0	0.894	47.82	47.80	12.00	1094.49
422		11	30	1092.0	963.1	208.1( 6.94)	358.5( 11.95)	0.0	63.25	11.44	6.0	0.894	47.56	47.56	12.00	1092.85
423		12	31	1089.0	712.1	119.4( 3.85)	370.4( 11.95)	0.0	61.71	11.63	6.1	0.893	47.19	47.19	12.00	1090.50
424		1	31	1085.9	482.1	140.5( 4.53)	370.4( 11.95)	0.0	59.73	11.37	6.1	0.891	46.71	46.71	12.00	1087.45
425		2	29	1082.7	270.3	134.7( 4.65)	346.5( 11.95)	0.0	57.71	10.39	6.2	0.890	46.20	46.20	12.00	1084.39
426		3	31	1082.4	253.7	354.3( 11.43)	370.4( 11.95)	0.0	56.59	10.96	6.2	0.889	45.92	45.92	12.00	1082.53
427		4	30	1087.7	610.9	1230.8( 41.03)	870.0( 29.00)	0.0	58.18	26.23	15.0	0.890	46.32	46.32	12.00	1085.03
428		5	31	1103.7	2140.8	3018.9( 97.38)	1482.2( 47.81)	0.0	65.00	48.27	24.0	0.895	47.90	47.90	12.00	1104.29
429		6	30	1104.8	2393.2	1507.1( 50.24)	1338.9( 44.63)	0.0	65.00	45.90	23.5	0.895	45.51	45.51	12.00	1104.29
430		7	31	1104.9	2301.6	649.3( 20.95)	620.0( 20.00)	0.0	65.00	21.33	10.6	0.895	45.34	45.34	12.00	1104.88
431		8	31	1104.1	2189.2	278.7( 8.99)	370.4( 11.95)	0.0	65.00	12.75	6.3	0.895	45.33	45.33	12.00	1104.50
432		9	30	1103.3	2083.8	268.5( 8.95)	358.5( 11.95)	0.0	65.00	12.28	6.3	0.895	45.55	45.55	12.00	1103.70
						677.9( 22.18)	602.2( 19.75)	0.0	62.21	19.54		0.893	1417.	1417.	12.00	1094.18

\*\*\* OPTIMAL SCHEDULE \*\*\*

Olur Project

NO.	YEAR	MON	DAY	H	S	GIN	QA	QOUT	P	E	T	ETG	QCR	QUP	LOSS	SUII
				(M)	(M3/SD)	(M3/SD)	(M3/SD)	(M3/SD)	(MW)	(GWH)	(H)		(M3/S)	(M3/S)	(CM)	(CM)
433	1976	10	31	1103.3	2087.8	382.4( 12.34)	370.4( 11.95)	0.0	65.00	12.66	6.3	0.895	45.65	45.65	12.00	1103.32
434		11	30	1103.2	2088.8	341.0( 11.37)	358.5( 11.95)	0.0	65.00	12.25	6.3	0.895	45.67	45.67	12.00	1103.26
435		12	31	1102.8	2022.5	324.2( 10.46)	370.4( 11.95)	0.0	65.00	12.63	6.3	0.895	45.74	45.74	12.00	1103.01
436		1	31	1101.7	1889.4	237.3( 7.65)	370.4( 11.95)	0.0	65.00	12.58	6.2	0.895	45.95	45.95	12.00	1102.29
437		2	28	1101.0	1804.9	250.1( 8.93)	370.4( 11.95)	0.0	65.00	11.30	6.2	0.895	46.21	46.21	12.00	1101.38
438		3	31	1098.5	1543.9	359.7( 11.60)	370.4( 11.95)	0.0	65.00	20.72	10.3	0.895	46.68	46.68	12.00	1099.77
439		4	30	1095.8	1311.6	1153.5( 38.45)	370.4( 11.95)	0.0	65.00	45.36	23.3	0.895	47.46	47.46	12.00	1097.15
440		5	31	1104.9	2306.8	2417.2( 77.98)	370.4( 11.95)	0.0	65.00	47.19	23.4	0.895	46.72	46.72	12.00	1100.36
441		6	30	1104.9	2306.9	856.4( 28.55)	370.4( 11.95)	0.0	65.00	28.87	14.8	0.895	45.38	45.38	12.00	1104.94
442		7	31	1104.3	2221.8	306.4( 9.88)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.36	45.36	12.00	1104.64
443		8	31	1102.6	1992.4	161.3( 5.20)	370.4( 11.95)	0.0	65.00	12.67	6.3	0.895	45.62	45.62	12.00	1103.46
444		9	30	1101.4	1850.6	231.4( 7.71)	370.4( 11.95)	0.0	65.00	12.15	6.2	0.895	46.03	46.03	12.00	1102.00
						585.1( 19.18)	370.4( 11.95)	0.0	65.00	20.09		0.895	1400.	1400.	12.00	1102.13
445	1977	10	31	1100.6	1753.5	280.8( 9.06)	370.4( 11.95)	0.0	65.00	12.48	6.2	0.895	46.32	46.32	12.00	1100.99
446		11	30	1099.6	1648.7	255.1( 8.50)	370.4( 11.95)	0.0	65.00	12.00	6.2	0.895	46.59	46.59	12.00	1100.06
447		12	31	1098.1	1502.7	224.4( 7.24)	370.4( 11.95)	0.0	65.00	12.31	6.1	0.895	46.96	46.96	12.00	1098.82
448		1	31	1096.3	1354.7	222.5( 7.18)	370.4( 11.95)	0.0	65.00	12.18	6.0	0.895	47.44	47.44	12.00	1097.21
449		2	28	1095.5	1290.0	269.9( 9.64)	370.4( 11.95)	0.0	65.00	10.91	6.0	0.895	47.83	47.83	12.00	1095.94
450		3	31	1090.6	840.9	450.6( 14.53)	370.4( 11.95)	0.0	65.00	28.74	14.6	0.895	47.59	47.59	12.00	1093.06
451		4	30	1088.1	639.9	1183.1( 39.44)	370.4( 11.95)	0.0	65.00	42.93	23.5	0.895	47.00	47.00	12.00	1089.32
452		5	31	1104.9	2304.0	3128.0( 100.90)	370.4( 11.95)	0.0	65.00	47.51	23.6	0.895	47.84	47.84	12.00	1096.49
453		6	30	1104.8	2292.5	1054.7( 35.16)	370.4( 11.95)	0.0	65.00	36.00	18.5	0.895	45.50	45.50	12.00	1104.88
454		7	31	1103.6	2120.7	219.6( 7.08)	370.4( 11.95)	0.0	65.00	12.70	6.3	0.895	45.51	45.51	12.00	1104.22
455		8	31	1101.4	1851.3	120.8( 3.90)	370.4( 11.95)	0.0	65.00	12.59	6.3	0.895	45.89	45.89	12.00	1102.50
456		9	30	1099.4	1631.1	152.4( 5.08)	370.4( 11.95)	0.0	65.00	12.03	6.2	0.895	46.49	46.49	12.00	1100.41
						630.2( 20.64)	370.4( 11.95)	0.0	65.00	21.03		0.895	1422.	1422.	12.00	1098.66
457	1978	10	31	1097.7	1473.2	219.6( 7.08)	370.4( 11.95)	0.0	65.00	12.29	6.1	0.895	47.03	47.03	12.00	1098.57
458		11	30	1096.2	1346.8	233.3( 7.78)	370.4( 11.95)	0.0	65.00	11.77	6.0	0.895	47.51	47.51	12.00	1096.99
459		12	31	1094.7	1205.8	229.4( 7.40)	370.4( 11.95)	0.0	65.00	12.04	6.0	0.895	47.97	47.97	12.00	1095.45
460		1	31	1093.0	1054.9	219.6( 7.08)	370.4( 11.95)	0.0	65.00	11.91	6.0	0.895	47.72	47.72	12.00	1093.85
461		2	28	1091.8	946.8	226.5( 8.09)	370.4( 11.95)	0.0	65.00	10.65	6.0	0.895	47.49	47.49	12.00	1092.43
462		3	31	1091.1	883.2	307.4( 9.92)	370.4( 11.95)	0.0	65.00	11.71	6.1	0.895	47.34	47.34	12.00	1091.45
463		4	30	1099.7	1663.9	1143.6( 38.12)	370.4( 11.95)	0.0	65.00	43.14	21.4	0.895	47.96	47.96	12.00	1095.40
464		5	31	1104.7	2276.9	1894.0( 61.10)	370.4( 11.95)	0.0	65.00	45.90	23.5	0.895	45.97	45.97	12.00	1102.23
465		6	30	1104.9	2295.2	1370.7( 45.69)	370.4( 11.95)	0.0	65.00	45.90	23.5	0.895	45.42	45.42	12.00	1104.80
466		7	31	1104.9	2307.4	560.2( 18.07)	370.4( 11.95)	0.0	65.00	18.13	9.0	0.895	45.33	45.33	12.00	1104.90
467		8	31	1103.2	2074.6	158.3( 5.11)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.44	45.44	12.00	1104.09
468		9	30	1101.4	1846.6	145.5( 4.85)	370.4( 11.95)	0.0	65.00	12.17	6.2	0.895	45.94	45.94	12.00	1102.31
						539.0( 18.36)	370.4( 11.95)	0.0	65.00	17.84		0.895	1422.	1422.	12.00	1098.54
469	1979	10	31	1101.3	1838.3	369.6( 11.92)	370.4( 11.95)	0.0	65.00	12.50	6.2	0.895	46.22	46.22	12.00	1101.34
470		11	30	1102.6	1992.2	515.8( 17.13)	370.4( 11.95)	0.0	65.00	12.15	6.2	0.895	46.04	46.04	12.00	1101.95
471		12	31	1102.5	1985.4	363.7( 11.73)	370.4( 11.95)	0.0	65.00	12.60	6.3	0.895	45.87	45.87	12.00	1102.56
472		1	31	1101.9	1912.5	297.6( 9.60)	370.4( 11.95)	0.0	65.00	12.57	6.2	0.895	45.96	45.96	12.00	1102.24
473		2	29	1101.2	1826.0	260.1( 8.97)	370.4( 11.95)	0.0	65.00	11.71	6.2	0.895	46.15	46.15	12.00	1101.57
474		3	31	1095.2	1256.8	454.5( 14.66)	370.4( 11.95)	0.0	65.00	33.85	16.8	0.895	47.14	47.14	12.00	1098.20
475		4	30	1101.7	1886.4	2032.2( 67.74)	370.4( 11.95)	0.0	65.00	44.14	23.7	0.895	47.24	47.24	12.00	1098.46
476		5	31	1104.9	2296.1	1814.9( 58.55)	370.4( 11.95)	0.0	65.00	47.42	23.5	0.895	45.88	45.88	12.00	1103.29
477		6	30	1104.3	2222.9	301.5( 10.05)	370.4( 11.95)	0.0	65.00	12.31	6.3	0.895	45.42	45.42	12.00	1103.61
478		7	31	1102.1	1934.8	103.0( 3.32)	370.4( 11.95)	0.0	65.00	12.65	6.3	0.895	45.68	45.68	12.00	1103.23
479		8	31	1100.2	1709.8	164.2( 5.30)	370.4( 11.95)	0.0	65.00	12.49	6.2	0.895	46.28	46.28	12.00	1101.14
480		9	30	1097.8	1478.2	140.5( 4.68)	370.4( 11.95)	0.0	65.00	11.92	6.1	0.895	46.91	46.91	12.00	1098.98
						568.0( 18.64)	370.4( 11.95)	0.0	65.00	19.86		0.895	1410.	1410.	12.00	1101.46



# Olur Project

\*\*\* OPTIMAL SCHEDULE \*\*\*

NO.	YEAR	MON	DAY	H	S	QIN	QO	GOUT	P	E	T	ETG	QCR	QUP	LOSS	SUII
				(M)	(M3/SD)	(M3/SD)	(M3/SD)	(M3/SD)	(MW)	(GWH)	(CH)		(M3/S)	(M3/S)	(CM)	(M)
481	1980	10	31	1095.7	1304.9	203.7( 6.57)	370.4( 11.95)	0.0	65.00	12.15	6.0	0.895	47.58	47.58	12.00	1096.75
482		11	30	1094.0	1139.1	193.9( 6.46)	358.5( 11.95)	0.0	64.46	11.60	6.0	0.895	47.87	47.87	12.00	1094.82
483		12	31	1091.9	956.6	188.0( 6.06)	370.4( 11.95)	0.0	63.31	11.83	6.0	0.894	47.58	47.58	12.00	1092.94
484		1	31	1089.6	761.3	175.1( 5.65)	370.4( 11.95)	0.0	61.89	11.65	6.1	0.893	47.23	47.23	12.00	1090.77
485		2	28	1087.4	588.0	161.3( 5.76)	334.6( 11.95)	0.0	60.40	10.35	6.1	0.892	46.87	46.87	12.00	1088.49
486		3	31	1085.5	450.4	233.3( 7.53)	370.4( 11.95)	0.0	59.06	11.28	6.2	0.891	46.54	46.54	12.00	1086.41
487		4	30	1080.7	849.6	761.6( 25.39)	358.5( 11.95)	0.0	60.13	11.05	6.1	0.891	46.81	46.81	12.00	1088.07
488		5	31	1099.1	1596.1	1528.7( 49.31)	775.0( 25.00)	0.0	64.58	25.09	12.5	0.895	47.88	47.88	12.00	1094.87
489		6	30	1104.9	2304.3	2071.6( 69.05)	1350.0( 45.00)	0.0	65.00	45.75	23.5	0.895	46.03	46.03	12.00	1101.99
490		7	31	1104.0	2176.9	264.0( 8.52)	370.4( 11.95)	0.0	65.00	12.72	6.3	0.895	45.45	45.45	12.00	1104.47
491		8	31	1102.3	1961.5	175.1( 5.65)	370.4( 11.95)	0.0	65.00	12.65	6.3	0.895	45.70	45.70	12.00	1103.17
492		9	30	1100.6	1753.7	165.3( 5.51)	358.5( 11.95)	0.0	65.00	12.11	6.2	0.895	46.19	46.19	12.00	1101.45
						510.1( 16.79)	479.8( 15.79)	0.0	63.24	15.69		0.894	1424.	1424.	12.00	1095.35
493	1981	10	31	1098.9	1584.7	208.7( 6.73)	370.4( 11.95)	0.0	65.00	12.38	6.1	0.895	46.68	46.68	12.00	1099.75
494		11	30	1097.7	1473.0	248.1( 8.27)	358.5( 11.95)	0.0	65.00	11.87	6.1	0.895	47.10	47.10	12.00	1098.34
495		12	31	1096.0	1338.3	225.7( 7.28)	370.4( 11.95)	0.0	65.00	12.16	6.0	0.895	47.54	47.54	12.00	1096.87
496		1	31	1093.9	1133.8	175.9( 5.68)	370.4( 11.95)	0.0	64.52	12.00	6.0	0.895	47.89	47.89	12.00	1094.95
497		2	28	1091.8	942.7	143.5( 5.13)	334.6( 11.95)	0.0	63.24	10.68	6.0	0.894	47.56	47.56	12.00	1092.84
498		3	31	1089.8	775.4	203.7( 6.57)	370.4( 11.95)	0.0	61.89	11.65	6.1	0.893	47.24	47.24	12.00	1090.78
499		4	30	1100.9	1790.0	1377.3( 45.91)	358.5( 11.95)	0.0	64.69	11.64	6.0	0.895	47.95	47.95	12.00	1095.34
500		5	31	1105.0	2314.8	1759.3( 56.75)	1224.0( 39.48)	0.0	65.00	41.73	20.7	0.895	45.76	45.76	12.00	1102.94
501		6	30	1105.0	2314.8	306.7( 10.22)	290.4( 9.68)	0.0	55.36	9.97	6.0	0.895	45.46	45.46	12.00	1105.00
502		7	31	1103.7	2132.8	103.7( 3.35)	82.6( 2.67)	0.0	15.25	2.84	6.0	0.895	45.48	45.48	12.00	1104.34
503		8	31	1103.7	2132.8	81.6( 2.63)	232.9( 7.84)	0.0	44.80	8.33	6.0	0.895	45.78	45.78	12.00	1102.89
504		9	30	1102.1	1932.9	158.6( 5.89)	345.3( 11.44)	0.0	64.99	11.70	6.0	0.895	45.77	45.77	12.00	1102.89
						416.1( 13.65)	393.1( 12.90)	0.0	57.89	13.08		0.895	1419.	1419.	12.00	1099.08
505	1982	10	31	1100.5	1752.2	189.8( 6.12)	362.9( 11.71)	0.0	65.00	12.25	6.1	0.895	46.22	46.22	12.00	1101.33
506		11	30	1098.8	1568.5	174.8( 5.83)	357.1( 11.90)	0.0	65.00	11.93	6.1	0.895	46.71	46.71	12.00	1099.66
507		12	31	1096.5	1369.3	171.3( 5.53)	370.4( 11.95)	0.0	65.00	12.22	6.1	0.895	47.31	47.31	12.00	1097.65
508		1	31	1094.1	1154.0	155.1( 5.00)	370.4( 11.95)	0.0	64.69	12.03	6.0	0.895	47.95	47.95	12.00	1095.32
509		2	28	1092.0	959.4	140.0( 5.00)	334.6( 11.95)	0.0	63.37	10.69	6.0	0.894	47.59	47.59	12.00	1093.04
510		3	31	1089.8	780.0	191.0( 6.16)	369.9( 11.93)	0.0	61.97	11.64	6.1	0.893	47.25	47.25	12.00	1090.90
511		4	30	1090.0	795.3	373.8( 12.46)	354.3( 11.81)	0.0	61.34	11.07	6.0	0.892	47.10	47.10	12.00	1089.94
512		5	31	1096.5	1370.4	945.6( 30.50)	345.3( 11.72)	0.0	63.54	11.63	6.0	0.894	47.63	47.63	12.00	1093.28
513		6	30	1097.5	1454.1	442.1( 14.74)	346.2( 11.54)	0.0	63.18	11.37	6.0	0.895	47.49	47.49	12.00	1097.03
514		7	31	1094.3	1173.0	89.4( 2.88)	354.0( 11.42)	0.0	62.07	11.55	6.0	0.895	47.84	47.84	12.00	1095.92
515		8	31	1090.7	848.9	46.4( 1.50)	356.0( 11.49)	0.0	60.94	11.34	6.0	0.893	47.51	47.51	12.00	1092.50
516		9	30	1087.1	565.3	74.9( 2.50)	348.8( 11.63)	0.0	60.10	10.82	6.0	0.892	46.93	46.93	12.00	1088.87
						249.5( 8.18)	357.3( 11.75)	0.0	62.93	11.54		0.894	1439.	1439.	12.00	1094.62
517	1983	10	31	1085.1	427.5	232.6( 7.50)	365.8( 11.80)	0.0	58.86	11.11	6.1	0.890	46.49	46.49	12.00	1086.09
518		11	30	1085.7	464.8	395.8( 13.19)	357.6( 11.92)	0.0	58.41	10.81	6.2	0.890	46.38	46.38	12.00	1085.39
519		12	31	1083.9	350.2	255.8( 8.25)	370.4( 11.95)	0.0	58.03	11.15	6.2	0.890	46.28	46.28	12.00	1084.80
520		1	31	1081.5	202.0	222.2( 7.17)	370.4( 11.95)	0.0	56.72	10.97	6.2	0.889	45.95	45.95	12.00	1082.72
521		2	29	1077.0	40.6	185.2( 6.39)	346.5( 11.95)	0.0	54.54	10.00	6.3	0.887	45.38	45.38	12.00	1079.25
522		3	31	1077.0	0.0	329.9( 10.64)	370.1( 11.94)	0.0	53.15	10.49	6.4	0.886	45.01	45.01	12.00	1077.00
523		4	30	1090.1	802.0	1435.2( 47.84)	630.0( 21.00)	0.0	57.24	18.78	10.9	0.889	46.08	46.08	12.00	1083.56
524		5	31	1104.9	2300.9	2963.0( 95.58)	1457.0( 47.00)	0.0	65.00	48.00	23.8	0.895	47.35	47.35	12.00	1097.51
525		6	30	1105.0	2314.8	810.2( 27.01)	780.0( 26.00)	0.0	65.00	26.77	13.7	0.895	45.45	45.45	12.00	1104.95
526		7	31	1104.7	2270.5	347.2( 11.20)	370.4( 11.95)	0.0	65.00	12.75	6.3	0.895	45.33	45.33	12.00	1104.84
527		8	31	1104.9	2295.1	415.5( 13.40)	370.4( 11.95)	0.0	65.00	12.77	6.3	0.895	45.25	45.25	12.00	1104.77
528		9	30	1104.2	2204.3	283.6( 9.45)	358.5( 11.95)	0.0	65.00	12.34	6.3	0.895	45.32	45.32	12.00	1104.54
						656.3( 21.47)	512.3( 16.78)	0.0	60.16	16.33		0.891	1399.	1399.	12.00	1091.28

\*\*\* OPTIMAL SCHEDULE \*\*\*

Olur Project

NO.	YEAR	MON	DAY	H (M)	S (M3/SD)	QIN (M3/SD)	QQ (M3/SD)	QOUT (M3/SD)	P (MW)	E (GWH)	Y (H)	ETG (M3/S)	QGR (M3/S)	GUP (M3/S)	LOSS (M)	SULL (M)
529	1984	10	31	1103.4	2091.9	266.2( 8.59)	370.4( 11.95)	0.0	65.00	12.69	6.3	0.895	45.52	45.52	12.00	1103.79
530		11	30	1102.8	2022.4	290.5( 9.68)	358.5( 11.95)	0.0	65.00	12.23	6.3	0.895	45.72	45.72	12.00	1103.10
531		12	31	1101.9	1906.6	254.6( 8.21)	370.4( 11.95)	0.0	65.00	12.58	6.2	0.895	45.93	45.93	12.00	1102.36
532		1	31	1100.6	1757.2	221.1( 7.13)	370.4( 11.95)	0.0	65.00	12.50	6.2	0.895	46.25	46.25	12.00	1101.24
533		2	28	1099.5	1642.5	219.9( 7.85)	334.6( 11.95)	0.0	65.00	11.20	6.2	0.895	46.59	46.59	12.00	1100.05
534		3	31	1098.8	1573.5	302.1( 9.74)	370.4( 11.95)	0.0	65.00	12.33	6.1	0.895	46.85	46.85	12.00	1099.17
535		4	30	1104.9	2306.5	1608.8( 53.63)	870.0( 29.00)	0.0	65.00	29.46	15.1	0.895	46.06	46.06	12.00	1101.88
536		5	31	1105.0	2310.7	1342.6( 43.31)	1326.5( 42.79)	0.0	65.00	45.78	22.7	0.895	45.20	45.20	12.00	1104.96
537		6	30	1104.4	2236.8	300.9( 10.03)	358.5( 11.95)	0.0	65.00	12.34	6.3	0.895	45.33	45.33	12.00	1104.71
538		7	31	1102.7	2011.2	165.5( 5.34)	370.4( 11.95)	0.0	65.00	12.68	6.3	0.895	45.58	45.58	12.00	1103.59
539		8	31	1100.1	1702.1	80.6( 2.60)	370.4( 11.95)	0.0	65.00	12.51	6.2	0.895	46.20	46.20	12.00	1101.41
540		9	30	1098.1	1508.3	178.2( 5.94)	358.5( 11.95)	0.0	65.00	11.93	6.1	0.895	46.87	46.87	12.00	1099.11
						435.9( 14.34)	485.8( 15.94)	0.0	65.00	16.52		0.895	1399.	1399.	12.00	1102.31
541	1985	10	31	1097.1	1417.1	285.9( 9.22)	370.4( 11.95)	0.0	65.00	12.21	6.1	0.895	47.32	47.32	12.00	1097.62
542		11	30	1095.4	1276.1	218.7( 7.29)	358.5( 11.95)	0.0	65.00	11.72	6.0	0.895	47.74	47.74	12.00	1096.25
543		12	31	1094.0	1146.4	240.7( 7.77)	370.4( 11.95)	0.0	64.61	11.98	6.0	0.895	47.85	47.85	12.00	1094.71
544		1	31	1092.2	984.3	208.3( 6.72)	370.4( 11.95)	0.0	63.44	11.85	6.0	0.894	47.61	47.61	12.00	1093.14
545		2	28	1090.9	867.3	217.6( 7.77)	334.6( 11.95)	0.0	62.41	10.58	6.1	0.893	47.36	47.36	12.00	1091.57
546		3	31	1091.2	895.6	399.3( 12.88)	370.4( 11.95)	0.0	62.07	11.67	6.1	0.893	47.28	47.28	12.00	1091.06
547		4	30	1102.1	1934.7	1643.5( 54.78)	600.0( 20.00)	0.0	65.00	19.66	10.1	0.895	47.60	47.60	12.00	1096.68
548		5	31	1105.0	2311.4	1736.1( 56.00)	1348.6( 43.50)	0.0	65.00	46.14	22.9	0.895	45.59	45.59	12.00	1103.55
549		6	30	1105.0	2313.0	1307.9( 43.60)	1290.0( 43.00)	0.0	65.00	44.36	22.7	0.895	45.36	45.36	12.00	1104.98
550		7	31	1104.3	2213.1	291.7( 9.41)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.36	45.36	12.00	1104.63
551		8	31	1101.7	1882.2	59.7( 1.93)	370.4( 11.95)	0.0	65.00	12.63	6.3	0.895	45.75	45.75	12.00	1102.98
552		9	30	1100.1	1707.3	197.9( 6.60)	358.5( 11.95)	0.0	65.00	12.07	6.2	0.895	46.34	46.34	12.00	1100.91
						567.3( 18.66)	542.7( 17.84)	0.0	64.36	18.14		0.895	1422.	1422.	12.00	1098.17
553	1986	10	31	1100.0	1697.8	368.1( 11.87)	370.4( 11.95)	0.0	65.00	12.41	6.2	0.895	46.58	46.58	12.00	1100.09
554		11	30	1100.1	1707.2	369.2( 12.31)	358.5( 11.95)	0.0	65.00	12.01	6.2	0.895	46.58	46.58	12.00	1100.09
555		12	31	1098.9	1585.6	248.8( 8.03)	370.4( 11.95)	0.0	65.00	12.36	6.1	0.895	46.74	46.74	12.00	1099.54
556		1	31	1097.2	1429.2	214.1( 6.91)	370.4( 11.95)	0.0	65.00	12.25	6.1	0.895	47.17	47.17	12.00	1098.09
557		2	28	1093.4	1083.8	298.6( 10.66)	644.0( 23.00)	0.0	64.87	20.91	11.5	0.895	47.94	47.94	12.00	1095.30
558		3	31	1077.0	0.0	302.1( 9.74)	1385.4( 44.69)	0.0	58.27	11.81	23.1	0.890	46.34	46.34	12.00	1085.18
559		4	30	1080.6	151.2	1504.6( 50.15)	1350.3( 45.01)	0.0	54.26	38.81	23.8	0.887	45.31	45.31	12.00	1078.80
560		5	31	1105.0	2314.8	4039.4( 130.30)	1474.1( 47.55)	395.8	63.21	47.03	24.0	0.894	47.55	47.55	12.00	1092.80
561		6	30	1105.0	2314.8	917.8( 30.59)	900.0( 30.00)	1.5	65.00	30.94	15.9	0.895	45.37	45.37	12.00	1105.00
562		7	31	1103.9	2155.9	232.6( 7.50)	370.4( 11.95)	0.0	65.00	12.70	6.3	0.895	45.50	45.50	12.00	1104.43
563		8	31	1102.2	1939.2	173.6( 5.60)	370.4( 11.95)	0.0	65.00	12.63	6.3	0.895	45.74	45.74	12.00	1103.01
564		9	30	1100.7	1771.0	204.9( 6.83)	358.5( 11.95)	0.0	65.00	12.11	6.2	0.895	46.19	46.19	12.00	1101.44
						739.5( 24.21)	693.6( 22.83)	33.1	63.38	22.16		0.894	1412.	1412.	12.00	1096.98
565	1987	10	31	1099.4	1629.9	236.6( 7.63)	370.4( 11.95)	0.0	65.00	12.40	6.2	0.895	46.59	46.59	12.00	1100.05
566		11	30	1098.5	1539.5	269.4( 8.98)	358.5( 11.95)	0.0	65.00	11.92	6.1	0.895	46.93	46.93	12.00	1098.93
567		12	31	1096.7	1383.9	214.8( 6.93)	370.4( 11.95)	0.0	65.00	12.21	6.1	0.895	47.33	47.33	12.00	1097.58
568		1	31	1094.7	1214.0	200.6( 6.47)	370.4( 11.95)	0.0	64.87	12.07	6.0	0.895	47.90	47.90	12.00	1095.73
569		2	29	1092.8	1034.5	226.5( 7.81)	406.0( 14.00)	0.0	63.86	13.04	7.0	0.894	47.71	47.71	12.00	1093.78
570		3	31	1077.0	0.0	354.6( 11.44)	1388.6( 44.79)	0.0	58.10	11.82	23.2	0.890	46.30	46.30	12.00	1084.91
571		4	30	1080.7	155.3	1508.4( 50.28)	1350.0( 45.00)	0.0	54.09	38.72	23.9	0.887	45.26	45.26	12.00	1078.83
572		5	31	1097.8	1478.0	2784.4( 89.82)	1455.8( 46.86)	0.0	60.88	45.27	24.0	0.892	46.99	46.99	12.00	1089.24
573		6	30	1105.0	2314.8	2456.1( 81.87)	1386.4( 46.21)	220.1	65.00	46.80	24.0	0.895	46.21	46.21	12.00	1101.40
574		7	31	1104.9	2296.2	1180.4( 38.08)	1178.0( 38.00)	0.0	65.00	40.47	20.1	0.895	45.40	45.40	12.00	1104.93
575		8	31	1104.6	2251.7	346.5( 11.18)	370.4( 11.95)	0.0	65.00	12.74	6.3	0.895	45.35	45.35	12.00	1104.71
576		9	30	1104.2	2203.9	326.4( 10.88)	358.5( 11.95)	0.0	65.00	12.33	6.3	0.895	45.36	45.36	12.00	1104.38
						842.1( 27.61)	780.3( 25.56)	18.3	63.07	24.98		0.894	1416.	1416.	12.00	1096.20

\*\*\* OPTIMAL SCHEDULE \*\*\*

Olur Project

NO.	YEAR	MON	DAY	H	S	GIN	QQ	QOUT	P	E	T	ETG	GCR	GUP	LOSS	SULL
				(M)	(M3/SD)	(M3/SD)	(M3/SD)	(M3/SD)	(MW)	(GWH)	(H)		(M3/S)	(M3/S)	(M)	(M)
577	1988	10	31	1104.6	2252.5	427.2	13.78	370.4	65.00	12.74	6.3	0.895	45.36	45.36	12.00	1104.38
578		11	30	1104.3	2215.6	323.1	10.77	358.5	65.00	12.33	6.3	0.895	45.35	45.35	12.00	1104.42
579		12	31	1103.5	2112.6	267.5	8.63	370.4	65.00	12.70	6.3	0.895	45.49	45.49	12.00	1103.91
580		1	31	1102.3	1961.6	219.4	7.08	370.4	65.00	12.63	6.3	0.895	45.76	45.76	12.00	1102.93
581		2	28	1101.0	1803.4	176.4	6.30	334.6	65.00	11.32	6.2	0.895	46.12	46.12	12.00	1101.67
582		3	31	1102.0	1920.2	488.0	15.74	370.4	65.00	11.52	6.2	0.895	46.17	46.17	12.00	1101.50
583		4	30	1104.9	2307.0	153.3	51.11	1140.0	65.00	38.99	20.0	0.895	45.61	45.61	12.00	1103.47
584		5	31	1104.8	2292.1	422.9	15.90	496.0	65.00	17.05	8.5	0.895	45.39	45.39	12.00	1104.89
585		6	30	1103.0	2047.0	129.6	4.32	358.5	65.00	12.27	6.3	0.895	45.58	45.58	12.00	1103.93
586		7	31	1100.3	1724.7	67.9	2.19	370.4	65.00	12.53	6.2	0.895	46.13	46.13	12.00	1101.66
587		8	31	1096.8	1395.1	58.6	1.89	370.4	65.00	12.29	6.1	0.895	47.03	47.03	12.00	1098.57
588		9	30	1093.9	1130.8	106.2	3.54	358.5	64.70	11.65	6.0	0.895	47.95	47.80	12.00	1095.35
						357.5	11.77	439.1	64.98	14.92		0.895	1399.	1399.	12.00	1102.22
589	1989	10	31	1092.8	1029.8	275.2	8.88	370.4	65.55	11.86	6.0	0.894	47.63	47.63	12.00	1093.31
590		11	30	1091.6	924.3	254.1	8.47	358.5	62.80	11.39	6.0	0.893	47.45	47.45	12.00	1092.16
591		12	31	1090.3	818.9	265.0	8.55	370.4	61.99	11.66	6.1	0.893	47.26	47.26	12.00	1090.94
592		1	31	1087.8	617.1	168.6	5.44	370.4	60.76	11.50	6.1	0.892	46.96	46.96	12.00	1089.04
593		2	28	1085.2	436.0	153.5	5.48	334.6	59.12	10.20	6.2	0.891	46.56	46.56	12.00	1086.50
594		3	31	1086.1	498.8	433.7	13.99	370.4	58.60	11.22	6.2	0.890	46.43	46.43	12.00	1085.69
595		4	30	1093.3	1078.1	1753.2	58.44	1170.0	61.20	36.51	19.9	0.892	47.07	47.07	12.00	1089.72
596		5	31	1104.9	2299.2	2886.1	86.65	1457.0	65.00	48.27	24.0	0.895	47.09	47.09	12.00	1099.09
597		6	30	1105.0	2314.8	741.0	24.70	709.1	65.00	24.36	12.5	0.895	45.42	45.42	12.00	1104.94
598		7	31	1105.0	2314.8	329.5	10.63	308.5	56.90	10.58	6.0	0.895	45.46	45.46	12.00	1103.00
599		8	31	1105.0	2314.8	135.4	4.37	114.7	21.16	3.94	6.0	0.895	45.46	45.46	12.00	1105.00
600		9	30	1105.0	2314.8	155.1	5.17	139.2	26.53	4.78	6.0	0.895	45.46	45.46	12.00	1105.00
						612.5	20.06	506.1	55.22	16.36		0.893	1415.	1254.	12.00	1095.53

7588.5(248.76) 7298.9(239.84) 195.9 765.29 241.53 0.894 16879. 16798. 12.00 1099.42

N=1 PMAX= 65.00 E= 241.51 ESUM= 241.53  
 PF100= 15.25 PF95= 57.77 PF90= 60.88  
 EF100= 33.39 EF95= 126.51 EF90= 133.34  
 ES100= 208.12 ES95= 115.00 ES90= 108.18  
 UF = 42.339 (%) QUMAX = 47.986

\*\*\* SEMW \*\*\* N= 1

1	65.00	2	65.00	3	65.00	4	65.00	5	65.00	6	65.00	7	65.00	8	65.00	9	65.00	10	65.00
11	65.00	12	65.00	13	65.00	14	65.00	15	65.00	16	65.00	17	65.00	18	65.00	19	65.00	20	65.00
21	65.00	22	65.00	23	65.00	24	65.00	25	65.00	26	65.00	27	65.00	28	65.00	29	65.00	30	65.00
31	65.00	32	65.00	33	65.00	34	65.00	35	65.00	36	65.00	37	65.00	38	65.00	39	65.00	40	65.00
41	65.00	42	65.00	43	65.00	44	65.00	45	65.00	46	65.00	47	65.00	48	65.00	49	65.00	50	65.00
51	65.00	52	65.00	53	65.00	54	65.00	55	65.00	56	65.00	57	65.00	58	65.00	59	65.00	60	65.00
61	65.00	62	65.00	63	65.00	64	65.00	65	65.00	66	65.00	67	65.00	68	65.00	69	65.00	70	65.00
71	65.00	72	65.00	73	65.00	74	65.00	75	65.00	76	65.00	77	65.00	78	65.00	79	65.00	80	65.00
81	65.00	82	65.00	83	65.00	84	65.00	85	65.00	86	65.00	87	65.00	88	65.00	89	65.00	90	65.00
91	65.00	92	65.00	93	65.00	94	65.00	95	65.00	96	65.00	97	65.00	98	65.00	99	65.00	100	65.00
101	65.00	102	65.00	103	65.00	104	65.00	105	65.00	106	65.00	107	65.00	108	65.00	109	65.00	110	65.00
111	65.00	112	65.00	113	65.00	114	65.00	115	65.00	116	65.00	117	65.00	118	65.00	119	65.00	120	65.00
121	65.00	122	65.00	123	65.00	124	65.00	125	65.00	126	65.00	127	65.00	128	65.00	129	65.00	130	65.00
131	65.00	132	65.00	133	65.00	134	65.00	135	65.00	136	65.00	137	65.00	138	65.00	139	65.00	140	65.00
141	65.00	142	65.00	143	65.00	144	65.00	145	65.00	146	65.00	147	65.00	148	65.00	149	65.00	150	65.00
151	65.00	152	65.00	153	65.00	154	65.00	155	65.00	156	65.00	157	65.00	158	65.00	159	65.00	160	65.00
161	65.00	162	65.00	163	65.00	164	65.00	165	65.00	166	65.00	167	65.00	168	65.00	169	65.00	170	65.00