3432

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR LICENSE FOR MAJOR PROJECT

SUSITNA HYDROELECTRIC PROJECT

VOLUME 8

D R A F T

EXHIBIT E

CHAPTER 2

FIGURES

HARZA-EBASCO
SUSITNA JOINT VENTURE

Alaska Power Authority

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR LICENSE FOR MAJOR PROJECT

SUSITNA HYDROELECTRIC PROJECT
DRAFT LICENSE APPLICATION

VOLUME 8

EXHIBIT E
CHAPTER 2 - WATER USE AND QUALITY
FIGURES

November 1985

VOLUME COMPARISON

VOLUME NUMBER COMPARISON

LICENSE APPLICATION AMENDMENT VS. JULY 29, 1983 LICENSE APPLICATION

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B	Entire	Project Operation and Resource Utilization	2	2 & 2A
	App. B1	MAP Model Documentation Report	3	2B
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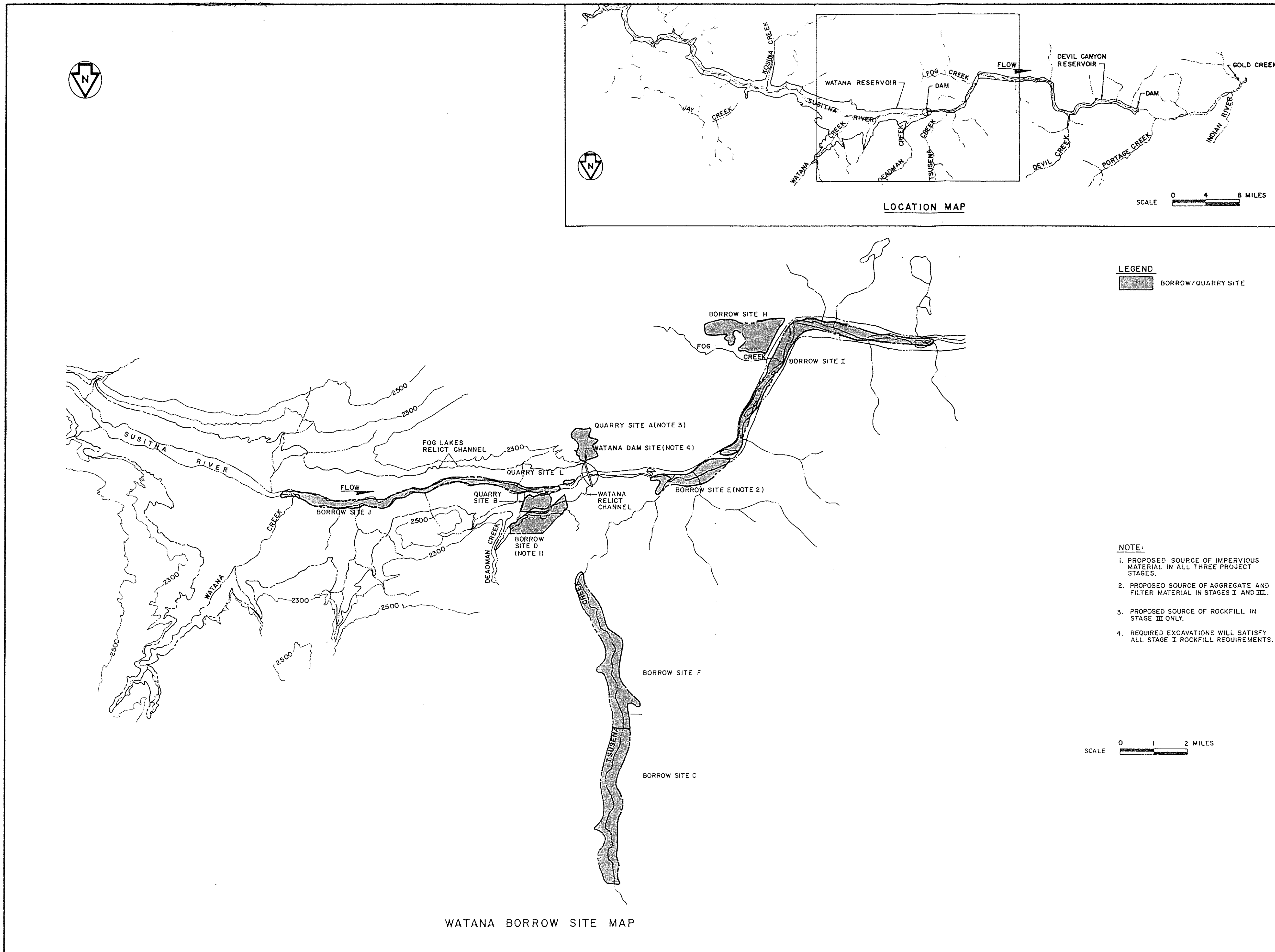
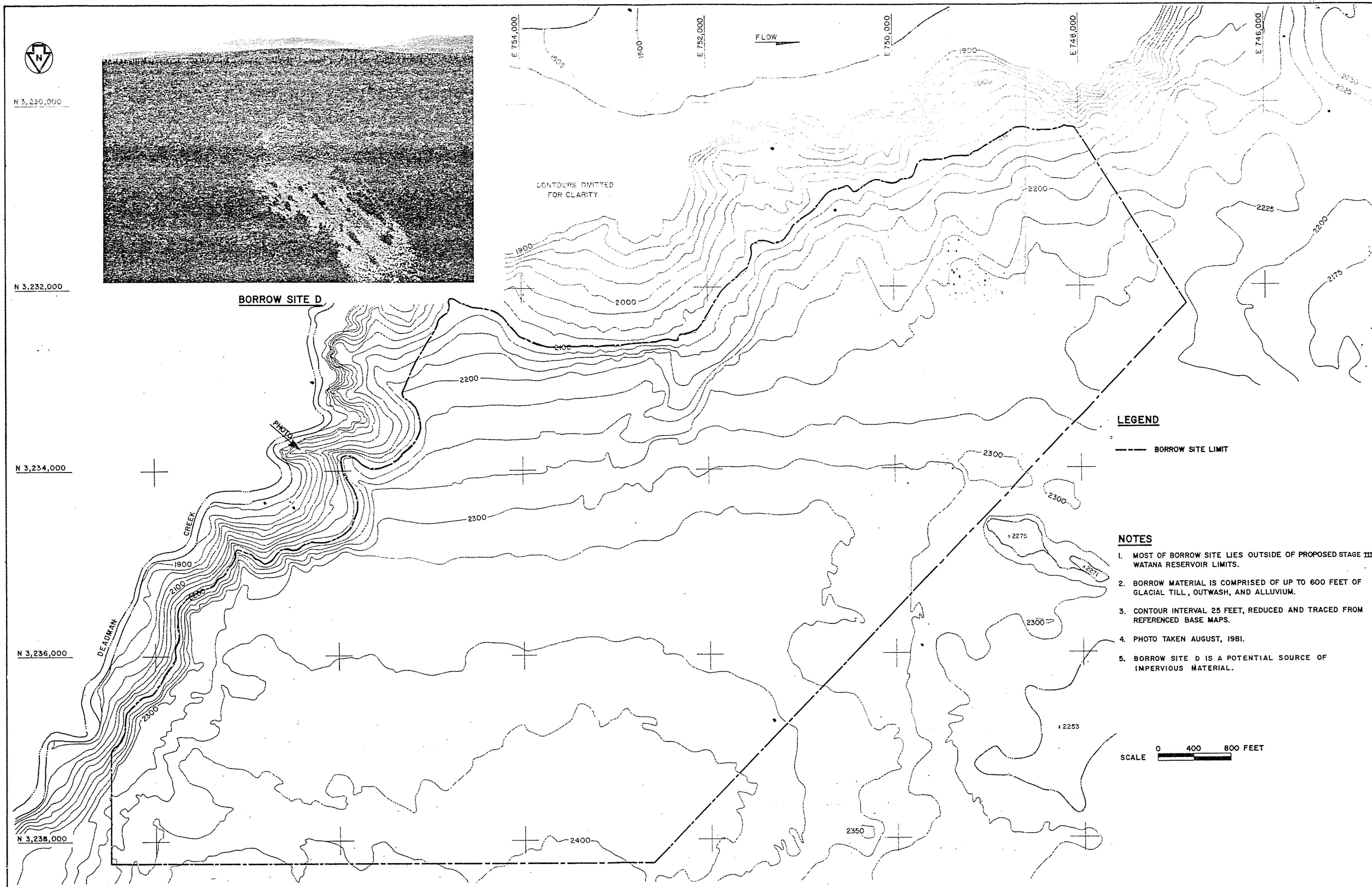


WATANA BORROW SITE MAP

FIGURE E.2.4.1



LEGEND

—·—·— BORROW SITE LIMIT

NOTES

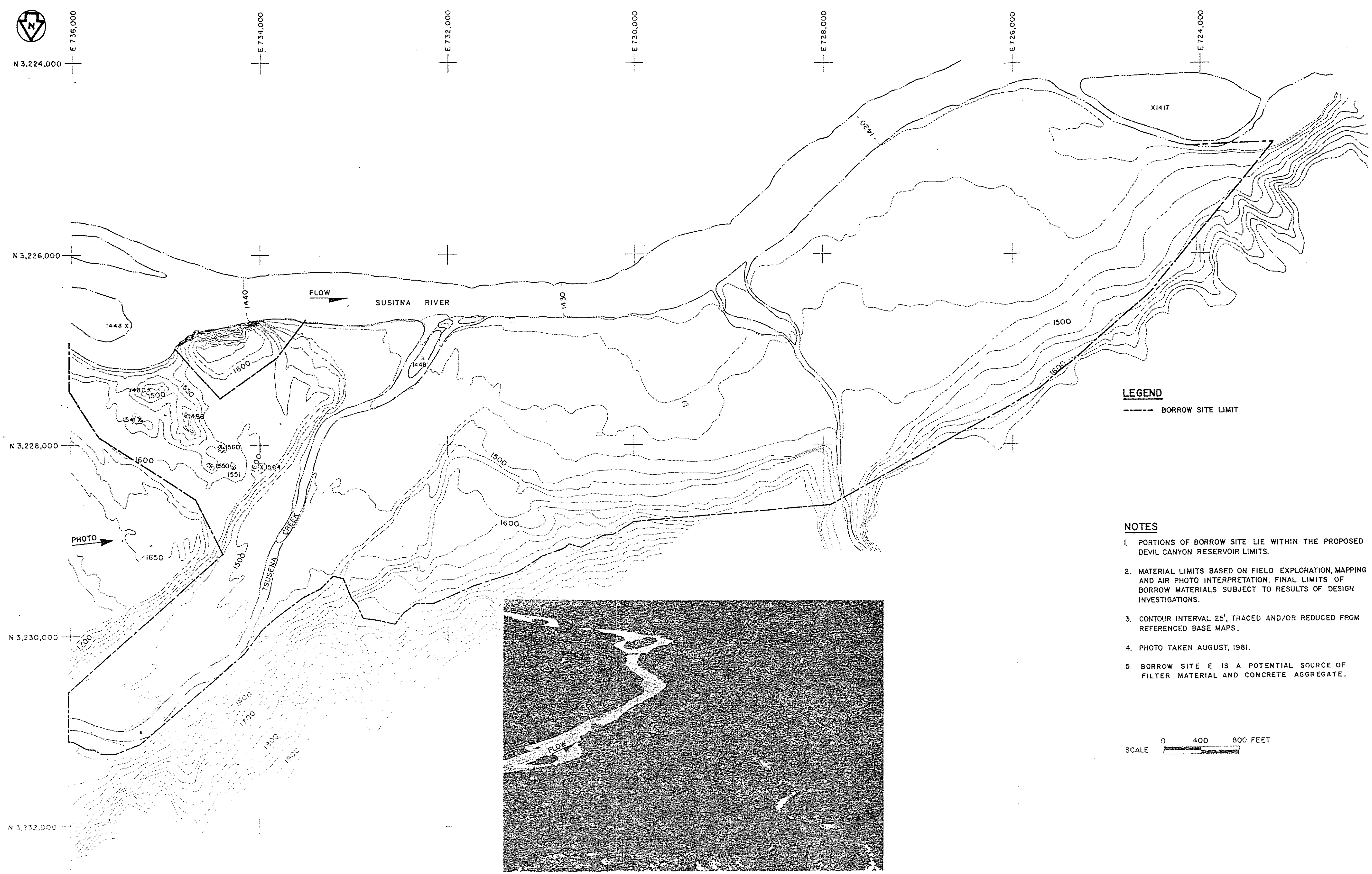
1. MOST OF BORROW SITE LIES OUTSIDE OF PROPOSED STAGE III WATANA RESERVOIR LIMITS.
2. BORROW MATERIAL IS COMPRISED OF UP TO 600 FEET OF GLACIAL TILL, OUTWASH, AND ALLUVIUM.
3. CONTOUR INTERVAL 25 FEET, REDUCED AND TRACED FROM REFERENCED BASE MAPS.
4. PHOTO TAKEN AUGUST, 1981.
5. BORROW SITE D IS A POTENTIAL SOURCE OF IMPERVIOUS MATERIAL.

SCALE 0 400 800 FEET

REFERENCE: BASE MAP FROM 1978, COE - 1" = 200' DAMSITE TOPOGRAPHY, SHEETS 13-15, 18-20 OF 26

WATANA
BORROW SITE D

FIGURE E.2.4.2



LEGEND

– – – BORROW SITE LIMIT

NOTES

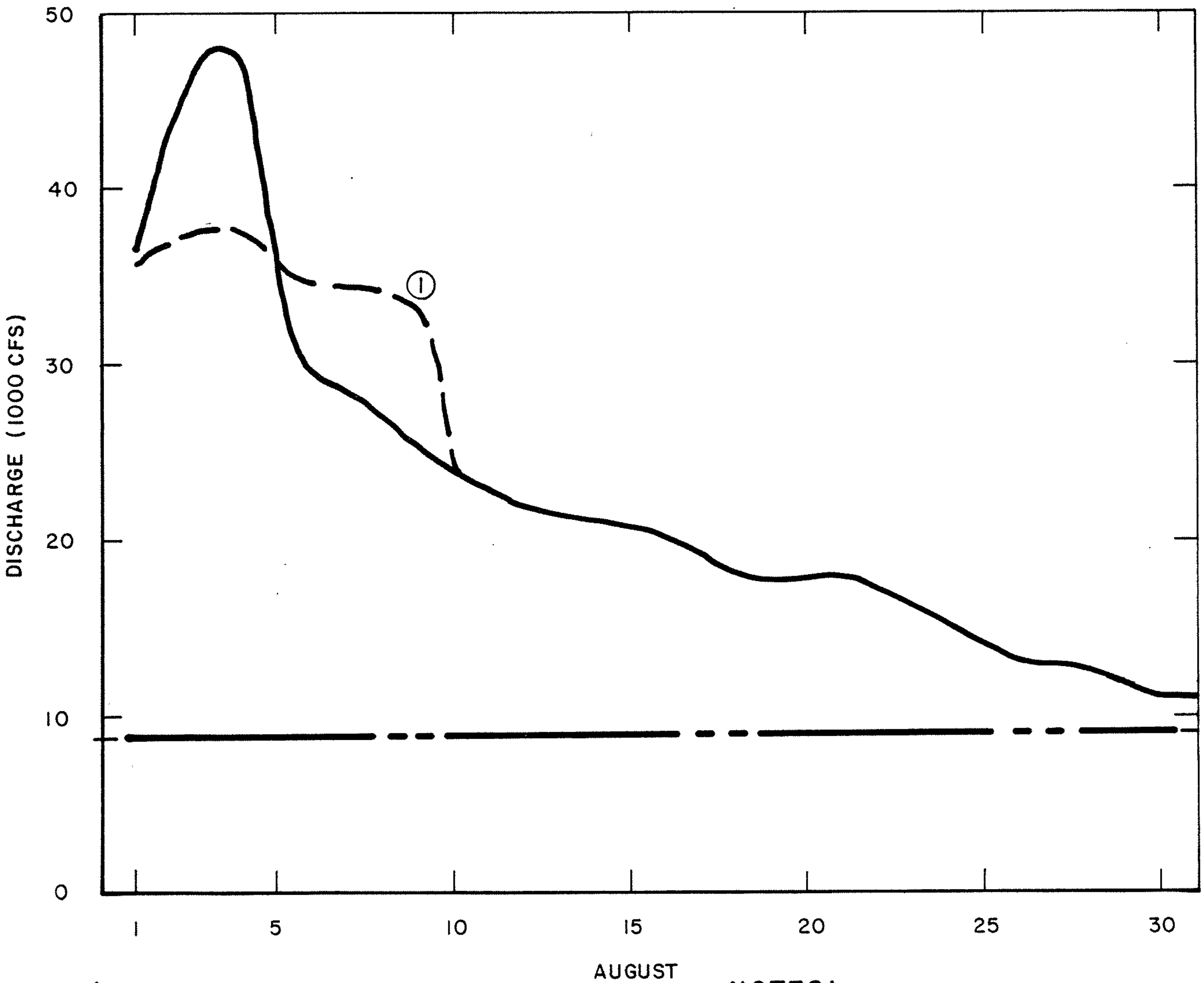
1. PORTIONS OF BORROW SITE LIE WITHIN THE PROPOSED DEVIL CANYON RESERVOIR LIMITS.
2. MATERIAL LIMITS BASED ON FIELD EXPLORATION, MAPPING AND AIR PHOTO INTERPRETATION. FINAL LIMITS OF BORROW MATERIALS SUBJECT TO RESULTS OF DESIGN INVESTIGATIONS.
3. CONTOUR INTERVAL 25', TRACED AND/OR REDUCED FROM REFERENCED BASE MAPS.
4. PHOTO TAKEN AUGUST, 1981.
5. BORROW SITE E IS A POTENTIAL SOURCE OF FILTER MATERIAL AND CONCRETE AGGREGATE.

SCALE 0 400 800 FEET

REFERENCES: BASE MAP FROM COE, 1978 - 1" = 200' WATANA TOPOGRAPHY, SHEET 6 & 11 OF 26
R & M, 1981 - 1" = 400' DEVIL CANYON RESERVOIR MAPPING, FLIGHT 5 (6-8), MANUSCRIPT 2
COORDINATES IN FEET, ALASKA STATE PLANE (ZONE 4)

WATANA
BORROW SITE E

FIGURE E.2.4.3



LEGEND:

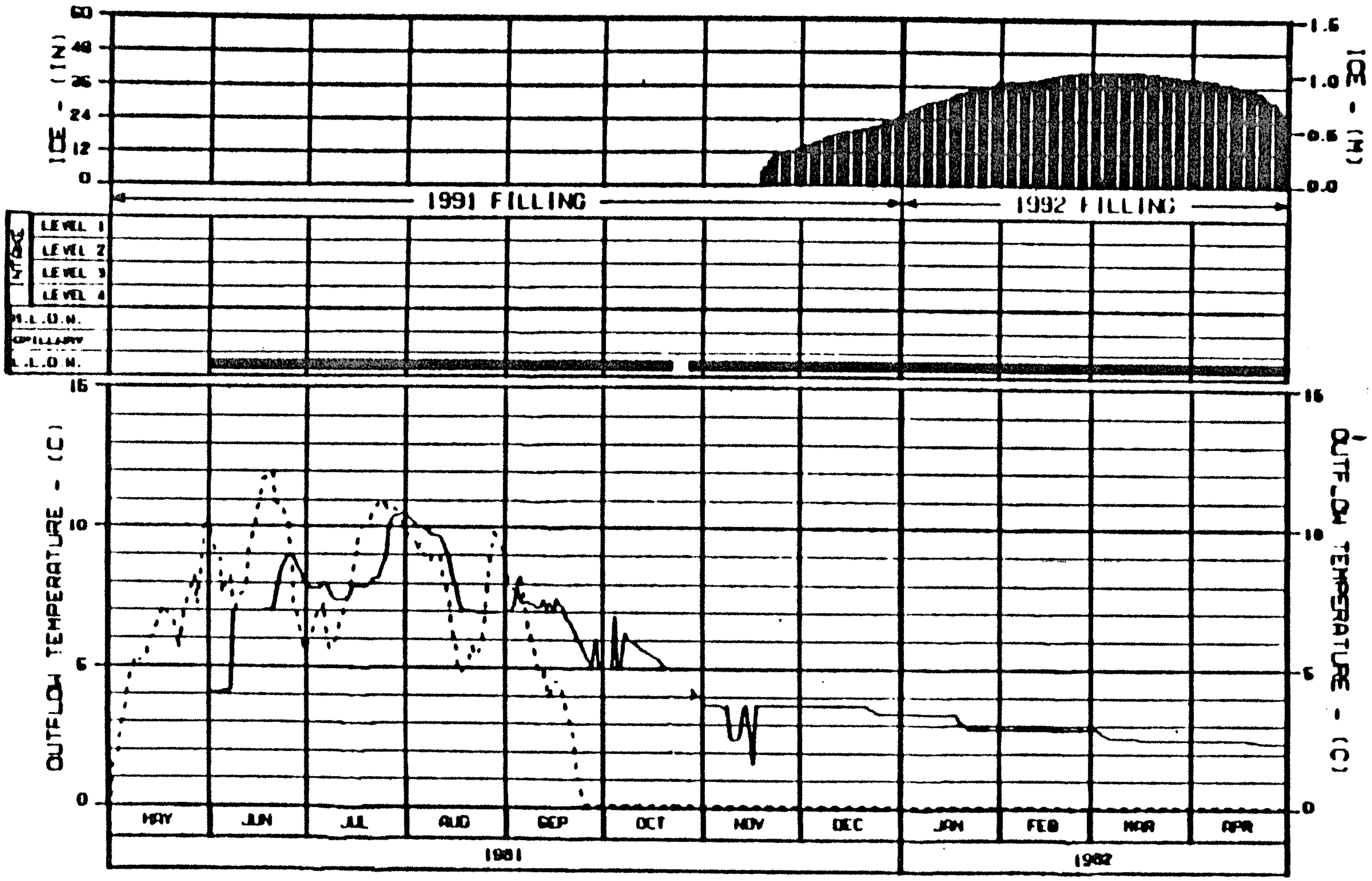
- AUGUST 1958 FLOWS
- ① FILLING SEQUENCE I, AUGUST 1958 FLOWS – WATANA MINIMUM STORAGE CRITERIA VIOLATED
- ② FILLING SEQUENCE 2, AUGUST 1958 FLOWS – WATANA CAPABLE OF ABSORBING HYDROGRAPH

NOTES:

1. WATANA FLOW ASSUMED TO BE 84 % OF GOLD CREEK FLOW.
2. RESERVOIR FILLING CRITERIA EXCEEDED WITH SEQUENCE ①
3. NEGLIGIBLE CHANGE IN DAM HEIGHT DURING FLOOD EVENT
4. MAXIMUM RELEASE AT WATANA 31,000 CFS (COMBINED POWERHOUSE AND OUTLET FACILITY DISCHARGE).

FLOW VARIABILITY AT GOLD CREEK DURING WATANA FILLING

FIGURE E.2.4.4



LEGEND: CASE: HASIFILA - WATANA FILLING OPERATION
FIRST YEAR FILLING STARTS IN MAY 1981
——— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

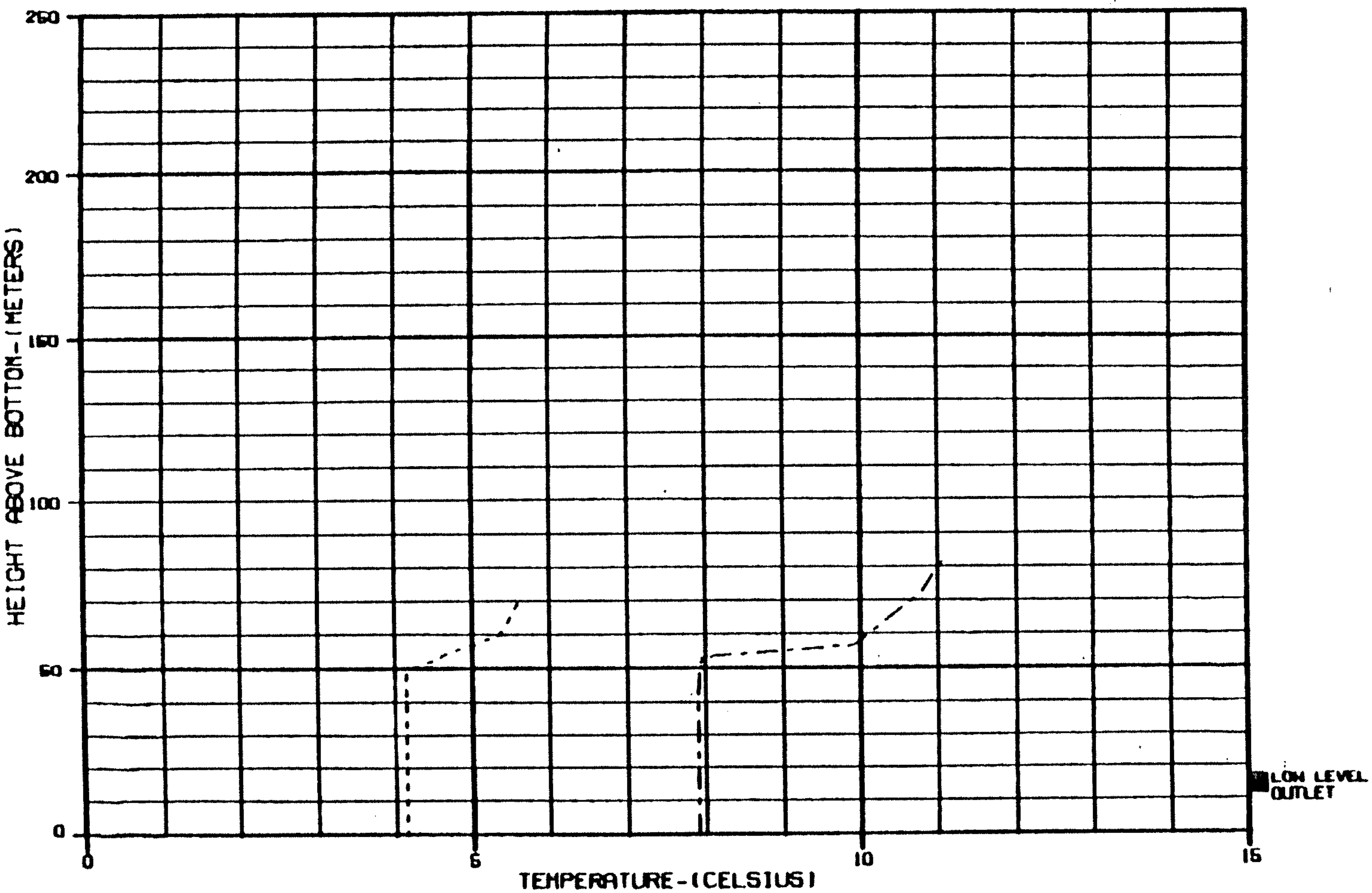
NOTES:
1. INTAKE PORT LEVEL 1 AT ELEVATION 2151 FT (655.6 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 2114 FT (644.3 M)
3. INTAKE PORT LEVEL 3 AT ELEVATION 2077 FT (633.1 M)
4. INTAKE PORT LEVEL 4 AT ELEVATION 2040 FT (621.8 M)
5. CONE VALVE (HLOW) AT ELEVATION 2040 FT (621.8 M)
6. SPILLWAY CREST AT ELEVATION 2148 FT (654.7 M)
7. LOW LEVEL OUTLET WORKS (LLOW) ELEV. 1508 FT (459.96 M)

SOURCE (APA, 1984a APPENDIX IV)

NOTE: SIMULATION WAS FOR FIRST YEAR OF FILLING WATANA 2-STAGE PROJECT. TEMPERATURES FROM MAY THROUGH SEPTEMBER WOULD BE APPLICABLE TO SUMMER OF FILLING WATANA STAGE-1. TEMPERATURES FOR OCTOBER THROUGH NOVEMBER ARE NOT APPLICABLE TO WATANA STAGE-1.

WATANA RESERVOIR
SUMMER OF FILLING
OUTFLOW TEMPERATURE AND ICE GROWTH

FIGURE E.2.4.5



CASE: ** WABIFILA - WATANA FILLING OPERATION **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

———— 1 MAY 1981

- - - - - - 1 JUNE 1981

— - — - — 1 JULY 1981

SOURCE: APA 1984a APPENDIX IV

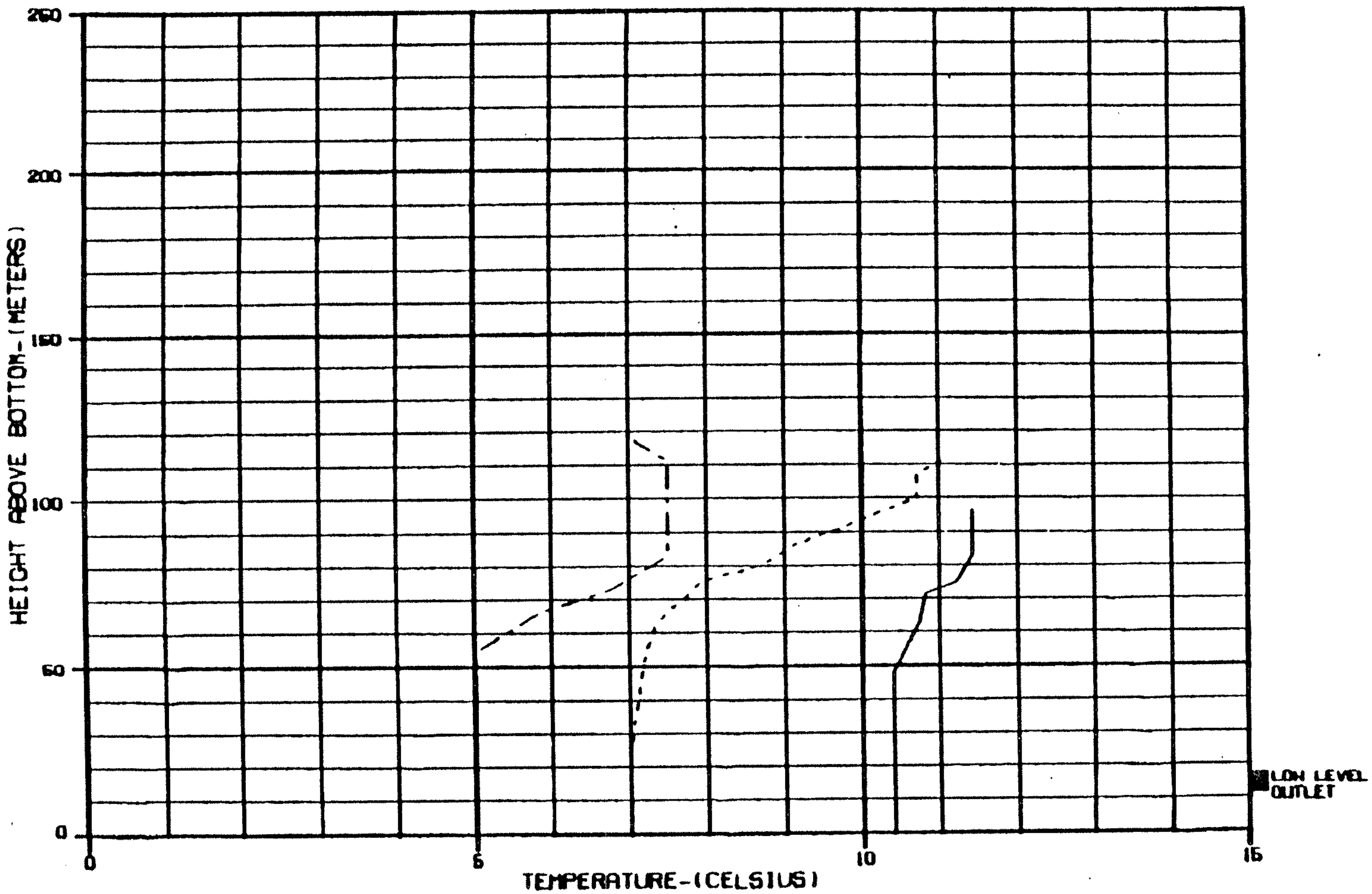
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR TEMPERATURE PROFILES

HARZA-EBASCO JOINT VENTURE

FIGURE E.2.4.6



CASE: ** WABIFILA - WATANA FILLING OPERATION **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

————————	1 AUGUST	1981
- - - - - - - -	1 SEPTEMBER	1981
— - — - —	1 OCTOBER	1981

SOURCE: APA 1984 a APPENDIX IV

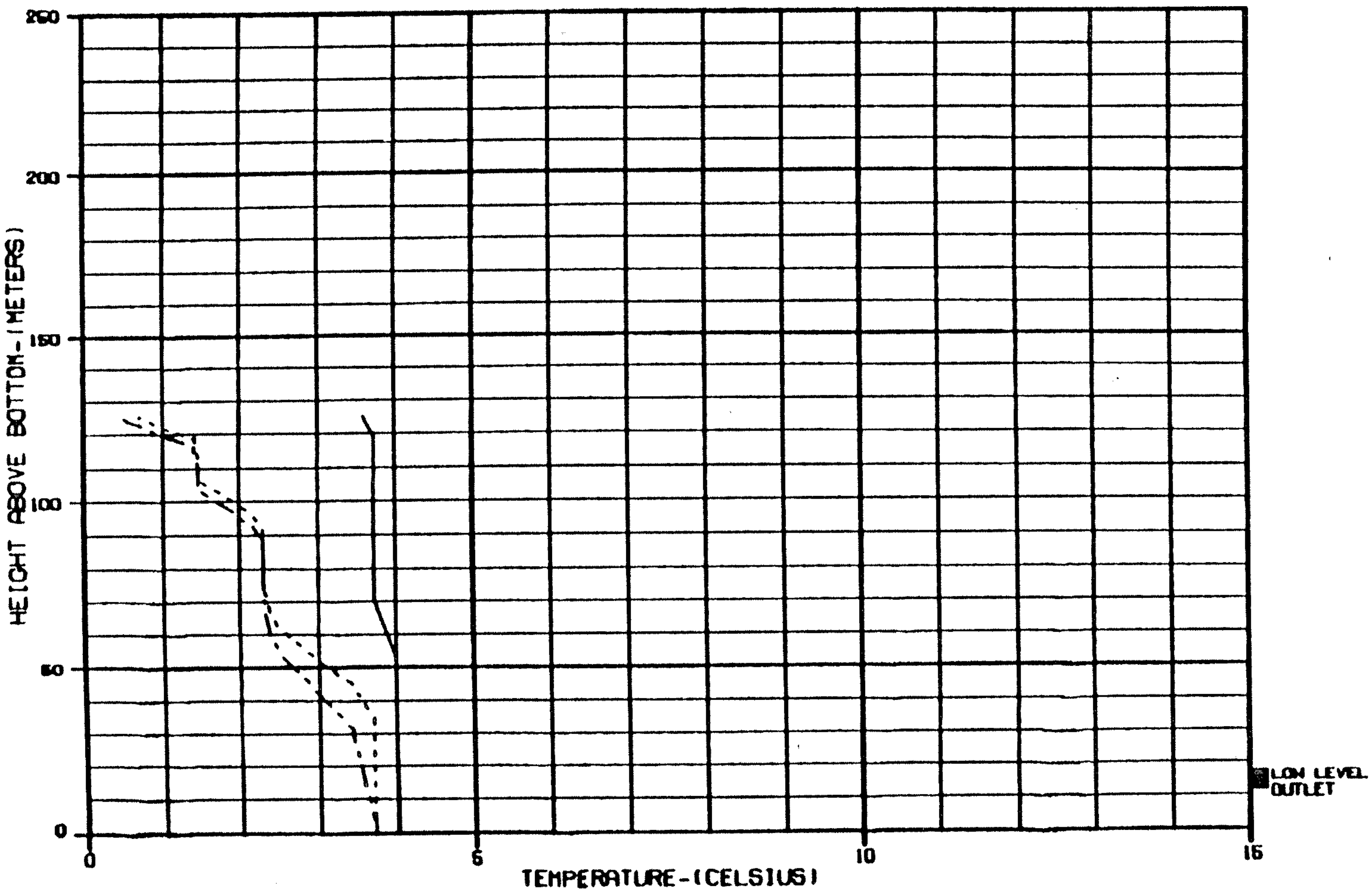
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR TEMPERATURE PROFILES

HARZA-EBASCO JOINT VENTURE

FIGURE E.2.4.7



CASE: ** WA81FILA - WATANA FILLING OPERATION **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

- ———— 1 NOVEMBER 1981
- -------- 1 DECEMBER 1981
- —-—-— 1 JANUARY 1982

SOURCE: APA 1984a APPENDIX IV

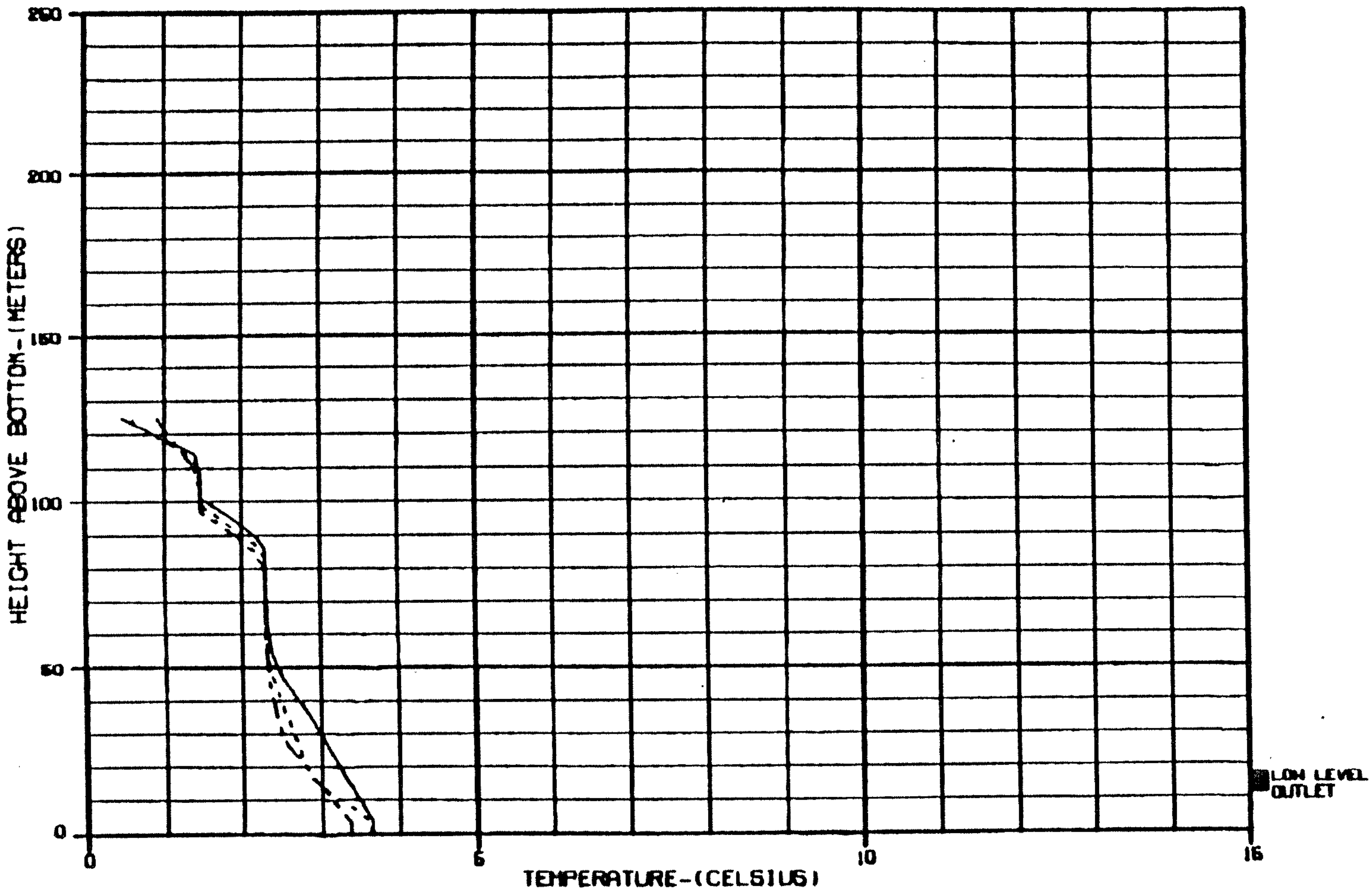
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR
TEMPERATURE PROFILES

HARZA-EBASCO JOINT VENTURE

FIGURE E.2.4.8



CASE: ** WASIFILA - WATANA FILLING OPERATION **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

———— 1 FEBRUARY 1982

- - - - - 1 MARCH 1982

— - — - 1 APRIL 1982

SOURCE: APA 1984a APPENDIX IV

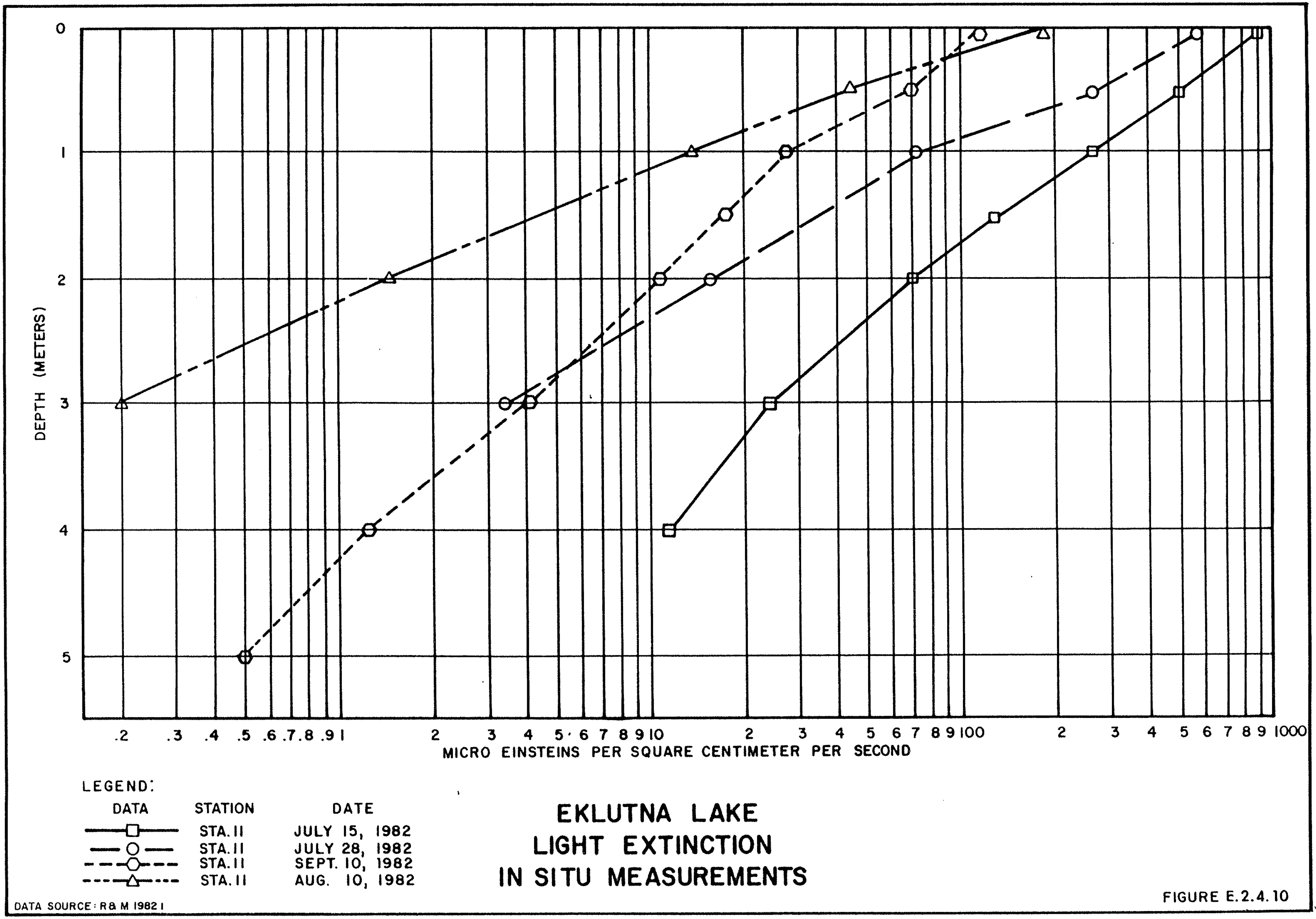
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR TEMPERATURE PROFILES

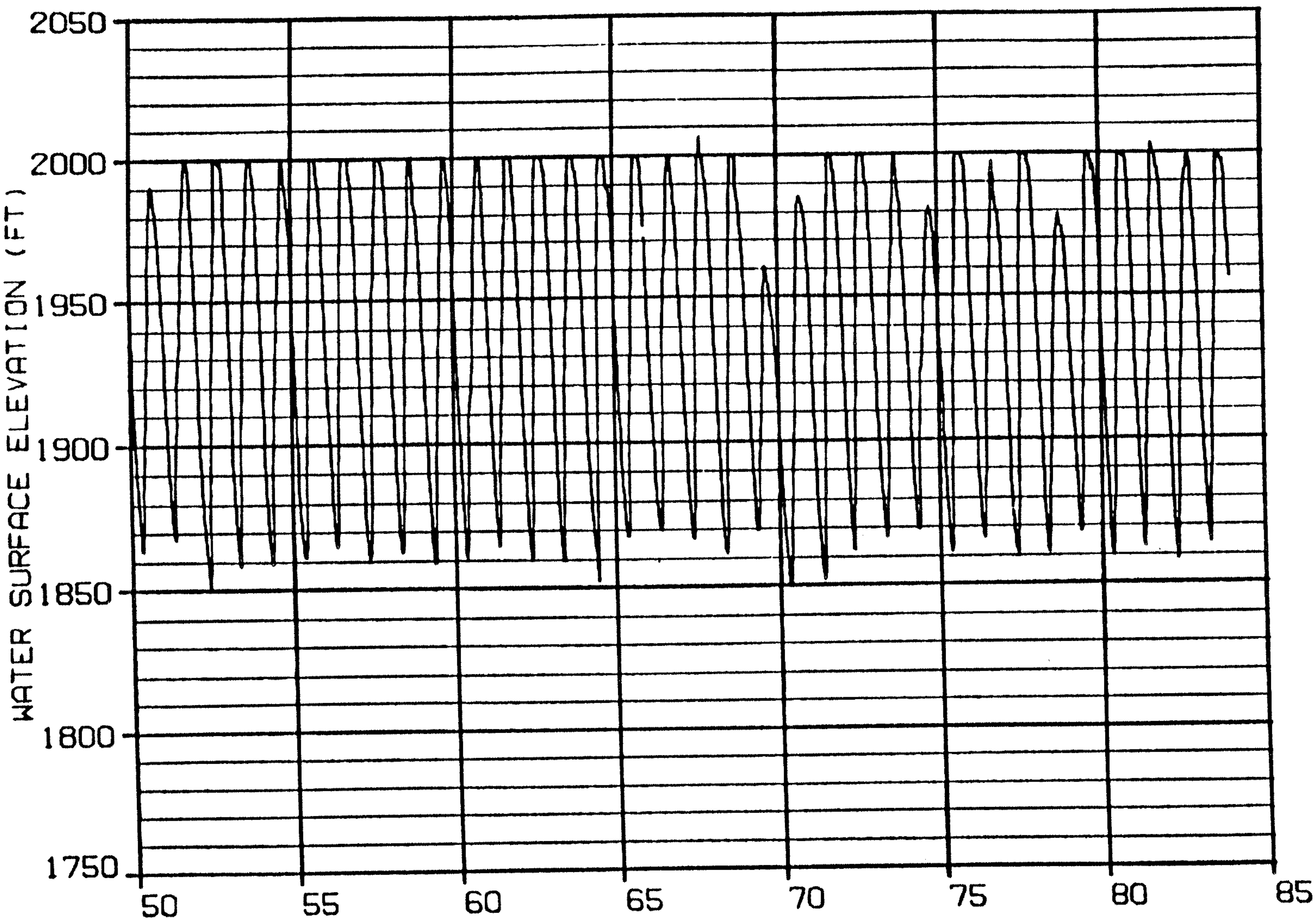
HARZA-EBASCO JOINT VENTURE

FIGURE E.2.4.9



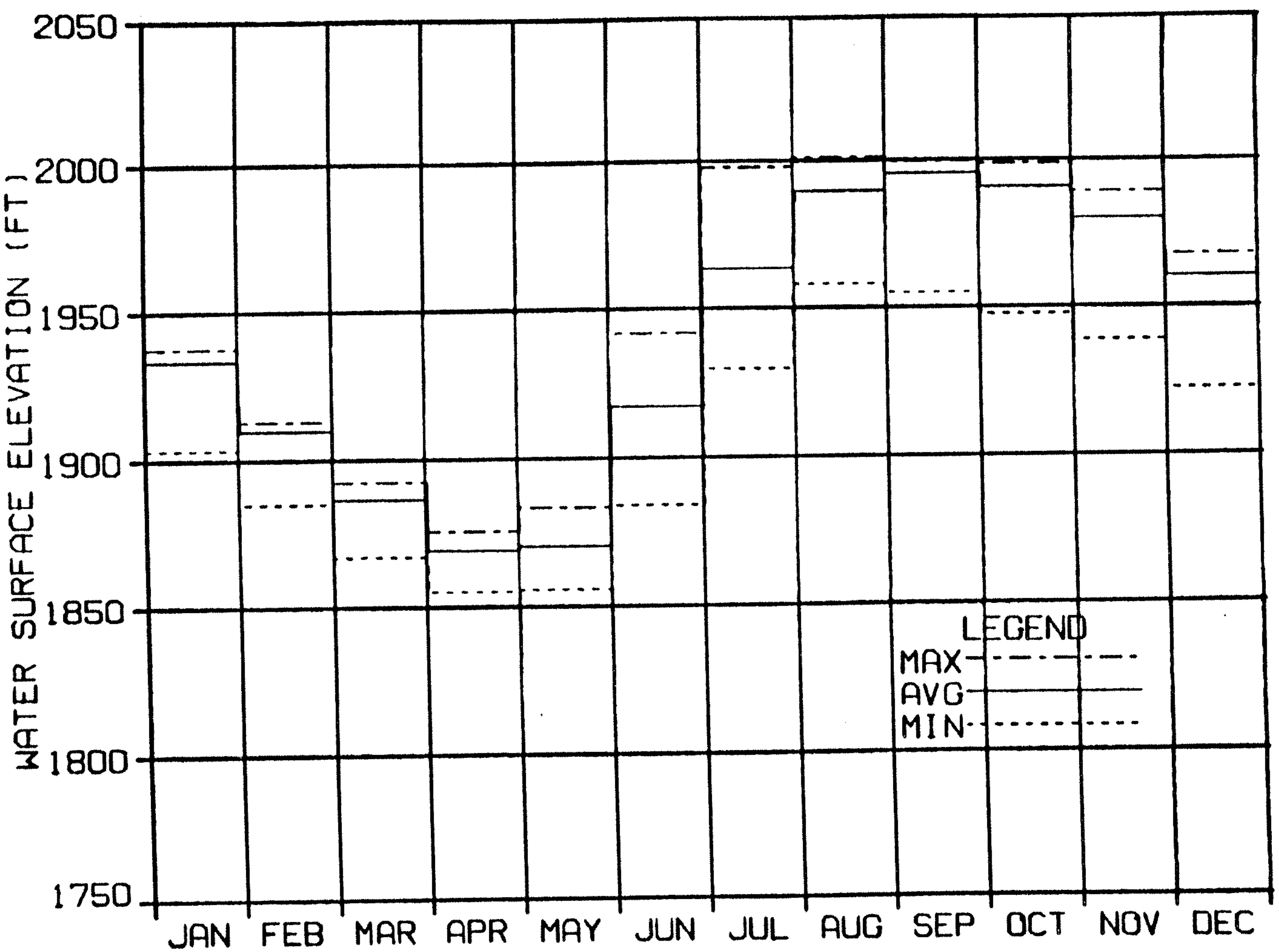
EKLUTNA LAKE
LIGHT EXTINCTION
IN SITU MEASUREMENTS

FIGURE E.2.4.10



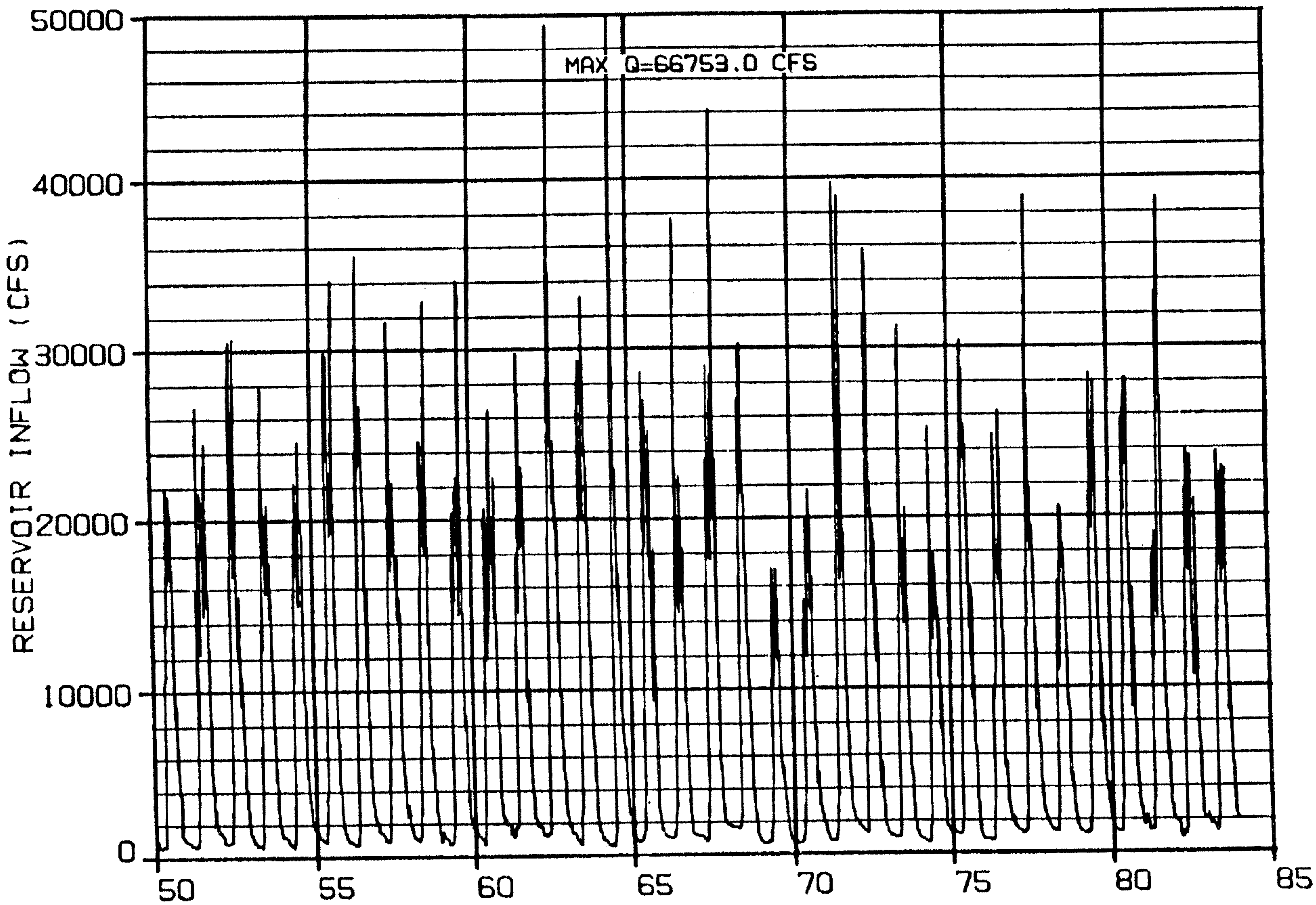
WATANA WATER SURFACE ELEVATION, STAGE I

FIGURE E.2.4.11



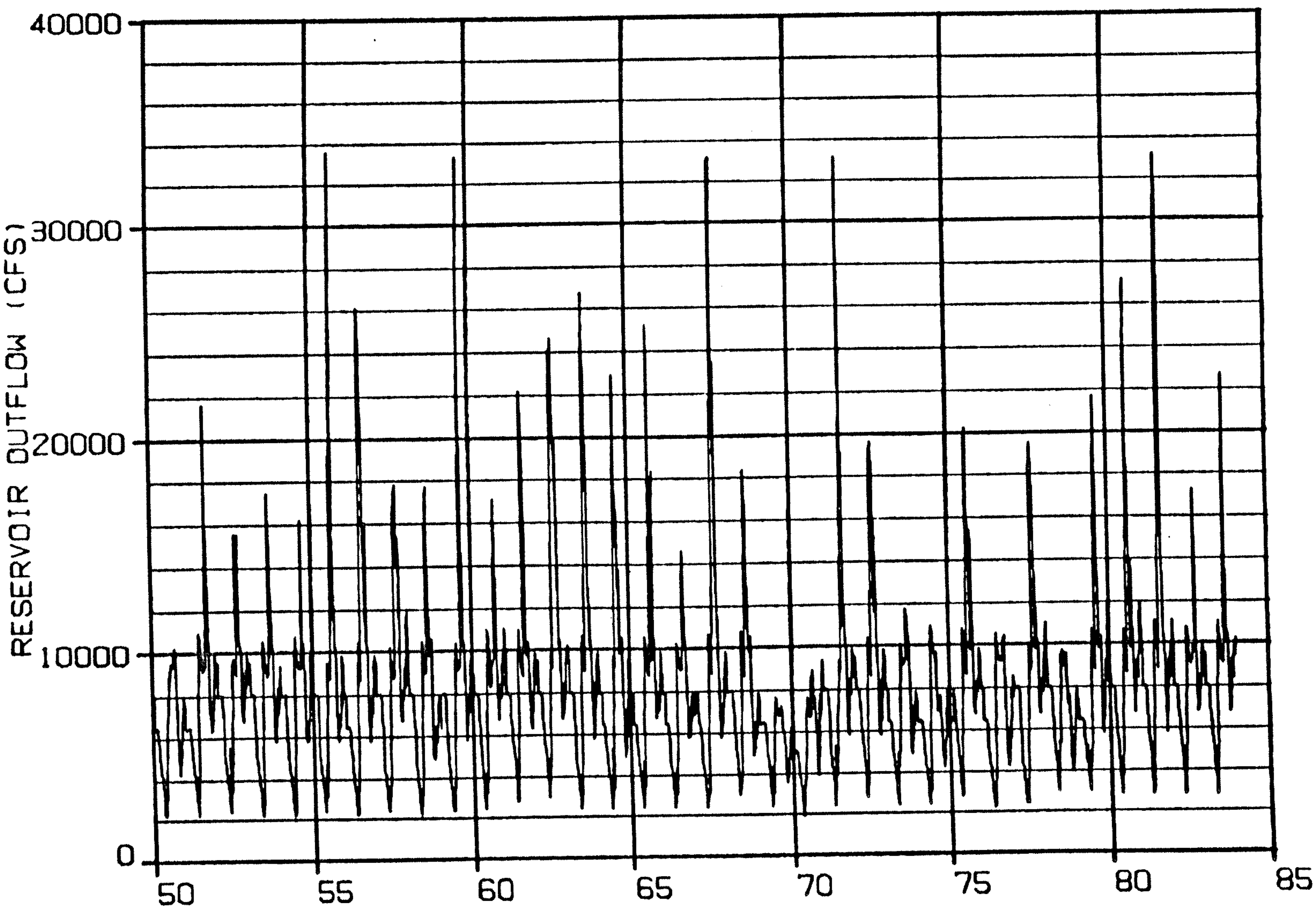
WATANA WATER SURFACE ELEVATION
MONTHLY SUMMARY, STAGE I

FIGURE E.2.4.12



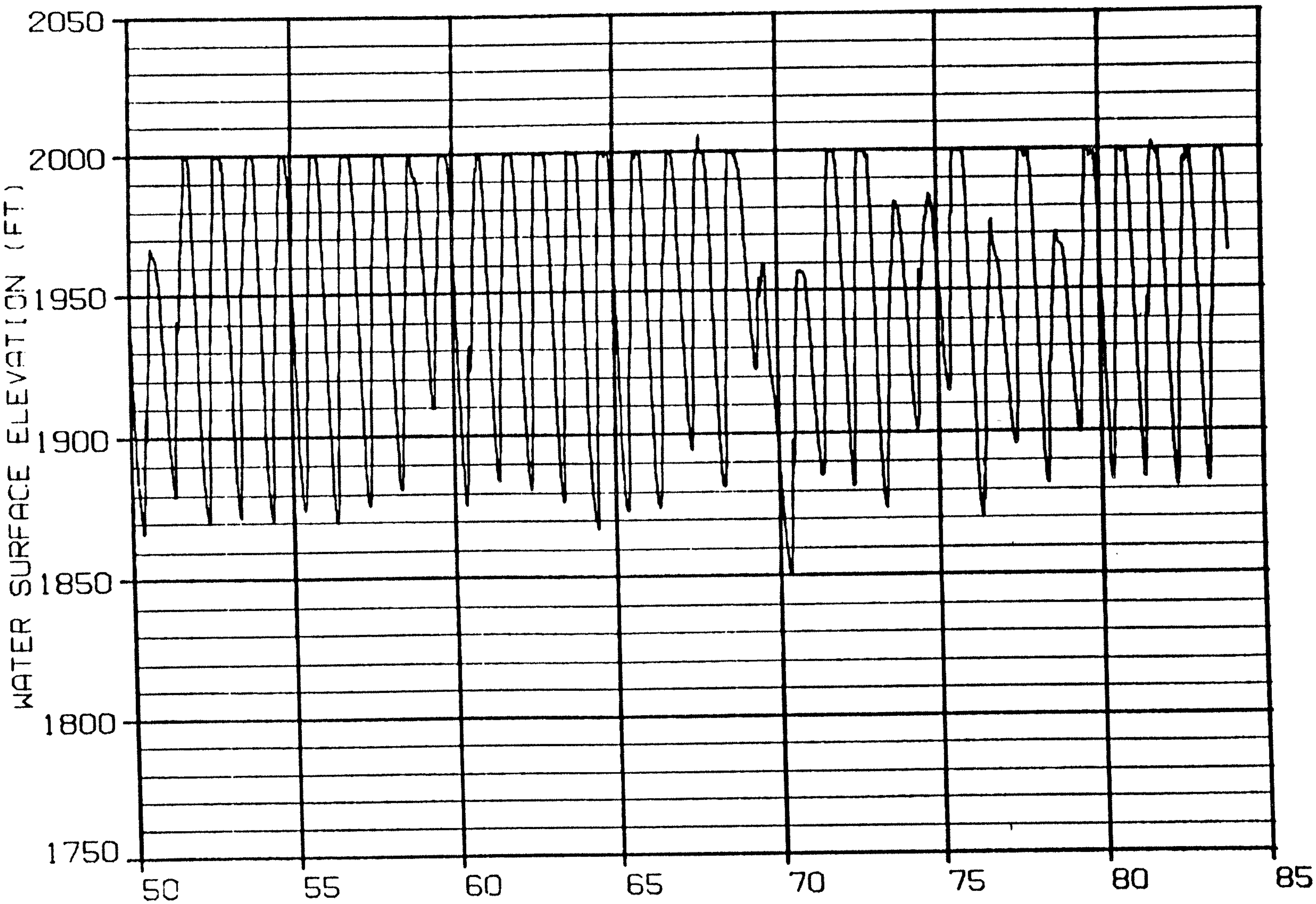
WATANA RESERVOIR INFLOW, STAGE I

FIGURE E.2.4.13



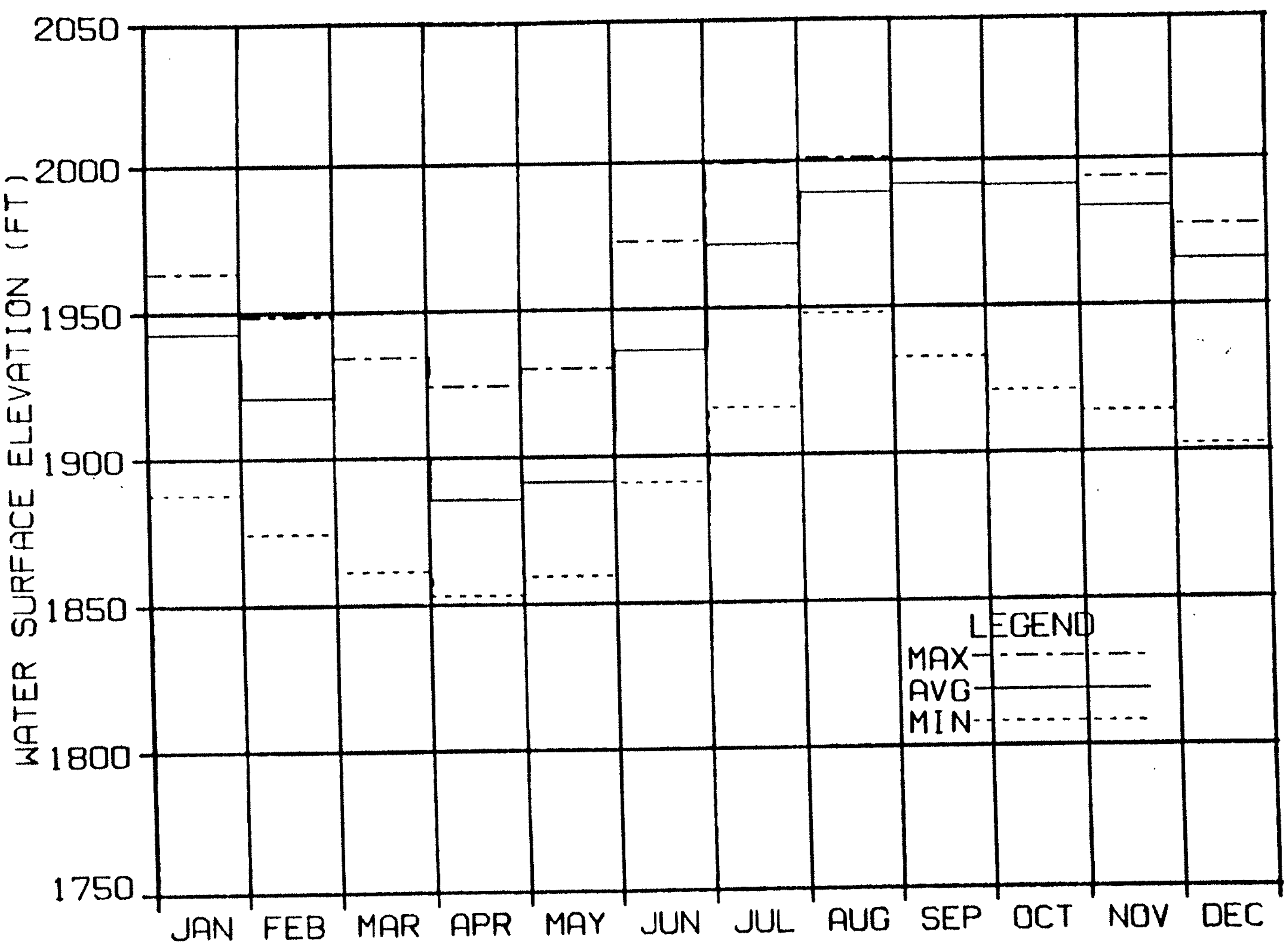
WATANA RESERVOIR OUTFLOW, STAGE I

FIGURE E. 2.4. 14



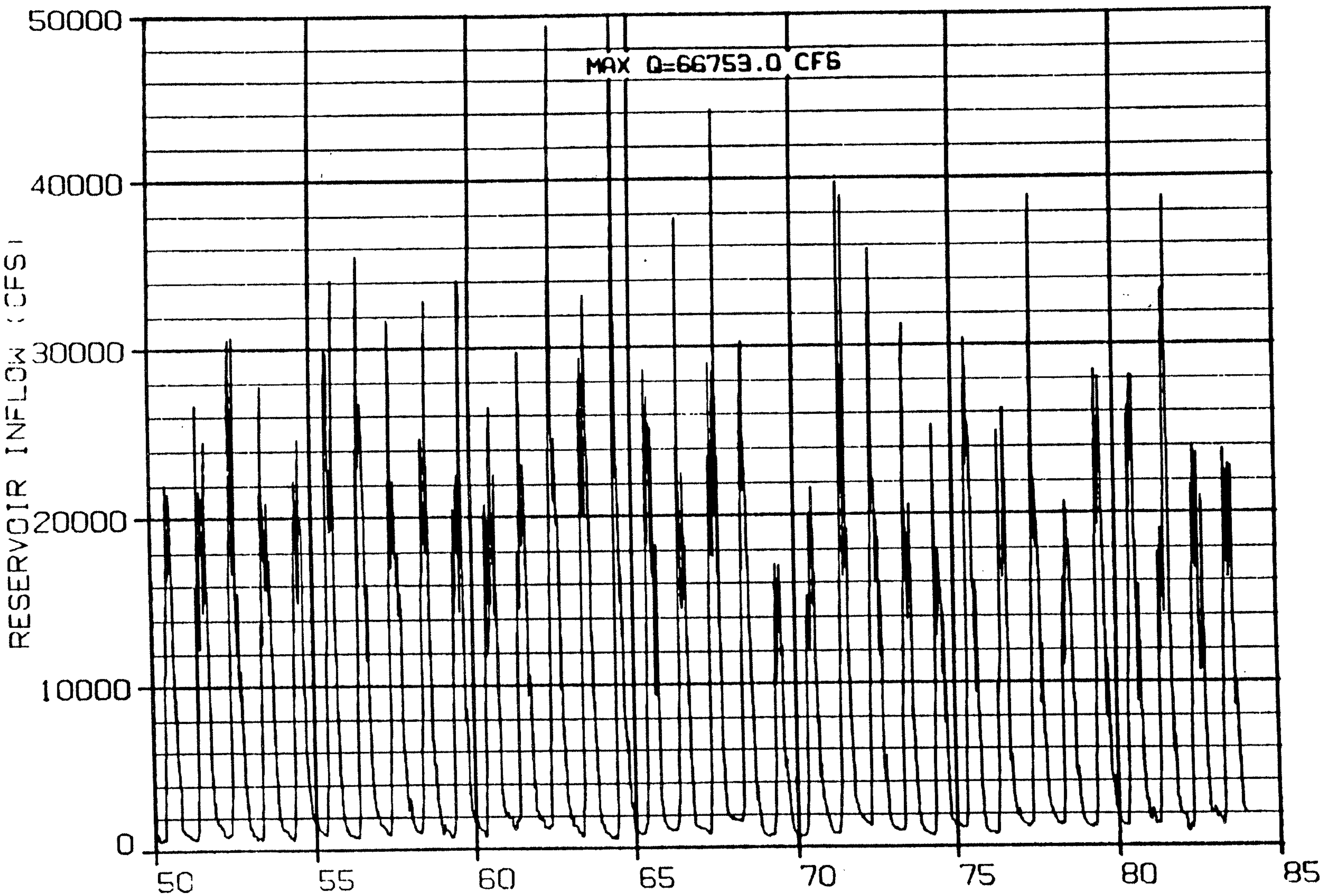
WATANA WATER SURFACE ELEVATION, E-I, STAGE I

FIGURE E.2.4.15

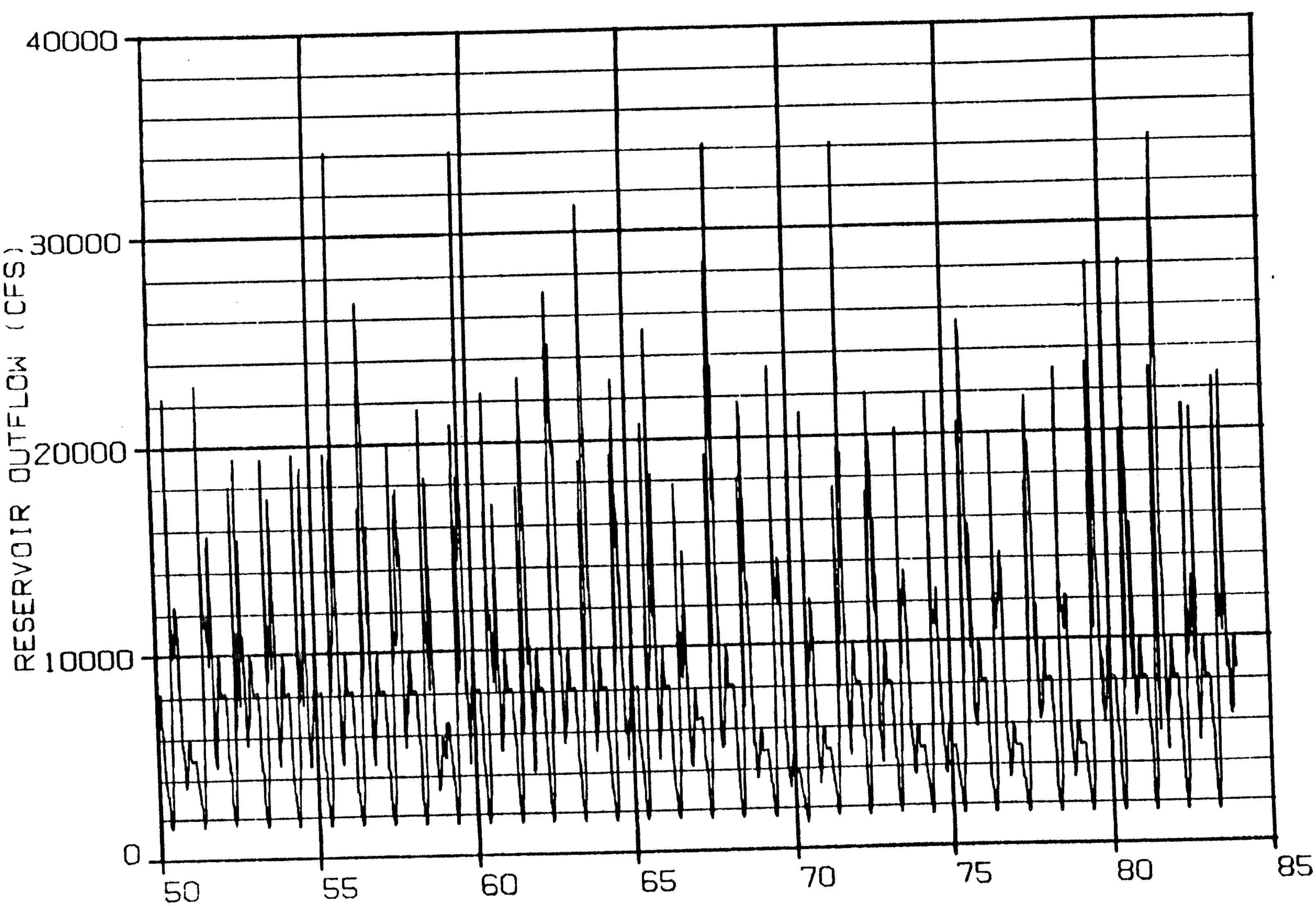


WATANA WATER SURFACE ELEVATION
E-I, MONTHLY SUMMARY, STAGE I

FIGURE E.2.4.16

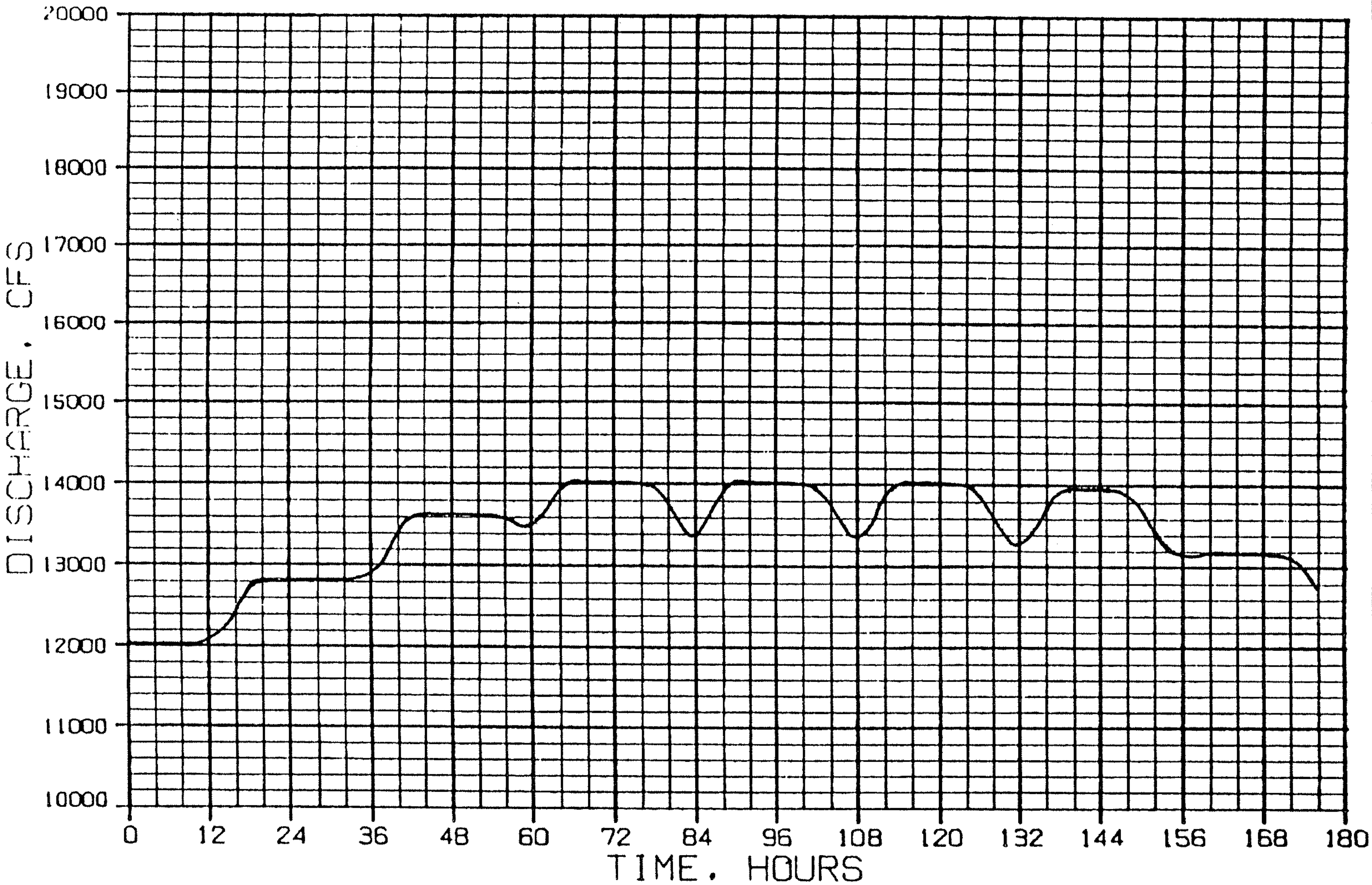


WATANA RESERVOIR INFLOW, E-I, STAGE I



WATANA RESERVOIR OUTFLOW, E-I, STAGE I

FIGURE E.2.4.18



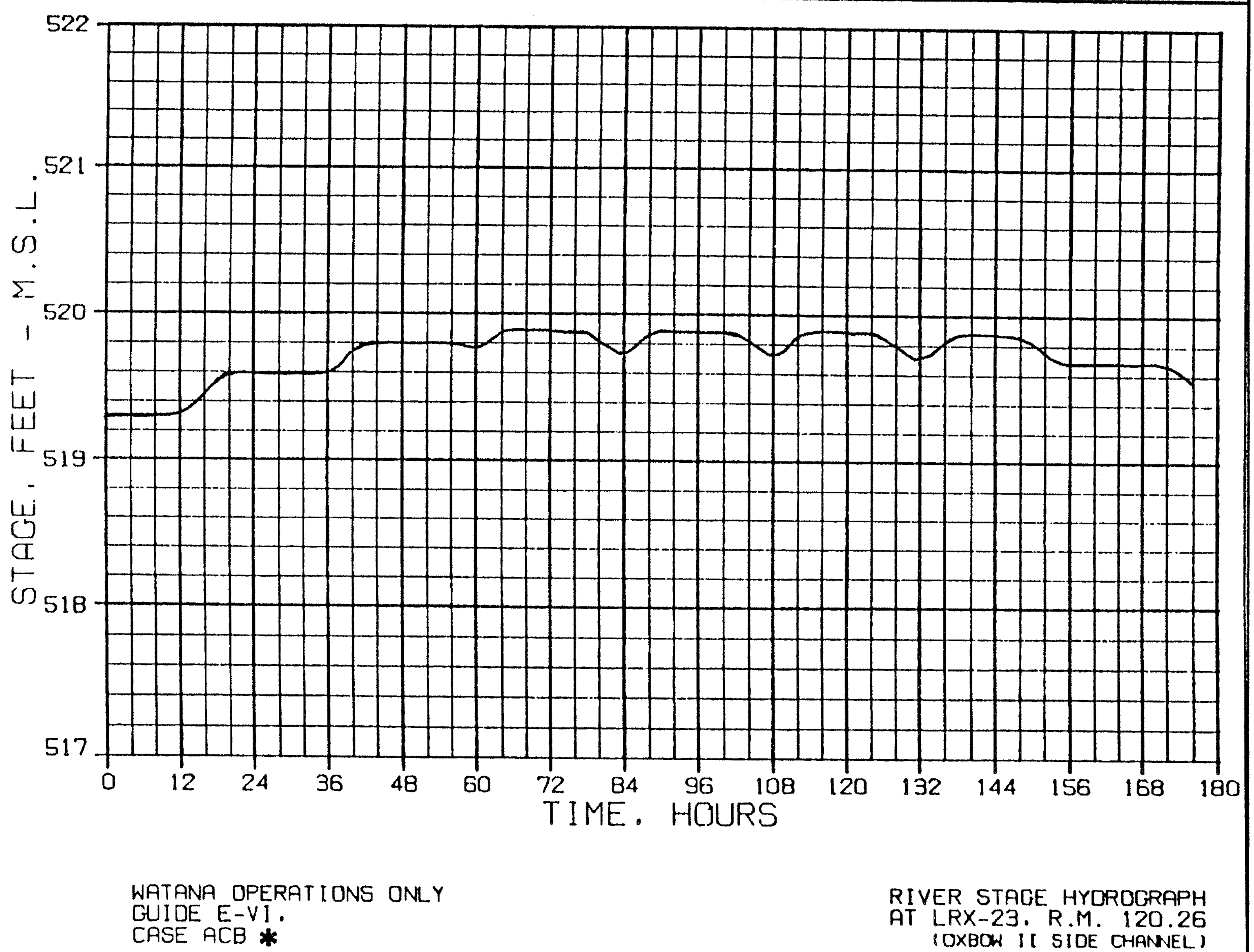
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE ACB *

DISCHARGE HYDROGRAPH
AT LRX-23, R.M. 120.26
(OXBOW II SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.19

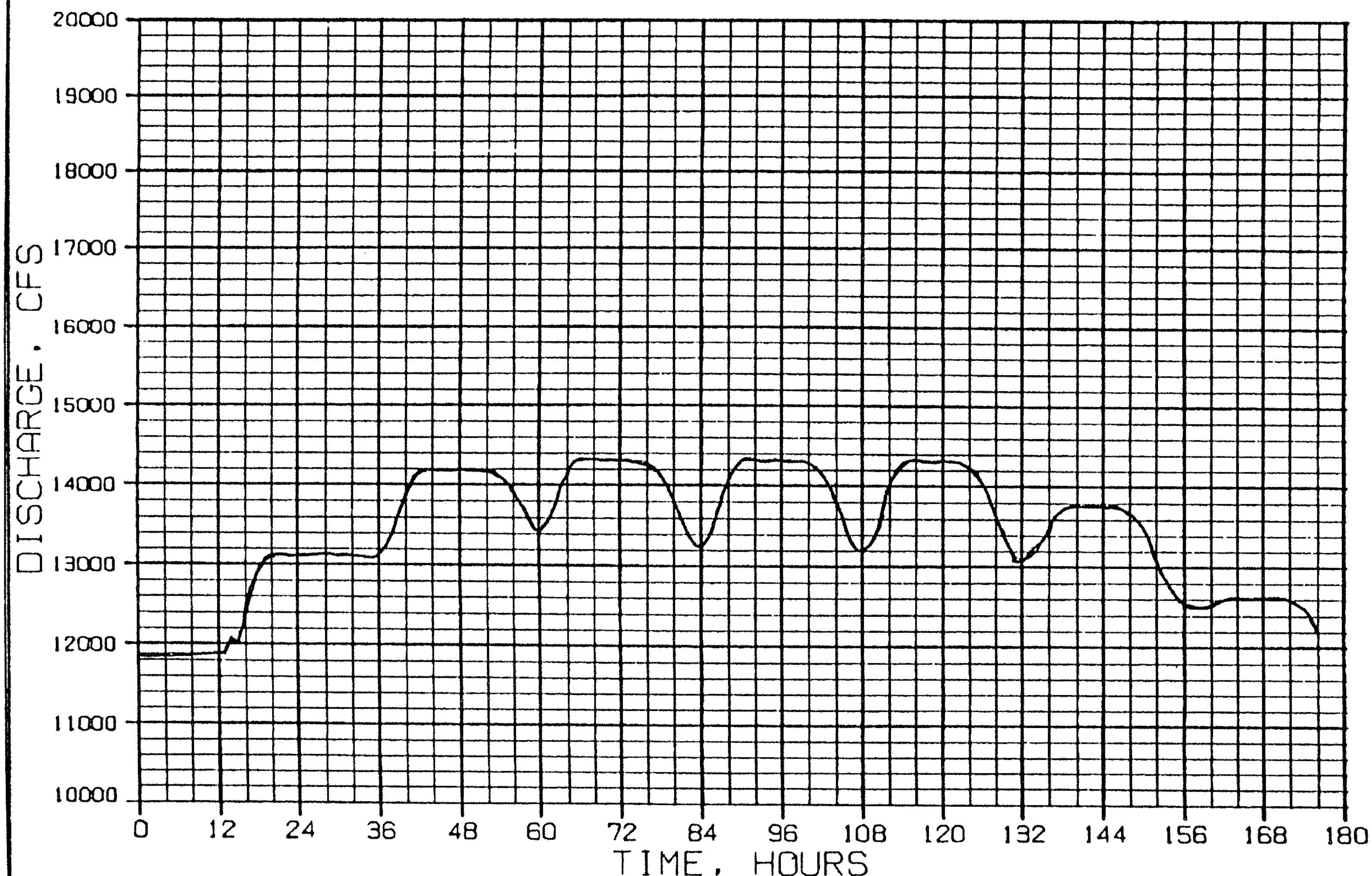
* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.20

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



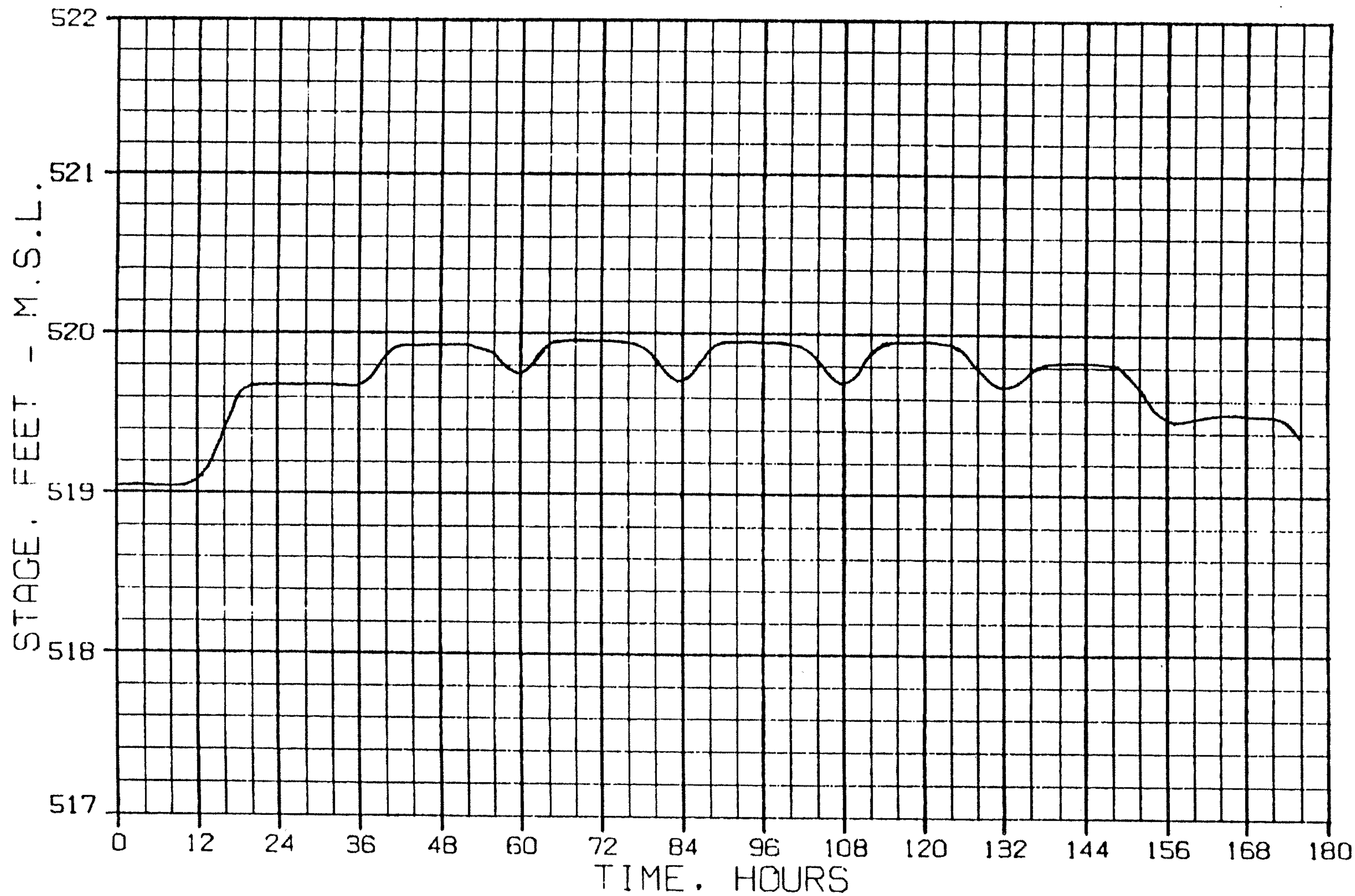
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE ACC *

DISCHARGE HYDROGRAPH
AT LRX-23, R.M. 120.26
(OXBOW II SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.21

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



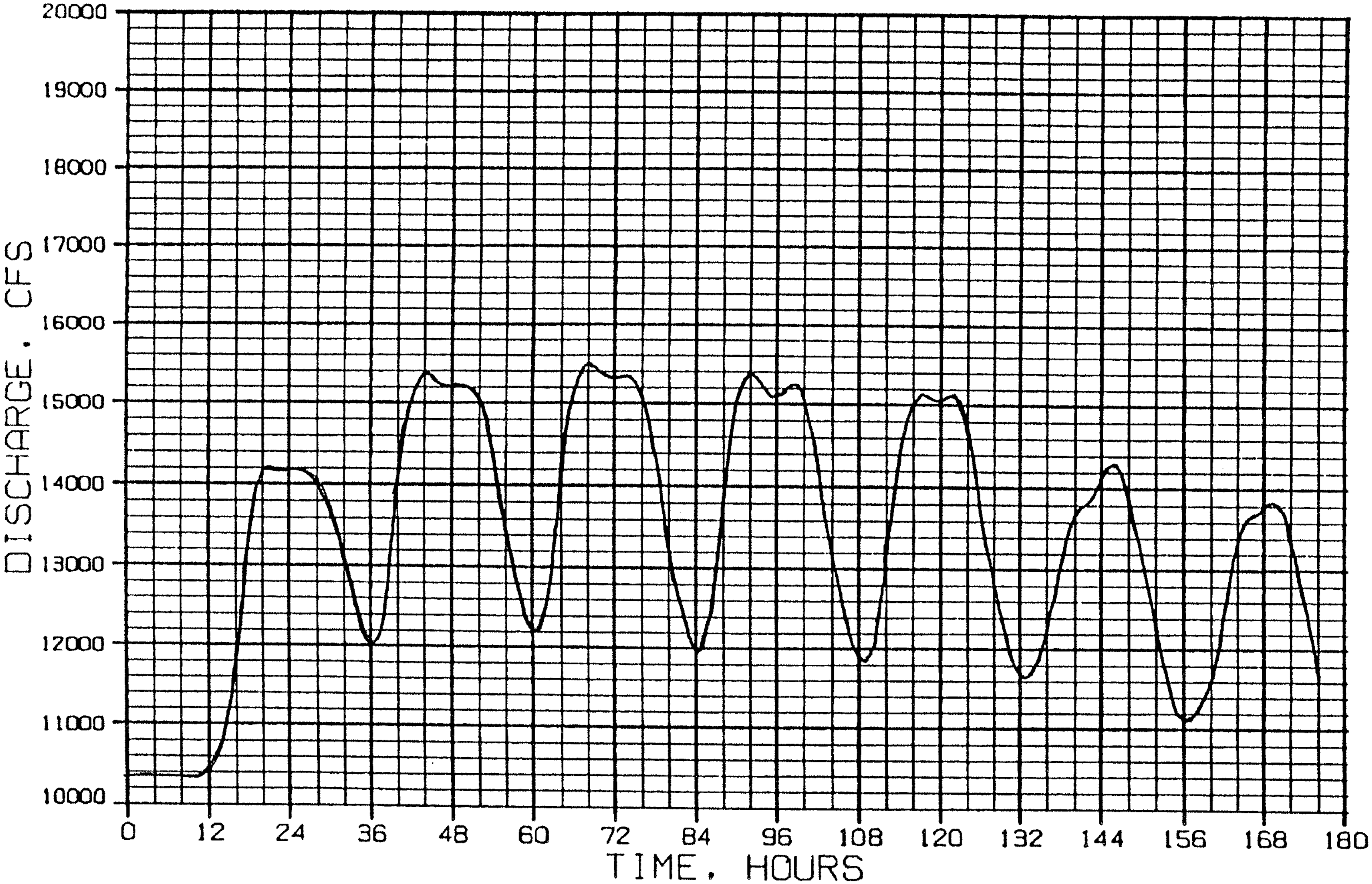
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE ACC *

RIVER STAGE HYDROGRAPH
AT LRX-23, R.M. 120.26
(OXBOW II SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.22

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



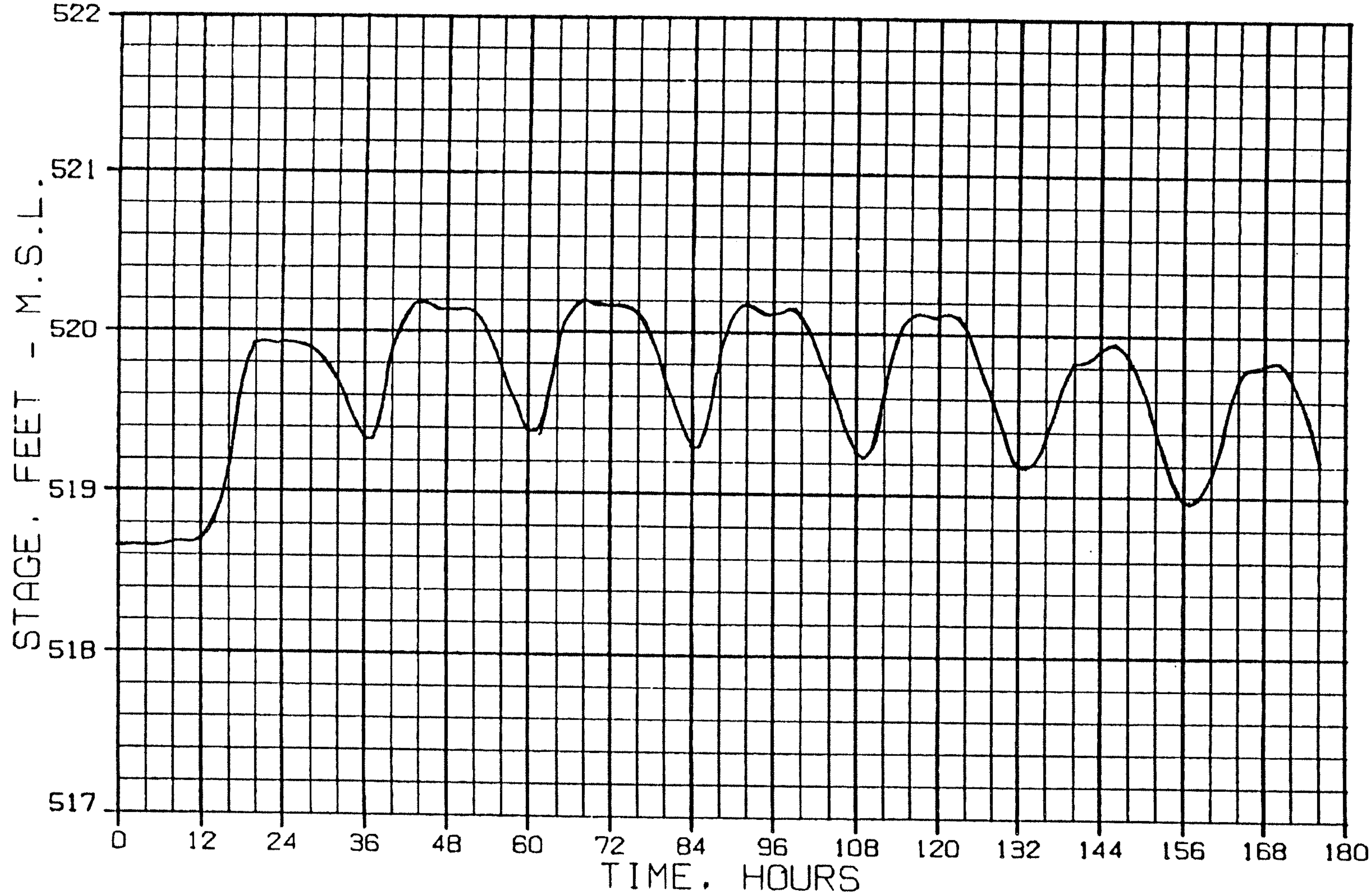
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE ACD ✱

DISCHARGE HYDROGRAPH
AT LRX-23, R.M. 120.26
(OXBOW II SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.23

✱ SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



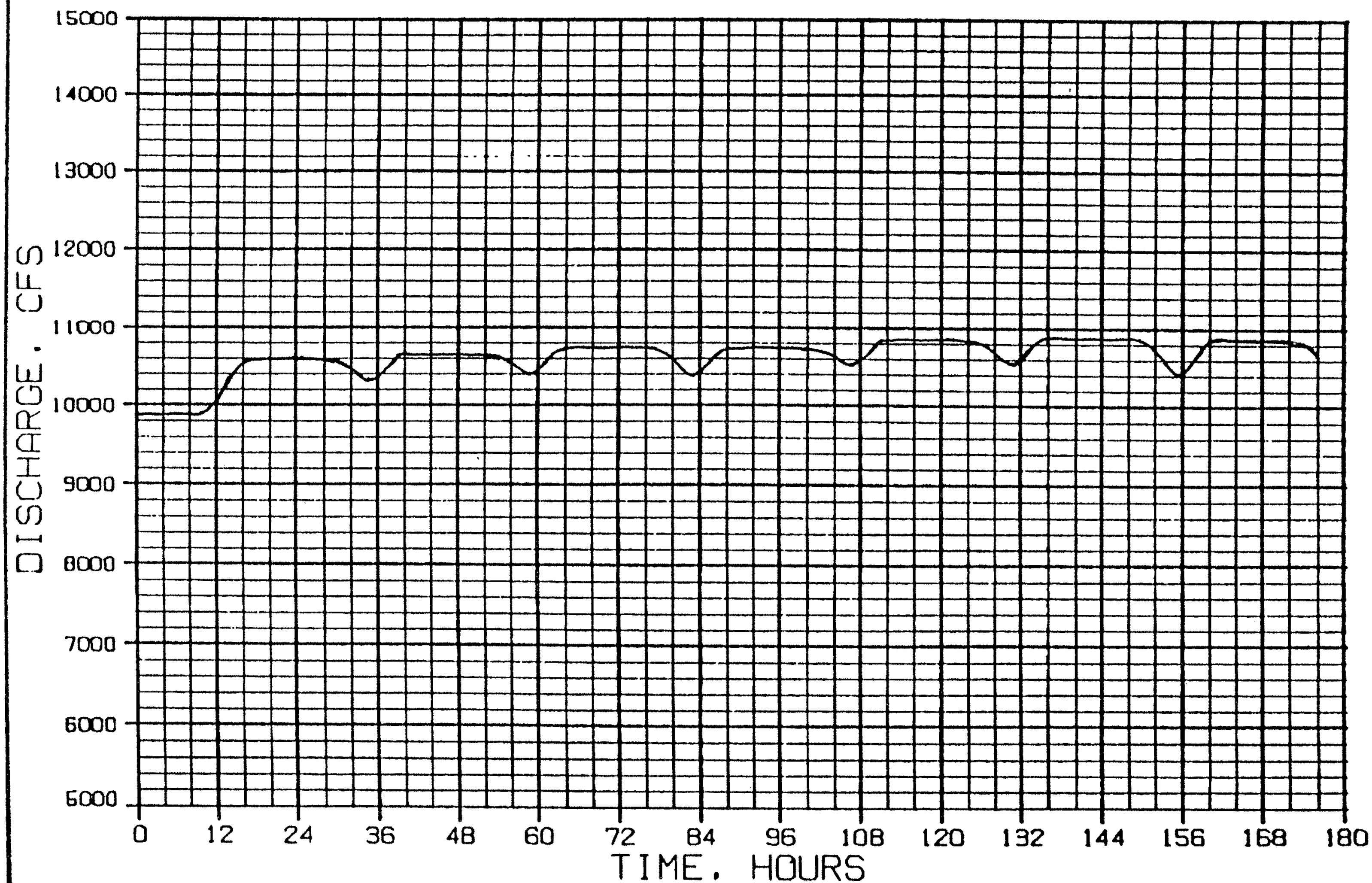
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE ACD *

RIVER STAGE HYDROGRAPH
AT LRX-23, R.M. 120.26
(OXBOW II SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.24

* SEE TABLE E.2.4.5 FOR DEFINATION OF "CASE"



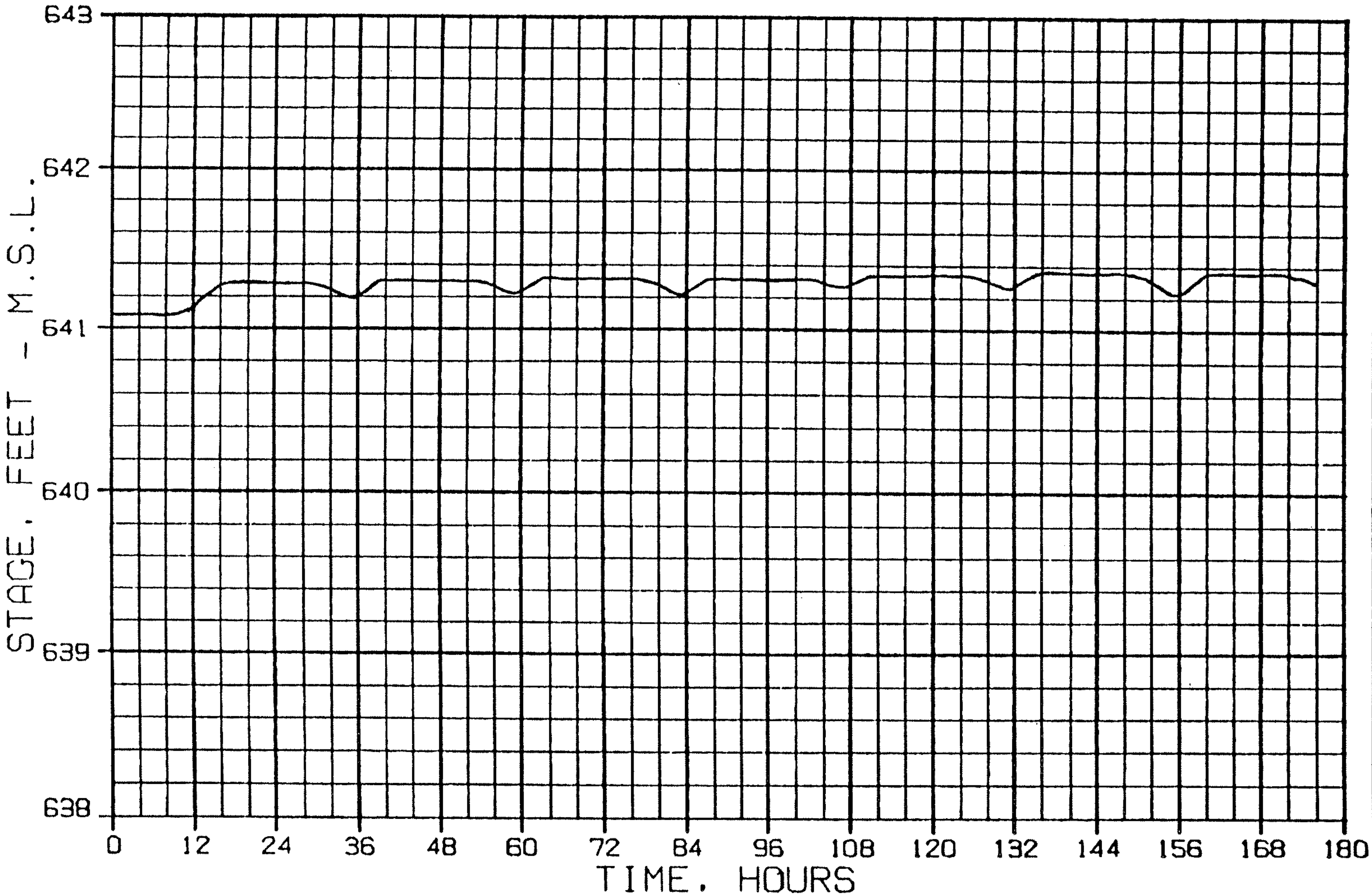
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE CBA *

DISCHARGE HYDROGRAPH
AT LRX-38, R.M. 132.90
(4TH OF JULY CREEK SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.25

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



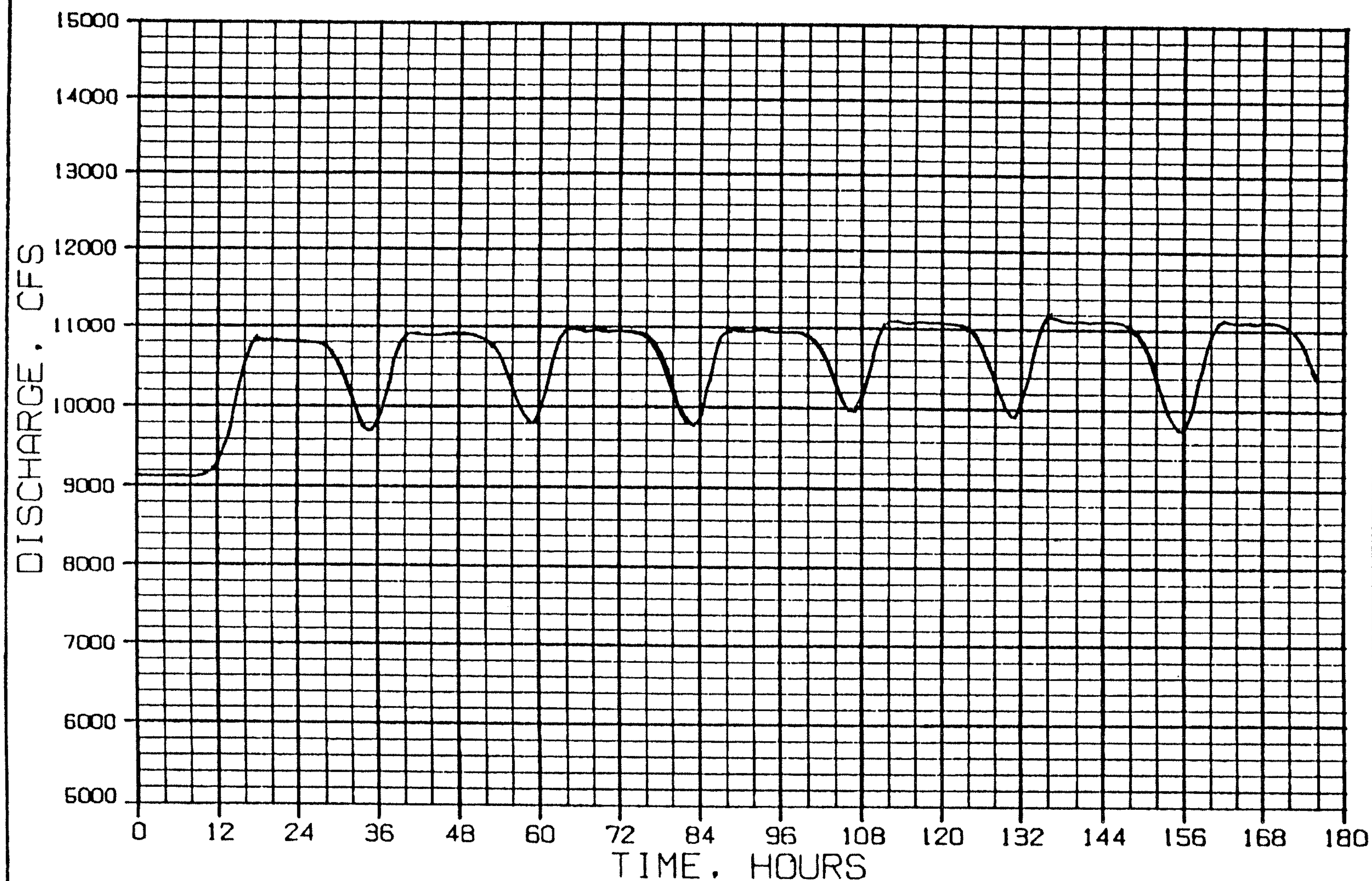
WATANA OPERATIONS ONLY
GUIDE E-VI.
CASE CBA *

RIVER STAGE HYDROGRAPH
AT LRX-38, R.M. 132.90
(4TH OF JULY CREEK SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.26

* SEE TABLE E.2.4.5 FOR DEFINATION OF "CASE"



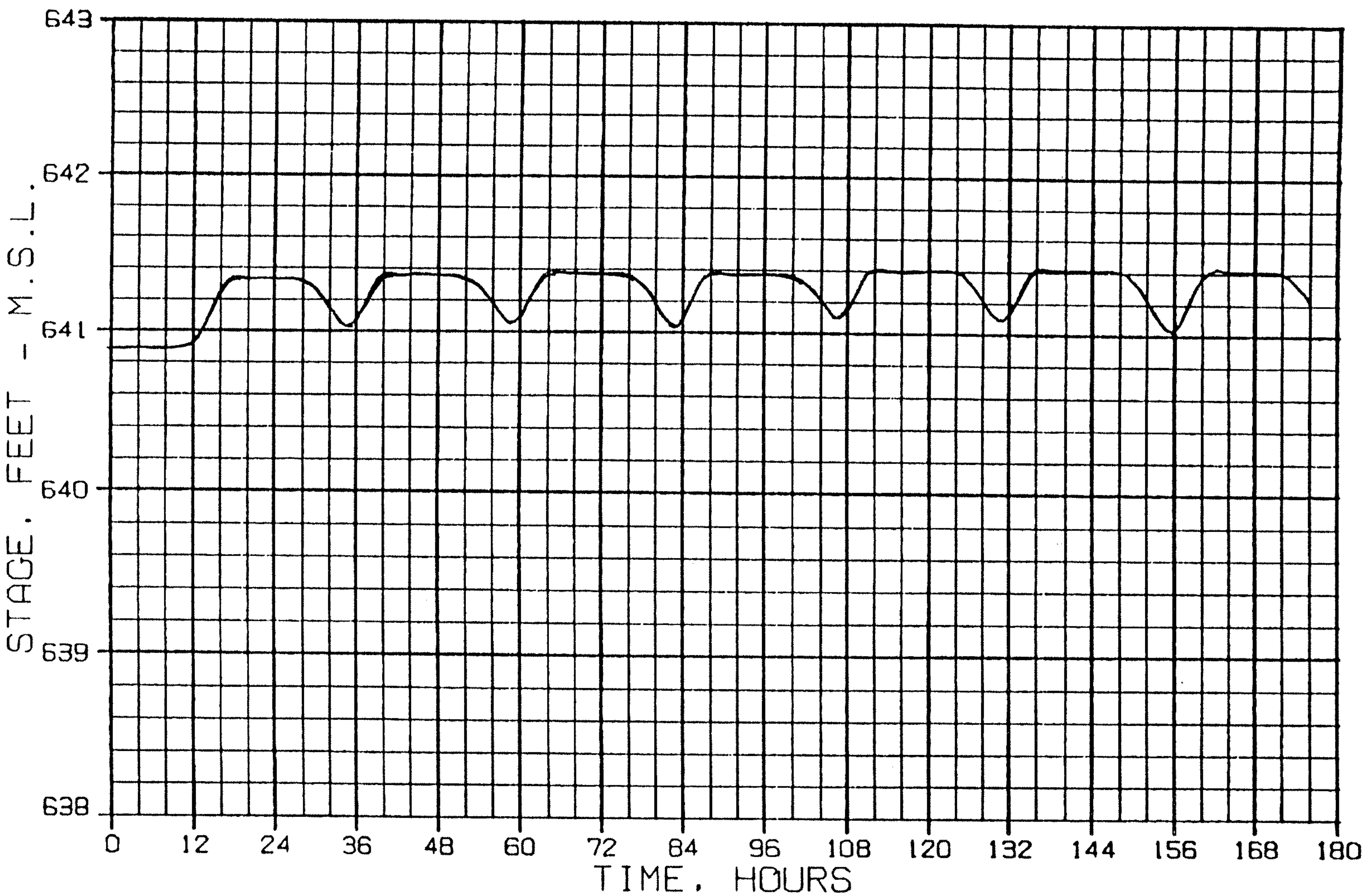
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE CCB *

DISCHARGE HYDROGRAPH
AT LRX-38, R.M. 132.90
(4TH OF JULY CREEK SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.27

* SEE TABLE E.2.4.5 FOR DEFINATION OF "CASE"



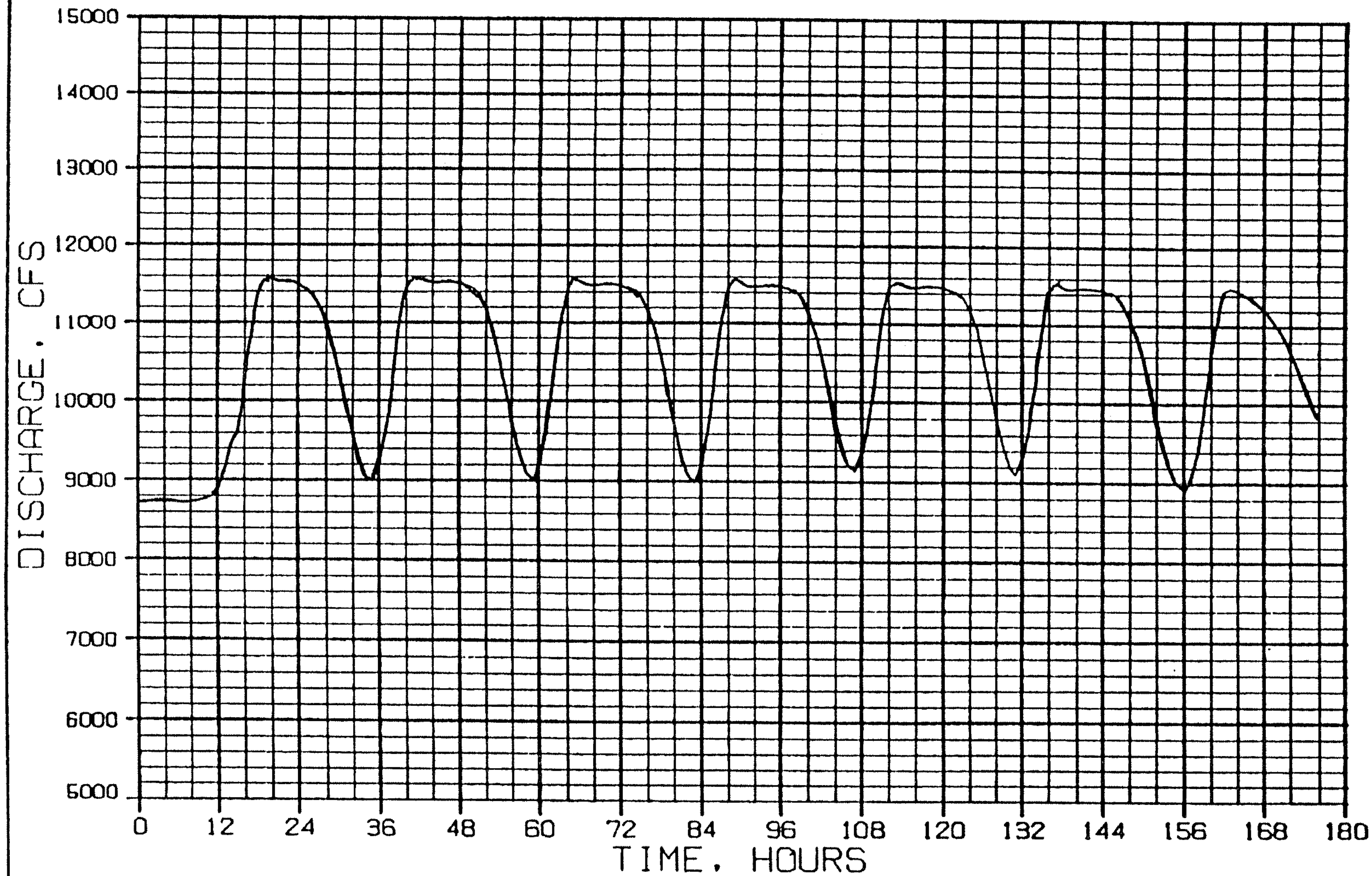
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE CCB *

RIVER STAGE HYDROGRAPH
AT LRX-38, R.M. 132.90
(4TH OF JULY CREEK SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.28

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



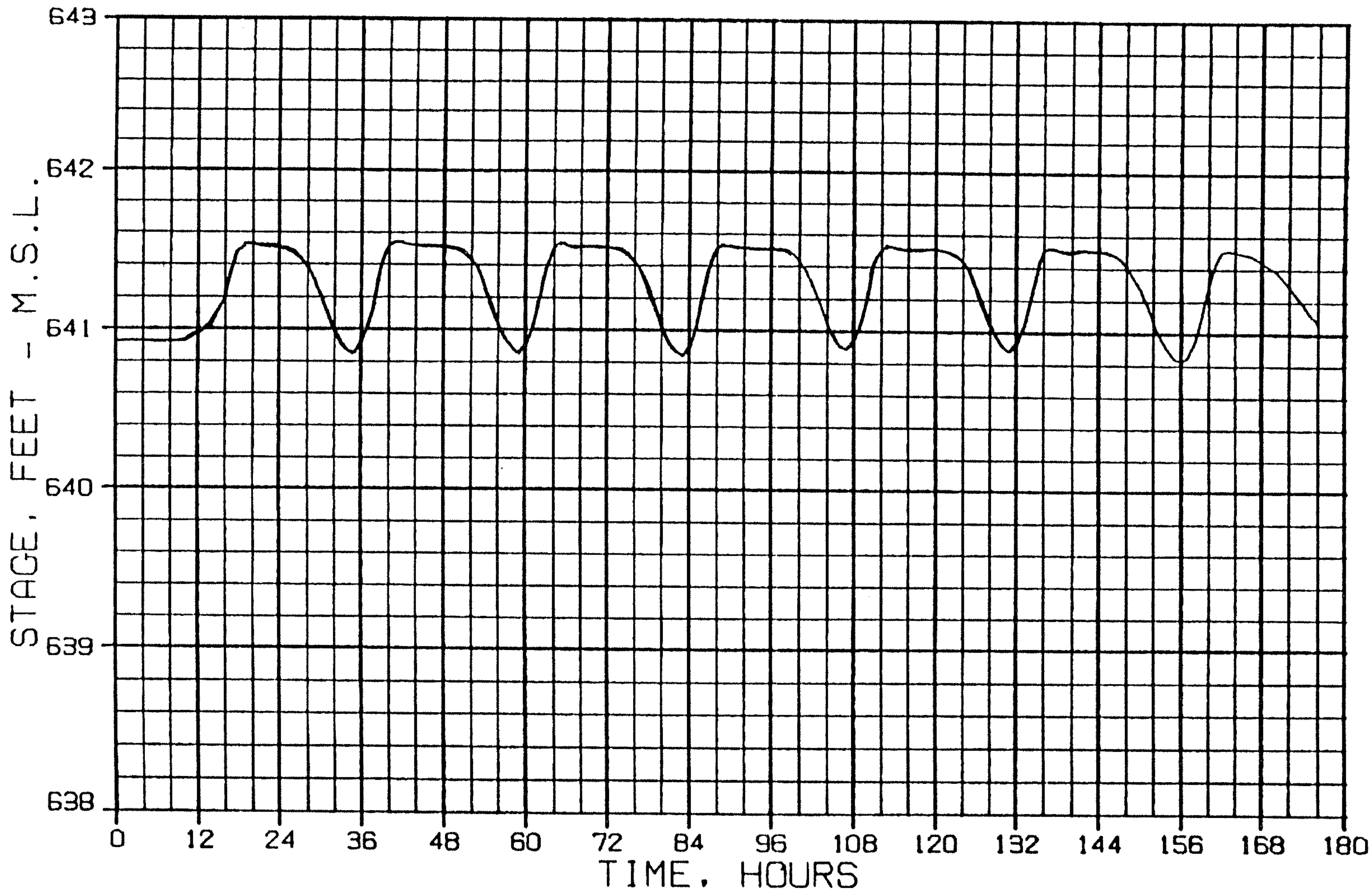
WATANA OPERATIONS ONLY
GUIDE E-VI,
CASE CCD *

DISCHARGE HYDROGRAPH
AT LRX-38, R.M. 132.90
(4TH OF JULY CREEK SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.29

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"



WATANA OPERATIONS ONLY
GUIDE E-VI.
CASE CCD *

RIVER STAGE HYDROGRAPH
AT LRX-38, R.M. 132.90
(4TH OF JULY CREEK SIDE CHANNEL)

HARZA-EBASCO SUSITNA JOINT VENTURE JULY, 1985

FIGURE E.2.4.30

* SEE TABLE E.2.4.5 FOR DEFINITION OF "CASE"

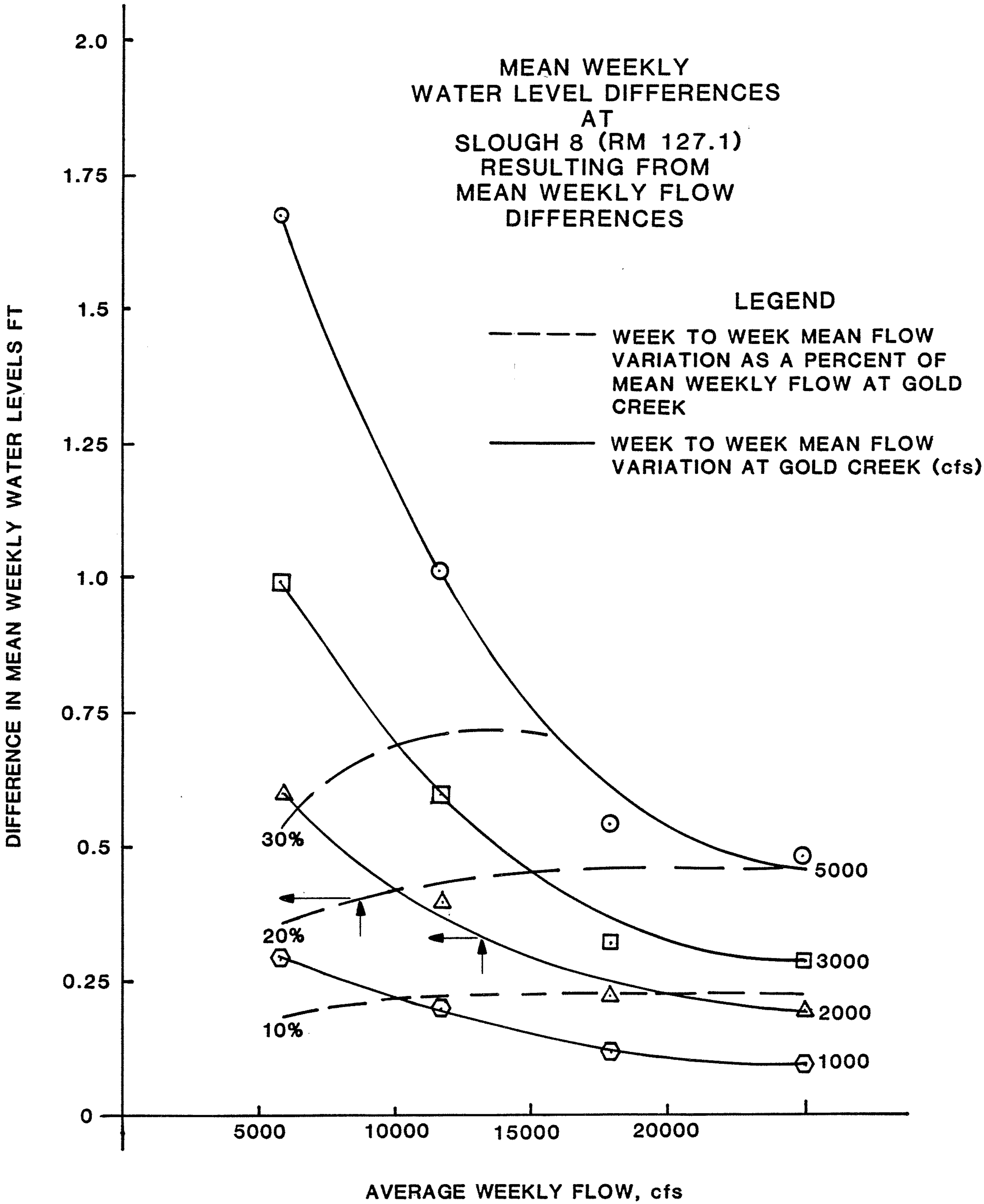


FIGURE E.2.4.31

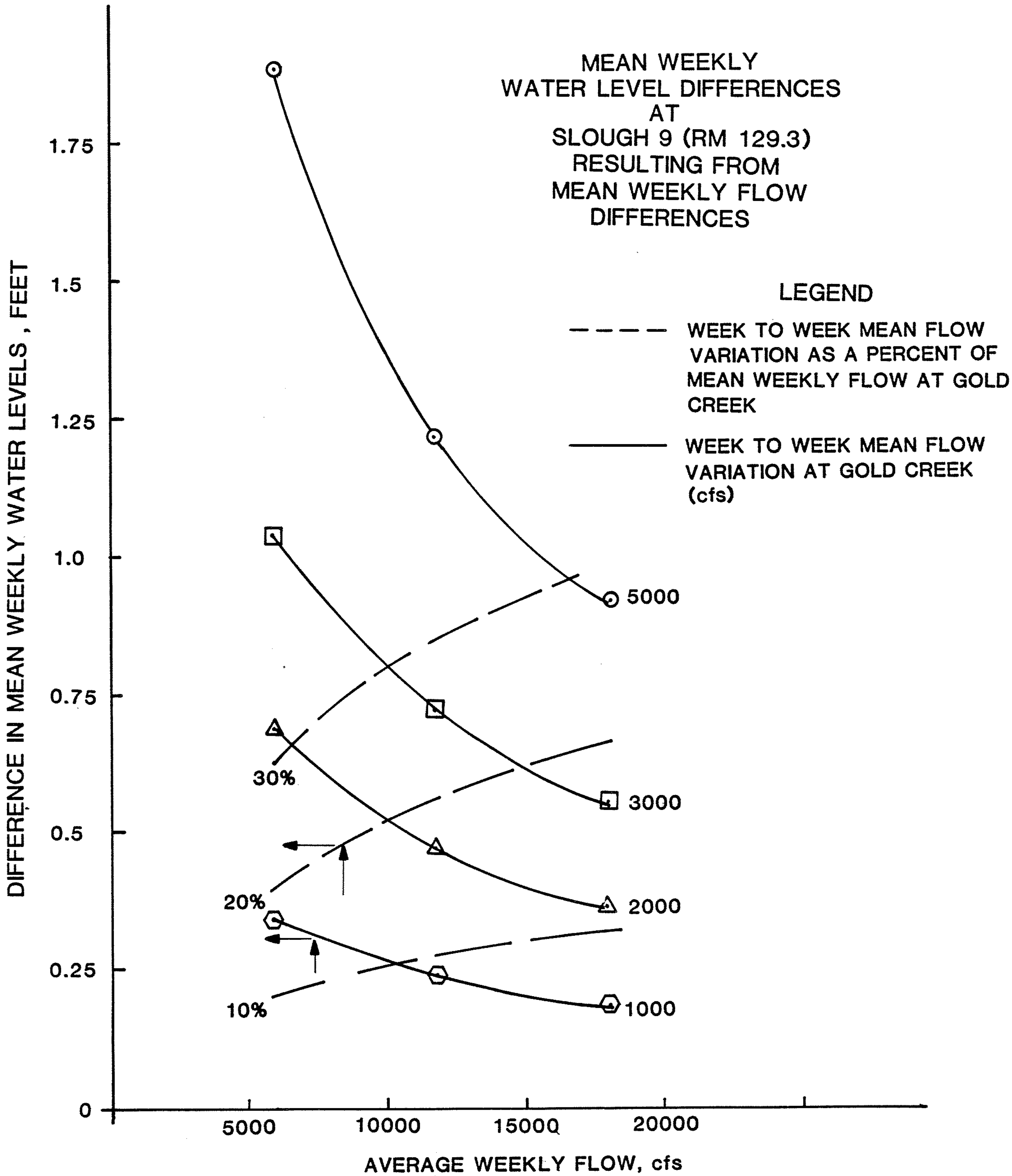


FIGURE E.2.4.32

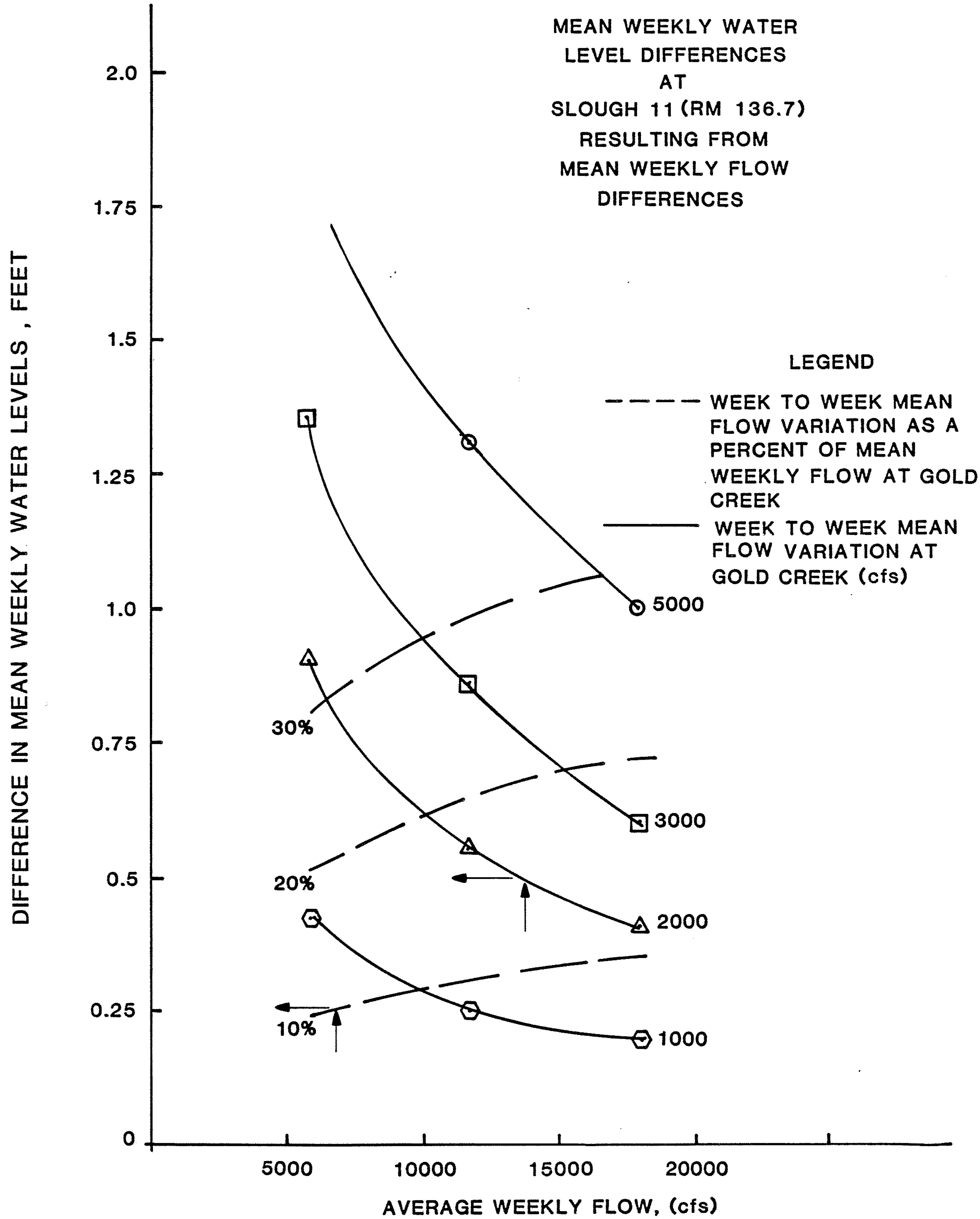


FIGURE E.2.4.33

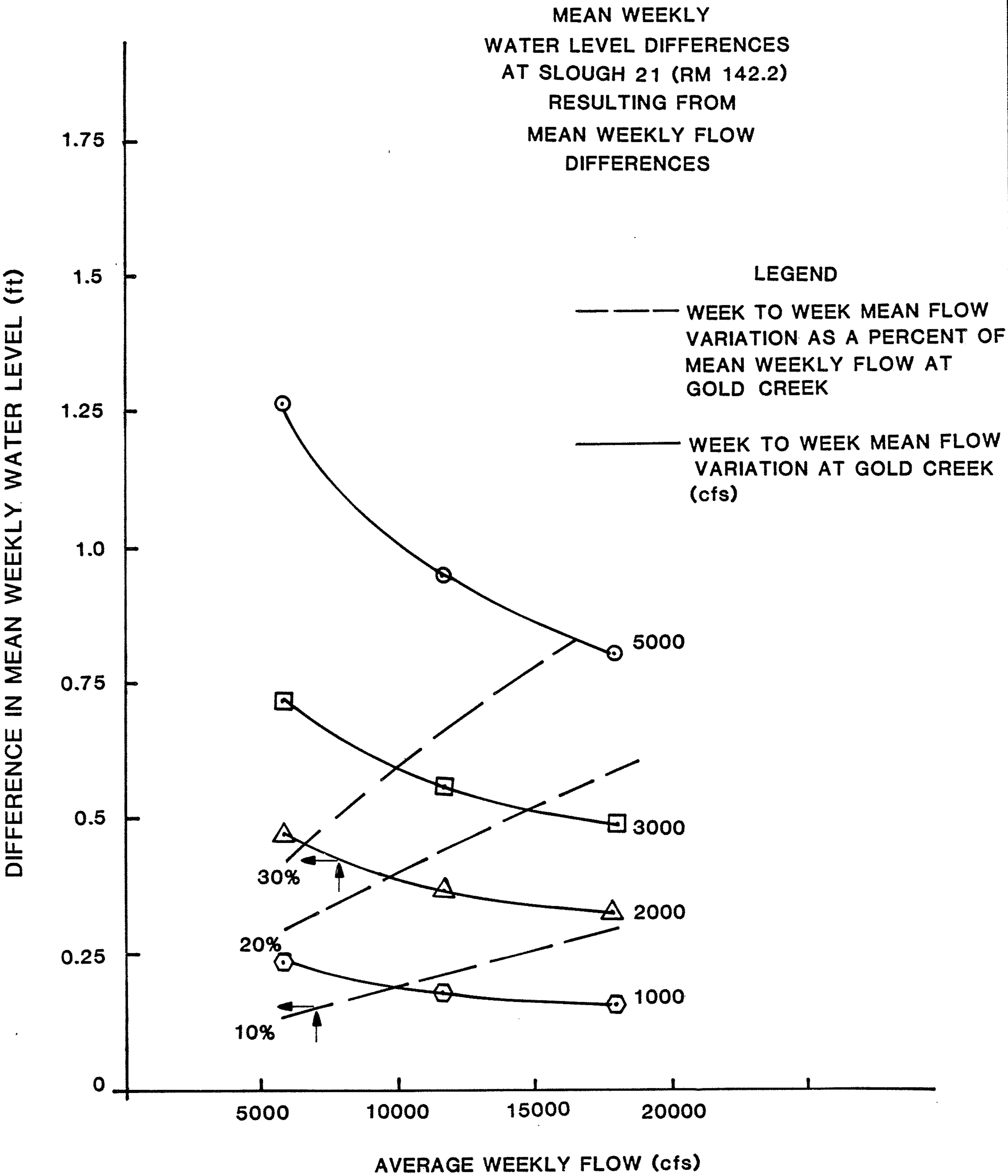
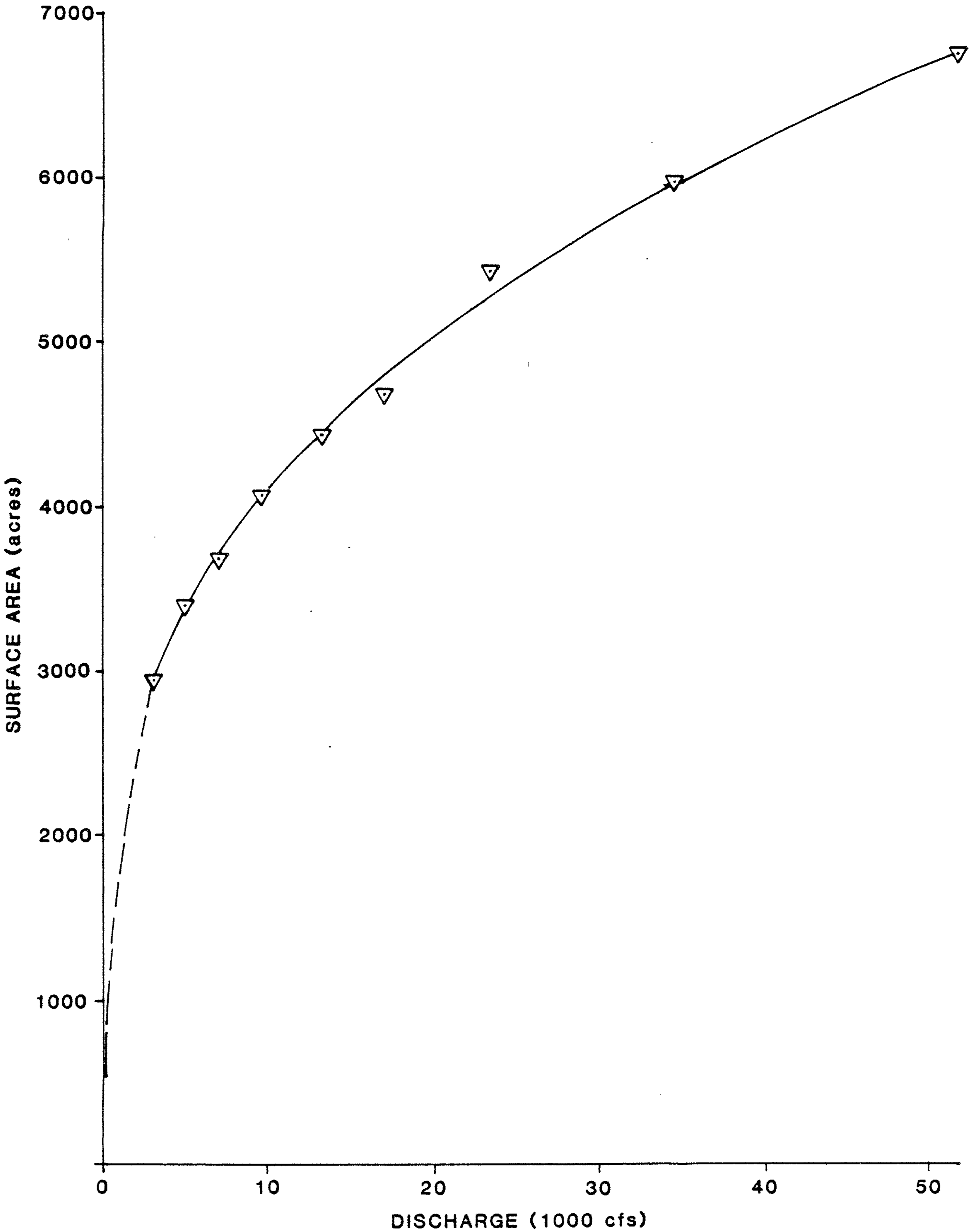
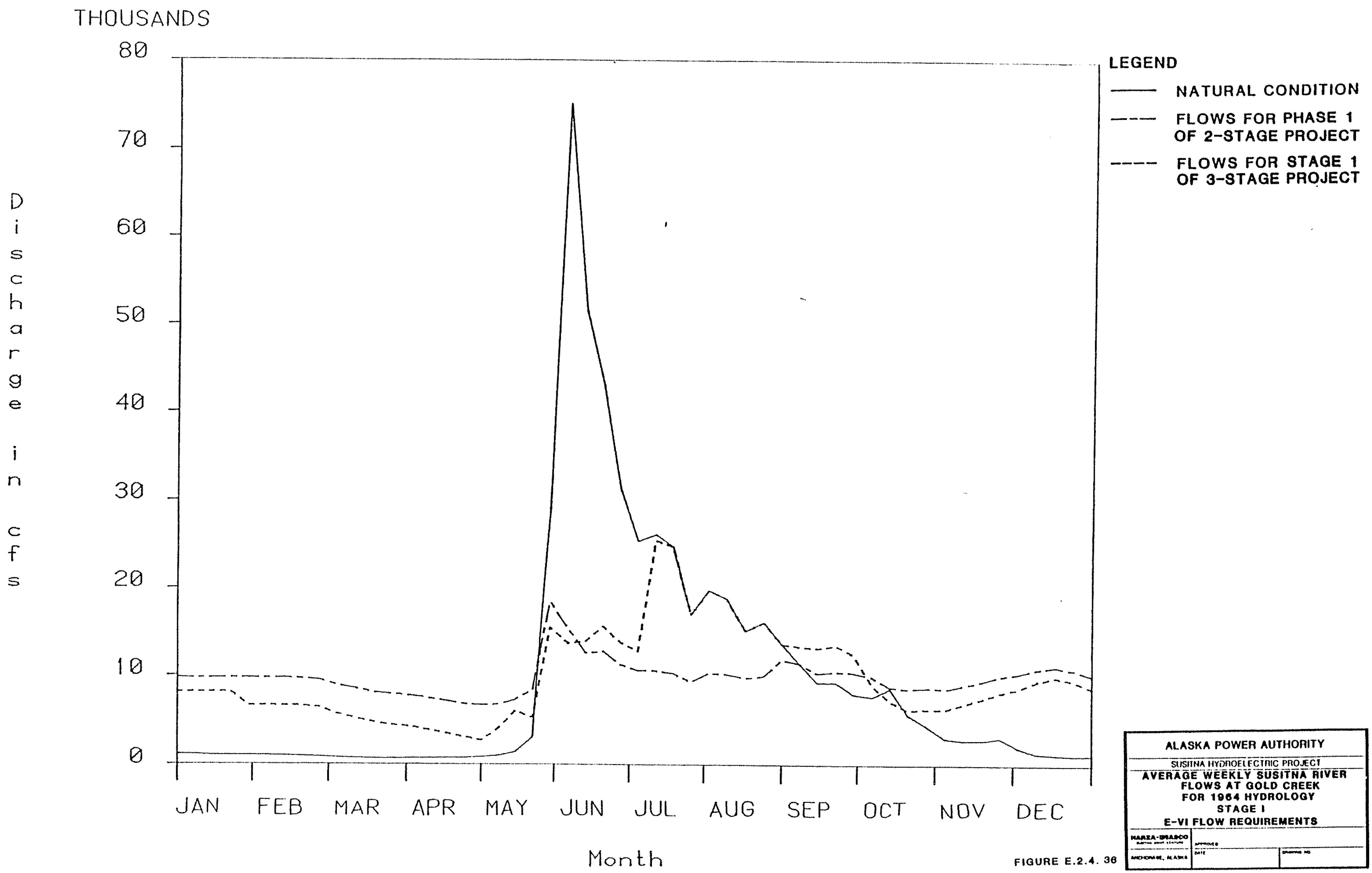


FIGURE E.2.4.34



SURFACE AREA VS DISCHARGE
SUSITNA RIVER BETWEEN
DEVIL CANYON AND CHULITNA RIVER

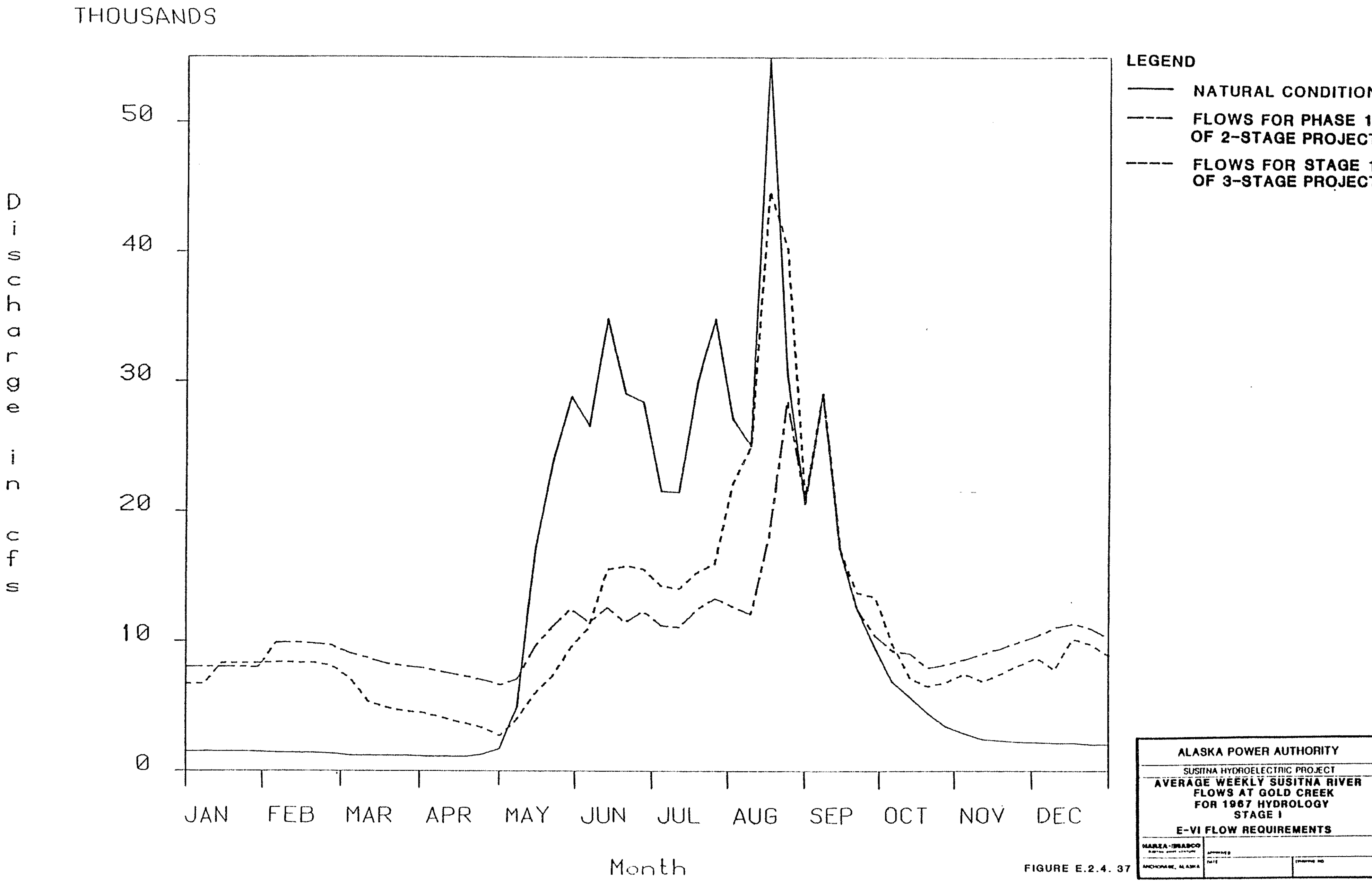
FIGURE E.2.4.35



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1964 HYDROLOGY STAGE I
E-VI FLOW REQUIREMENTS

HARZA-EBASCO

FIGURE E.2.4. 36



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1967 HYDROLOGY STAGE I

E-VI FLOW REQUIREMENTS

FIGURE E.2.4. 37

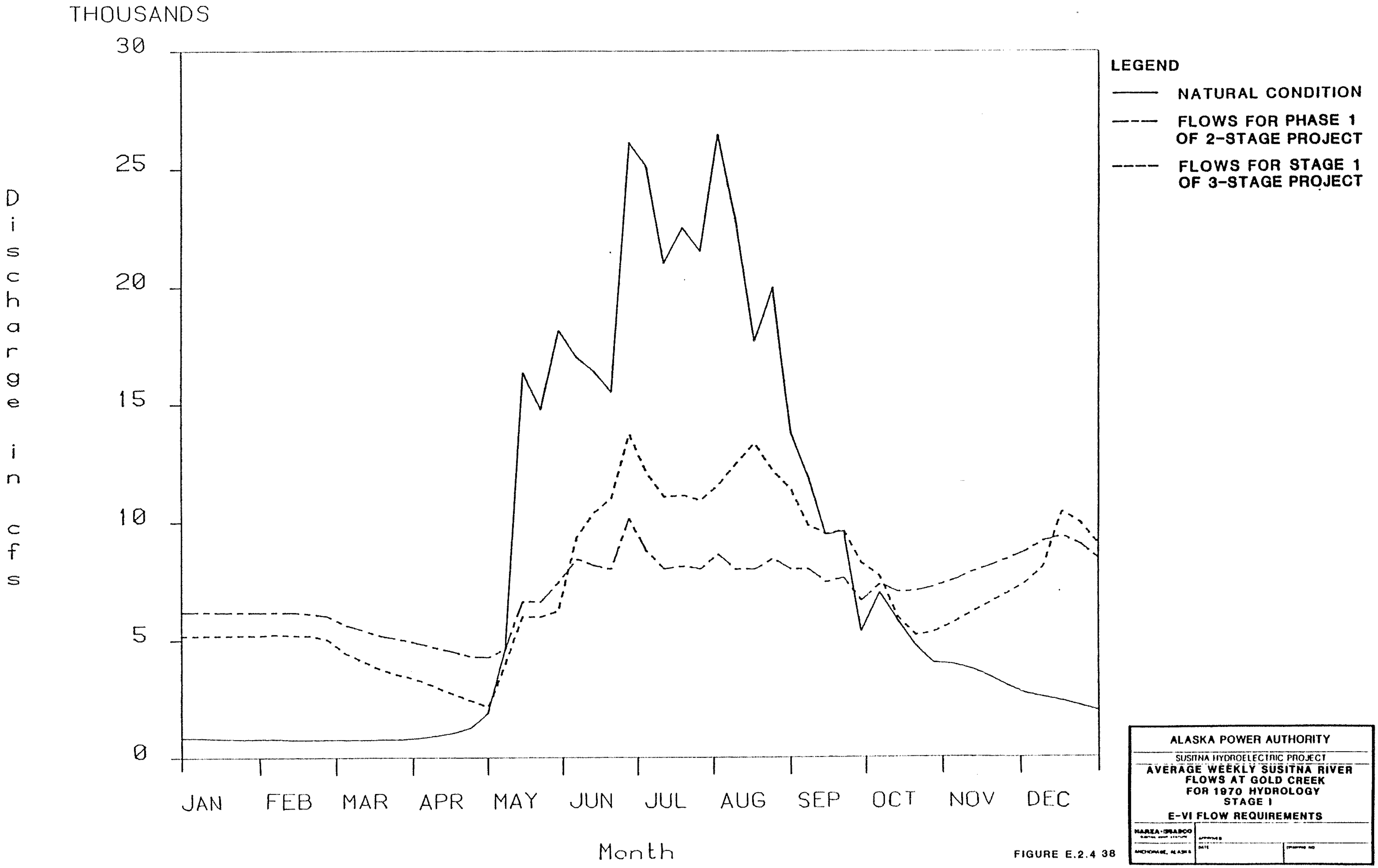


FIGURE E.2.4 38

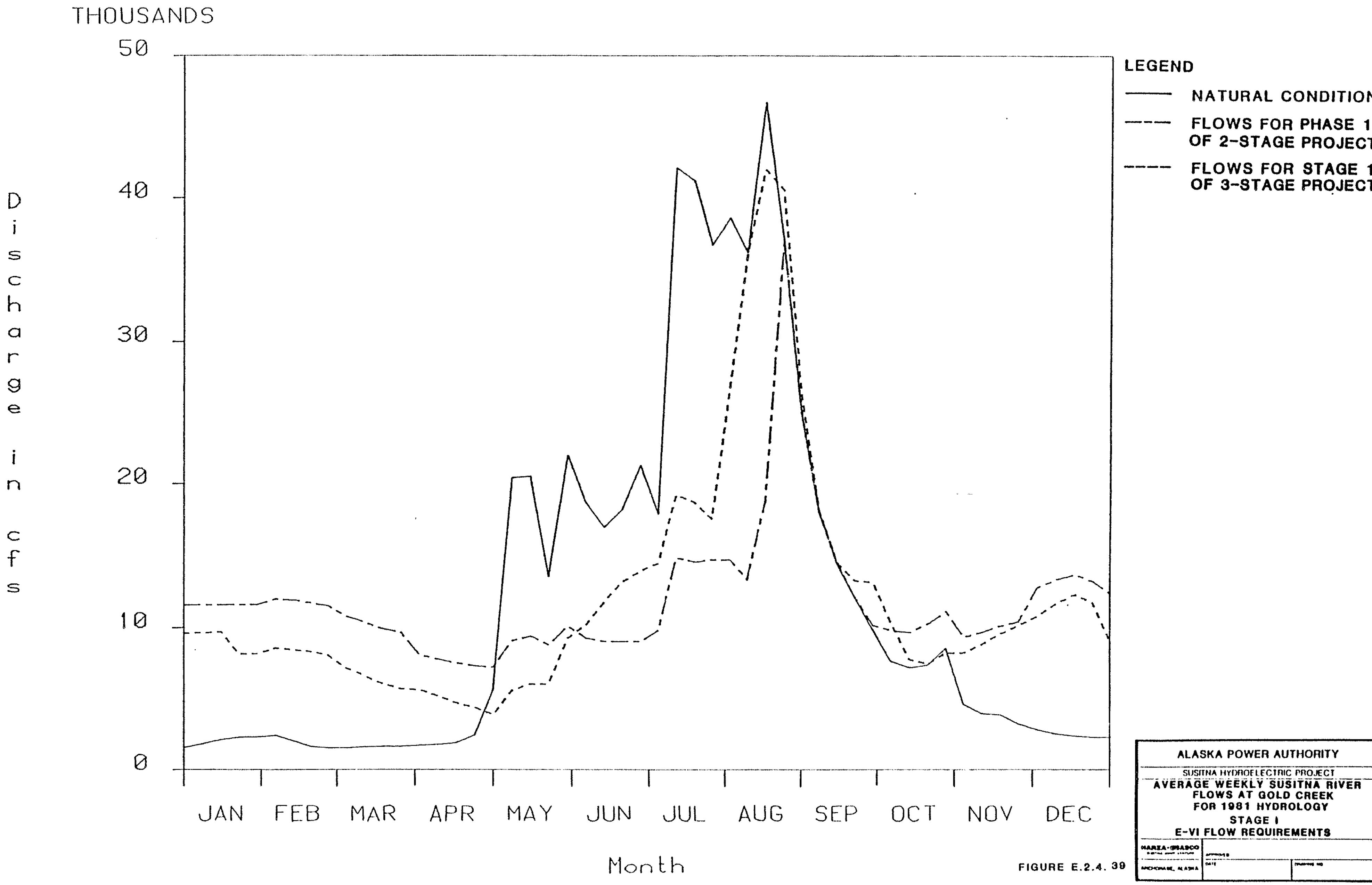
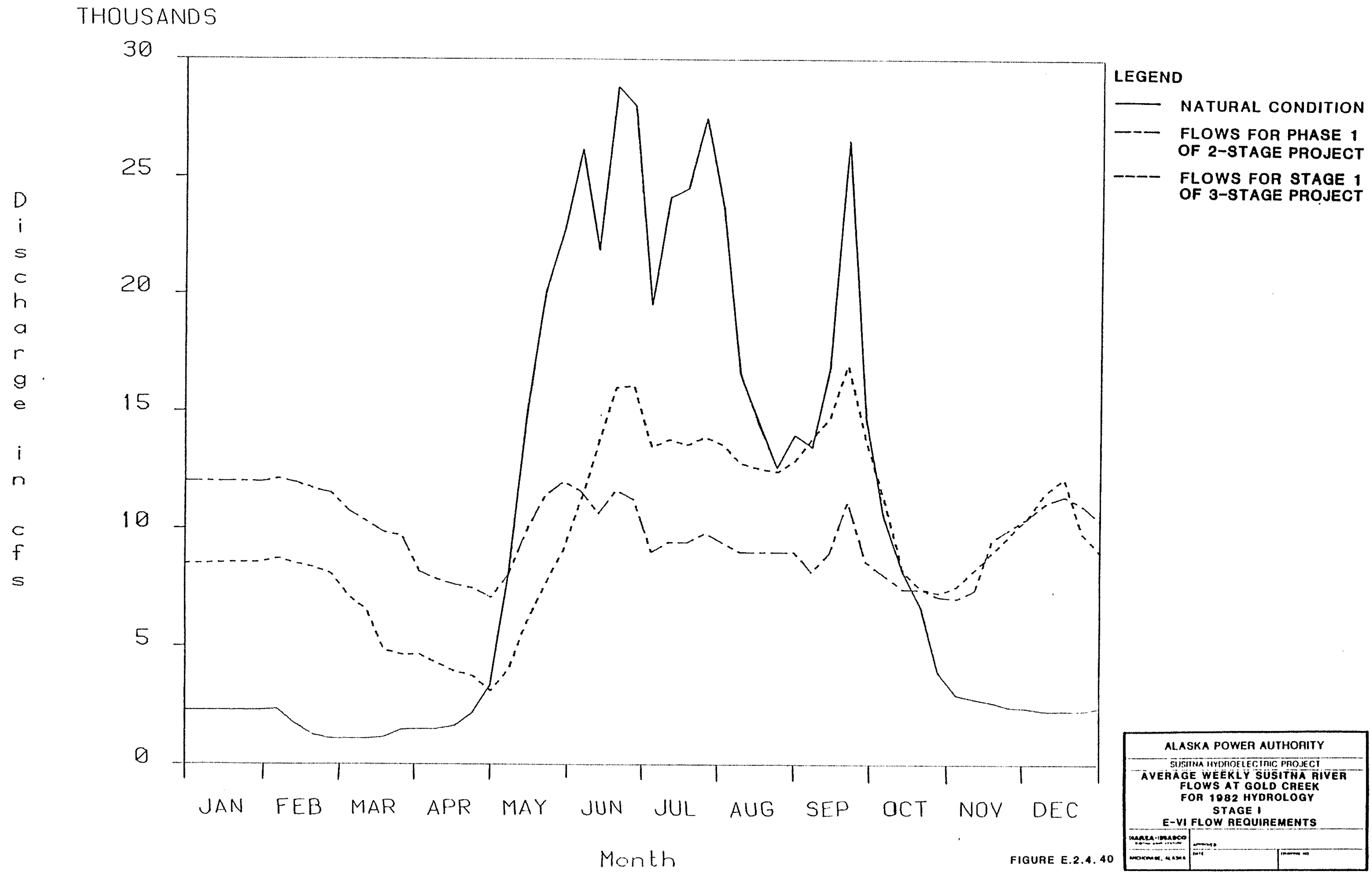


FIGURE E.2.4. 39

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1981 HYDROLOGY
STAGE I
E-VI FLOW REQUIREMENTS

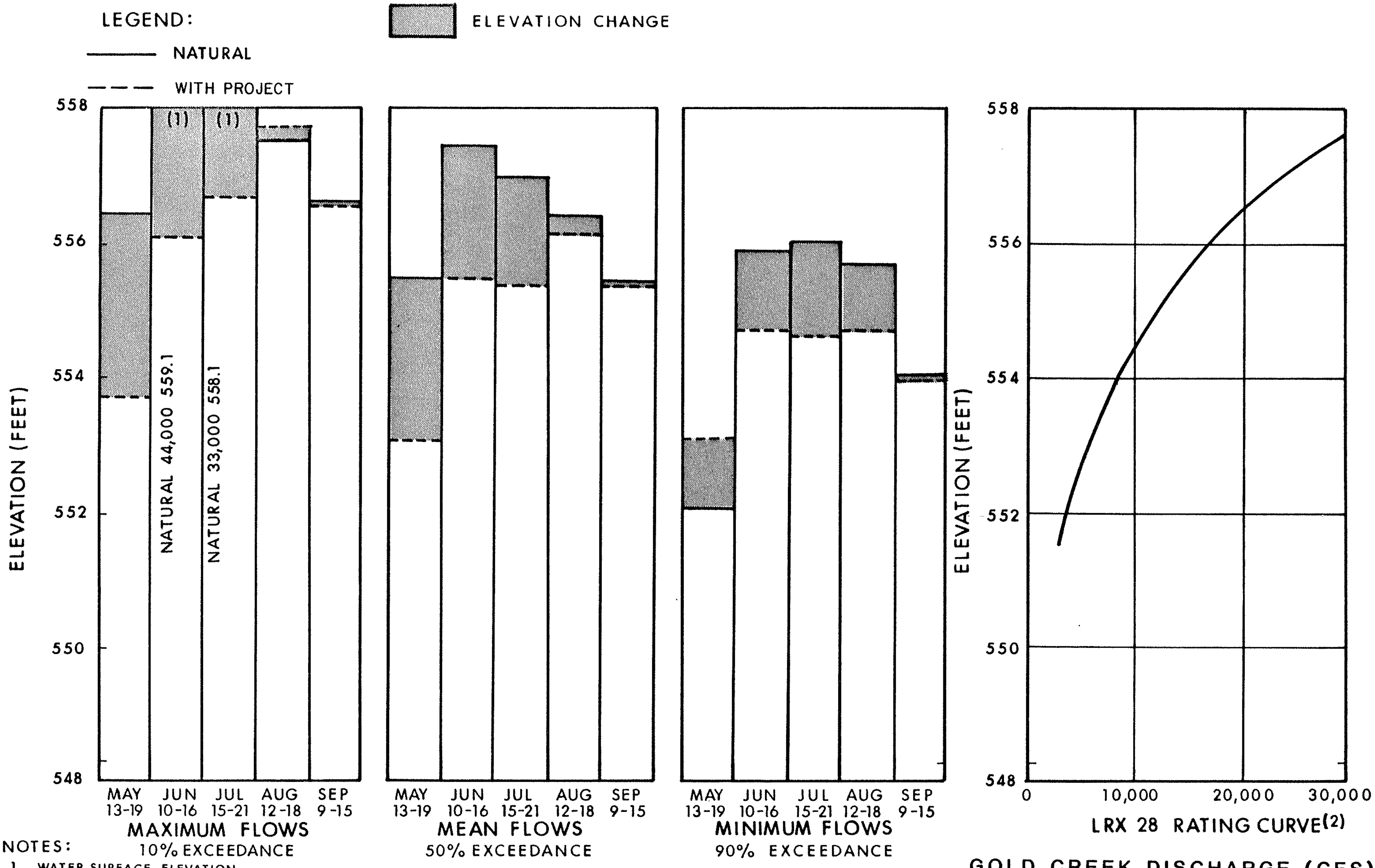
HARZA-EBASCO
ANCHORAGE, ALASKA



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1982 HYDROLOGY
STAGE I
E-VI FLOW REQUIREMENTS

HARZA-EBASCO

FIGURE E.2.4.40

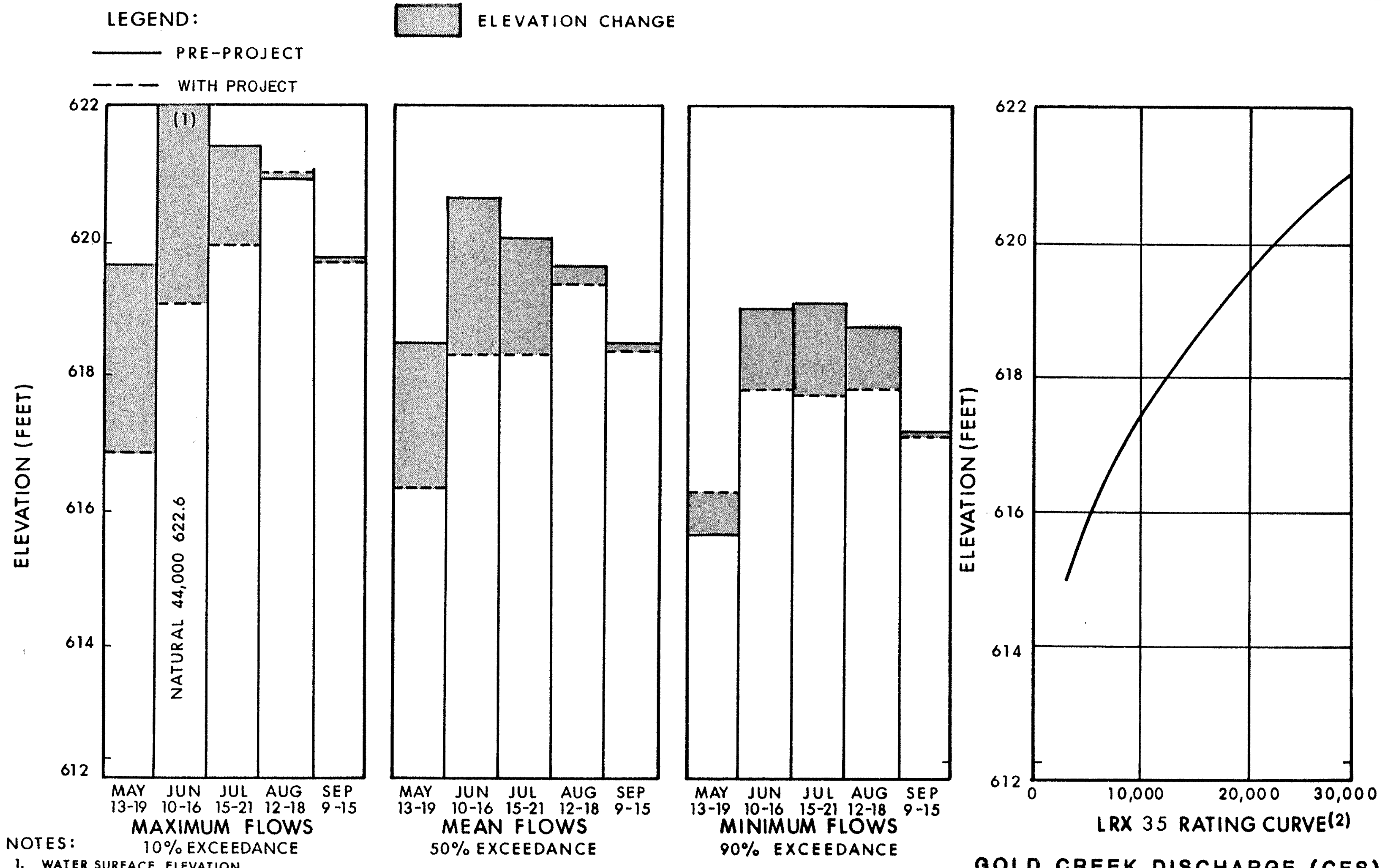


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 124.4, STAGE I

FIGURE 2.4.41

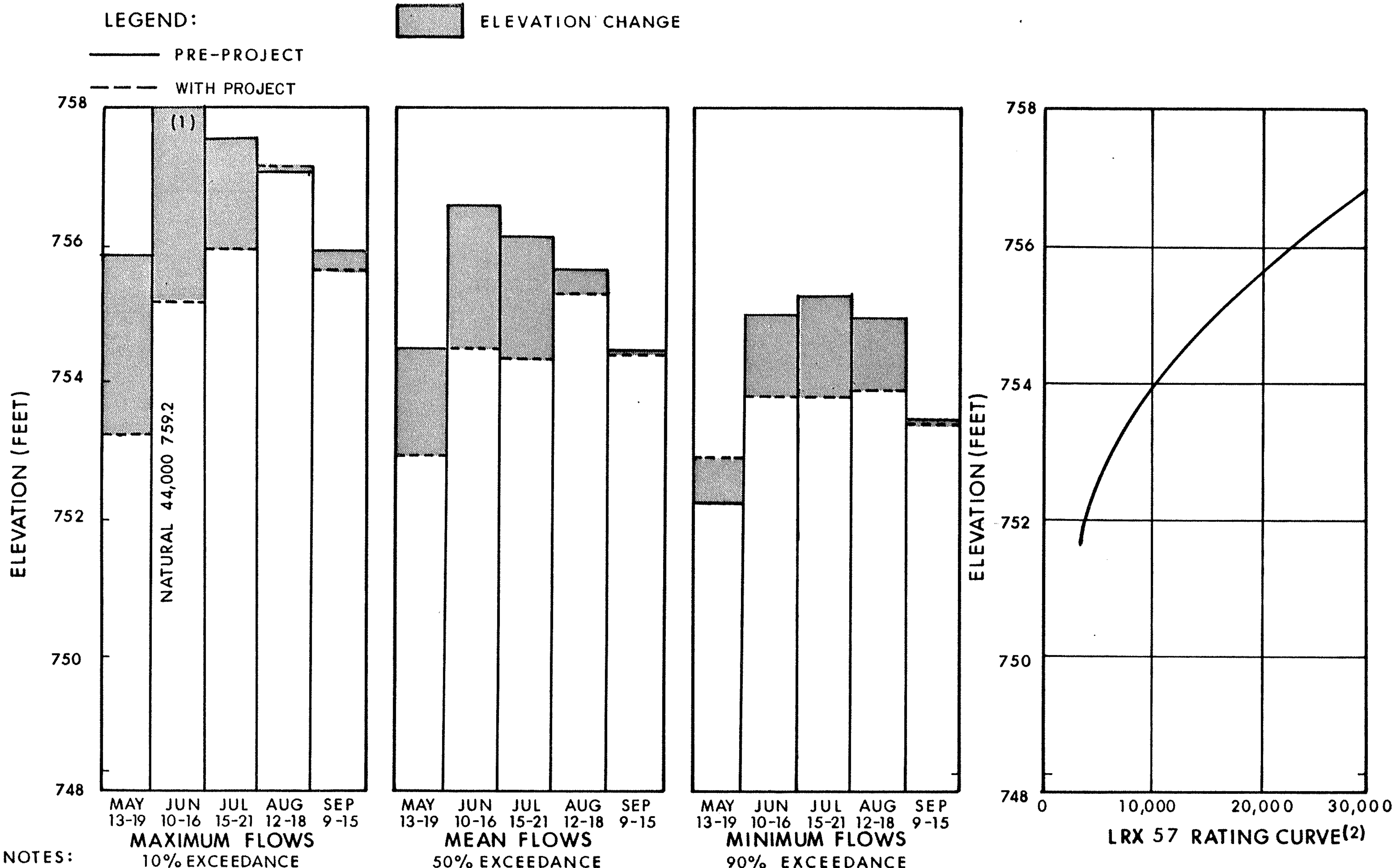


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 130.9, STAGE I

FIGURE E.2.4.42

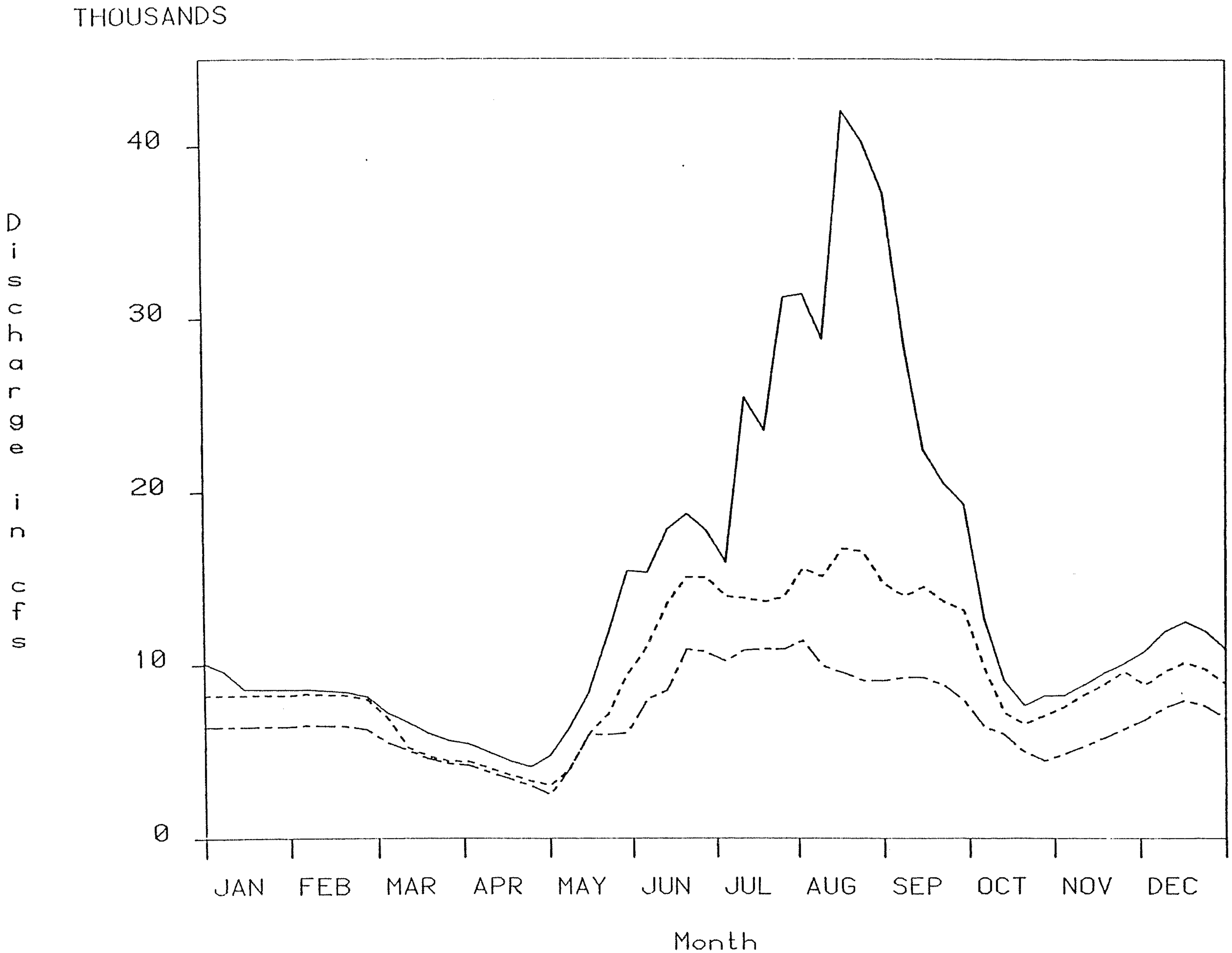


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 142.3, STAGE I

FIGURE E.2.4.43



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 1 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMENTS

LEGEND

——— 6% EXCEEDENCE FLOWS

- - - - 50% EXCEEDENCE FLOW

— — — 97% EXCEEDENCE FLOWS

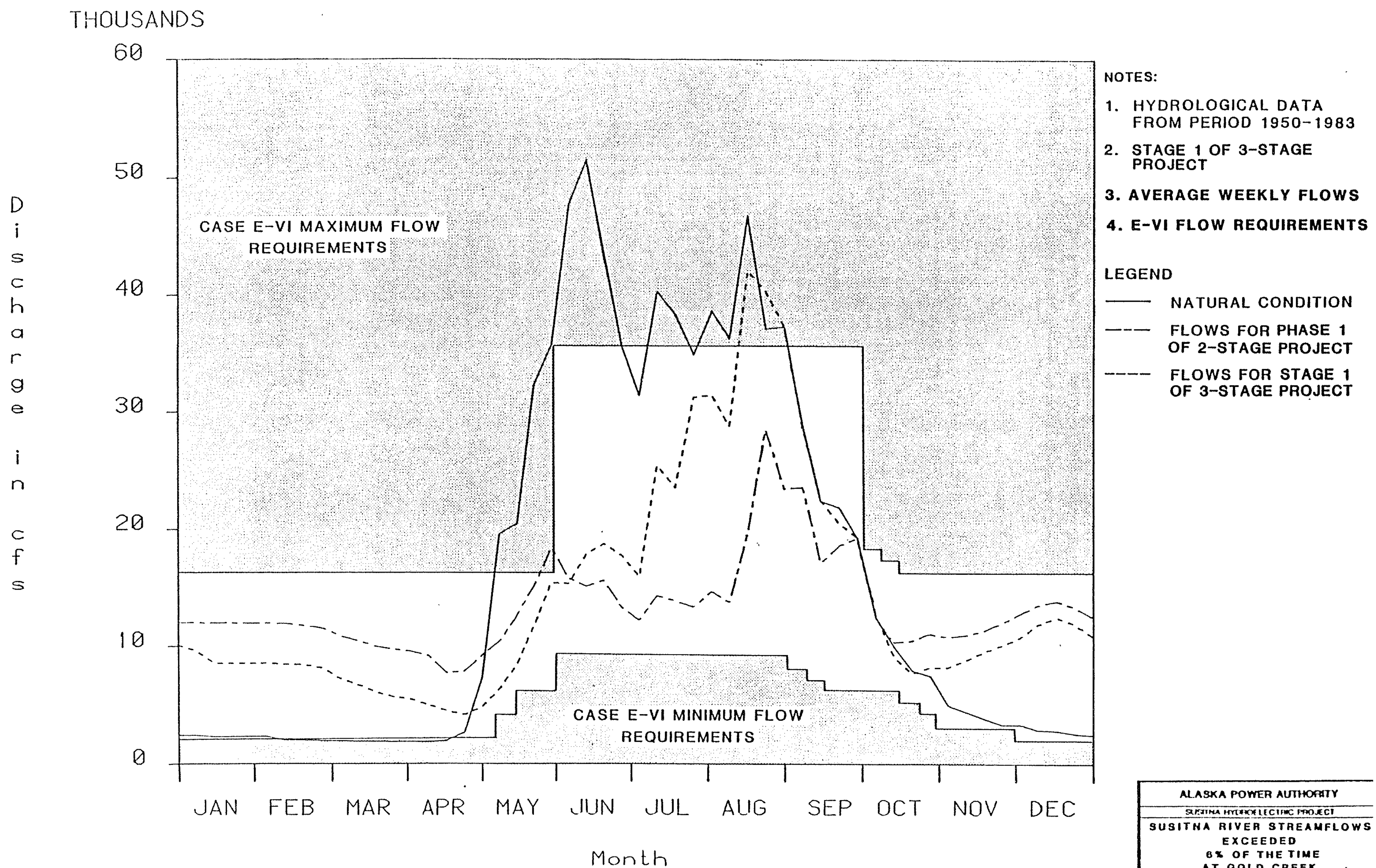
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6%,50% AND 97% OF THE TIME AT GOLD CREEK

HARZA-EBASCO

FIGURE E.2.4.44

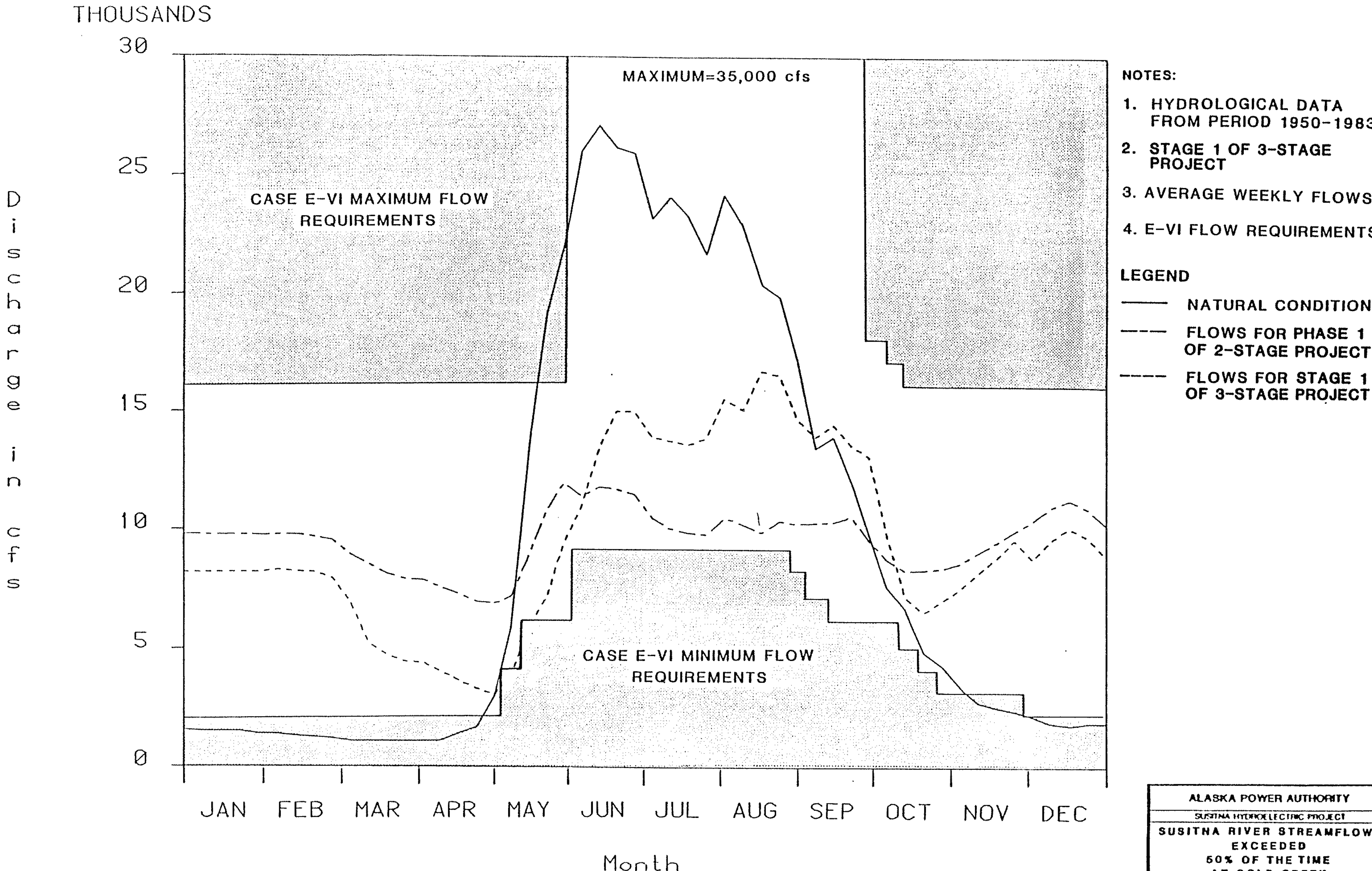


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6% OF THE TIME AT GOLD CREEK

FIGURE E.2.4.45

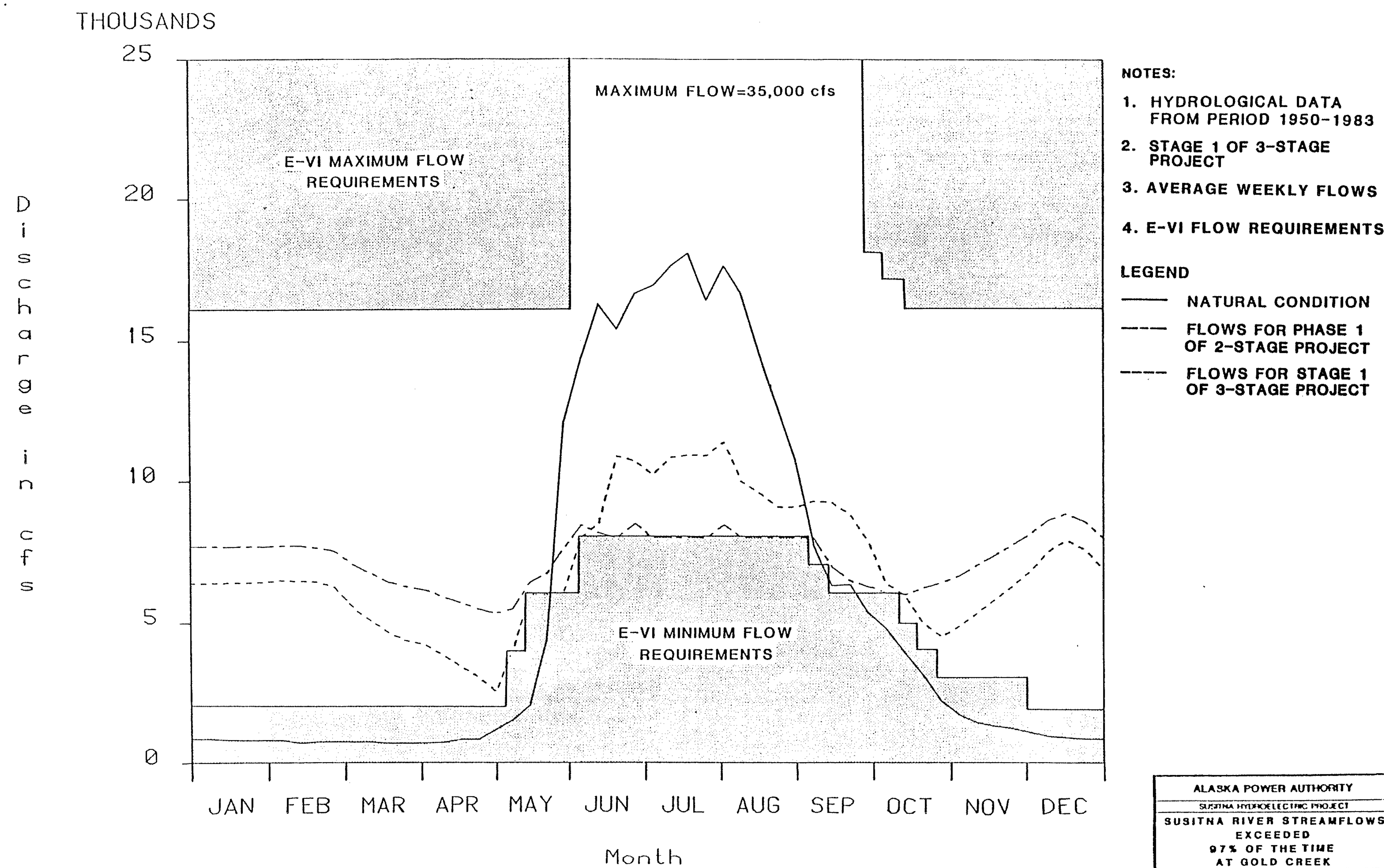


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME AT GOLD CREEK

FIGURE E.2.4. 46

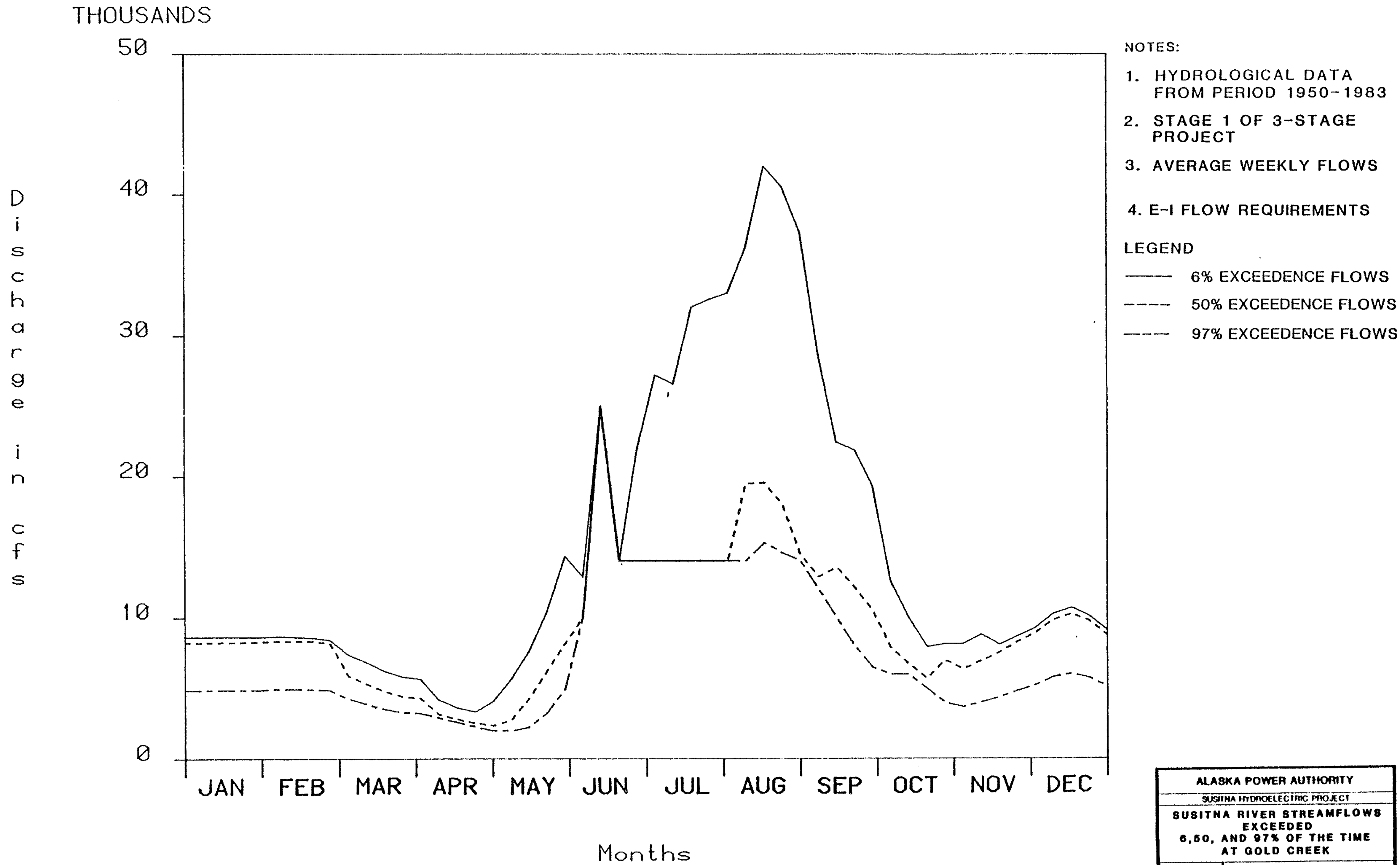


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 97% OF THE TIME AT GOLD CREEK

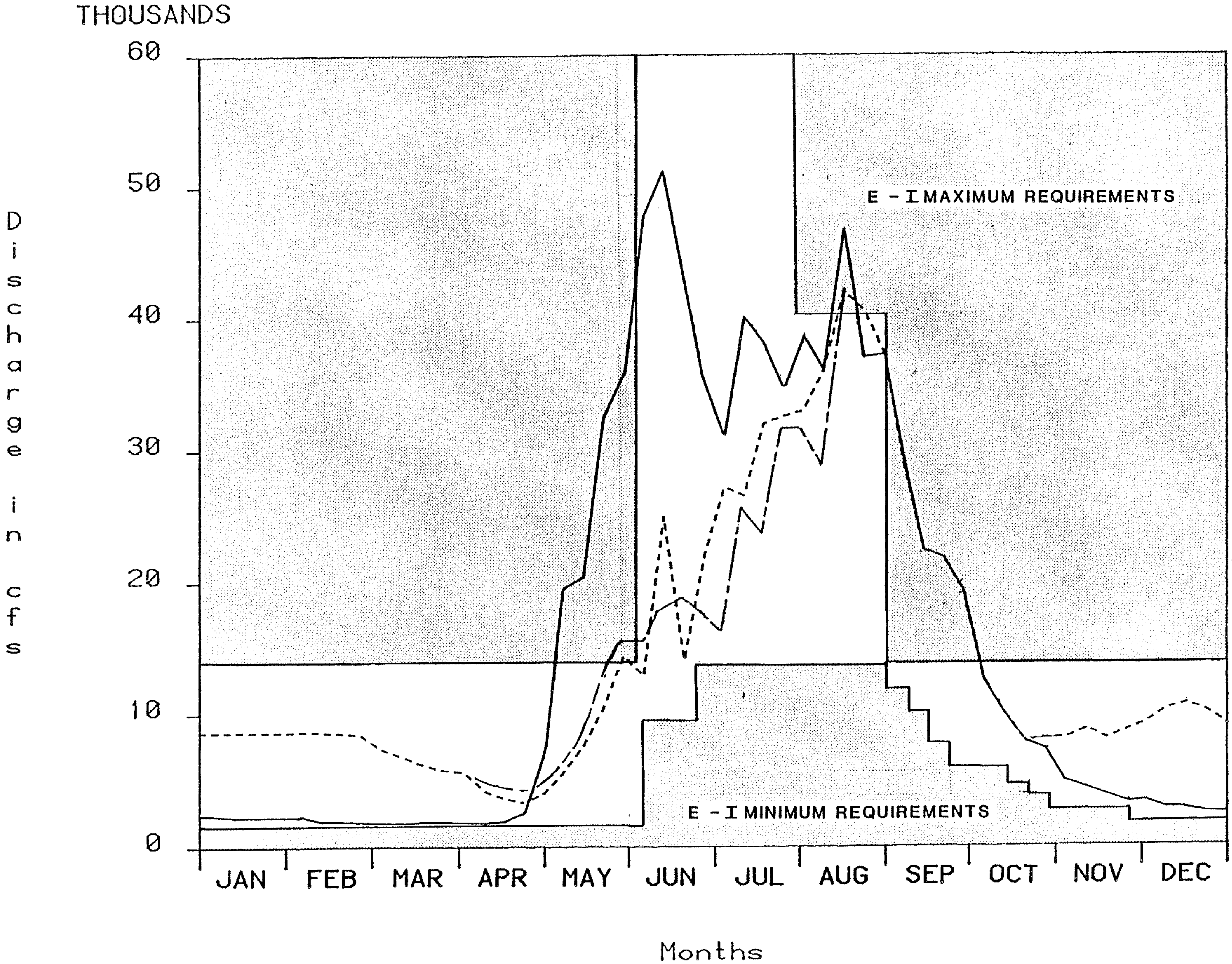
FIGURE E.2.4.47



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOWS EXCEEDED 6,50, AND 97% OF THE TIME AT GOLD CREEK

HARZA-EBASCO

FIGURE E.2.4.48



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 1 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. BETWEEN JUNE 10 AND JUNE 16 THERE IS A SPIKE TO 45,000 CFS
5. BETWEEN AUG 12 AND AUG 18 THERE IS A SPIKE TO 23,000 CFS
6. BETWEEN AUG 19 AND AUG 25 THERE IS A SPIKE TO 18,000 CFS

LEGEND

——— NATURAL CONDITION

— — — FLOWS FOR E - VI FLOW REQUIREMENTS

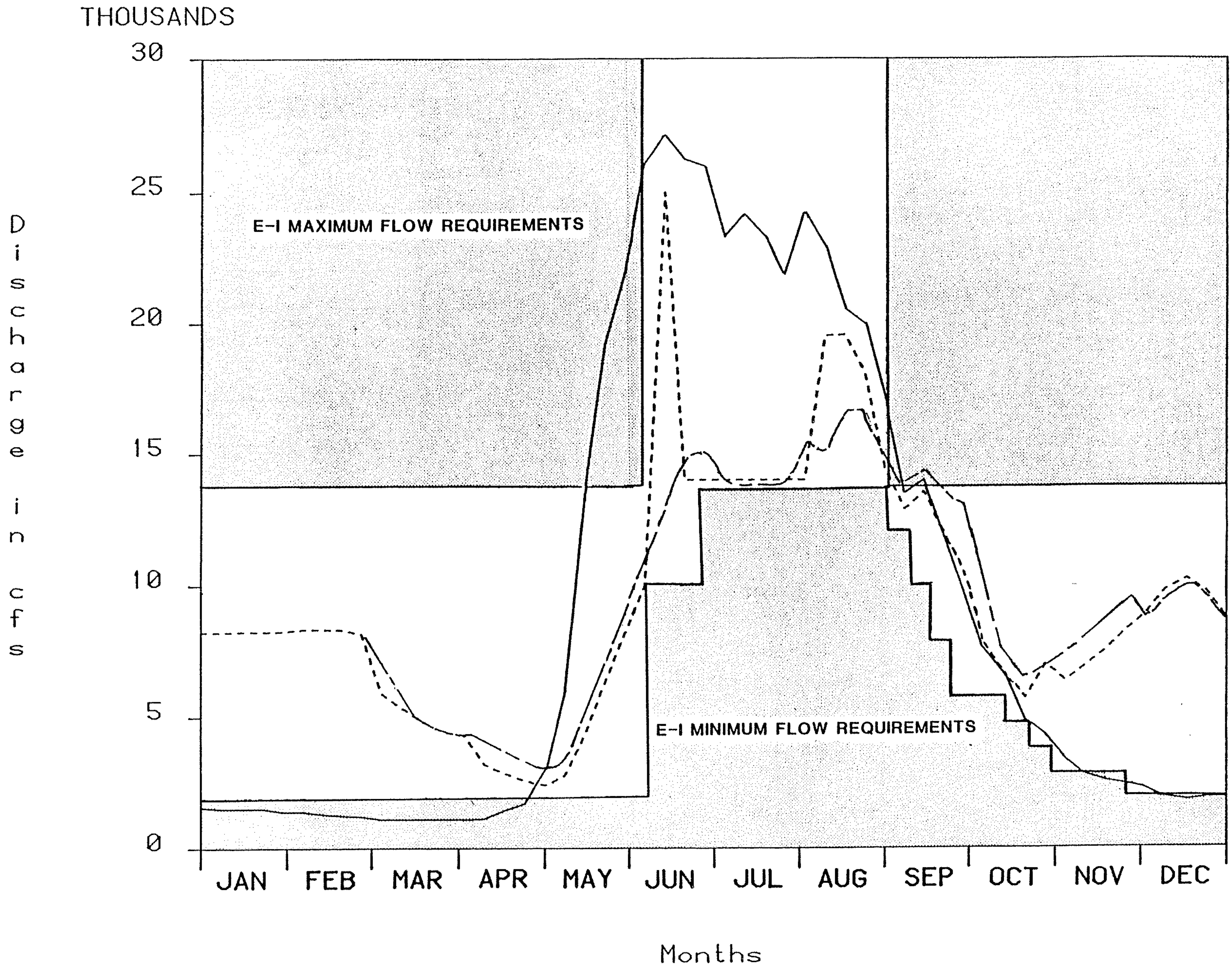
- - - - FLOWS FOR E - I FLOW REQUIREMENTS

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6% OF THE TIME AT GOLD CREEK

FIGURE E.2.4.49



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 1 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. BETWEEN JUNE 10 AND JUNE 16 THERE IS A SPIKE TO 45,000 CFS
5. BETWEEN AUG 12 AND AUG 18 THERE IS A SPIKE TO 23,000 CFS
6. BETWEEN AUG 19 AND AUG 25 THERE IS A SPIKE TO 18,000 CFS

LEGEND

——— NATURAL CONDITION

— — — FLOWS FOR E - VI FLOW REQUIREMENT

- - - - FLOWS FOR E - I FLOW REQUIREMENT

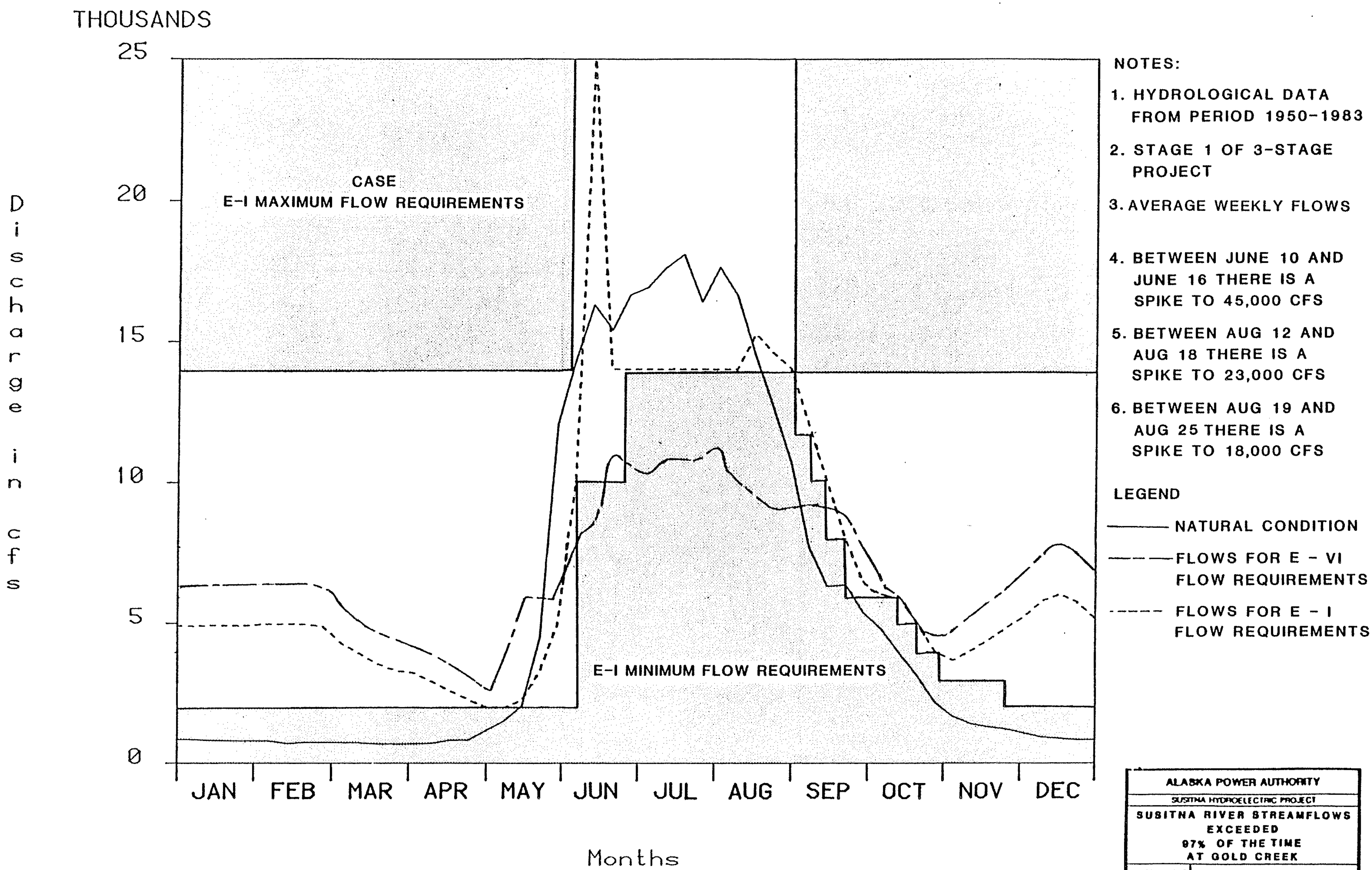
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME AT GOLD CREEK

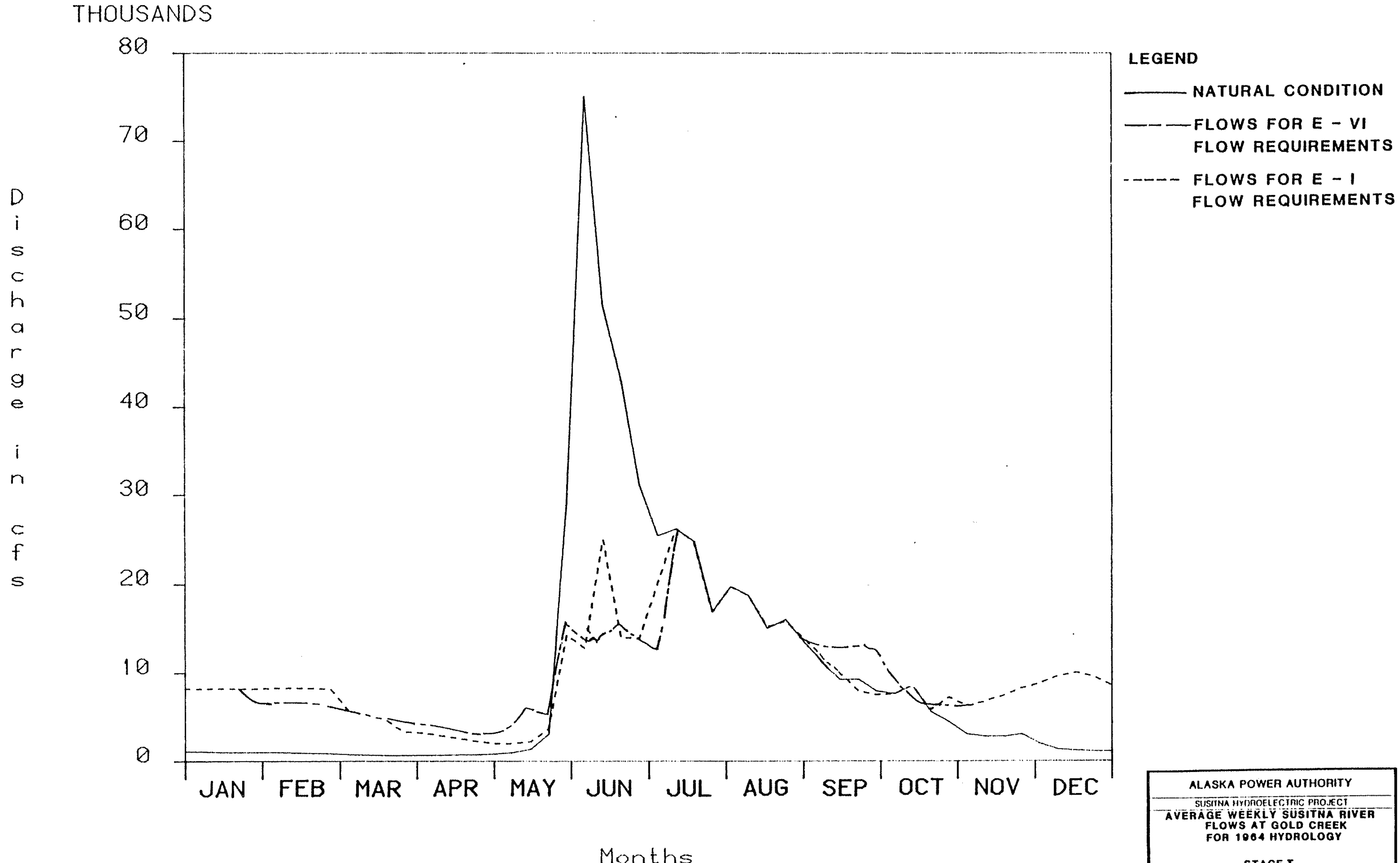
HARZA-EBASCO

FIGURE E.2.4. 50



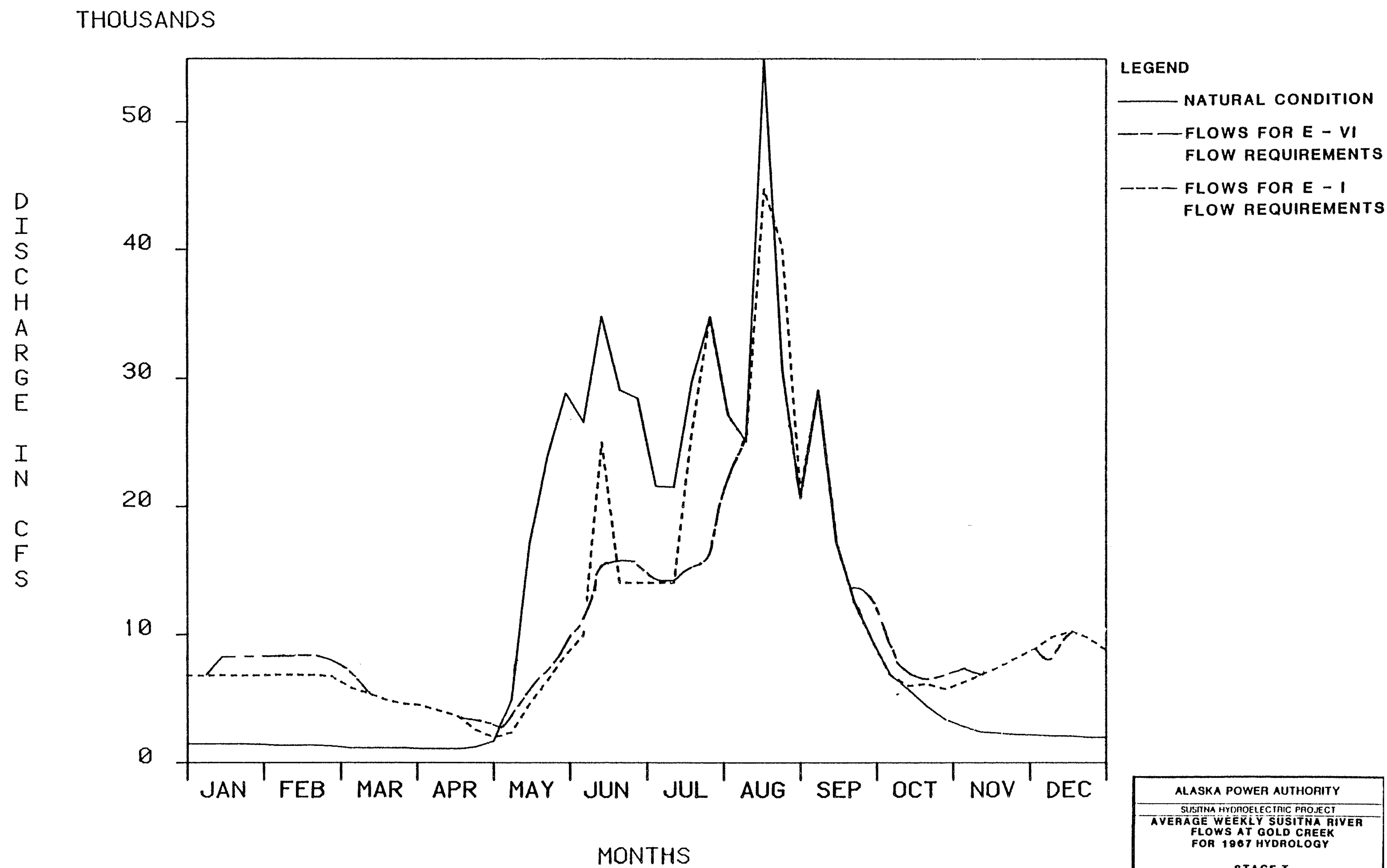
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOWS EXCEEDED 97% OF THE TIME AT GOLD CREEK

FIGURE E.2.4.51



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1964 HYDROLOGY
STAGE I
HARZA-EBASCO

FIGURE E.2.4.52



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1967 HYDROLOGY

STAGE I

FIGURE E.2.4.53

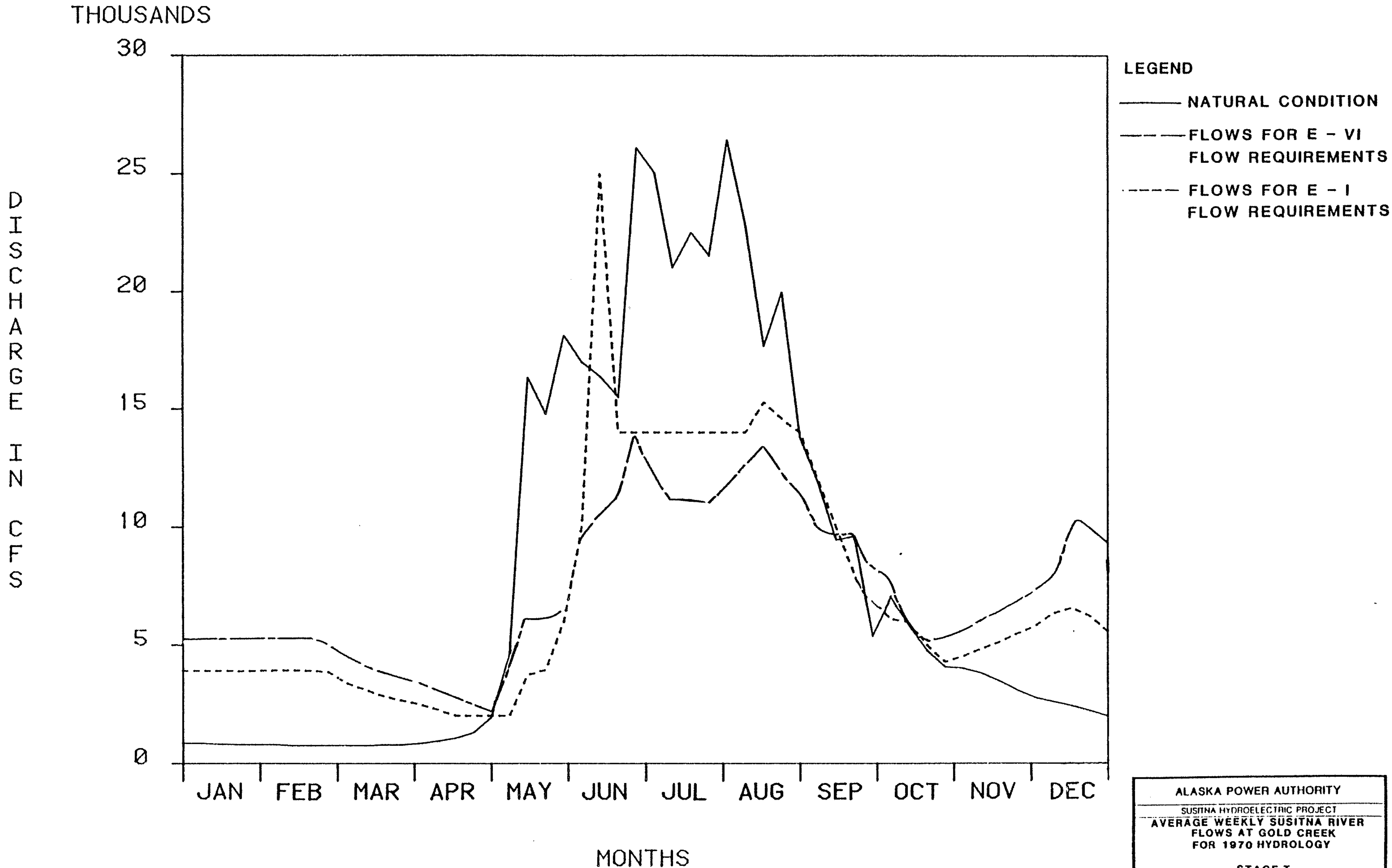


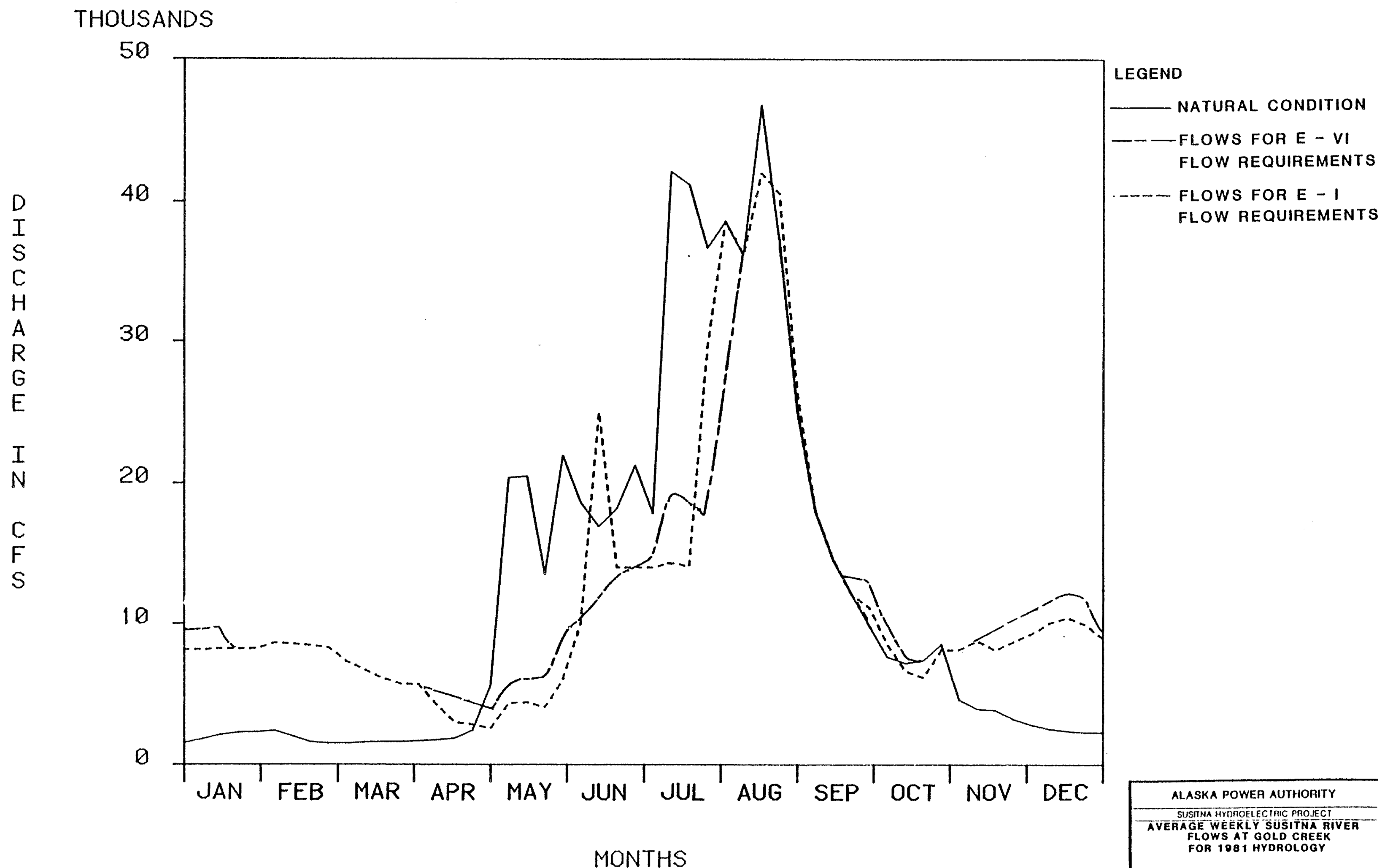
FIGURE E.2.4.54

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1970 HYDROLOGY

STAGE I



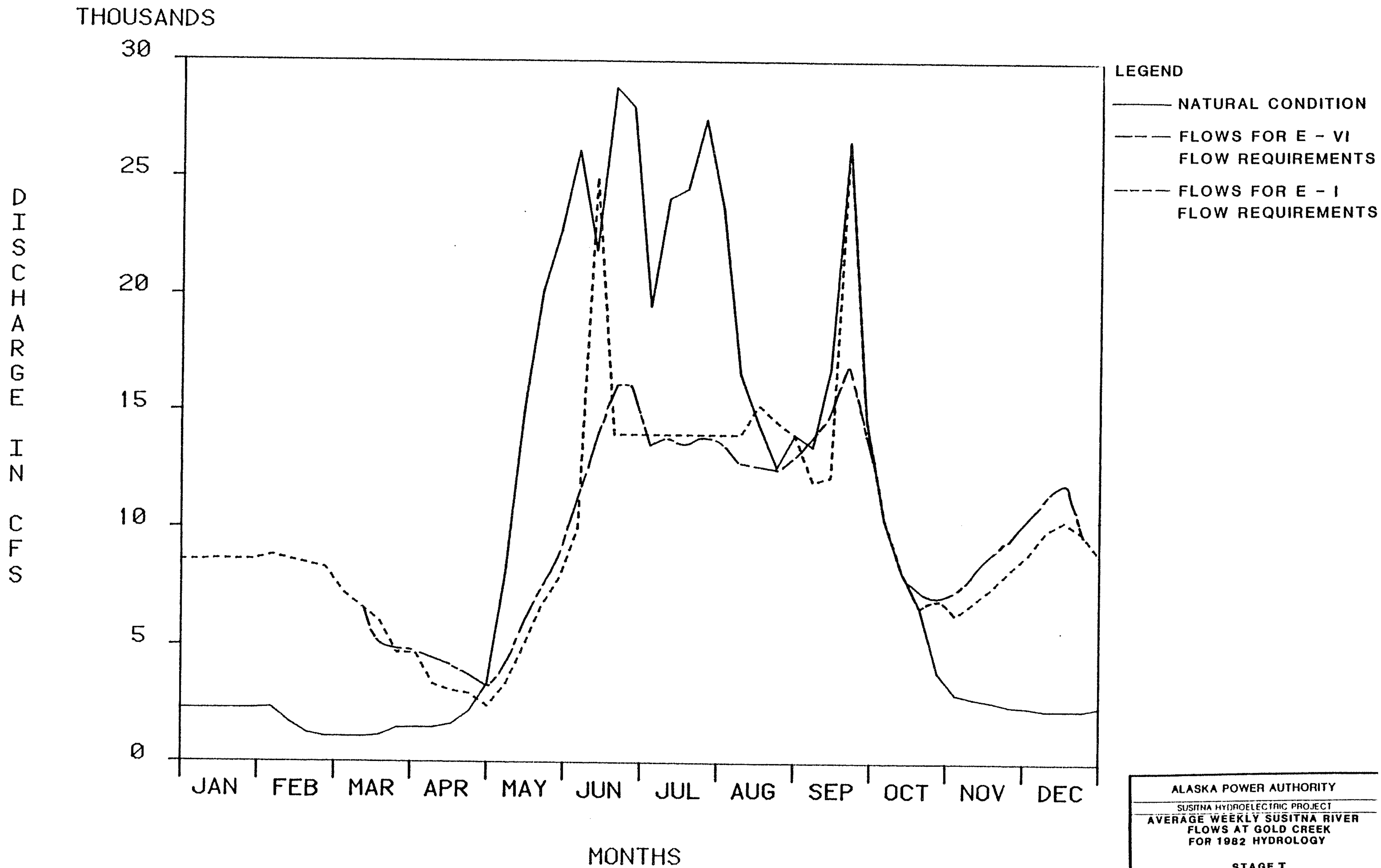
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1981 HYDROLOGY

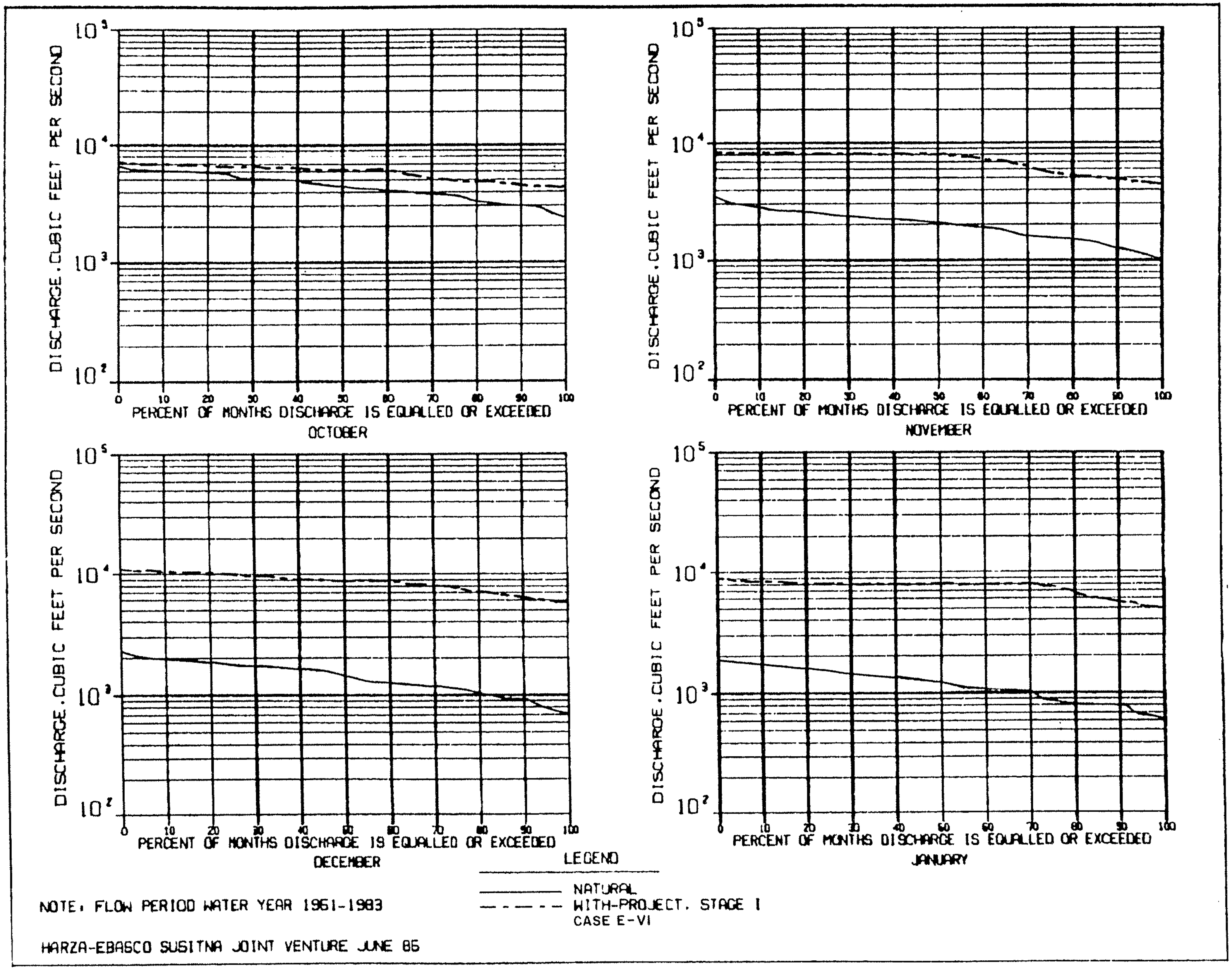
STAGE I

FIGURE E.2.4.55



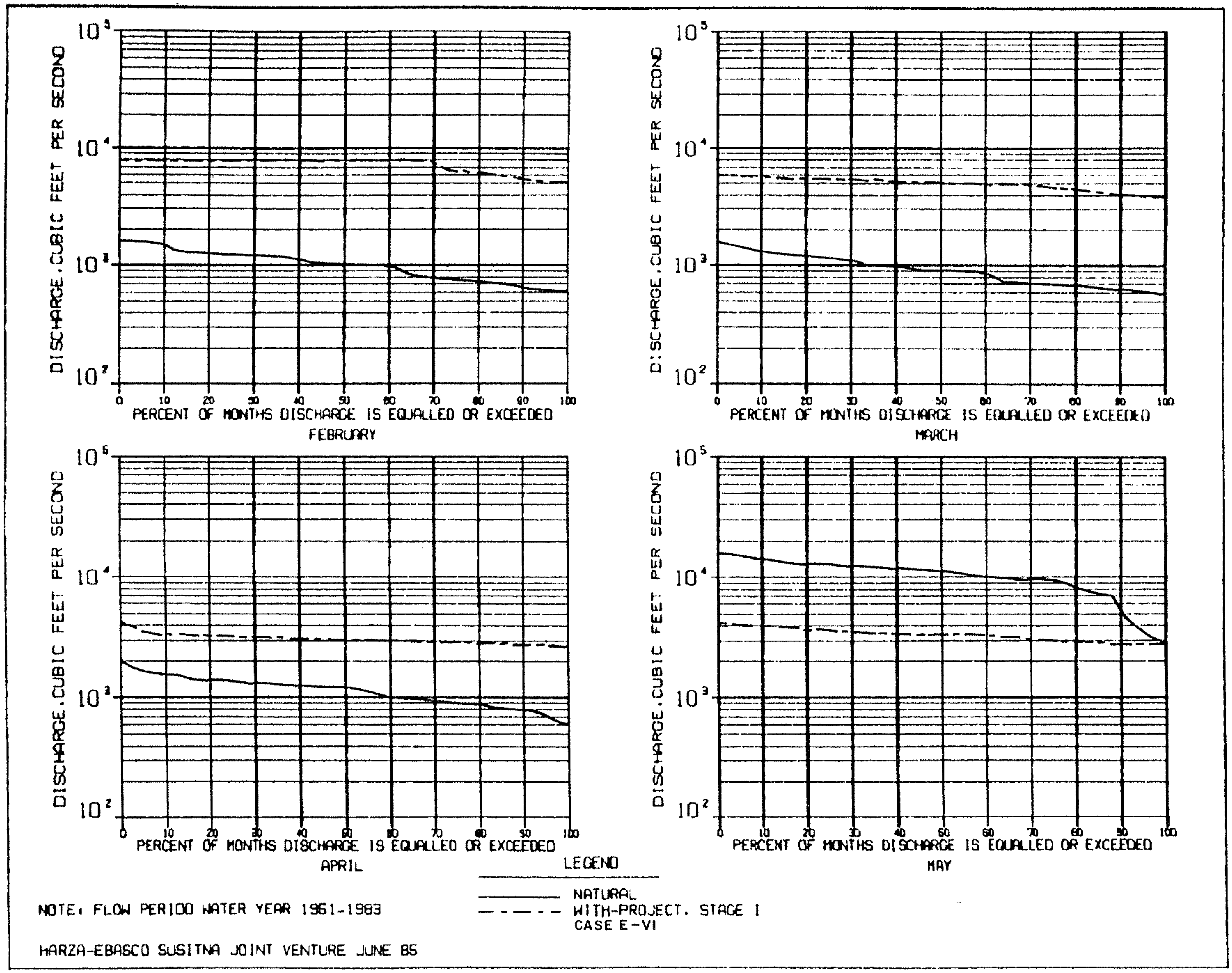
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1982 HYDROLOGY
STAGE I

FIGURE E.2.4.56



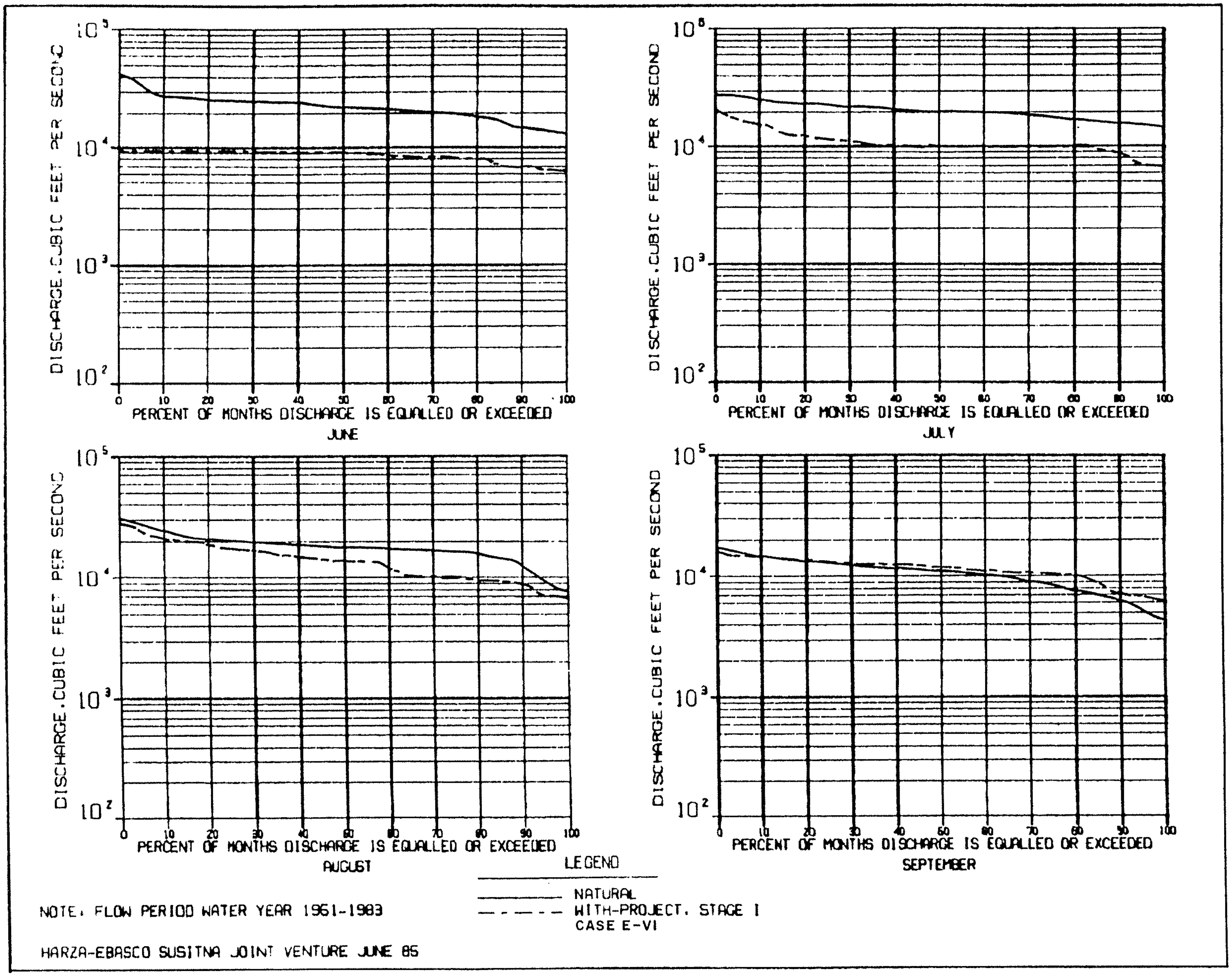
FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.57
(Page 1 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT WATANA DAMSITE

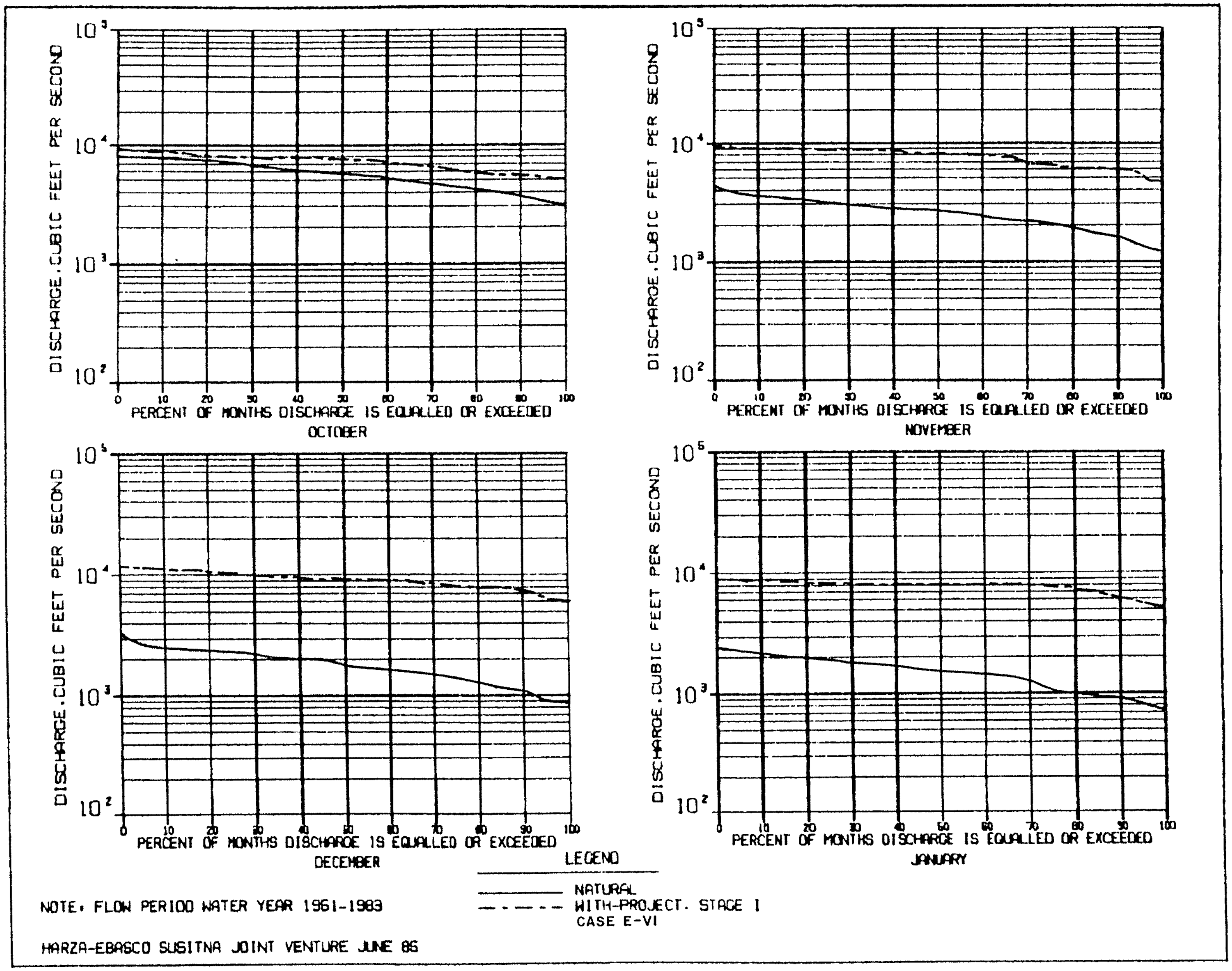
FIGURE E.2.4.57
(Page 2 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.57

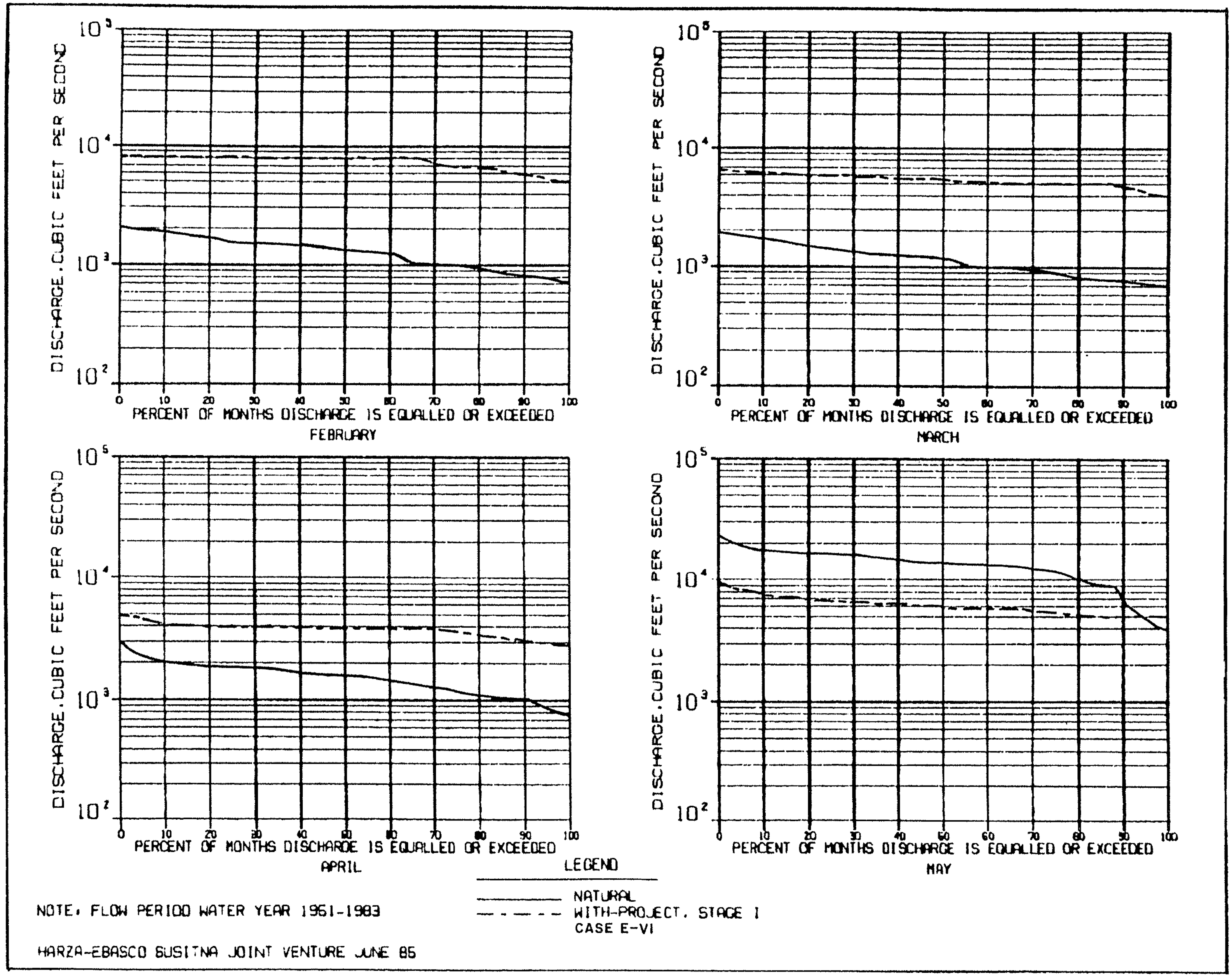
(Page 3 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT GOLD CREEK

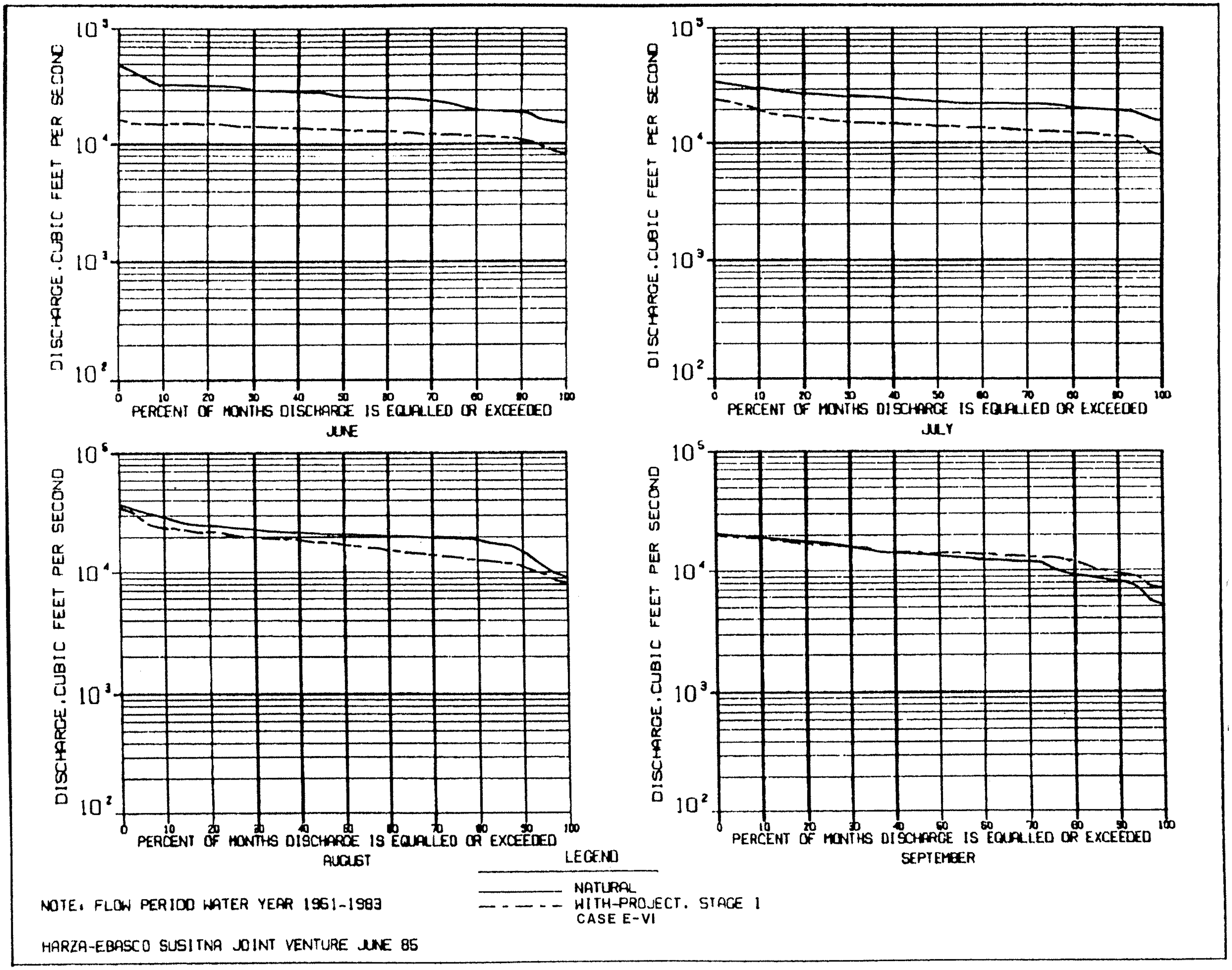
FIGURE E.2.4.58

(Page 1 of 3)



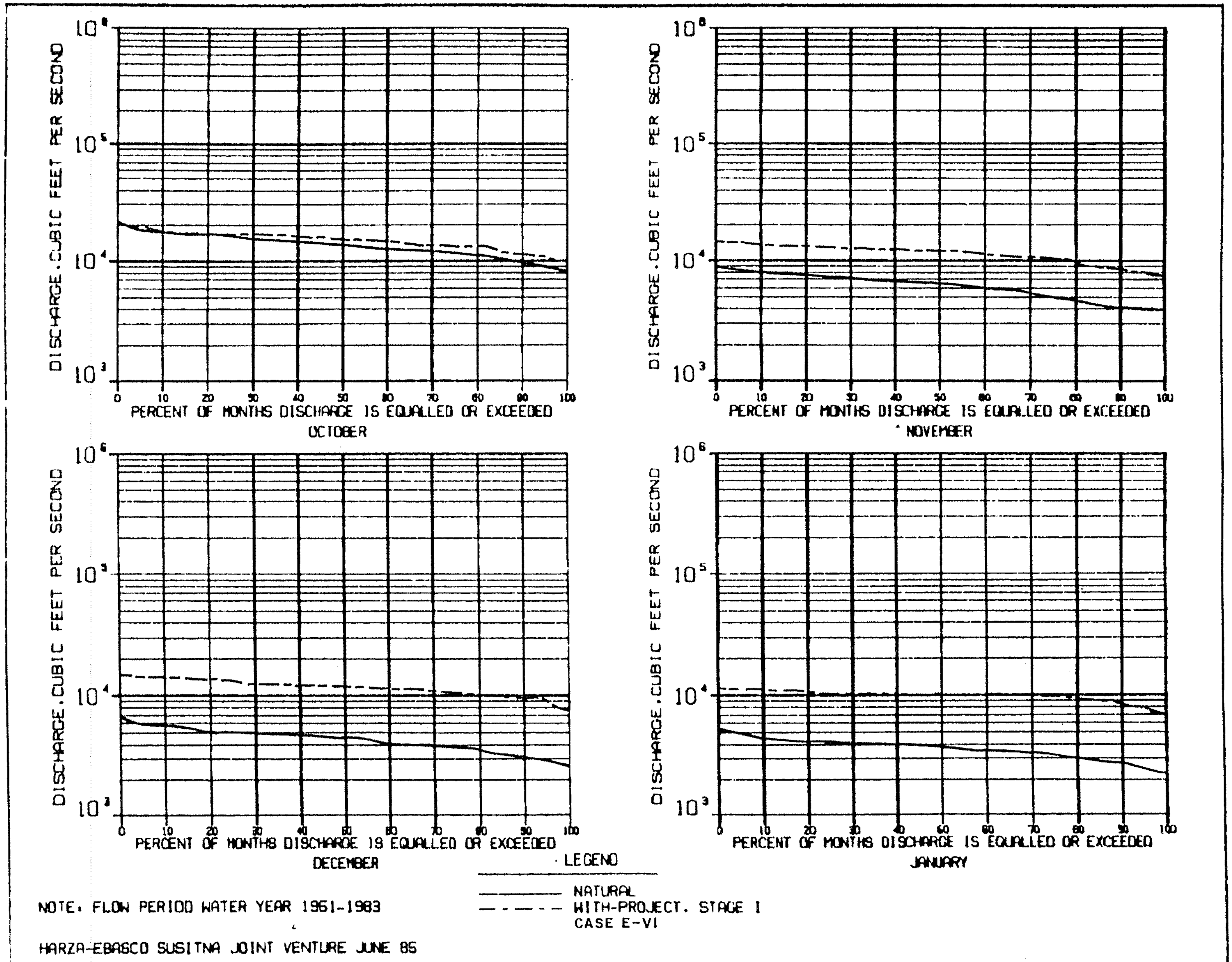
FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT GOLD CREEK

FIGURE E.2.4.58



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT GOLD CREEK

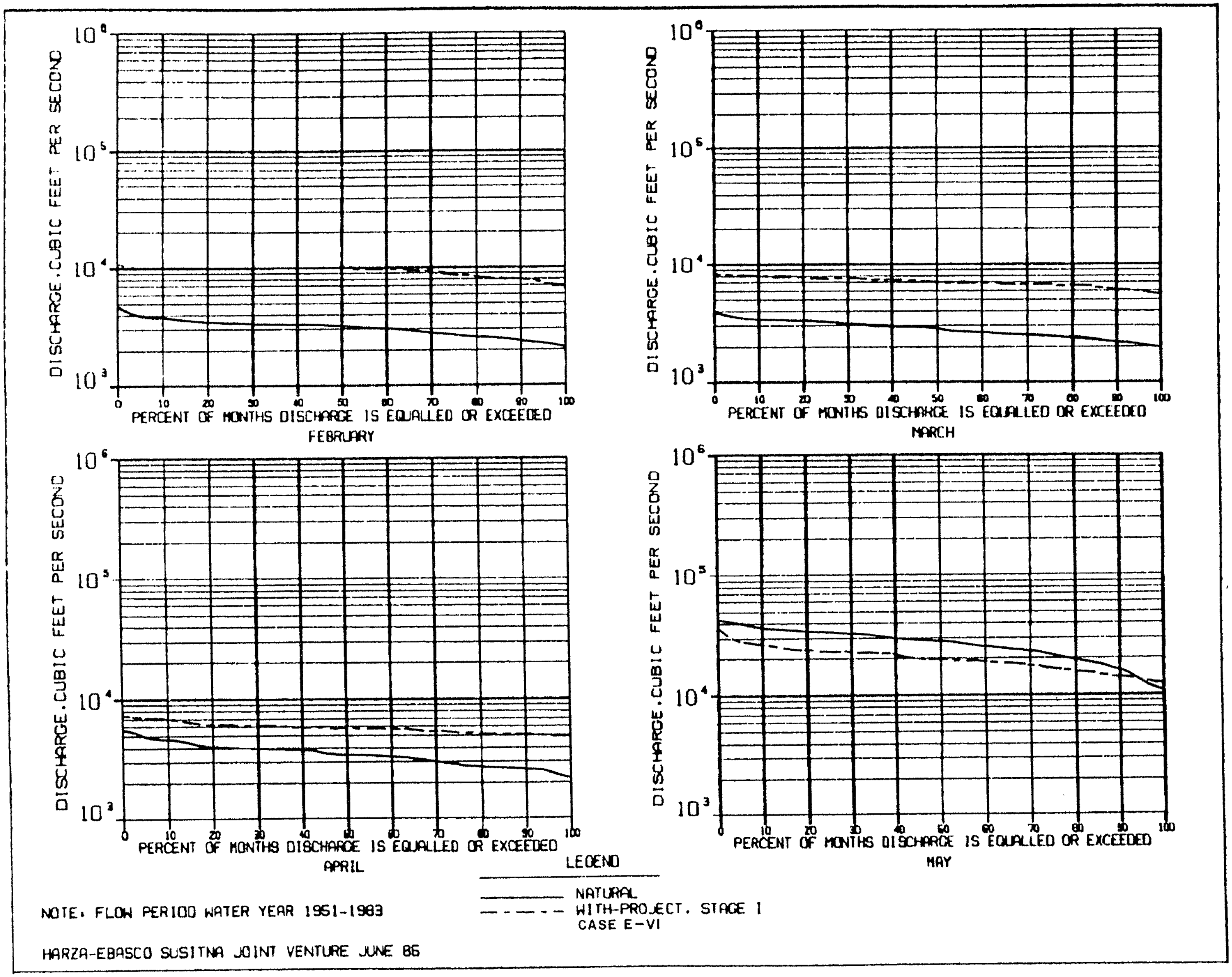
FIGURE E.2.4.58
(Page 3 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.59

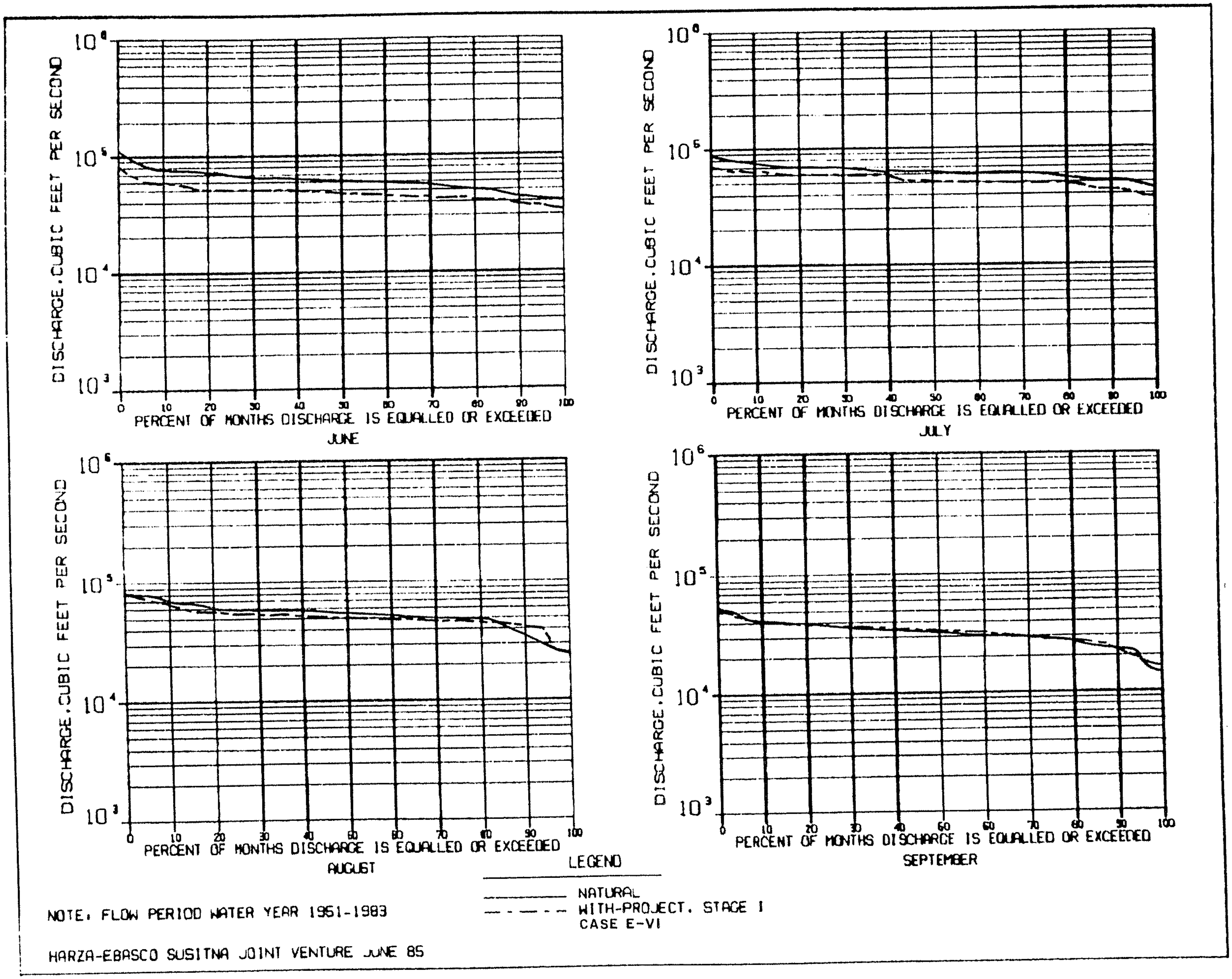
(Page 1 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.59

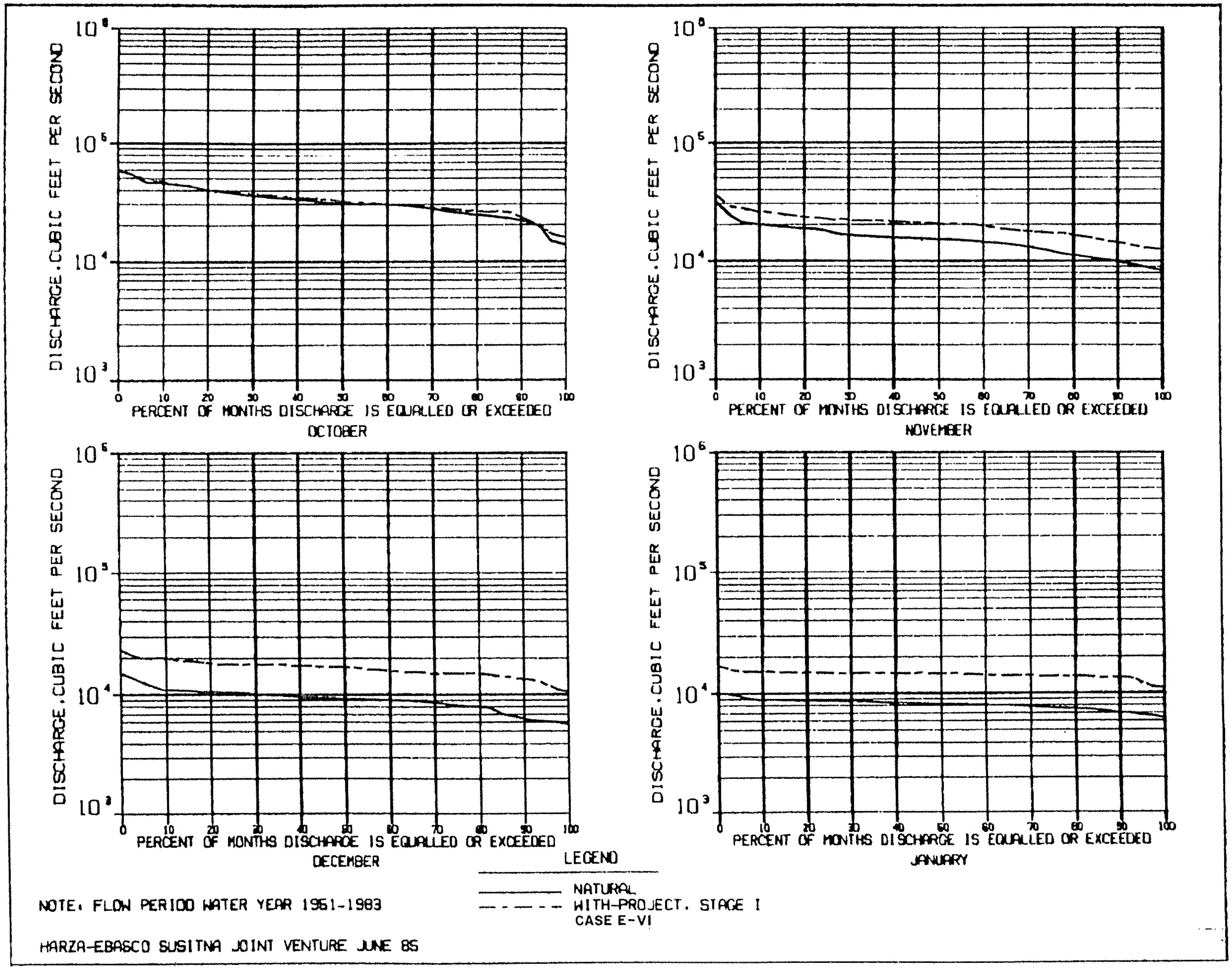
(Page 2 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT SUNSHINE

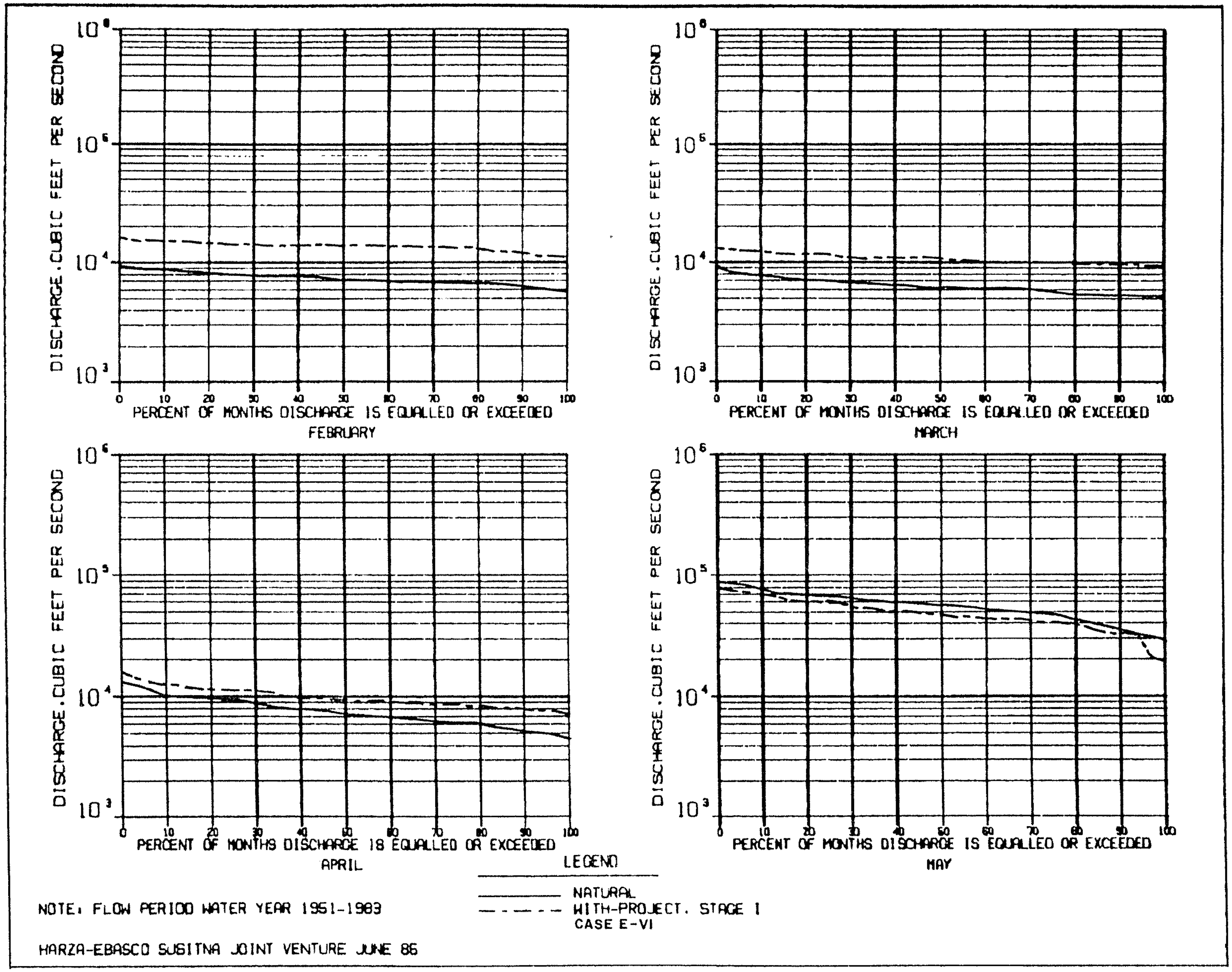
FIGURE E.2.4.59

(Page 3 of 3)



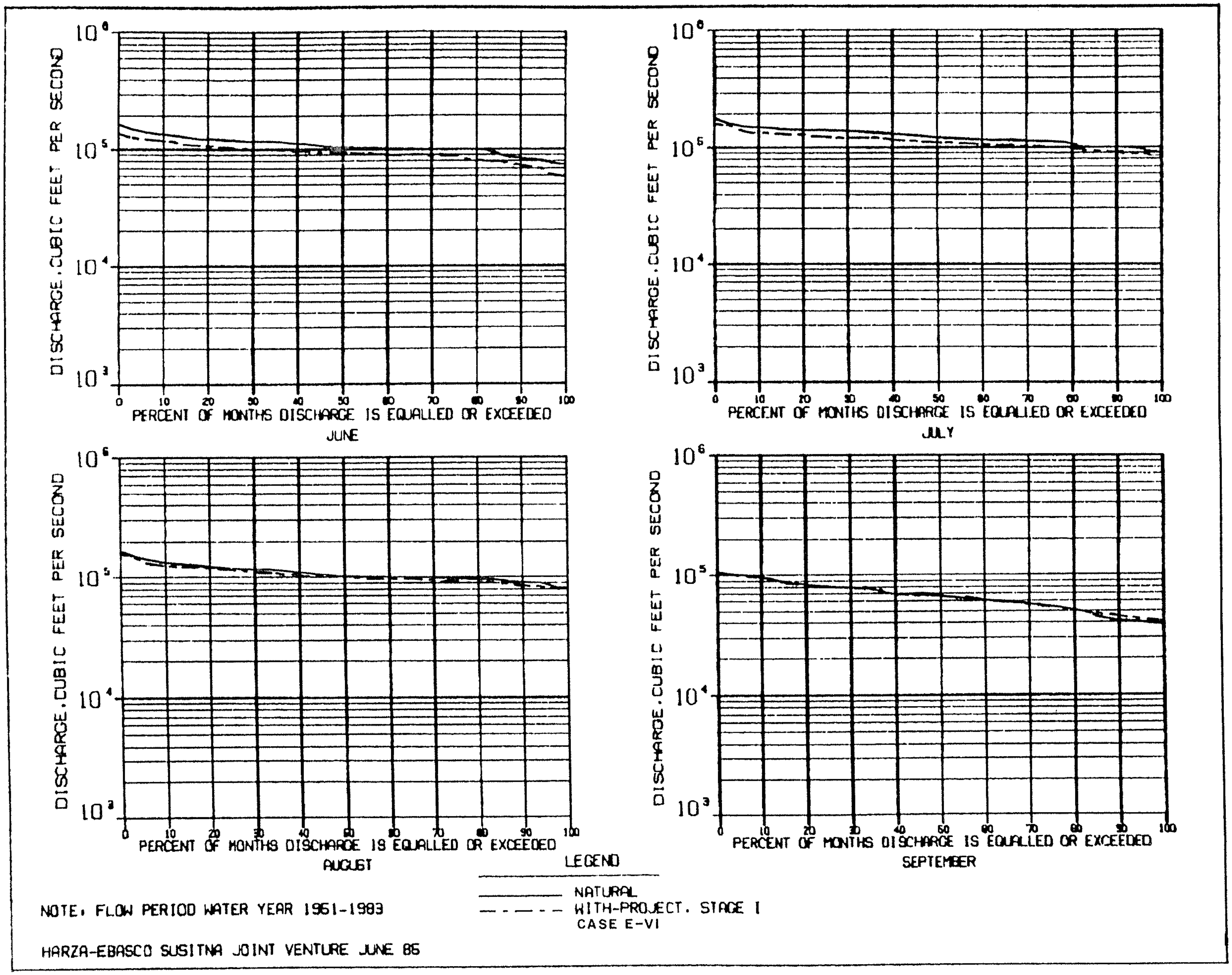
FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.60
(Page 1 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT SUSITNA STATION

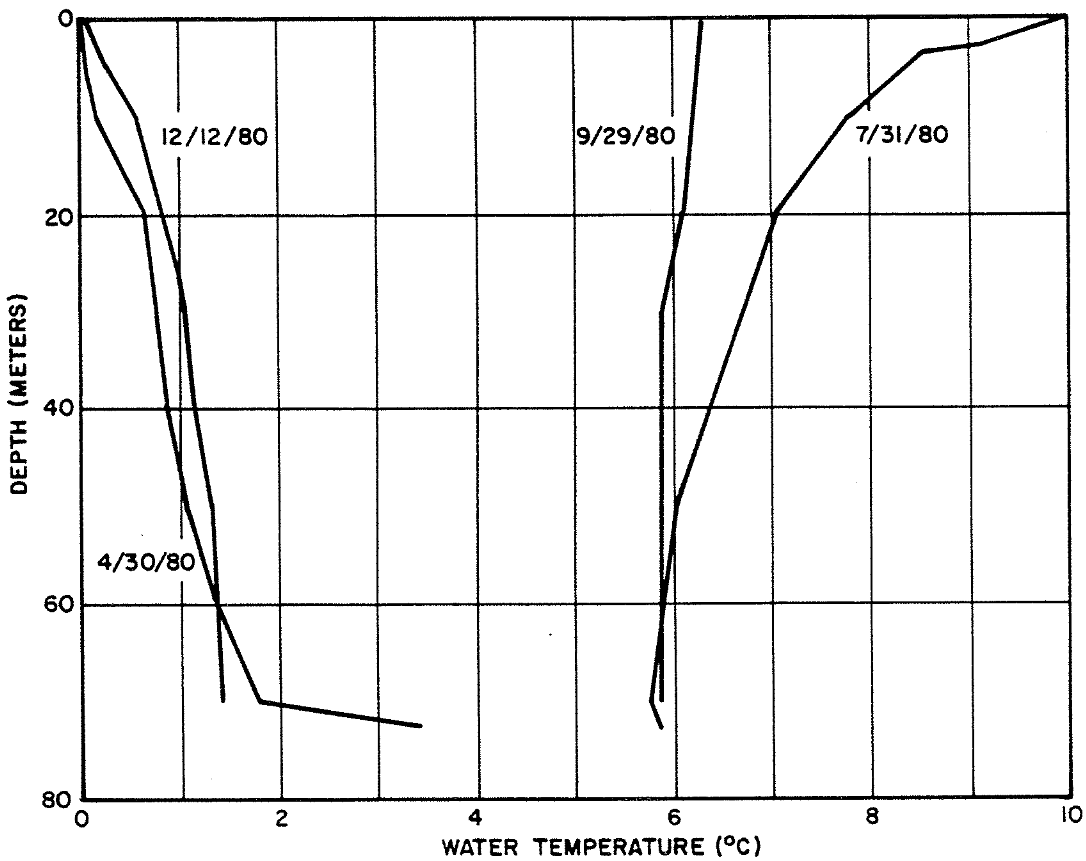
FIGURE E.2.4.60
(Page 2 of 3)



FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.60

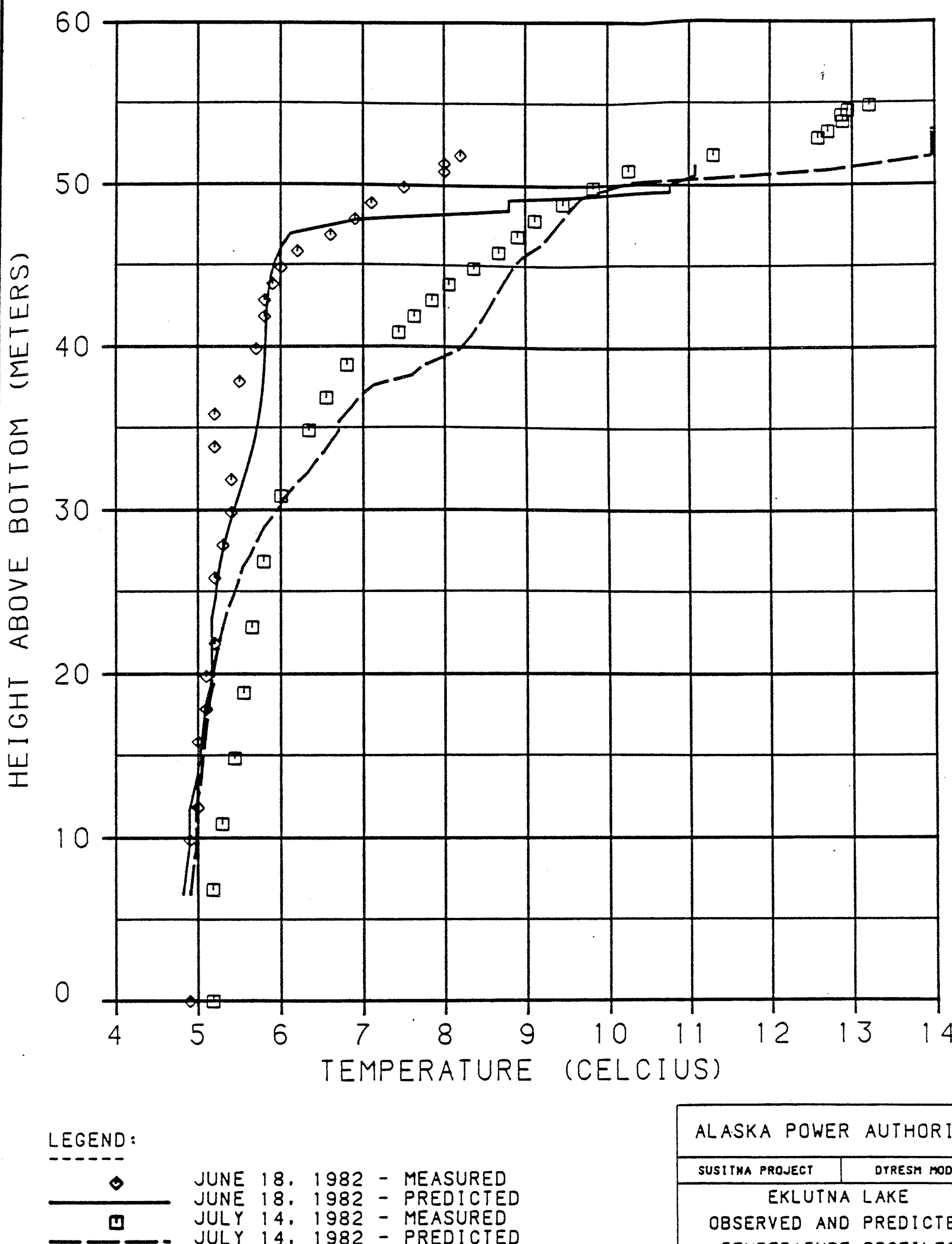
(Page 3 of 3)



WATER TEMPERATURE PROFILES
BRADLEY LAKE, ALASKA

SOURCE: CORPS OF ENGINEERS 1982

FIGURE E.2.4.61



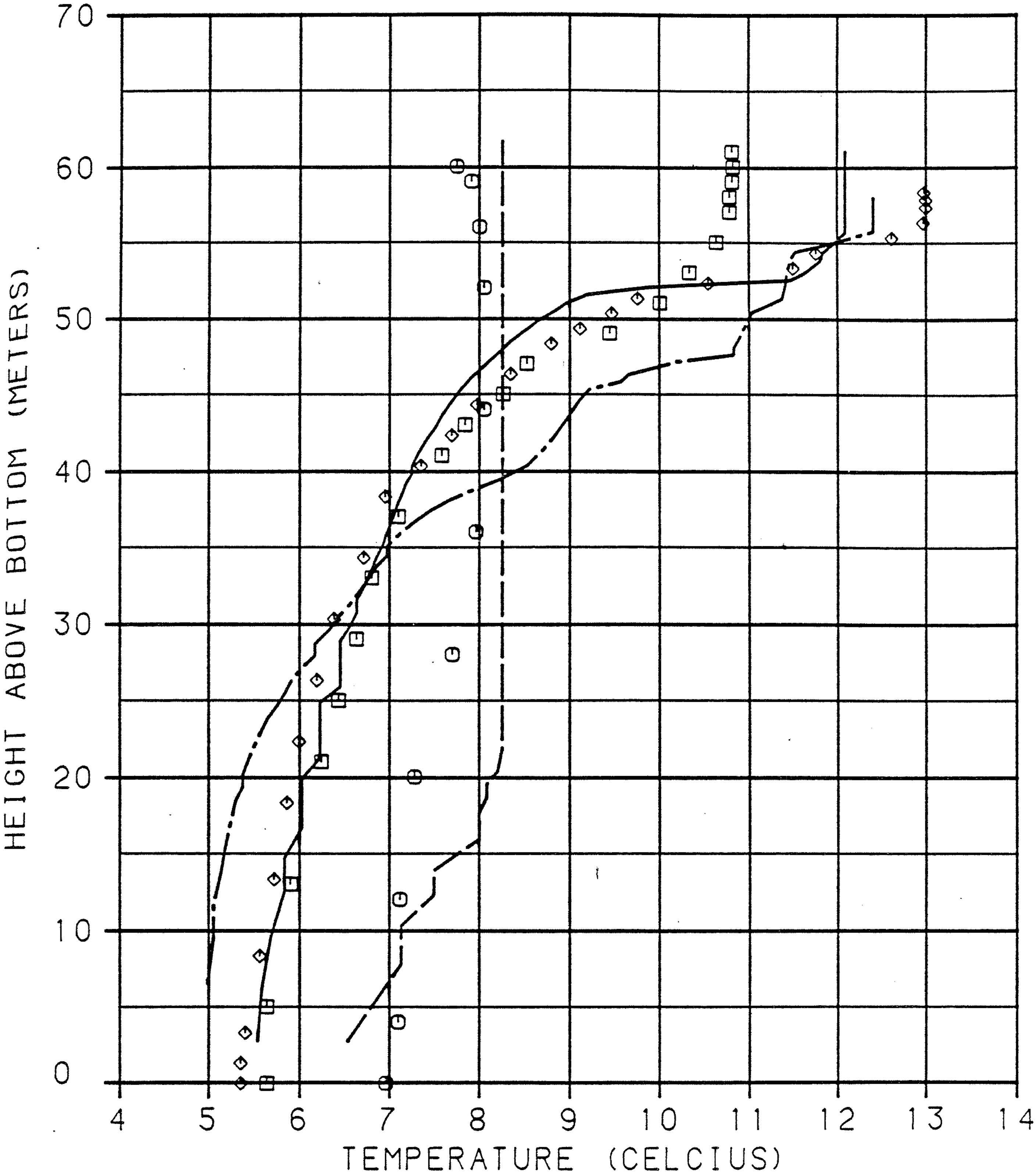
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

EKLUTNA LAKE
OBSERVED AND PREDICTED
TEMPERATURE PROFILES

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 30 DEC 83 | FIGURE E.2.4.62



LEGEND:

◇	AUGUST 11, 1982 - MEASURED
—·—	AUGUST 11, 1982 - PREDICTED
⊡	SEPTEMBER 9, 1982 - MEASURED
——	SEPTEMBER 9, 1982 - PREDICTED
⊙	SEPTEMBER 21, 1982 - MEASURED
— —	SEPTEMBER 21, 1982 - PREDICTED

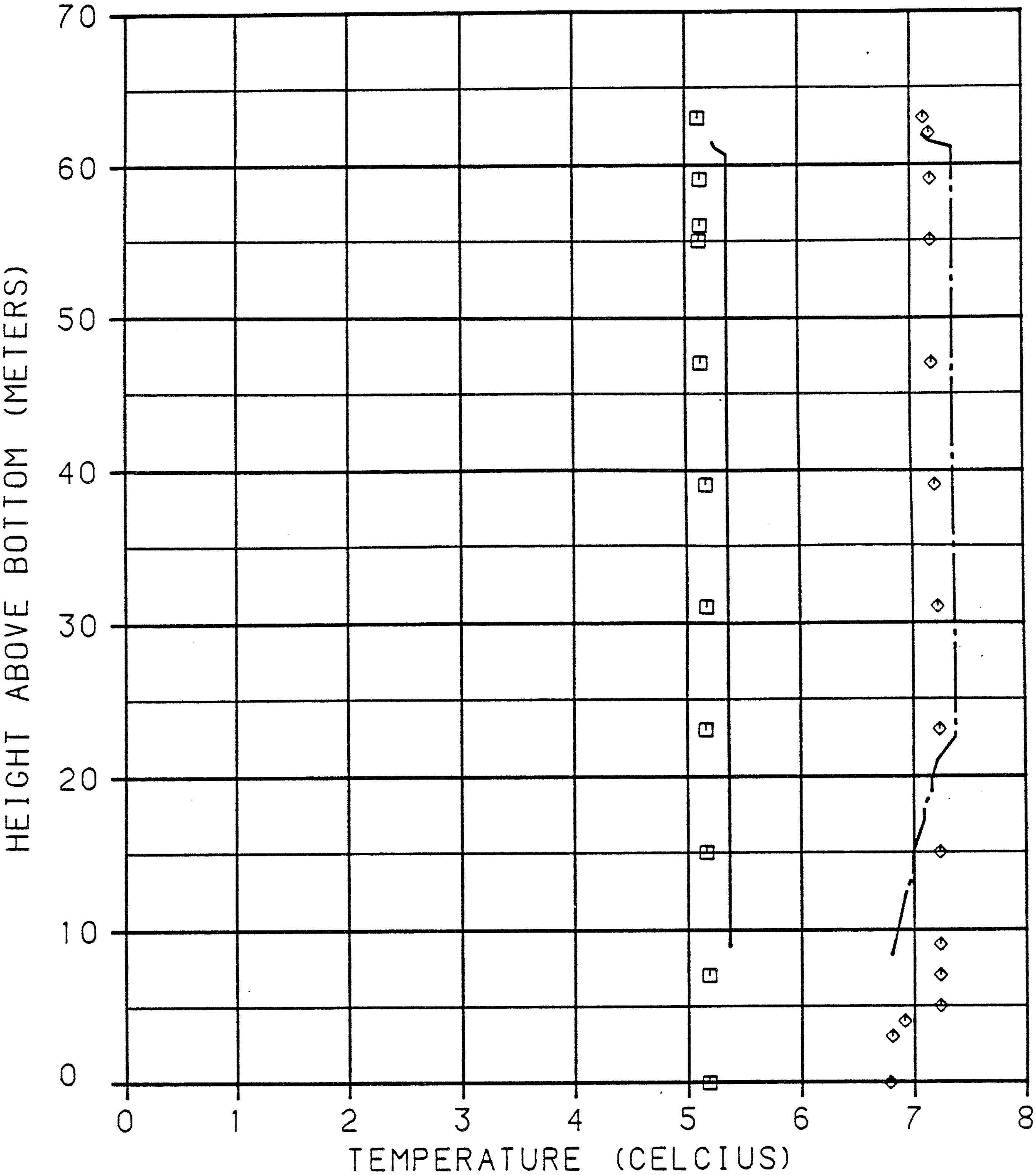
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

EKLUTNA LAKE
OBSERVED AND PREDICTED
TEMPERATURE PROFILES

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 30 DEC 83 | FIGURE E.2.4.63



LEGEND:

OCTOBER 14, 1982 - MEASURED
OCTOBER 14, 1982 - PREDICTED
NOVEMBER 4, 1982 - MEASURED
NOVEMBER 4, 1982 - PREDICTED

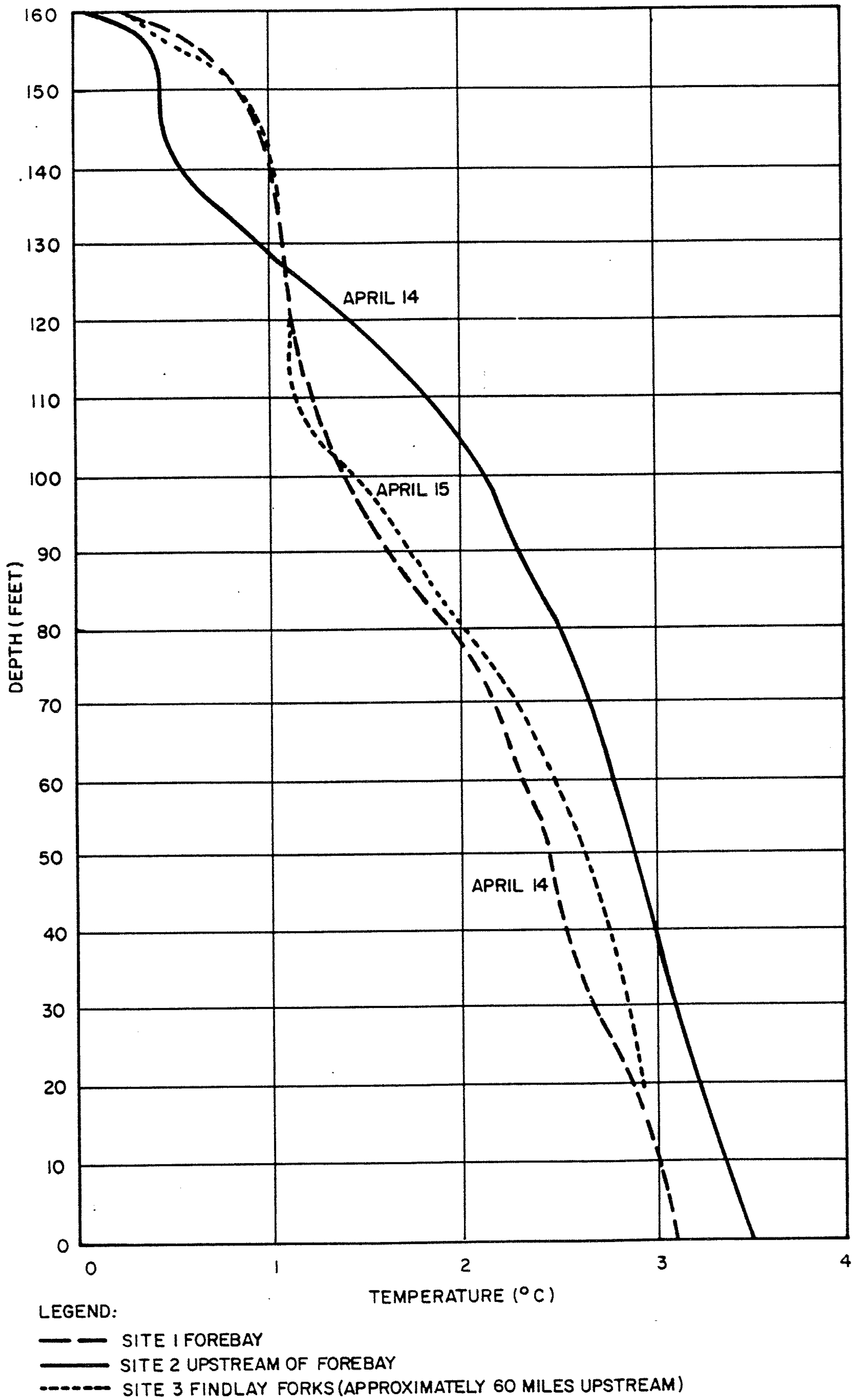
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

EKLUTNA LAKE
OBSERVED AND PREDICTED
TEMPERATURE PROFILES

HARZA-EBASCO JOINT VENTURE

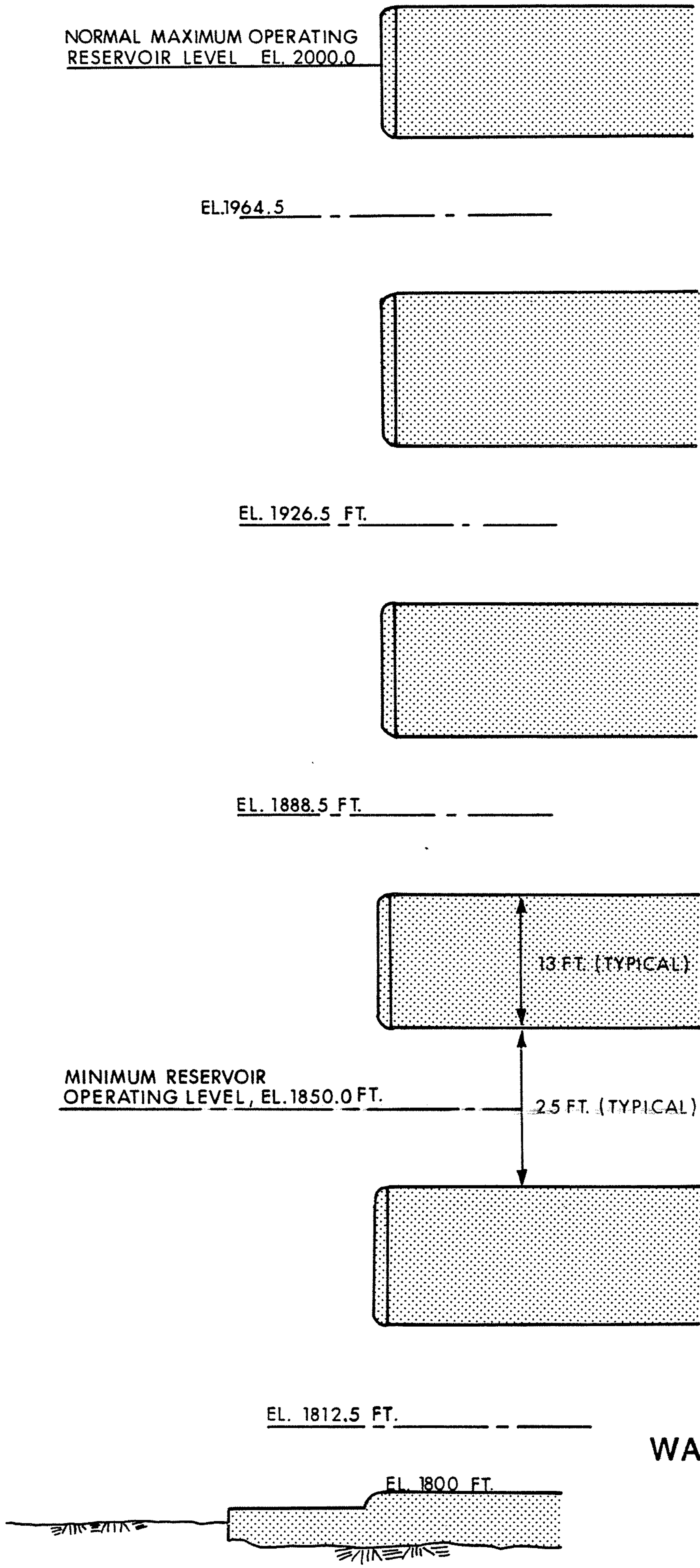
CHICAGO, ILLINOIS | 30 DEC 83 | FIGURE E.2.4.64



LAKE WILLISTON
TEMPERATURE PROFILES
APRIL 14 - 15, 1982

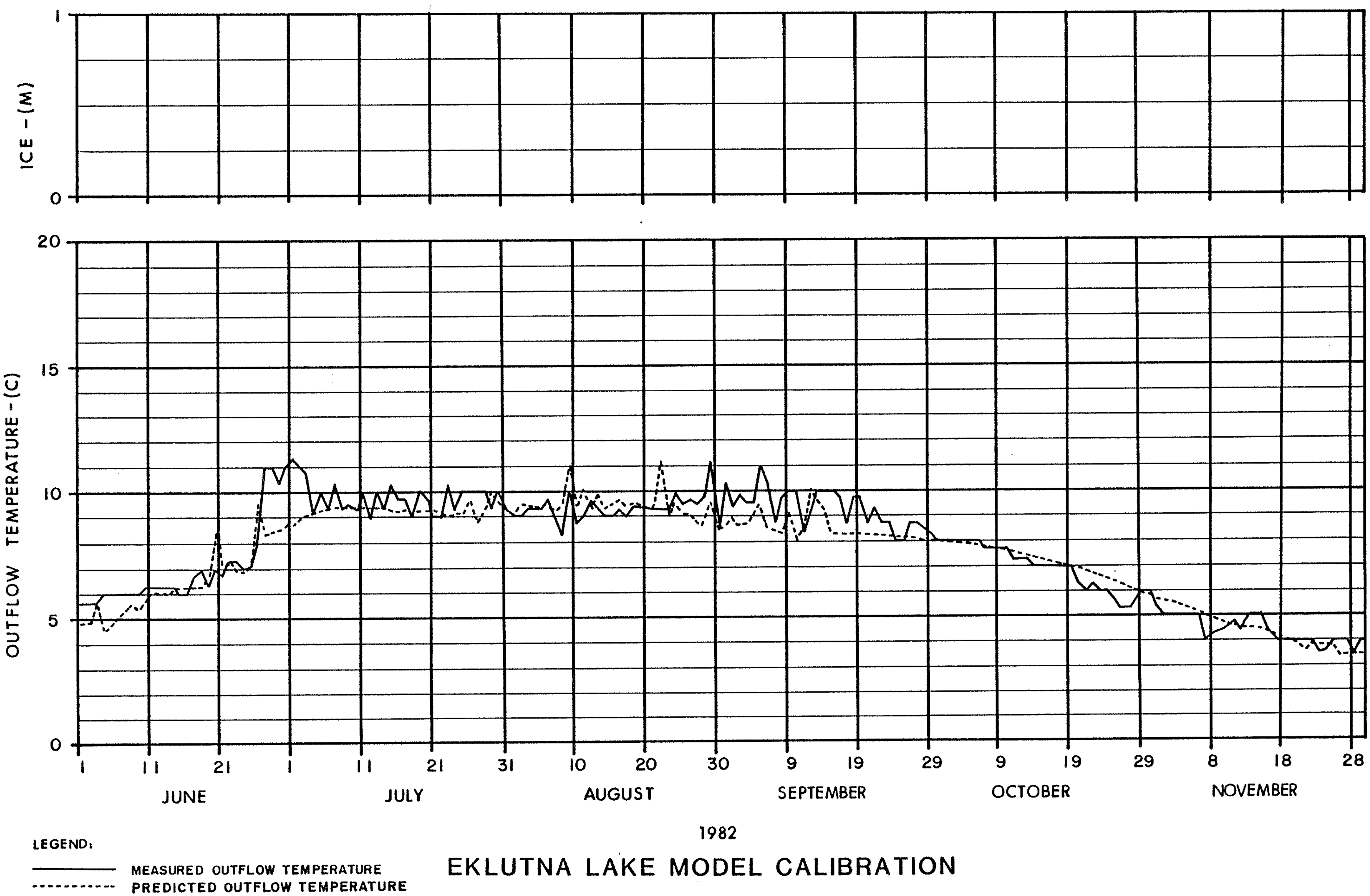
FIGURE E.2.4.65

SOURCE: B C HYDRO 1982 UNPUBLISHED DATA



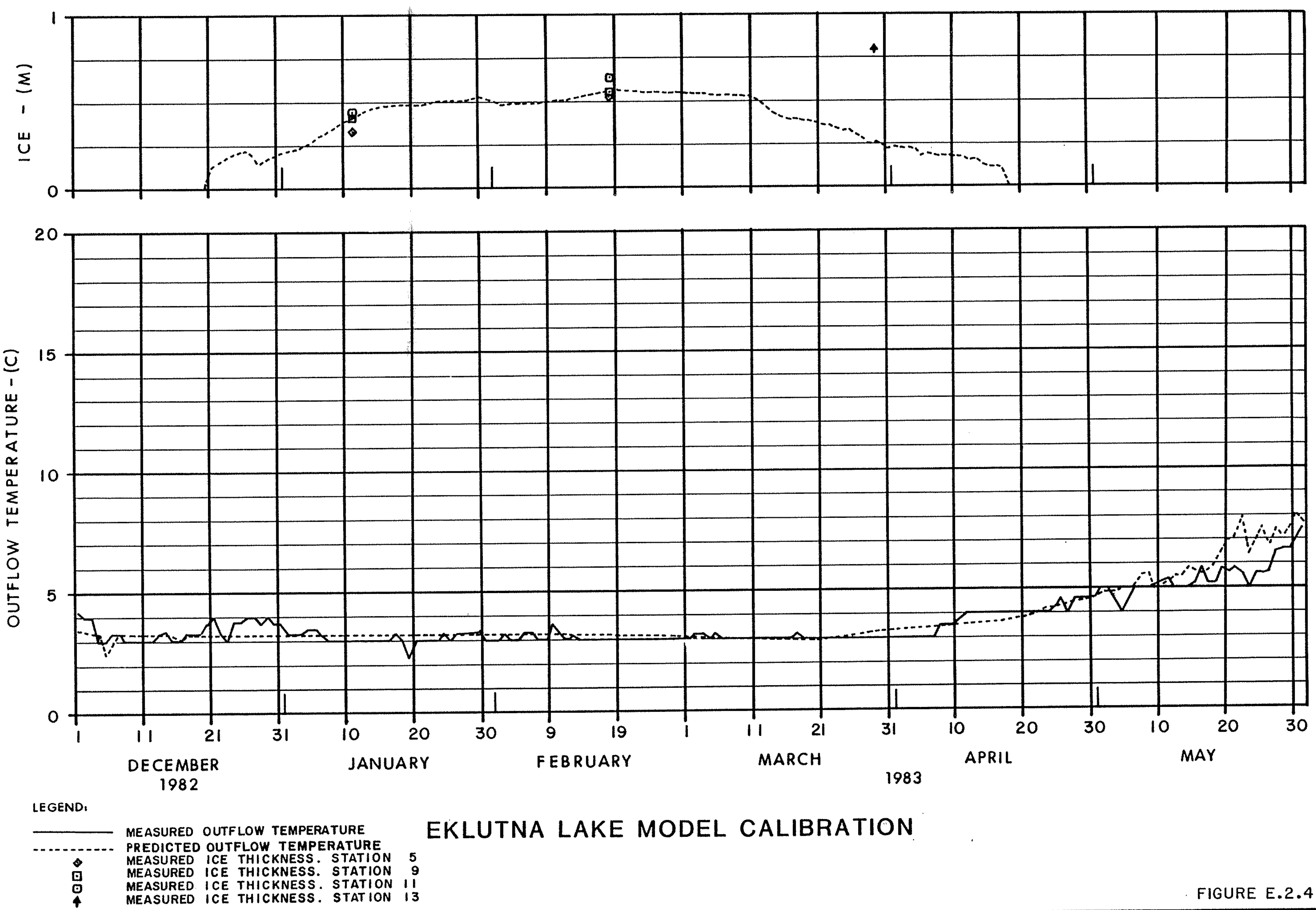
WATANA MULTILEVEL INTAKE STAGE I & II

FIGURE E.2.4.66



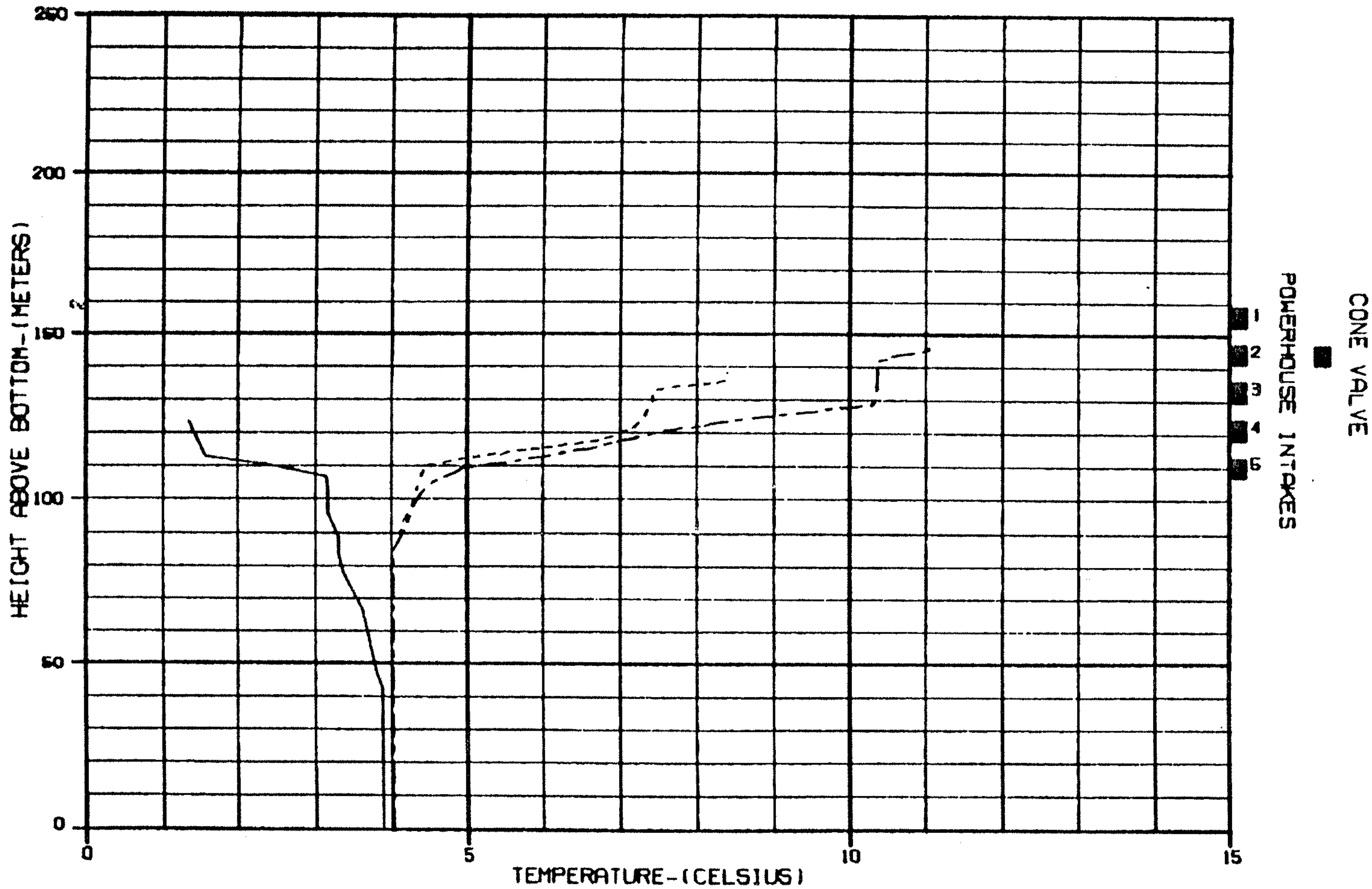
EKLUTNA LAKE MODEL CALIBRATION

FIGURE E.2.4.67



EKLUTNA LAKE MODEL CALIBRATION

FIGURE E.2.4.68



CASE: ** WAB1010 - WATANA OPERATION ALONE IN STAGE I

LEGEND:

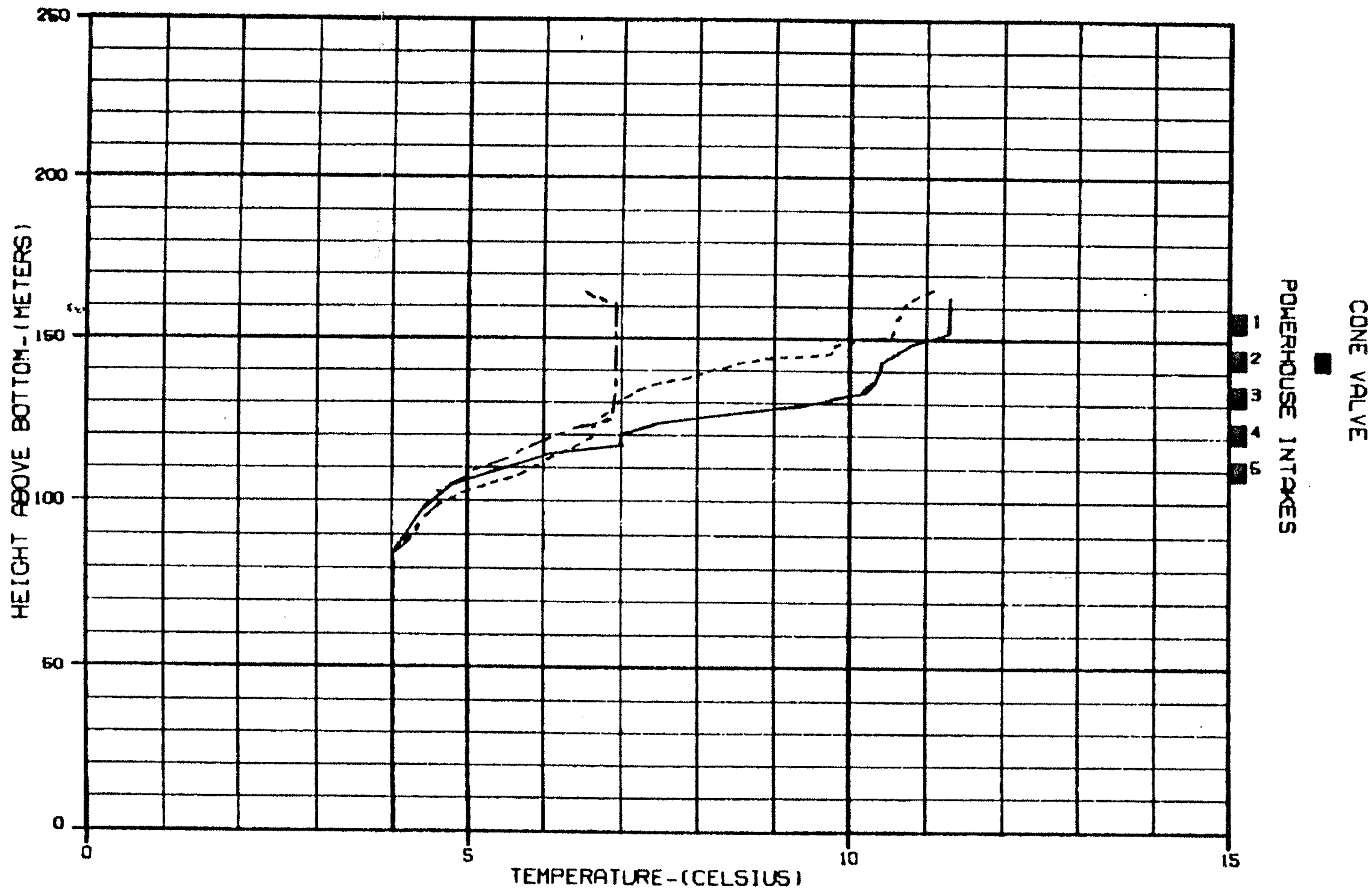
PREDICTED TEMPERATURE PROFILES:

———— 1 MAY 1981

- - - - - 1 JUNE 1981

— - — - 1 JULY 1981

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
WATANA RESERVOIR TEMPERATURE PROFILES STAGE I	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	FIGURE E.2.4.69



CASE: ** WAB1010 - WATANA OPERATION ALONE IN STAGE I

LEGEND:

PREDICTED TEMPERATURE PROFILES:

———— 1 AUGUST 1981
- - - - - 1 SEPTEMBER 1981
—·—·— 1 OCTOBER 1981

ALASKA POWER AUTHORITY

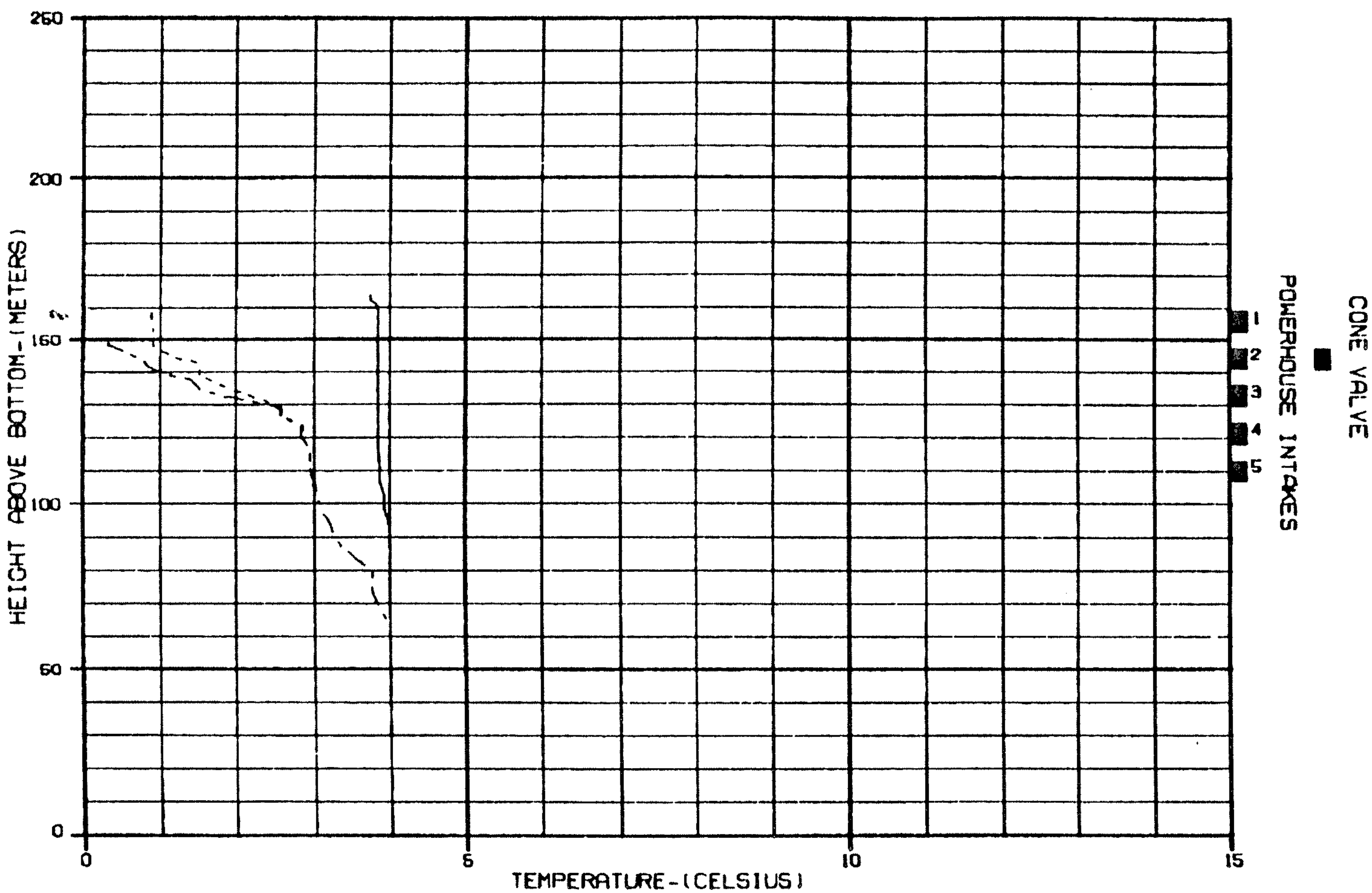
SUSITNA PROJECT	DYRESM MODEL

WATANA RESERVOIR
TEMPERATURE PROFILES
STAGE I

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS

FIGURE E.2.4.70



CASE: ** WAB1010 - WATANA OPERATION ALONE IN STAGE I

LEGEND:

PREDICTED TEMPERATURE PROFILES:

———— 1 NOVEMBER 1981

- - - - - 1 DECEMBER 1981

—·—·— 1 JANUARY 1982

ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

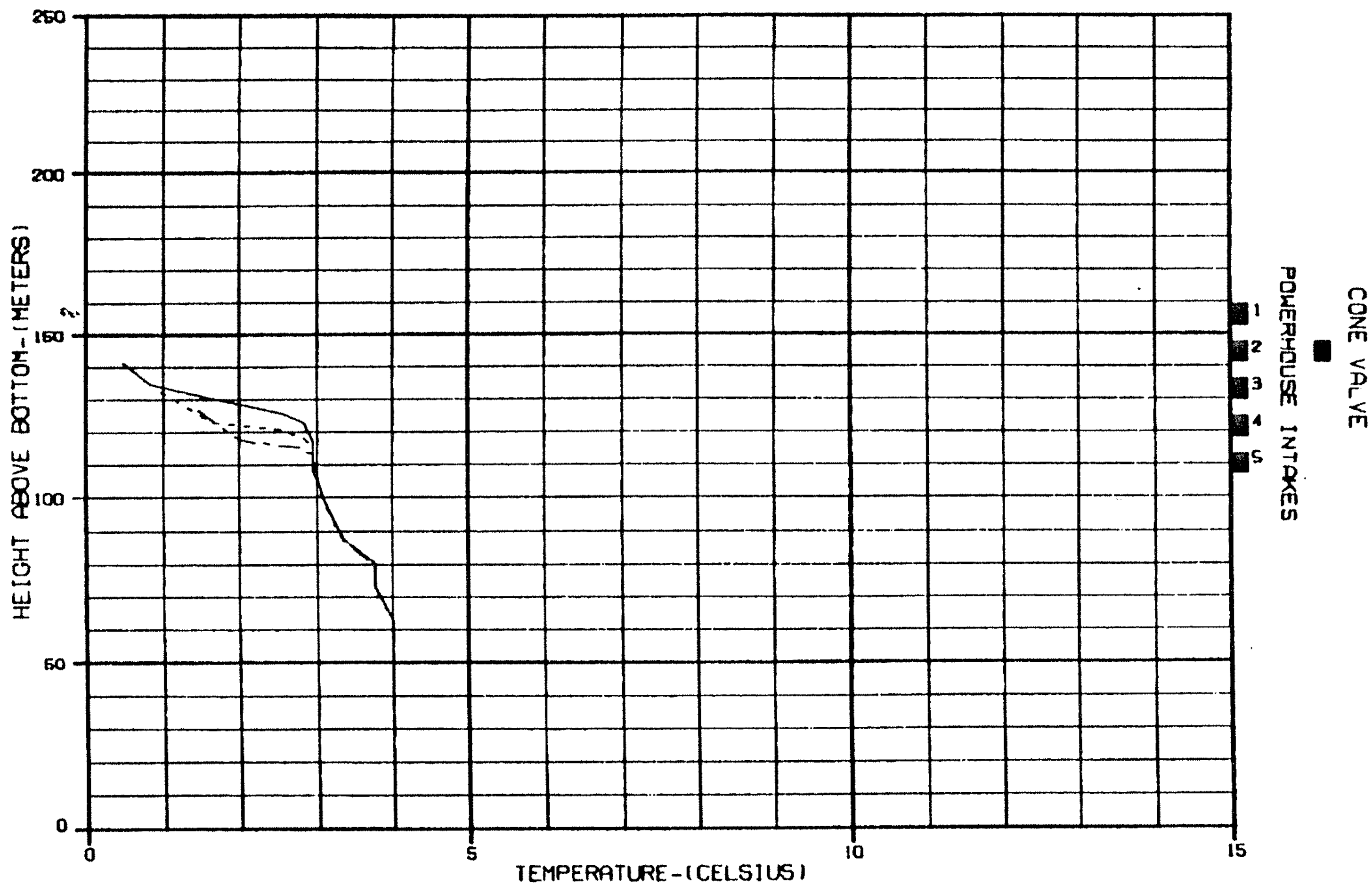
WATANA RESERVOIR

TEMPERATURE PROFILES

STAGE I

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | FIGURE E.2.4.71



CASE: ** WAB1010 - WATANA OPERATION ALONE IN STAGE I

LEGEND:

PREDICTED TEMPERATURE PROFILES:

————	1 FEBRUARY	1982
- - - - - -	1 MARCH	1982
— - — -	1 APRIL	1982

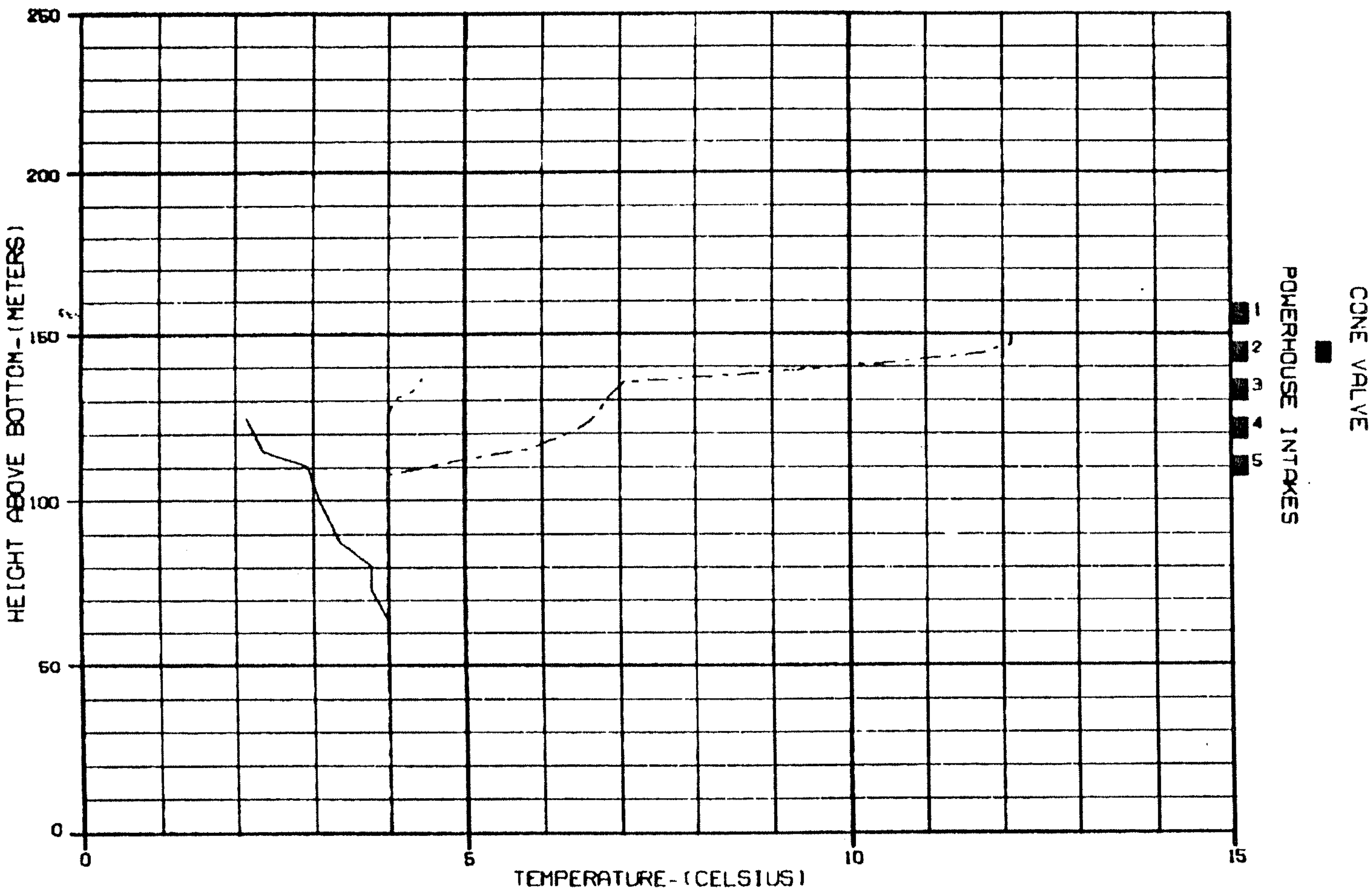
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR
TEMPERATURE PROFILES
STAGE I

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | FIGURE E.2.4.72



CASE: ** WAB1010 - WATANA OPERATION ALONE IN STAGE I

LEGEND:

PREDICTED TEMPERATURE PROFILES:

———— 1 MAY 1982

- - - - 1 JUNE 1982

— - — - 1 JULY 1982

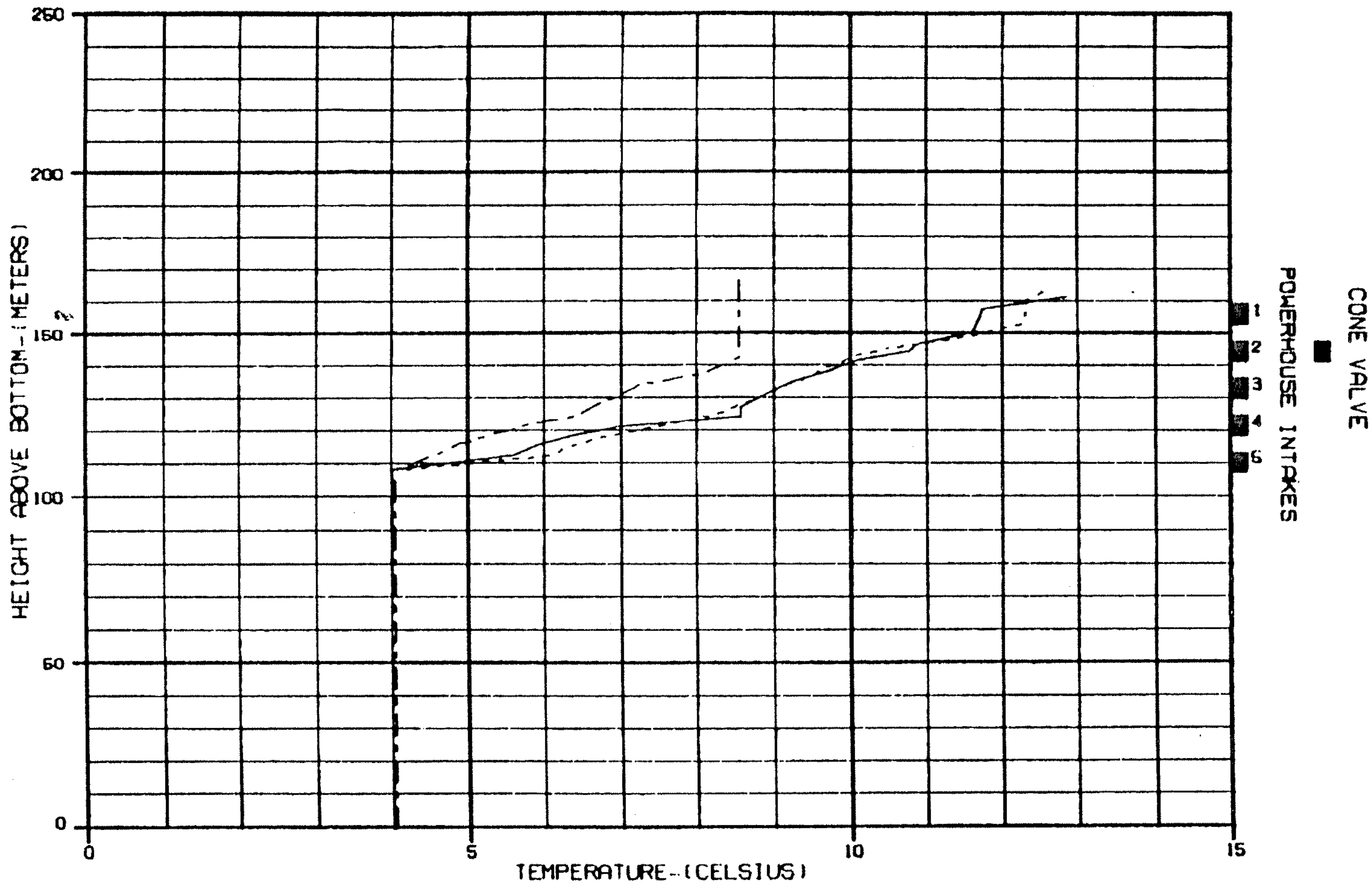
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR TEMPERATURE PROFILES STAGE I

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | FIGURE E.2.4.73



CASE: ** WA81010 - WATANA OPERATION ALONE IN STAGE I

LEGEND:

PREDICTED TEMPERATURE PROFILES:

————	1 AUGUST	1982
- - - - - -	1 SEPTEMBER	1982
— - — -	1 OCTOBER	1982

ALASKA POWER AUTHORITY

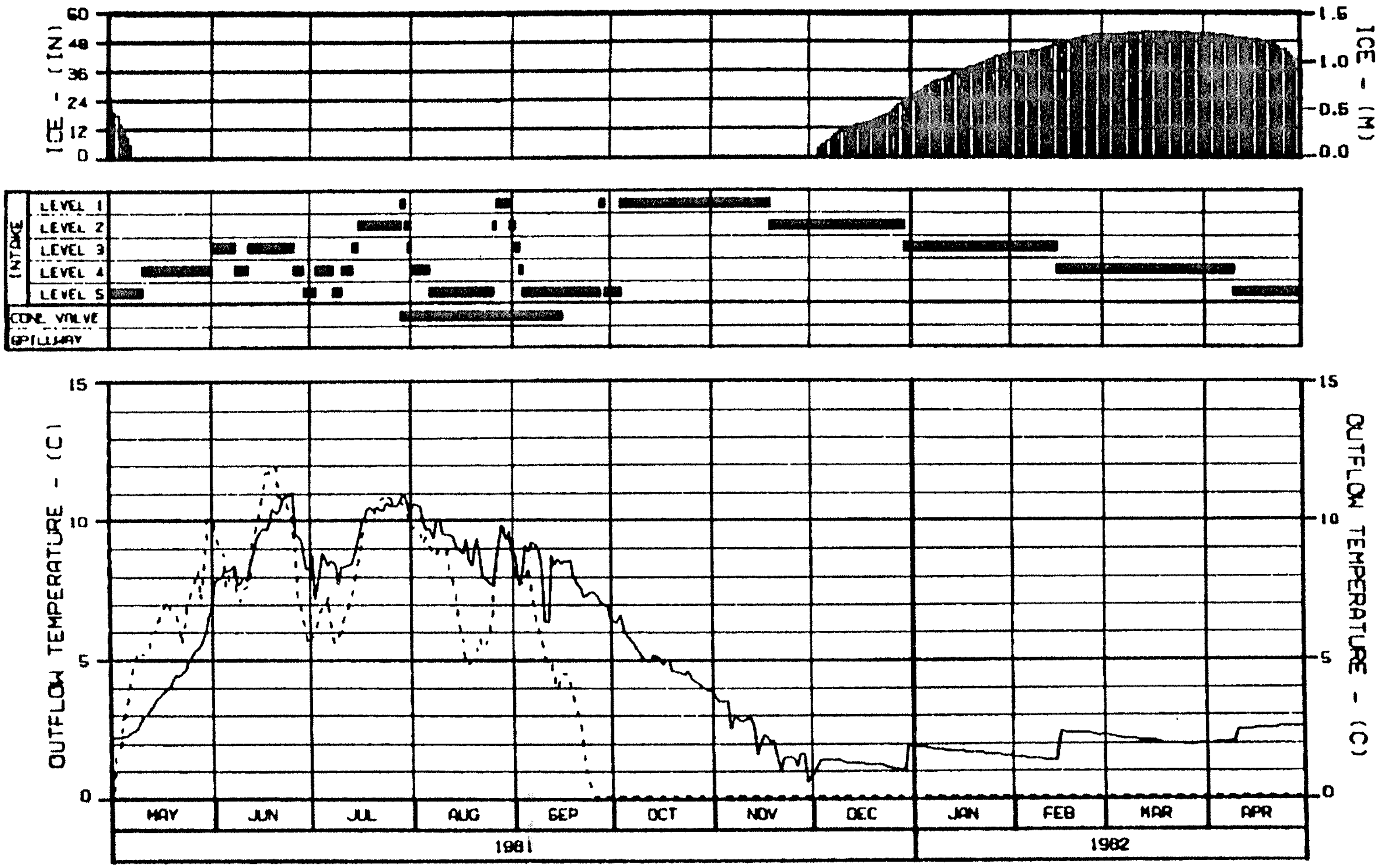
SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR
TEMPERATURE PROFILES
STAGE I

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS

FIGURE E.2.4.74

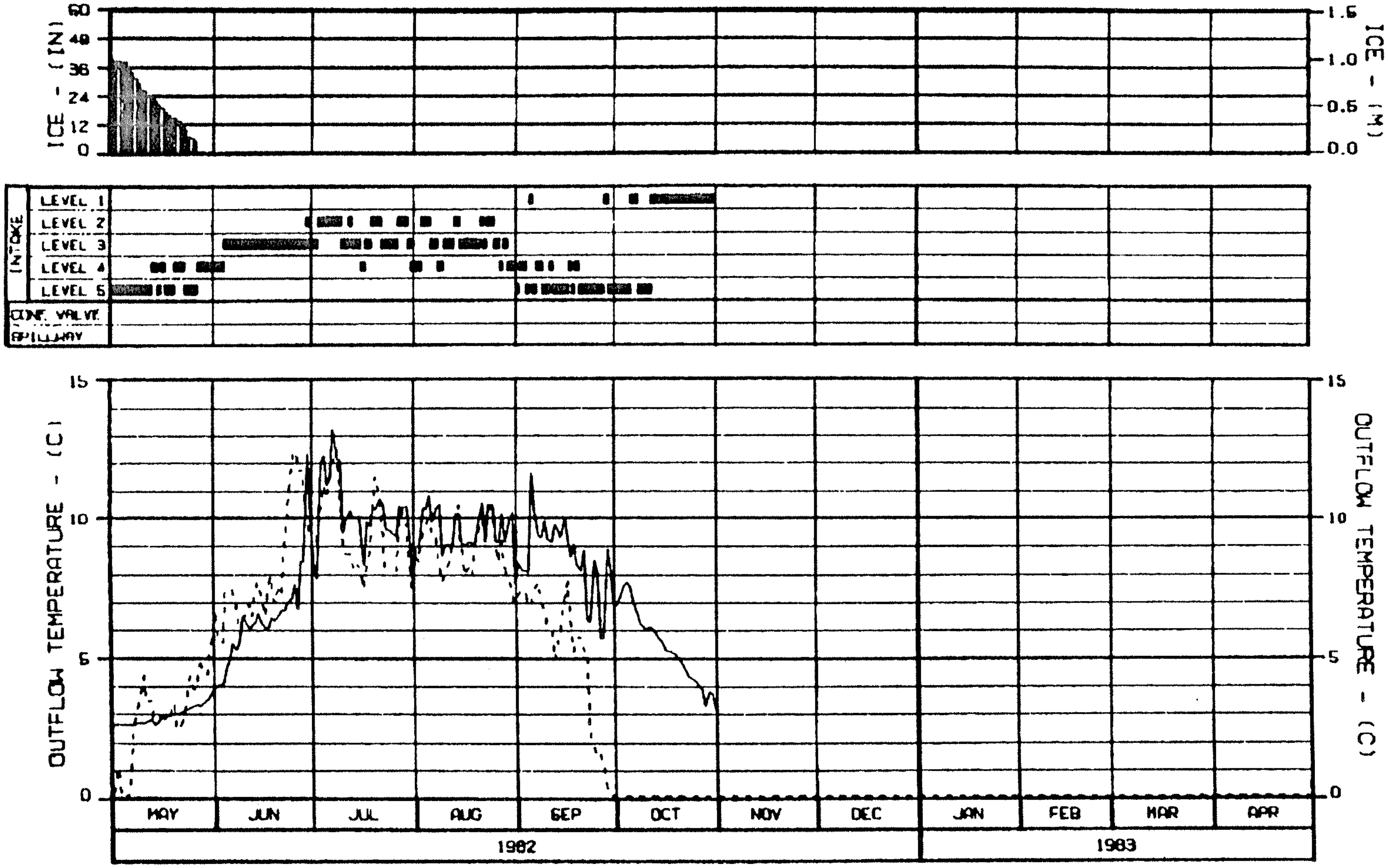


LEGEND: CASE: ** WA81010 - WATANA OPERATION

——————— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT EL. 1964 FT. (598.8 M)
2. INTAKE PORT LEVEL 2 AT EL. 1926 FT. (587.2 M)
3. INTAKE PORT LEVEL 3 AT EL. 1888 FT. (575.6 M)
4. INTAKE PORT LEVEL 4 AT EL. 1850 FT. (564.0 M)
5. INTAKE PORT LEVEL 5 AT EL. 1812 FT. (552.4 M)
6. CONE VALVE AT ELEVATION 1929 FT (588.0 M)
7. SPILLWAY CREST AT ELEVATION 2148 FT (654.7 M)

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
STAGE I WATANA RESERVOIR OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	FIGURE E.2.4.75

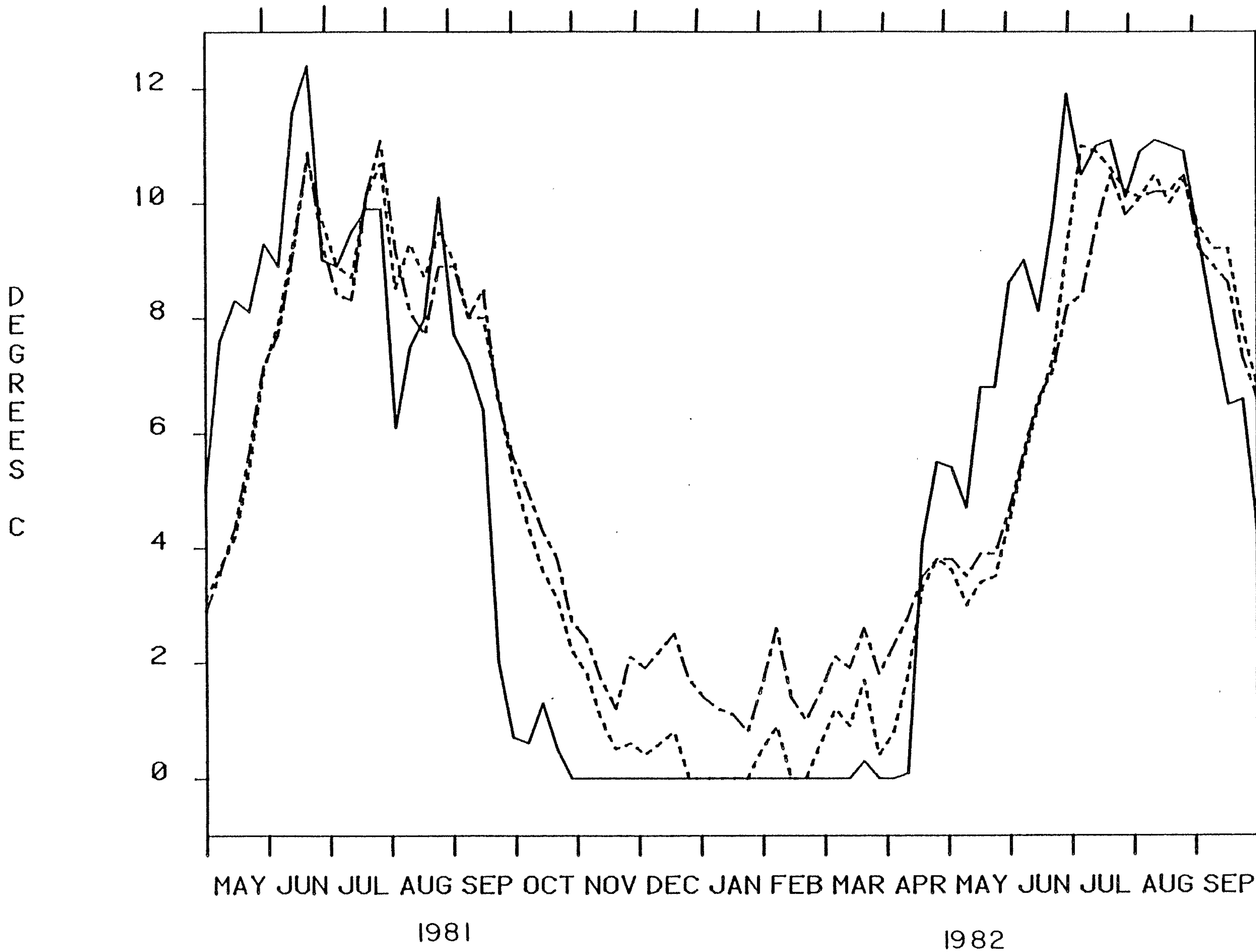


LEGEND: CASE: ** WA81010 - WATANA OPERATION

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES:
1. INTAKE PORT LEVEL 1 AT EL. 1964 FT. (598.8 M)
2. INTAKE PORT LEVEL 2 AT EL. 1926 FT. (587.2 M)
3. INTAKE PORT LEVEL 3 AT EL. 1888 FT. (575.6 M)
4. INTAKE PORT LEVEL 4 AT EL. 1850 FT. (564.0 M)
5. INTAKE PORT LEVEL 5 AT EL. 1812 FT. (552.4 M)
6. CONE VALVE AT ELEVATION 1929 FT (588.0 M)
7. SPILLWAY CREST AT ELEVATION 2148 FT (654.7 M)

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
STAGE I WATANA RESERVOIR OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	FIGURE E.2.4.76



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 1 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD DECEMBER-MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)

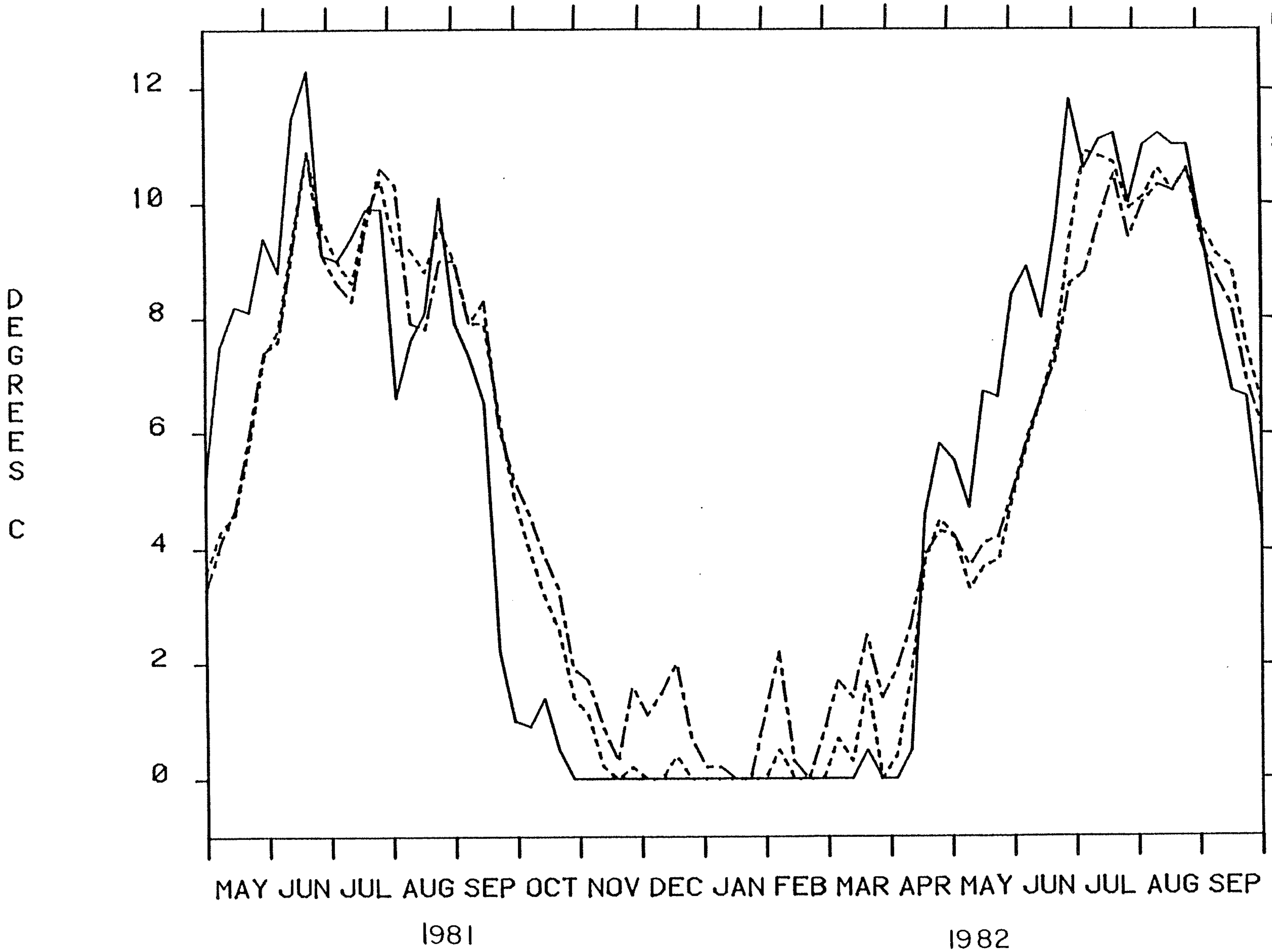
LEGEND

- SIMULATED NATURAL TEMPERATURES
- SIMULATED TEMPERATURE PHASE 1 OF TWO STAGE PROJECT (FOR COMPARIS
- SIMULATED TEMPERATURE STAGE 1 OF PROPOSED PROJECT

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 STAGE I

FIGURE E.2.4. 77



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 1 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD NOVEMBER-APRIL SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)

LEGEND

——— SIMULATED NATURAL TEMPERATURES

—·—·— SIMULATED TEMPERATURES PHASE 1 OF TWO STAGE PROJECT (FOR COMPARISO

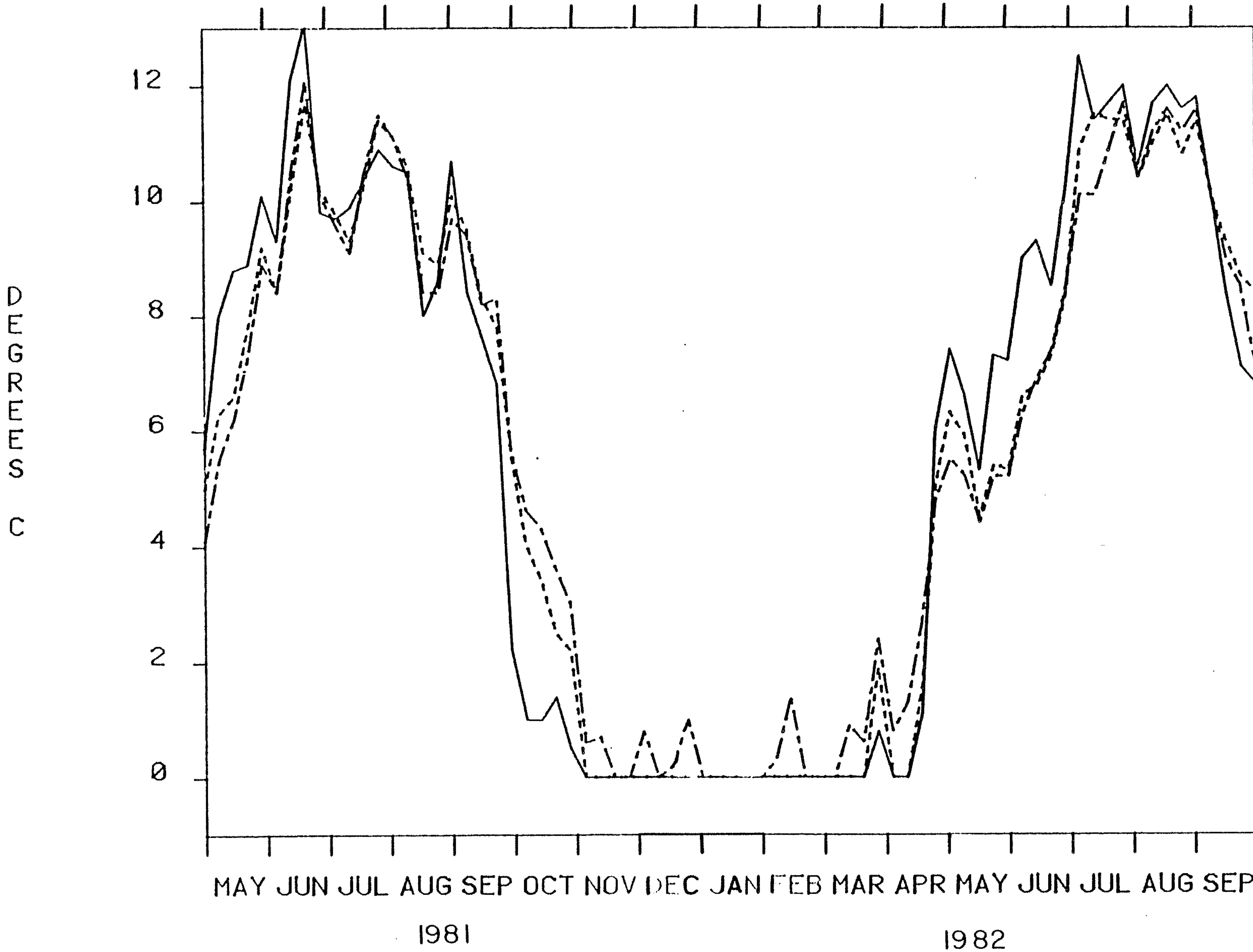
- - - - SIMULATED TEMPERATURES STAGE I OF PROPOSED PROJECT

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 STAGE I

FIGURE E.2.4.78



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 1 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. TEMPERATURES SIMULATE BY SNTEMP FOR PERIOD NOVEMBER - APRIL SHOULD BE USED WITH CAUTION A AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)

LEGEND

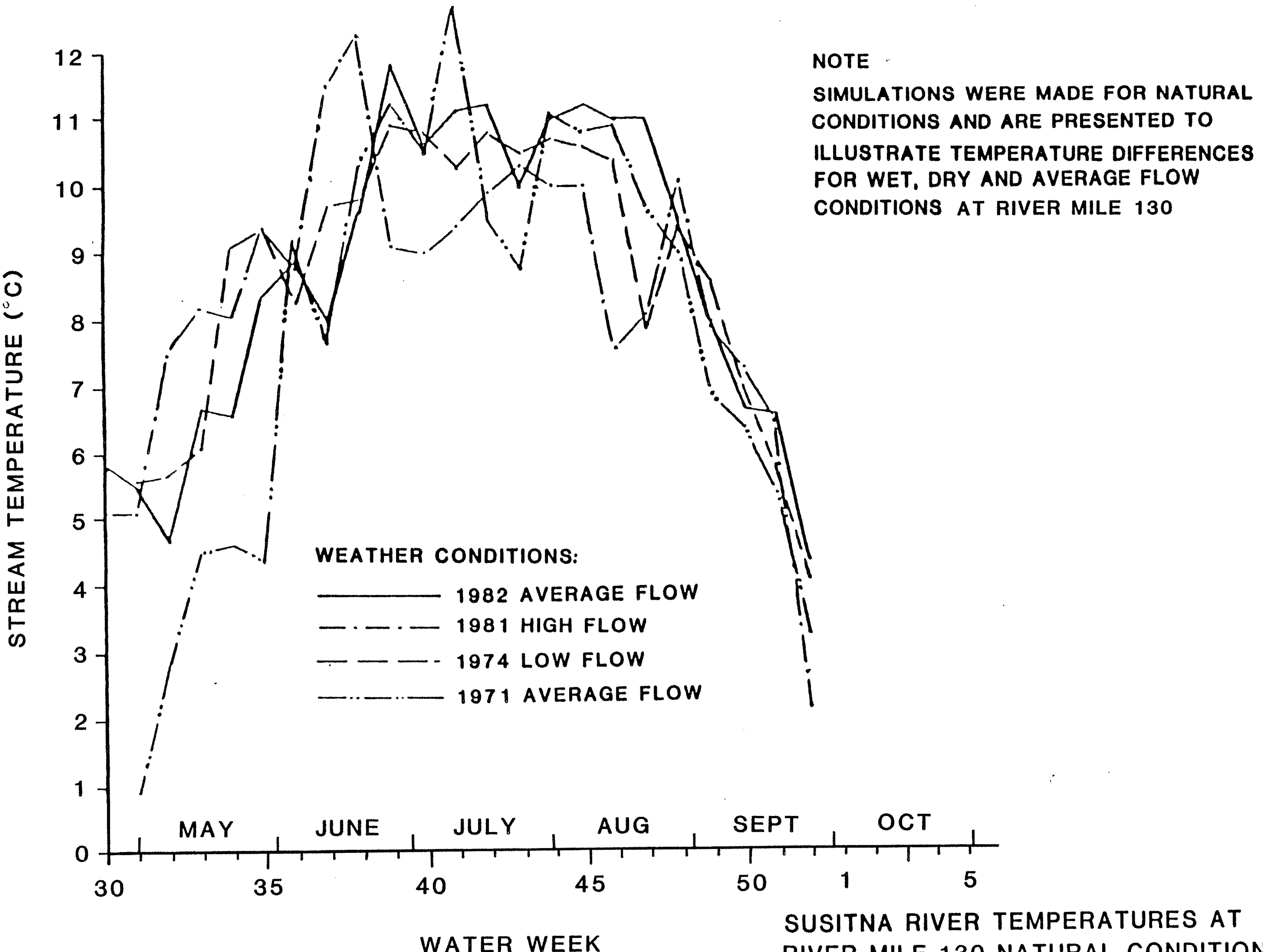
- ——— SIMULATED NATURAL TEMPERATURES
- —·—·— SIMULATED TEMPERATUR PHASE 1 OF TWO STAGE PROJECT (FOR COMPARI
- - - - - SIMULATED TEMPERATUR STAGE 1 OF PROPOSED PROJECT

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

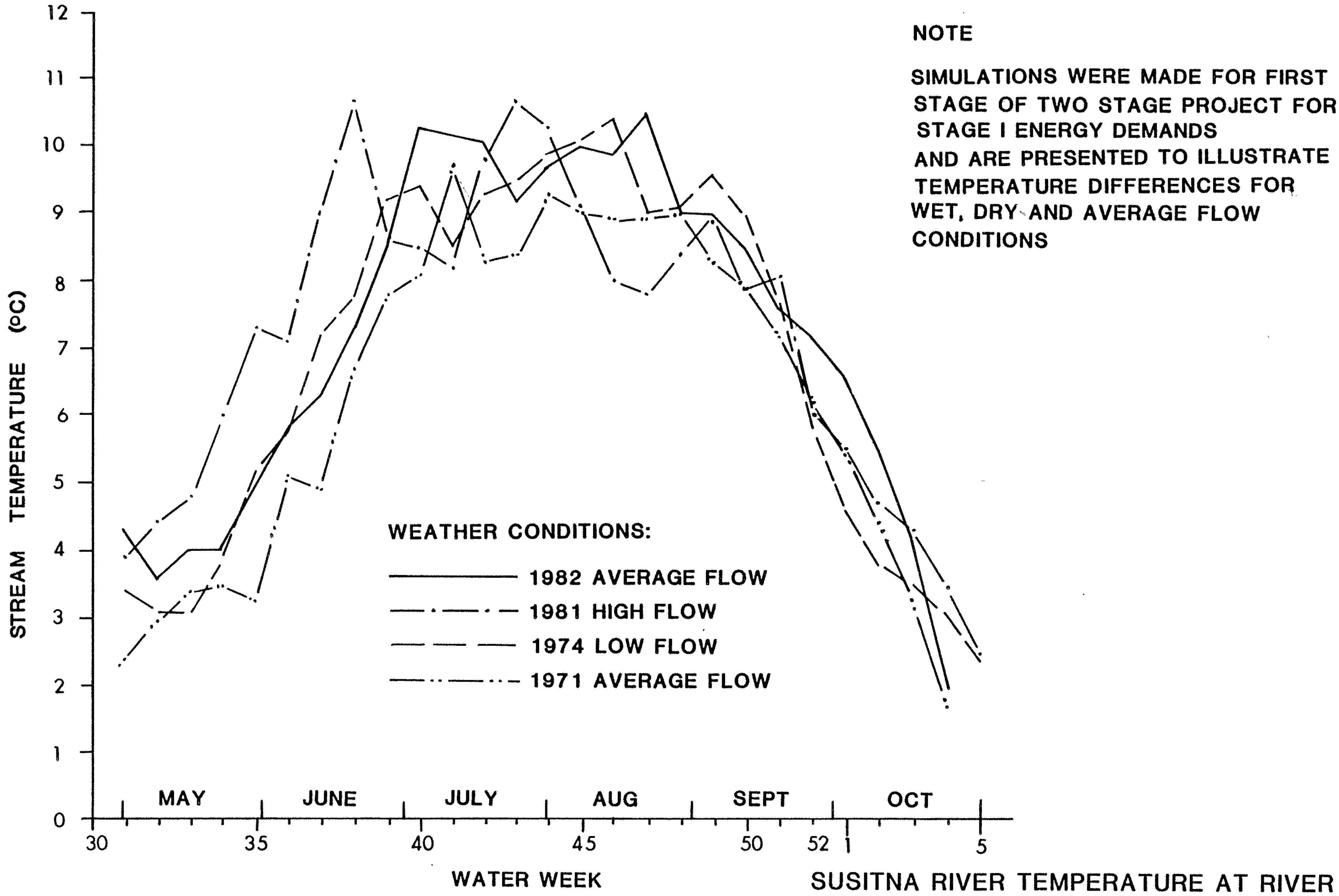
SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100 STAGE I

FIGURE E.2.4.79



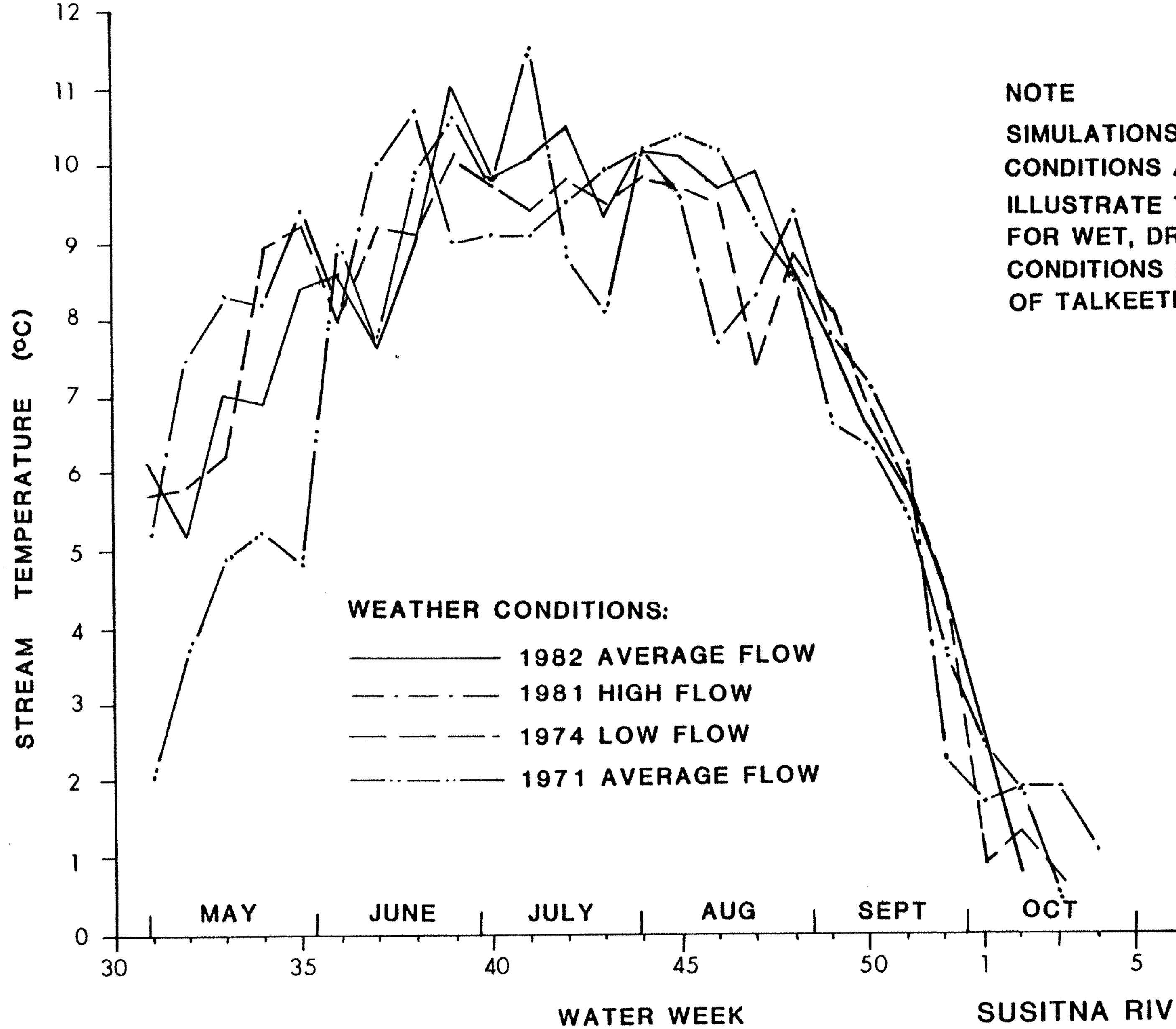
SUSITNA RIVER TEMPERATURES AT RIVER MILE 130 NATURAL CONDITIONS

FIGURE E.2.4.80



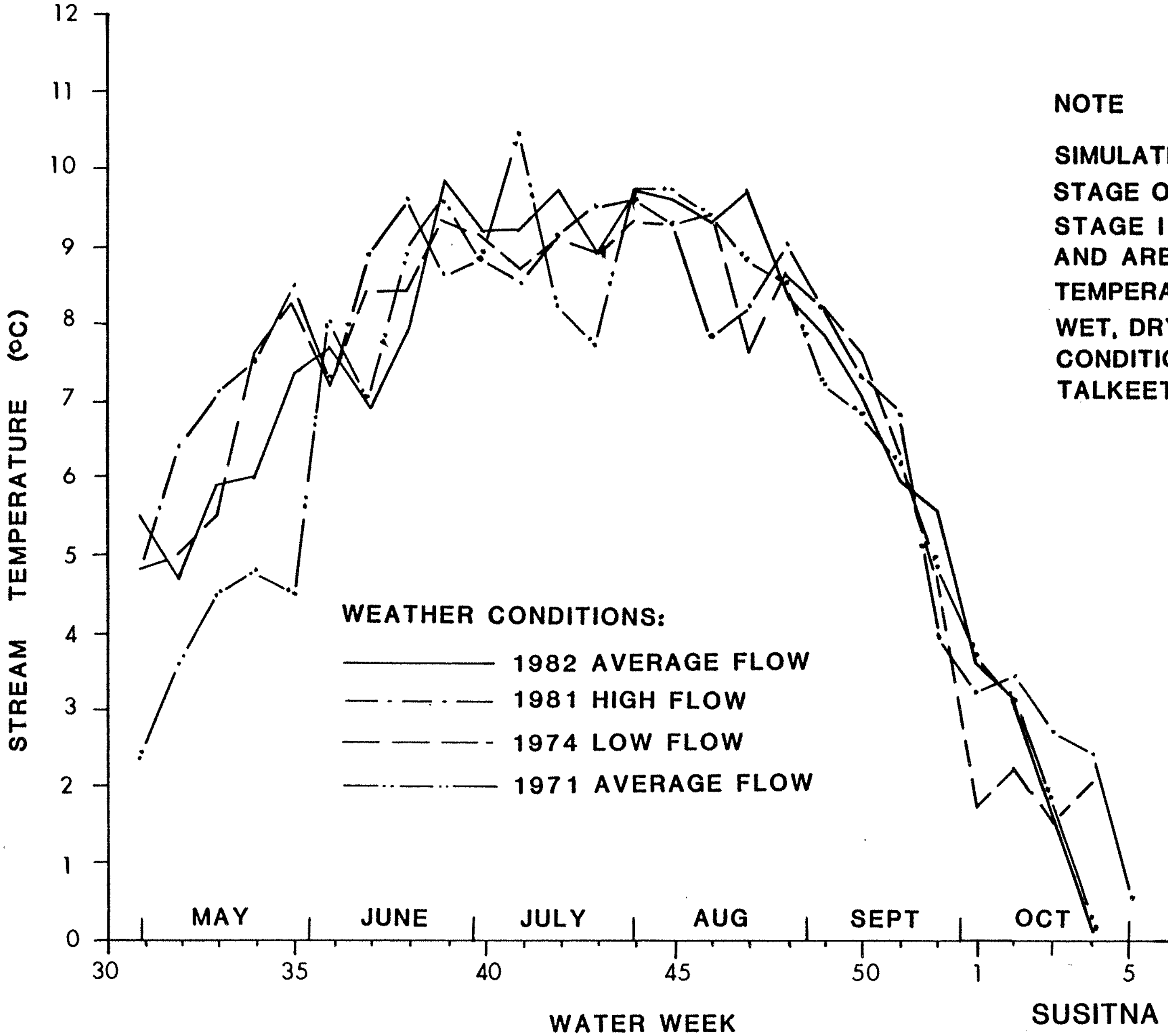
SUSITNA RIVER TEMPERATURE AT RIVER MILE 130 WATANA OPERATING

FIGURE E.2.4.81



SUSITNA RIVER TEMPERATURES AT RIVER MILE 84 NATURAL CONDITIONS

FIGURE E.2.4.82

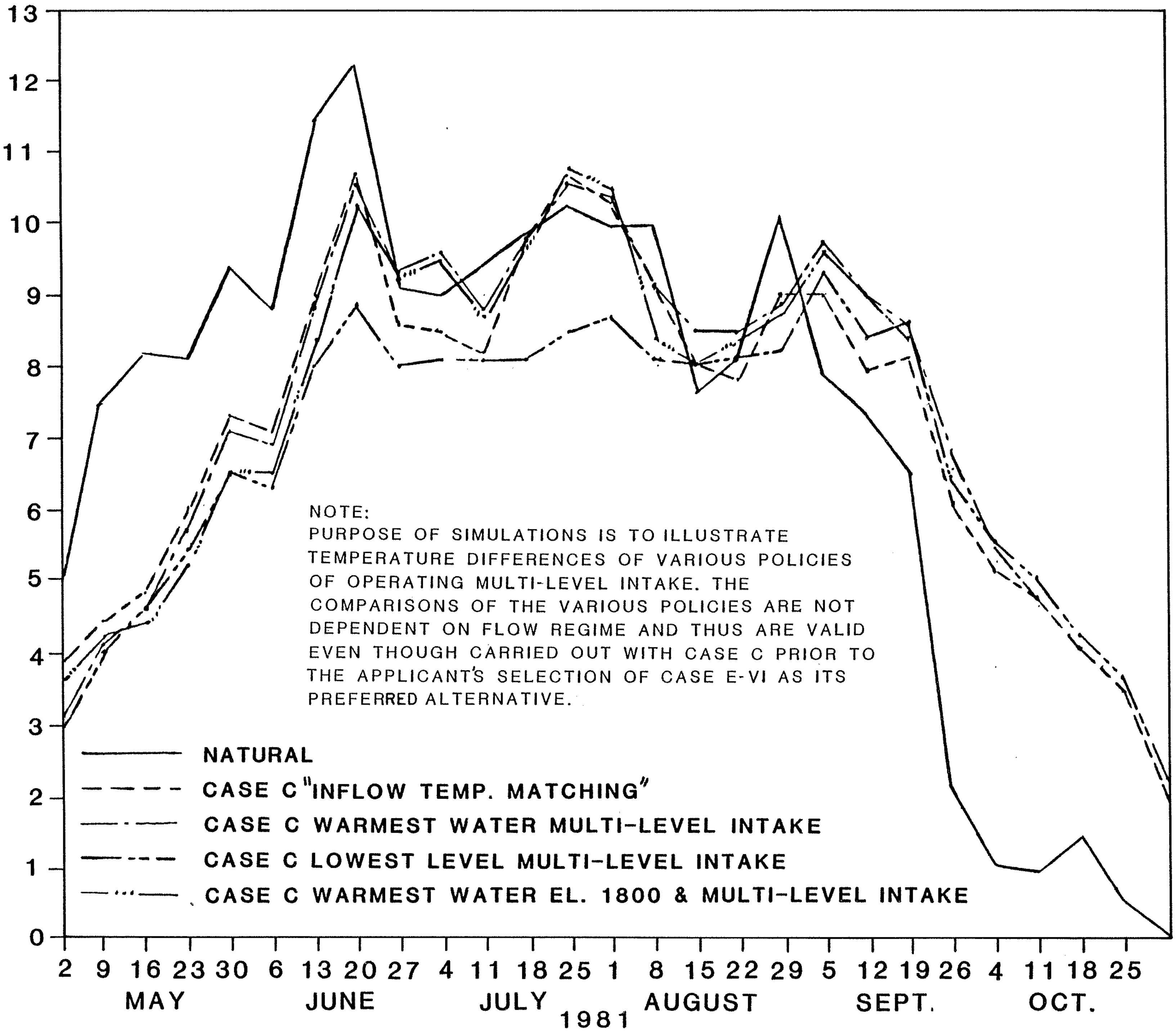


NOTE

SIMULATIONS WERE MADE FOR FIRST STAGE OF TWO STAGE PROJECT FOR STAGE I ENERGY DEMANDS AND ARE PRESENTED TO ILLUSTRATE TEMPERATURE DIFFERENCES FOR WET, DRY AND AVERAGE FLOW CONDITIONS DOWNSTREAM OF TALKEETNA

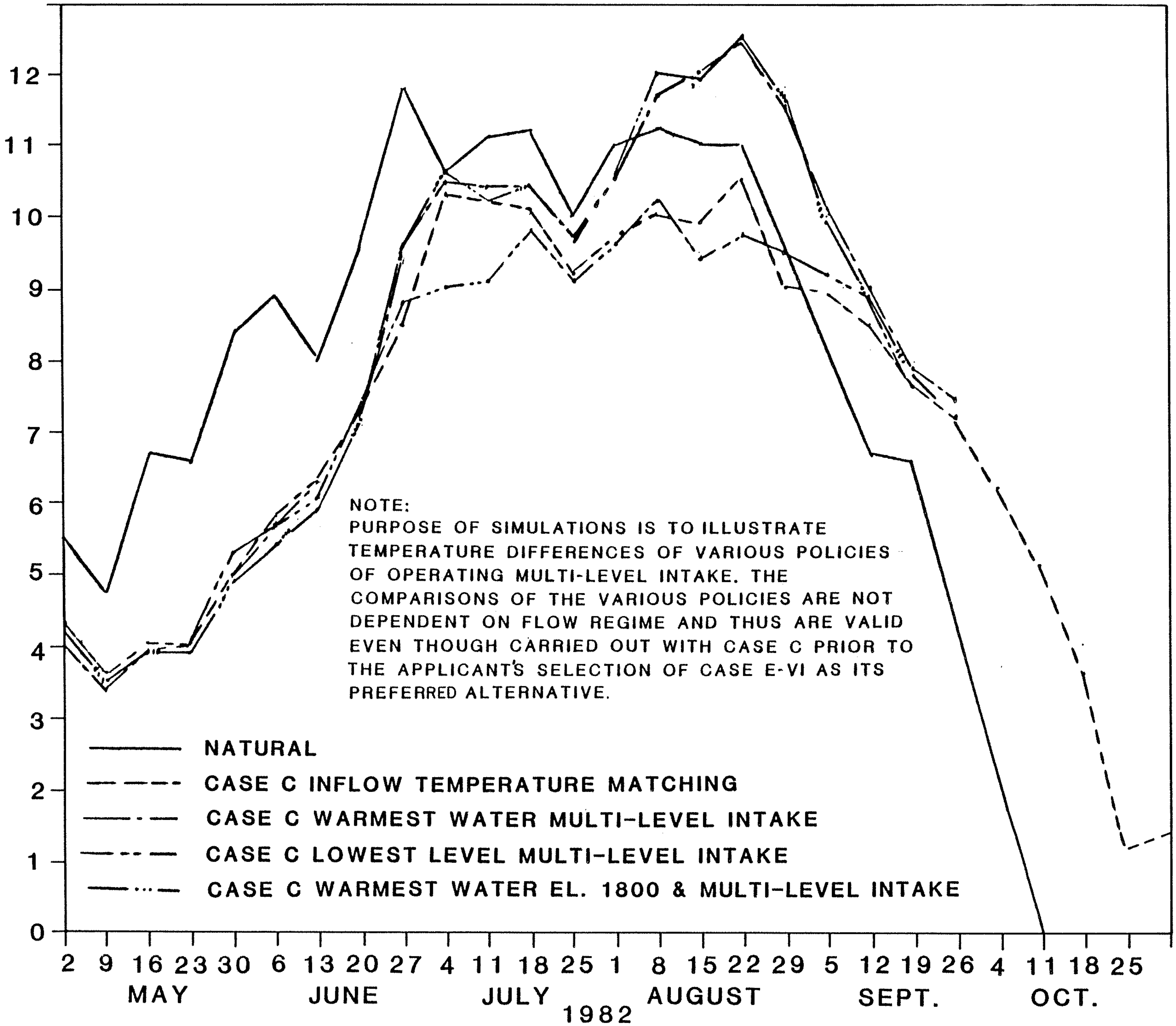
SUSITNA RIVER TEMPERATURES AT RIVER MILE 84 WATANA OPERATING

FIGURE E.2.4.83



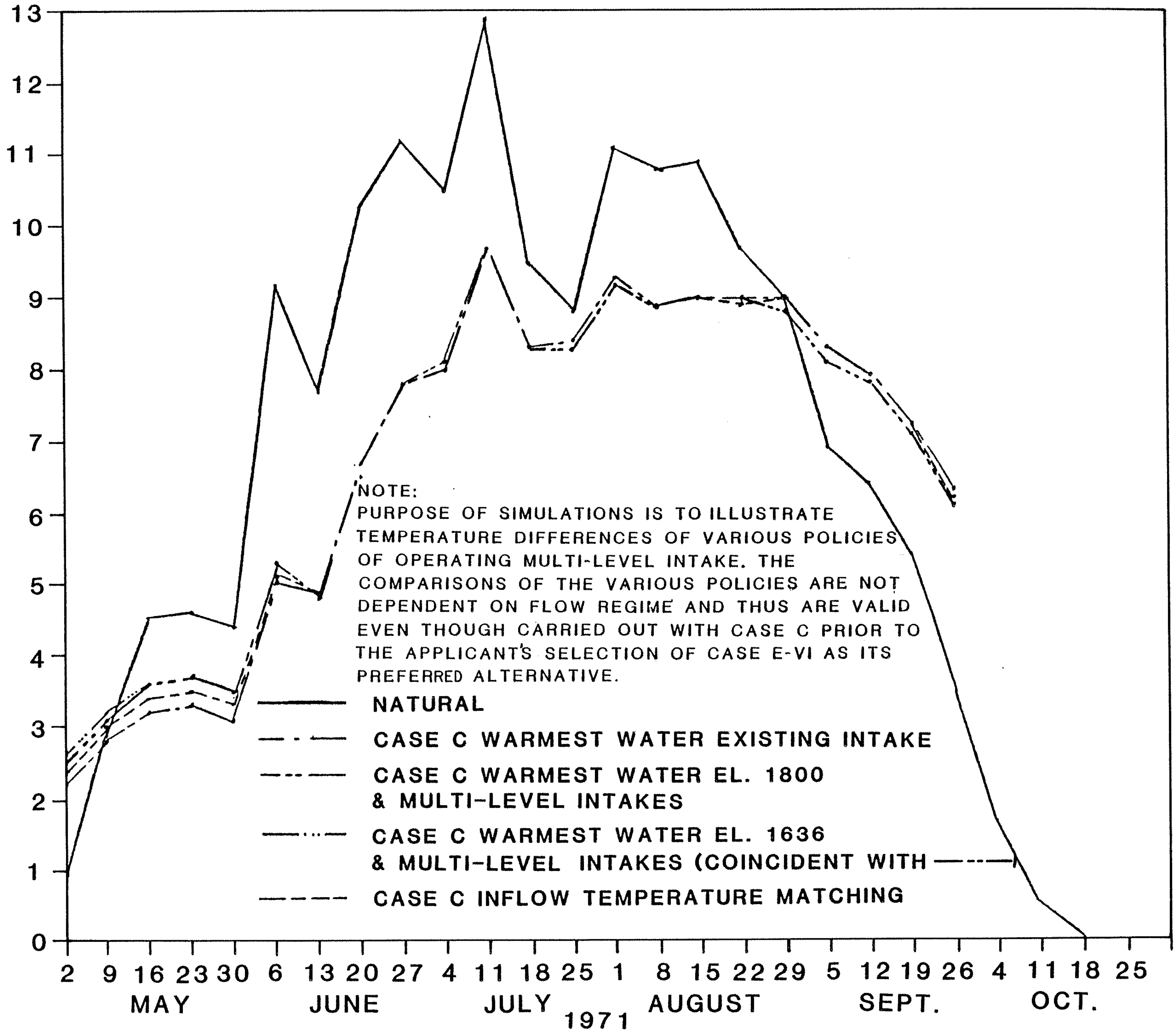
SIMULATED TEMPERATURES AT RIVER MILE 130
VARIOUS INTAKE OPERATING POLICIES

FIGURE E.2.4.84



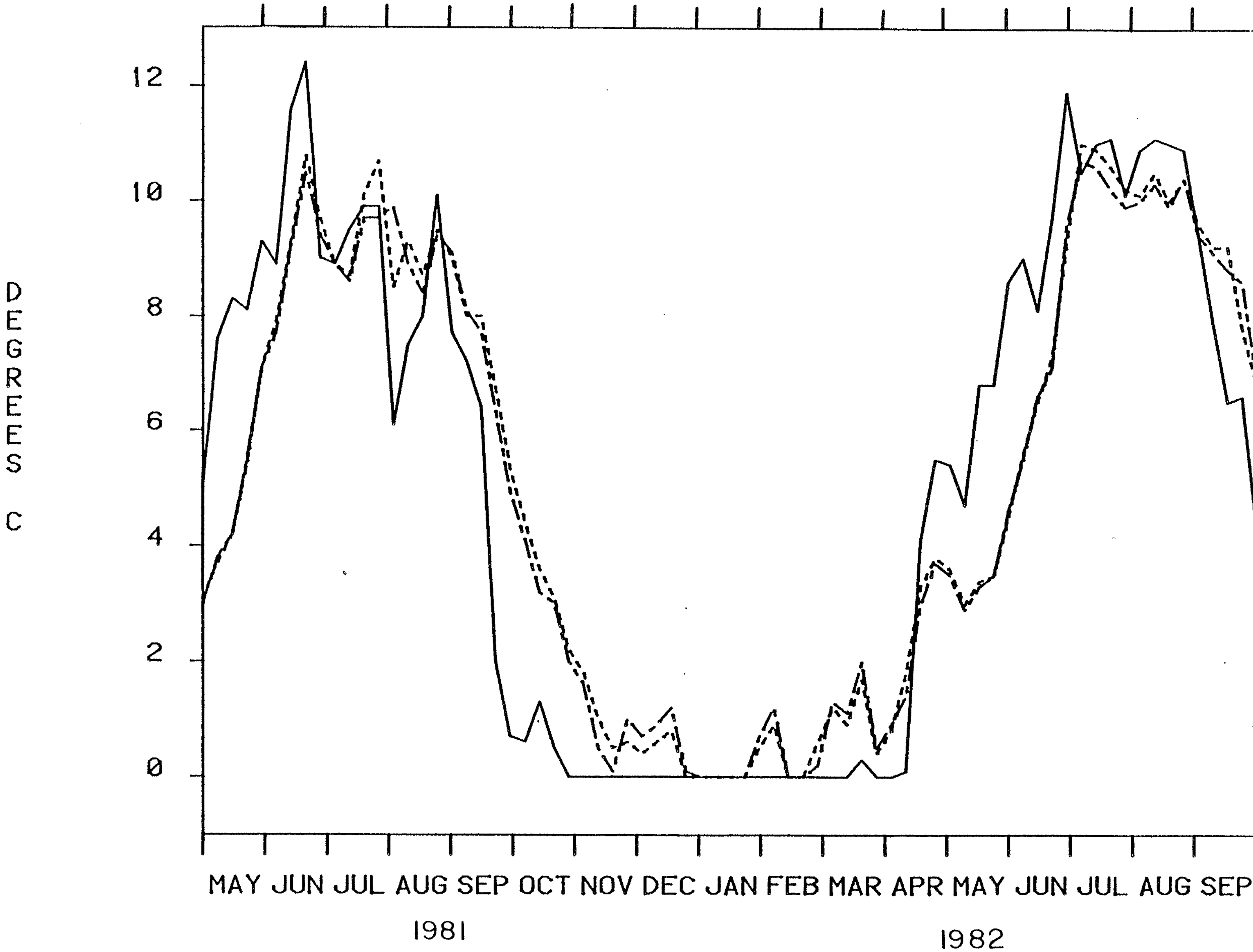
SIMULATED TEMPERATURES AT RIVER MILE 130
VARIOUS INTAKE OPERATING POLICIES

FIGURE E.2.4.85



SIMULATED TEMPERATURES AT RIVER MILE 130
VARIOUS INTAKE OPERATING POLICIES

FIGURE E.2.4.86



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981–SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 1 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD DECEMBER – MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER

LEGEND

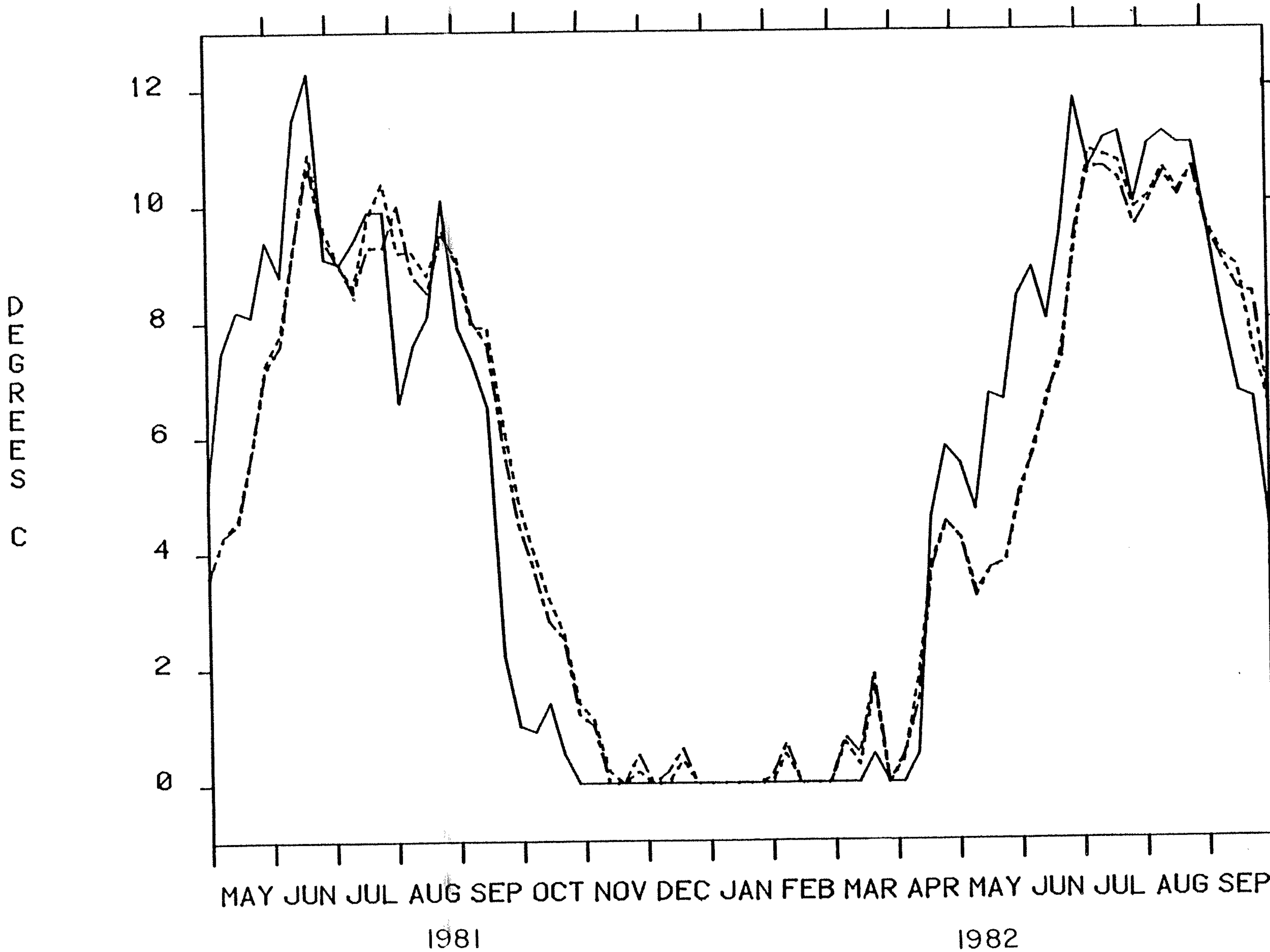
- ——— SIMULATED NATURAL TEMPERATURES
- - - - - - SIMULATED TEMPERATURES E-VI FLOW REQUIREMENTS PROPOSED PROJECT
- — — — SIMULATED TEMPERATURES E-I FLOW REQUIREMENTS (FOR COMPARISON)

FIGURE E.2.4. 87

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 STAGE I



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 1 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD NOVEMBER-APRIL SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER

LEGEND

——— SIMULATED NATURAL TEMPERATURES

- - - - - SIMULATED TEMPERATURES E-VI FLOW REQUIREMENTS PROPOSED PROJECT

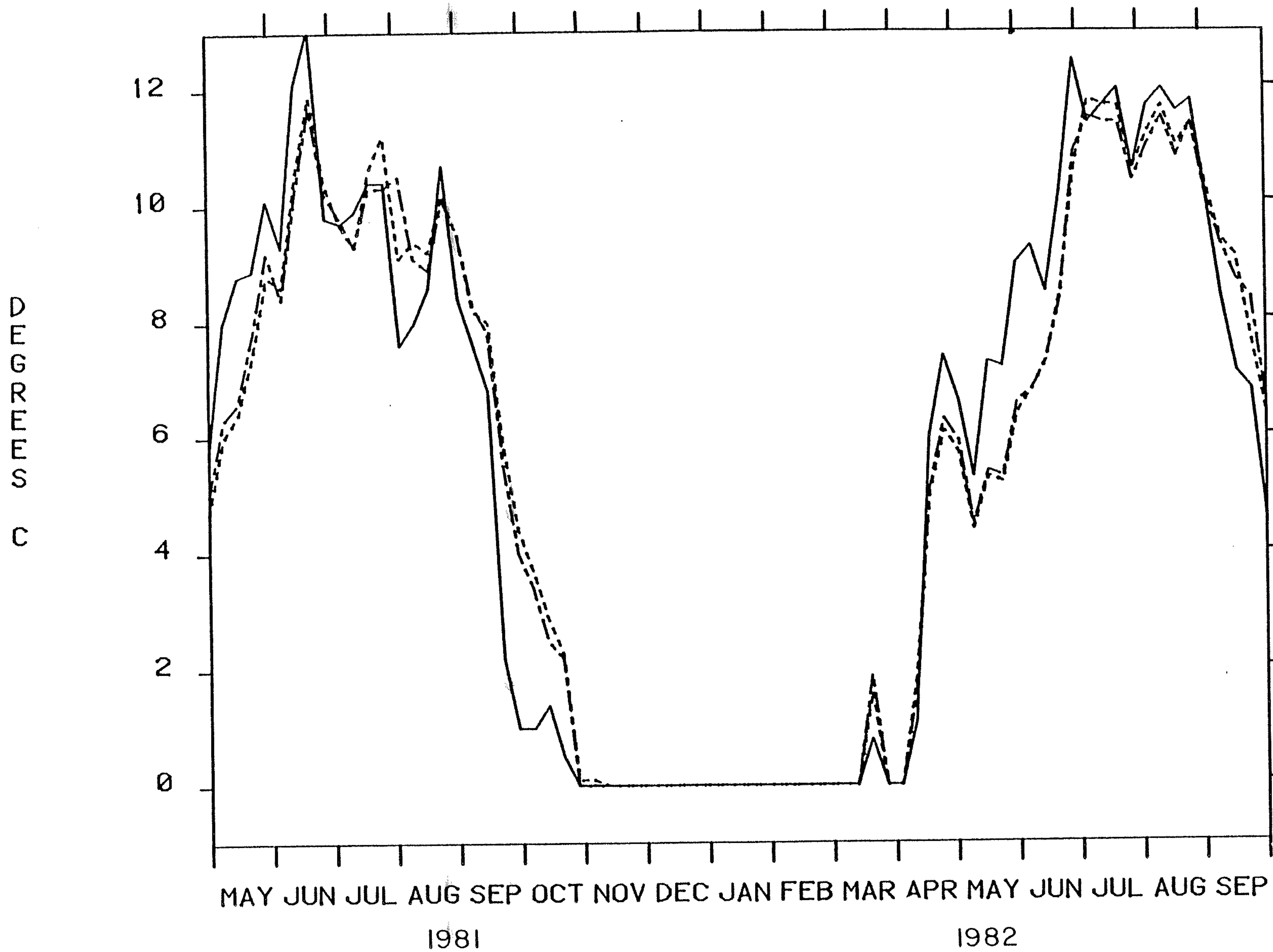
— — — SIMULATED TEMPERATURES E-I FLOW REQUIREMENTS (FOR COMPARISON)

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 STAGE I

FIGURE E.2.4.88



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 1 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD NOVEMBER-APRIL SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)

LEGEND

——— SIMULATED NATURAL TEMPERATURES

- - - - - SIMULATED TEMPERATURES E-VI FLOW REQUIREMENTS PROPOSED PROJECT

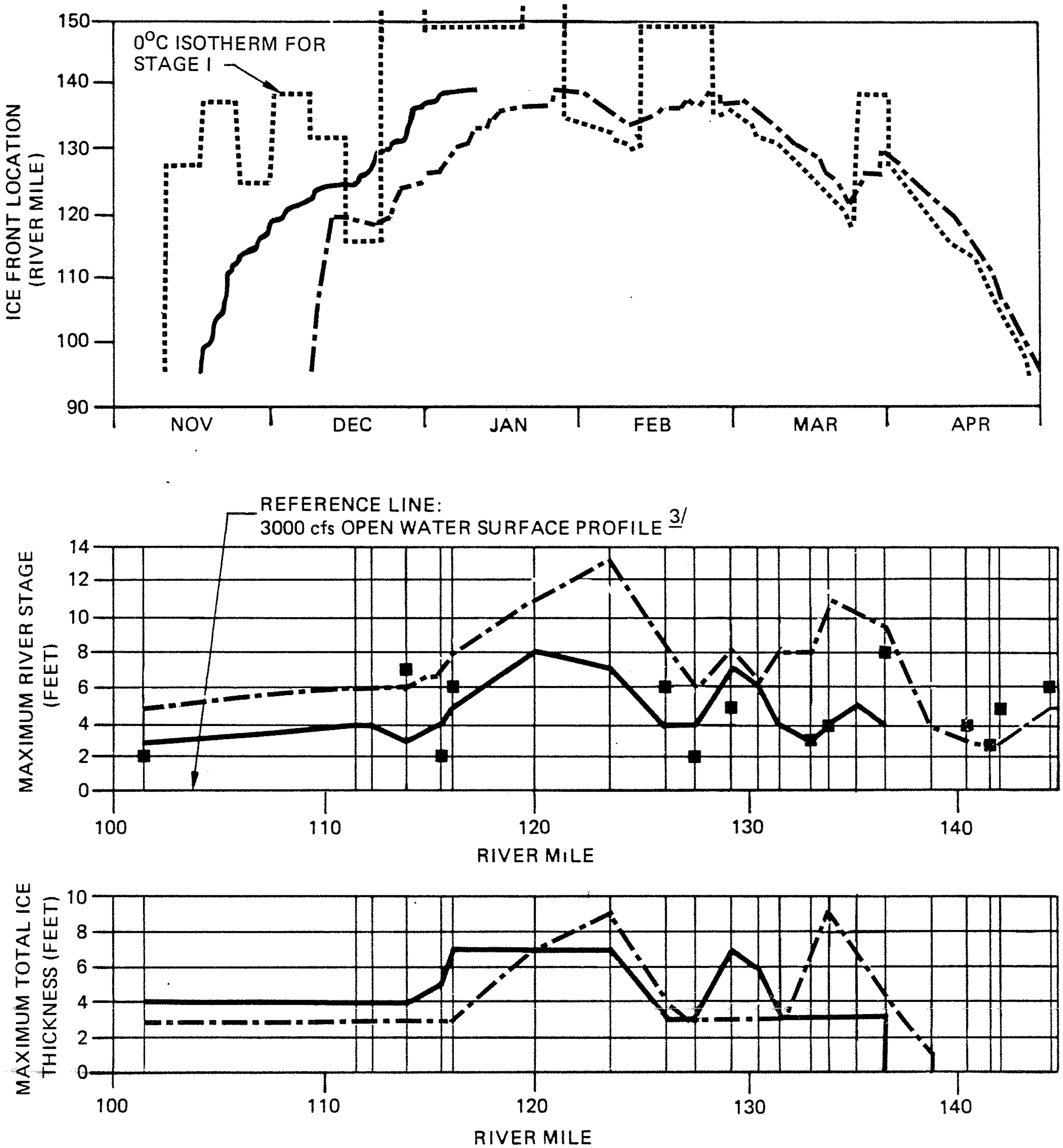
— — — SIMULATED TEMPERATURES E-I FLOW REQUIREMENTS (FOR COMPARISON)

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100 STAGE I

FIGURE E.2.4.89



NOTES:

1. STAGE I SIMULATION BASED ON CASE E–VI FLOWS. STAGE I ENERGY DEMAND, INFLOW MATCHING TEMPERATURE POLICY.
2. NATURAL CONDITIONS NOT SIMULATED UPSTREAM OF RM 140.
3. 3000 cfs REPRESENTS TYPICAL WINTER FLOW UNDER NATURAL CONDITIONS AT FREEZE UP.

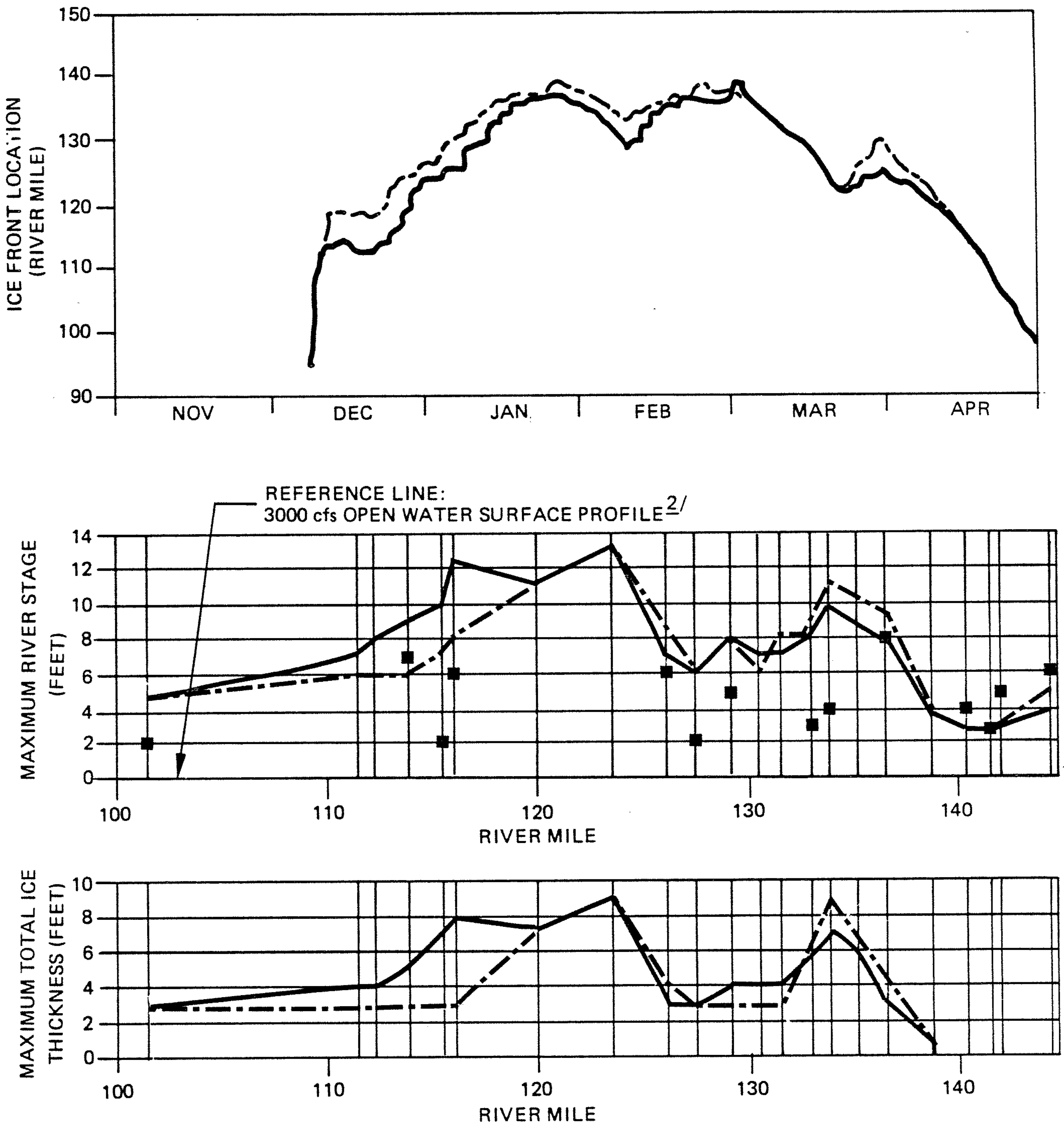
LEGEND:

- NATURAL CONDITIONS
- STAGE I OPERATING
- ■ NATURAL SLOUGH BERM ELEVATION (SEE TABLE E.2.4.23)

HARZA-EBASCO SUSITNA JOINT VENTURE
ALASKA POWER AUTHORITY

SIMULATED RIVER ICE CONDITIONS STAGE I vs. NATURAL 1981-82 WEATHER CONDITIONS CASE E-VI FLOWS

FIGURE E.2.4.90



NOTES:

1. SIMULATIONS BASED ON STAGE I ENERGY DEMAND, INFLOW MATCHING TEMPERATURE POLICY.
2. 3000 cfs REPRESENTS TYPICAL FLOW UNDER NATURAL CONDITIONS AT FREEZE UP.

LEGEND:

CASE E–1 FLOWS

CASE E–VI FLOWS

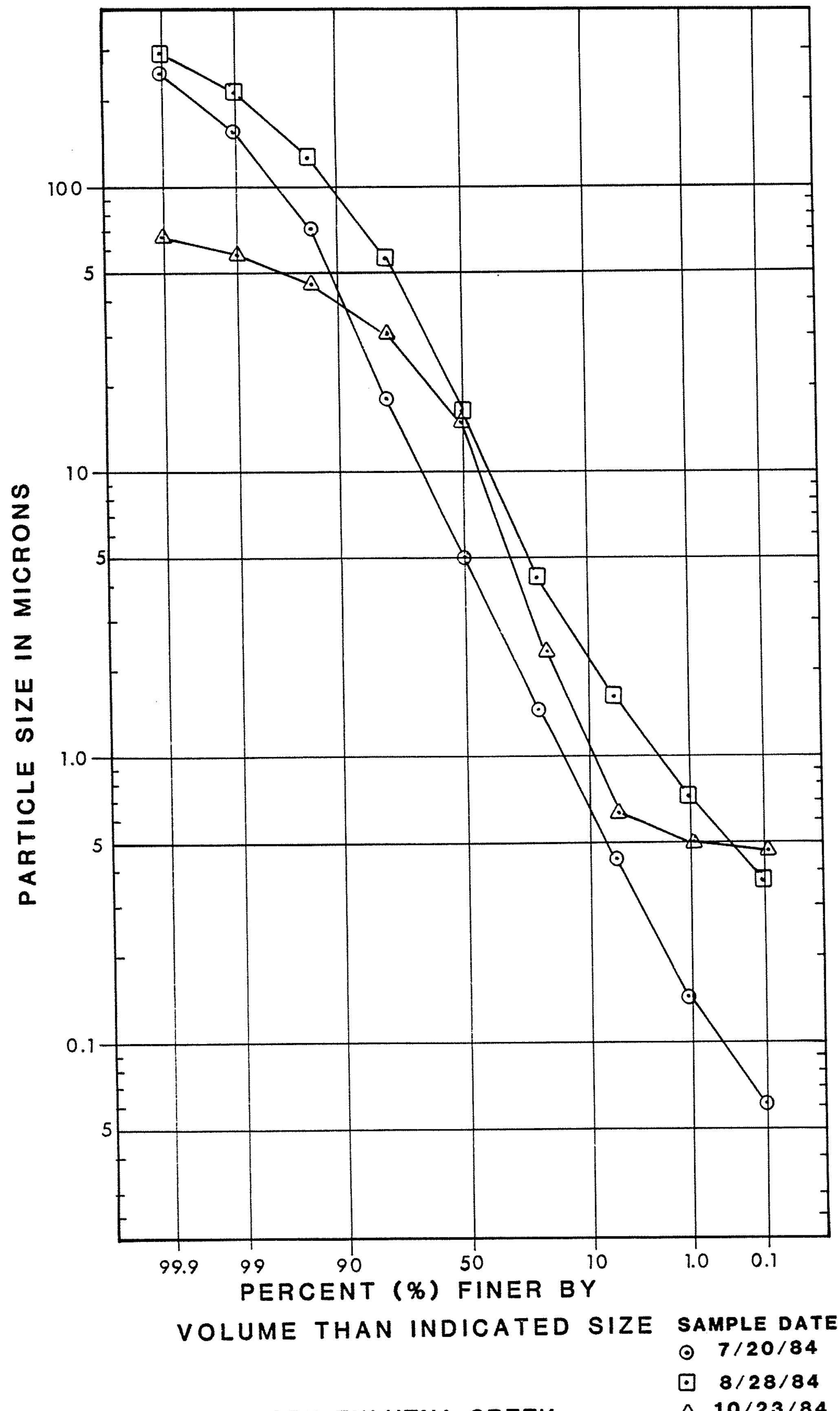
NATURAL SLOUGH BERM ELEVATION (SEE TABLE E.2.4.24)

SIMULATED RIVER ICE CONDITIONS
STAGE I
1981-82 WEATHER CONDITIONS
CASE E-I vs. CASE E-VI

FIGURE E.2.4.91

HARZA-EBASCO SUSITNA JOINT VENTURE

ALASKA POWER AUTHORITY

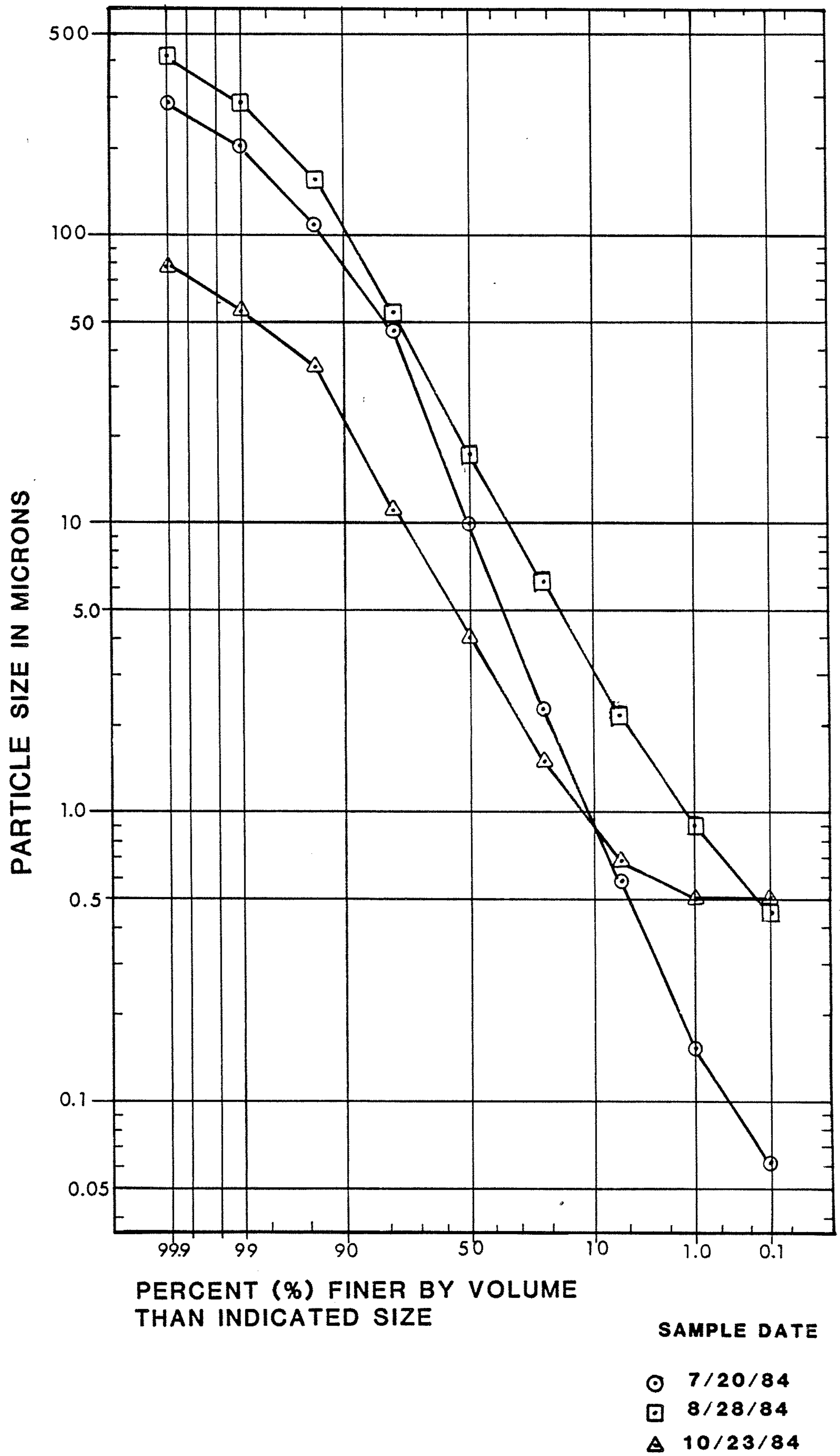


EAST FORK EKLUTNA CREEK

SUSPENDED SEDIMENT PARTICLE SIZE DISTRIBUTION

SOURCE: R & M 1985 f

FIGURE E.2.4.92

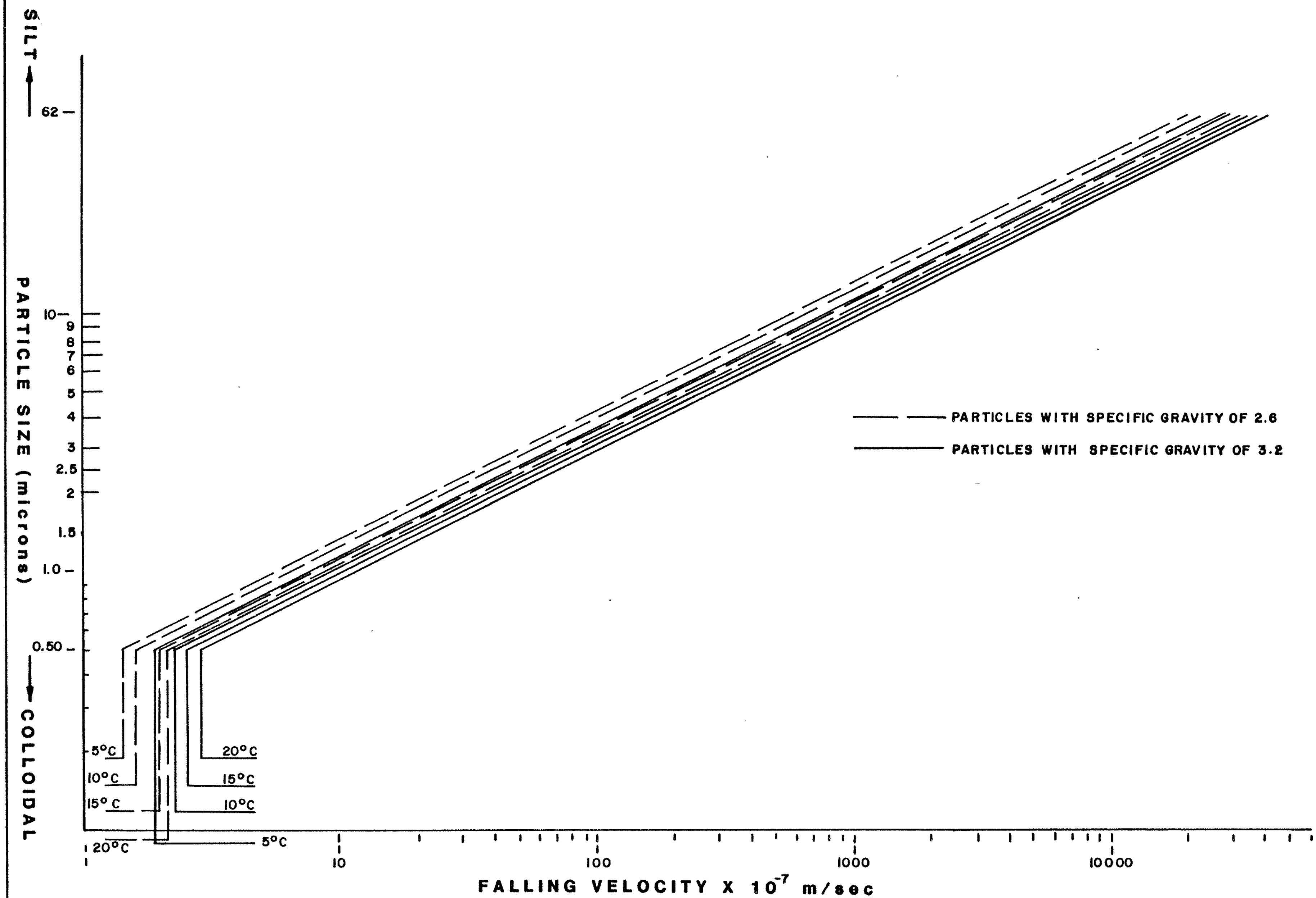


SOURCE: R & M 1985f

GLACIER FORK EKLUTNA CREEK

SUSPENDED SEDIMENT PARTICLE SIZE DISTRIBUTION

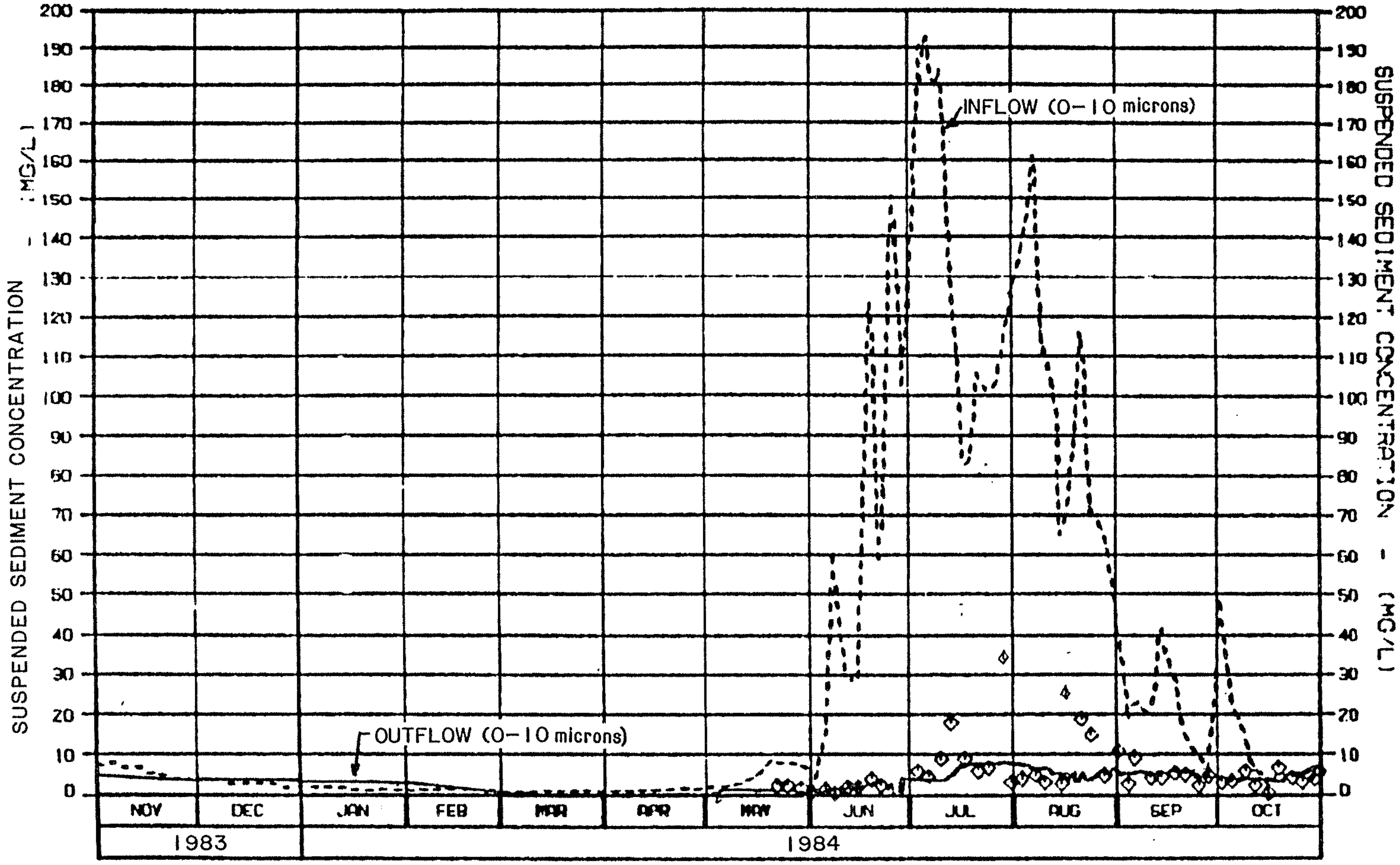
FIGURE E.2.4.93



STOKES LAW FOR FALL VELOCITIES VARIATIONS WITH RESPECT TO TEMPERATURE AND PARTICLE DENSITY

SOURCE: R&M 1985f

FIGURE E.2.4.94

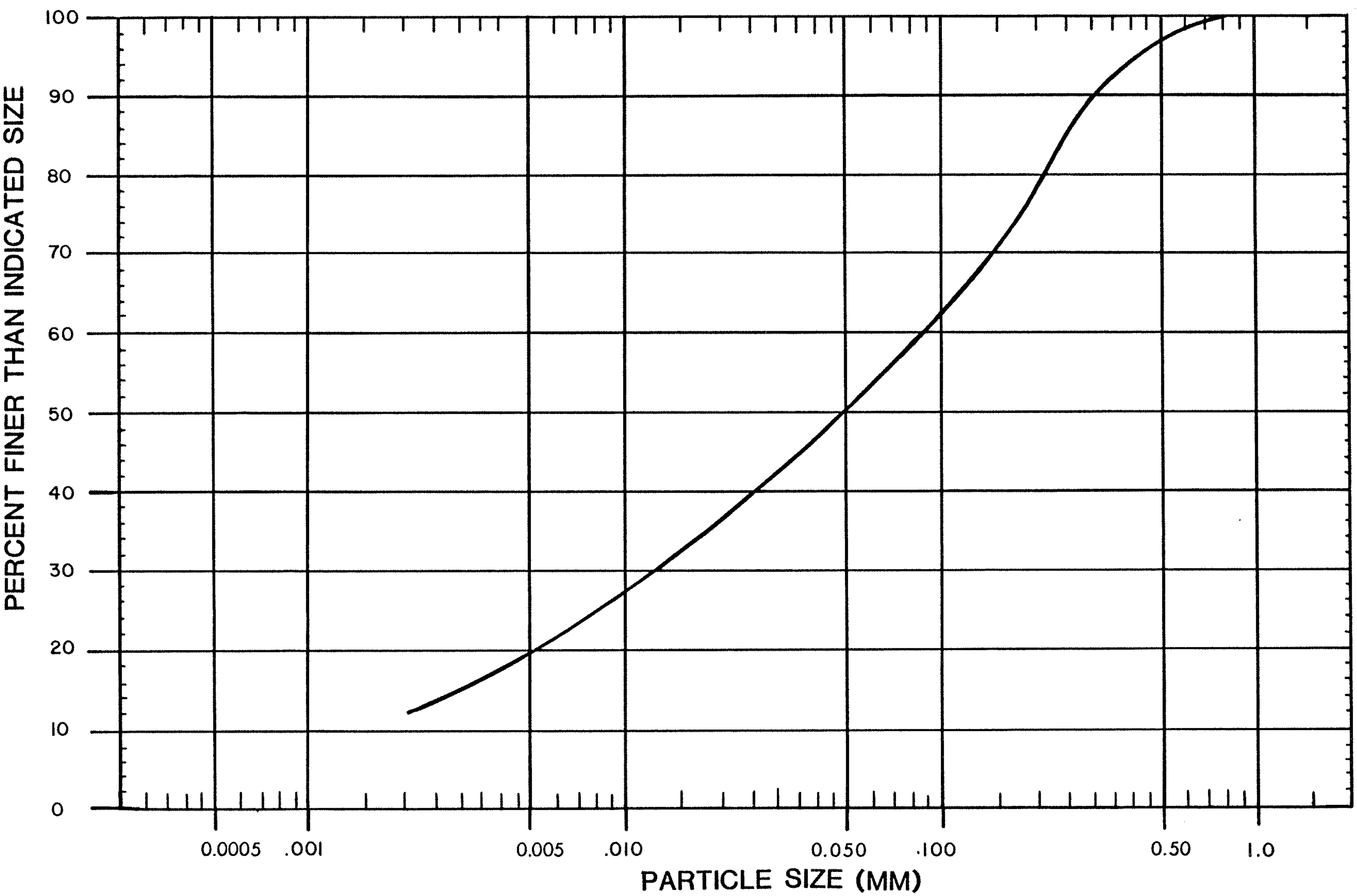


LEGEND: EK84B8 0-10 MICRON SUSPENDED SEDIMENT SIMULATION
0-3 MICRON AND 3-10 MICRON RUNS COMBINED (EK84B803+EK84B810)
——— PREDICTED OUTFLOW SUSPENDED SEDIMENT CONCENTRATION (MG/L)
- - - - - INFLOW SUSPENDED SEDIMENT CONCENTRATION (MG/L)
◊ OBSERVED OUTFLOW SUSPENDED SEDIMENT CONCENTRATION (MG/L) TSS

NOTES:
1. INFLOW SUSP. SED. CONC. IS BASED ON 7/20 8/28 10/23 (1984) PARTICLE SIZE DISTRIBUTIONS
2. SSC INFLOW VALUES REPRESENT THE 0-10 MICRON RANGE AND ARE 51.8% OF TSS EXCEPT DURING 7/20/84-10/23/84. DURING THIS PERIOD, SSC PERCENTAGES (OF TSS) ARE LINEARLY INTERPOLATED BETWEEN THE FOLLOWING VALUES:
66.6% ON 7/20/84 35.8% ON 8/28/84 51.8% ON 10/23/84

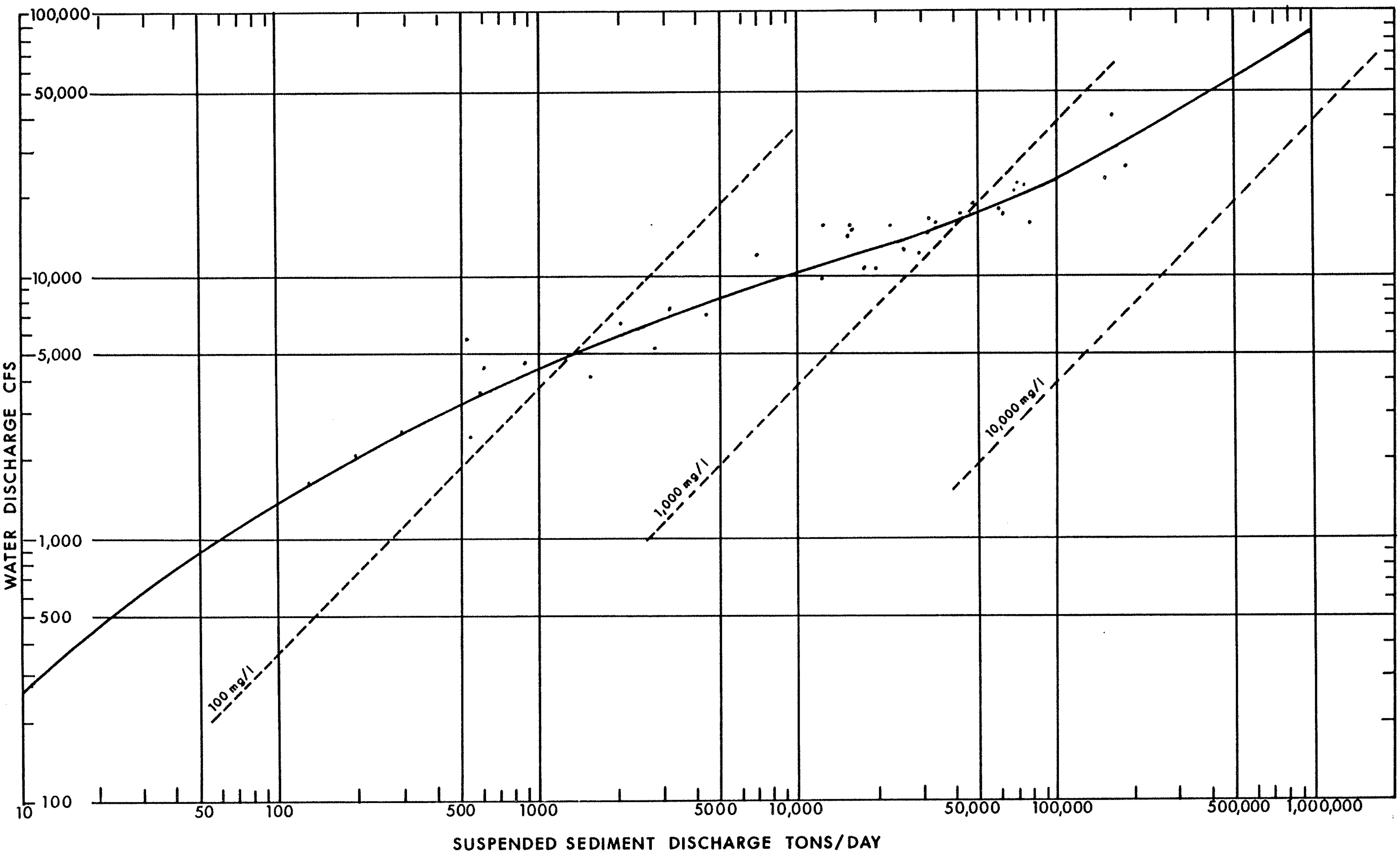
FIGURE E.2.4.95

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
EKLUTNA LAKE OUTFLOW (0-10 MICRON) SUSPENDED SEDIMENT		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	8 JUL 85	42-010-04



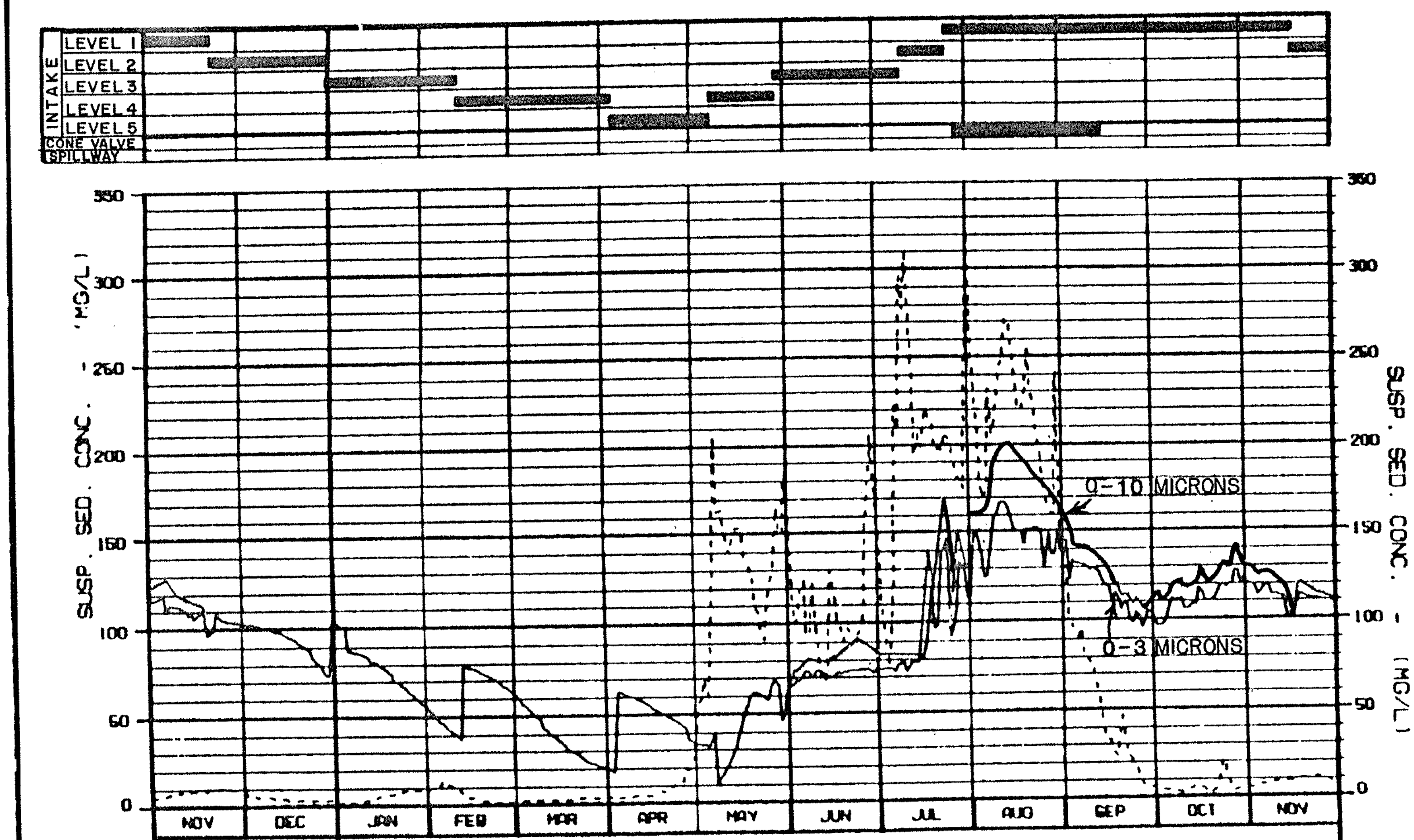
SUSPENDED SEDIMENT SIZE DISTRIBUTION
SUSITNA RIVER NEAR CANTWELL

FIGURE E.2.4.96



SUSPENDED SEDIMENT RATING CURVE
AT USGS GAGING STATION
SUSITNA RIVER NEAR CANTWELL, ALASKA

FIGURE E.2.4.97



LEGEND:

——— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)

- - - - - INFLOW SUSP. SED. CONCENTRATION (MG/L) (0-3 MICRONS ONLY)

NOTES:

1. SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS

FIGURE 2.4.98

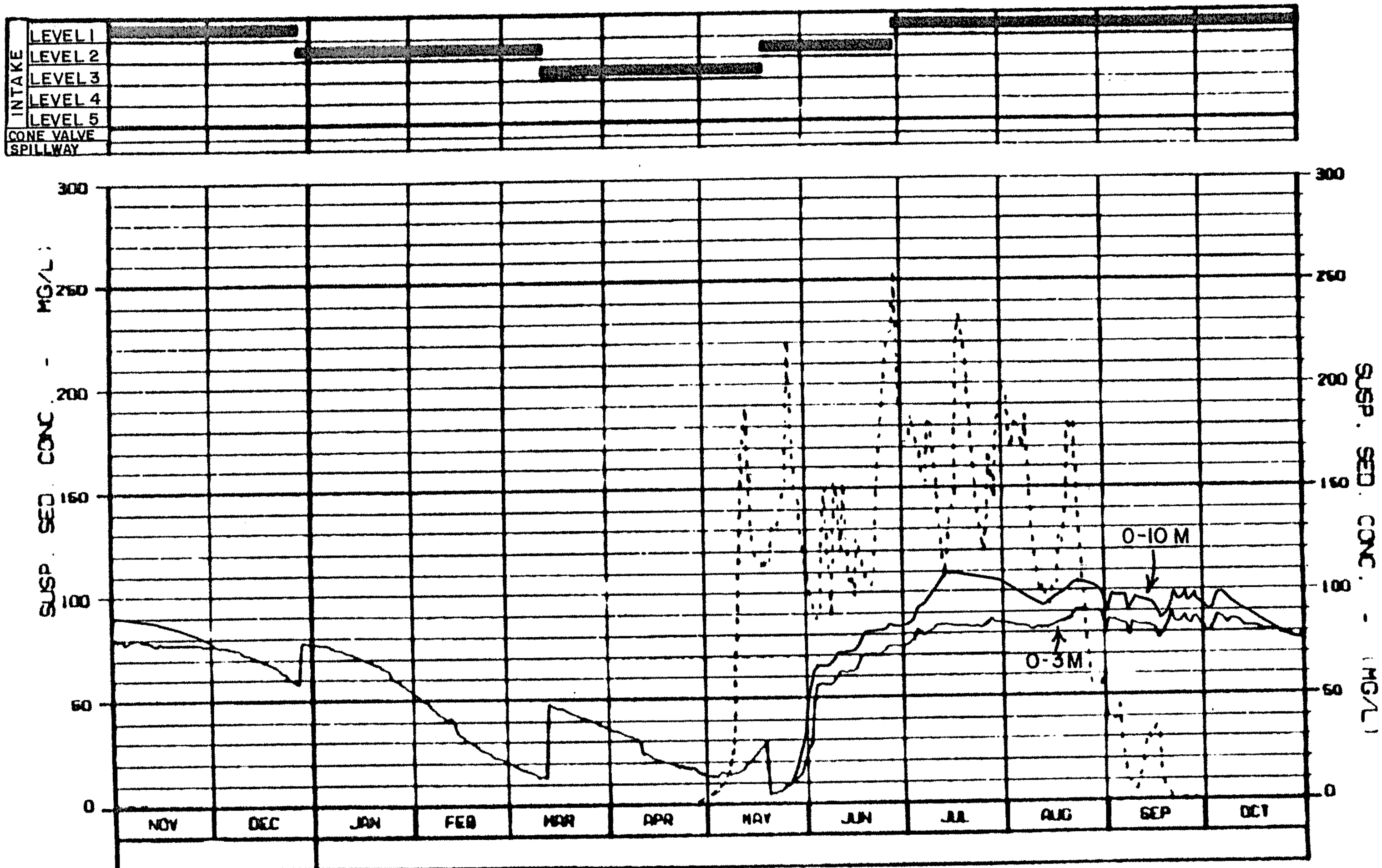
ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR OUTFLOW (0-10) SUSPENDED SOLIDS HIGH INFLOW YEAR

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 42-010-06



LEGEND:

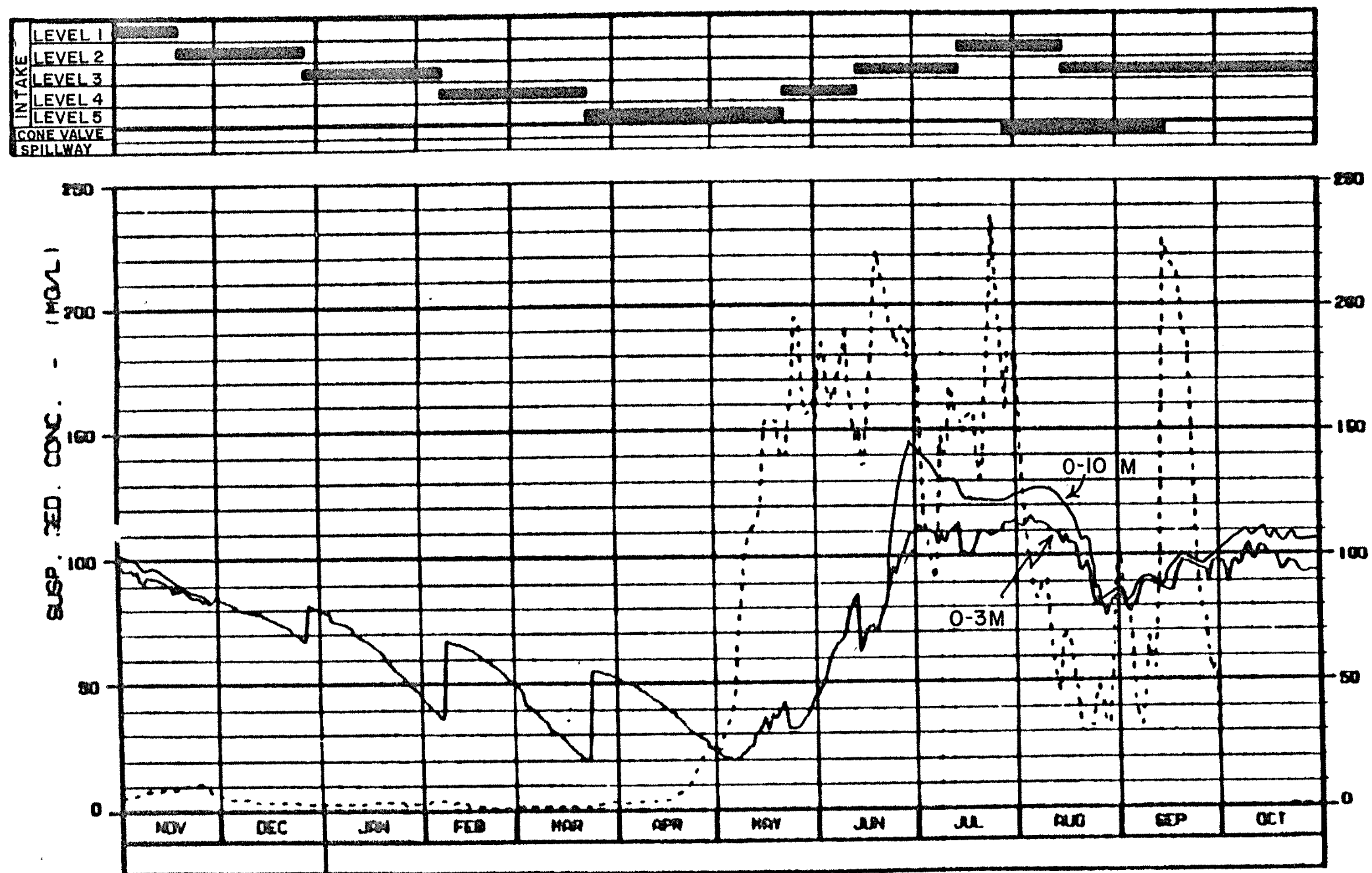
——— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)
- - - - - - INFLOW SUSP. SED. CONCENTRATION (MG/L) (0-3 MICRONS ONLY)

NOTES:

1. SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS

FIGURE E.2.4.99

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
WATANA RESERVOIR OUTFLOW (0-10) SUSPENDED SOLIDS LOW INFLOW YEAR	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-05



LEGEND:

——— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)

- - - - INFLOW SUSP. SED. CONCENTRATION (MG/L) (0-3 MICRONS)

NOTES: 1. SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS

ALASKA POWER AUTHORITY

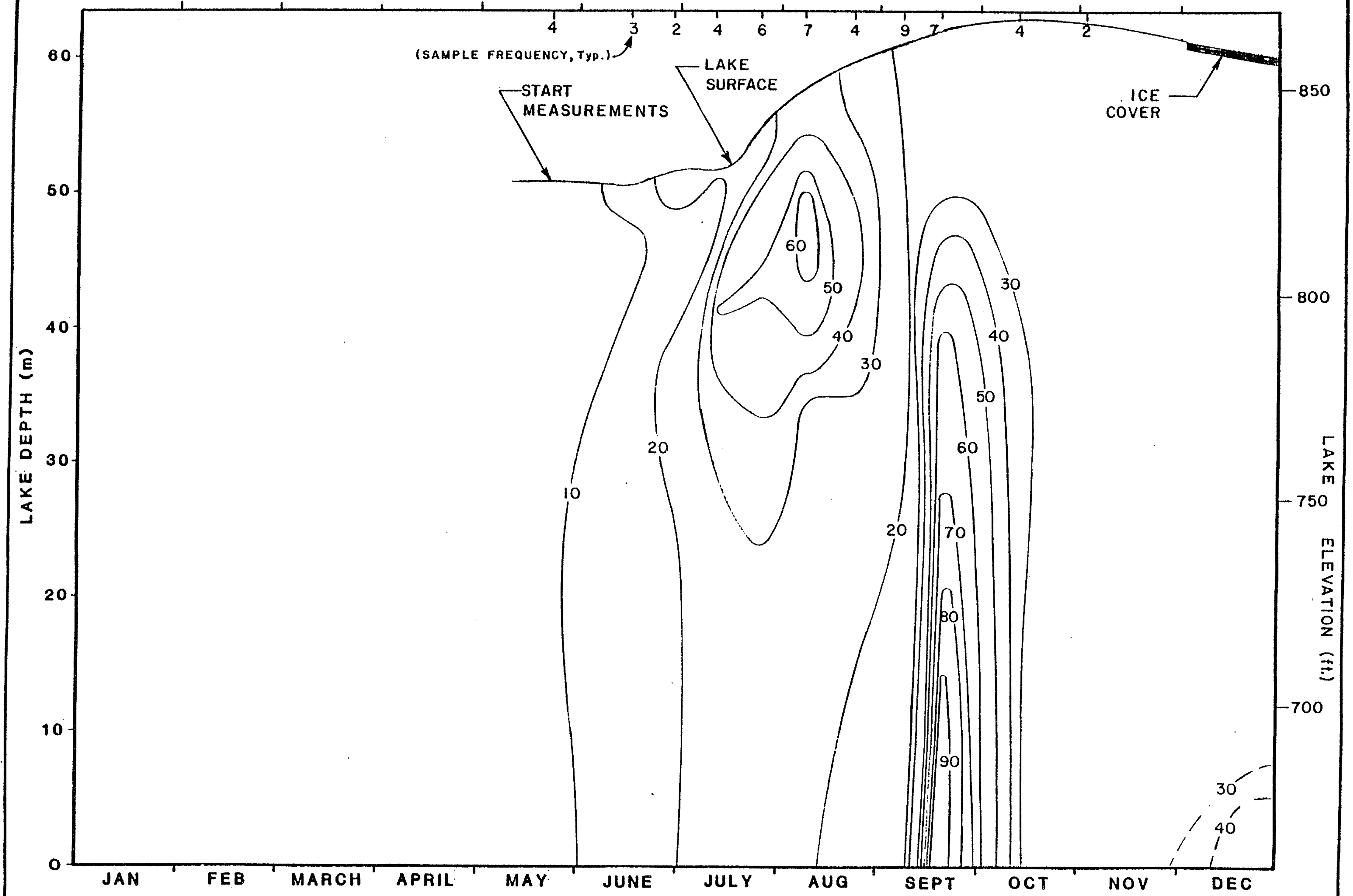
SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR
OUTFLOW (0-10 MICRONS)
SUSPENDED SOLIDS
AVERAGE INFLOW YEAR

HARZA-EBASCO JOINT VENTURE

42-010-04

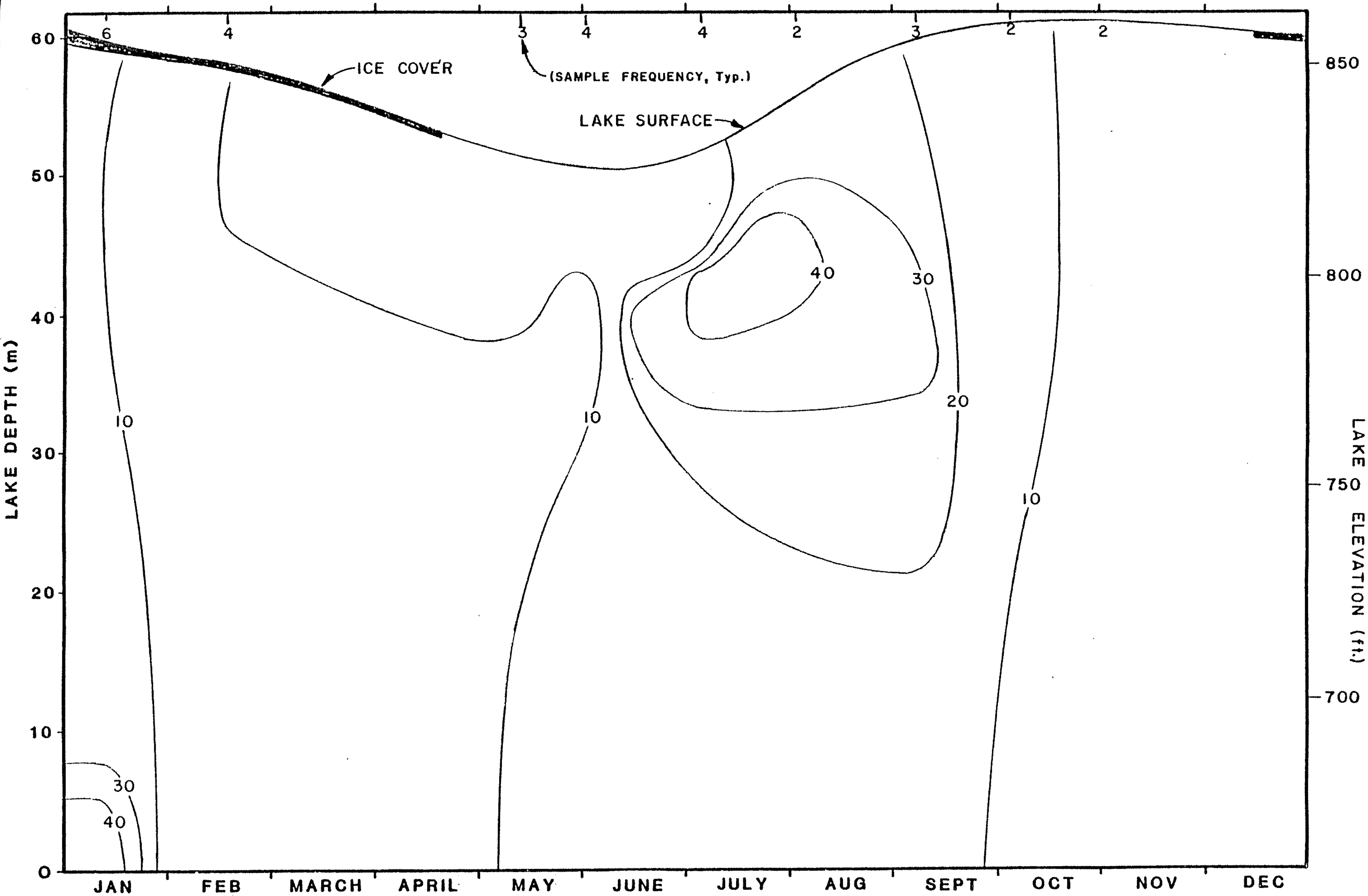
FIGURE E.2.4.100



ISO-TURBIDITY vs. TIME
EKLUTNA LAKE at STATION 9
1982

SOURCE: R & M 1982 f

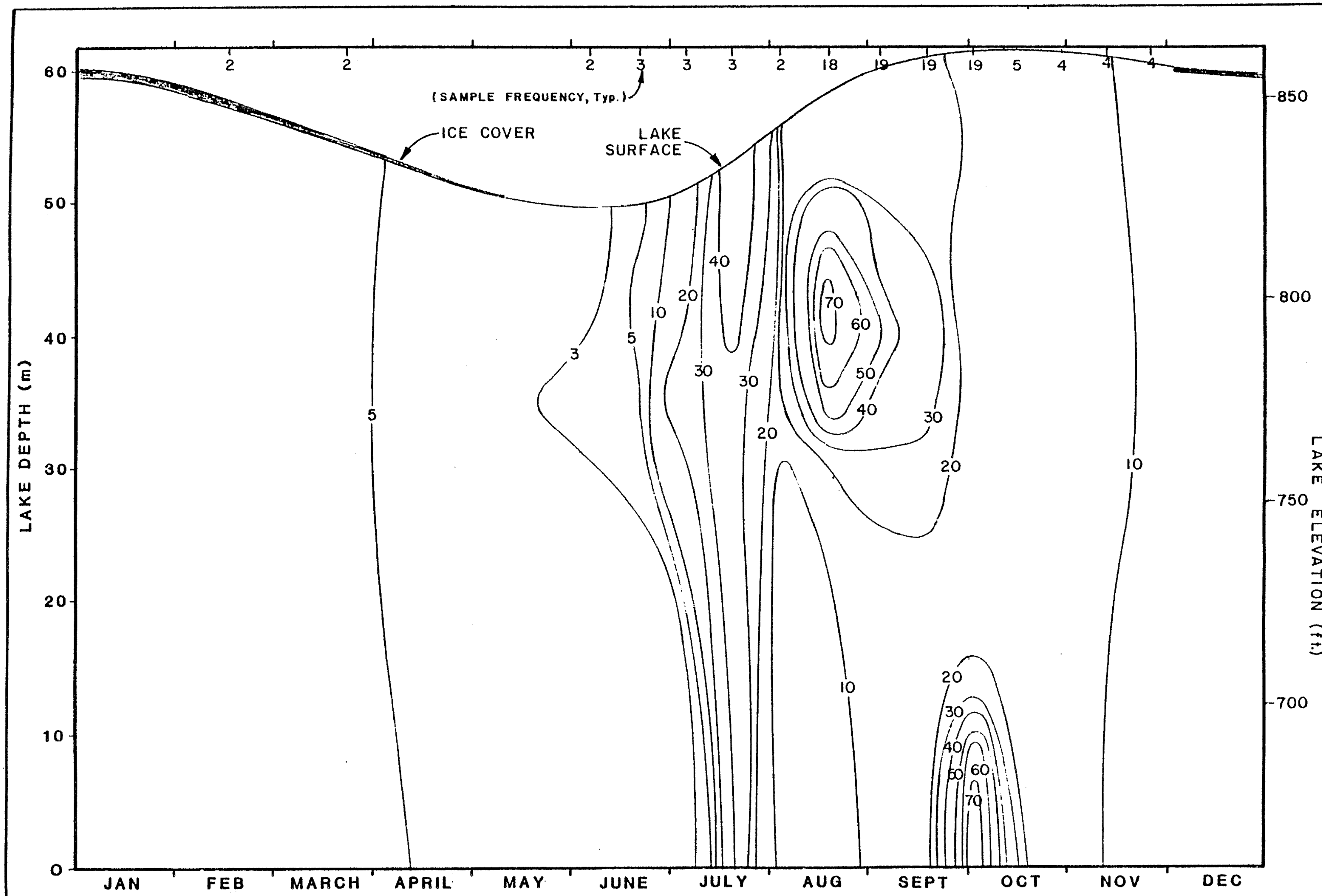
FIGURE E.2.4.101



ISO-TURBIDITY vs. TIME
EKLUTNA LAKE at STATION 9
1983

SOURCE: R & M 1982f

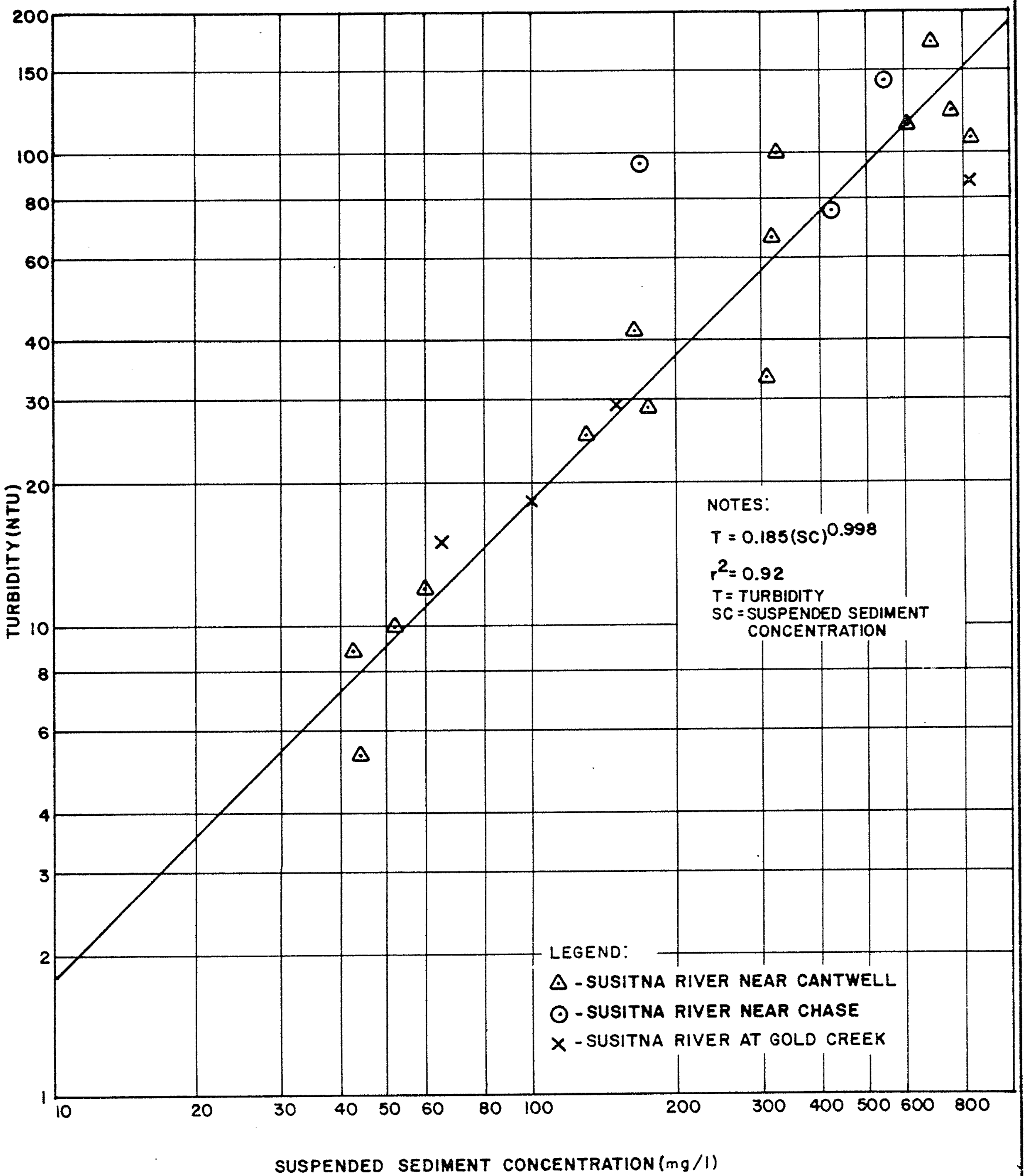
FIGURE E.2.4.102



ISO-TURBIDITY vs. TIME
EKLUTNA LAKE at STATION 9
1984

SOURCE: R & M 1982f

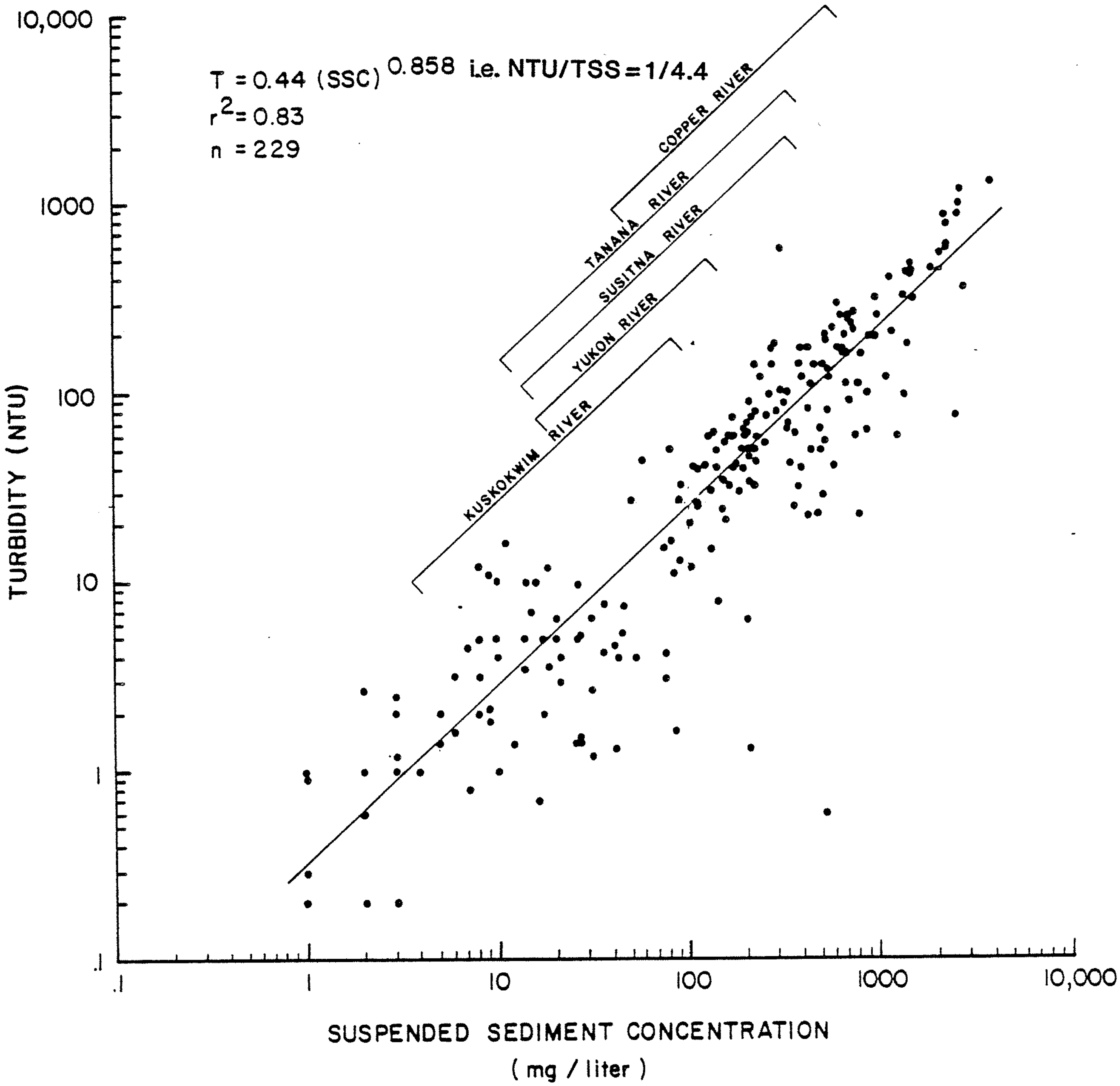
FIGURE E.2.4.103



TURBIDITY VS.
SUSPENDED SEDIMENT CONCENTRATION
SUSITNA RIVER

FIGURE E.2.4.104

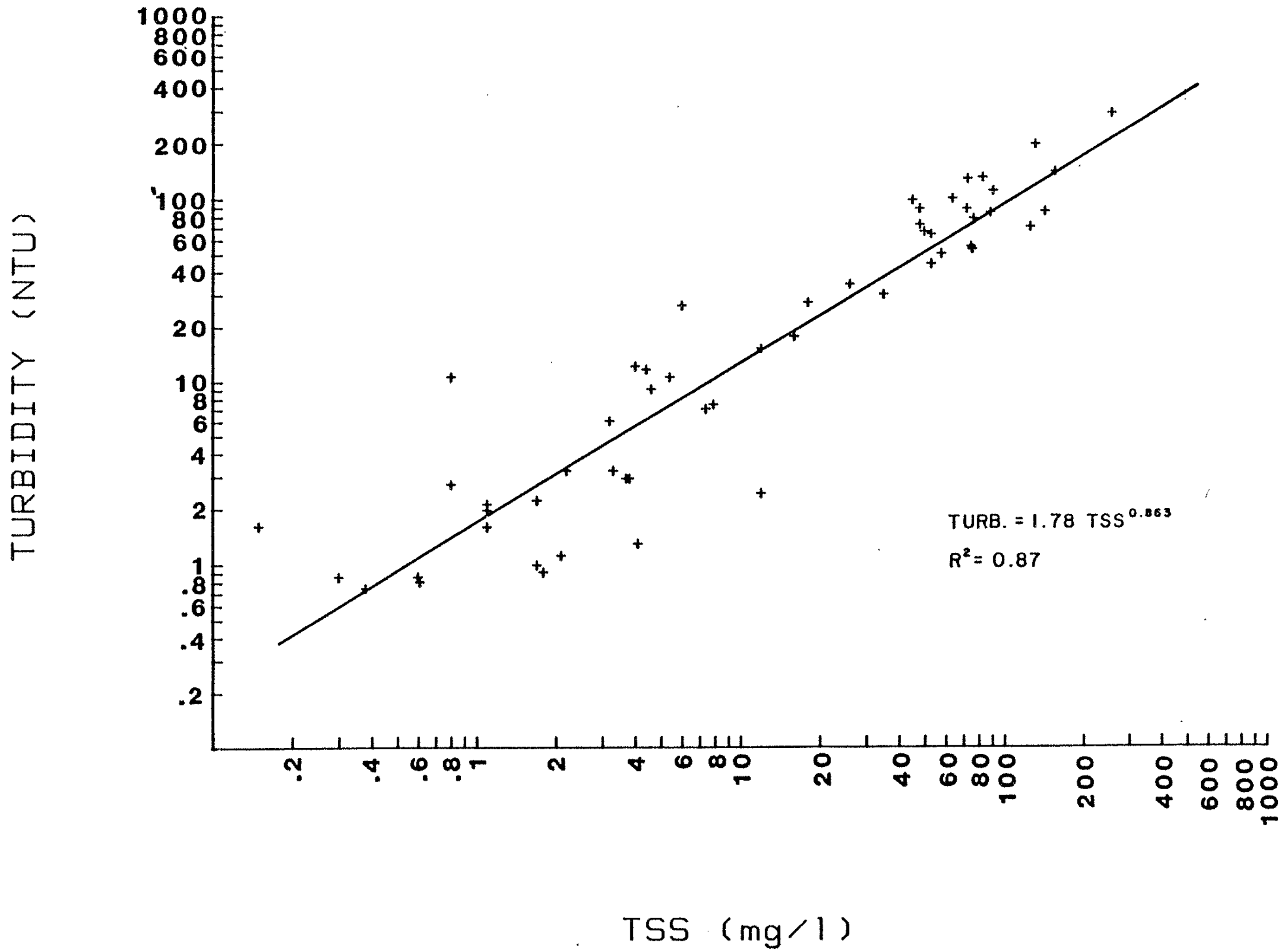
SOURCE: PERATROVICH, NOTTINGHAM AND DRAGE 1982



TURBIDITY VS SUSPENDED SEDIMENT CONCENTRATION IN SEVERAL ALASKAN RIVERS

Figure Empirical relationship of naturally occurring turbidity versus suspended sediment concentration for rivers and streams in Alaska, sampled during May-October, 1976-1983 (derived in this report from data provided by USGS, 1984).

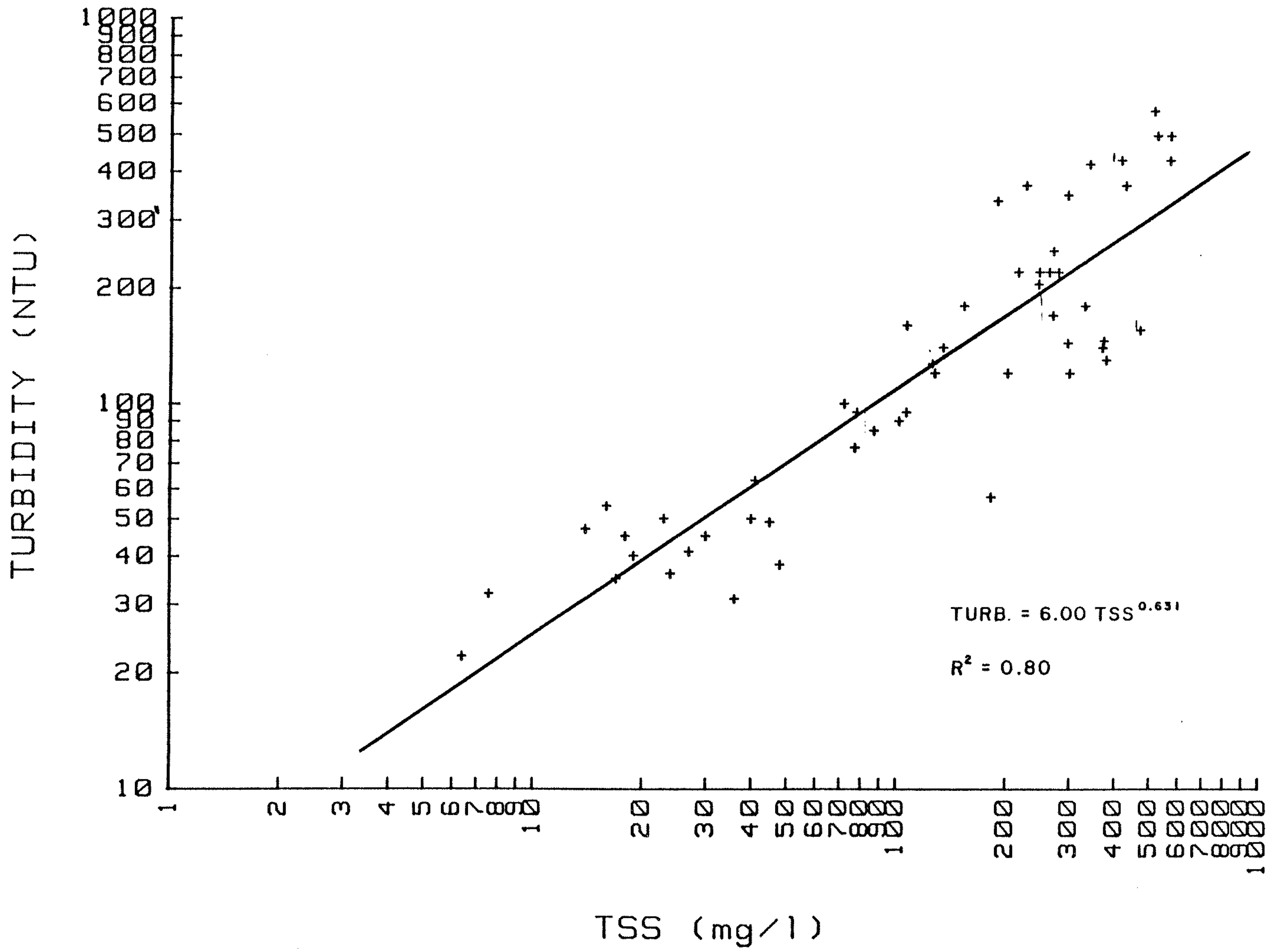
SOURCE: LLOYD 1985



TURBIDITY VS SUSPENDED SEDIMENT CONCENTRATION EAST FORK TRIBUTARY TO EKLUTNA LAKE, 1984

SOURCE: R & M 1982f

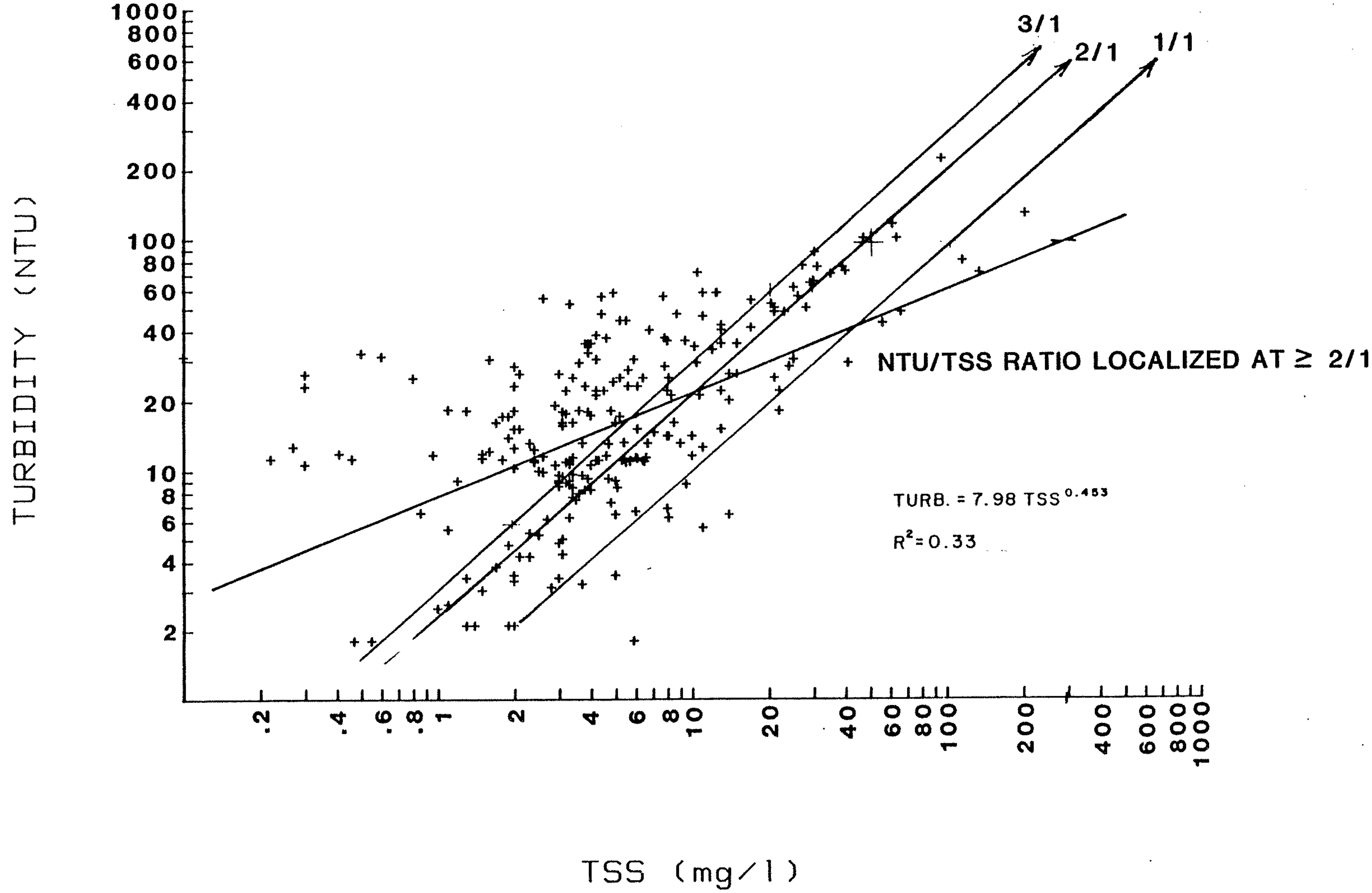
FIGURE E.2.4.106



TURBIDITY VS SUSPENDED SEDIMENT CONCENTRATION
GLACIER FORK TRIBUTARY TO EKLUTNA LAKE, 1984

SOURCE: R & M 1982f

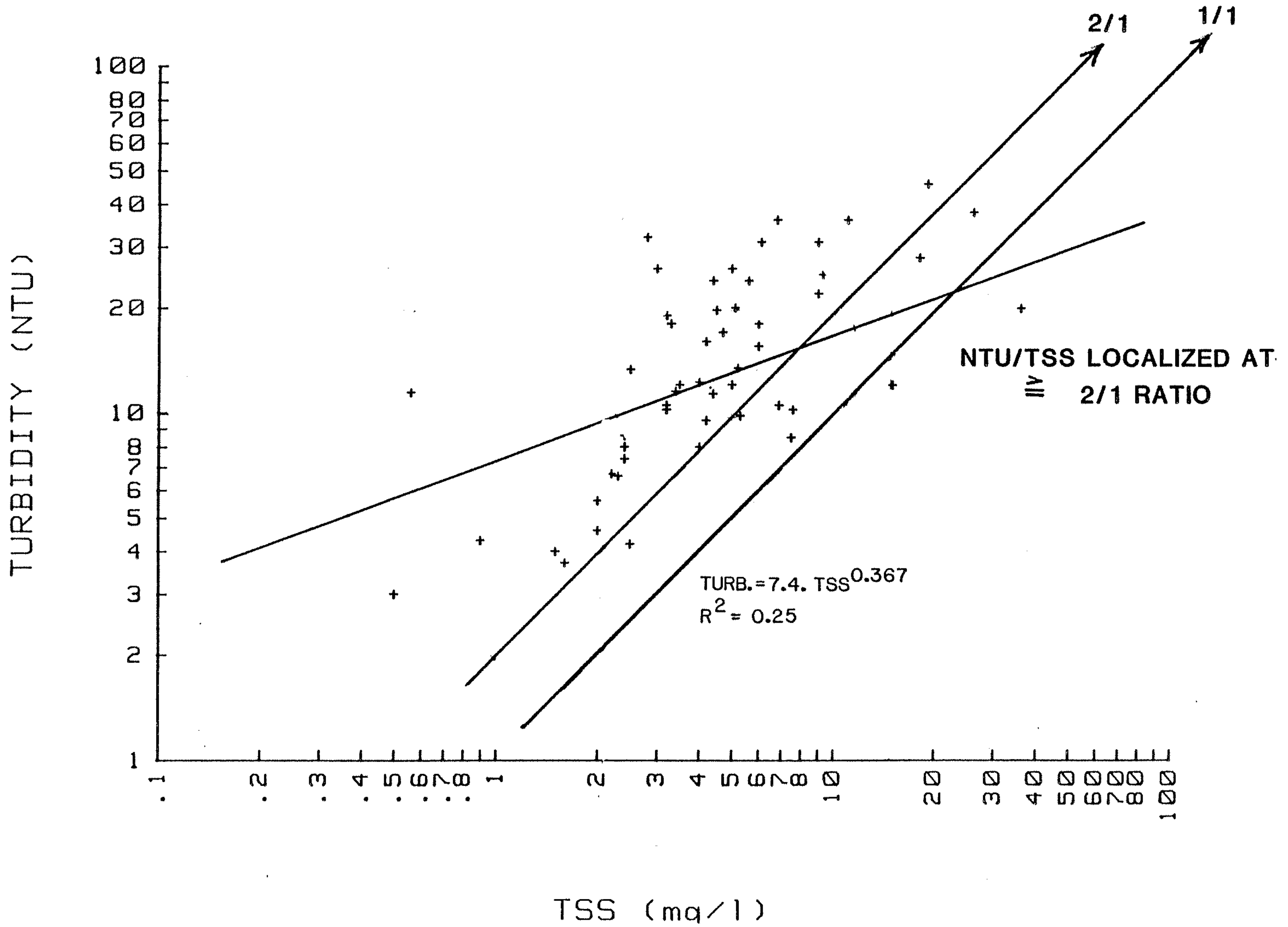
FIGURE E.2.4.107



TURBIDITY VS SUSPENDED SEDIMENT CONCENTRATION
EKLUTNA LAKE

SOURCE: R&M 1982f

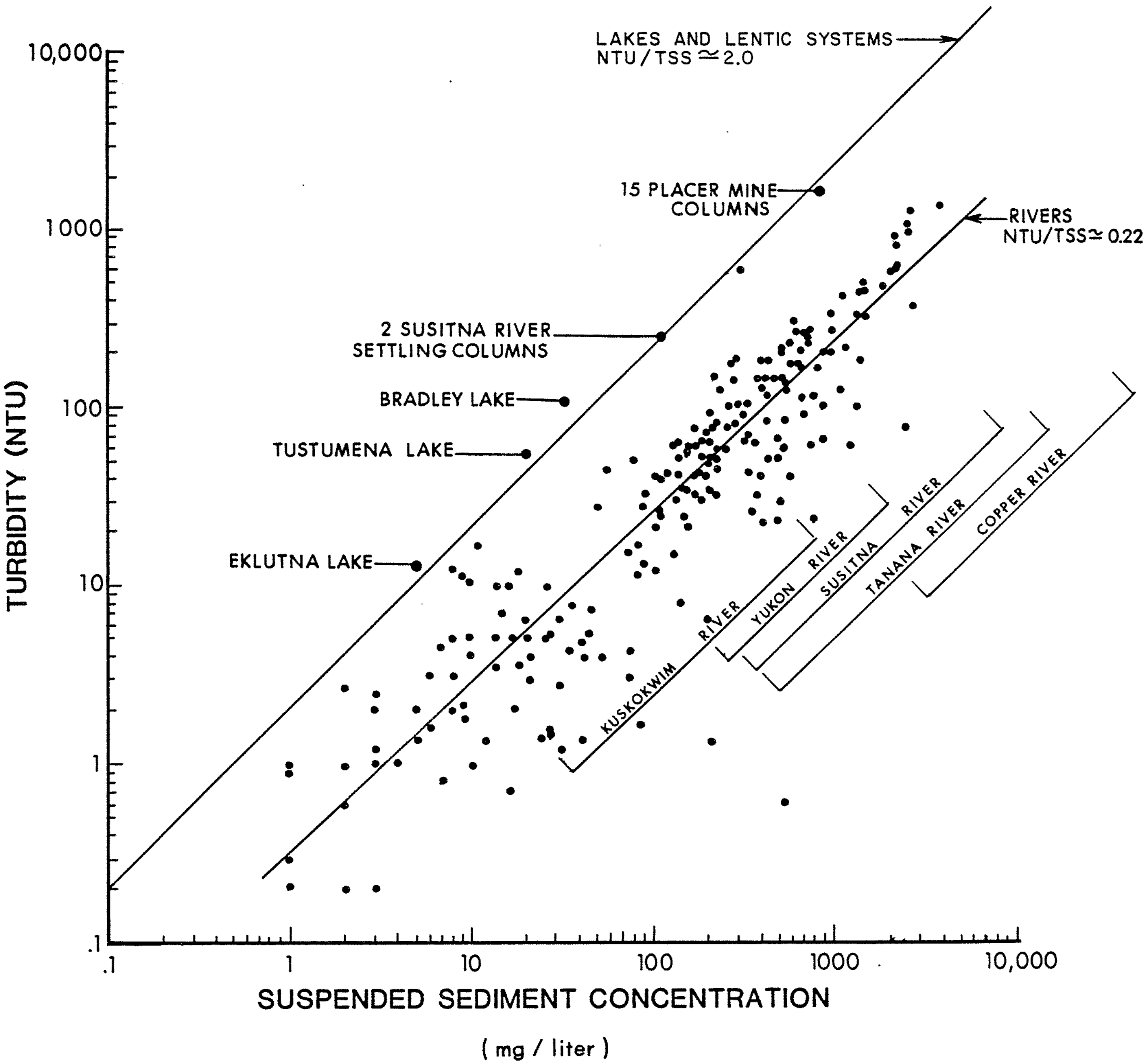
FIGURE E.2.4.108



TURBIDITY VS SUSPENDED SEDIMENT CONCENTRATION
EKLUTNA LAKE POWERHOUSE TAILRACE, 1984

SOURCE: R & M 1982 f

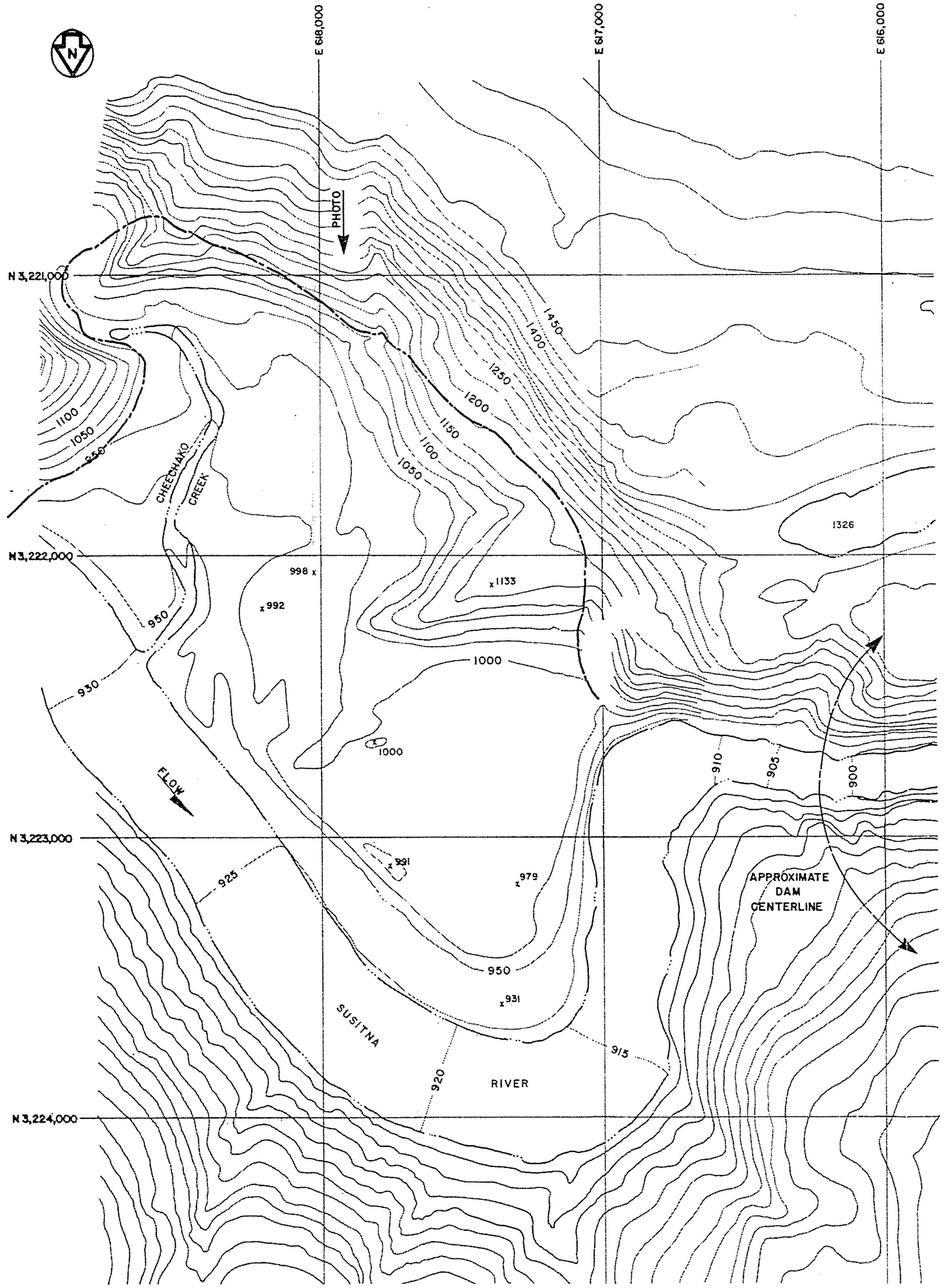
FIGURE E.2.4.109

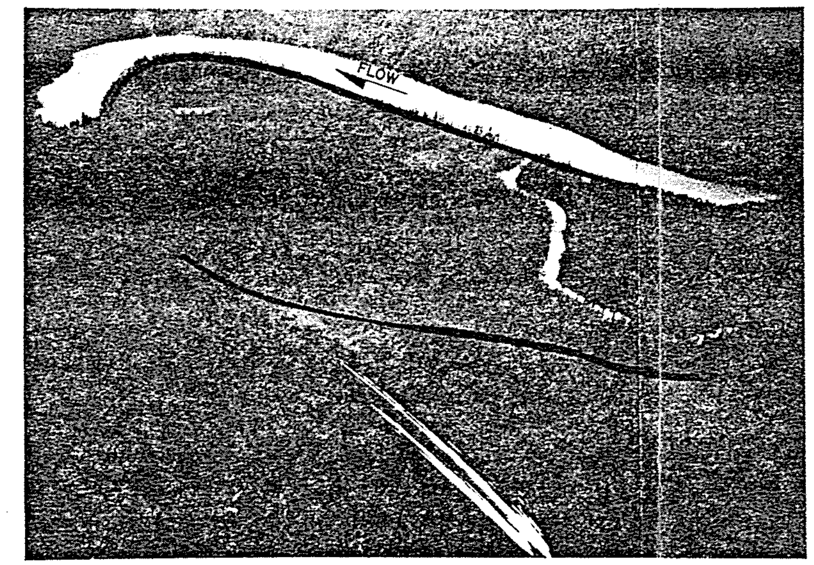


EMPIRICAL RELATIONSHIP OF NATURALLY OCCURRING TURBIDITY VERSUS SUSPENDED SEDIMENT CONCENTRATION FOR RIVERS AND LAKES IN ALASKA

(MODIFIED AFTER LLOYD 1985)

FIGURE E.2.4.110





BORROW SITE G

LEGEND

—·—·— BORROW SITE LIMIT

NOTES

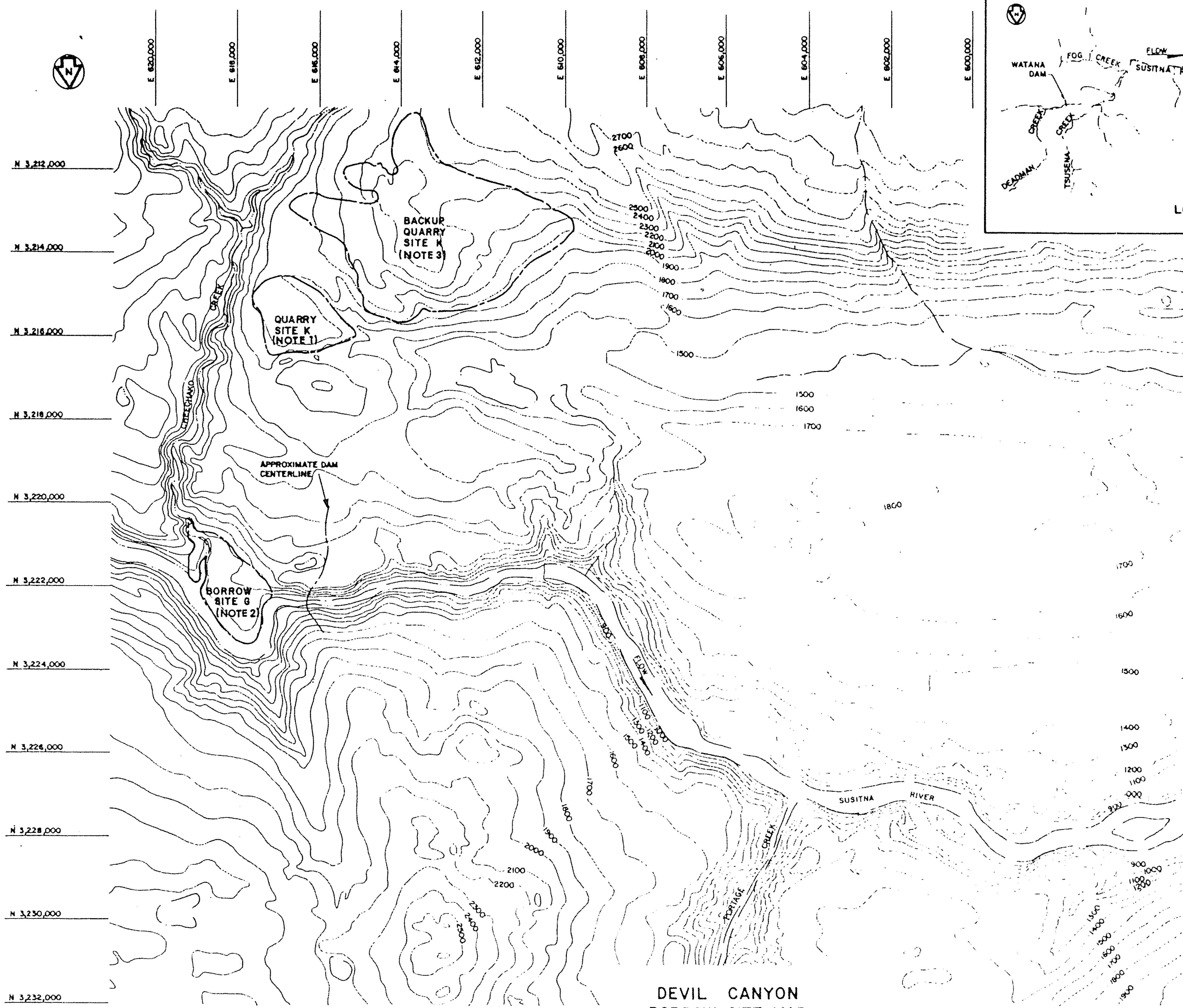
1. ENTIRE BORROW SITE LIES WITHIN PROPOSED DEVIL CANYON RESERVOIR LIMITS.
2. BORROW SITE LIMITS BASED ON FIELD AND AIR PHOTO INTERPRETATION OF BORROW MATERIAL. FINAL LIMITS SUBJECT TO RESULTS OF DESIGN INVESTIGATIONS.
3. 25 FOOT CONTOUR INTERVAL ADDED FROM SOURCE MAP (REFERENCED) IN BORROW SITE ONLY.
4. PHOTO TAKEN AUGUST, 1981.
5. BORROW SITE G IS A POTENTIAL SOURCE OF FILTER MATERIAL AND CONCRETE AGGREGATE.

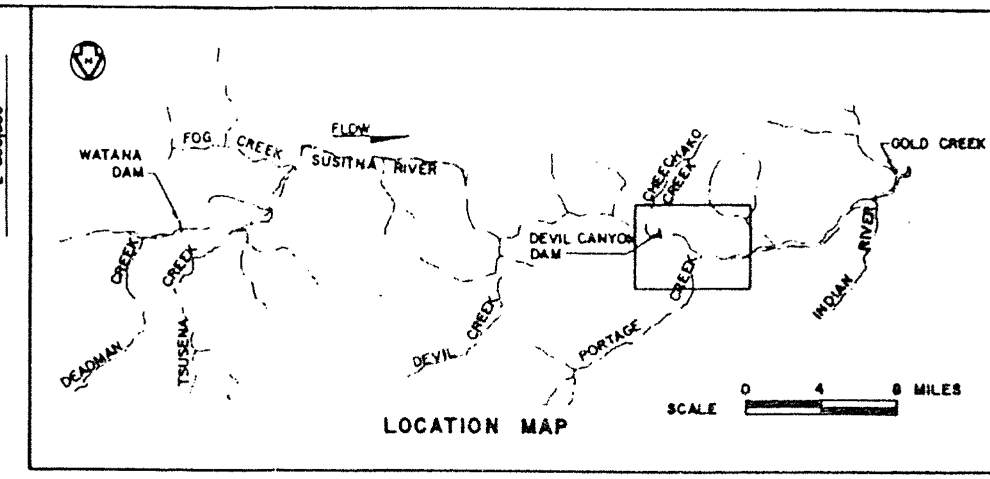
SCALE 0 200 400 FEET

REFERENCE: BASE MAP FROM R&M, 1981 - 1" = 200' DEVIL CANYON TOPOGRAPHY, RETRACED AT 25' CONTOURS
USBR, 1960
COE, 1978
WCC, 1978

DEVIL CANYON
BORROW SITE G

FIGURE E.2.4.111





LEGEND

---- BORROW / QUARRY SITE LIMITS

NOTES

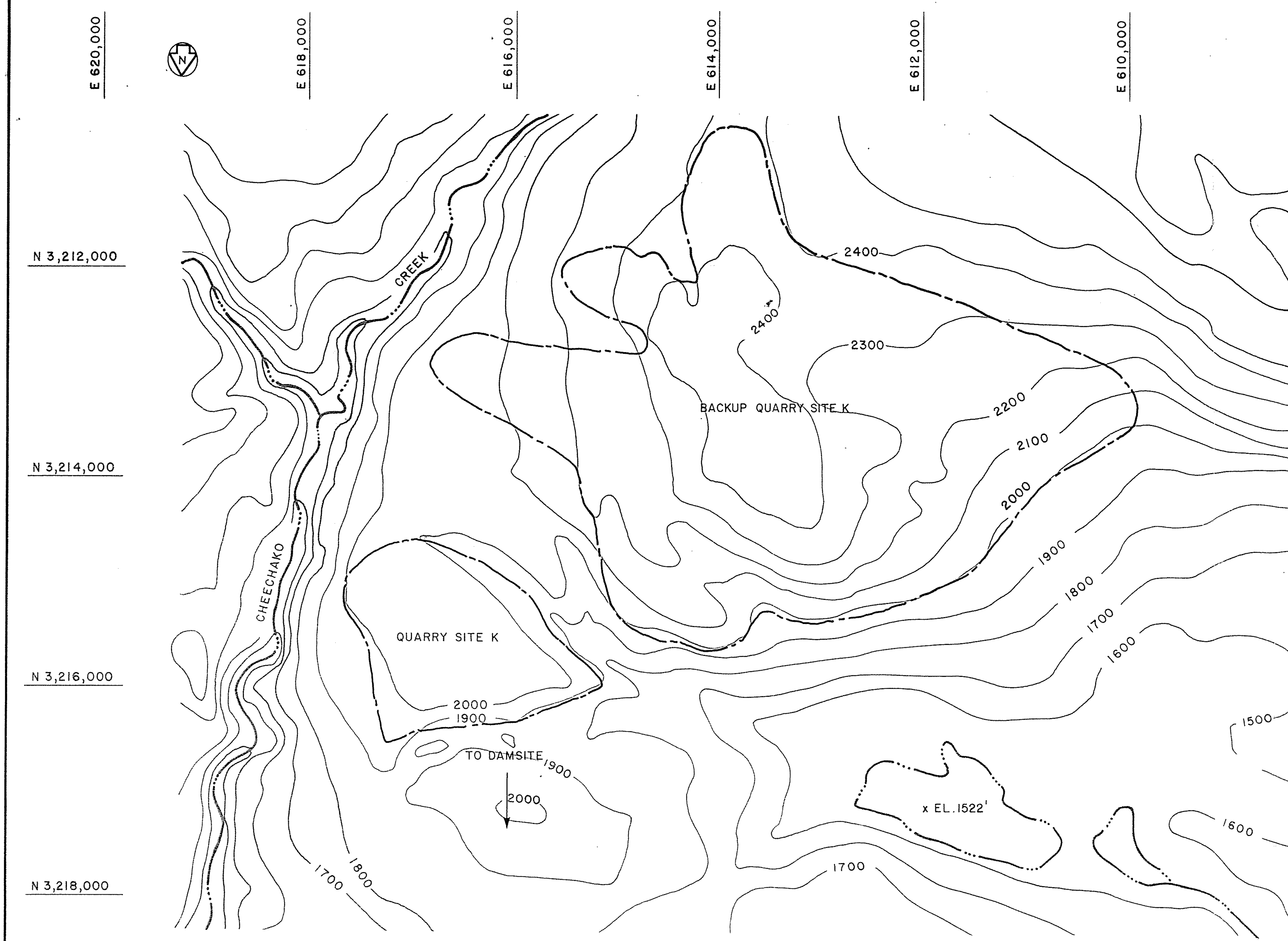
1. WATANA BORROW SITE D IS THE PROPOSED SOURCE OF IMPERVIOUS MATERIAL (SEE FIGURE E-2-4.1.1-b-1)
2. PROPOSED SOURCE OF AGGREGATE AND FILTER MATERIAL.
3. PROPOSED SOURCE OF ROCKFILL.
4. TOPOGRAPHY AND DETAILS SHOWN ON INDIVIDUAL FIGURES.

SCALE 0 1000 2000 FEET

REFERENCE: BASE MAP FROM R & M, 1961 - 1" = 200'
DEVIL CANYON TOPOGRAPHY.
COORDINATES IN FEET, ALASKA STATE PLANE (ZONE 4)

DEVIL CANYON
BORROW SITE MAP

FIGURE E.2.4.112



LEGEND

MATERIAL LIMITS

NOTES

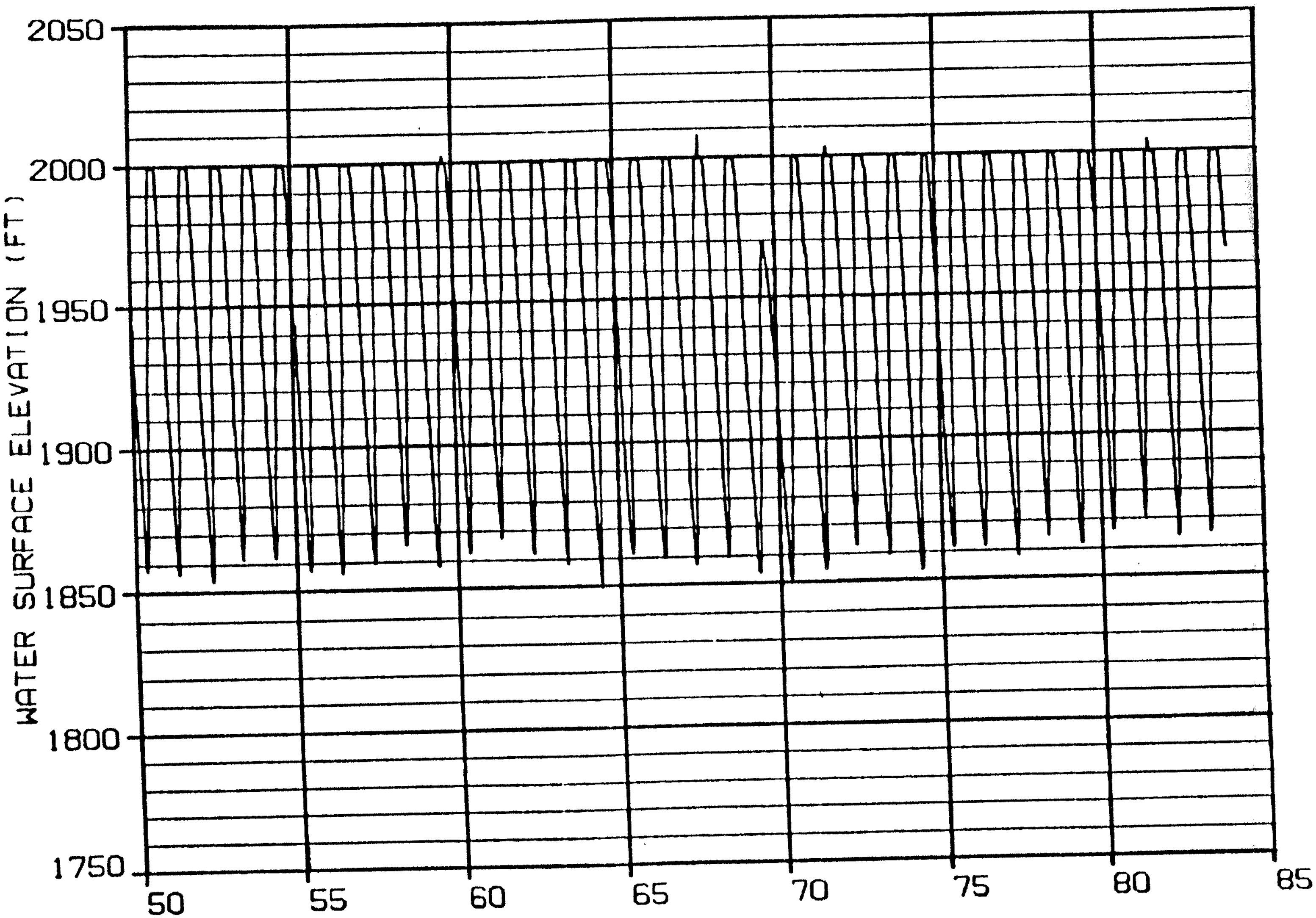
1. ENTIRE QUARRY SITE LIES OUTSIDE OF PROPOSED RESERVOIR LIMITS.
2. MATERIAL LIMIT SHOWN IS OUTCROP LIMIT AS DETERMINED FROM AIR PHOTO INTERPRETATION. NORTH FACES OF SITES ARE EXPOSED ROCK CLIFFS, AND LOCATION OF SAMPLES.
3. CONTOURS TRACED FROM ENLARGED, REFERENCE BASE MAP, AT 100' INTERVALS.
4. QUARRY SITE K IS A POTENTIAL SOURCE OF ROCKFILL.

SCALE 0 1000 2000 FEET

REFERENCE: BASE MAP FROM USGS 1:63,360 ALASKA QUADRANGLE TALKEETNA MOUNTAINS (D-5).
COORDINATES IN FEET, ALASKA STATE PLANE (ZONE 4)

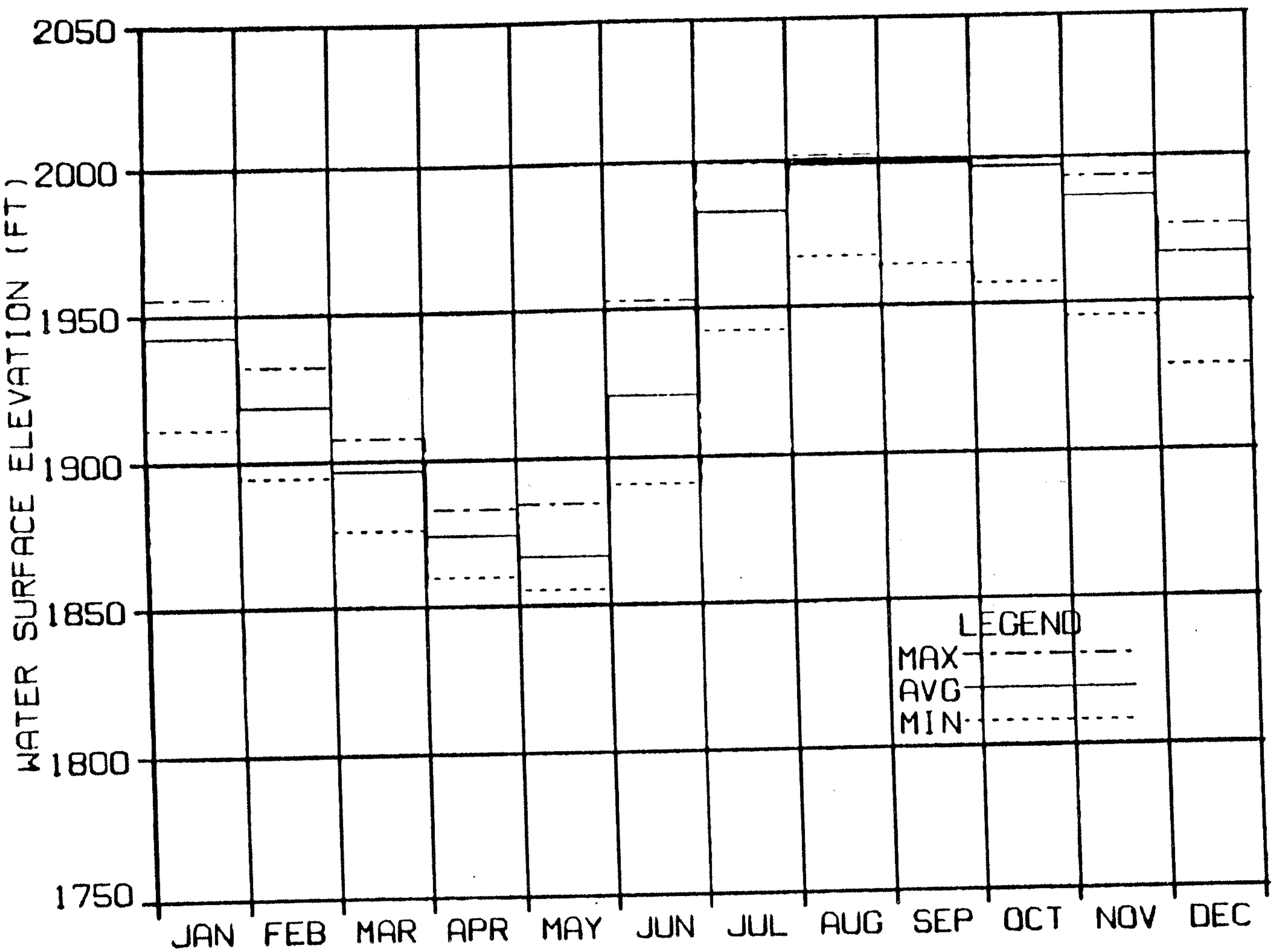
DEVIL CANYON
QUARRY SITE K

FIGURE E.2.4.113



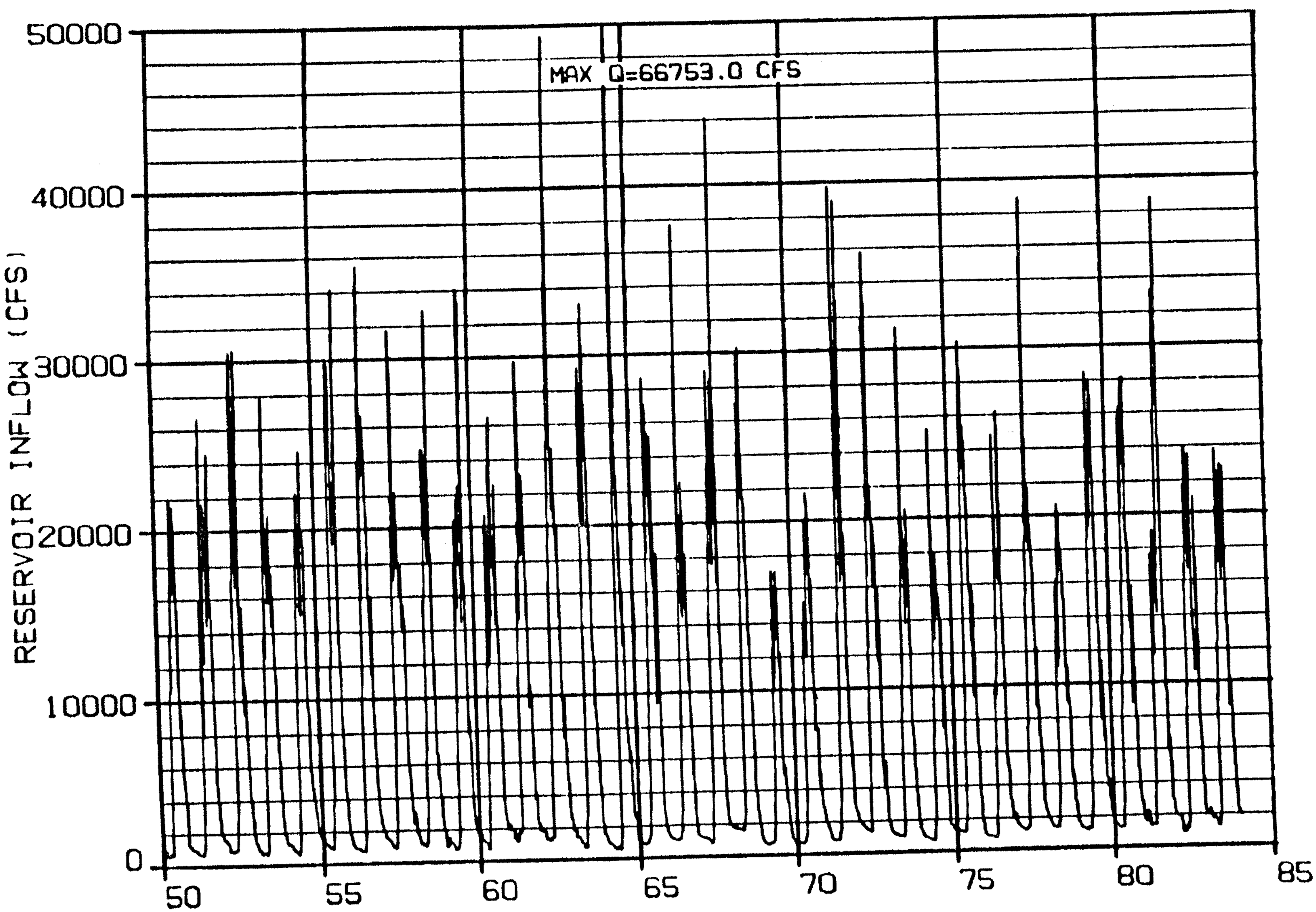
WATANA WATER SURFACE ELEVATION, STAGE II

FIGURE E.2.4.114



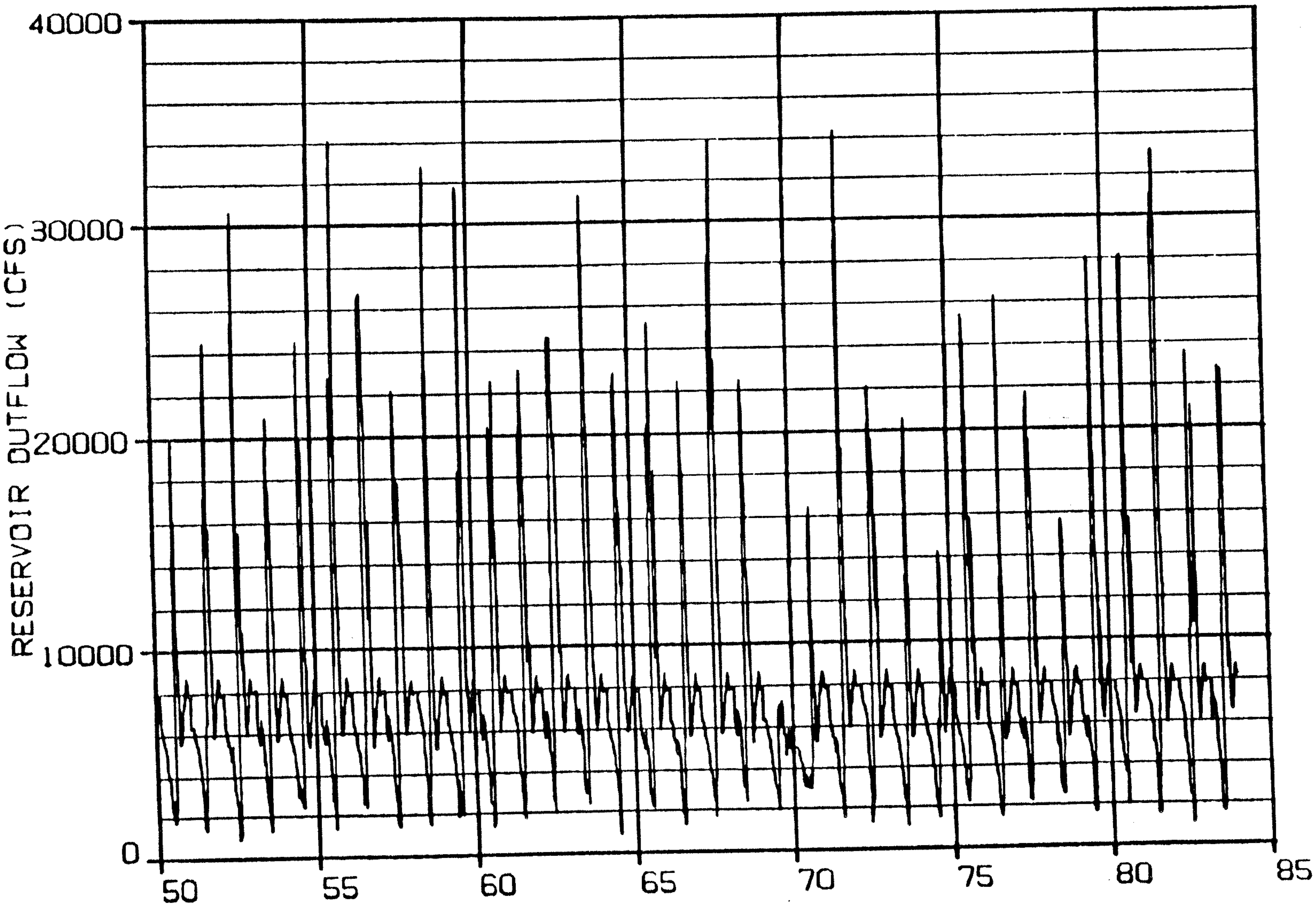
WATANA WATER SURFACE ELEVATION
MONTHLY SUMMARY, STAGE II

FIGURE E.2.4.115



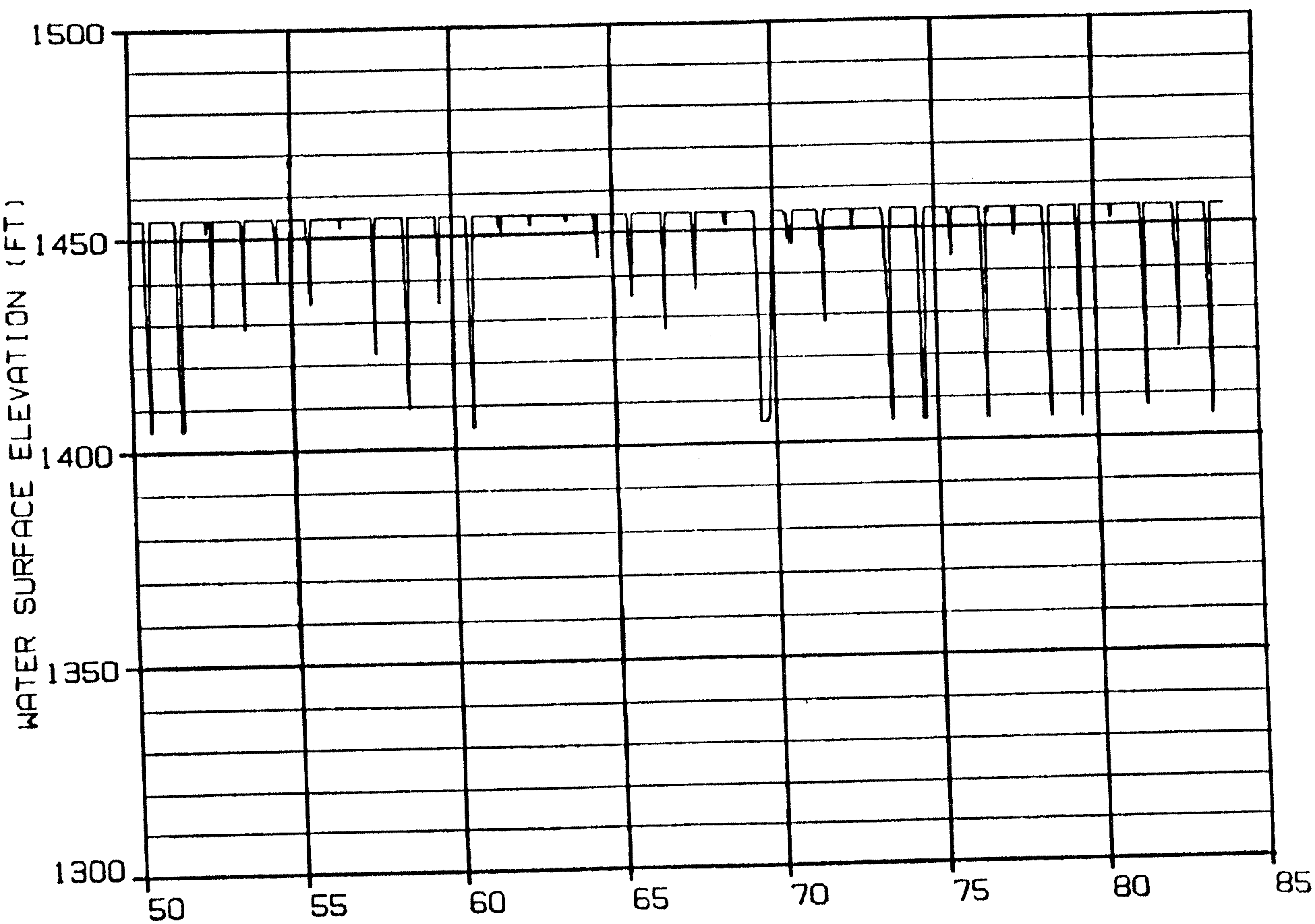
WATANA RESERVOIR INFLOW, STAGE II

FIGURE E.2.4.116



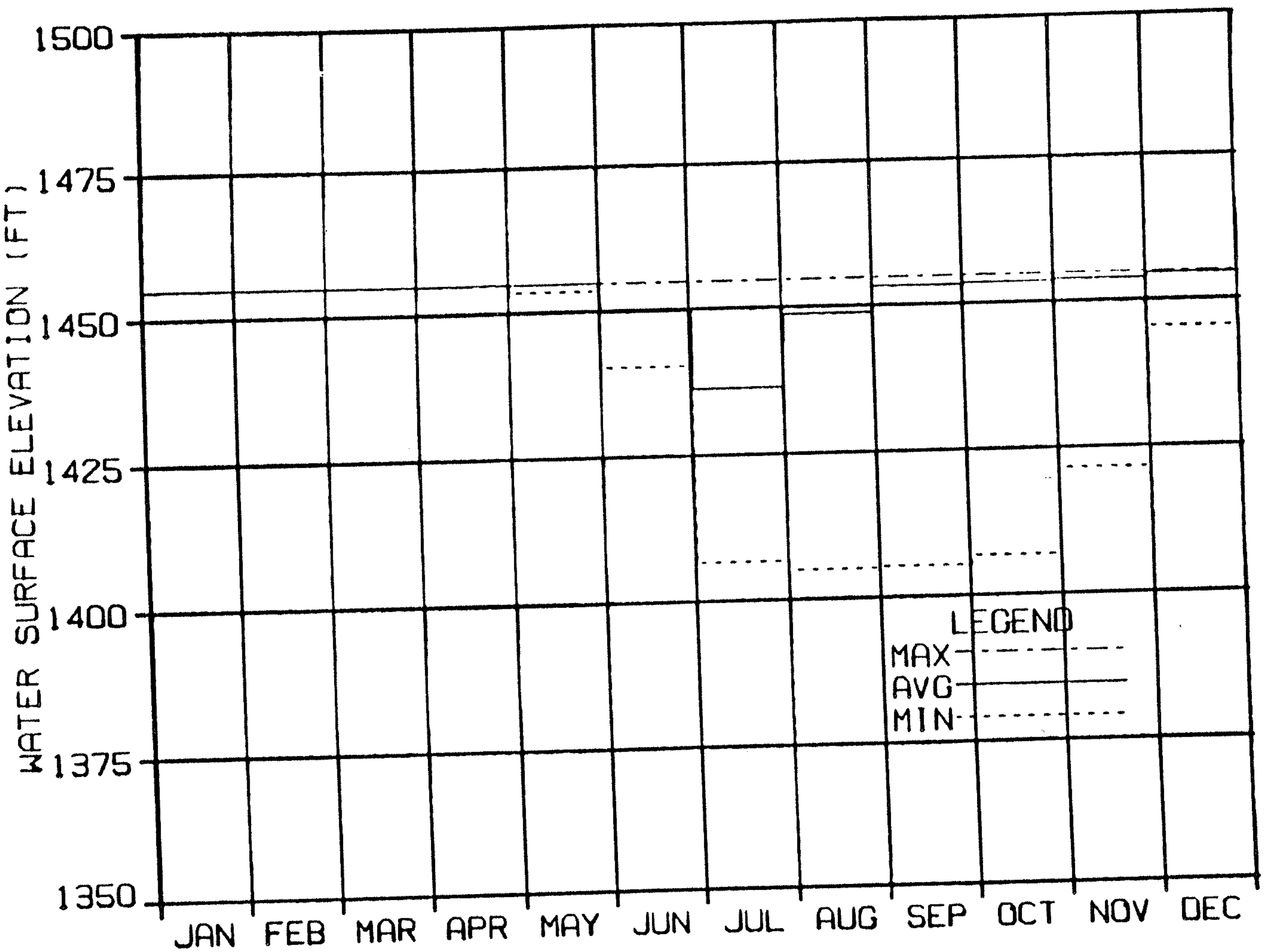
WATANA RESERVOIR OUTFLOW, STAGE II

FIGURE E.2.4.117



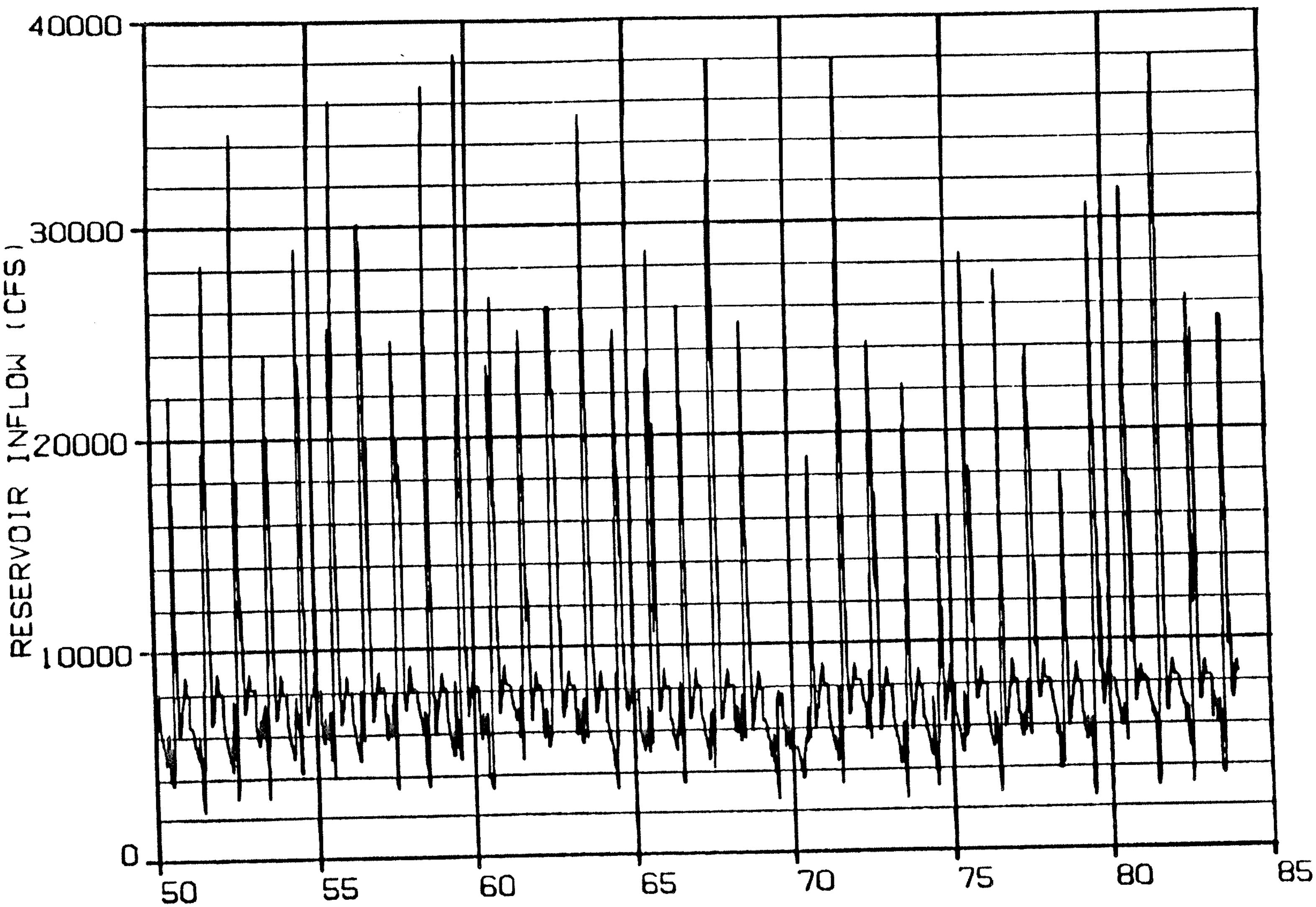
DEVIL CANYON WATER SURFACE ELEVATION, STAGE II

FIGURE E.2.4.118



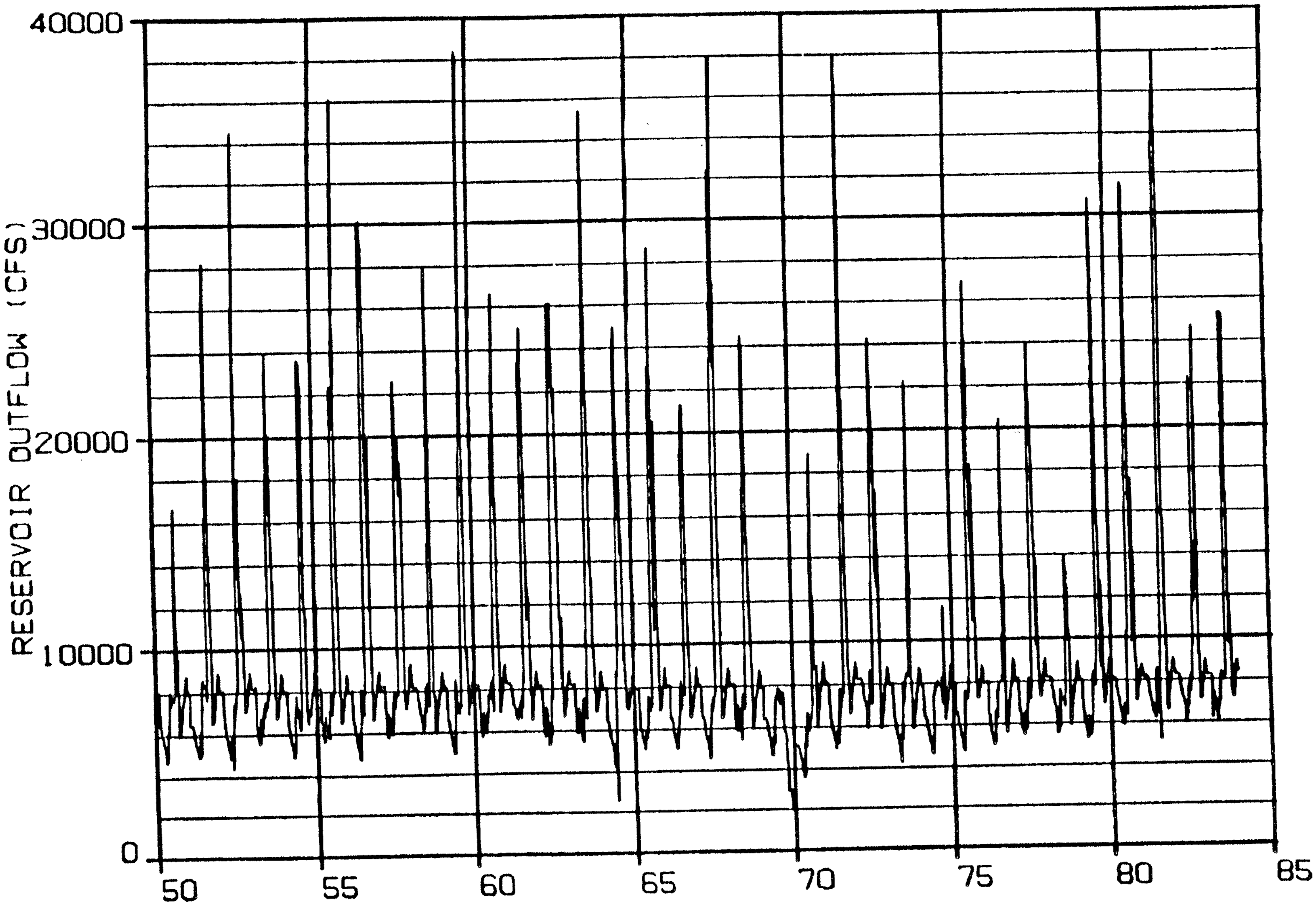
DEVIL CANYON WATER SURFACE ELEVATION
MONTHLY SUMMARY, STAGE II

FIGURE E.2.4.119



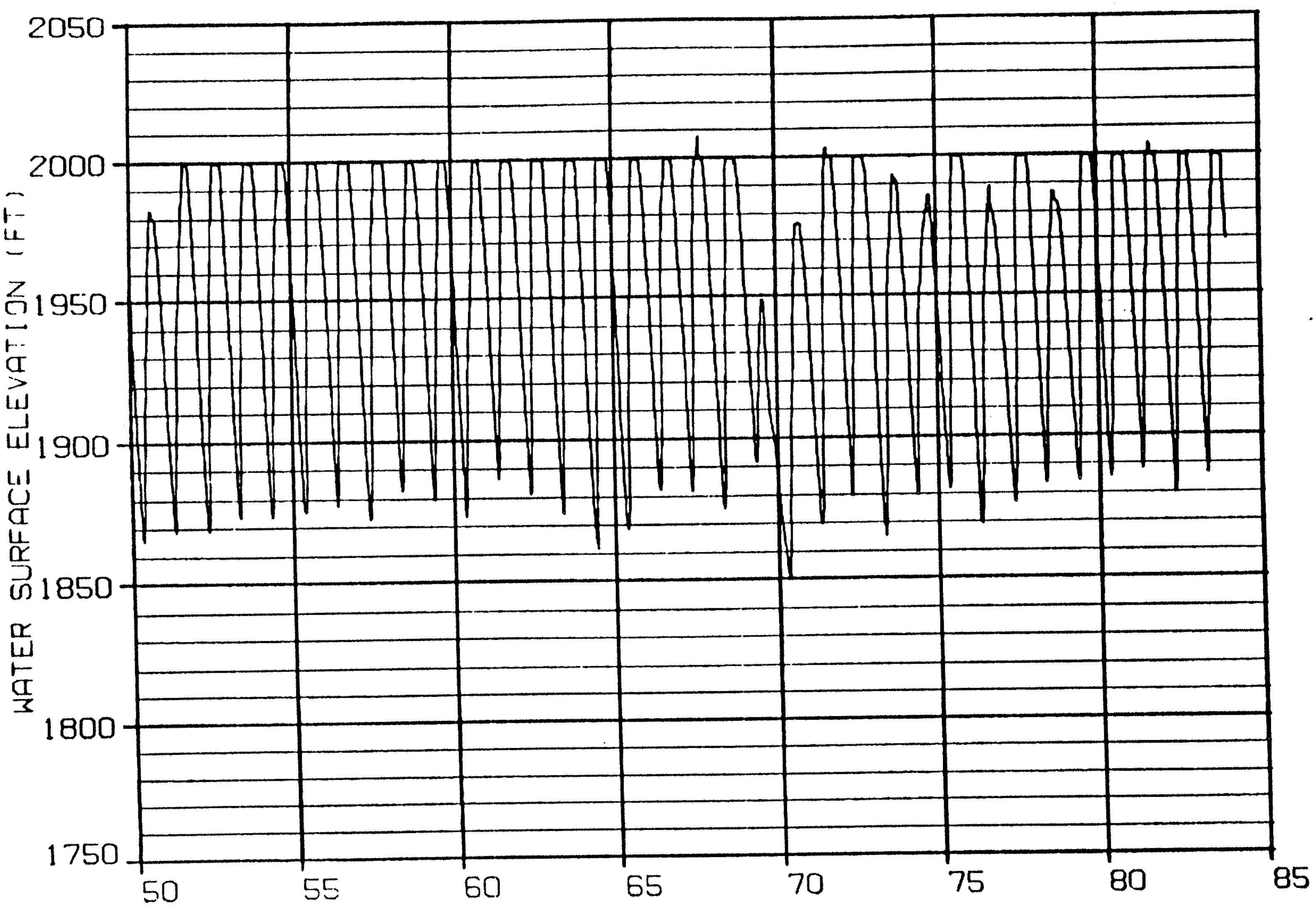
DEVIL CANYON RESERVOIR INFLOW, STAGE II

FIGURE E.2.4.120



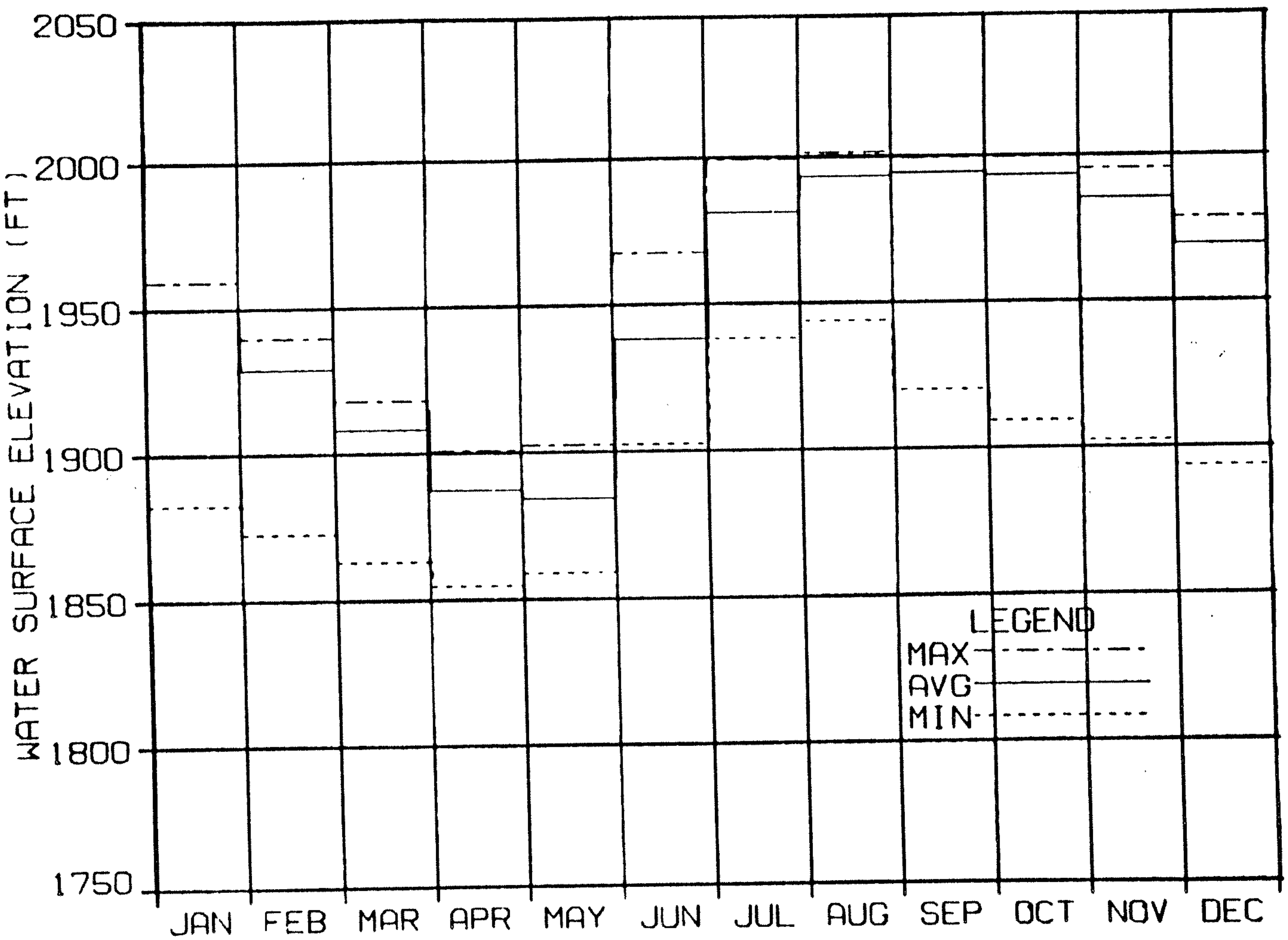
DEVIL CANYON RESERVOIR OUTFLOW, STAGE II

FIGURE E.2.4.121



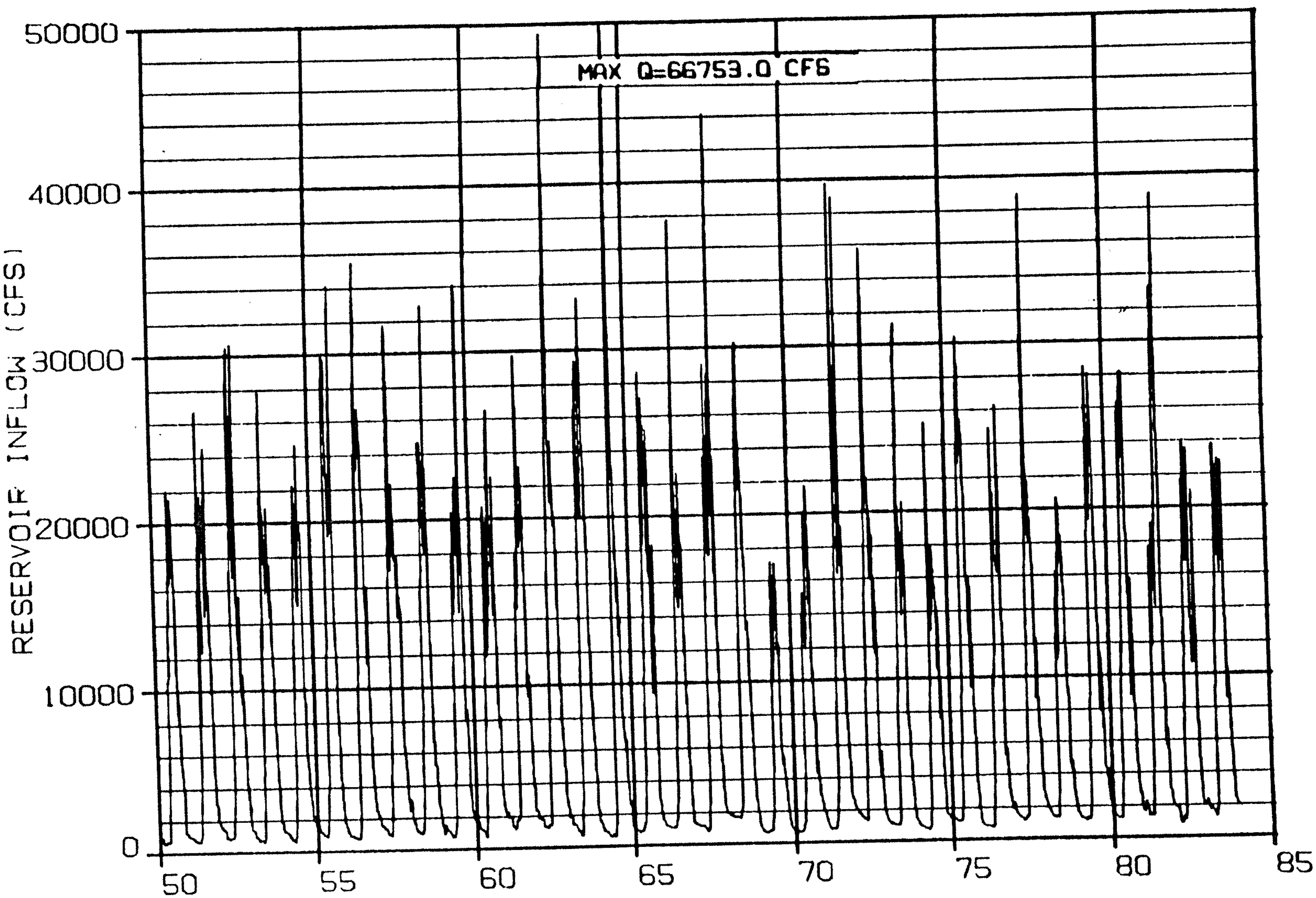
WATANA WATER SURFACE ELEVATION, E-I, STAGE II

FIGURE E.2.4.122



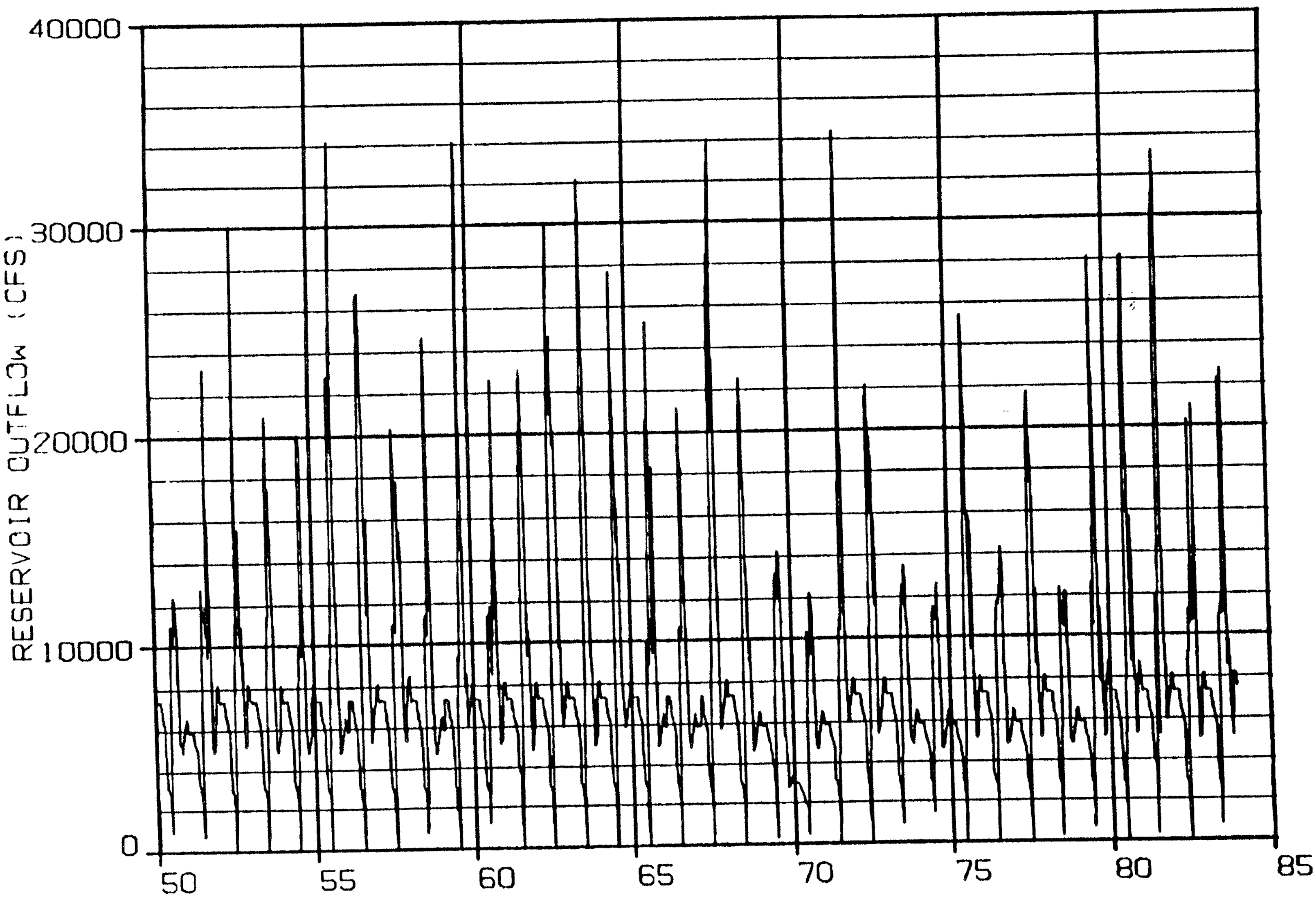
WATANA WATER SURFACE ELEVATION
MONTHLY SUMMARY, E-I, STAGE II

FIGURE E.2.4.123



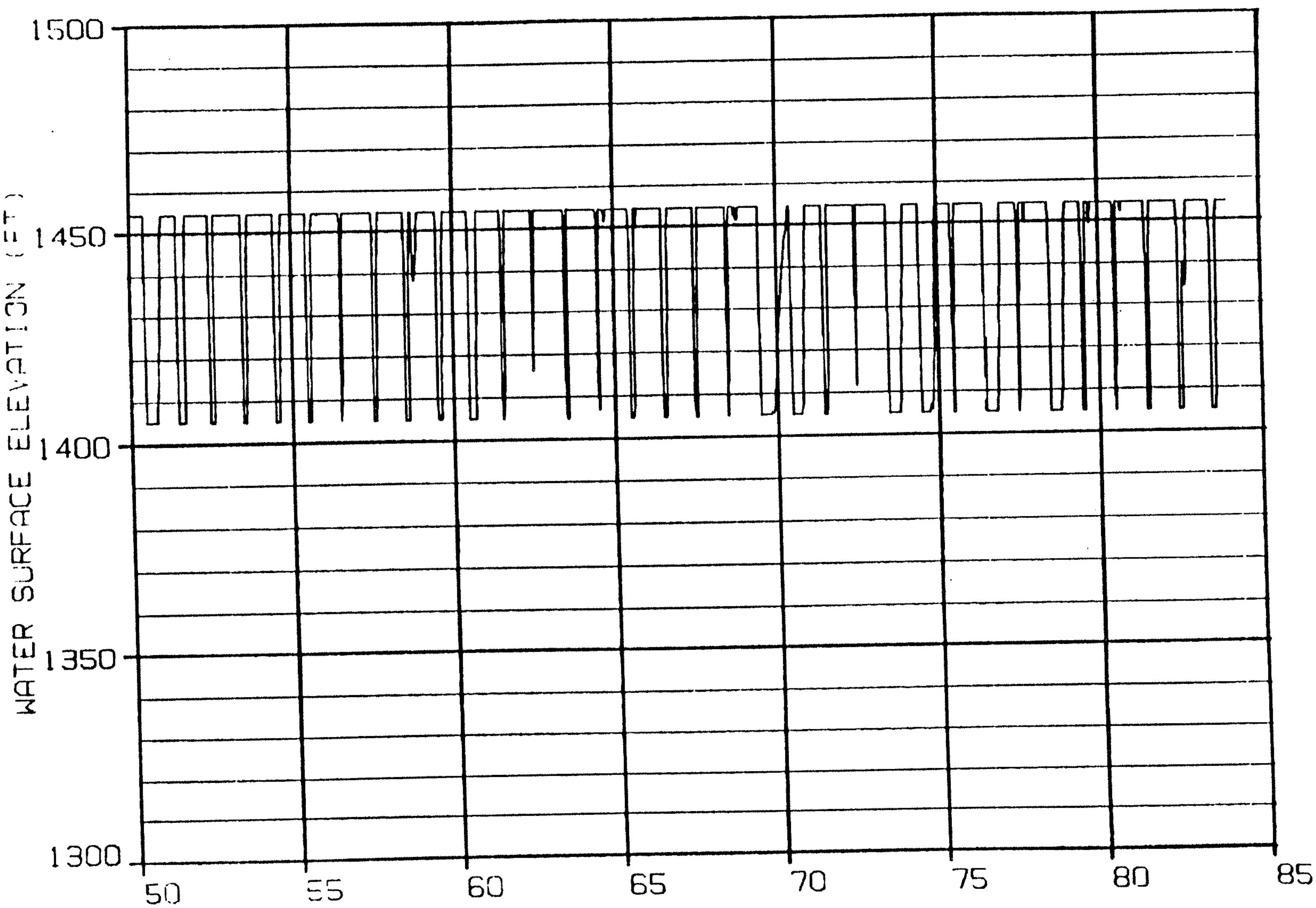
WATANA RESERVOIR INFLOW, E-I, STAGE II

FIGURE E.2.4.124



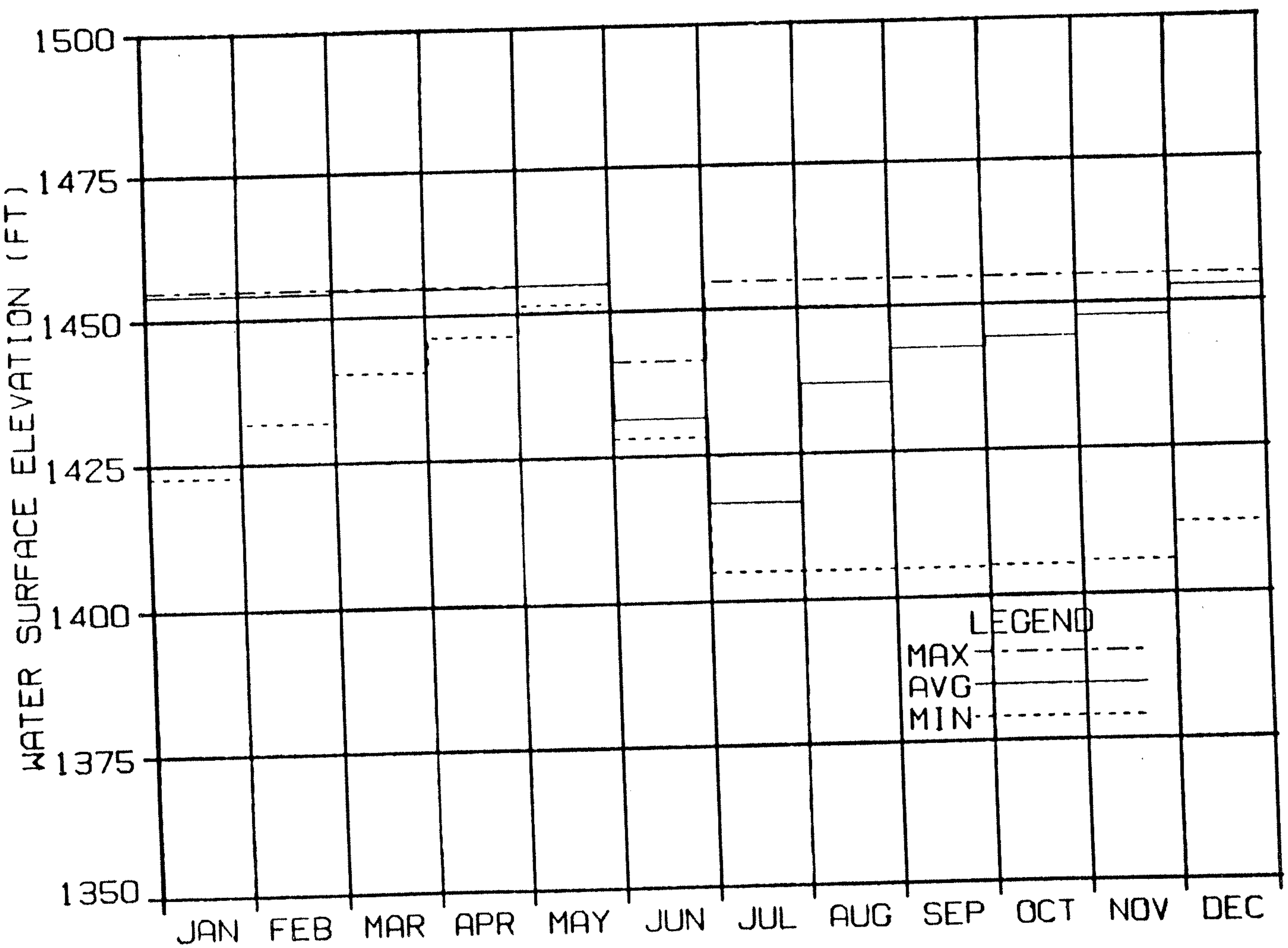
WATANA RESERVOIR OUTFLOW, E-I, STAGE II

FIGURE E.2.4.125



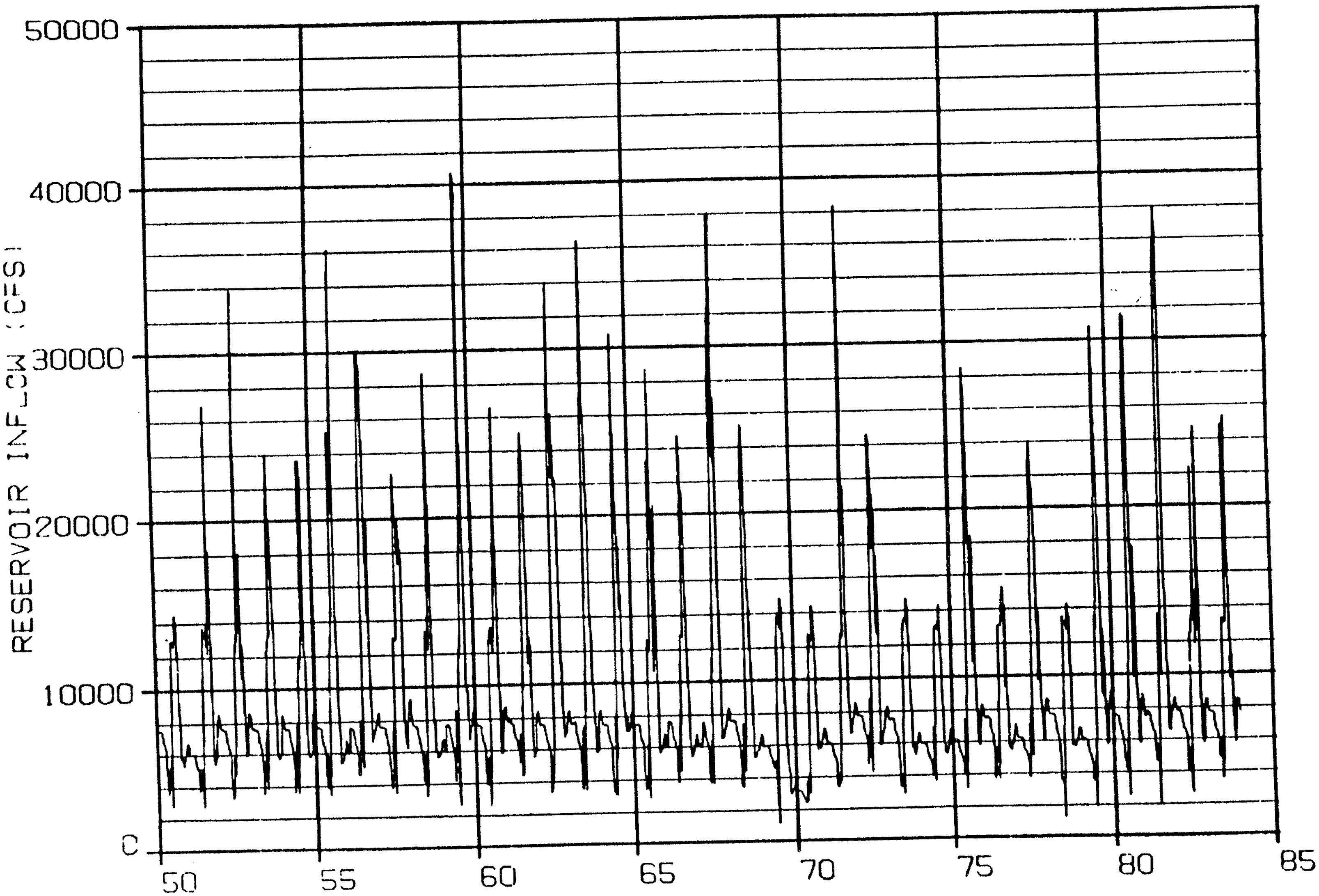
DEVIL CANYON WATER SURFACE ELEVATION, E-I, STAGE II

FIGURE E.2.4.126



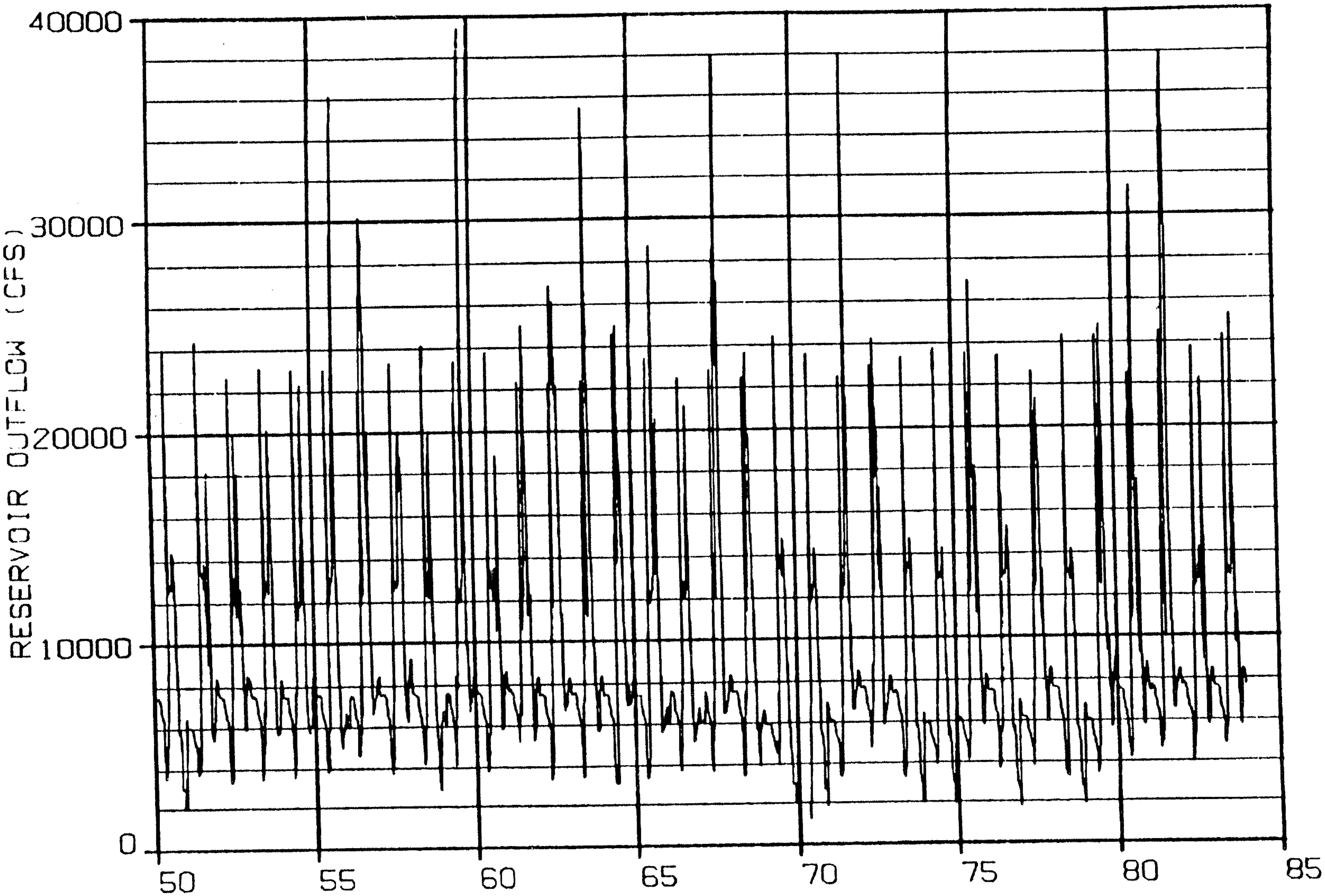
DEVIL CANYON WATER SURFACE ELEVATION
MONTHLY SUMMARY, E-I, STAGE II

FIGURE E.2.4.127

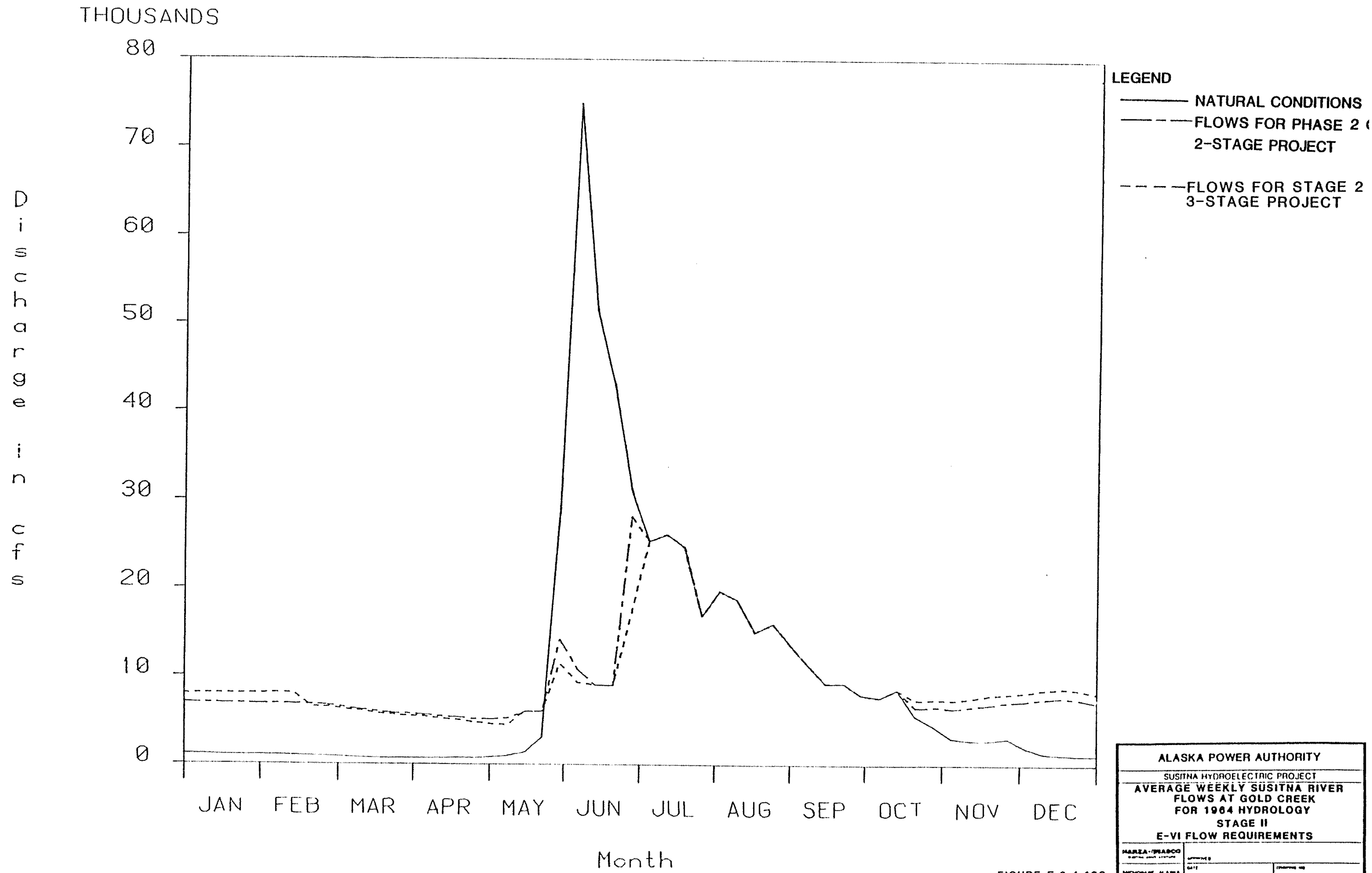


DEVIL CANYON RESERVOIR INFLOW, E-I, STAGE II

FIGURE E.2.4.128



DEVIL CANYON RESERVOIR OUTFLOW, E-I, STAGE II



ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1964 HYDROLOGY STAGE II E-VI FLOW REQUIREMENTS

HARZA-EBASCO

ANCHORAGE, ALASKA

FIGURE E.2.4.130

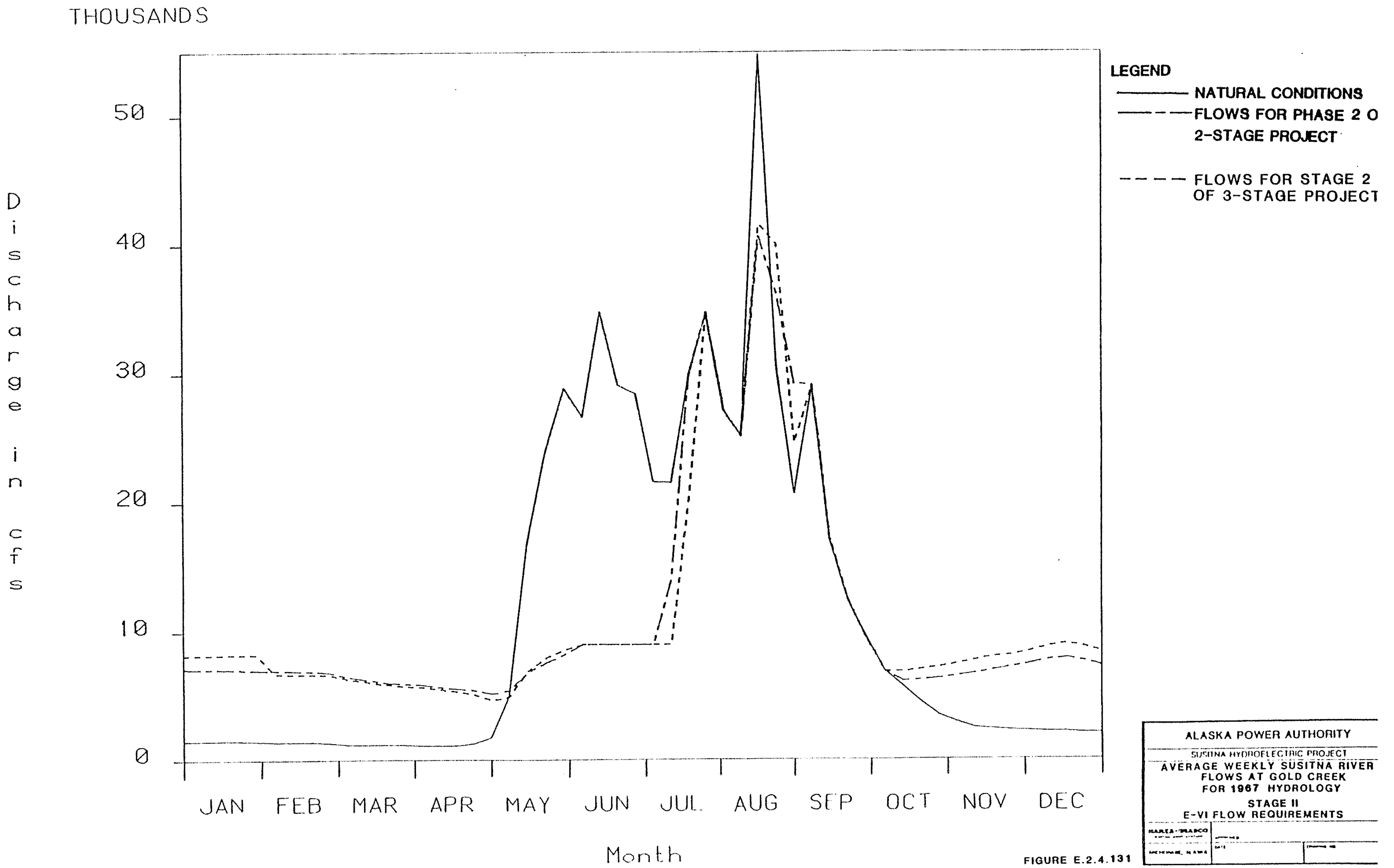
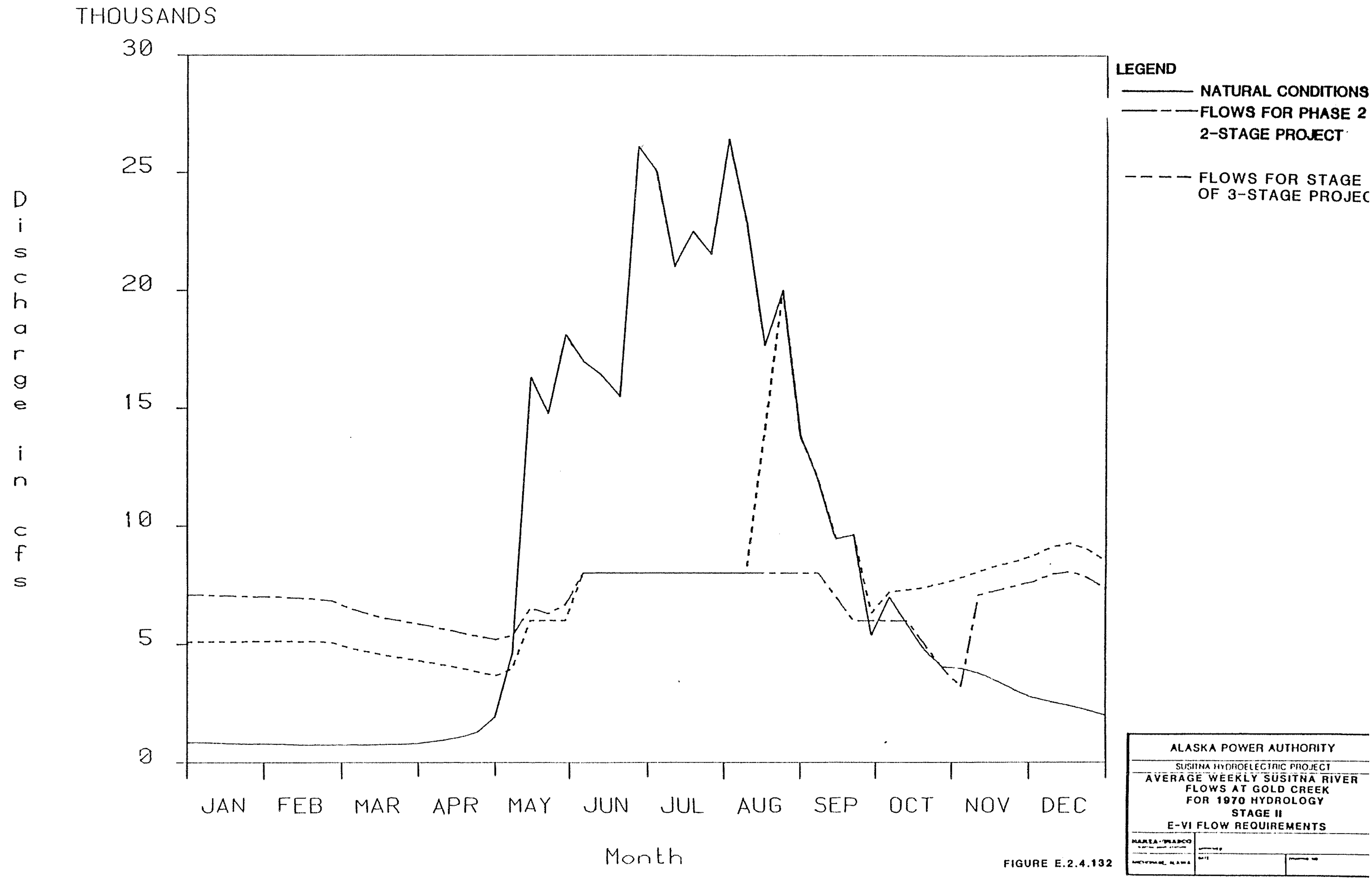


FIGURE E.2.4.131

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER
FLOWS AT GOLD CREEK
FOR 1967 HYDROLOGY
STAGE II
E-VI FLOW REQUIREMENTS



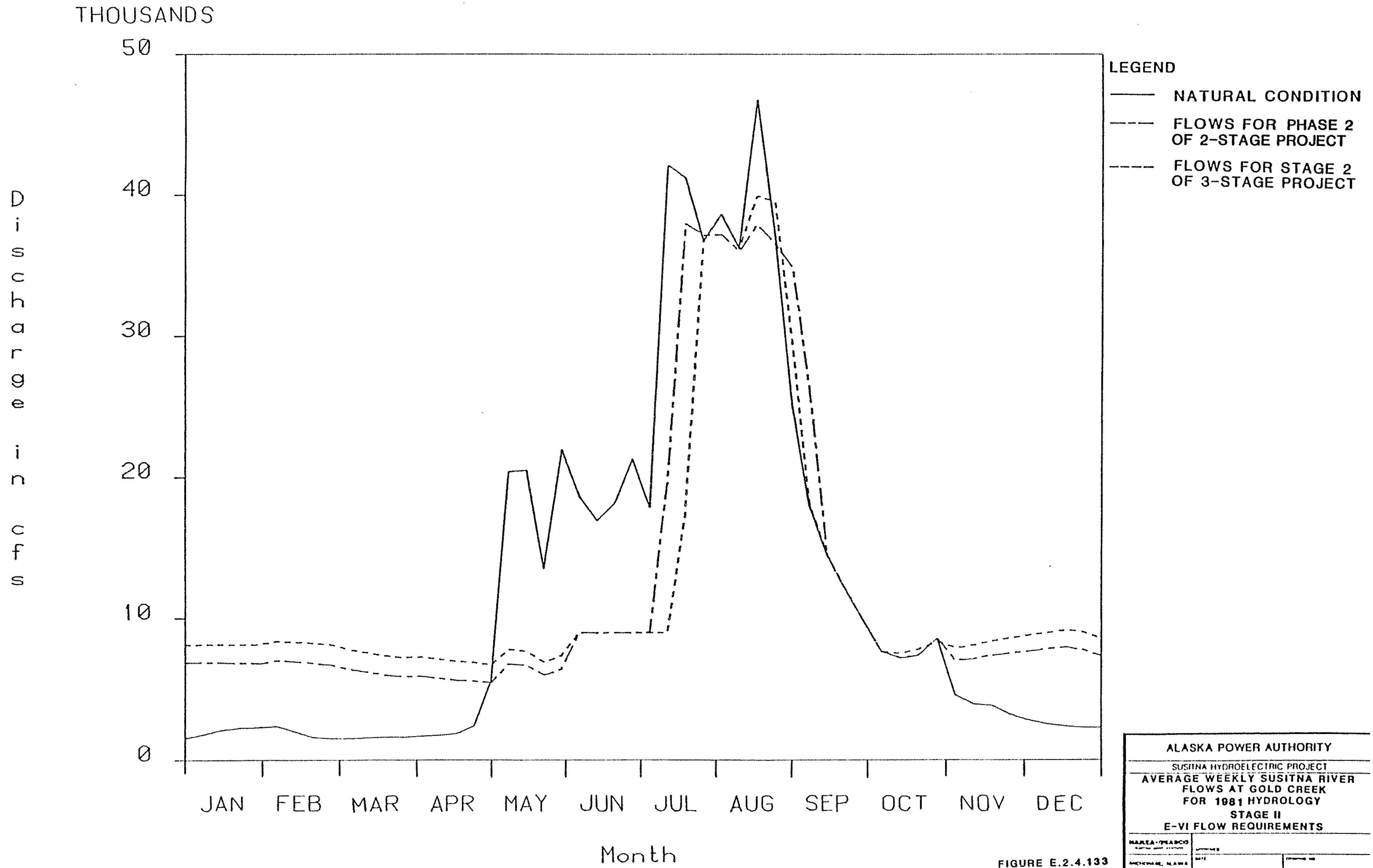
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1970 HYDROLOGY STAGE II E-VI FLOW REQUIREMENTS

HARZA-EBASCO

FIGURE E.2.4.132



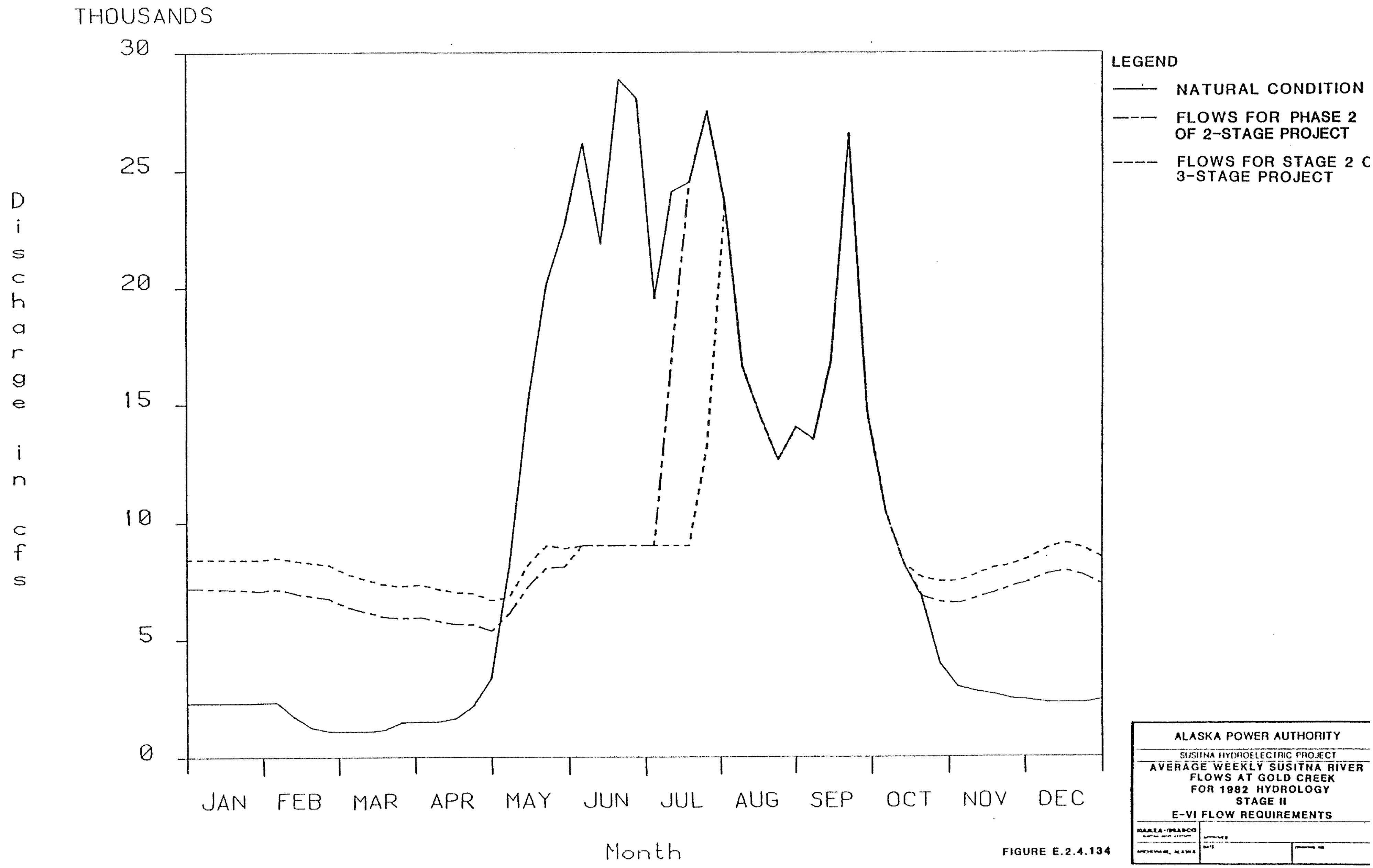
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1981 HYDROLOGY STAGE II E-VI FLOW REQUIREMENTS

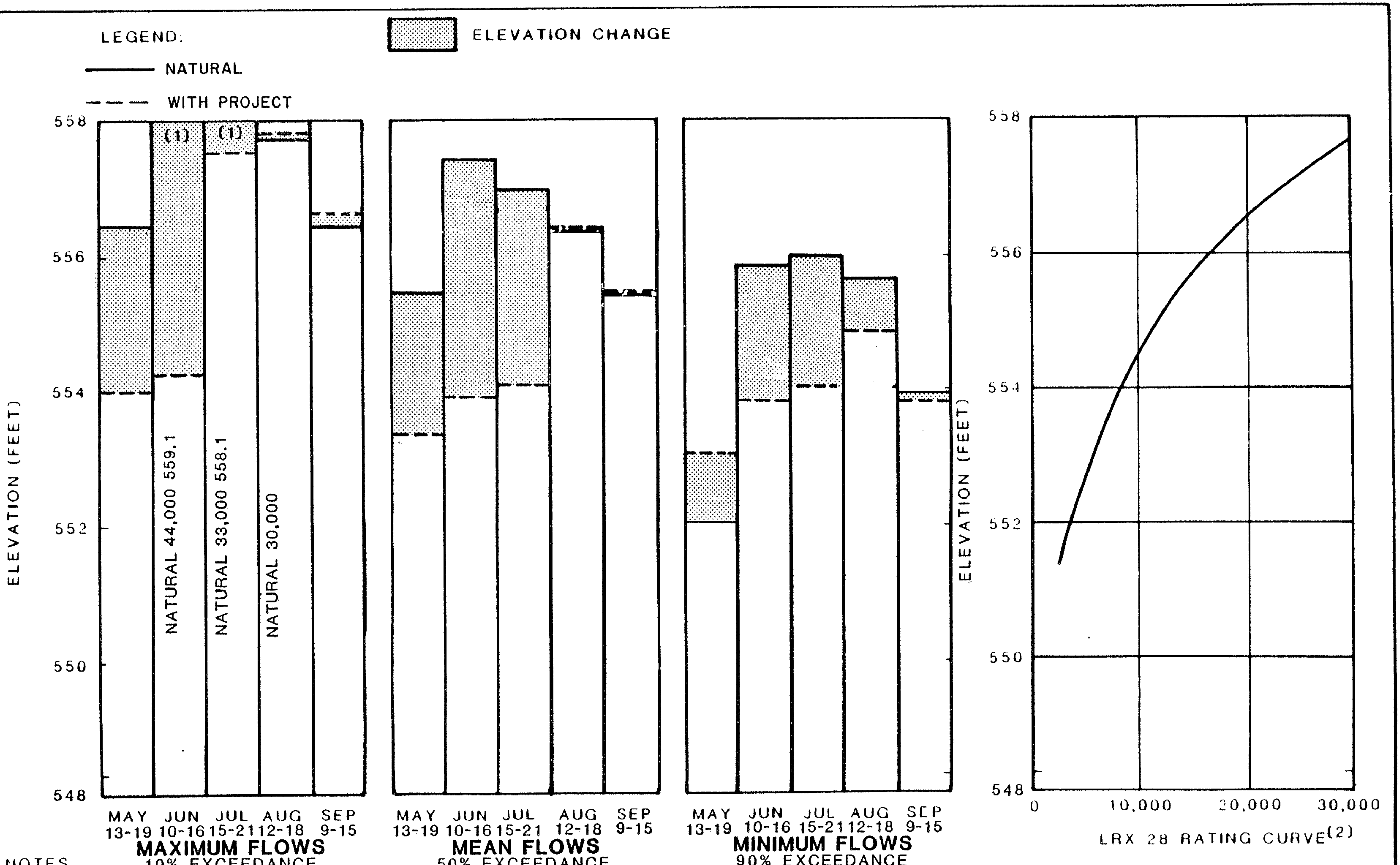
HARZA-EBASCO

FIGURE E.2.4.133



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1982 HYDROLOGY
STAGE II
E-VI FLOW REQUIREMENTS

FIGURE E.2.4.134

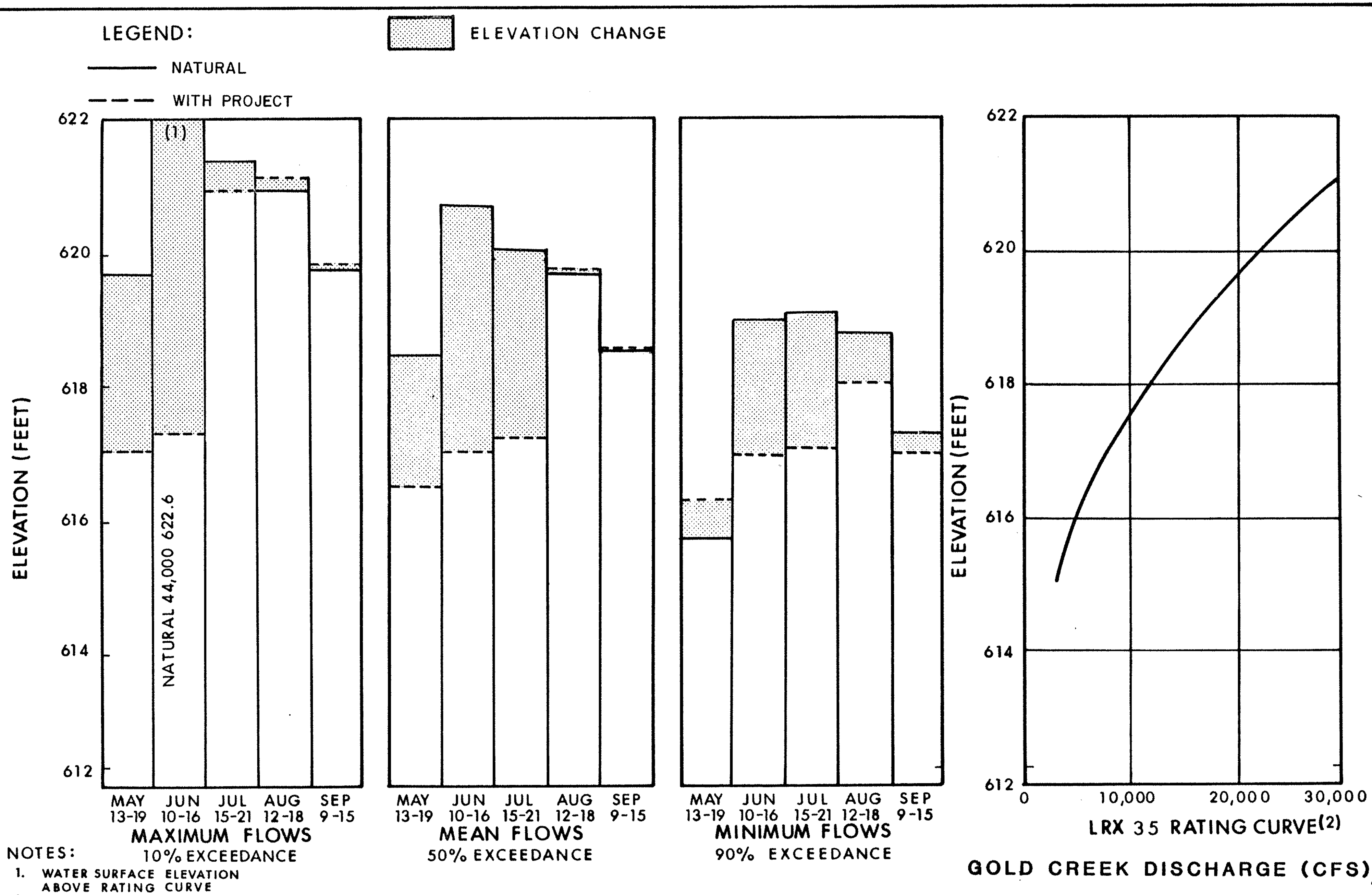


NOTES.

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE,1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 124.4, STAGE II

FIGURE E.2.4.135

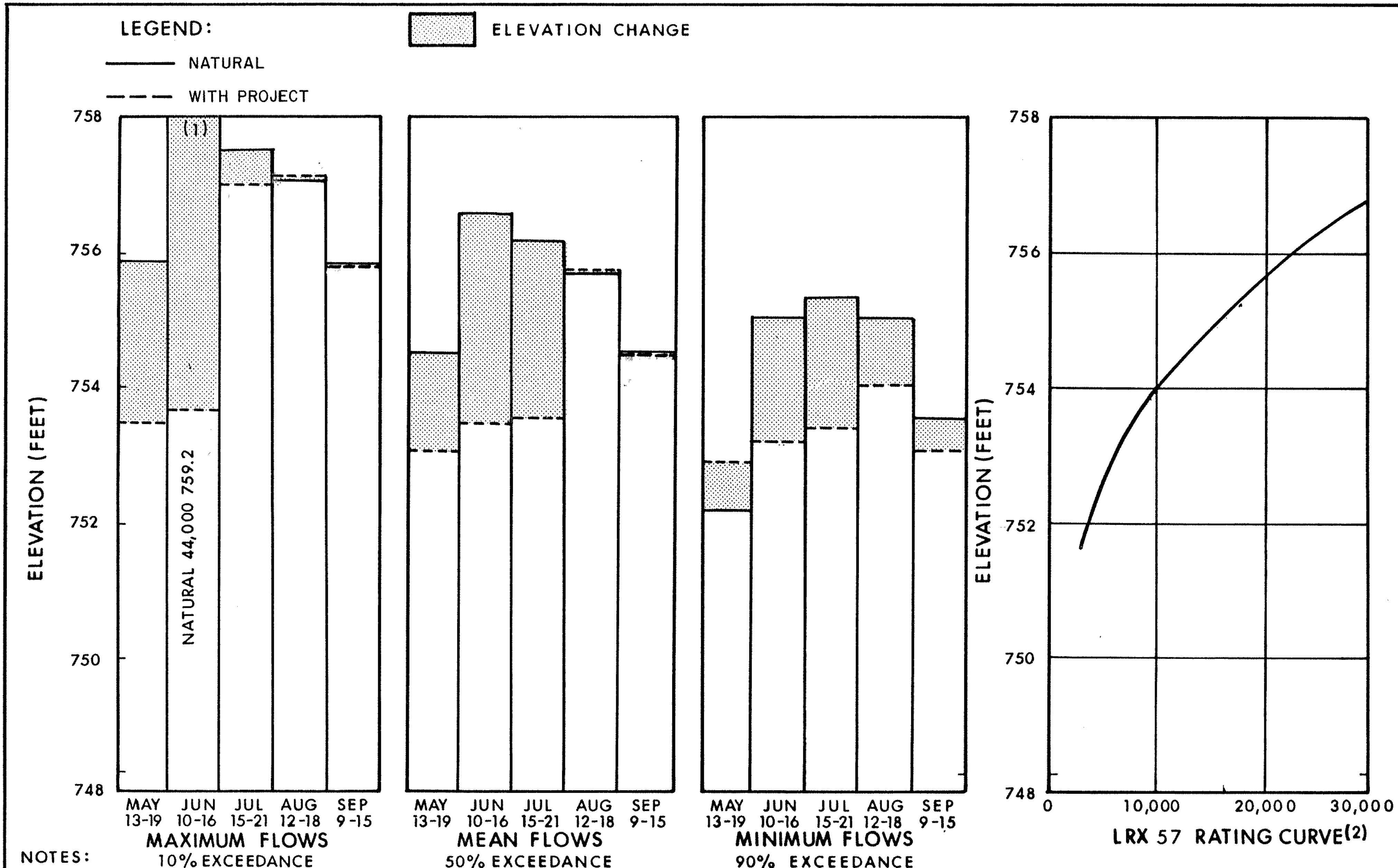


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 130.9, STAGE II

FIGURE E.2.4.136

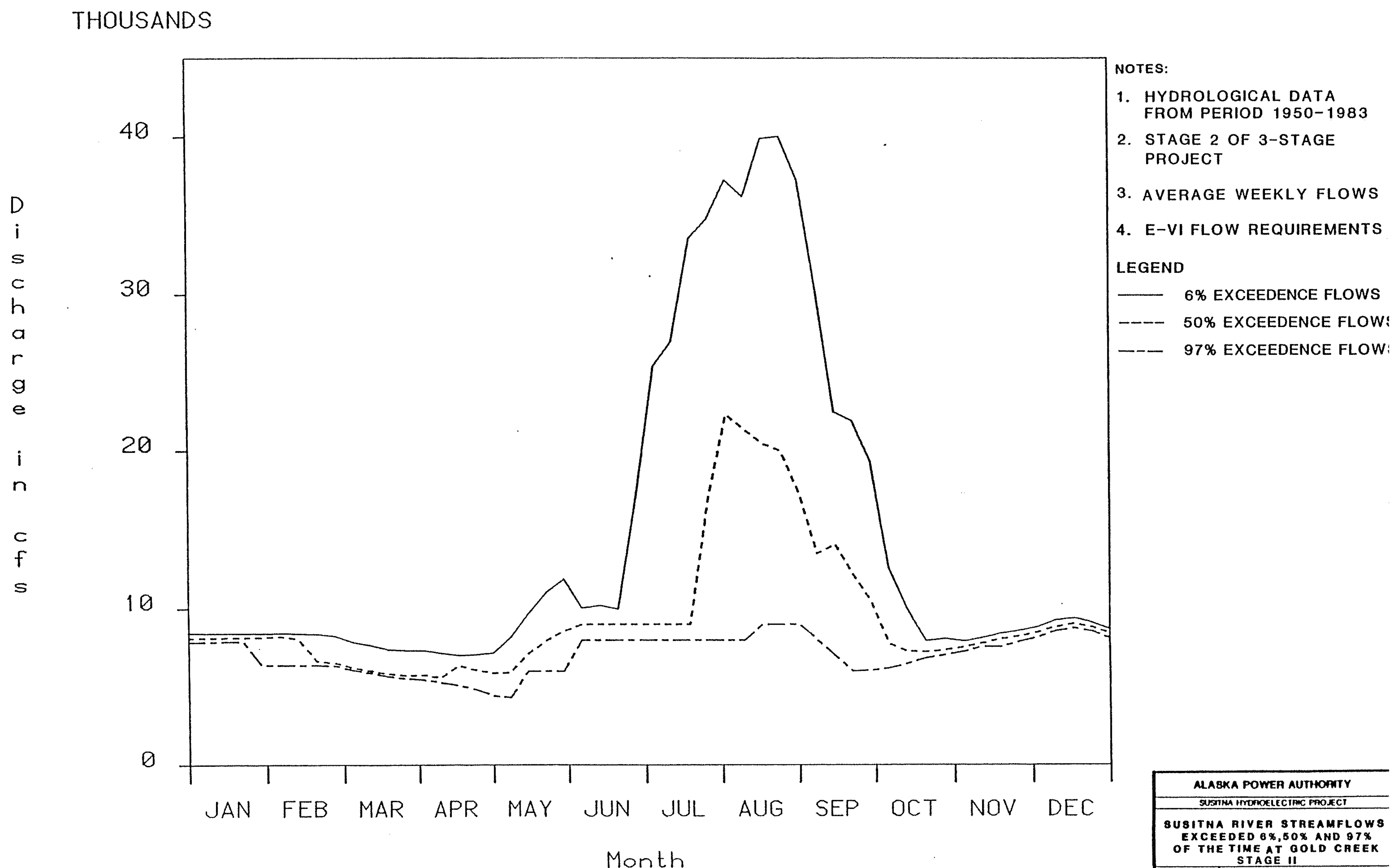


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 142.3, STAGE II

FIGURE E.2.4.137



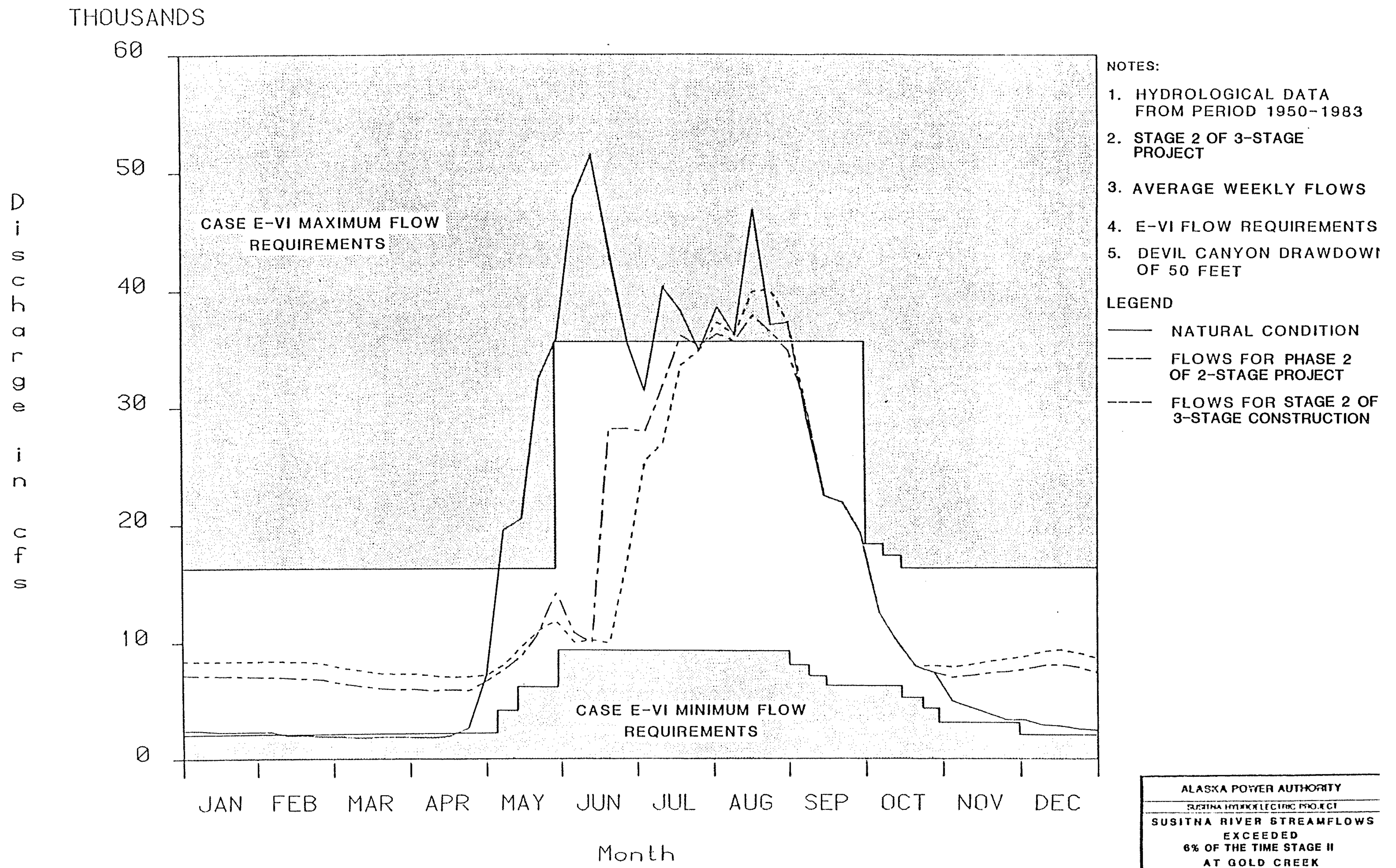
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6%,50% AND 97% OF THE TIME AT GOLD CREEK STAGE II

HARZA-EBASCO

FIGURE E.2.4.138

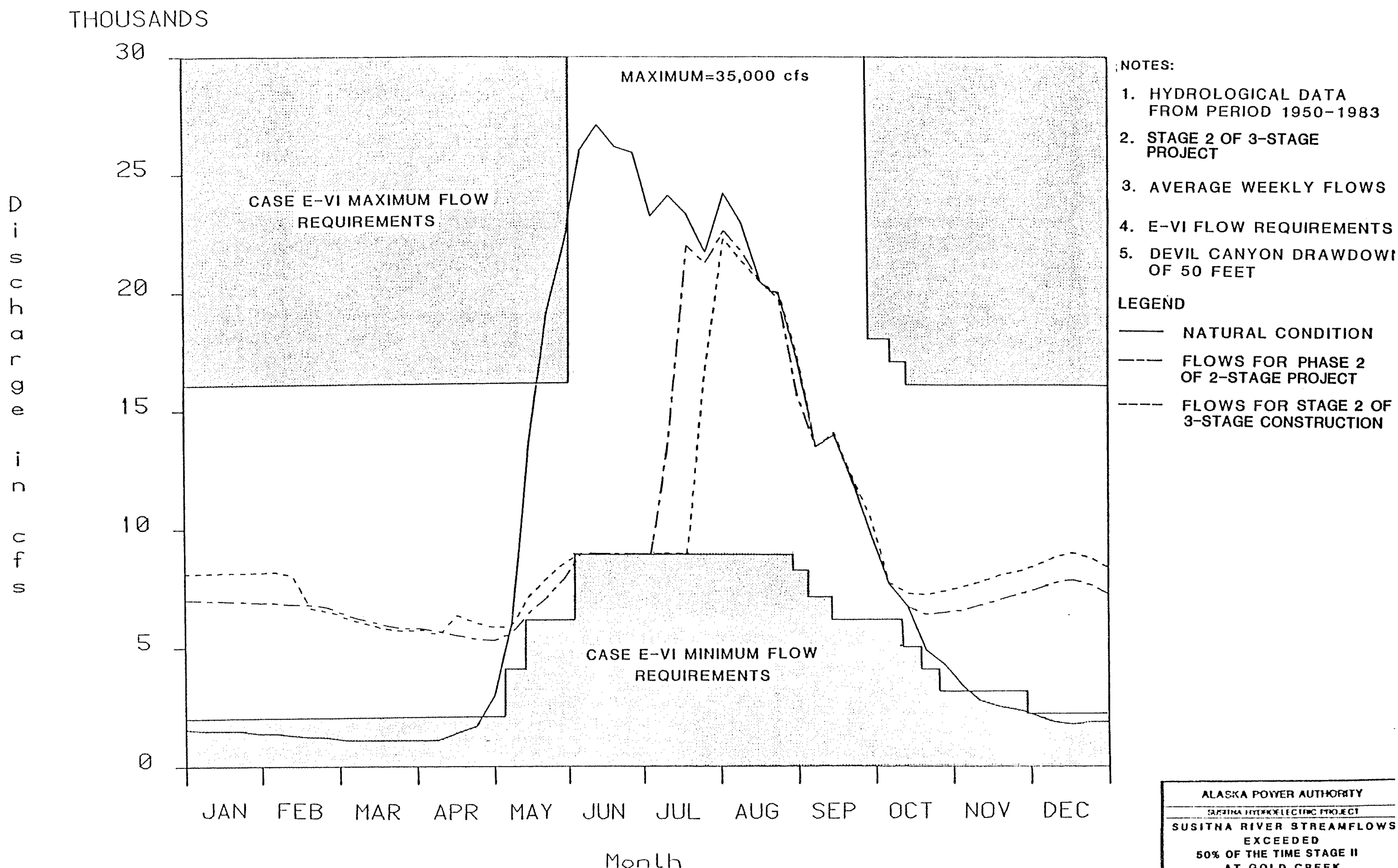


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6% OF THE TIME STAGE II AT GOLD CREEK

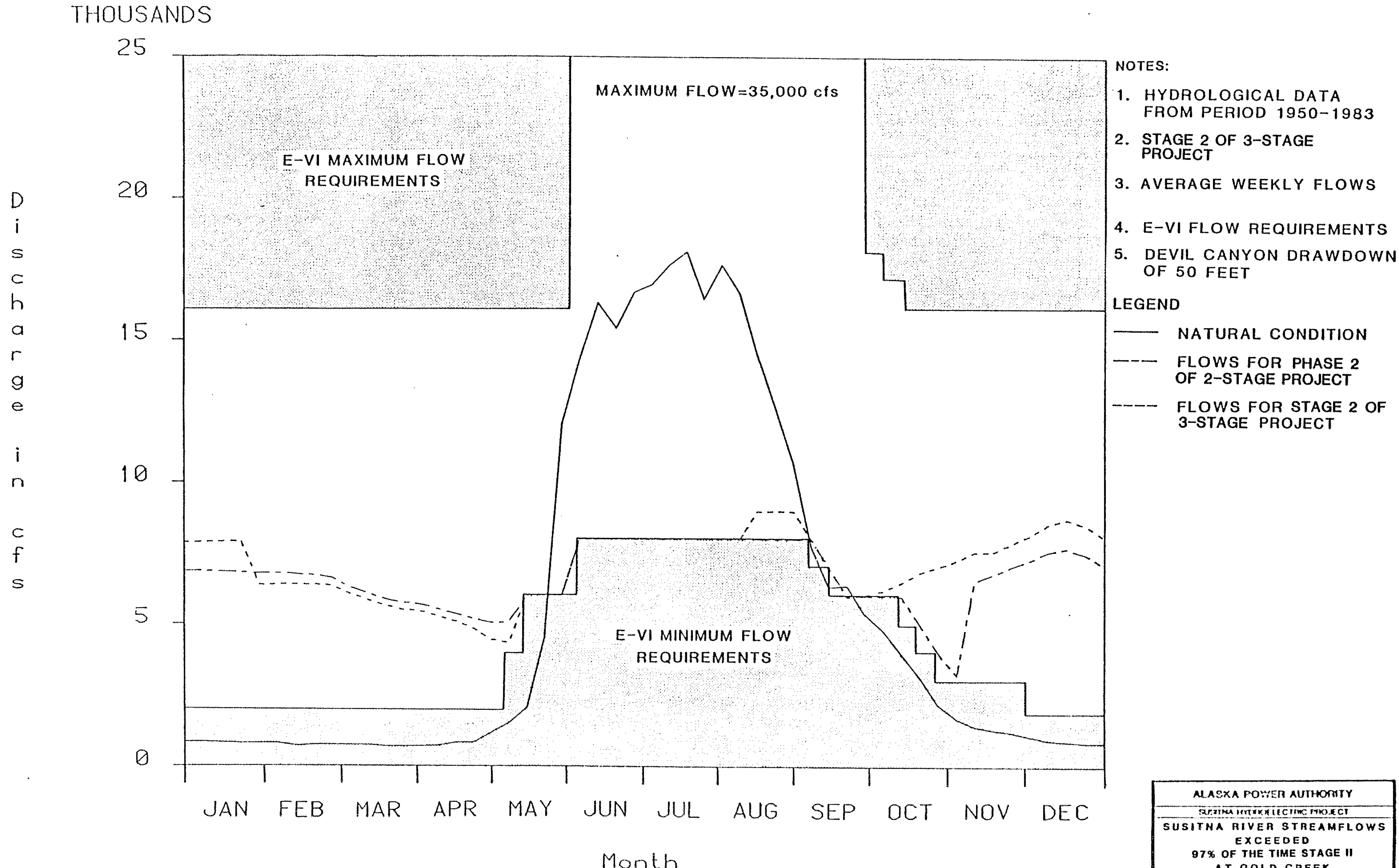
FIGURE E.2.4.139



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME STAGE II AT GOLD CREEK

FIGURE E.2.4.140

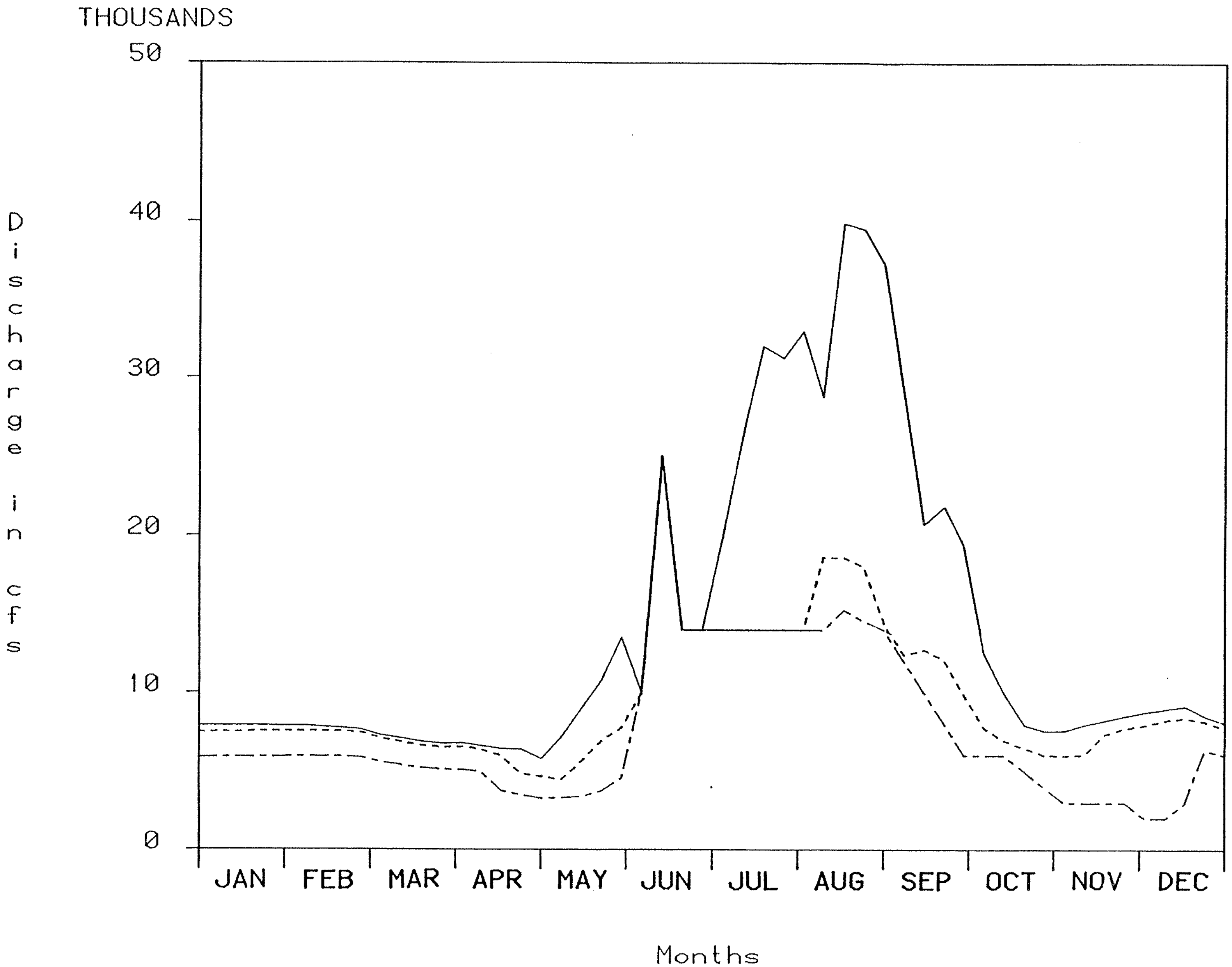


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 97% OF THE TIME STAGE II AT GOLD CREEK

FIGURE E.2.4.141



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-198
2. STAGE 2 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-I FLOW REQUIREMEN

LEGEND

——— 6% EXCEEDENCE FLOW

– – – – 50% EXCEEDENCE FLO

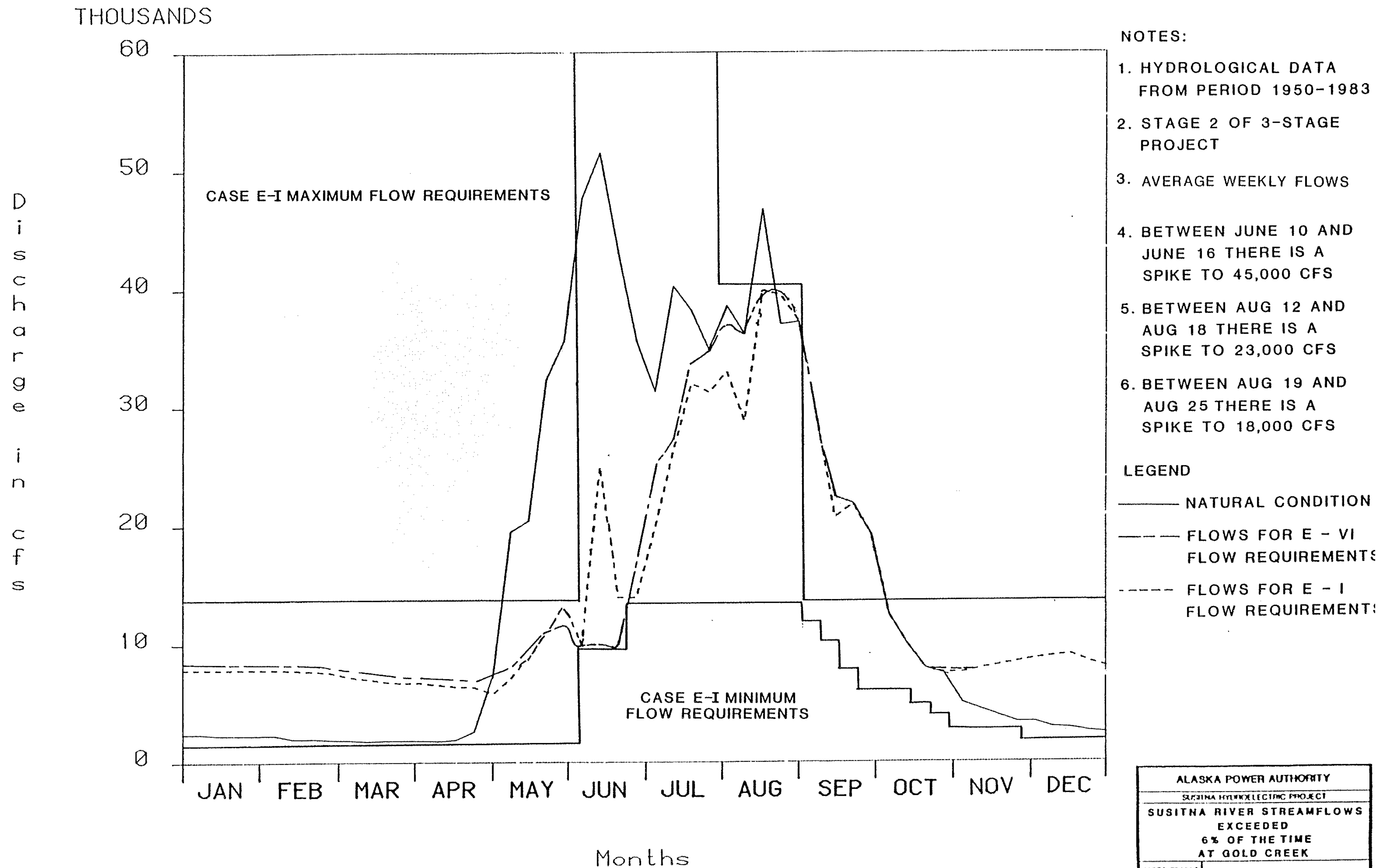
— — — 97% EXCEEDENCE FLO

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

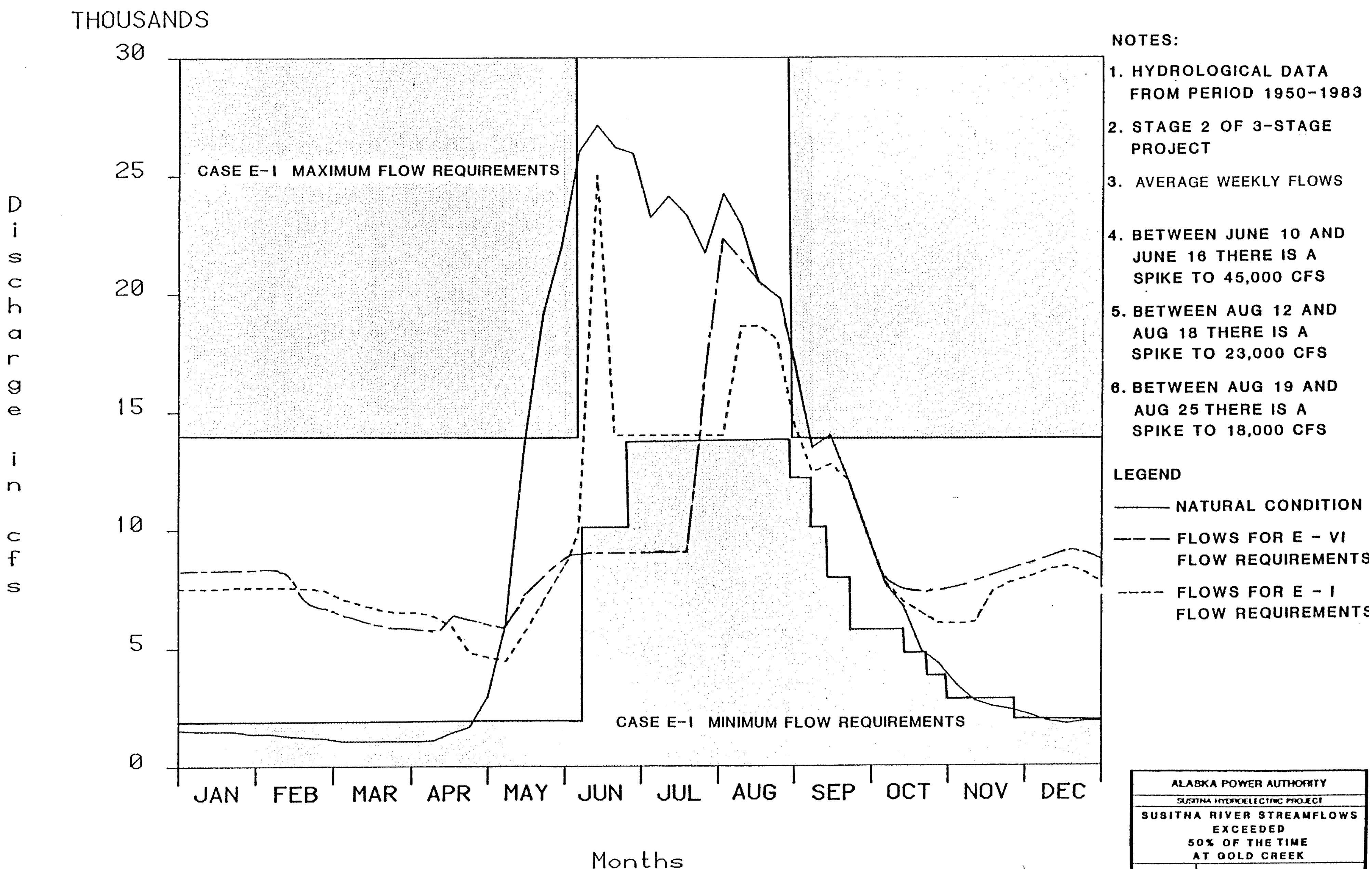
SUSITNA RIVER STREAMFLOWS EXCEEDED 6%,50% AND 97% OF THE TIME AT GOLD CREEK STAGE II

FIGURE E.2.4.142



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOWS EXCEEDED 6% OF THE TIME AT GOLD CREEK

FIGURE E.2.4.143



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME AT GOLD CREEK

FIGURE E.2.4.144

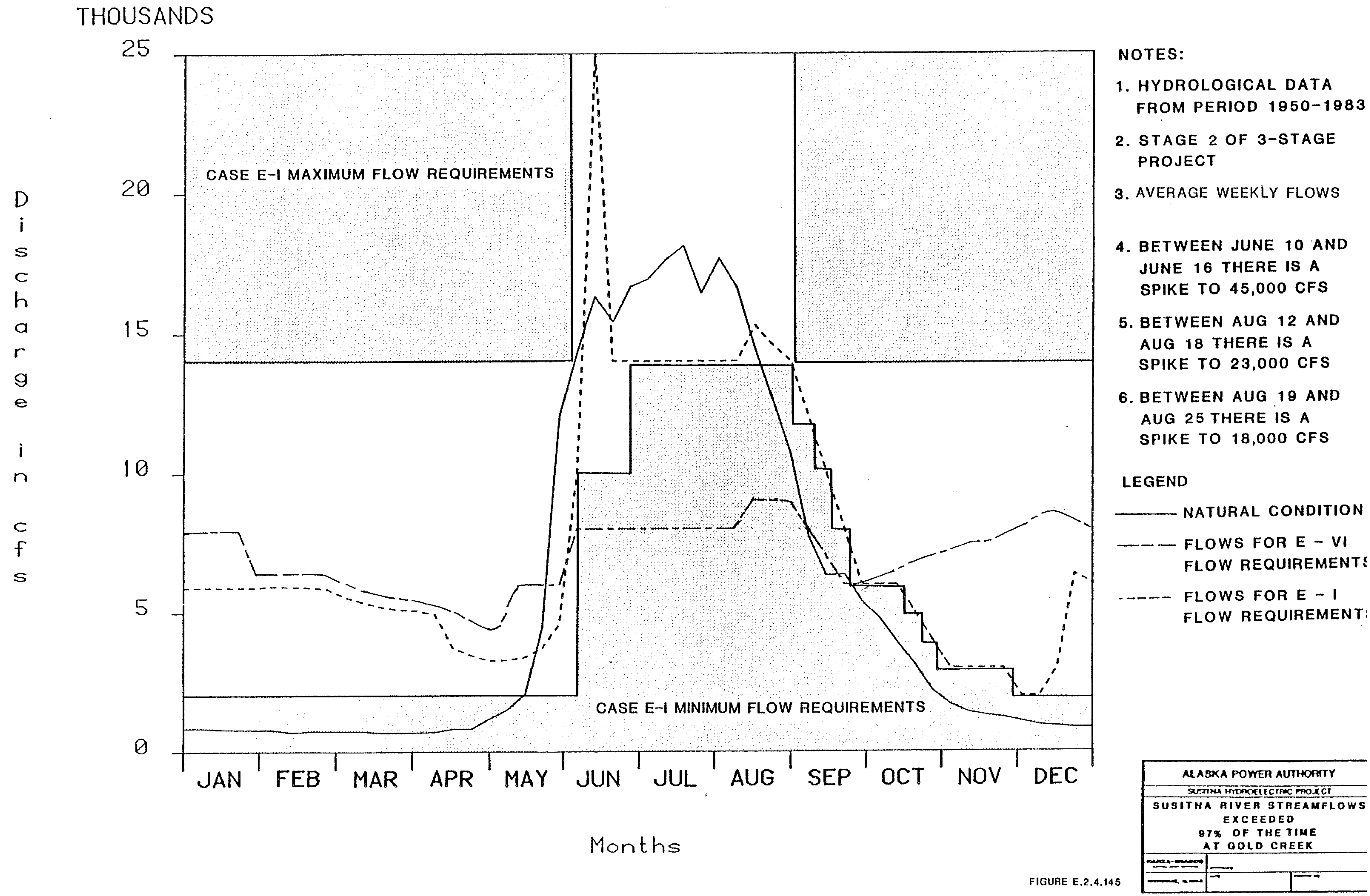
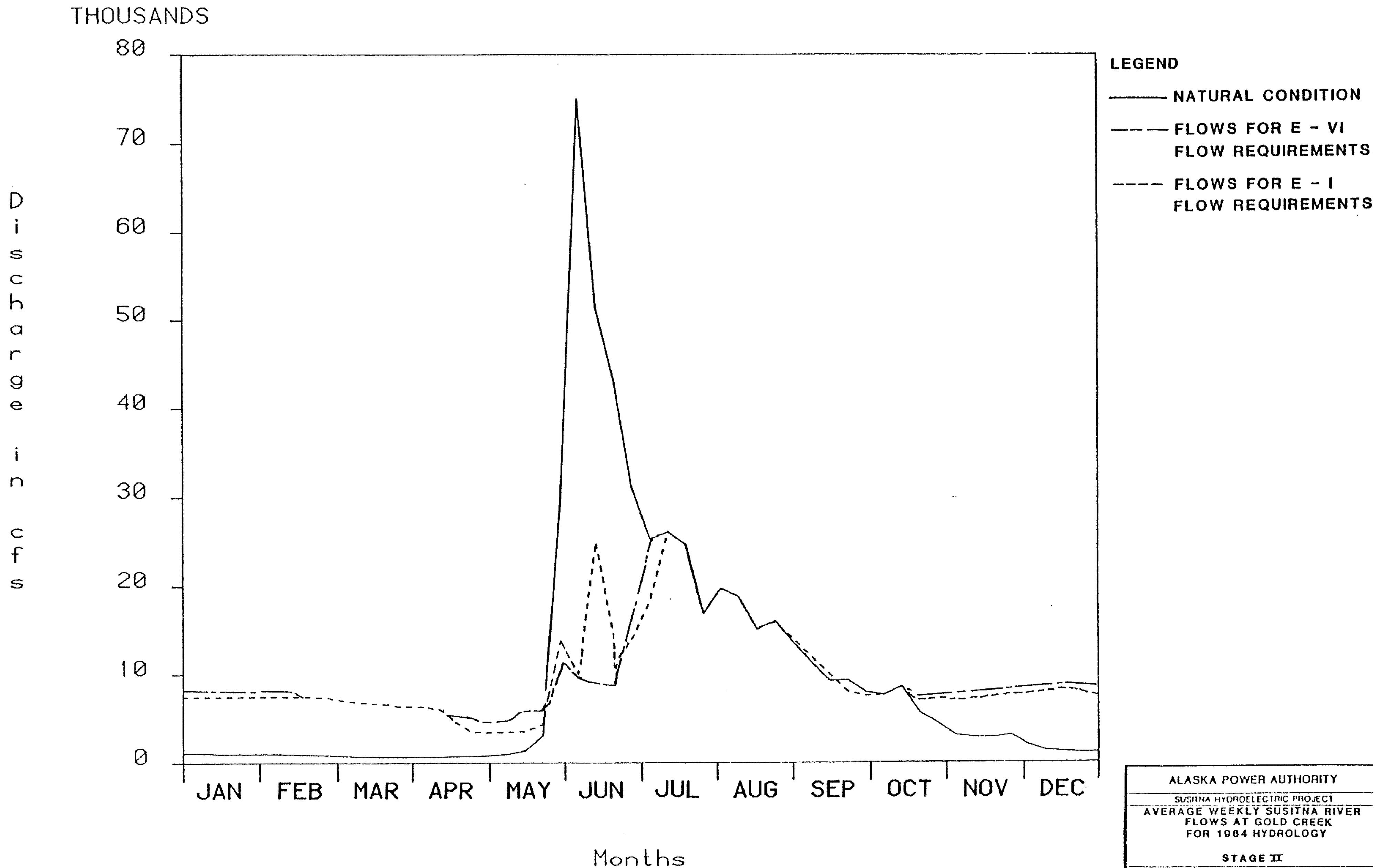
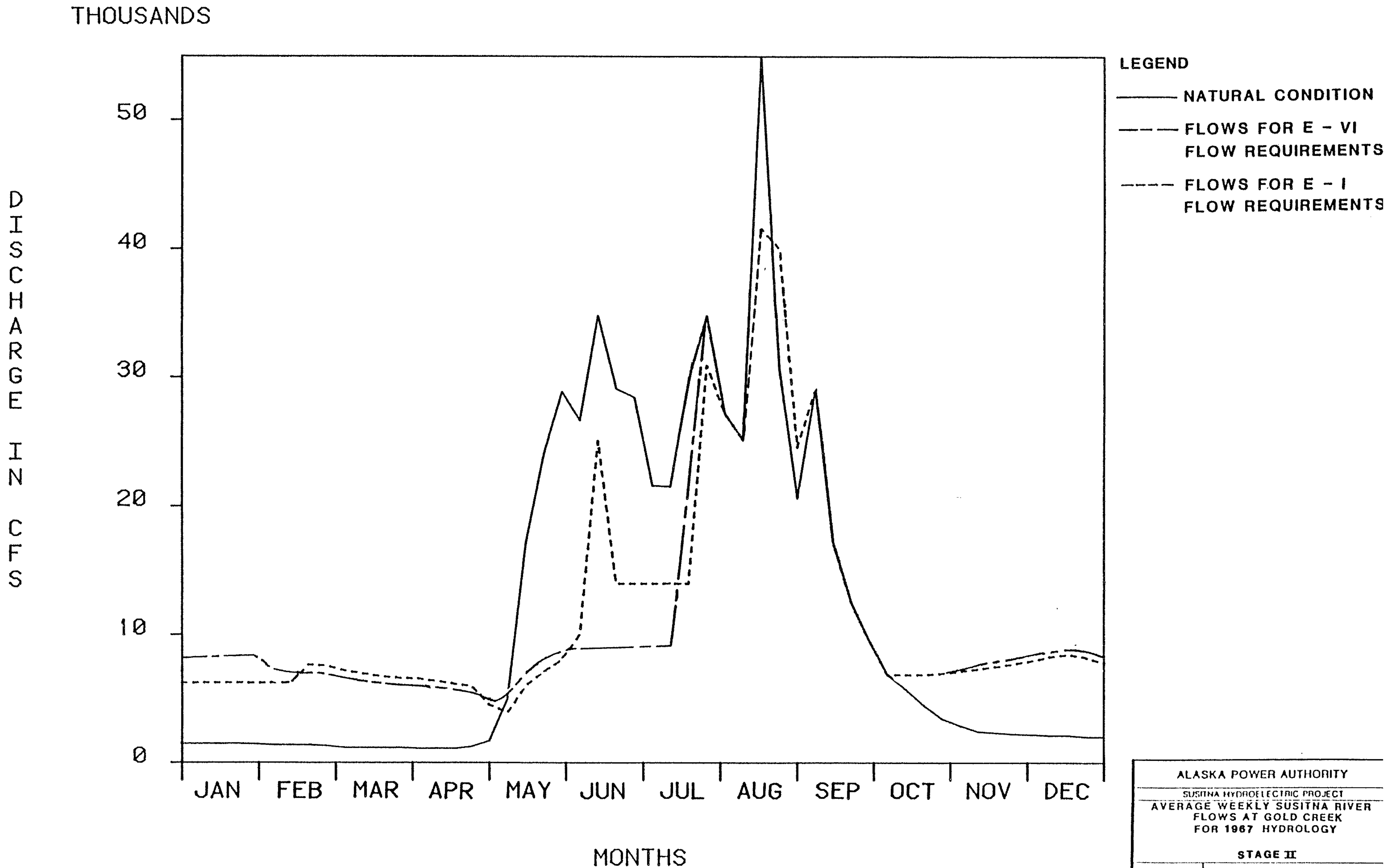


FIGURE E.2.4.145



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1964 HYDROLOGY
STAGE II

FIGURE E.2.4.146



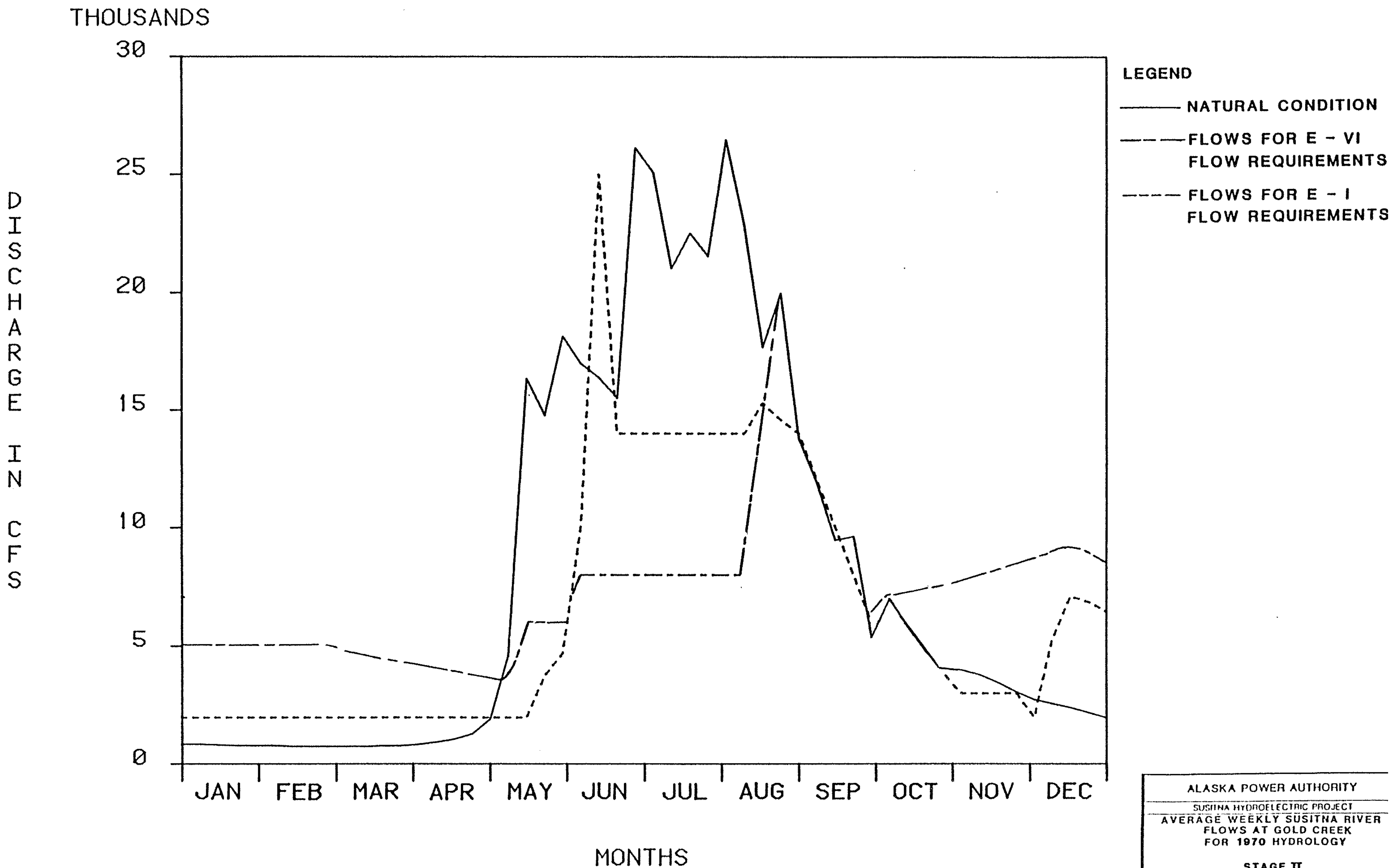
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1967 HYDROLOGY

STAGE II

FIGURE E.2.4.147



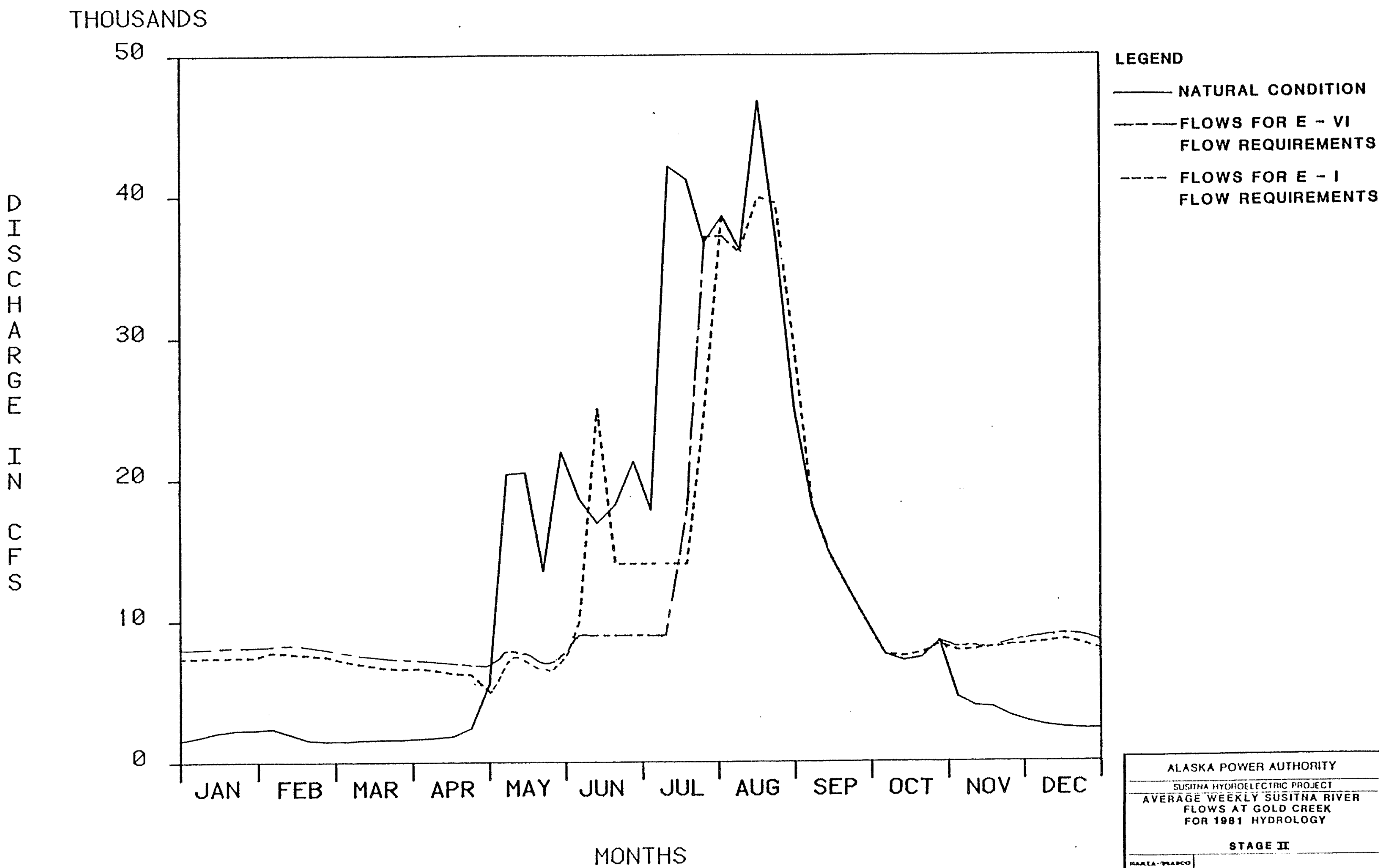
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1970 HYDROLOGY

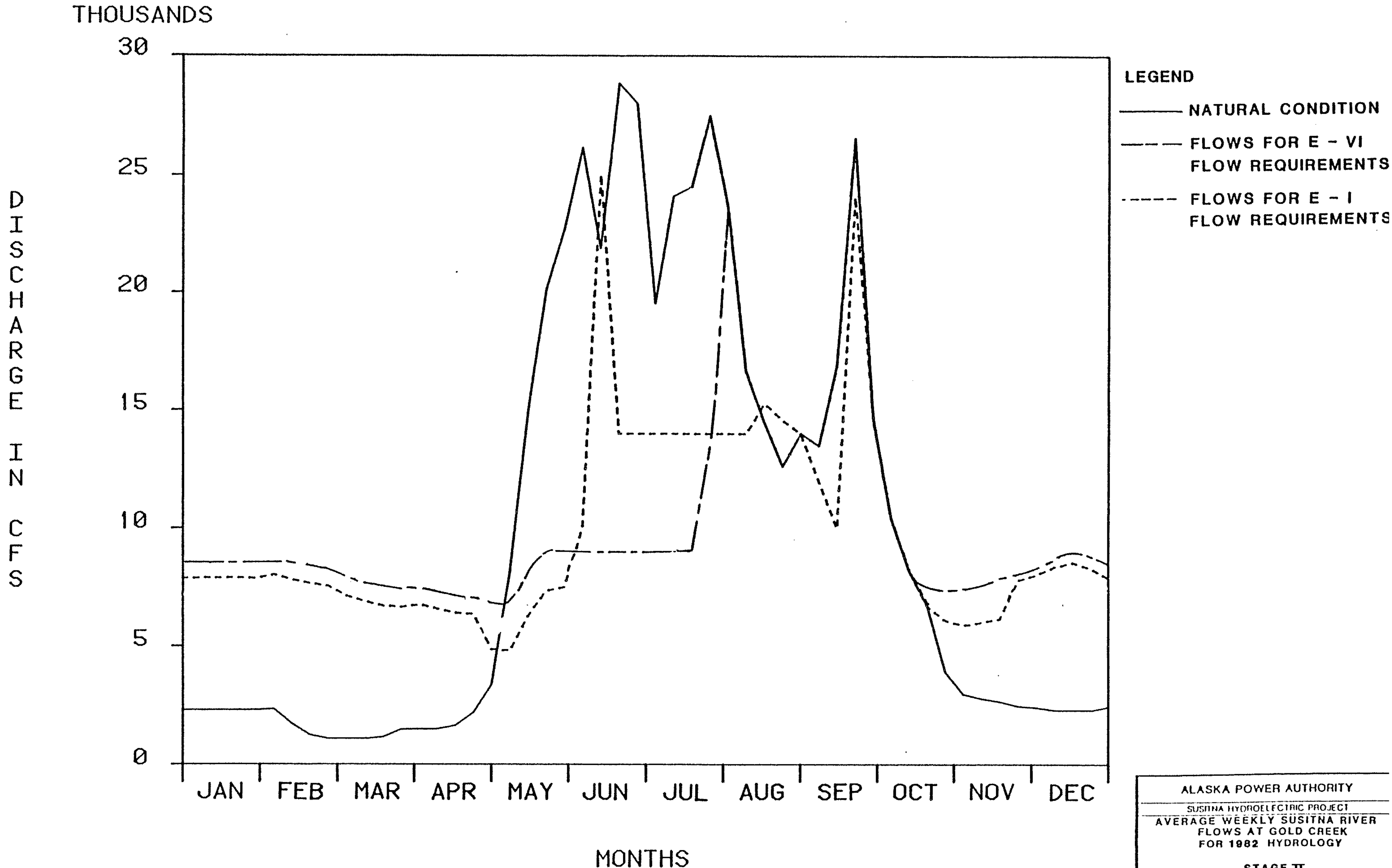
STAGE II

FIGURE E.2.4.148



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1981 HYDROLOGY
STAGE II

FIGURE E.2.4.149



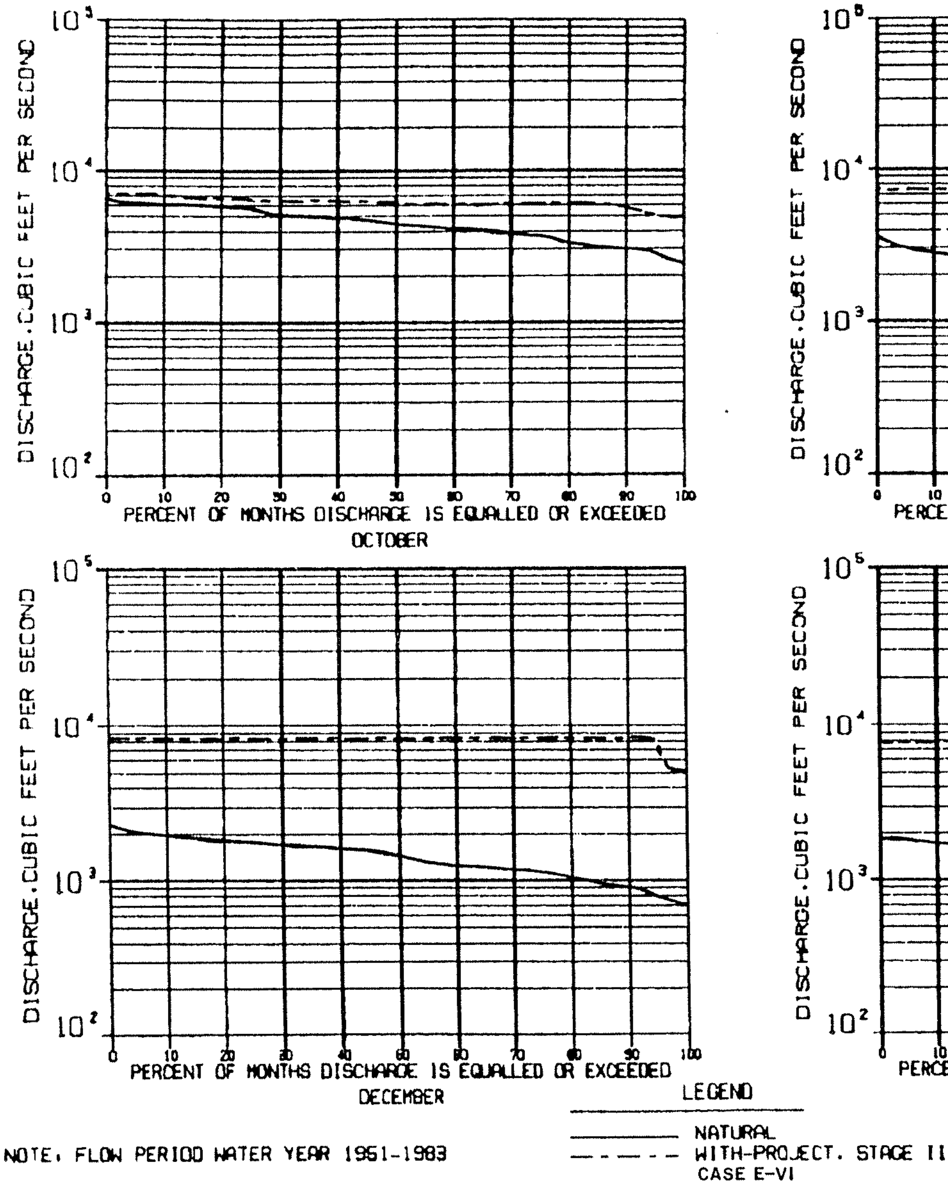
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1982 HYDROLOGY

STAGE II

FIGURE E.2.4.150



NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 86

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.151

(PAGE 1 of 3)

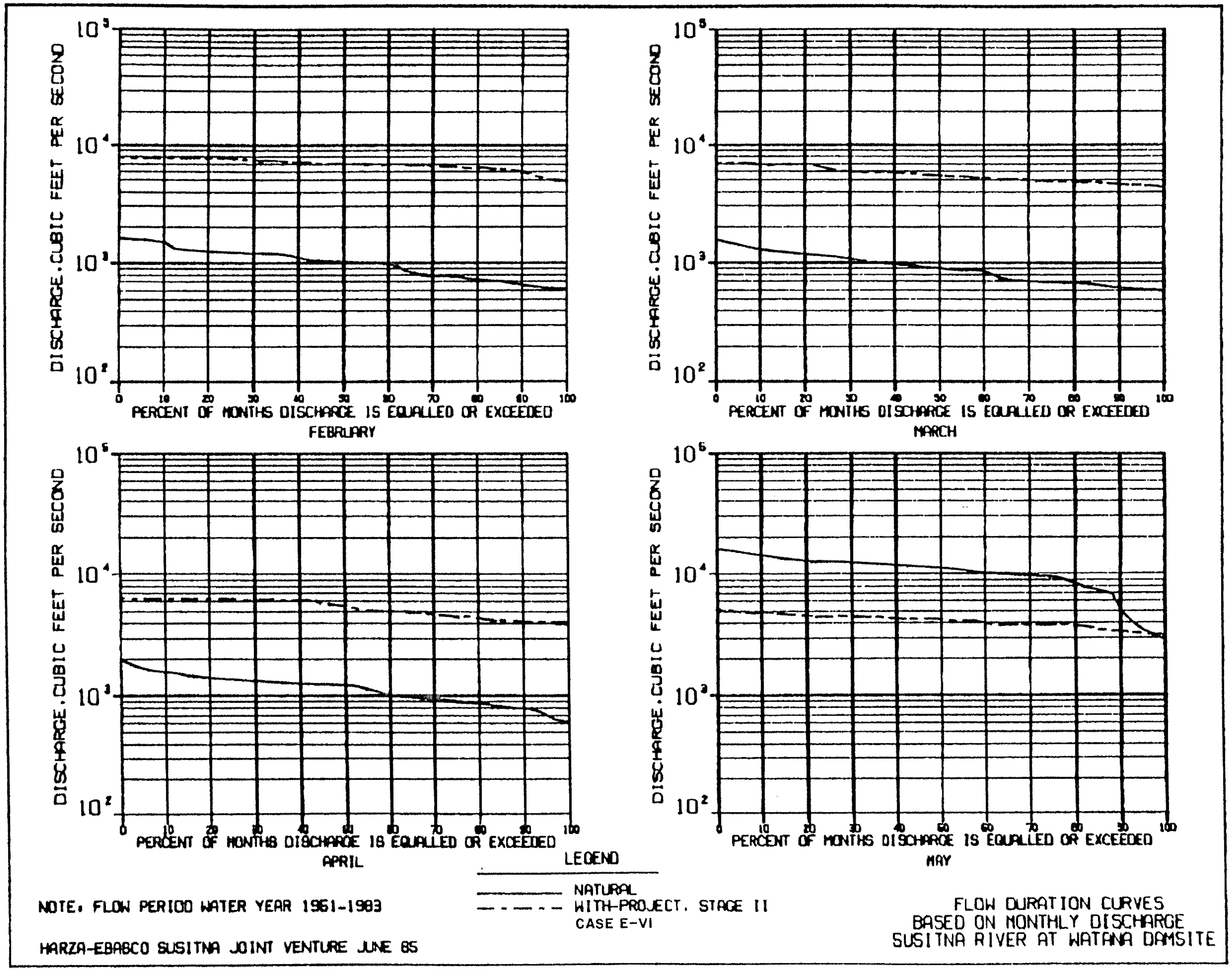
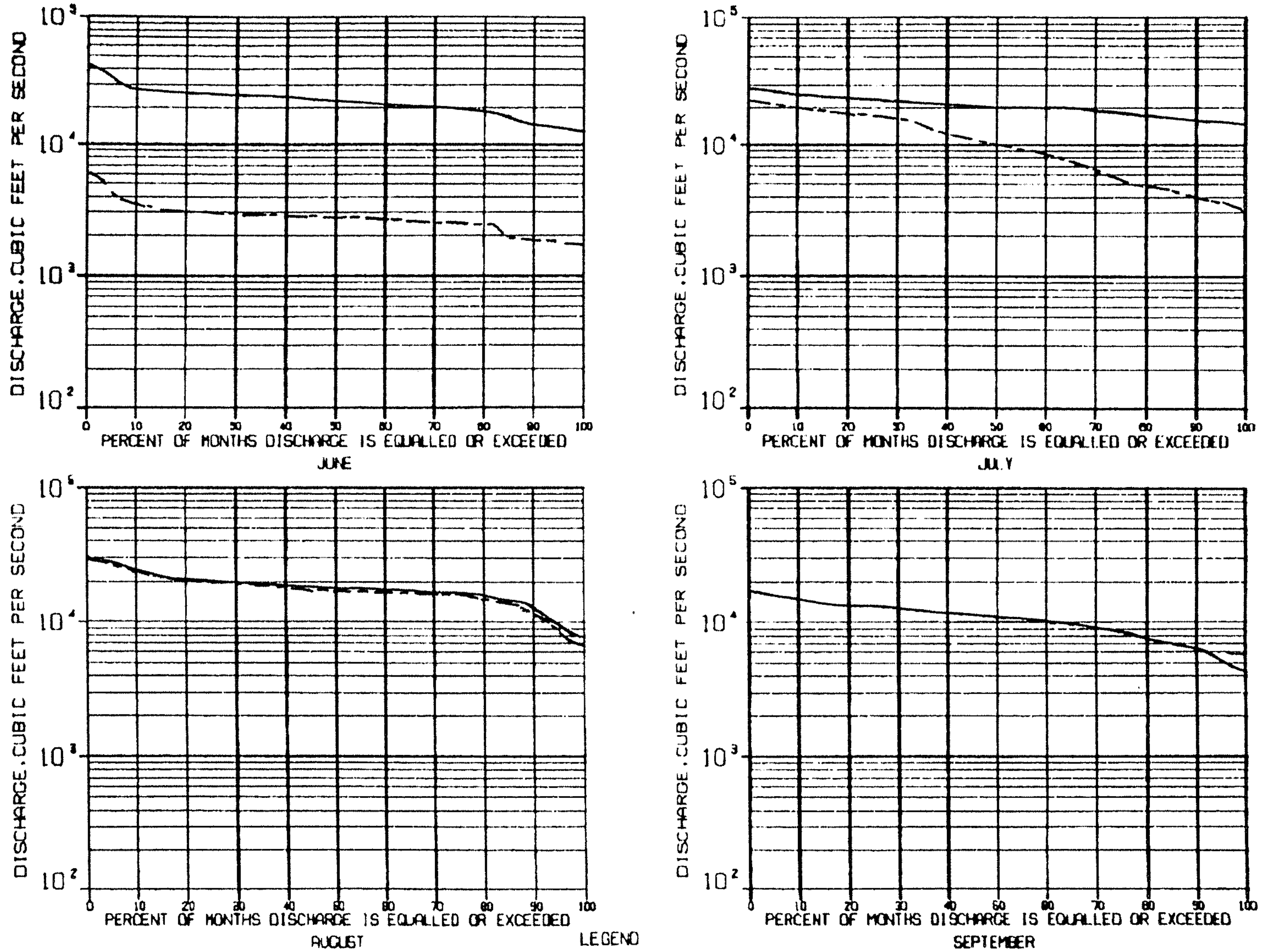


FIGURE E.2.4.151

(PAGE 2 of 3)



LEGEND

——— NATURAL

– – – – WITH-PROJECT, STAGE II CASE E-VI

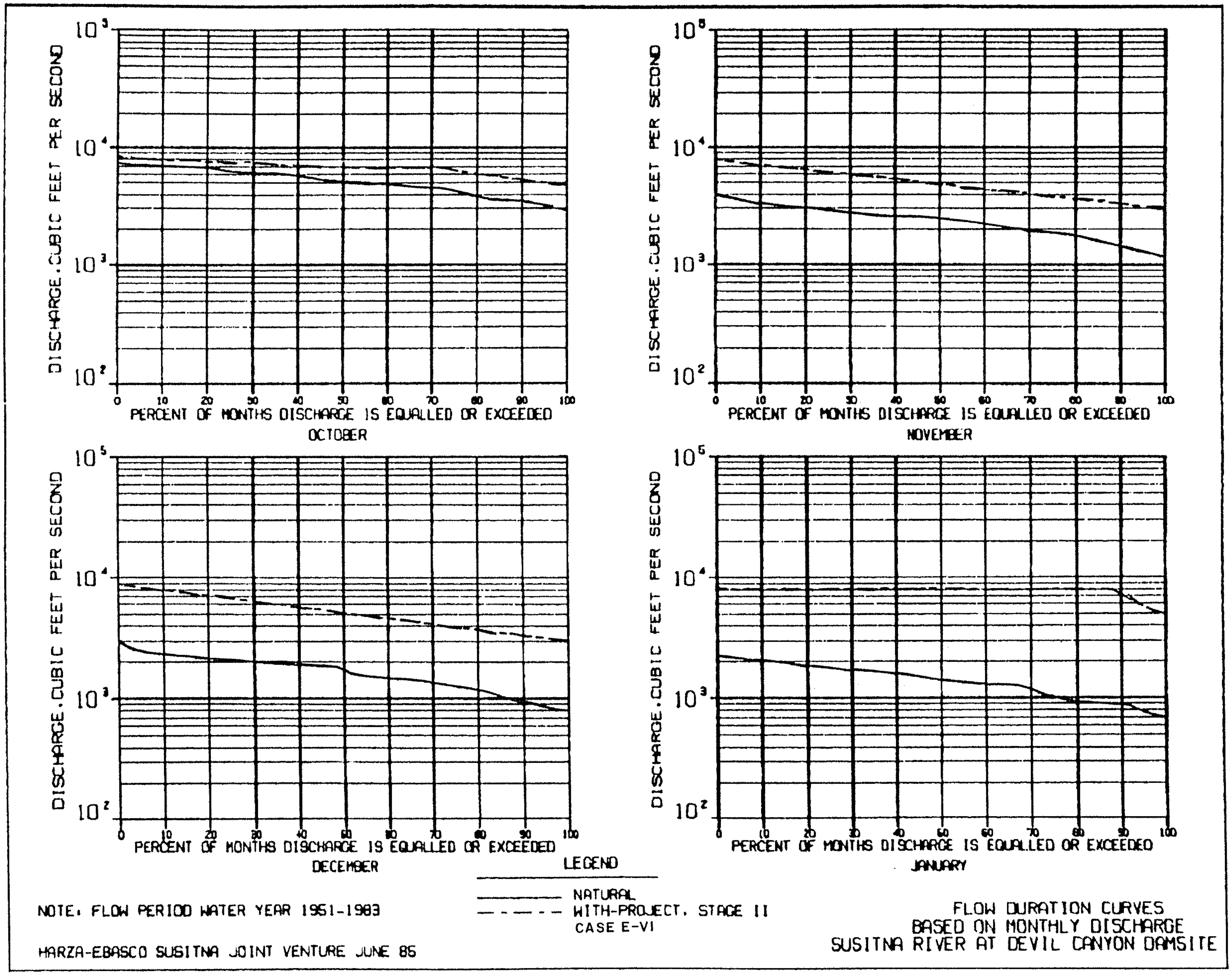
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 86

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.151

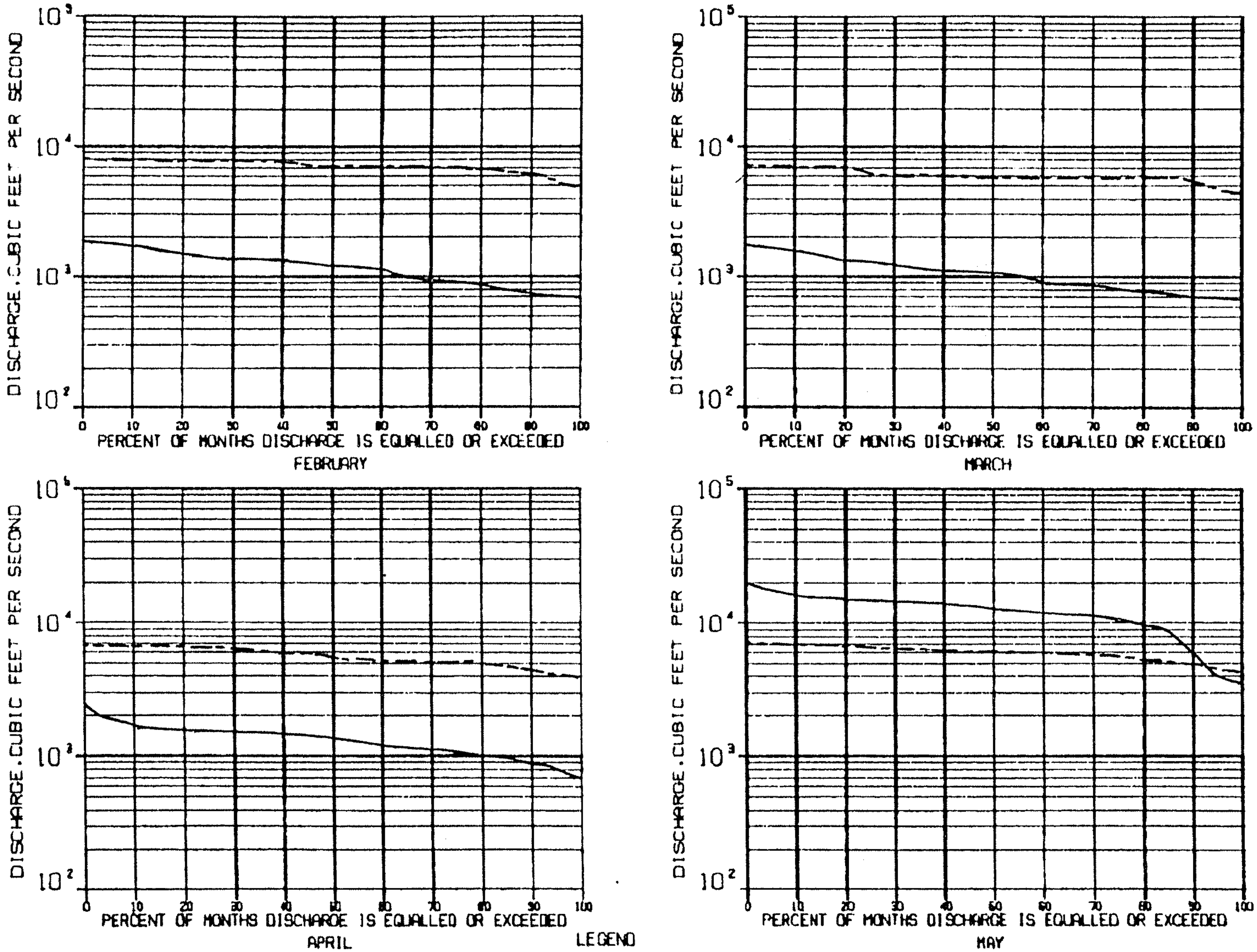
(PAGE 3 of 3)



FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.152

(PAGE 1 of 3)



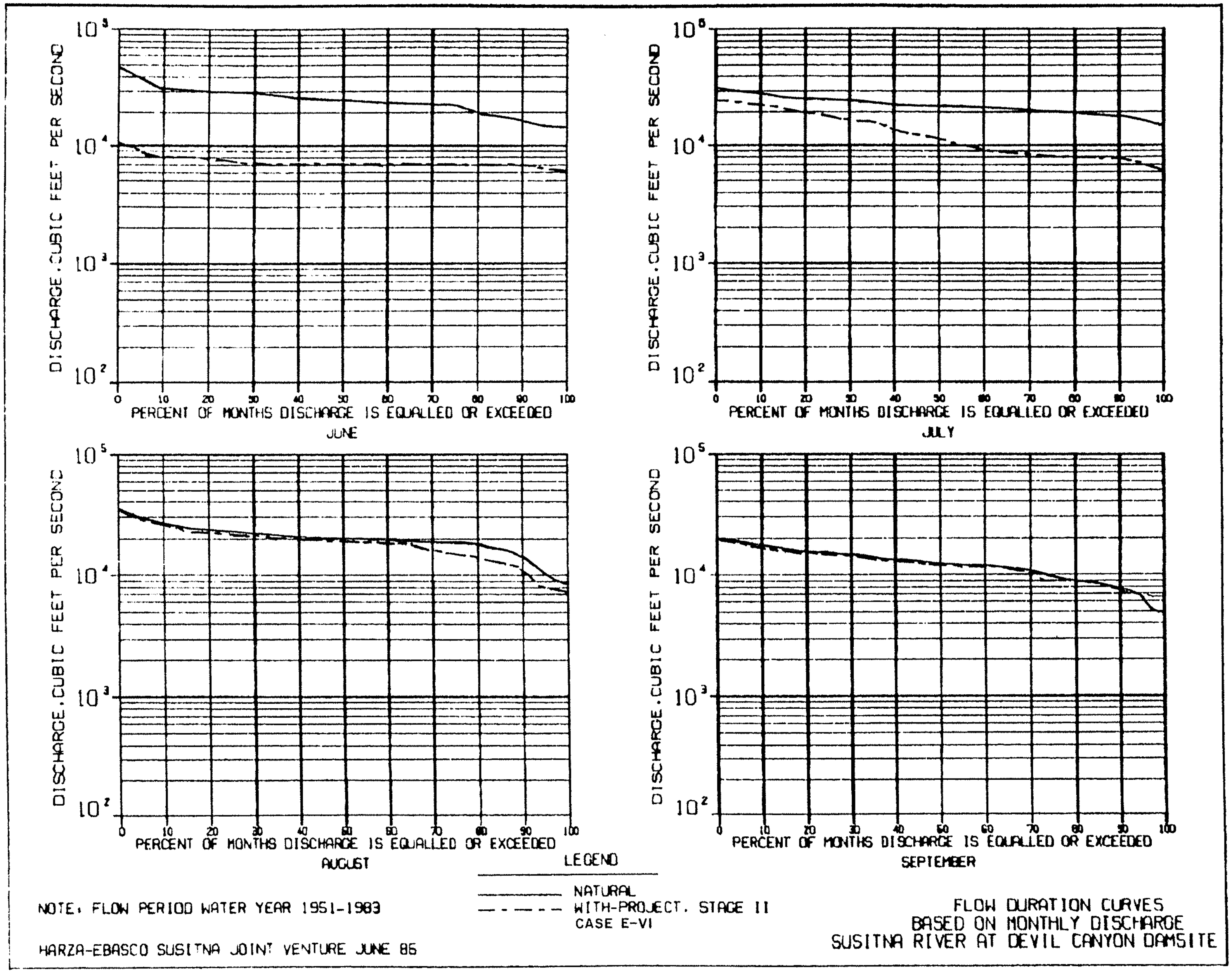
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.152

(PAGE 2 of 3)



FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.152

(PAGE 3 of 3)

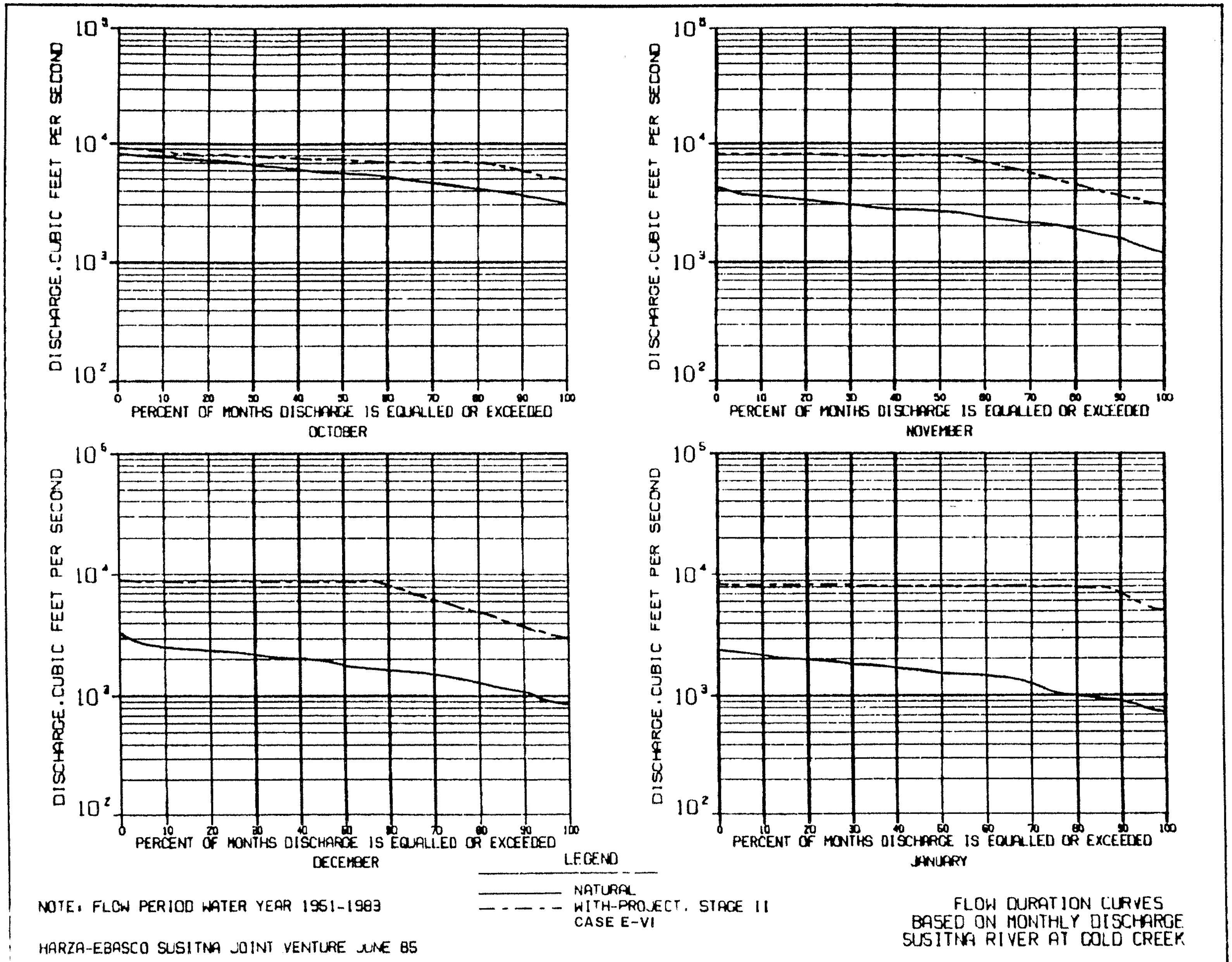
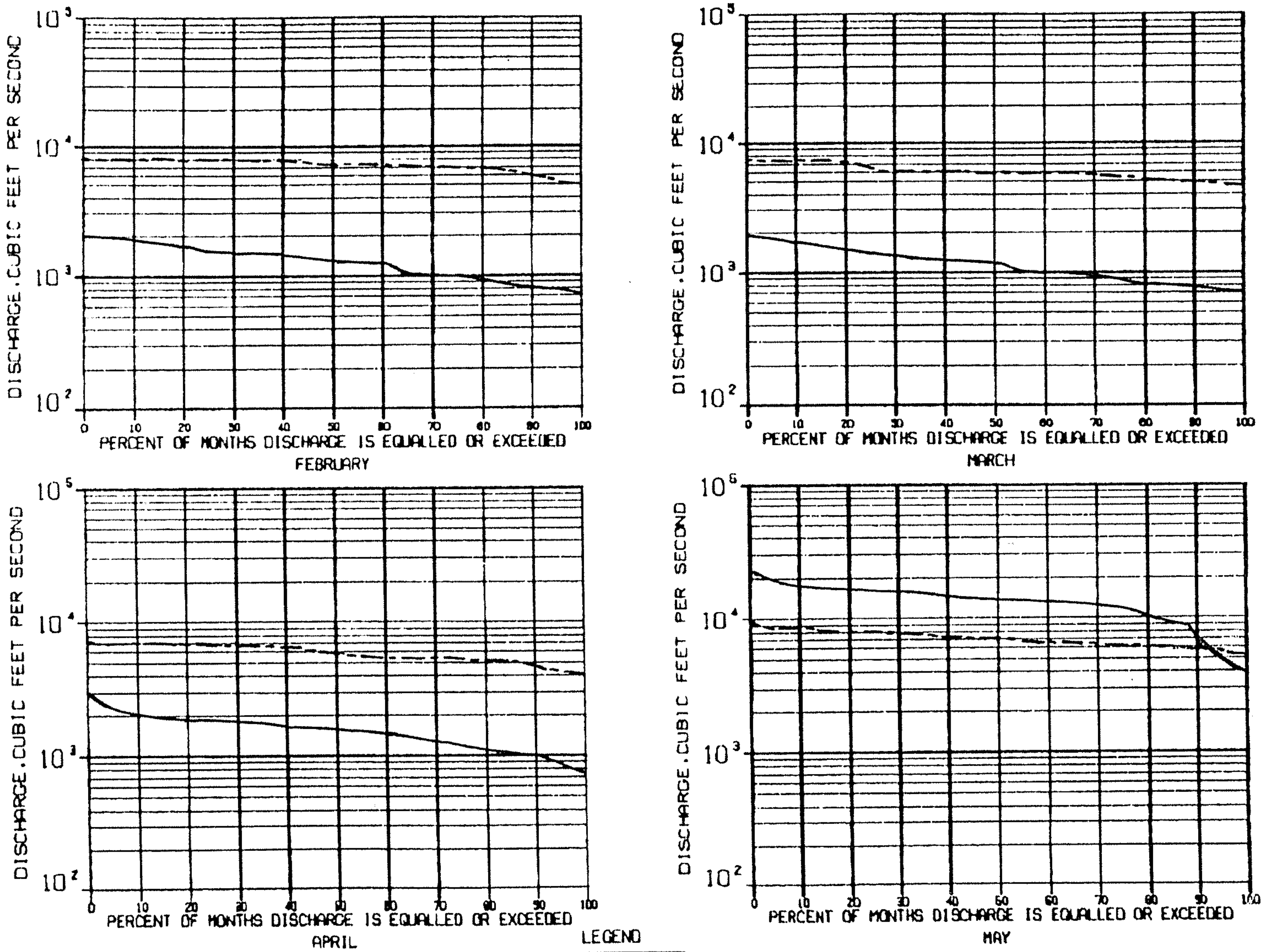


FIGURE E.2.4.153

(PAGE 1 of 3)



LEGEND

——— NATURAL
– – – WITH-PROJECT, STAGE II CASE E-VI

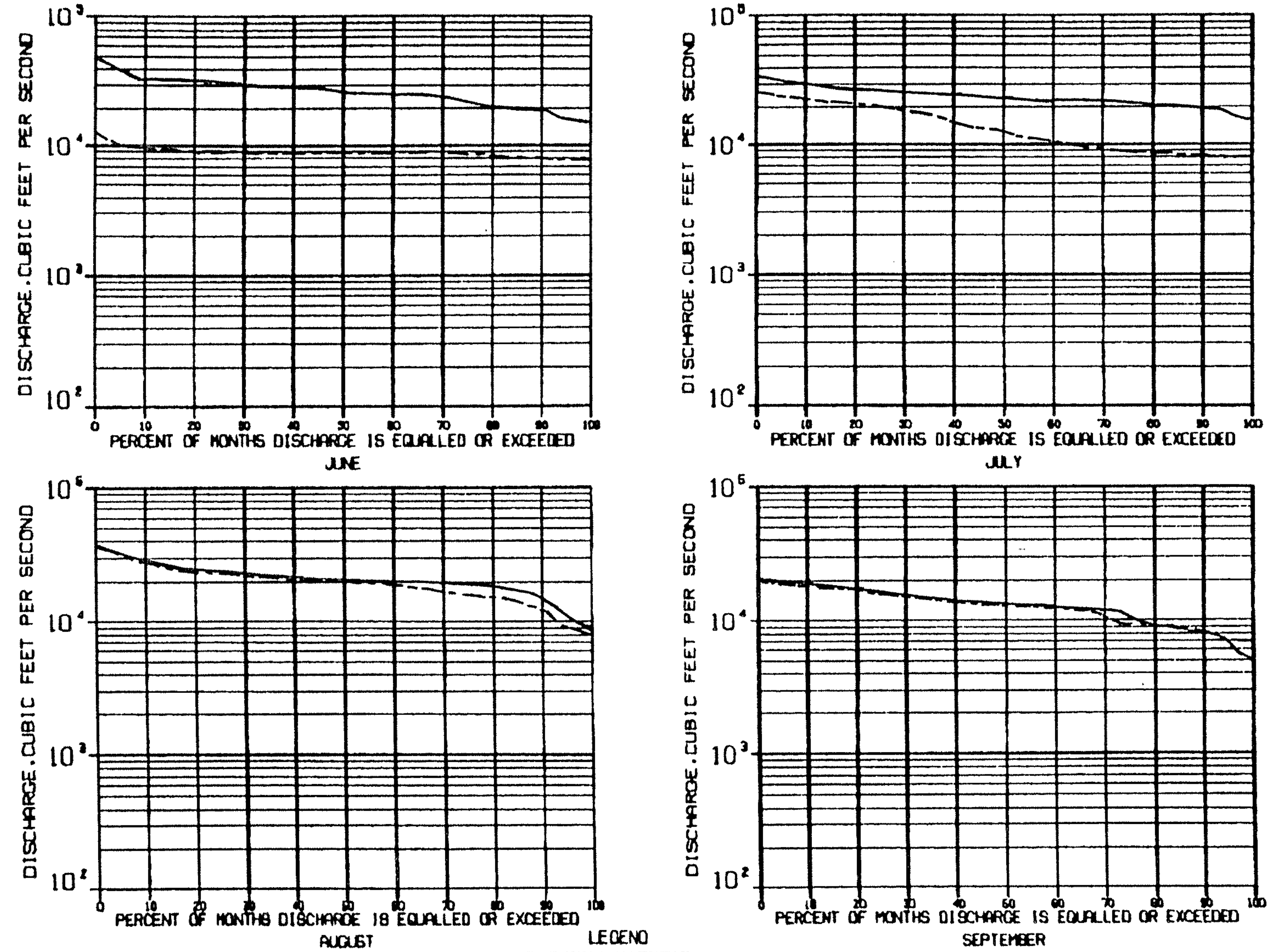
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT GOLD CREEK

FIGURE 2.4.153

(PAGE 2 of 3)



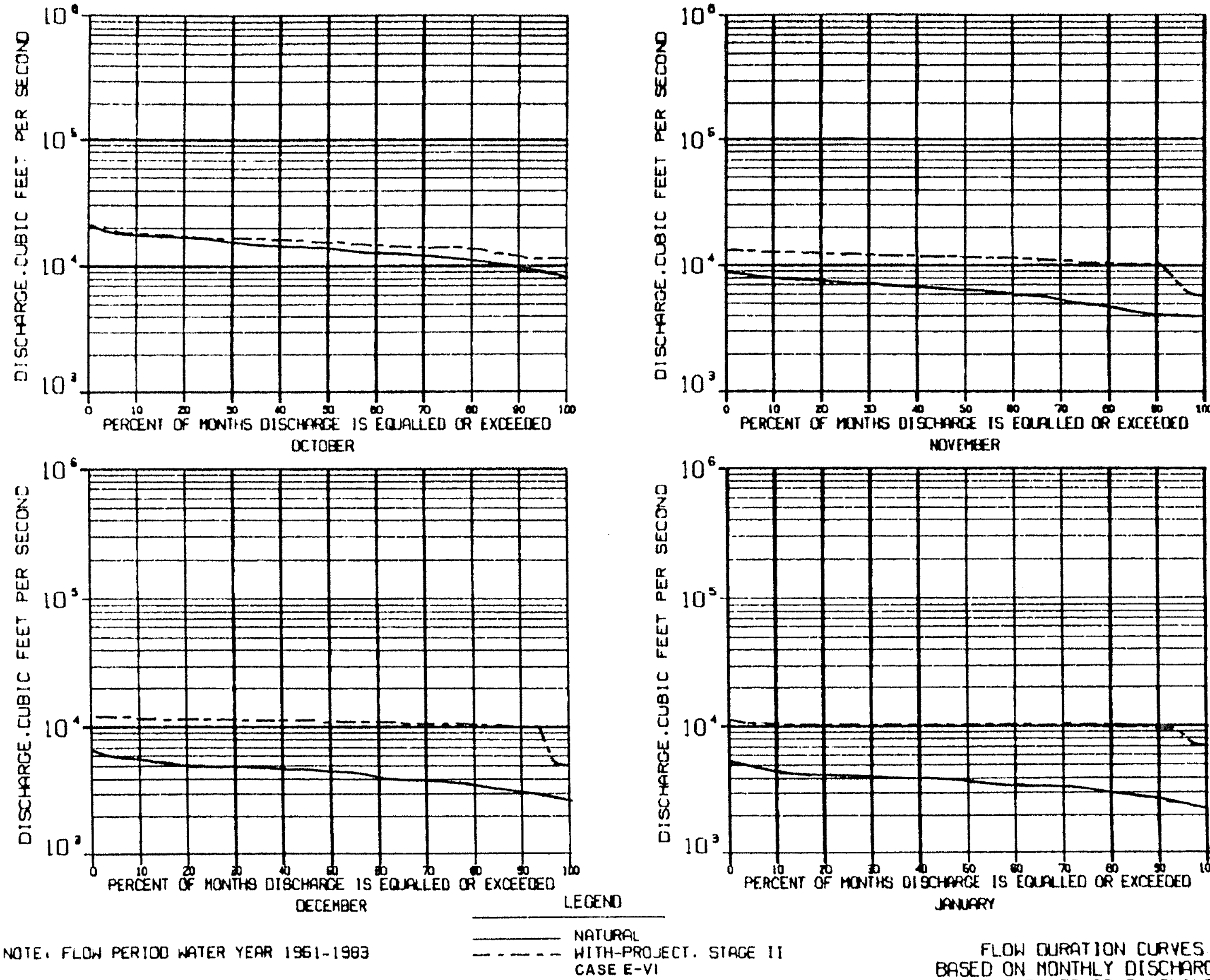
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES BASED ON MONTHLY DISCHARGE SUSITNA RIVER AT GOLD CREEK

FIGURE E.2.4.153

(PAGE 3 of 3)



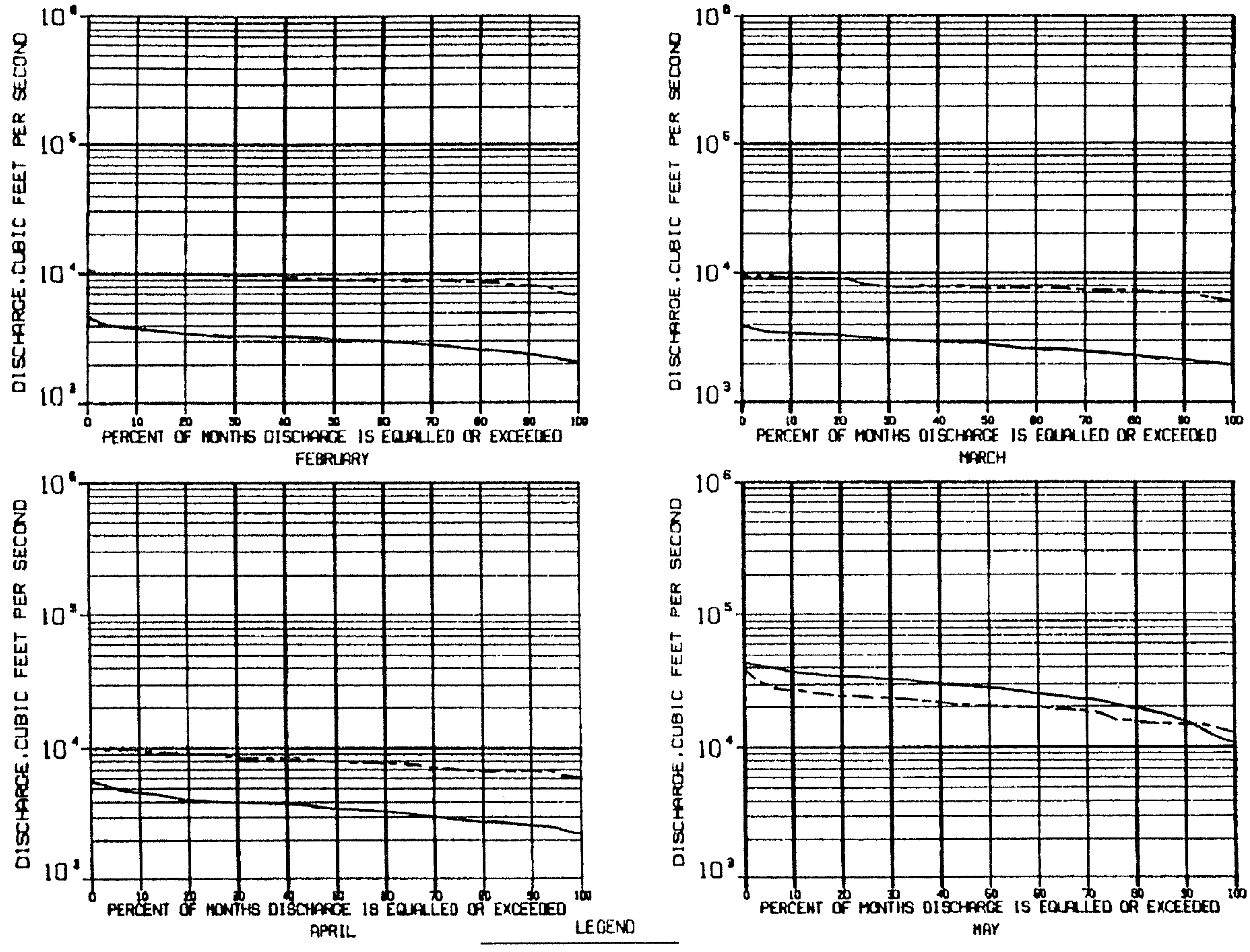
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE 2.4.154

(PAGE 1 of 3)



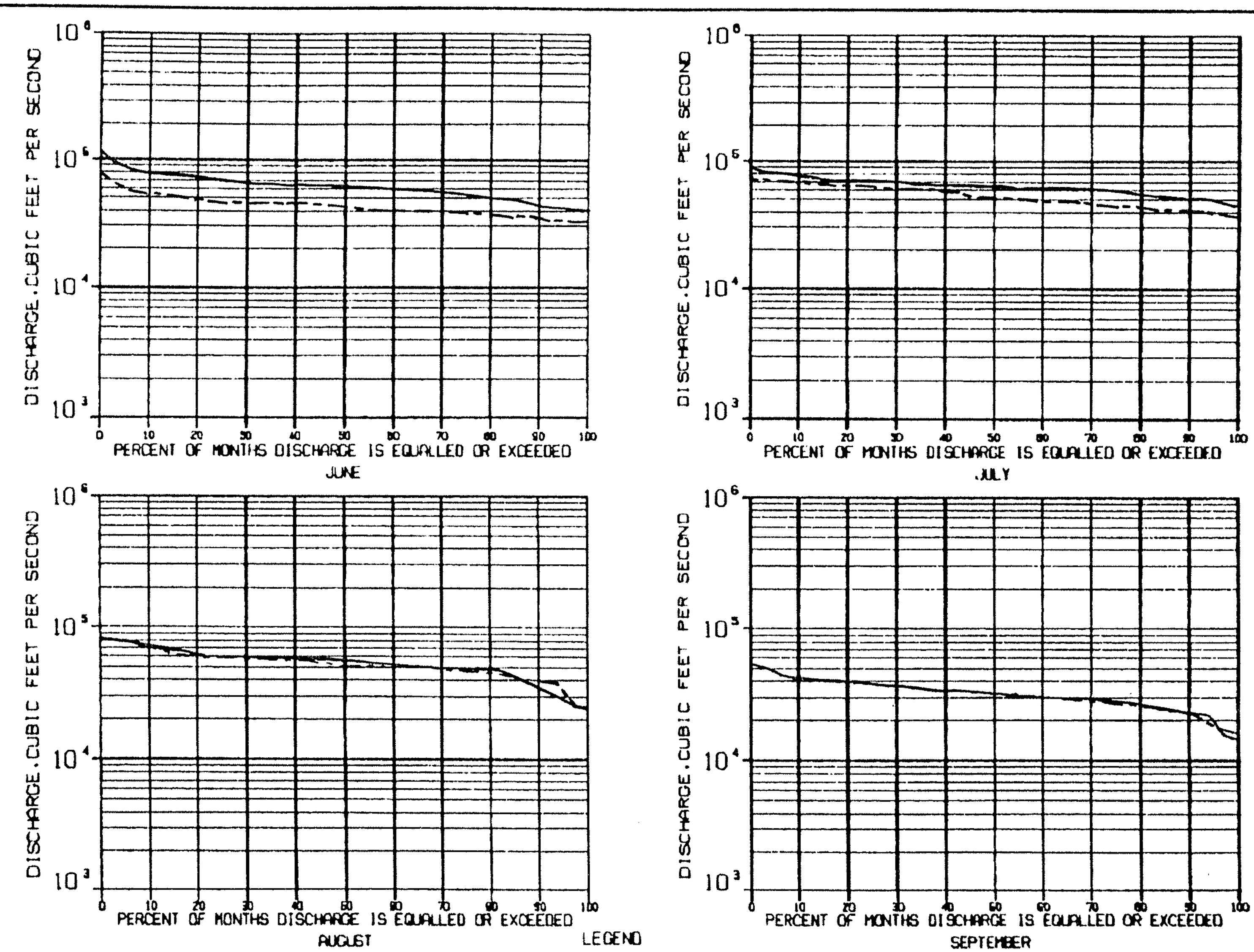
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.154

(PAGE 2 of 3)



LEGEND

——— NATURAL

- · - · - WITH-PROJECT, STAGE II CASE E-VI

NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.154

(PAGE 3 of 3)

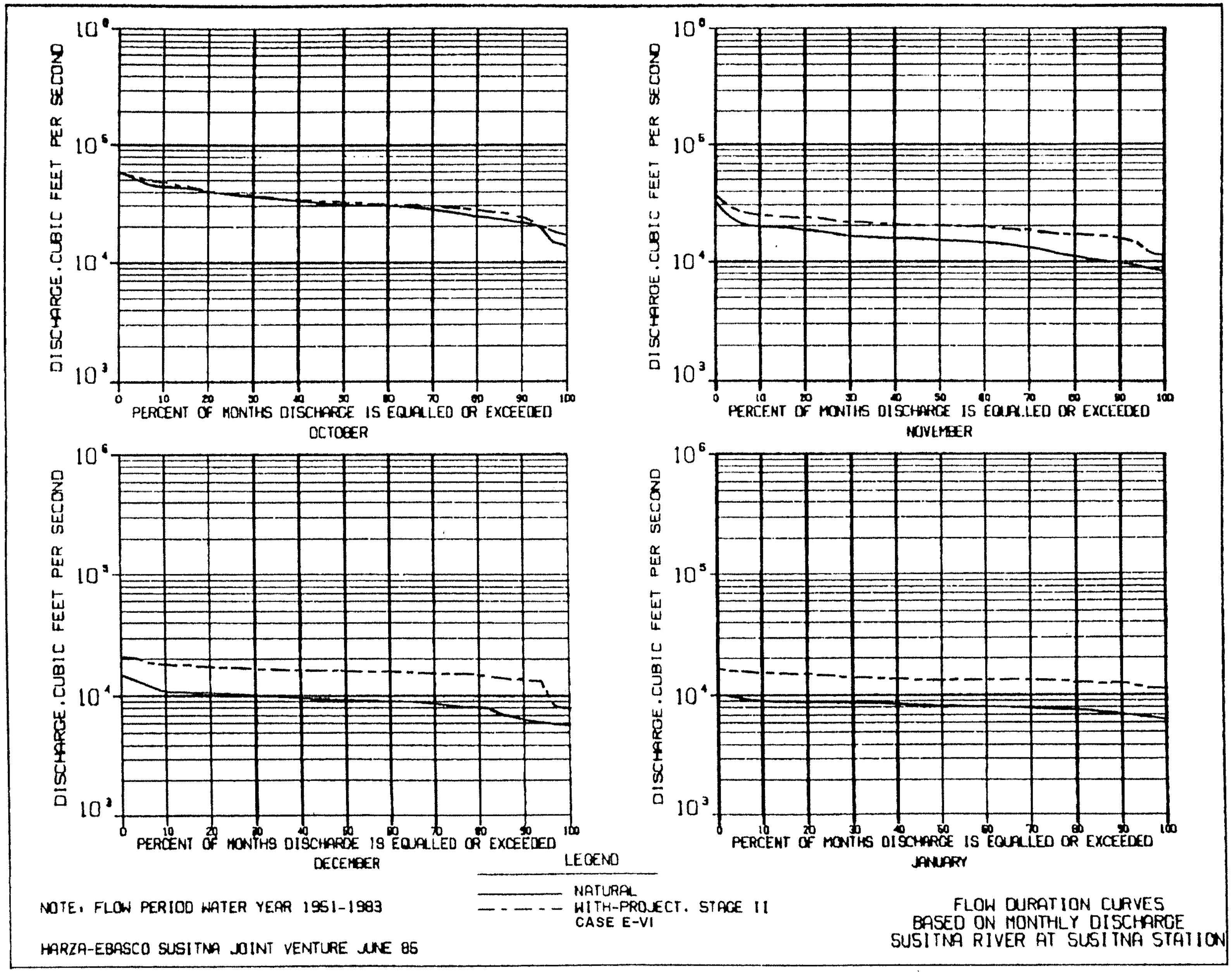
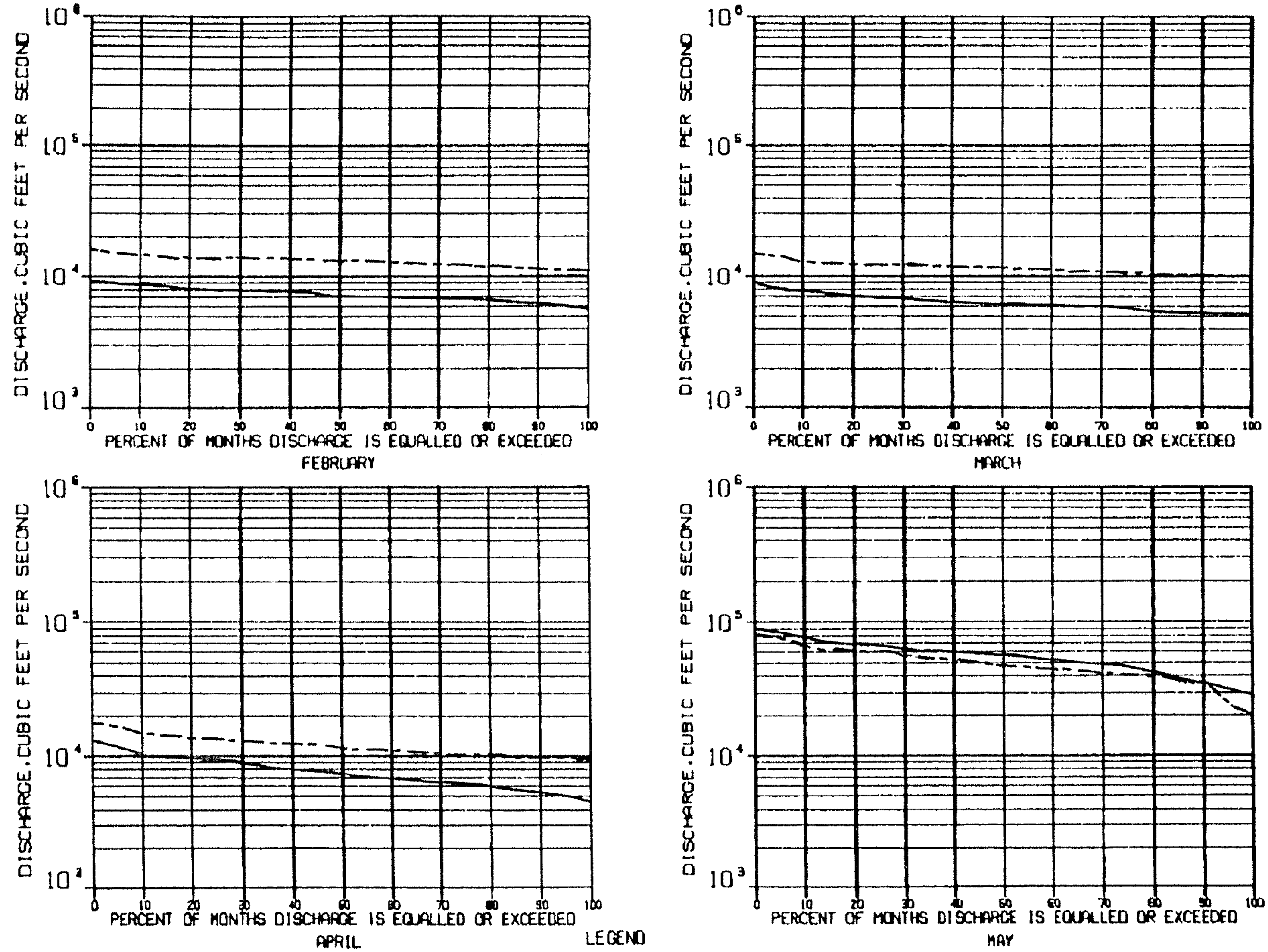


FIGURE E.2.4.155

(PAGE 1 of 3)



LEGEND

NATURAL

WITH-PROJECT, STAGE II CASE E-VI

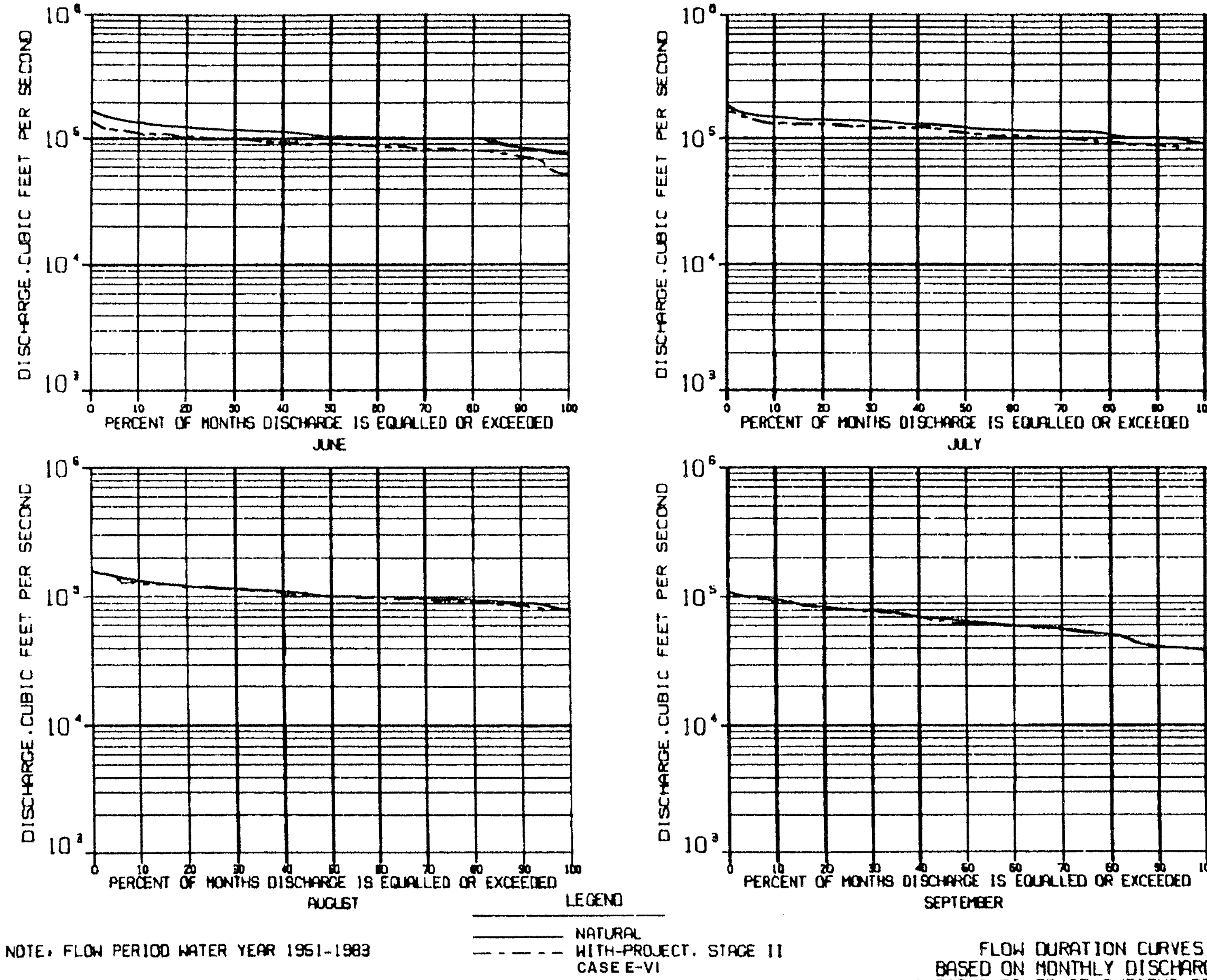
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.155

(PAGE 2 of 3)



NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.155

(PAGE 3 of 3)

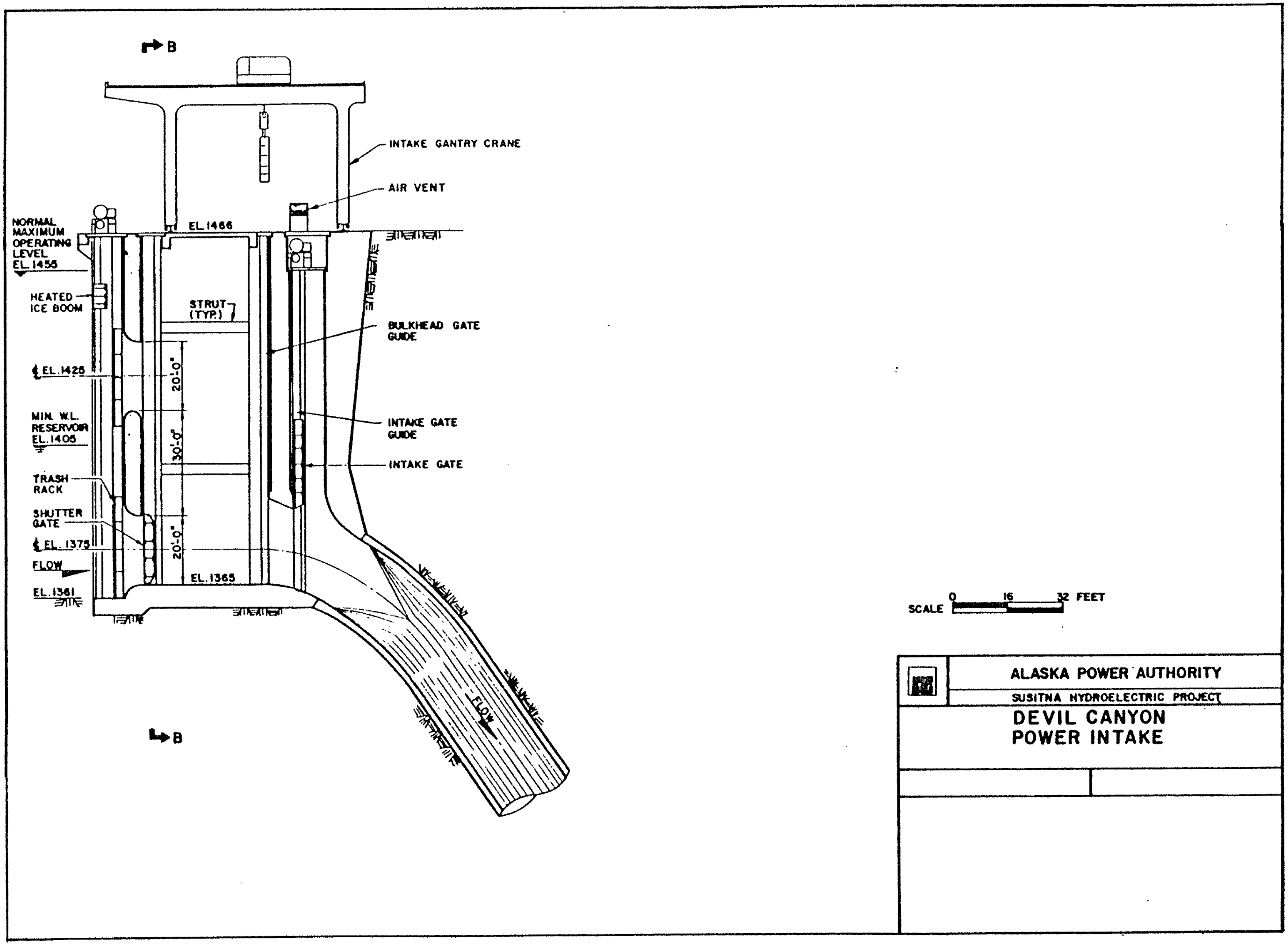
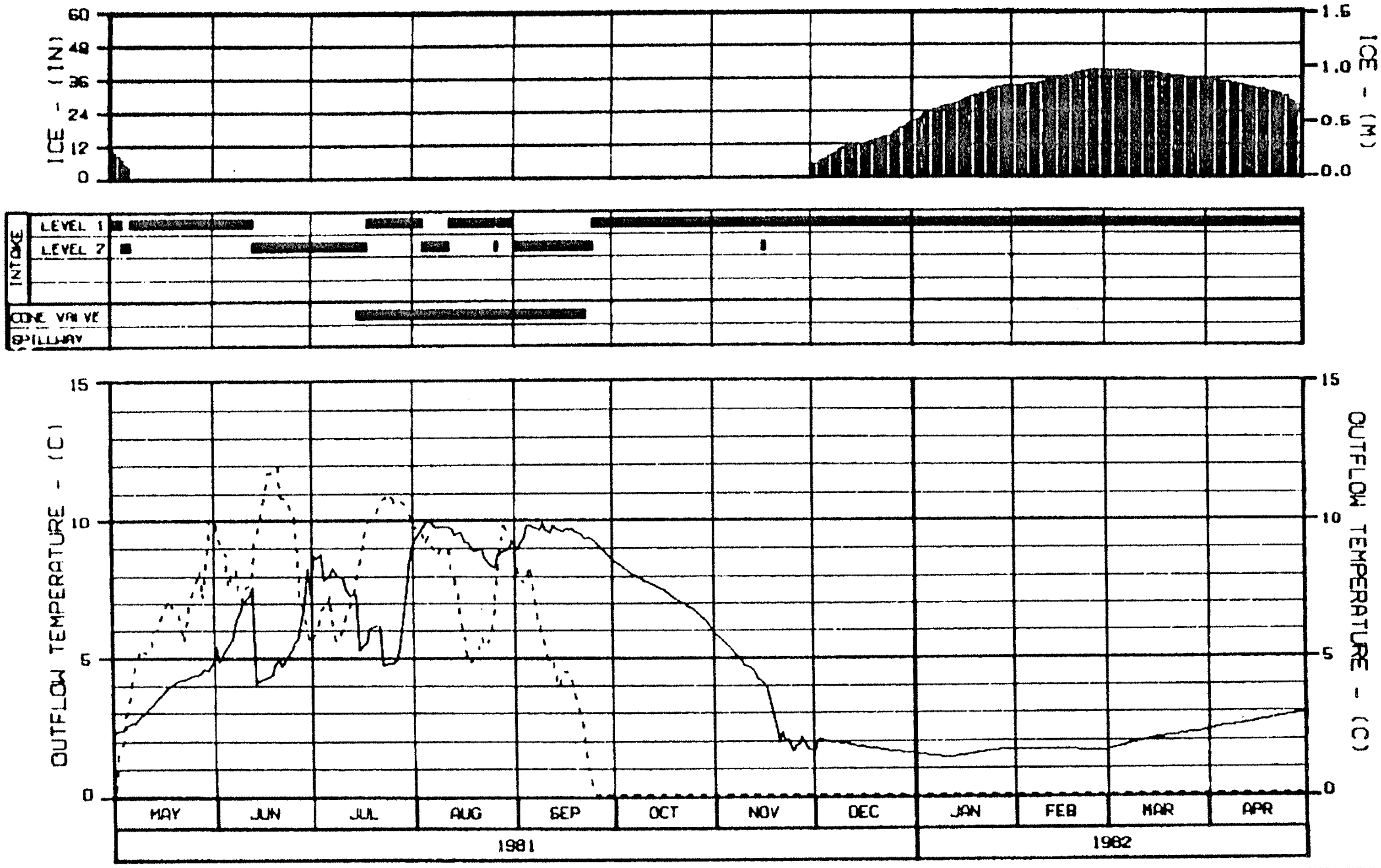


FIGURE E.2.4.156



LEGEND: CASE: ** DC8102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES:
1. INTAKE PORT LEVEL 1 AT ELEVATION 1426 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1375 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. PROPOSED PROJECT

ALASKA POWER AUTHORITY

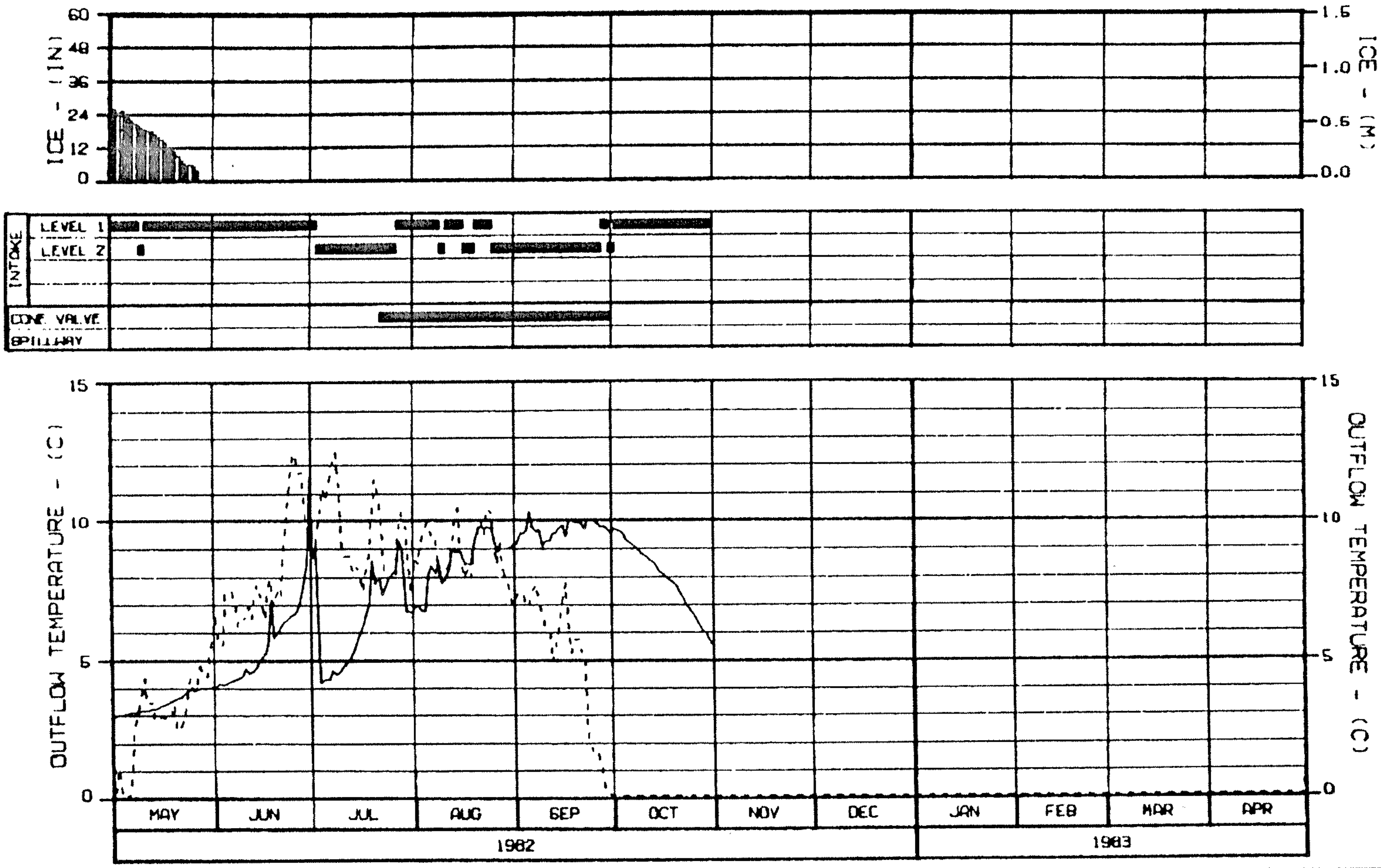
SUSITNA PROJECT | DYRESM MODEL

STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 10 JUN 85 | 42-010-04

FIGURE E.2.4.157



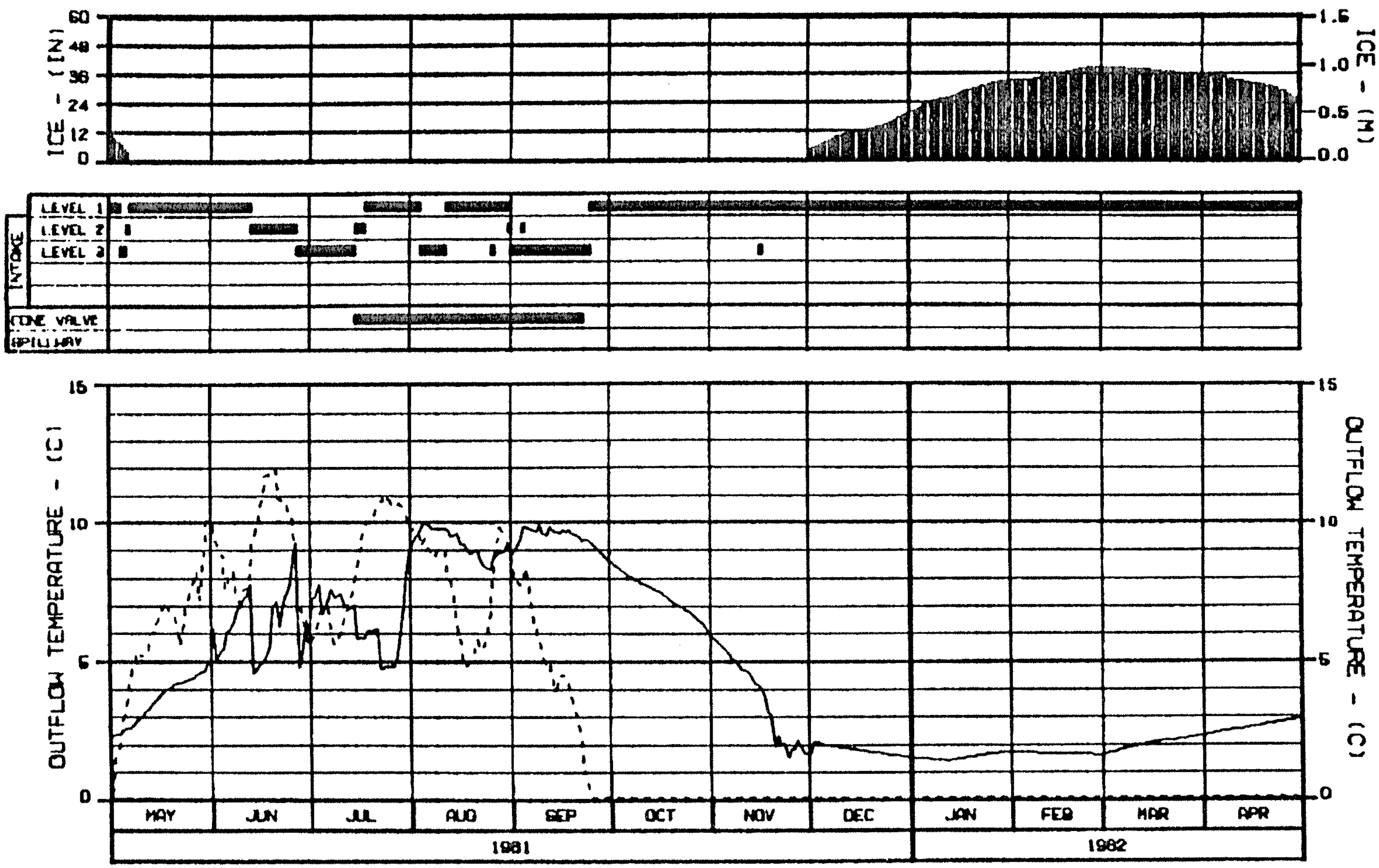
LEGEND: CASE: ** DC81026 - DEVIL CANYON OPERATION W/WATANA IN STAGE II

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1426 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. PROPOSED PROJECT

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	10 JUN 86	42-010-04

FIGURE E.2.4.158



LEGEND: CASE: DC810202 - DEVIL CANYON OPERATION W/WATANA IN STAGE II
CASE E-VI 62 NATURAL COND. 3 LEVELS AT D.C. DRAWDOWN=50.FT

———— PREDICTED OUTFLOW TEMPERATURE

- - - - - - - INFLOW TEMPERATURE

NOTES:
1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1400 FT (426.72 M)
3. INTAKE PORT LEVEL 3 AT ELEVATION 1375 FT (419.10 M)
4. CONE VALVE AT ELEVATION 990 FT (301.75 M)
5. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
6. FOR COMPARISON WITH PROPOSED PROJECT

ALASKA POWER AUTHORITY

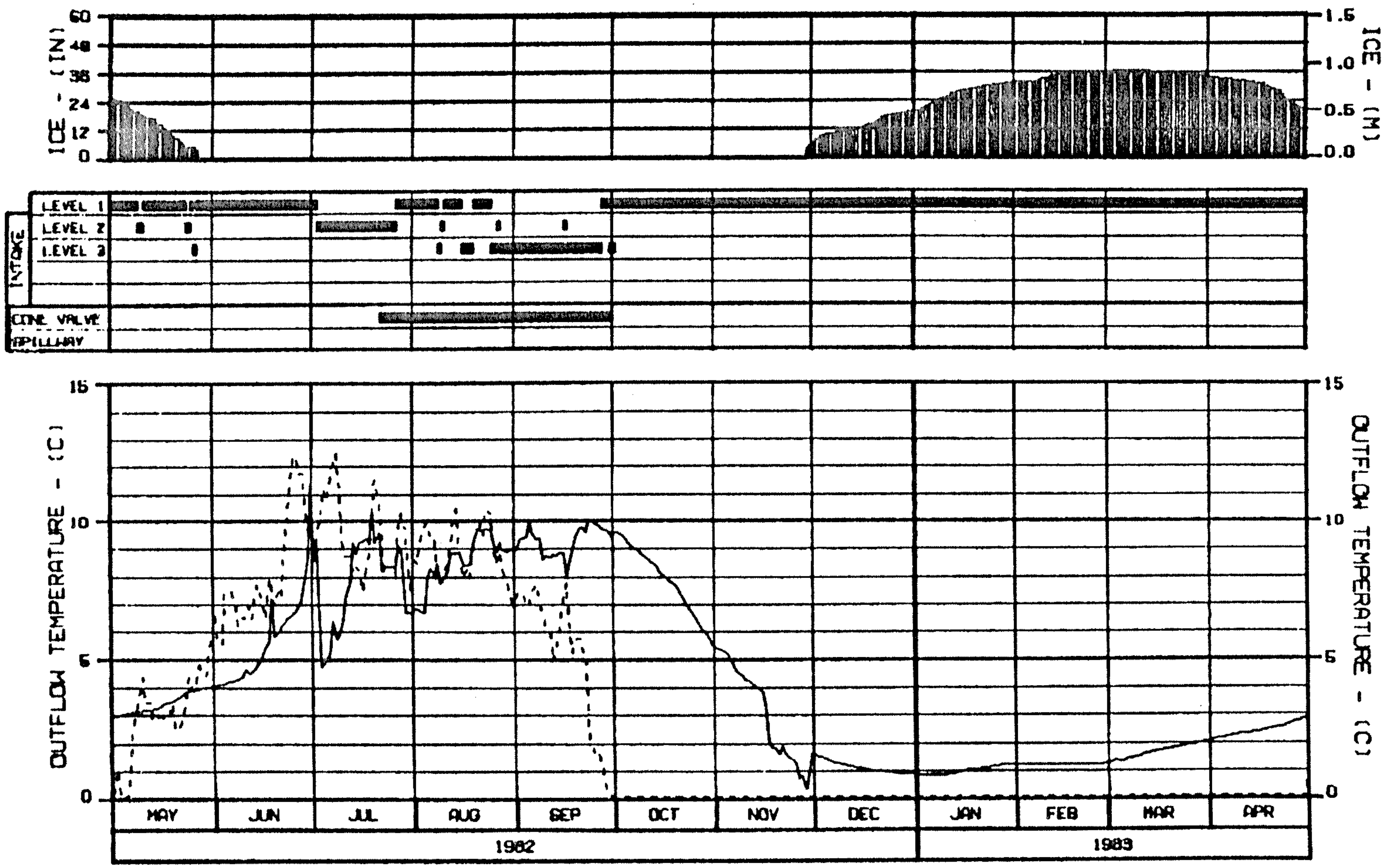
SUSITNA PROJECT | DYRESM MODEL

STAGE II DEVIL CANYON
OUTFLOW TEMPERATURE
AND ICE GROWTH (E-VI)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 42-010-04

FIGURE E.2.4.159



LEGEND: CASE: DC810202 - DEVIL CANYON OPERATION W/WATANA IN STAGE II
CASE E-VI 62 NATURAL COND. 3 LEVELS AT D.C. DRAWDOWN=50.FT
——— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES:
1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1400 FT (426.72 M)
3. INTAKE PORT LEVEL 3 AT ELEVATION 1375 FT (419.10 M)
4. CONE VALVE AT ELEVATION 930 FT (301.75 M)
5. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
6. FOR COMPARISON WITH PROPOSED PROJECT

ALASKA POWER AUTHORITY

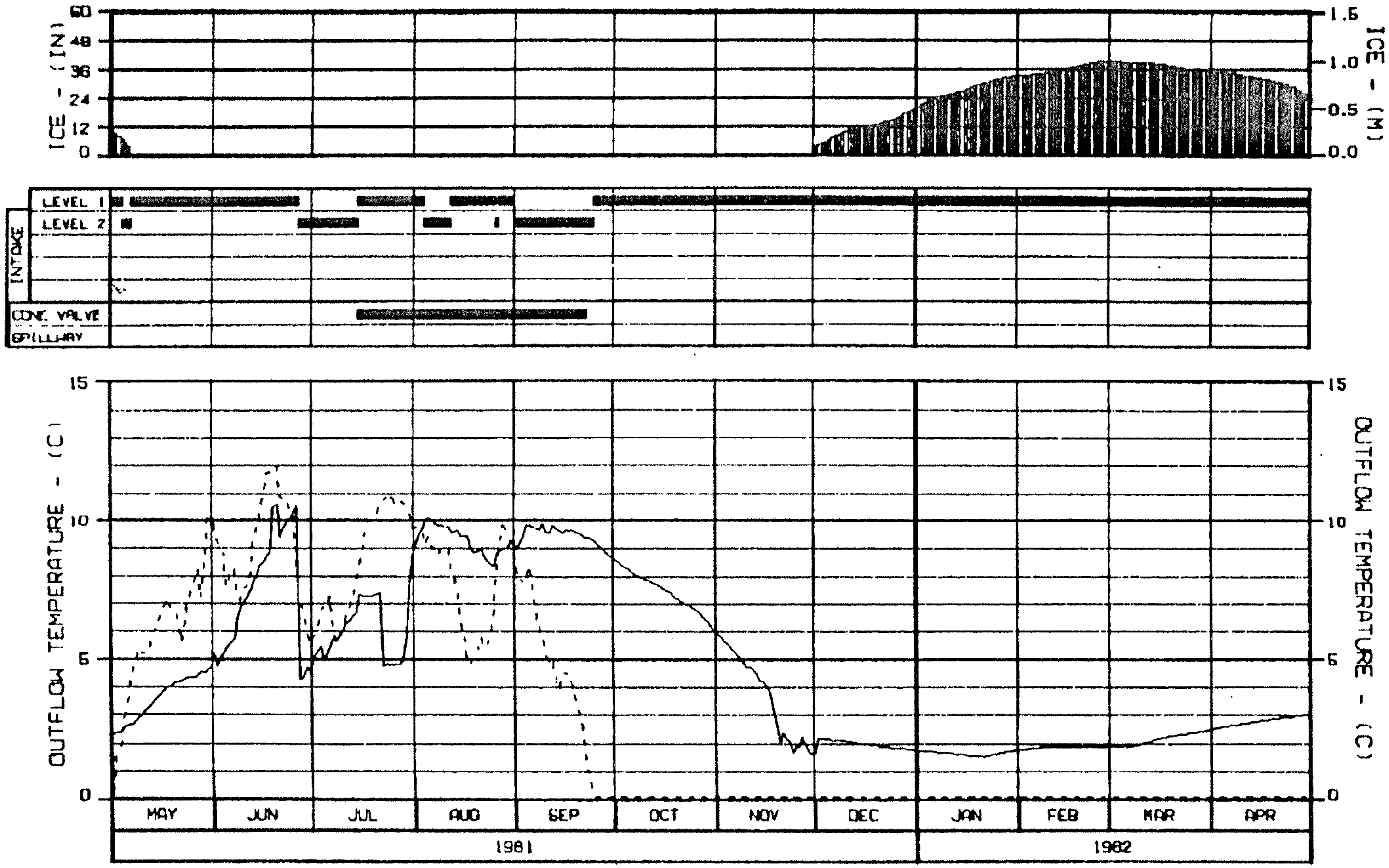
SUSITNA PROJECT | DYRESM MODEL

STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 18 MAY 85 | 42-010-04

FIGURE E.2.4.160



LEGEND: CASE: ** DC8102T - DEVIL CANYON OPERATION W/WATANA IN STAGE II
STAGE 2 --- 9 FT DRAWDOWN
———————— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1375 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. FOR COMPARISON WITH PROPOSED PROJECT

ALASKA POWER AUTHORITY

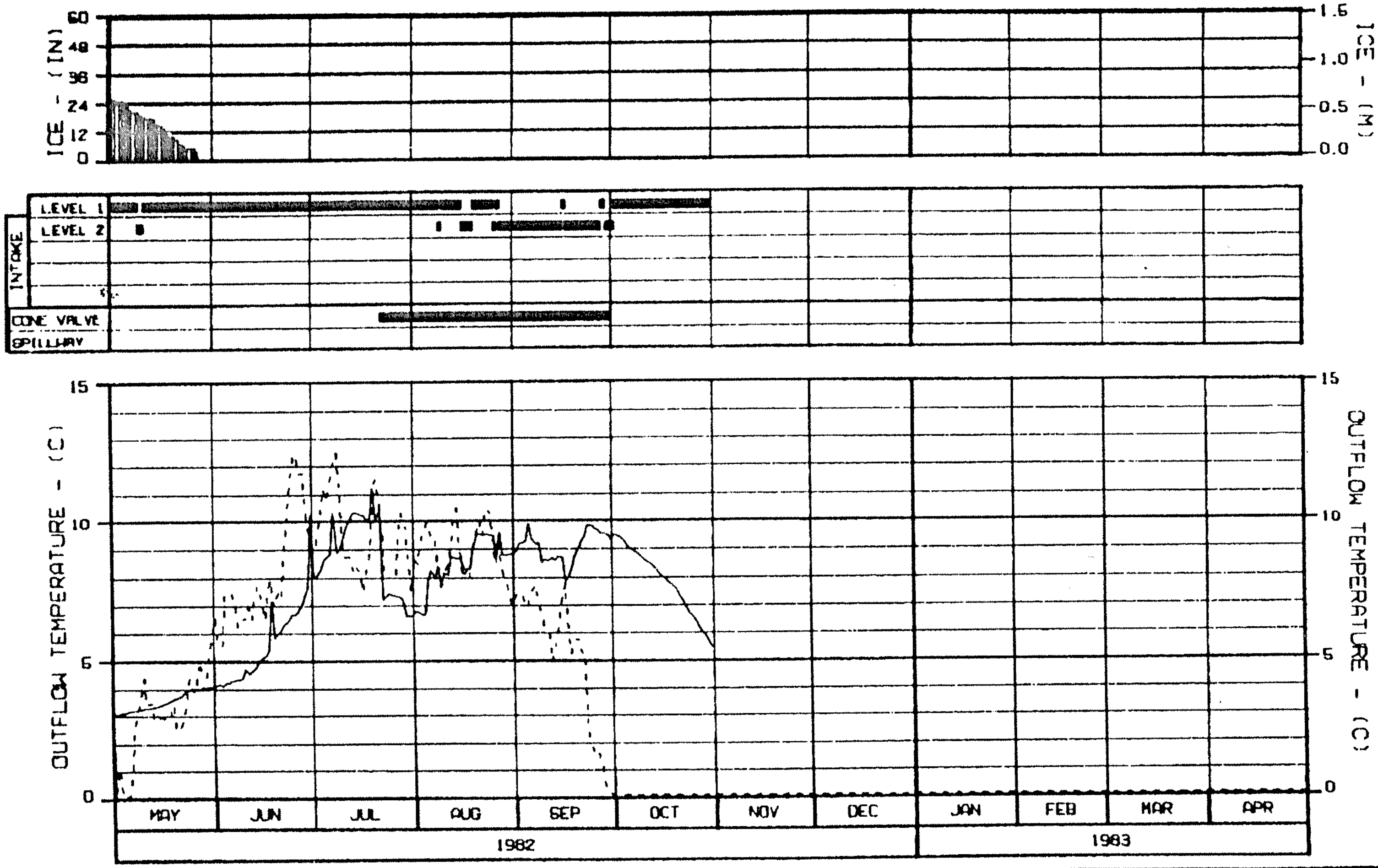
SUSITNA PROJECT | DYRESM MODEL

STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 14 JUN 85 | 42-010-04

FIGURE E.2.4.161

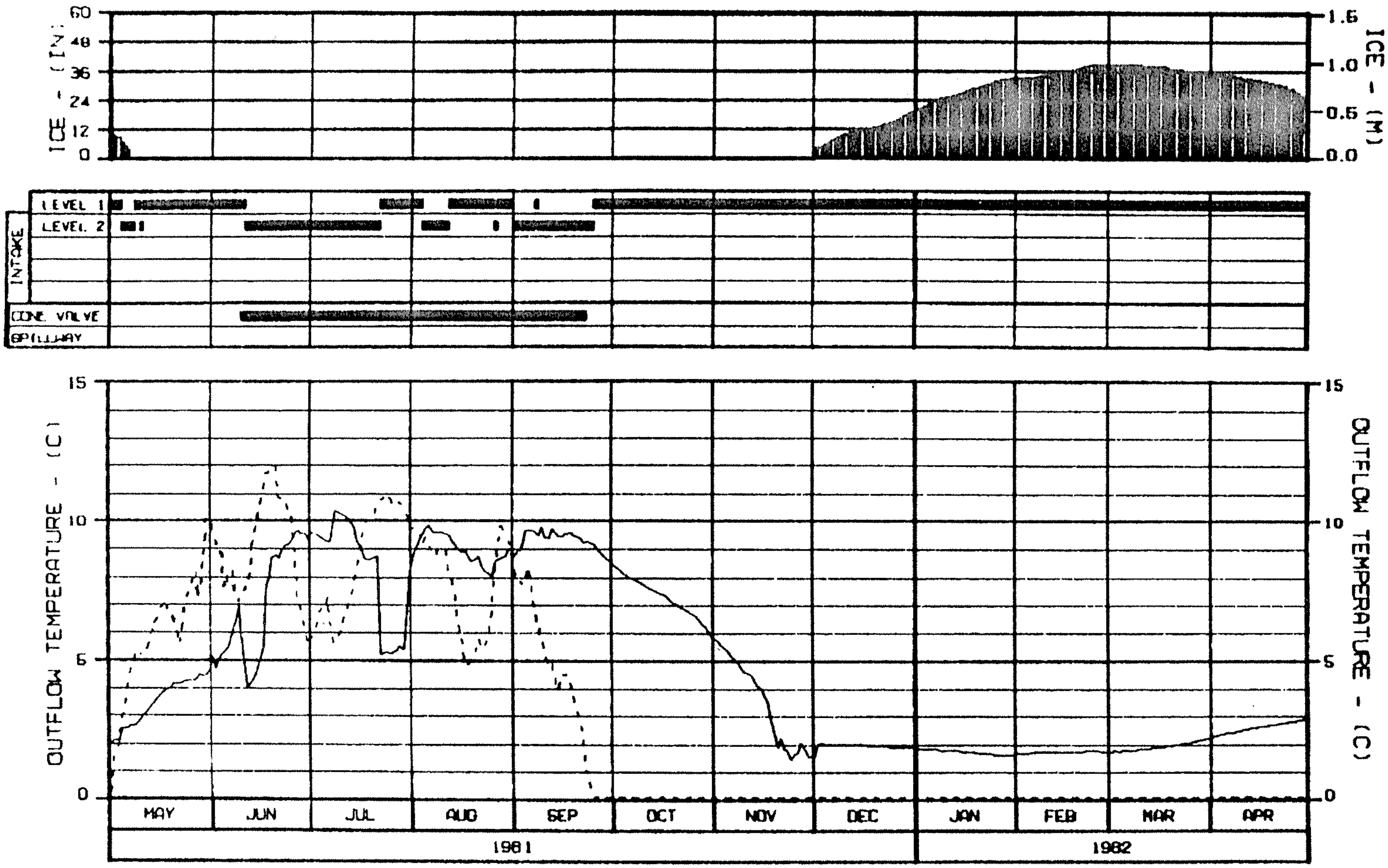


LEGEND: CASE: ** DC8102T - DEVIL CANYON OPERATION W/WATANA IN STAGE II
STAGE 2 --- 9 FT DRAWDOWN
———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434 34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419 10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. FOR COMPARISON WITH PROPOSED PROJECT

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS 14 JUN 86	42-010-04

FIGURE E.2.4.162



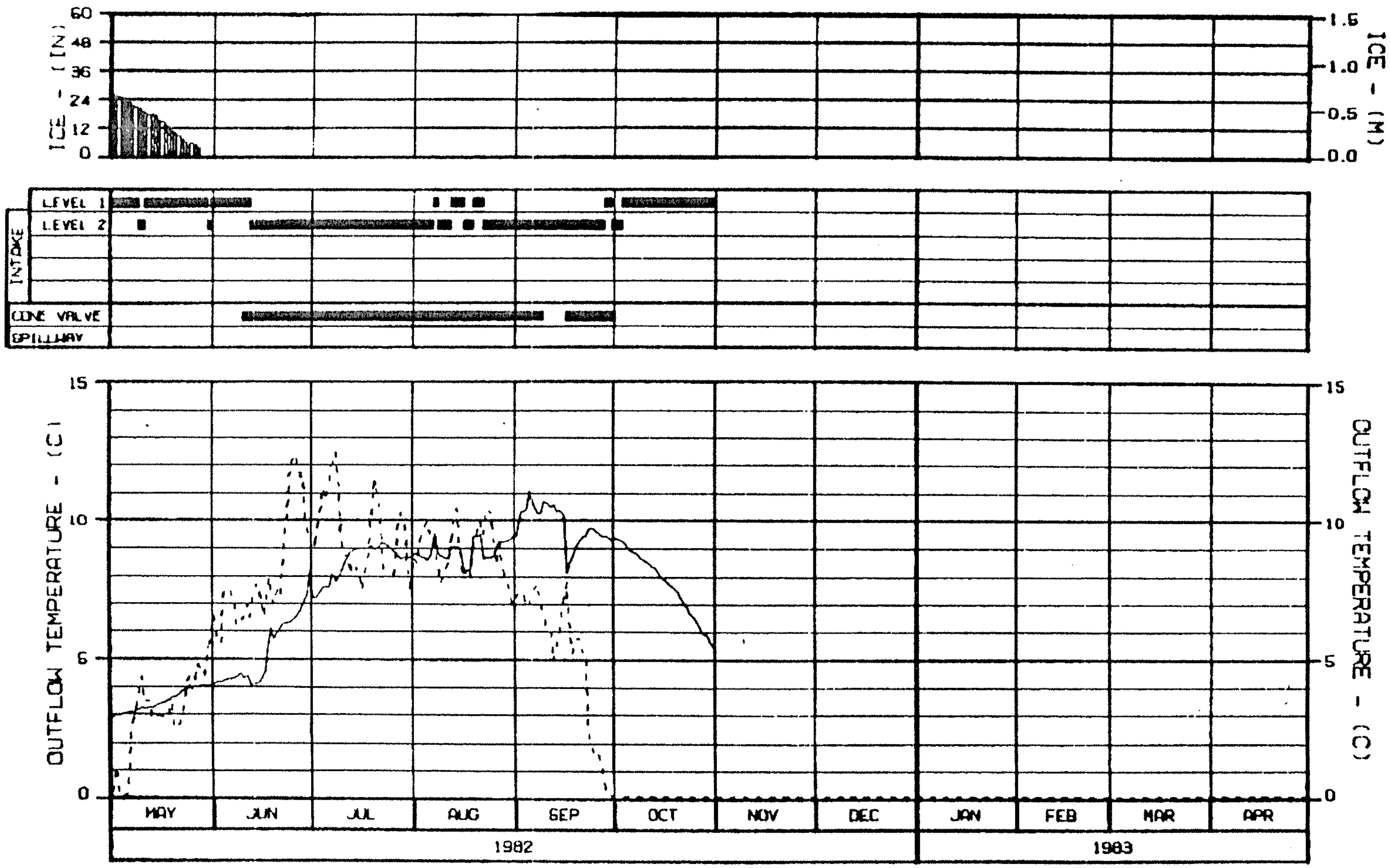
LEGEND: CASE: ** DC8102U - DEVIL CANYON OPERATION W/WATANA IN STAGED II

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES:
1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. FOR COMPARISON WITH PROPOSED PROJECT

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-I)	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-04

FIGURE E.2.4.163



LEGEND: CASE: ** DC8102U - DEVIL CANYON OPERATION W/WATANA IN STAGE II

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. FOR COMPARISON WITH PROPOSED PROJECT

ALASKA POWER AUTHORITY

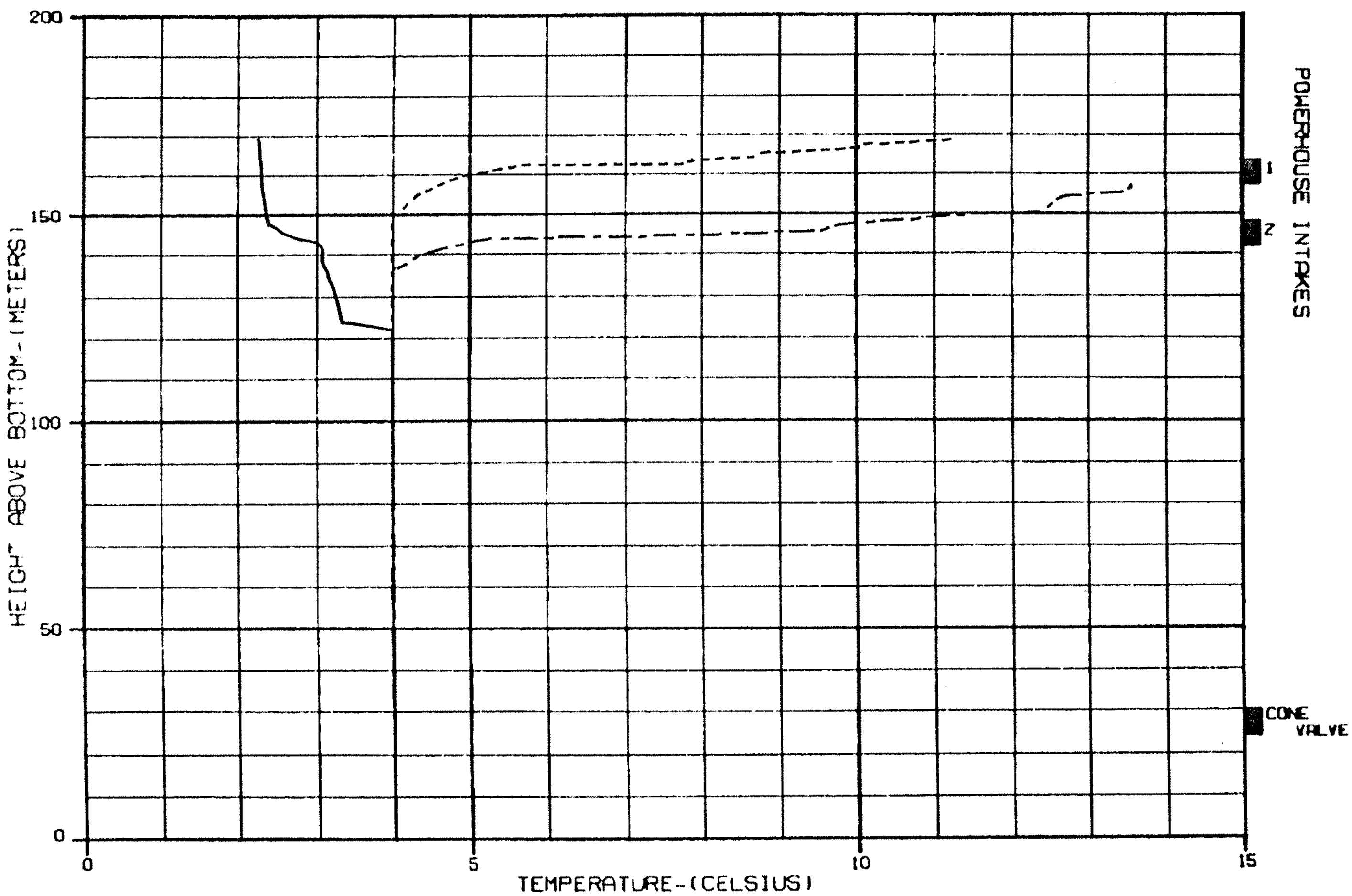
SUSITNA PROJECT | DYRESM MODEL

STAGE II DEVIL CANYON OUTFLOW TEMPERATURE AND ICE GROWTH (E-1)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 05 JUN 85 | 42-010-04

FIGURE E.2.4.164



CASE: ** DC8102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

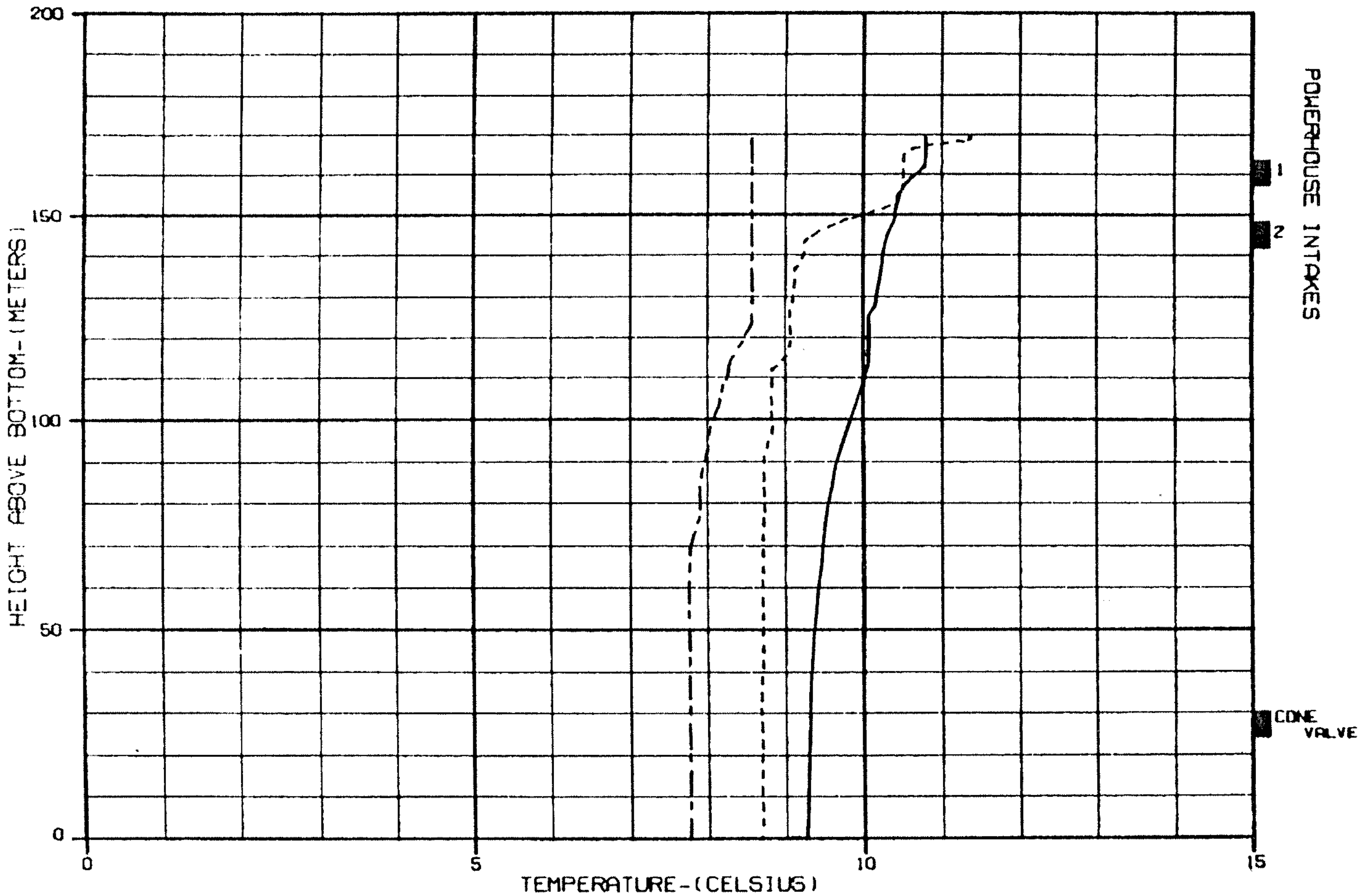
LEGEND:

PREDICTED TEMPERATURE PROFILES:

- ———— 1 MAY 1981
- - - - - - 1 JUNE 1981
- — - — - 1 JULY 1981

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
DEVIL CANYON RESERVOIR TEMPERATURE PROFILES CASE E-VI STAGE II	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-04

FIGURE E.2.4.165



CASE: ** DCB102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

LEGEND:

PREDICTED TEMPERATURE PROFILES:

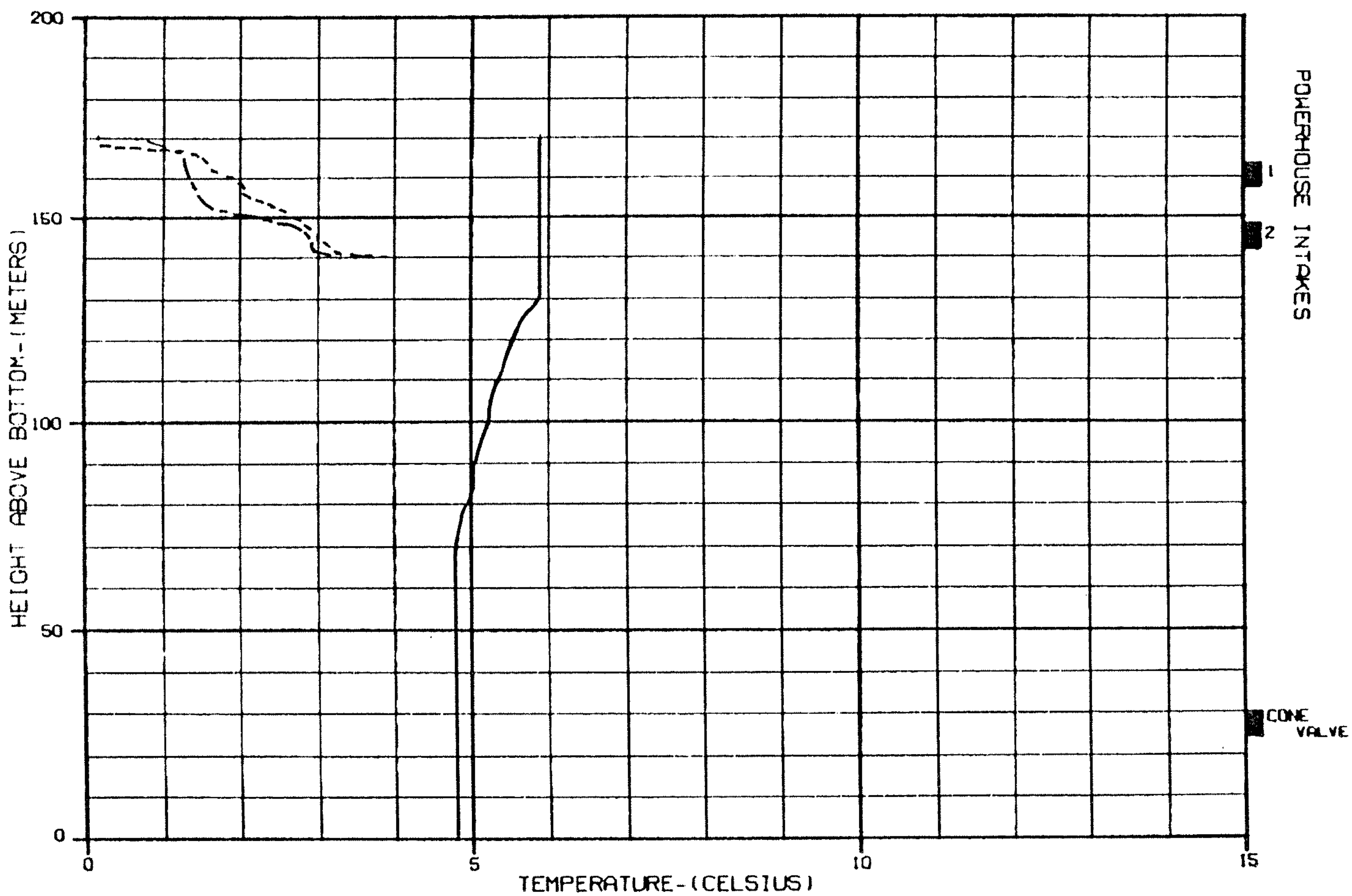
———— 1 AUGUST 1981

- - - - 1 SEPTEMBER 1981

— - — 1 OCTOBER 1981

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
DEVIL CANYON RESERVOIR TEMPERATURE PROFILES CASE E-VI STAGE II		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	10 JUN 86	4Z-010-04

FIGURE E.2.4.166



CASE: ** DC8102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

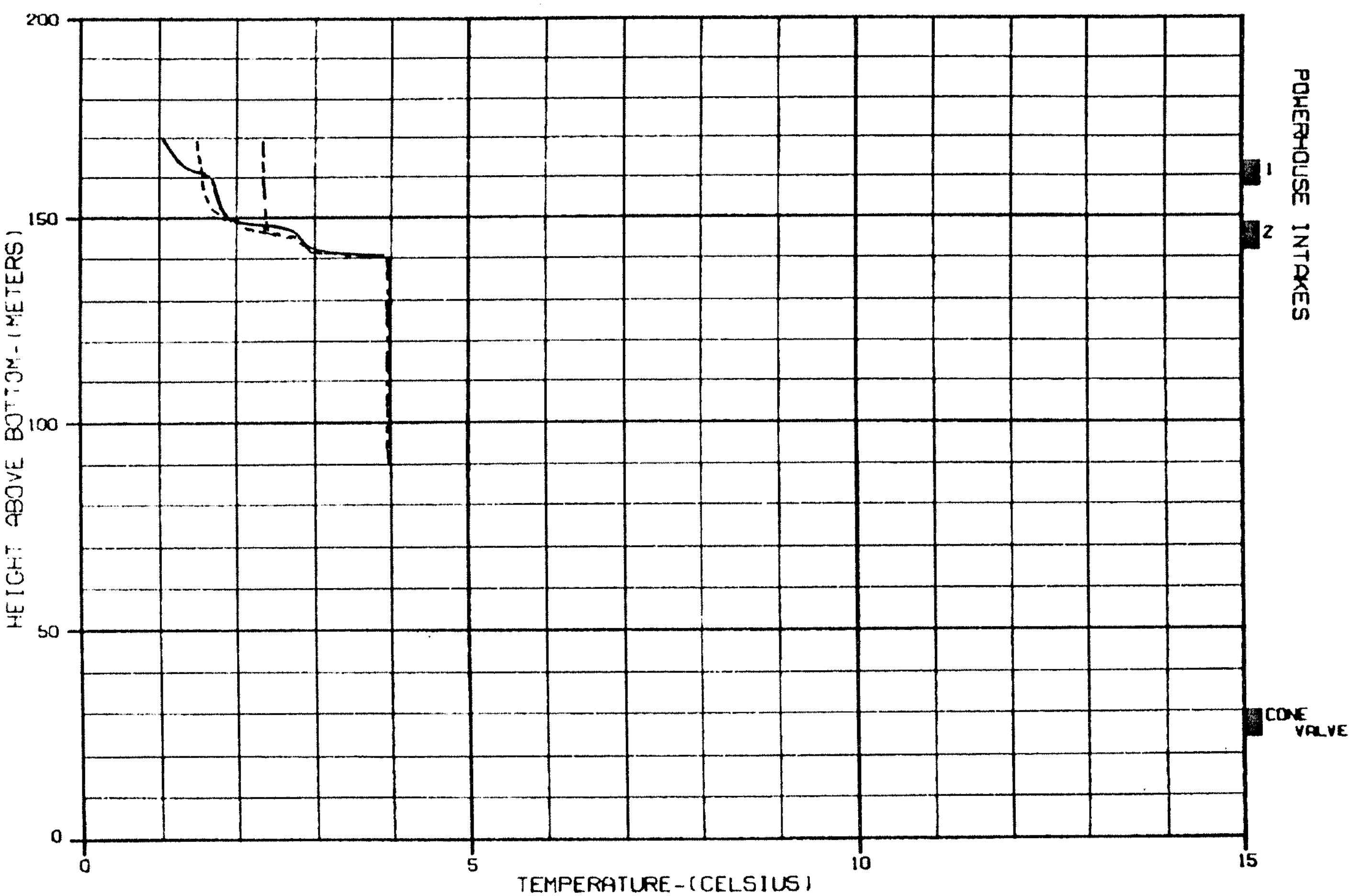
LEGEND:

PREDICTED TEMPERATURE PROFILES:

- ———— 1 NOVEMBER 1981
- - - - - - 1 DECEMBER 1981
- —·—·— 1 JANUARY 1982

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
DEVIL CANYON RESERVOIR TEMPERATURE PROFILES CASE E-VI STAGE II	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-04

FIGURE E.2.4.167



CASE: ** DCB102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

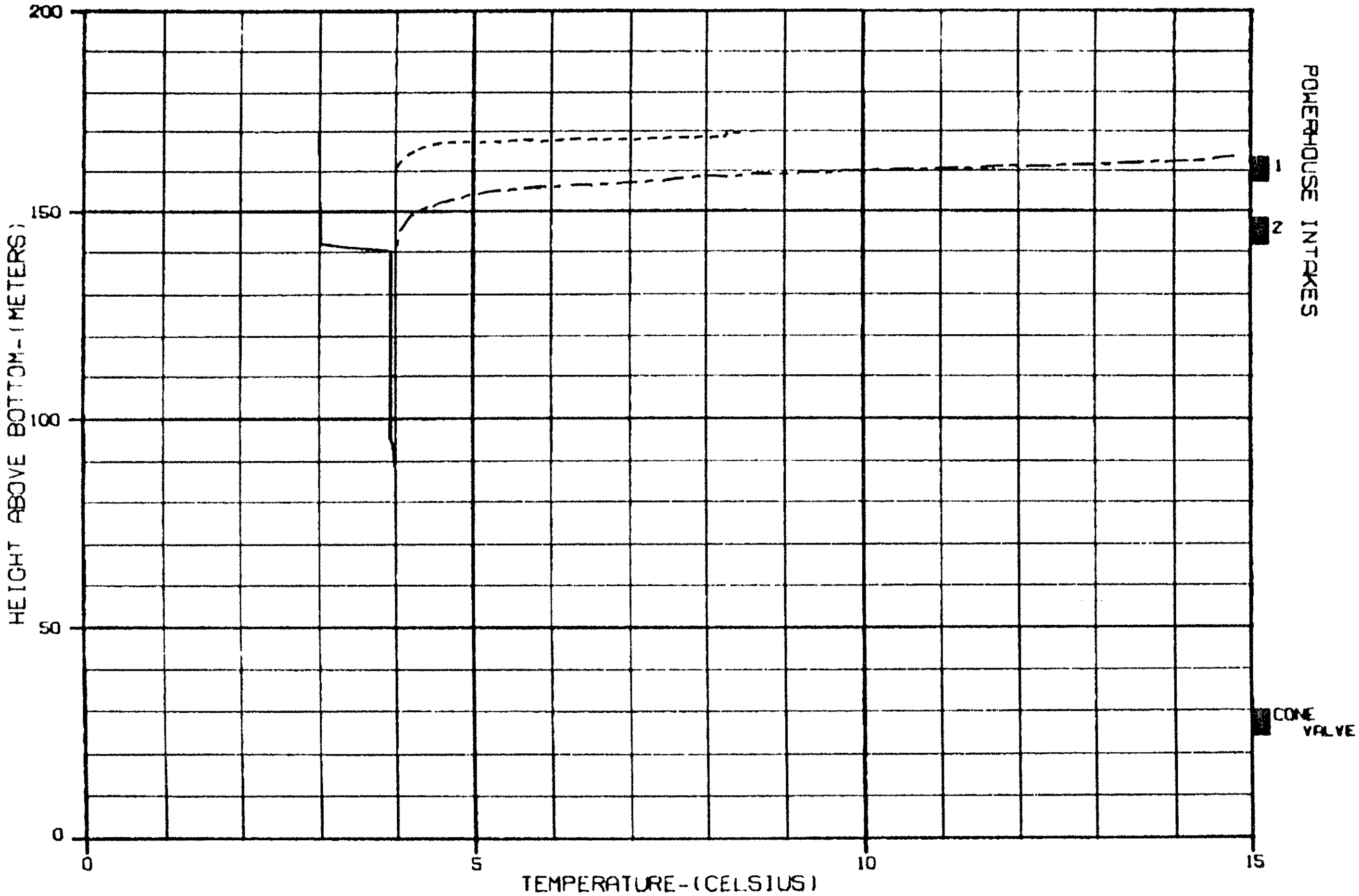
LEGEND:

PREDICTED TEMPERATURE PROFILES:

————	1 FEBRUARY 1982
- - - - - - - -	1 MARCH 1982
— - — - —	1 APRIL 1982

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
DEVIL CANYON RESERVOIR TEMPERATURE PROFILES CASE E-VI STAGE II		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	10 JAN 86	42-010-04

FIGURE E.2.4.168



CASE: ** DC8102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

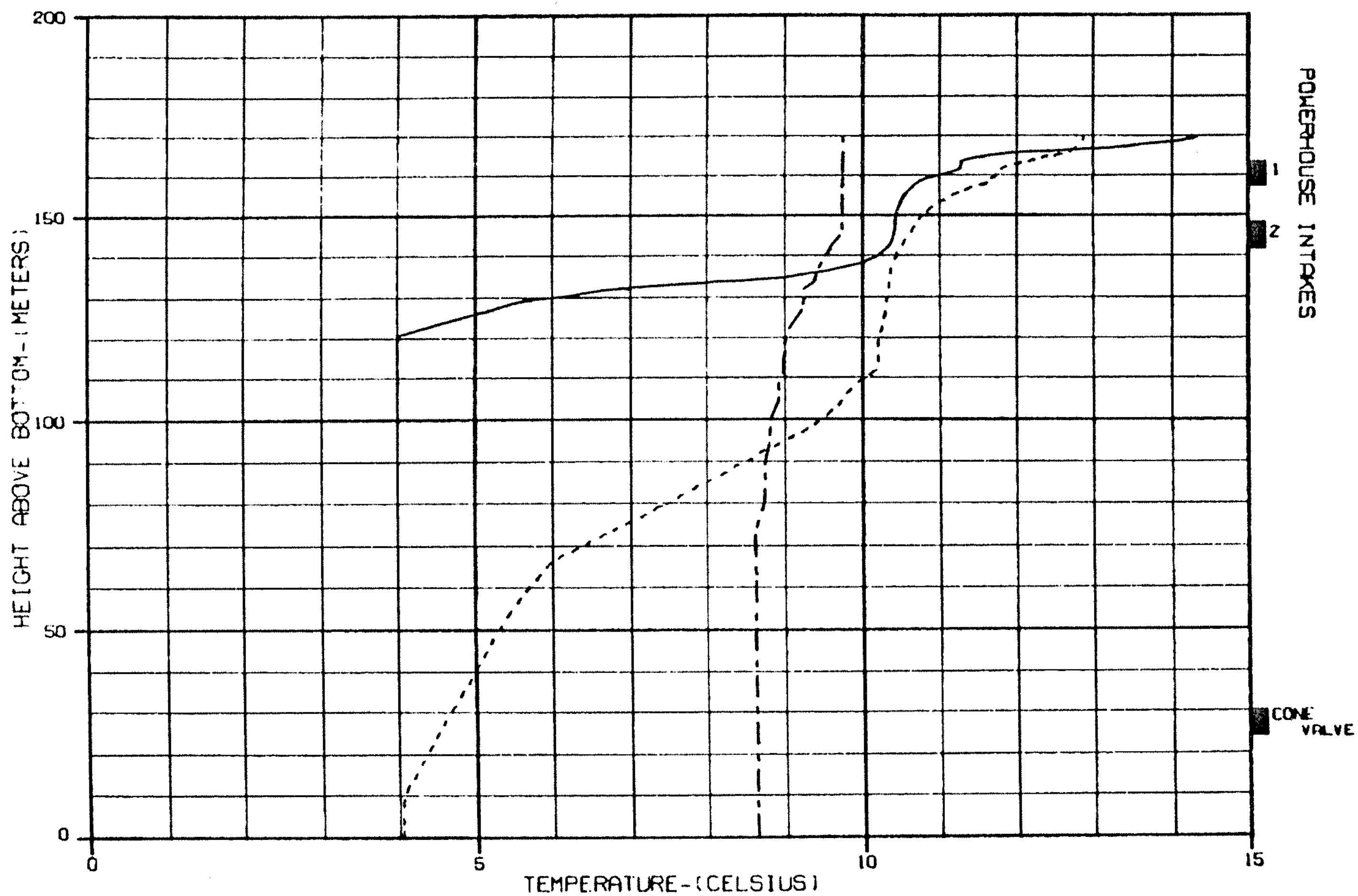
LEGEND:

PREDICTED TEMPERATURE PROFILES:

——— 1 MAY 1982
- - - - 1 JUNE 1982
— - — - 1 JULY 1982

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
DEVIL CANYON RESERVOIR TEMPERATURE PROFILES CASE E-VI STAGE II		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	18 JUN 84	42-010-04

FIGURE E.2.4.169



CASE: ** DCB102S - DEVIL CANYON OPERATION W/WATANA IN STAGE II

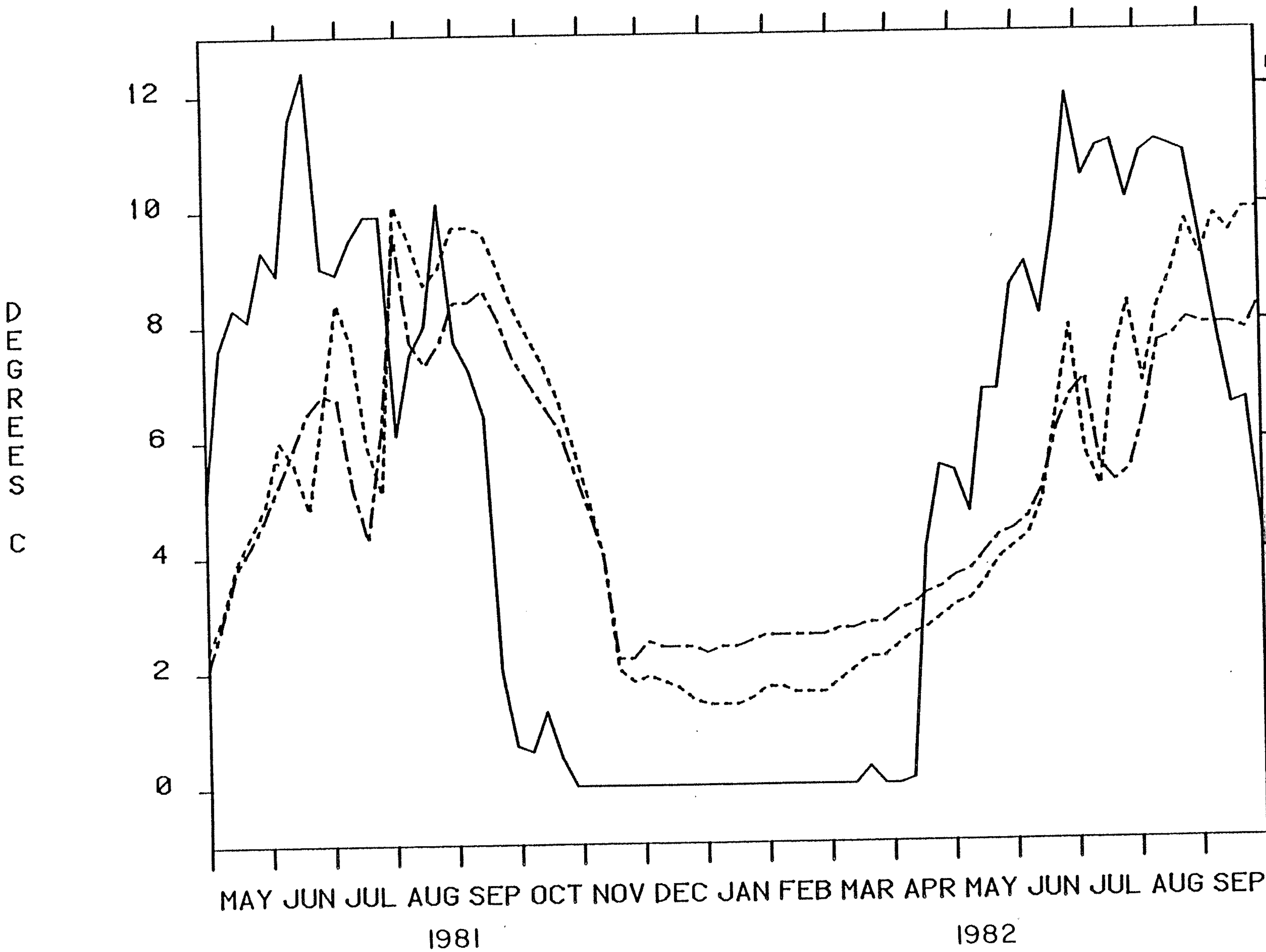
LEGEND:

PREDICTED TEMPERATURE PROFILES:

————	1 AUGUST	1982
- - - - - -	1 SEPTEMBER	1982
— - — - —	1 OCTOBER	1982

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
DEVIL CANYON RESERVOIR TEMPERATURE PROFILES CASE E-VI STAGE II	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS · 10 JUN 86	4Z-010-04

FIGURE E.2.4.170



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 2 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. DEVIL CANYON DRAWDOWN OF 50 FEET-2 LEVELS OF SHUTTERS

LEGEND

SIMULATED NATURAL TEMPERATURES

SIMULATED TEMPERATURES PHASE 2 OF TWO STAGE PROJECT (FOR COMPARISO

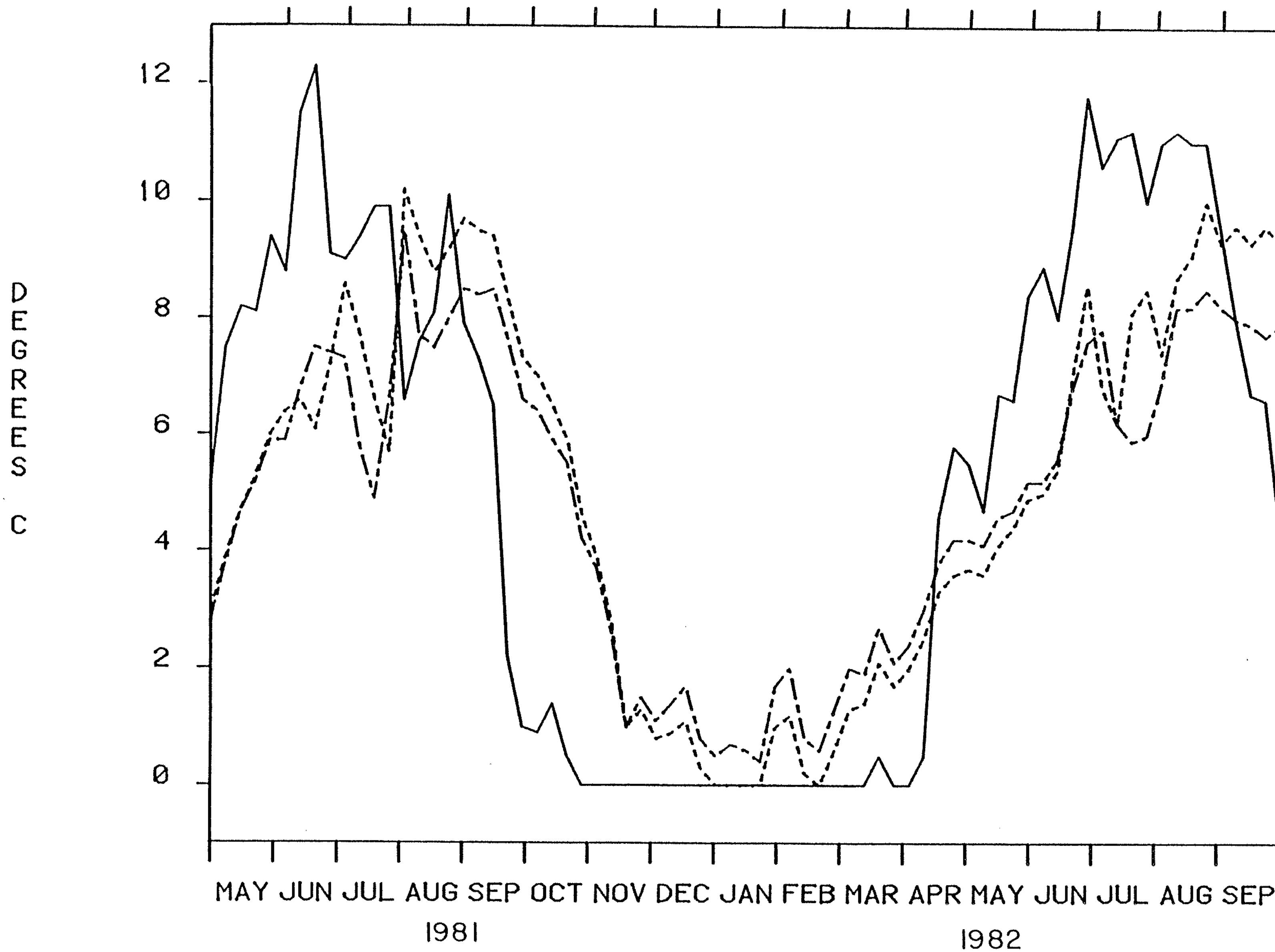
SIMULATED TEMPERATURE STAGE II OF PROPOSED PROJECT

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 STAGE II

FIGURE E.2.4.171



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 2 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD JANUARY - MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)
7. DEVIL CANYON DRAWDOWN OF 50 FEET-2 LEVELS OF SHUTTERS

LEGEND

SIMULATED NATURAL TEMPERATURES

SIMULATED TEMPERATURES PHASE 2 OF TWO STAGE PROJECT (FOR COMPARISON

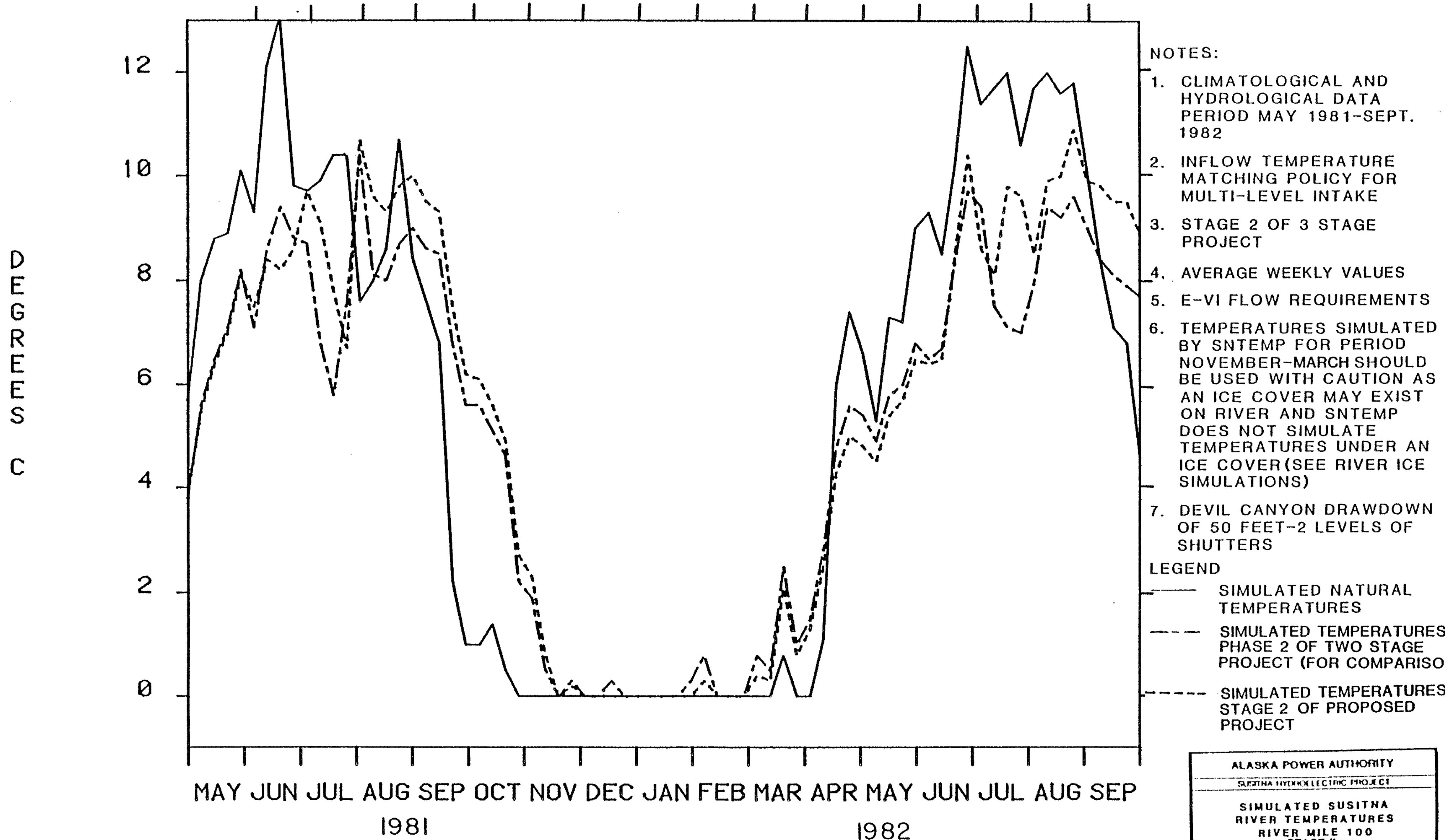
SIMULATED TEMPERATURES STAGE 2 OF PROPOSED PROJECT

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 STAGE II

FIGURE E.2.4.172

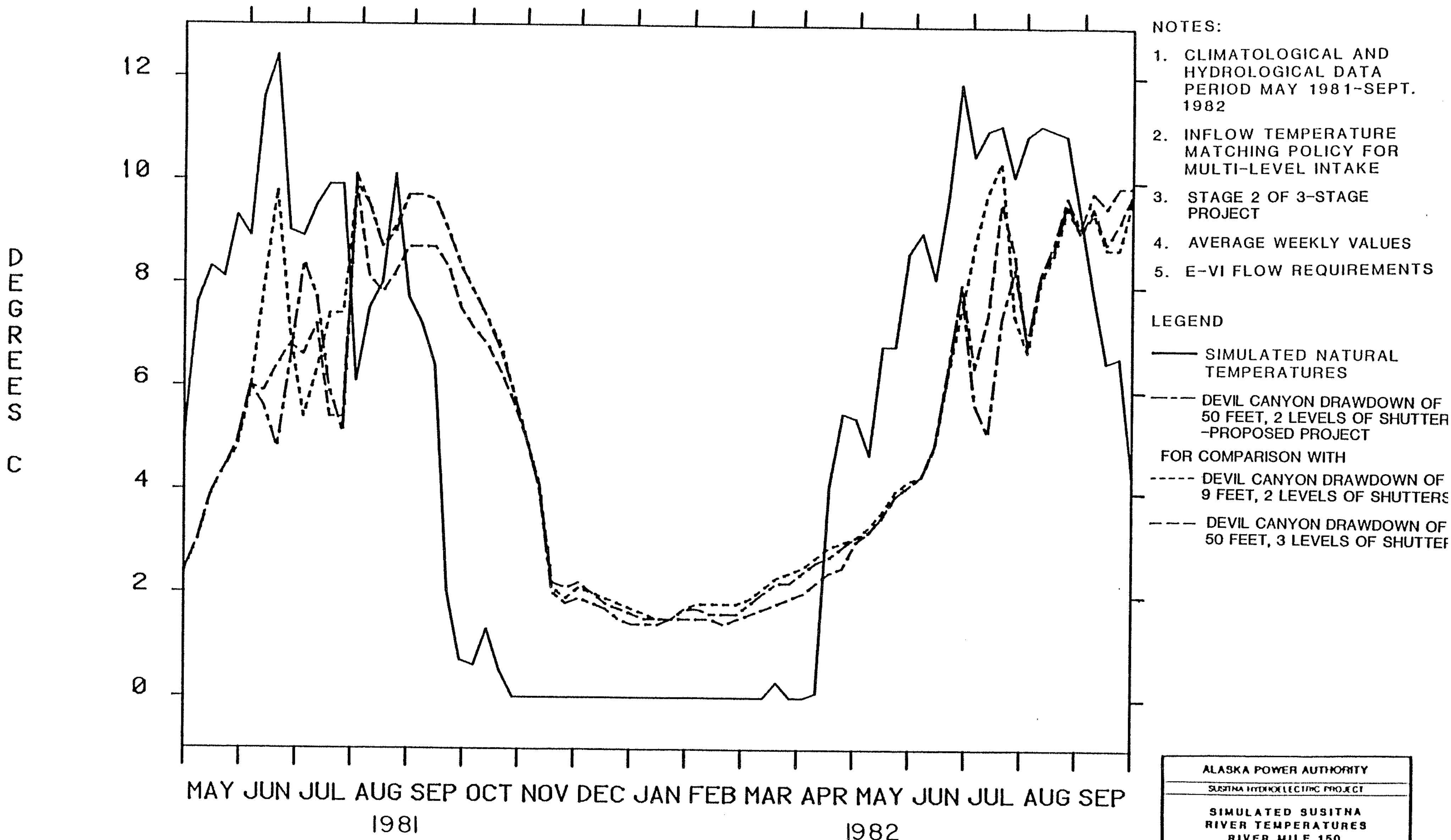


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100 STAGE II

FIGURE E.2.4.173

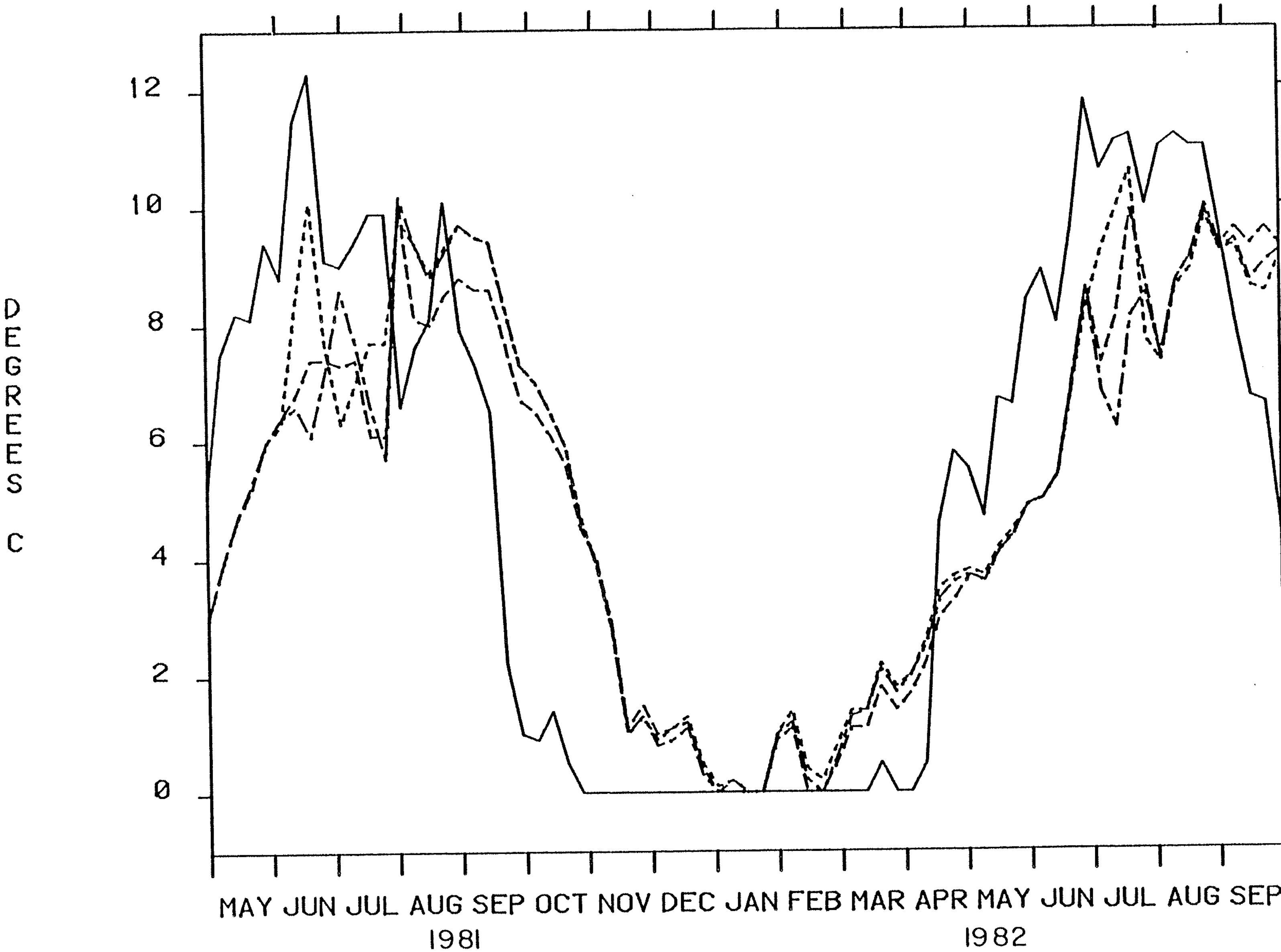


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 STAGE II

FIGURE E.2.4.174



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 2 OF 3-STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD DECEMBER-MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)

LEGEND

——— DEVIL CANYON DRAWDOWN OF 50 FEET, 2 LEVELS OF SHUTTERS -PROPOSED PROJECT

FOR COMPARISON WITH

----- DEVIL CANYON DRAWDOWN OF 9 FEET, 2 LEVELS OF SHUTTERS

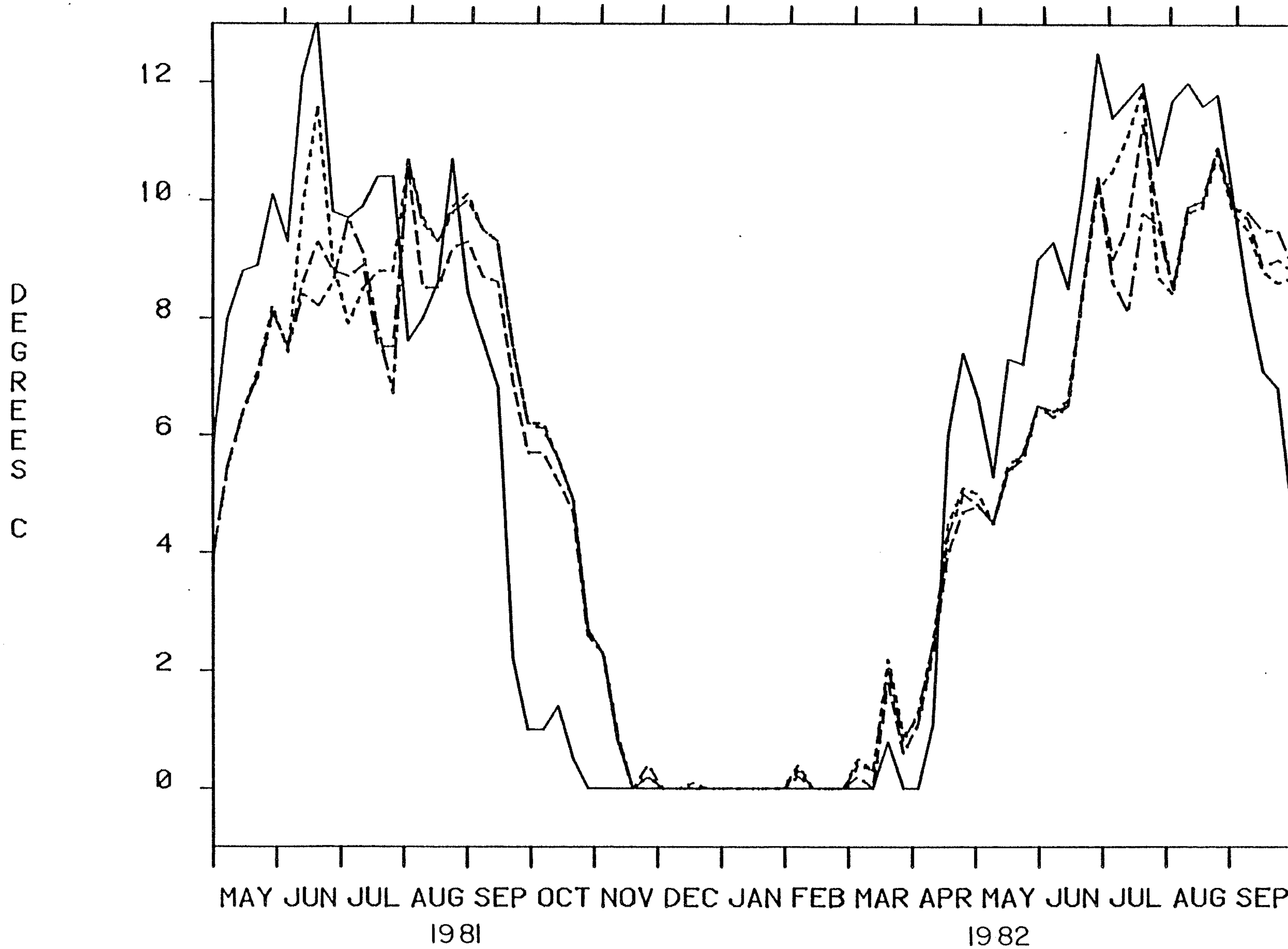
— — — DEVIL CANYON DRAWDOWN OF 50 FEET, 3 LEVELS OF SHUTTERS

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 STAGE II

FIGURE E.2.4.175



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 2 OF 3-STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD NOVEMBER-APRIL SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)

LEGEND

——— DEVIL CANYON DRAWDOWN OF 50 FEET, 2 LEVELS OF SHUTTERS -PROPOSED PROJECT

FOR COMPARISON WITH

----- DEVIL CANYON DRAWDOWN OF 9 FEET, 2 LEVELS OF SHUTTERS

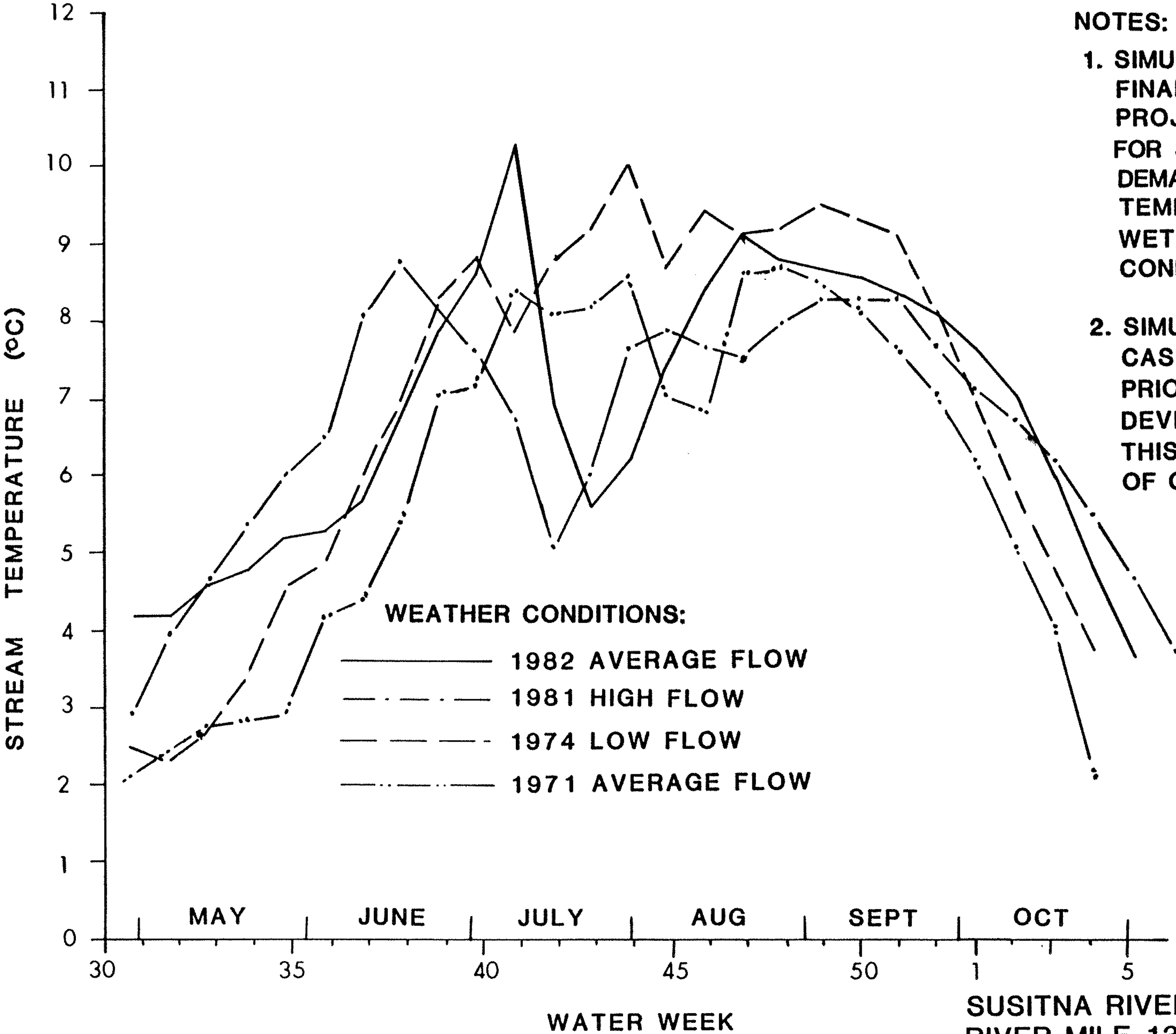
— — — DEVIL CANYON DRAWDOWN OF 50 FEET, 3 LEVELS OF SHUTTERS

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100 STAGE II

FIGURE E.2.4.176



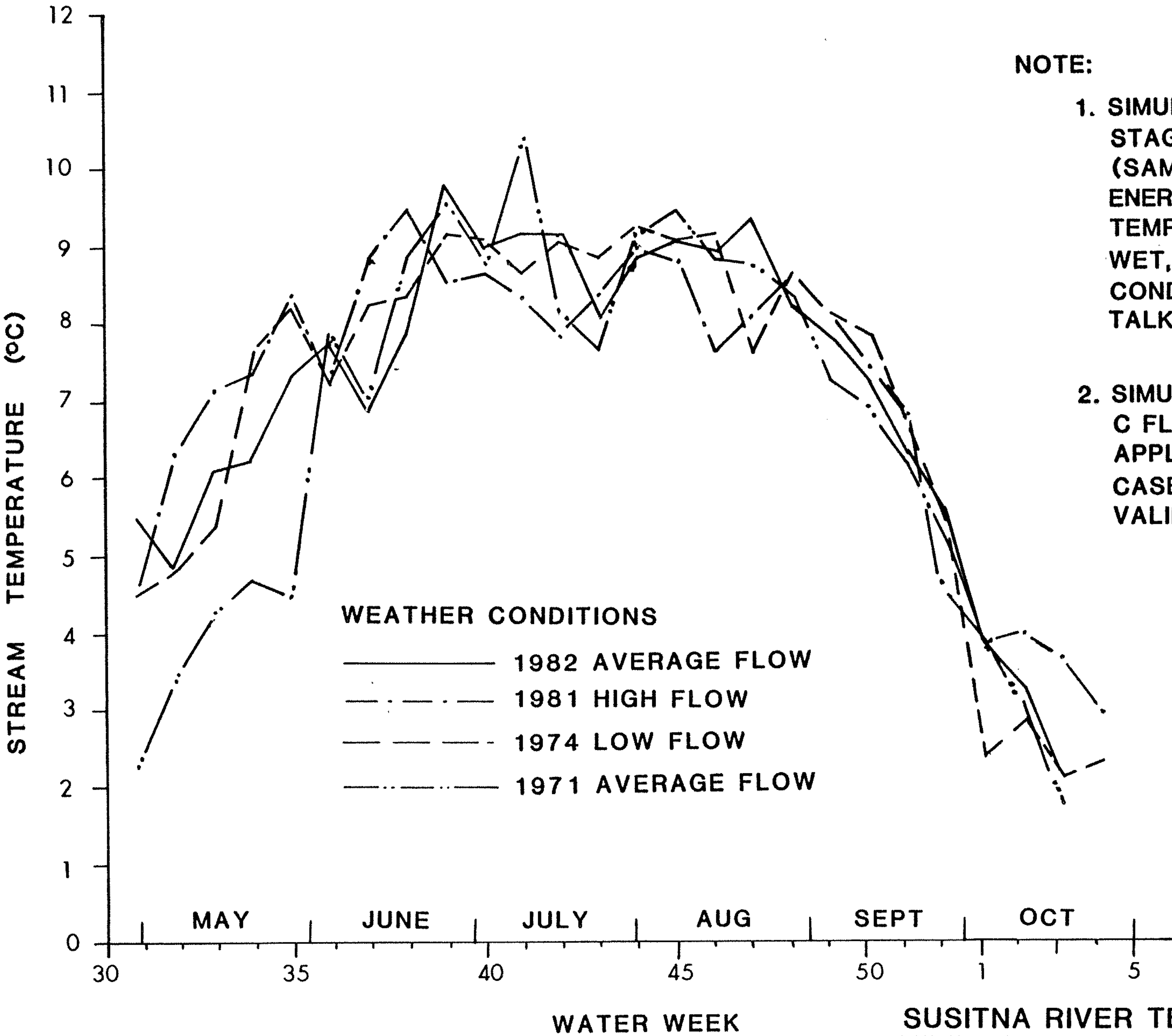
NOTES:

1. SIMULATIONS WERE MADE FOR FINAL STAGE OF TWO-STAGE PROJECT (SAME AS STAGE III) FOR STAGE II ENERGY DEMANDS AND ILLUSTRATE TEMPERATURE DIFFERENCES FOR WET, DRY AND AVERAGE FLOW CONDITIONS

2. SIMULATIONS WERE MADE FOR CASE C FLOW REQUIREMENTS PRIOR TO APPLICANTS DEVELOPMENT OF CASE E-VI . THIS DOES NOT AFFECT VALIDITY OF COMPARISON

SUSITNA RIVER TEMPERATURES AT RIVER MILE 130 WATANA AND DEVIL CANYON OPERATING

FIGURE E.2.4.177



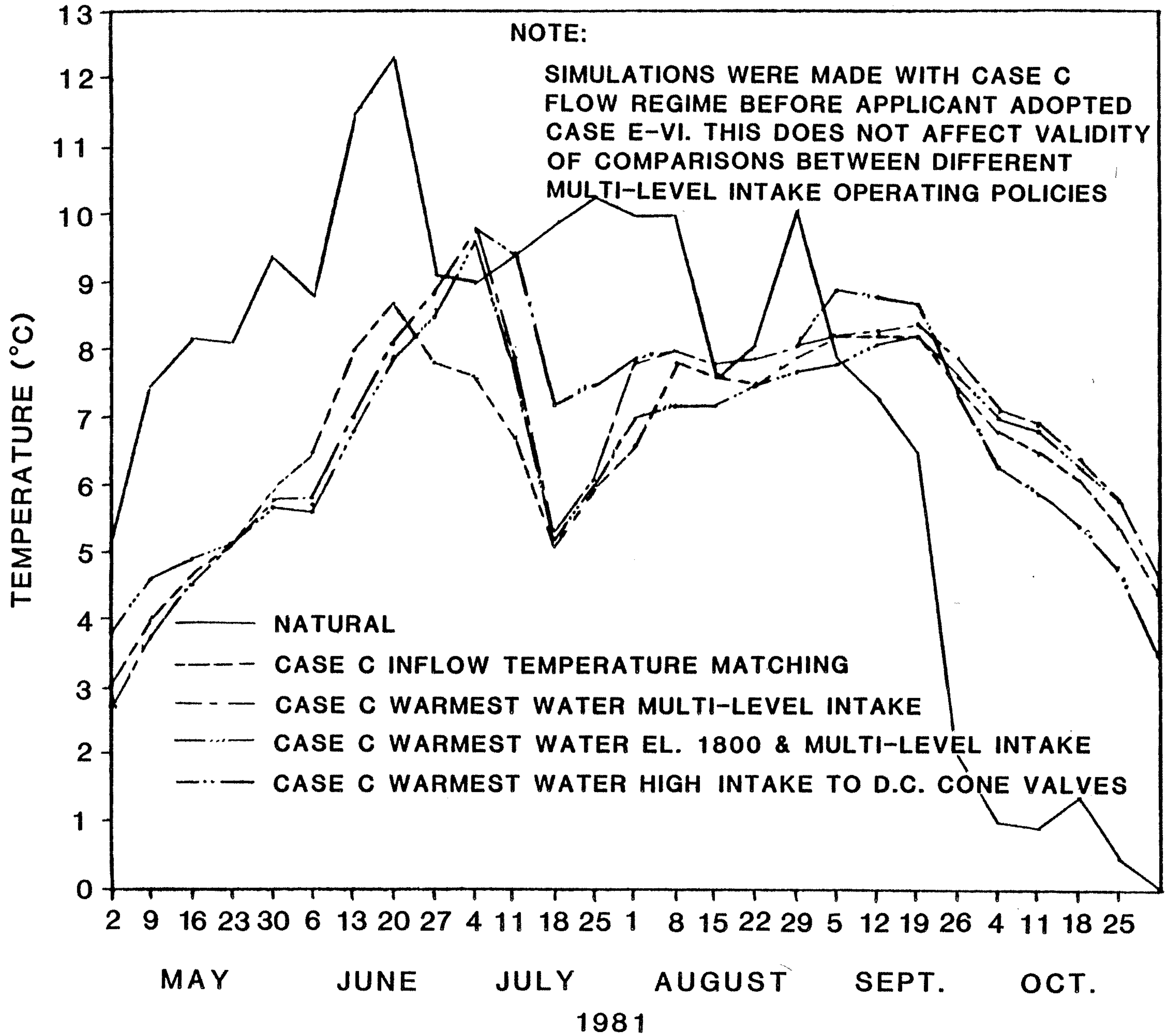
NOTE:

1. SIMULATIONS WERE MADE FOR FINAL STAGE OF TWO STAGE PROJECT (SAME AS STAGE III) FOR STAGE II ENERGY DEMANDS AND ILLUSTRATE TEMPERATURE DIFFERENCES FOR WET, DRY AND AVERAGE FLOW CONDITIONS DOWNSTREAM OF TALKEETNA.

2. SIMULATIONS WERE MADE FOR CASE C FLOW REQUIREMENTS PRIOR TO APPLICANTS DEVELOPMENT OF CASE E-VI. THIS DOES NOT AFFECT VALIDITY OF COMPARISON.

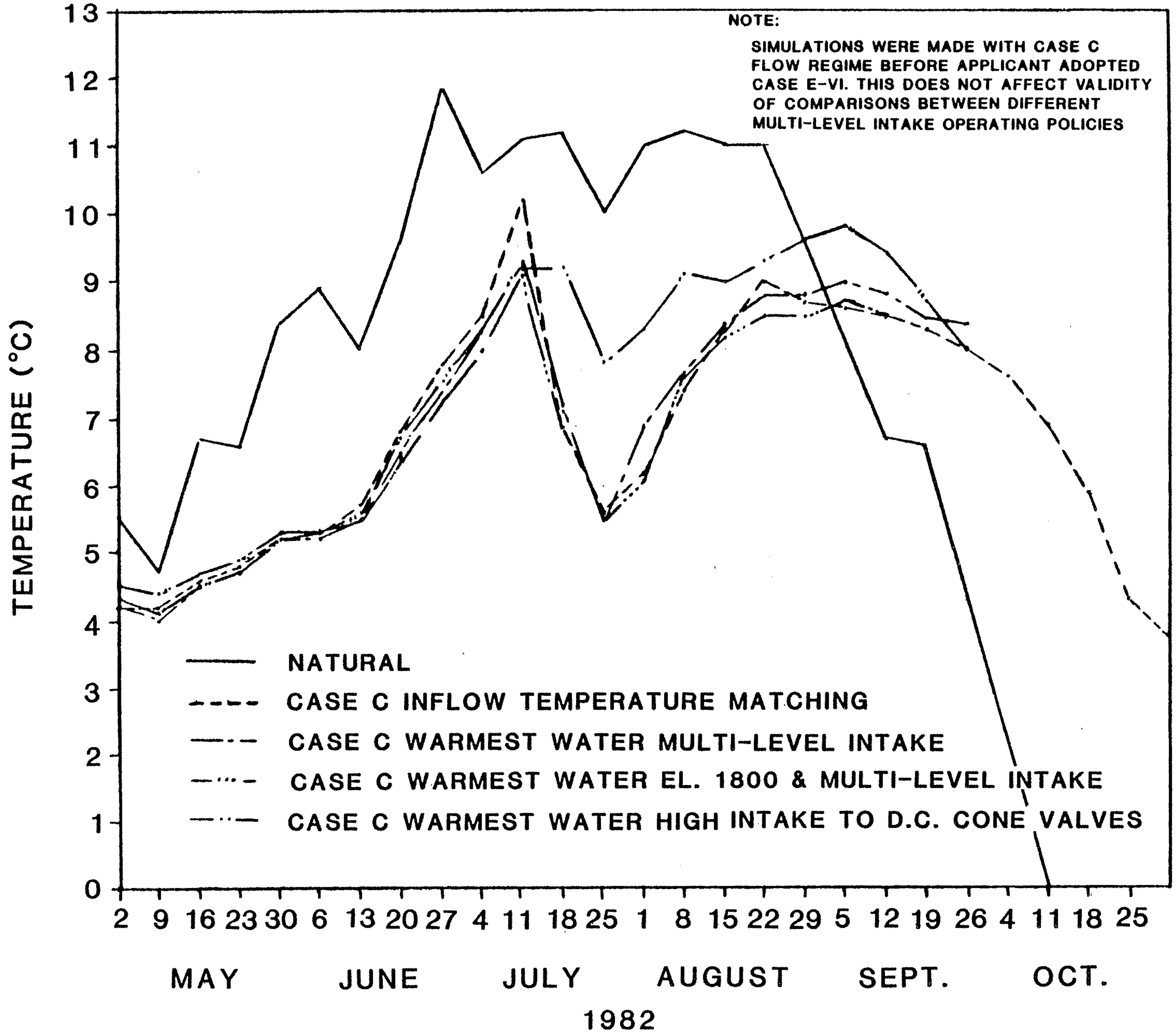
SUSITNA RIVER TEMPERATURES AT RIVER MILE 84 WATANA AND DEVIL CANYON OPERATING

FIGURE E.2.4.178



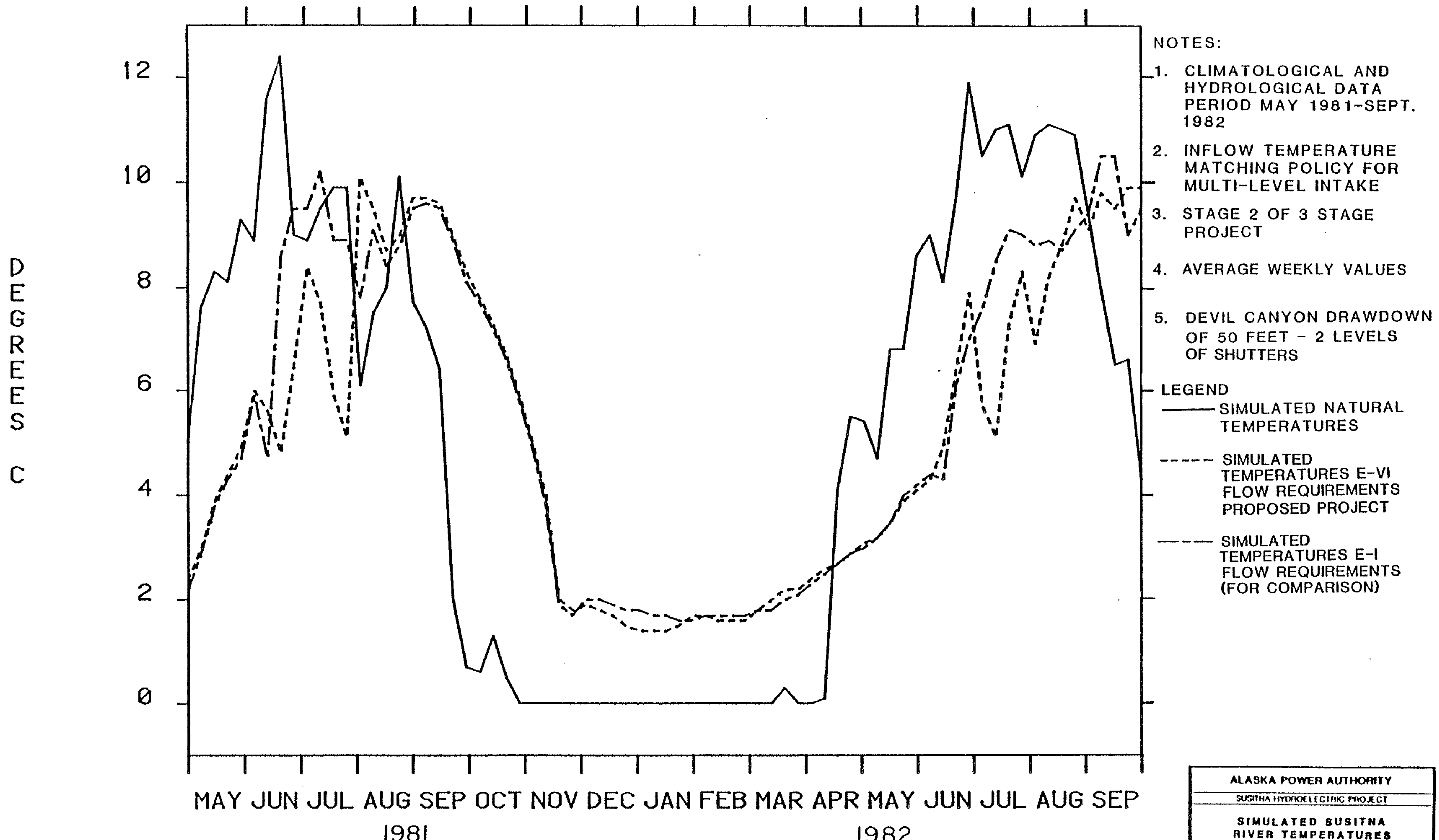
SIMULATED TEMPERATURES AT RIVER MILE 130
VARIOUS INTAKE OPERATING POLICIES

FIGURE E.2.4.179



SIMULATED TEMPERATURES AT RIVER MILE 130
VARIOUS INTAKE OPERATING POLICIES

FIGURE E.2.4.180

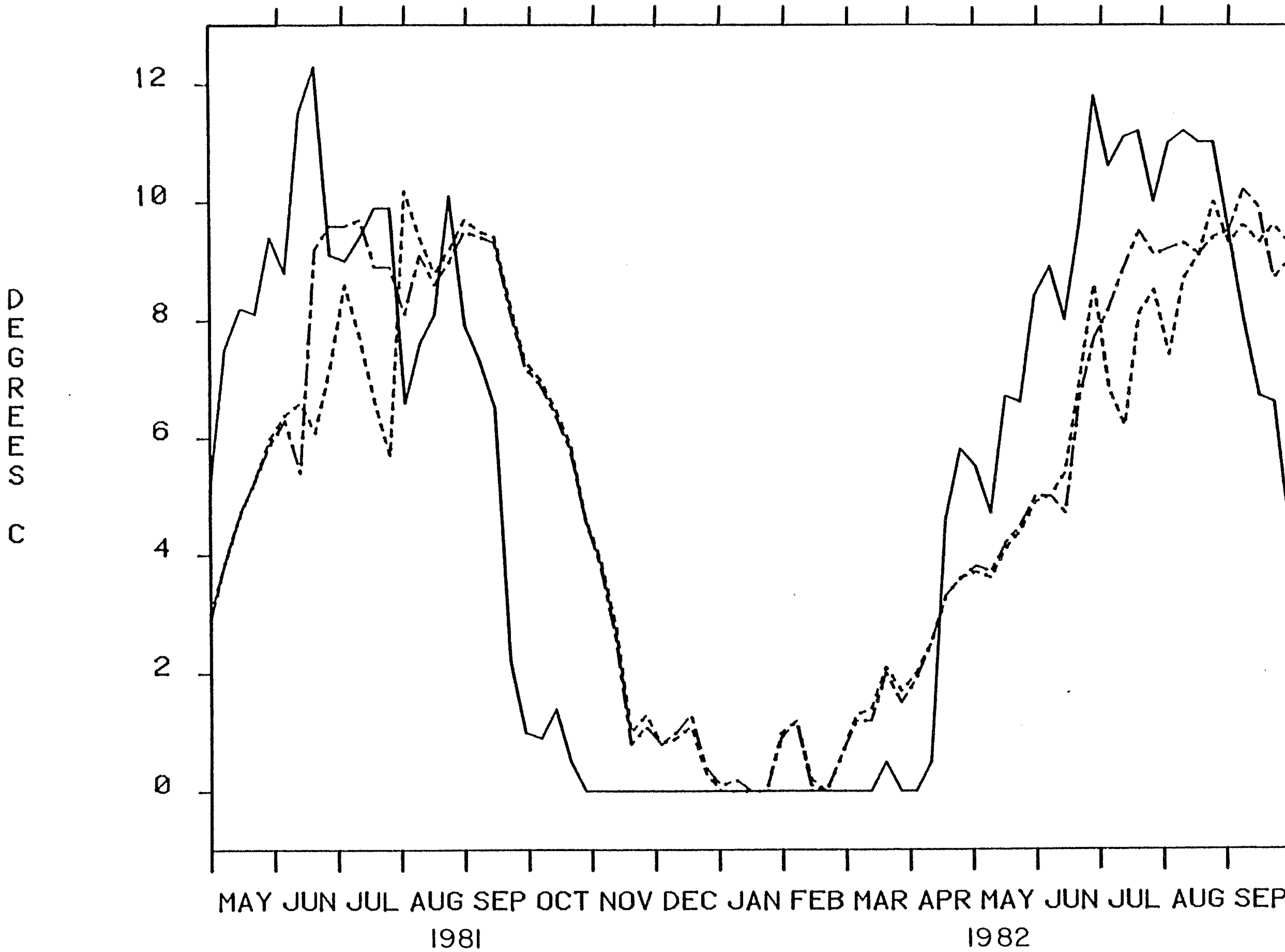


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 STAGE II

FIGURE E.2.4.181



NOTES:
1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 2 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD DECEMBER -MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER
6. DEVIL CANYON DRAWDOWN OF 50 FEET- 2 LEVELS OF SHUTTERS

LEGEND

——— SIMULATED NATURAL TEMPERATURES

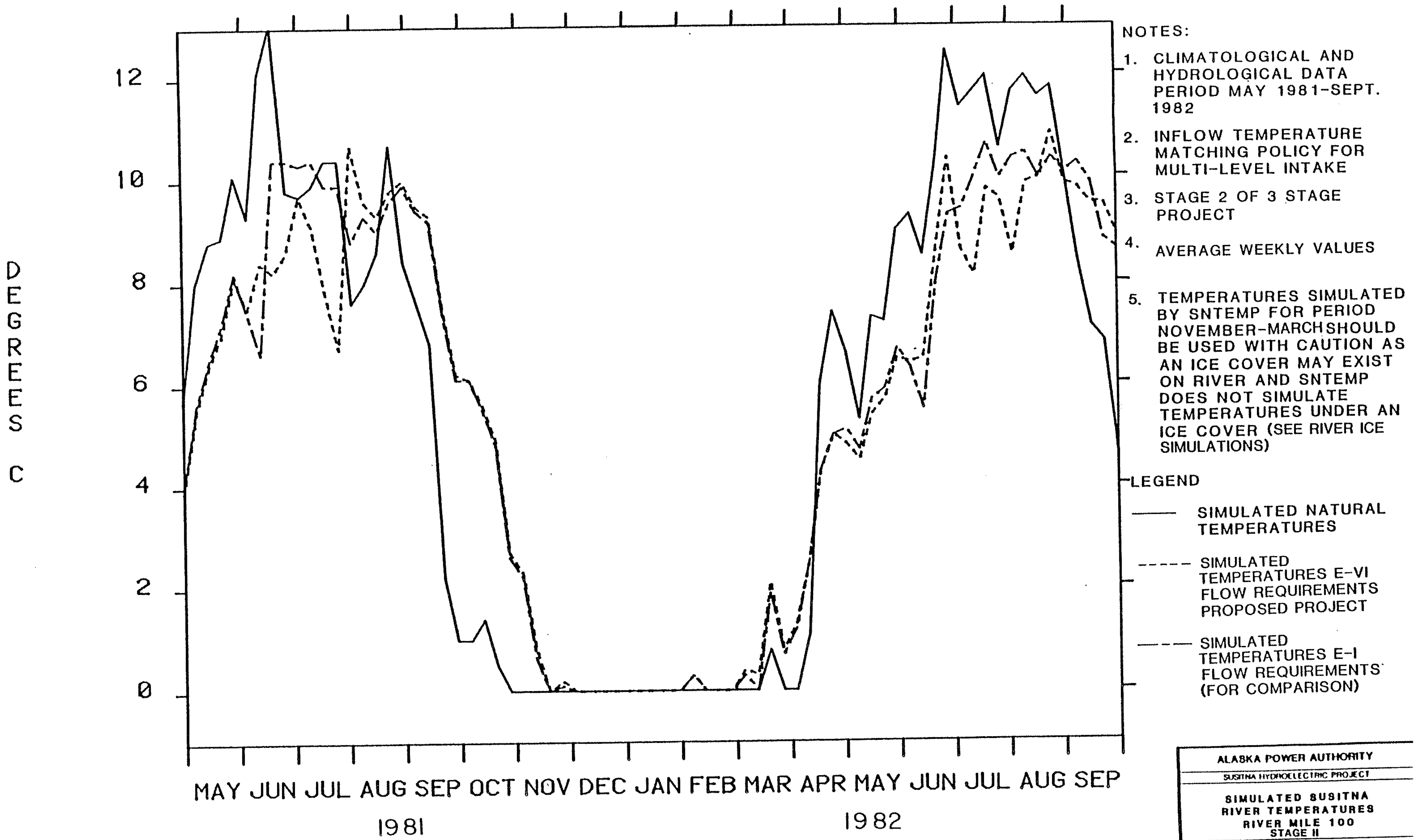
----- SIMULATED TEMPERATURES E-VI FLOW REQUIREMENTS PROPOSED PROJECT

— — — SIMULATED TEMPERATURES E-I FLOW REQUIREMENTS (FOR COMPARISON)

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 STAGE II

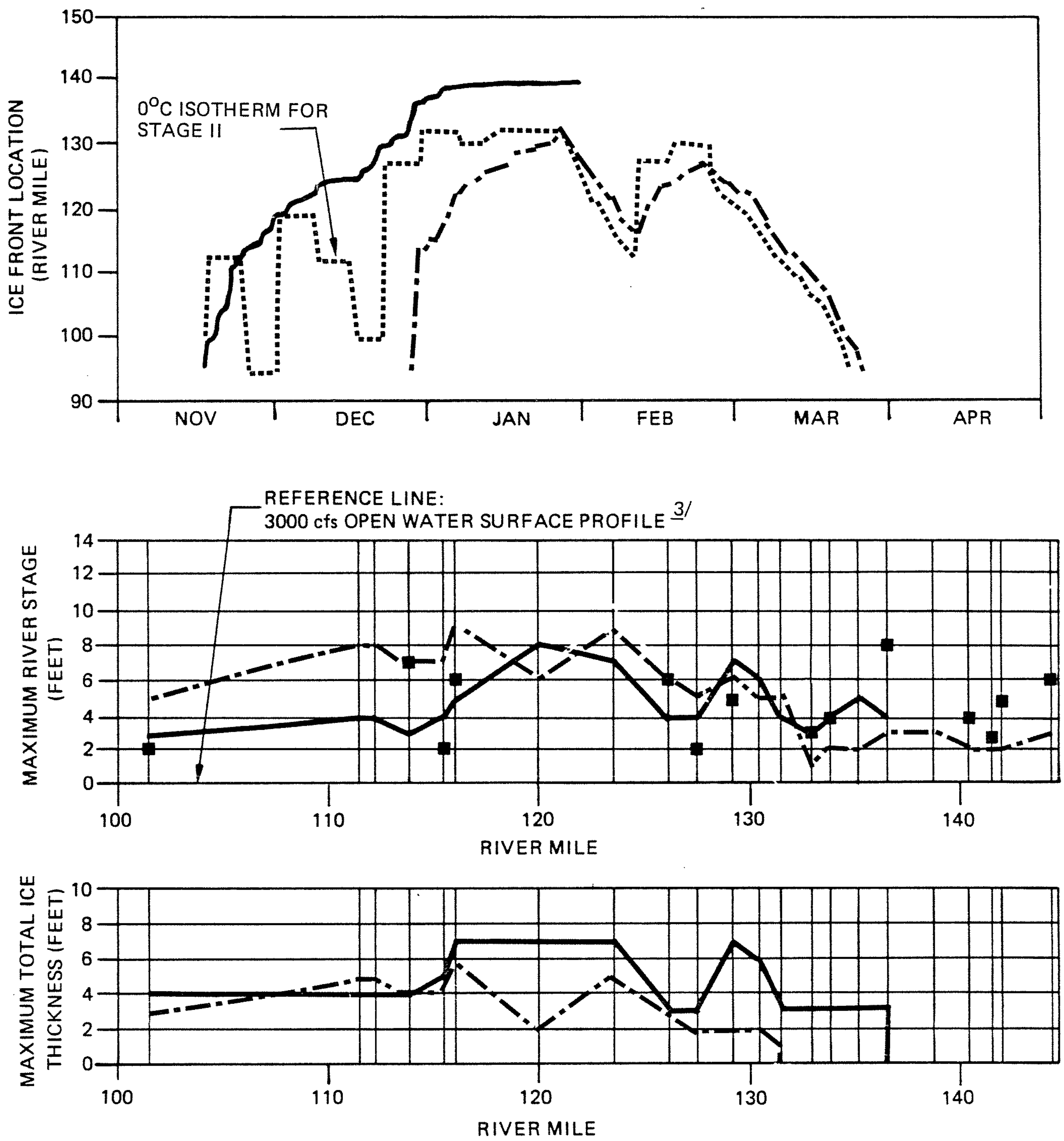
FIGURE E.2.4.182



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100 STAGE II

FIGURE E.2.4.183



NOTES:

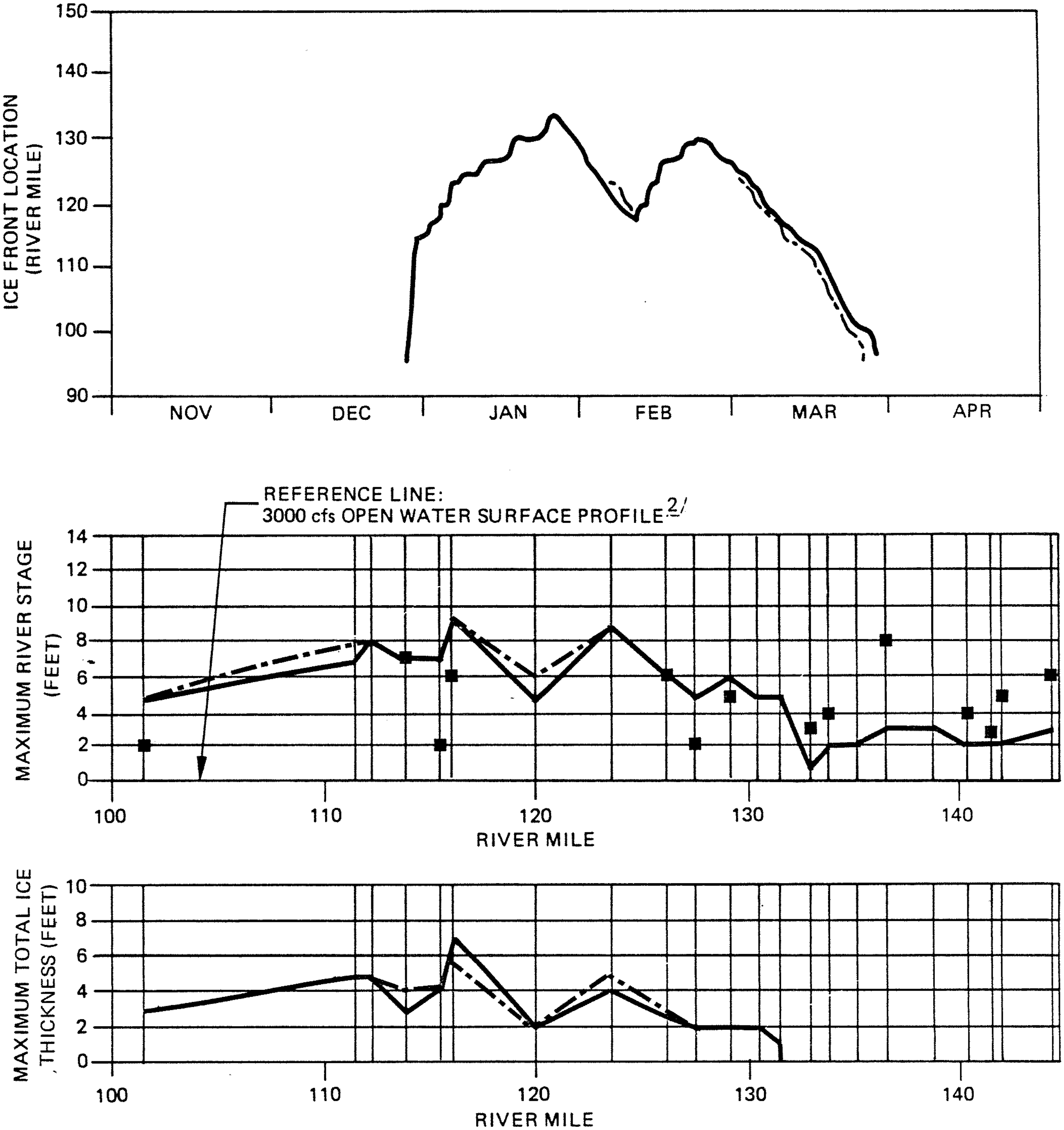
1. STAGE II SIMULATION BASED ON CASE E–VI FLOWS, STAGE II ENERGY DEMAND, INFLOW MATCHING TEMPERATURE POLICY
2. NATURAL CONDITIONS NOT SIMULATED UPSTREAM OF RM 140.
3. 3000 cfs REPRESENTS TYPICAL WINTER FLOW UNDER NATURAL CONDITIONS AT FREEZE UP'

LEGEND:

- NATURAL CONDITIONS
- STAGE II OPERATING
- ■ NATURAL SLOUGH BERM ELEVATION SEE TABLE E.2.4.23

SIMULATED RIVER ICE CONDITIONS
STAGE II vs. NATURAL
1981-82 WEATHER CONDITIONS
CASE E-VI FLOWS

FIGURE E.2.4.184

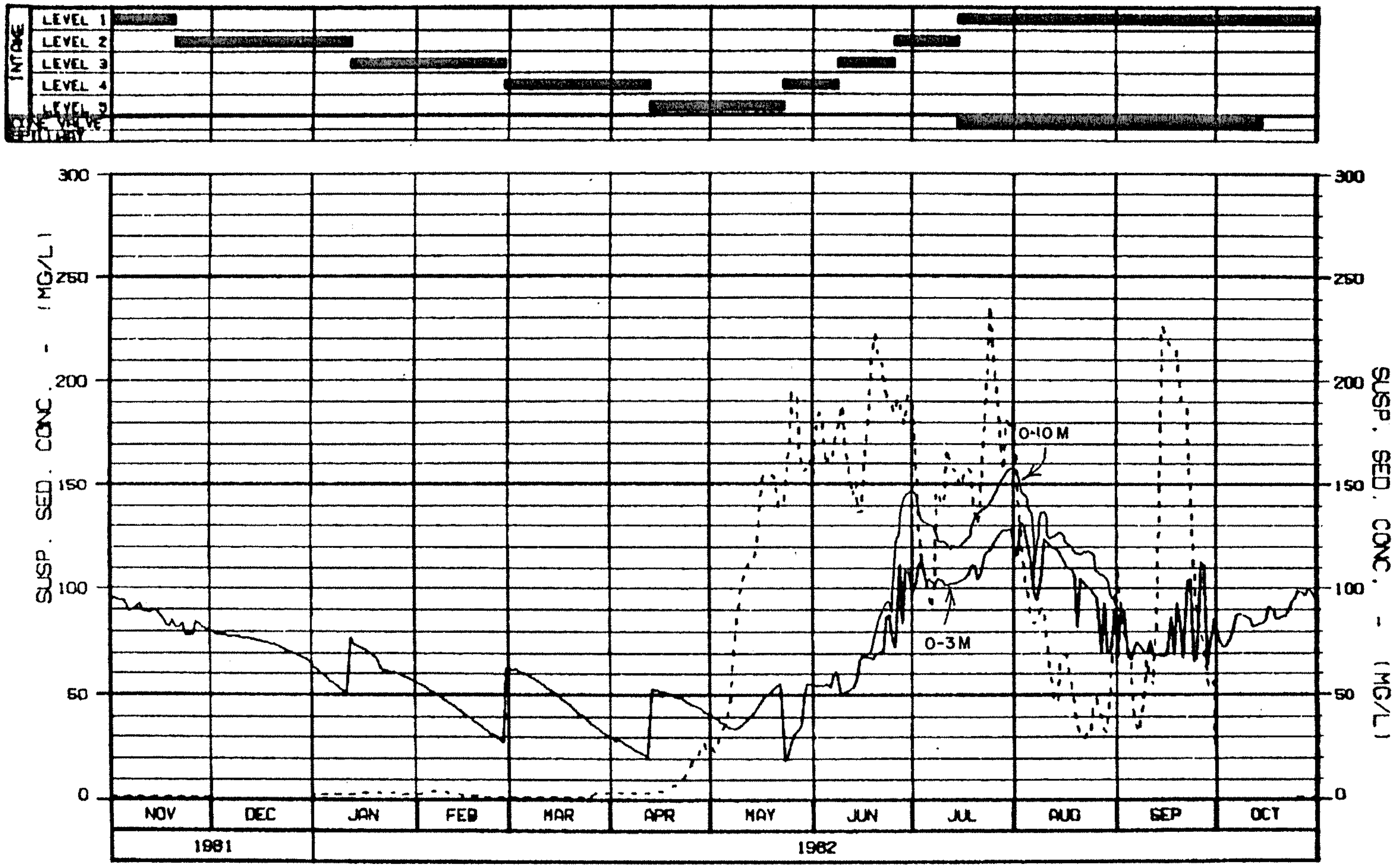


NOTES:
1. SIMULATIONS BASED ON STAGE II ENERGY DEMAND, INFLOW MATCHING TEMPERATURE POLICY.
2. 3000 cfs REPRESENTS TYPICAL WINTER FLOW UNDER NATURAL CONDITIONS AT FREEZE UP.

LEGEND:
CASE E–I FLOWS
CASE E–VI FLOWS
■ NATURAL SLOUGH BERM ELEVATION (SEE TABLE E.2.4.24)

SIMULATED RIVER ICE CONDITIONS
STAGE II
1981-82 WEATHER CONDITIONS
CASE E-I vs. CASE E-VI

FIGURE E.2.4.185



LEGEND:

——————— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)

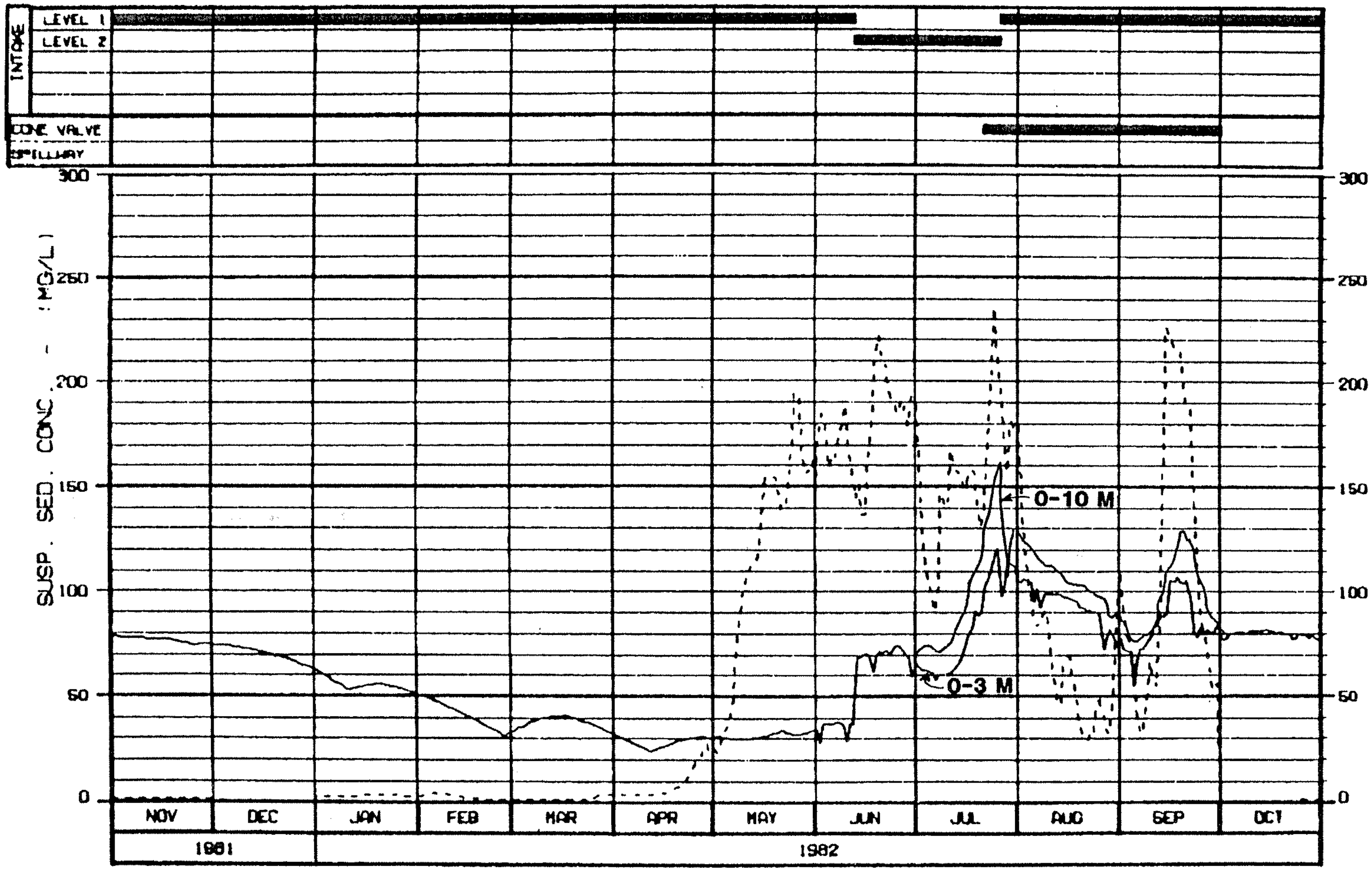
- - - - - - - INFLOW SUSP. SED. CONCENTRATION (MG/L) (0-3 MICRONS ONLY)

NOTES:

1. SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
WATANA RESERVOIR OUTFLOW SUSPENDED SOLIDS STAGE II AVERAGE YEAR		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	18 JUN 85	42-010-06

FIGURE E.2.4.186



LEGEND:

——— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)
- - - - INFLOW SUSP. SED. CONCENTRATION AT WATANA (MG/L)(0-3 M)

NOTES:

1. SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS.

ALASKA POWER AUTHORITY

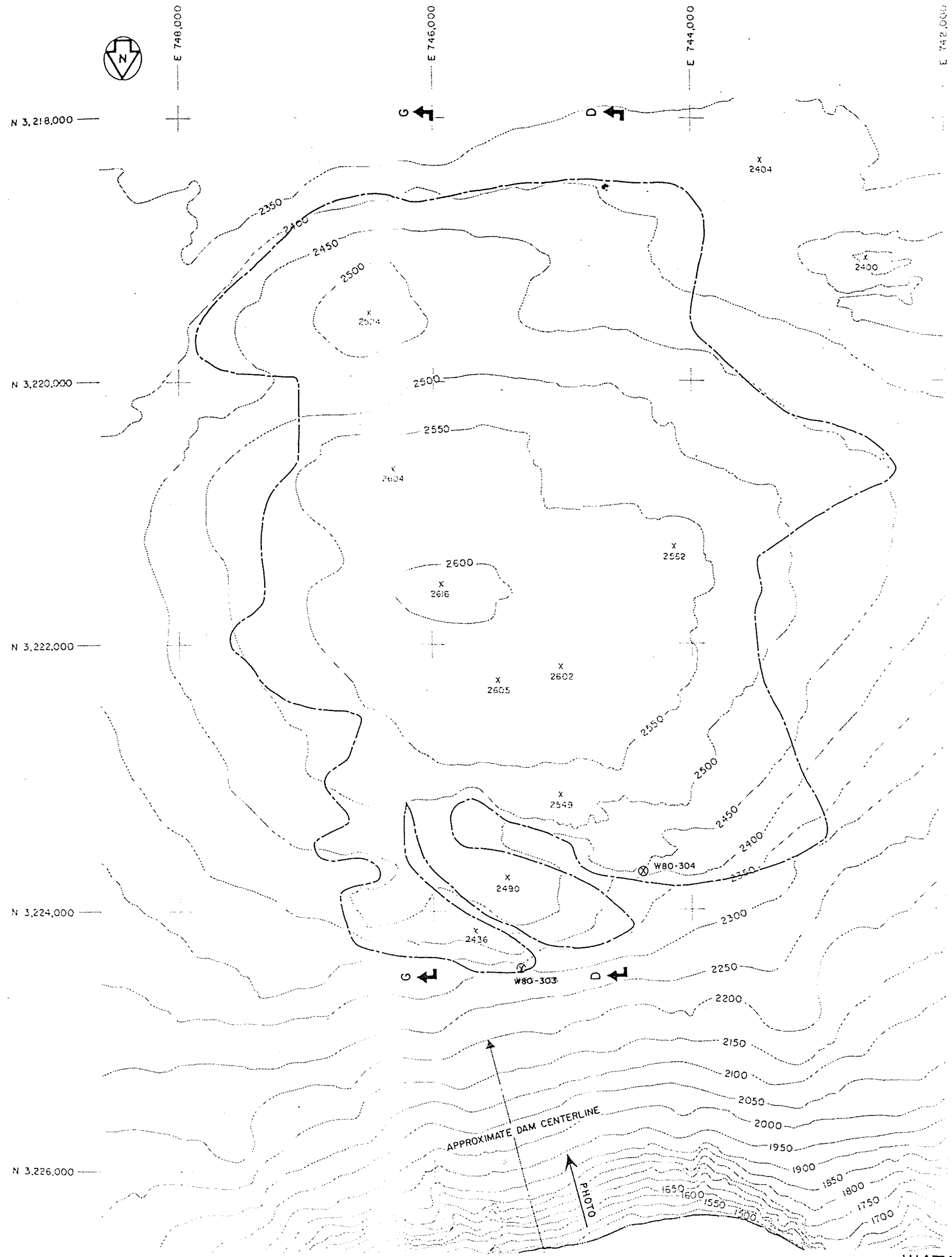
SUSITNA PROJECT | DYRESM MODEL

DEVIL CANYON OUTFLOW (0-10) SUSPENDED SOLIDS STAGE II AVERAGE YEAR

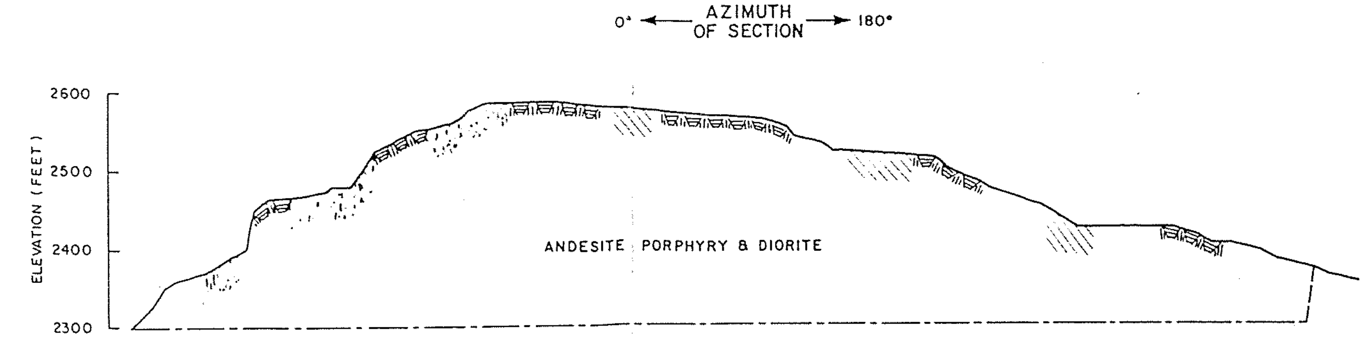
HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 10 JUN 85 | 42-010-06

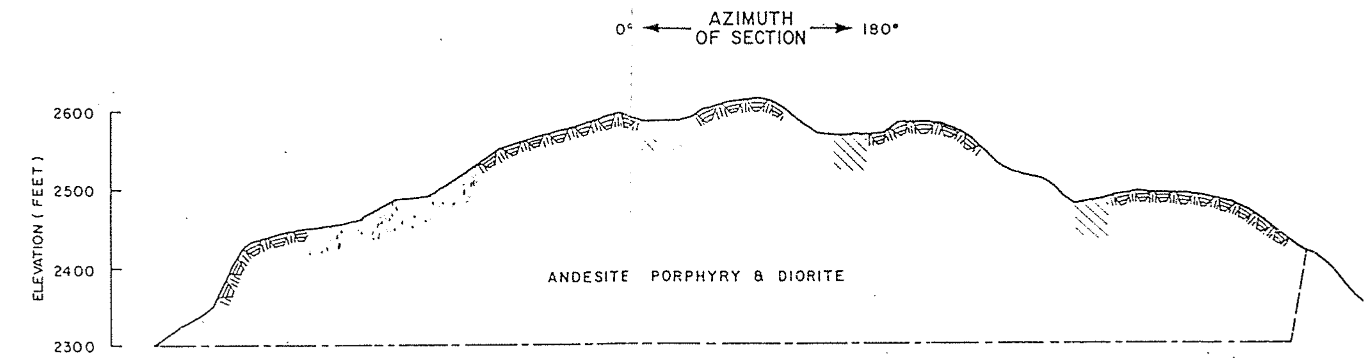
FIGURE E.2.4.187



QUARRY A PLAN

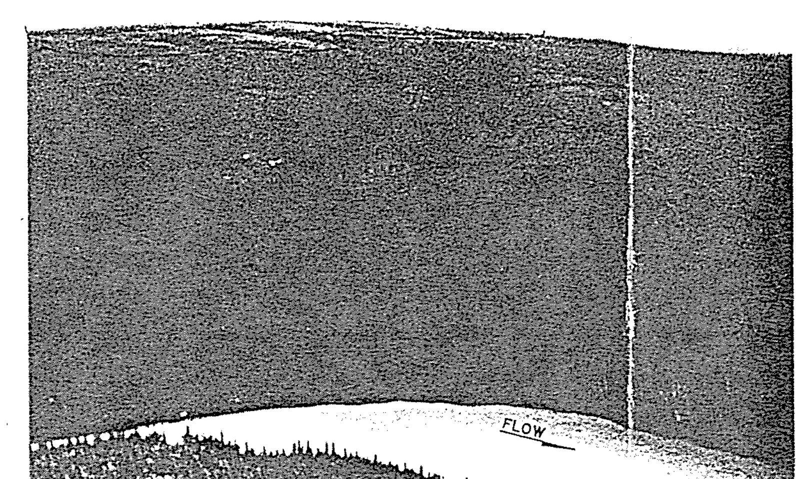


SECTION D-D



SECTION G - G

QUARRY SITE



APPROXIMATE DAM CENTERLINE

LEGEND

STRUCTURE

- SUSPECTED FRACTURE ZONE WITH LOCAL SHEARING
- BEDROCK OUTCROP
- SHEAR ZONE

CONTACTS

- MAPPED LIMIT OF BORROW SITE

OTHER

- D D CROSS-SECTION LOCATIONS
- ⊗ SAMPLE LOCATION (APPROXIMATE)

NOTES

1. SELECTED TYPICAL SECTIONS SHOWN.
2. VERTICAL SCALE 4 TIMES HORIZONTAL SCALE.
3. 50 FOOT CONTOURS REPRODUCED FROM REFERENCED BASE MAP.
4. CONTOUR INTERVAL 50 FEET
5. QUARRY SITE LIMITS BASED ON PRELIMINARY MAPPING AND IS SUBJECT TO RESULTS OF DESIGN EXPLORATIONS.
6. INTERPRETATION BASED ON AIR PHOTO INTERPRETATION AND RECONNAISSANCE, AND SURFICIAL GEOLOGY MAPPING.
7. PHOTO TAKEN AUGUST, 1981.
8. LITHOLOGY AND CONTACTS WITHIN QUARRY A REQUIRE FUTURE DELINEATION
9. QUARRY SITE A IS A PROPOSED SOURCE OF ROCKFILL FOR STAGE III CONSTRUCTION.

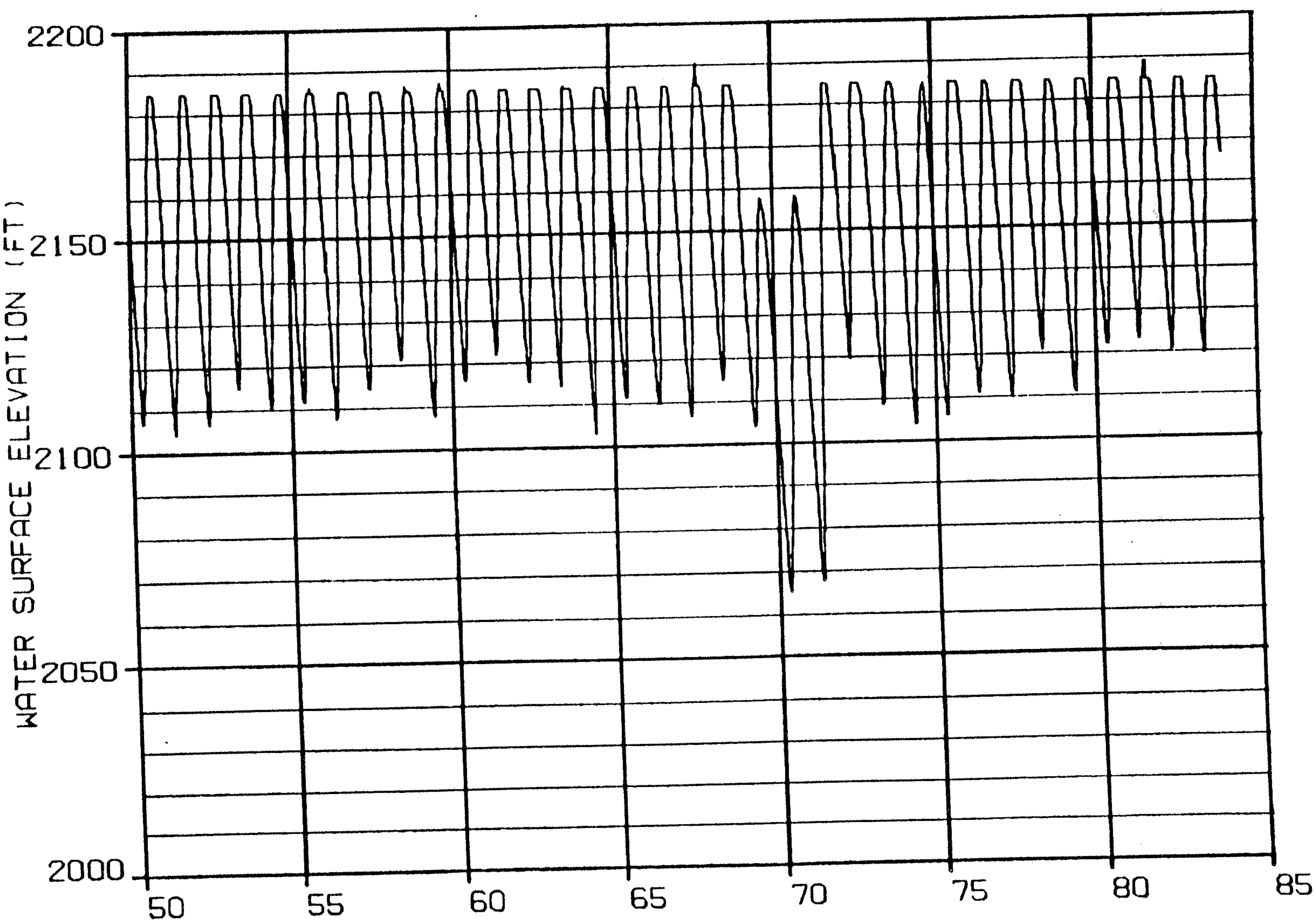
SCALE 0 400 800 FEET

WATANA
QUARRY SITE A PLAN AND SECTIONS

REFERENCE : 1" = 200' TOPOGRAPHY 1978 COE, (NPAS) SHEET 8/26.
1" = 400' TOPOGRAPHY 1981 AAI, (NPAS) SHEET 1 OF 1, FLT. NO. 4-4.

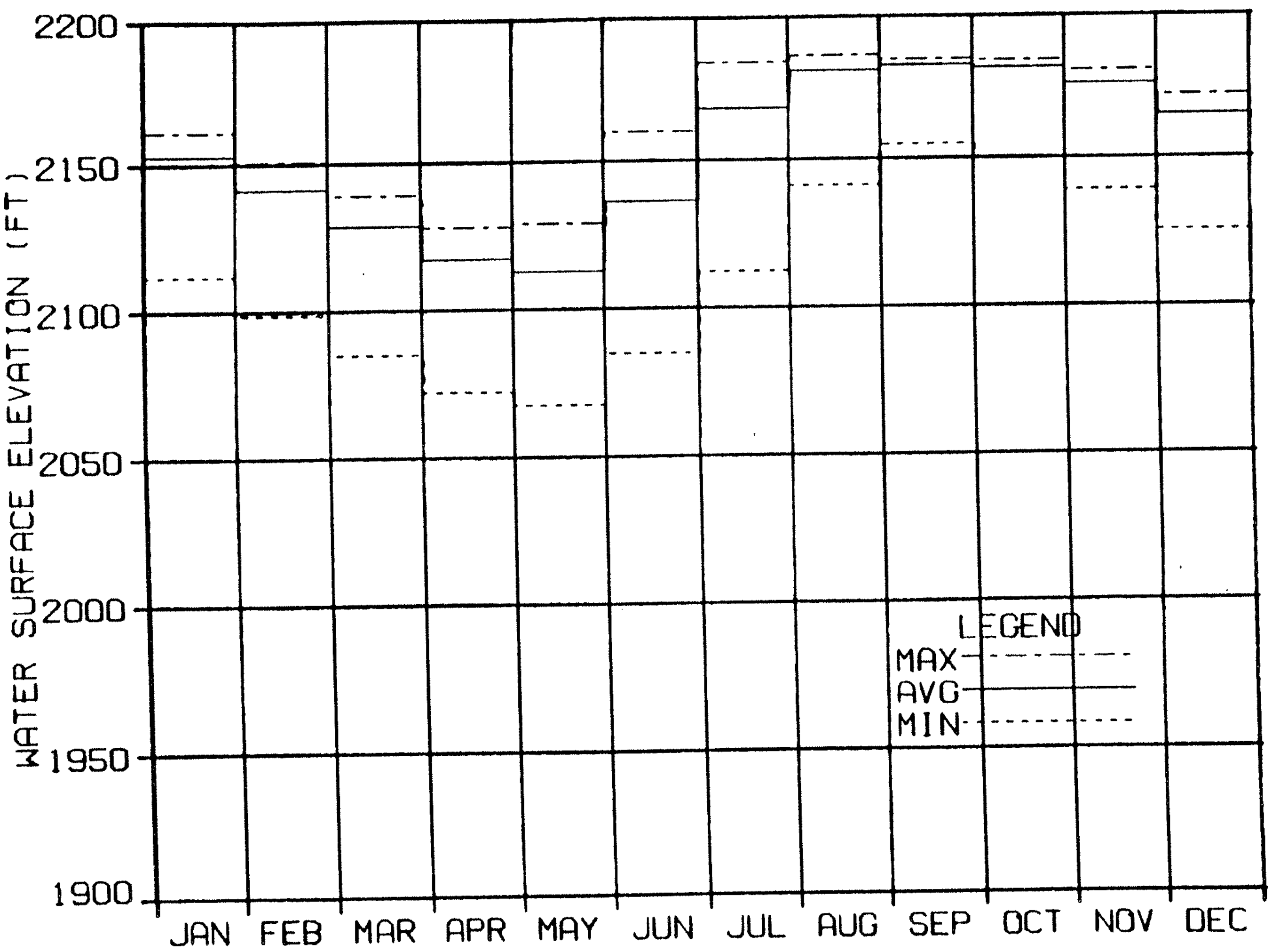
ACRES

FIGURE E.2.4.188



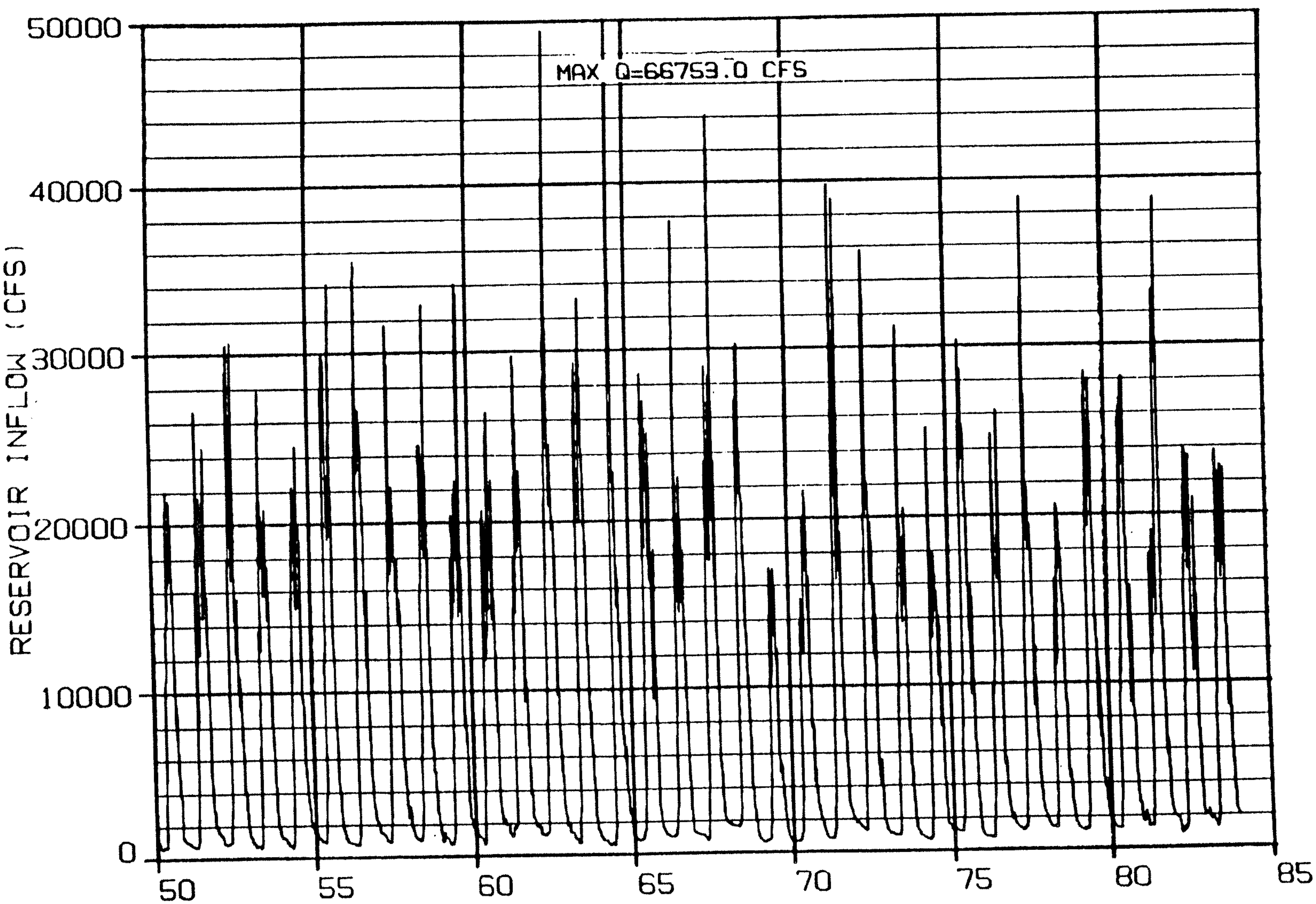
WATANA WATER SURFACE ELEVATION, EARLY STAGE III

FIGURE E.2.4.189



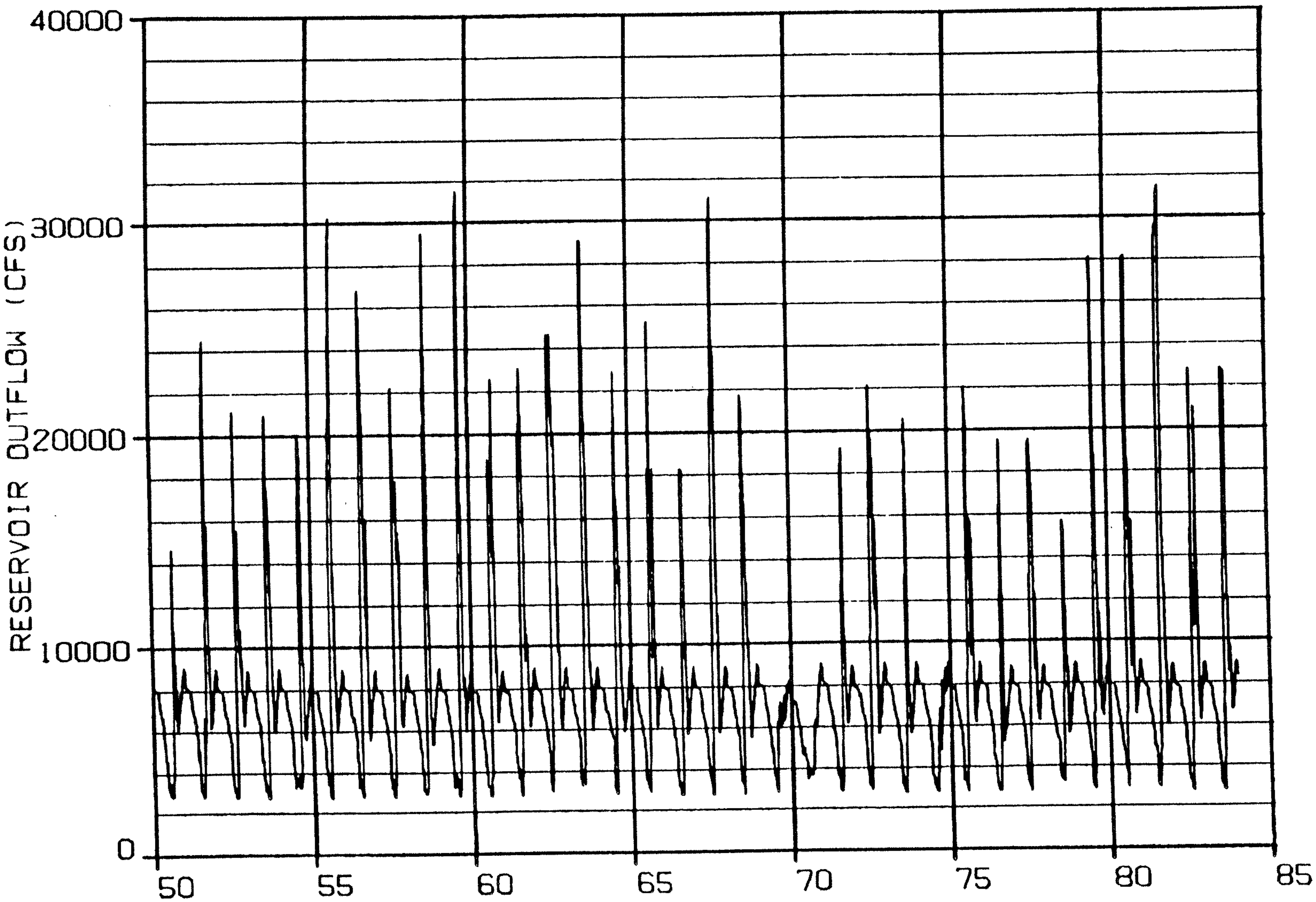
WATANA WATER SURFACE ELEVATION
MONTHLY SUMMARY, EARLY STAGE III

FIGURE E.2.4.190



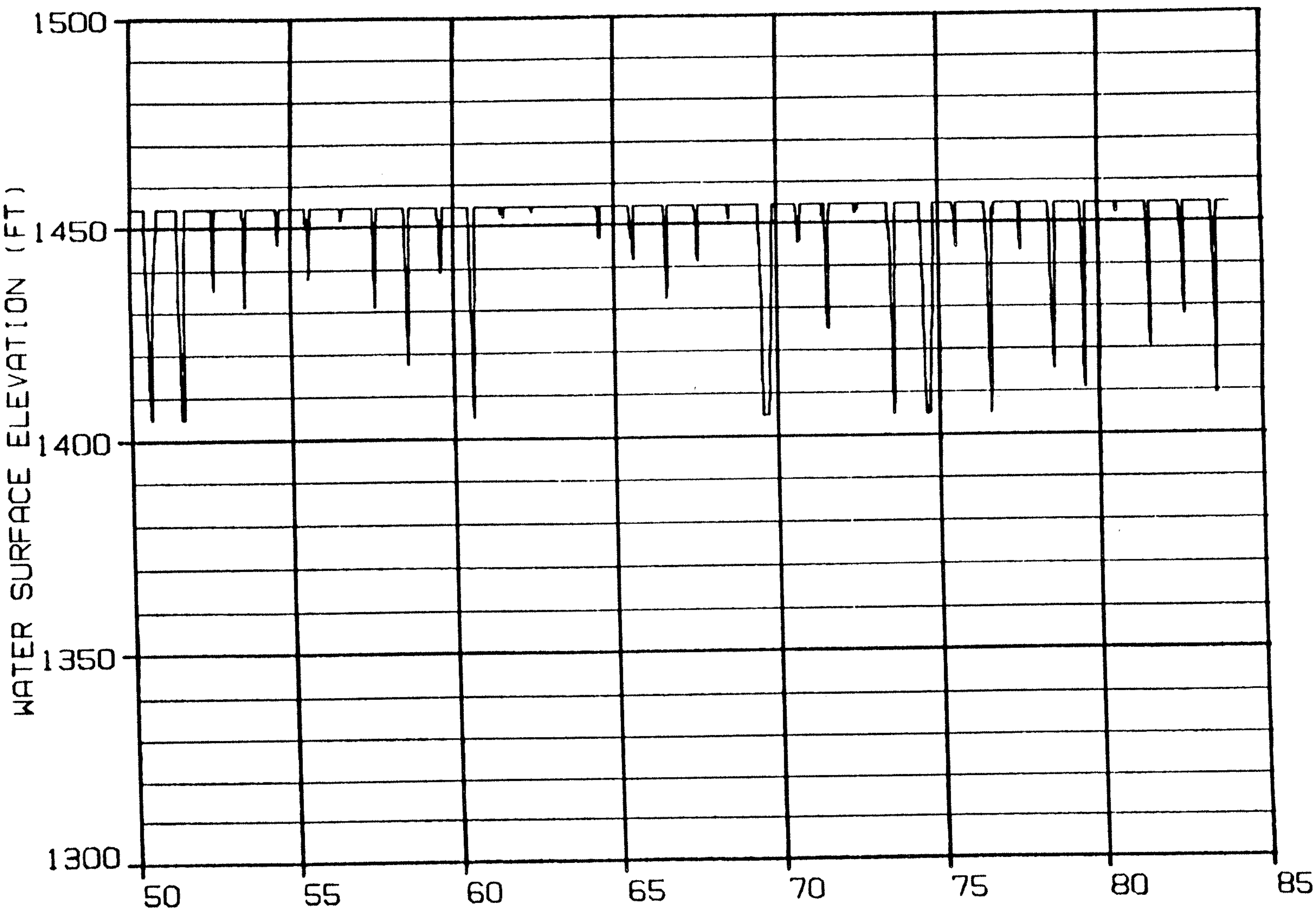
WATANA RESERVOIR INFLOW, EARLY STAGE III

FIGURE E.2.4.191



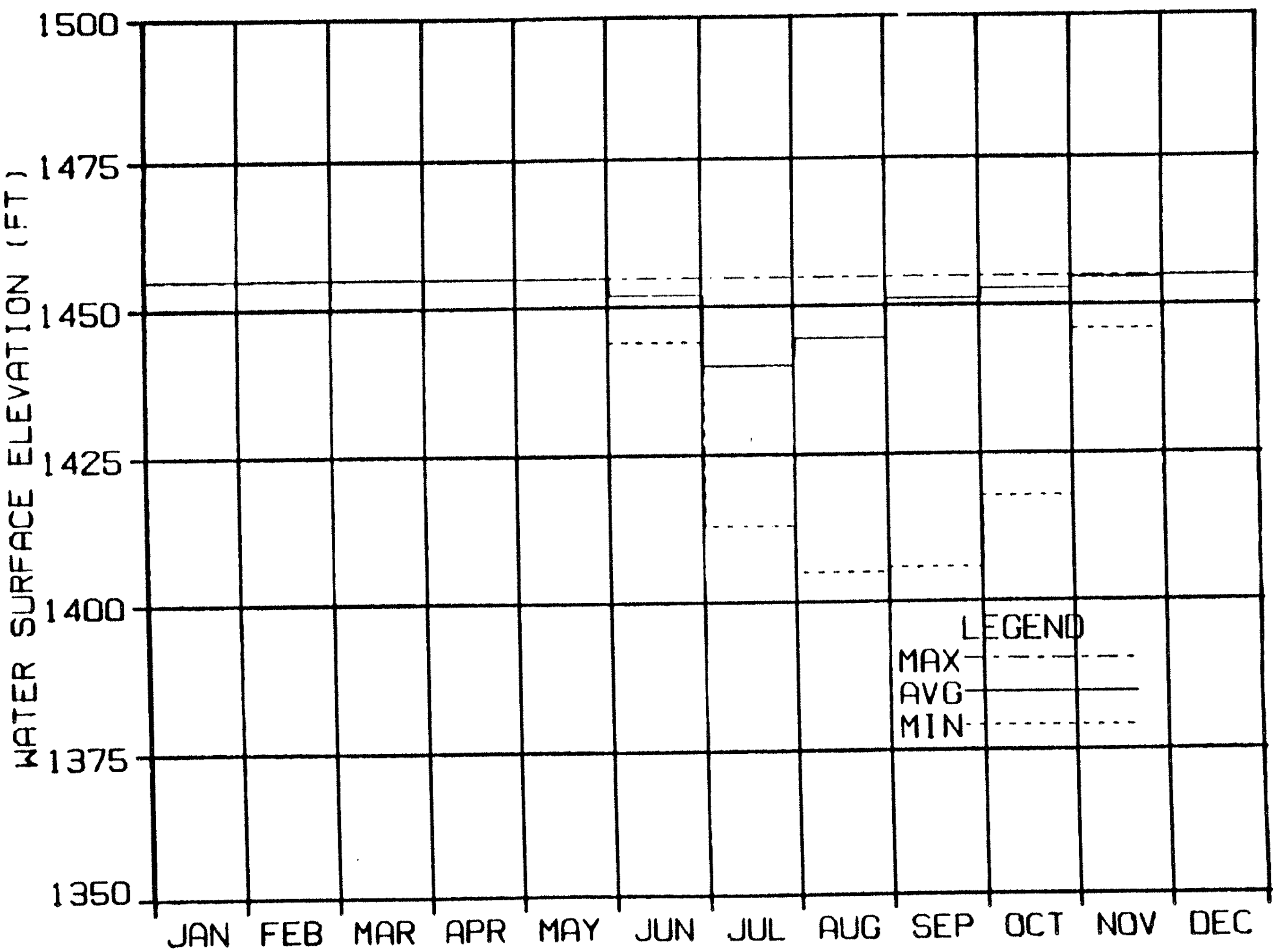
WATANA RESERVOIR OUTFLOW, EARLY STAGE III

GUR 2.4.



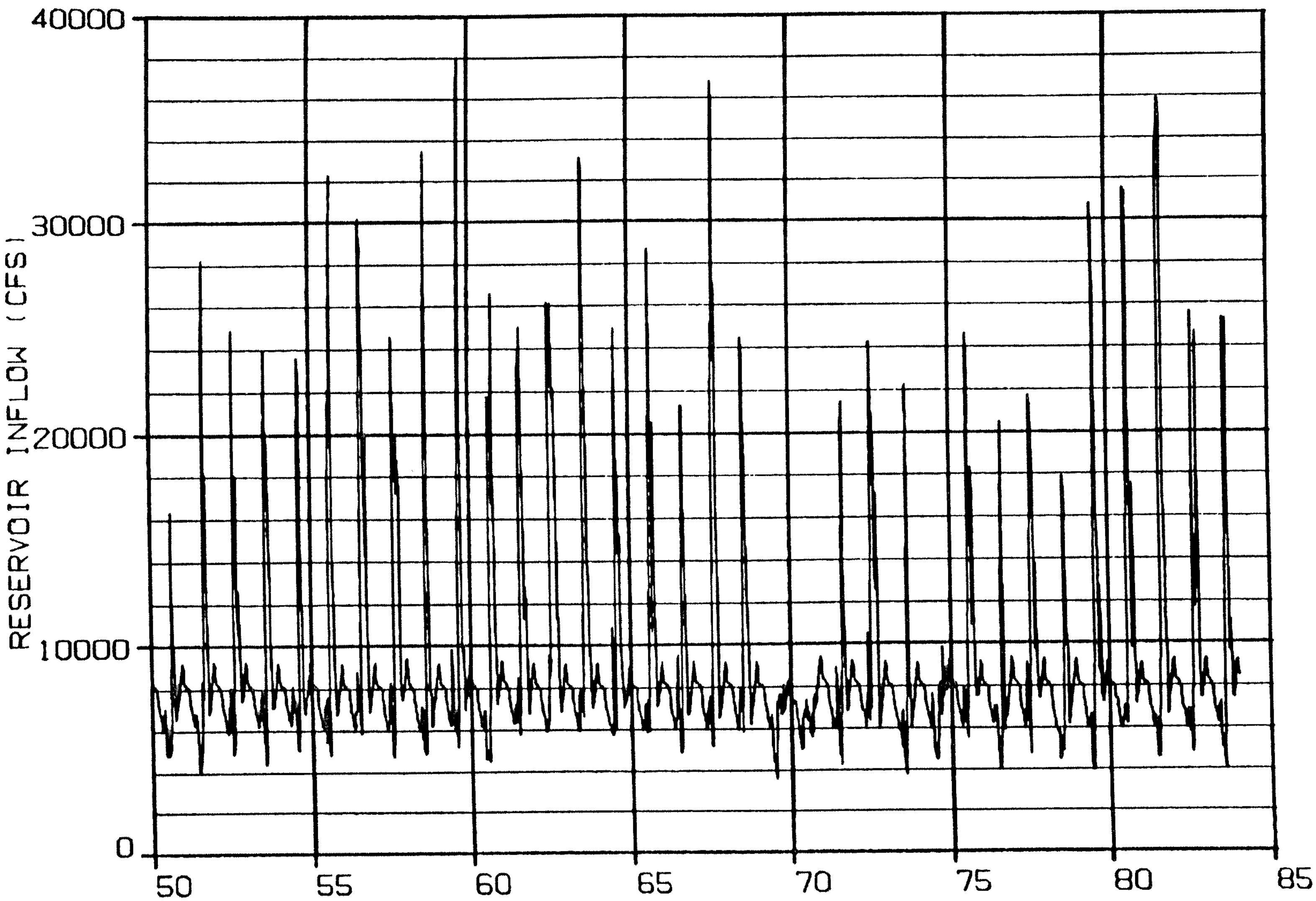
DEVIL CANYON WATER SURFACE ELEVATION, EARLY STAGE III

FIGURE E.2.4.193



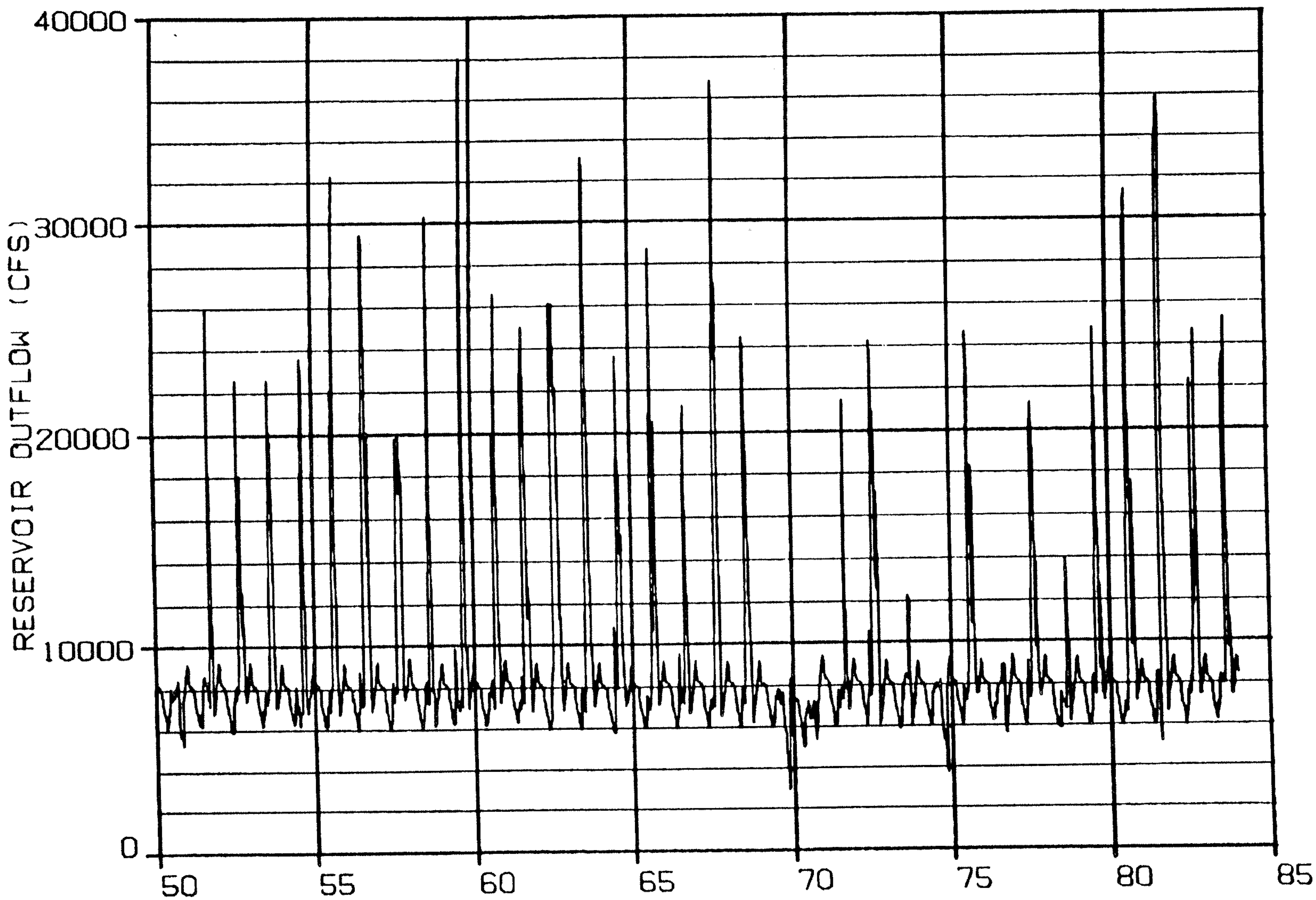
DEVIL CANYON WATER SURFACE ELEVATION
MONTHLY SUMMARY, EARLY STAGE III

FIGURE E.2.4.194



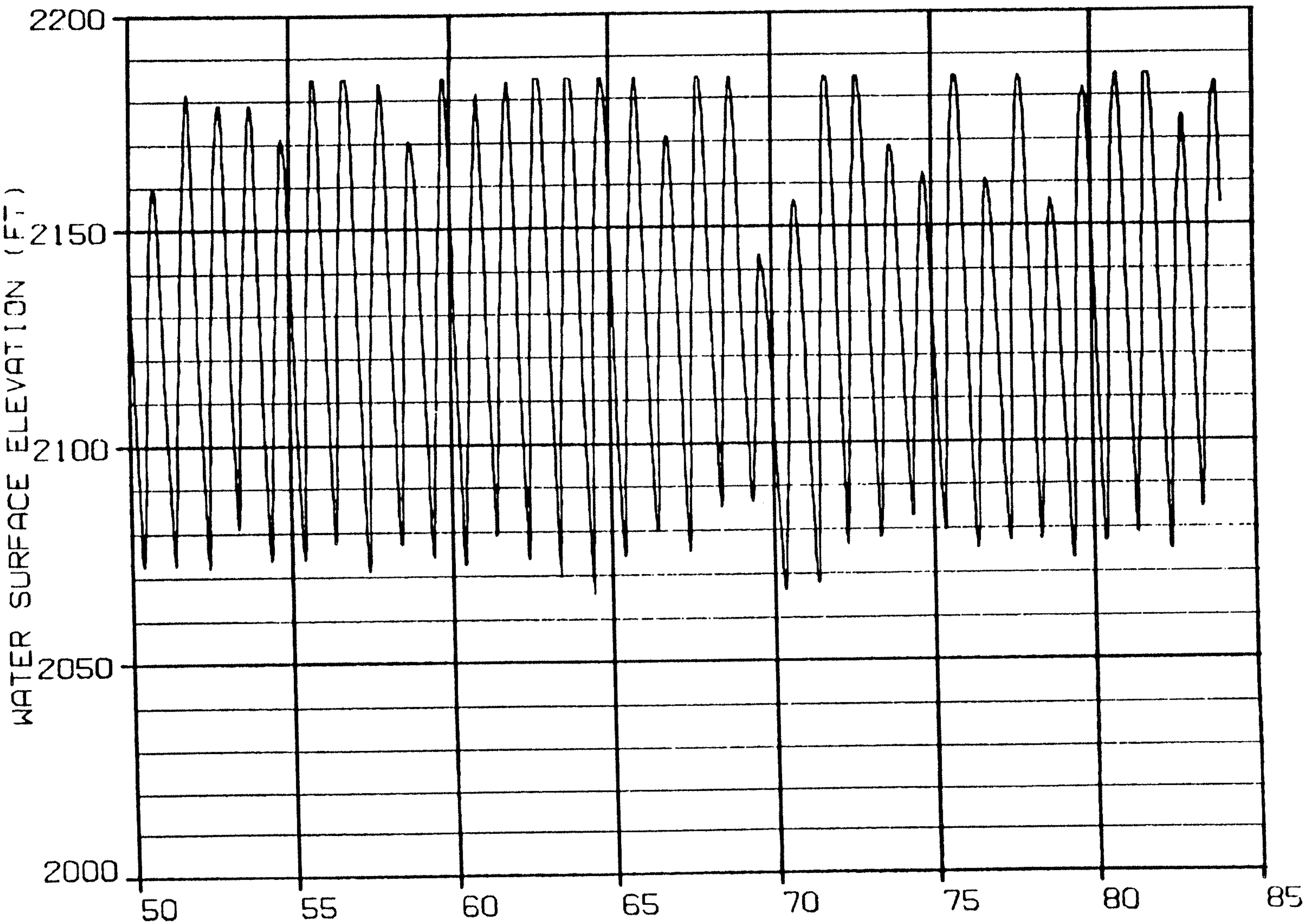
DEVIL CANYON RESERVOIR INFLOW, EARLY STAGE III

FIGURE E.2.4.195

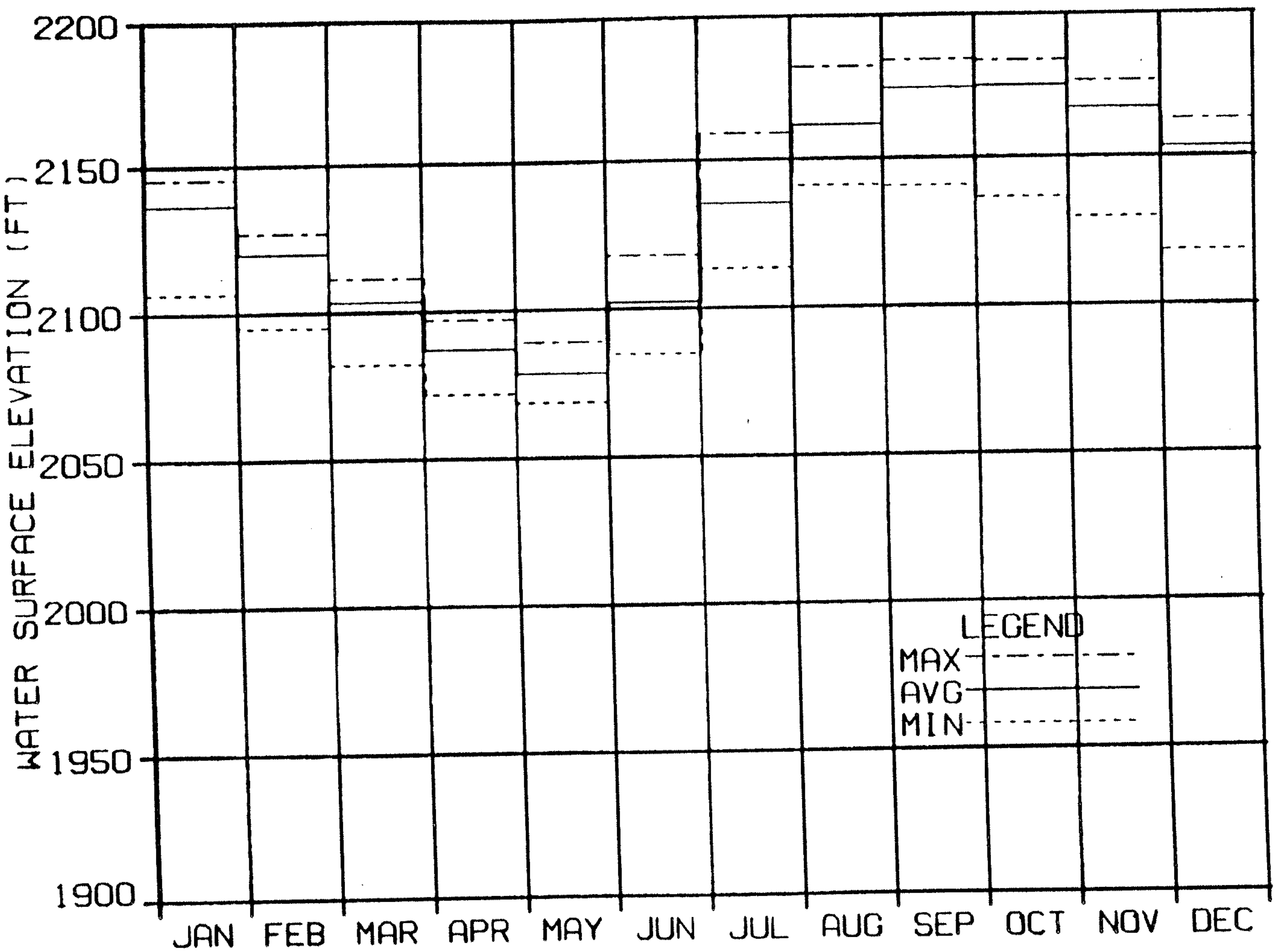


DEVIL CANYON RESERVOIR OUTFLOW, EARLY STAGE III

GUR 2.4

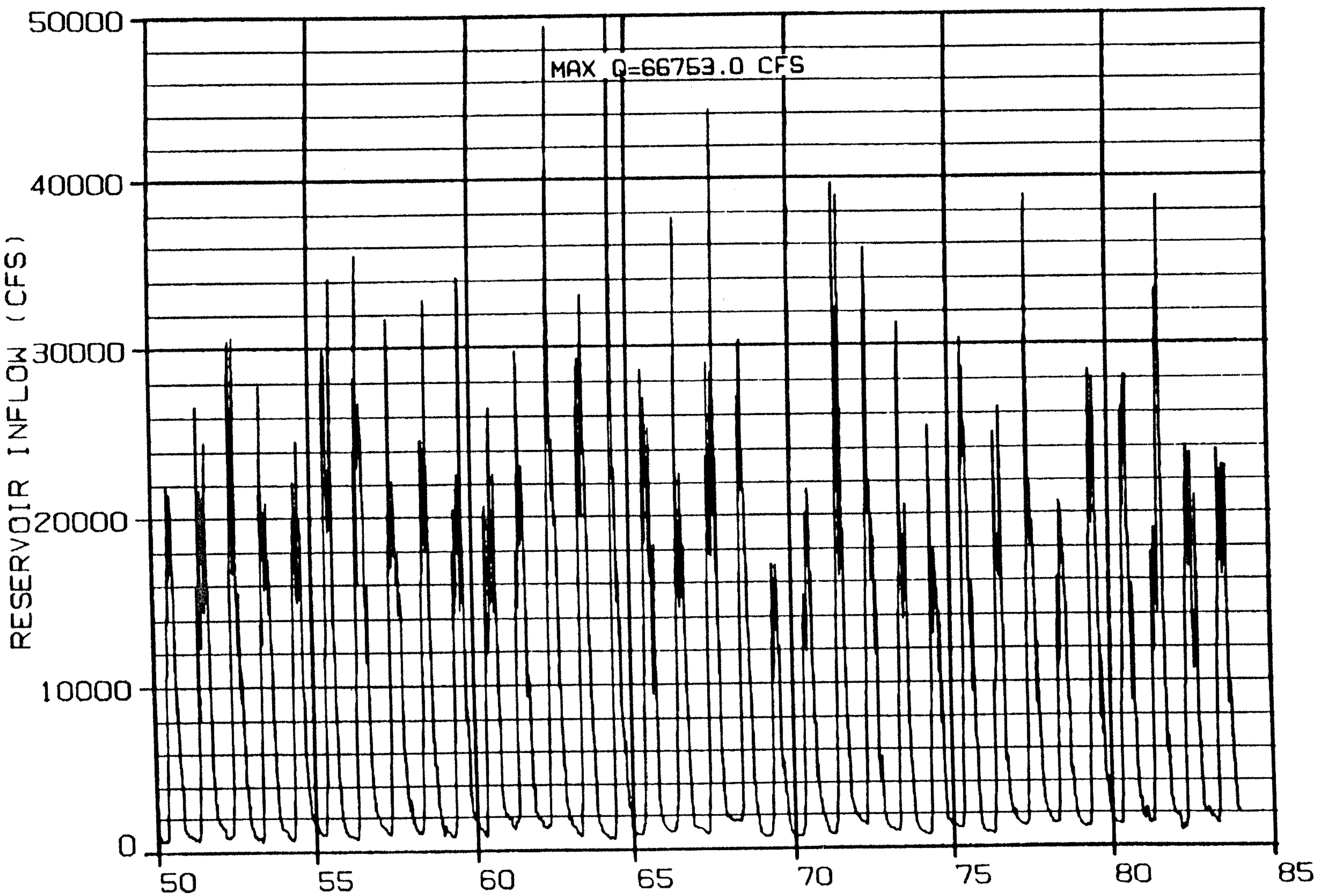


WATANA WATER SURFACE ELEVATION
LATE STAGE III



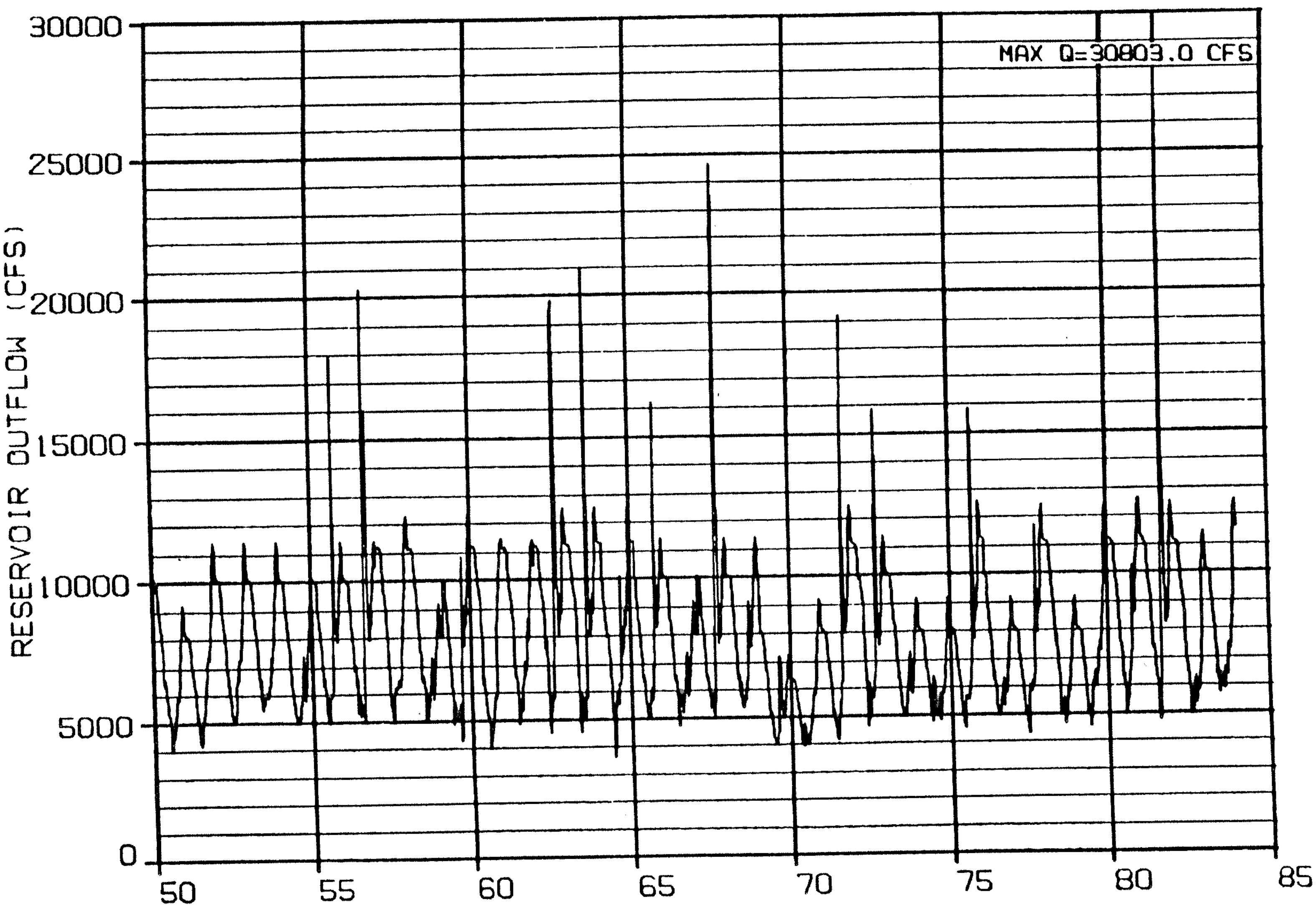
WATANA WATER SURFACE ELEVATION
MONTHLY SUMMARY LATE STAGE III

FIGURE E.2.4.198



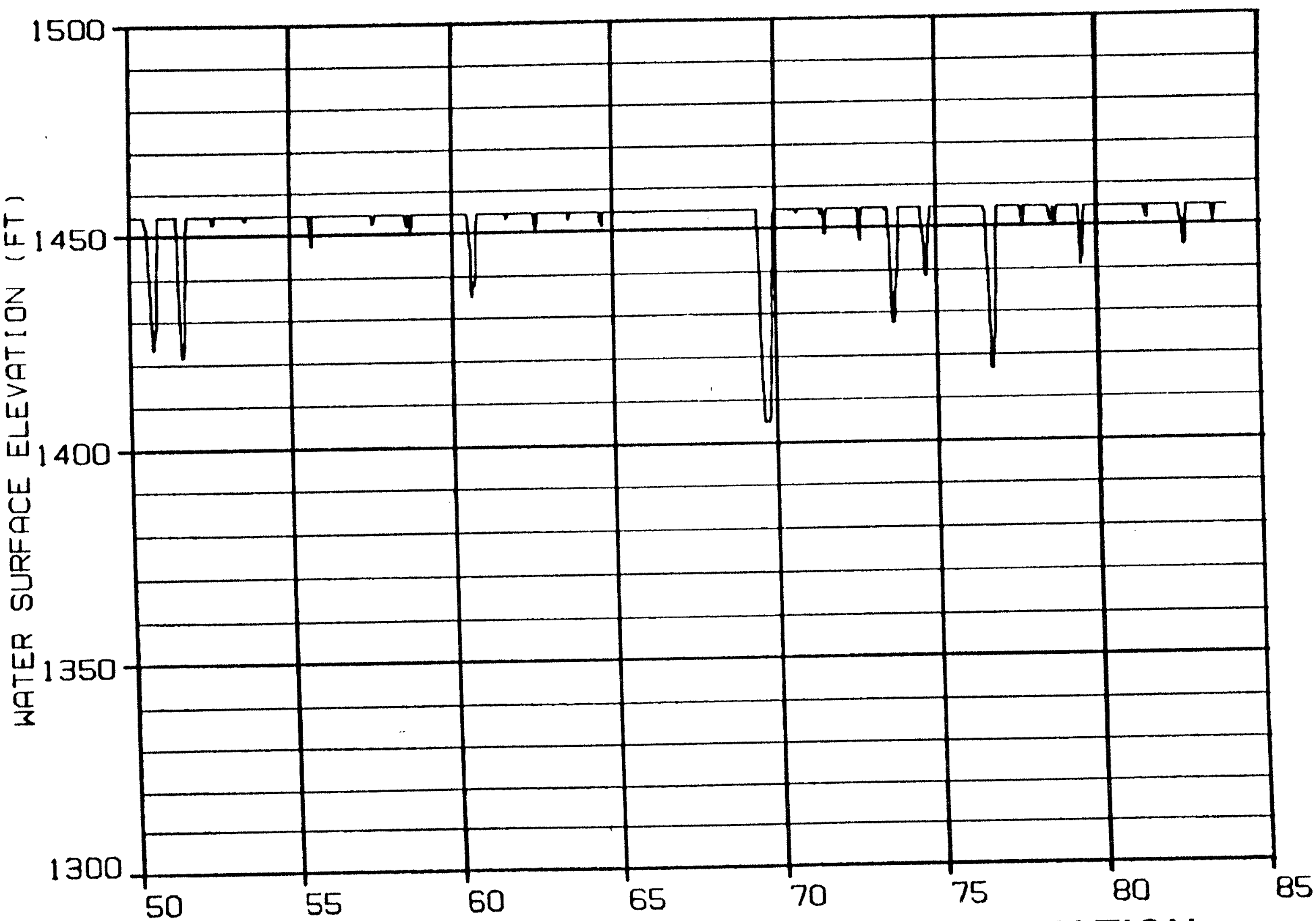
WATANA RESERVOIR INFLOW
LATE STAGE III

FIGURE E.2.4.19



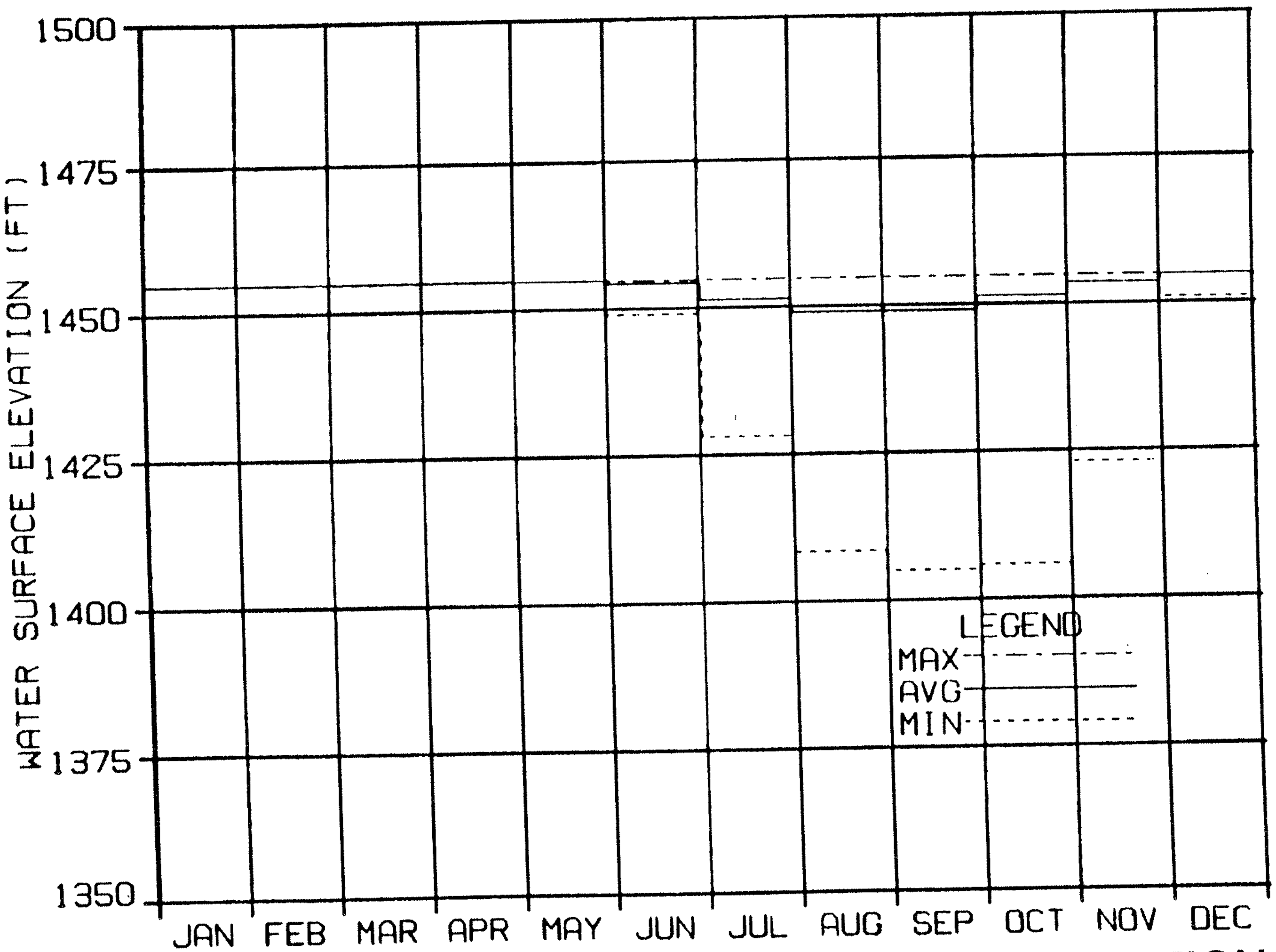
WATANA RESERVOIR OUTFLOW
LATE STAGE III

GUR 2.4



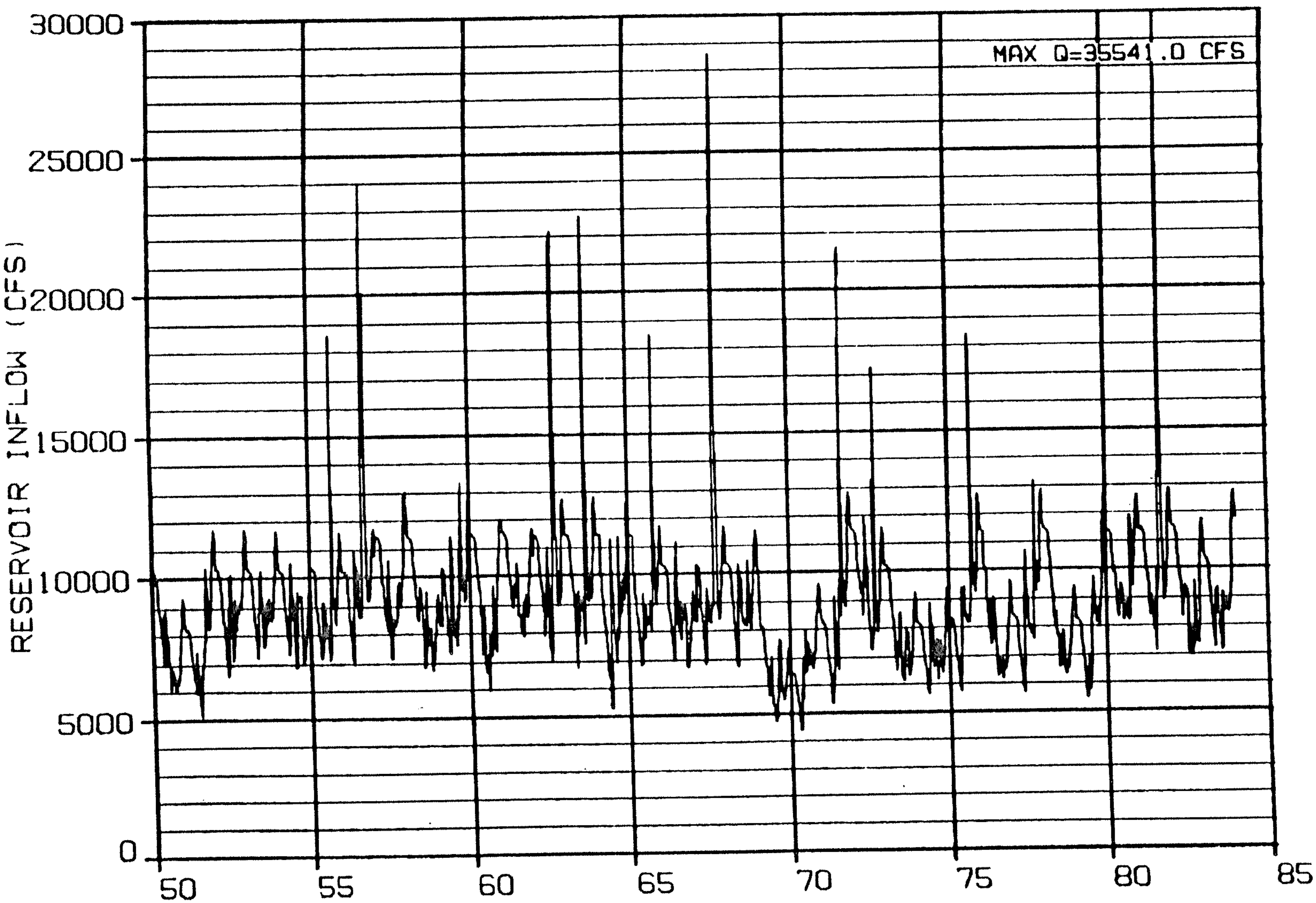
DEVIL CANYON WATER SURFACE ELEVATION
LATE STAGE III

FIGURE E.2.4.20



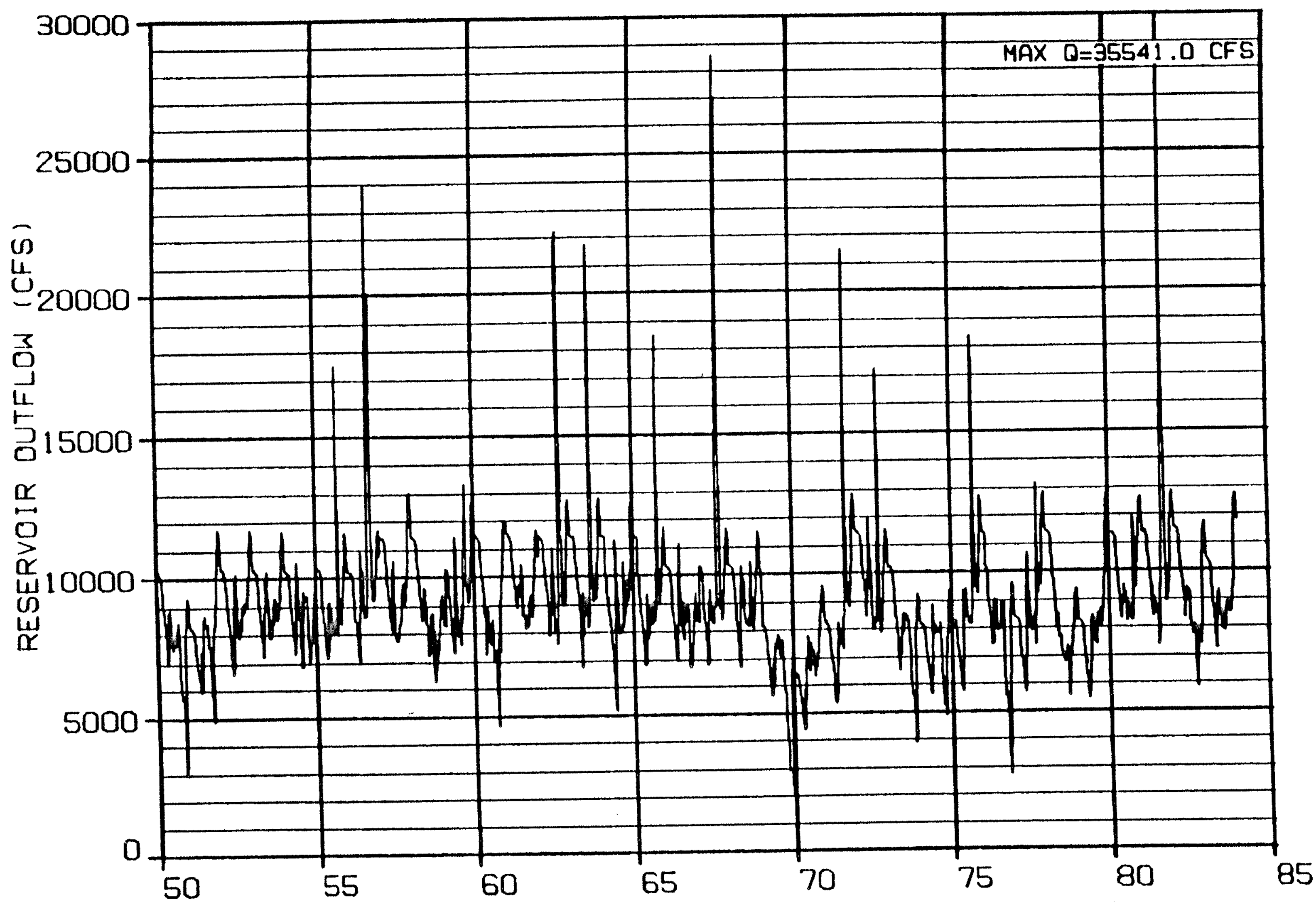
DEVIL CANYON WATER SURFACE ELEVATION
MONTHLY SUMMARY
LATE STAGE III

FIGURE E.2.4.202



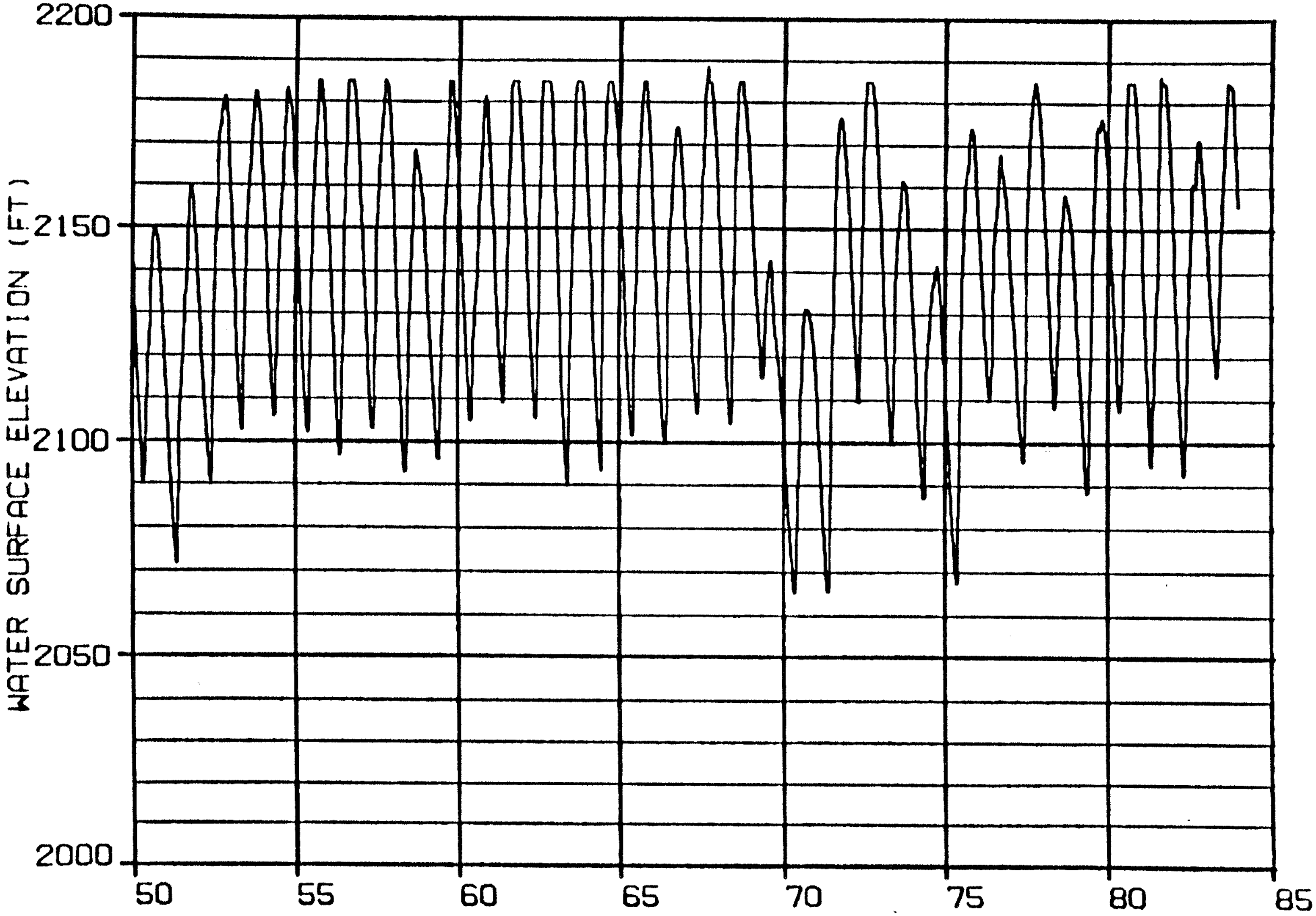
DEVIL CANYON RESERVOIR INFLOW
LATE STAGE III

FIGURE E.2.4.203



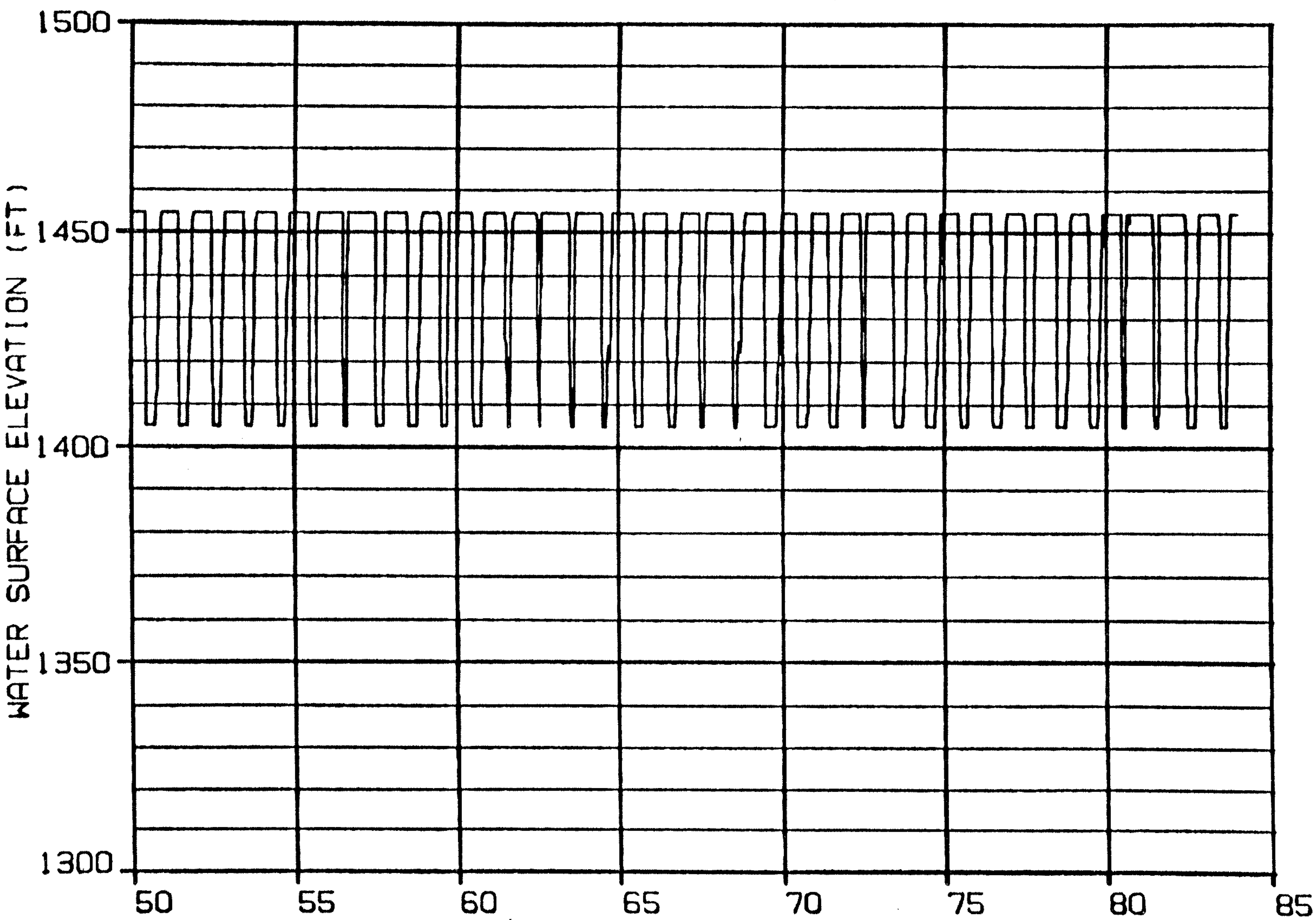
DEVIL CANYON RESERVOIR OUTFLOW
LATE STAGE III

FIGURE E.2...

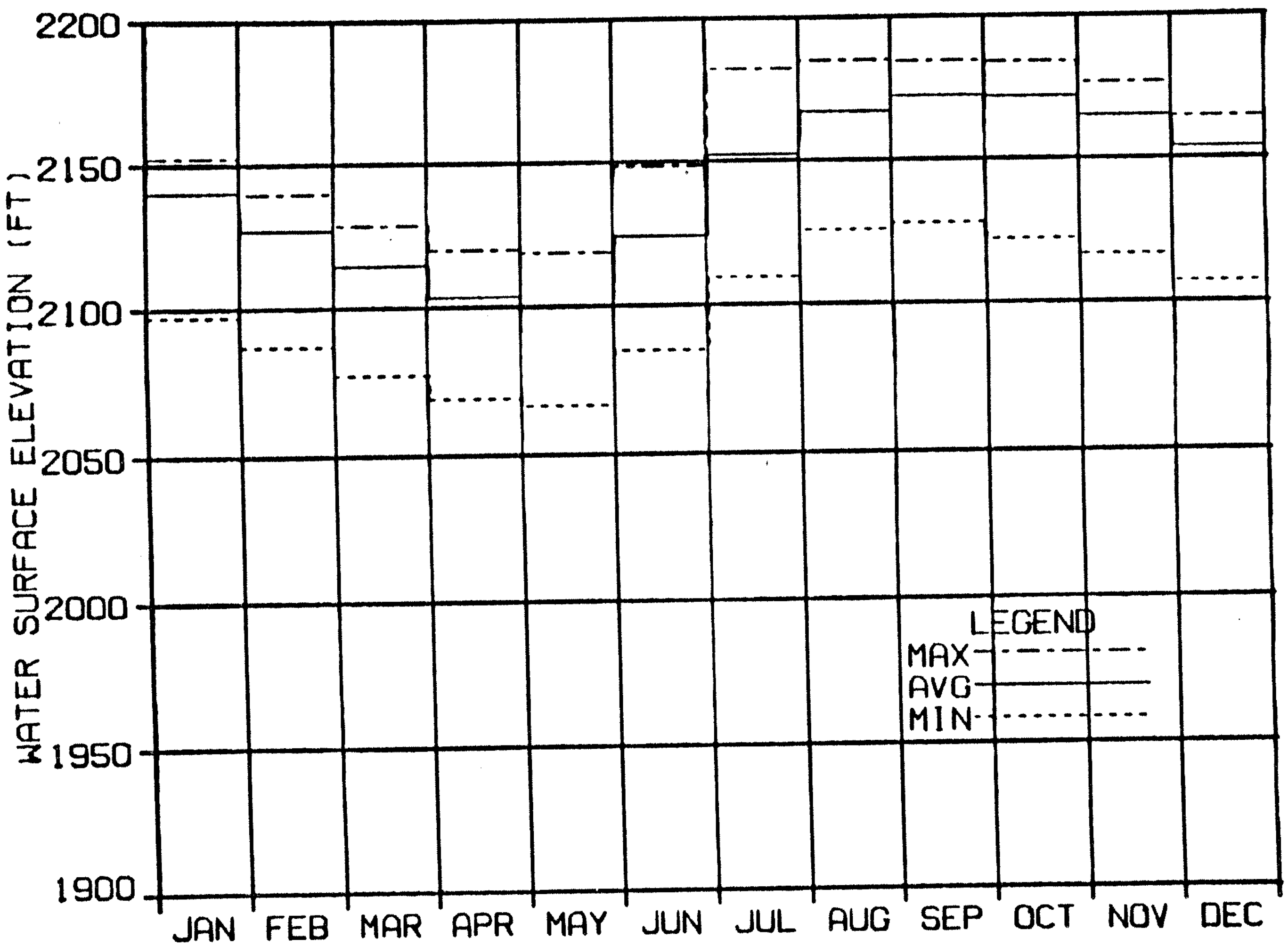


WATANA WATER SURFACE ELEVATION
E-I, LATE STAGE III

FIGURE E.2.4.205

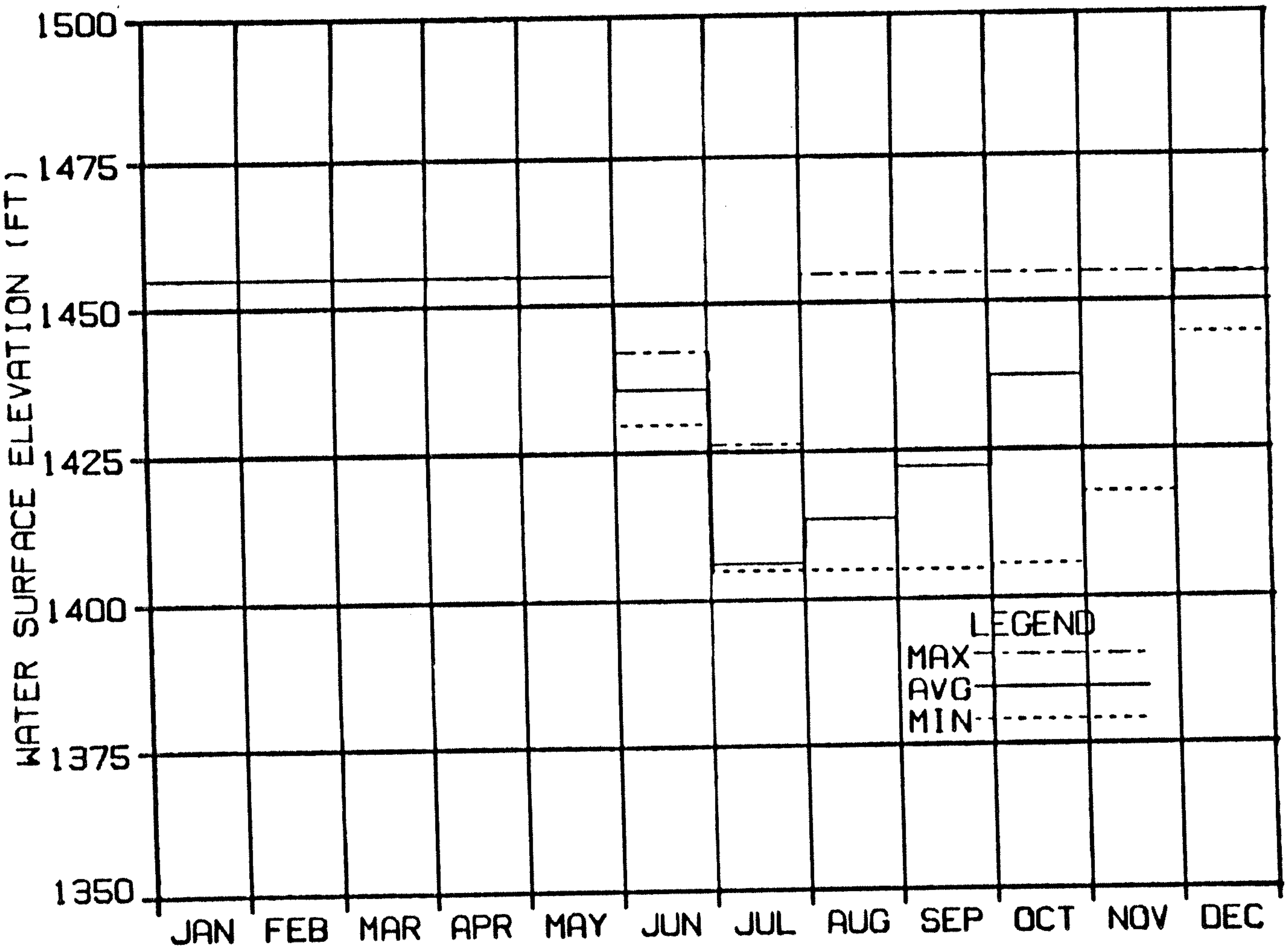


DEVIL CANYON WATER SURFACE ELEVATION
E-I, LATE STAGE III



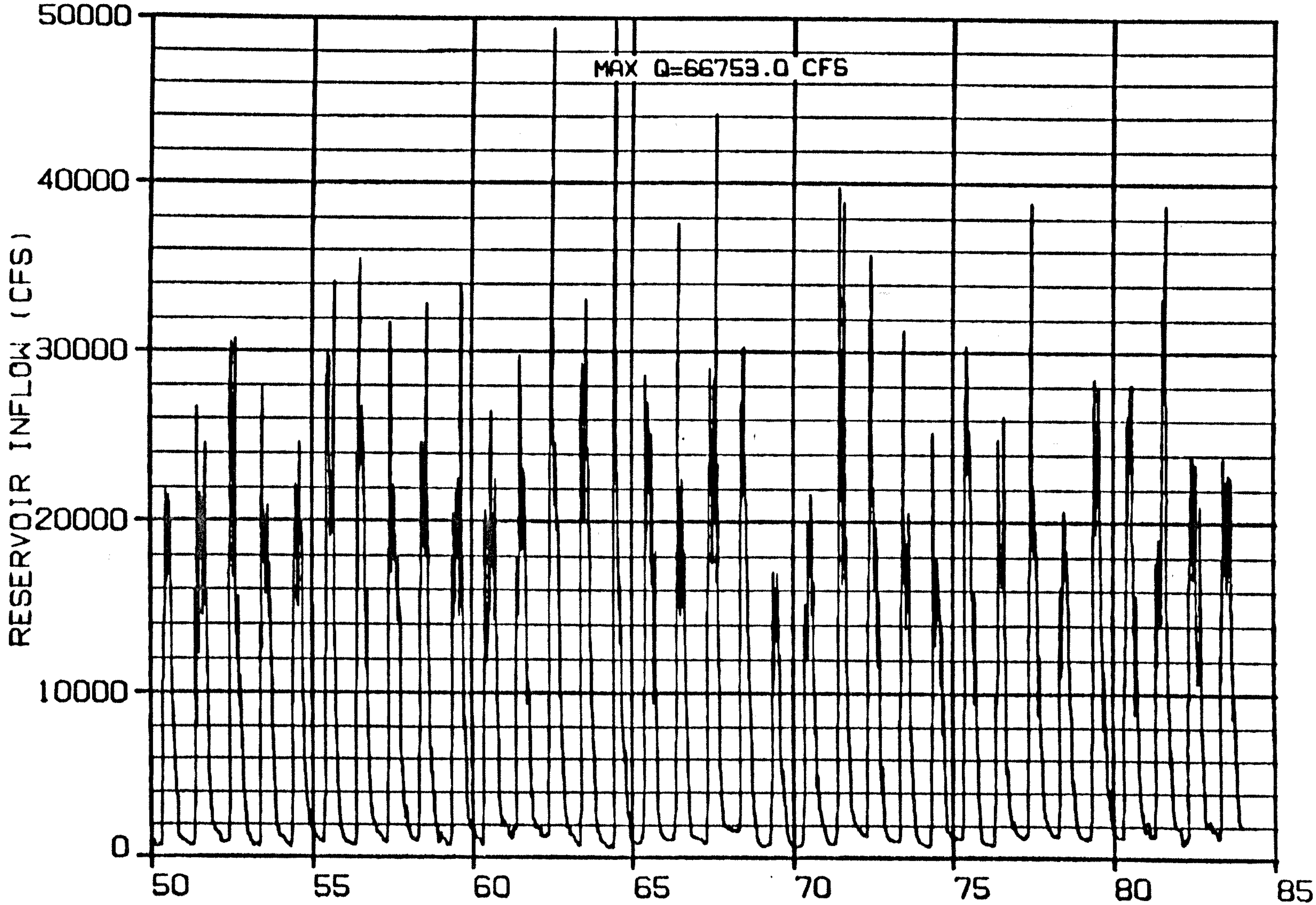
WATANA WATER SURFACE ELEVATION
MONTHLY SUMMARY
E-I, LATE STAGE III

FIGURE E.2.4. 207



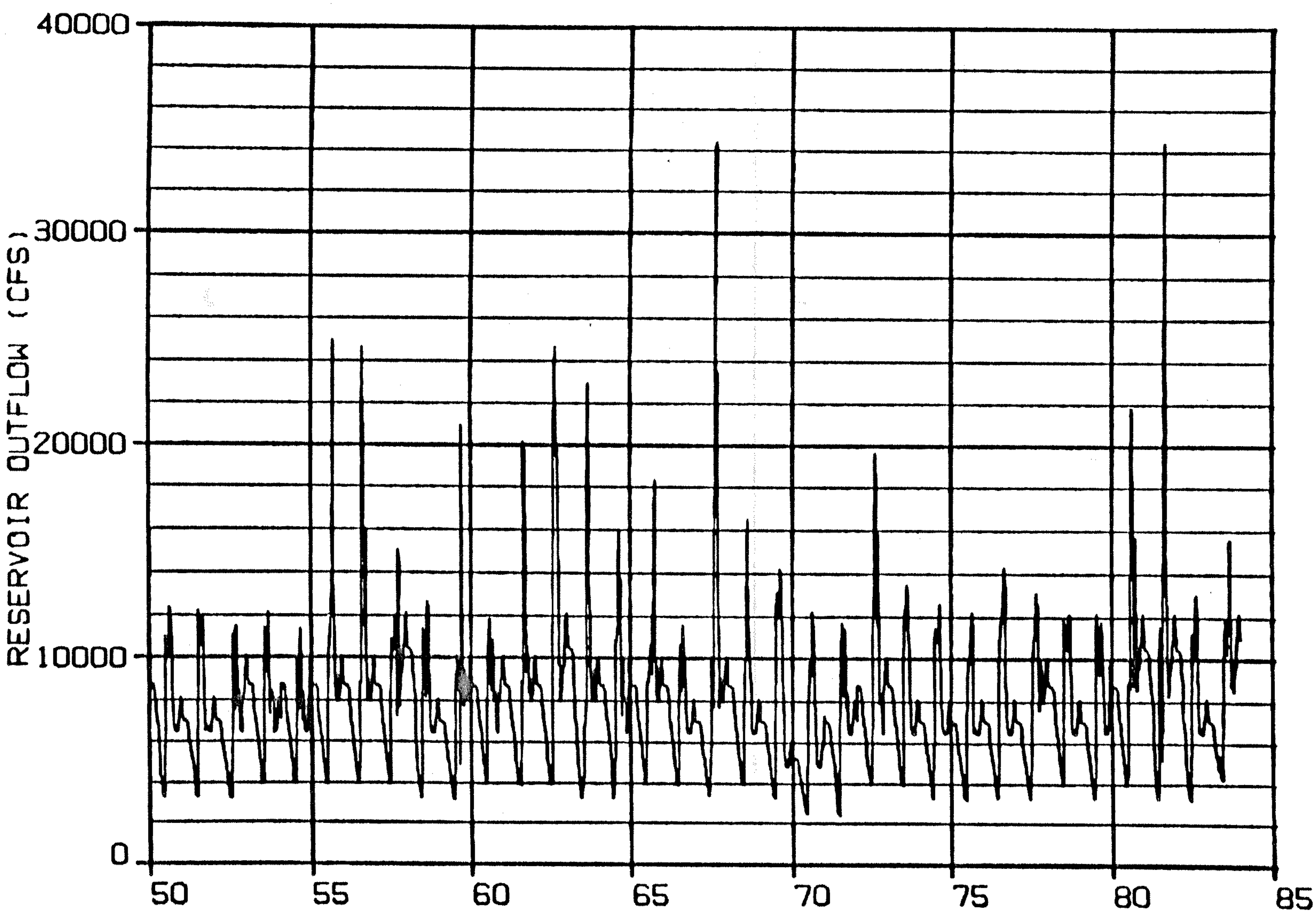
DEVIL CANYON WATER SURFACE ELEVATION
MONTHLY SUMMARY
E-I, LATE STAGE III

FIGURE E.2.4.208



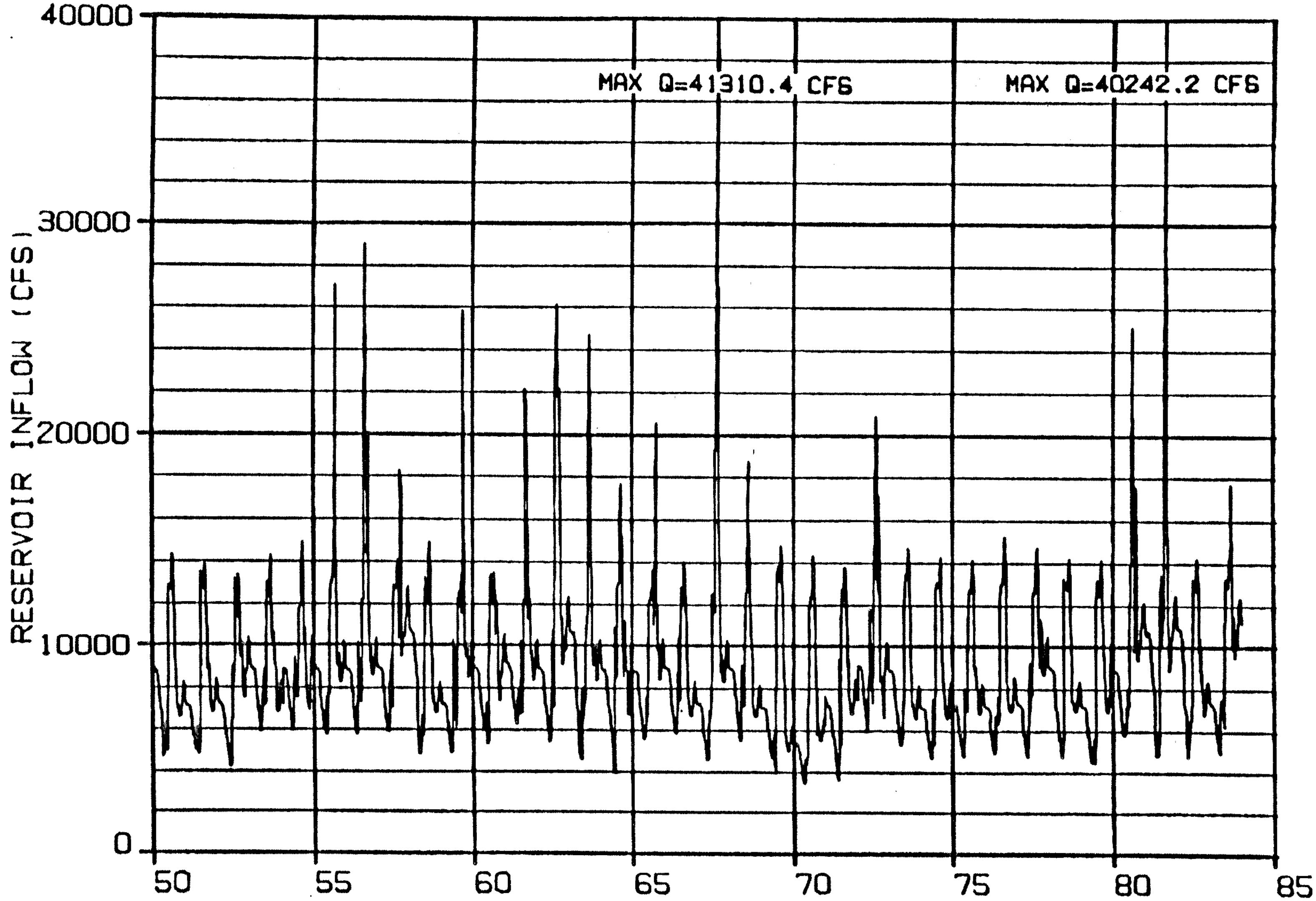
WATANA RESERVOIR INFLOW
E-I, LATE STAGE III

FIGURE E.2.4.209



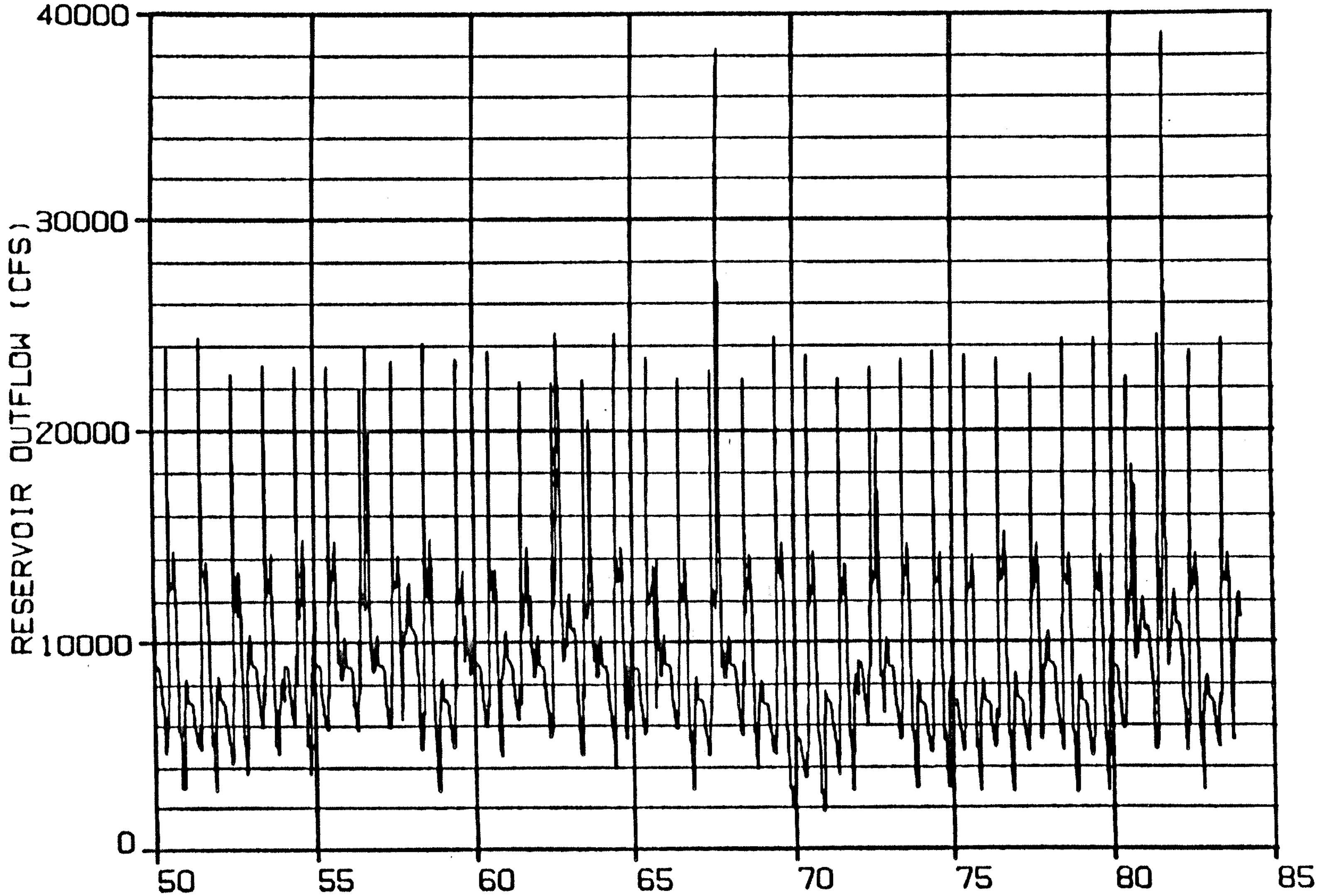
WATANA RESERVOIR OUTFLOW
E-I, LATE STAGE III

IGU E.2. 0



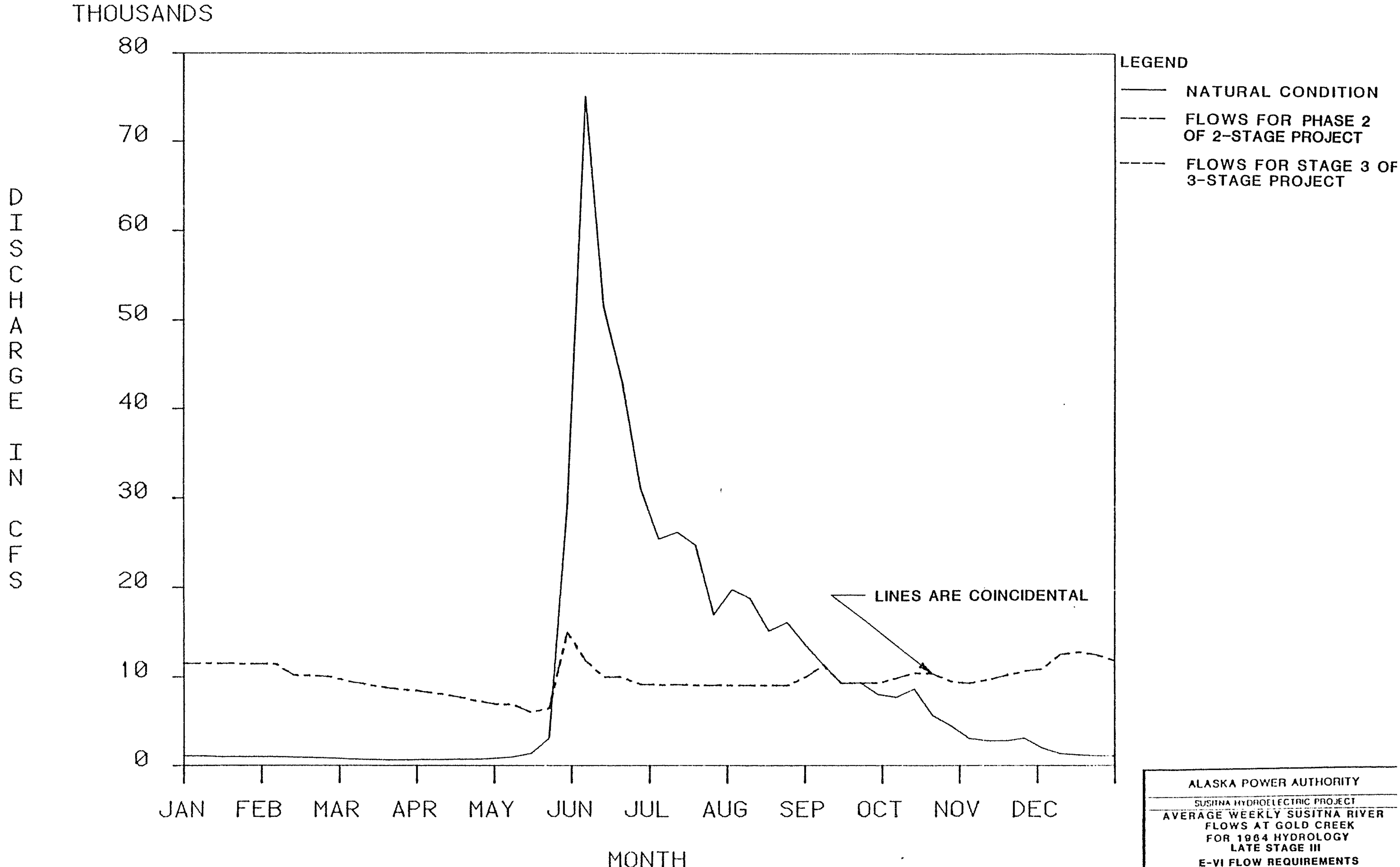
DEVIL CANYON RESERVOIR INFLOW
E-I, LATE STAGE III

FIGURE E.2.4.211



DEVIL CANYON RESERVOIR OUTFLOW
E-I, LATE STAGE III

FIGURE [illegible].21



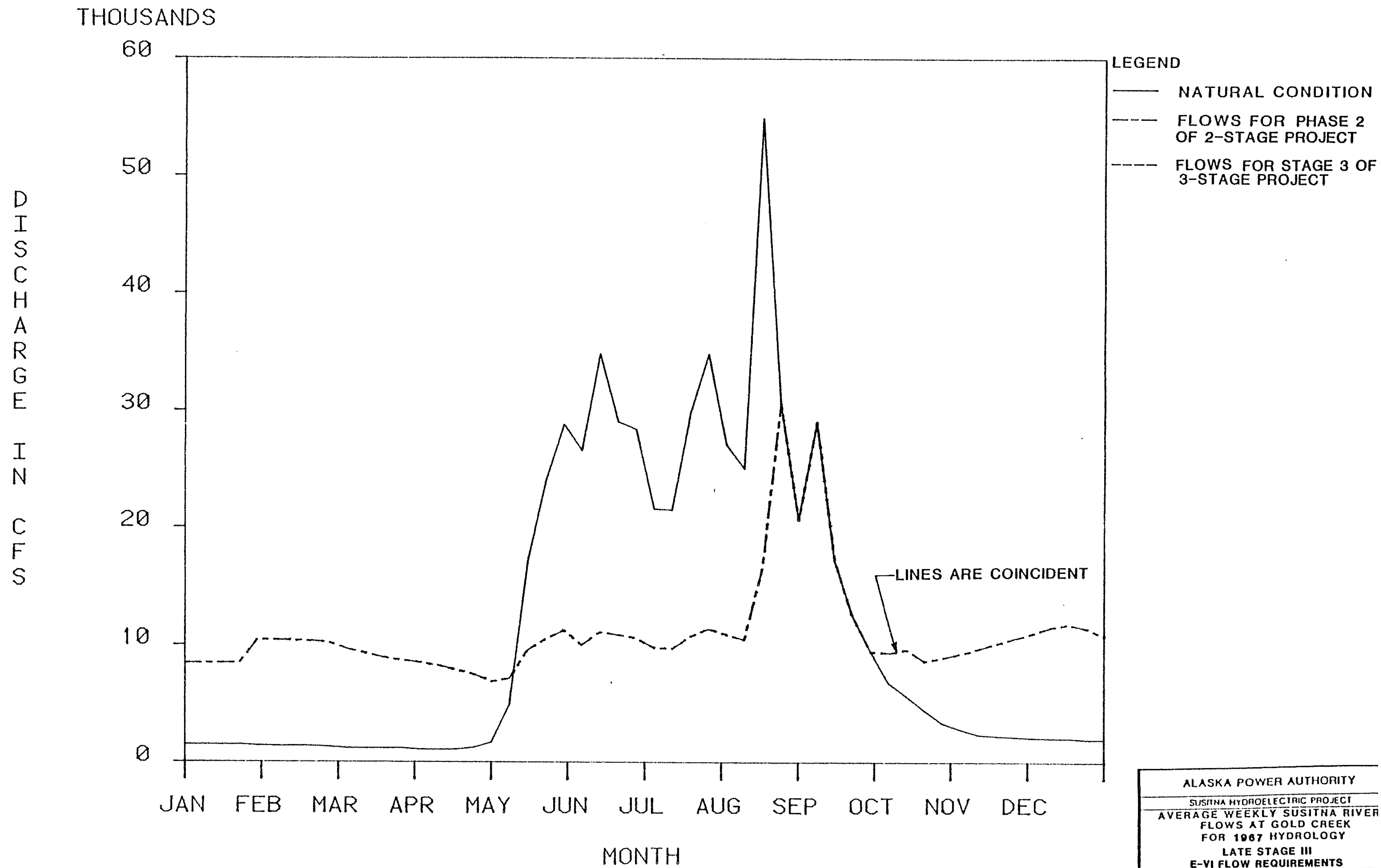
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1964 HYDROLOGY LATE STAGE III

E-VI FLOW REQUIREMENTS

FIGURE E.2.4.213



ALASKA POWER AUTHORITY

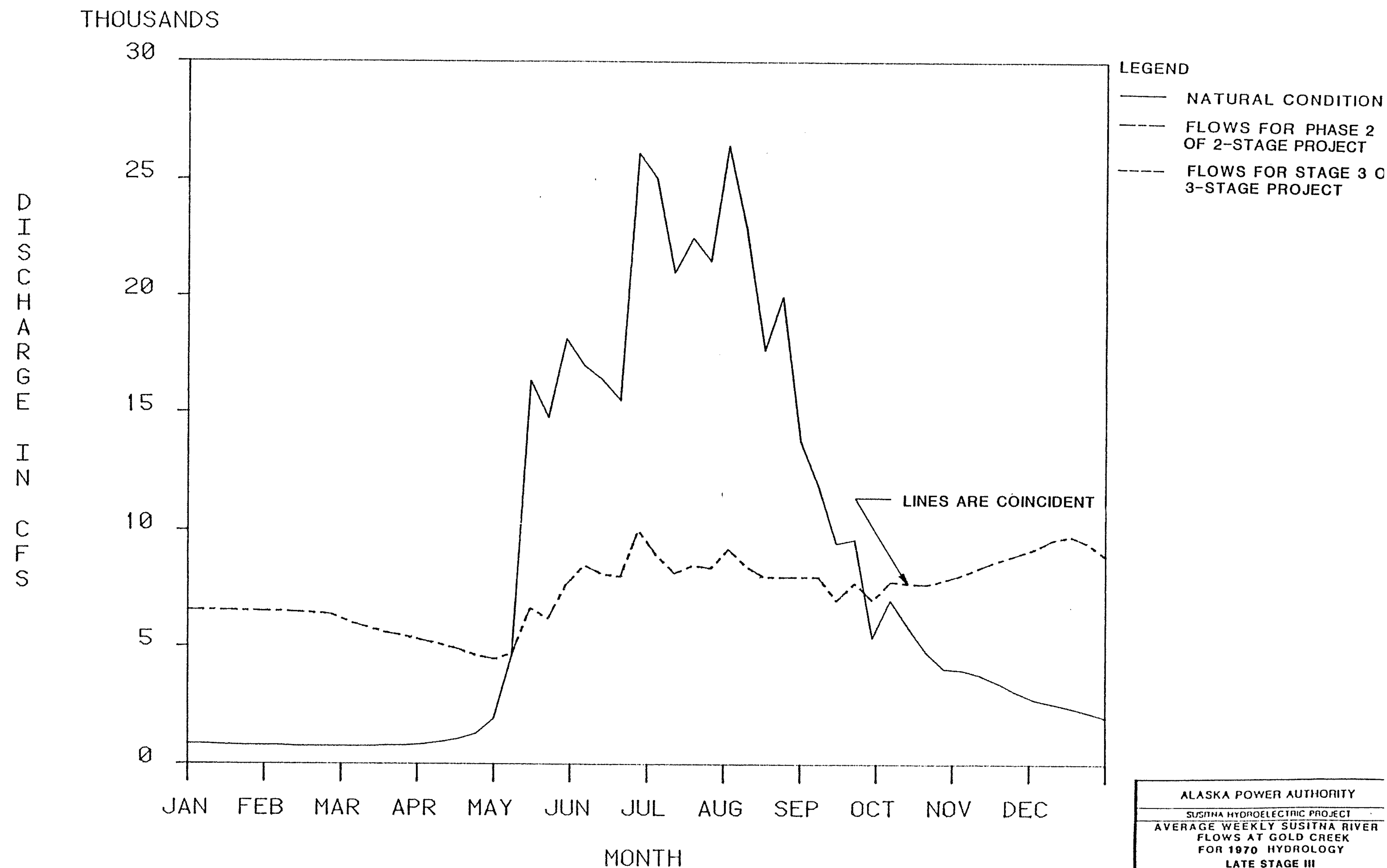
SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1967 HYDROLOGY

LATE STAGE III

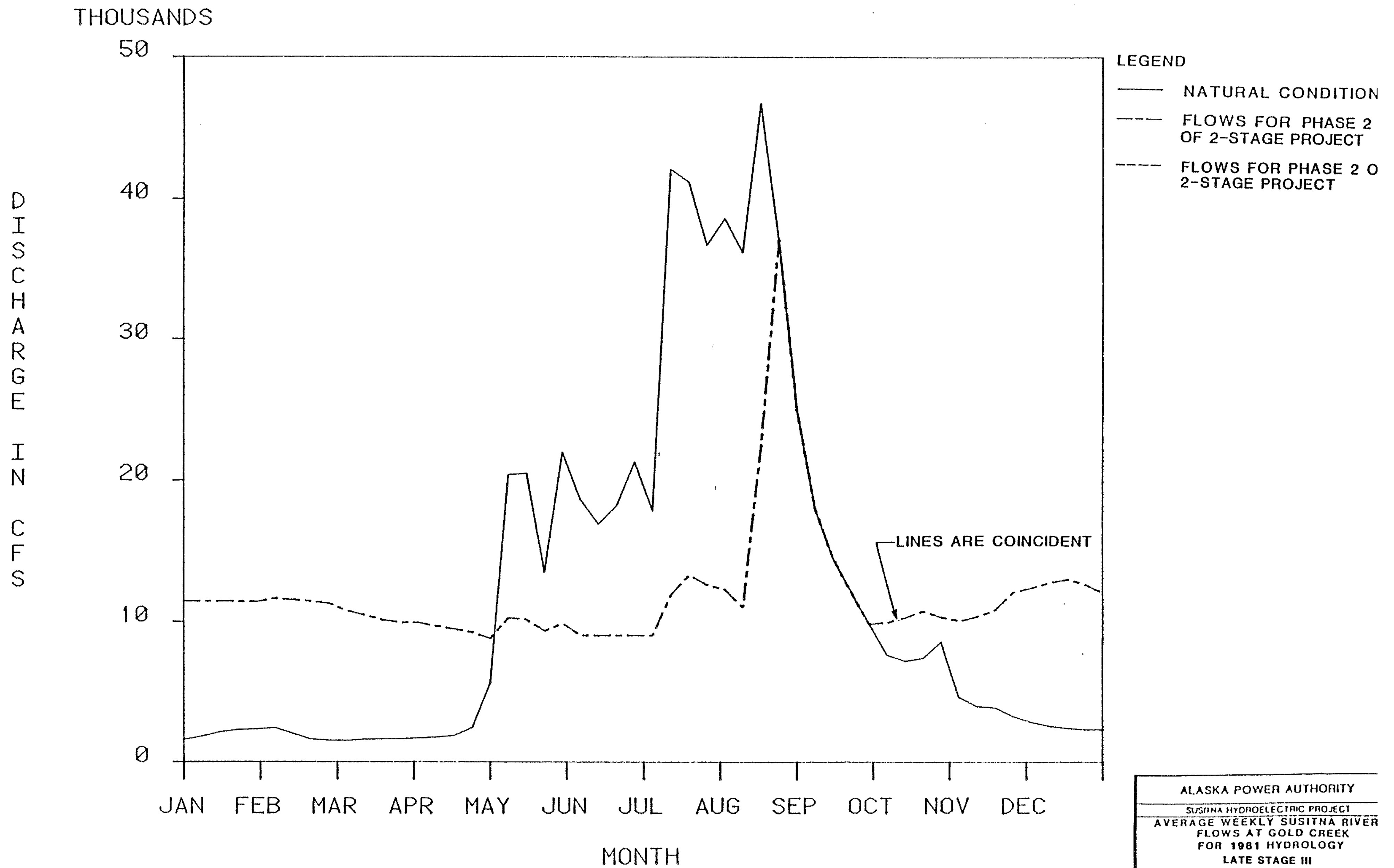
E-VI FLOW REQUIREMENTS

FIGURE E.2.4.214



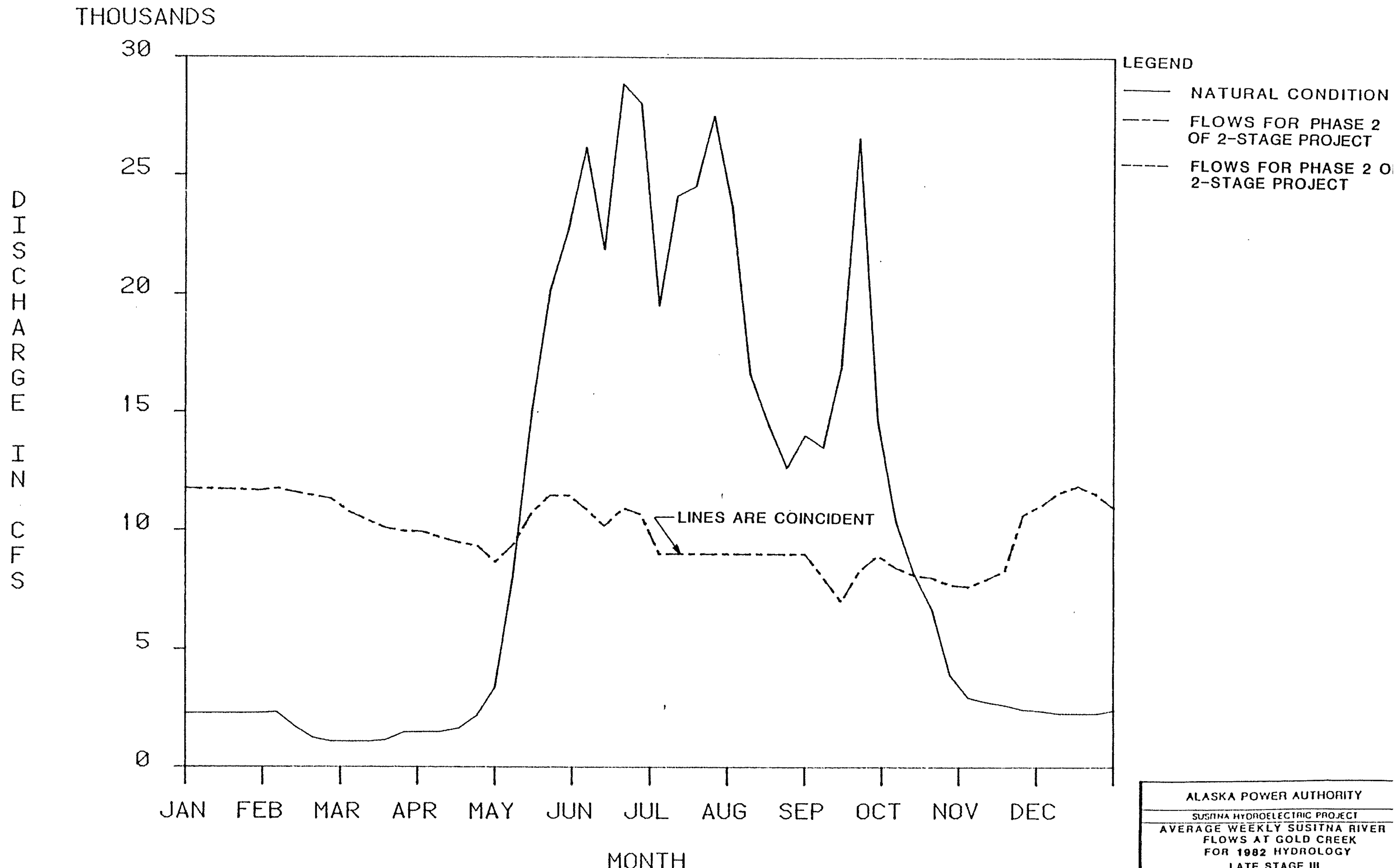
ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1970 HYDROLOGY
LATE STAGE III
E-VI FLOW REQUIREMENTS

FIGURE E.2.4. 215



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1981 HYDROLOGY
LATE STAGE III
E-VI FLOW REQUIREMENTS

FIGURE E.2.4.216

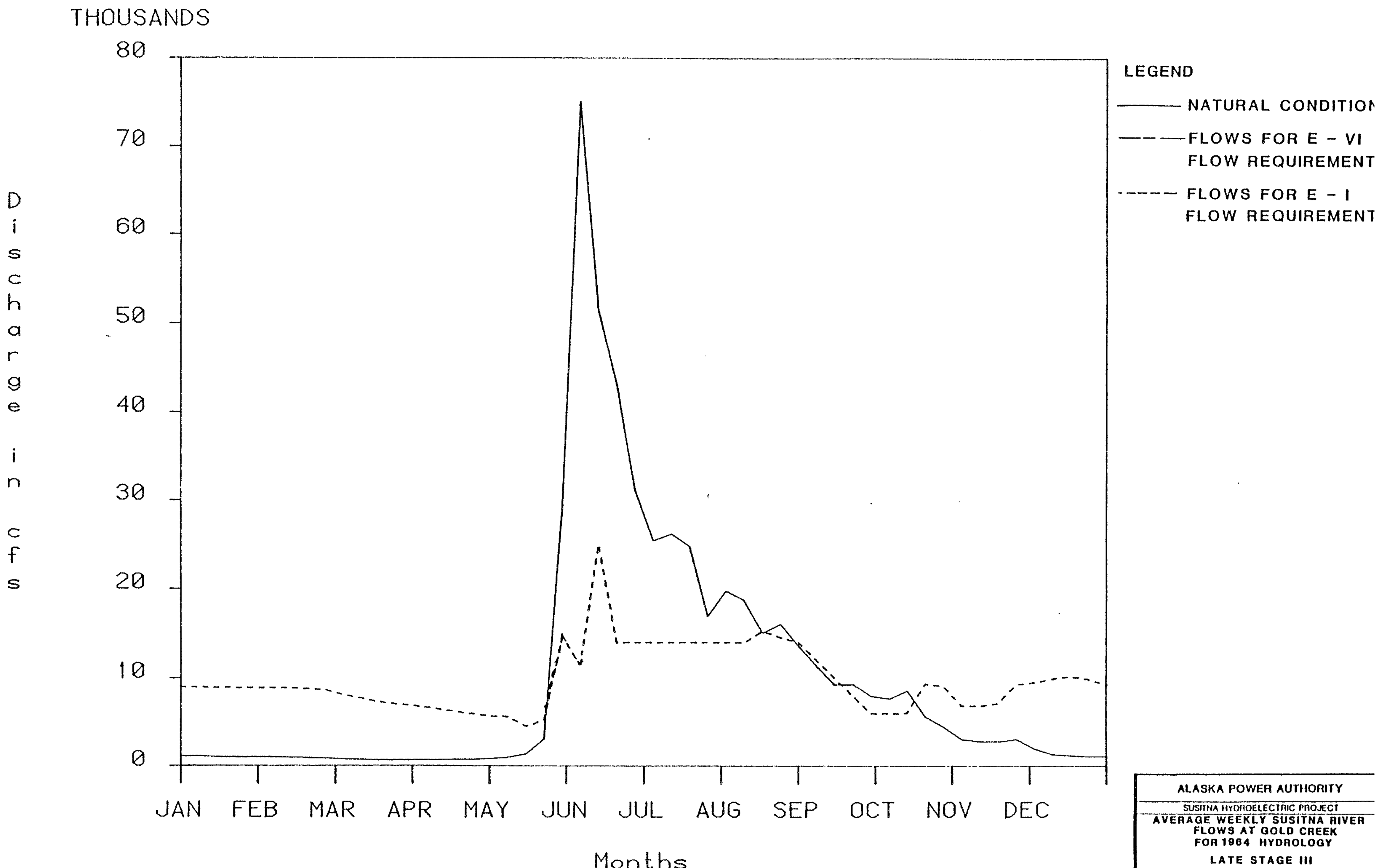


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1982 HYDROLOGY LATE STAGE III E-VI FLOW REQUIREMENTS

FIGURE E.2.4.217



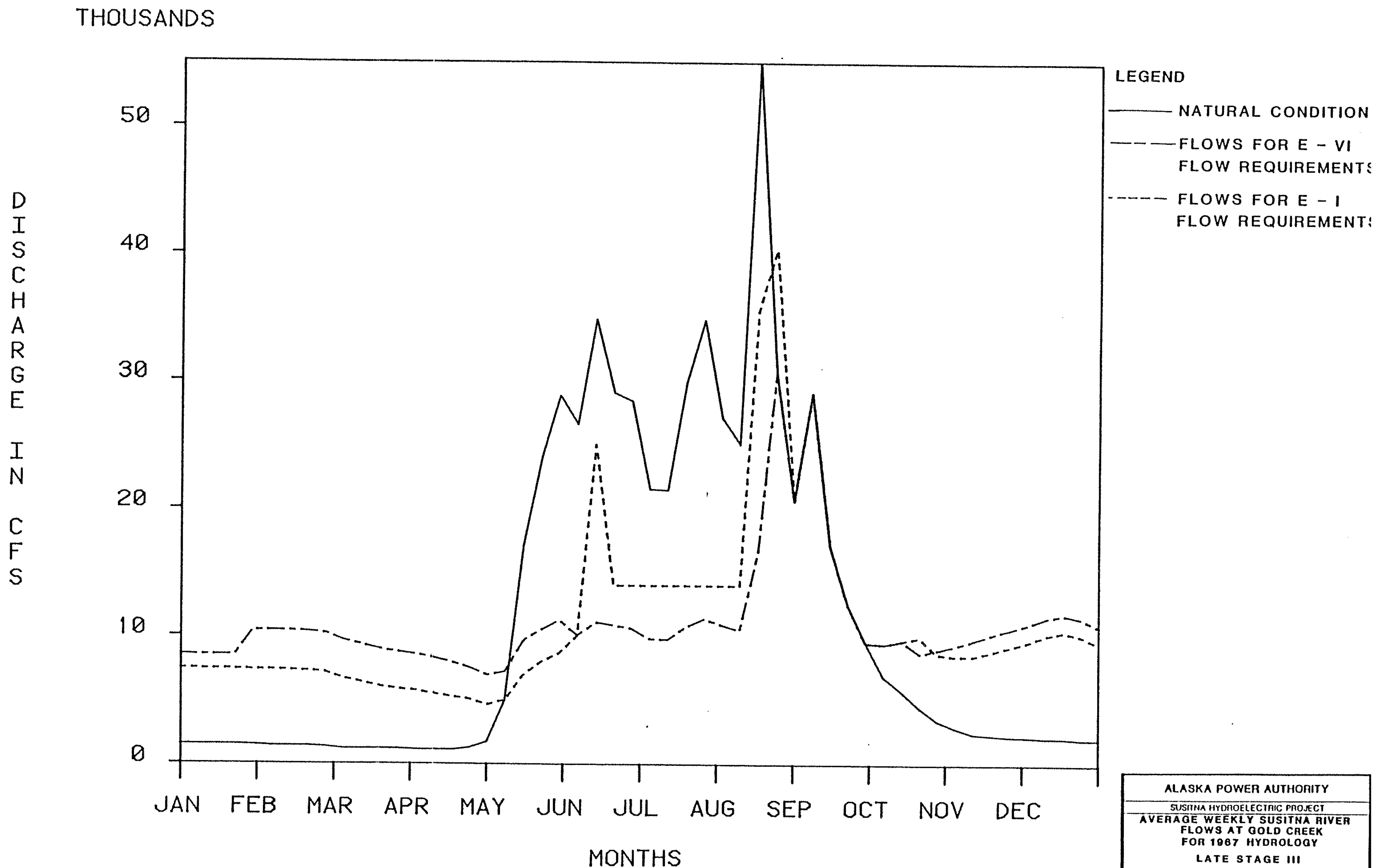
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1964 HYDROLOGY

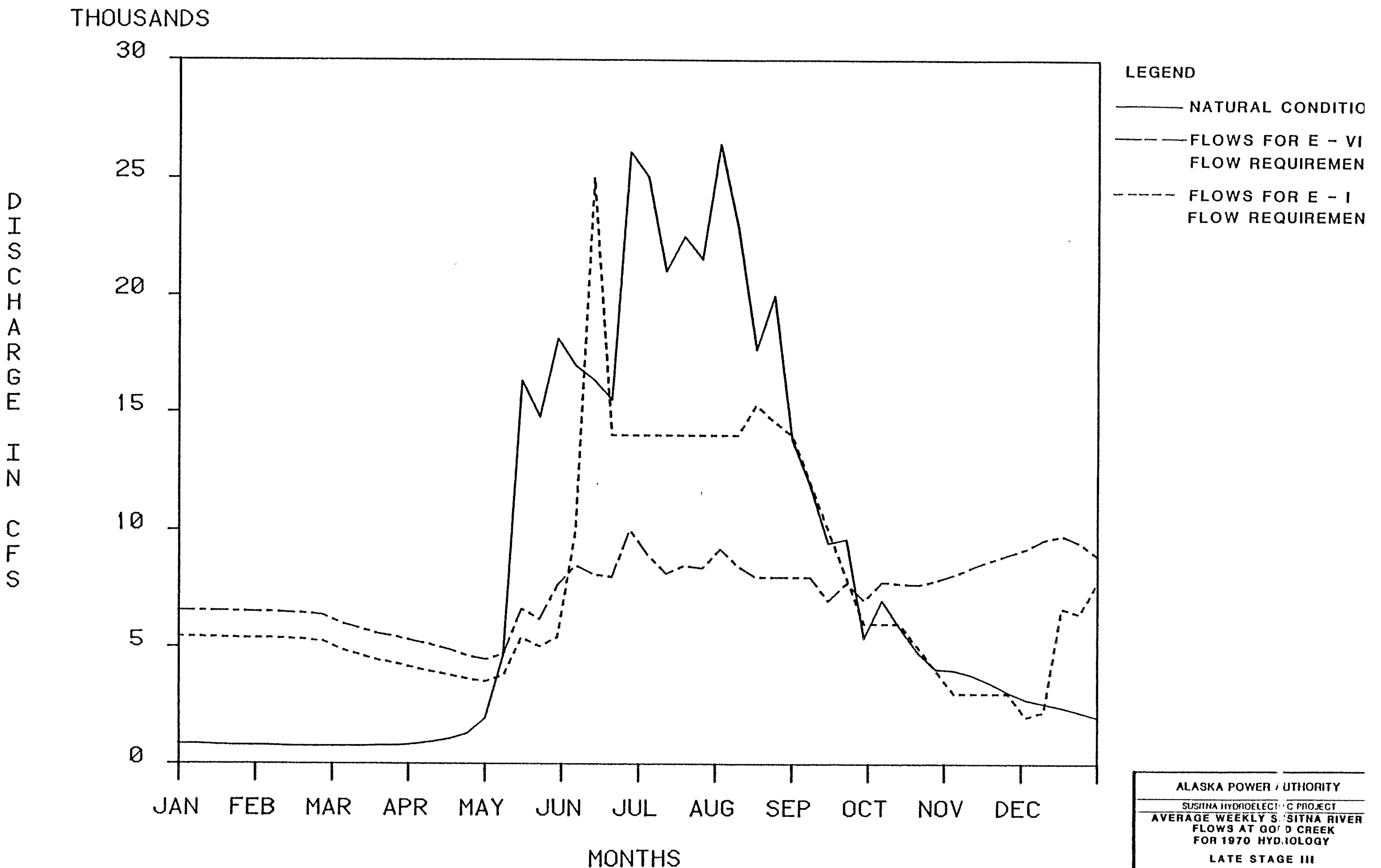
LATE STAGE III

FIGURE E.2.4.218



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1967 HYDROLOGY
LATE STAGE III

FIGURE E.2.4.219



ALASKA POWER AUTHORITY

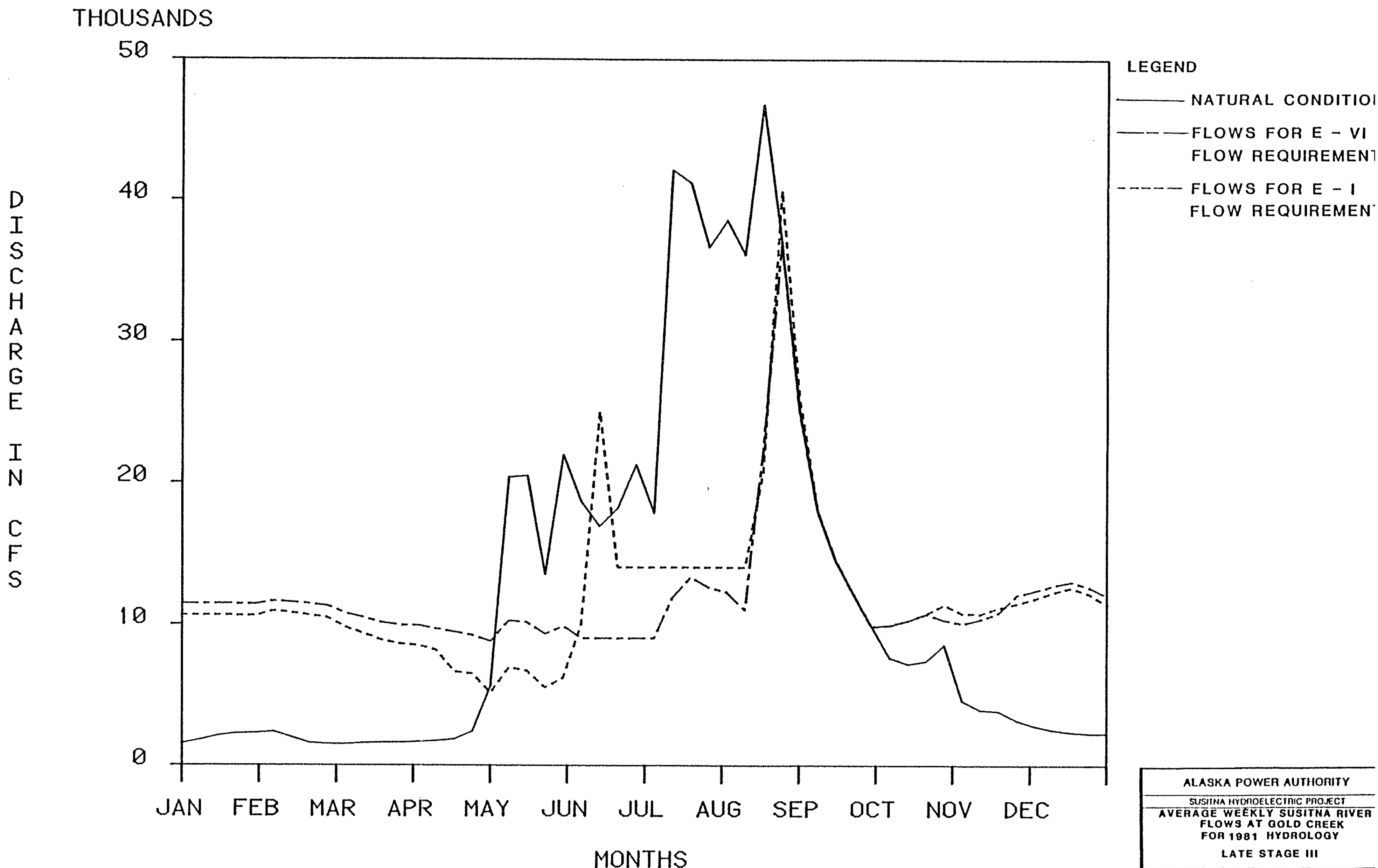
SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1970 HYDROLOGY

LATE STAGE III

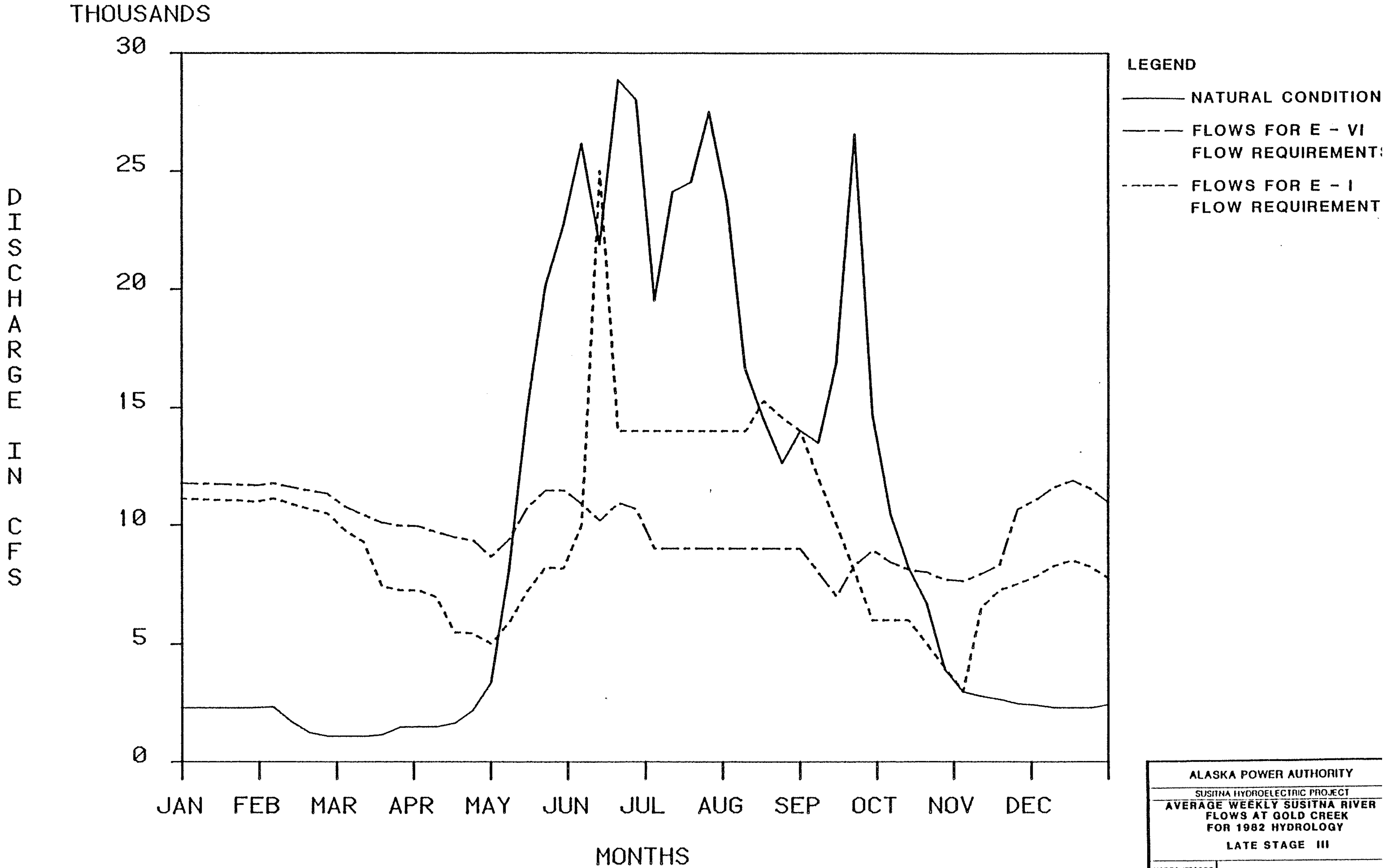
HARZA-EBASCO

FIGURE E.2.4.220



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1981 HYDROLOGY
LATE STAGE III

FIGURE E.2.4. 221



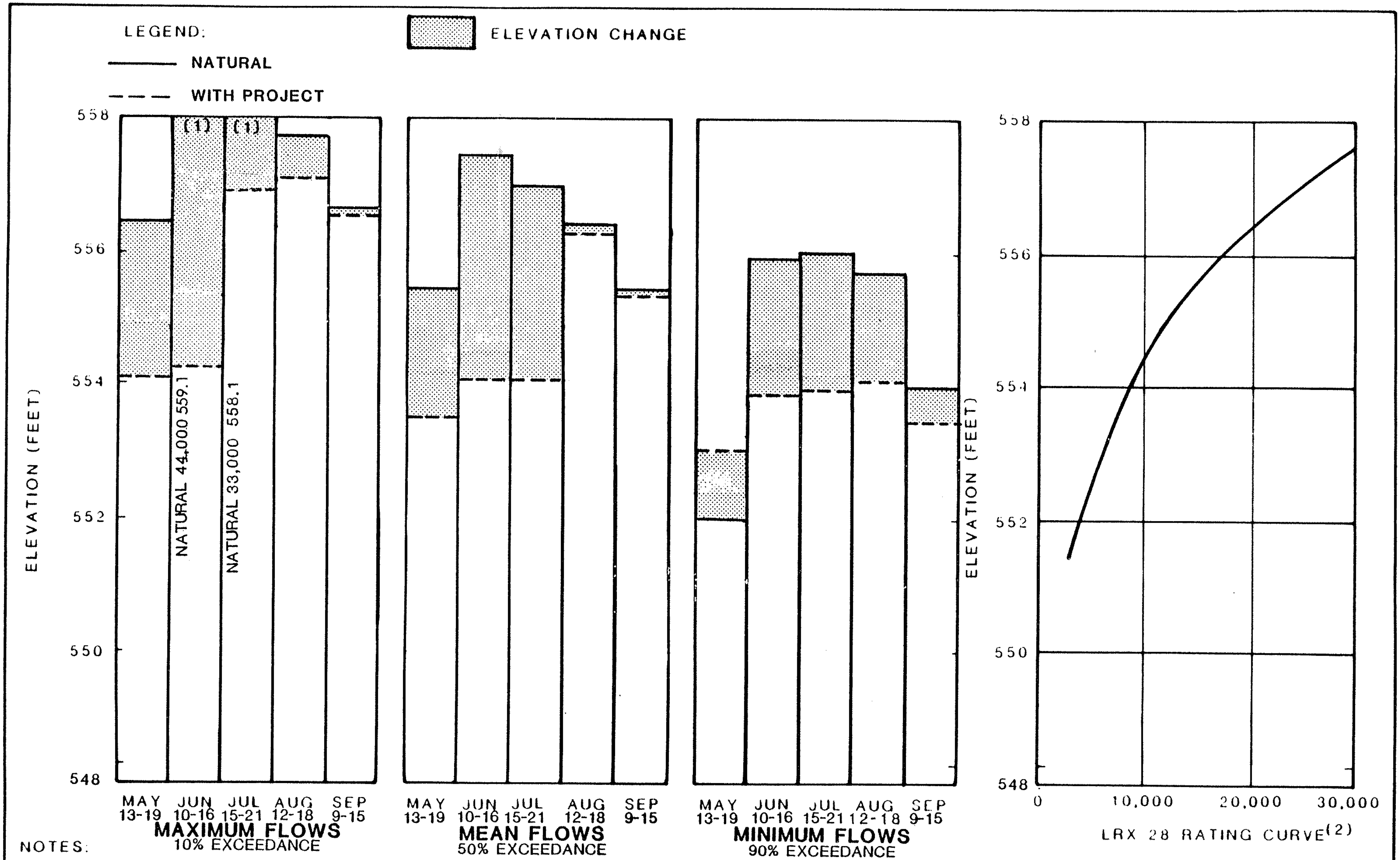
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

AVERAGE WEEKLY SUSITNA RIVER FLOWS AT GOLD CREEK FOR 1982 HYDROLOGY

LATE STAGE III

FIGURE E.2.4.222

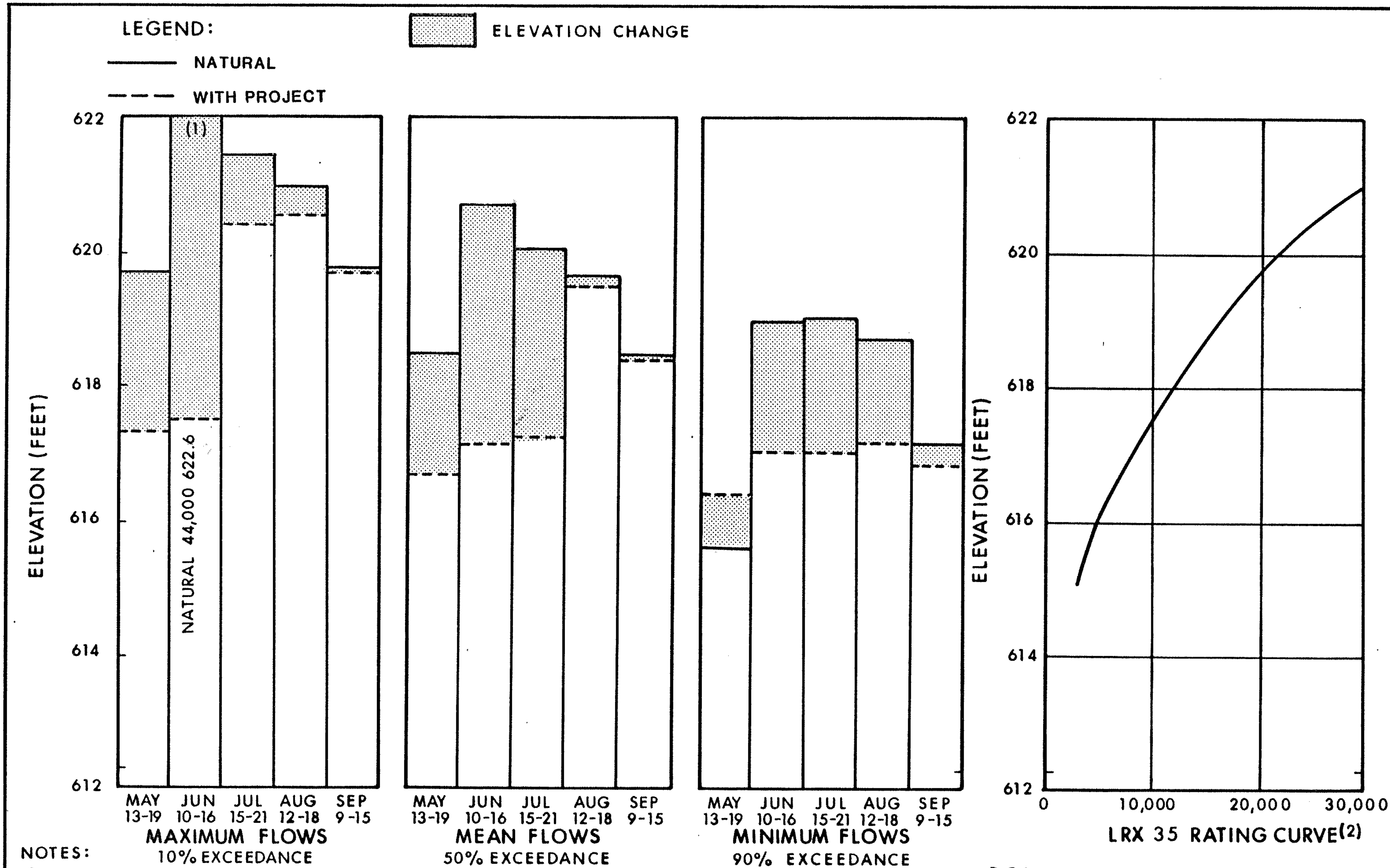


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING BASED ON COMPUTATIONS AND OBSERVATIONS (HE1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS
AT RIVER MILE 124.4, EARLY STAGE III

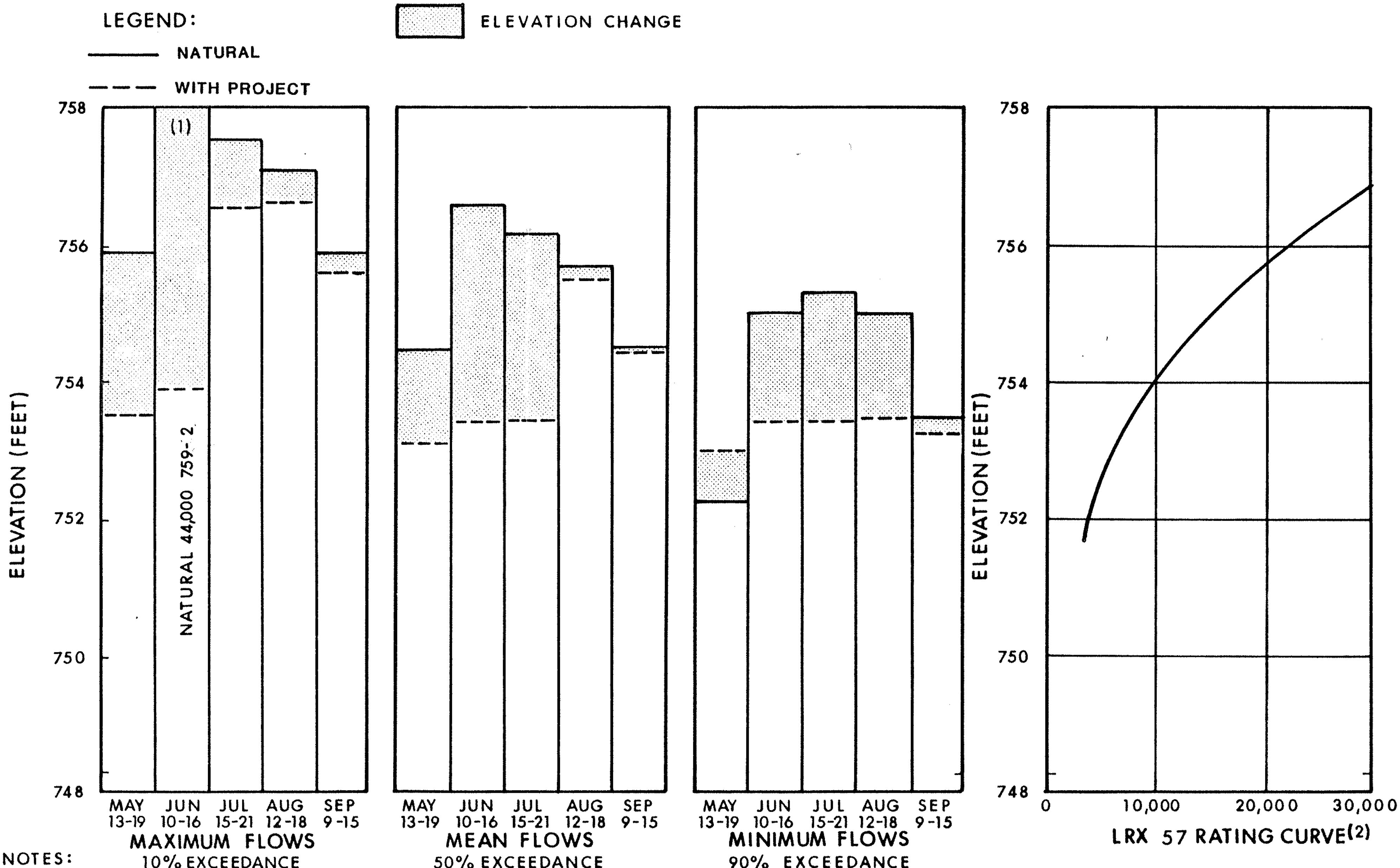
FIGURE E.2.4.223



NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 130.9, EARLY STAGE III

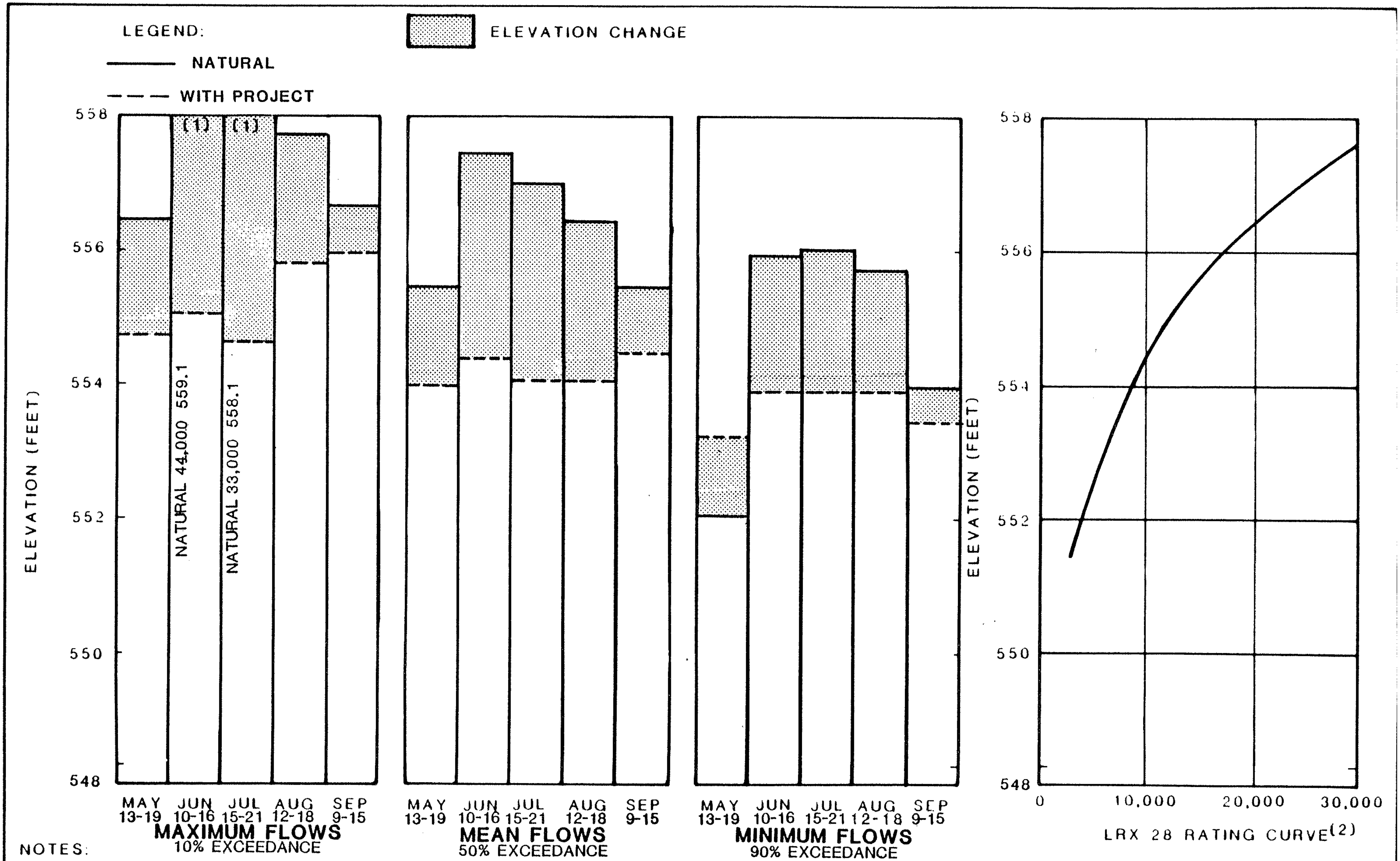


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 142.3, EARLY STAGE III

FIGURE E.2.4.225

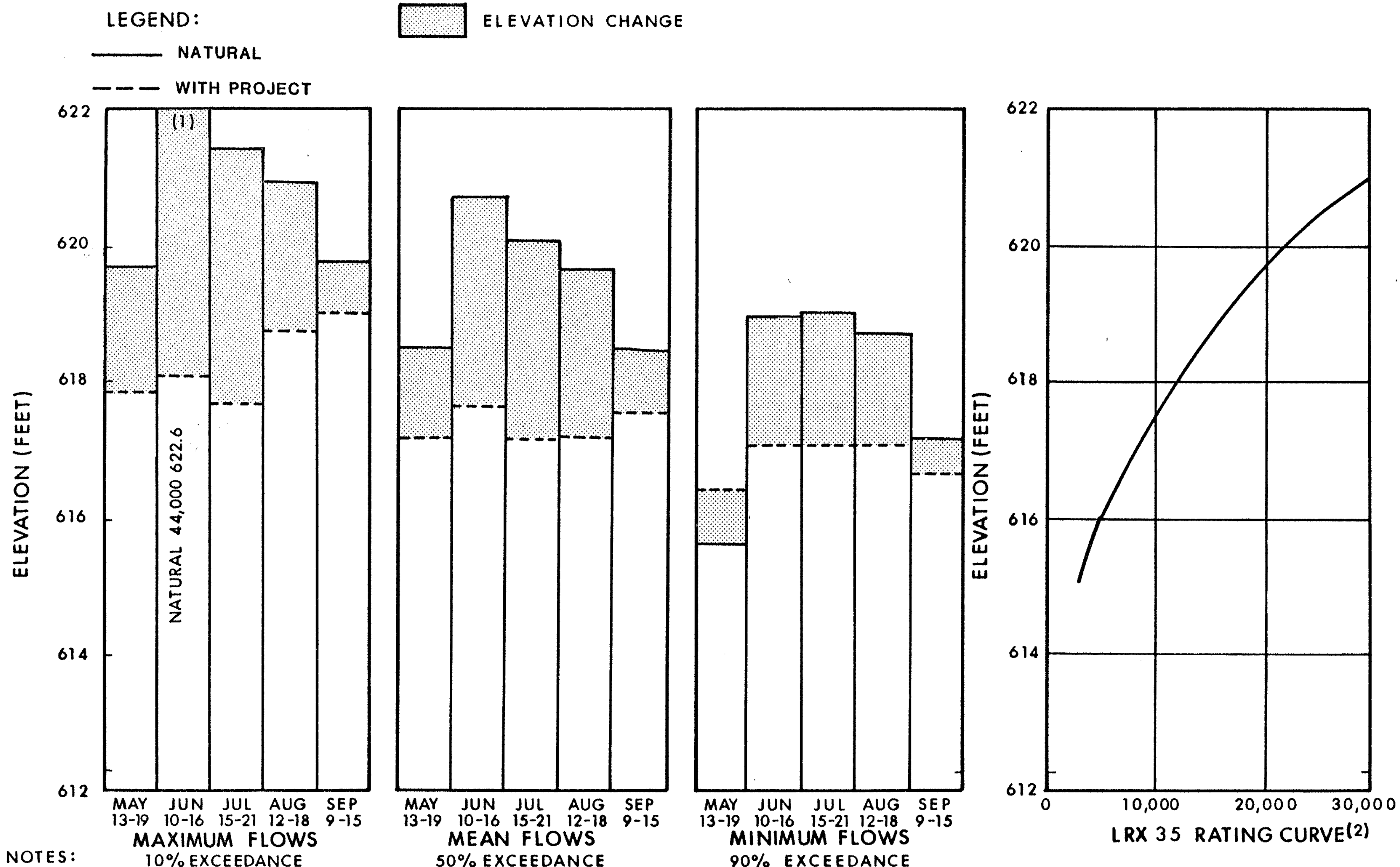


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING BASED ON COMPUTATIONS AND OBSERVATIONS (HE1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 124.4 , LATE STAGE III

FIGURE E.2.4.226

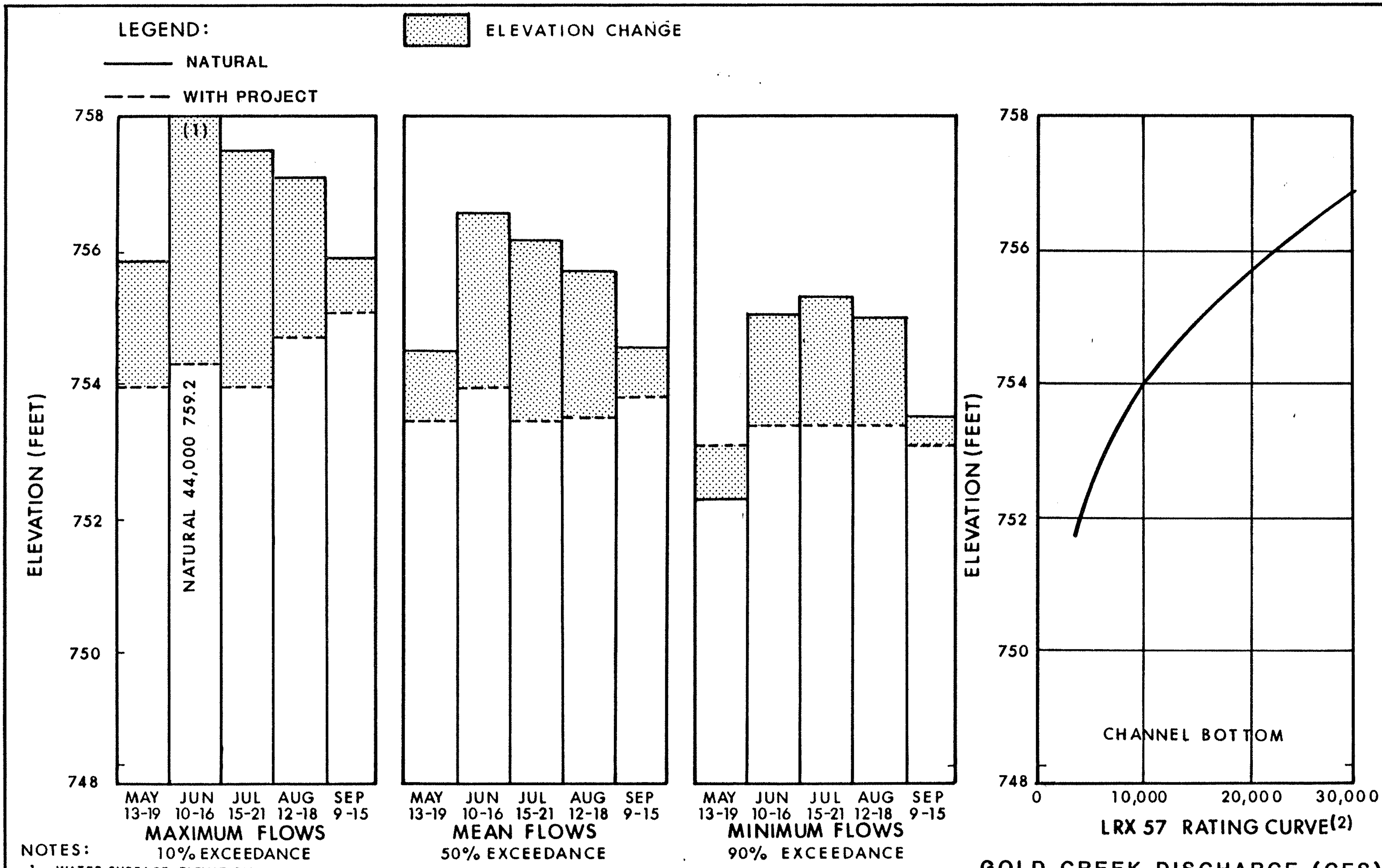


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 130.9, LATE STAGE III

FIGURE E.2.4.227

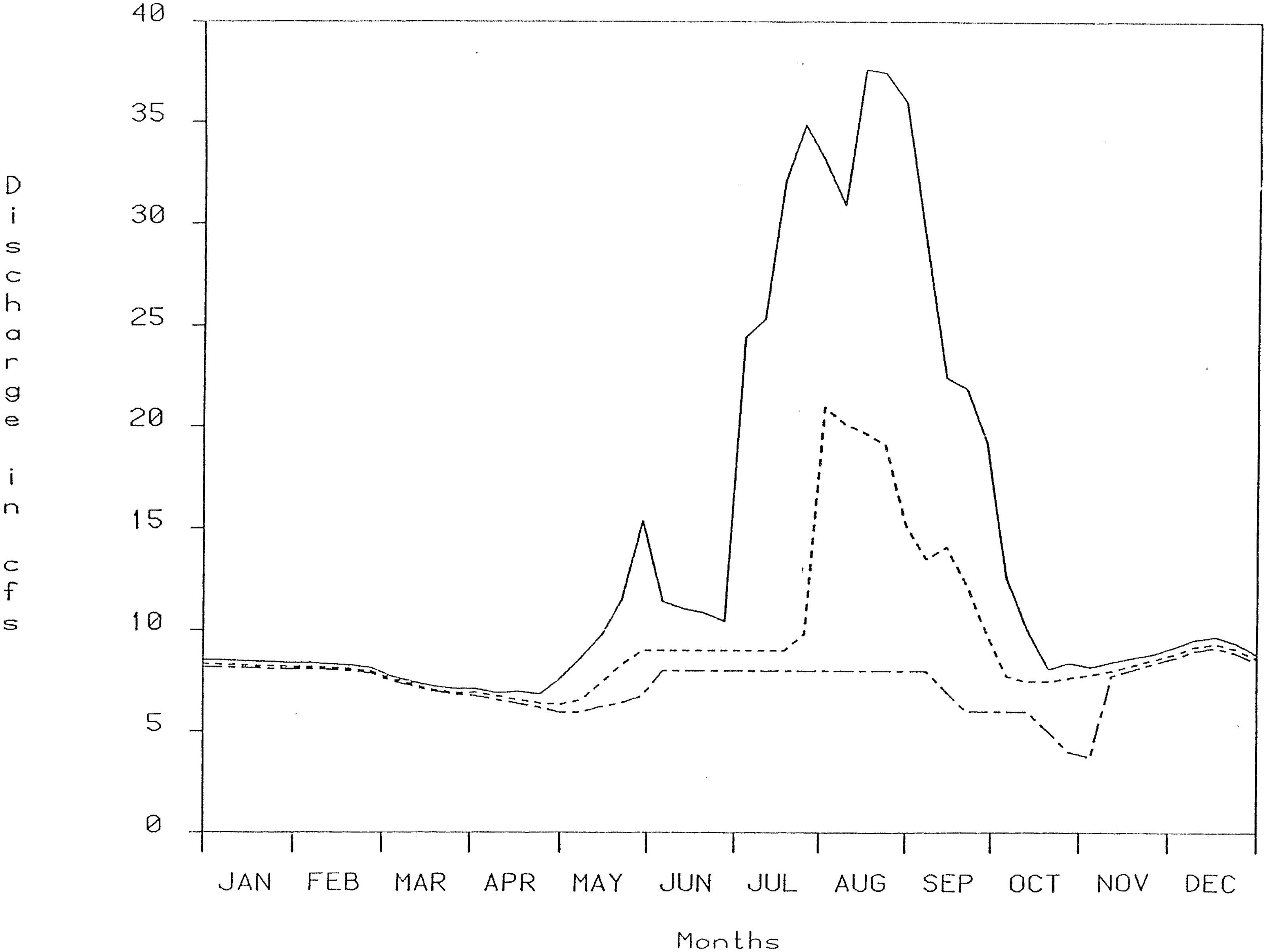


NOTES:

1. WATER SURFACE ELEVATION ABOVE RATING CURVE
2. RATING CURVE BASED ON COMPUTATIONS AND OBSERVATIONS (HE, 1984-) MIDDLE AND LOWER RIVER WATER SURFACE PROFILES AND DISCHARGE RATING CURVES.

WEEKLY AVERAGE WATER SURFACE ELEVATIONS AT RIVER MILE 142.3, LATE STAGE III

GUR... 2.4...



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-198
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMEN

LEGEND

——— 6% EXCEEDENCE FLOW
- - - - 50% EXCEEDENCE FLO
— — — 97% EXCEEDENCE FLO

FIGURE E.2.4.229

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6%,50% AND 97% OF THE TIME AT GOLD CREEK EARLY STAGE III

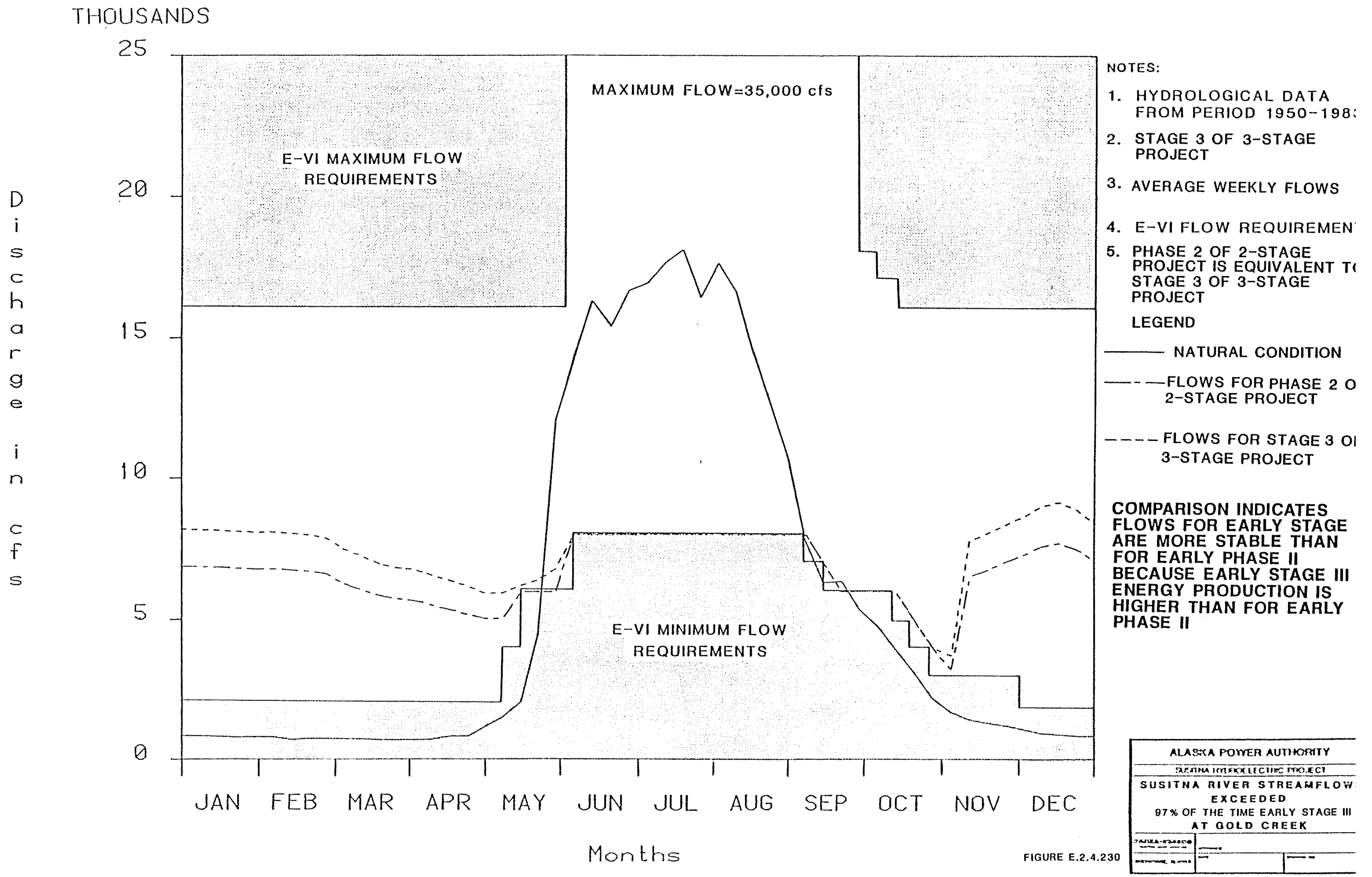
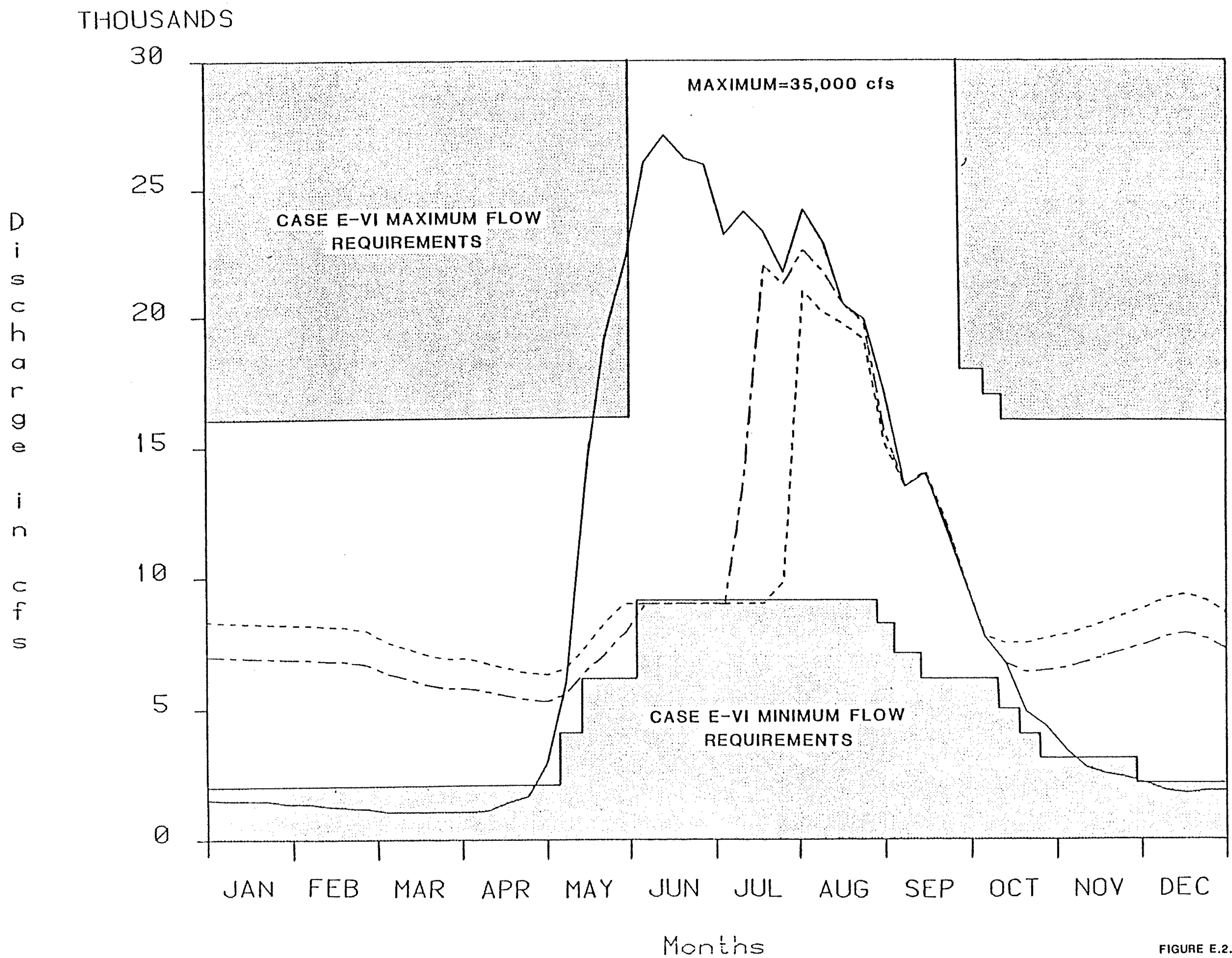


FIGURE E.2.4.230



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMENT
5. PHASE 2 OF 2-STAGE PROJECT IS EQUIVALENT TO STAGE 3 OF 3-STAGE PROJECT

LEGEND

——— NATURAL CONDITION

— - — FLOWS FOR PHASE 2 OF 2-STAGE PROJECT

- - - - FLOWS FOR STAGE 3 OF 3-STAGE PROJECT

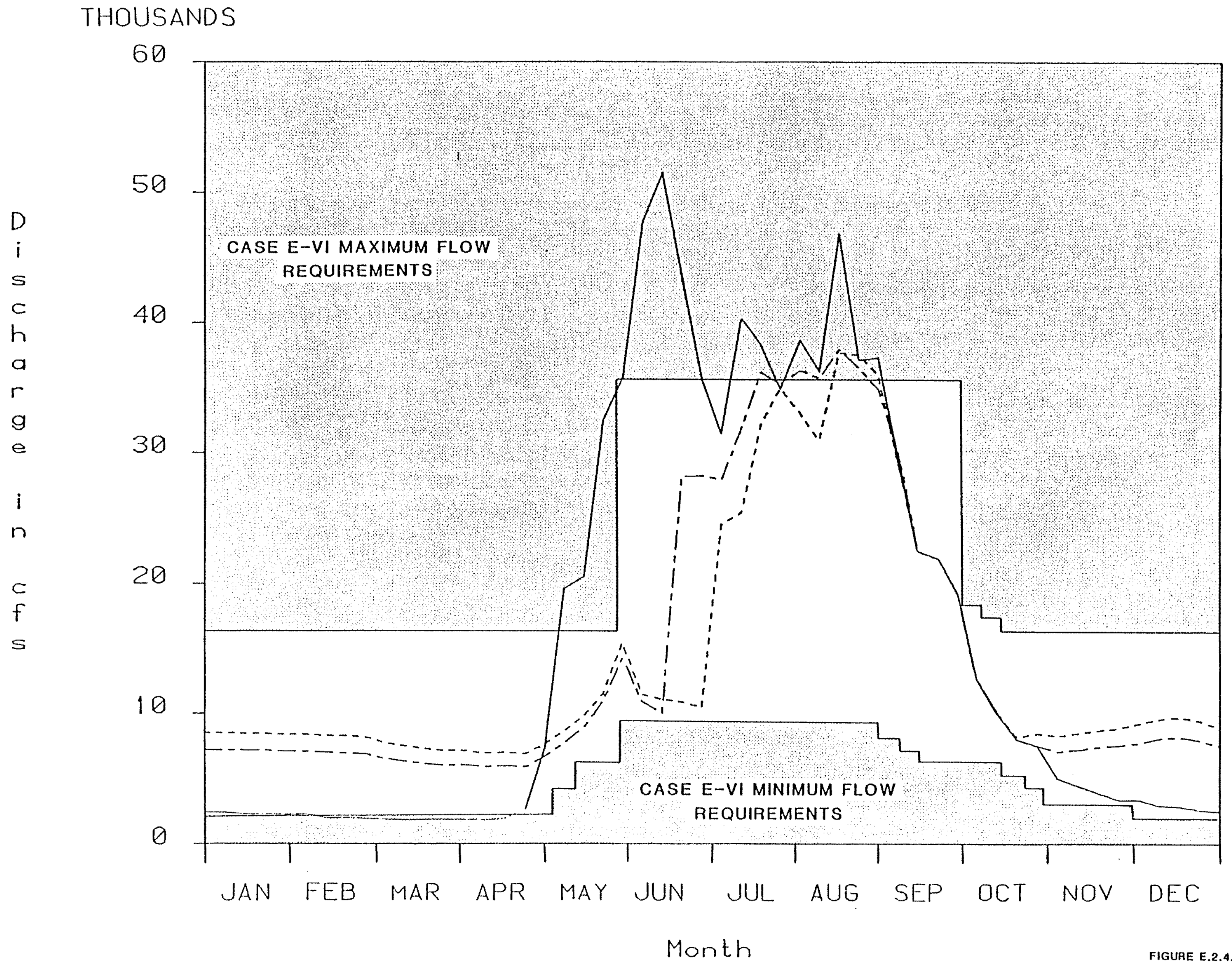
COMPARISON INDICATES FLOWS FOR EARLY STAGE III ARE MORE STABLE THAN FOR EARLY PHASE II BECAUSE EARLY STAGE III ENERGY PRODUCTION IS HIGHER THAN FOR EARLY PHASE II

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME EARLY STAGE III AT GOLD CREEK

FIGURE E.2.4.231



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMENT
5. PHASE 2 OF 2-STAGE PROJECT IS EQUIVALENT TO STAGE 3 OF 3-STAGE PROJECT

LEGEND

NATURAL CONDITION

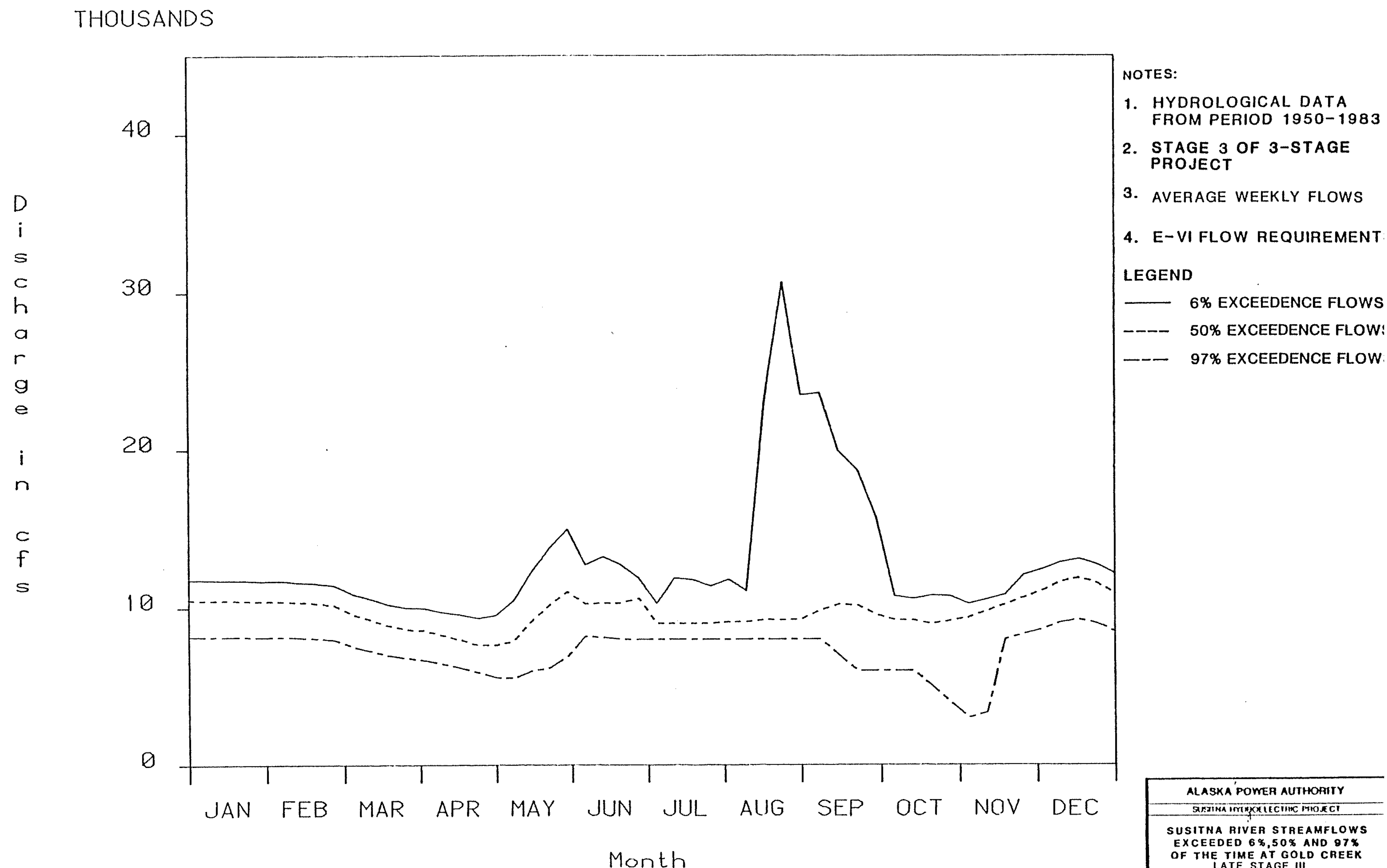
FLOWS FOR PHASE 2 OF 2-STAGE PROJECT

FLOWS FOR STAGE 3 OF 3-STAGE PROJECT

COMPARISON INDICATES FLOWS FOR EARLY STAGE III ARE MORE STABLE THAN FOR EARLY PHASE II BECAUSE EARLY STAGE III ENERGY PRODUCTION IS HIGHER THAN FOR EARLY PHASE II

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOW EXCEEDED 6% OF THE TIME EARLY STAGE III AT GOLD CREEK

FIGURE E.2.4.232

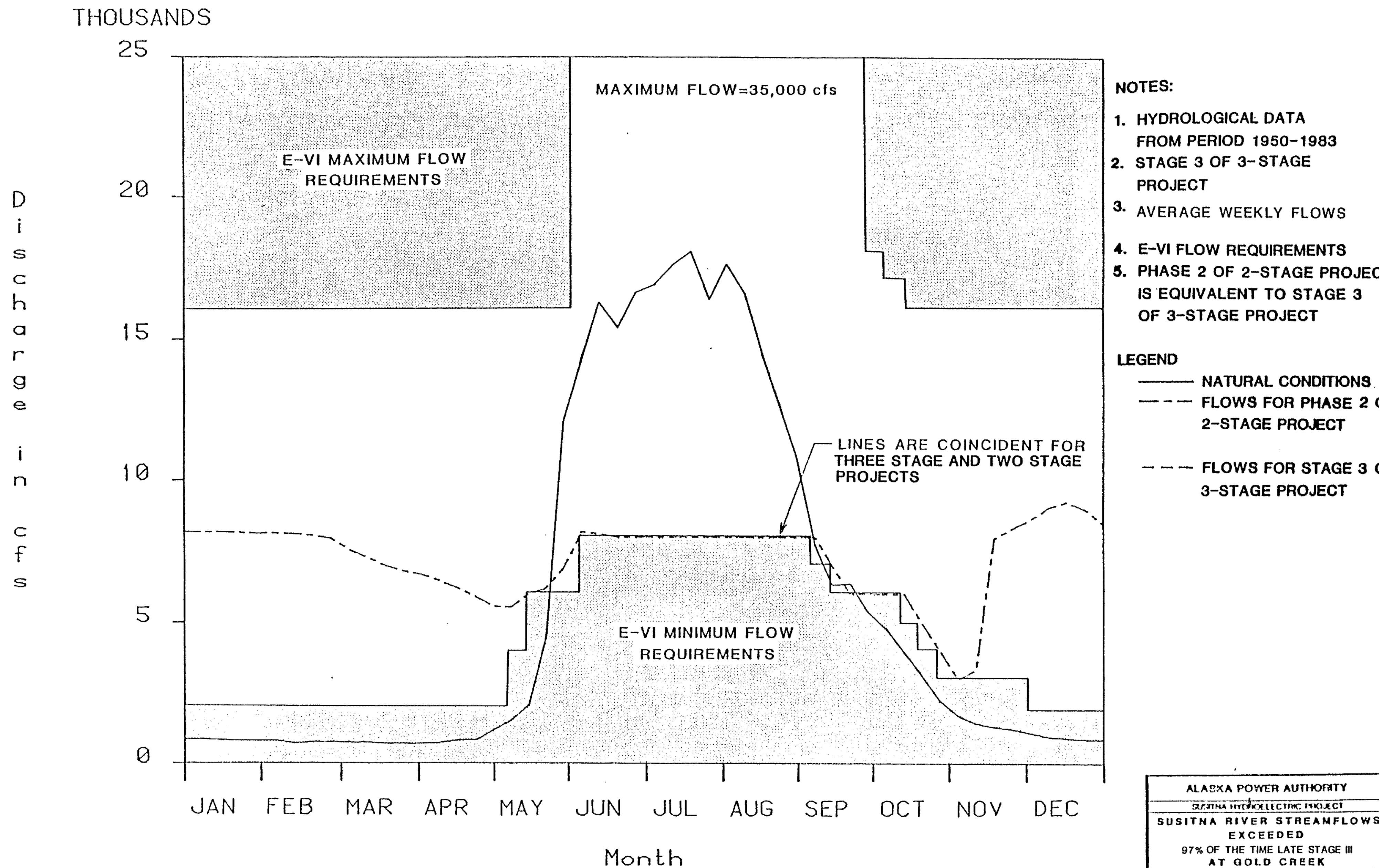


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

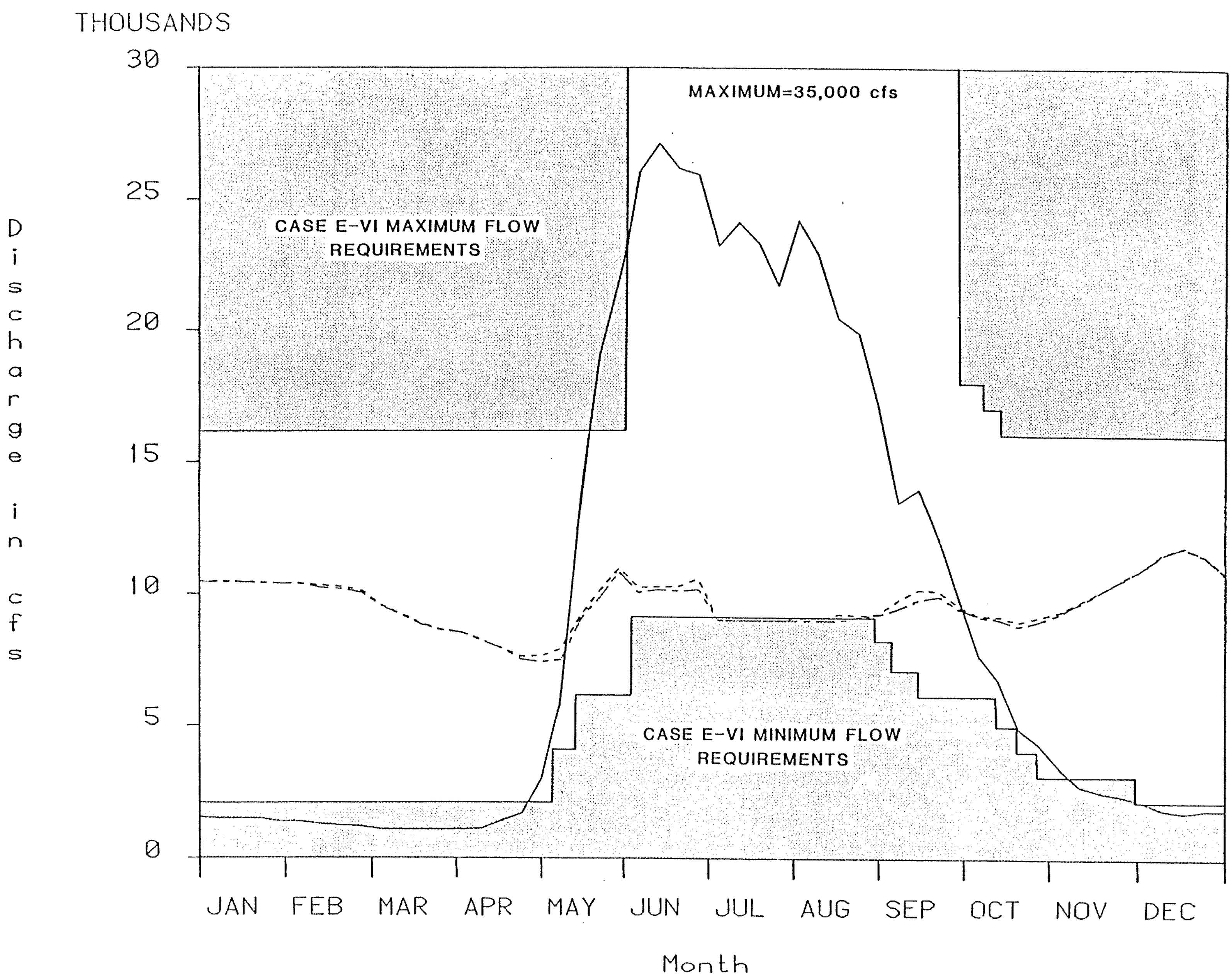
SUSITNA RIVER STREAMFLOWS EXCEEDED 6%,50% AND 97% OF THE TIME AT GOLD CREEK LATE STAGE III

FIGURE E.2.4.233



ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOWS EXCEEDED 97% OF THE TIME LATE STAGE III AT GOLD CREEK

FIGURE E.2.4.234



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMENTS
5. PHASE 2 OF 2-STAGE PROJECT IS EQUIVALENT TO STAGE 3 OF 3-STAGE PROJECT

LEGEND

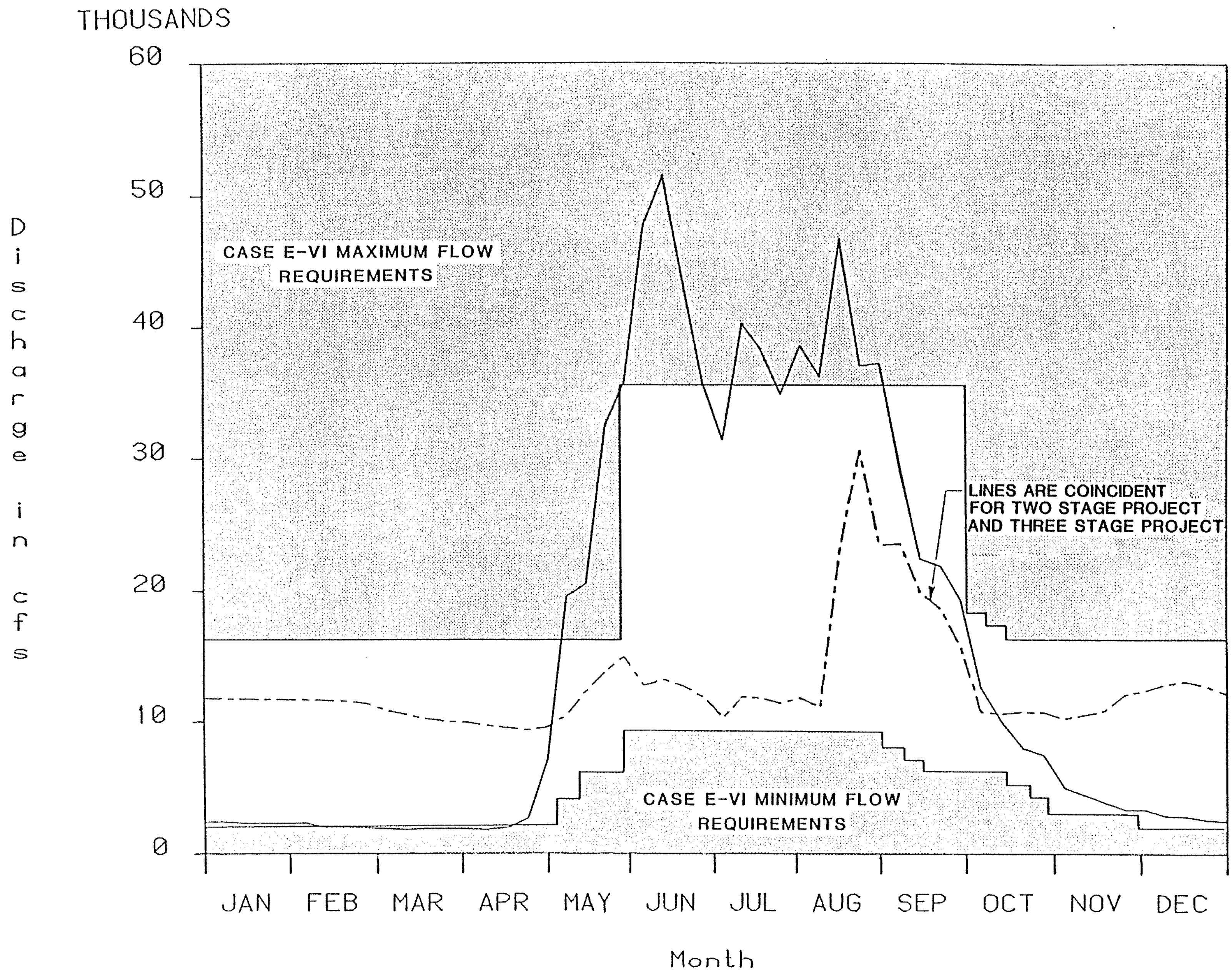
- NATURAL CONDITIONS
- FLOWS FOR PHASE 2 OF 2-STAGE PROJECT
- FLOWS FOR STAGE 3 OF 3-STAGE PROJECT CONSTRUCTION

FIGURE E.2.4.235

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME LATE STAGE III AT GOLD CREEK



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950–1983
2. STAGE 3 OF 3–STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMENTS
5. PHASE 2 OF 2–STAGE PROJEC IS EQUIVALENT TO STAGE 3 OF 3–STAGE PROJECT

LEGEND

——— NATURAL CONDITIONS

— — — FLOWS FOR PHASE 2 O 2–STAGE PROJECT

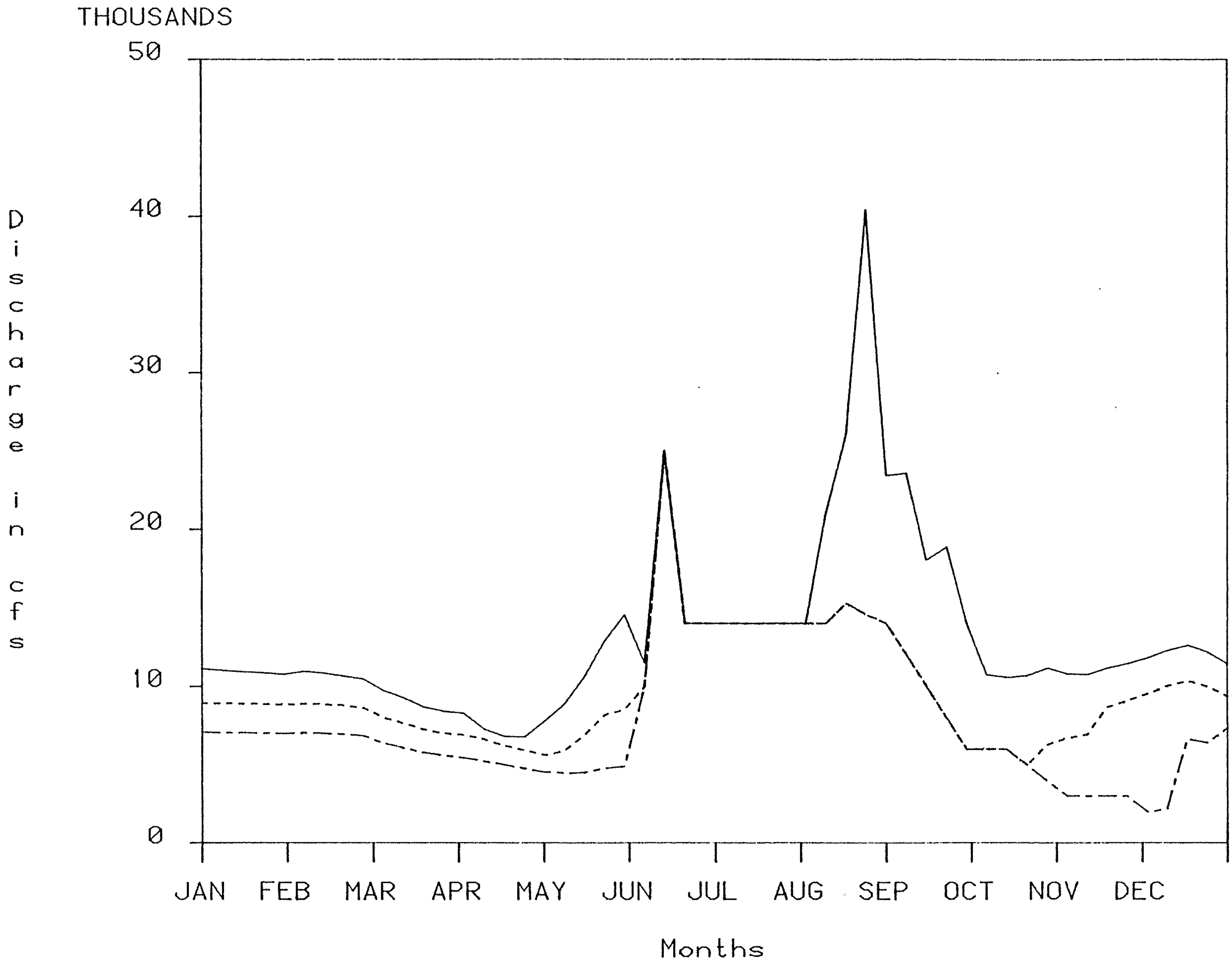
– – – – FLOWS FOR STAGE 3 O 3–STAGE PROJECT

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6% OF THE TIME LATE STAGE III AT GOLD CREEK

FIGURE E.2.4.236



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-198
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-I FLOW REQUIREMEN

LEGEND

——— 6% EXCEEDENCE FLOW

---- 50% EXCEEDENCE FLOW

— — — 97% EXCEEDENCE FLOW

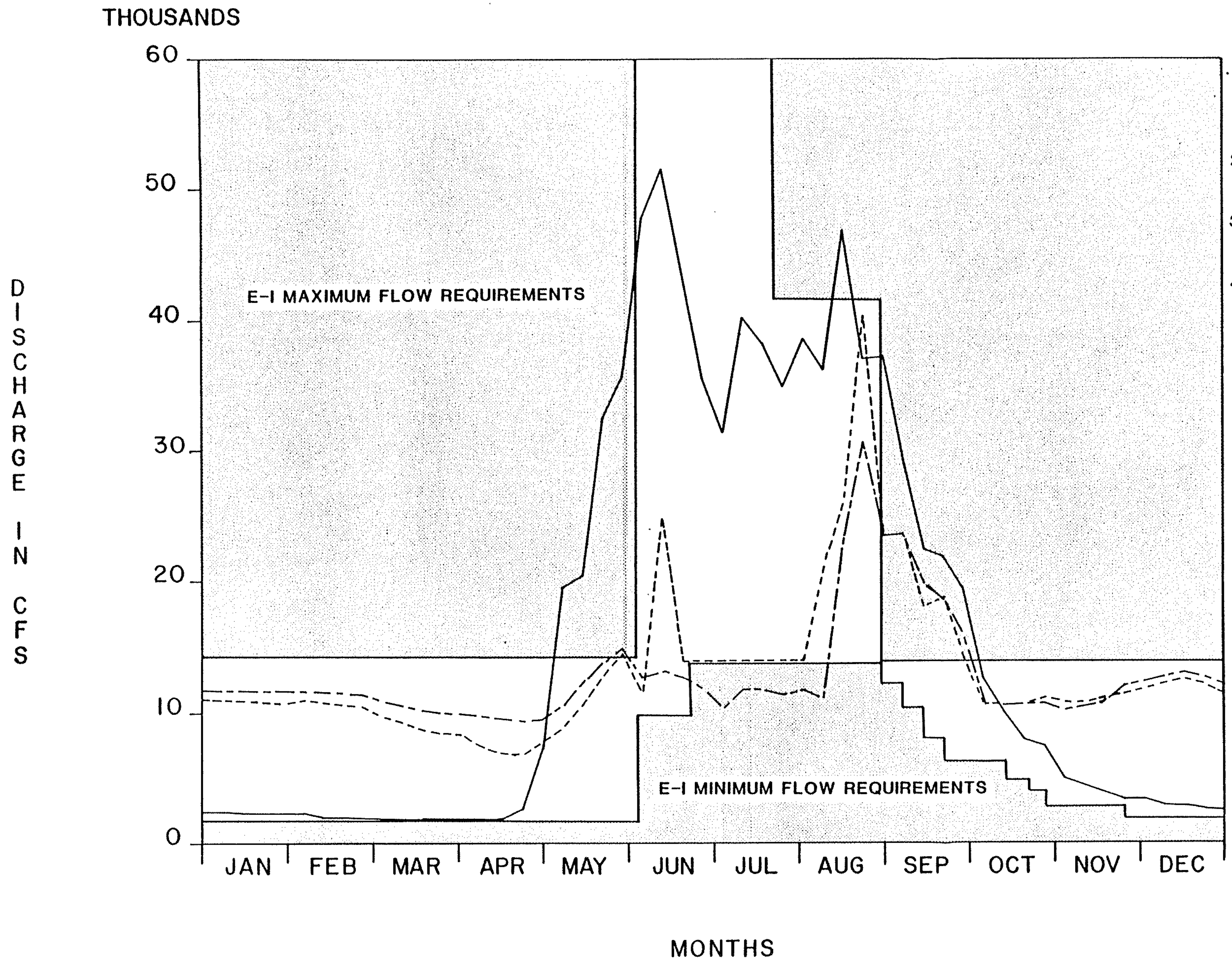
FIGURE E.2.4.237

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6%,50% AND 97% OF THE TIME AT GOLD CREEK

LATE STAGE III



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. BETWEEN JUNE 10 AND JUNE 16 THERE IS A SPIKE TO 45,000 CFS
5. BETWEEN AUG 12 AND AUG 18 THERE IS A SPIKE TO 23,000 CFS
6. BETWEEN AUG 19 AND AUG 25 THERE IS A SPIKE TO 18,000 CFS

LEGEND

——— NATURAL CONDITION

– – – FLOWS FOR E - VI FLOW REQUIREMENTS

- - - - FLOWS FOR E - I FLOW REQUIREMENTS

FIGURE E.2.4.238

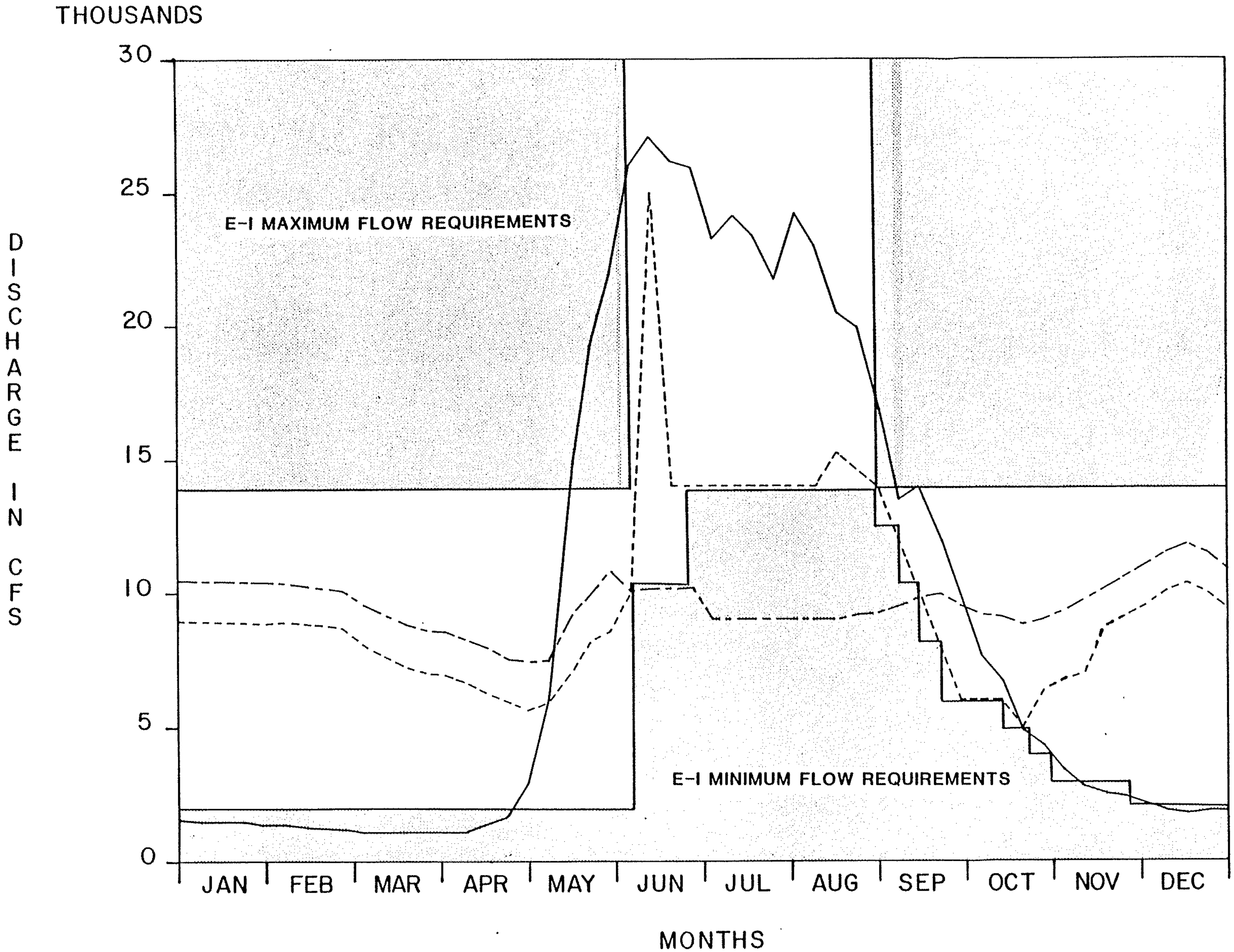
ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 6% OF THE TIME LATE STAGE III AT GOLD CREEK

HARZA-EBASCO

ANCHORAGE, ALASKA



NOTES:

1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. BETWEEN JUNE 10 AND JUNE 16 THERE IS A SPIKE TO 45,000 CFS
5. BETWEEN AUG 12 AND AUG 18 THERE IS A SPIKE TO 23,000 CFS
6. BETWEEN AUG 19 AND AUG 25 THERE IS A SPIKE TO 18,000 CFS

LEGEND

——— NATURAL CONDITION

— — — FLOWS FOR E - VI FLOW REQUIREMENTS

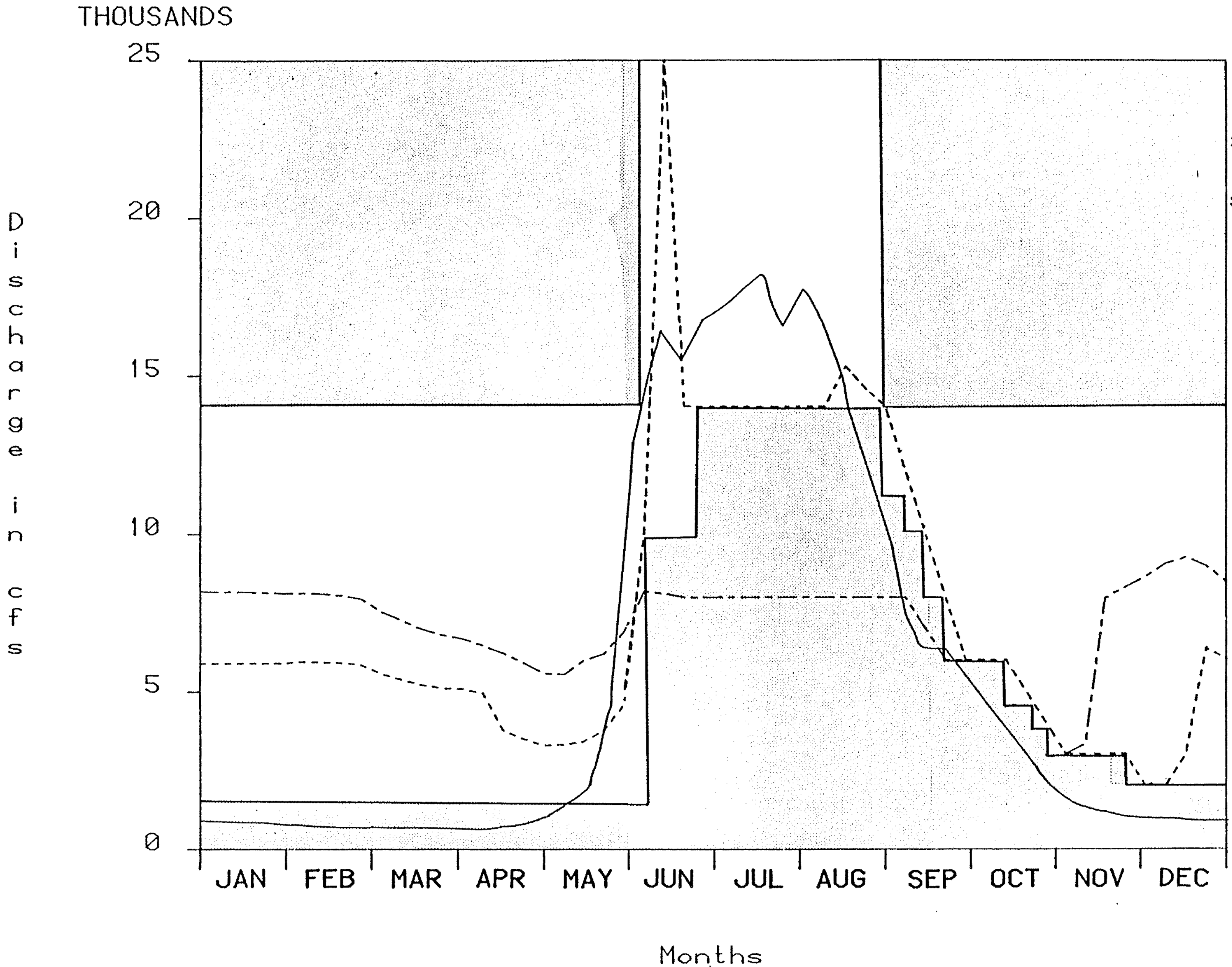
- - - - FLOWS FOR E - I FLOW REQUIREMENTS

FIGURE E.2.4.239

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SUSITNA RIVER STREAMFLOWS EXCEEDED 50% OF THE TIME LATE STAGE III AT GOLD CREEK



NOTES:

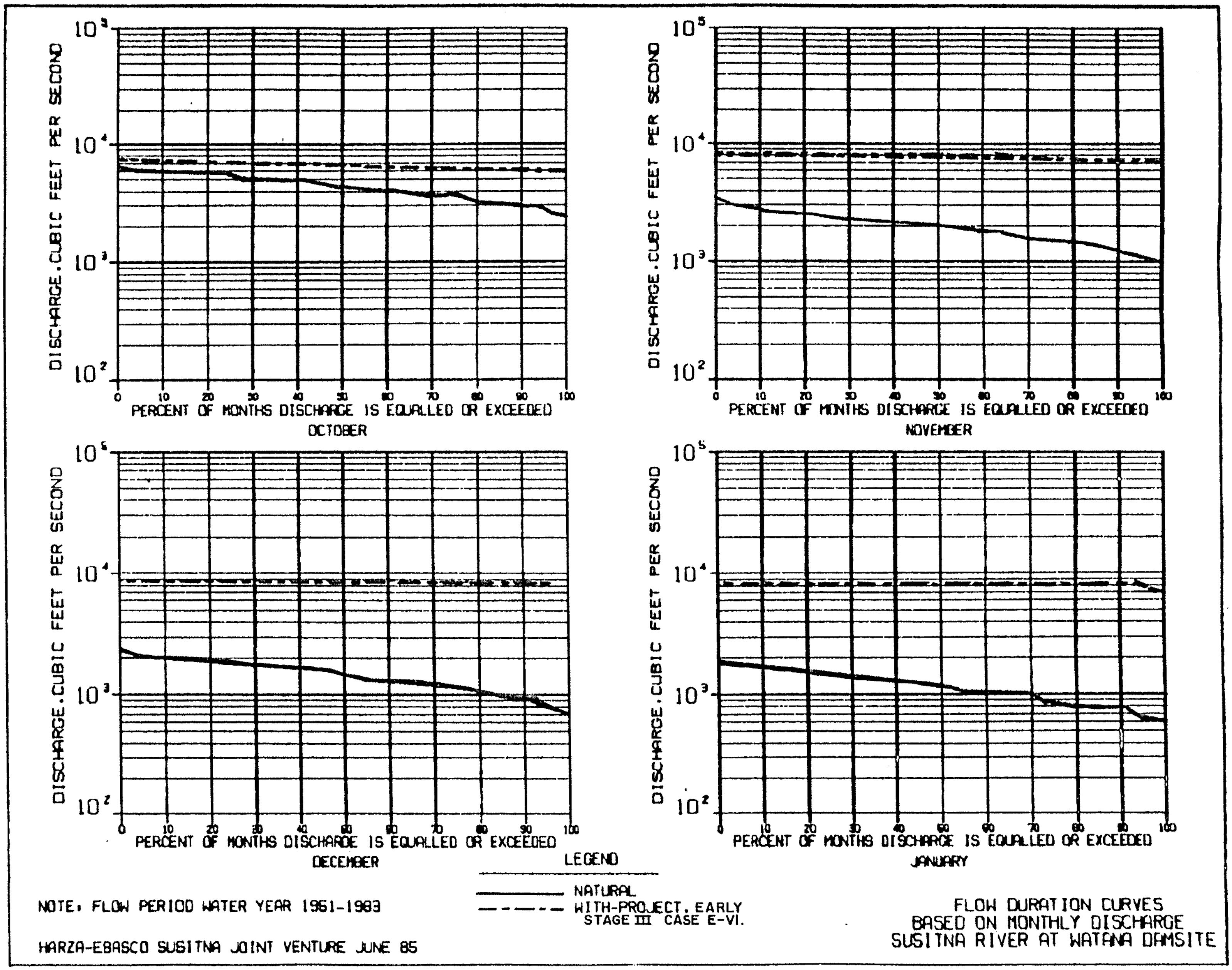
1. HYDROLOGICAL DATA FROM PERIOD 1950-1983
2. STAGE 3 OF 3-STAGE PROJECT
3. AVERAGE WEEKLY FLOWS
4. E-VI FLOW REQUIREMENTS
5. BETWEEN JUNE 10 AND JUNE 16 THERE IS A SPIKE TO 45,000 CFS
6. BETWEEN AUG 12 AND AUG 18 THERE IS A SPIKE TO 23,000 CFS
7. BETWEEN AUG 19 AND AUG 25 THERE IS A SPIKE TO 18,000 CFS

LEGEND

NATURAL CONDITIONS
FLOWS FOR E - VI FLOW REQUIREMENT
FLOWS FOR E - I FLOW REQUIREMENT

ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER STREAMFLOWS EXCEEDED 97% OF THE TIME LATE STAGE III AT GOLD CREEK

FIGURE E.2.4.240



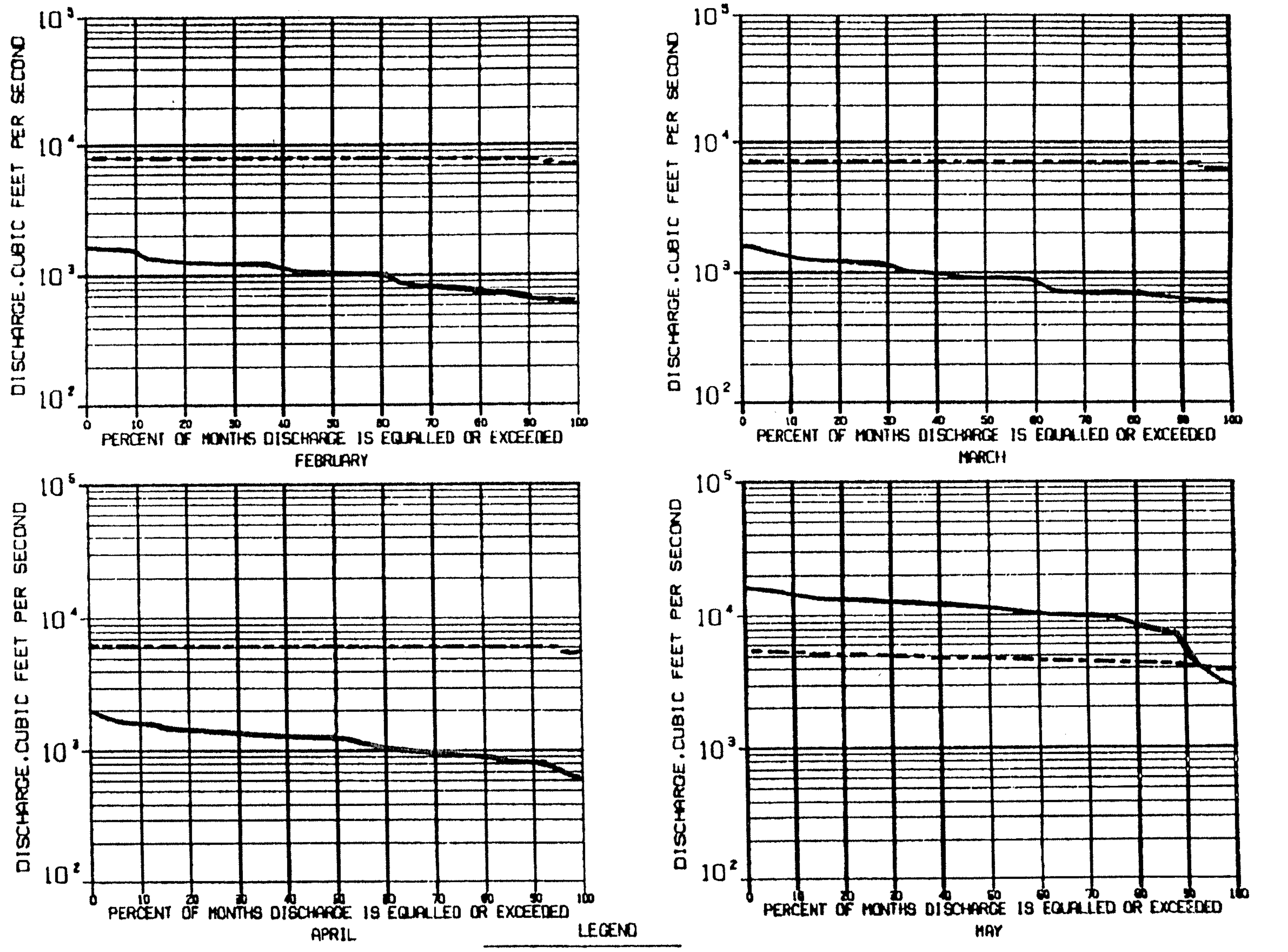
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.241

(PAGE 1 of 3)



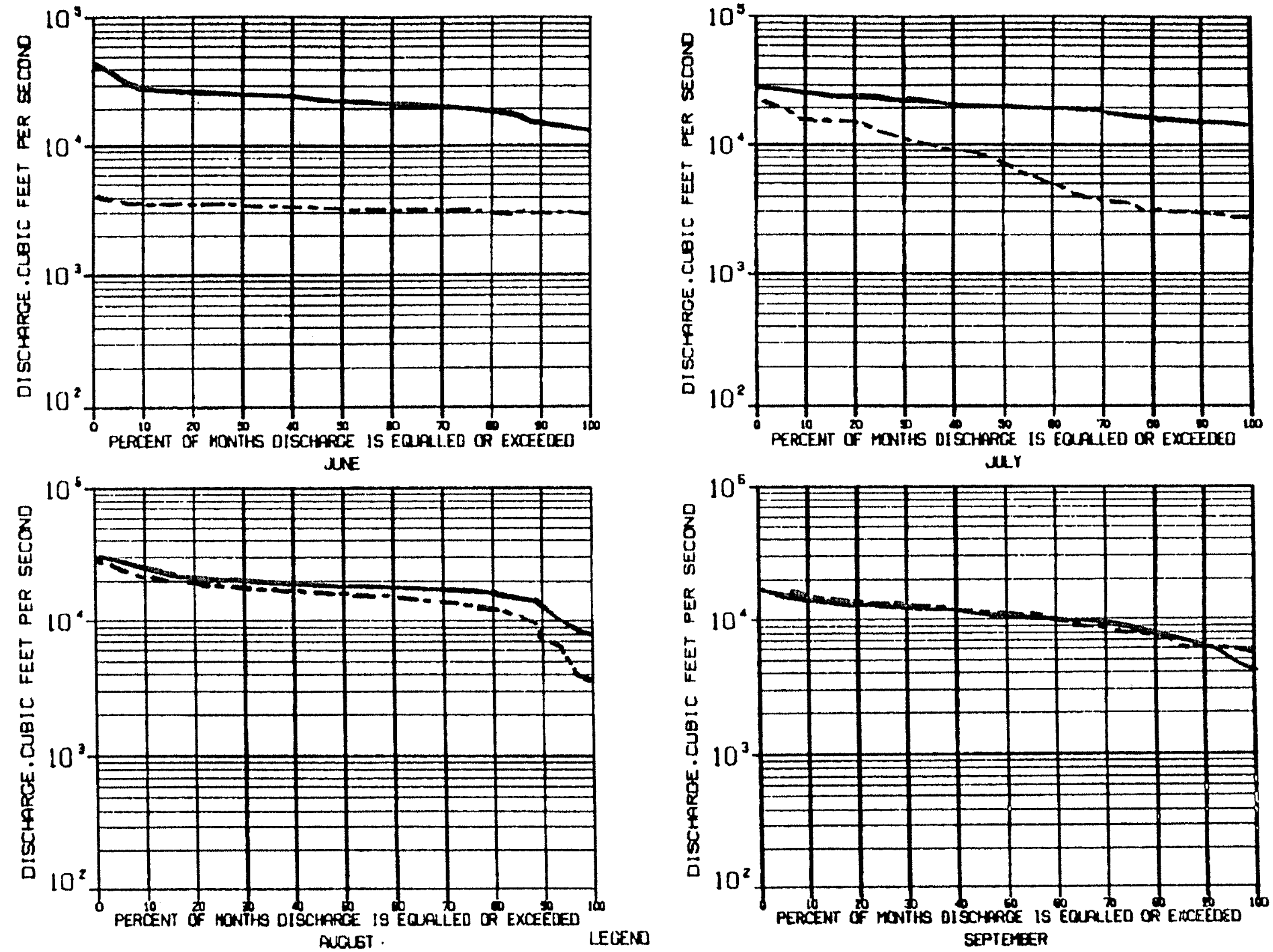
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 86

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.241

(PAGE 2 of 3)



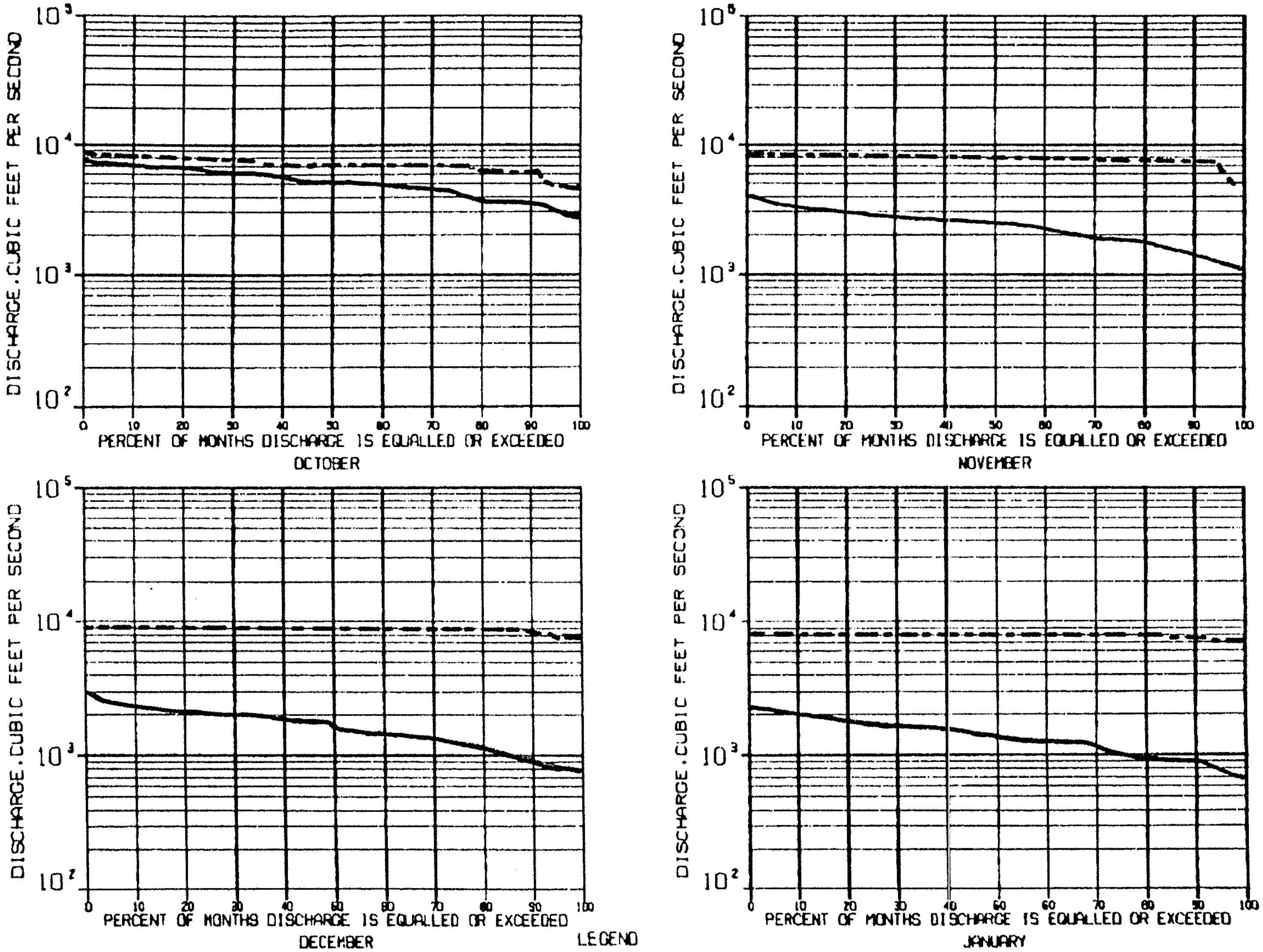
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.241

(PAGE 3 of 3)



LEGEND

NATURAL

WITH-PROJECT, EARLY STAGE III CASE E-VI.

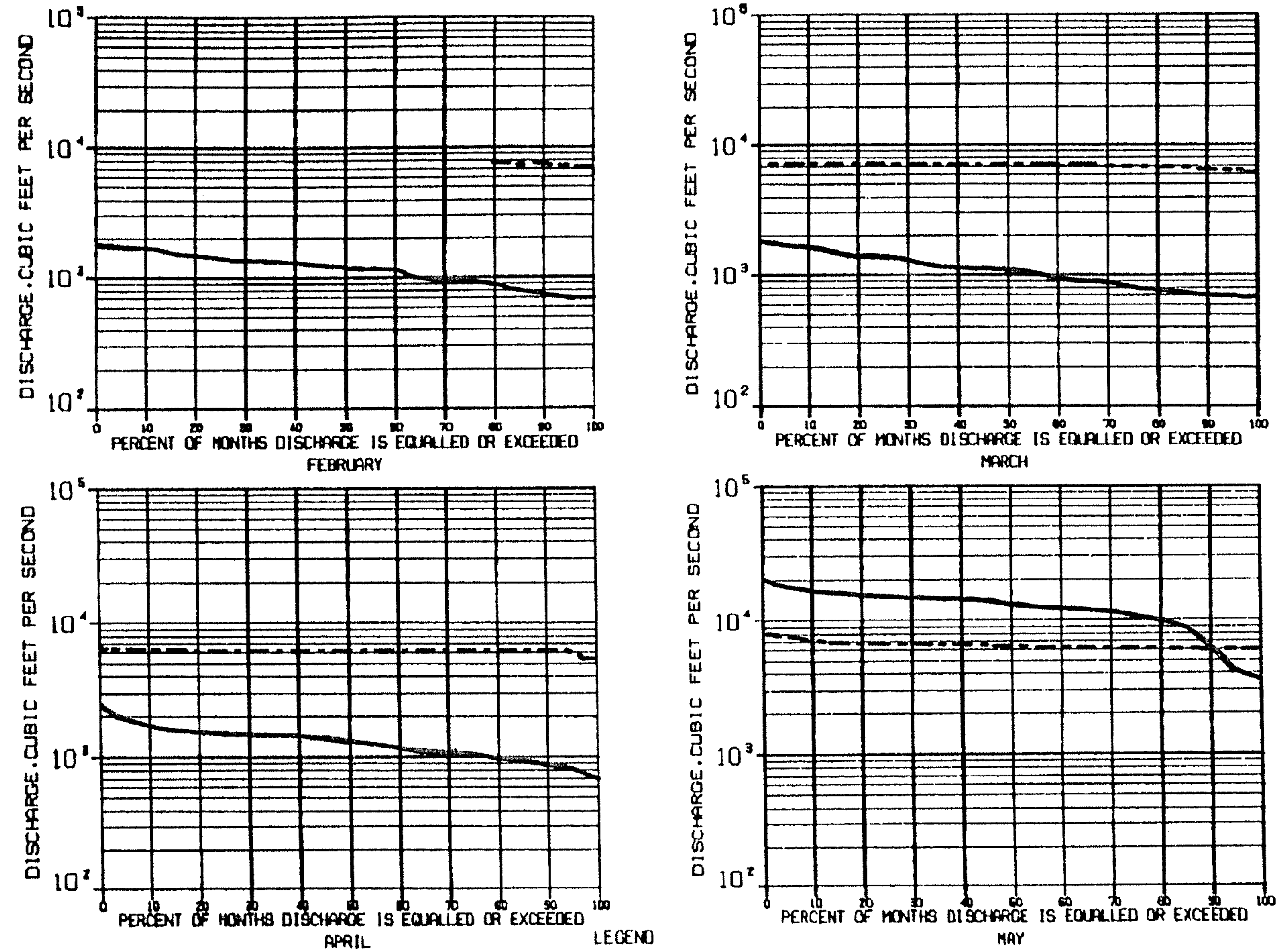
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.242

(PAGE 1 of 3)



LEGEND

NATURAL

WITH-PROJECT, EARLY STAGE III CASE E-VI.

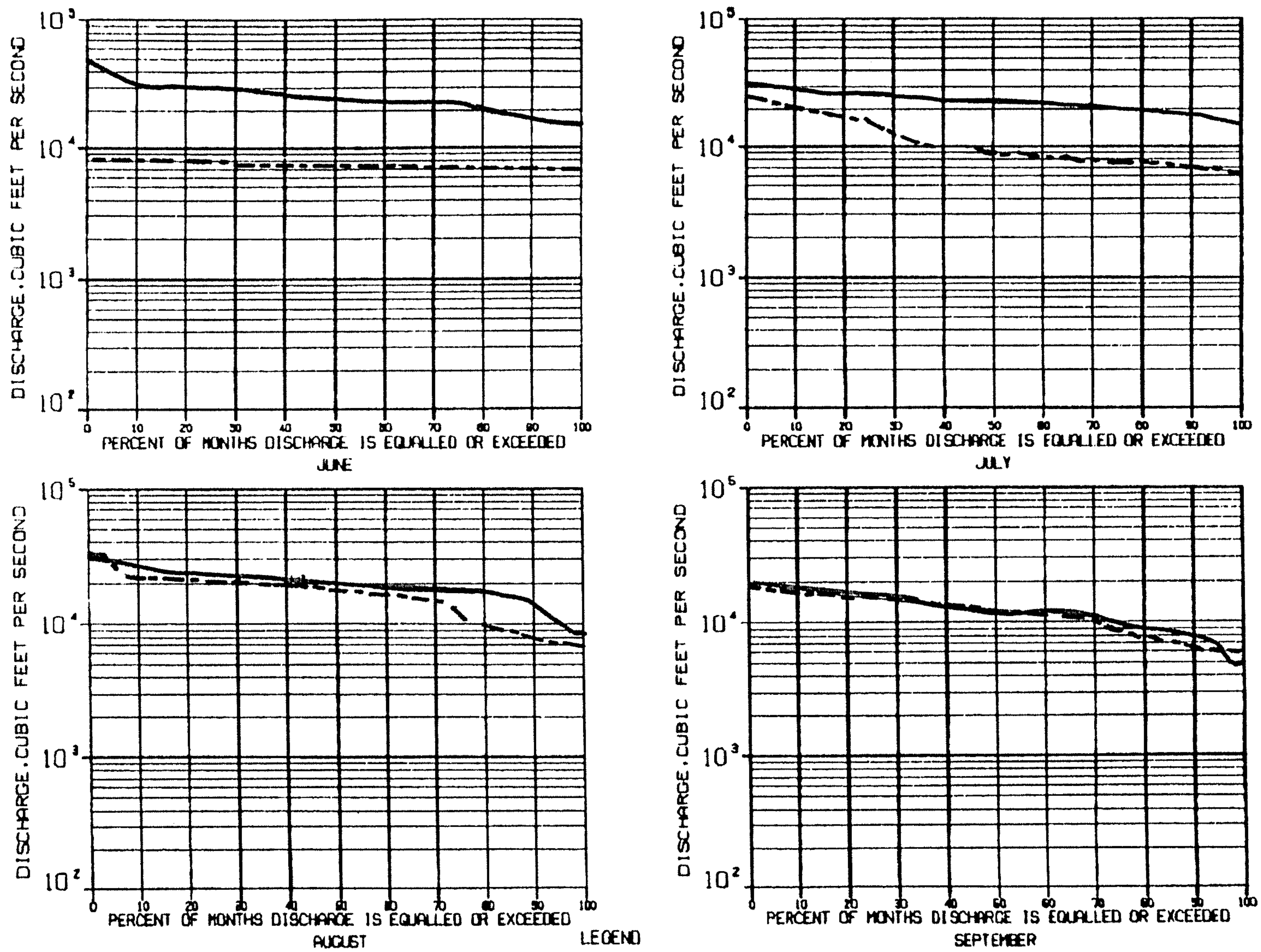
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 86

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.242

(PAGE 2 of 3)



LEGEND

NATURAL

WITH-PROJECT, EARLY STAGE III CASE E-VI.

NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.242

(PAGE 3 of 3)

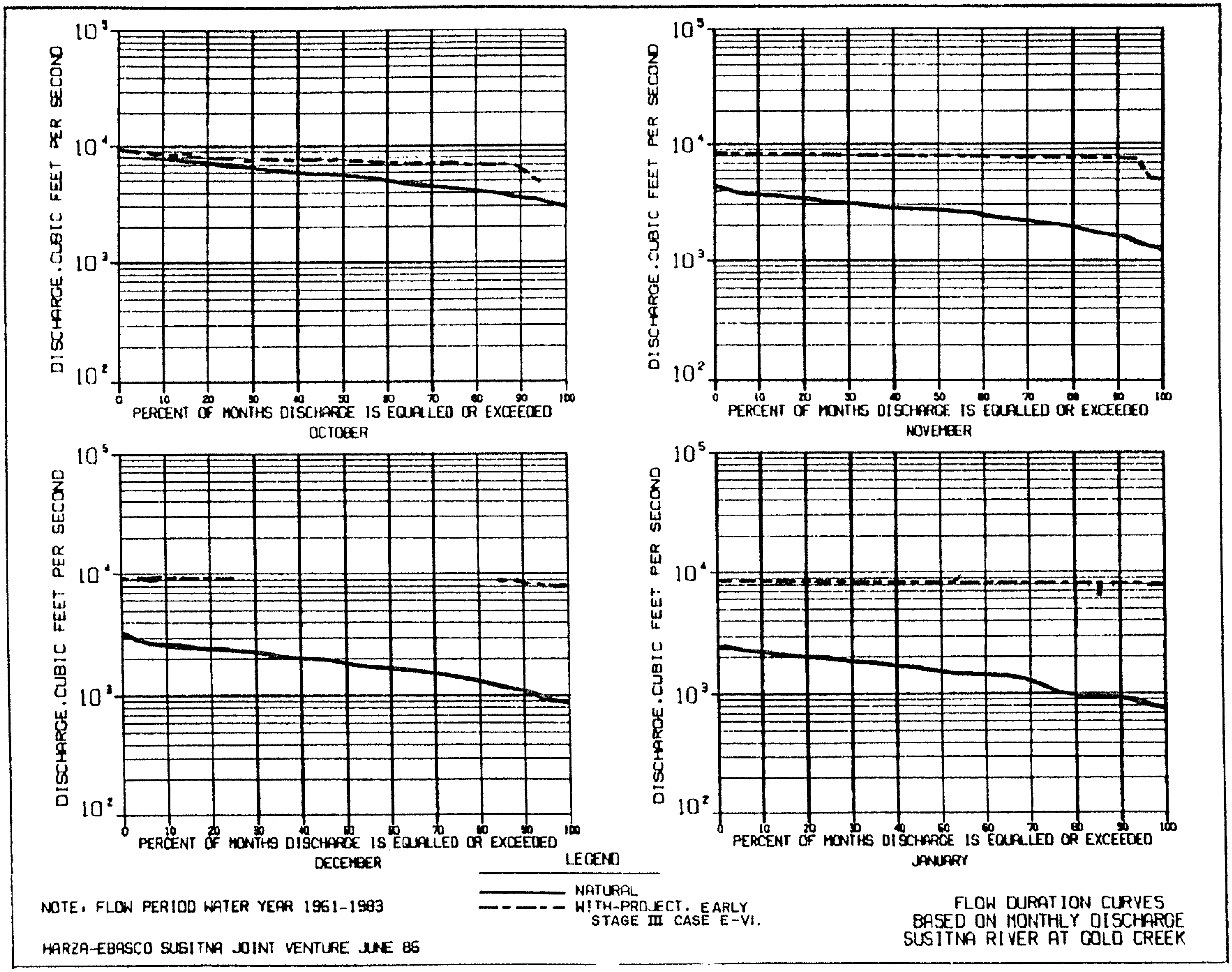
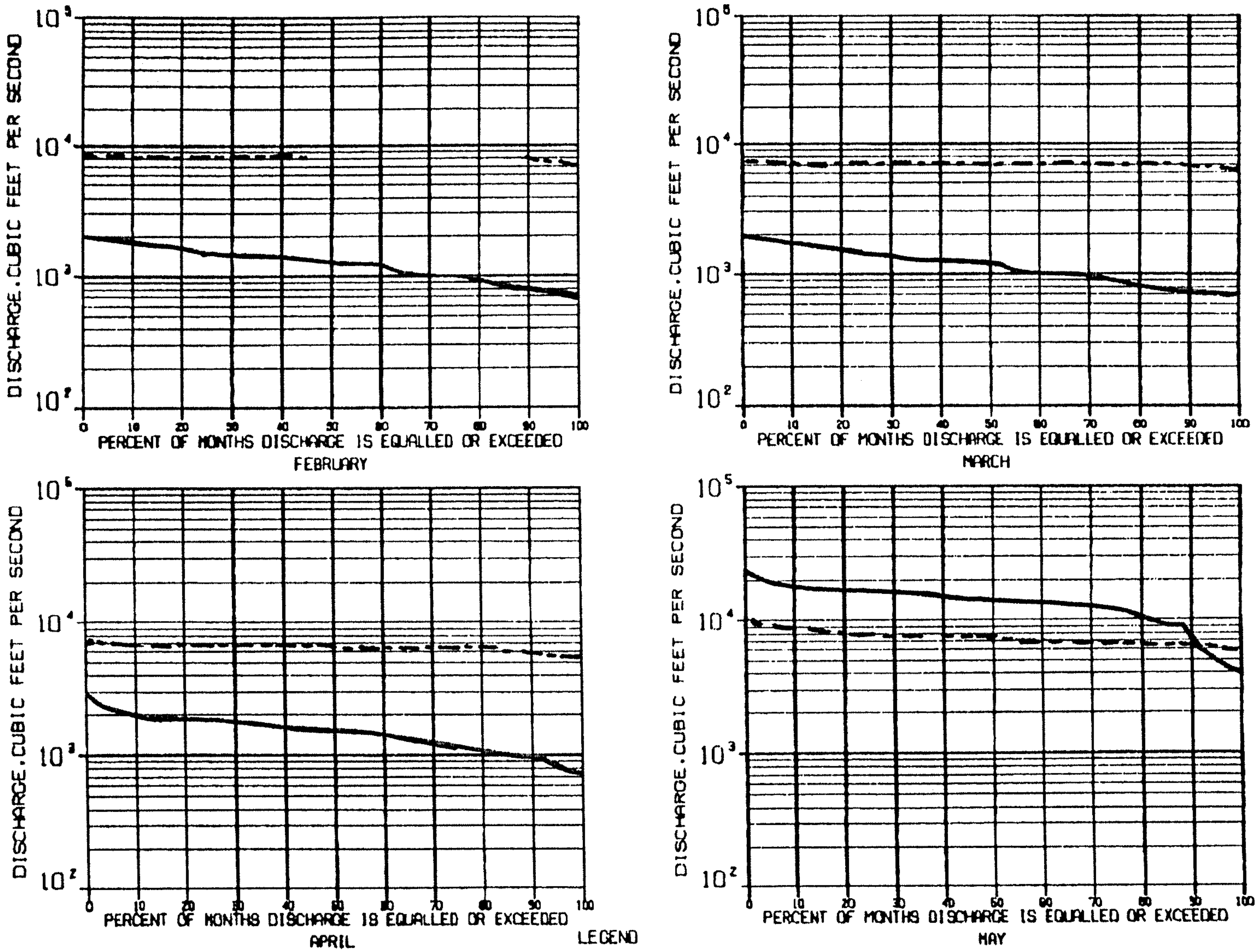


FIGURE E.2.4.243

(PAGE 1 of 3)



NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT GOLD CREEK

FIGURE E.2.4.243

(PAGE 2 of 3)

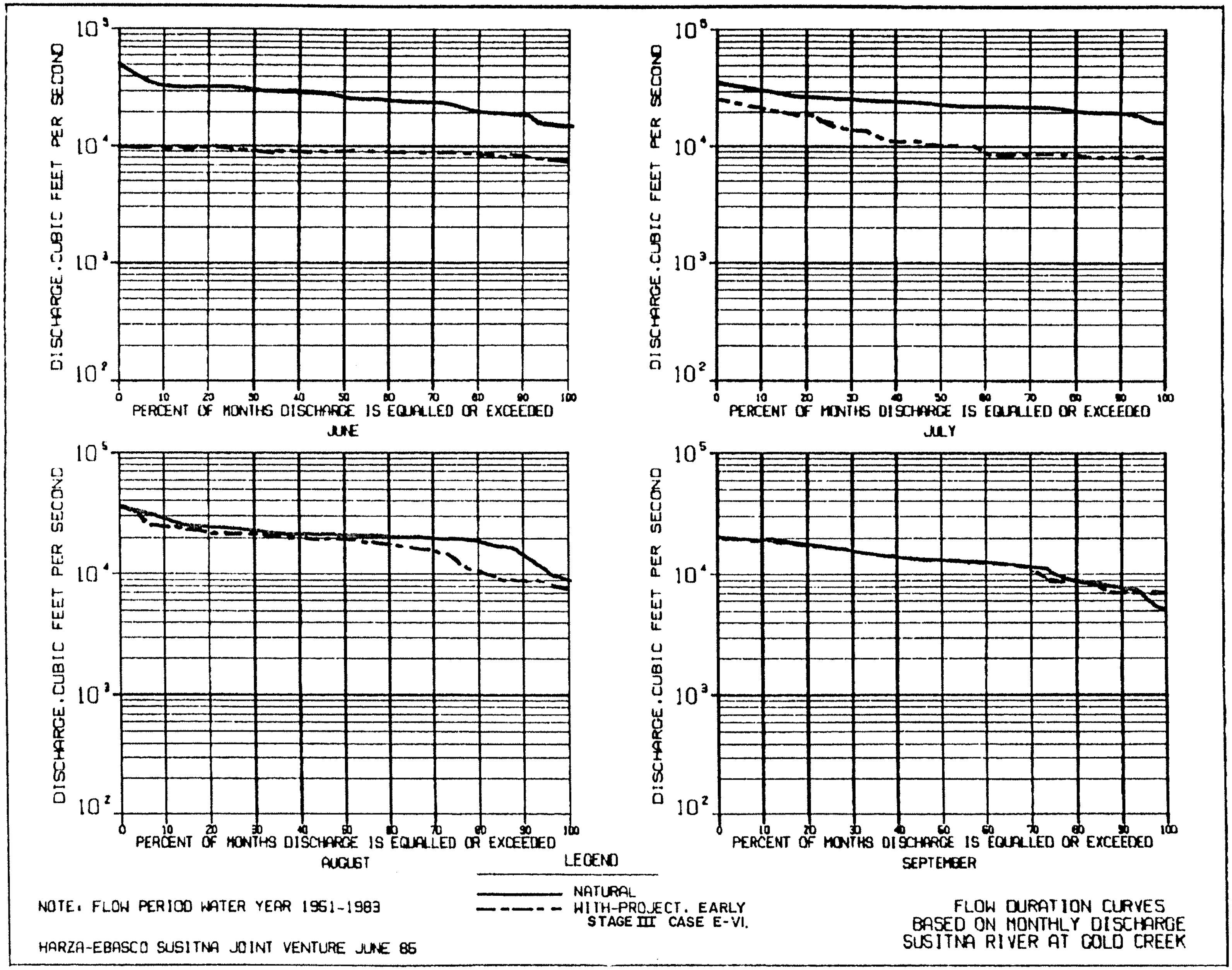


FIGURE E.2.4.243

(PAGE 3 of 3)

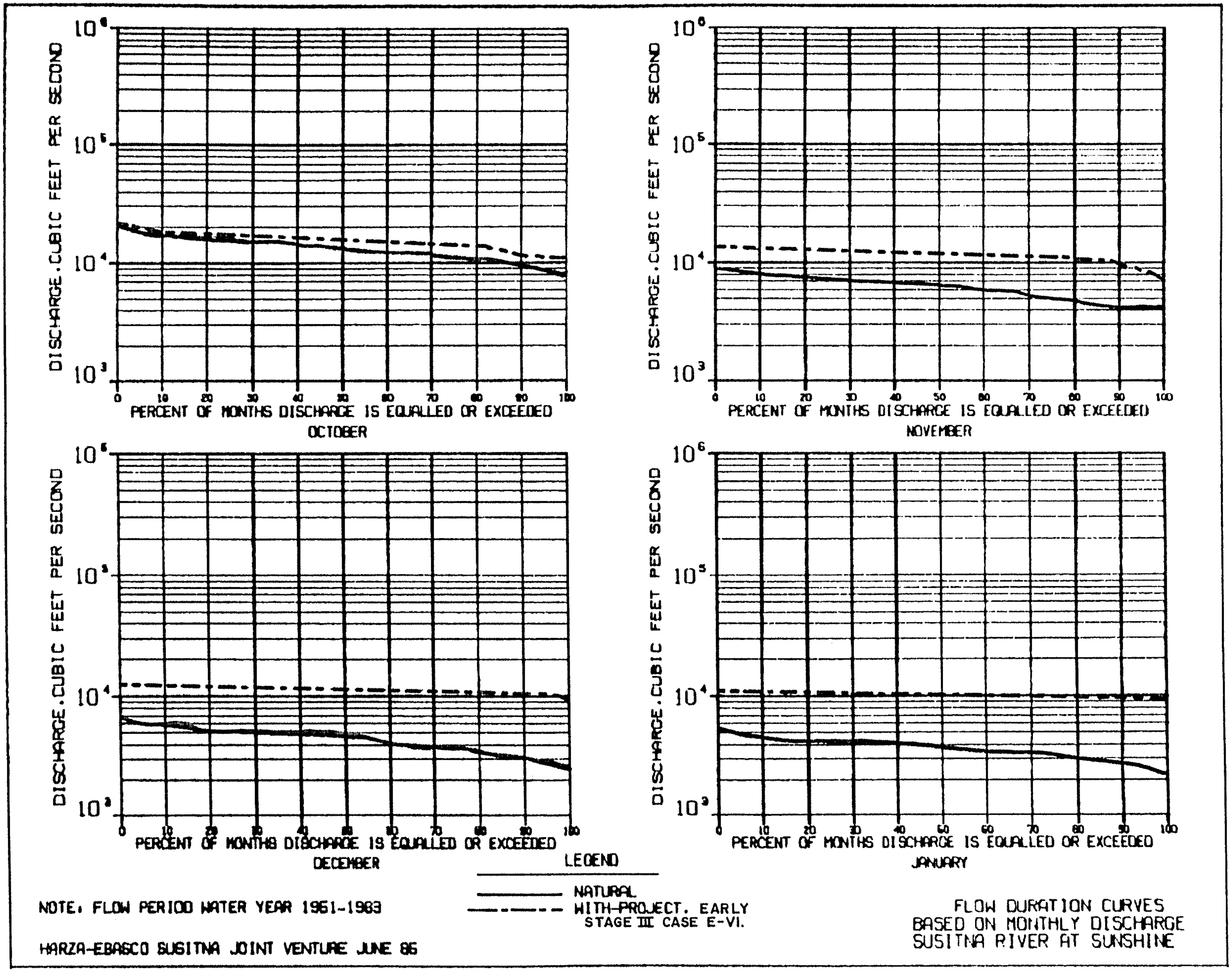


FIGURE E.2.4.244

(PAGE 1 of 3)

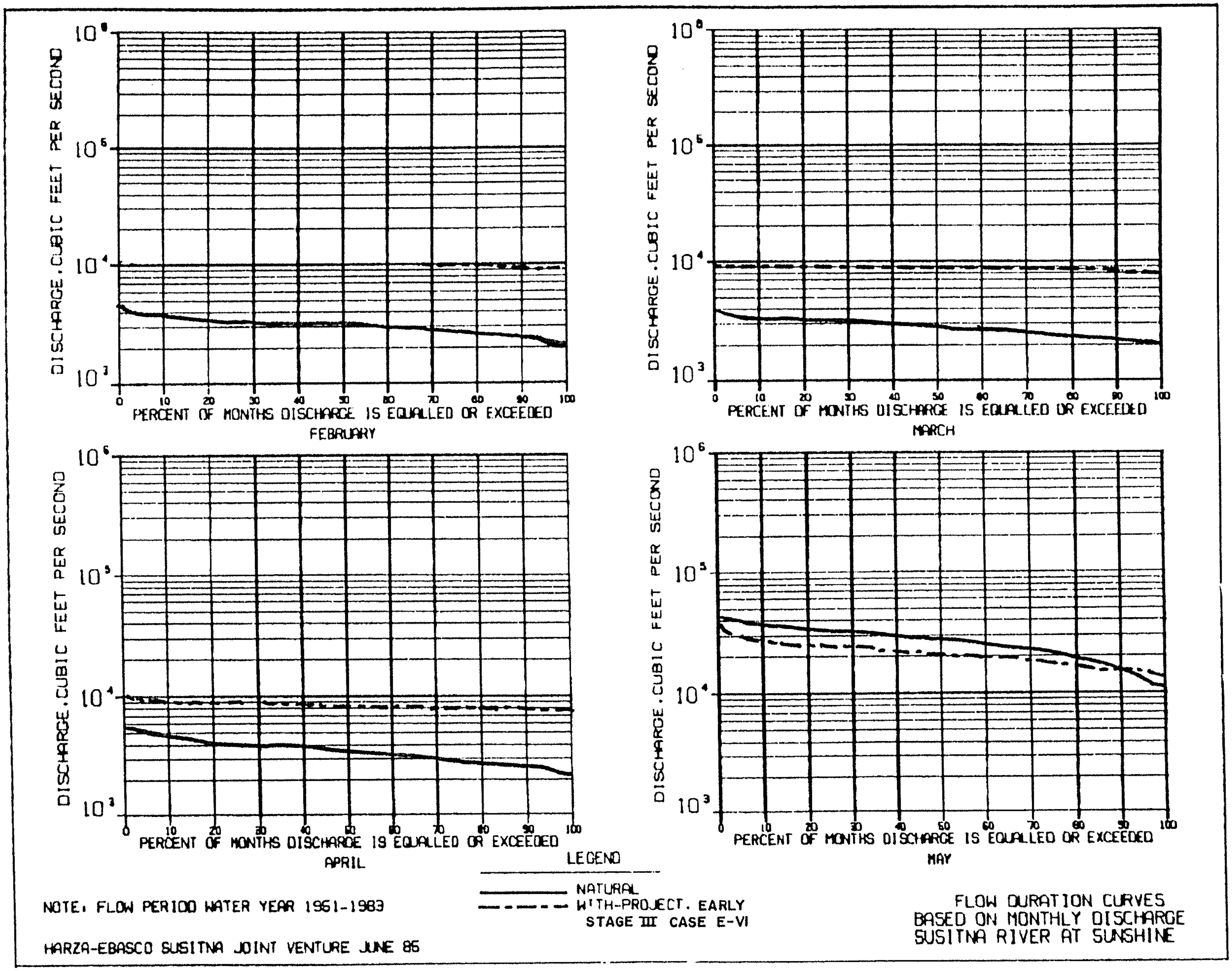
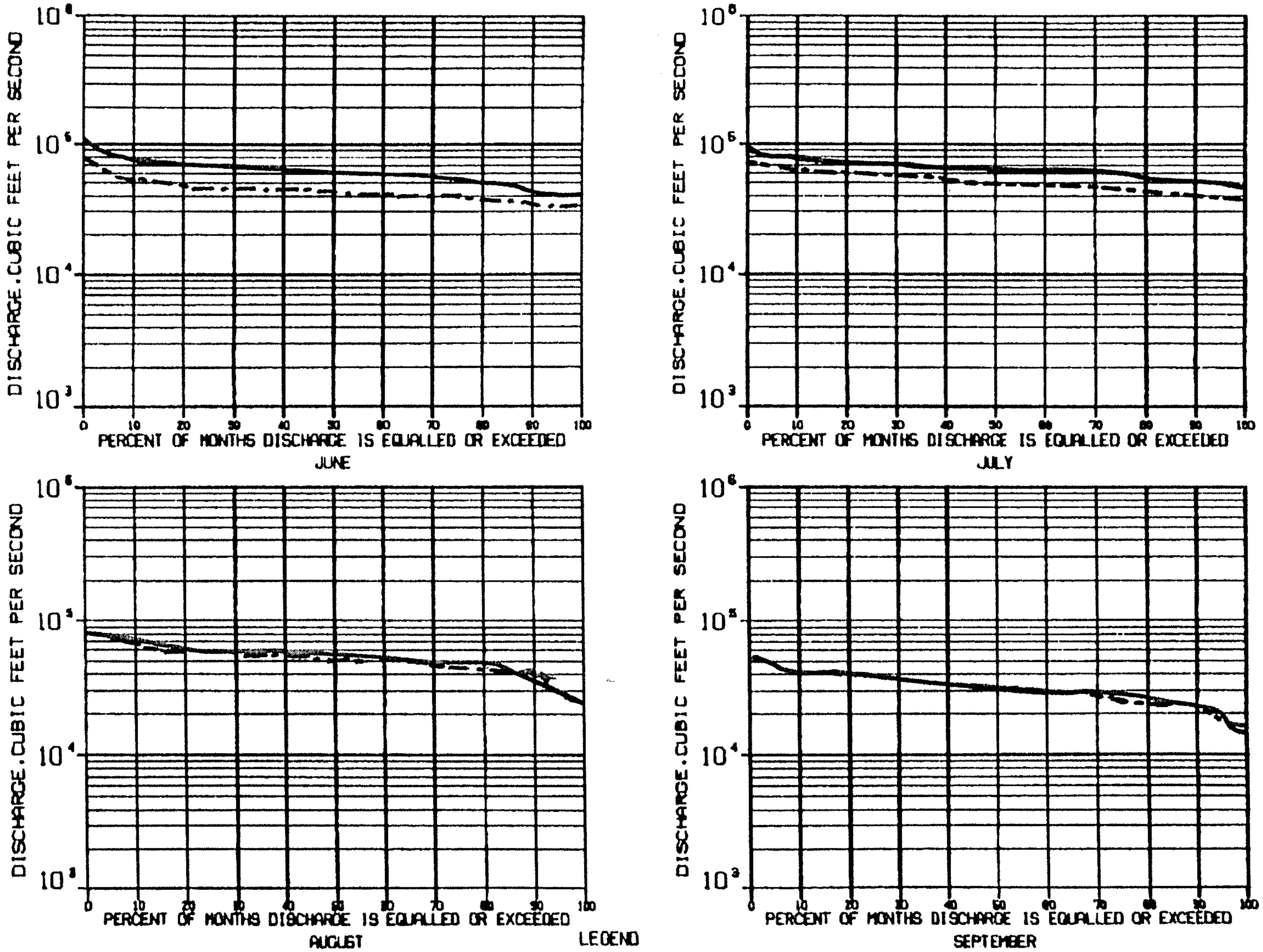


FIGURE E.2.4.244

(PAGE 2 of 3)



LEGEND

NATURAL
WITH-PROJECT, EARLY STAGE III CASE E-VI.

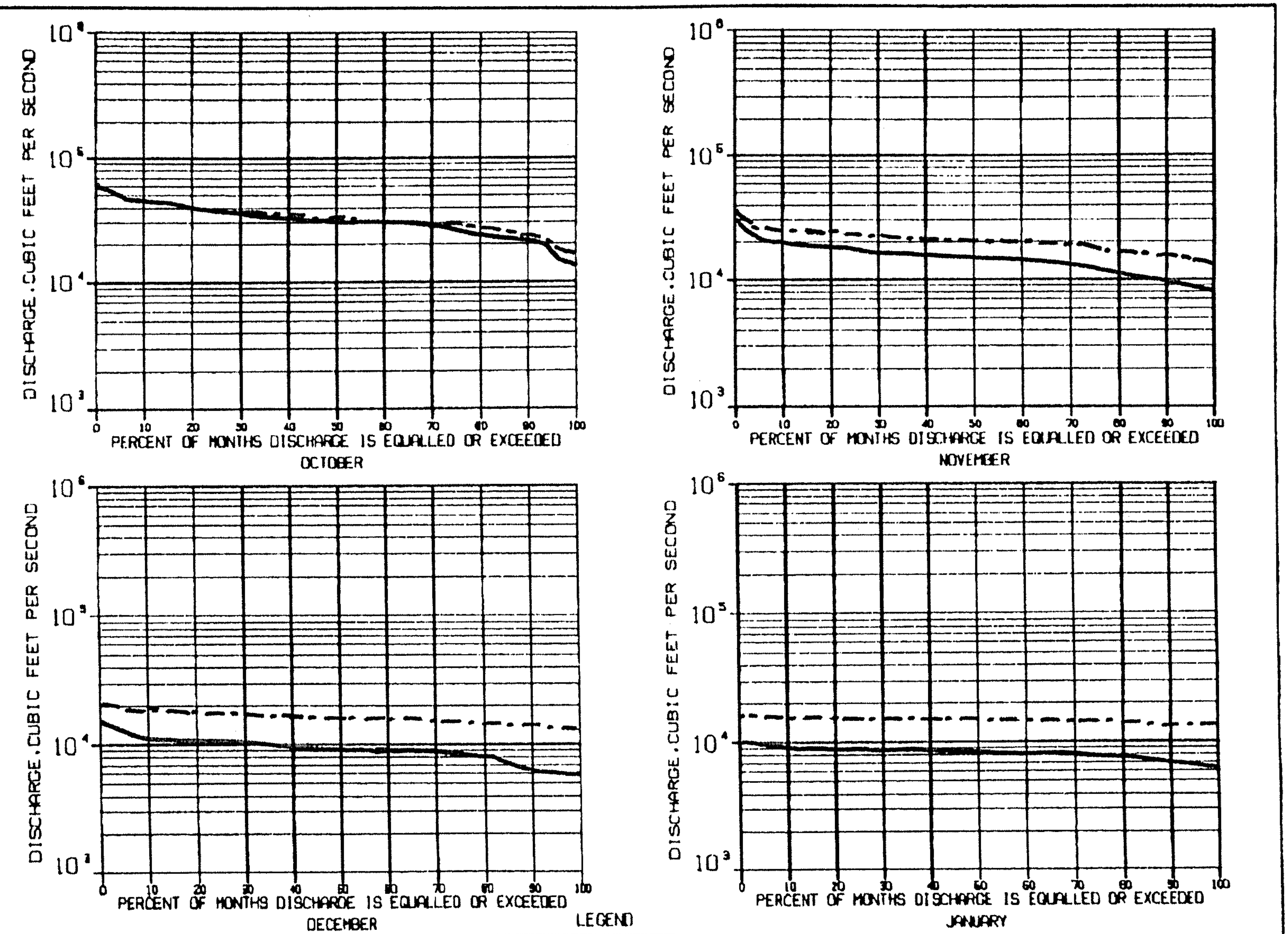
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE 2.4.244

(PAGE 3 of 3)



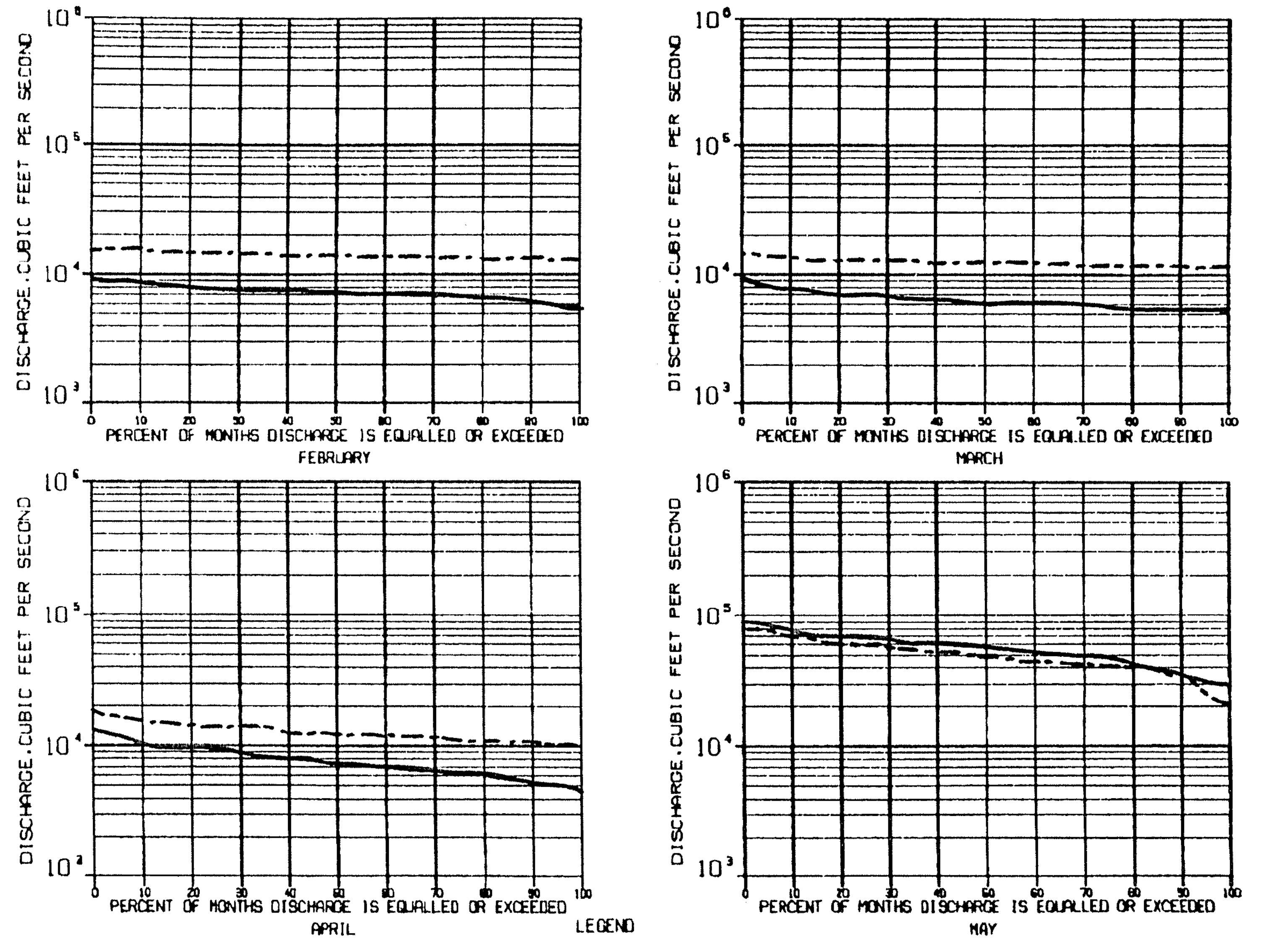
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.245

(PAGE 1 of 3)



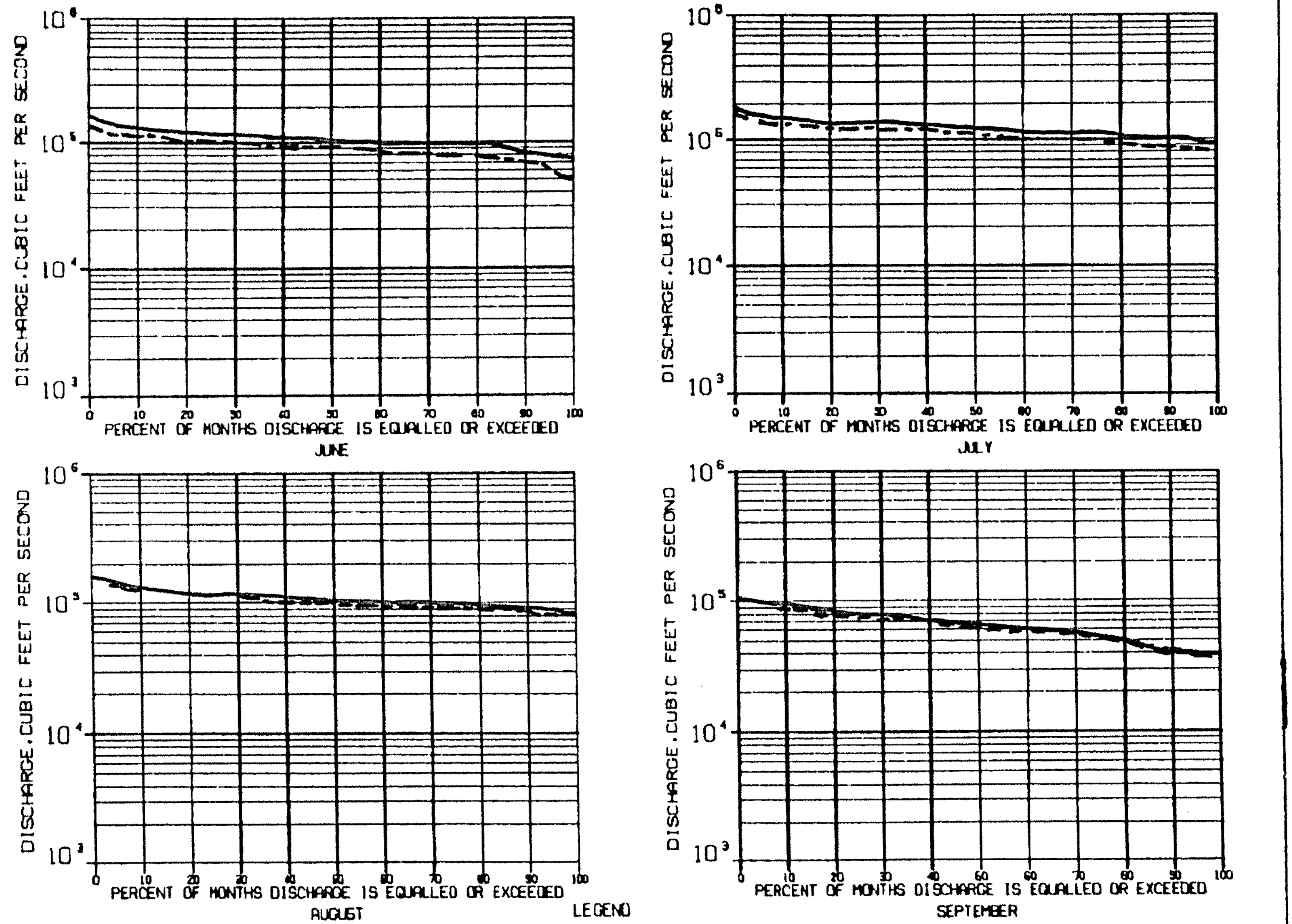
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.245

(PAGE 2 of 3)



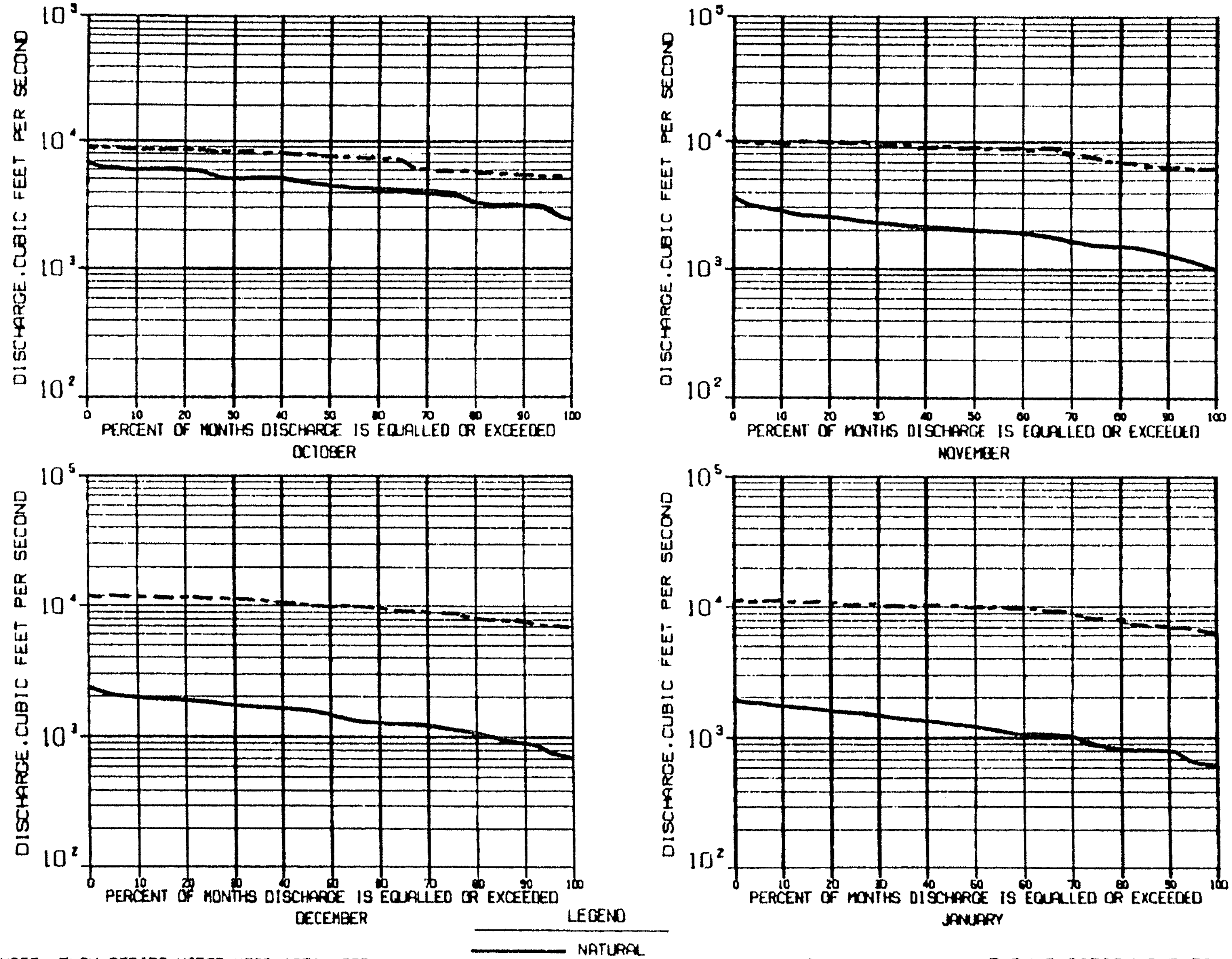
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.245

(PAGE 3 of 3)



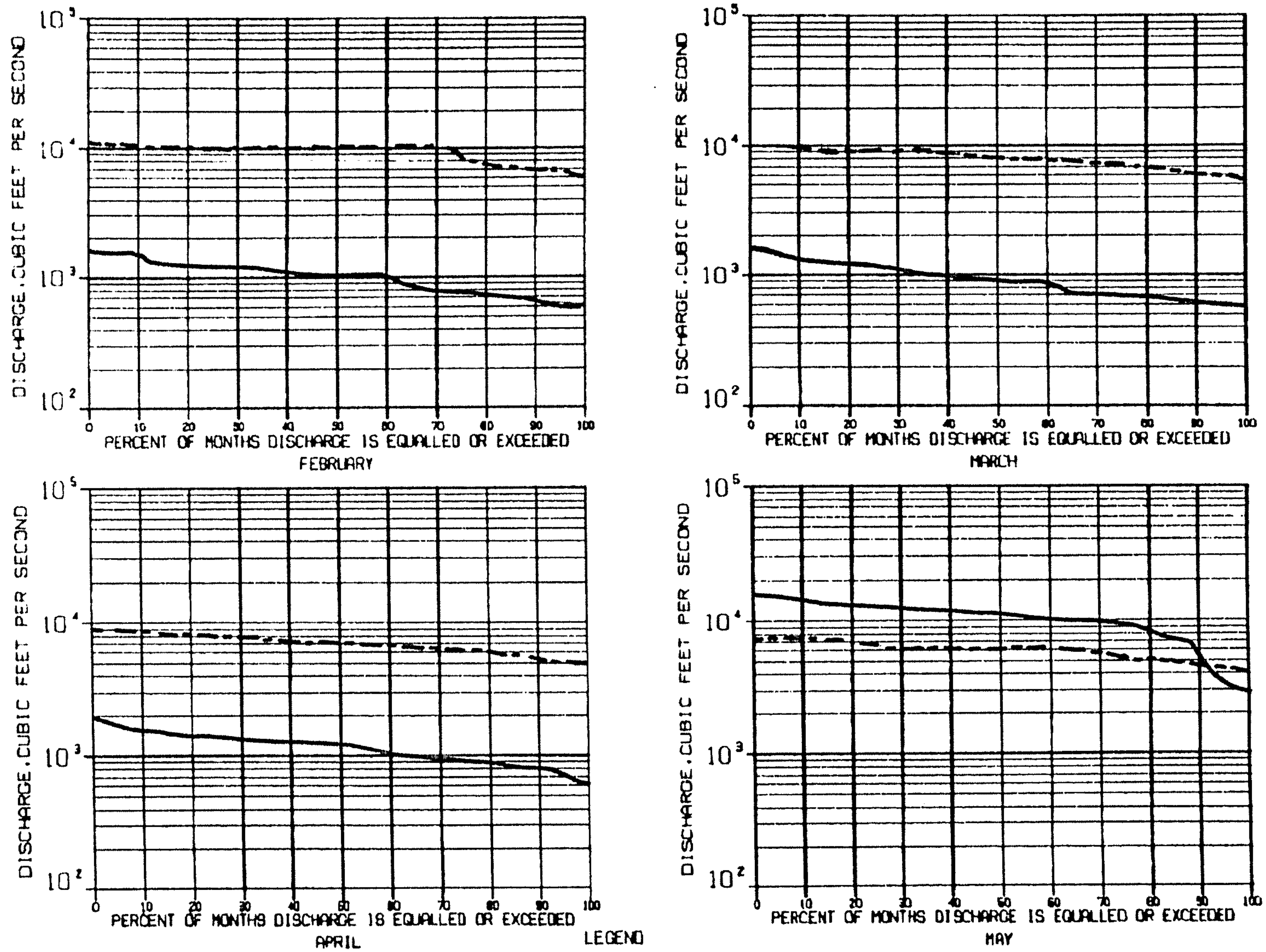
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.246

(PAGE 1 of 3)



LEGEND

NATURAL

WITH-PROJECT, STAGE III (LATE) CASE E-VI.

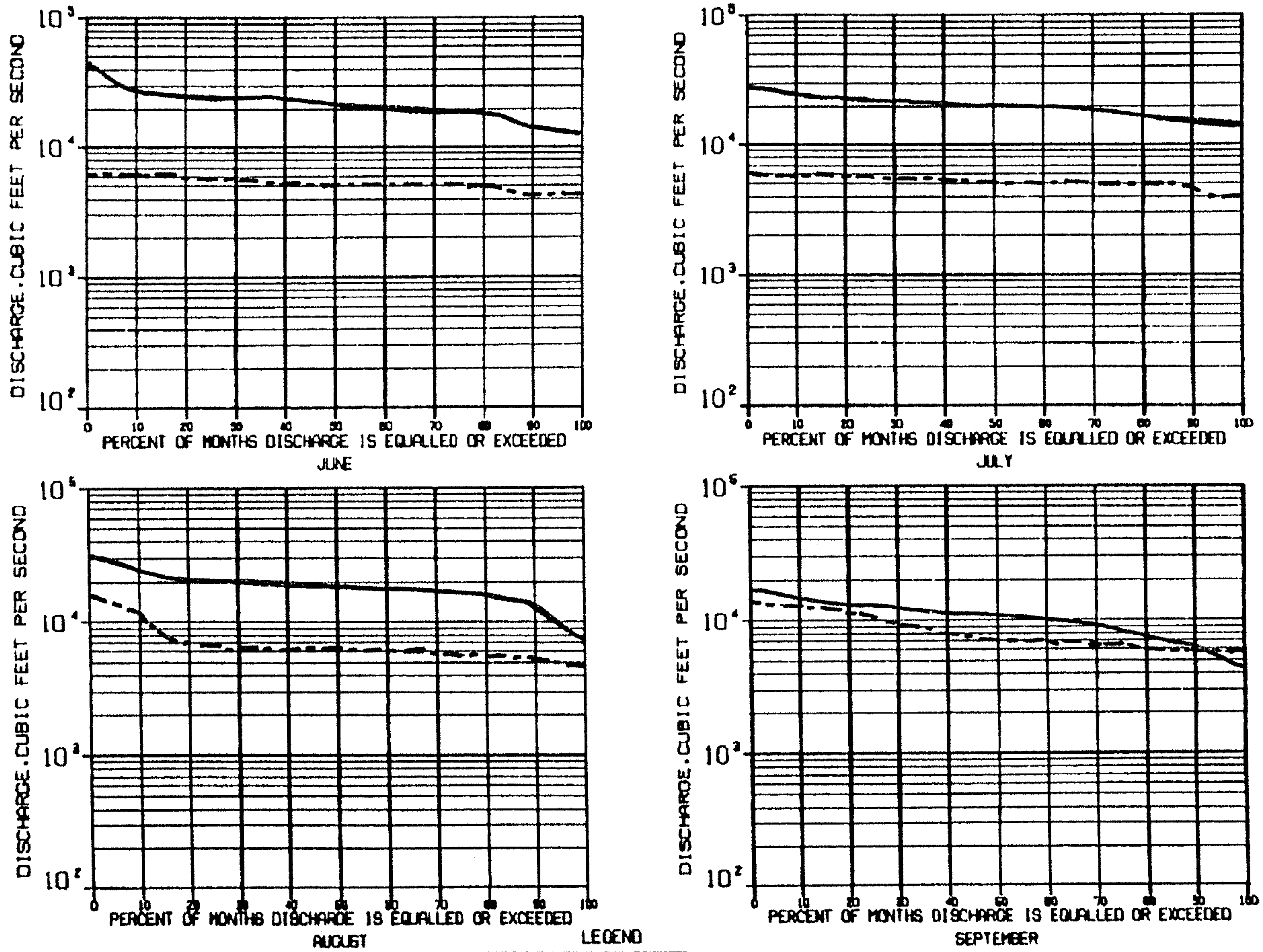
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.246

(PAGE 2 of 3)



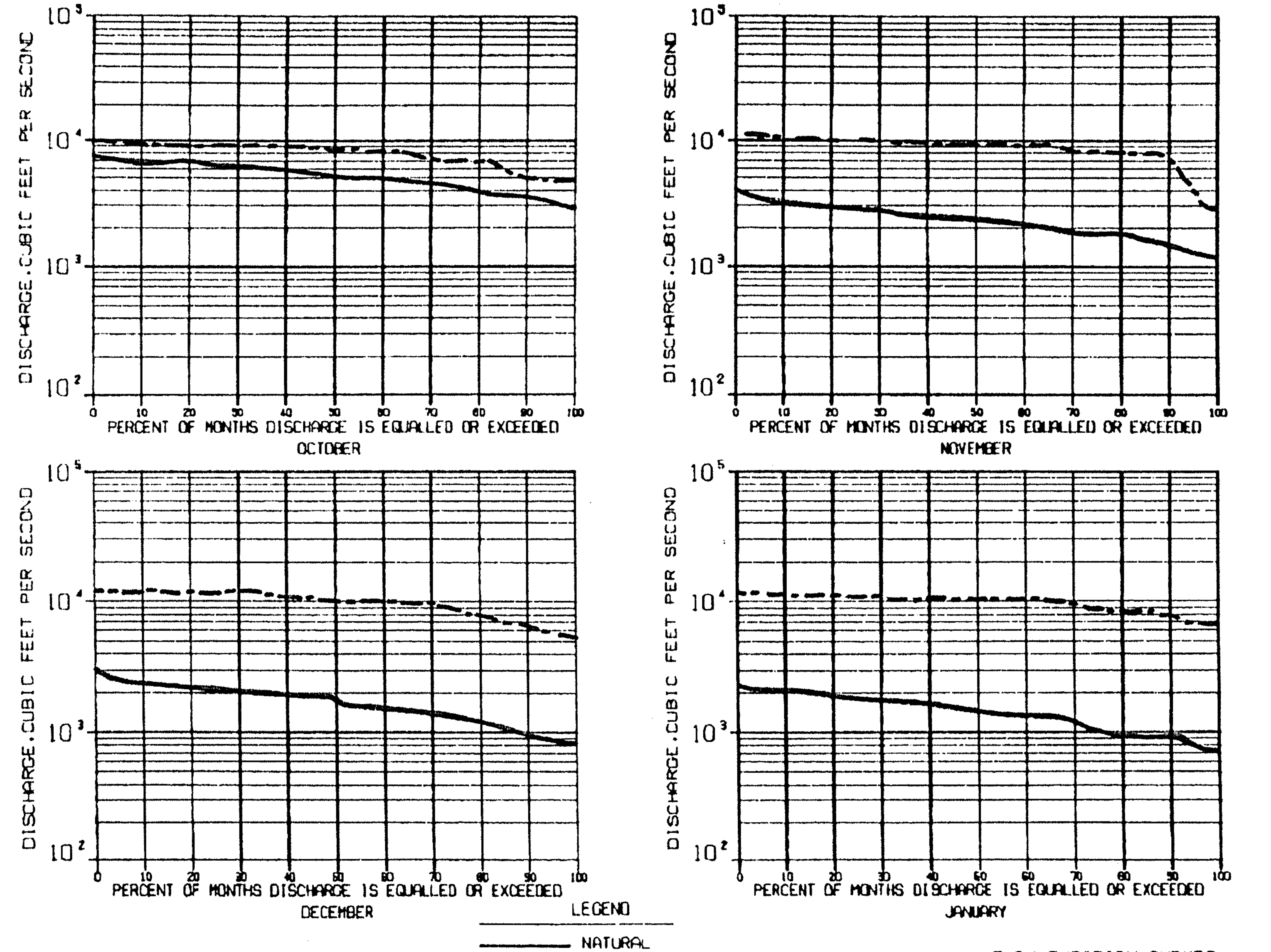
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT WATANA DAMSITE

FIGURE E.2.4.246

(PAGE 3 of 3)



NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT DEVIL CANYON DAMSITE

FIGURE E.2.4.247

(PAGE 1 of 3)

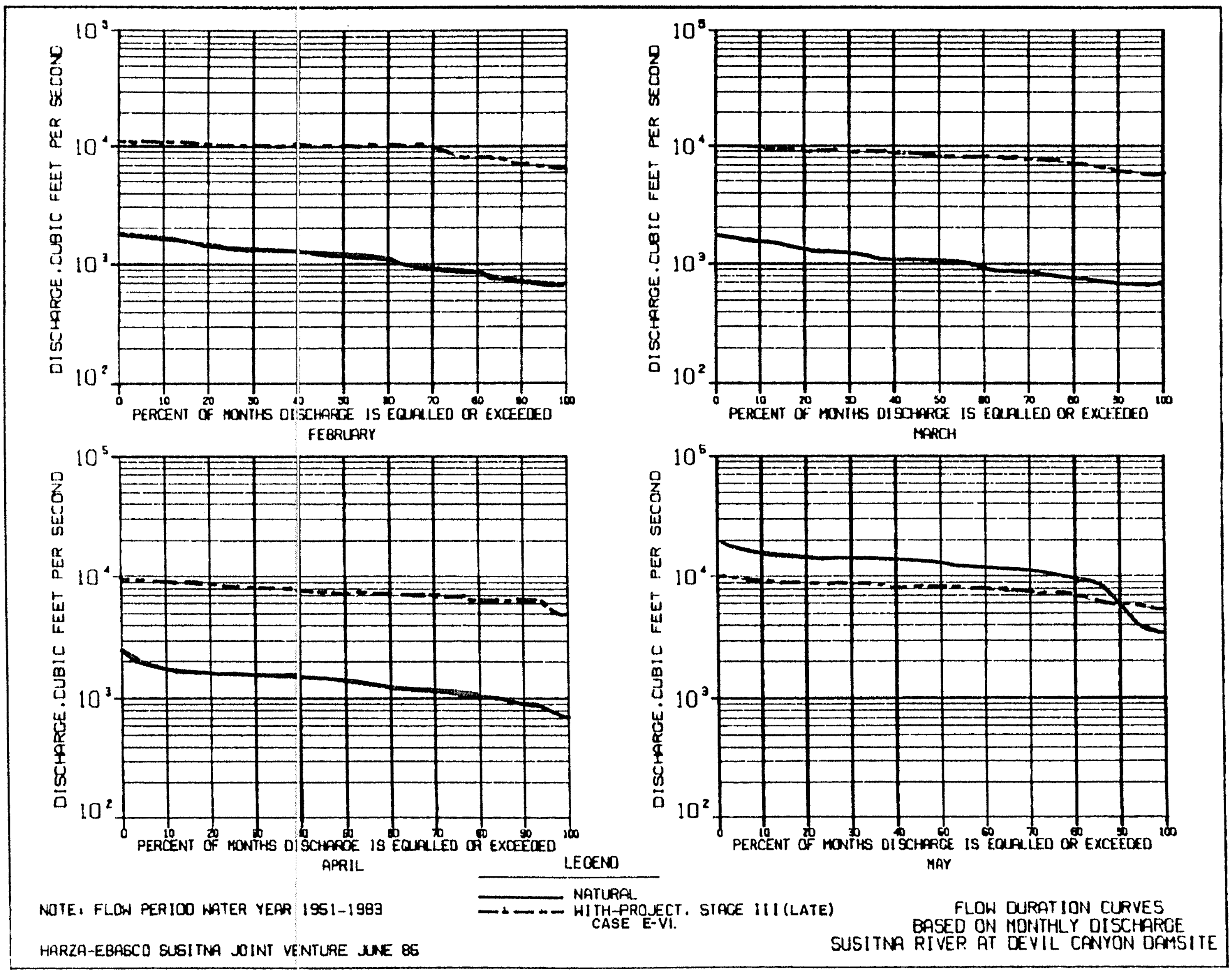


FIGURE E.2.4.247

(PAGE 2 of 3)

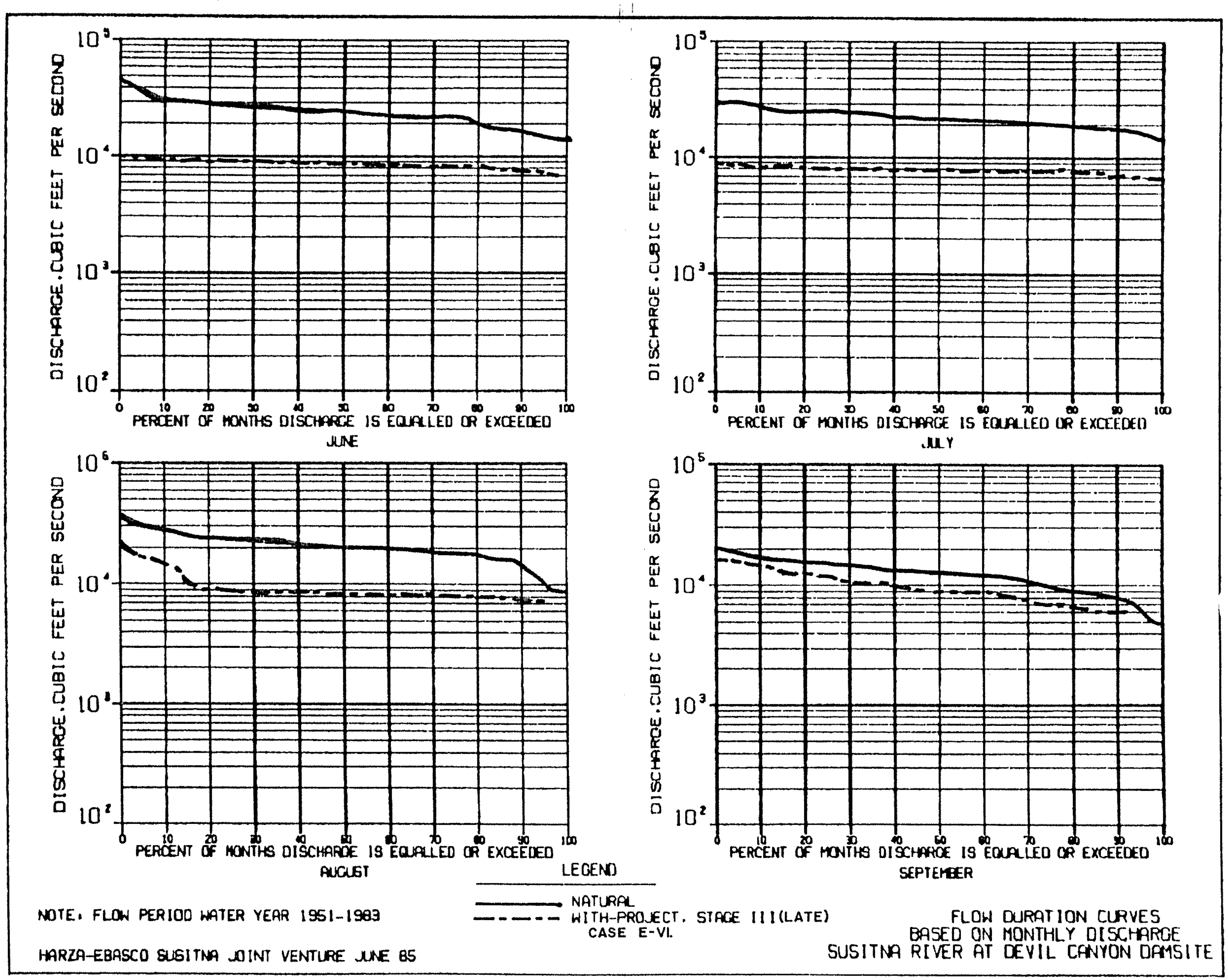
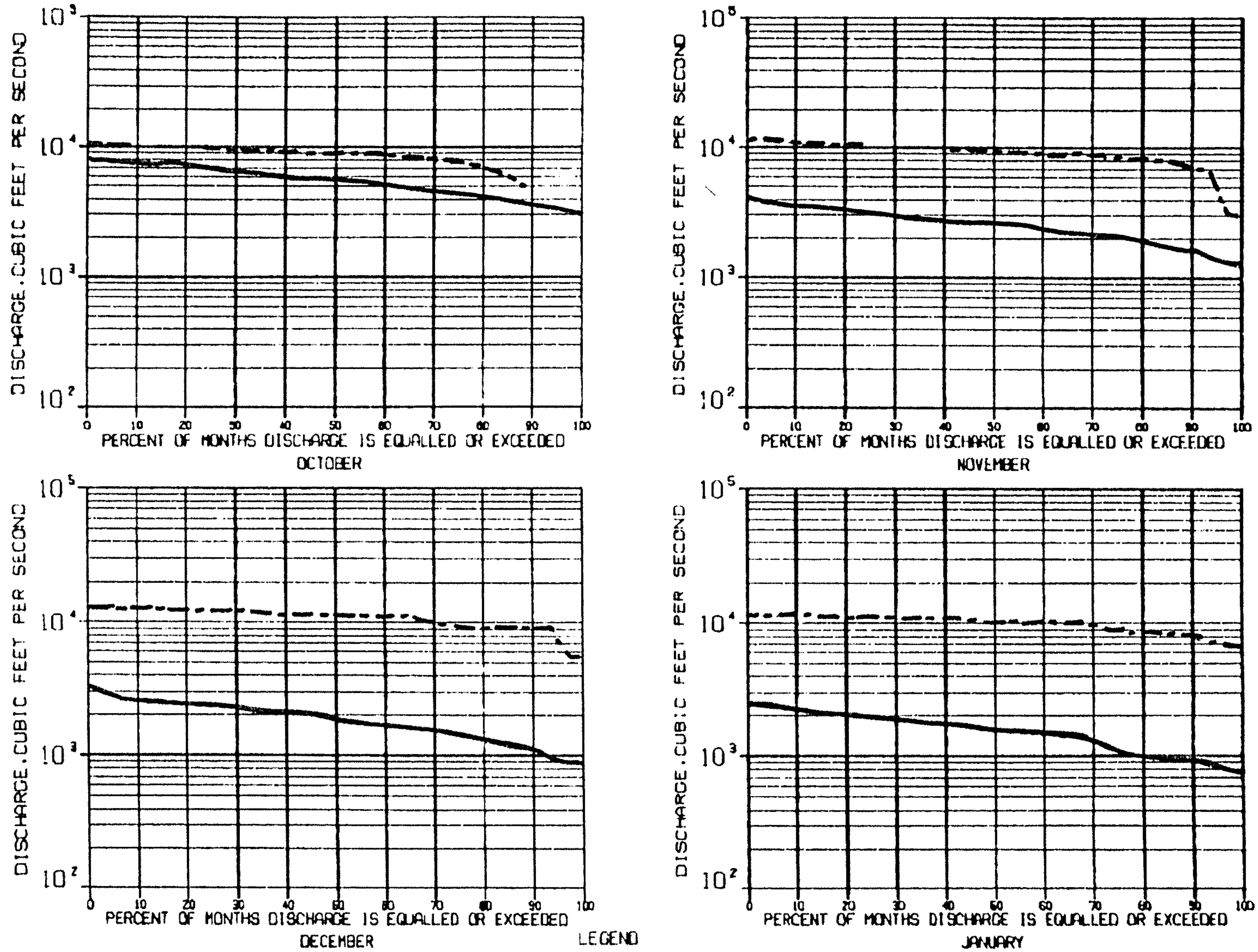


FIGURE E.2.4.247

(PAGE 3 of 3)



LEGEND

——— NATURAL
– – – – WITH-PROJECT, STAGE III (LATE) CASE E-VI.

NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT GOLD CREEK

FIGURE E.2.4.248

(PAGE 1 of 3)

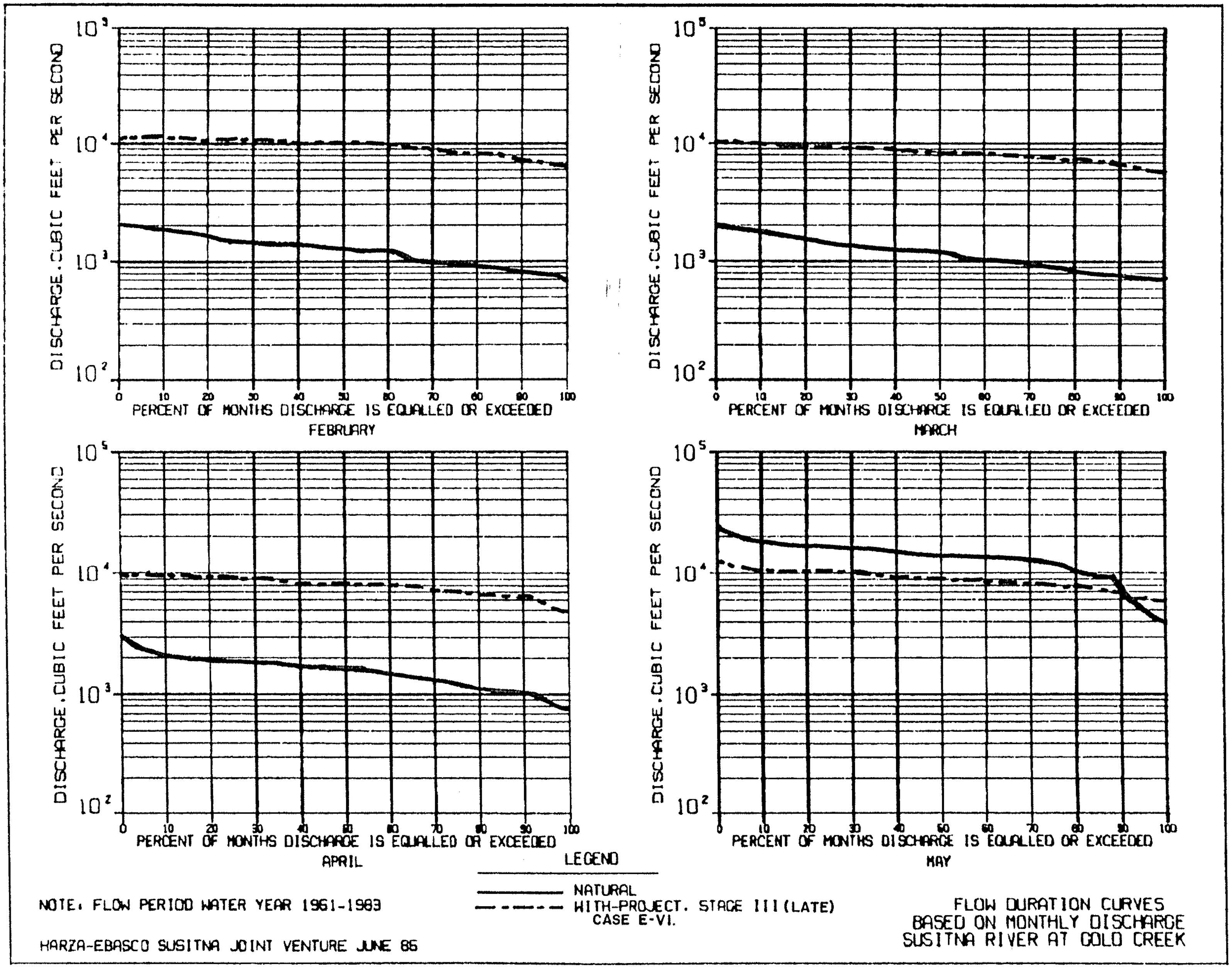
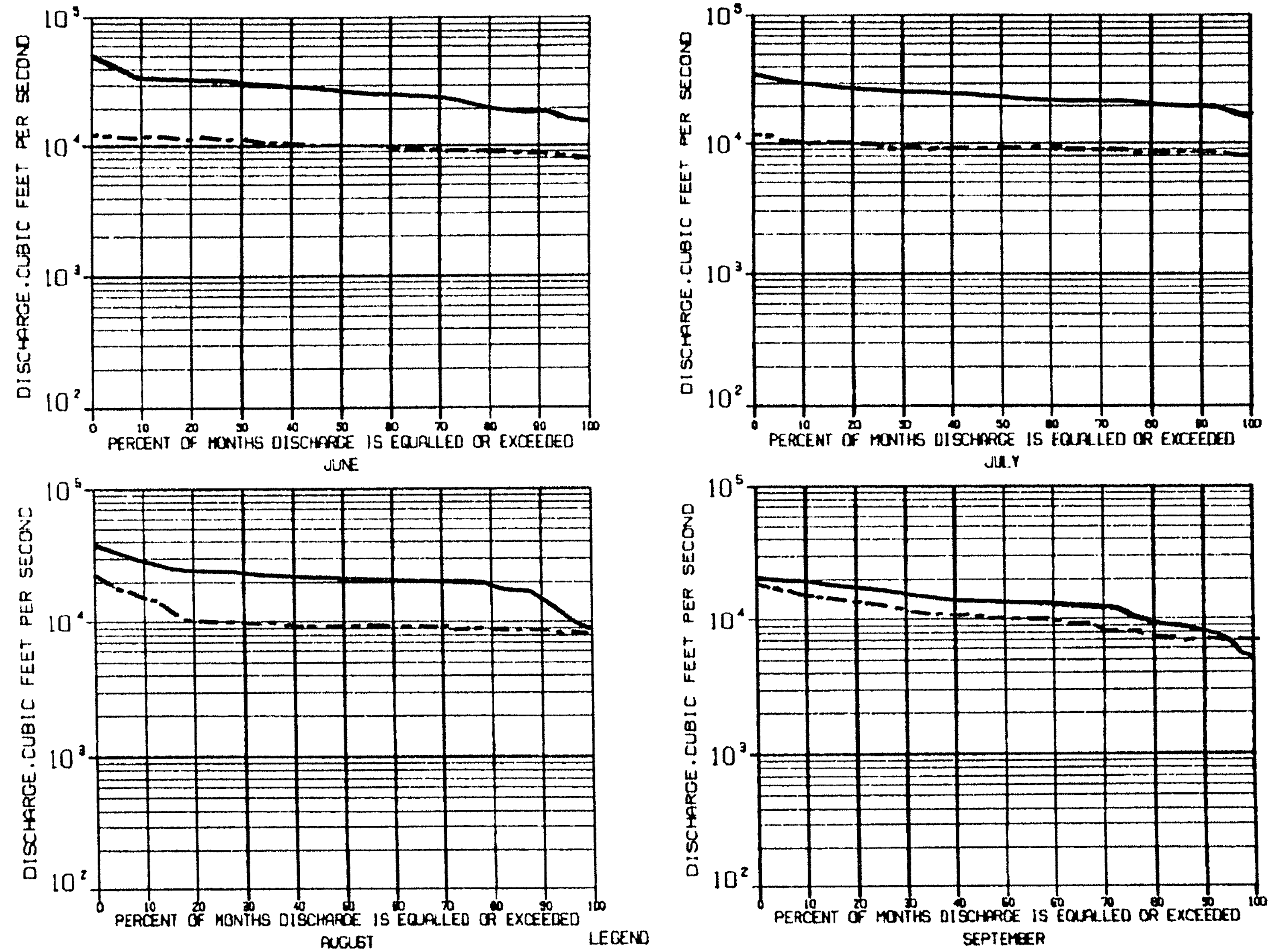


FIGURE E.2.4.248

(PAGE 2 of 3)



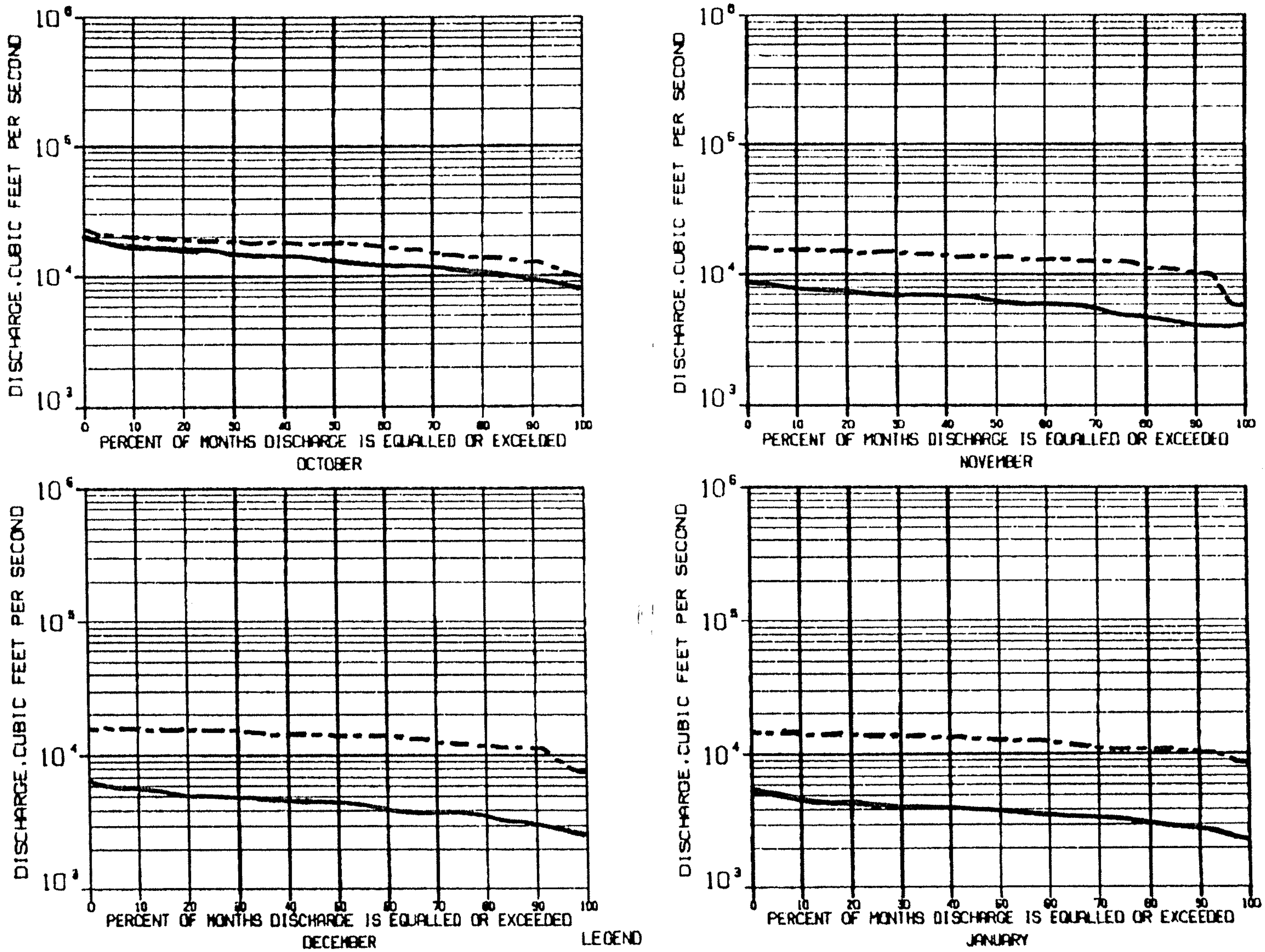
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 86

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT GOLD CREEK

FIGURE E.2.4.248

(PAGE 3 of 3)



LEGEND

——— NATURAL

– – – – WITH-PROJECT, STAGE III (LATE) CASE E-VI.

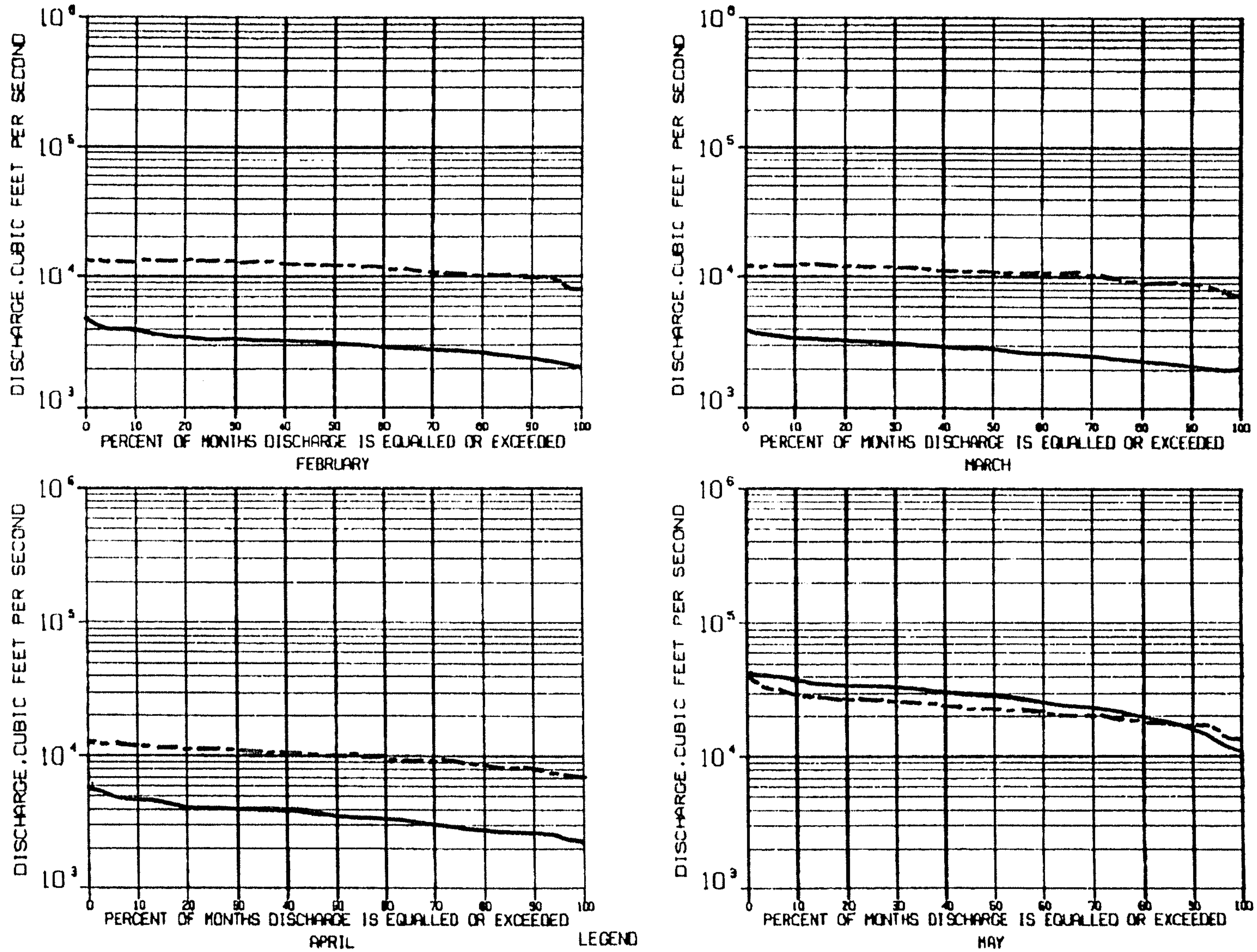
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.249

(PAGE 1 of 3)



LEGEND

NATURAL

WITH-PROJECT. STAGE III (LATE) CASE E-VI.

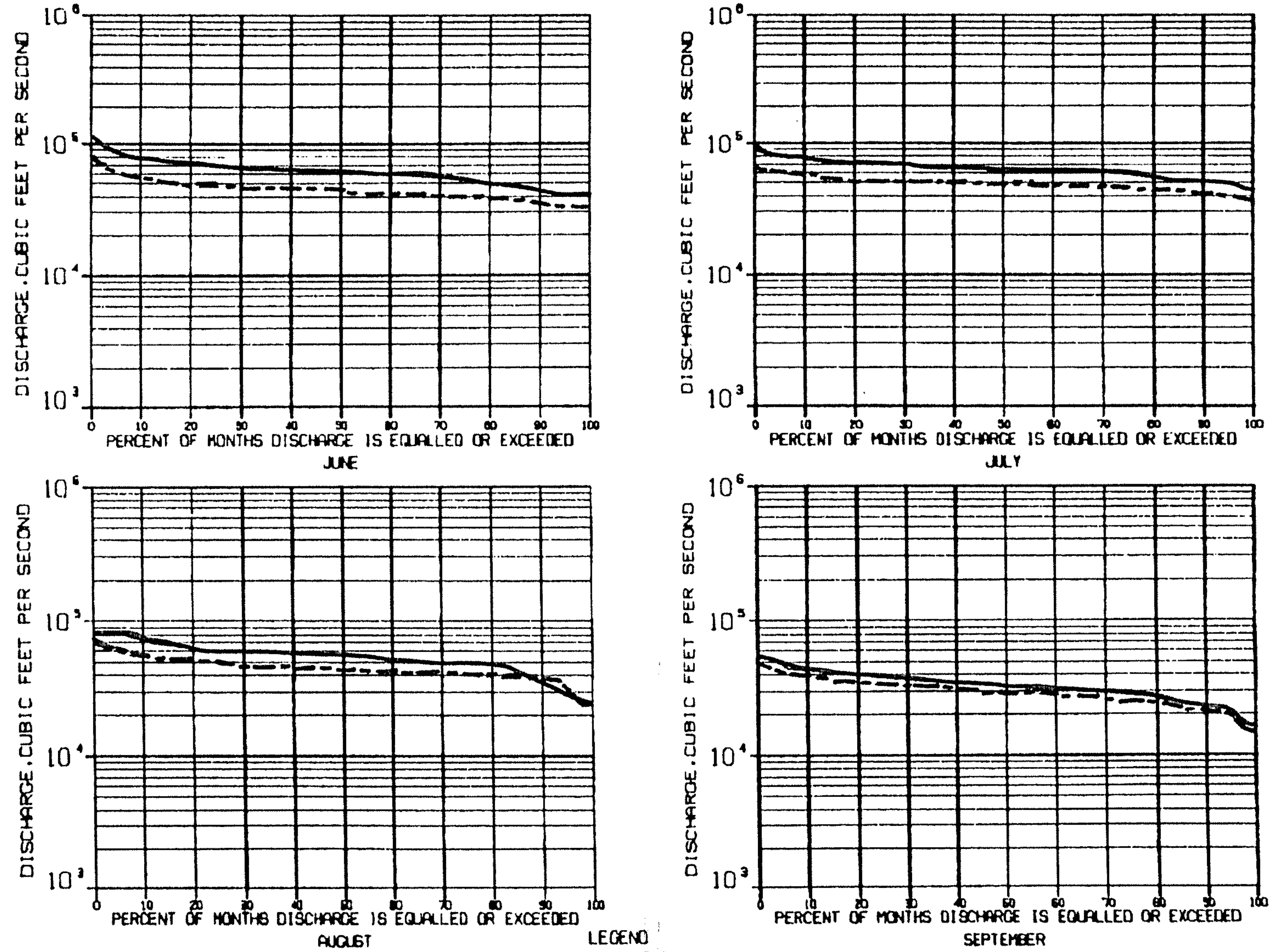
NOTE: FLOW PERIOD WATER YEAR 1961-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.249

(PAGE 2 of 3)



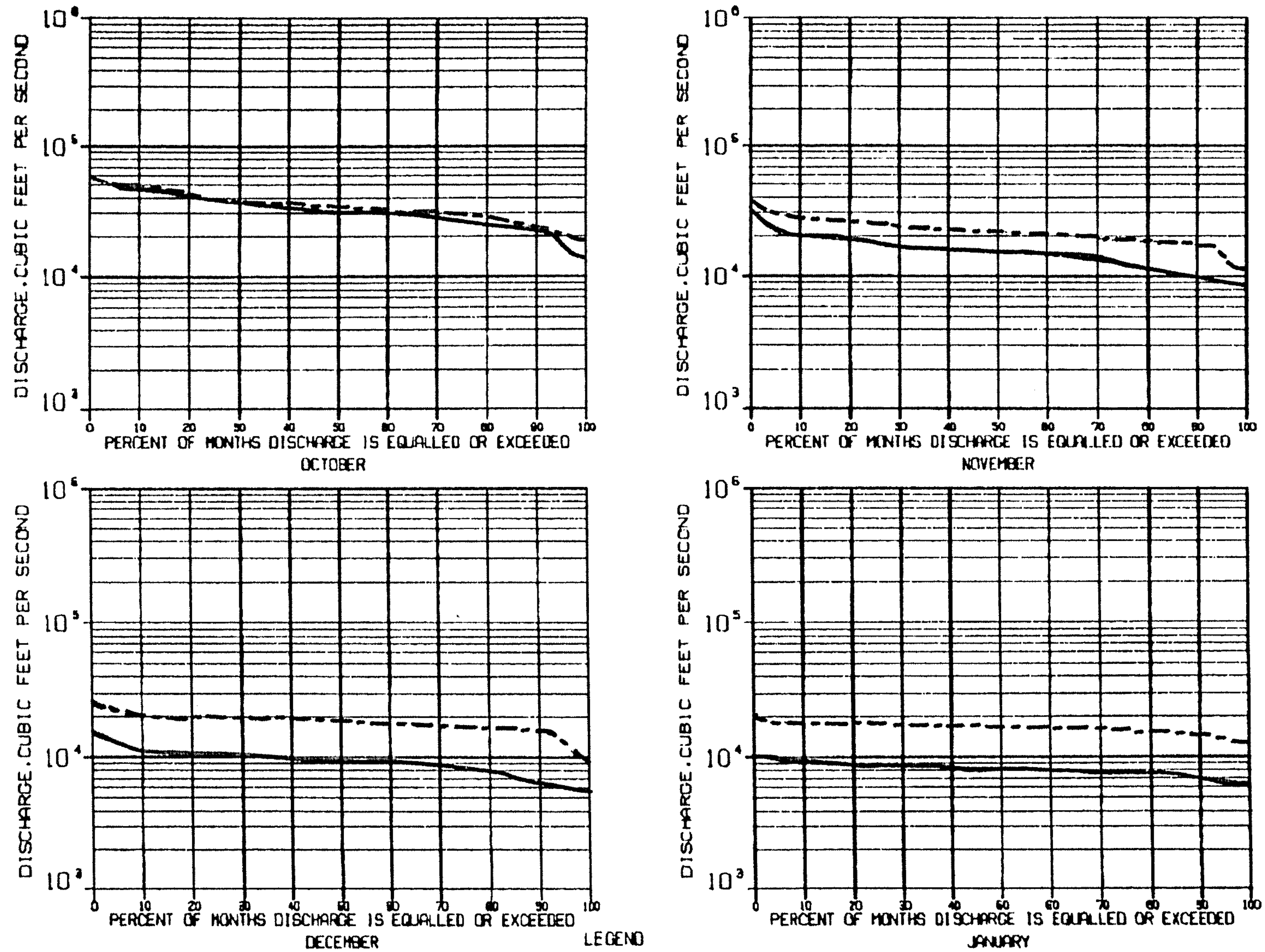
NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUNSHINE

FIGURE E.2.4.249

(PAGE 3 of 3)



LEGEND

NATURAL

WITH-PROJECT, STAGE III (LATE)

CASE E-VI.

NOTE: FLOW PERIOD WATER YEAR 1951-1983

HARZA-EBASCO SUSITNA JOINT VENTURE JUNE 85

FLOW DURATION CURVES
BASED ON MONTHLY DISCHARGE
SUSITNA RIVER AT SUSITNA STATION

FIGURE E.2.4.250

(PAGE 1 of 3)

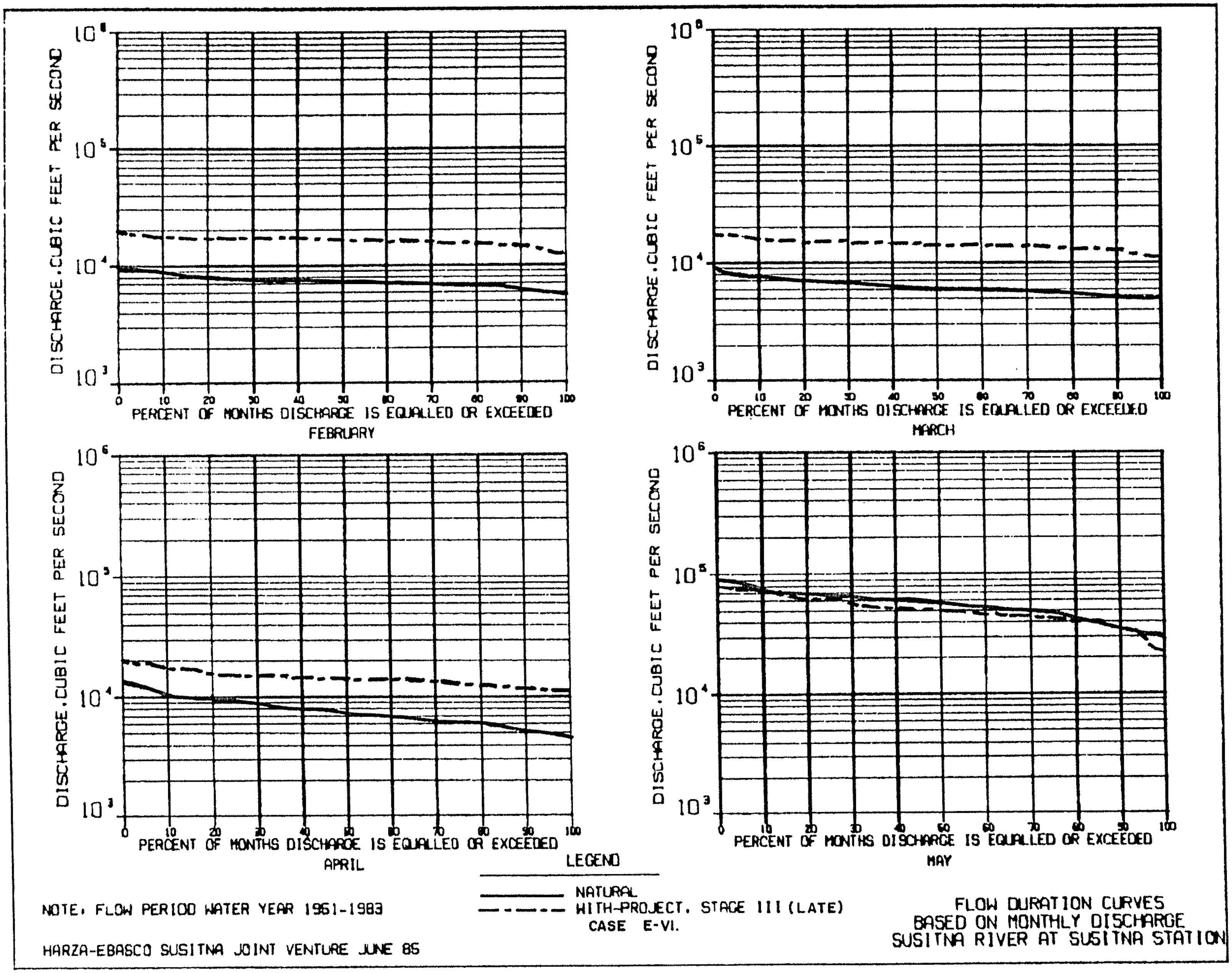


FIGURE E.2.4.250

(PAGE 2 of 3)

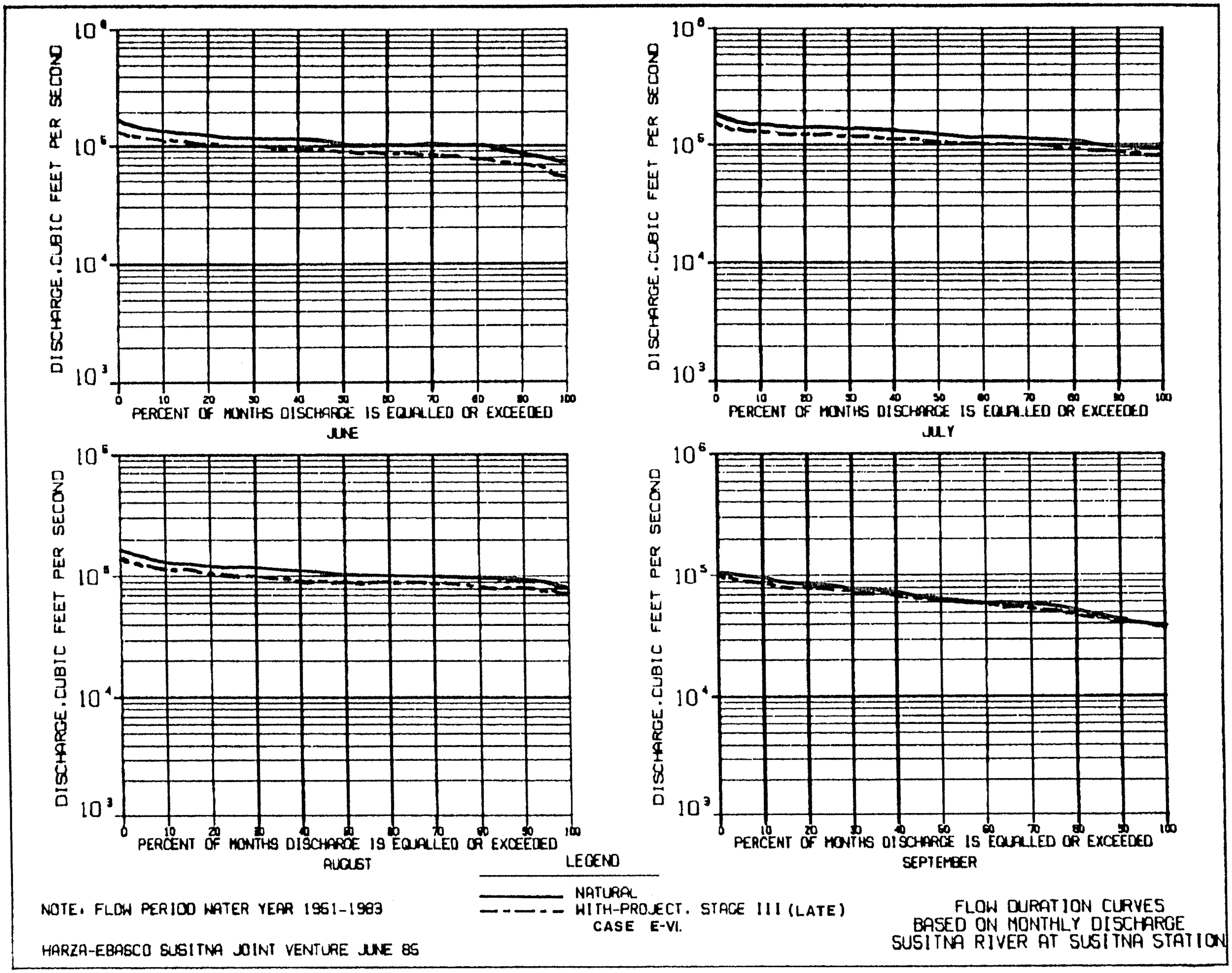
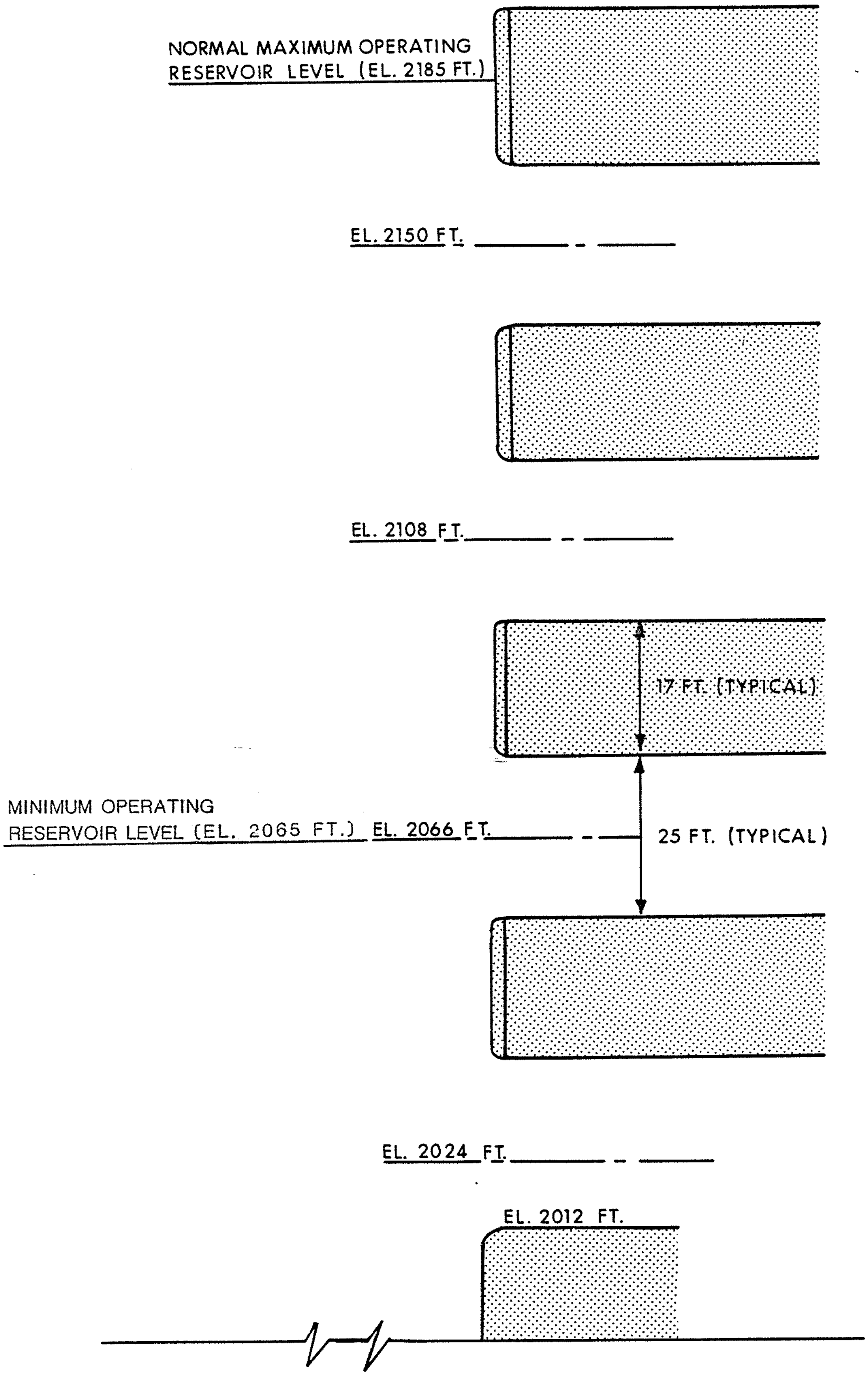


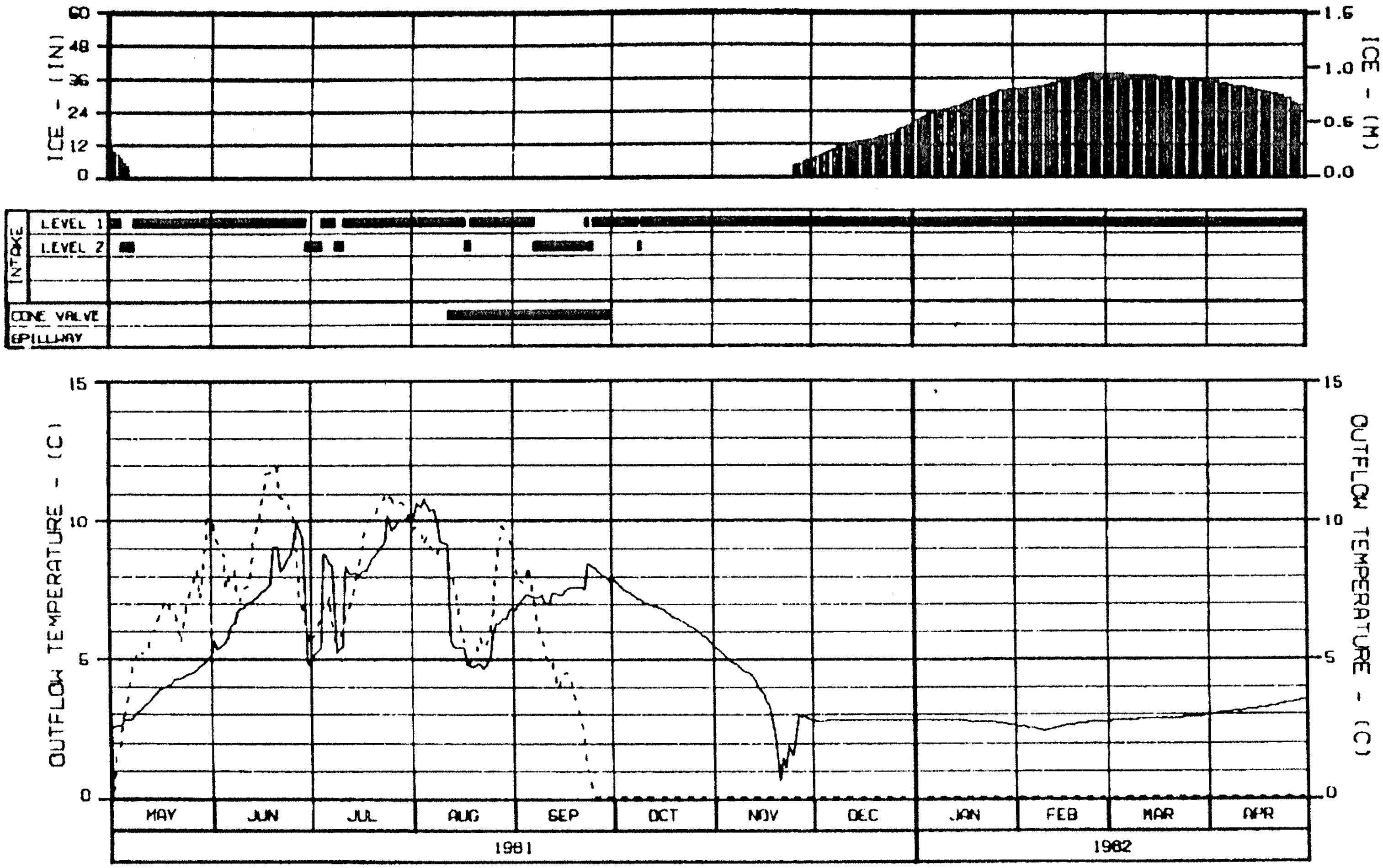
FIGURE E.2.4.250

(PAGE 3 of 3)



WATANA MULTILEVEL INTAKE
STAGE III

FIGURE E.2.4.251



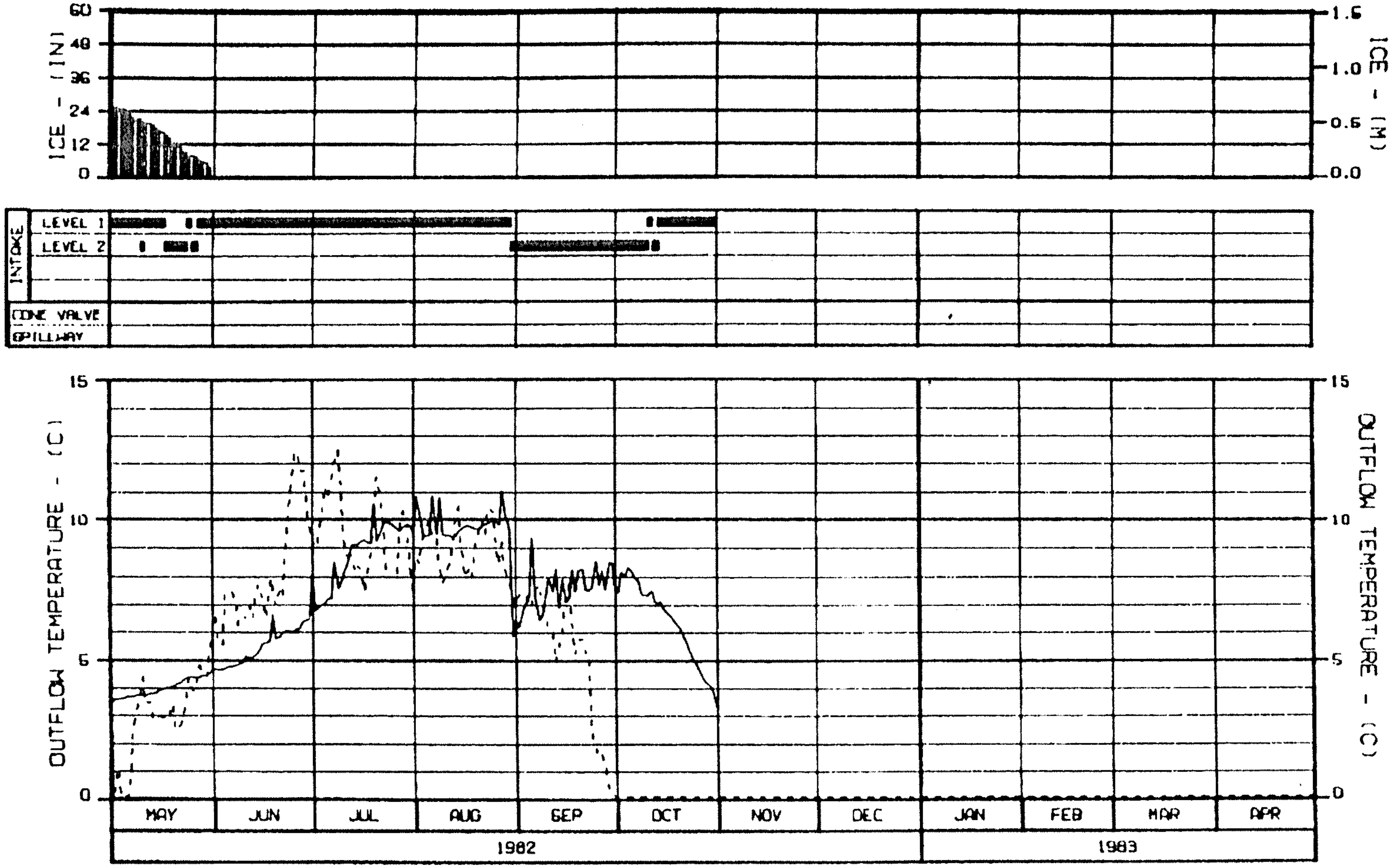
LEGEND: CASE: ** DC8120E - DEVIL CANYON OPERATION W/WATANA IN LATE STAGE III.

——— PREDICTED OUTFLOW TEMPERATURE
- - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1426 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
DEVIL CANYON LATE STAGE III OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	28 MAY 86	42-010-04

FIGURE E.2.4.252



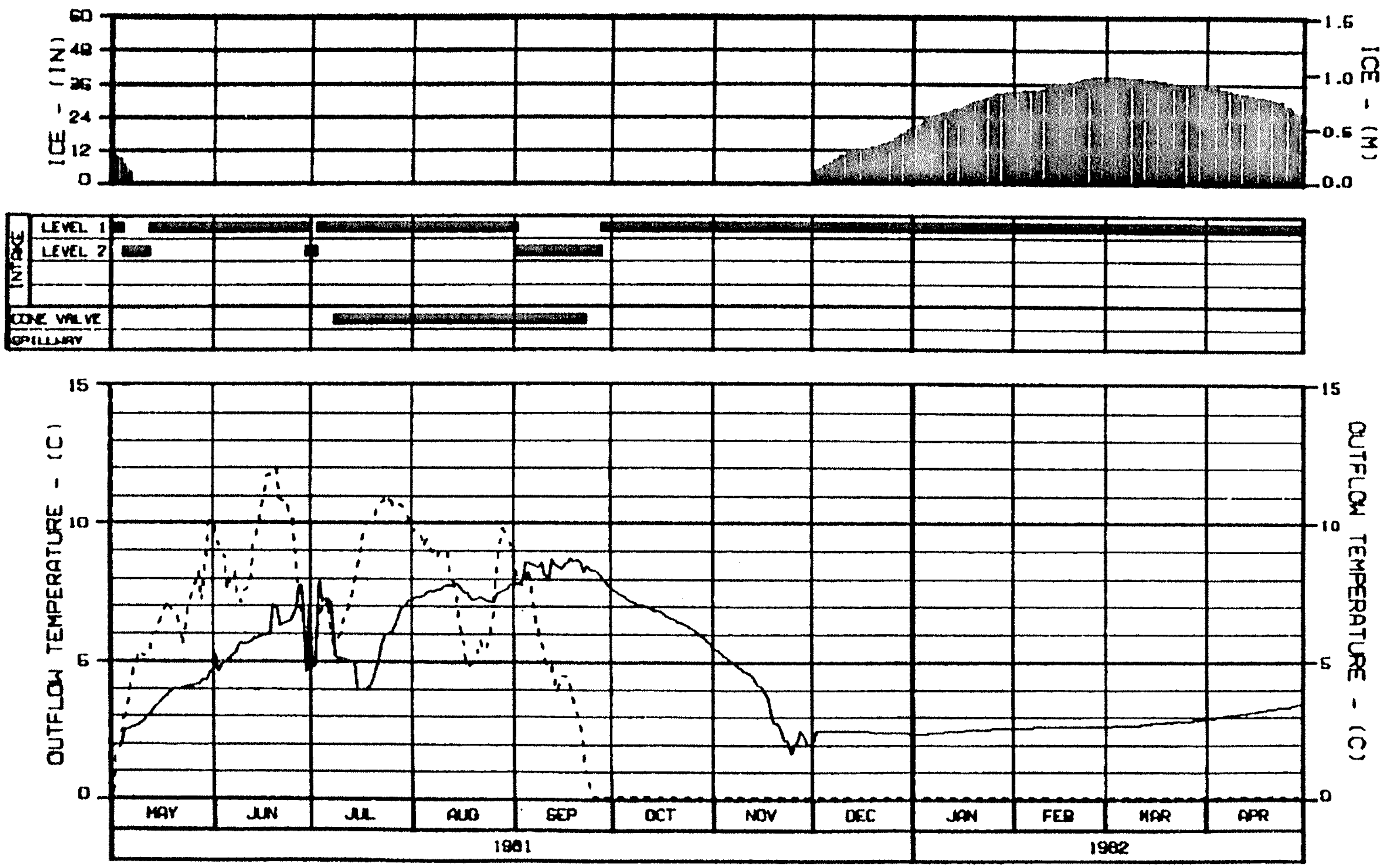
LEGEND: CASE: ** DC8120E - DEVIL CANYON OPERATION W/WATANA IN LATE STAGE III.

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1375 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
DEVIL CANYON LATE STAGE III OUTFLOW TEMPERATURE AND ICE GROWTH (E-VI)	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS 28 MAY 86	42-010-04

FIGURE E.2.4.253



LEGEND: CASE: DC8102L - DEVIL CANYON OPERATION W/WATANA IN EARLY STAGE III.

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1375 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)

ALASKA POWER AUTHORITY

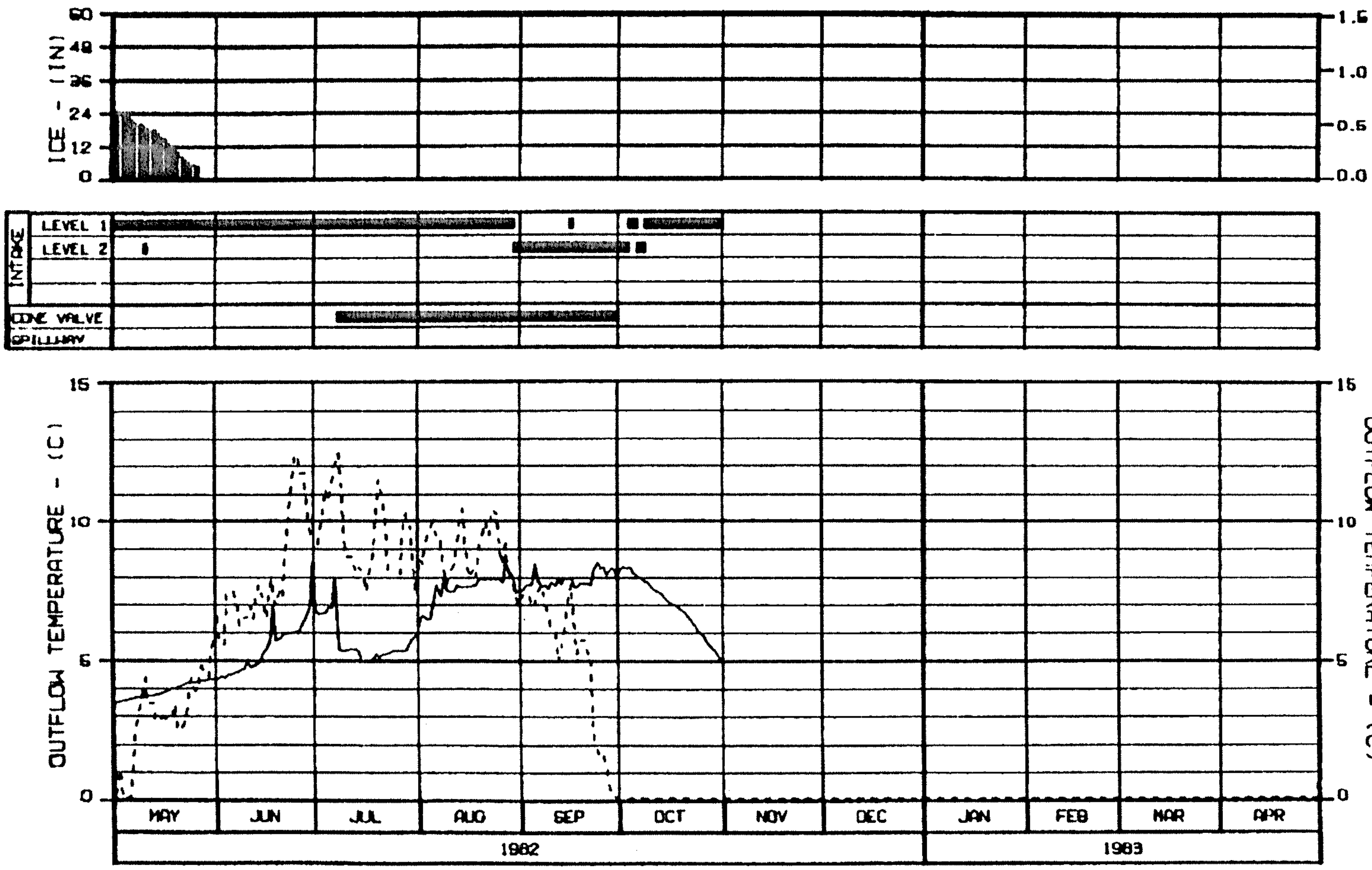
SUSITNA PROJECT | DYRESM MODEL

DEVIL CANYON
EARLY STAGE III
OUTFLOW TEMPERATURE
AND ICE GROWTH (E-VI)

HARZA-EBASCO JOINT VENTURE

42-010-04

FIGURE E.2.4.254



LEGEND: CASE: DC8102L - DEVIL CANYON OPERATION W/WATANA IN EARLY STAGE III.

——— PREDICTED OUTFLOW TEMPERATURE
- - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1426 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.75 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)

ALASKA POWER AUTHORITY

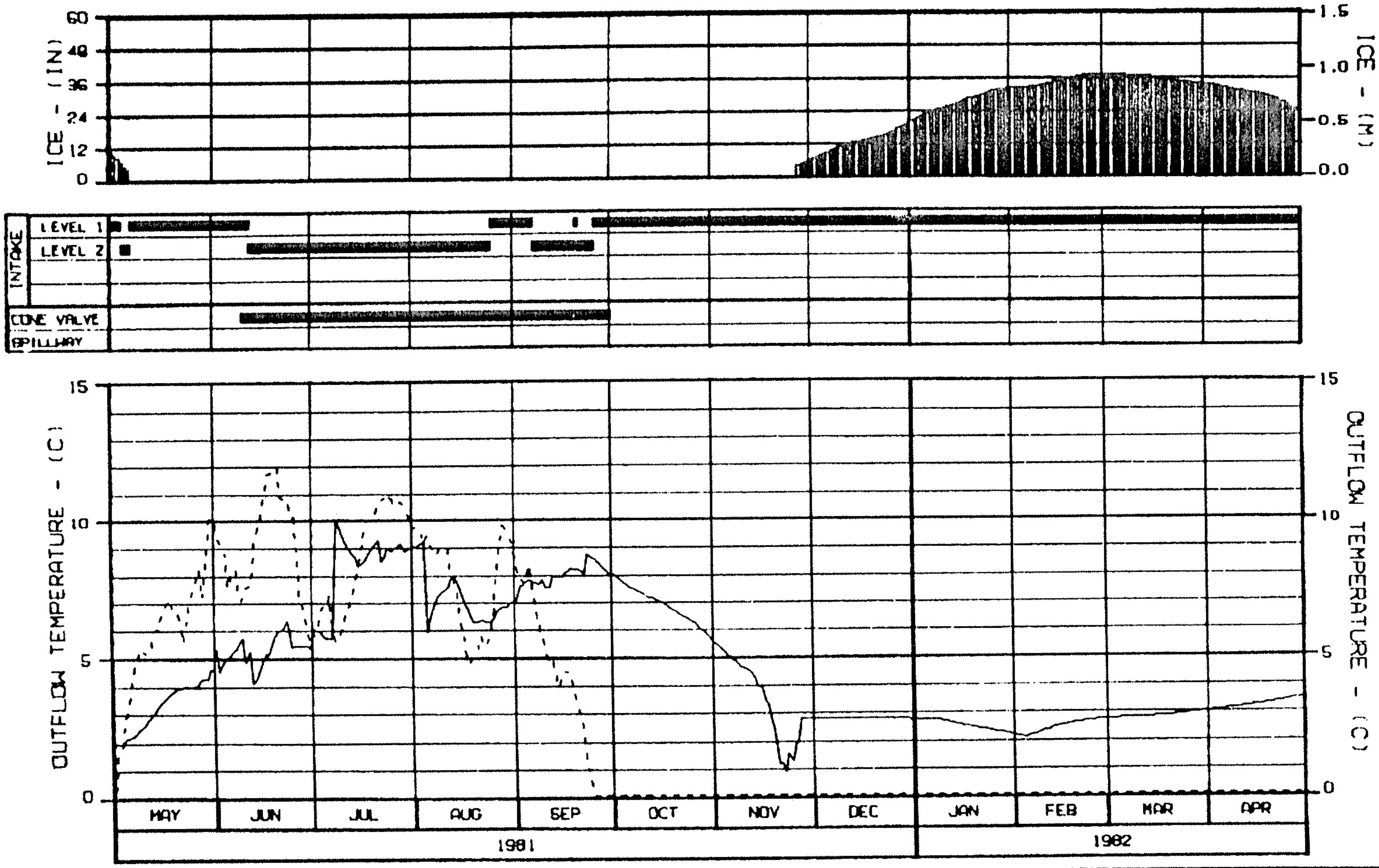
SUSITNA PROJECT | DYRESM MODEL

DEVIL CANYON
EARLY STAGE III
OUTFLOW TEMPERATURE
AND ICE GROWTH (E-VI)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 11 FEB 85 | 42-010-04

FIGURE E.2.4.255



LEGEND: CASE: ** DC8120D - DEVIL CANYON OPERATION W/WATANA IN LATE STAGE III.

——— PREDICTED OUTFLOW TEMPERATURE
- - - - - - INFLOW TEMPERATURE

NOTES:
1. INTAKE PORT LEVEL 1 AT ELEVATION 1425 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.76 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. FOR COMPARISON WITH PROPOSED PROJECT.

ALASKA POWER AUTHORITY

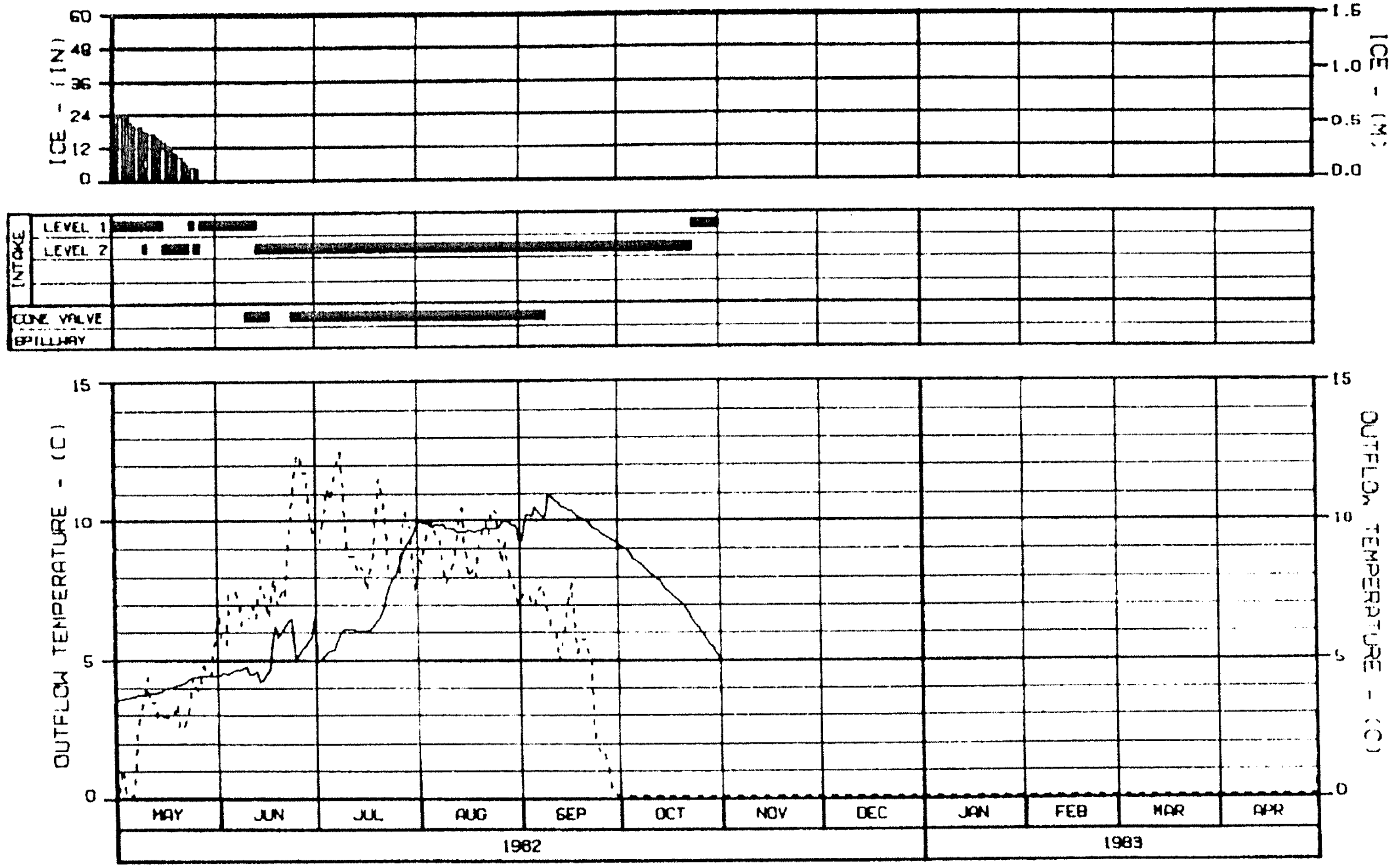
SUSITNA PROJECT | DYRESM MODEL

DEVIL CANYON
LATE STAGE III
OUTFLOW TEMPERATURE
AND ICE GROWTH (E-I)

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 22 MAY 84 | 42-010-04

FIGURE E.2.4.256



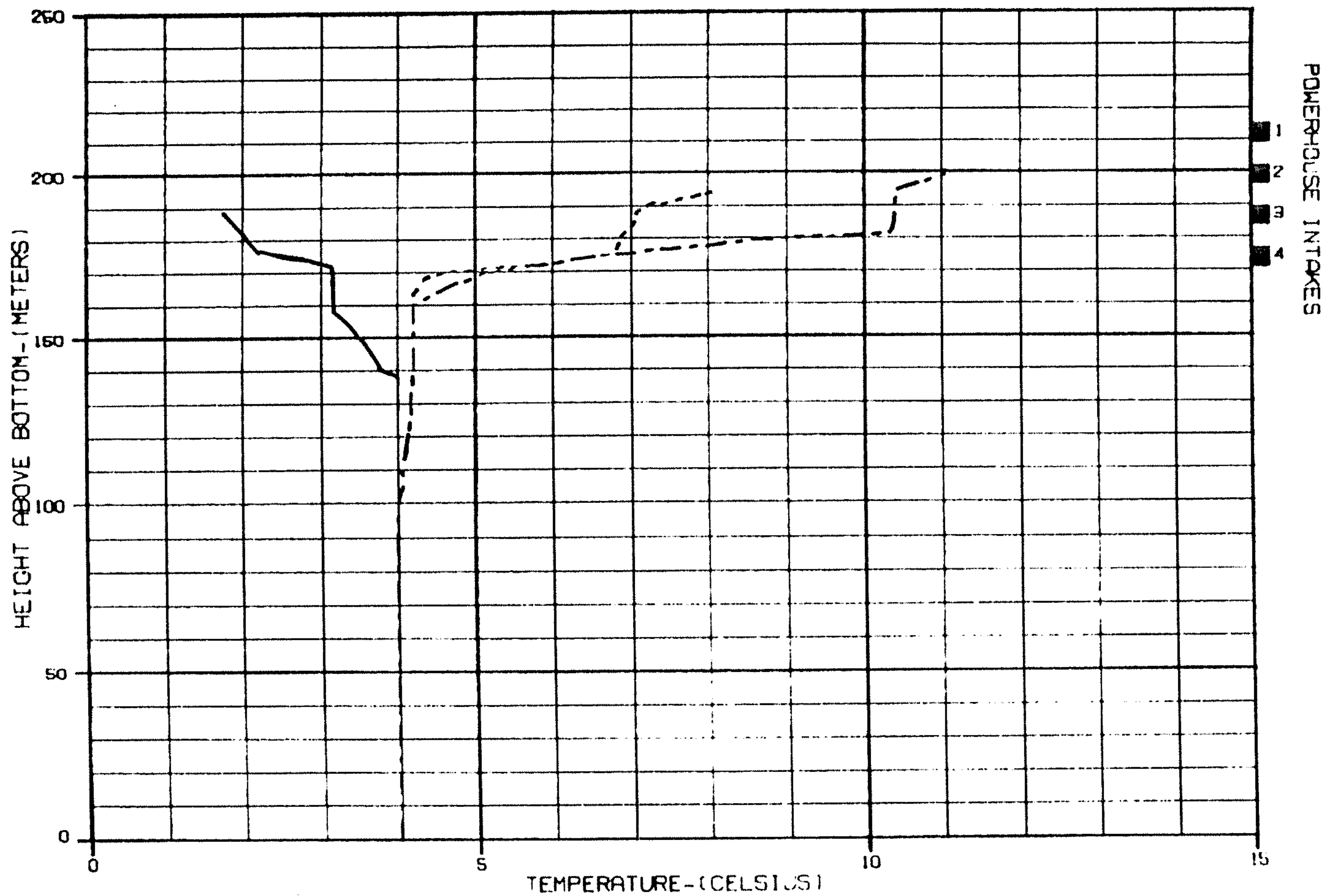
LEGEND: CASE: ** DC81200 - DEVIL CANYON OPERATION W/WATANA IN LATE STAGE III.

———— PREDICTED OUTFLOW TEMPERATURE
- - - - - - - INFLOW TEMPERATURE

NOTES: 1. INTAKE PORT LEVEL 1 AT ELEVATION 1426 FT (434.34 M)
2. INTAKE PORT LEVEL 2 AT ELEVATION 1376 FT (419.10 M)
3. CONE VALVE AT ELEVATION 990 FT (301.76 M)
4. SPILLWAY CREST AT ELEVATION 1404 FT (427.94 M)
5. FOR COMPARISON WITH PROPOSED PROJECT.

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
DEVIL CANYON LATE STAGE III OUTFLOW TEMPERATURE AND ICE GROWTH (E-I)	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS ** MAY **	42-010-04

FIGURE E.2.4.257



CASE: ** WA8120E - WATANA OPERATION W/DEVIL CANYON IN LATE STAGE III **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

———— 1 MAY 1981

- - - - 1 JUNE 1981

—·—·— 1 JULY 1981

ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

WATANA RESERVOIR

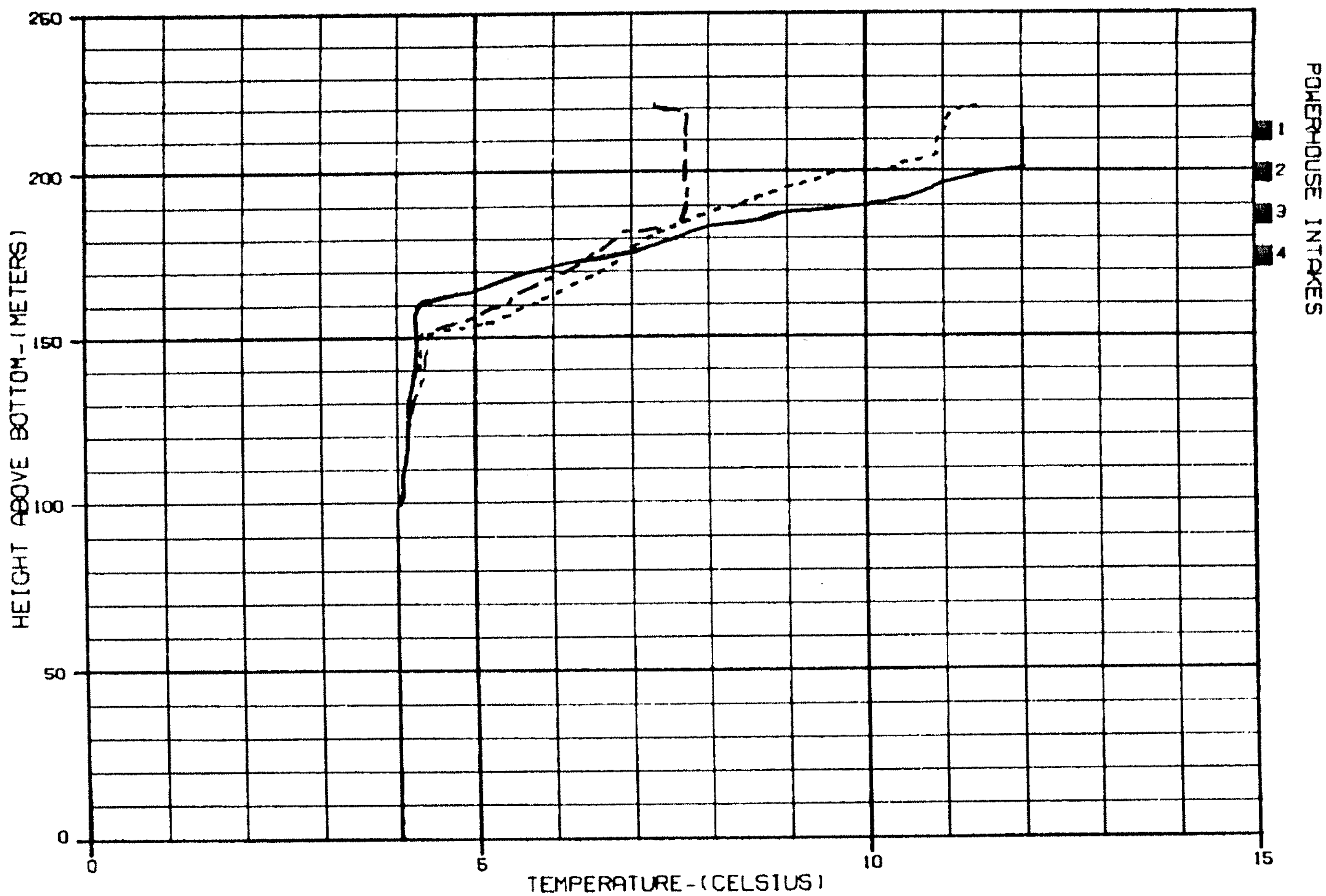
TEMPERATURE PROFILES

LATE STAGE III

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 28 MAY 85 | 42-010-04

FIGURE E.2.4.258



CASE: ** WA8120E - WATANA OPERATION W/DEVIL CANYON IN LATE STAGE III **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

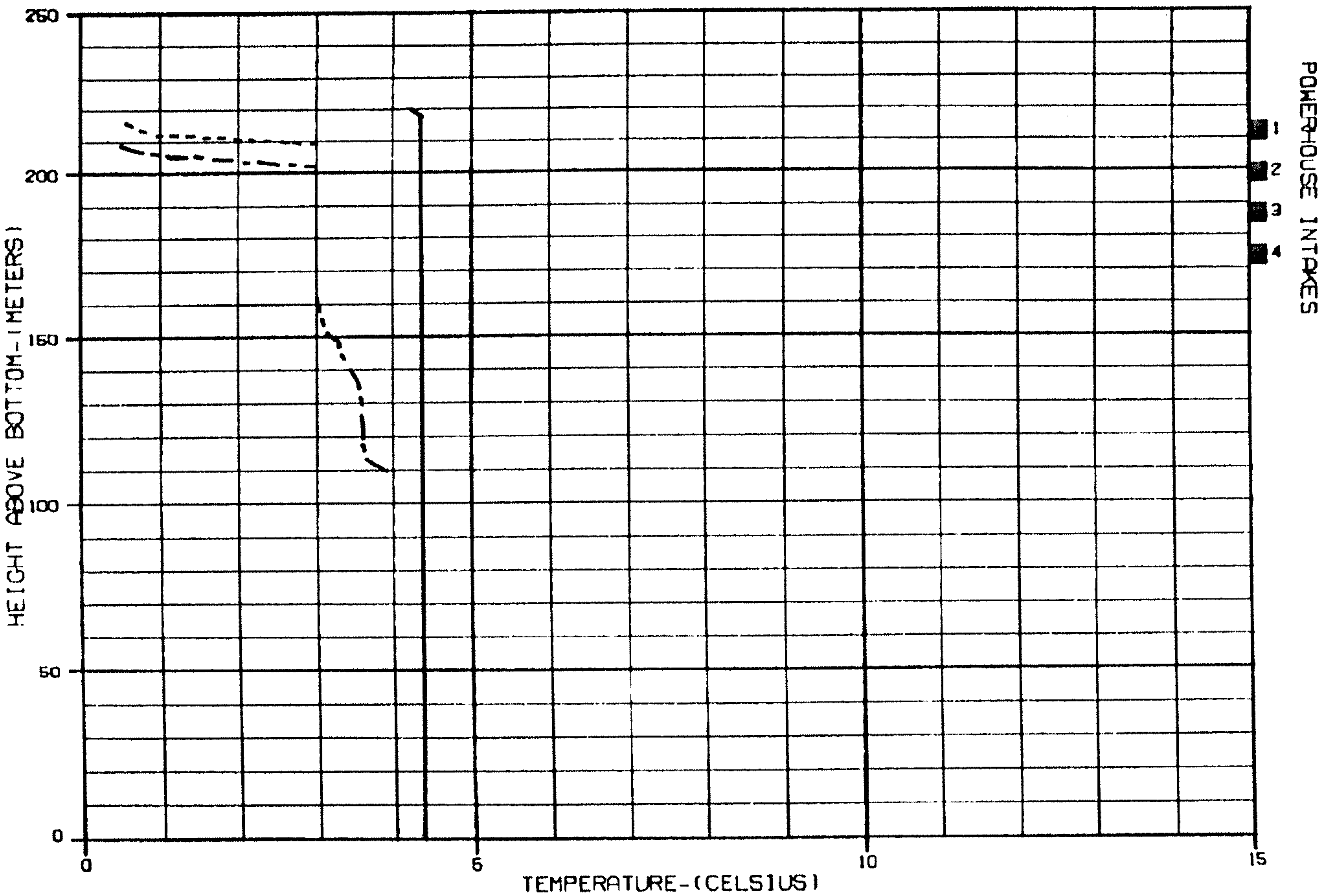
———— 1 AUGUST 1981

- - - - - 1 SEPTEMBER 1981

— - — - 1 OCTOBER 1981

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
WATANA RESERVOIR TEMPERATURE PROFILES LATE STAGE III	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-04

FIGURE E.2.4.259



CASE: ** WA8120E - WATANA OPERATION W/DEVIL CANYON IN LATE STAGE III **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

————	1 NOVEMBER 1981
- - - - - -	1 DECEMBER 1981
— - — - —	1 JANUARY 1982

ALASKA POWER AUTHORITY

SUSITNA PROJECT | DYRESM MODEL

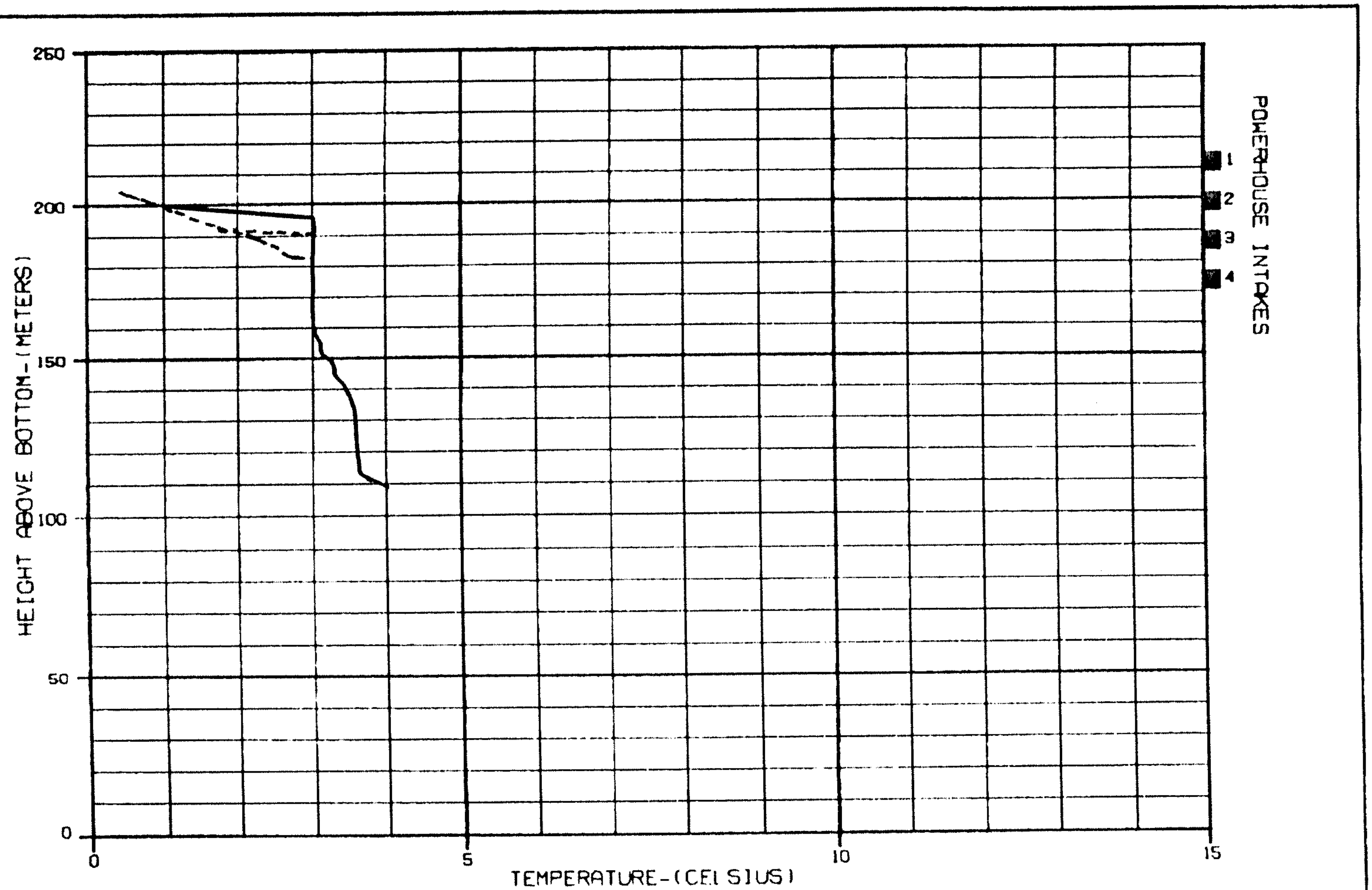
WATANA RESERVOIR

TEMPERATURE PROFILES
LATE STAGE III

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 42-010-04

FIGURE E.2.4.260



CASE: ** WAB120E - WATANA OPERATION W/DEVIL CANYON IN LATE STAGE III **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

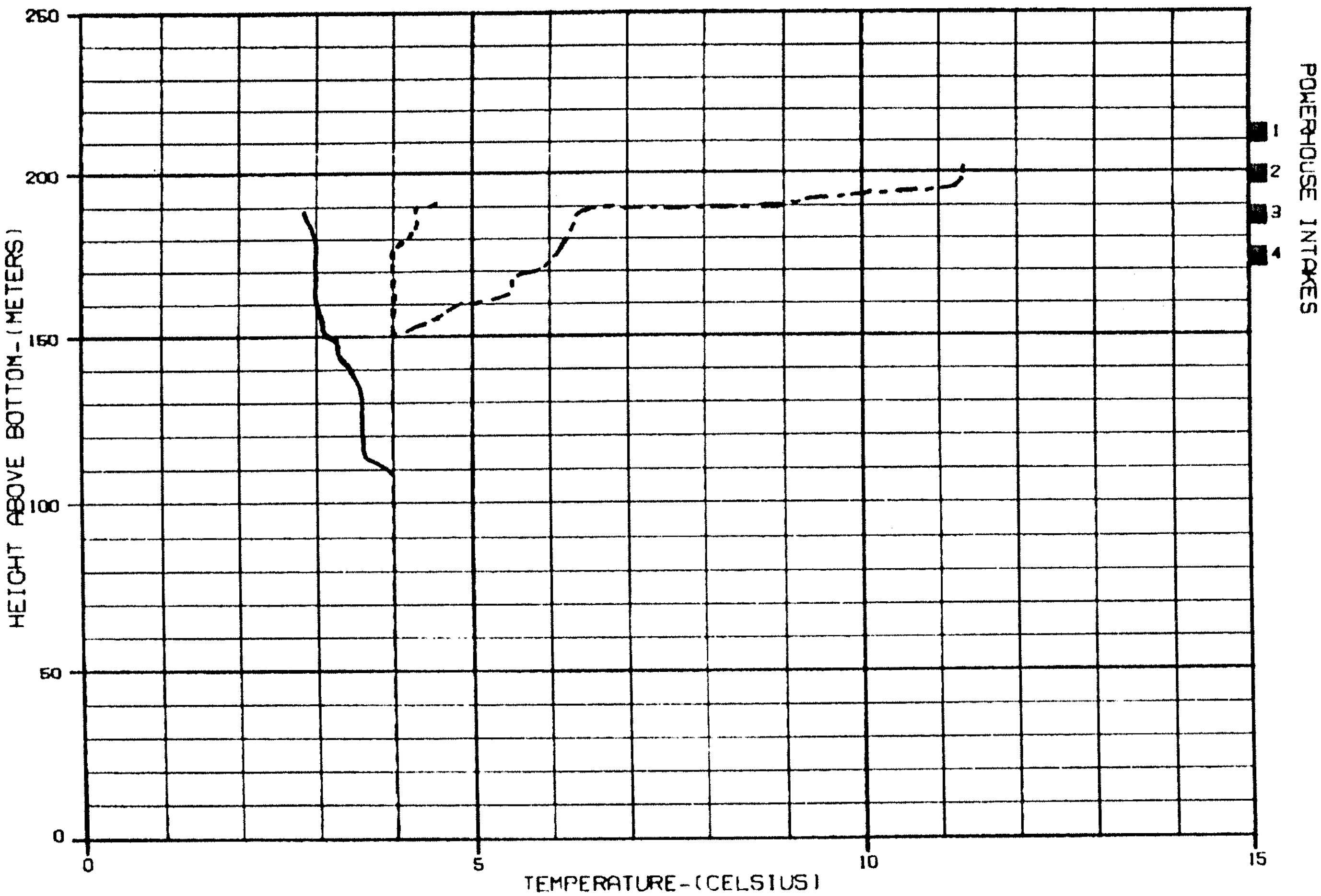
———— 1 FEBRUARY 1982

-------- 1 MARCH 1982

—·—·— 1 APRIL 1982

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
WATANA RESERVOIR TEMPERATURE PROFILES LATE STAGE III	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-04

FIGURE E.2.4.261



CASE: ** WA8120E - WATANA OPERATION W/DEVIL CANYON IN LATE STAGE III **

LEGEND:

PREDICTED TEMPERATURE PROFILES:

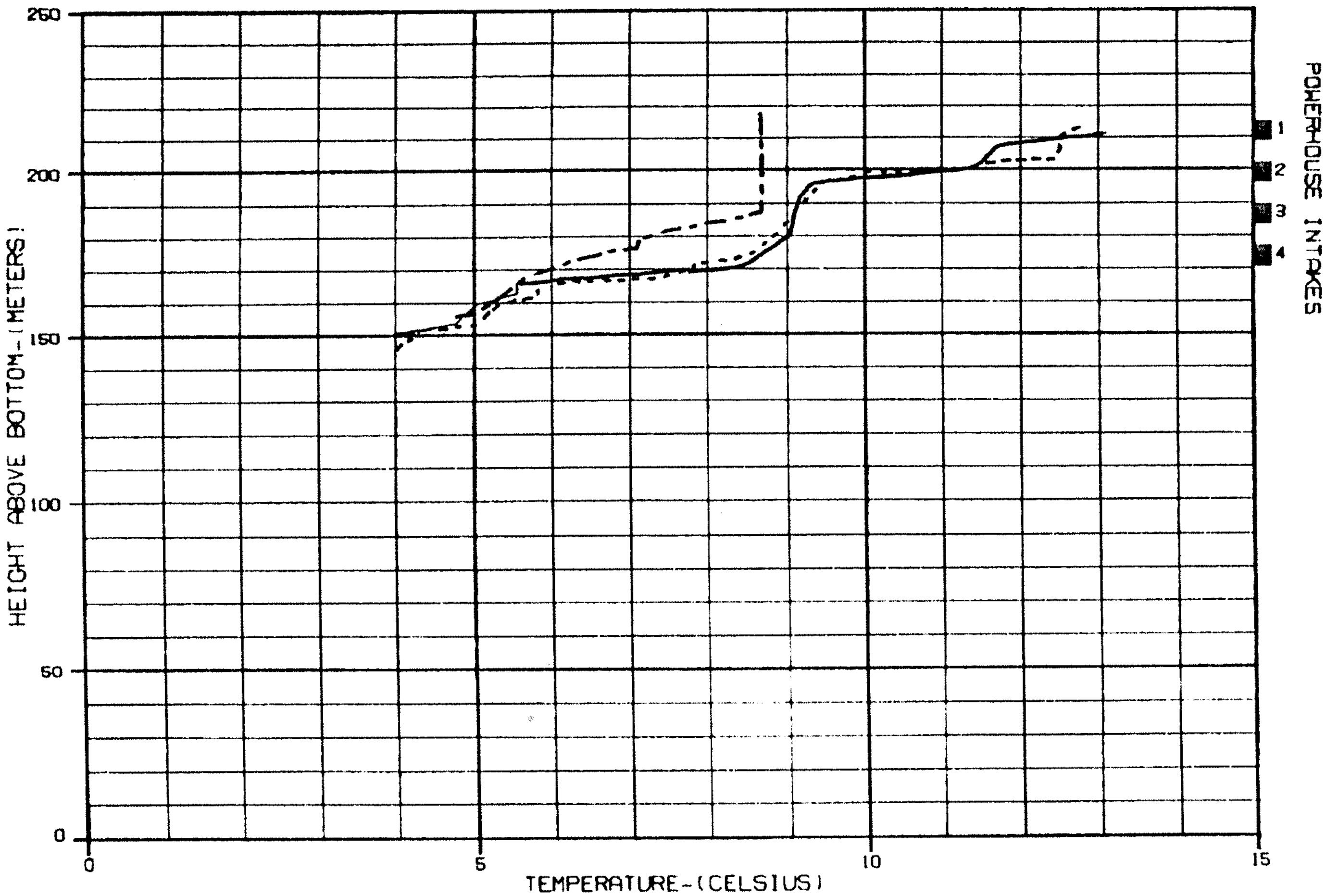
———— 1 MAY 1982

- - - - 1 JUNE 1982

— - — - 1 JULY 1982

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
WATANA RESERVOIR TEMPERATURE PROFILES LATE STAGE III	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS / 20 MAY 85	42-010-04

FIGURE E.2.4.262



CASE: ** WA8120E - WATANA OPERATION W/DEVIL CANYON IN LATE STAGE III **

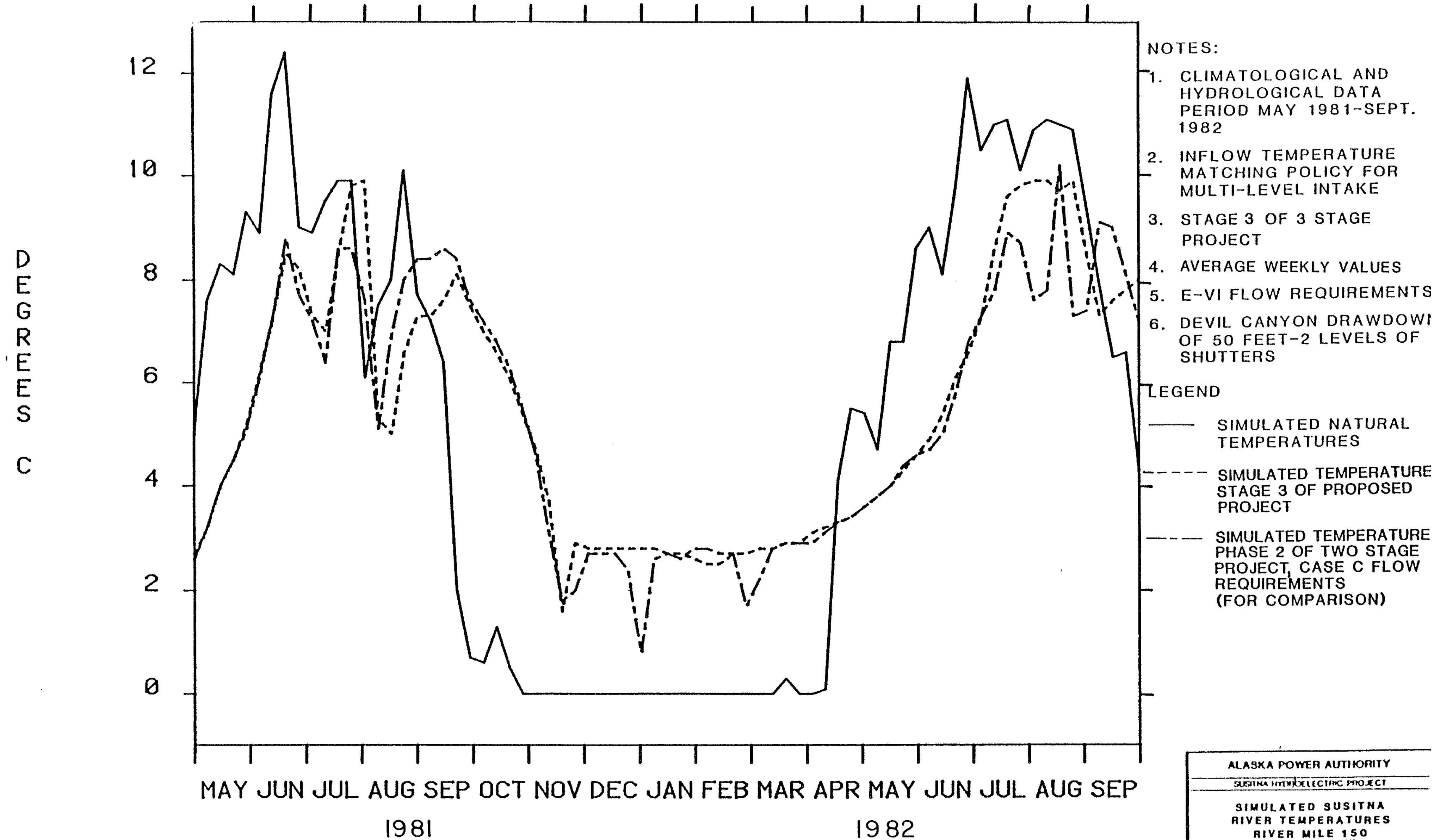
LEGEND:

PREDICTED TEMPERATURE PROFILES:

————	1 AUGUST 1982
- - - - -	1 SEPTEMBER 1982
— - — -	1 OCTOBER 1982

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
WATANA RESERVOIR TEMPERATURE PROFILES LATE STAGE III	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS	42-010-04

FIGURE E.2.4.263

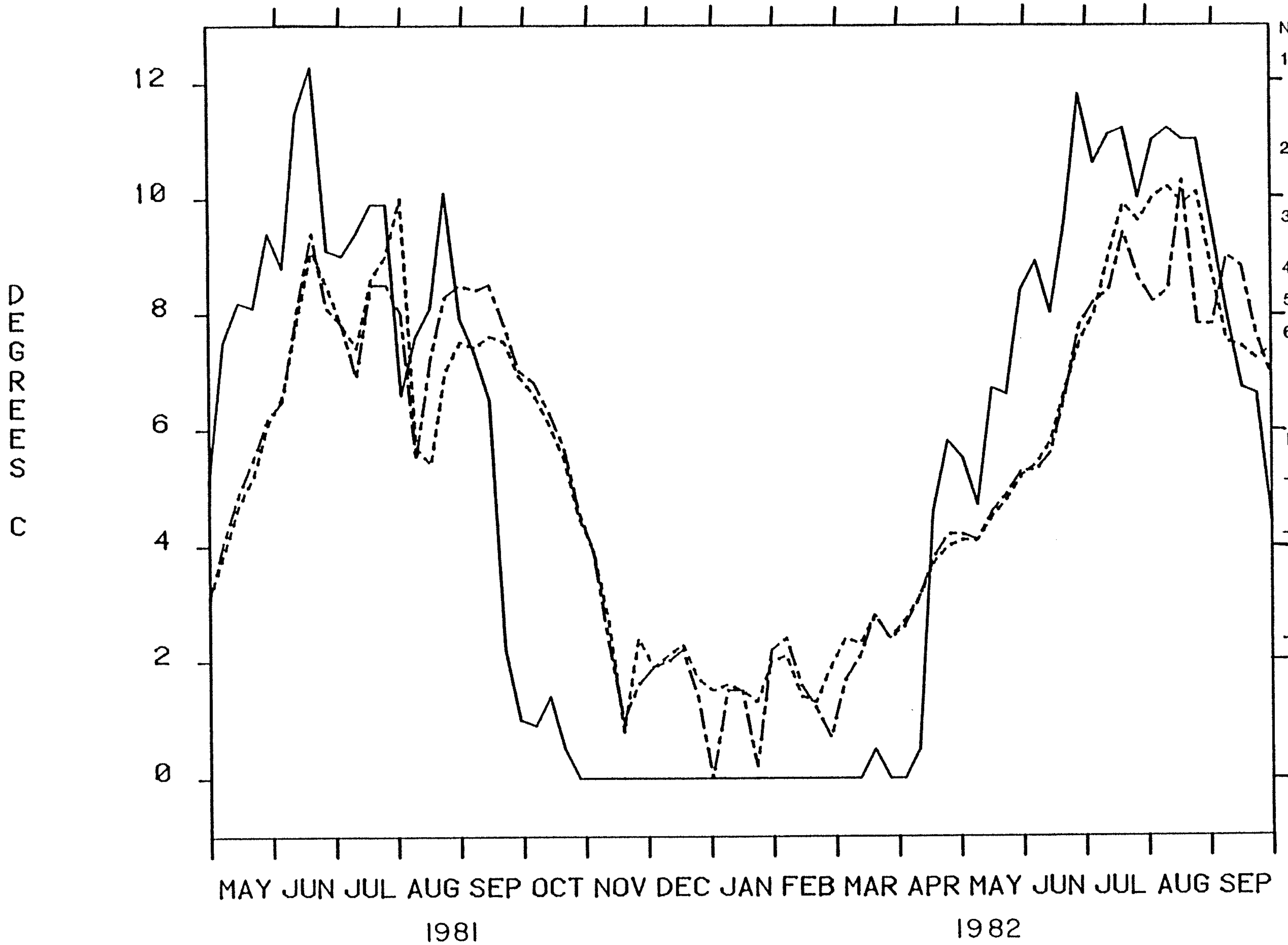


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES
RIVER MILE 150
LATE STAGE III

FIGURE E.2.4.264



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 3 OF 3-STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. E-VI FLOW REQUIREMENTS
6. DEVIL CANYON DRAWDOWN OF 50 FEET- 2 LEVELS OF SHUTTERS

LEGEND

——— SIMULATED NATURAL TEMPERATURES

— — — SIMULATED TEMPERATURE PHASE 2 OF TWO STAGE PROJECT, CASE C FLOW REQUIREMENTS (FOR COMPARISON)

- - - - - SIMULATED TEMPERATURE STAGE 3 OF PROPOSED PROJECT

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 LATE STAGE III

FIGURE E.2.4.265

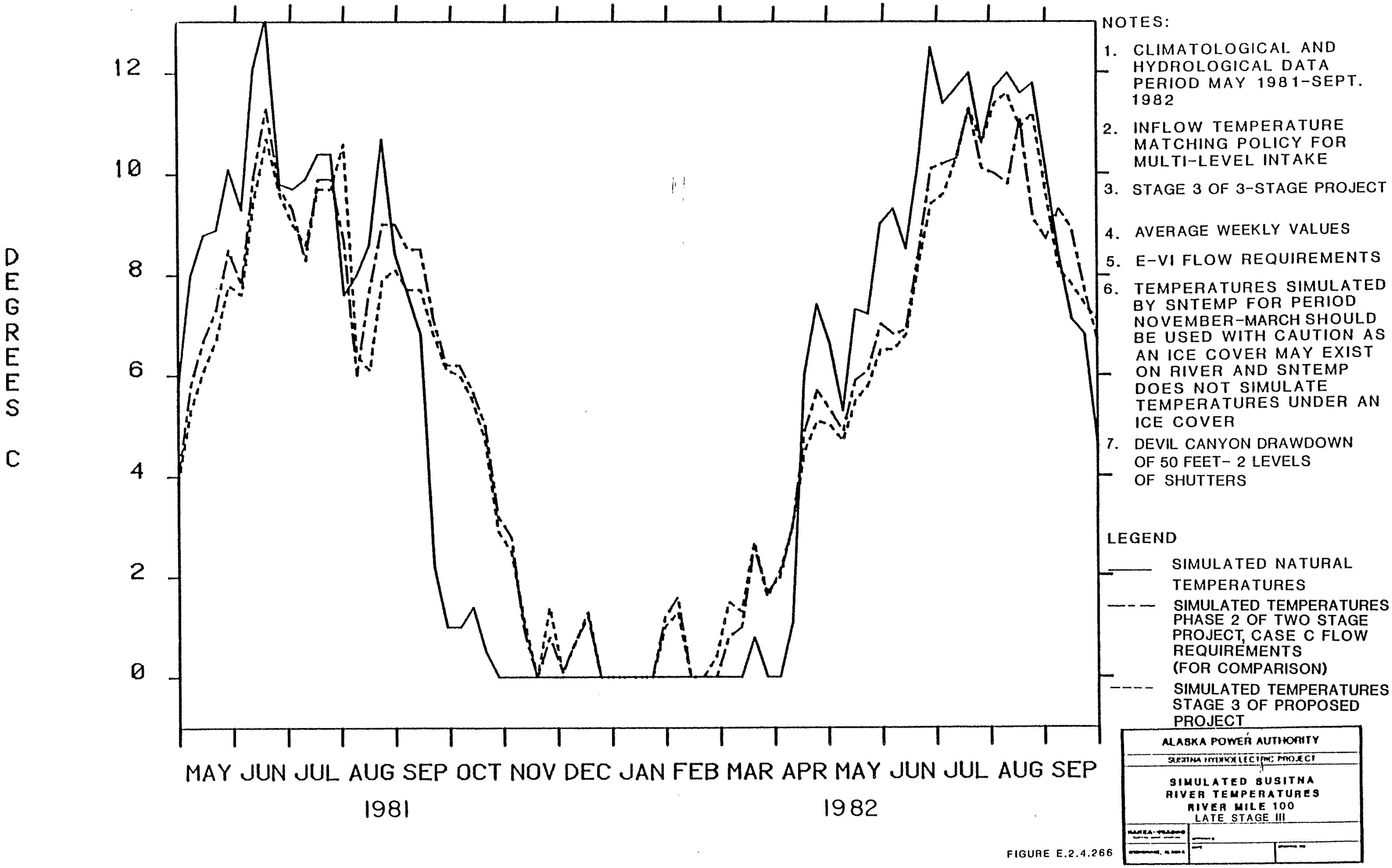
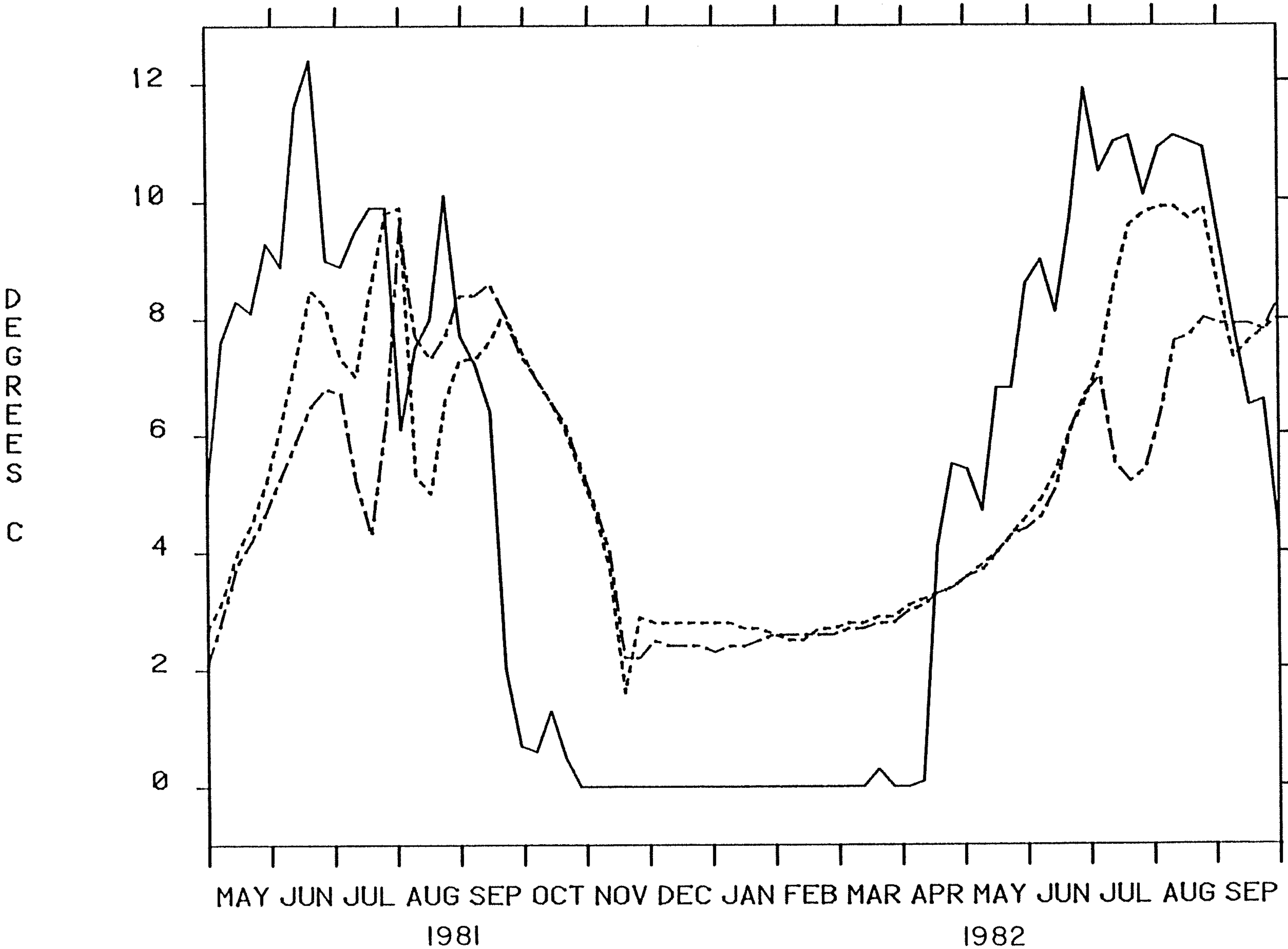


FIGURE E.2.4.266



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 3 OF 3 STAGE PROJECT
4. DEVIL CANYON DRAWDOWN OF 50 FEET-2 LEVELS OF SHUTTERS
5. THE TWO SIMULATIONS SHOWN PROVIDE BOUNDS ON TEMPERATURE WHICH CAN BE EXPECTED DURING STAGE III. AS ENERGY DEMAND AND PROJECT ENERGY PRODUCTION INCREASES TEMPERATURES WILL PROGRESS FROM THOSE SHOWN FO EARLY STAGE III DEMANDS TO THOS SHOWN FOR LATE STAGE III DEMANI

LEGEND

SIMULATED NATURAL TEMPERATURES

LATE STAGE III

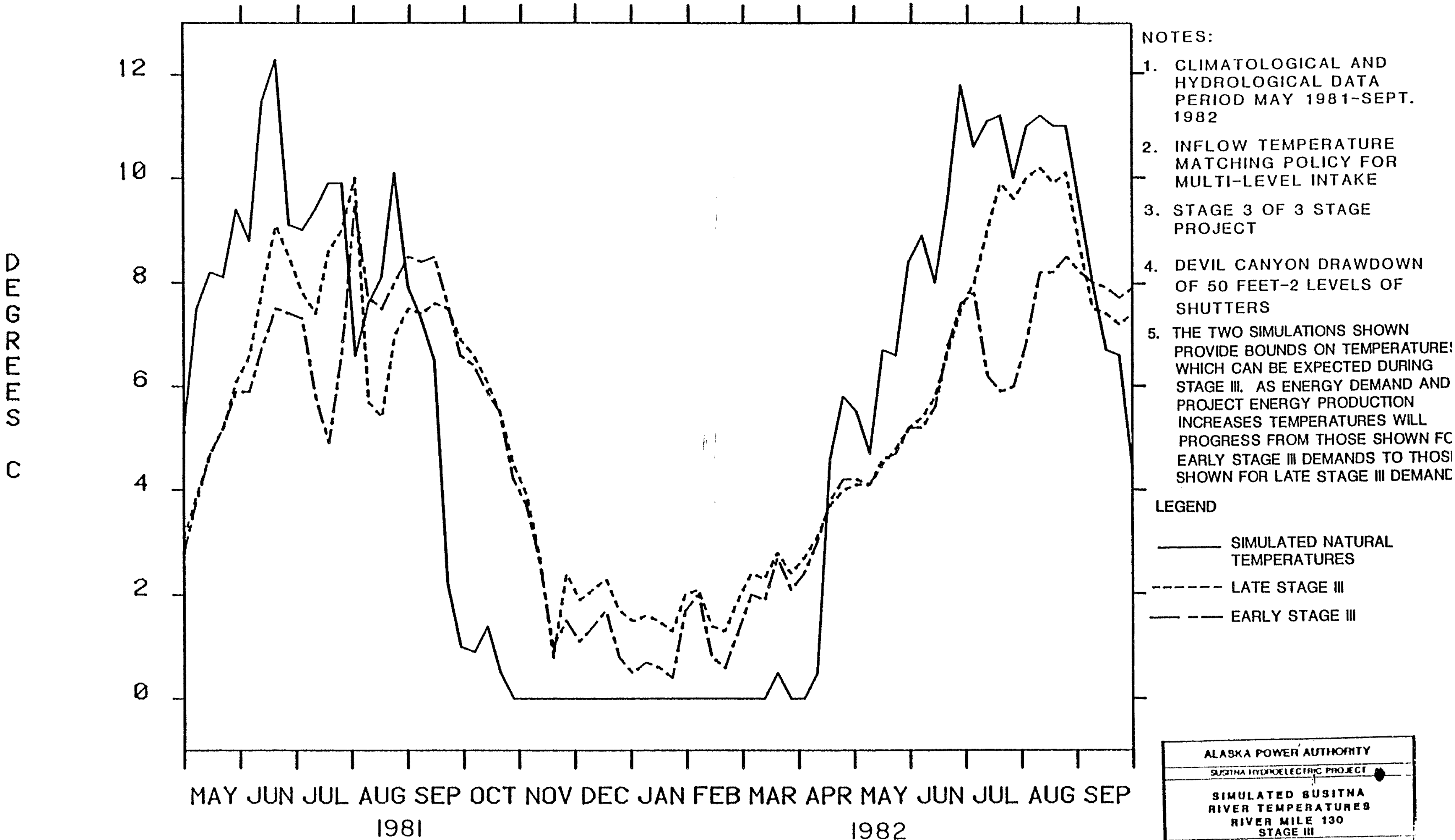
EARLY STAGE III

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 STAGE III

FIGURE E.2.4.267

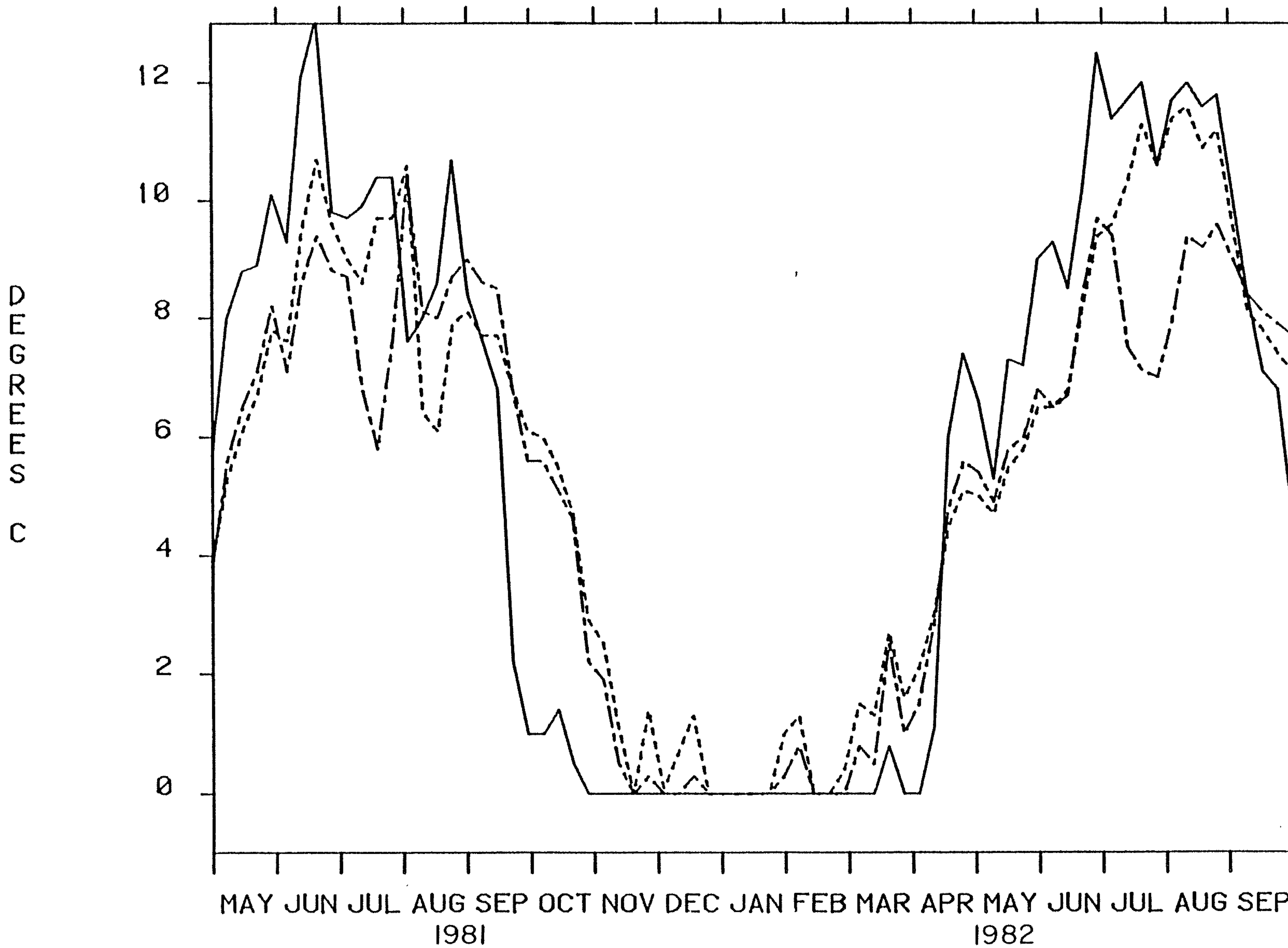


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 STAGE III

FIGURE E.2.4.268



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 3 OF 3 STAGE PROJECT
4. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD NOVEMBER-MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)
5. DEVIL CANYON DRAWDOWN OF 50 FEET-2 LEVELS OF SHUTTERS
6. THE TWO SIMULATIONS SHOWN PROVIDE BOUNDS ON TEMPERATURE WHICH CAN BE EXPECTED DURING STAGE III. AS ENERGY DEMAND AND PROJECT ENERGY PRODUCTION INCREASES TEMPERATURES WILL PROGRESS FROM THOSE SHOWN FOR EARLY STAGE III DEMANDS TO THOSE SHOWN FOR LATE STAGE III DEMAND

LEGEND

SIMULATED NATURAL TEMPERATURES

LATE STAGE III

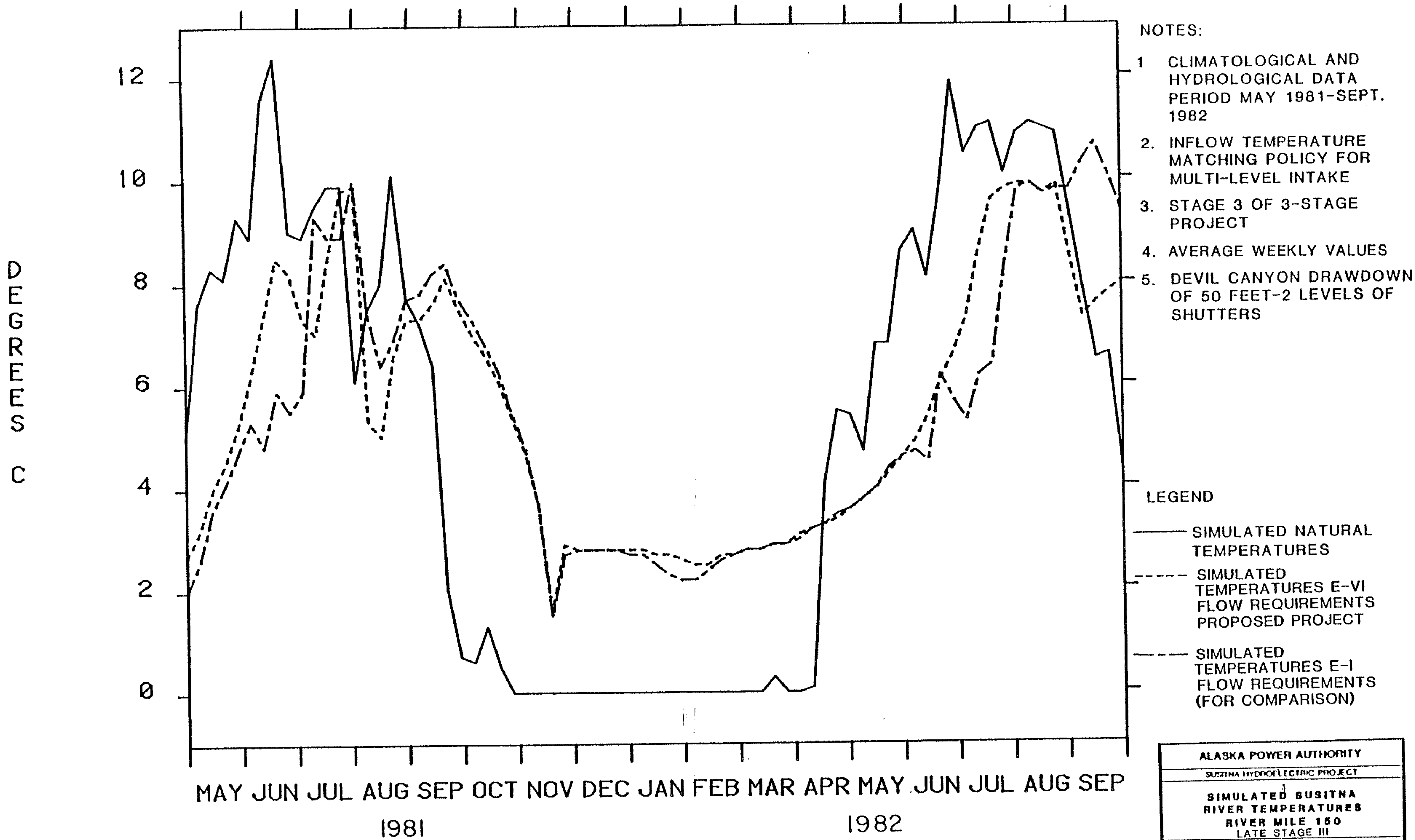
EARLY STAGE III

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100 STAGE III

FIGURE E.2.4.269

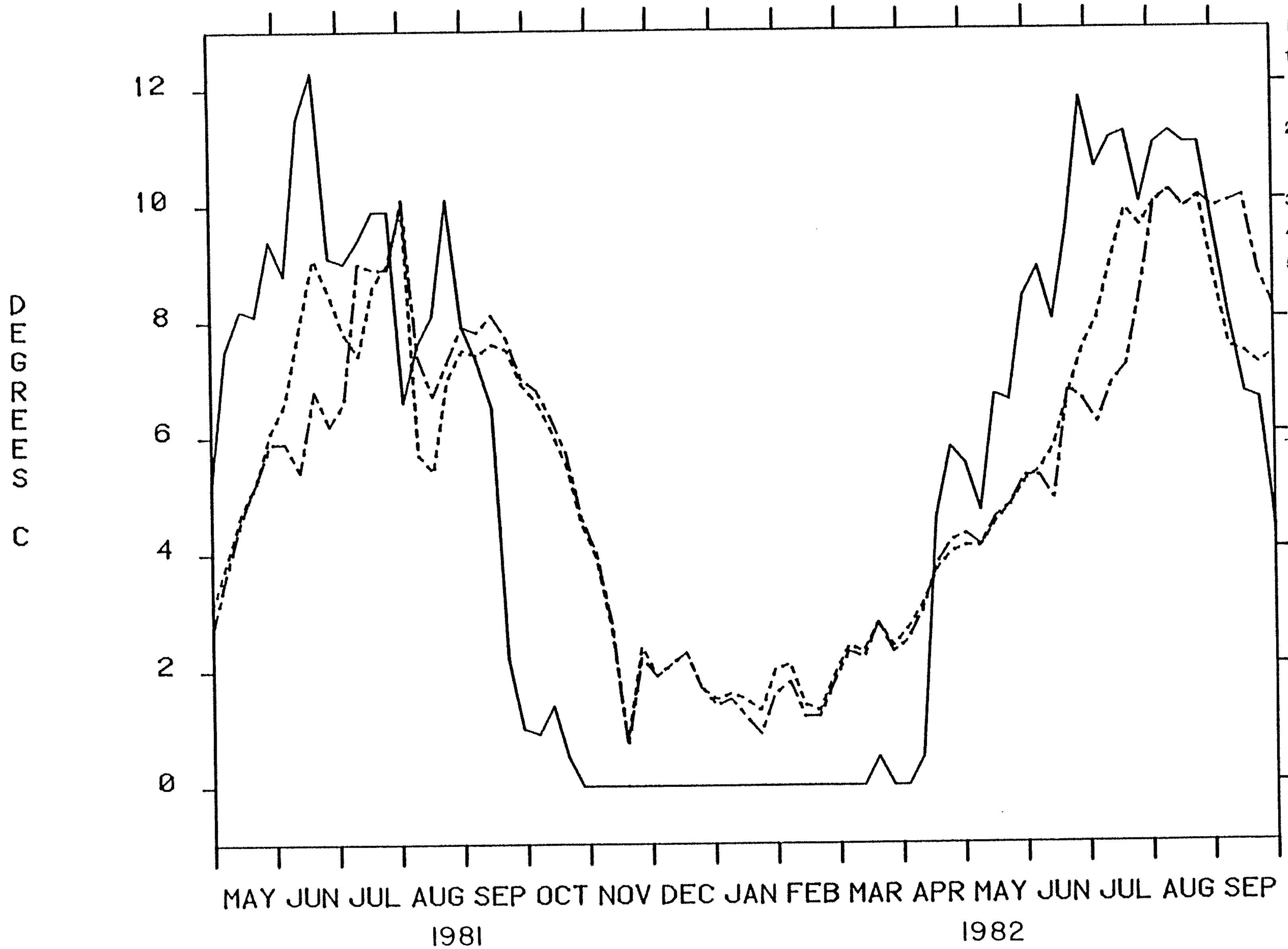


ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 150 LATE STAGE III

FIGURE E.2.4.270



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 3 OF 3-STAGE
4. AVERAGE WEEKLY VALUES
5. DEVIL CANYON DRAWDOWN OF 50 FEET - 2 LEVELS OF SHUTTERS

LEGEND

——— SIMULATED NATURAL TEMPERATURES

- - - - - SIMULATED TEMPERATURES E-VI FLOW REQUIREMENTS PROPOSED PROJECT

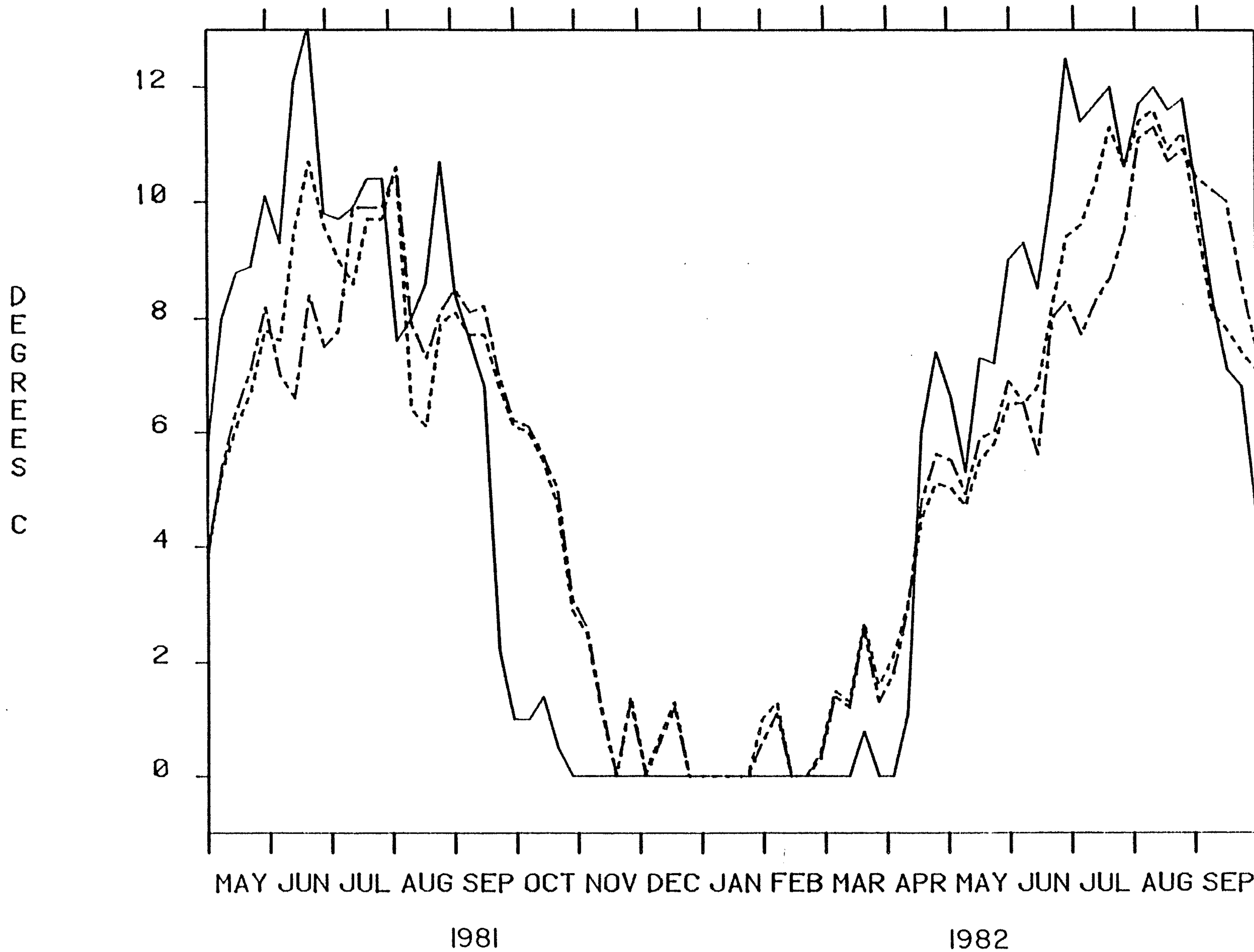
— — — SIMULATED TEMPERATURES E-I FLOW REQUIREMENTS (FOR COMPARISON)

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 130 LATE STAGE III

FIGURE E.2.4.271



NOTES:

1. CLIMATOLOGICAL AND HYDROLOGICAL DATA PERIOD MAY 1981-SEPT. 1982
2. INFLOW TEMPERATURE MATCHING POLICY FOR MULTI-LEVEL INTAKE
3. STAGE 3 OF 3 STAGE PROJECT
4. AVERAGE WEEKLY VALUES
5. TEMPERATURES SIMULATED BY SNTEMP FOR PERIOD NOVEMBER-MARCH SHOULD BE USED WITH CAUTION AS AN ICE COVER MAY EXIST ON RIVER AND SNTEMP DOES NOT SIMULATE TEMPERATURES UNDER AN ICE COVER (SEE RIVER ICE SIMULATIONS)
6. DEVIL CANYON DRAWDOWN OF 50 FEET-2 LEVELS OF SHUTTERS

LEGEND

——— SIMULATED NATURAL TEMPERATURES

------- SIMULATED TEMPERATURES E-VI FLOW REQUIREMENTS PROPOSED PROJECT

— - — SIMULATED TEMPERATURES E-I FLOW REQUIREMENTS (FOR COMPARISON)

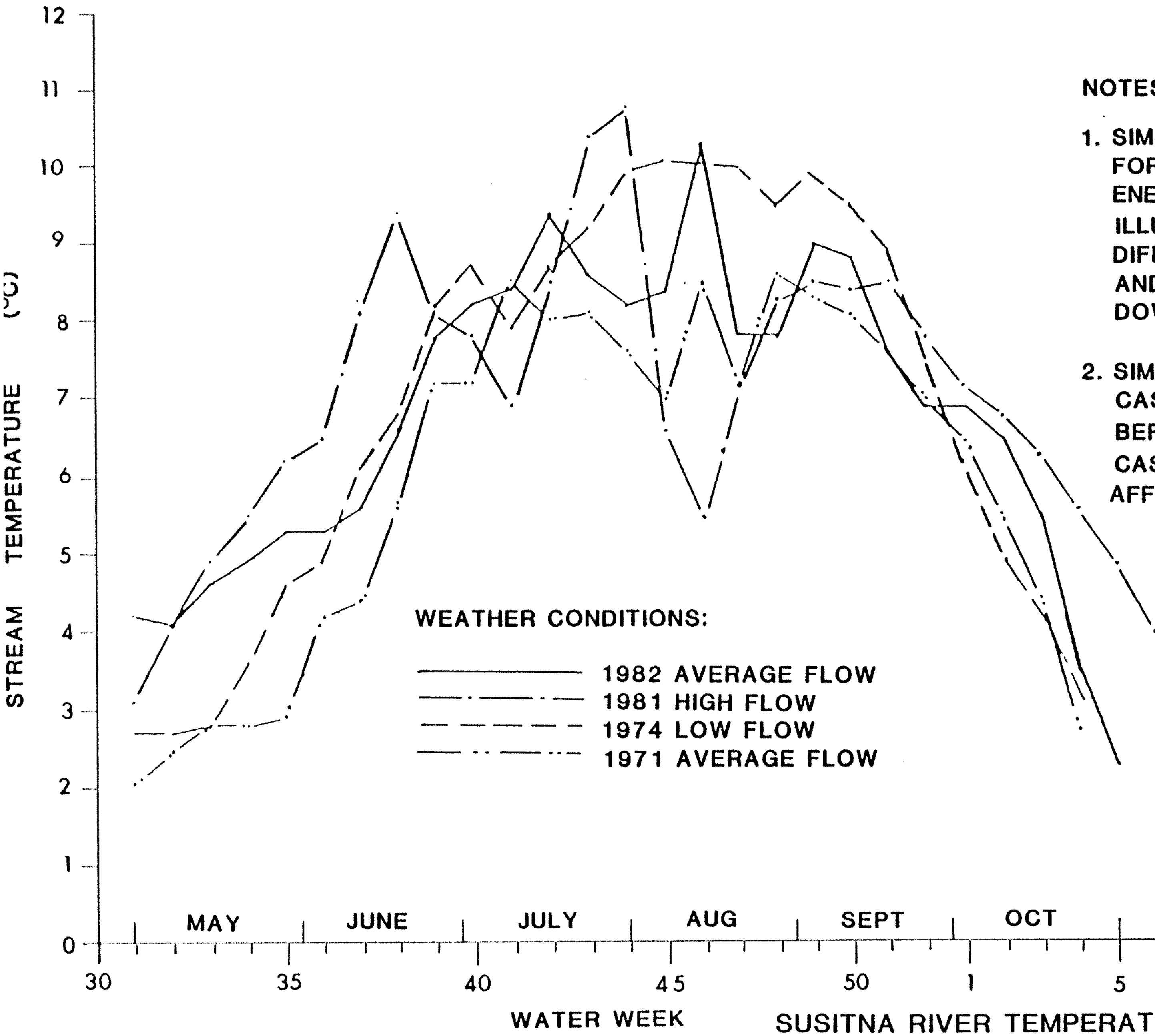
FIGURE E.2.4.272

ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

SIMULATED SUSITNA RIVER TEMPERATURES RIVER MILE 100

LATE STAGE III

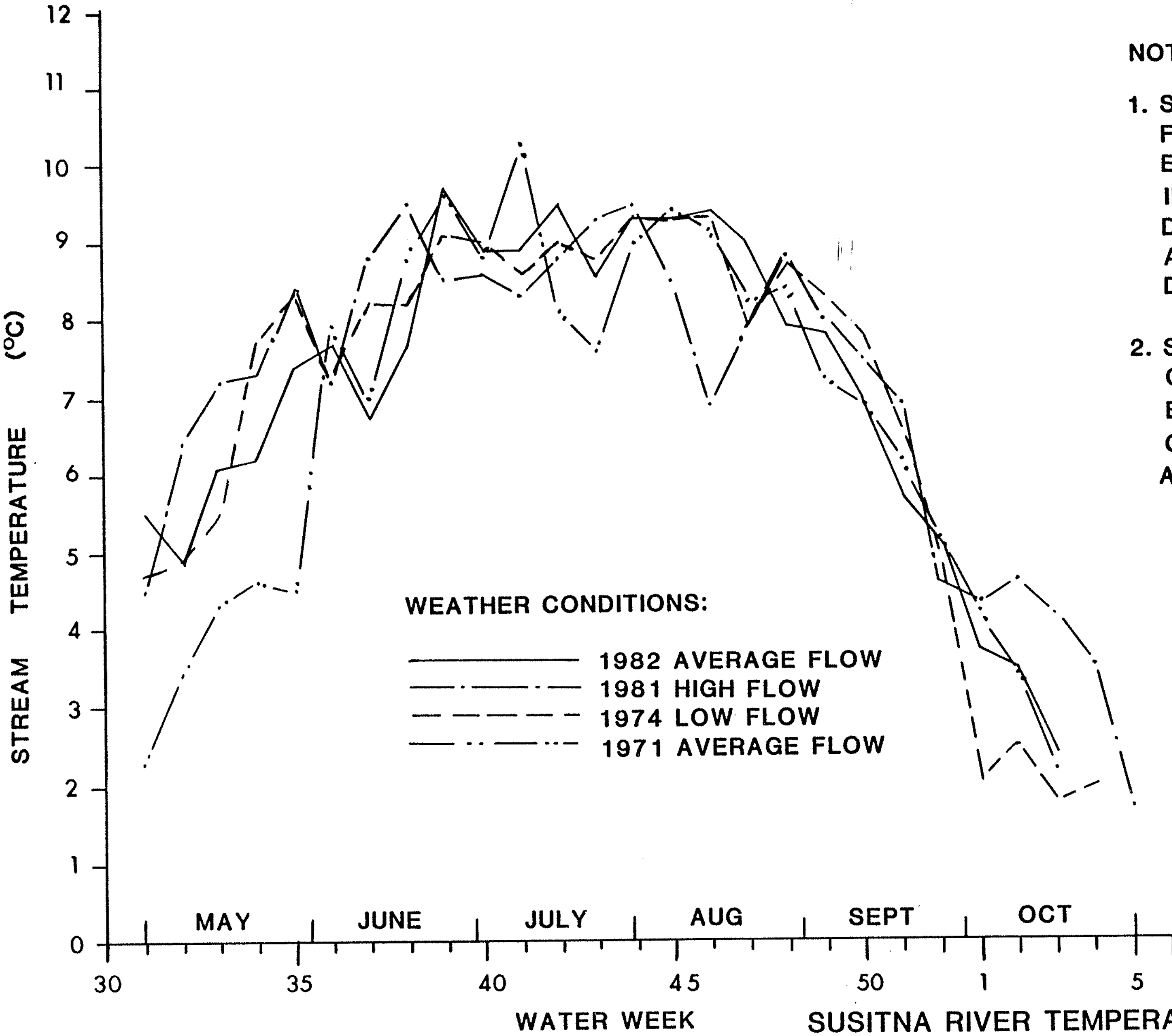


NOTES

1. SIMULATIONS WERE MADE FOR LATE STAGE III ENERGY DEMANDS AND ILLUSTRATE TEMPERATURE DIFFERENCES FOR WET, DRY AND AVERAGE CONDITIONS DOWNSTREAM OF TALKEETNA

2. SIMULATIONS WERE MADE WITH CASE C FLOW REQUIREMENTS BEFORE APPLICANT DEVELOPED CASE E-VI. THIS DOES NOT AFFECT VALIDITY OF COMPARISON.

SUSITNA RIVER TEMPERATURE AT RIVER MILE 130
WATANA AND DEVIL CANYON OPERATING

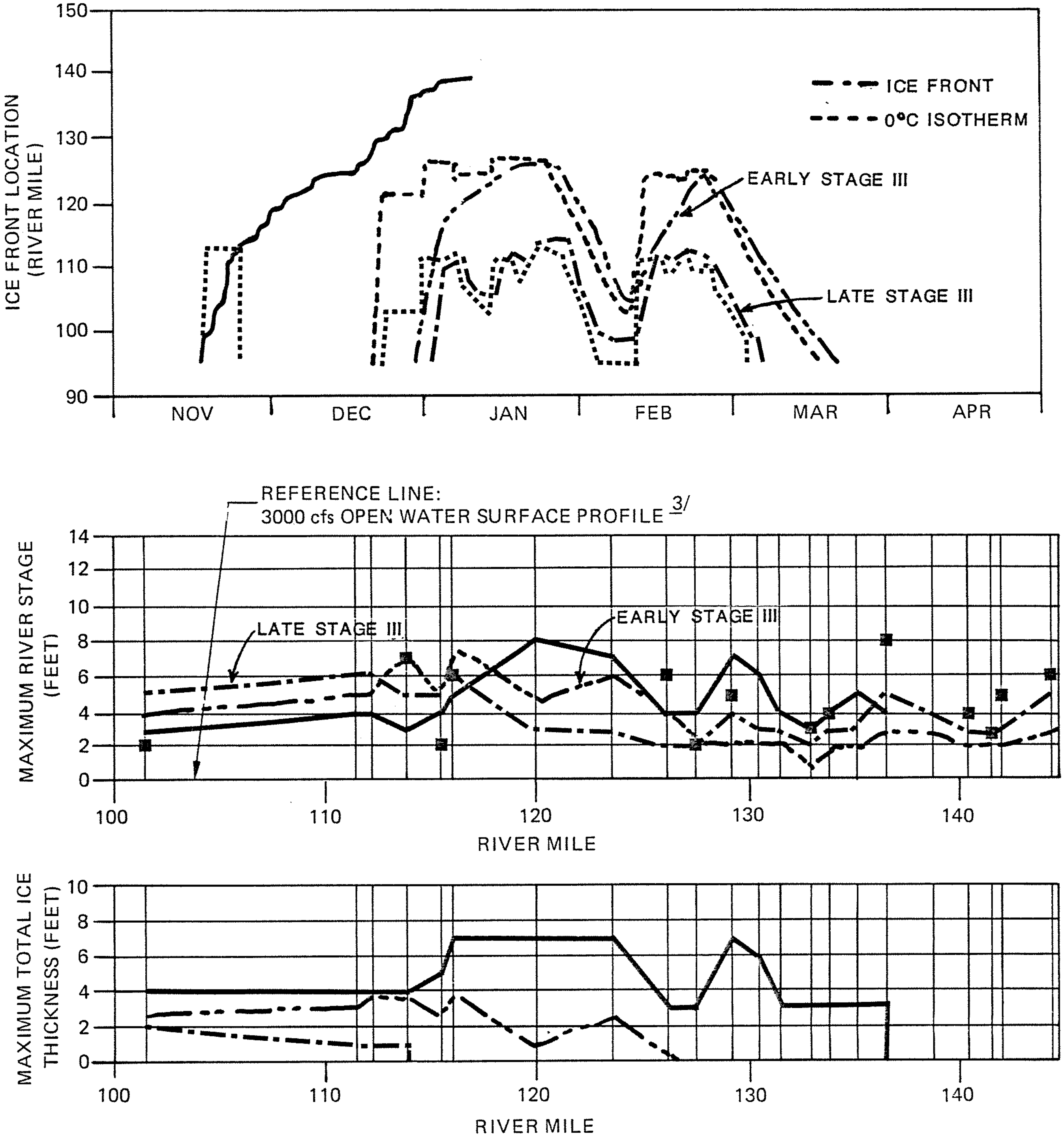


NOTES

1. SIMULATIONS WERE MADE FOR LATE STAGE III ENERGY DEMANDS AND ILLUSTRATE TEMPERATURE DIFFERENCES FOR WET, DRY AND AVERAGE CONDITIONS DOWNSTREAM OF TALKEETNA

2. SIMULATIONS WERE MADE WITH CASE C FLOW REQUIREMENTS BEFORE APPLICANT DEVELOPED CASE E-VI. THIS DOES NOT AFFECT VALIDITY OF COMPARISON.

SUSITNA RIVER TEMPERATURE AT RIVER MILE 84
WATANA AND DEVIL CANYON OPERATING



NOTES:

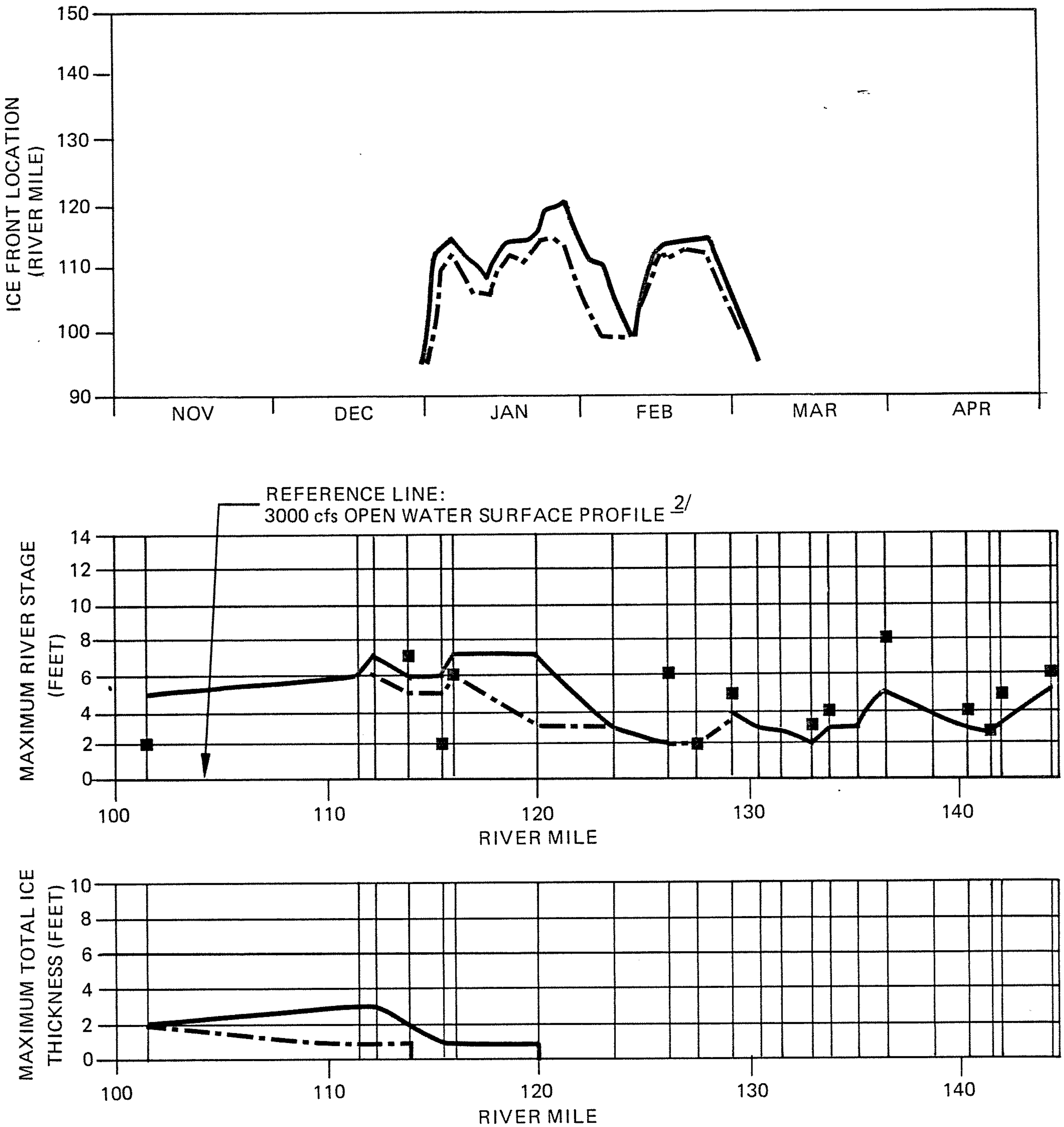
1. STAGE III SIMULATION BASED ON CASE E-VI FLOWS, LATE STAGE III ENERGY DEMAND, INFLOW MATCHING TEMPERATURE POLICY
2. NATURAL CONDITIONS NOT SIMULATED UPSTREAM OF RM 140.
3. 3000 cfs REPRESENTS TYPICAL WINTER FLOW UNDER NATURAL CONDITIONS AT FREEZE UP.

LEGEND:

- NATURAL CONDITIONS
- LATE STAGE III OPERATING
- NATURAL SLOUGH BERM ELEVATION (See Table E.2.4.23)
- EARLY STAGE III OPERATING

SIMULATED RIVER ICE CONDITIONS STAGE III vs. NATURAL 1981-82 WEATHER CONDITIONS CASE E-VI FLOWS

FIGURE E.2.4.275



NOTES:

1. SIMULATIONS BASED ON LATE STAGE III ENERGY DEMAND, INFLOW MATCHING TEMPERATURE POLICY.
2. 3000 cfs REPRESENTS TYPICAL WINTER FLOW UNDER NATURAL CONDITIONS AT FREEZE UP.

LEGEND:

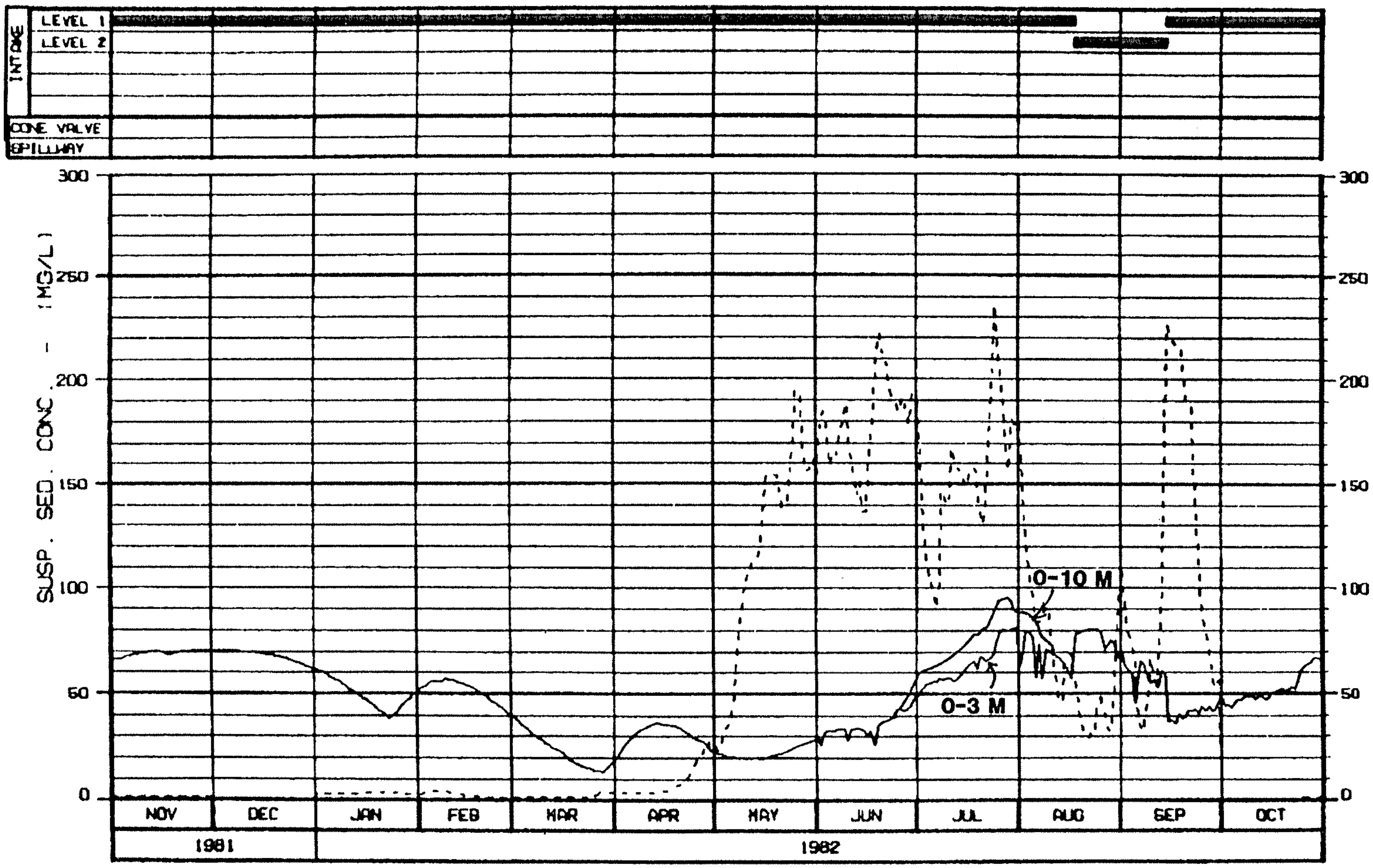
CASE E–1 FLOWS

CASE E–V1 FLOWS

NATURAL BERM OVERTOPPING ELEVATION (See Table E.2.4.24)

SIMULATED RIVER ICE CONDITIONS
STAGE III
1981-82 WEATHER CONDITIONS
CASE E-1 vs. CASE E-VI

FIGURE E.2.2.276



LEGEND:

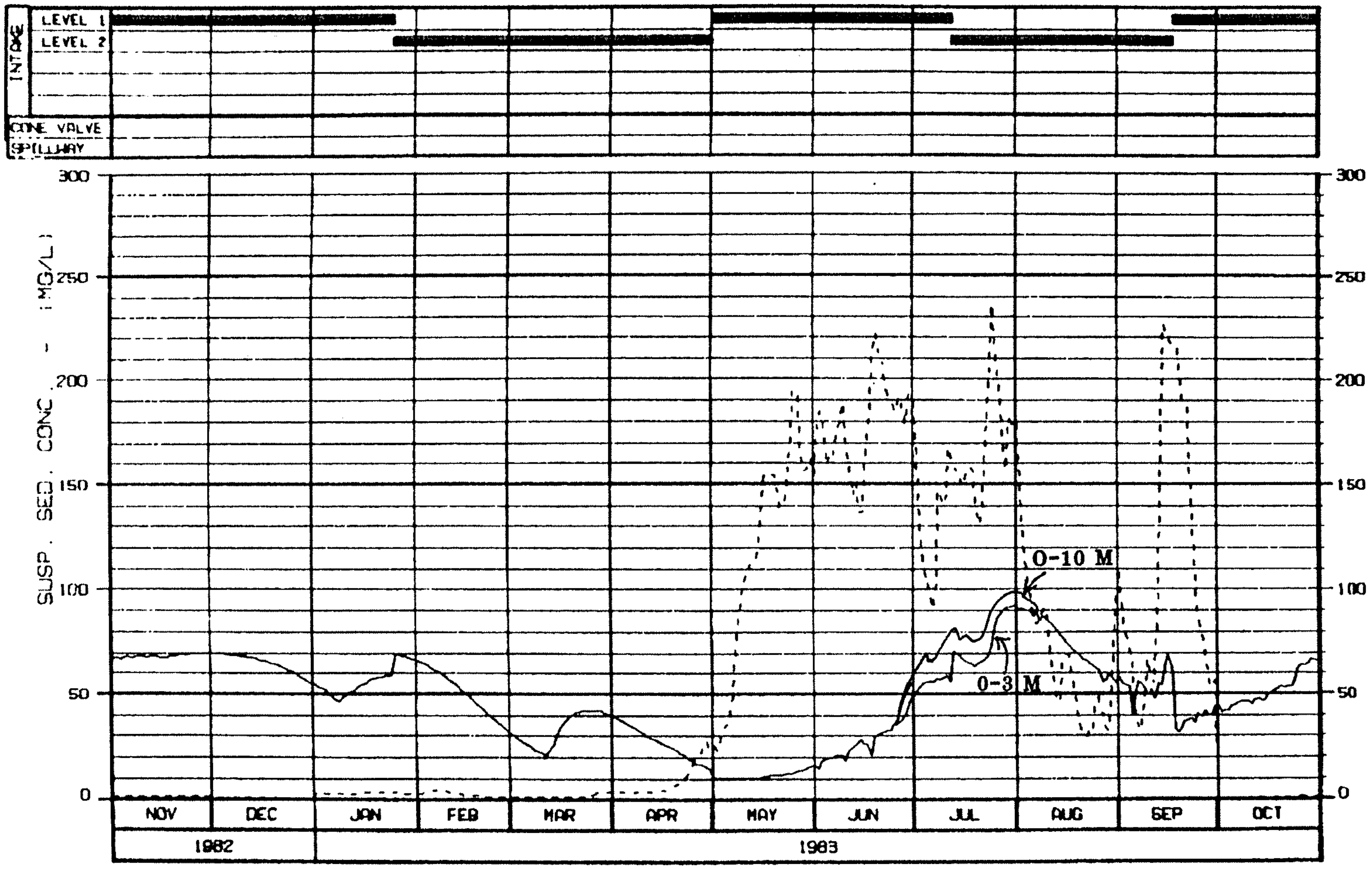
——— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)
- - - - INFLOW SUSP. SED. CONCENTRATION AT WATANA (MG/L) **(0-3 ONLY)**

NOTES:

1, SUSPENDED SEDIMENT INFLOW VALUES REPRESENT THE 0-3 M RANGE AND ARE 15% OF THE TOTAL SUSPENDED SEDIMENT INFLOW.

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
STAGE III DEVIL CANYON OUTFLOW SUSPENDED SOLIDS (0-10 MICRONS) AVERAGE YEAR	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS 12 JUN 85	42-010-06

FIGURE E.2.4.277



LEGEND:

———— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)

- - - - - - - INFLOW SUSP. SED. CONCENTRATION AT WATANA (MG/L) **(0-3 M ONLY)**

NOTES:

1. SUSPENDED SEDIMENT INFLOW VALUES REPRESENT THE 0-3 M RANGE AND ARE 15% OF THE TOTAL SUSPENDED SEDIMENT INFLOW

ALASKA POWER AUTHORITY

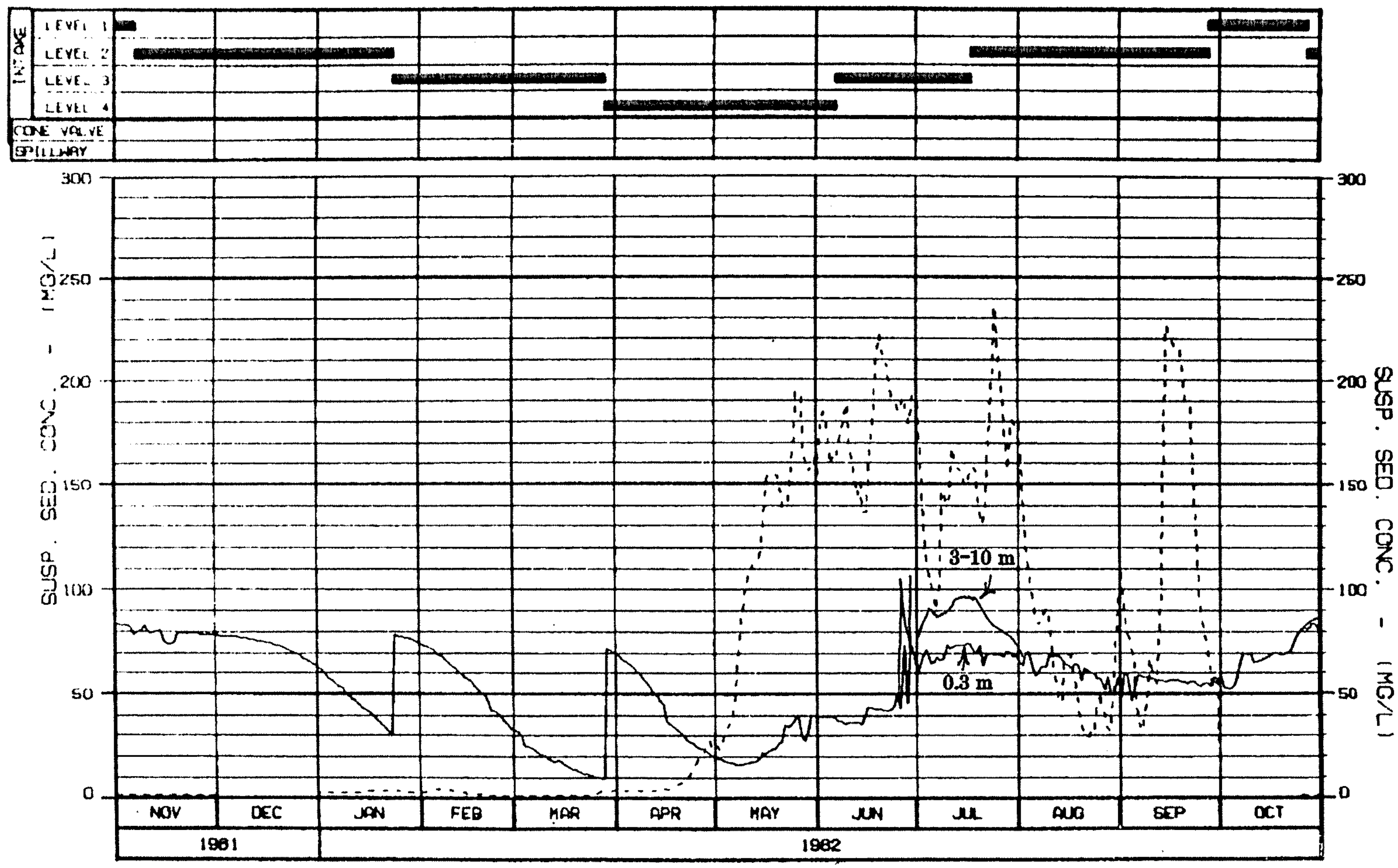
SUSITNA PROJECT | DYRESM MODEL

STAGE III DEVIL CANYON
OUTFLOW SUSPENDED
SOLIDS (0-10 MICRONS)
AVERAGE YEAR

HARZA-EBASCO JOINT VENTURE

CHICAGO, ILLINOIS | 18 JUN 86 | 42-010-06

FIGURE E.2.4.278



LEGEND:

———— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)

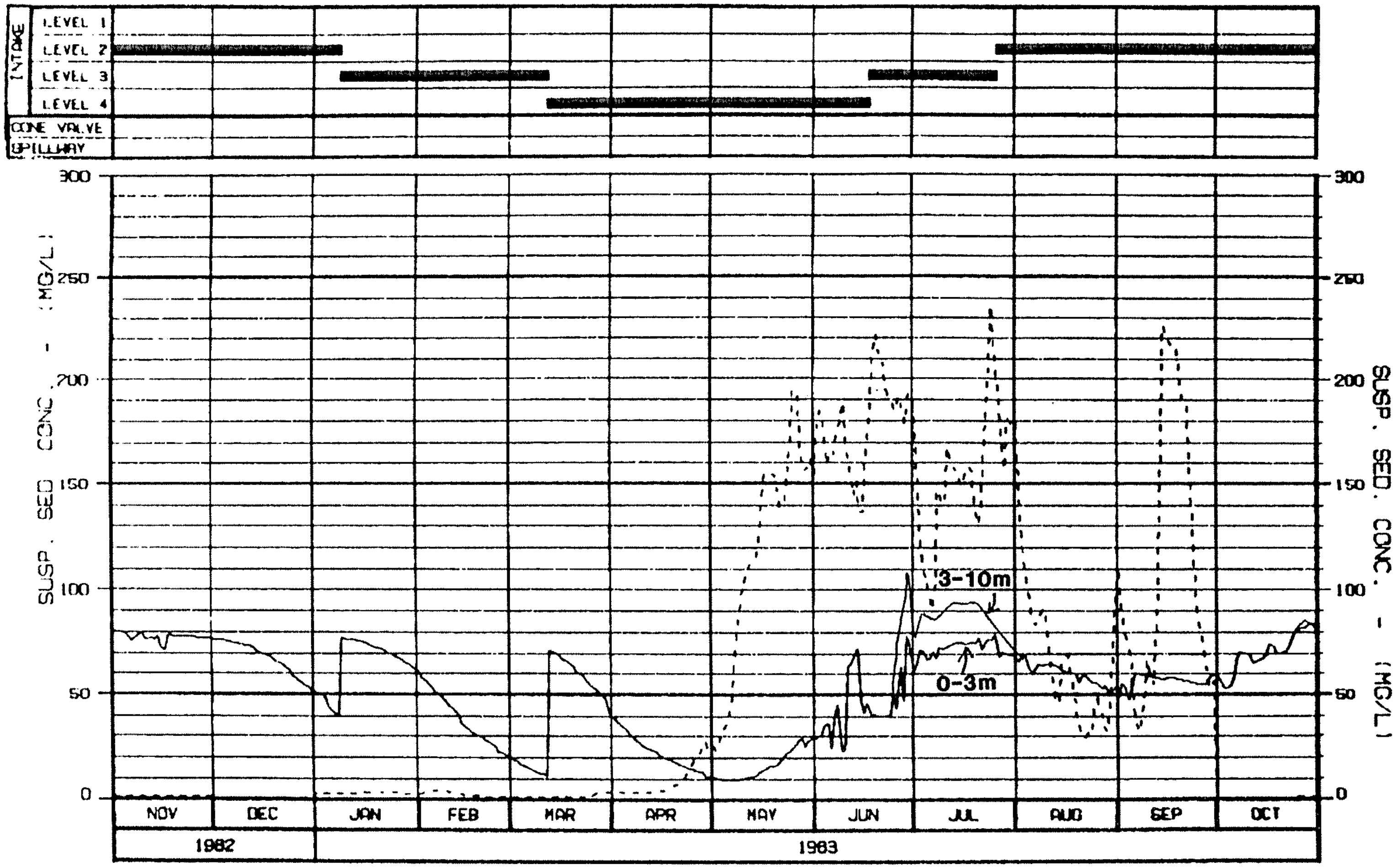
- - - - - INFLOW SUSP. SED. CONCENTRATION (MG/L) **(0-3 M ONLY)**

NOTES:

SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS

ALASKA POWER AUTHORITY	
SUSITNA PROJECT	DYRESM MODEL
STAGE III WATANA OUTFLOW SUSPENDED SOLIDS (0-10 MICRONS) AVERAGE YEAR	
HARZA-EBASCO JOINT VENTURE	
CHICAGO, ILLINOIS / 12 JUN 86	42-010-06

FIGURE E.2.4.279



LEGEND:

——————— PREDICTED OUTFLOW SUSP. SED. CONCENTRATION (MG/L)
- - - - - - - INFLOW SUSP. SED. CONCENTRATION (MG/L)

NOTES:

1. SSC INFLOW VALUES REPRESENT THE 0-3 MICRON RANGE AND ARE 15% OF TSS

ALASKA POWER AUTHORITY		
SUSITNA PROJECT	DYRESM MODEL	
STAGE III WATANA OUTFLOW SUSPENDED SOLIDS (0-10 MICRONS) AVERAGE YEAR		
HARZA-EBASCO JOINT VENTURE		
CHICAGO, ILLINOIS	18 JUN 85	42-010-06

FIGURE E.2.4.280

PHOTOGRAPHS

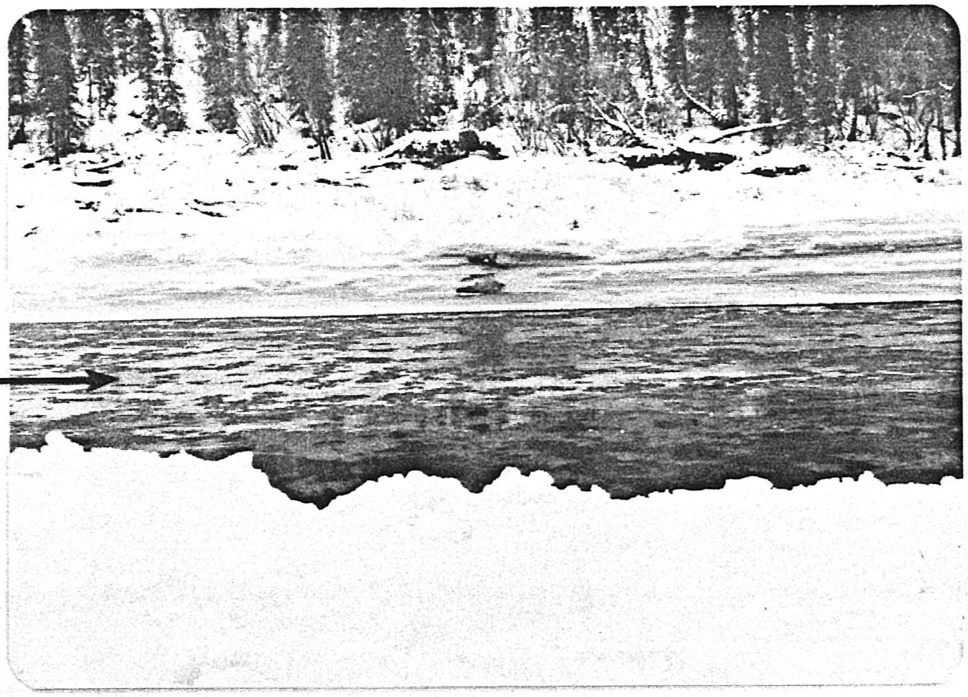


PHOTO E.2.2.1 FRAZIL ICE UPSTREAM FROM WATANA

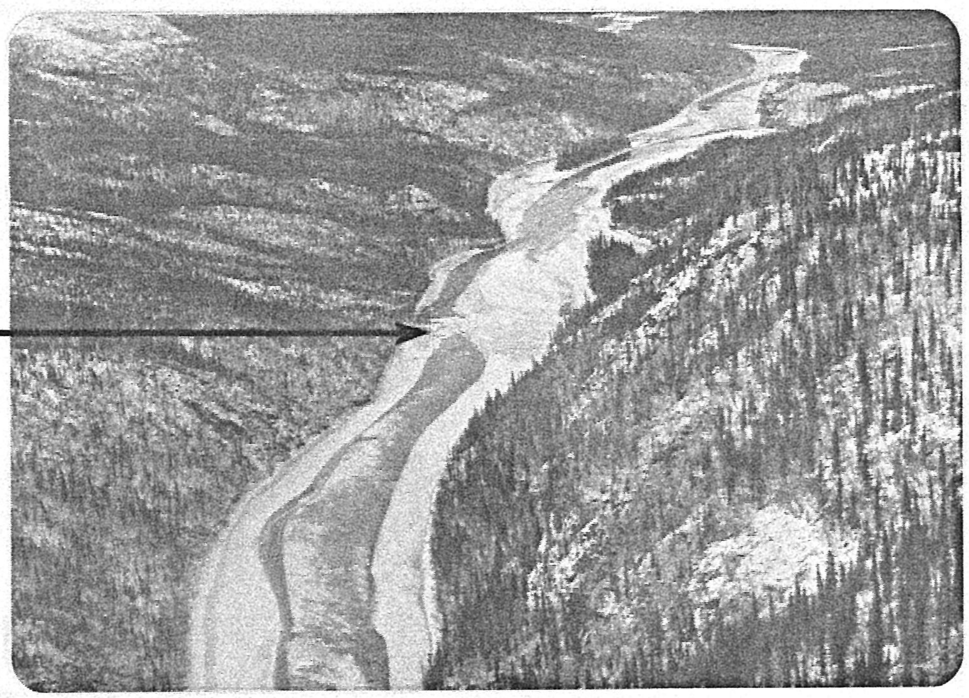


PHOTO E.2.2.2 ICE COVER DOWNSTREAM FROM WATANA SHOWING NATURAL LODGEMENT POINT

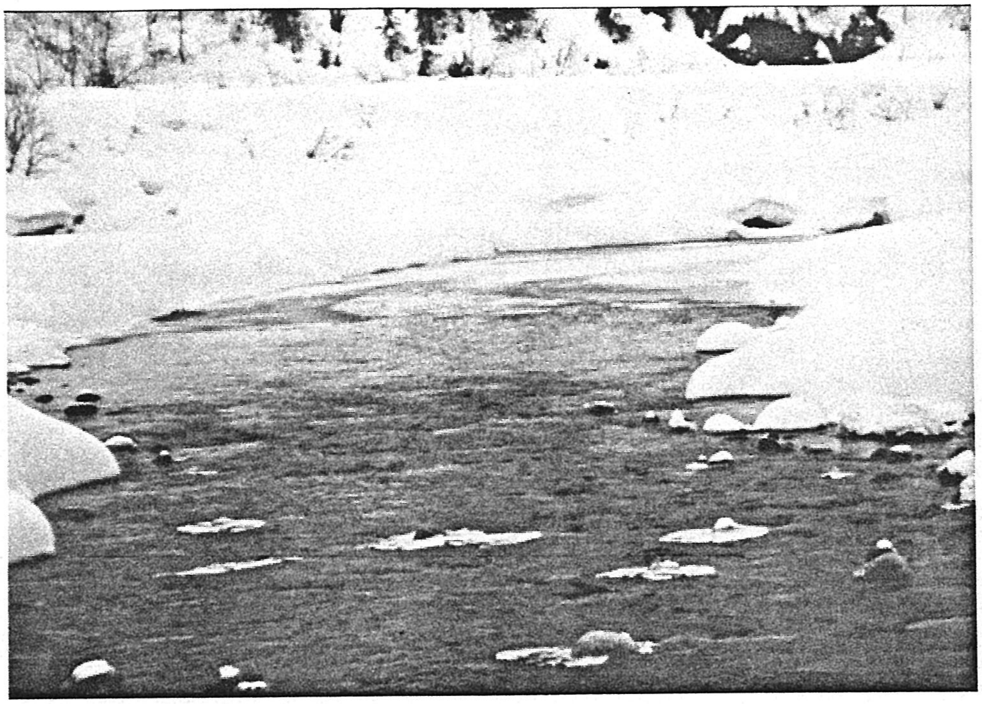


PHOTO E.2.2.3 SLOUGH 9 APPROXIMATELY 3500 FEET UPSTREAM FROM SLOUGH MOUTH, DECEMBER 1982

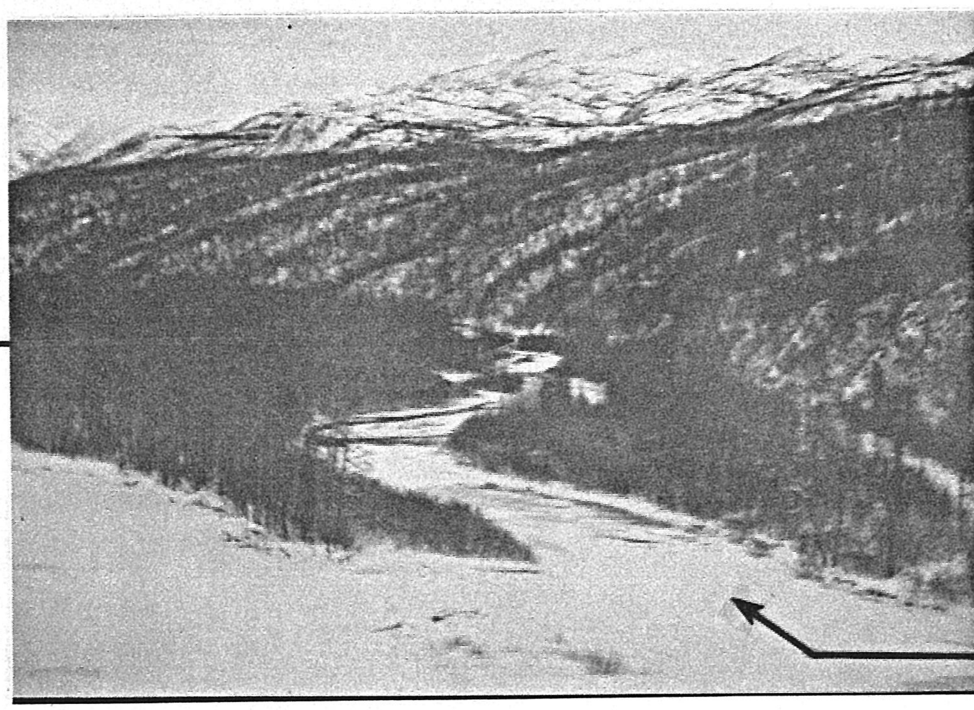


PHOTO E.2.2.4 SLOUGH 8A FREEZE-UP, DECEMBER 1982

PHOTO E.2.2.6

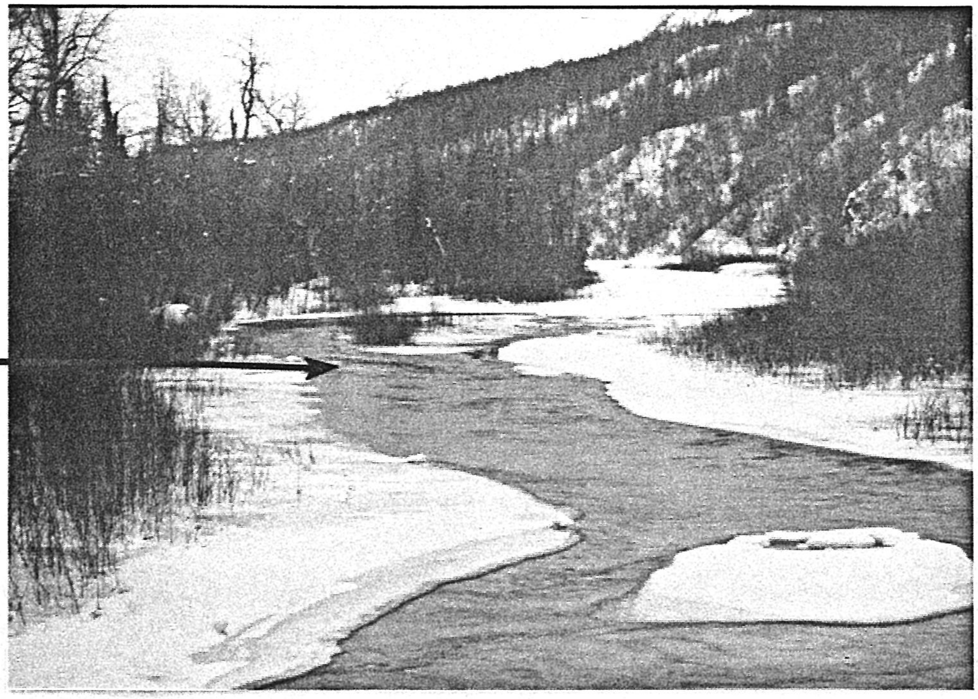


PHOTO E.2.2.5 SLOUGH 8A NEAR LRX-29 LOOKING UPSTREAM

PHOTO E.2.2.7

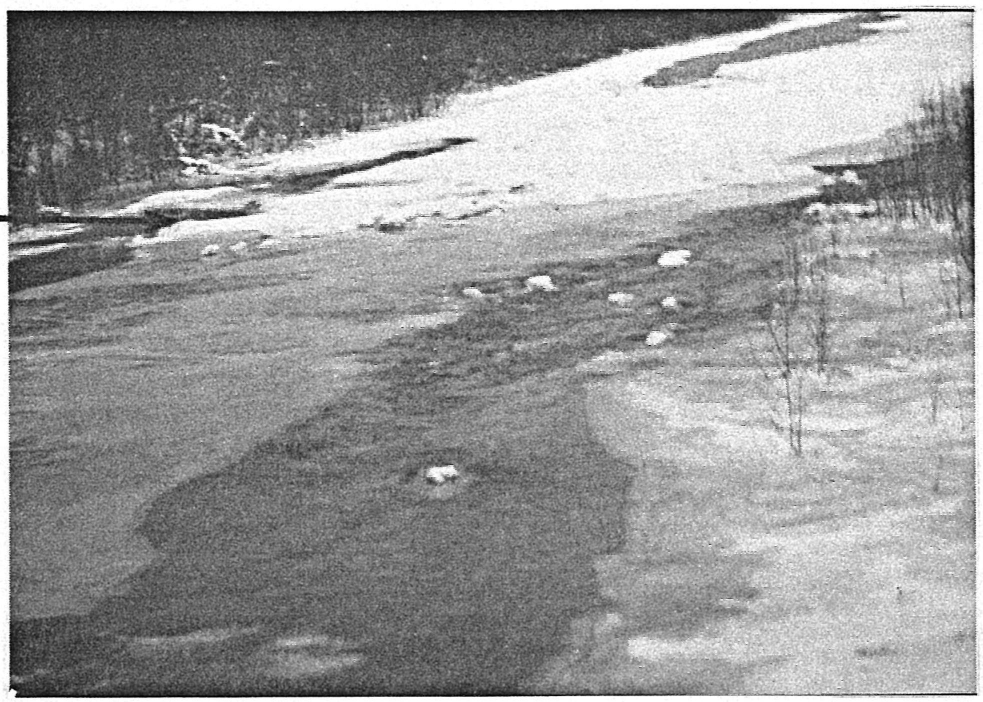


PHOTO E.2.2.6 SLOUGH 8A

PHOTO E.2.2.8

PHOTO E.2.2.7 SLOUGH 8A SHOWING FLOODING DURING FREEZE-UP

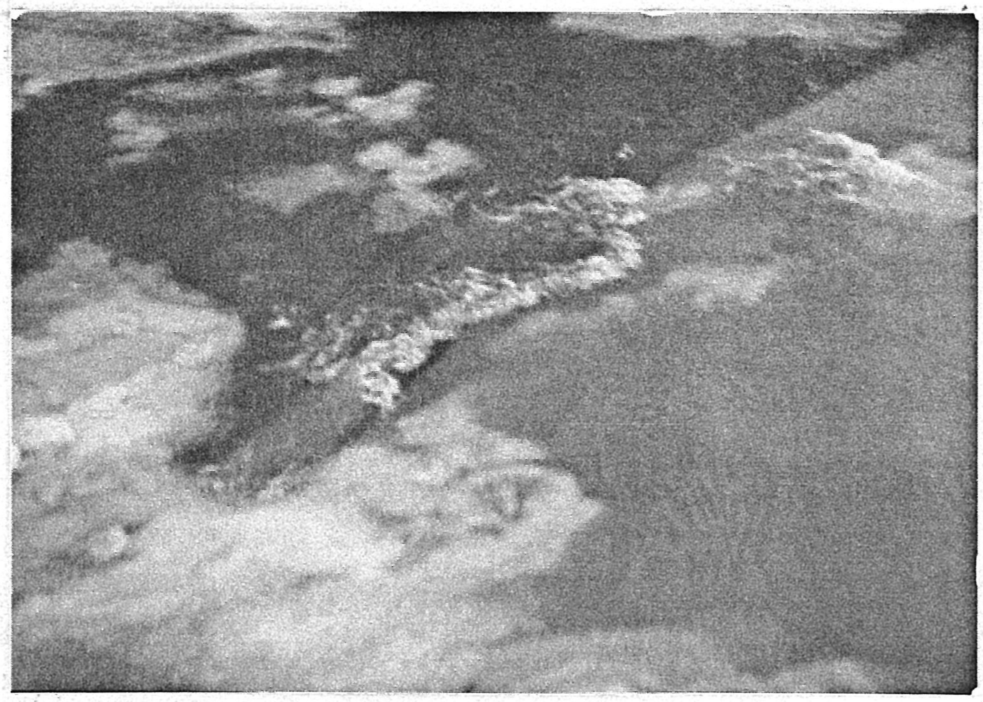


PHOTO E.2.2.8 ENLARGEMENT OF PHOTO E.2.2.7 SHOWING TURBULENT FLOW