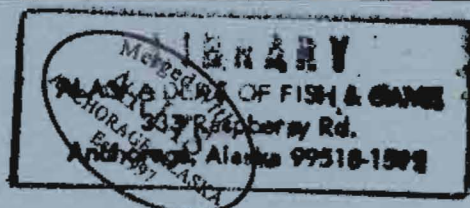


1773

**SUSITNA
HYDROELECTRIC PROJECT**

FEDERAL ENERGY REGULATORY COMMISSION
PROJECT No. 7114



**ALASKA POWER AUTHORITY
COMMENTS
ON THE
FEDERAL ENERGY REGULATORY COMMISSION
DRAFT ENVIRONMENTAL IMPACT STATEMENT
OF MAY 1984**

**VOLUME 2C
TECHNICAL COMMENTS
-TERRESTRIAL RESOURCES
-SOCIAL SCIENCE**

**AUGUST 1984
DOCUMENT No. 1773**

ALASKA POWER AUTHORITY

TK
1425
.58
F472
No. 1773

FEDERAL ENERGY REGULATORY COMMISSION
SUSITNA HYDROELECTRIC PROJECT
PROJECT NO. 7114

ALASKA POWER AUTHORITY
COMMENTS
ON THE
FEDERAL ENERGY REGULATORY COMMISSION
DRAFT ENVIRONMENTAL IMPACT STATEMENT
OF MAY 1984

Volume 2C

Technical Comments

- Terrestrial Resources
- Social Science

3 3755 000 36704 5

August 1984

ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

VOLUME 2C
TABLE OF CONTENTS

Cross-Reference Index

Subject Index

Technical Comments

- Terrestrial Resources TRR001 - TRR081
- Social Science SSC001 - SSC171

Bibliography

Note: The attached Bibliography is for the enclosed Technical Comments only.

ARLIS
Alaska Resources
Library & Information Services
Anchorage, Alaska

CROSS-REFERENCE INDEX

This Index organizes the Technical Comments by the Section in the DEIS to which they refer. Each Technical Comment is listed by its alphanumeric code opposite a Section of the DEIS. If a Technical Comment deals with more than one Section, it is listed opposite each Section with which it deals.

DEIS SECTION

SEE COMMENT NOS.

SUMMARY

NFP001, NFP002, NFP003, NFP004, NFP005, NFP006, NFP007
ALT001 AQR001, AQR002

1. PURPOSE OF AND NEED FOR ACTION

1.1 PURPOSE OF ACTION

1.2 NEED FOR POWER

1.2.1 Historical Energy Requirements

1.2.1.1 Perspective on Geography and Economy of the Region

NFP008, NFP009, NFP010, NFP011

1.2.1.2 Energy Use in the Region

NFP012, NFP013, NFP014

1.2.2 Present Energy Scenario

NFP015, NFP016, NFP017, NFP018, NFP019, NFP020, NFP021

1.2.3 Future Energy Resources

NFP022

1.2.4 Load Growth Forecast

1.2.4.1 Alaska Power Authority Forecasts

NFP023, NFP024, NFP025

1.2.4.2 FERC Staff Projections

NFP026, NFP027, NFP028, NFP029, NFP030, NFP031

1.2.5 Generation-Load Relationships of Existing and Planned Railbelt System

NFP032, NFP033, NFP034, NFP035

1.3 ALTERNATIVE ACTIONS

1.3.1 Alternative Project Designs

1.3.1.1 Previous Studies

1.3.1.2 Applicant's Studies

1.3.1.3 Staff Studies

NFP036, NFP037

DEIS SECTION

SEE COMMENT NOS.

1.3.2 Other Hydroelectric Alternatives	ALT002, ALT003, ALT004
1.3.3 Non-Hydroelectric Alternatives	
1.3.3.1 Petroleum Fuels	
1.3.3.2 Natural Gas	NFP038, NFP039
1.3.3.3 Coal	NFP040, NFP041, NFP042, NFP043
1.3.3.4 Peat	NFP044
1.3.3.5 Geothermal Energy	NFP045
1.3.3.6 Tidal Power	NFP046
1.3.3.7 Solar Energy	
1.3.4 Non-Structural Alternatives	NFP047
1.3.4.1 Effects of Conservation on Demand	NFP048
1.3.4.2 Effects of Rate Revision on Demand	NFP049
1.4 SCENARIO DEVELOPMENT	
1.4.1 Susitna Basin Development	NFP050, NFP051, NFP052, NFP053
1.4.2 Non-Susitna River Hydroelectric Development Plans	NFP050, NFP053
1.4.3 Natural-Gas-Fired Generation Scenario	
1.4.3.1 Scenario Evaluation	NFP054, NFP055
1.4.3.2 Data Assumptions for Gas Scenario	NFP056, NFP058, NFP059
1.4.4 Coal-Fired Generation Scenario	NFP057, NFP059
1.4.4.1 Scenario Evaluation	
1.4.4.2 Data Assumptions for Coal Scenario	NFP060, NFP061
1.4.5 Scenario Comparison and Combined Scenarios	
1.4.5.1 Hydroelectric Scenarios	NFP063
1.4.5.2 Thermal Scenarios	NFP063
1.4.5.3 Combined Scenarios	NFP062, NFP063

REFERENCES

DEIS SECTION

SEE COMMENT NOS.

2. PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED PROJECT

2.1.1 Location

2.1.2 Facilities

2.1.2.1 Watana Development

NFP064

2.1.2.2 Devil Canyon Development

NFP066

2.1.2.3 Construction and Permanent Site
Facilities

2.1.3 Construction Schedule

2.1.3.1 Watana

2.1.3.2 Devil Canyon

2.1.4 Construction Workforce Requirements

2.1.5 Operation and Maintenance

2.1.5.1 Operation

NFP065

2.1.5.2 Maintenance

2.1.6 Safety Inspections

2.1.7 Access Plan

2.1.8 Transmission Line Electrical Effects

2.1.9 Compliance with Applicable Laws

ALT005

2.1.10 Future Plans

2.1.11 Recreation Plan

2.1.11.1 Inventory and Evaluation of Potential
Recreation Development Areas

2.1.11.2 Implementation and Description of the
Proposed Recreation Plan

2.1.11.3 Recreation Monitoring Program

2.1.12 Mitigative Measures Proposed by the Applicant

2.1.12.1 Land Resources

AQR003

2.1.12.2 Water Quantity and Quality

AQR004

2.1.12.3 Fisheries

2.1.12.4 Terrestrial Communities

<u>DEIS SECTION</u>	<u>SEE COMMENT NOS.</u>
2.1.12.5 Threatened and Endangered Species	TRR001
2.1.12.6 Recreation Resources	
2.1.12.7 Socioeconomic Factors	
2.1.12.8 Visual Resources	
2.1.12.9 Cultural Resources	SSC001, SSC002, SSC003
2.2 SUSITNA DEVELOPMENT ALTERNATIVES	
2.2.1 Alternative Facility Designs	
2.2.1.1 Applicant's Studies	
2.2.1.2 Alternative Watana Facilities	
2.2.1.3 Alternative Devil Canyon Facilities	
2.2.2 Alternative Access Corridors	
2.2.2.1 Applicant Studies	
2.2.2.2 Corridors Studied	
2.2.2.3 Development of Plans	
2.2.2.4 Description of Most Responsive Access Plans	
2.2.3 Alternative Transmission Line Corridors	
2.2.4 Alternative Susitna Development Schemes	NFP067
2.2.4.1 General	
2.2.4.2 Watana I-Devil Canyon Development	
2.2.4.3 Watana I-Modified High Devil Canyon Development	
2.2.4.4 Watana I-Reregulating Dam Development	
2.3 NATURAL-GAS-FIRED GENERATION SCENARIO	
2.3.1 Alternative Facilities	NFP068
2.3.2 Location	NFP068
2.3.3 Construction Requirements	NFP068
2.3.4 Operation and Maintenance	NFP068
2.4 COAL-FIRED GENERATION SCENARIO	
2.4.1 Alternative Facilities	NFP069 ALT006, ALT007, ALT008
2.4.2 Location	NFP069

DEIS SECTION

SEE COMMENT NOS.

2.4.3 Construction Requirements	NFP069
2.4.4 Operation and Maintenance	NFP069
2.5 COMBINED HYDRO-THERMAL GENERATION SCENARIO	
2.5.1 Hydro Units	ALT009, ALT010
2.5.1.1 Browne	
2.5.1.2 Chakachamna	
2.5.1.3 Johnson	
2.5.1.4 Keetna	
2.5.1.5 Snow	
2.5.2 Thermal Units	NFP070
2.5.2.1 Facilities	
2.5.2.2 Location	
2.5.2.3 Construction Requirements	
2.5.2.4 Operation and Maintenance	
2.5.3 Transmission	ALT011, ALT012, ALT013, ALT014
2.6 NO-ACTION ALTERNATIVE	
2.7 MITIGATIVE MEASURES FOR ALTERNATIVE SCENARIOS	
2.7.1 Land Resources	
2.7.1.1 Geology and Soils	
2.7.1.2 Land Use and Ownership	
2.7.2 Climate, Air Quality, Noise	ALT015, ALT016
2.7.3 Water Quantity and Quality	ALT017, ALT018
2.7.4 Fisheries	ALT019
2.7.5 Terrestrial Communities	
2.7.5.1 Plant Communities	
2.7.5.2 Wildlife	
2.7.6 Threatened and Endangered Species	TRR002
2.7.7 Socioeconomic Factors	
2.7.8 Visual Resources	ALT020
2.7.9 Cultural Resources	SSC004, SSC005
REFERENCES	

DEIS SECTION

SEE COMMENT NOS.

3. AFFECTED ENVIRONMENT

3.1 PROPOSED PROJECT

3.1.1 Land Resources

3.1.1.1 Geology and Soils

3.1.1.2 Land Uses and Ownership

SSC006

3.1.2 Climate, Air Quality, Noise

3.1.2.1 Climate

ALT021

3.1.2.2 Air Quality and Noise

3.1.3 Water Quality and Quantity

3.1.3.1 Surface Water Resources

AQR005, AQR006, AQR007, AQR008, AQR009, AQR013

3.1.3.2 Surface Water Quality

AQR010, AQR011, AQR014

3.1.3.3 Groundwater

3.1.4 Fish Communities

AQR012

3.1.4.1 Watershed Above Devil Canyon

3.1.4.2 Devil Canyon to Talkeetna

3.1.4.3 Below Talkeetna

**3.1.4.4 Access Roads and Transmission Line
Corridors**

3.1.4.5 Fishery Resources

3.1.5 Terrestrial Communities

3.1.5.1 Plant Communities

3.1.5.2 Animal Communities

TRR003, TRR004, TRR005, TRR006, TRR007, TRR008, TRR009

3.1.6 Threatened and Endangered Species

TRR010, TRR011

3.1.7 Recreation Resources

SSC007

3.1.8 Socioeconomic Factors

3.1.8.1 Population

SSC008

3.1.8.2 Institutional Issues and Quality of Life

SSC009

3.1.8.3 Economy and Employment

DEIS SECTION

SEE COMMENT NOS.

- 3.1.8.4 Housing
- 3.1.8.5 Community Services and Fiscal Status
- 3.1.8.6 Transportation
- 3.1.8.7 Human Use and Management of Wildlife Resources SSC010
- 3.1.9 Visual Resources
- 3.1.9.1 Landscape Character Types
- 3.1.9.2 Prominent Natural Features
- 3.1.9.3 Significant Viewsheds, Vista Points, and Travel Routes SSC011
- 3.1.10 Cultural Resources SSC012, SSC013
- 3.2 SUSITNA DEVELOPMENT ALTERNATIVES
- 3.2.1 Land Resources
- 3.2.2 Climate, Air Quality, Noise ALT022
- 3.2.3 Water Quantity and Quality
- 3.2.4 Aquatic Communities
- 3.2.5 Terrestrial Communities
- 3.2.5.1 Plant Communities
- 3.2.5.2 Animal Communities
- 3.2.6 Threatened and Endangered Species
- 3.2.7 Recreation Resources
- 3.2.8 Socioeconomic Factors
- 3.2.9 Visual Resources
- 3.2.10 Cultural Resources SSC014, SSC015
- 3.3 NATURAL-GAS-FIRED GENERATION SCENARIO
- 3.3.1 Land Resources
- 3.3.1.1 Geology and Soils
- 3.3.1.2 Land Use and Ownership
- 3.3.2 Climate, Air Quality, Noise
- 3.3.2.1 Climate

DEIS SECTION

SEE COMMENT NOS.

3.3.2.2 Air Quality and Noise	ALT023
3.3.3 Water Quantity and Quality	
3.3.4 Aquatic Communities	
3.3.5 Terrestrial Communities	
3.3.5.1 Plant Communities	
3.3.5.2 Animal Communities	TRR012, TRR013
3.3.6 Threatened and Endangered Species	
3.3.7 Recreation Resources	
3.3.8 Socioeconomic Factors	
3.3.9 Visual Resources	SSC016
3.3.10 Cultural Resources	
3.4 COAL-FIRED GENERATION SCENARIO	SSC017
3.4.1 Land Resources	
3.4.1.1 Geology and Soils	
3.4.1.2 Land Use and Ownership	
3.4.2 Climate, Air Quality, Noise	
3.4.2.1 Climate	ALT024
3.4.2.2 Air Quality and Noise	
3.4.3 Water Quantity and Quality	
3.4.4 Aquatic Communities	
3.4.5 Terrestrial Communities	
3.4.5.1 Plant Communities	
3.4.5.2 Animal Communities	
3.4.6 Threatened and Endangered Species	
3.4.7 Recreation Resources	SSC018
3.4.8 Socioeconomic Factors	
3.4.9 Visual Resources	SSC019
3.4.10 Cultural Resources	
3.5 COMBINED HYDRO-THERMAL GENERATION SCENARIO	
3.5.1 Land Resources	

DEIS SECTION

- 3.5.1.1 Geology and Soils
- 3.5.1.2 Land Use and Ownership
- 3.5.2 Climate, Air Quality, Noise
- 3.5.3 Water Quantity and Quality
- 3.5.4 Aquatic Communities
- 3.5.5 Terrestrial Communities
 - 3.5.5.1 Plant Communities
 - 3.5.5.2 Animal Communities
- 3.5.6 Threatened and Endangered Species
- 3.5.7 Recreation Resources
- 3.5.8 Socioeconomic Factors
- 3.5.9 Visual Resources
- 3.5.10 Cultural Resources

REFERENCES

4. ENVIRONMENTAL IMPACT

4.1 PROPOSED PROJECT

4.1.1 Land Resources

4.1.1.1 Geology and Soils

4.1.1.2 Land Use and Ownership

4.1.2 Climate, Air Quality, Noise

4.1.3 Water Quantity and Quality

4.1.3.1 Surface Water Resources

4.1.3.2 Water Quality

4.1.3.3 Temperature

4.1.3.4 Ice Processes

4.1.3.5 Groundwater

4.1.4 Aquatic Communities

4.1.4.1 Plant and Invertebrate Communities

SEE COMMENT NOS.

ALT025
SSC020
ALT026
ALT027, ALT028
ALT029, ALT030, ALT031, ALT032, ALT033

TRR014
TRR015, TRR016, TRR017
TRR018
SSC021

SSC022
SSC023

ALT034, ALT035 AQR019
ALT036, ALT037, ALT038

NFP071, NFP072, NFP073, NFP074, NP075, NP076 AQR015,
AQR016, AQR017, AQR018, AQR020, ACR021, ACR022, AQR023,
AQR024, AQR025, AQR026, AQR027, AQR028, AQR029,
ALT039 AQR030, AQR031,
AQR032, AQR033, AQR034, AQR035, AQR036, AQR037, AQR038

DEIS SECTION

SEE COMMENT NOS.

4.1.4.2 Fish Communities	AQR039, AQR040, AQR041, AQR042, AQR043, AQR044, AQR045, AQR046, AQR047, AQR048, AQR049, AQR050, AQR051, AQR052, AQR053, AQR054, AQR055
4.1.5 Terrestrial Communities	
4.1.5.1 Plant Communities	TRR019, TRR020
4.1.5.2 Animal Communities	TRR021, TRR022, TRR023, TRR024, TRR025, TRR026, TRR032, TRR029, TRR027, TRR028, TRR030, TRR031
4.1.6 Threatened and Endangered Species	
4.1.7 Recreation Resources	SSC024, SSC025, SSC026, SSC027, SSC039
4.1.8 Socioeconomic Impacts	SSC028, SSC029, SSC030, SSC031, SSC032, SSC033
4.1.9 Visual Resources	SSC034, SSC035, SSC036
4.1.10 Cultural Resources	SSC037, SSC038
4.2 SUSITNA DEVELOPMENT ALTERNATIVES	
4.2.1 Land Resources	
4.2.1.1 Geology and Soils	
4.2.1.2 Land Use and Ownership	
4.2.2 Climate, Air Quality, Noise	ALTO40
4.2.3 Water Quantity and Quality	
4.2.4 Aquatic Communities	
4.2.5 Terrestrial Communities	
4.2.5.1 Plant Communities	
4.2.5.2 Animal Communities	TRR033
4.2.6 Threatened and Endangered Species	
4.2.7 Recreation Resources	SSC039
4.2.8 Socioeconomic Factors	
4.2.9 Visual Resources	
4.2.10 Cultural Resources	SSC040, SSC041, SSC042, SSC043
4.3 NATURAL-GAS-FIRED GENERATION SCENARIO	
4.3.1 Land Resources	
4.3.1.1 Geology and Soils	
4.3.1.2 Land Use and Ownership	

<u>DEIS SECTION</u>	<u>SEE COMMENT NOS.</u>
4.3.2 Climate, Air Quality, Noise	ALT041, ALT042
4.3.3 Water Quantity and Quality	AQR071
4.3.4 Aquatic Communities	
4.3.5 Terrestrial Communities	
4.3.5.1 Plant Communities	
4.3.5.2 Animal Communities	TRR034
4.3.6 Threatened and Endangered Species	
4.3.7 Recreation Resources	SSC044, SSC045
4.3.8 Socioeconomic Factors	
4.3.9 Visual Resources	
4.3.10 Cultural Resources	SSC046
4.4 COAL-FIRED GENERATION SCENARIO	
4.4.1 Land Resources	
4.4.1.1 Geology and Soils	
4.4.1.2 Land Use and Ownership	
4.4.2 Climate, Air Quality, Noise	ALT043, ALT044, ALT045
4.4.3 Water Quantity and Quality	
4.4.4 Aquatic Communities	
4.4.5 Terrestrial Communities	
4.4.5.1 Plant Communities	TRR035
4.4.5.2 Animal Communities	
4.4.6 Threatened and Endangered Species	
4.4.7 Recreation Resources	SSC047, SSC048
4.4.8 Socioeconomic Factors	
4.4.9 Visual Resources	SSC049
4.4.10 Cultural Resources	SSC050
4.5 COMBINED HYDRO-THERMAL GENERATION SCENARIO	
4.5.1 Land Resources	ALT046
4.5.1.1 Geology and Soils	
4.5.1.2 Land Use and Ownership	SSC051

DEIS SECTION

SEE COMMENT NOS.

4.5.2	Climate, Air Quality, Noise	
4.5.3	Water Quantity and Quality	ALT047, ALT048
4.5.4	Aquatic Communities	ALT049
4.5.5	Terrestrial Communities	
4.5.5.1	Plant Communities	
4.5.5.2	Animal Communities	TRR036, TRR037
4.5.6	Threatened and Endangered Species	TRR038
4.5.7	Recreation Resources	SSC052
4.5.8	Socioeconomic Factors	SSC053, SSC054
4.5.9	Visual Resources	SSC055
4.5.10	Cultural Resources	
4.6	NO-ACTION ALTERNATIVE	
4.7	COMPARISON OF ALTERNATIVES	
4.7.1	Land Resources	
4.7.1.1	Geology and Soils	ALT050
4.7.1.2	Land Use and Ownership	
4.7.2	Climate, Air Quality, Noise	ALT051, ALT052
4.7.3	Water Quantity and Quality	ALT053
4.7.4	Aquatic Communities	ALT054
4.7.5	Terrestrial Communities	
4.7.5.1	Plant Communities	
4.7.5.2	Animal Communities	TRR039
4.7.6	Threatened and Endangered Species	TRR040
4.7.7	Recreation Resources	SSC056
4.7.8	Socioeconomic Factors	SSC057
4.7.9	Visual Resources	
4.7.10	Cultural Resources	SSC058, SSC059, SSC060, SSC061, SSC062, SSC063
4.8	RELATIONSHIP TO RESOURCE PLANS AND UTILIZATION	
4.9	UNAVOIDABLE ADVERSE IMPACTS	
4.9.1	Proposed Project	ALT055, ALT056

DEIS SECTION

SEE COMMENT NOS.

4.9.2 Alternatives

4.10 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT
OF RESOURCES

4.10.1 Proposed Project

ALT056 TRR041

4.10.2 Alternatives

SSC064

4.11 SHORT-TERM USES AND LONG TERM-PRODUCTIVITY

ALT057

4.11.1 Proposed Project

ALT058

4.11.2 Alternatives

ALT058, ALT059

REFERENCES

5. STAFF CONCLUSIONS

5.1 SIGNIFICANT ENVIRONMENTAL IMPACTS

5.1.1 Proposed Project

5.1.1.1 Land Resources

5.1.1.2 Climate, Air Quality, Noise

ALT060

5.1.1.3 Water Quantity and Quality

5.1.1.4 Aquatic Communities

AQR056, AQR057

5.1.1.5 Terrestrial Communities

TRR042, TRR043, TRR044, TRR045

5.1.1.6 Recreation Resources

5.1.1.7 Socioeconomic Factors

5.1.1.8 Visual Resources

5.1.2 Alternatives

5.1.2.1 Land Resources

ALT061, ALT062

5.1.2.2 Climate, Air Quality, Noise

5.1.2.3 Water Quantity and Quality

NFP077 ALT063, ALT064

5.1.2.4 Aquatic Communities

ALT065

5.1.2.5 Terrestrial Communities

TRR046

5.1.2.6 Recreation Resources

SSC065

5.1.2.7 Socioeconomic Factors

5.1.2.8 Visual Resources

DEIS SECTION

SEE COMMENT NOS.

5.1.3 No-Action Alternative

5.2 RECOMMENDATIONS

5.2.1 Power Generation

5.2.2 Flow Regulation

5.2.3 Access Plan

5.3 MITIGATIVE MEASURES

5.3.1 Land Resources

5.3.1.1 Geology and Soils

5.3.1.2 Land Use and Ownership

5.3.2 Climate, Air Quality, Noise

5.3.3 Water Quantity and Quality

5.3.4 Aquatic Communities

5.3.5 Terrestrial Communities

5.3.6 Recreation Resources

5.3.7 Socioeconomic Factors

5.3.8 Visual Resources

5.3.9 Cultural Resources

5.4 RECOMMENDED AND ONGOING STUDIES

5.4.1 Land Resources

5.4.1.1 Geology and Soils

5.4.1.2 Land Use and Ownership

5.4.2 Aquatic Communities

5.4.3 Terrestrial Communities

5.4.4 Recreation Resources

5.4.5 Socioeconomic Factors

5.4.6 Visual Resources

REFERENCES

APPENDIX A. LOAD GROWTH FORECAST: THE ALASKA POWER
AUTHORITY FORECASTS

A.1 METHODOLOGY

A.2 LOAD PROJECTION

NFP078 ALT066, ALT067 TRR047

NFP079, NFP080 AQR058, AQR059

ALT068 SSC066

ALT069

NFP081, NFP082 AQR060, AQR061, AQR062

AQR063, AQR064, AQR065, AQR066

TRR048

SSC067, SSC068, SSC069, SSC070

SSC071

NFP083, NFP084, NFP085

NFP086

DEIS SECTION

SEE COMMENT NOS.

A.3 WORLD OIL PRICE

A.3.1 Some Current Views

NFP087, NFP088, NFP089, NFP090

A.3.2 Masking Effect of Inventory Changes

NFP092

A.3.3 Some Recent Trends and Their Meaning

NFP091, NFP094, NFP095

A.3.4 APA Oil Price and Load Projection

NFP096

A.3.5 FERC Projections

NFP097

REFERENCES

APPENDIX B. FUTURE ENERGY RESOURCES

B.1 INTRODUCTION

B.2 PETROLEUM FUELS

B.3 NATURAL GAS

B.3.1 Reserves/Resources

NFP098

B.3.2 Pricing of Natural Gas

B.3.3 Future Price of Natural Gas

B.3.3.1 Completion of the ANGTS

B.3.3.2 Completion of Gas Pipeline to
Alaskan Gulf and Construction
of LNG Export Facilities

B.3.3.3 Construction of Facilities to Export
Additional Volumes of Cook Inlet Gas

NFP099, NFP101

B.3.3.4 No Additional Facilities for
Export of Cook Inlet Gas

B.3.3.5 Future Gas Prices

NFP100

B.4 COAL

NFP102, NFP103, NFP104

B.5 PEAT

NFP105

B.6 GEOTHERMAL ENERGY

NFP106

B.7 TIDAL POWER

NFP107

B.8 SOLAR ENERGY

REFERENCES

DEIS SECTION

SEE COMMENT NOS.

APPENDIX C. ENERGY CONSERVATION

- C.1 ENERGY CONSERVATION AND THE NATIONAL ENERGY ACT OF 1978
- C.2 CONSERVATION OF OIL AND NATURAL GAS--THE POWERPLANT AND INDUSTRIAL FUEL USE ACT OF 1978
- C.3 THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978--RATE DESIGN, LOAD MANAGEMENT, AND REDUCTION OF THE GROWTH RATES IN THE DEMAND FOR ELECTRIC POWER
- C.4 RATE DESIGN AND LOAD MANAGEMENT--THE NARUC RESOLUTION NO. 9 STUDY

NFP108

APPENDIX D. 345-kV TRANSMISSION LINE ELECTRICAL ENVIRONMENTAL EFFECTS

- D.1 INTRODUCTION
 - D.2 OZONE PRODUCTION
 - D.3 AUDIBLE NOISE
 - D.4 RADIO NOISE
 - D.5 ELECTRIC AND MAGNETIC FIELDS
 - D.5.1 Electric Fields
 - D.5.2 Magnetic Fields
 - D.6. ELECTRICAL SAFETY
- REFERENCES

APPENDIX E. GEOLOGY AND SOILS

- E.1 AFFECTED ENVIRONMENT
 - E.1.1 Proposed Project
 - E.1.1.1 Upper and Middle Susitna River Basin
 - E.1.1.2 Lower Susitna River Basin

DEIS SECTION

SEE COMMENT NOS.

- E.1.1.3 Power Transmission Line Corridors
- E.1.2 Susitna Development Alternatives
 - E.1.2.1 Alternative Dam Locations and Designs
 - E.1.2.2 Alternative Access Routes
 - E.1.2.3 Alternative Power Transmission Routes
 - E.1.2.4 Alternative Borrow Sites
- E.1.3 Non-Susitna Generation Alternatives
 - E.1.3.1 Natural-Gas-Fired Generation Scenario
 - E.1.3.2 Coal-Fired Generation Scenario
 - E.1.3.3 Combined Hydro-Thermal Generation Scenario
- E.2 ENVIRONMENTAL IMPACT
 - E.2.1 Proposed Project
 - E.2.1.1 Watana Development
 - E.2.1.2 Devil Canyon Development
 - E.2.1.3 Access Routes
 - E.2.1.4 Power Transmission Facilities
 - E.2.2 Susitna Development Alternatives
 - E.2.2.1 Alternative Dam Locations and Designs
 - E.2.2.2 Alternative Access Routes
 - E.2.2.3 Alternative Power Transmission Routes
 - E.2.2.4 Alternative Borrow Sites
 - E.2.3 Non-Susitna Generation Alternatives
 - E.2.3.1 Natural-Gas-Fired Generation Scenario
 - E.2.3.2 Coal-Fired Generation Scenario
 - E.2.3.3 Combined Hydro-Thermal Generation Scenario ALT070, ALT071
 - E.2.4 Comparison of Alternatives
 - E.2.4.1 Susitna Development Alternatives
 - E.2.4.2 Non-Susitna Generation Alternatives
- E.3 MITIGATION

REFERENCES

DEIS SECTION

SEE COMMENT NOS.

APPENDIX F. LAND USE

F.1 AFFECTED ENVIRONMENT

F.1.1 Introduction

F.1.2 Proposed Project

F.1.2.1 Upper and Middle Susitna River Basin

F.1.2.2 Power Transmission Line Corridor

SSC072, SSC073

F.1.3 Susitna Development Alternatives

F.1.3.1 Alternative Dam Locations and Design

F.1.3.2 Alternative Access Routes

F.1.3.3 Alternative Power Transmission Routes

F.1.3.4 Alternative Borrow Sites

F.1.4 Non-Susitna Generation Alternatives

F.1.4.1 Natural-Gas-Fired Generation Scenario

F.1.4.2 Coal-Fired Generation Scenario

F.1.4.3 Combined Hydro-Thermal Generation
Scenario

F.2 ENVIRONMENTAL IMPACTS

F.2.1 Proposed Project

F.2.1.1 Watana Development

SSC074, SSC075

F.2.1.2 Devil Canyon Development

F.2.1.3 Access Routes

F.2.1.4 Power Transmission Facilities

F.2.2 Susitna Development Alternatives

F.2.2.1 Alternative Dam Locations and Designs

F.2.2.2 Alternative Access Routes

F.2.2.3 Alternative Power Transmission Routes

F.2.2.4 Alternative Borrow Sites

F.2.3 Non-Susitna Generation Alternatives

SSC076

F.2.3.1 Natural-Gas-Fired Generation Scenario

F.2.3.2 Coal-Fired Generation Scenario

DEIS SECTION

SEE COMMENT NOS.

- F.2.3.3 Combined Hydro-Thermal Generation Scenario SSC077
- F.2.4 Comparison of Alternatives
 - F.2.4.1 Susitna Development Alternatives
 - F.2.4.2 Power Generation Scenarios
- F.3 MITIGATION
 - F.3.1 Mitigative Measures Proposed by the Applicant
 - F.3.1.1 Dams and Impoundment Areas SSC078
 - F.3.1.2 Construction Camps and Villages
 - F.3.1.3 Recreational Use
 - F.3.1.4 Access Route Corridors
 - F.3.1.5 Transmission Line Corridors
 - F.3.2 Additional Mitigative Measures Recommended by the Staff

REFERENCES

APPENDIX G. CLIMATE, AIR QUALITY, NOISE

G.1 AFFECTED ENVIRONMENT

- G.1.1 Proposed Project
 - G.1.1.1 Climate ALT072
 - G.1.1.2 Air Quality ALT073
 - G.1.1.3 Noise
- G.1.2 Susitna Development Alternatives
- G.1.3 Natural-Gas-Fired Generation Scenario
 - G.1.3.1 Climate
 - G.1.3.2 Air Quality, Noise
- G.1.4 Coal-Fired Generation Scenario
 - G.1.4.1 Climate
 - G.1.4.2 Air Quality
 - G.1.4.3 Noise
- G.1.5 Combined Hydro-Thermal Generation Scenario

G.2 ENVIRONMENTAL IMPACTS

DEIS SECTION

SEE COMMENT NOS.

G.2.1 Proposed Project

G.2.1.1 Climate

G.2.1.2 Air Quality

G.2.1.3 Noise

ALT074, ALT075

G.2.2 Susitna Development Alternatives

G.2.3 Natural-Gas-Fired Generation Scenario

ALT076, ALT077

G.2.4 Coal-Fired Generation Scenario

ALT078, ALT079, ALT080

G.2.5 Combined Hydro-Thermal Generation Scenario

REFERENCES

APPENDIX H. WATER RESOURCES

H.1 BASIN CHARACTERISTICS

H.1.1 River Morphology

H.1.2 Habitat Types

AQR067, AQR068

H.2 FLOW REGIMES

H.2.1 Pre-Project

AQR069

H.2.2 Post-Project

H.3 HABITAT ALTERATION

AQR070, AQR072, AQR073

H.4 WATER TEMPERATURE

AQR074

H.5 WATER QUALITY

H.5.1 Salinity

H.5.2 Suspended Solids

H.5.3 Nitrogen Gas Supersaturation

AQR075

H.5.4 Nutrients

AQR076

REFERENCES

APPENDIX I. FISHERIES AND AQUATIC RESOURCES

I.1 AFFECTED ENVIRONMENT

I.1.1 Plant and Invertebrate Communities

I.1.2 Biology and Habitat Suitability

Requirements of Fish Species

DEIS SECTION

- I.1.2.1 Pacific Salmon
- I.1.2.2 Other Anadromous Species
- I.1.3 Resident Species
- I.1.4 Habitat Utilization
 - I.1.4.1 Upstream of Devil Canyon
 - I.1.4.2 Devil Canyon to Talkeetna
 - I.1.4.3 Talkeetna to Cook Inlet
 - I.1.4.4 Streams of Access Routes and Transmission Corridors
- I.1.5 Fisheries
 - I.1.5.1 Commercial Fishery
 - I.1.5.2 Sport Fishery
 - I.1.5.3 Subsistence Fishery
 - I.1.5.4 Salmon Enhancement Plan
- I.2 ENVIRONMENTAL IMPACTS
 - I.2.1 Watana Development
 - I.2.1.1 Plant Communities
 - I.2.1.2 Invertebrate Communities
 - I.2.1.3 Fish Communities
 - I.2.2 Devil Canyon Development
 - I.2.2.1 Plant Communities
 - I.2.2.2 Invertebrate Communities
 - I.2.2.3 Fish Communities
 - I.2.3 Access Routes

SEE COMMENT NOS.

AQR077, AQR078, AQR079, AQR080, AQR081, AQR082, AQR083,
AQR084, AQR085, AQR086, AQR087, AQR088, AQR089, AQR090,
AQR091, AQR092, AQR093,
AQR094, AQR095
AQR096

AQR097, AQR098

AQR112

AQR099, AQR100, AQR101, AQR102, AQR103, AQR104, AQR105,
AQR106, AQR107, AQR108, AQR109, AQR110, AQR111, AQR113,
AQR114, AQR115, AQR116, AQR117, AQR118, AQR119, AQR120,
AQR121, AQR122, AQR123, AQR124, AQR125, AQR126, AQR127,
AQR128, AQR129, AQR130, AQR131, AQR132, AQR133

AQR134, AQR135, AQR136, AQR137, AQR138, AQR139, AQR140
AQR141, AQR142, AQR143, AQR144

DEIS SECTION

SEE COMMENT NOS.

- I.2.3.1 Plant Communities
- I.2.3.2 Invertebrate Communities
- I.2.3.3 Fish Communities
- I.2.4 Power Transmission Facilities
 - I.2.4.1 Plant Communities
 - I.2.4.2 Invertebrate Communities
 - I.2.4.3 Fish Communities

REFERENCES

APPENDIX J. TERRESTRIAL BOTANICAL RESOURCES

J.1 AFFECTED ENVIRONMENT

J.1.1 Introduction

J.1.2 Proposed Project

TRR049

J.1.2.1 Upper and Middle Susitna River Basin

TRR049

J.1.2.2 Lower Susitna River Floodplain

J.1.2.3 Power Transmission Corridor

J.1.2.4 Threatened and Endangered Species

J.1.3 Susitna Development Alternatives

J.1.3.1 Alternative Dam Locations and Designs

J.1.3.2 Alternative Access Routes

J.1.3.3 Alternative Power Transmission Routes

J.1.3.4 Alternative Borrow Sites

J.1.3.5 Threatened and Endangered Species

J.1.4 Non-Susitna Generation Alternatives

J.1.4.1 Natural-Gas-Fired Generation Scenario

J.1.4.2 Coal-Fired Generation Scenario

J.1.4.3 Combined Hydro-Thermal Generation
Scenario

J.1.4.4 Threatened and Endangered Species

J.2 ENVIRONMENTAL IMPACTS

J.2.1 Proposed Project

DEIS SECTION

SEE COMMENT NOS.

- J.2.1.1 Watana Development TRR050
- J.2.1.2 Devil Canyon Development
- J.2.1.3 Access Routes
- J.2.1.4 Power Transmission Facilities TRR051
- J.2.1.5 Threatened and Endangered Species
- J.2.2 Susitna Development Alternatives
 - J.2.2.1 Alternative Dam Locations and Designs
 - J.2.2.2 Alternative Access Routes
 - J.2.2.3 Alternative Power Transmission Routes
 - J.2.2.4 Alternative Borrow Sites
 - J.2.2.5 Threatened and Endangered Species
- J.2.3 Non-Susitna Generation Alternatives
 - J.2.3.1 Natural-Gas-Fired Generation Scenario
 - J.2.3.2 Coal-Fired Generation Scenario
 - J.2.3.3 Combined Hydro-Thermal Generation Scenario
 - J.2.3.4 Threatened and Endangered Species
- J.2.4 Comparison of Alternatives
 - J.2.4.1 Susitna Development Alternatives
 - J.2.4.2 Power Generation Scenarios
- J.2.5 Conclusions
 - J.2.5.1 Proposed Project
 - J.2.5.2 Alternatives
- J.3 MITIGATION
 - J.3.1 Measures Proposed by the Applicant
 - J.3.1.1 Avoidance
 - J.3.1.2 Minimization
 - J.3.1.3 Rectification
 - J.3.1.4 Reduction
 - J.3.1.5 Compensation

DEIS SECTION

SEE COMMENT NOS.

J.3.2 Evaluation of Proposed Measures

J.3.3 Recommended and Ongoing Studies

REFERENCES

APPENDIX K. TERRESTRIAL WILDLIFE RESOURCES

K.1 BACKGROUND

K.2 AFFECTED ENVIRONMENT

K.2.1 Proposed Project

K.2.1.1 Upper and Middle Susitna River Basin

TRR052, TRR053, TRR054, TRR055, TRR056, TRR057, TRR058

K.2.1.2 Lower Susitna River Basin

K.2.1.3 Power Transmission Line Corridor

K.2.2 Susitna Development Alternatives

K.2.2.1 Alternative Dam Locations and Designs

K.2.2.2 Alternative Access Routes, Power
Transmission Line Routes, and Borrow Sites

K.2.3 Non-Susitna Generation Scenarios

K.2.3.1 Natural-Gas-Fired Generation Scenario

TRR059, TRR060, TRR062

K.2.3.2 Coal-Fired Generation Scenario

K.2.3.3 Combined Hydro-Thermal Generation Scenario TRR061, TRR063

K.3 ENVIRONMENTAL IMPACT

K.3.1 Proposed Project

K.3.1.1 Wataná Project

TRR064, TRR065, TRR066, TRR067, TRR068, TRR069

K.3.1.2 Devil Canyon Development

TRR070, TRR071, TRR072, TRR073

K.3.1.3 Access Routes

K.3.1.4 Power Transmission Facilities

TRR074, TRR075

K.3.2 Susitna Development Alternatives

K.3.3 Non-Susitna Generating Alternatives

K.3.3.1 Natural-Gas-Fired Generation Scenario

TRR076, TRR077

K.3.3.2 Coal-Fired Generation Scenario

DEIS SECTION

SEE COMMENT NOS.

K.3.3.3 Combined Hydro-Thermal Generation
Scenario

K.3.4 Comparison of Alternatives

TRR078

K.4 MITIGATIVE ACTIONS

K.4.1 Proposed Mitigation

K.4.2 Recommended Mitigation

K.5 SIGNIFICANT ENVIRONMENTAL IMPACTS

K.5.1 Proposed Project

TRR079, TRR080, TRR081

K.5.2 Alternatives to the Proposed Project

REFERENCES

APPENDIX L. RECREATION RESOURCES

L.1 AFFECTED ENVIRONMENT

L.1.1 Introduction

L.1.1.1 Historical Perspective

L.1.1.2 Statewide Overview

L.1.2 Proposed Project

L.1.2.1 Regional Setting

L.1.2.2 Upper and Middle Susitna River Basin

L.1.2.3 Lower Susitna Basin and Cook Inlet Area

L.1.2.4 Transmission Line Corridors

L.1.3 Susitna Development Alternatives

L.1.3.1 Alternative Dam Locations and Designs

L.1.3.2 Alternative Access Routes

L.1.3.3 Alternative Power Transmission Routes

L.1.3.4 Alternative Borrow Sites

L.1.4 Non-Susitna Generation Alternatives

SSC079

L.1.4.1 Natural-Gas-Fired Generation Scenario

L.1.4.2 Coal-Fired Generation Scenario

DEIS SECTION

SEE COMMENT NOS.

L.1.4.3 Combined Hydro-Thermal Generation Scenario

L.2 ENVIRONMENTAL IMPACTS

L.2.1 Proposed Project

SSC080

L.2.1.1 Watana Development

SSC081, SSC082

L.2.1.2 Devil Canyon Development

SSC083

L.2.1.3 Access Routes

SSC084, SSC085, SSC086

L.2.1.4 Power Transmission Facilities

SSC087

L.2.1.5 Proposed Recreation Plan

L.2.2 Susitna Development Alternatives

L.2.2.1 Alternative Dam Locations and Designs

L.2.2.2 Alternative Access Routes

L.2.2.3 Alternative Power Transmission Routes

L.2.2.4 Alternative Borrow Sites

L.2.3 Non-Susitna Generation Alternatives

L.2.3.1 Natural-Gas-Fired Generation Scenario

SSC088, SSC089

L.2.3.2 Coal-Fired Generation Scenario

SSC090

L.2.3.3 Combined Hydro-Thermal Generation Scenario

SSC091

L.2.4 Comparison of Alternatives

L.2.4.1 Susitna Development Alternatives

SSC092

L.2.4.2 Non-Susitna Generation Alternatives

SSC093, SSC094, SSC095

L.3 MITIGATION

REFERENCES

APPENDIX M. VISUAL RESOURCES

M.1 VISUAL RESOURCE ANALYSIS CRITERIA

M.2 AFFECTED ENVIRONMENT

M.2.1 Proposed Project

M.2.1.1 Upper and Middle Susitna River Basin

M.2.1.2 Power Transmission Line Corridor

DEIS SECTION

SEE COMMENT NOS.

M.2.2 Susitna Development Alternatives

M.2.2.1 Alternative Dam Locations and Design

M.2.2.2 Alternative Access Routes

M.2.2.3 Alternative Power Transmission Line Routes SSC096

M.2.2.4 Alternative Borrow Sites

M.2.3 Non-Susitna Generation Alternatives

M.2.3.1 Natural-Gas-Fired Generation Scenario

M.2.3.2 Coal-Fired Generation Scenario

M.2.3.3 Combined Hydro-Thermal Generation Scenario

M.3 ENVIRONMENTAL IMPACTS

M.3.1 Proposed Project

M.3.1.1 Watana Development SSC097

M.3.1.2 Devil Canyon Development

M.3.1.3 Access Routes

M.3.1.4 Power Transmission Facilities ALT081 SSC098

M.3.2 Susitna Development Alternatives

M.3.2.1 Alternative Dam Locations and Designs

M.3.2.2 Alternative Access Routes

M.3.2.3 Alternative Power Transmission Line Routes

M.3.2.4 Alternative Borrow Sites

M.3.3 Non-Susitna Generation Alternatives

M.3.3.1 Natural-Gas-Fired Generation Scenario SSC099

M.3.3.2 Coal-Fired Generation Scenario

M.3.3.3 Combined Hydro-Thermal Generation Scenario SSC100

M.3.4 Comparison of Alternatives

M.3.4.1 Susitna Development Alternatives

M.3.4.2 Power Generation Scenario SSC101

M.4 MITIGATION

M.4.1 Mitigative Measures Proposed by the Applicant

M.4.1.1 Additional Study

DEIS SECTION

SEE COMMENT NOS.

- M.4.1.2 Best Development Practices
- M.4.1.3 Creative Engineering Design
- M.4.1.4 Use of Form, Line, Color, or Textures
- M.4.2 Additional Mitigative Measures
Recommended by the Staff

SSC102

REFERENCES

APPENDIX N. SOCIOECONOMICS

N.1 AFFECTED ENVIRONMENT

N.1.1 Proposed Project

N.1.1.1 Introduction

N.1.1.2 Population

SSC103, SSC105

N.1.1.3 Institutional Issues

SSC104

N.1.1.4 Quality of Life

N.1.1.5 Economy and Employment

N.1.1.6 Housing

N.1.1.7 Community Services and Fiscal Status

N.1.1.8 Transportation

N.1.2 Susitna Development Alternatives

N.1.2.1 Alternative Dam Locations and Designs

N.1.2.2 Alternative Access Routes

N.1.2.3 Alternative Power Transmission Routes

N.1.2.4 Alternative Borrow Sites

N.1.3 Non-Susitna Generation Alternatives

N.1.3.1 Natural-Gas-Fired Generation Scenario

N.1.3.2 Coal-Fired Generation Scenario

N.1.3.3 Combined Hydro-Thermal Generation Scenario

N.2 ENVIRONMENTAL IMPACTS

N.2.1 Proposed Project

N.2.1.1 Watana Development

SSC106, SSC107, SSC108, SSC109, SSC110, SSC111

N.2.1.2 Devil Canyon

DEIS SECTION

SEE COMMENT NOS.

- N.2.1.3 Access Routes
- N.2.1.4 Power Transmission Facilities
- N.2.1.5 Alternative Borrow Sites
- N.2.2 Susitna Development Alternatives
 - N.2.2.1 Alternative Dam Locations and Designs
 - N.2.2.2 Alternative Access Routes
 - N.2.2.3 Alternative Power Transmission Routes
 - N.2.2.4 Alternative Borrow Sites
- N.2.3 Non-Susitna Generation Alternatives
 - N.2.3.1 Natural-Gas-Fired Generation Scenarios
 - N.2.3.2 Coal-Fired Generation Scenario
 - N.2.3.3 Combined Hydro-Thermal Generation Scenario SSC112
- N.2.4 Comparison of Alternatives
- N.3 MITIGATION
- N.4 RECOMMENDED AND ONGOING STUDIES SSC113
- REFERENCES

APPENDIX O. CULTURAL RESOURCES

- O.1 AFFECTED ENVIRONMENT
 - O.1.1 Proposed Project
 - O.1.1.1 Introduction SSC114, SSC115, SSC116
 - O.1.1.2 Geoarcheology SSC117
 - O.1.1.3 Regional History and Prehistory
 - O.1.1.4 Middle and Upper Susitna Basin SSC118, SSC119, SSC120, SSC121, SSC122, SSC123, SSC124, SSC125, SSC126
 - O.1.1.5 Transmission Corridors SSC127, SSC128, SSC129, SSC130, SSC131
 - O.1.2 Susitna Development Alternatives
 - O.1.2.1 Alternative Dam Locations and Designs SSC132, SSC133, SSC134
 - O.1.2.2 Alternative Access Routes SSC135, SSC136, SSC137

DEIS SECTION

SEE COMMENT NOS.

0.1.2.3	Alternative Power Transmission Routes	
0.1.2.4	Alternative Borrow Sites	SSC138, SSC139
0.1.3	Non-Susitna Power Generation Alternatives	
0.1.3.1	Natural Gas-Fired Generation Scenario	
0.1.3.2	Coal-Fired Generation Scenario	SSC140, SSC141
0.1.3.3	Combined Hydro-thermal Generation Scenario	
0.2	ENVIRONMENTAL IMPACT	
0.2.1	Proposed Project	
0.2.1.1	Watana Development	SSC142, SSC143, SSC144, SSC145, SSC146, SSC147, SSC148, SSC149, SSC150, SSC151
0.2.1.2	Devil Canyon Development	SSC152
0.2.1.3	Access Routes	SSC153, SSC154, SSC155, SSC156, SSC157
0.2.1.4	Power Transmission Facilities	SSC158, SSC159, SSC160, SSC161, SSC162
0.2.2	Susitna Development Alternatives	
0.2.2.1	Alternative Dam Locations and Designs	SSC163, SSC164
0.2.2.2	Alternative Access Routes	SSC165, SSC166, SSC167, SSC168
0.2.2.3	Alternative Power Transmission Routes	SSC169
0.2.2.4	Alternative Borrow Sites	SSC170, SSC171
	REFERENCES	

SUBJECT INDEX

This Index classifies the Technical Comments by subject matter. Each Technical Comment is listed by its alphanumeric code opposite a subject discussed in the DEIS and its accompanying Technical Comment. If a Technical Comment deals with more than one subject, it is listed opposite each subject with which it deals.

<u>SUBJECT</u>	<u>TECHNICAL COMMENT REFERENCE NUMBERS</u>
Access Roads	ALT068 TRR005, TRR024, TRR027, TRR058, TRR073, TRR074 SSC060, SSC066, SSC085, SSC092, SSC135, SSC136, SSC137, SSC153, SSC165, SSC166, SSC167, SSC168
Aesthetic Resources (See Visual Resources)	
Aesthetic Impacts (See Visual Impacts)	
Air Quality	ALT005, ALT006, ALT007, ALT008, ALT015, ALT016, ALT020, ALT021, ALT022, ALT023, ALT024, ALT026, ALT036, ALT037, ALT038, ALT040, ALT041, ALT042, ALT043, ALT044, ALT045, ALT051, ALT052, ALT053, ALT054, ALT055, ALT060, ALT069, ALT072, ALT073, ALT074, ALT075, ALT076, ALT077, ALT078, ALT079, ALT080 SSC094
Alternatives	NFP001, NFP002, NFP003, NFP004, NFP005, NFP007, NFP047, NFP050, NFP051, NFP053, NFP054, NFP055, NFP056, NFP057, NFP060, NFP067, NFP068, NFP069, NFP070, NFP077, NFP078, ALT001, ALT002, ALT003, ALT004, ALT009, ALT010, ALT011, ALT012, ALT013, ALT014, ALT017, ALT018, ALT019, ALT020, ALT025, ALT027, ALT028, ALT029,

SUBJECT

TECHNICAL COMMENT
REFERENCE NUMBERS

Alternatives

ALTO30, ALTO31, ALTO32,
ALTO33, ALTO46, ALTO47,
ALTO48, ALTO49, ALTO50,
ALTO53, ALTO54, ALTO55,
ALTO56, ALTO59, ALTO61,
ALTO62, ALTO64, ALTO65,
ALTO66, ALTO67, ALTO70,
ALTO71

TRR014, TRR015, TRR016,
TRR017, TRR018, TRR033,
TRR036, TRR037, TRR038,
TRR039, TRR040, TRR046,
TRR047, TRR061, TRR062,
TRR063, TRR078

SSC016, SSC020, SSC021
SSC022, SSC023, SSC039,
SSC041, SSC042, SSC049,
SSC051, SSC052, SSC053,
SSC054, SSC055, SSC056,
SSC063, SSC064, SSC065,
SSC076, SSC077, SSC079,
SSC091, SSC092, SSC093,
SSC095, SSC096, SSC099,
SSC100, SSC101

Bear

TRR005, TRR006, TRR007,
TRR015, TRR027, TRR028,
TRR029, TRR044, TRR053,
TRR054, TRR055, TRR056,
TRR062, TRR066, TRR071,
TRR073, TRR075, TRR079

Bering Cisco
Caribou

AQR094, AQR095
TRR004, TRR025, TRR052,
TRR068

SUBJECTTECHNICAL COMMENT
REFERENCE NUMBERS

Chinook Salmon
Chum Salmon
Climate

AQR079, AQR081
AQR091
ALT021, ALT024
TRR019

Coal Plants

NFP006, NFP057, NFP060,
ALT006, ALT007, ALT008,
ALT015, ALT016, ALT051,
ALT052, ALT079

Coal Price

SSC018, SSC047, SSC048,
SSC050, SSC090, SSC099
NFP006, NFP040, NFP041,
NFP042, NFP043, NFP057,
NFP059, NFP062, NFP102,
NFP103, NFP104

Coal Resources
Coho Salmon
Cone Valves
Conservation
Construction Cost
Cultural Resources

NFP018, NFP057, ALT079
AQR089, AQR090, AQR097
AQR001, AQR031, AQR075
NFP048, NFP094, NFP108
NFP037, ALT004
SSC001, SSC002, SSC003,
SSC004, SSC005, SSC012,
SSC013, SSC014, SSC015,
SSC017, SSC023, SSC037,
SSC038, SSC040, SSC041,
SSC042, SSC043, SSC046,
SSC050, SSC059, SSC060,
SSC061, SSC062, SSC063,
SSC067, SSC068, SSC069,
SSC070, SSC114, SSC115,
SSC116, SSC117, SSC118,
SSC119, SSC120, SSC121,
SSC122, SSC123, SSC124,
SSC125, SSC126, SSC127,
SSC128, SSC129, SSC130,
SSC131, SSC132, SSC133,
SSC133, SSC134, SSC135,
SSC136, SSC137, SSC138,
SSC139, SSC140, SSC141,
SSC142, SSC143, SSC144,
SSC145, SSC146, SSC147,
SSC148, SSC149, SSC150,
SSC151, SSC152, SSC153,
SSC154, SSC155, SSC156,
SSC157, SSC158, SSC159,
SSC160, SSC161, SSC162,
SSC163, SSC164, SSC165,
SSC166, SSC167, SSC168,
SSC169, SSC170, SSC171
SSC058

Dall Sheep
Devil Canyon

TRR026, TRR069, TRR080
AQR135, AQR136

SUBJECTTECHNICAL COMMENT
REFERENCE NUMBERS

Discount Rate
Eagles

NFP052
TRR008, TRR030, TRR031,
TRR045, TRR057, TRR067,
TRR072, TRR076, TRR081

Employment

NFP011

Endangered Species

SSC105

Energy Consumption

TRR002, TRR010, TRR011,
TRR018, TRR032, TRR038,
TRR040, TRR058

Energy Production

NFP012, NFP013, NFP014,
NFP015, NFP020
NFP036, NFP037, NFP074,
NFP075, NFP076, ALT004,

Escapement

AQR012, AQR080, AQR085,
AQR089, AQR091, AQR092
AQR106

Existing Systems

NFP019, NFP021, NFP022,
NFP032

Expansion Plans

NFP001, NFP002, NFP003,
NFP005, NFP007, NFP050,
NFP051, NFP053, NFP054,
NFP055, NFP056, NFP057,
NFP060, NFP063, NFP068,
NFP069, NFP070, NFP078

Export Market
Filling

NFP040

ALT071

AQR015, AQR042, AQR054
AQR055, AQR063, AQR099
AQR100, AQR103, AQR104
AQR105, AQR108, AQR110
AQR111, AQR131, AQR142
AQR144

Flow Regime

TRR008, TRR028, TRR057,
TRR072

NFP066, NFP071, NFP072,
NFP073, NFP074, NFP075,
NFP076, NFP079, NFP080,
NFP081, NFP082, ALT017,
ALT018

Forecasting
Fuel Switching
Fuel Use Act
Furbearers

AQR005, AQR007, AQR008
AQR015, AQR017, AQR018
AQR019, AQR021, AQR027
AQR028, AQR029, AQR039
AQR053, AQR058, AQR059
AQR060, AQR062, AQR141
AQR062

NFP093, NFP094

NFP047

TRR016, TRR063

SUBJECT

TECHNICAL COMMENT
REFERENCE NUMBERS

Gas Price
Gas Price Resources
Geographic

NFP039, NFP056
NFP100
NFP008

Geothermal
Gold Creek Station
Groundwater

NFP045, NFP106
AQR008, AQR017, AQR069
AQR011, AQR014, AQR035
AQR036, AQR066, AQR105
AQR118, AQR134
AQR019, AQR027, AQR050
AQR053, AQR068, AQR081
AQR084, AQR087, AQR090
AQR097, AQR104, AQR113
AQR115, AQR134, AQR140
AQR141

Habitat

TRR003, TRR006, TRR009,
TRR013, TRR017, TRR033,
TRR035, TRR039, TRR048,
TRR059, TRR061, TRR078

HEC-2 Model
HEC-5 Model
Housing
Hydraulics

AQR067
NFP036
SSC110

Hydroelectric

AQR007, AQR020, AQR022
AQR028, AQR040, AQR044
AQR070, AQR071, AQR073
AQR104, AQR113, AQR136
NFP053, NFP067, NFP077,
ALT002, ALT003, ALT004,
ALT009, ALT010, ALT011,
ALT012, ALT013, ALT017,
ALT018, ALT019, ALT025,
ALT029, ALT030, ALT031,
ALT032, ALT033, ALT046,
ALT047, ALT048, ALT049,
ALT050, ALT061, ALT062,
ALT064, ALT065, ALT070,
ALT071

Ice Cover

SSC021, SSC022, SSC053,
SSC054, SSC055, SSC076,
SSC077, SSC091, SSC100
AQR038, AQR116, AQR121
TRR068

Ice Model
Ice Processes

AQR029
AQR009, AQR037, AQR051
AQR071, AQR098, AQR120

Impacts

ALT001, ALT022, ALT035,
ALT047, ALT052, ALT053,
ALT054, ALT055, ALT056,
ALT057, ALT058, ALT059,

SUBJECT

Impacts

Incubation

Instream Flow
Land Management
Land Use

TECHNICAL COMMENT
REFERENCE NUMBERS

ALT064, ALT065, ALT068,
AQR143

TRR008, TRR021, TRR023,
TRR025, TRR026, TRR030,
TRR031, TRR033, TRR034,
TRR035, TRR036, TRR037,
TRR039, TRR040, TRR041,
TRR042, TRR043, TRR044,
TRR045, TRR046, TRR051,
TRR057, TRR064, TRR065,
TRR067, TRR069, TRR070,
TRR072, TRR076, TRR077,
TRR078, TRR079, TRR080,
TRR081

SSC003, SSC007, SSC015,
SSC017, SSC023, SSC024,
SSC025, SSC026, SSC028,
SSC030, SSC031, SSC037,
SSC039, SSC041, SSC042,
SSC043, SSC044, SSC045,
SSC046, SSC047, SSC048,
SSC050, SSC051, SSC052,
SSC053, SSC054, SSC056,
SSC058, SSC059, SSC060,
SSC061, SSC062, SSC063,
SSC064, SSC067, SSC069,
SSC076, SSC077, SSC081,
SSC082, SSC083, SSC084,
SSC085, SSC086, SSC087,
SSC088, SSC089, SSC090,
SSC091, SSC093, SSC094,
SSC095, SSC106, SSC108,
SSC109, SSC142, SSC144,
SSC146, SSC149, SSC150,
SSC153, SSC155, SSC156,
SSC157, SSC159, SSC160,
SSC161, SSC162, SSC163,
SSC166, SSC168, SSC169,
SSC170

AQR045, AQR047, AQR048
AQR056, AQR077, AQR116
AQR117, AQR119, AQR120
AQR121, AQR137

AQR059, AQR062, AQR067
SSC006, SSC072, SSC078
ALT046, ALT050, ALT062
SSC020, SSC032, SSC051,
SSC053, SSC054, SSC073,
SSC074, SSC075, SSC076,
SSC077

SUBJECT

TECHNICAL COMMENT
REFERENCE NUMBERS

Levelized Costs

NFP053, NFP055, NFP060,
NFP061, NFP062, NFP068,
NFP069, NFP070

Load Forecast

NFP013, NFP023, NFP024,
NFP025, NFP027, NFP028,
NFP029, NFP030, NFP031,
NFP061, NFP083, NFP084,
NFP085, NFP086, NFP096,
NFP097

MAP Model
Mainstem

NFP029, NFP083, NFP097
AQR019, AQR027, AQR035
AQR039, AQR041, AQR045
AQR105, AQR115, AQR117

Mitigation

ALT019
AQR063, AQR064, AQR065
TRR002, TRR048
SSC001, SSC004, SSC005,
SSC069, SSC078, SSC102,
SSC142, SSC149, SSC159,
SSC160

MJSENSO Model
Monopoly Profit
Moose

NFP083
NFP088, NFP090
TRR003, TRR021, TRR022,
TRR023, TRR024, TRR034,
TRR064, TRR065, TRR070,
TRR074, TRR077

Multilevel Intake
Natural Gas Plants

AQR003, AQR032
NFP055, ALT007, ALT008
TRR012, TRR034, TRR076,
TRR077
SSC017, SSC044, SSC045,
SSC046, SSC088, SSC089

Natural Gas Price

NFP004, NFP015, NFP016,
NFP058, NFP099, NFP100,
NFP101

Natural Gas Resources

NFP015, NFP016, NFP017,
NFP038, NFP047, NFP098
NFP055, NFP060, NFP062,
NFP063

Net Benefits

Nitrogen Supersaturation

ALT039
AQR001, AQR004, AQR031
AQR075

OGP Model

NFP002, NFP003, NFP005,
NFP050, NFP051, NFP054,
NFP063

SUBJECTTECHNICAL COMMENT
REFERENCE NUMBERS

Oil (See World Oil)
OPCOST Model

NFP002, NFP050, NFP051,
NFP053, NFP063, NFP070,

Peat
Peregrine Falcon

NFP044, NFP105
TRR001, TRR002, TRR010,
TRR011, TRR018, TRR032,
TRR058

Pink Salmon

AQR055, AQR092, AQR093
AQR131, AQR144

Planning Horizon
Population

NFP050
TRR004, TRR025, TRR052
SSC008, SSC010, SSC028,
SSC030, SSC057, SSC066,
SSC106, SSC109, SSC111,
SSC112

Population Projections

SSC008, SSC029, SSC033,
SSC071, SSC103, SSC107,
SSC113

PRODCOST Model

NFP003, NFP005, NFP050,
NFP054, NFP055, NFP060,
NFP062, NFP063, NFP068,
NFP069, NFP070

Proposed Project

ALT057, ALT058, ALT059,
ALT066, ALT067
AQR021

TRR010, TRR041, TRR046,
TRR047, TRR064
SSC006, SSC007, SSC009,
SSC011, SSC024, SSC025,
SSC026, SSC033, SSC034,
SSC035, SSC074, SSC075,
SSC078, SSC080, SSC081,
SSC083, SSC086, SSC097,
SSC104, SSC108, SSC111,
SSC112

Railbelt Economy
Raptors

NFP009, NFP010, NFP011,
TRR008, TRR030, TRR031,
TRR045, TRR057, TRR067,
TRR072, TRR076, TRR081

Rate Design
Rearing

NFP049
AQR081, ACR087, ACR097
ACR108

Recreation Resources

SSC007, SSC018, SSC021,
SSC024, SSC026, SSC039,
SSC044, SSC045, SSC047,
SSC048, SSC052, SSC056,
SSC064, SSC065, SSC079,
SSC080, SSC081, SSC082,

SUBJECTTECHNICAL COMMENT
REFERENCE NUMBERS

Recreation Resources

SSC083, SSC084, SSC085,
SSC086, SSC087, SSC088,
SSC089, SSC090, SSC091,
SSC092, SSC093, SSC094,
SSC095RED Model
Reliability
ReservoirNFP084, NFP085
NFP034, NFP035
NFP065, NFP071, NFP073,
NFP074, NFP075, NFP076
AQR002, AQR032, AQR038
AQR052, AQR061, AQR062
AQR064, AQR065, AQR076
AQR109, AQR131, AQR132
AQR133, AQR143
TRR019, TRR058, TRR068
AQR030, AQR038
NFP032Reservoir Temperature Model
Retirement Schedule
Rime Ice
River Temperature ModelTRR020, TRR050
AQR033, AQR046, AQR066
AQR074, AQR098, AQR109
AQR122, AQR124
ALT019, ALT030, ALT031,
ALT032, ALT033, ALT049
AQR012, AQR013, AQR053
AQR054, AQR056, AQR063
AQR078, AQR080, AQR096
AQR100, AQR106, AQR115
AQR119, AQR126, AQR127
AQR129, AQR137, AQR141
AQR142

Salmon

AQR025, AQR058, AQR060
AQR072, AQR103, AQR107
AQR112, AQR114, AQR135
AQR042, AQR043, AQR046
AQR049, AQR050, AQR057
AQR082, AQR086, AQR101
AQR102, AQR110, AQR111
AQR123, AQR125, AQR138
AQR139

Salmon Access

AQR051, AQR088, AQR128
AQR006, AQR010, AQR023
AQR025, AQR026, AQR028
AQR121

Salmon Growth

AQR041
AQR007, AQR023, AQR068
AQR011, AQR014, AQR020
AQR022, AQR029, AQR035
AQR036, AQR047, AQR058Salmon Outmigration
SedimentSide Channel
Side Slough
Slough

SUBJECTTECHNICAL COMMENT
REFERENCE NUMBERS

Slough

AQR070, AQR071, AQR072
AQR073, AQR103, AQR104
AQR105, AQR112, AQR113
AQR115, AQR116, AQR118
AQR120

Slough Access

AQR020, AQR024, AQR040
AQR044

Sockeye (Kokanee) Salmon

AQR052, AQR065, AQR083
AQR084, AQR085, AQR086
AQR087, AQR088, AQR133

Spawning

AQR013, AQR014, AQR039
AQR040, AQR041, AQR048
AQR079, AQR080, AQR083
AQR084, AQR085, AQR089
AQR090, AQR091, AQR092
AQR093, AQR095, AQR104
AQR107, AQR113, AQR115
AQR130, AQR132Speculative In-migration
Spiking ReleasesSSC030
NFP079, NFP081
AQR002, AQR060, AQR061

Subsistence

ALT029
SSC009, SSC010, SSC031,
SSC104, SSC108Sunshine Station
Susitna RiverAQR005, AQR016
AQR005, AQR006, AQR008
AQR009, AQR012, AQR018
AQR033, AQR034, AQR037
AQR074, AQR094Susitna Station
TemperatureAQR069
AQR003, AQR011, AQR032
AQR034, AQR035, AQR036
AQR042, AQR043, AQR045
AQR047, AQR048, AQR049
AQR051, AQR056, AQR057
AQR066, AQR077, AQR082
AQR086, AQR088, AQR099
AQR100, AQR101, AQR102
AQR107, AQR108, AQR109
AQR110, AQR111, AQR117
AQR118, AQR119, AQR120
AQR123, AQR124, AQR125
AQR127, AQR128, AQR129
AQR134, AQR137, AQR138
AQR139, AQR140, AQR141

SUBJECTTECHNICAL COMMENT
REFERENCE NUMBERS

Thermal

ALT020, ALT061
TRR059
SSC016, SSC019, SSC049,
SSC063

Threatened/Endangered Species (See Endangered Species)

Tidal Power

Transmission Lines and Corridors

NFP046, NFP107
NFP033, NFP056, NFP068
NFP069, NFP070
ALT012, ALT013, ALT014,
ALT034, ALT035, ALT081
TRR001, TRR002, TRR009,
TRR011, TRR024, TRR029,
TRR032, TRR051, TRR074,
TRR075
SSC027, SSC032, SSC036,
SSC039, SSC061, SSC072,
SSC073, SSC087, SSC098,
SSC102, SSC129, SSC169,
SSC170

Tributary

AQR025, AQR026, AQR107
AQR114, AQR115

Turbidity

AQR010, AQR030, AQR076
AQR126

Vegetation

TRR014, TRR019, TRR020,
TRR024, TRR035, TRR042,
TRR046, TRR049, TRR050,
TRR051, TRR074

Visual Impacts

ALT020, ALT045
SSC027, SSC034, SSC035,
SSC036, SSC049, SSC055,
SSC096, SSC097, SSC098,
SSC099, SSC100, SSC102
SSC011, SSC016, SSC019,
SSC022, SSC027, SSC099,
SSC101

Visual Resources

Watana

NFP064, NFP071, NFP072,
NFP073, NFP074, NFP075,
NFP076
ALT039
AQR002, AQR015, AQR032
AQR099, AQR114, AQR135
AQR136
SSC082, SSC144

Water Quality

NFP066, NFP077, NFP081,
NFP082
ALT028, ALT047, ALT063
AQR004

Water Quantity

NFP066, NFP077, NFP081,
NFP082,
ALT027, ALT063

SUBJECT

Wetlands
Wildlife Resources

Wood
Work Force
World Economy
World Oil Price

World Oil Production
World Oil Resources

TECHNICAL COMMENT
REFERENCE NUMBERS

TRR043
TRR012, TRR013, TRR017,
TRR020, TRR033, TRR035,
TRR036, TRR037, TRR039,
TRR041, TRR047, TRR050,
TRR059, TRR060, TRR061,
TRR078

NFP020
SSC112
NFP089
NFP023, NFP024, NFP026,
NFP027, NFP042, NFP087,
NFP088, NFP089, NFP090,
NFP091, NFP092, NFP093,
NFP094, NFP095, NFP096,
NFP102
NFP087, NFP095
NFP092

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Peregrine Falcon, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 2-27 Section 2.1.12.5 Paragraph 10 of page

COMMENT IN REFERENCE TO: DEIS comment, "North of Nenana the proposed transmission line would pass near peregrine nesting habitat in the hills overlooking the Tanana River to the south. Several historical peregrine nesting sites are located within these hills. Two of these locations are within one mile of the proposed route".

TECHNICAL COMMENT: Confusion occurs in this statement through the use of the terms "nesting sites" and "locations". The terms are not interchangeable. A nesting location (nesting territory) is occupied and defended by only one pair of birds at a time. Nesting locations often contain several alternate nests (nest sites) constructed in different years at distances up to several hundred meters apart.

Based on a recent survey conducted in June 1984, the peregrine falcon nesting location at Nenana is situated 1.4 miles east of the proposed transmission line route. No known nesting locations occur within 1 mile of any project facilities.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Endangered Species, Peregrine Falcon, Mitigation, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 2-48 Section 2.7.6 Paragraph 3 of the page

COMMENT IN REFERENCE TO: DEIS comment "No other alternatives would likely require mitigative measures for threatened and endangered species."

TECHNICAL COMMENT: This discussion of the alternative hydro sites as expressed above is incorrect. The Tanana River corridor in the proposed Johnson hydro site is prime raptor habitat (ADNR 1984). Four nest locations of the endangered peregrine falcon are located along the shoreline of the proposed Johnson reservoir and may be significantly impacted by the project. Three of these four nest locations were documented as active in 1983 (Money 1984 pers. comm.). The strong potential that one or more of these nest locations would be abandoned with the project would make licensing of this project very difficult, if not impossible.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Moose, Habitat

LOCATION IN DEIS: Vol 1 Page 3-31 Section 3.1.5.2 Paragraph 4 of the page

COMMENT IN REFERENCE TO: DEIS comment, "Although moose range through all habitat types of the project area, riparian or lowland forest habitat near the river is preferred during the important overwintering and calving stages. Particularly important overwintering habitat likely occurs in the projected impoundment zones."

TECHNICAL COMMENT: This statement is misleading. As noted in Appendix K (p. K-6), during calving, "moose were principally in areas dominated by sparse to medium-dense, medium-height spruce and upland brush/willow habitat types" and average elevational occurrences of radio-collared moose during May and June were at 2400 to 2700 feet (Ballard et al. 1983), well above the impoundment zone. Therefore, it is incorrect to state that riparian or lowland forest habitat near the river is preferred during calving.

Similarly, available data collected during the previous eight winters do not indicate that "riparian or lowland forest habitat near the river is preferred" as overwintering habitat. Average elevational occurrences of radio-collared moose from December through March (during six winters) were at 2200 to 3000 feet (Ballard et al. 1983). Most moose were observed in upland brush/willow and sparse to medium-dense, short to medium-height spruce habitat types (Ballard et al. 1982).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Caribou, Population

LOCATION IN DEIS: Vol 1 Page 3-31 Section 3.1.5.2 Paragraph 7 of the page

COMMENT IN REFERENCE TO: The DEIS notes, "The Nelchina herd in the upper and middle basin comprises about 20,000 individuals, ranging over about 20,000 mi²... These areas are used by a small (ca. 2000 individuals) subherd of the Nelchina herd."

TECHNICAL COMMENT: Latest estimates place the Nelchina herd at approximately 25,000 individuals and the upper Susitna-Nenana subherd at approximately 1,500 animals (Pitcher 1984).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Access Roads

LOCATION IN DEIS: Vol 1 Page 3-33 Section 3.1.5.2 Paragraph 2 of the page

COMMENT IN REFERENCE TO: DEIS comment, "Overwintering dens are frequently established in loose soils on slopes in upland habitat, through which the proposed access road to Watana would pass."

TECHNICAL COMMENT: The mean elevation of the 50 brown bear dens located in the Susitna project area from 1980 through 1983 was 4,040 feet, of which nine (18 percent) of the dens were below 3,500-feet (Miller 1984, Table 23). The proposed Denali Highway-to-Watana access road will exceed the 3,500 foot contour along about 7.5 miles of its approximately 42-mile length (Alaska Power Authority 1983, Exhibit G). None of the 50 brown bear dens identified since 1980 are in the vicinity of the proposed road; the nearest dens were at higher elevations in the Chulitna Hills along the upper Tsusena Creek and in the uplands bordering upper-middle Watana Creek, all at least 2 miles from and up to 2,000 feet higher than the nearest portion of the proposed access road (Miller 1984, Fig. 8).

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear, Habitat

LOCATION IN DEIS: Vol 1 Page 3-33 Section 3.1.5.2 Paragraph 2 of the page

COMMENT IN REFERENCE TO: DEIS comment, "After emergence from the den, bear move to the lowland forest along the river to take advantage of early spring plant growth and moose concentrations."

TECHNICAL COMMENT: This statement is misleading. Although brown bear use of the impoundment areas is highest in early spring after den emergence, all brown bear do not move there at that time as the DEIS statement implies. As can be seen in Table K-3 (p. K-18 of Appendix K) over 50 percent of all aerial brown bear observations during May and June occurred in upland areas. As indicated on page K-17 of Appendix K, female brown bears with cubs were more frequently observed in upland areas away from the impoundments during the whole year.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear

LOCATION IN DEIS: Vol 1 Page 3-33 Section 3.1.5.2 Paragraph 3 of the page

COMMENT IN REFERENCE TO: DEIS comment, "In the area of the proposed impoundments, black bear overwintered in dens in the forest along the river at elevations averaging 2000 ft. (600 m) mean sea level (MSL). About 55 percent of the known dens are within the projected boundaries of the proposed impoundment."

TECHNICAL COMMENT: Based on the most recent data (Miller 1984), 34 percent of all black bear dens known to occur in the vicinity of the proposed impoundments have elevations near or below the normal maximum operating levels (NMOL) of the reservoirs. The 26 dens that have been identified in the vicinity of the Watana impoundment (NMOL = 2185 feet above MSL) range in elevation from 1675 to 3450 feet above MSL. About 58 percent (15) of these dens occur at or below 2200 feet above MSL. The 21 dens that have been discovered in the vicinity of the Devil Canyon impoundment (NMOL = 1455 feet above MSL) range in elevation from 1400 to 4340 feet above MSL. Only one of these dens or about 5 percent is likely to be inundated. An additional 13 dens have been discovered to date outside the impoundment zones in the downstream study area (between Devil Canyon and Talkeetna). Most of the dens located by radio tracking during the three winters following the first winter of study were first-time discoveries, not repeats. This suggests that den re-use rate may not be particularly high and that dens do not appear to be a limiting resource.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Eagles, Raptors, Impacts, Filling

LOCATION IN DEIS: Vol 1 Page 3-33 Section 3.1.5.2 Paragraph 6 of page

COMMENT IN REFERENCE TO: Update of raptor and raven nest locations and numbers.

TECHNICAL COMMENT: Additional raptor surveys of the project area were conducted in late May 1984. Results of these surveys will be published in an upcoming report. A summary of the results of these surveys is presented below.

A total of 67 raptor/raven nesting locations are now known to occur in the vicinity of the project area in the middle basin of the Susitna River drainage. These include 3 goshawk, 23 golden eagle, 10 bald eagle, 6 gyrfalcon, and 25 common raven nesting locations. One of the 3 goshawk, 12 of the 23 golden eagle, 7 of the 10 bald eagle, 3 of the 6 gyrfalcon and 15 of the 25 raven locations are in the vicinity of the Watana project area. The remainder, including 2 goshawk, 11 golden eagle, 3 bald eagle, 3 gyrfalcon, and 10 raven nesting locations, are in the vicinity of the Devil Canyon project area.

One goshawk, 5 golden eagle, 3 bald eagle, and 8 raven nesting locations will be inundated during filling of the Watana reservoir (assuming a normal maximum operating level of 2185 feet and a maximum flood level of 2202 feet). One additional golden eagle nesting location will be partially inundated; however, 2 of the 3 nest sites at this location will remain approximately 115 feet above maximum operating level and 100 feet above maximum flood level. Nest sites at 6 additional raven nesting locations will be inundated, but sufficient cliff will remain above water in their

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Habitat, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 3-33 Section 3.1.5.2 Paragraph 7 of page

COMMENT IN REFERENCE TO: The DEIS comment that the transmission line route would "pass through" the Susitna Flats Game Refuge - an area of "high densities of waterbirds."

TECHNICAL COMMENT: The proposed transmission line passes through the extreme northeast corner of the Susitna Flats Game Refuge and avoids the higher-use southern portions. Approximately 4 miles of line will be within the boundaries of the refuge. The DEIS statement is unclear and leads to the impression that the transmission line will impact a large portion of the refuge.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Peregrine Falcon, Endangered Species, Proposed Project

LOCATION IN DEIS: Vol 1 Page 3-34 Section 3.1.6 Paragraph 4 of the page

COMMENT IN REFERENCE TO: DEIS statements regarding peregrine falcons in vicinity of the proposed dams, reservoirs, and access routes.

TECHNICAL COMMENT: Only two sightings of peregrine falcons in the project area have been recorded. Alaska Power Authority (1983) Exhibit E, Chapter 3, page E-3-375 states: "There were no confirmed sightings of peregrine falcons in the middle Susitna Basin during 1980, 1981, or 1982, despite the substantial number of man-hours spent on ornithological field work and on raptor surveys (Kessel et al. 1982). White (1974) saw two individual peregrines during a June 10-15, 1974 survey; however, he found no sign of nesting. White (1974) stated that the Yenta-Chulitna-Susitna-Matanuska drainage basin "seemingly represents a hiatus in the breeding range of breeding peregrines....," and Roseneau et al. (1981) stated that "the Susitna and Copper Rivers both provide... very few... potential nesting areas for peregrines."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Peregrine Falcon, Transmission Lines and Corridors, Endangered
Species

LOCATION IN DEIS: Vol 1 Page 3-34 Section 3.1.6 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: DEIS statements regarding historic peregrine
falcon nesting locations near the transmission line.

TECHNICAL COMMENT: Please refer to Technical Comment TRR001.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Resources, Natural Gas Plants

LOCATION IN DEIS: Vol 1 Page 3-59 Section 3.3.5.2 Paragraph 4 of the page

COMMENT IN REFERENCE TO: DEIS comment, "The Kenai Peninsula supports a wide array of wildlife populations. Concentrations of moose, caribou, and waterfowl occur in all areas with available natural gas. An area of intensive use by black bear occurs northwest of Kenai and Soldotna. Other species occurring in the Kenai area include brown bear, Dall's sheep, mountain goat, and wolf."

TECHNICAL COMMENT: The above comments were made in the discussion of the natural gas-fired scenario. The gas facility would be located near the community of Kenai. Kenai is surrounded by lowland spruce-birch forest and associated wetlands, about 40 miles away from the nearest Dall sheep or mountain goat habitat.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Habitat

LOCATION IN DEIS: Vol 1 Page 3-59 Section 3.3.5.2 Paragraph 5 of the page

COMMENT IN REFERENCE TO: DEIS comments, "Anchorage is basically urbanized and provides limited wildlife habitat. However, moose and other wildlife do use the area on occasion. South of Anchorage along the Seward Highway, Potter Marsh supports a large number of waterbirds."

TECHNICAL COMMENT: The referenced description underestimates the value of Anchorage's wildlife habitat. Between 2000 and 2500 moose inhabit the Municipality of Anchorage (Municipality of Anchorage 1980). Most of these animals range into the subalpine zone of the Chugach Mountains in spring, summer and early fall. In late fall or winter, however, they depend upon the traditional winter range--the lowlands of the Anchorage Bowl. Wintering areas for moose are found within the city in Chester Creek Park, along the Chester Creek drainage, on the Point Campbell Military Reservation, in the Campbell Creek drainages, and east of Ship Creek near Fort Richardson. In addition to Potter Marsh State Game Refuge (which is within the Municipality), waterfowl nesting and brooding areas occur within the city at Connors, Blueberry, Strawberry, and Lake Hood, Lake Spenard, north of Klatt Road, and southwest of Earthquake Park (Municipality of Anchorage 1980).

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Vegetation, Alternatives

LOCATION IN DEIS: Vol 1 Pages 3-68 and 3-69 Section 3.5.5.1 All
Paragraphs

COMMENT IN REFERENCE TO: The DEIS plant community descriptions for the
combined hydrothermal sites.

TECHNICAL COMMENT: The plant community descriptions are not site-specific
and generally lack the vegetative detail necessary to adequately describe
the areas and with which to make meaningful site comparisons. For more
detailed site descriptions see the Evaluation Report on Non-Susitna
Hydroelectric Alternatives Appendix II.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Alternatives

LOCATION IN DEIS: Vol 1 Page 3-69 Section 3.5.5.2 Paragraph 3 of the page

COMMENT IN REFERENCE TO: The DEIS statement, "Black and brown bear are abundant in the areas above Chakachamna Lake and just downstream. High altitude, riparian habitat supports the most bear. Bear become less common in downstream habitats along the Chakachatna and McArthur Rivers."

TECHNICAL COMMENT: The downstream habitats along the Chakachatna and McArthur Rivers are important bear habitat. Black bears intensively utilize the McArthur River drainage in spring. Brown bears heavily utilize the Chakachatna River (above the confluence of the Chakachatna and Middle Rivers) during the sockeye and chum salmon runs (Bechtel, 1983). Project impacts on salmon in these rivers may significantly impact the availability of summer foods for bears, and result in population-level impacts.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Furbearers, Alternatives

LOCATION IN DEIS: Vol 1 Page 3-69 Section 3.5.5.2 Paragraph 4 of the page

COMMENT IN REFERENCE TO: DEIS comment, "Furbearers occur along the Nenana River but do not appear to be very common."

TECHNICAL COMMENT: This statement significantly underestimates the importance and abundance of furbearers along the Nenana River.

The area along the Nenana River from the Nenana-to-Clear-to-Browne-to-Healy region receives intensive fur trapping (M. Robus 1984, pers. comm.). The area has been described as important furbearer habitat containing the full range of Interior Alaskan furbearers (ADNR 1984). Although harvests of individual trappers are modest, total take from the region is substantial (ADNR 1984). The comment made here is misleading in that it understates and underestimates the importance of furbearers in the region. Refer to Appendix II (Non-Susitna Hydroelectric Alternatives) for further information relative to the Browne Project.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Habitat, Alternatives

LOCATION IN DEIS: Vol 1 Page 3-69 Section 3.5.5.2 All paragraphs

COMMENT IN REFERENCE TO: DEIS description of the wildlife at each alternative hydro site.

TECHNICAL COMMENT: The wildlife descriptions presented here lack sufficient detail to adequately assess the significance of impacts of the alternative hydroelectric projects. Please refer to our Evaluation Report on Non-Susitna Hydroelectric Alternatives (Appendix II) for further detail.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Peregrine Falcon, Endangered Species, Alternatives

LOCATION IN DEIS: Vol 1 Page 3-69 Section 3.5.6 Paragraph 9 of the page

COMMENT IN REFERENCE TO: DEIS does not mention peregrine falcon use of Johnson Reservoir area.

TECHNICAL COMMENT: There are four peregrine falcon nest locations that may be significantly impacted by the proposed Johnson hydroelectric project. Three of these nest locations were active in 1983. For further details see the Evaluation Report on Non-Susitna Hydroelectric Alternatives (Appendix II) and Technical Comment TRR002.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Climate, Vegetation, Reservoir

LOCATION IN DEIS: Vol 1 Page 4-37 Section 4.1.5.1 Paragraph 5 of the page

COMMENT IN REFERENCE TO: The DEIS comment that reservoirs would moderate diurnal temperature fluctuations which might affect local rainfall patterns and humidity.

TECHNICAL COMMENT: Measurable precipitation increases during winter are not expected to result from the impoundments (Wise 1984 pers. comm.; Clagett 1984 pers. comm.). Precipitation, particularly snowfall, is highly variable at present in the middle Susitna Basin, and it would be difficult to attribute changes in precipitation distribution or quantity to the presence of the Watana or Devil Canyon reservoir. The impoundments will be largely ice covered during winter (around Nov. 20-May 30) and will contribute only slight evaporative loss once frozen. Any precipitation changes during fall would be most noticeable on the windward shore. Moisture picked up by winds blowing over the impoundment waters in fall will be confined to the lower air mass layers. The impoundments are so narrow that only small increments of moisture will be picked up and this will be deposited on the immediate windward side of the reservoir (Windler 1984 pers. comm.). Prevailing wind direction during October and November at the Watana Station is east-northeast (R & M 1982, Vol. 5). Evaporation from the reservoirs may contribute slightly to local summer precipitation (Wise 1984 pers. comm.; Clagett 1984 pers. comm.), but the potential increase is expected to be too small to affect vegetation in a measurable way.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Rime Ice, Vegetation, Wildlife Resources

LOCATION IN DEIS: Vol 1 Page 4-37 Section 4.1.5.1 Paragraph 6 of the page

COMMENT IN REFERENCE TO: DEIS comment, "When rime ice accumulations are thick, branches and twigs can break, damaging vegetation."

TECHNICAL COMMENT: Rime ice from the influence of open water in the reservoirs or downstream reaches is not expected to form on vegetation (Wise 1984 pers. comm.). Rime ice will probably be deposited on vegetation and other objects in the immediate vicinity of the dam outlet facilities, where water spray may form an ice coating. Because impacts from rime ice will be very localized, its formation is not expected to affect browsing moose or snowshoe hares in the vicinity.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose, Impacts

LOCATION IN DEIS: Vol 1 Page 4-38 Section 4.1.5.2 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Moose impact estimates.

TECHNICAL COMMENT: The estimate of 1800 moose that presently range through the area of the Watana impoundment is an overestimate. The estimate is intended to represent the fall population of the area occupied by moose whose home ranges overlap with areas to be directly altered by operation and maintenance of the impoundment (Ballard et al. 1983). The number includes these animals, but also includes an unknown number of animals whose home ranges do not overlap with the impoundment, but do overlap with the home ranges occupied by these animals. In other words, estimates of the number of moose occupying the Ballard et al. (1983) "primary zone of impact" necessarily include an unknown number of moose that do not traverse the impoundment area, but are present within the "primary zone of impact" at any point in time.

Estimates of the numbers of moose occupying the "secondary" and "tertiary zones of impact" would not be subject to this bias because it can be assumed that the number of zone nonresidents present within a zone at any point in time is equal to the number of zone residents outside the zone at that time. However, it should be pointed out that the estimate of 8,000 moose in the "secondary" and "tertiary zones of impact" is associated with both the Watana and Devil Canyon impoundments (see Table 5 of Ballard et al. 1983) and not just the Watana impoundment as is implied on page K-41. It should be made clear that most moose occurring within the "primary zone of impact"

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose

LOCATION IN DEIS: Vol 1 Page 4-38 Section 4.1.5.2 Paragraph 3 of the page (Reference Figures 4-11 and 4-12)

COMMENT IN REFERENCE TO: Figures 4-11 and 4-12 are misleading.

TECHNICAL COMMENT: Without defining the extent of the upper and middle Susitna Basin in these figures, the reader may mistakenly assume it includes the entire mapped area rather than the much smaller area actually included. In any event, the figure does not accurately portray what its title implies. Figure 4 of Ballard et al. (1983) shows that general overwintering ranges in the upper and middle basin are much more extensive than that shown, particularly in the upper basin, along the MacLaren River, between the Oshetna and Tyone Rivers, and elsewhere.

The same comment also applies to Figure 4-12, which is inconsistent with Figure 14 of Ballard et al. (1982). The latter figure shows extensive calving season observations in the Oshetna and MacLaren River drainages, in the upper basin, and elsewhere. These are not shown in Figure 4-12 of the DEIS even though they are within the upper and middle Susitna Basin.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose, Impacts

LOCATION IN DEIS: Vol 1 Page 4-38 Section 4.1.5.2 Paragraph 6 of the page

COMMENT IN REFERENCE TO: DEIS statement regarding impediment to river crossings by moose during calving season caused by ice-free water.

TECHNICAL COMMENT: The likelihood and significance of this impact mechanism is overstated. The calving season in the downstream floodplain, as defined by Modafferi (1983), extends from May 10 through June 17. This is a period of mild to warm air, temperatures not likely to cause cold stress to a swimming moose. In any event, the Susitna River is normally either ice-free or undergoing break-up (which would be hazardous to moose crossings) during this period under natural conditions.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose, Vegetation, Transmission Lines and Corridors, Access Roads

LOCATION IN DEIS: Vol 1 Page 4-38 Section 4.1.5.2 Paragraph 7 of the page

COMMENT IN REFERENCE TO: Statements regarding utilization of forage in disturbed areas based on study by Wolff and Zasada.

TECHNICAL COMMENT: This statement is misleading because it fails to describe relevant differences between the type of disturbances studied by Wolff and Zasada (1979) and the type of disturbances associated with transmission line clearing. Of the 15 disturbed sites studied by Wolff and Zasada, only 2 (Wickersham 4 and Bonanza Creek) were created by procedures (clearing and logging) similar to methods that will be employed on the transmission lines and access routes for the Susitna Project. The other sites Wolff and Zasada examined were created as a result of fire or river disturbances on floodplains--sites with very different plant competition and soil nutrient scenarios and successional patterns. The DEIS states that browse utilization measured by Wolff and Zasada (1979) ranged from 0 to 50 percent and averaged 20 percent. This statement is incorrect as the actual range presented in their paper is 0 to 81 percent for all stands sampled.

Furthermore, as Wolff and Zasada (1979) suggest, the low browsing intensity measured at many sites was a reflection of population levels below carrying capacity rather than on avoidance of the disturbed sites as implied in the DEIS.

However, even if average moose useage is as low as 20%, and if the cleared right-of-way produce substantially more available forage than found in older

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Caribou, Impacts, Population

LOCATION IN DEIS: Vol 1 Page 4-41 Section 4.1.5.2 Paragraph 1 of page

COMMENT IN REFERENCE TO: DEIS comment, "...the Nenana-Upper Susitna caribou subherd, which constitutes about 2,000 individuals and 10 percent of the basinwide herd."

TECHNICAL COMMENT: The size of the Upper Susitna-Nenana subherd is currently estimated to be about 1500 animals. The total Nelchina caribou herd population is estimated to be 25,000 individuals (see Technical Comment TRR004). The Upper Susitna-Nenana subherd would therefore comprise approximately 6 percent of the herd.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Dall Sheep, Impacts

LOCATION IN DEIS: Vol I Page 4-41 Section 4.1.5.2 Paragraphs 4 and 5 of the page

COMMENT IN REFERENCE TO: Updated information on Jay Creek lick impacts.

TECHNICAL COMMENT: The following summary is based on the most recent information on the Jay Creek Lick (Tankersley 1984). A minimum of 31 percent of the observed 1983 sheep population traveled 5 miles or more to the Jay Creek lick area, which is below alpine sheep habitat in the lower 4 miles of Jay Creek. Sheep travel to this area even though another smaller lick with similar chemical anomalies is located within their alpine range. The Jay Creek lick soil, containing significantly high levels of sodium, is exposed in several areas mostly between 2200-2400 feet. Sheep attracted to the area spent about 14 percent of the time below 2200 feet. The Watana impoundment normal maximum operating level is designated as 2185 feet with an average annual drawdown of 120 feet. These proposed impoundment levels will not directly inundate any major licking areas. Erosion may result in the loss of some licking and resting areas, and the reservoir may inhibit some travel across Jay Creek to well-used sites. However, reservoir impoundment levels will be between 2070 and 2150 feet during the period of peak sheep use which will minimize the extent of this potential conflict.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Access Roads

LOCATION IN DEIS: Vol 1 Page 4-41 Section 4.1.5.2 Paragraph 8 of the page

COMMENT IN REFERENCE TO: DEIS Comment "Disturbance during winter denning could result in den abandonment; this would be most likely to occur along the Denali-Watana access route."

TECHNICAL COMMENT: The mean elevation of the 50 brown bear dens located in the Susitna project area from 1980-1983 was 4040 feet. Only nine (18%) of these dens were below 3500 feet (Miller 1984, Table 23). The proposed Denali Highway-to-Watana access road will exceed the 3500 feet contour along about 7.5 miles of its approximately 42-mile length (Alaska Power Authority 1983, Exhibit G). None of the 50 brown bear dens identified since 1980 are within the vicinity of the proposed road. The nearest dens were at higher elevations in the Chulitna Hills and in the uplands bordering Watana Creek, all at least 2 miles from and up to 2000 feet higher than the nearest portion of the proposed access road (Miller 1984, Fig 8). Therefore, disturbance of brown bears during winter denning along the access road appear to be an unlikely occurrence, not a likely occurrence as stated.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Filling

LOCATION IN DEIS: Vol 1 Page 4-43 Section 4.1.5.2 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: DEIS Comment, "About 55% of the known black bear
dens would be inundated by reservoir filling."

TECHNICAL COMMENT: Please refer to Technical Comment TRR007.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 4-43 Section 4.1.5.2 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: Reference to black bear use of transmission
lines right-of-way.

TECHNICAL COMMENT: It is not all clear black bear would not make use of the
net increase in available forage produced within transmission line right-of-
way. This should be explained or the statement deleted.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Eagles, Raptors, Impacts

LOCATION IN DEIS: Vol 1 Page 4-45 Section 4.1.5.2 Paragraph 2 of the page

COMMENT IN REFERENCE TO: DEIS Comment, "Specific impacts would include: Loss of 12 to 14 golden eagle, 4 bald eagle, 1 gyrfalcon, 2 goshawk, and 13 raven nesting locations"

TECHNICAL COMMENT: Please refer to Technical Comment TRR008 for an update on raptor nest impacts.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Eagle, Raptors, Impacts

LOCATION IN DEIS: Vol 1 Page 4-45 Section 4.1.5.2 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: Update of raptor and raven nest locations and
numbers.

TECHNICAL COMMENT: Please refer to Technical Comment TRR008 for the most
recent data on the number of raptor and raven nest locations occurring in
the project vicinity.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Peregrine Falcon, Transmission Lines and Corridors, Endangered Species

LOCATION IN DEIS: Vol 1 Page 4-45 Section 4.1.5.2 Paragraphs 5 & 6 of the page

COMMENT IN REFERENCE TO: DEIS Comment, "North of Nenana, the transmission line route would pass within 1 mile of 2 historical peregrine falcon nesting locations and within 2 to 5 miles of several others."

TECHNICAL COMMENT: The two historic peregrine falcon nesting locations referred to in the referenced statement are actually nest sites of the same nesting location. The nearest is 1.4 miles from the proposed transmission line. Please see Technical Comment TRR001.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Resources, Habitat, Alternatives, Impacts

LOCATION IN DEIS: Vol 1 Page 4-74 Section 4.2.5.2 Paragraph 9 of the
page

COMMENT IN REFERENCE TO: Inconsistency in estimates of acreage inundated.

TECHNICAL COMMENT: There appears to be an inconsistency and probably an error in the acreage figure and percentage presented here relative to the effects of the Watana I configuration (i.e., 37,000 acres and 85%) when compared to the data presented in Table 4-11 (p. 4-71) and in paragraph 5 of page K-74, Appendix K.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Moose, Impacts, Natural Gas Plants, Impacts

LOCATION IN DEIS: Vol 1 Page 4-79 Section 4.3.5.2 Paragraph 1 of the page

COMMENT IN REFERENCE TO: DEIS comment on moose congregating and impacts.

TECHNICAL COMMENT: Moose during the winter concentrate in the area north-northeast of the proposed Beluga gas site. During the winter this area tends to have dense aggregations of moose, forming in what are called 'moose yards' (Cook Inlet Region, Inc. and Placer Amax, Inc. 1981). Although the number of acres disturbed by the proposed facility are small, major impacts on the local moose population would result from increased human population in the area. In such dense concentrations, moose in the area could easily be impacted by legal and illegal hunting activities-- especially if an additional 400 people were present in the area (See DEIS, p. 2-39). Impact of the initial construction phase of the proposed facility, and the potential disturbance caused by the 28-33 people required to operate and maintain the facility (See DEIS, p. 2-39), coupled with the existing ready access into the Olson Creek area, could result in moose abandoning their traditional winter range.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Communities, Vegetation, Impacts, Habitat

LOCATION IN DEIS: Vol 1 Page 4-83 Section 4.4.5.1 Paragraph 2 of the page

COMMENT IN REFERENCE TO: Reclamation of mined lands

TECHNICAL COMMENT: The DEIS states, "Over the 30-year life of the coal units an additional total of about 225 (90 ha) acres of vegetation would be temporarily removed for solid waste disposal at the plant sites, and a total of about 2250 (910 ha) acres of vegetation would be temporarily removed for surface mining of coal. It would be expected that the waste disposal and surface mine sites would eventually be rehabilitated. If soils could be adequately restored on these areas, rehabilitation should be no more difficult than the rehabilitation of borrow sites or other temporary facilities planned for the proposed Susitna project."

Present coal mine reclamation methods practiced in the State are different from the revegetation plans proposed for the Susitna Project. Alaska State regulations require that reclaimed sites exhibit 90 percent of their original plant cover values. Coal operators are required to put up a monetary bond until this criteria is reached. To accomplish this in a rapid manner, coal operations use grasses for revegetation.

The grasses meet the cover requirements, but produce low quality wildlife habitat (Elliott 1984). Susitna project revegetation plans, on the other hand, emphasize natural revegetation with native plants which will more rapidly produce valuable wildlife habitat. Because of this, the return of coal stripped land to viable wildlife habitat will take much longer than the time estimated for restoration of Susitna land. The DEIS estimate of the number of acres needed for mining may be correct, but it underestimates the long-term impact of mining on local wildlife populations.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-88 Section 4.5.5.2 Paragraph 5 of the page

COMMENT IN REFERENCE TO: DEIS description of animal communities in the combined hydrothermal generation scenario.

TECHNICAL COMMENT: The potential impacts of the proposed projects on animal communities as provided by FERC does not address many of the species-specific problems that would occur. In addition to the brown bear fisheries affected by the Chakachamna project, nesting raptors (e.g. bald eagles), trumpeter swan nest areas, important waterfowl habitat (especially molting areas for the Tule White-fronted goose), black bear use of downstream fisheries (especially in the upper reaches of the McArthur River), and potential long-term loss of the downstream riparian communities on the McArthur and Chakachamna Rivers (important moose calving and winter habitat) would all be adversely impacted. The Keetna site would eliminate salmon runs to Prairie Creek and the attendant brown bear concentrations, and impact moose fall and winter concentration areas and parts of caribou winter range. The Johnson site would impact caribou and moose winter range and, moose calving areas, high use areas for black bears, nesting areas for peregrine falcons and other raptors, and approximately 30,000 acres of lowland wetlands (area estimated from USGS topographic maps) important as waterfowl nesting, molting, and resting habitat. In addition to mountain goat and Dall sheep, the Snow Project will impact a moose wintering area and waterfowl nesting and molting areas.

Please refer to our Evaluation Report on the Non-Susitna Hydropower Alternatives (Appendix II) for more detailed information.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-88 Section 4.5.5.2 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: Description of wildlife impacts.

TECHNICAL COMMENT: Please refer to Technical Comment TRR036.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Endangered Species, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-88 Section 4.5.6 Paragraph 6 of the page

COMMENT IN REFERENCE TO: DEIS summary states that no impacts to threatened or endangered species would occur as a result of the non-Susitna power generation alternatives.

TECHNICAL COMMENT: Please refer to Technical Comment TRR018.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Habitat, Alternatives, Impacts

LOCATION IN DEIS: Vol 1 Page 4-94 Section 4.7.5.2 Paragraph 4 of the page

COMMENT IN REFERENCE TO: DEIS comment that the value of the affected habitat in the combined hydrothermal scenario may be lower than in the other suggested alternative power generation scenarios.

TECHNICAL COMMENT: There is no basis provided for why the value of the affected habitat might be lower for the combined configuration. The value of affected habitat at each hydrothermal alternative site has not been fully addressed in the DEIS. For example, the value of the proposed Johnson site as moose wintering and calving habitat, the area's importance to migratory waterfowl, and the presence of four peregrine falcon nesting locations, have not been addressed by the DEIS. For more detailed comments and site habitat evaluations see the Evaluation Report on Non-Susitna Hydroelectric Alternatives (Appendix II).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Endangered Species, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-94 Section 4.7.6 Paragraph 7 of the page

COMMENT IN REFERENCE TO: DEIS comment that no impacts to threatened or endangered species would be expected as a result of construction and operation of the proposed Susitna project or any alternatives.

TECHNICAL COMMENT: This statement is incorrect. Please refer to Technical Comment TRR018.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-101 Section 4.10.1 Paragraph 4 of page

COMMENT IN REFERENCE TO: Statement regarding irretrievable loss of fish and wildlife populations.

TECHNICAL COMMENT: We disagree that fish and wildlife populations destroyed or displaced by dam construction and reservoir filling would be irretrievably lost. Displacement of animals or populations is not the equivalent of an irretrievable loss, since the animals or populations concerned are not necessarily lost. This is particularly true for populations below carrying capacity which is the present case for moose in the Susitna project area. In addition, it is feasible to enhance nearby or distant habitat in order to maintain or replace animals or populations that would be destroyed by the Proposed Project. This enhancement of adjacent or distant lands for wildlife has been proposed in the License Application (APA 1983) and is incorporated into project plans.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Vegetation, Impacts

LOCATION IN DEIS: Vol 1 Page 5-2 Section 5.1.1.5.1 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Percentages of vegetated areas in upper and middle Susitna Basin.

TECHNICAL COMMENT: The percentages of the vegetated area within the upper and middle Susitna Basin as presented on page 5-2 actually represent the percentages of the vegetated area within the Watana and Gold Creek watersheds (see Technical Comment TRR049). The Watana and Gold Creek watersheds encompass less land area than the upper and middle Susitna Basin, hence the values given in the DEIS would overstate the actual percentages of vegetated area to be affected by the project within the upper and middle Susitna Basin.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wetlands, Impacts

LOCATION IN DEIS: Vol 1 Page 5-2 Section 5.1.1.5.1 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Statement on wetland impacts.

TECHNICAL COMMENT: It should be stated here that the wetland area identified as potentially affected represents an extremely liberal estimate (see Vol. 1, Sec. 4.1.5, p. 4-35, para. 4) and that almost none consist of marsh and pond-type palustrine wetlands that the average reader would envision.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Impacts

LOCATION IN DEIS: Vol 1 Page 5-3 Section 5.1.1.5.2 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: DEIS comment that the Susitna project would result
in a loss of 50 percent of available denning sites.

TECHNICAL COMMENT: Please refer to Technical Comment TRR007.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Eagles, Raptors, Impacts

LOCATION IN DEIS: Vol 1 Page 5-3 Section 5.1.1.5.2 Paragraph 1 of the
page

COMMENT IN REFERENCE: The DEIS statement that the Susitna Project would
result in the loss or disturbance of 4 bald eagle and 16 to 18 golden eagle
nesting locations.

TECHNICAL COMMENT: Please refer to Technical Comment TRR008.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Vegetation, Impacts, Alternatives, Proposed Project

LOCATION IN DEIS: Vol 1 Page 5-5 Section 5.1.2.5.1 Paragraph 5 of the page

COMMENT IN REFERENCE TO: Impacts to vegetation from alternative Susitna dam disturbances vs proposed project impacts.

TECHNICAL COMMENT: We disagree that impacts to vegetation from alternative Susitna dam locations would be similar in magnitude to impacts of the proposed project. The 16,000-acre difference in inundation area between Watana-Devil Canyon and the Watana I - Reregulating Dam project (see Sec. 4.2.3, p. 4-7, Table 4-11) should be considered a significant difference (see Sec. 5.2.1, p. 5-7, para. 6, 2nd sentence).

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Resources, Proposed Project, Alternatives

LOCATION IN DEIS: Vol 1 Page 5-7 Section 5.2.1 Paragraphs 2 & 3 of the page

COMMENT IN REFERENCE TO: Statement that adverse impacts projected for the alternative hydro and thermal scenarios are generally less than those projected for the proposed Susitna project.

TECHNICAL COMMENT: After reviewing the alternative projects, it appears obvious that the alternative hydrothermal scenario has greater environmental impacts than the Susitna development. It is very important that the FEIS incorporate the information made available in Appendix II (Non Susitna Hydroelectric Alternatives).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Habitat, Mitigation

LOCATION IN DEIS: Vol 1 Page 5-11 Section 5.3.5 All paragraphs

COMMENT IN REFERENCE TO: Candidate mitigation lands for habitat compensation through enhancement.

TECHNICAL COMMENT: In reference to the DEIS statements regarding lands for habitat compensation, the Power Authority has identified, on a preliminary basis, candidate lands for habitat compensation. These lands are shown in attached maps, which were transmitted by letter from the Power Authority to the Alaska Department of Natural Resources (APA 1984). The Department of Natural Resources has, accordingly, incorporated this information on candidate lands into their Susitna Area Plan Public Review Draft (ADNR and USDASCS 1984). A portion of the Draft is also attached.

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7841
(907) 276-0001

May 30, 1984
Susitna File No. 6.18.4.1

Mr. Dick LeFebvre
Deputy Director
Alaska Department of Natural Resources
Division of Land and Water Management
Pouch 7-005
Anchorage, Alaska 99510

SUBJECT: Susitna Hydroelectric Project
Comments on Agency Draft
Susitna Area Plan
Candidate Lands for Habitat Compensation

Dear Mr. LeFebvre:

The Alaska Power Authority has identified, on a preliminary basis, candidate lands which may be suitable for enhancement measures to compensate for habitat losses which may result from the Susitna Hydroelectric Project. In response to your letter of April 25, 1984, in which you requested information on these lands to assist development of the public review draft of the Susitna Area Plan, I enclose copies of the appropriate maps from the agency draft of the Susitna Area Plan with the candidate lands marked on them (Attachments I through V). A matrix comparing the lands in question with respect to their merit for wildlife mitigation is included (Attachment VI).

It should be emphasized that identification of the candidate lands is preliminary, and that the land areas described in the enclosures are many times larger than the actual acreages expected to be required for habitat compensation. During state Fiscal Year 1985, the Power Authority will sponsor continuing studies to refine acreage and locational requirements for candidate lands. We will keep you informed of the results of these continuing studies.

Several additional points should be noted. The lands identified on the maps and matrix are all included within the Susitna Area Plan. Other state and federal lands not included in the Susitna Planning Area are also under active consideration by the Power Authority. With the exception of federally owned lands in the northern portion of the Lake Louise Subregion, all of the identified candidate lands within the Susitna Planning Area are state-owned. These lands have been identified through careful review of the Susitna Area Plan agency review draft and ADF&G Habitat Division maps prepared in conjunction with the Susitna Area Plan.

Mr. Dick LeFebvre
Page 2

On a preliminary basis, we believe that Petersville Road Subregion management subunits 1a, 1b, 3c, and 4a should be given highest priority for consideration as candidate lands for moose habitat compensation. As noted in the agency review draft, this area supports the highest intensity of moose hunting activity in the Susitna Planning Area. The area has high habitat enhancement potential, relatively good access, and is near several established and planned settlements.

Second-priority consideration is being given to Susitna Lowlands Subregion management subunits 6d, 6e, 13d, and 13e. This area consists of a high proportion of habitat with high enhancement potential for moose and is important to the support of several moose populations. The area is near communities of the Willow Sub-Basin and Anchorage, and affords good access by boat and aircraft.

Susitna Lowlands Subregion management subunits 5a, 5b, 7a, 7b, 8c, 11a, and 12a, although more remote from settled areas, are also under consideration as candidate lands because of their high habitat enhancement potential for moose. Lands in the Lake Louise Subregion are less suitable in this regard but have been included in the analysis because of their high accessibility by road, boat and aircraft, and because of the proximity to the Susitna Hydroelectric Project area.

I hope that the enclosed information will be helpful in coordinating Susitna Area Plan preparation with Susitna Hydroelectric planning. The Power Authority wants to ensure that the Susitna Hydroelectric Project receives full consideration by the Susitna Area planning team, and that all information necessary for this coordination is provided.

If we can provide further information to assist planning team efforts, please contact Mr. Thomas Arminski at 279-6611.

Sincerely,


Don S. Ferguson
Project Manager

Enclosures as Stated.

TJA:JSF:it

cc: Mr. William E. Larson, Harza-Ebasco, w/enclosures
Ms. D. Jane Drennan, Pillsbury, Madison & Sutro, w/enclosures
Commissioner Don W. Collinsworth, Alaska Department of Fish
and Game, w/enclosures
Resources Committee, w/enclosures
Mr. Carl Yanagawa, Alaska Department of Fish and Game,
w/enclosures

LAND USE DESIGNATIONS

(Designations written in CAPITAL LETTERS are primary designations; those in lower case letters are secondary designations; areas shown with stars (★) will be proposed for legislative designation.)

MGT. UNIT 1 — PETERS CR./KROTO CR.

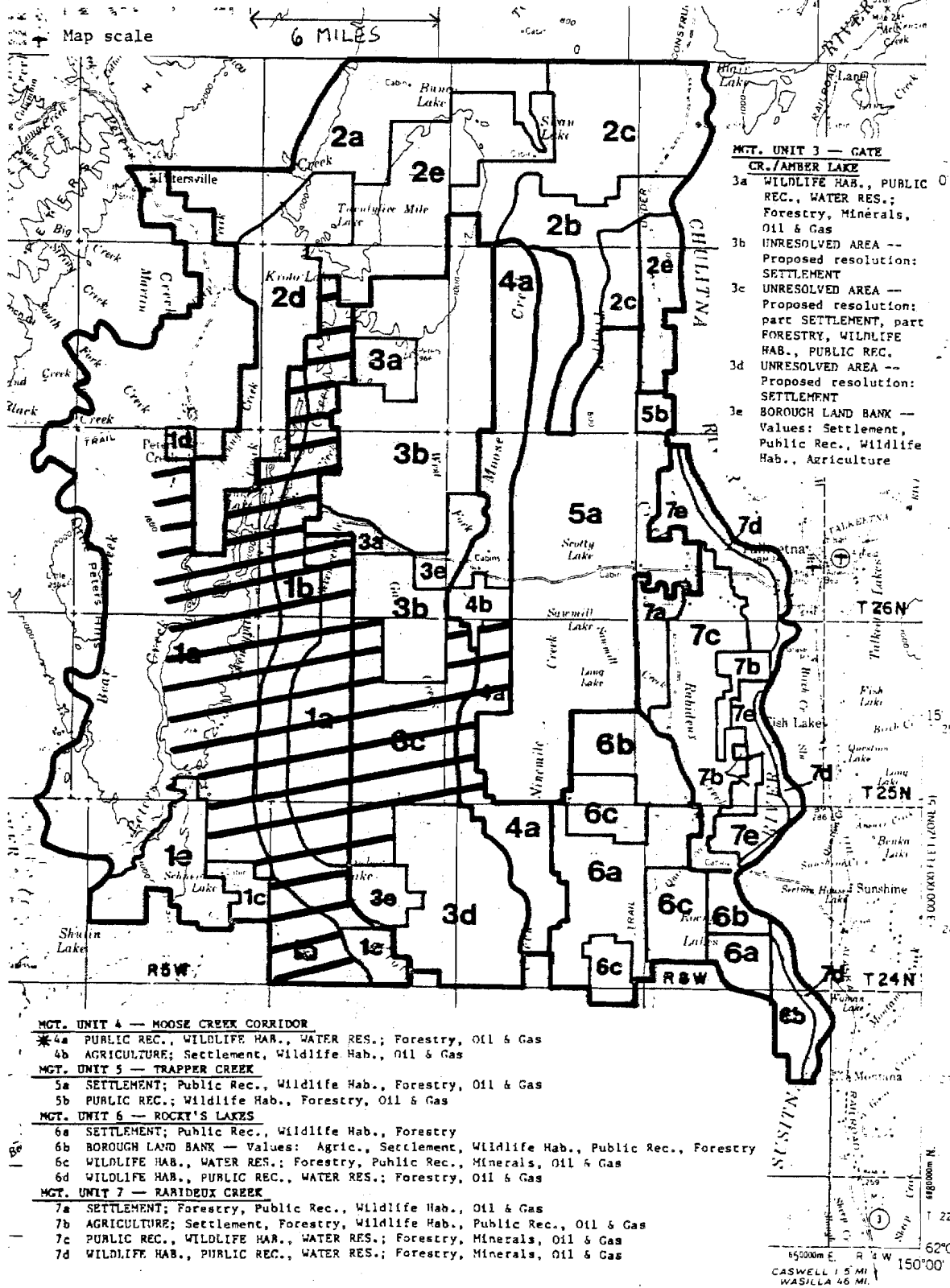
- *1a FORESTRY, WILDLIFE HAB., PUBLIC REC., WATER RES.; Minerals, Oil & Gas
 *1b WILDLIFE HAB., PUBLIC REC., WATER RES.; Forestry, Oil & Gas
 1c SETTLEMENT; Forestry, Public Rec., Wildlife Hab., Oil & Gas
 1d COMMERCIAL DEVELOPMENT, PUBLIC REC.; Forestry, Wildlife Hab., Oil & Gas, Minerals
 1e UNRESOLVED AREA -- Proposed resolution: RESOURCE MANAGEMENT -- Values: Forestry,
 Wildlife Hab., Agriculture

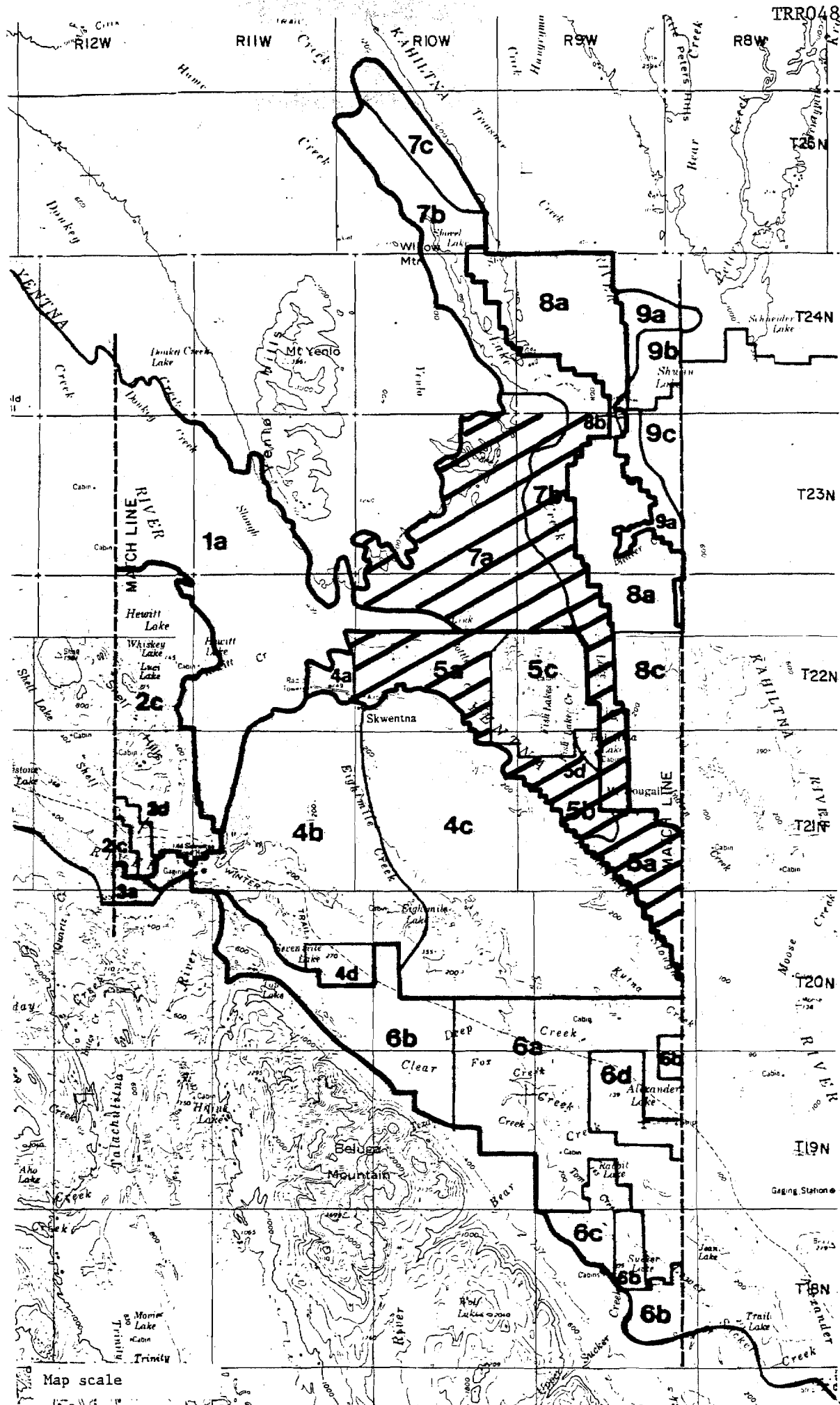
MGT. UNIT 2 - TOKOSHA

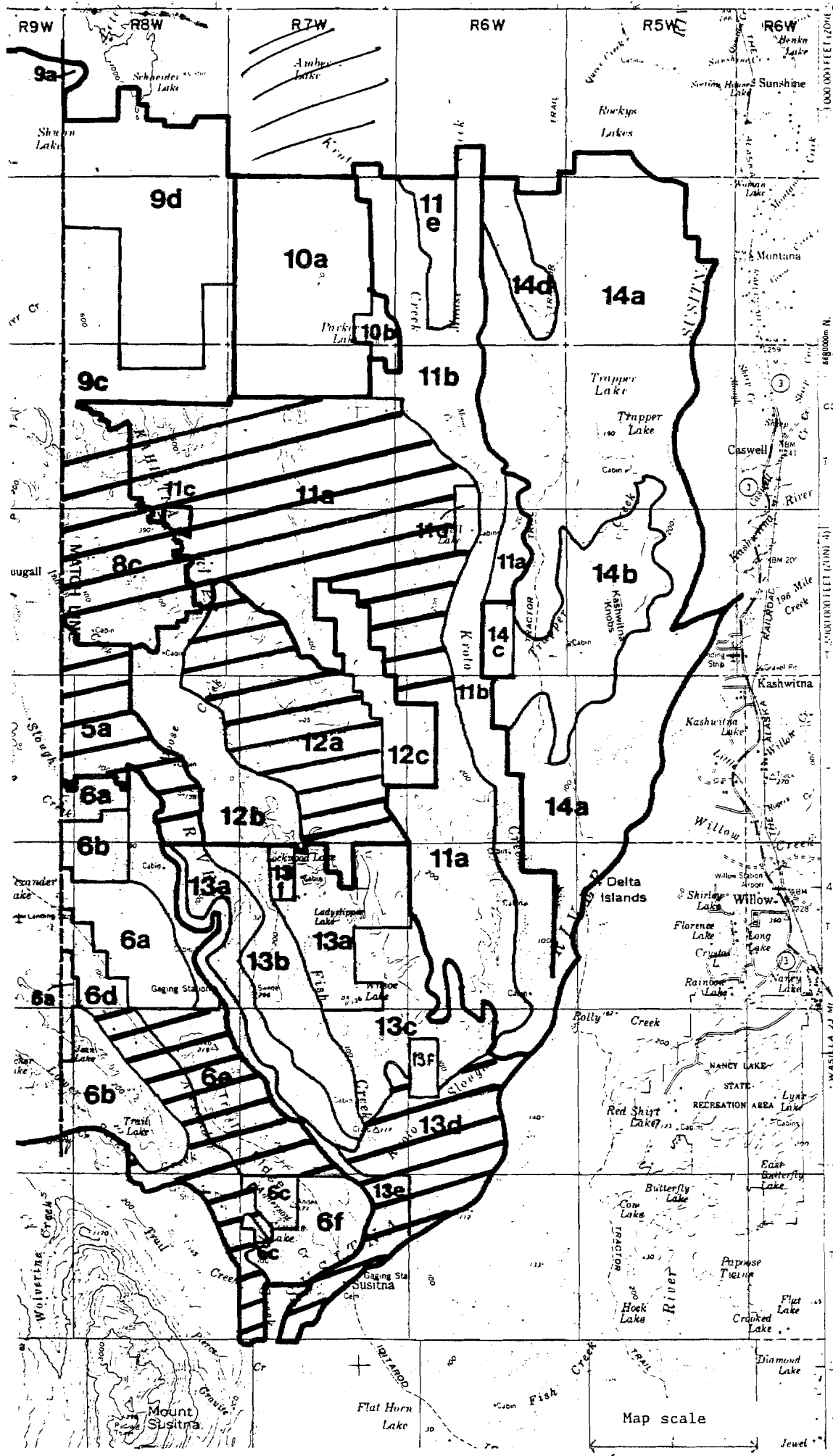
- 2a WILDLIFE HAB., PUBLIC REC., FORESTRY, WATER RES., MINERALS; Oil & Gas
2b PUBLIC REC., WILDLIFE HAB., WATER RES.; Forestry, Minerals, Oil & Gas
2c SETTLEMENT; Wildlife Hab., Public Rec., Agriculture, Forestry, Oil & Gas
2d UNRESOLVED AREA -- Proposed resolution: part SETTLEMENT, part WILDLIFE HAB., PUBLIC
REC., FORESTRY
2e BOROUGH LAND BANK -- Values: Settlement, Public Rec., Wildlife Hab.

Map scale

6 MILLS







Map scale

6 MILES

R1E R2E R3E

LAKE LOUISE

LAND USE DESIGNATIONS

Designations written in CAPITAL LETTERS are primary designations; those in lower case letters are secondary designations; areas shown with stars (*) will be recommended for legislative designation.

MGT. UNIT 1 -- GLENN HIGHWAY

- 1a SETTLEMENT; Public Rec., Forestry, Wildlife Hab., Oil & Gas
- 1b WILDLIFE HAB.; Public Rec., Oil & Gas
- 1c PUBLIC REC.; Wildlife Hab., Forestry, Oil & Gas
- 1d WILDLIFE HAB., FORESTRY; Public Rec., Oil & Gas
- 1e SETTLEMENT; Public Rec., Wildlife Hab., Forestry

MGT. UNIT 2 -- LAKE LOUISE EAST

- 2a SETTLEMENT; Wildlife Hab., Water Res., Public Rec., Oil & Gas
- 2b SETTLEMENT; Wildlife Hab., Water Res., Public Rec., Oil & Gas

MGT. UNIT 3 -- LAKE LOUISE/SUSITNA LAKE

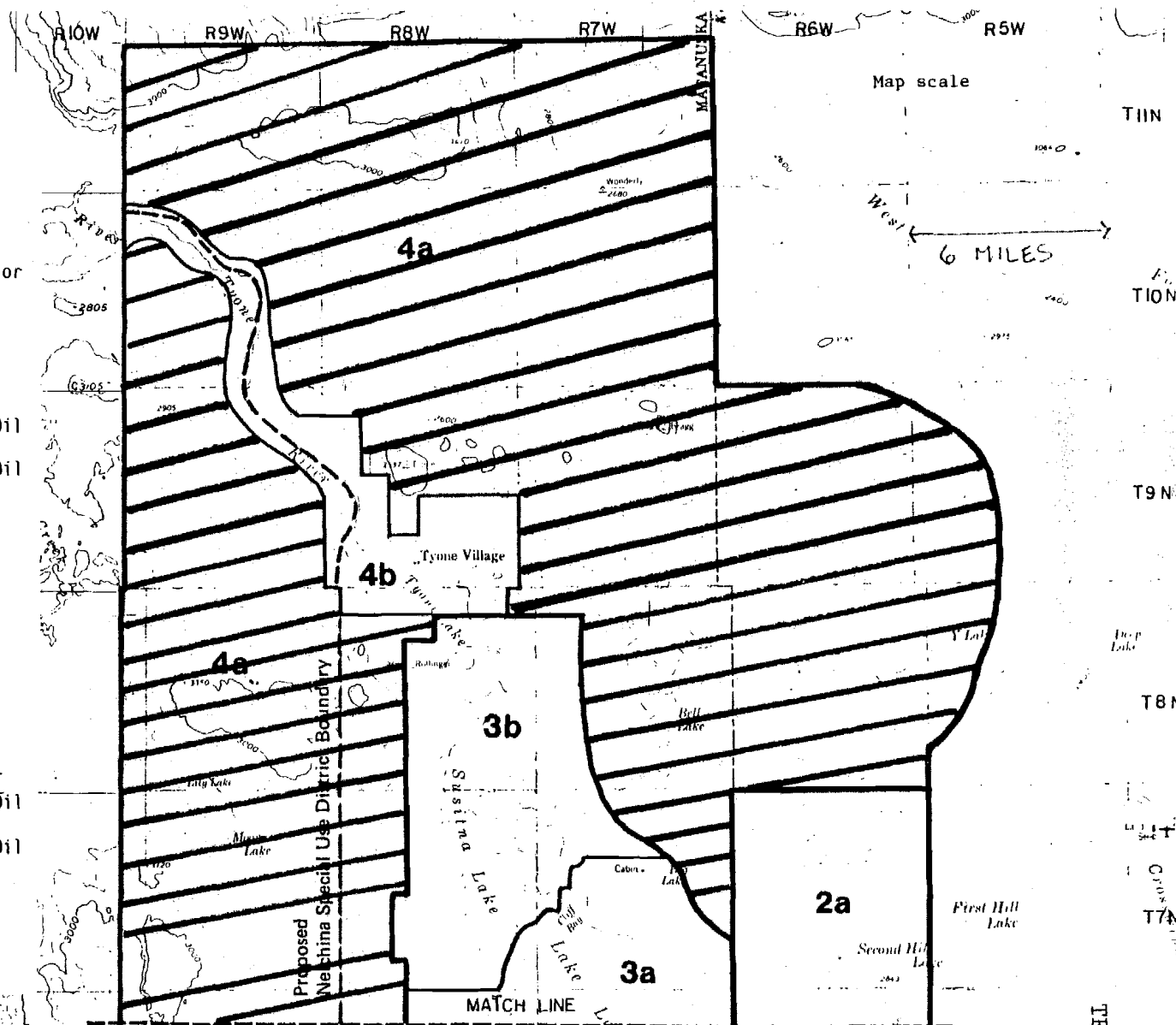
- 3a PUBLIC REC.; Settlement, Wildlife Hab., Oil & Gas
- 3b PUBLIC REC.; Settlement, Wildlife Hab., Oil & Gas

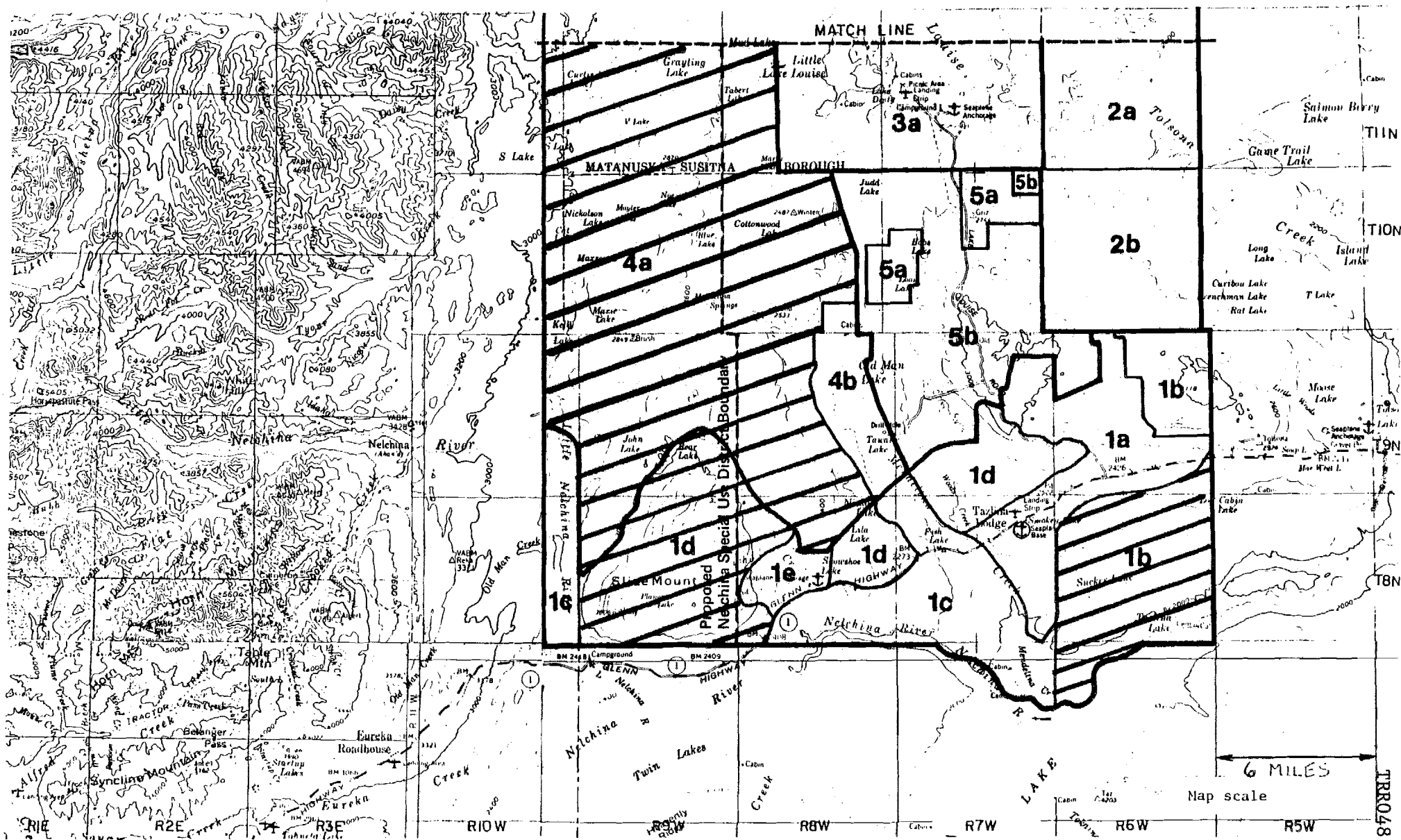
MGT. UNIT 4 -- LAKE LOUISE WILDLIFE HABITAT

- 4a WILDLIFE HAB., Public Rec., Forestry, Oil & Gas
- 4b PUBLIC REC.; Wildlife Hab., Forestry, Oil & Gas

MGT. UNIT 5 -- LAKE LOUISE ROAD

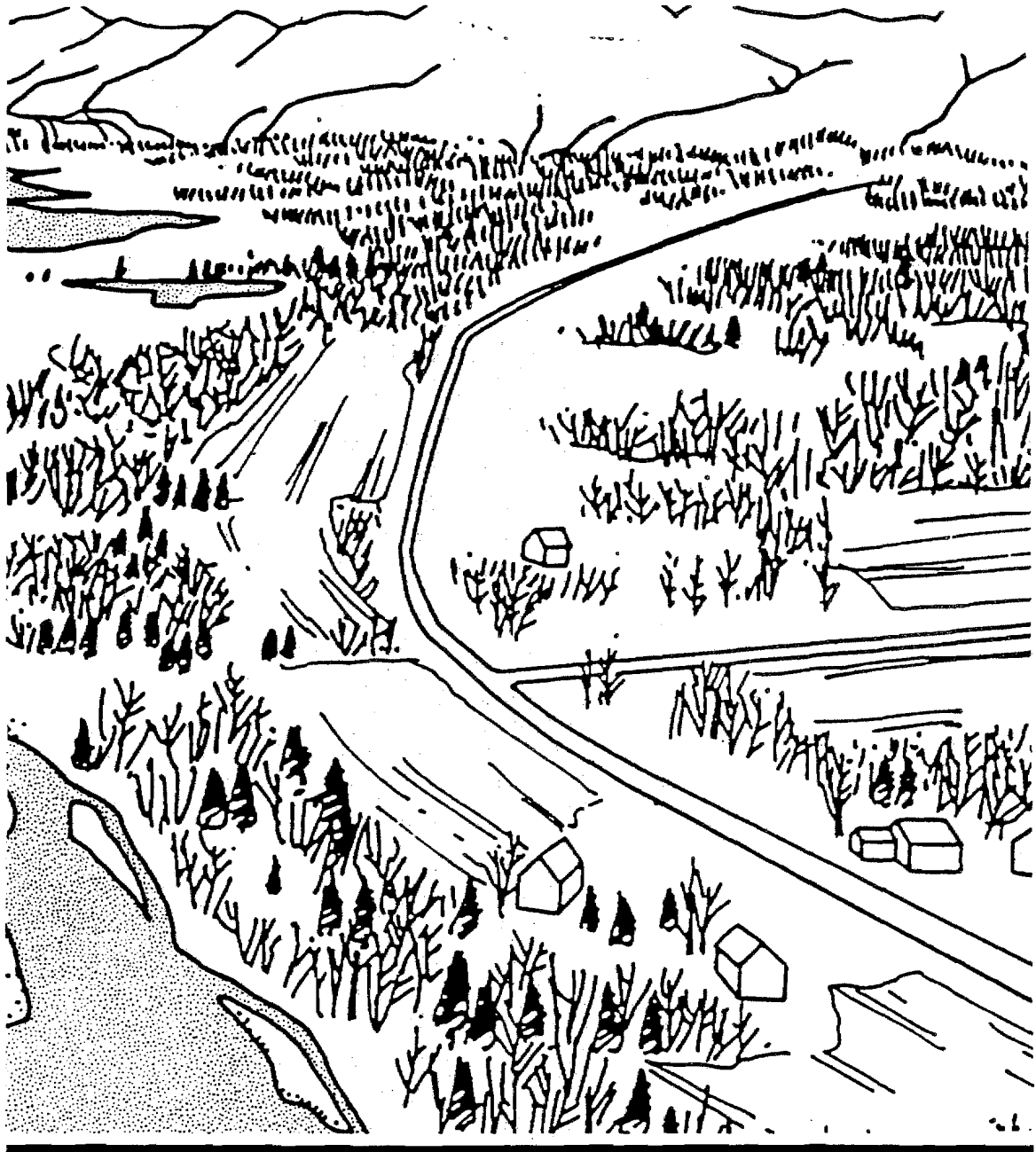
- 5a SETTLEMENT; Public Rec., Wildlife Hab., Oil & Gas
- 5b WILDLIFE HAB., PUBLIC REC.; Oil & Gas





CANDIDATE LAND AREA	SECTION AREA PLAN NUMBER	TOWNSHIP & RANGE	COUNTY	FORESTRY WILDLIFE HABITAT PUBLIC RECREATION WATER RESOURCES	UNDEVELOPED LAND USE INDEX	PROPOSED SPECIAL DESIGNATION	RECORDING NUMBER BUREAU QUANTITY	RECORDING BUREAU BENCHMARK	RECORDING BUREAU BENCHMARK	RECORDING BUREAU BENCHMARK	APPROX. BOW DITCH SPACING	IN WOODS CONSERVATION AREA	APPROPRIATE BUREAU	YES: TRAPERS CREEK, PETERS CREEK, PETERSVILLE, SCHMIDTKE LAKE, AMBER LAKE	BOAT, 9 BOAT, FLOATPLANE	YES:16 HIGH:16	YES:11
PETERS CREEK - FEDERAL CREEK - GATE CREEK NORTH	PETERSVILLE ROAD 1a, 1b, 3c, 4c T25N, 25W T25N, 25W T25N, 25W T25N, 25W T25N, 25W	T25N, 25W T25N, 25W T25N, 25W T25N, 25W T25N, 25W	STATE	FORESTRY WILDLIFE HABITAT PUBLIC RECREATION WATER RESOURCES	YES (3c)2	YES (1a)3, 1b, 4a)5	MIXED- HIGH & LOW	HIGH	SHRUBLAND & CONIFEROUS FOREST	40'- 60'-	YES 7, 8	ADMR DIV. OF FORESTRY; ADPAC	YES: TRAPERS CREEK, PETERS CREEK, PETERSVILLE, SCHMIDTKE LAKE, AMBER LAKE	BOAT, 9 BOAT, FLOATPLANE	YES:16 HIGH:16	YES:11	
LAKE CREEK - PETERS RIVER	SUNSHINE LOWLANDS 5a, 5b, 7a, 7b T21N, 25W T21N, 25W T21N, 25W T21N, 25W	T21N, 25W T21N, 25W T21N, 25W T21N, 25W	STATE	WILDLIFE HABITAT 12 RESOURCE MANAGEMENT FORESTRY PUBLIC RECREATION WATER RESOURCES	NO	YES (7a)13, 7b)14	MEDIUM	MEDIUM	MIXED FOREST & SHRUBLAND	30'- 50'-	YES	ADMR DIV. OF FORESTRY; ADPAC	YES: SUNSHINE LAKE SUNSHINE LAKE SUNSHINE LAKE	BOAT, PLANE, FLOATPLANE, WINTER TRAILS15	YES:16 HIGH:16	NO	
KASIMATA RIVER - DUMAS PLATE	SUNSHINE LOWLANDS 8c, 11a, 12a T21N, 25W T21N, 25W T21N, 25W T21N, 25W	T21N, 25W T21N, 25W T21N, 25W T21N, 25W	STATE	RESOURCE MANAGEMENT 12 FORESTRY WILDLIFE HABITAT SETTLEMENT 18	YES (11a, 12a)19	NO (NOT SEE NOTE 19)	MEDIUM	MEDIUM	MIXED FOREST & WETLAND	UP TO 30-20	YES	ADMR DIV. OF FORESTRY; ADPAC	YES: WILDLIFE WILDLIFE WILDLIFE	BOAT, 21 BOAT, 21 BOAT, 21	YES:21 HIGH:21	YES:19	
ALEXANDER CREEK - TRAIL RIDGE - FEDERAL CREEK	SUNSHINE LOWLANDS 6a, 6b, 13a, 13b T17N, 25W T17N, 25W T17N, 25W T17N, 25W T17N, 25W	T17N, 25W T17N, 25W T17N, 25W T17N, 25W T17N, 25W	STATE	PUBLIC RECREATION WILDLIFE HABITAT WATER RESOURCES FORESTRY COAL	NO	YES (6a)14, 13a)21	MEDIUM & HIGH	MEDIUM	MIXED FOREST & SHRUBLAND	UP TO 40'-	YES 23	ADMR DIV. OF FORESTRY; ADPAC	YES: WILDLIFE WILDLIFE WILDLIFE	BOAT, FLOATPLANE, WINTER TRAILS24	YES:23 HIGH:23	YES:25	
OTHER STATE LANDS	LAKE LOUISE 1b, 1d, 4a T28N, 25W T28N, 25W T28N, 25W T28N, 25W T28N, 25W	T28N, 25W T28N, 25W T28N, 25W T28N, 25W T28N, 25W	STATE	WILDLIFE HABITAT	NO	YES 28	MEDIUM	MEDIUM	SHRUBLAND, DECIDUOUS FOREST, CONIFEROUS FOREST	UP TO 30-20	YES	ADPAC	YES: LAKE LOUISE & PRIVATE PARCELS ACCESSIBLE FROM CLEAN HIGHWAY & LAKE LOUISE ROAD	BOAT, BOAT, PLANE, FLOATPLANE, WINTER TRAILS26	YES:28 HIGH:28	YES:28	
FEDERAL LANDS	LAKE LOUISE 4a)23 T28N, 25W T28N, 25W T28N, 25W T28N, 25W T28N, 25W	T28N, 25W T28N, 25W T28N, 25W T28N, 25W T28N, 25W	FEDERAL	WILDLIFE HABITAT	NO	YES 28	MEDIUM	MEDIUM	SHRUBLAND, DECIDUOUS FOREST, CONIFEROUS FOREST	UP TO 30-20	YES	BLM	YES: LAKE LOUISE & PRIVATE PARCELS ACCESSIBLE FROM CLEAN HIGHWAY & LAKE LOUISE ROAD	BOAT, BOAT, PLANE, FLOATPLANE, WINTER TRAILS	YES:28 HIGH:28	YES:28	

SUSITNA AREA PLAN PUBLIC REVIEW DRAFT-Summary



PREPARED BY:
ALASKA DEPARTMENT OF NATURAL RESOURCES
ALASKA DEPARTMENT OF FISH AND GAME
AND THE MATANUSKA-SUSITNA BOROUGH
IN COOPERATION WITH:
ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
KENAI PENINSULA BOROUGH
U.S. DEPARTMENT OF AGRICULTURE
AND THE BUREAU OF LAND MANAGEMENT

JUNE 1984



TALKEETNA MOUNTAINS SUBREGION

The following section describes land use policy within the Talkeetna Mountain Subregion. It is divided into two parts. The first is an overview of resources and their management for the subregion as a whole. The second presents specific statements of management intent, land use designations, prohibited uses, and management guidelines for each of the subregion's three management units. The land use plan's proposals on two issues--the borough's Talkeetna Mountains Special Use District and the proposed Susitna Hydroelectric project--overlap several management units and are therefore presented in the first part of this subregion summary under the section on management summary. Maps showing land ownership in the subregion and boundaries of management units and subunits are presented at the end of the first part.

I. SUBREGION OVERVIEW

A. Background

The boundaries of the Talkeetna Mountains Subregion are the planning area boundaries on the north and east (these coincide with the boundary of the Matanuska-Susitna Borough), a line that approximates the northern edge of the Matanuska River drainage on the south, and on the west, a line that roughly follows the 2,500' contour. These boundaries generally encompass only the upper portions of the mountains. Lower-lying portions of river valleys which extend into the area such as the Talkeetna, Sheep, and Kashwitna are included in the adjacent subregions.

This subregion encompasses roughly 6 million acres, the majority of which is publicly owned. The northern half of the unit is primarily in federal ownership, the southern half is held by the State of Alaska. The state recently received tentative approval for nearly all of the approximately 80 townships (1,840,000 acres) of federal land it had selected in the southern half of the area. There are approximately 206,000 acres of Native selected and interim conveyed lands in the area. Most of these lands are located in the Susitna River - Stephan Lake area and in the East Fork of the Chulitna River drainage. These Native selected lands are very likely to be conveyed. In addition to private land held by Native corporations there are also numerous scattered small parcels held by private individuals. These holdings are generally of two types: state offered open-to-entry sites adjacent to fly-in lakes (primarily used for recreational purposes), and federally patented mining claims located in the Nelchina area, the Clearwater Mountains and other mining areas. See the ownership maps at the end of this section for more information.

Access to the periphery of the subregion is provided by two major highways -- the Glenn on the south, the Parks on the west. The only road access into the subregion is provided by the Denali Highway on the north. This highway traverses mostly alpine country in federal ownership from Paxson to Cantwell. The State Department of Transportation is presently working on improvements to the western end of this highway. A number of trails branch off from these highways and provide a measure of access into the mountains. Other means of access include landing strips, fly-in lakes, and boatable rivers.

Although most of this rugged area does not offer the potential for agriculture, forestry, or settlement found elsewhere in the study area, these limitations are well balanced by the region's rich fish and wildlife, recreational and mineral resources. This area is one of the most heavily used big game hunting areas in the state, offering moose, Dall sheep, bear, and caribou. The majority of the range of the 20,000 animals of the Nelchina caribou herd is located here. The area's many lakes and rivers offer excellent fishing for salmon, lake and rainbow trout, grayling and other species. The subregion offers literally millions of acres of alpine country for hiking, camping, skiing and climbing.

These same alpine areas have a rich and to a large degree unexplored potential for mineral development. Several areas -- Hatcher Pass, Nelchina and Valdez Creek -- are currently active producers of gold and other precious minerals.

The Alaska Power Authority recently applied to the Federal Energy and Regulatory Commission (FERC) for a license to build a major hydroelectric project on the Susitna River. Two dams are proposed for sites at Devil's Canyon and Watana. (More on this proposal below.)

B. Management Summary

The Talkeetna Subregion will be managed as a multiple use area emphasizing the uses that are most important in the area now: recreation, including hunting and fishing, protection of fish and wildlife habitat, and mining. Grazing, private recreational settlement (remote cabins), and personal use timber harvests are also uses appropriate in specific portions of this subregion. The vast majority of this rugged, mountainous area is expected to remain remote and very sparsely developed. Additional road access to the area and concentrated settlement on public lands will be contingent on a demonstrated need for such development in order to facilitate activities such as mining or dam construction.

1. Settlement

State and federal land disposals for private recreational settlement are a very low priority in this subregion. The state will issue permits for remote cabin sites in this subregion under the remote cabin permit program in limited, select sites. Should the proposed Susitna hydropower project be developed, state land will be available for a workcamp or other settlement uses associated with the construction and operation of the dams. Most of these hydro-project related uses, however, are expected to occur on lands presently in Native ownership. If road access into this area is provided as a result of the hydro project native lands are likely to be developed for private recreational purposes. Settlement may be an appropriate use on public lands adjacent to areas developed by the natives although no lands are designated for this purpose at this time. (Demand for private residential and commercial uses that may be associated with the project are discussed further under the section on Susitna hydro.) Residential development of public land also may occur in this unit concurrent with major mineral development. Any settlement in this subregion should be designed to maintain public access and protect fish and wildlife habitat and the area's high scenic quality--particularly where the activities occur within the highway corridors.

2. Agriculture

Grazing is the only agricultural use that is possible in this subregion. Grazing will be limited to an area several hundred thousand acres in size in the southwestern portion of the subregion. This area is relatively close to access and to land that could be used for farm headquarter sites. Management guidelines will be applied to grazing activities to ensure compatibility with wildlife.

3. Forestry

Although most of this unit is above timberline, major drainages (e.g., the Susitna and Talkeetna rivers) have personal use and perhaps commercial timber harvest potential. If major developments such as the Susitna hydro project occur there will undoubtedly be associated demands for structural timbers which could be met from these areas. In general, however, the state will set a higher priority on protecting the scenic, habitat, and recreational values of these forested areas rather than using these areas for commercial uses. Limited personal use harvests will be permitted in some areas.

4. Recreation/Fish and Wildlife

This subregion will be managed to protect its current status as one of the major game harvest areas in the state for moose, caribou and sheep. Streams will be managed to protect their recrea-

tion and commercial fishery values. The area also will be managed to maintain a full range of summer and winter recreation activities, including skiing, mountain climbing, hiking, and snowmobiling. Adequate access for these recreation purposes should be maintained in public ownership. Because the Talkeetnas are a highly scenic but still relatively gentle mountain range, the area is particularly suited for cross country hiking, skiing and snowmobiling. A system of trails running through this subregion should be identified and promoted. The state and borough should also seek funding to build and, if necessary, operate public use cabins along this trail system.

Construction of the Susitna Hydroelectric project also could provide increased opportunities for public recreation, primarily due to improved access. Any plans for recreation improvements in the subregion—for example a trails system—should be coordinated with recreation plans associated with the proposed Hydro project.

The plan recommends that the southeastern portion of the Talkeetna Mountains be legislatively or administratively designated as the "Nelchina Public Use Area" to protect the Nelchina caribou herd. This proposal would allow multiple use of the area, including mining, but would prohibit lands sales except for what might be required for resource development. (See Management Unit 3 for more details.)

5. Minerals

This subregion will remain open to mineral exploration and development and to oil and gas leasing. Mineral development, including necessary roads and workcamps, should be designed to minimize impacts on important wildlife and recreation values in this unit.

6. Access

The road/rail system that would provide access to the Susitna hydroelectric project is the only major access improvement being considered in the area. The Power Authority's proposed access route, described in the FERC license application, would provide access to the Watana Dam site from the Denali Highway via Deadman Creek. The Devils Canyon site would be provided with access via a railroad spur from near Gold Creek (on the existing RR line) and via a road on the north side of the Susitna River from the Watana site. A final decision on the planned access route will be made through the environmental impact statement review process.

7. Stream Corridors

The headwaters of many major streams lie in the Talkeetna Mountains. Management of these corridors will be determined on a case-by-case basis consistent with the management objectives for the more heavily used downstream segments of the rivers. In general, the objectives for the rivers originating in this subregion will be to protect water quality, fish and wildlife habitat, and public access.

8. Susitna Hydroelectric Project

As mentioned, the two proposed Susitna hydroelectric dam sites are located within this subregion. The plan does not address any of the basic issues concerning the direct social, fiscal or environmental impacts of this project. This task is being addressed by the FERC licensing process and by the many state and federal agencies already working on the project. Several of the indirect impacts of the hydro project are, however, within the purview of the plan, and will be addressed here. (Note: Because the issues associated with the hydro project affect virtually the entire subregion, these issues will be discussed here for the whole subregion rather than within each of the three management units.)

Four issues addressed by the plan are mitigation lands, land ownership, and recreation and settlement associated with the project. Each are discussed below.

a. Mitigation Lands

Construction of the Susitna Hydroelectric project would have significant effects on terrestrial and aquatic habitats. One proposed method for mitigating the loss of wildlife habitat that would be inundated or disturbed by the hydro project is to designate and manage nearby lands in a way that compensates for this loss. The Alaska Power Authority estimates that roughly 20,000 acres of land would be needed to adequately compensate for the predicted loss of habitat lands.

No compensation lands have been depicted in this agency review draft plan. The Power Authority has prepared a description of the objectives to be met by identifying mitigation lands, criteria for selecting such areas, and lastly, identified a large pool of possible mitigation lands. This information is presented in Appendix 2. The final determination of mitigation strategies and, if appropriate, mitigation lands, will be done after the plan is complete.

b. Land Ownership

Nearly all of the land where the proposed dams, reservoirs, and associated facilities are planned to be located are selected by or intermly conveyed to Cook Inlet Region Inc. and its village corporations. If the hydro project is approved, the state has the option to condemn or buy these lands or trade for lands in other areas. Roughly 40,000 acres of land are at issue, however, the Power Authority estimates as little as 16,000 acres will actually have to be acquired. Final decisions related to land acquisition will be made in light of the plan's designations on land adjacent to the project and on possible trading stock lands.

c. Settlement Associated with the Dam Project












If the project is constructed this would increase development pressures on the portions of the planning area that are already settled and also, due to construction of new access, open new areas to settlement pressures. On the first of these two issues, sufficient private land presently exists to accommodate the predicted level of population growth associated with the project. Regarding possible new settlement areas, no plans can be made until a final decision is made on the location and mode of new access into the area. However, whatever route is ultimately chosen, DNR will follow a settlement policy of "commensurate impact". This means that in locations where the Power Authority is making a special effort (e.g., through road design and siting) to protect some aspect of environmental quality, DNR will not negate this effort through selling land in the particularly sensitive area. On the other hand, portions of the area opened as a result of the project likely will be able to support some land sales (or cabin construction under the remote cabin program) with an acceptable level of environmental impact. Overall, DNR does not intend to sell much land in this area, since it has limited physical capability to support settlement and is generally sensitive to development.

d. Recreation Associated with Dam Project

The area surrounding the project has good potential for various types of new, developed recreation activities. As part of the FERC application the Power Authority and the State Division of Parks and Outdoor Recreation are working together to finalize a plan identifying areas for trails, camping, dispersed recreation, etc.

Match Line

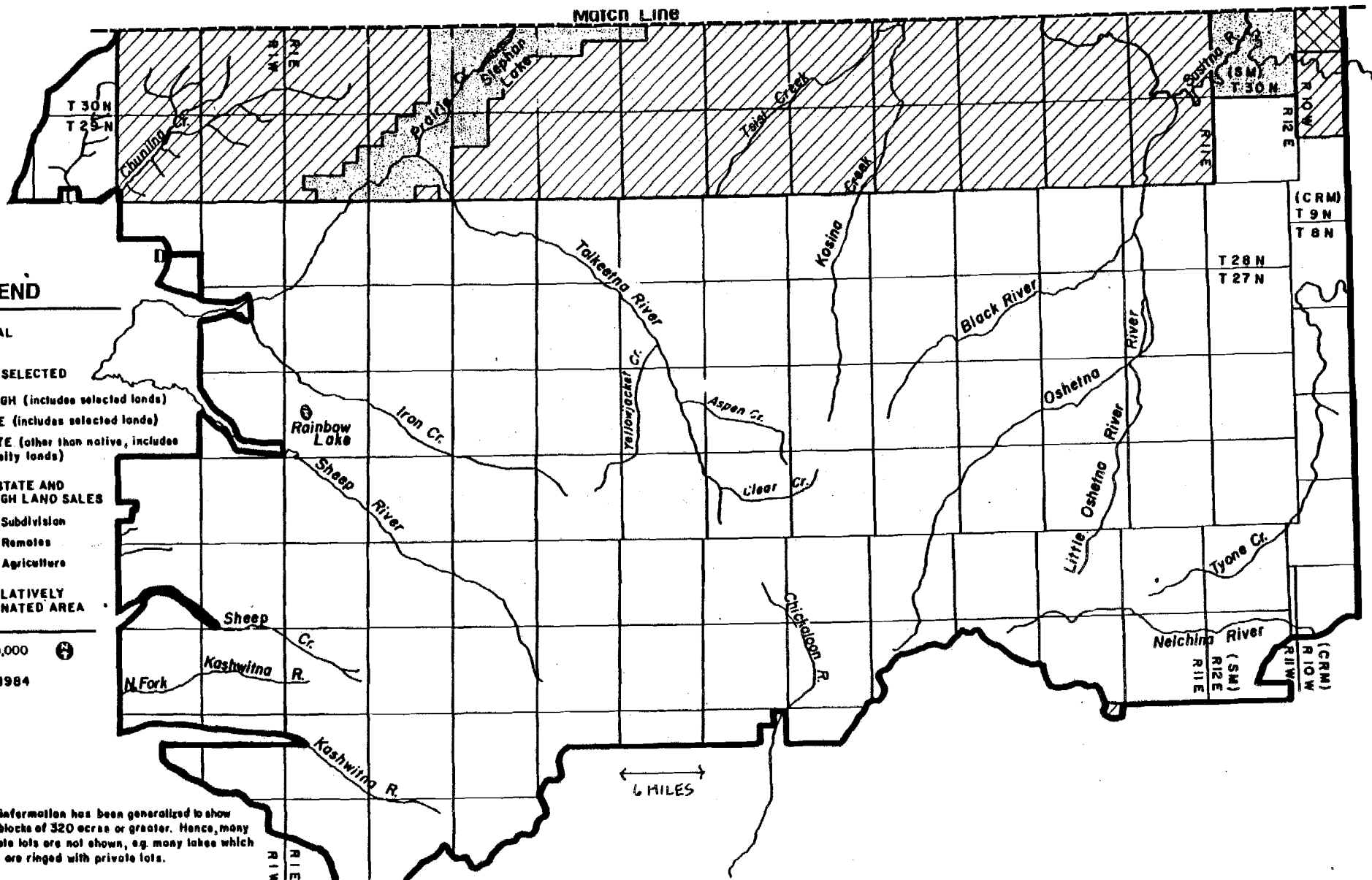
LEGEND

-  FEDERAL
-  STATE
-  STATE SELECTED
-  BOROUGH (includes selected lands)
-  NATIVE (includes selected lands)
-  PRIVATE (other than native, includes university lands)
-  PAST STATE AND BOROUGH LAND SALES
-  Subdivision
-  Remotes
-  Agriculture
-  LEGISLATIVELY DESIGNATED AREA

SCALE 1:250,000

JANUARY 1984

NOTE: This information has been generalized to show ownership in blocks of 320 acres or greater. Hence, many isolated private lots are not shown, eg. many lakes which appear public are ringed with private lots.



TALKEETNA MOUNTAINS

Land Use Designations

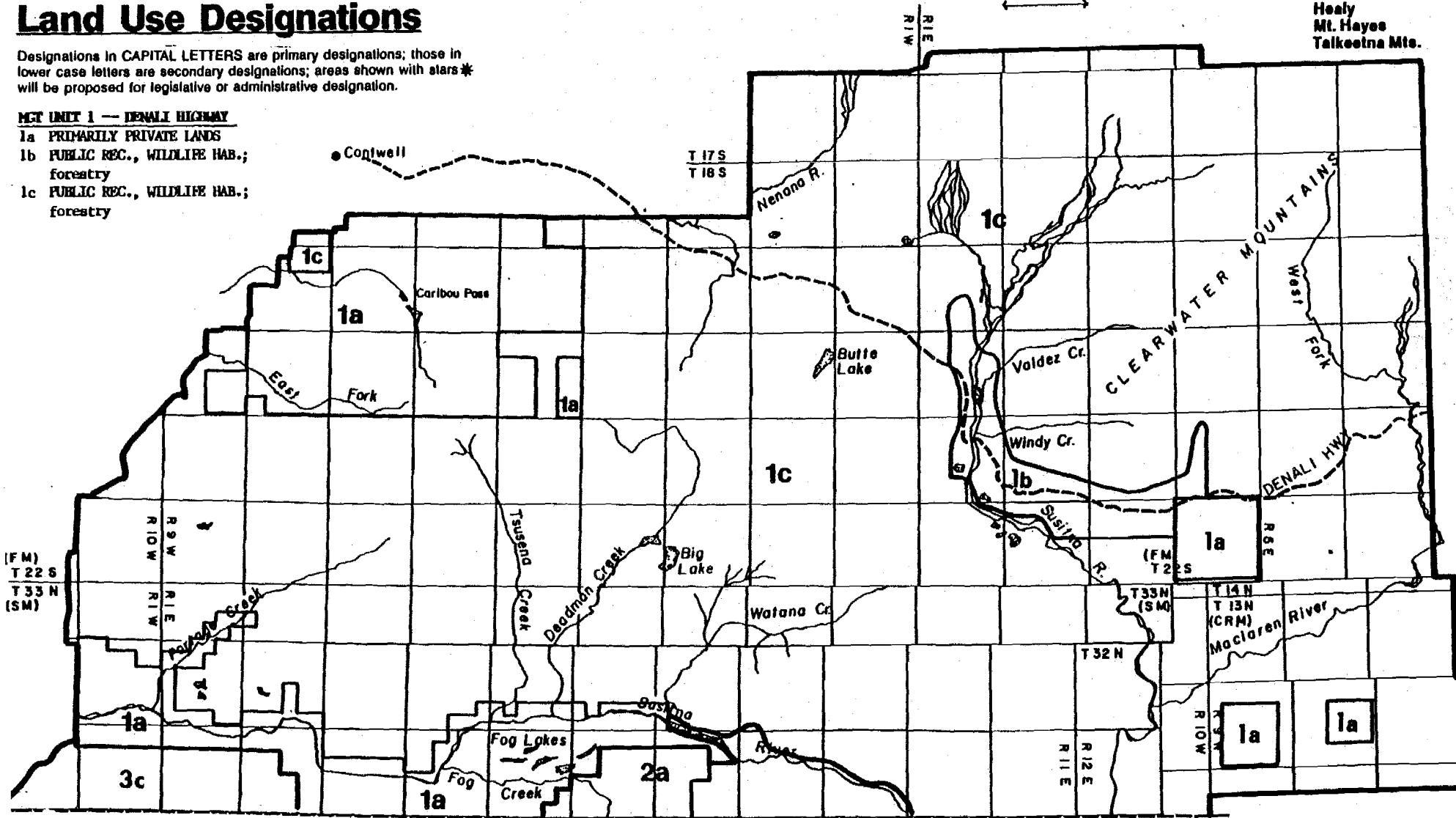
Designations in CAPITAL LETTERS are primary designations; those in lower case letters are secondary designations; areas shown with stars * will be proposed for legislative or administrative designation.

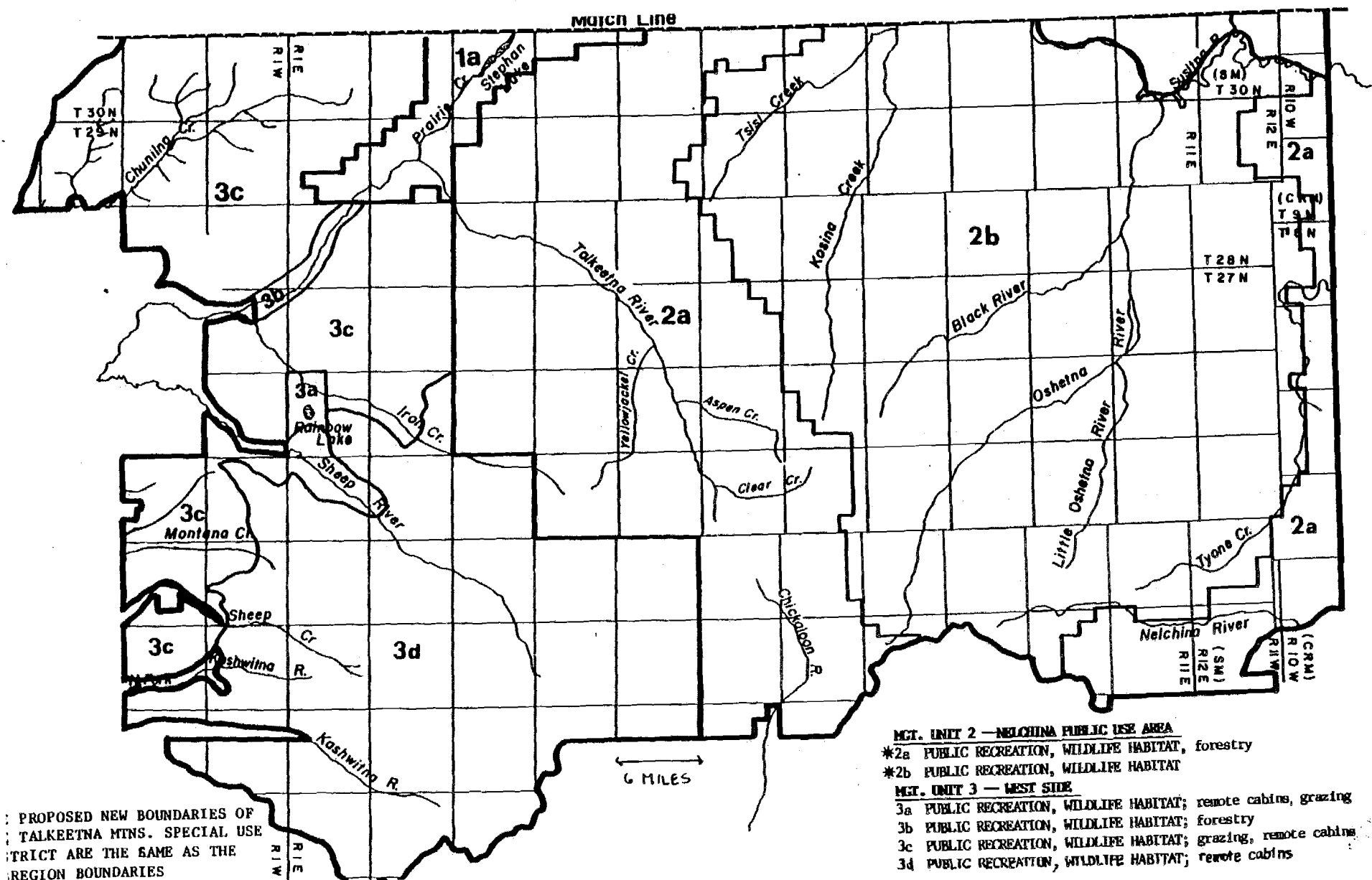
MCT UNIT 1 -- DENALI HIGHWAY

- 1a PRIMARILY PRIVATE LANDS
- 1b PUBLIC REC., WILDLIFE HAB.; forestry
- 1c PUBLIC REC., WILDLIFE HAB.; forestry

U.S.G.S. Quads:
Gulkana
Healy
Mt. Hayes
Talkeetna Mts.

6 MILES





LAND USE SUMMARY

SUBREGION TALKEETNA MTS.

MANAGEMENT UNIT 1 - DENALI HIGHWAY

MGMT. UNIT/ SUBUNIT	ANALYSIS UNIT NUMBERS	LAND OWNERSHIP (GENERALIZED)	LAND USE DESIGNATIONS		PROHIBITED SURFACE USE(S) ¹	MINERALS		COMMENTS
			PRIMARY USE(S)	SECONDARY USE(S)		MGMT. OF LOCATABLE MINERALS	MGMT. OF LEASEABLE MINERALS	
1a Native Lands	This information will be added in the final draft	Native (patented, interim conveyed and selected)	Primarily Private Land-- Recommended Uses: Wildlife Habitat, Public Recreation, Limited Settlement		---	---	---	---
1b Denali Highway East		Federal	Wildlife Habitat Public Recreation	Forestry (personal use)	Remote Cabins Grazing	Open	Available for leasing	
1c Upper Susitna		Federal/ State/State Selected	Wildlife Habitat Public Recreation	Forestry (personal use)	Remote Cabins Grazing	Open	Available for leasing	

¹Other uses such as material sales, land leases, remote cabin leases, etc., that are not specifically prohibited may be allowed. Such uses will be allowed if consistent with the management intent and management guidelines of this unit, and with the relevant management guidelines in chapter 2.

LAND USE SUMMARY

SUBREGION TALKEETNA MTS.

MANAGEMENT UNIT

2 - NELCHINA PUBLIC
USE AREA

MGMT. UNIT/ SUBUNIT	ANALYSIS UNIT NUMBERS	LAND OWNERSHIP (GENERALIZED)	LAND USE DESIGNATIONS		PROHIBITED SURFACE USE(S) ¹	MINERALS		COMMENTS
			PRIMARY USE(S)	SECONDARY USE(S)		MGMT. OF LOCATABLE MINERALS	MGMT. OF LEASEABLE MINERALS	
2a Nelchina Public Use Area except caribou calving grounds	This infor- mation will be added in the final draft	State/State Selected	Wildlife Habitat Public Recreation	Forestry	Grazing Land Disposals	Open	Available for leasing	Proposed for legislative or administrative designation as the Nelchina Public Use Area
2b Caribou Calving Grounds		State	Wildlife Habitat Public Recreation	---	Grazing Land Disposals	Open	Available for leasing	

¹Other uses such as material sales, land leases, remote cabin leases, etc., that are not specifically prohibited may be allowed. Such uses will be allowed if consistent with the management intent and management guidelines of this unit, and with the relevant management guidelines in chapter 2.

LAND USE SUMMARY

SUBREGION

TALKEETNA MTS.

MANAGEMENT UNIT

3 - WESTERN
TALKEETNAS

MGMT. UNIT/ SUBUNIT	ANALYSIS UNIT NUMBERS	LAND OWNERSHIP (GENERALIZED)	LAND USE DESIGNATIONS		PROHIBITED SURFACE USE(S) ¹	MINERALS		COMMENTS
			PRIMARY USE(S)	SECONDARY USE(S)		MGMT. OF LOCATABLE MINERALS	MGMT. OF LEASEABLE MINERALS	
3a Rainbow Lake	This information will be added in the final draft	State	Public Recreation Wildlife Habitat	Remote Cabins Grazing	Land Disposals	Open	Available for leasing	
3b Talkeetna River		State	Public Recreation Wildlife Habitat	Forestry (personal use)	Trapper Cabins Land Disposals Grazing	Open	Available for leasing	Proposed for legislative or administrative designation
3c Wells Mountain		State/State Selected	Public Recreation Wildlife Habitat	Grazing Remote Cabins	Land Disposals	Open	Available for leasing	
3d Sheep Haven		State	Public Recreation Wildlife Habitat	Remote Cabins	Grazing Land Disposals	Open	Available for leasing	

¹Other uses such as material sales, land leases, remote cabin leases, etc., that are not specifically prohibited may be allowed. Such uses will be allowed if consistent with the management intent and management guidelines of this unit, and with the relevant management guidelines in chapter 2.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Vegetation

LOCATION IN DEIS: Vol 5 Page J-3 Section J.1.2 Paragraph 4 of the page
Page J-26 Table J-7 Section J.1.2.1

COMMENT IN REFERENCE TO: DEIS comments that Figure E.3.38 of Exhibit E
represents the entire upper and middle Susitna
Basin.

TECHNICAL COMMENT: The DEIS states that Figure E.3.38 of Exhibit E
represents the entire upper and middle Susitna Basin and then represents the
data in Table J-7 as including this entire area. This is inconsistent with
the Applicant's definitions of the upper and middle Susitna Basins (see
APA 1983, Figure E.3.3 in Exhibit E) which is a larger area. The area
represented in Figure E.3.38 is referred to as the Watana and Gold Creek
watersheds in Exhibit E (see APA 1983, Fig. E.3.36 of Exhibit E), which is a
subset of the upper and middle Susitna Basin. We have not observed a
redefinition of this latter area in the DEIS and, therefore, recommend that
the area be clearly redefined or the text be made consistent with Exhibit E.
The inconsistency affects all later tables and text where a percentage of
total area is given.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Rime Ice, Vegetation, Wildlife Resources

LOCATION IN DEIS: Vol 5 Page J-55 Section J.2.1.1.2 Paragraph 8 of the
page

COMMENT IN REFERENCE TO: DEIS statements on rime ice.

TECHNICAL COMMENT: Please refer to Technical Comment TRR020.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Vegetation, Transmission Lines and Corridors, Impacts

LOCATION IN DEIS: Vol 5 Page J-69 Section J.2.1.4.2 Paragraphs 2 and 3
of the page (Reference Tables J-30 and J-31)

COMMENT IN REFERENCE TO: Incorrect numbers in Tables J-30 and J-31 and the
resultant need for correction to other tables and text.

TECHNICAL COMMENT: Two tables in the DEIS Volume 5 are incorrect; Tables J-
30 and J-31, on pages J-70 and J-71, respectively. The correct figures for
Table J-30 can be found in Table E-3-79 (Reference I.370.2) in the Responses
to Agency Comments on License Application, submitted February 15, 1984.

Discrepancies in Tables J-30 and 31 are due to errors in the right-of-way
clearing widths used. The clearing width used in Tables J-30 and 31 was 190
feet from Gold Creek to Healy and 290 feet from Gold Creek to Willow. The
correct clearing width as used in revised Table E-3-79 is 130 feet from Gold
Creek to Healy and 230 feet from Gold Creek to Willow.

The corresponding text in the DEIS Volume 5 should be changed as follows:
(p.J-69) J.2.1.4.2 Healy-to-Willow Segment Construction

...Approximately 3400 acres (1400 ha) of vegetation would be crossed by the
Susitna addition to the existing Healy-to-Willow intertie right-of-way
(Table J-30). From Gold Creek to Healy the addition would be 130 feet (40m)
wide, and from Gold Creek to Willow the addition would be 230 feet (70m)
wide. The area of 3400 acres (1400 ha) represents a worst-case estimate...

...As a worst-case estimate, the Healy-to-Willow segment would cross about
2400 acres (970 ha) of potential wetland types (Table J-31).....

Due to changes in Tables J-30 and J-31, summary Table 4-3 in the DEIS Volume 5, page 4-34 is in need of revision as follows:

Facility and Type of Loss	<u>Affected Acreage by Vegetation Type</u>				Potential
	Forest	Shrubland	Tundra	Total	Wetland
				Vegetated Area	Acreage
					Affected
<u>Vegetation Disturbance</u>					
Transmission Line Corridors	5900	2900	1500	10,000	6700

Portions of the DEIS Volume 1 text that subsequently require modification include:

Page 4-35, paragraph 6, first sentence:

The 10,000 acres (4050 ha) of vegetated area to be crossed by the proposed transmission corridors (Table 4-3) represent a worst-case estimate of vegetation that would be impacted....

page 4-35, paragraph 6, last sentence:

As a worst-case estimate, 6700 acres (2700 ha) of potential wetlands would be....

Additional portions of the text and/or tables may also need to be modified to reflect these changes.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Caribou, Population

LOCATION IN DEIS: Vol 5 Page K-12 Section K.2.1.1.2 Paragraphs 4 & 5 of
the page

COMMENT IN REFERENCE TO: Estimated size of the Nelchina herd and the Upper
Susitna - Nenana subherd.

TECHNICAL COMMENT: Please refer to Technical Comment TRR004.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Brown Bear Denning

LOCATION IN DEIS: Vol 5 Page K-19 Section K.2.1.1.5 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: DEIS comment, "Of 31 dens found in the area, only
three occurred at elevations below 2,500 ft (760m)."

TECHNICAL COMMENT: On the basis of Miller (1984), the number of brown bear
dens observed in the area should be amended to 50 dens. It remains true,
as stated, that only three of these dens were below 2,500 feet and that none
of them were in the impoundment zones or near project features.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear

LOCATION IN DEIS: Vol 5 Page K-19 Section K.2.1.1.5 Paragraph 5 of the page

COMMENT IN REFERENCE TO: DEIS comment, "Miller (1983) surveyed for black bear in a 1,600 square-mile (4,200 km²) study area within the upper and middle Susitna Basin."

TECHNICAL COMMENT: The 1,600-square mile area referred to encompassed only the middle Susitna Basin between Devil Creek and the Vee Canyon gauging station; this was the 1980/81 study area (Miller and McAllister 1982). This upstream study area was retained during the 1981/82 and 1982/83 programs (Miller 1983 and 1984, respectively). During 1981/82, a downstream study area was added, extending over approximately 447 square-miles (1157 sq. km) from about Portage Creek to Curry (Miller 1983). This downstream study area was retained in the 1982/83 program (Miller 1984).

Therefore, the sentence quoted above from Appendix K should be amended to state that black bear studies conducted by Miller and McAllister (1982) during the 1980/81 season included a 1,600-sq. mi (4,200-square-mile km) area of the middle Susitna Basin, whereas subsequent studies during 1981/82 and 1982/83 were conducted over a total of 2,047 square miles (5,357 sq. km) including the middle Susitna Basin from Vee Canyon to Devil Creek, and a portion of the lower basin extending from Portage Creek to Curry (Miller 1983, 1984).

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear

LOCATION IN DEIS: Vol 5 Page K-19 Section K.2.1.1.5 Paragraph 7 of the
page

COMMENT IN REFERENCE TO: DEIS comment states that 54 black bear dens were
located by Miller and McAllister (1982) and by Miller (1983).

TECHNICAL COMMENT: Please refer to Technical Comment TRR007 for updated
information on black bear dens.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear

LOCATION IN DEIS: Vol 5 Page K-19 Section K.2.1.1.5 Paragraph 7 of page

COMMENT IN REFERENCE TO: Statements regarding elevations of black bear
dens.

TECHNICAL COMMENT: Please refer to Technical Comment TRR007.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Eagles, Raptors, Impacts, Filling

LOCATION IN DEIS: Vol 5 Page K-23 Section K.2.1.1.11 Paragraph 9 of page

COMMENT IN REFERENCE TO: Update of raptor and raven nest locations and
numbers.

TECHNICAL COMMENT: Please refer to Technical Comment TRR008 for an update
on the locations and numbers of raptor and raven nest locations in the
project vicinity.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Peregrine Falcon, Endangered Species, Access Roads, Reservoir

LOCATION IN DEIS: Vol 5 Page K-30 Section K.2.1.1.18 Paragraph 1 of page

COMMENT IN REFERENCE TO: DEIS statements regarding peregrine falcons in the vicinity of the proposed dams, reservoirs, and access routes.

TECHNICAL COMMENT: Please refer to Technical Comment TRR010.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Habitat, Thermal

LOCATION IN DEIS: Vol 5 Page K-36 Section K.2.3.1.2 Paragraph 1 of the page

COMMENT IN REFERENCE TO: Wildlife description

TECHNICAL COMMENT: As a point of clarification, the gas facility would be located near the community of Kenai which is surrounded by lowland spruce-birch forest and associated wetlands and is approximately 40 miles from the nearest Dall sheep or mountain goat habitat. Also, much of the area near Kenai represents high-quality moose, black bear, waterfowl, and furbearer habitat.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Resources

LOCATION IN DEIS: Vol 5 Page K-36 Section K.2.3.1.3 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: DEIS description of wildlife in Anchorage.

TECHNICAL COMMENT: Please refer to Technical Comment TRR013.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Wildlife Resources, Habitat, Alternatives

LOCATION IN DEIS: Vol 5 Page K-36 and K-37 Section K.2.3.3 All paragraphs

COMMENT IN REFERENCE TO: DEIS description of the wildlife at each alternative hydro site.

TECHNICAL COMMENT: Please refer to Technical Comment TRR017.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear, Alternatives

LOCATION IN DEIS: Vol 5 Page K-37 Section K.2.3.1 Paragraph 1 of the
page

COMMENT IN REFERENCE TO: Black and brown bear abundance at Chakachamna Lake
hydro site.

TECHNICAL COMMENT: Please refer to Technical Comment TRR015.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Furbearers, Alternatives

LOCATION IN DEIS: Vol 5 Page K-37 Section K.2.3.3.2 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: DEIS comment, "Furbearers occur along the Nenana
River but do not appear to be very common."

TECHNICAL COMMENT: Please refer to Technical Comment TRR016.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose, Impacts, Proposed Project

LOCATION IN DEIS: Vol 5 Page K-38 Section K.3.1.1.1 Paragraph 5 of the page

COMMENT IN REFERENCE TO: Preliminary calculations of winter carrying capacity.

TECHNICAL COMMENT: Reference is made in the text to Table K-5, this table deals with trapper exports and dealer purchases of furbearer pelts, not calculations concerning moose winter carrying capacity. The table actually being referred to appears to be Table K-2.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Moose, Impacts

LOCATION IN DEIS: Vol 5 Page K-41 Section K.3.1.1.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: Moose impact estimates.

TECHNICAL COMMENT: The estimate of 2200 moose that presently range through
the area of the Devil Canyon and Watana impoundments is an overestimate.
Please refer to Technical Comment TRR021.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear

LOCATION IN DEIS: Vol 5 Page K-46 Section K.3.1.1.1 (Reference Table K-12) Paragraph 2 of the page

COMMENT IN REFERENCE TO: Statements regarding black bear denning.

TECHNICAL COMMENT: Please refer to Technical Comment TRR007.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Eagles, Raptors, Impacts

LOCATION IN DEIS: Vol 5 Page K-50 Section K.3.1.1.1 Paragraphs 5 and 6
of the page

COMMENT IN REFERENCE TO: Update on raptor and raven nest locations and
numbers.

TECHNICAL COMMENT: Please refer to Technical Comment TRR008 for an update
on the number of raptor and raven nest locations to be inundated and the
number occurring in the project vicinity.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Caribou, Ice Cover, Reservoir

LOCATION IN DEIS: Vol 5 Page K-56 Section K.3.1.1.2 Paragraph 5 of the page

COMMENT IN REFERENCE TO: DEIS implication that the impoundment would create ice-related problems (floating ice, unstable ice conditions, open mud flats and snow drifts) that could hinder movements and pose threats of mortal and debilitating injury.

TECHNICAL COMMENT: Current data indicate that caribou mainly cross the Susitna River in the area between Deadman Creek and Jay Creek. These crossings occur during spring migration (crossing from early April to mid-May), as a result of post-calving movements (crossing in June and July), and crossing from August to October during autumn dispersal (Pitcher 1982, 1983). The movement period of interest, with regard to ice on and in the river, is the spring crossing. Crossings during post-calving movements and autumn dispersals occur during ice-free periods at present, and will continue as under with-project conditions. Available historical records indicate that the Susitna River generally breaks up in early to mid-May (R&M 1981, pages 4-10 to 4-11). Under present conditions caribou cross the river in early to mid-April on the ice. Caribou crossing during late-April to mid-May might encounter open water, floating ice, unstable ice conditions, and minimum water velocities of 2.5 to 5 ft/sec.

Ice conditions that may exist with the proposed Watana dam in place have been simulated using the DYRESM Reservoir Temperature and Ice Model. Computer simulations have been performed using weather and water temperature data from 1971-72, 74-75, 76-77, 81-83 (Appendix, Reservoir Temperature and Ice Model). The general trend for ice thickness and breakup, as determined from computer simulation, is similar to general conditions presently observed on the river. That is, breakup would occur in early to mid-May, with thick ice still present on the reservoir in April.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Dall Sheep, Impacts

LOCATION IN DEIS: Vol 5 Page K-57 Section K.3.1.1.2 Paragraphs 1-8 of
the page

COMMENT IN REFERENCE TO: DEIS statements relative to Jay Creek Lick
impacts.

TECHNICAL COMMENT: Please refer to Technical Comment TRR026 for updated
information on Jay Creek Lick impacts.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Moose, Impacts

LOCATION IN DEIS: Vol 5 Page K-60 Section K.3.1.2.1 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: Moose impact estimates.

TECHNICAL COMMENT: The estimate of 450 moose that would be affected by the
Devil Canyon impoundment appears to be an overestimate. Please refer to
Technical Comment TRR021.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear

LOCATION IN DEIS: Vol 5 Page K-64 Section K.3.1.2.1 (Reference Table K-21) Paragraph 7 of the page

COMMENT IN REFERENCE TO: Statements regarding black bear denning.

TECHNICAL COMMENT: Please refer to Technical Comment TRR007.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Eagles, Raptors, Impacts, Filling

LOCATION IN DEIS: Vol 5 Page K-65 Section K.3.1.2.1(Reference Table K-22)
Paragraph 1 of the page

COMMENT IN REFERENCE TO: Update on raptor and raven nest locations and numbers.

TECHNICAL COMMENT: Please refer to Technical Comment TRR008 for an update on the number of raptor and raven nest locations to be inundated and the number occurring in the project vicinity.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Bear, Access Roads

LOCATION IN DEIS: Vol 5 Page K-67 Section K.3.1.3.1 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: Access road disturbance to brown bear denning.

TECHNICAL COMMENT: Please refer to Technical Comment TRR005.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose, Vegetation, Transmission Lines and Corridors, Access Roads

LOCATION IN DEIS: Vol 5 Page K-70 Section K.3.1.4.1 Paragraph 2 of the page

COMMENT IN REFERENCE TO: The comment based upon Wolff and Zasada's 1979 study regarding utilization of forage in right-of-way.

TECHNICAL COMMENT: Please refer to Technical Comment TRR024.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Transmission Lines and Corridors

LOCATION IN DEIS: Vol. 5 Page K-70 Section K.2.1.4.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: Reference to black bear use of transmission line
right-of-way.

TECHNICAL COMMENT: Please refer to Technical Comment TRR029.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Eagles, Raptors, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 5 Page K-76 Section K.3.3.1 Paragraph 2 of the page

COMMENT IN REFERENCE TO: Raptors in natural gas impacted areas.

TECHNICAL COMMENT: There is no mention made in the discussion of animal communities for the natural gas scenario concerning the projects impact on raptorial birds. There are 3 recorded bald eagle nest sites in the Chuitna River drainage (Cook Inlet Region, Inc., and Placer Amax, Inc. 1981)-- all in close proximity to the proposed Chuitna combined gas plant. The DEIS must address these bald eagle nest sites and probable impacts.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Moose, Natural Gas Plants, Impacts

LOCATION IN DEIS: Vol 5 Page K-76 Section K.3.3.1 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: Statements on moose impacts.

TECHNICAL COMMENT: Please refer to Technical Comment TRR034.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Wildlife Resources, Habitat, Alternatives, Impacts

LOCATION IN DEIS: Vol 5 Page K-79 Section K.3.4. Paragraph 1 of the page

COMMENT IN REFERENCE TO: DEIS comments on the value of habitat affected by combined hydrothermal scenario.

TECHNICAL COMMENT: Please refer to Technical Comment TRR039.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Bear, Impacts

LOCATION IN DEIS: Vol 5 Page K-83 Section K.5.1 Paragraph 8 of the page

COMMENT IN REFERENCE TO: DEIS statement on black bear denning impacts.

TECHNICAL COMMENT: This statement is misleading. Please refer to Technical Comment TRR007 for an update on the percentage of black bear dens occurring in the vicinity of the impoundments that would be inundated. Based on all available information this percentage is 34 percent, not 55 percent (Miller, 1984). Moreover, the DEIS implies that the percentage refers to the entire Susitna basin or at least the middle and upper basin bear population. However, the dens considered in these percentage figures are based only on those dens in the vicinity of the impoundment zones. If data were available for the entire basin or even just the entire middle and upper basins and these data were included in these percentages, then the percentage of dens to be inundated would be far less.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Dall Sheep, Impacts

LOCATION IN DEIS: Vol 5 Page K-83 Section K.5.1. Paragraph 11 of the
page

COMMENT IN REFERENCE TO: DEIS statements relative to Jay Creek Lick
impacts.

TECHNICAL COMMENT: Please refer to Technical Comment TRR026 for updated
information on Jay Creek Lick impacts.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Eagles, Raptors, Impacts

LOCATION IN DEIS: Vol 5 Page K-83 Section K.5.1 Paragraph 13 of the
page

COMMENT IN REFERENCE TO: DEIS statements on numbers of eagle nest impacts.

TECHNICAL COMMENT: The references to eagle nest impacts are not up-to-date.
Please refer to Technical Comment TRR008 for the corrections.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Mitigation

LOCATION IN DEIS: Vol 1 Page 2-29 Section 2.1.12.9 Paragraph 3 of page

COMMENT IN REFERENCE TO: "The Applicant has recommended the investigation of all significant...sites...subject to unavoidable direct or indirect impact."

TECHNICAL COMMENT: FERC Staff should note that investigation (excavation) of all directly and indirectly impacted sites may not be necessary. Which sites are investigated, and the extent to which they will be subject to investigation, will depend upon the manner and degree to which they can contribute to archeological research as measured against specific research questions currently being developed. The sentence should be rephrased as follows: "The Applicant has recommended the investigation of significant cultural resource sites (i.e., those eligible for inclusion in the National Register of Historic Places) that would be subject to unavoidable direct or indirect impacts resulting from project development. A mitigation plan to guide investigation is being developed on the basis of specific research questions for the project area. Preservation by...."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 1 Page 2-29 Section 2.1.12.9 Paragraph 3 of page

COMMENT IN REFERENCE TO: "sites that would be exposed to potential impacts"

TECHNICAL COMMENT: All impacts should be classified as direct or indirect, and references to potential impacts should be deleted. The DEIS notes (p. 0-17) that "for legal purposes [potential impacts] may be considered as indirect impacts."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Mitigation

LOCATION IN DEIS: Vol 1 Page 2-48 Section 2.7.9 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "Investigation...required for...sites exposed to direct and indirect impact,...while preservation...(with monitoring) for potentially impacted significant sites."

TECHNICAL COMMENT: See Technical Comments SSC002 and SSC003.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Mitigation, Cultural Resources

LOCATION IN DEIS: Vol 1 Page 2-48 Section 2.7.9 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "Significant sites in areas that would be impacted by non-hydro generation facilities would probably be mitigable by avoidance."

TECHNICAL COMMENT: The DEIS presents no evidence to support the conclusion that avoidance is more viable for non-hydro developments. Fossil fuel units must be located with respect to many factors and will not necessarily be easier to relocate. FERC staff should review the data and drop the sentence or (if appropriate) rephrase it to suggest that non-hydro generation facilities may impact fewer significant sites because these facilities require smaller land areas and/or may be sited in environments that are likely to have fewer cultural resource sites.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Management, Proposed Project

LOCATION IN DEIS: Vol 1 Page 3-4 Section 3.1.1.2.2 Paragraph 2, 3

COMMENT IN REFERENCE TO: Description of future land status and management of project area and transmission corridor.

TECHNICAL COMMENT: This section should include a brief summary of the DEIS Appendix F discussion of land use planning, particularly noting the draft Susitna Area Plan designation of the project area for multiple use.

The Susitna Area Plan contains an overview of the management intent for the Talkeetna Mountain Subregion (including the project area) which states, "The Talkeetna Subregion will be managed as a multiple use area emphasizing the uses that are most important in the area now ... Additional road access to the area and concentrated settlement on public lands will be contingent on a demonstrated need for such development in order to facilitate activities such as mining or dam construction." In addition, a special section on the Susitna Hydroelectric Project addresses mitigation measures for a number of indirect impacts to land use, ownership, settlement and recreation that would occur with the project. Consequently, the proposed project would not adversely affect management of the Talkeetna Mountain Subregion.

See ADNR et al. (1984) and Technical Comment SSC074.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 3-34 Section 3.1.7

COMMENT IN REFERENCE TO: Potential overuse, competition, and resource degradation.

TECHNICAL COMMENT: In general, this section does not include any discussions of present or projected use of recreation resources in any of the project area, nor does it discuss the relative capacity of the resources to absorb greater use.

The recreation plan proposed by the Applicant took into consideration recreation demand with the project and sensitive resource areas in terms of natural value, durability and recreation carrying capacities (License Application, Exhibit E, Volume 8, Chapter 7, Pages 43 through 47 and Pages 62 through 95). As a result of this effort, facilities were proposed which would meet projected demand and disperse use to minimize competition and protect sensitive resource areas.

The plan addresses the requirements of the FERC regulations regarding recreation. In view of the abundance of recreational resources, and the paucity of road-accessible opportunities in the region, the plan will well serve the general public.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population, Population Projections

LOCATION IN DEIS: Vol 1 Page 3-38 Section 3.1.8.1 Paragraph 8 of the page
(Table 3-4)

COMMENT IN REFERENCE TO: The DEIS discusses three sets of baseline projections. They compare the three and choose from among them the ISER baseline for calculating socioeconomic impacts.

TECHNICAL COMMENT: The DEIS socioeconomic forecasts for the Matanuska-Susitna Borough are based on a report published in February 1983 by the Institute of Social and Economic Research (ISER) for the University of Alaska (ISER 1983a). These forecasts were computed by ISER by disaggregating a set of statewide forecasts, which were also published in February 1983.

The statewide forecasts from which the DEIS forecasts were derived were generated by ISER's Man-in-the-Arctic Program (MAP) Model (ISER 1983b). The forecasts are based on a series of assumptions concerning Alaska state petroleum revenues, industrial developments, and a number of other economic and demographic factors. These statewide forecasts were then distributed to each of 20 regions by a regionalization submodel. This submodel disaggregates statewide forecasts based on expectations in each region for basic and certain other economic development, leaving the sum total of regional population, employment, and all other forecasted factors equal to the state total for each year. Shifts in development trends among regions are not assumed to occur.

Differences between the DEIS and License Application forecasts for the Mat-Su Borough are attributable mostly to the application of two different sets of assumptions and different disaggregation procedures.

among regions. The advisability of taking into account such region-specific factors is suggested throughout the documentation of the MAP Model. See for example, page E-1 of the License Application Volume 2B, ISER (1983b) and the first page of the Introduction of ISER (1983a).

While such shifts are relatively unimportant for the Railbelt as a whole, as indicated on Page E-25 of License Application Volume 2B, they are quite important for the Mat-Su Borough.

In view of the advantages offered by the Applicant's population forecasts for the Mat-Su Borough, it is suggested that the socioeconomic impact analyses presented in the DEIS be revised and based on the Applicant's forecasts.

The differences in assumptions are in exogenous economic development scenarios and in state petroleum revenue levels. Of these two factors, the different assumptions for state petroleum revenues is by far the more important in explaining differences in the statewide forecasts from which the two sets of regional forecasts are derived. The DEIS forecasts are based on state petroleum revenue forecasts generated in December 1982, while the License Application regional forecasts are based on petroleum revenue forecasts from 1981, at which time world oil prices were higher and future state revenues were expected to be at higher levels.

The DEIS forecasts were prepared using the MAP Model's regionalization submodel, which disaggregates statewide forecasts mostly on the basis of existing distribution of employment and population and expected exogenous developments that are attributed to specific regions. The License Application forecasts were disaggregated from MAP Model forecasts for the six-region Railbelt, taking into account recent and expected trends in employment and population shifts between regions. In this disaggregation process, it was assumed that the recent trend toward greater development in the area north of Anchorage will continue, and that the overall growth rate in the Mat-Su Borough will be substantially greater than for the Railbelt as a whole.

The License Application socioeconomic forecasts for the Mat-Su Borough offer two major advantages over those used in the DEIS. First, the state petroleum revenue forecasts used in the License Application socioeconomic forecasts for the Mat-Su Borough are substantially closer to those used in the July 1983 filing in support of the need for the Susitna Hydroelectric Project than are the revenue forecasts from which the DEIS forecasts are derived. The basis for the higher revenue forecasts used in the July filing is explained in detail in License Application Volume 2A.

Second, the methods used in the License Application for disaggregating forecasts to the Mat-Su Borough take into account the trends in and expectation for shifts

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Subsistence, Proposed Project

LOCATION IN DEIS: Vol 1 Page 3-41 Section 3.1.8.2 Paragraph 4 of the page

COMMENT IN REFERENCE TO: The discussion notes the importance of subsistence use and conflicts about the issue of subsistence use

TECHNICAL COMMENT: The DEIS discussion of subsistence use is based on data for locations outside the proposed project area (DEIS Appendix N). There is no indication that project area communities are similar to locations where specific data exists. Without demonstrating this similarity no generalization about the project area should be made from the data.

See Technical Comment SSC104.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population, Subsistence

LOCATION IN DEIS: Vol 1 Pages 3-44 to 3-49 Section 3.1.8.7 All paragraphs

COMMENT IN REFERENCE TO: The assessment of human use of wildlife resources for the Susitna Project.

TECHNICAL COMMENT: The Affected Environment and Environmental Impact Sections of DEIS Vol 1 include extensive discussions regarding human use of wildlife resources. This same topic has not been addressed for any of the five hydro alternatives or the thermal alternatives. Consequently, the overall impacts attributable to the alternative projects are likely to be greater than indicated.

This comment also applies to DEIS Section 4.1.8.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Proposed Project

LOCATION IN DEIS: Vol 1 Page 3-52 Section 3.1.9.3 Paragraphs 4-5 of page

COMMENT IN REFERENCE TO: Significant views of project area

TECHNICAL COMMENT: Discussion of viewsheds, of the affected environment, and visual sensitivity of areas would greatly assist in preparing discussions of impacts relative to the proposed project facilities. The visual sensitivity of the area is particularly important in evaluating the overall significance of the visual impact. Information related to number of viewers, position and duration of views, distance from viewer and viewer intent would bring this section up to the level of discussion of visual impacts for the transmission line presented in DEIS Appendix M.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 3-53 Section 3.1.10 Paragraph 2 of page

COMMENT IN REFERENCE TO: "...study area for the proposed project contains a total of 423...sites"

TECHNICAL COMMENT: The numbers of affected sites in Watana dam and impoundment, Devil Canyon dam and impoundment, along access routes and along transmission lines do not match data in Table 4.5 of UAM (1984). FERC Staff should review the data and correct the figures or explain the discrepancy.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 3-53 Section 3.1.10 Paragraph 4 of page

COMMENT IN REFERENCE TO: "Only one of the sites assessed to date has been termed insignificant....a large proportion of sites in the proposed...impoundment areas (but not other project areas) will be judged significant."

TECHNICAL COMMENT: Sites assessed to date appear to have been selected for systematic testing because reconnaissance survey yield a large number of artifacts. Hence, these sites may be atypical of the majority of sites in the project area. See Technical Comment SSC126.

The statement that sites outside impoundment areas will probably not be significant is questionable. The text should be revised to drop the parenthetical phrase "(but not other project areas)."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 3-56 Section 3.2.10 Paragraph 8 of page

COMMENT IN REFERENCE TO: "It appears likely that the majority of these sites, which lack a stratigraphic context, will not be termed significant."

TECHNICAL COMMENT: The stratigraphic context of a site is important, but it is not the only factor considered in evaluating significance. Site significance is a function of the extent to which data recovery at the site can answer research questions important in project area prehistory. The statement should be rephrased as follows: "...it appears likely that the majority of these sites, which lack a stratigraphic context, will not be termed significant unless these sites are shown to contribute information important in answering research questions in topics other than chronology."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 1 Page 3-57 Section 3.2.10 Paragraph 2 of page

COMMENT IN REFERENCE TO: "A high proportion of these sites are likely... significant, since a majority possess volcanic tephra stratigraphy."

TECHNICAL COMMENT: The presence of tephra stratigraphy is not a sufficient (although it may prove to be necessary in some cases) criterion for significance. Artifact type and density and artifact distribution within a particular site must be adequate to address specific research questions. The sentence should be rephrased as follows: "A high proportion of these sites are likely to be judged significant, since a majority possess volcanic tephra stratigraphy and may contain materials whose investigation can answer research questions important to the project area."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Alternatives, Thermal

LOCATION IN DEIS: Vol 1 Page 3-62 Section 3.3.9 Para 2, 3, & 4 of page

COMMENT IN REFERENCE TO: Descriptions of visual resources.

TECHNICAL COMMENT: The DEIS does not discuss the alternatives in enough detail to allow for an adequate evaluation or comparison. This section should include discussion of visual quality, visual absorption capabilities, prominent viewsheds, viewer numbers, view duration, visual impacts related to roads and transmission lines, and visual resources lost or impacted and their significance.

Comparison of the thermal scenarios should also be made to the Proposed Project in the same terms. Discussions should include impacts caused by air pollution and strip mining, as well as associated trains and pipelines. The comparison should be made combining the impacts for the entire hydrothermal scenario versus the Proposed Project, not just by individual alternatives sites.

Please refer to Appendix III of this document for further information.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 1 Page 3-62 Section 3.4 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "Few cultural resources have been discovered in the areas that would be affected by the natural gas generation scenario."

TECHNICAL COMMENT: FERC staff should clarify how the "areas" are being defined. Although the DEIS notes that surveys would be necessary to adequately assess impacts in these areas, the DEIS should make it clear that the lack of known resources is a result of lack of survey, not necessarily a lower site density than in the Proposed Project area.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Recreation Resources, Coal Plants

LOCATION IN DEIS: Vol 1 Page 3-64 Section 3.4.7 Paragraphs 3-5 of page

COMMENT IN REFERENCE TO: Discussion of recreation resources

TECHNICAL COMMENT: Discussion of recreation resources related to alternative sites needs to be more detailed in order to evaluate impacts and make fair comparisons with the Proposed Project. The DEIS should describe existing and proposed recreation sites as well as general levels of use in the vicinity of the alternative project sites. Additional information on recreation for the alternative hydro sites is available. See Appendix II of this document for more information on recreation for those areas.

The following references also include relevant recreation information: ADNR 1983a, ADNR and USDASCS 1982, ADNR et al. 1984, ADNR 1981.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Alternatives, Thermal

LOCATION IN DEIS: Vol 1 Page 3-64 Section 3.4.9 Paragraph 6 of the page

COMMENT IN REFERENCE TO: Descriptions of visual resources.

TECHNICAL COMMENT: This section should include discussions of scenic values, absorption capabilities, and levels of use for all areas affected including transmission line and access roads.

Please refer to Appendix III of this document for more information.

See also ADNR and USDASCS (1983b) for resources at Nenana and Healy coal mines and scenic designations, and ADNR (1981) for the same areas. See also Technical Comment SSC049.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Alternatives

LOCATION IN DEIS: Vol 1 Page 3-65 Section 3.5.1.2 Paragraph 8 of page

COMMENT IN REFERENCE TO: Several homesteads at Parson Lake

TECHNICAL COMMENT: Change "Parson" to "Larson".

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Hydroelectric, Alternatives

LOCATION: Vol 1 Page 3-70 Section 3.5.7 Paragraphs 1-5 of page

COMMENT IN REFERENCE TO: Discussion of recreation resources

TECHNICAL COMMENT: More information should be provided regarding recreation resources within the areas of the alternatives. See Technical Comment SSC018 and Appendix II of this document.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 1 Page 3-71 Section 3.5.9 Paragraphs 5-10 of the page

COMMENT IN REFERENCE TO: Discussion of visual resources.

TECHNICAL COMMENT: The DEIS does not discuss the alternatives in enough detail to allow for an adequate evaluation or comparison. More information is needed to adequately evaluate impacts of these alternatives and make comparisons with the proposed project. Discussions should include information on: visual quality of areas, visual absorption capabilities, prominent viewsheds, viewer numbers, view duration, visual impacts related to roads and transmission lines (including discussion of significance of visual impact from relocating major highways and railroad), and discussion of visual resources lost or impacted and their significance.

In brief, the visual quality of the alternative sites tend to be as high or higher than the Proposed Project, the visual sensitivity of the sites is much greater, and a number of areas of state or nationally designated significance would be affected (compared to none for the Proposed Project).

Refer to Appendix II of this document for more information which should be included in the FEIS.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page.3-71 Section 3.5.10 Paragraph 11 of the
page

COMMENT IN REFERENCE TO: "Cultural resource sites are unknown in most of
the areas that would be affected by the combined hydro-thermal scenario."

TECHNICAL COMMENT: See Technical Comment SSC017.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-47 Section 4.1.7 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Construction impacts on fishing sites

TECHNICAL COMMENT: Although construction activities will alter some existing fish habitat, the DEIS should clearly place these resources and impacts into perspective, particularly concerning the construction of cofferdams, diversion tunnels, and dredging of the river. Currently, there is very little or no sport fishing use of these sites, mainly due to inaccessibility and because these areas are in the glacially-affected mainstem which is generally considered to be too turbid for recreational fishing. Also, any increase in sediments due to construction is not anticipated to have any substantial effect due to the already high turbidity levels present in the Susitna. Therefore, it is not anticipated that these construction activities will have an effect on fishing sites either at the construction site or downstream.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-47 Section 4.1.7 Paragraph 6 of the page

COMMENT IN REFERENCE TO: Prime sportfishing areas inundated

TECHNICAL COMMENT: The term "prime" regarding the tributaries mentioned is not appropriate in terms of popularity or fishing demand. The phrase "prime sport fishing areas" should be qualified so that the reader understands what is meant and so that an appropriate evaluation of impacts can be made. The following information would help qualify this phrase:

- o Sport fish in the tributaries mentioned consists almost entirely of grayling
- o While the resource (grayling) may be high quality in terms of numbers and size, the streams receive very little use due to their inaccessibility. Access to many tributaries is available only by helicopter with the nearest point of departure being the airport at Talkeetna, which is approximately a one-hour flight away.
- o The tributaries are not "prime" in terms of recreation demand. They are not on the same level of popularity as salmon fishing and many good grayling streams exist that are much more easily accessible than the tributaries mentioned.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-47/48 Section 4.1.7 Paragraph 7 of page

COMMENT IN REFERENCE TO: Important fishing areas, recreation, impacts

TECHNICAL COMMENT: Although the mouths of Tsusena and Fog Creeks may have spawning habitat for grayling and other species, they should not be considered important fishing areas because there is little or no use of these areas, primarily due to inaccessibility (See Technical Comment SSC025).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Visual Impacts, Transmission Lines and Corridors.

LOCATION IN DEIS: Vol 1 Page 4-48 Section 4.1.7 Paragraph 7 of the page

COMMENT IN REFERENCE TO: "Significant" visual impacts of transmission line versus "incremental" impacts.

TECHNICAL COMMENT: This paragraph is confusing. FERC Staff states that visual impacts would be significant, then later states that the visual impacts would be incremental since the lines would parallel existing facilities. Does FERC staff mean that the visual impacts are both incremental and significant? If so, what is the basis for the impacts being significant relative to similarly significant visual impacts of those portions of the transmission line not paralleling existing facilities?

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Population, Impacts

LOCATION IN DEIS: Vol 1 Page 4-49 Section 4.1.8 Paragraph 4 of the page

COMMENT IN REFERENCE TO: The lead-in statement for this section notes that "the principal socioeconomic impacts related to the proposed Susitna project would be of the kinds commonly called 'boomtown' . . . sudden, rapid, growth in population in a rural area, followed by a . . . 'bust' period".

TECHNICAL COMMENT: This introductory statement sets the tone for much of the impacts chapter. The concepts of "boomtown" or "boom-bust" occur frequently throughout the section. The impression is that the "area" will experience this "boom," a concept that is a subject of controversy and misunderstanding among socioeconomicists. There certainly is agreement among parties (ISER, Applicant, and FERC Staff) that the communities of Trapper Creek, Cantwell, and (to a smaller degree) Talkeetna are likely to experience high growth rates. There is less agreement about the portion of expected growth that will be associated with the Proposed Project. The sources of disagreement stem from differences in baseline (without Project) projections, allocation of Project-related (impact) populations to communities, and the combination of baseline-project projections. To illustrate the variation in conclusions that can be created by varying combinations: if the ISER baseline is combined with the Borough impact projection, the project will create an increase of 118% over the baseline in 1990. If the Borough baseline is combined with Applicant impact projections, a 17% increase results. The difference between these percentages and the other impacts that are driven by population is significant. To further complicate interpretation, town boundaries and impact population retention rates are different for the models.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Population Projections

LOCATION IN DEIS: Vol 1 Page 4-50 Section 4.1.8 Paragraph 2 of the page
(Table 4-4)

COMMENT IN REFERENCE TO: The DEIS "revised applicant impact projections" were based on an assignment of immigrants to several towns not included in the Applicant's projections.

TECHNICAL COMMENT: The Applicant submitted a revision of their impact projections to FERC on April 30, 1984 (FOA 1984a). The revisions included an assignment of immigrants to the towns added to the analysis in the DEIS: Paxson, Healy, and Nenana.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Speculative In-migration, Impacts, Population

LOCATION IN DEIS: Vol 1 Page 4-50 Section 4.1.8 Paragraphs 1 and 8 of the page

COMMENT IN REFERENCE TO: A concern is expressed that the number of in-migrating job seekers will exceed the number of available jobs. The concern is based on the Trans-Alaskan Pipeline experience, has important consequences for the level of community services impacts.

TECHNICAL COMMENT: A report entitled The Assessment of the Potential for Speculative In-migration is being prepared by the applicant. The report analyzes the level of speculative immigration that occurred during construction of the Trans-Alaska Pipeline System (TAPS), the Revelstoke Hydroelectric Project and the Colorado Oil Shale Project. The analysis resulted in identification of project characteristics (variables) that affected speculative immigration. These variables were then examined for the Proposed Project.

The identified variables were: 1) size of peak construction work force, 2) number of years to build up, 3) amount of media exposure, 4) site/community.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Subsistence

LOCATION IN DEIS: Vol 1 Section 4.1.8 Page 4-55 Paragraph 5 of the page

COMMENT IN REFERENCE TO: Impact on subsistence use in the Proposed Project area and its consequences for Native Alaskan culture

TECHNICAL COMMENT: Several statements are made about the Proposed Project's potential impacts on subsistence activities and subsequent impacts on the economy and cultural heritage of Native Alaskans. Since no baseline levels of subsistence activities were established in earlier sections, the conclusion about impacts are premature (See Technical Comment SSC009).

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Transmissions and Corridors, Land Use

LOCATION IN DEIS: Vol 1 Page 4-58 Section 4.1.8 Paragraph 1 of the page

COMMENT IN REFERENCE TO: "If the proposed transmission line route went through existing residential areas or areas planned for development, controversies over reductions in property values near the right-of-way would be expected. Temporary losses... have been documented in some cases."

TECHNICAL COMMENT: The citation given in the DEIS (Appendix N, p. N-63) to support the statement about transmission line effects on property values is an environmental study for a 450 kV transmission line proposed to connect New England with Quebec. The citation is not the best available on the issue. A more comprehensive document was produced by Mountain West Research, Inc. (1981). This document concludes that effects on land values are very site specific. Most research has been conducted in urban and suburban areas and most pre-1975 research had methodological problems. Very little evidence is available for assessing effects on remote areas. The transmission line for the Proposed Project crosses a variety of settings and is parallel to an existing line. In sum, there is no evidence available to indicate that the transmission line would have any significant effects on land values.

This comment also applies to DEIS Vol 7 Page N-63 Section N.2.1.4, Page N-63, Paragraph 4 of the page.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population Projections, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-58 Section 4.1.8 Paragraph 2 of the page (Table 4-10)

COMMENT IN REFERENCE TO: "...immigrants would change the way some community services are provided and severely stress current capacities." The DEIS, with reference to Table 4-10, notes the kind, number, and timing of project-induced demand.

TECHNICAL COMMENT: The sensitivity of community service impacts to baseline projections does not receive adequate attention. Depending upon which baseline one chooses (see Technical Comments SSC008 and SSC028), the timing and, hence, the planning needs for impacts can vary greatly. The timing is, of course, also sensitive to variation between models in baseline and "with-project" numbers, and lack of agreement about both numbers, points to the importance of an effective monitoring program and a mitigation plan with flexibility to react to monitoring data.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-64 Section 4.1.9 Paragraph 6 of the page

COMMENT IN REFERENCE TO: ...much of the highly scenic Vee Canyon area would be inundated."

TECHNICAL COMMENT: Vee Canyon is approximately 300-500 feet deep. The project will inundate only approximately 185 feet of this depth. This comment should be restated to indicate that the rapids through the highly scenic Vee Canyon area would be inundated.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Proposed Project

LOCATION IN DEIS: Vol 1 Page 4-68 Section 4.1.9 Paragraph 2 of the page

COMMENT IN REFERENCE TO: No intention of opening the railroad to public, therefore, no opportunities for new views.

TECHNICAL COMMENT: A final determination on the long term use of the railroad line has not yet been made by APA; public use has not been precluded.

This comment also applies to DEIS Vol 6 Page M-53 Section 3.1.3.3 Paragraph 2 of the page.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 4-68 Section 4.1.9 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Transmission line right-of-way is 300-510 ft. wide

TECHNICAL COMMENT: Where the proposed transmission line parallels and shares the Intertie right-of-way (between Willow and Healy), actual new right-of-way required would be approximately 170 or 230 feet wide.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 1 Page 4-68 Section 4.1.10 All paragraphs of section

COMMENT IN REFERENCE TO: Number of sites subject to impacts

TECHNICAL COMMENT: The numbers given for sites to be impacted by construction and operation of various project segments do not match those provided by UAM (1984, Table 5.1). FERC staff should review the data and correct the figures or explain the reason for the discrepancies.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 4-69 Section 4.1.10 Paragraphs 1-8 of the
page

COMMENT IN REFERENCE TO: Assessment of site significance

TECHNICAL COMMENT: The term "significant" when used is generally understood to mean "eligible for the National Register of Historic Places." No determinations of National Register eligibility have been made for any of the sites in the study area. The text should be revised.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Alternatives, Transmission
Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 4-75 Section 4.2.7 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "Assuming that the relatively numerous public and private recreation areas could be avoided during final alignment, the transmission lines would constitute significant visual impacts."

TECHNICAL COMMENT: This statement is confusing and needs some clarification. Does FERC Staff intend to say that, assuming that the numerous recreation areas are avoided in the final alignment, the only significant impact to the public would be the lines' visual impact? Also, part of the reason that the other alternative transmission line corridors were not selected was because of their impact or proximity to recreation areas and areas of higher recreational use.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 4-76 Section 4.2.1.0 All paragraphs of
section

COMMENT IN REFERENCE TO: Assessment of site significance

TECHNICAL COMMENT: See Technical Comment SSC038.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-76 Section 4.2.10 All paragraphs of section

COMMENT IN REFERENCE TO: Use of term "potential impacts"; mitigation through monitoring

TECHNICAL COMMENT: See Technical Comments SSC002 and SSC003.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-76 Section 4.2.10 Paragraph 5 of page

COMMENT IN REFERENCE TO: "The area of the Watana I reservoir would be subject to the same impacts on cultural resources as the proposed Watana development except..."

TECHNICAL COMMENT: Note that exact site elevations are unavailable at present because detailed contour mapping based on engineering surveys has not yet been undertaken. Site elevations are probably only accurate within 20 feet since the USGS maps have contour intervals of 100 feet. FERC Staff should review the analysis in this paragraph and revise the wording accordingly.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 1 Page 4-77 Section 4.2.10 Paragraph 1 of page

COMMENT IN REFERENCE TO: "...indirect impacts...due to destabilization of slopes and increased erosion."

TECHNICAL COMMENT: Note that detailed information on impacts from slope destabilization and erosion is not yet available. In addition, impacts might be avoided by moving the borrow areas, limiting their extents, or stabilizing slopes near archeological sites. FERC Staff should rephrase statements on destabilization of slopes and erosion to indicate that impacts "might" (rather than "would") occur. Also, a statement such as the one above, on the potential for mitigating these impacts, should be added.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 1 Page 4-79 Section 4.3.7 Paragraph 5 of the page

COMMENT IN REFERENCE TO: "...it is unlikely that developing five combined-cycle gas plants...would appreciably impact existing recreation patterns here."

TECHNICAL COMMENT: Impacts to existing recreation activities and resources could be extremely significant if access roads connecting these sites with the Anchorage area are constructed as a result of these projects. The area's close proximity to the Anchorage population could result in a drastic increase in recreation use and resultant impacts on existing recreation activities and area fish and wildlife resources.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 1 Page 4-79 Section 4.3.7 Paragraph 5 of the page

COMMENT IN REFERENCE TO: Two natural gas-fired plants near Kenai would not appreciably impact recreation opportunities

TECHNICAL COMMENT: This statement is difficult to substantiate without knowing locations of actual sites and related facilities such as transmission lines, pipelines, and access roads. In view of the proximity of proposed plants to existing recreation resources, it is unlikely that facilities could be sited without significant visual or noise impacts.

Due to the popularity of these areas for recreation, impacts could be significant. Potential impacts of these plants in the Kenai area could include: increased recreation demand from construction and operation personnel, impacts of associated transmission lines and pipelines on area recreation, and aesthetic impacts on recreationists due to the presence of the plants in an otherwise natural setting.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 1 page 4-80 Section 4.3.10 Paragraph 4 of page

COMMENT IN REFERENCE TO: "Potential for impacts...would appear to be limited."

TECHNICAL COMMENT: This statement appears to contradict information presented in Appendix O (p. O-15) which notes that site specific surveys would be needed in both the Kenai and Anchorage areas to assess impacts. The statement also seems to contradict the last sentence in paragraph 4.3.10 which states the need for site-specific surveys and significance assessments. The sentence should be rephrased as follows: "The potential for impacts to cultural resources in the designated locations for the natural gas-fired generation scenario cannot be evaluated without site-specific surveys and significance assessments." Alternatively, the basis for concluding that the potential for impacts appears to be limited should be clarified. Also, FERC Staff should explain briefly why avoidance and monitoring would be more feasible than data recovery.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Coal Plants

LOCATION IN DEIS: Vol 1 Page 4-84 Section 4.4.7 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Recreation impacts of three coal-fired plants at Nenana.

TECHNICAL COMMENT: Recreation impacts of three coal-fired plants near Nenana would be more significant than stated. Impacts would include:

- o Loss of 450 acres of land near the Nenana and Tanana rivers (both of which are proposed for recreation protection)
- o Noise (up to 1.5 miles away)
- o Increased access to rivers and creeks
- o Up to three times the number of trains in the area
- o Increased demand resulting from up to 3,600 project-related people in the area for construction and 1,500 for operation
- o Impacts to sightseers from vapor plumes, reduced clarity of views, and reduction of color contrasts
- o Related impacts from mining operations

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Coal Plants

LOCATION IN DEIS: Vol 1 Page 4-84 Section 4.4.7 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Recreation impacts of mining at Healy

TECHNICAL COMMENT: Potential recreation impacts related to mining in the Healy area could be significant and should be discussed. Impacts would include up to 2,250 acres of potential recreation land disturbed during the 30-year life of the coal plants, a significant increase in recreation demand in Healy due to project-related population increases of more than 1,100 persons, and impacts on recreation patterns due to increased train traffic to Nenana and Willow.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Visual Impacts, Alternatives, Thermal

LOCATION IN DEIS: Vol 1 Page 4-85 Section 4.4.9 Paragraphs 8-9 of page

COMMENT IN REFERENCE TO: Potential visibility changes due to coal-fired plants.

TECHNICAL COMMENT: Visual impacts related to coal-fired alternatives should be discussed in greater detail.

See Technical Comments ALT007 and ALT044 for more information on visual impacts related to coal-fired plants. See also Appendix III of this document.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources Impacts, Coal Plants

LOCATION IN DEIS: Vol 1 Page 4-86 Section 4.4.10 Paragraph 2 of page

COMMENT IN REFERENCE TO: "Impacts...under this scenario would probably be limited."

TECHNICAL COMMENT: This statement appears to partially contradict information in Appendix O (pp. O-15/16) which notes that "significant...sites would occur [in the Nenana area]" and that the Cook Inlet area has numerous sites. This statement should be rephrased as follows: "Impacts to cultural resources in the designated locations for units that would be developed under this scenario cannot be evaluated without site-specific surveys and significance assessments." Alternatively, the basis for concluding that the potential for impacts appears to be limited should be clarified. Also, FERC Staff should explain why avoidance and monitoring would be more feasible than data recovery.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-86 Section 4.5.1.2 Paragraph 9 of page

COMMENT IN REFERENCE TO: Browne project inundation area

TECHNICAL COMMENT: Given the distribution of planned ADNR land disposals indicated in Figure F-4 of the DEIS, it would appear that the inundation area for the Browne Project would affect disposal land. In fact, detailed land disposal map information shows that the dam and reservoir would be built on disposal lands. The reservoir would almost entirely inundate the Healy Agricultural Subdivision and numerous other disposal tracts. The access and utility corridors for the Browne Project would also cross disposal lands.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Recreation Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-88 Section 4.5.7 Paragraph 7 of the page

COMMENT IN REFERENCE TO: Recreation impacts are not fully described.

TECHNICAL COMMENT: See Technical Comment SSC056.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Land Use, Impacts, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 1 Page 4-89 Section 4.5.8 Paragraph 5 of the page

COMMENT IN REFERENCE TO: The inundation of areas or structures as a result of the Johnson impoundment

TECHNICAL COMMENT: DEIS Appendix N (Sec N.2.3.3.1, Paragraphs 2 and 8) mentions of a number of possible impacts that would result from the Johnson impoundment which are not discussed in Vol 1. The most serious of these impacts would be the inundation of the Native Community of Dot Lake. Other impacts noted in DEIS Appendix N but omitted in Volume 1 include the possible inundation of a lodge near the dam site and a portion of a pipeline. Other serious impacts not mentioned in either the DEIS or Appendix N would be inundation of a religious community at Dry Creek called the Living Word, and innundation of 30,000 acres of palustrine wetlands.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Impacts, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 1 Page 4-89 Section 4.5.8 Paragraph 5 of the page

COMMENT IN REFERENCE TO: The inundation of areas or structures as a result of the Johnson site impoundment.

TECHNICAL COMMENT: Detailed map information (see Appendix II of this document for map representation) shows that areas or structures other than those mentioned in the DEIS might also be inundated. These would include a highway maintenance station, three gravel pits, two gaging stations, a telephone line, and airstrips at Dot Lake and the Living Word. Dot Lake is a primarily Native community of approximately 70 persons. The Living Word is a religious community of approximately 200 persons occupying land near Dry Creek that would also be inundated.

This comment also applies to DEIS Vol 7 Page N-70 Section N.2.3.3.1 Paragraph 5 of the page.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 1 Page 4-90 Section 4.5.9 Paragraph 4 of the page

COMMENT IN REFERENCE TO: Description and evaluation of visual impacts.

TECHNICAL COMMENT: See Technical Comment SSC022.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-97 Section 4.7.7 Paragraph 1, 2, 3 of page

COMMENT IN REFERENCE TO: Discussion of impacts

TECHNICAL COMMENT: The comparison of alternative project impacts to the Proposed Project impacts should also discuss the importance of recreation resources lost as well as just total acreage lost. Other impacts that should be discussed include: the amount of remote areas newly accessed; total mileage of transmission lines and access roads in sensitive areas; increased recreation demand due to access, construction and operation personnel, and other project facilities; and comparisons of existing use affected by each scenario.

Please refer to Appendix II of this document for a comparison of recreation impacts from the Proposed Project and the non-Susitna hydro alternatives.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population

LOCATION IN DEIS: Vol 1 Page 4-98 Section 4.7.8 Paragraph 2

COMMENT IN REFERENCE TO: Healy having a largely Native population; being a primarily small Native community; having a large proportion of Natives.

TECHNICAL COMMENT: U.S. Bureau of Census, Census of Population and Housing figures for 1980 show the total population of Healy to be 334 including 317 Whites, 4 American Indians, 12 Eskimos, and 1 other. Based on these figures, Healy does not have a largely Native population.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 1 Page 4-99 Section 4.7.10 Paragraph 3 of page

COMMENT IN REFERENCE TO: Validity of evaluation and basis of evaluation

TECHNICAL COMMENT: This section appears to equate the level of impact with number of sites affected. However, factors such as relative significance (or non-significance), mitigation costs, type of impact, and the relationship to an overall mitigation plan all need to be considered. FERC Staff should review the data in light of these factors and alter the conclusions as necessary.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 1 Page 4-99 Section 4.7.10 Paragraph 3 & 4 of page

COMMENT IN REFERENCE TO: Use of term "potential impact"

TECHNICAL COMMENT: See Technical Comment SSC003.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Cultural Resources, Access Roads

LOCATION IN DEIS: Vol 1 Page 4-99 Section 4.7.10 Paragraph 4 of page

COMMENT IN REFERENCE TO: Basis of evaluation

TECHNICAL COMMENT: See Technical Comment SSC058.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 1 Page 4-99 Section 4.7.10 Paragraph 5 of page

COMMENT IN REFERENCE TO: Basis of evaluation

TECHNICAL COMMENT: See Technical Comment SSC058.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 1 Page 4-99 Section 4.7.10 Paragraph 6 of page

COMMENT IN REFERENCE TO: Basis of evaluation

TECHNICAL COMMENT: See Technical Comment SSC058.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Cultural Resources, Alternatives, Thermal

LOCATION IN DEIS: Vol 1 Page 4-99 Section 4.7.10 Paragraph 7 of page

COMMENT IN REFERENCE TO: "Gas-fired and coal-fired scenarios would be less likely to have...impacts, due to limited land disturbance."

TECHNICAL COMMENT: This evaluation assumes that inundation is generally as destructive to archeological sites as construction. Susitna alternatives would indeed affect more land, but most of it would be in impoundments. This is something that needs to be evaluated in more detail, especially in light of the results of the National Reservoir Inundation Study. Coal-fired scenarios might impact as much or more land if one includes mine areas. In addition, OSM regulations concerning cultural resources could result in many National Register-eligible sites in mine areas being destroyed without mitigation. The net result may be more severe impacts under a coal-fired scenario. FERC Staff should review the evaluation in light of these issues and revise the conclusions accordingly.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Recreation Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 1 Page 4-101 Section 4.10.2 Paragraphs 5-6 of page

COMMENT IN REFERENCE TO: Comparison of alternatives

TECHNICAL COMMENT: The DEIS should provide additional discussion of recreation resources and potential impacts. See Appendix II of this document for additional information on recreation impacts of the combined hydro-thermal alternative.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Alternatives

LOCATION IN DEIS: Vol 1 Page 5-6 Section 5.1.2.6 Paragraphs 1-5 of page

COMMENT IN REFERENCE TO: Significant recreation impacts of non-Susitna hydro alternatives

TECHNICAL COMMENT: Significant recreation impacts listed for the non-Susitna hydroelectric alternative section should include:

- o Creation of new access to three remote areas
- o Loss of significant fishing opportunities
- o Sightseeing impact for recreationists in two National Parks, and one National Forest
- o Inundation of the Tanana, Talkeetna Rivers and Disappointment Creek, which are recommended for State protection.
- o Substantial increase in recreation demand would be created by the alternative hydro projects.

See Appendix II of this document for additional discussion of potential recreation impacts related to the non-Susitna hydro alternatives.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Access Roads, Population

LOCATION IN DEIS: Vol 1 Page 5-8 Section 5.2.3 Paragraph 5 of the page

COMMENT IN REFERENCE TO: "Based on these considerations, the staff recommends that the Applicant adopt an alternative to the Denali Highway access plan that incorporates access from Gold Creek only."

TECHNICAL COMMENT: The recommendation to change the access road is based solely on potential impacts to fish and wildlife resources. A more balanced approach is needed if the consequences for changing the access is to be fully understood. For example, if the Gold Creek access were used the population impacts would decrease for Cantwell and Healy but would increase significantly for Gold Creek and Talkeetna. Impacts at Trapper Creek could also increase to levels even higher than projected for the Denali Highway access. Moreover, the Railbelt from Talkeetna to Wasilla would also receive increased impacts. The increase in population would, in turn, produce increased demands for housing and a variety of community services and facilities.

The approach leading to the Applicant's decision to propose the Denali Highway access used a multidisiplinary approach, attempting to balance the fish and wildlife concerns with socioeconomic, land use, recreation, hydrologic, geologic, engineering and economic concerns. FERC Staff conclusions about the Proposed Project (DEIS Section 5.1.1) and Alternatives (Section 5.1.2) are based on a multi-disciplinary approach. A similar analysis should be used before reaching conclusions about an alternative access route.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 1 Page 5-14 Section 5.3.9 Paragraph 3 & 4 of page

COMMENT IN REFERENCE TO: Use of term "potential"

TECHNICAL COMMENT: See Technical Comment SSC003.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 5-14 Section 5.3.9 Paragraph 4 of the page

COMMENT IN REFERENCE TO: "Twenty-two of these sites have been assessed as significant"

TECHNICAL COMMENT: See Technical Comment SSC038.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts, Mitigation

LOCATION IN DEIS: Vol 1 Page 5-14 Section 5.3.9 Paragraph 4 of the page

COMMENT IN REFERENCE TO: "Recommended mitigation ...[is] a monitoring program...by the appropriate land-managing agency."

TECHNICAL COMMENT: The land-managing agencies included should be identified. In many cases there may not be a state or federal agency involved (particularly lands which have been or are being conveyed to Native corporations).

See Technical Comment SSC002.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 1 Page 5-14 Section 5.3.9 Paragraph 4 of the page

COMMENT IN REFERENCE TO: "Most...sites occur in...shallow...contexts and appear to be of restricted areal extent, thus limiting the scope of investigation."

TECHNICAL COMMENT: The extent of excavation necessary at a particular site to adequately mitigate adverse effects is not necessarily dependent upon its size. The extent of data recovery is determined by the way in which a site can contribute to the solution of specific research questions. Factors such as the size of the artifact sample necessary to address research questions will determine how much of a site is excavated. The text should be rephrased as follows: "Most of these sites occur in relatively shallow sedimentary contexts and appear to be of restricted aerial extent. The limited extent and depth of sites, in conjunction with sampling methods to be developed in the mitigation plan, will likely limit the scope of data recovery."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population Projections

LOCATION IN DEIS: Vol 1 Page 5-15 Section 5.4.5 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "The Applicant states that studies are being conducted to: Update baseline and project-induced population projections"

TECHNICAL COMMENT: The report summarizing this work was completed March, 1984 and submitted to FERC on April 30, 1984. See FOA (1984a).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Transmission Lines and Corridors, Land Management

LOCATION IN DEIS: Vol 3 Page F-24 Section F.1.2.2.2 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: "Currently only baseline information has been prepared and no policies or draft plans have been published."

TECHNICAL COMMENT: A plan map (ADNR and USDASCS 1982) and various resource elements (ADNR and USDASCS 1983a-1983f) were released in 1983 as the basis for the forthcoming Tanana Basin Area Plan. The Public Review Draft Tanana Basin Area Plan was published in May 1984 (ADNR and USDASCS 1984). The final will be available in October 1984. Also, the Fairbanks-North Star Borough Draft Comprehensive Plan, Side 1 and 2 maps, was released in January 1984 (FNSB 1984). The contents of these plans should be addressed in the FEIS.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 3 Page F-24 Section F.1.2.2.2 Paragraph 5 of the page

COMMENT IN REFERENCE TO: Discussion of state land ownership along the proposed transmission line route indicates that the Willow-Anchorage route extends through state land. The DEIS states "Much of the area is currently used as state recreation lands and game refuges."

TECHNICAL COMMENT: The last statement in the paragraph is incorrect insofar as it could give the mistaken impression that most of the Willow-Anchorage transmission line is routed across recreation and refuge lands. While much of the area east of the Susitna River, south of Willow and north of Point MacKenzie is recreation and refuge land (as noted on page F-20 of the DEIS), the proposed route in this area has been carefully chosen so that it only crosses 4 miles of the 302,000-acre Susitna Flats Game Refuge and does not cross the Nancy Lake Recreation Area. The portion of the corridor south of Knik Arm does not include such recreation and refuge lands.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Proposed Project

LOCATION IN DEIS: Vol 3 Page F-33 Section F.2.1.1.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: The impact analysis states that land management in the project area is passive with few applicable definite management plans or regulations.

TECHNICAL COMMENT: The draft Susitna Area Plan and the BLM Land Use Plan for Southcentral Alaska recommend lands which are within or around the Proposed Project area for multiple-use management (ADNR et. al. 1984, BLM 1980) The Susitna Area Plan States: "most public lands are intended to be managed for multiple use. For this reason, the plan establishes management guidelines that will allow various uses to occur without serious conflicts. Management guidelines can direct the timing, amount, or specific location of different activities in order to make the permitted uses compatible." It goes on to say, "The purpose of the plan is to lay out a set of management policies for state and borough lands that will allow these lands to produce the greatest possible public benefits."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Proposed Project

LOCATION IN DEIS: Vol 3 Page F-36 Section F.2.1.1.2 Paragraphs 2-4 of
the page

COMMENT IN REFERENCE TO: Discussion of land use planning efforts in project area reference only BLM (Denali Planning Block), Mat-Su Borough comprehensive plan, Talkeetna Mountains, and coastal zone plans.

TECHNICAL COMMENT: The Susitna Area Plan (ADNR et al. 1984), which was mentioned but not described on p. F-16 contains an overview of the management intent for the Talkeetna Mountain Subregion (including the project area) which states, "the Talkeetna Subregion will be managed as a multiple use area emphasizing the uses that are most important in the area now....Additional road access to the area and concentrated settlement on public lands will be contingent on a demonstrated need for such development in order to facilitate activities such as mining or dam construction." In addition, a special section on the Susitna Hydroelectric Project addresses mitigation measures for a number of indirect impacts to land use, ownership, settlement and recreation that would occur with the project. Consequently, the Proposed Project would not adversely affect management of the Talkeetna Mountain Subregion.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Impacts, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 3 Pages F-41 to 45 Section F.2.3 All paragraphs

COMMENT IN REFERENCE TO: Identification of land use impacts of non-Susitna generation alternatives only addresses major land types and project acreage requirements.

TECHNICAL COMMENT: There are qualitative and quantitative differences between areas. For example, recreational lands on the Kenai Peninsula or on the Talkeetna River are likely to be used by more recreationists and be valued more highly by recreationists than similar lands affected by some of the other alternatives. (See Appendix II of this document for more information).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Land Use, Impacts, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 3 page F-45 Section F.2.3.3 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: Description of Browne Project inundating 10,640
acres and portions of Parks Highway and Alaska Railroad.

TECHNICAL COMMENT: Effects on ADNR disposal areas should be included. See
Technical Comment SSC051.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Mitigation, Land Management, Proposed Project

LOCATION IN DEIS: Vol 3 Page F-48 Section F.3.1.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: Land use plans for Proposed Project area developed
in cooperation with jurisdictional agencies

TECHNICAL COMMENT: The paragraph should be modified to state that the Applicant is cooperating with the agencies to develop and implement land management plans for the Proposed Project area. The current wording could be construed to indicate that the actual plan development and implementation will be done by the Power Authority with assistance from the managing agencies; the agencies possess the expertise and capability and should properly be described as leading this effort. This revision would be consistent with the discussion in the third paragraph of DEIS page F-49.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Alternatives

LOCATION IN DEIS: Vol 6 Pages L-23 through L-26 Section L.1.4

COMMENT IN REFERENCE TO: Recreation activities, resources, levels of use
and relative significance of recreation for areas of the alternative sites

TECHNICAL COMMENT: See Technical Comment SSC018.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Proposed Project

LOCATION IN DEIS: Vol 6 Page L-26 Section L.2.1

COMMENT IN REFERENCE TO: Levels of use and resource significance

TECHNICAL COMMENT: See Technical Comment SSC007.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 6 Page L-27 Section L.2.1.1.1 Paragraph 8 of the
page

COMMENT IN REFERENCE TO: Prime fishing areas inundated

TECHNICAL COMMENT: See Technical Comment SSC025.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Watana

LOCATION IN DEIS: Vol 6 Page L-27 Section L.2.1.1.1 Paragraph 8 of the
page

COMMENT IN REFERENCE TO: Vee Canyon is a "designated scenic resource area"

TECHNICAL COMMENT: The state has not designated any scenic or recreation
resources in the study area. By whom was this designation made?

Land use of the Susitna Hydroelectric Project area has been addressed in a
number of planning studies and in legislation (ADNR et al. 1984, ALUC 1983,
ANILCA 1980, BLM 1980). Generally, no outstanding natural features or
significant wildlife values have been identified. Consequently, this area
has been designated for multiple uses such as mining, oil and gas
development, developed public recreation, and hydroelectric development.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 6 Page L-30 Section L.2.1.2.2 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: Warmer water temperatures potentially affecting
sportfishing downstream of Devil Canyon

TECHNICAL COMMENT: Although the temperature alteration could affect the
freezing front, it is unclear how sportfishing activity would be adversely
affected unless FERC Staff is considering ice fishing which constitutes an
extremely small, if not non-existent, sportfishing opportunity in the
Susitna River below Devil Canyon.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts

LOCATION IN DEIS: Vol 6 Page 1-31 Section L.2.1.3 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: Upgrading the 21-mile section of Denali Highway will result in greater recreation use and jeopardize sensitive recreation resources currently unprotected.

TECHNICAL COMMENT: Recreation demand studies presented in Exhibit E, Volume 8, Chapter 7 of the License Application found no significant recreation use increase as a result of improving the highway. What are the sensitive recreation resources that are currently unprotected? These should be specified or this contention deleted in the FEIS.

The development of recreation resources represents a significant component of current and future economy of the Mat-Su Borough and the unincorporated borough. The project areas have been identified for multiple-use management in both federal and state/borough land use plans, and recreation is a key component of multiple use in each plan. To abandon recreation development because of possible overuse in a region with extensive potential for development is not consistent with either state or Federal policy for this area.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Access Roads

LOCATION IN DEIS: Vol 6 Page L-31 Section L.2.1.3.1 Paragraph 3 of the page

COMMENT IN REFERENCE TO: "The more accessible areas might be overused, and the remote wilderness settings degraded."

TECHNICAL COMMENT: This comment appears to be largely speculative. No data exist that point to sufficient demand for winter recreation to cause overuse. For much of the winter weather in general, and snow quality in particular, is not conducive to skiing. In view of the extent of resources available in the area, the general geographically dispersed nature of winter recreation activities, and the limited amount of winter recreation use now occurring, overuse and degradation is unlikely. Unless this contention can be factually substantiated it should be deleted from the FEIS.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 6 Page L-32 Section L.2.1.3.2 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: Statement that road would be used by project
personnel to access hunting and fishing areas.

TECHNICAL COMMENT: The DEIS statement is inaccurate and misleading. The
policy regarding use of the access road and area for hunting and fishing by
project personnel has not yet been determined. The above statement should
be rephrased to reflect this fact.

It is anticipated that an acceptable policy will be developed and success-
fully implemented after negotiation with all interested parties. Existing
rules for project field personnel on the Susitna site do allow for firearms
to be carried, but only for protection from bears. No hunting is allowed
from project facilities or supported by project resources. Project
personnel are permitted to bank-fish from their camp.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 6 Page L-33 Section L.2.1.4.1 Paragraph 7 of the
page

COMMENT IN REFERENCE TO: Transmission lines would be used for access to remote areas and sensitive environmental areas might be degraded by excessive use.

TECHNICAL COMMENT: The proposed transmission line rights-of-way between the damsites and Gold Creek would parallel the proposed access road and rail spur access corridors. Therefore, it is unlikely that the transmission line corridors would increase access in excess of that provided by the road or rail spur.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 6 Page L-39 Section L.2.3.1 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: It is unlikely that development of five, 200-MW combined-cycle units would have a meaningful effect on contemporary recreation activities in the Beluga and Chuitna River areas.

TECHNICAL COMMENT: See Technical Comment SSC044.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Natural Gas Plants

LOCATION IN DEIS: Vol 6 Page L-39 Section L.2.3.1 Paragraph 6 of the
page

COMMENT IN REFERENCE TO: The siting of two, 200 MW combined-cycle units near Kenai and one along Turnagain Arm would have a minimal effect on recreation opportunities and experiences.

TECHNICAL COMMENT: See Technical Comment SSC045.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Coal Plants

LOCATION IN DEIS: Vol 6 Page L-39 Section L.2.3.2 Paragraphs 7 and 8
of the page

COMMENT IN REFERENCE TO: Impacts resulting from project facilities,
emissions, and construction work

TECHNICAL COMMENT: See Technical Comments SSC047 and SSC048.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Hydroelectric Alternatives

LOCATION IN DEIS: Vol 6 Page L-40 Section L.2.3.3 Paragraph 2 to 7 of
the page

COMMENT IN REFERENCE TO: Recreation impacts of project facilities,
operation, and construction.

TECHNICAL COMMENT: The DEIS fails to discuss impacts to significant recreation resources related to the alternative sites. Those impacts and associated impacts should be described in the FEIS. See Technical Comment SSC065 for a list of significant impacts associated with the alternative sites.

For further detail on these resources and impacts, please see Appendix II of this document.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Alternatives, Access Roads

LOCATION IN DEIS: Vol 6 Page L-40 Section L.2.4.1 Paragraph 9 of the
page

COMMENT IN REFERENCE TO: Recreation potentials associated with the proposed
and alternative access routes are indistinguishable.

TECHNICAL COMMENT: The statement that recreation potentials associated with
the alternative access routes are indistinguishable is not correct. The
major portion of land-based recreation impacts result from new access; the
Proposed Project recreation plan is closely linked to recreation potential
associated with the selected access route. Demand figures for recreation
could change dramatically if driving distances from population centers are
reduced and the road entry were connected to the Parks Highway near Denali
State Park.

If the "rail-only" access route from Gold Creek were selected, as
recommended in the DEIS, open access by the public would essentially be
eliminated and recreation opportunity and demand would change
significantly.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 6 Page L-41 Section L.2.4.2 Paragraph 7 of the page

COMMENT IN REFERENCE TO: Acreage comparison of coal-fired scenario to the Proposed Project.

TECHNICAL COMMENT: Land requirements for the Proposed Project were stated as 37,000 acres compared to 600 acres required for permanent facilities under the coal-fired scenario. While the 37,000 acres included the impoundment area, the 600 acres stated for the coal-fired scenario did not include the area mined. This should be added for a more accurate comparison. A more complete analysis would compare the total acreages disturbed, including those for access roads and transmission lines for each project.

Please refer to Appendix III of this submittal for more information on acreage comparisons.

Also, the Reference to DEIS Table 4-14 stated in the paragraph should be changed to DEIS Table 4-12.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Air Quality

LOCATION IN DEIS: Vol 6 Page L-41 Section L.2.4.2 Paragraph 7 of the page

COMMENT IN REFERENCE TO: Comparison of the effects on public recreation opportunities of the coal-fired generation scenario to the proposed project.

TECHNICAL COMMENT: The widespread impacts on sightseeing and recreation in the region resulting from air pollution are not included in the discussion. This could be a significant impact with the number of coal-fired units proposed. See Technical Comments ALT015, ALT020, ALT042, and ALT045 and Appendix III of this document regarding air quality.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Recreation Resources, Impacts, Alternatives

LOCATION IN DEIS: Vol 6 Page L-41 Section L.2.4.2 Paragraph 8 of the
page

COMMENT IN REFERENCE TO: Comparison of non-Susitna alternatives

TECHNICAL COMMENT: See Technical Comments SSC018 and SSC056. For further
information, see Appendix II of this document.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Alternatives

LOCATION IN DEIS: Vol 6 Page M-39 Section M.2.3.3 Page M-68 Section
M.3.3.3

COMMENT IN REFERENCE TO: Visual impacts of hydrothermal scenario

TECHNICAL COMMENT: See Technical Comment SSC022.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Proposed Project

LOCATION IN DEIS: Vol 6 Page M-43 Section M.3.1.1.2

COMMENT IN REFERENCE TO: Discussion of visual impacts

TECHNICAL COMMENT: Visual mitigation plans discussed in License Application Exhibit E, Vol. 8, Chapter 8, Section 9 discuss methods to lessen the visual impacts of borrow pits. These should be taken into account in Appendix M discussions. (See License Application, Exhibit E, pp. E-8-49, E-8-50, E-8-54, and E-8-57).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 6 Page M-53 Section M.3.1.4 Paragraph 3 of the page (Figures M-18 and M-21)

COMMENT IN REFERENCE TO: Significant views and visual impacts shown on figures

TECHNICAL COMMENT: Existing transmission lines routes (such as the Intertie, Chugach Electric Association lines, and Golden Valley Electric Association lines) that parallel the proposed transmission line should be shown in order to give the reader a better indication of the significance of the visual impact. Visual impacts in these locations would only be incremental.

Also, Figure M-22 is misleading in that it shows the highly visible aluminum lattice, delta design towers and not the rusting X-framed design that has been proposed by the Applicant.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Visual Impacts, Alternatives, Coal Plants

LOCATION IN DEIS: Vol 6 Page M-68 Section 3.3.2 Paragraphs 1 & 2 of the page

COMMENT IN REFERENCE TO: Visual impacts of coal-fired plants

TECHNICAL COMMENT: Visual impact of strip mining and infrastructure in the Healy and particularly the Beluga areas is a significant issue that should be addressed more completely in the FEIS.

See Technical Comments SSC047, SSC048, SSC049, and Appendix III of this document.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Alternatives, Hydroelectric

LOCATION IN DEIS: Vol 6 Page M-68 Section 3.3.3 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Visual impacts of facilities would be similar to those of Proposed Project.

TECHNICAL COMMENT: There are several major differences between the impacts of the Proposed Project site and other hydro sites.

Several of the alternative sites are considered to have a much higher scenic value than the Proposed Project and a relatively low capacity to visually absorb facilities. Significant parts of each of the alternative hydro sites would also be highly visible from one or more major sightseeing corridors:

- o Johnson - Alaska Highway, approximately 25 miles parallel.
- o Browne - Parks Highway and Alaska Railroad, approximately 13 and 12 miles parallel.
- o Snow - Seward Highway, view from 1 to 2 miles away.
- o Chakachamna - Merrill Pass air corridor
- o Keetna - the Talkeetna River corridor

In comparison only part of the access road of the Proposed Project would be visible from the Denail Highway.

For further information, refer to Appendix II of this document.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Resources, Alternatives

LOCATION IN DEIS: Vol 6 Page M-69 Section M.3.4.2 Paragraphs 3-4 of the
page

COMMENT IN REFERENCE TO: Comparison of alternative power generation
scenarios to the proposed project and significance of visual impacts.

TECHNICAL COMMENT: See Technical Comment SSC016.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Visual Impacts, Transmission Lines and Corridors, Mitigation

LOCATION: Vol 6 Page M-71 Section M.4.2 Paragraph 11-12 of the page

COMMENT IN REFERENCE TO: Trees and shrubs should be planted at transmission line crossings of roads to block views.

TECHNICAL COMMENT: Certain parts of the transmission line are routed through tundra areas. Use of vegetation as a visual mitigation measure in these areas would be difficult if not impossible. The Power Authority intends to utilize trees and shrubs as a visual mitigation measure wherever possible or feasible.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population Projections

LOCATION IN DEIS: Vol 7 Page N-3 Section N.1.1.2 Paragraph 3 of the page

COMMENT IN REFERENCE TO: Basis for DEIS forecast

TECHNICAL COMMENT: See Technical Comment SSC008.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Subsistence, Proposed Project

LOCATION IN DEIS: Vol 7 Page N-11 Section N.1.1.3 Last paragraph of the page

COMMENT IN REFERENCE TO: The discussion notes the importance of subsistence use and conflicts about the issue of subsistence use.

TECHNICAL COMMENT: The discussion about subsistence use contains specific data for locations outside the proposed project area. There is no indication that project area communities are similar to locations where specific data exists. Without demonstrating this similarity, no generalization about the project area should be made from the data. A general statement is made about the economic importance of subsistence activities for Cantwell residents. No citation is given to support this statement. Cantwell would be very different, in its degree of isolation and homogeneity from communities where studies were conducted. Cantwell is less homogenous ethnically and less isolated from land transportation routes than the communities where specific data exist.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Employment

LOCATION IN DEIS: Vol 7 Page N-14 Section N.1.1.1 Paragraph 3 of the page
(Table N-4)

COMMENT IN REFERENCE TO: Though Mat-Su Borough statistics show government employment to be important, no comparable data are given for towns within the Mat-Su Borough or important towns in other boroughs.

TECHNICAL COMMENT: Research conducted by the Applicant and published in 1984 shows government accounting for 29% of employment in Trapper Creek and 26% in Cantwell. In these two towns government employment accounts for a higher percentage of employment than any other sector. In Talkeetna, government employment is less predominant, accounting for 18% of the employment. See FOA (1984b, 1984c, 1984d) for other employment information for Trapper Creek, Talkeetna, and Cantwell.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Population, Impacts

LOCATION IN DEIS: Vol 7 Pages N-37 and N-38 Section N.2.1.1

COMMENT IN REFERENCE TO: The lead-in statement for this section notes that "the principal socioeconomic impacts related to the proposed Susitna project would be of the kinds commonly called 'boomtown'. . . sudden, rapid growth in population in a rural area, followed by a . . . 'bust' period."

TECHNICAL COMMENT: See Technical Comment SSC028.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population Projections

LOCATION IN DEIS: Vol 7 Page N-40 Section N.2.1.1.2 Paragraph 4 of the page
(Table N-13)

COMMENT IN REFERENCE TO: The FERC Staff's "revised Applicant impact projections" were based on an assignment of immigrants to several towns not included in the Applicant's projections.

TECHNICAL COMMENT: The Applicant submitted a revision of its impact projections to FERC on April 30, 1984. The revision included an assignment of immigrants to the towns added to the analysis in the DEIS; namely Paxson, Healy and Nenana (FOA 1984a).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Subsistence, Proposed Project

LOCATION IN DEIS: Vol 7 Page N-47 Section N.2.1.1.3 Paragraph 1 of the page

COMMENT IN REFERENCE TO: The Proposed Project's impact on subsistence uses in the project area and consequent effects on Native Alaskan culture.

TECHNICAL COMMENT: See Technical Comment SSC009.

The citation by Justus and Simonetta (1983) does not support the concluding sentence about "increased population and access to the area of the proposed project". The article is neither about the project area nor, except at "level of principle", about Alaskan Natives (Justus and Simonetta, 1983).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Population, Impacts

LOCATION IN DEIS: Vol 7 Page N-49 Section N.2.1.1.5 Paragraph 7 of the page

COMMENT IN REFERENCE TO: A concern is expressed that job seekers will immigrate in excess of available jobs. The concern is based on the Trans Alaska Pipeline experience and has important consequences for the level of community services impacts.

TECHNICAL COMMENT: See Technical Comment SSC030.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Housing

LOCATION IN DEIS: Vol 7 Page N-50 Section N-2.1.1.6

COMMENT IN REFERENCE TO: Page Missing

TECHNICAL COMMENT: The FEIS should include this page.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPICA AREA: Population, Proposed Project

LOCATION IN DEIS: Vol 7 Page N-52 Section N.2.1.7 Paragraph 6 of the page
(Tables N-18 & N-19)

COMMENT IN REFERENCE TO: Immigrants . . . "would change the way some community services are provided and severely stress current capacities."

TECHNICAL COMMENT: The sensitivity of community service impacts to baseline projections does not receive adequate attention in the DEIS. Depending upon which baseline one chooses (see comments SSC008 and SSC028) the timing and hence the planning needs for impacts can vary greatly. The timing is, of course, also sensitive to changes in the number of project-induced immigrants. This sensitivity to variation in baseline and "with-project" numbers and lack of agreement between models about both numbers points to the importance of an effective monitoring program and a mitigation plan with flexibility to react to monitoring data.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Work Force, Proposed Project, Population

LOCATION IN DEIS: Vol 7 Pages N-69 to N-72 Sections N.2.3.3.1 through N.2.3.3.5

COMMENT IN REFERENCE TO: Peak construction work forces for each alternative

TECHNICAL COMMENT: The projections for numbers of workers during peak construction periods for the five hydroelectric and selected thermal alternatives do not include workers who would be building transmission lines, major highways, pipelines, towns and other facilities. This construction would be due to either normally required ancillary facilities or to relocation due to inundation. Since some of this ancillary construction would likely be concurrent with the main facility construction, peak work forces are likely to be underestimated for all alternatives.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Population Projections

LOCATION IN DEIS: Vol 7 Page N-75 Section N.4 Paragraph 3 of the page

COMMENT IN REFERENCE TO: "The Applicant states that studies are being conducted to: Update baseline and project-induced population projections..."

TECHNICAL COMMENT: The report summarizing this work was completed in March, 1984 and submitted to FERC on April 30, 1984. See FOA (1984a).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-3 Section 0.1.1.1 Paragraph 1 of the
page

COMMENT IN REFERENCE TO: "The cultural resource study areas for the
proposed Susitna project..."

TECHNICAL COMMENT: The FEIS should define the "study areas" for the
Proposed Project and distinguish them from the "project area".

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-3 Section 0.1.1.1 Paragraph 1 of the page

COMMENT IN REFERENCE TO: "Both the quality and quantity of these resources (archeological and historic sites) are significant."

TECHNICAL COMMENT: The term "significant" when used is generally understood to mean "eligible for the National Register of Historic Places." No determinations of National Register eligibility have been made for any of the sites in the study area. The text should be rephrased as follows: "Both the quantity and quality of these resources appear significant, and determinations of eligibility for the National Register of Historic Places are being prepared."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-3 Section 0.1.1.1 Paragraph 1 of the
page

COMMENT IN REFERENCE TO: "Currently 423 archeological and historic sites
are known in the area..."

TECHNICAL COMMENT: Previously known sites recorded in the AHRS files and
sites located by UAM surveys to date total only 245. A site by site listing
is provided in Table 5.1 (UAM 1984). FERC staff should review the data and
correct the figure or explain the discrepancy.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-3 Section 0.1.1.2.1 Paragraph 3 of the page

COMMENT IN REFERENCE TO: "The tephra sequence permits the relative and absolute dating of a large number of sites..."

TECHNICAL COMMENT: The tephra sequence provides absolute dating only when a cultural deposit is located directly on top of a tephra layer and few (if any) sites in the project area meet this criterion. The text should be revised to drop the words "and absolute."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-9 Section 0.1.1.4.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: "These data were fully adequate...for assessment
of site significance."

TECHNICAL COMMENT: Determinations of eligibility have not yet been
prepared. The sentence should be rephrased as follows: "These data appear
adequate for assessment of site...."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-9 Section 0.1.1.4.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: "In 1980-1983, the University of Alaska Museum
initiated large-scale survey and preliminary excavation"

TECHNICAL COMMENT: The project field program has been limited to survey
and test excavation. The federal antiquities permit does not permit
"extensive testing, emergency excavation, and/or salvage." The sentence
should be rephrased as follows: "In 1980-1983, the University of Alaska
Museum initiated large-scale survey and preliminary test excavation."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-9 Section 0.1.1.4.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: "...in order to determine their eligibility for
nomination to the National Register..."

TECHNICAL COMMENT: No formal nominations will be made because formal
determinations of eligibility are sufficient for regulatory purposes. The
phrase "nomination to" should be deleted.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-9 Section 0.1.1.4.2 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: "The middle and upper Susitna Basin contains 209
presently known...sites"

TECHNICAL COMMENT: Reports by Dixon et al. (1982, 1983, 1984) are cited as
the source of this statement, but the DEIS appears to be at odds with UAM's
figure of 245 sites reported to date (UAM 1984). FERC Staff should review
the data and correct the figure or explain the discrepancy.

Note that the DEIS citations of Dixon et al. (1982, 1983, 1984) are cited
herein as UAM (1982, 1983, 1984).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-10 Section 0.1.1.4.2 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "...142 (68%) (sites) have produced subsurface material, an unusually high percentage"

TECHNICAL COMMENT: The evaluation that this is an unusually high percentage needs to be substantiated. In the absence of supporting data, the Applicant suggests deleting "...an unusually high percentage."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-11 Section 0.1.1.4.2 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: "...a surprising number (66) have not produced any
surficial remains."

TECHNICAL COMMENT: The evaluation that this is a surprising number needs to
be substantiated. In the absence of supporting data, the Applicant suggests
deleting "...a surprising number."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-11 Section 0.1.1.4.4 Paragraph 9 of the
page

COMMENT IN REFERENCE TO: "With one exception (TLM 033) all (sites) were
found to be significant..."

TECHNICAL COMMENT: See Technical Comments SSC115 and SSC126.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-12 Section 0.1.1.4.4 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "The surface archeological sites generally lack an adequate stratigraphic context, and are of limited importance."

TECHNICAL COMMENT: FERC staff should review the tone of this sentence and the rest of the paragraph. It assumes that only subsurface sites with good stratigraphy can be significant, however, many studies have demonstrated how surface sites can yield important data. In particular, see Malmdge and Chesler (1977). Significance is assessed in terms of a site's ability to help solve a specific research question(s) and there are non-chronology related questions which might be addressed with data from the Susitna project.

The text should be rephrased as follows: "The surficial archeological sites generally lack an adequate stratigraphic context and are of limited importance in chronological studies. Possible exceptions would include situations where surface material overlies the tephra sequence and consequently occupies a better-defined chronological (and, by inference, cultural) unit. These sites could provide some useful information on late prehistoric (specifically Athapaskan) settlement patterns. Some sites can be expected to contribute information important in non-chronological studies. However, many sites occur on exposed till and lack diagnostic artifacts relating to specific periods within the record of regional habitation. If such sites are not found to contribute important information in non-chronological studies, these sites will be of little significance."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0.12 Section 0.1.1.4.4 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "...contain large quantities of artifactual and faunal remains, it is likely that many additional sites...will be assessed as significant."

TECHNICAL COMMENT: It is true that most of the systematically tested sites have a large quantity of artifactual and faunal material. However, these sites appear to have been selected for systematic testing because reconnaissance survey yielded a large number of artifacts. Most sites surveyed to date yielded much smaller quantities (in many cases 1 or 2) of artifacts than those subsequently systematically tested. Sites systematically tested to date may therefore be somewhat atypical of the majority of sites in the project area. The sentence should be rephrased as follows: "Given the high proportion of remaining stratified, datable archeological sites, some of which may contain large quantities of...."

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-12 Section 0.1.1.5.2 Paragraph 5 of the page

COMMENT IN REFERENCE TO: "A total of 69 archeological and historic sites is currently known from this portion (Healy to Fairbanks) of the proposed corridor (Dixon et al. 1984)."

TECHNICAL COMMENT: Tables 4.5 and 5.1 of Dixon et al. (1984) (cited herein as UAM 1984) both indicate 22 sites along the Healy-Fairbanks transmission-line corridor.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-12 Section 0.1.1.5.2 Paragraph 5 of the page

COMMENT IN REFERENCE TO: Historic and Prehistoric Sites FAI 206, HEA 005, HEA 129

TECHNICAL COMMENT: The FEIS should specify the source(s) of information on these sites. HEA 005 is the Dry Creek site and listed in the National Register. FERC staff should also state how HEA 005 and the other sites relate to the transmission line corridor.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 7 Page 0-12 Section 0.1.1.5.2 Paragraph 6 of the
page

COMMENT IN REFERENCE TO: "Sites are distributed throughout the proposed
project area..."

TECHNICAL COMMENT: The FEIS should specify the number of sites known within
the corridor as opposed to those along the Intertie. Also, it should note
the type and comparability of data between the two areas.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-13 Section 0.1.1.5.2 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "Thirty...sites are currently known...(Dixon et al., 1984)"

TECHNICAL COMMENT: Dixon et al. (1984) (cited herein as UAM 1984) notes only 9 sites on the Willow-to-Anchorage segment of the transmission line. See Tables 4.5 and 5.1.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-13 Section 0.1.1.5.3 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "...several sites (e.g. Dry Creek) that already have provided important information... The Carlo Creek site...represents another..."

TECHNICAL COMMENT: The text appears to imply that the Dry Creek and Carlo Creek sites are in the Proposed Project area. FERC Staff should review the data to verify their location. If the sites are not in the project area, these two sentences should be rephrased to show that significant sites are known in the study area and specify their distance from the Proposed Project area.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-13 Section 0.1.2.1.1 Paragraph 4 of the page

COMMENT IN REFERENCE TO: Different number of sites impacted by 100 ft. change of reservoir level.

TECHNICAL COMMENT: See Technical Comment SSC042.

Also, the proposed Watana reservoir level is El. 2185, while Watana I is El. 2100. This represents an 85 ft reduction in reservoir level, not 100 ft as stated in the DEIS. (Refer to the DEIS Summary, Vol 1 page xxiii paragraph 4 of the page).

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-13 Section 0.1.2.1.1 Paragraph 4 of the page

COMMENT IN REFERENCE TO: "Three sites (TLM 026, 123, 196) contain subsurface material that may or may not be related to human occupation"

TECHNICAL COMMENT: The National Park Service publication "How to Apply the National Register Criteria for Evaluation" (NPS 1982) notes that "A property for which no human associations can be established, such as a paleontological site, is not eligible." The FEIS should add the following statement: "If these sites prove to be unrelated to human occupation, they will be dropped from the inventory."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-13 Section 0.1.2.1.1 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: "...five (sites) appear to be lacking in
subsurface remains, and seem unlikely to be significant."

TECHNICAL COMMENT: See Technical Comment SSC125.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-14 Section 0.1.2.2.1 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: "These sites are typically lacking in strati-
graphic context and are of limited importance."

TECHNICAL COMMENT: See Technical Comment SSC014.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Access Roads, Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-14 Section 0.1.2.2.2 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: "...the terrain covered by the route is thought to
have less potential for significant sites..."

TECHNICAL COMMENT: The License Application, Exhibit E. Vol. 9, Chap. 10, p.
E-10-46 is cited. A more detailed description is needed to clarify and
support this statement.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-14 Section 0.1.2.2.3 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: "...they are mostly surface sites of limited
importance."

TECHNICAL COMMENT: See Technical Comment SSC125.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-14 Section 0.1.2.4 Paragraph 8 of the
page

COMMENT IN REFERENCE TO: "Borrow site H is adjacent to the Fog Creek site
(TLM 030), which has been assessed as significant."

TECHNICAL COMMENT: See Technical Comment SSC115.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-14 Section 0.1.2.4 Paragraph 9 of the
page

COMMENT IN REFERENCE TO: "One site (TLM 097) has already been assessed as
significant."

TECHNICAL COMMENT: See Technical Comment SSC115.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-15 Section 0.1.3.2.1 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: "The area seems unlikely to possess many
significant sites."

TECHNICAL COMMENT: This sentence seems to partially contradict the previous
sentence: "A site-specific survey would be necessary to fully assess
existing cultural resources." FERC staff should explain the basis for
concluding that the area seems unlikely to possess many significant sites.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-16 Section 0.1.3.2.3 Paragraph 2 of the page

COMMENT IN REFERENCE TO: Evaluation of archeological potential and impacts of the coal-fired generation scenario.

TECHNICAL COMMENT: In its assessment of archeological resources, the DEIS simply notes that a survey would be necessary to assess cultural resources. However, the description of existing knowledge of the area would seem to indicate that it is highly likely that a survey would find numerous sites. In addition the nature of the known sites suggests that new ones are likely to be potentially eligible for the National Register. The sentence should be rephrased to note both of these facts.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Mitigation, Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.1 Paragraph 1 of the
page

COMMENT IN REFERENCE TO: "...most impacts would be mitigated by
investigation"

TECHNICAL COMMENT: Avoidance may be possible at many sites. The sentence
should be rephrased as follows: "...most impacts would be mitigated by
avoidance or scientific data recovery."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.1 Paragraph 1 of the
page

COMMENT IN REFERENCE TO: "...the mitigation process would likely make a
substantial positive contribution...in the realm of prehistoric cultural
chronology..."

TECHNICAL COMMENT: See Technical Comment SSC002.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Cultural Resources, Watana

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.1 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "As indicated in Table 0-1, eight archeological sites would be directly impacted, and six archeological sites would be indirectly impacted"

TECHNICAL COMMENT: Table 0-1 does not indicate which sites would be impacted by Watana construction. Table 5.1 of UAM (1984) lists 13, not 14 sites as being impacted. Table 0-1 also does not show the sites identified in individual impact areas. Attached are copies of this table, as well as Tables 0-2, 0-3, and 0-4, which have been annotated to show site occurrence in impact areas. Note that TLM 130 should be shown as indirectly impacted. FERC staff should check the tables and summary numbers and correct them or explain the reason for discrepancy.

Table 0-1. Expected Impacts and Recommended Mitigation:
Watana Development

AHRST ¹ No.	Type	Significance	Impact	Recommended Mitigation
R TLM 015 O	Archeological		Indirect	
S TLM 016 <u>Wc</u>	Archeological	Significant	Direct	Investigation
R TLM 017 <u>Wc</u>	Archeological		Direct	
S TLM 018 <u>Wc</u>	Archeological	Significant	Direct	Investigation
R TLM 021 <u>RAJ</u>	Archeological		Potential	Avoidance
R TLM 025 O	Archeological		Potential	Avoidance
R TLM 026 <u>WR</u>	Archeological		Indirect	
R TLM 028 O	Archeological		Potential	Avoidance
R TLM 031 O	Archeological		Potential	Avoidance
R TLM 032 O	Archeological		Potential	Avoidance
S TLM 033 <u>WR</u>	Archeological	Not Significant	Direct	None
R TLM 036 O	Archeological		Potential	Avoidance
R TLM 037 O	Archeological		Potential	Avoidance
S TLM 038 O	Archeological	Significant	Indirect	Investigation
S TLM 039 <u>WR</u>	Archeological	Significant	Direct	Investigation
S TLM 040 <u>WR</u>	Archeological	Significant	Direct	Investigation
S TLM 042 <u>WR</u>	Archeological	Significant	Indirect	Investigation
S TLM 043 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 044 O	Archeological		Potential	Avoidance
R TLM 045 O	Archeological		Potential	Avoidance
S TLM 046 O	Archeological	Significant	Potential	Avoidance
R TLM 047 O	Archeological		Potential	Avoidance
S TLM 048 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 049 O	Archeological		Potential	Avoidance
S TLM 050 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 051 <u>Wc</u>	Archeological		Indirect	Avoidance
R TLM 052 O	Archeological		Potential	Avoidance
R TLM 053 O	Archeological		Potential	Avoidance
R TLM 058 <u>WR</u>	Archeological		Direct	
S TLM 059 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 060 <u>WR</u>	Archeological		Direct	
R TLM 061 <u>WR</u>	Archeological		Direct	
S TLM 062 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 063 <u>WR</u>	Archeological		Direct	
R TLM 064 <u>WR</u>	Archeological		Indirect	
S TLM 065 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 066 O	Archeological		Potential	Avoidance
S TLM 069 O	Archeological	Significant	Potential	Avoidance
R TLM 071 <u>RAJ</u>	Historic	Significant	Indirect	Preservation
R TLM 072 <u>WR</u>	Archeological		Direct	

Table 0-1. (Continued)

AHRST ¹ No.	Type	Significance	Impact	Recommended Mitigation
R TLM 152 O	Archeological		Potential	Avoidance
R TLM 154 O	Archeological		Potential	Avoidance
R TLM 159 O	Archeological		Potential	Avoidance
R TLM 160 <u>WC</u>	Archeological		Indirect	
R TLM 164 <u>WC</u>	Archeological		Indirect	
R TLM 165 <u>WC</u>	Archeological		Direct	
R TLM 166 <u>WC</u>	Archeological		Direct	
R TLM 167 <u>WC</u>	Archeological		Direct	
R TLM 169 <u>WR</u>	Archeological		Direct	
R TLM 170 O	Archeological		Potential	Avoidance
R TLM 171 <u>WR</u>	Archeological		Direct	
R TLM 172 <u>WC</u>	Archeological		Direct	
R TLM 173 <u>WR</u>	Archeological		Direct	
R TLM 174 <u>WR</u>	Archeological		Direct	
R TOM 175 <u>WR</u>	Archeological		Direct	
R TLM 177 <u>WR</u>	Archeological		Direct	
S TLM 180 <u>WC</u>	Archeological	Significant	Indirect	Investigation
R TLM 181 O	Archeological		Potential	Avoidance
R TLM 182 <u>WR/RAJ</u>	Archeological		Direct	
R TLM 183 O	Archeological		Potential	Avoidance
S TLM 184 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 185 O	Archeological		Potential	Avoidance
R TLM 186 RA-K	Archeological		Potential	Avoidance
R TLM 187 RA-J	Archeological		Potential	Avoidance
R TLM 188 B-F	Archeological		Potential	Avoidance
R TLM 189 O	Archeological		Potential	Avoidance
R TLM 190 O	Archeological		Potential	Avoidance
R TLM 191 O	Archeological		Potential	Avoidance
R TLM 192 <u>WC</u>	Archeological		Indirect	
R TLM 193 O	Archeological		Potential	Avoidance
R TLM 194 <u>WR</u>	Archeological		Direct	
R TLM 195 O	Archeological		Potential	Avoidance
R TLM 196 <u>WR</u>	Paleontological/ Archeological[?]		Direct	
R TLM 197 O	Archeological		Potential	Avoidance
R TLM 198 O	Archeological		Potential	Avoidance
R TLM 199 <u>WR</u>	Archeological		Direct	
R TLM 200 <u>WR</u>	Archeological		Direct	
R TLM 204 <u>WR</u>	Historic		Direct	
R TLM 206 <u>WR</u>	Archeological		Direct	
R TLM 207 <u>WR</u>	Archeological		Indirect	
S TLM 215 <u>WR</u>	Archeological	Significant	Direct	Investigation
R TLM 218 O	Archeological		Direct	
R TLM 219 O	Archeological		Potential	Avoidance

Table 0-3. Expected Impacts and Recommended Mitigation:
Access Routes

AHRSt ¹ No.	Type	Significance	Impact† ²	Recommended Mitigation
<u>Denali Highway to Watana</u>				
P TLM 098 RA-L	Archeological		Potential	Avoidance
R TLM 099 RA-L	Archeological		Potential	Avoidance
R TLM 116 AR/RA-I	Archeological		Potential	Avoidance
R TLM 117 AR/RA-I	Archeological		Indirect	
R TLM 153 ARB/AR	Archeological		Direct*	
R TLM 155 AR	Archeological		Indirect	
R TLM 168 AR	Archeological		Indirect	
R HEA 174 RA-L	Archeological		Potential	Avoidance
R HEA 176 RA-L	Archeological		Potential	Avoidance
R HEA 180 AR	Archeological		Indirect	
R HEA 181 ARB/AR	Archeological		Direct*	
R HEA 182 ARB/AR	Archeological		Direct*	
P HEA 183 RA-L	Archeological		Potential	Avoidance
R HEA 184 RA-L	Archeological		Potential	Avoidance
R HEA 185 RA-L	Archeological		Potential	Avoidance
R HEA 211 ARB	Archeological		Direct*	
<u>Watana to Devil Canyon</u>				
P TLM 101 AR-B	Archeological		Potential	Avoidance
R TLM 103 ARB/RA-9	Archeological		Direct*	
P TLM 106 ARB	Archeological		Direct*	
R TLM 107 ARB	Archeological		Direct*	
R TLM 108 ARB	Archeological		Direct*	
R TLM 109 ARB/AR	Archeological		Direct*	
R TLM 110 ARB/AR	Archeological		Direct*	
P TLM 111 ARB/AR	Archeological		Direct*	
R TLM 112 TW-I/AR	Archeological		Potential	Avoidance
R TLM 113 ARB/AR	Archeological		Direct*	
<u>Watana to Devil Canyon (continued)</u>				
R TLM 114 ARB	Archeological		Direct*	
R TLM 214 B-FAR	Archeological		Potential	Avoidance
<u>Rail Access to Devil Canyon</u>				
- TLM 005 RR	Historic		Potential	Avoidance
- TLM 006 RR	Historic		Potential	Avoidance

†¹ AHRs = Alaska Historic Resources Survey.†² "*" identifies a site that is located in a proposed access route borrow site.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.1 Paragraph 2 of the
page (Table 0-1)

COMMENT IN REFERENCE TO: Column head "Significance"

TECHNICAL COMMENT: See Technical Comment SSC115.

Column heading should be changed to "Potential for National Register
Eligibility" or similar heading.

The same comment applies to Table 0-2 and Table 0-3.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 7 Pages 0-17 Section 0.2.1.1.1 Paragraph 2 of the page (Table 0-1)

COMMENT IN REFERENCE TO: Entries under column heading "Impact"

TECHNICAL COMMENT: All impacts should be classified as direct or indirect, and references to potential impacts should be deleted. The DEIS notes (p. 0-17) that "for legal purposes [potential impacts] may be considered as indirect impacts."

This comment also applies to Tables 0-2 and 0-3.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: "Nineteen sites...all but one have been assessed
as significant."

TECHNICAL COMMENT: See Technical Comment SSC115 and SSC126.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.1 Paragraph 3 of the page

COMMENT IN REFERENCE TO: "...undoubtedly, additional significant sites will be identified, judging by the high proportion of subsurface localities with rich inventories."

TECHNICAL COMMENT: Of the 59 archeological and historic sites identified in the DEIS as being impacted, it is noted that 19 have been systematically tested and a high proportion yielded large quantities of artifacts. The conclusion that the remaining sites will also have large artifact inventories may not be justified. The systematic testing program has given priority to those sites where reconnaissance survey yielded large numbers of artifacts, and systematic testing was generally not done at those sites which yielded few artifacts during reconnaissance survey. The sentence should be rephrased as follows: "Nineteen of these sites have been systematically tested, and all but one have been assessed as significant; undoubtedly additional significant sites will be identified ..."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts, Mitigation

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.2 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: "...some damage due to vandalism seems
possible"..."(a monitoring program...) appears to be an adequate mitigative
measure."

TECHNICAL COMMENT: See Technical Comment SSC002.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.2 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "Since precise assessment of potential impacts is impossible, the number of sites placed in this category is relatively subjective. Fifty-three archeological sites are currently included in the potential impacts list."

TECHNICAL COMMENT: The statement that precise assessment of potential impacts is impossible is correct. Therefore, specific numbers of sites should be eliminated, as should all mention of "potential" impacts. A generic evaluation of other "indirect" impacts (e.g. induced development) should be substituted.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-17 Section 0.2.1.1.2 Paragraph 6 of the
page

COMMENT IN REFERENCE TO: "Three of these sites...have been determined to be
significant"

TECHNICAL COMMENT: See Technical Comments SSC115 and SSC126.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-21 Section 0.2.1.2.1 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: "Three of their (sites) have been systematically
tested, and all were identified as significant"

TECHNICAL COMMENT: See Technical Comments SSC115 and SSC126.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources Impacts, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-21 Section 0.2.1.3.1 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: "...sites...would be subject...to indirect impacts
due to greatly increased access."

TECHNICAL COMMENT: See Technical Comment SSC002.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-21 Section 0.2.1.31 Paragraph 5 of the
page

COMMENT IN REFERENCE TO: "...it appears unlikely that many, if any, of
these sites will be assessed as significant, due to their largely surficial
character"

TECHNICAL COMMENT: See Technical Comment SSC125.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 7 Page 0-21 Section 0.2.1.3.1 Paragraph 6 of the
page

COMMENT IN REFERENCE TO: "...sites would be subject to potential impact due
to increased access"

TECHNICAL COMMENT: See Technical Comment SSC146.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 7 Page 0-23 Section 0.2.1.3.1 Paragraph 2 of the page

COMMENT IN REFERENCE TO: "Any of the 16 sites described above not investigated during construction phase mitigation would be exposed to potential impacts due to increased access"

TECHNICAL COMMENT: This sentence should be rephrased as follows: "Any of the 16 sites described above not included in data recovery under the project mitigation plan might be exposed to indirect impacts due to increased access....."

See Technical Comment SSC002.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts, Proposed Project

LOCATION IN DEIS: Vol 7 Page 0-23 Section 0.2.1.3.2 Paragraph 4 of the
page

COMMENT IN REFERENCE TO: "Any sites...not thoroughly excavated as part of
the construction phase mitigation process would be exposed to potential
impacts due to increased exposed to potential impacts due to increased
access to the area."

TECHNICAL COMMENT: See Technical Comments SSC146 and SSC159.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-23 Section 0.2.1.4.1 Paragraph 6 of the page

COMMENT IN REFERENCE TO: "Only TLM 018 has been assessed for significance (with positive results)"

TECHNICAL COMMENT: See Technical Comment SSC115.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Mitigation, Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-23 Section 0.2.1.4.1 Paragraph 7 of the page

COMMENT IN REFERENCE TO: "Any sites not thoroughly excavated...would continue to be exposed to potential impacts due to increased access"

TECHNICAL COMMENT: The DEIS should avoid implying that complete excavation of impacted sites is necessary. Whether or not complete evacuation is warranted at a particular site depends upon the research questions the site is being used to address. The sentence should be rephrased as follows: "Any significant sites not included in data recovery under the project mitigation plan might be exposed to indirect impacts from increased access. An alternate form of mitigation may be necessary to detect impacts and provide for mitigation at such sites."

See Technical Comment SSC003.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Mitigation, Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-24 Section 0.2.1.4.2 Paragraph 1 of the
page

COMMENT IN REFERENCE TO: "Any sites not thoroughly excavated..."

TECHNICAL COMMENT: See Technical Comment SSC159.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 7 Page 0-24 Section 0.2.1.4.2 Paragraph 2 of the
page

COMMENT IN REFERENCE TO: "...sites would be subject...to potential impact,
due to increased access"

TECHNICAL COMMENT: See Technical Comments SSC003.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts

LOCATION IN DEIS: Vol 7 Page 0-24 Section 0.2.1.4.3 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: "Any sites not thoroughly excavated..."

TECHNICAL COMMENT: See Technical Comment SSC159.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Impacts, Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.1.1 Paragraphs 1 and 2
of the page

COMMENT IN REFERENCE TO: Impact evaluation

TECHNICAL COMMENT: Because the distinction made between indirect and potential impacts is unclear, this discussion is somewhat difficult to follow. If "indirect" impact is assumed to mean subject to erosion impacts (as described by UAM 1984: 4-1) and one assumes that available elevations for sites are correct, then only two to four of the sites (as opposed to 12) would be impacted by the proposed development. The remainder are 40 feet above the maximum crest height of the dam (before subsidence), and are 65 feet above the normal maximum pool. For the Watana I alternative all 12 sites would be above the normal maximum pool. These sites would be subjected to only indirect impacts associated with increased access and the potential for vandalism. Whether vandalism is a legitimate impact concern requiring mitigative measure is subject to question (see Technical Comment SSC002). FERC staff should consider these comments and rephrase the conclusion accordingly.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.1.1 Paragraph 3 of the
page

COMMENT IN REFERENCE TO: "Three ...sites...have been assessed as
significant"

TECHNICAL COMMENT: See Technical Comment SSC115.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.2.1 Paragraph 7 of page

COMMENT IN REFERENCE TO: "Few, if any, of the sites found to date in this proposed corridor (chiefly surficial archeological localities) appear likely to be assessed as significant"

TECHNICAL COMMENT: See Technical Comment SSC125.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Impacts, Cultural Resources, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.2.1 Paragraph 7 of page

COMMENT IN REFERENCE TO: "...sites...would be subject to direct, indirect and potential"

TECHNICAL COMMENT: See Technical Comment SSC146.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.2.3 Paragraph 9 of page

COMMENT IN REFERENCE TO: "The sites...(chiefly surficial...) contain few, if any, significant localities"

TECHNICAL COMMENT: See Comment SSC125.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts, Access Roads

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.2.3 Paragraph 9 of page

COMMENT IN REFERENCE TO: "...resources...would be exposed to direct,
indirect and potential impacts"

TECHNICAL COMMENT: See Technical Comment SSC146.

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources, Impacts, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 7 Page 0-25 Section 0.2.2.3 Paragraph 10 of page

COMMENT IN REFERENCE TO: "...sites within .25 mi (0.4 km) of the centerline would be at least partially impacted during the construction phase by increased access..."

TECHNICAL COMMENT: Construction is likely to result in very limited increased access to the area. In addition, the sites in these areas are unlikely to be very attractive to potential vandals. Therefore, the FEIS should drop the sentence, "Archeological and historic sites within .25 mile (0.4 km)... by increased access to the area." Alternatively, FERC Staff should clarify the basis for expecting any impacts to archeological sites during the construction phase by increased access, as well as the basis for the .25 mi figure. See Technical Comment SSC002.

**SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM**

TOPIC AREA: Cultural Resources, Impacts, Transmission Lines and Corridors

LOCATION IN DEIS: Vol 7 Page 0-26 Section 0.2.2.4 Paragraph 1 of page

COMMENT IN REFERENCE TO: "Alternative 3 would impact six sites... while No. 4 would impact three sites...These sites appear to be largely surficial, and seem unlikely to be significant."

TECHNICAL COMMENT: Final design, siting, and construction methods often are flexible enough to allow avoidance of cultural resources sites. The paragraph should be rephrased as follows: "Alternative No. 3 may impact six ..., while No. 4 may impact.... Alternative No. 10 may impact one... Additional survey will surely reveal more sites in impact areas, some of which will likely be determined to be significant. Final design, as well as siting and construction methods, may allow avoidance of significant sites."

SUSITNA HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENT FORM

TOPIC AREA: Cultural Resources

LOCATION IN DEIS: Vol 7 Page 0-26 Section 0.2.2.4 Paragraph 5 of page

COMMENT IN REFERENCE TO: "At least one site has already been termed significant."

TECHNICAL COMMENT: See Technical Comment SSC115.

BIBLIOGRAPHY

For
Alaska Power Authority
Comments on the Federal Energy Regulatory Commission
Draft Environmental Impact Statement
of May 1984

This Bibliography is organized according to the five categories of the Technical Comments. Within each category, the references are listed alphabetically by author. For brevity, the following acronyms are used in the citations.

<u>Acronym</u>	<u>Affiliation</u>
Acres	Acres American, Inc.
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AEIDC	Arctic Environmental Information and Data Center
AIEE	American Institute of Electrical Engineers
AK	State of Alaska (General)
ALUC	Alaska Land Use Council
APA	Alaska Power Authority
ASL	Alaska State Legislature
Battelle	Battelle Pacific Northwest Laboratories
BLM	Bureau of Land Management
BP	British Petroleum
COE	Corps of Engineers
DCED	Alaska Department of Commerce and Economic Development
DOE	U.S. Department of Energy
EBASCO	Ebasco Services, Inc.
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission

<u>Acronym</u>	<u>Affiliation</u>
FNSB	Fairbanks - North Star Borough
FOA	Frank Orth and Associates
HE	Harza-Ebasco Susitna Joint Venture
IEA	International Energy Agency
IEEE	Institute of Electrical and Electronics Engineers, Inc.
ISER	Institute of Social and Economic Research
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
O&GCC	Oil and Gas Conservation Commission
PND	Peratrovich, Nottingham & Drage, Inc.
R&M	R&M Associates
SHCA	Sherman H. Clark Associates
SHP	Susitna Hydroelectric Project
TES	Terrestrial Environmental Specialists
UAM	University of Alaska - Museum
USBR	U.S. Bureau of Reclamation
USDASCS	U.S. Department of Agriculture, Soil Conservation Service
USGS	U.S. Geological Survey

TERRESTRIAL RESOURCES

<u>Citation</u>	<u>Technical Comment Numbers</u>
ADNR 1984. Tanana Basin Area Plan. Fish and Wildlife Element and Wildlife Resources Narratives (Background Report). ADNR and USDASCS.	TRR002 TRR016
ADNR and USDASCS 1984. Susitna Area Plan. Summary of the Public Review Draft. June 1984.	TRR048
APA 1983. SHP-Application for Major Project to the Federal Energy Regulatory Commission. Filed February 1983, Revised July 1983.	TRR005 TRR010 TRR027 TRR041 TRR049 TRR067 TRR098
APA 1984a. Responses to Department of the Interior Comments on License Application. Volumes 1 and 2. February 15, 1984.	TRR051
APA 1984b. Letter from J. Ferguson to D. LeFebvre, ADNR. May 30, 1984.	TRR048
Ballard, W.B., J.S. Whitman, N.G. Tankersley, L.D. Aumiller, and P. Hessing 1983. SHP-Phase II Progress Report, Big Game Studies, Vol. III, Moose-Upstream. ADF&G.	TRR003 TRR021 TRR022
Ballard, W.B., C.L. Gardner, J.H. Westlund, and J.R. Dau 1982. SHP-Phase I Final Report, Big Game Studies, Vol. III, Moose-Upstream. ADF&G. 119 pp.	TRR003 TRR022
Bechtel Civil and Minerals, Inc. 1983. Chakachamna Hydroelectric Project. Interim Feasibility Assessment Report.	TRR015
Claget, G. 1984. Personal Communications, Snow Supervisor, Soil Conservation Service. Anchorage, AK.	TRR019
Cook Inlet Region, Inc., and Placer Amax Inc. 1981. Coal to Methanol Feasibility Study. Beluga Methanol Project. Final Report. Vol. IV. Environmental.	TRR076 TRR034

TERRESTRIAL RESOURCES (cont.)

<u>Citation</u>	<u>Technical Comment Numbers</u>
Elliott, C.L. 1984. Wildlife Food Habits and Habitat Use on Revegetated Strip Mine Land in Alaska. PhD Dissertation, Univ. of Alaska, Fairbanks. 174 pp.	TRR035
Kessel, B., S.O. MacDonald, D.A. Gibson, B.A. Cooper, and B.A. Anderson. 1982. SHP-Phase I Final Report, Birds and Non-Game Mammals. Univ. Alaska Museum. Fairbanks, AK.	TRR010
Miller, S.D., and D.C. McAllister 1982. SHP-Phase I Final Report, Big Game Studies, Vol. VI., Black Bear and Brown Bear. ADF&G.	TRR054
Miller, S.D. 1983. SHP- Phase II Progress Report, Big Game Studies, Vol. VI, Black Bear and Brown Bear. ADF&G	TRR054
Miller, S.D. 1984. SHP-Annual Report, Big Game Studies, Vol. VI, Black Bear and Brown Bear. ADF&G, April 1984.	TRR005 TRR007 TRR027 TRR053 TRR054 TRR079
Modafferi, R.D.. 1983. SHP-Phase II Progress Report, Big Game Studies, Vol. II, Moose-Downstream. ADF&G, April 1983.	TRR023 TRR024
Money, D. 1984. Personal Communication, Endangered Species Biologist, U.S. Fish and Wildlife Service. Anchorage, AK.	TRR002
Municipality of Anchorage 1980. Anchorage Coastal Resource Atlas. Vol. 1. The Anchorage Bowl. Planning Dept. Physical Planning Div. December 1980.	TRR013

TERRESTRIAL RESOURCES (cont.)

<u>Citation</u>	<u>Technical Comment Numbers</u>
Pitcher, K.W. 1982. SHP-Phase I Final Report, Big Game Studies, Vol. IV, Caribou. ADF&G, March 1982.	TRR068
Pitcher, K.W. 1983 - SHP-Phase II Progress Report, Big Game Studies, Vol. IV, Caribou. ADF&G, April 1983.	TRR068
Pitcher, K.W. 1984. SHP-1983 Annual Report, Big Game Studies, Vol. IV- Caribou. ADF&G, April 1984.	TRR004
R&M 1981. SHP-Task 3, Hydrology, Ice Observations 1980-81. August 1981.	TRR068
R&M 1982. SHP-Task 3 - Hydrology, Processed Climatic Data. Volumes 1 through 8, December 1982.	TRR019
Robus, M. 1984. Personal Communication, Habitat Biologist, ADF&G. Fairbanks, AK.	TRR016
Roseneau, D.G., C.E. Tull, and R.W. Nelson 1981. Protection Strategies for Peregrine Falcons and Other Raptors Along the Planned Northwest Alaskan Gas Pipeline Route. Final Report, Volumes I and II. LGL Alaska Ecological Research Associates, Inc. June 1981.	TRR010
Tankersley, N.G. 1984. SHP-Final Report, Big Game Studies, Vol. VIII, Dall Sheep. ADF&G, April 1984.	TRR026
White, C.M. 1974. Survey of the Peregrine Falcon and Other Raptors in the Proposed Susitna River Reservoir Impoundment Areas. Unpub. Interim Report, U.S. Fish and Wildlife Service. Anchorage, July 1974.	TRR010

TERRESTRIAL RESOURCES (cont.)

<u>Citation</u>	<u>Technical Comment Numbers</u>
Windler, G. 1984. Personal Communication with Geophysical Institute, University of Alaska, Fairbanks, AK.	TRR019
Wise, J. 1984. Personal Communication, State Climatologist, AEIDC, University of Alaska, Anchorage.	TRR019 TRR020
Wolff, J.O. and J.C. Zasada 1979. Moose Habitat and River Floodplain and Yukon-Tanana Upland. Proc. North American Moose Conf. Workshop 15:213-244.	TRR024

SOCIAL SCIENCE

<u>Citation</u>	<u>Technical Comment Numbers</u>
Alaska National Interest Lands Conservation Act (ANILCA). December 2, 1980.	SSC082
ALUC 1983. The Denali National Scenic Highway Study.	SSC082
ADNR 1981. Susitna Basin Planning Background Report. Scenic Resources Along the Parks Highway. 1981.	SSC018 SSC019
ADNR and USDASCS 1982. Tanana Basin Area Plan Land Use Atlas. 1982.	SSC018 SSC072
ADNR and USDASCS 1983a. Tanana Basin Area Plan. Recreation Element. October 1983.	SSC018 SSC072
ADNR and USDASCS 1983b. Tanana Basin Area Plan Mineral Element. August 1983.	SSC019 SSC072
ADNR and USDASCS 1983c. Tanana Basin Area Plan Agriculture Element. August 1983.	SSC072
ADNR and USDASCS 1983d. Tanana Basin Area Plan Forestry Element. August 1983.	SSC072
ADNR and USDASCS 1983e. Tanana Basin Area Plan Settlement Element. August 1983.	SSC072
ADNR and USDASCS 1983f. Tanana Basin Area Plan Fish & Wildlife Element. August 1983.	SSC072
ADNR and USDASCS 1984. Susitna Area Plan. Summary or the Public Review Draft. June 1984.	SSC072

SOCIAL SCIENCE (cont.)

<u>Citation</u>	<u>Technical Comment Numbers</u>
ADNR et al. 1984. Susitna Area Plan, Agency Review Draft, February 1984.	SSC006 SSC018 SSC074 SSC075 SSC082
BLM 1980. BLM Land Use Plan for Southcentral Alaska. Summary Report. U.S. Dept. of Interior. Anchorage, AK. Sept. 1980.	SSC074 SSC082
FNSB 1984. Fairbanks North Star Borough Draft Comprehensive Plan - Side 1 and 2; Maps. January 1984.	SSC072
FOA 1984a. Socioeconomic Impact Projections - Car Transportation Scenario, 1984.	SSC029 SSC071 SSC107 SSC113
FOA 1984b. SHP-Trapper Creek Household Survey Report, 1984.	SSC105
FOA 1984c. SHP-Talkeetna Household Survey Report, 1984.	SSC105
FOA 1984d. SHP-Cantwell Household Survey Report, 1984.	SSC105
ISER 1983a. MAP Model Regional Base Case Projections, 1980-2010. For Use In OCS Lease Sale 87 (Diapir Field) Impact Analysis. Prepared for Minerals Management Service, Alaska OCS Office. Anchorage. February 1983.	SSC008
ISER 1983b. SHP - Man-In-The-Arctic Program (MAP) Technical Documentation Report, July 1983.	SSC008

SOCIAL SCIENCE (cont.)

<u>Citation</u>	<u>Technical Comment Numbers</u>
Justus and Simonetta 1983. Social Pollution: Impact Mitigation and Compensation Schemes and the Indian Interest, in: Alaska Symposium on the Social, Economic and Cultural Impacts of Natural Resources Development. pp. 216-226. Anchorage, AK. August 25-27, 1983.	SSC108
Mountain West Research, Inc. 1981. Electric Transmission Line Effects on Land Values. A Critical Review of the Literature. Prepared for Bonneville Power Administration. Billings, Montana. December 1981.	SSC032
NPS 1982. How to apply the National Register Criteria for Evaluation. Washington, D.C., June 1982.	SSC133
Talmadge, V. and O. Chesler 1977. The Importance of Small, Surface, and Disturbed Sites as Sources of Significant Archeological Data. Interagency Archeological Services, Office of Archeology and Historical Preservation, NPS Washington, D.C. 1977.	SSC125
UAM 1982. SHP - A Preliminary Cultural Resources Survey in the Upper Susitna River Valley, Final Report.	SSC121
UAM 1983. SHP-1982 Cultural Resources Survey. Final Report. March 1983.	SSC012
UAM 1984. SHP - 1983 Field Season, Cultural Resources Investigation, Vol. 1., Final Report. January 1984.	SSC037 SSC116 SSC127 SSC130 SSC144 SSC163