ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 8672
1001 SCOMM44: HOUSE POWER ALTERNATIVES STUDY COMM. 1979-80 001

APPENDIX C
RECKONING OF EVALUATIONS AT EACH SITE

Site Number	INDIVIDUAL EVALUATIONS FG	NMF	LU	FW	Reckoning of Evaluations	Result
8	0	5	10	—	ON STATE LAND, NEAR EXISTING TRAIL AND LANDING STRIPS SOME FISH AND GAME CONFLICT ∴ USE AVERAGE: $\frac{0+5+10}{3} = 5$	5
15	0	0	10	—	ON STATE LAND, NEAR EXISTING ROAD AND RAILROAD UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
16	0	0	10	—	ON STATE LAND, NEAR EXISTING ROAD AND RAILROAD UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
17	0	0	10	—	ON STATE LAND, NEAR EXISTING TRAIL UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
18	0	0	10	—	ON STATE LAND, NEAR EXISTING TRAIL, NEAR D-1 LAND UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
19	5	5	10	—	ON STATE LAND, NEAR EXISTING TRAIL SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{5+5+10}{3} = 6.67$	6.67
20	0	0	10	—	ON STATE LAND, NEAR EXISTING TRAIL, NEAR D-1 LAND UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
21	0	0	10	—	ON STATE LAND, ACCESS TO EXISTING TRAIL, NEAR D-1 LAND UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
22	0	0	5	—	ON NATIVE SELECTED LANDS, ACCESS TO EXISTING TRAIL UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
23	0	0	10	—	ON STATE LAND, NEAR EXISTING ROAD UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0

Site Number	INDIVIDUAL EVALUATIONS FG	NMF	LU	FW	Reckoning of Evaluations	Result
24	0	0	10	—	ON STATE LAND, NEAR EXISTING ROAD AND RAILROAD UNANIMOUS ON FISH & GAME — UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
25	0	0	10	—	ON STATE LAND, NEAR EXISTING ROAD AND RAILROAD UNANIMOUS ON FISH & GAME - UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
26	0	0	10	—	ON STATE LAND, NEAR EXISTING ROAD AND RAILROAD UNANIMOUS ON FISH & GAME - UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
27	0	0	10	—	ON STATE LANDS, NEAR EXISTING RAILROAD & D-1 LANDS UNANIMOUS ON FISH & GAME — UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
28	5	5	5	—	D-1 FEDERAL LANDS — POSSIBLE ACCESS TO EXISTING RAILROAD SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{5+5+5}{3} = 5$	5
48	0	5	5	—	PENSTOCK RUNS FROM D-1 LANDS TO UTILITY CORRIDOR NEAR EXISTING ROAD. SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{5+5}{3} = 3.33$	3.33
49	0	0	5	0	ON D-1 LAND, NEAR PROPOSED RAILROAD AND EXISTING TRAIL UNANIMOUS ON FISH & GAME - UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
50	0	0	10	0	ON STATE LAND, NEAR PROPOSED HIGHWAY AND RAILROAD AND EXISTING TRAIL UNANIMOUS ON FISH & GAME - UNACCEPTABLE ∴ CONSIDER SITE "0"	0
51	0	0	5	0	ON D-1 LAND, CLOSE TO NATIVE CLAIMS, DISTANT ACCESS UNANIMOUS ON FISH & GAME - UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
52	5	5	0	5	INTAKE ON D-1 LAND, DAM ON D-2 LANDS, DISTANT ACCESS SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{5+5+0+5}{4} = 3.75$	3.75

Site Number	INDIVIDUAL EVALUATIONS FG	NMF	LU	FW	Reckoning of Evaluations	Result
53	0	0	10	5	ON STATE LAND, NEXT TO EXISTING ROAD AND RAILROAD. SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{0+0+10+5}{4} = 3.75$	3.75
54	0	0	10	5	ON STATE LAND, NEXT TO EXISTING ROAD AND RAILROAD SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{0+0+10+5}{4} = 3.75$	3.75
55	5	0	5	5	ON NATIVE SELECTED LANDS, NEXT TO EXISTING ROAD AND RAILROAD SOME CONFLICT ON FISH & GAME ∴ USE AVERAGE: $\frac{5+0+5+5}{4} = 3.75$	3.75
56	5	0	10	5	ON STATE LAND, NEXT TO EXISTING ROAD AND RAILROAD SOME FISH AND GAME CONFLICT ∴ USE AVERAGE: $\frac{5+0+10+5}{4} = 5$	5
57	5	0	0	5	IN MT. MCKINLEY NATIONAL PARK ∴ SITE IS UNACCEPTABLE AT "0"	0
58	5	0	10	5	ON STATE LAND (RESERVOIR MAY BE ON D-1 AND NATIVE LANDS) CLOSE TO EXISTING HIGHWAY SOME FISH & GAME CONFLICT ∴ USE AVERAGE: $\frac{5+0+10+5}{4} = 5$	5
59	10	5	10	5	ON STATE LAND, NEAR EXISTING LOCAL ROAD AND TRAIL SOME FISH & GAME CONFICT ∴ USE AVERAGE: $\frac{10+5+10+5}{4} = 7.5$	7.5
60	0	0	10	0	ON STATE LAND NEAR PROPOSED ROAD AND EXISTING TRAIL UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0
61	0	0	10	0	ON STATE LAND NEAR EXISTING ROAD AND PROPOSED RAILROAD UNANIMOUS ON FISH & GAME – UNACCEPTABLE ∴ CONSIDER SITE UNACCEPTABLE AT "0"	0

APPENDIX D
INDIVIDUAL SITE INFORMATION SHEETS

Site No. 8

Group Rank 3

Name Lake Creek Upper

Stream Lake Creek

Power Potential (kW) 15,000

Transmission Access Severe

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing trail -- airport landing strips.

Alaska Department of Fish & Game:

Scale	Comments
0	Important fisheries habitat involved. Chelatna Lake is a nursery system for sockeye salmon, and Lake Creek provides spawning and rearing habitat for rainbow trout, Arctic grayling and also five salmon species.

National Marine Fisheries Services:

Scale	Comments
5	Some loss of fish habitat likely and loss of moose habitat. Red salmon enter Chelatna Lake area.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Heavy recreational use; fisheries conflict.

Alaska Center for the Environment:

Scale	Comments
0	Fish -- project would or might impact "obvious" fisheries resource (usually salmon). Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, rafting, canoing, kayaking, etc.).

Site No. 15

Group Rank 6

Name Lower Chulitna

Stream Chulitna River

Power Potential (kW) 90,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing road and railroad.

Alaska Department of Fish & Game:

Scale	Comments
0	Important migrational corridor for several species of Pacific salmon.

National Marine Fisheries Services:

Scale	Comments
0	Impacts on anadromous fish -- important game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
-	?

Alaska Center for the Environment:

Scale	Comments
5	Recreation -- adverse impact on present or potential recreation uses (rafting, canoing, kayaking)? Fish -- project would or might impact "obvious" fisheries resource (usually salmon)?

Site No. 16

Group Rank 6

Name Tokichitna

Stream Chulitna River

Power Potential (kW) 184,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing road and railroad.

Alaska Department of Fish & Game:

Scale	Comments
0	Upstream area important for anadromous fish production and provides notable big game habitat.

National Marine Fisheries Services:

Scales	Comments
0	Impacts on anadromous fish -- important game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
-	?

Alaska Center for the Environment:

Scale	Comments
5	Recreation -- adverse impact on present or potential recreation uses (rafting, canoing, kayaking)(?) Fish -- project would or might impact "obvious" fisheries resource (usually salmon)(?) Also depends on size of lake created.

Site No. 17

Group Rank 6

Name Talkeetna River (Sheep)

Stream Talkeetna River

Power Potential (kW) 31,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing trail.

Alaska Department of Fish & Game:

Scale	Comments
0	Several major anadromous fisheries systems upstream of the site and important big game habitat involved.

National Marine Fisheries Services:

Scale	Comments
0	Impacts on anadromous fish -- important game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Potential high use area.

Alaska Center for the Environment:

Scale	Comments
5	Access -- maintenance of roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.). Preferable to #19, #20, #21 because of proximity to market; less "access" problems.

Site No. 18

Group Rank 6

Name Keetna

Stream Talkeetna River

Power Potential (kW) 74,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing trail -- near D-1 Federal land.

Alaska Department of Fish & Game:

Scale	Comments
0	Several major anadromous fisheries systems upstream of the site and important big game habitat involved.

National Marine Fisheries Services:

Scale	Comments
0	Impacts on anadromous fish -- important game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Potential high use area.

Alaska Center for the Environment:

Scale	Comments
5	Access -- maintenance roads, etc. would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.). Preferable to #19, #20, #21 because of proximity to market; less "access" problems.

Site No. 19

Group Rank 2

Name Iron Creek

Stream Iron Creek

Power Potential (kW) 31,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- existing trail.

Alaska Department of Fish & Game:

Scale	Comments
5	Minor fish and wildlife problems anticipated.

National Marine Fisheries Services:

Scale	Comments
5	Some loss of fish and game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Potential high use area.

Alaska Center for the Environment:

Scale	Comments
5	Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.). Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Would need overriding superiority for other reasons to be preferable to #17, #18.

Site No. 20

Group Rank 6

Name Granite Gorge

Stream Talkeetna River

Power Potential (kW) 72,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- existing trail -- near D-1 Federal land.

Alaska Department of Fish & Game:

Scale	Comments
0	Major conflict with Prairie Creek/Stephan Lake anadromous fish runs. Important big game habitat involved.

National Marine Fisheries Services:

Scale	Comments
0	Impacts on anadromous fish -- loss of game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Potential high use area.

Alaska Center for the Environment:

Scale	Comments
5	Would need overriding superiority for other reasons to be preferable to #17, #18. Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.).

Site No. 21

Group Rank 6

Name Greenstone

Stream Talkeetna River

Power Potential (kW) 51,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

Alternative to Granite Gorge (20).

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- possible access along river to existing trail; near D-1 land.

Alaska Department of Fish & Game:

Scale	Comments
0	Major conflict with Prairie Creek/Stephan Lake anadromous fish runs. Important big game habitat involved.

National Marine Fisheries Services:

Scale	Comments
0	Impacts on anadromous fish -- loss of game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Potential for high recreational use.

Alaska Center for the Environment:

Scale	Comments
5	Would need overriding superiority for other reasons to be preferable to #17, #18. Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Recreation -- adverse impact on present or potential recreation use (tourism, floating rivers, etc.).

Site No. 22

Group Rank 6

Name Trapper

Stream Talkeetna River

Power Potential (kW) 45,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
5	Village corporation selection -- possible access along river to existing trail.

Alaska Department of Fish & Game:

Scale	Comments
0	Major conflict with Prairie Creek/Stephan Lake anadromous fish runs. Important big game habitat involved.

National Marine Fisheries Services:

Scale	Comments
0	Impacts on anadromous fish -- loss of game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Potential high recreational use.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, length/cost of transmission facilities needed. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.). Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values.

Site No. 23

Group Rank 6

Name Lucy

Stream Chulitna River

Power Potential (kW) 15,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing road.

Alaska Department of Fish & Game:

Scale	Comments
0	Important big game and anadromous fisheries habitat involved. Annually, several thousand king salmon spawn upstream of the site.

National Marine Fisheries Services:

Scale	Comments
0	Loss of anadromous fish habitat and big game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Scenic drive visually connected with Denali/ McKinley parks.

Alaska Center for the Environment:

Scale	Comments
5	Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.)(?) Reasonable Size -- size of project seems more in keeping with our general views that smaller, decentralized sources of energy are desirable. Impact on Denali State Park?

Site No. 24

Group Rank 6

Name Coal

Stream Chulitna River

Power Potential (kW) 40,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

Would be inundated by development of Ohio (25).

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing road and railroad.

Alaska Department of Fish & Game:

Scale	Comments
0	Impoundment would conflict with important fish and wildlife habitat. A major king salmon spawning area would be involved.

National Marine Fisheries Services:

Scale	Comments
0	Loss of anadromous fish habitat and big game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Scenic drive visually connected with Denali/ McKinley Parks.

Alaska Center for the Environment:

Scale	Comments
5	Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.). Reasonable Size -- size of project seems more in keeping with our general views that smaller, decentralized sources of energy are desirable. Impact on Denali State Park? Too Big -- sheer magnitude of project causes us to question its desirability(?)

Site No. 25

Group Rank 6

Name Ohio

Stream Chulitna River

Power Potential (kW) 30,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- existing road and railroad.

Alaska Department of Fish & Game:

Scale	Comments
0	Impoundment would conflict with important fish and wildlife habitat. A major king salmon spawning area would be involved.

National Marine Fisheries Services:

Scale	Comments
0	Loss of anadromous fish habitat and big game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Scenic drive visually connected with Denali/ McKinley Parks.

Alaska Center for the Environment:

Scale	Comments
5	Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.)(?) Reasonable Size -- size of project seems more in keeping with our general views that smaller, decentralized sources of energy are desirable. Impact on Denali State Park? Too Big -- sheer magnitude of project causes us to question its desirability(?)

Site No. 26

Group Rank 6

Name Chulitna Hurricane

Stream Chulitna River

Power Potential (kW) 34,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Healy

COMMENTS:

Would be inundated by development of Ohio (25).

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- existing road, railroad and power.

Alaska Department of Fish & Game:

Scale	Comments
0	Impoundment would conflict with important fish and wildlife habitat. A major king salmon spawning area would be involved.

National Marine Fisheries Services:

Scale	Comments
0	Loss of anadromous fish habitat and big game habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Scenic drive visually connected with Denali/ McKinley Parks.

Alaska Center for the Enviornment:

Scale	Comments
5	No head given! Size? Recreation -- adverse impact on present or pctential recreation uses (scenic, etc.). Proximity good -- project is apparently desirable because of closeness to markets for electricity or existing corridors.

Site No. 27

Group Rank 6

Name Gold

Stream Susitna River

Power Potential (kW) 260,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- existing railroad -- near D-1 Federal lands.

Alaska Department of Fish & Game:

Scale	Comments
0	Important big game habitat involved. Impoundment would destroy several streams and sloughs important to resident and anadromous fish.

National Marine Fisheries Services:

Scale	Comments
0	Major anadromous fish stream -- loss of spawning/ rearing habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Wild river study area.

Alaska Center for the Environment:

Scale	Comments
0	Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.). Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.).

Site No. 28

Group Rank 3

Name Deadman Creek

Stream Deadman Creek

Power Potential (kW) 34,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Talkeetna Mountains

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
5	D-1 Federal lands -- possible access through Susitna Valley to existing railroad.

Alaska Department of Fish & Game:

Scale	Comments
5	No major fisheries conflict anticipated. Some wildlife habitat would be lost.

National Marine Fisheries Services:

Scale	Comments
5	Some loss of fish and wildlife habitat.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Hunting and other recreation use.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Too Big -- sheer magnitude of project causes us to question its desirability. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values.

Site No. 48

Group Rank 5

Name Gulkana River

Stream Gulkana River

Power Potential (kW) 34,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Gulkana

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
5	Penstock runs from D-1 to utility corridor (dam on utility corridor). Accessible to existing road and pipeline.

Alaska Department of Fish & Game:

Scale	Comments
0	Major anadromous and resident fisheries producing system. Important big game habitat involved.

National Marine Fisheries Services:

Scale	Comments
5	None.

U.S. Fish & Wildlife Service:

Scale	Comments
-	None.

Trustees for Alaska:

Scale	Comments
0	Fisheries conflict; heavy recreation use, proposed wild river.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.). Recreation -- adverse impact on present or potential recreation uses (proposed wild and scenic river). Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values.

Site No. 49

Group Rank 6

Name Vachon Island

Stream Tanana River

Power Potential (kW) 426,000

Transmission Access Severe

U.S.G.S. Topographic Map (Scale 1:250,000) Kantishna River

COMMENTS:

Alternative to Junction Island (50).

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
5	D-1 land. Limited access -- next to proposed railroad and existing trail.

Alaska Department of Fish & Game:

Scale	Comments
0	Whitefish, Arctic grayling, sculpins, suckers, possibly sheefish (numbers unknown) 50,000+ chum, 5,000+ silver, 4,000+ kings. Moose habitat would be flooded in Unit 20A, an already depressed population. Raptor nesting and hunting perches would be impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
0	Waterflowl nesting/molting habitat and migration route. Tanana River has a major run of anadromous fish (50,000 chums; 5,000 silver, 4,000 kings). Moose overwintering habitat.

Trustees for Alaska:

Scale	Comments
0	Heavy recreation and commercial use; transportation system.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.)(?)

Site No. 50

Group Rank 6

Name Junction Island

Stream Tanana River

Power Potential (kW) 532,000

Transmission Access Severe

U.S.G.S. Topographic Map (Scale 1:250,000) Kantishna River

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	On state land -- close to proposed railroad and highway and existing trail.

Alaska Department of Fish & Game:

Scale	Comments
0	More than 50,000 chum salmon migrate through, more than 5,000 silver salmon migrate through, more than 4,000 king salmon migrate through plus sheefish and whitefish move through. Overwintering impacts on Northern pike, Arctic grayling, burbot and whitefish. Would flood extensive areas of moose habitat. Raptor nesting and hunting perches would be impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
0	Waterfowl nesting/molting habitat and migration route. Tanana River has a major run of anadromous fish (50,000 chums; 5,000 silver; 4,000 kings). Moose overwintering habitat.

Trustees for Alaska:

Scale	Comments
0	Heavy recreation and commercial use; transportation system.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.).

Site No. 51

Group Rank 6

Name Kantishna River

Stream Kantishna River

Power Potential (kW) 82,000

Transmission Access Severe

U.S.G.S. Topographic Map (Scale 1:250,000) Kantishna River

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
5	On D-1, close to native selected lands. Dubious access -- no mountains (but miles away with swamp and streams).

Alaska Department of Fish & Game:

Scale	Comments
0	Chum, king and silver salmon spawning, rearing and migratory routes interrupted, flooded are impacted. Moose habitat flooded. Raptor nesting and hunting perches would be impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
0	Waterfowl nesting/molting habitat. Transmission corridor and dam project would cause significant disturbance to moose and other wildlife habitat.

Trustees for Alaska:

Scale	Comments
5	Some use for transport.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.). Possible interference with proposed northern extension of McKinley Park.

Site No. 52

Group Rank 4

Name Teklanika River

Stream Teklanika River

Power Potential (kW) 57,000

Transmission Access Moderate

U.S.G.S. Topographic Map (Scale 1:250,000) Healy

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
0	Intake on D-1, dam on D-2 -- access could be difficult.

Alaska Department of Fish & Game:

Scale	Comments
5	Fisheries -- a grayling impacted resident fish in trib. Wildlife habitat. Raptor nesting and hunting perches would be impacted.

National Marine Fisheries Services:

Scale	Comments
5	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Loss and/or disturbance of habitat for following species: grizzly bear, moose, caribou (winter range).

Trustees for Alaska:

Scale	Comments
5	May conflict with National park proposal.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.). Possible interference with proposed northern extension of McKinley Park.

Site No. 53

Group Rank 4

Name Browne

Stream Nenana River

Power Potential (kW) 80,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Fairbanks

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- next to existing road, railroad and power.

Alaska Department of Fish & Game:

Scale	Comments
0	Block to silver salmon migration to spawning area. Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Migration route for waterfowl. Riparian willow along river provides critical winter range for moose. Silver salmon migrate through this point. Grayling and round white fish overwintering area.

Trustees for Alaska:

Scale	Comments
0	Recreation use; scenic drive.

Alaska Center for the Environment:

Scale	Comments
10	Proximity -- project is apparently desirable because of closeness to markets for electricity or existing corridors.

Site No. 54

Group Rank 4

Name Walker Creek

Stream Nenana River

Power Potential (kW) 35,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Fairbanks

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State lands -- next to existing road and power.

Alaska Department of Fish & Game:

Scale	Comments
0	Would block silver salmon migration to spawning areas. Whitefish movements. Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Migration route for waterfowl. Riparian willow along river provides critical winter range for moose. Silver salmon migrate through this point. Grayling and round white fish overwintering area.

Trustees for Alaska:

Scale	Comments
0	Recreation use; scenic drive.

Alaska Center for the Environment:

Scale	Comments
10	Proximity -- project is apparently desirable because of closeness to markets for electricity or existing corridors.

Site No. 55

Group Rank 4

Name Yanert #2

Stream Nenana River

Power Potential (kW) 62,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Healy

COMMENTS:

Alternative to Upper Nenana system; inundate Carlo (57) and Bruskansna (58).

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
5	On native selected lands -- next to existing road, railroad and power.

Alaska Department of Fish & Game:

Scale	Comments
5	Whitefish movements(?) Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Migration route for waterfowl. Winter and fall moose habitat. Grayling and whitefish probably overwinter in pools along this section of water.

Trustees for Alaska:

Scale	Comments
0	Recreation use; scenic drive.

Alaska Center for the Environment:

Scale	Comments
0	Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.). Impact on McKinley Park area. Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed?

Site No. 56

Group Rank 3

Name Healy

Stream Nenana River

Power Potential (kW) 130,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Healy

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- next to existing road, railroad and power.

Alaska Department of Fish & Game:

Scale	Comments
5	Whitefish movements(?) Resident fish spawn in tributaries; overwintering? Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Migration route for waterfowl, winter and fall moose habitat. Grayling and whitefish over-wintering area.

Trustees for Alaska:

Scale	Comments
0	Recreation use; scenic area.

Alaska Center for the Environment:

Scale	Comments
10	Proximity -- project is apparently desirable because of closeness to markets for electricity or existing corridors.

Site No. 57

Group Rank 6

Name Carlo

Stream Nenana River

Power Potential (kW) 30,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Healy

COMMENTS:

Assumes operation as a system with Bruskasna (58) and Totatlanika River (59).

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
0	In Mt. McKinley National Park. Next to existing road, railroad and power. Raptor nesting and hunting perches impacted.

Alaska Department of Fish & Game:

Scale	Comments
5	Whitefish movements (?) Resident fish in tributary.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Migration route for waterfowl. Winter and fall moose habitat. Grayling and whitefish probable overwintering area. Raptor eyries common in this area.

Trustees for Alaska:

Scale	Comments
0	Recreation use; scenic area.

Alaska Center for the Environment:

Scale	Comments
0	Recreation -- adverse impact on present or potential recreation uses (tourism, floating rivers, etc.). Impact on McKinley Park area. Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed?

Site No. 58

Group Rank 3

Name Bruskasna

Stream Nenana River

Power Potential (kW) 40,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Healy

COMMENTS:

Assumes operation as a system with Carlo (57) and Totatlanika River (59).

Note that (57) is a very poor site because of location in Mt. McKinley Park.

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	On state land; reservoir may be on native selected and D-1 land. Close to existing highway.

Alaska Department of Fish & Game:

Scale	Comments
5	Whitefish, Arctic grayling wintering(?) and movements(?) Resident. Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Some waterfowl nesting occurs in this area. Minor waterfowl migration route. Caribou winter range. Grizzly bear and moose present throughout project area.

Trustees for Alaska:

Scale	Comments
0	Recreation use; scenic area.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values.

Site No. 59

Group Rank 1

Name Totatlanika River

Stream Totatlanika River

Power Potential (kW) 24,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Fairbanks

COMMENTS:

Assumes operation as a system with Carlo (57) and Bruskasna (58).

Note that Carlo (57) has a very poor rating.

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	On state land -- reasonably near trails, local road.

Alaska Department of Fish & Game:

Scale	Comments
10	Resident Arctic grayling, whitefish. Wildlife habitat flooding (?) Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
5	None.

U.S. Fish & Wildlife Service:

Scale	Comments
5	Grayling fishery. Project and transmission corridor would affect significant amounts of moose habitat. This area extensively used for trapping.

Trustees for Alaska:

No information.

Alaska Center for the Environment:

Scale	Comments
0	Distance -- undesirable due to distance from markets, and length/cost of transmission facilities needed. Access -- maintenance roads, etc., would encourage new and excessive (usually motorized) access to remote areas, with attendant damage to wildlife and nonmotorized recreation values. Too Big -- sheer magnitude of project causes us to question its desirability.

Site No. 60

Group Rank 6

Name Salcha River

Stream Salcha River

Power Potential (kW) 25,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Big Delta

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- on existing trail, proposed road.

Alaska Department of Fish & Game:

Scale	Comments
0	King salmon, chum salmon, Arctic grayling, movements, rearing and spawning. Flood moose habitat, recreation sites, routes, gold mining. Raptor nesting and hunting perches impacted.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
0	Chum and king salmon spawning and/or migration would be significantly affected by this project. Some waterfowl nesting. Winter moose habitat.

Trustees for Alaska:

Scale	Comments
0	Fisheries conflict; heavy recreation use.

Alaska Center for the Environment:

Scale	Comments
5	Proximity -- project is apparently desirable because of closeness to markets for electricity or existing corridors. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.)?

Site No. 61

Group Rank 6

Name Tanana River (Little Delta)

Stream Tanana River

Power Potential (kW) 65,000

Transmission Access Good

U.S.G.S. Topographic Map (Scale 1:250,000) Big Delta

COMMENTS:

EVALUATIONS:

CH2M HILL Utilizing Land Use Planning Commission Information:

Scale	Comments
10	State land -- existing road, power, pipeline, proposed railroad.

Alaska Department of Fish & Game:

Scale	Comments
0	Chum, king and silver salmon migration route would be blocked, spawning and rearing habitat flooded. Moose habitat flooded, trapping areas would be lost. Fish overwintering impacted as well as sheefish, whitefish, Arctic grayling movements.

National Marine Fisheries Services:

Scale	Comments
0	None.

U.S. Fish & Wildlife Service:

Scale	Comments
0	Chum, king and silver salmon migration would be significantly impeded by this project. Waterfowl migration route. Peregrine falcon nest was observed in 1978 less than 2 miles upstream from dam site.

Trustees for Alaska:

No information.

Alaska Center for the Environment:

Scale	Comments
5	Proximity -- project is apparently desirable because of closeness to markets for electricity or existing corridors. Lake -- based on available information, dam would create lake of excessive size, given local conditions (settlement, wildlife habitat, etc.)?!?

APPENDIX E
PERTINENT CORRESPONDENCE

STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

LAND AND WATER MANAGEMENT

323 E. 4TH AVENUE - ANCHORAGE 99501

October 20, 1978

Mr. Ron Reiland
CH2M Hill
310 "K" Street, Suite 602
Anchorage, AK 99501

Dear Mr. Reiland:

During the week of October 9, 1978, we received a ringbinder identifying 61 potential dam sites along with a request for input from the Division of Lands on a variety of issues including land classification, water rights, and socioeconomic impacts. We understand that this document is a first-cut at site evaluation. However, given the time deadline of October 20, it is impossible to divert our staff from other high priority ongoing projects on such short notice to provide any reasonable input.

We are interested in providing information on these sites and could, in fact, do so if the timeframe is extended to December 15. Therefore we reserve any judgment until sufficient review time and more specific site information is available. Additional site information should include: 1) type and major components (reservoirs, penstocks, powerhouses) of the hydroelectric projects anticipated at the various sites; 2) more specific site locations, preferably on USGS 1:63360 quad sheets, 3) power generation potential of the sites, 4) anticipated storage capacity of the impoundments, 5) and potential markets to be served by the projects (to help determine powerline and highway right-of-way needs).

Again, we are interested in providing information to your project, but we require a more reasonable review time.

Sincerely,

Brent N. Petrie
Acting Chief, Water Management

cc: Steve Reeve - Planning and Classification
Dave Hanson - Planning and Research
John Morris - SCDO

10-J4LH

United States Department of the Interior

FISH AND WILDLIFE SERVICE

NORTHERN ALASKA ECOLOGICAL SERVICES
Room 266, Federal Building, Box 20
101 12th Avenue
Fairbanks, Alaska 99701
October 20, 1978

Corby Howell
CH2M Hill
Anchorage Office
310 K Street
Anchorage, Alaska 99501

Dear Mr. Howell:

Enclosed is our evaluation of 13 of the 61 dam sites proposed by the U.S. Army Corps of Engineers. These dam sites, 49 through 61, are all that fall within our jurisdiction. The remaining 48 should be evaluated by our Western Alaska Ecological Services office in Anchorage. If you have any questions, please contact Jerry Stroebele or myself.

Sincerely yours,

Michael W. Smith
Fish and Wildlife Biologist

CONSERVE AMERICA'S ENERGY

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"WE ARE NOT HERE TO MAKE A LIVING. WE ARE HERE TO MAKE A LIFE."
W.E.RUSSELL

ALASKA CENTER FOR THE ENVIRONMENT

913 WEST 6TH AVENUE ANCHORAGE, ALASKA 99501 (907) 274-3621

October 25, 1978

Ms. Corby Howell
CH2M-Hill
310 K Street
Anchorage, AK 99501

Dear Ms. Howell,

This letter is part of our response to your Evaluation Package for 61 proposed alternative hydroelectric sites.

Given the data available to us, our comments are necessarily very general. We have not attempted to address fish/wildlife impacts, except in obvious cases. Our primary concerns have been the impacts each proposal might have in terms of encouraging unnecessary access to remote areas and loss of significant habitat, scenic or recreation values, due to size or location of the dams/lakes.

We will be preparing a more detailed response, based on proposed impoundment areas, better maps, etc., as soon as we can obtain these. Therefore, the enclosed comments should be regarded as very preliminary, as a starting point for further work, and subject to modification in the light of new information.

The format for seeking comment is quite good particularly given the time constraints involved.

We appreciate the opportunity to comment, and to look forward to a continuing and active role in this process.

Thank you,

Paul Lowe

Paul Lowe
Executive Director

P.S. Please note the key to abbreviations used in our Comments, on the title page for that section.

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED AS A UNIT IN THE ORIGINAL DOCUMENT.

Basin

UPPER SUSTINA RIVER PROJECT
ALASKA

ANALYSIS OF POTENTIAL GENERATION ALTERNATIVE HYDROELECTRIC SITES TO SERVE THE RAILBELT AREA MARKET

November, 1978

DRAFT

U.S. Department of Energy
Alaska Power Administration
Juneau, Alaska

1/18

Contents

I. PURPOSE AND SCOPE

This analysis presents an evaluation of possible hydroelectric generation alternatives to the Upper Susitna ~~River~~ Basin Project. Specifically, the concern exists that supplying projected electric power demands in the central and southcentral "Railbelt" areas of Alaska (the market area of the project) may be better accomplished by development of several projects of less generation capability than the Susitna project. Analysis of the possible alternatives is based on consideration of potential hydropower projects near the Railbelt area.

More than 2,000 potential hydroelectric generation sites distributed throughout the State have been identified by various agencies over the past years. most are in the central and southcentral areas. Subsequently, the majority of possible sites have been eliminated from more detailed consideration by judgment evaluation of available topographic, geologic, hydrologic, and land use data. Although some of the data were limited, comparable evaluations of primary factors could be made because of the scope involved (limited runoff, large reservoirs with unacceptable environmental impacts, unfavorable geology in wide glacial valleys, and national parks and monuments limitations).

An eventual list of 252 sites worthy of appraisal level analysis was assembled by Alaska Power Administration (APA) in the late 1960's. The list and a map of site locations are enclosed. This is refered to as the "list of 252 sites."

Further analysis was made of sites with at least 2,500 kilowatts (kW) electric power generation potential. This included field topographic, geologic, and hydrologic investigation of some of the sites, and appraisal estimates of potential power generation costs of all of the sites. The result was a list of the 76 best sites that has been the baseline pool of the most economic potential hydropower sites for consideration by State and Federal agencies during the past several years. (These 76 sites are also identified on the list of 252 sites, and are referred to as the "76 sites.")

In this analysis various combinations of the 76 sites are compared with Susitna power demand projections and costs. Also considered are large potential projects that could singly supply Susitna market area demands.

II. CONCLUSION

The conclusion of this analysis is that there are no combinations of small projects, or single large projects, that can satisfy projected Railbelt electric power requirements as ecomonically as the Upper Susitna River Project. The primary reasons are that (1) the large sites are unavailable because of designated land uses (national parks and monuments, etc.), and (2) combinations of small sites are more costly per unit of energy produced. Only a few small sites could provide power at costs comparable with Susitna, but would supply only a fraction of the projected power demands of the Railbelt area.

III. BASIS OF COMPARISON

Two bases are used for comparing other potential hydropower sites with the Susitna project: (1) selection of single or multiple sites with the potential of as much power generation capability as Susitna, and (2) comparison of costs in mills per kilowatt-hour (kwh) of average annual energy produced.

A. Power Requirements

The projected power requirements for the Upper Susitna River Project market area (Anchorage-Fairbanks "Railbelt" area) are:

	1980		1990		2000	
	MW 1/	GWH 2/	MW	GWH	MW	GWH
High	890	3,930	2,360	10,680	4,650	20,940
Medium	830	3,660	1,590	7,080	2,850	12,740
Low	770	3,390	1,180	5,220	1,780	7,890

These projections include the total utility, industrial, and national defense needs, and are based on Institite of Social and Economic Research (ISER) 1978 population and employment estimates.

The earliest online date of the project, or an alternative, would be the early 1990's. Consequently, comparison is based on load requirement increase after 1990, which would be from 600 MW (low range) to 2,290 MW (high range). Alternative sites or groups of sites with potential

1/ MW (megawatt) = 1000 kw

2/ GWH (gigawatt-hour) = 1,000,000 kwh

production in this range are considered. The Susitna project would generate about ~~1,390~~ 1573 MW. Correspondingly, annual firm energy requirements would range from 2,670 GWH to 10,260 GWH, with Susitna planned to provide ~~6,100~~ 6787 GWH.

B. Cost

Estimates of the cost of power generation (mills per kwh) were prepared for each of the 252 sites. This is the index cost (last column) of the list of 252 sites, which is the basis of economic comparision of the sites (generation only--no transmission). (Costs are based on 1965-66 prices, 50 year repayment at ~~3 3/4~~ 3 1/8 percent interest rate, and complete utilization of average annual energy.)

3 1/8 OK Rev Cost

The combination of the four Susitna River sites (127 - Devil Canyon, 128 - Watana, 129 - Vee, 130 - Denali) resulted in an index of 6.3 (mills per kwh). This is the basis of economic comparison of possible alternatives.

For information purposes, possible alternatives are discussed that are within twice the cost range of Susitna (12.6 mills per kwh). This is to allow some flexibility for contingencies and unknowns should more detailed consideration become warranted, and, candidly, ~~frankly~~ because very few sites are within the cost range.

Even though economic comparison is based on work that is several years old, it is concluded to be valid. More recent estimates of the Susitna

River sites correspond generally with costs that would be obtained by indexing earlier costs to present levels. More specifically, cost estimates for energy from the four Susitna River sites, by the Corps of Engineers in the December 1975 Interim Feasibility Report Southcentral Railbelt Area, Alaska - Upper Susitna River Basin, are within 10 percent of the index cost escalated to 1975 by construction cost trends. Therefore, economic comparison of possible alternatives is based on relative costs from the list of sites rather than updating all costs on the list.

17.9 mills/kwh in 1975 @ %

IV. SELECTION OF ALTERNATIVES. Potential alternatives were selected in two catagories--large single sites that could provide about 600 MW minimum at approximatly 6.3 mills/kwh, and combinations of smaller sites grouped by geographic area (River Basin). Finding no suitable alternatives from this procedure, the best small single sites from the combinations were combined and evaluated. (The first reference number applies to the list of 252 sites, and the parenthesized number applies to the best 76 sites. The reference numbers do not indicate economic ranking--they are for list reference only.)

A. Large Capacity Single Sites

Six large capacity single sites have the potential of meeting the minimum capacity requirements and cost requirements, and one site has slightly less than minimum capacity potential. The sites are:

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KWH
16 (6)	Holy Cross	Yukon R.	12,300	2,800	9.0
29 (11)	Ruby	Yukon R.	6,400	460	3.9
54 (20)	Rampart	Yukon R.	34,200	5,040	2.0
59 (21)	Porcupine	Porcupine R.	2,320	530	5.0
60 (22)	Woodchopper	Yukon R.	14,200	3,200	4.5
64 (24)	Yukon-Taiya	Yukon R.	21,000	3,200	3.3
173 (54)	Wood Canyon	Copper R.	21,900	3,600	3.2

The Ruby and Porcupine sites are too small to be effective single projects, and distantly located from the service area. Rampart and Wood Canyon are too large, and again because of distant location would require extensive transmission to the service area. Yukon-Taiya would require rights-of-way ~~within a~~ ~~way~~ within an international park, and agreement with Canada. Power from Holy Cross would be about 50 percent more costly than from Susitna. The remaining site--Woodchopper--is not located conveniently to the service area, and has excess capacity.

Additionally, all sites are within areas that have been designated as National Monuments, are being considered for either the Wild and Scenic Rivers or National Park systems, or are on large rivers where severely objectionable environmental impacts would result.

Sites within the Nenana River basin have also been identified in past

work, but all would be precluded by Mount McKinley National Park.]

It is therefore concluded that no single large hydro generation sites are available as alternatives to the Upper Susitna River Project.

B. Combinations of Small Capacity Sites (Geographic Areas)

Combinations of single sites with less capacity than Susitna requirements can be compared with the generation capacity and cost criteria. Combinations consist of sites within a river basin or other geographically bounded area, and scattered small sites within the Railbelt area. A more detailed description of the sites within each basin is presented in the attached ~~in V~~. Appendix. The combinations are:

Area	Firm Energy GWH/yr	Capacity MW	Cost Range Mills/KWH
1. Matanuska R.B.	935	194	21.7 - ~~124.2~~ 124.2 ~~145.5~~
2. Tanana R.B.	5,806	136	15.1 - 69.4
3. Cook Inlet-~~H~~Northwest Drainage	2,221	507	6.5 - ~~19.1~~ 83.4
4. Skwentna-Yentna R.B.	2,312	609	10.1 - 72.8
5. Talkeetna R.B.	1,107	237	11.3 - 68.6
6. Chultina R.B.	1,542	245	8.1 - ~~122.2~~ 30.6
7. Kenai Peninsula	2,360	646	11.2 - ~~128.0~~ 122.2

(1) → IP from p. 8.

IP There are no combinations of sites within a geographic area (primary river basin) that have sufficient potential generation capability to be considered

(Skwentna-Yentna River basin and Kenai Peninsula are marginal). In addition only a few individual sites are within the economic range of the cost of Susitna project power.

The scattered Railbelt sites are widely distributed and could not be reasonably developed as an intergated system. (Additional discussion is presented in Appendix paragraph 8.) Discussion of individual sites is included in the following paragraph (C.).

C. Distributed Best Small Capacity Sites

The third approach to evaluating a possible alternative to the Susitna project is to combine the economically best small sites from each of the geographic areas. Only one site (Chakachamna) is within the economic range of Susitna. Twelve sites are within twice the cost range, and are included in the following tabulation of the best small sites within the Railbelt area.

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KWH
93 (32)	Crescent Lake (5)	Crescent R.	179	41	9.9
94 (33)	Chakachamna (2)	Chakachatna R.	1,600	366	6.5
97 (34)	Coffee (6)	Beluga R.	160	37	11.5
98 (35)	Upper Beluga (6)	Beluga R.	210	48	11.1
105 (36)	Yentna (6)	Yentna R.		145)	
106 (37)	Talachulitna (6)	Skwentna	1,390	75)	10.1
107 (38)	Skwentna (6)	Skwentna		98)	
	(Yentna, Talachulitna, and Skwentna operated as a system)				
109 (39)	Lower Chulitna (6)	Chulitna	394	90	8.1
110 (40)	Tokichitna (6)	Chulitna	806	184	8.8
112 (41)	Keetna (6)	Talkeetna R.	324	74	11.3
150 (49)	Snow (2)	Snow R.	278	63	11.2
158 (51)	Lowe (not rated)	Lowe R.	254	55	11.2
Total			5,595	1,276	

Another site -- Lane (no. 124, 240 MW) with an index cost of 8.9 could also be included based on the less than 12.6 criteria. However, it is actually a part of the Susitna River system because it is immediately downstream from the Devil Canyon site.

The Lowe site has the severe disadvantage that it would block the major land access route to Valdez; it would also involve relocating the Trans-Alaska oil pipeline and a highway, and a planned transmission line between Valdez and Glennallen.

Sites that are in designated ~~National~~ ~~Monuments~~ or are included in proposed Federal land withdrawals include Crescent Lake and Chakachamna in the Lake Clark area, and Tokichitna in the Denali area. These sites represent approximately half of the total potential power from the sites, leaving 685 MW capacity and 3,010 GWH energy.

Bradley Lake (no. 154-Kenai Peninsula) with an index cost of 8.0 is not included because it is already an authorized project (Corps of Engineers).

D. Results

Based on examination of indivdual sites and combinations of sites, there are no hydro generation opportunities available to generate power in sufficient quantity to be alternative to the Susitna project. Small indivdual sites may be available, but would satisfy only a small portion of the market area demand. Other sites with apparently acceptable ~~quantity~~ capacity and economic capabiltiy have been or will be precluded by land status designation.

APPENDIX

~~Detailed~~ Description of Small Capacity Sites

Within ~~of~~ Geographic Areas

Following are tabulations of parameters of sites within each of the geographic areas examined, and descriptions of some of the particular factors of each area. The site number refers to the list of 252 sites while the number in parenthesis refers to the list of best (best) 76 sites The comparison is to a Susitna project energy cost index of 6.3 mills/kwh and generation capability of 6,100 GWH/yr (range from 2,670 to 10,260 GWH/yr).

1. Matanuska River Basin

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KWH
133	Palmer	Matanuska R.	79	16	195.5
134	Moose Creek (Alternative to Palmer)	Matanuska R.	100	21	124.2
135	King Mountain	Matanuska R.	210	44	37.6
136	Coal Creek (Alternative to King Mountain)	Matanuska R.	307	64	78.5
137	Boulder Creek	Boulder Cr.	69	14	57.0
138	Rush Lake	Boulder Cr.	45	9	92.7
139	Purinton Creek (Alternative to Hicks)	Matanuska R.	324	67	108.1
140	Hicks Site	Matanuska R.	286	59	37.2
141	Caribou Creek	Caribou Cr.	90	19	21.7
	Total (excluding Palmer, King Mountain, and Hicks)		935	194	

The small Caribou Creek site, which has the lowest index cost, was determined to be infeasible because it is located in a broad glaciated valley with poor foundation, and probable severe reservoir sedimentation.

2. Tanana River Basin

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KW
31	Vachon Island (Alternative to Junction Island)	Tanana R.	2,050	426	29.0
32 (12)	Junction Island	Tanana R.	2,330	532	15.1
45	Salcha River	Salcha R.	123	25	69.4
46	Tanana River (Little Delta)	Tanana R.	315	65	43.1
47 (16)	Big Delta	Tanana R.	987	226	16.8
48 (17)	Gerstle	Tanana R.	438	100	17.0
49 (18)	Johnson	Tanana R.	920	210	16.1
50 (19)	Cathedral Bluffs	Tanana R.	693	158	15.3
Total (excluding Vahcon Island)			5,806	1,316	

Three of the sites-- Vachon Island, Salcha River, and Tanana River (Little Delta)-- are significantly more costly than the others. All sites except Salcha River involve regulation of the main stem of the Tanana River.

Additional geologic investigation after development of cost estimates revealed that Cathedral Bluffs would require extensive foundation treatment, which is not reflected in the cost estimate.

3. Cook Inlet - Northwest Drainage

There are several sites northwest of Cook Inlet, most of which are smaller than 50 MW.

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KW
90 (32)	Crescent Lake	Cresecent R.	179	41	9.9
94 (33)	Chakachamna	Chakachatna R.	1,600	366	6.5
95	Chuitna	Chuitna R.	45	9	83.4
96	Lower Beluga	Beluga R.	72	15	19.1
97 (34)	Coffee	Beluga R.	160	37	11.5
98 (35)	Upper Beluga	Beluga R.	210	48	11.1
99	Strandline Lake	Beluga R.	81	17	30.8
	(Upper Beluga would reduce Stadline Lake energy 12 GWH/yr.)				
Total			2,347	533	

Two of the sites, Chuitna and Strandline Lake, are very costly. Chakachamna has an index cost comparable to Susitna (6.5 versus 6.3). Chakachamna could supply 60 percent of the low estimate 1990-2000 power requirement, 30 percent of the medium estimate, and 15 percent of the high estimate. Part of Lake Chakachamna is included in the recently designated Lake Clark National Monument, and it may not be available for development. Crescent Lake is also in the Lake Clark National Monument.

4. Yentna-Skwnetna River Basin

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KWH
100	Lake Creek (Lower)	Lake Creek	105	22	32.6
101	Upper Lake Creek	Lake Creek	74	15	20.3
102	Talachulitna River	Talachulitna R.	137	28	41.6
103	Hayes, Skwentna R.	Skwentna R.	429	89	72.8
104	Emerald	Skwentna R.	177	37	69.7
105 (36)	Yentna	Yentna R.		145)	
106 (37)	Talachulitna	Skwentna R.	1,390	75)	10.1
107 (38)	Skwentna	Skwentna R.		98)	
	(Yentna, Talachulitna, and Skwentna operated as a system)				
	Total		2,312	609	

The cost of the Yentna-Skwentna system includes 70 miles of access road. This system is the lowest cost potential hydro development other than authorized projects and those that would be precluded by land use designations. The capacity of the system would be 318 MW.

5. Talkeetna River Basin

No.	Site	Stream	Firm Energy GWH/YR	Capacity MW	Cost Mills/KWH
108	Chunilna Creek	Chunilna Cr.	25	5	50.9
111	Talkeetna R. (Sheep)	Talkeetna R.	149	31	40.4
112 (41)	Keetna	Talkeetna R.	324	74	11.3
113	Iron Creek	Iron Creek	147	31	63.9
114	Granite Gorge	Talkeetna R.	345	72	43.8
115	Greenstone (Alternative to Granite Gorge)	Talkeetna R.	246	51	38.6
116	Trapper	Talkeetna R.	216	45	68.6
Total (excluding Granite Gorge)			1,107	237	

Most of the sites in this basin require large dams (from 300 to 565 feet high and more than 3,000 feet long).

6. Chulitna River Basin

No.	Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KW
109 (39)	Lower Chulitna	Chulitna R.	394	90	8.1
110 (40)	Tokichitna	Chulitna R.	806	184	8.8
117	Lucy	Chulitna R.	71	15	19.3
118	Coal	Chulitna R.	193	40	36.6
119	Ohio (would inundate Coal and Chulitna-Hurricane)	Chulitna R.	144	30	21.0
120	Chulitna-Hurricane	Chulitna R.	166	34	26.7
121	West Fork Chulitna	W.F. Chulitna R.	68	14	33.4
122	East Fork Chulitna	E.F. Chulitna R.	59	12	31.3
Total (excluding Coal and Chulitna-Hurricane)			1,542	345	

Two sites (Coal and Chulitna-Hurricane) are eliminated by a more economical third site (Ohio) which would involve the same reach of river. Only the Lower Chulitna and Tokichitna sites are near the economic range of Susitna. Part of the Tokichitna reservoir would be included in the new Denali National Monument.

7. Kenai Peninsula

The Kenai Peninsula has several sites, most of which are small and at best marginally economical.

No.		Site	Stream	Firm Energy GWH/yr	Capacity MW	Cost Mills/KW
143		Sunrise	Sixmile Cr.	52	11	122.2
144		Lower Kenai	Kenai R.	263	55	18.2
145		Moose Horn	Kenai R.	290	60	18.8
146		Killey River	Killey R.	100	21	38.1
147		Stelters Ranch	Kenai R.	403	84	17.9
148		Kenai Lake	Kenai R.	552	115	22.3
		(Alternative to Stelters Ranch site)				
149		Crescent Lake	Crescent L.	29	55	31.4
150	(49)	Snow	Snow R.	278	63	11.2
152		Tustumena	Tustumena Gla.	102	21	17.1
153		Sheep Creek	Sheep Cr.	94	20	23.8
154	(50)	Bradley Lake	Bradley Cr.	410	94	8.0
		(Authorized Project)				
155		Resurrection R.	Resurrection R.	86	18	58.5
156		Nellie Juan River	Nellie Juan R.	47	10	32.0
157		Upper Nellie Juan	Nellie Juan R.	57	12	17.6
		Total (excluding Kenai Lake)		2,404	515	

For comparison purposes Bradley Lake energy cost on a January 1977 price basis is 36 mills per kilowatt-hour compared to the index cost of 8.0. This factor of 4.5 includes several plan modifications and refinements to reduce costs. Bradley Lake is an authorized Corps of Engineers project with final planning, design, and construction funding pending. It is a supplement to the Susitna project and not a signifigant alternative.

An average of two to five of these sites would have to be developed each year to meet the Anchorage-Kenai area projected power growth of 200 MW annually during the 1990's. Environmental impacts for development of the Kenai River sites would be significant, primarily due to extensive fishery.