ALASKA POWER AUTHORITY
SUSITNA HYDROELECTRIC PROJECT
POSITION PAPER
RECREATION ISSUE R-3

EXECUTIVE SUMMARY

Issue

Significance of loss of whitewater resource.

Position

The Alaska Power Authority proposes the mitigation measures presented in this paper. It is the position of the Alaska Power Authority that project impacts on the area's whitewater resource will be significant. However, with respect to use of the resource, the number of users significantly affected by this impact is expected to remain low. Current use levels of the resource are estimated to be less than 25 people per year boating the Denali Highway to Devil Canyon stretch, and less than that running Devil Canyon rapids. Because of the area's remoteness, and difficulty of the rapids, these use levels are not expected to increase significantly. The mitigation measures presented in this paper provide some compensation for this impact through improvement of whitewater boating access to stretches of the river upstream and downstream of the project reservoirs.

Present Knowledge

Four stretches of the Susitna River between the Denali Highway and the Parks Highway (207 river miles total) are described below as they relate to whitewater boating (canoeing, kayaking, and rafting).

1. Denali Highway to Devil Canyon (130 miles): Provides a remote, relatively long trip (approximately seven days), with an estimated

two to three expeditions with two to four persons each trip per year. The low use is assumed to be a result of the trip length and difficult access out of the river (two mile portage to Stephan Lake or 10 mile portage around Devil Canyon). This portion of the Susitna River, however, is considered the preferable portion by kayakers because of its remote character.

2. Devil Canyon to Gold Creek (26 miles): Although a relatively remote stretch of whitewater, this portion is not frequently used because the only access is by air or by running or portaging Devil Canyon rapids.

3. Gold Creek to Talkeetna (38 miles): This has been the portion most frequently used by whitewater boaters because of its remote character, short duration (two day trip), and relatively convenient access via the Alaska Railroad. Since the railroad has recently changed its policy, however, and restricts bringing boats onto the train, use of this river segment will probably decrease in the future.

4. Talkeetna to the Parks Highway (13 miles): This segment is listed along with the segment described above as a whitewater route in two local whitewater guides. This portion is not as attractive for whitewater boating as other portions of the Susitna River because of the open, braided river channel and the greater amount of use for jet boating.

The major sets of rapids within the above listed segments of the Susitna River are:

1. Vee Canyon Rapids: Located approximately 40 river miles upstream of the Watana Dam site, these Class III to IV rapids are not necessarily an attraction in themselves as much as an integral part of the whitewater trip described above (Denali Highway to Devil Canyon).

2. Devil Canyon Rapids: Located both upstream and downstream from the Devil Canyon Dam site, these Class VI rapids are considered a world-class whitewater run by kayakers. The length, high flows, and the fact that the rapids represent the upper limit of navigability constitute their supreme challenge to expert kayakers. Because of the extreme difficulty, very few people have attempted the rapids. Between 1976 and 1982, only approximately 27 people have attempted running the rapids. Native groups have indicated that they may restrict access to the rapids for liability reasons.

Impacts of the Project to the whitewater resources listed above are summarized as follows:

1. Eighty-five miles of the river trip between the upper limit of the Watana Reservoir and Devil Canyon will be changed to a flatwater experience by the reservoir. Watana Dam will create an additional portage to exit locations.

2. Minor impacts will result in the 53 mile stretch from below Devil Canyon to Talkeetna because summer flows will be reduced to 9,000 cfs (median flow). These should not adversely affect whitewater boating, however, because of the shallow drafts on whitewater boats.

3. During construction of the Watana Dam, the Devil Canyon rapids will not be affected and will still be accessible by air, except during the three year filling period. During filling of the reservoirs the 9000 cfs flows occurring most of the time will likely be too low for kayaking.

4. The Vee Canyon rapids and most of the Devil Canyon rapids will be inundated by the Project. One and a half miles of the Devil Canyon rapids downstream of the dam will be largely dewatered after project completion.

Mitigation Measures Endorsed by the Alaska Power Authority

1. Provide a boat launch and parking area for improved access to the Susitna River at the Denali Highway (APA 1983 p. E-7-74).

2. Provide access to the Susitna River downstream of the Devil Canyon Dam tailrace outlet for whitewater boating to Gold Creek, Talkeetna, or the Parks Highway. This measure recognizes that agreements with Native landowners may be needed, and that user fees may be changed.

3. During construction, post signs at upstream launch sites to alert boaters of construction activities.

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Present Knowledge

Resource. The portion of the Susitna River between the Denali Highway and the Parks Highway provides approximately 207 miles of river used for whitewater boating[1] (Fig 1). This stretch of the Susitna River ranges from a remote setting with many miles of river canyon to the open,

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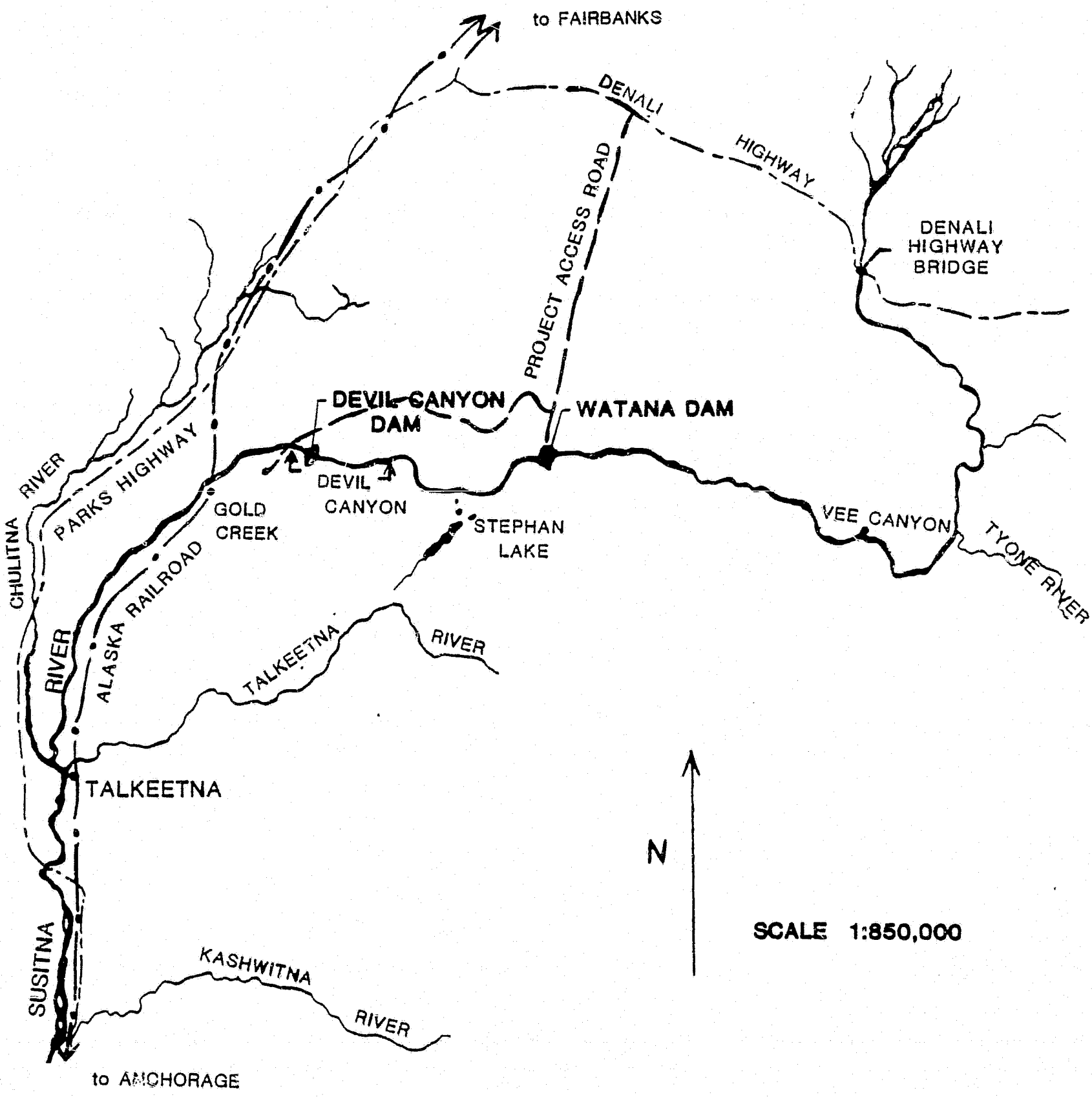
1 For purposes of this paper whitewater boating is defined as canoeing, kayaking, and rafting on relatively fast moving water, with or without obstacles such as rapids.

Figure 1

SUSITNA HYDROELECTRIC PROJECT
SUSITNA RIVER AND PROPOSED HYDROELECTRIC DAM SITES



braided river channel downstream of Talkeetna. Several sets of rapids varying in difficulty from Class I to Class VI (International Whitewater Scale) are located in this portion of the river.

The 130 miles between the Denali Highway and Devil Canyon is listed as a whitewater route in Wild Rivers of Alaska (Weber 1976). The 51-mile portion between Gold Creek and the Parks Highway is listed as a river route in both Weber's guide and the Alaska Paddling Guide (Mosby and Dapkus 1983). River guide books such as these typically determine for much of the public which river routes to try, since they provide necessary information on access, navigability, and difficulty of rapids within a route.

The upper portion of the Susitna above Devil Canyon is described by Weber as "...for experienced wilderness travelers only" (Weber 1976). Weber classifies this stretch as easy to medium difficulty. This portion is considered Class I to II, primarily because of its fast current (Lesser 1984). Local kayakers consider the Susitna River above Devil Canyon to be the preferable portion of the trip because of its remote nature and river canyon scenery (Rhodehamel 1982). The lower portion of the Susitna downstream of Gold Creek is described by Weber as multichanneled and silty flatwater with no great technical difficulties. Some skill is required, however, to negotiate the fast current in bends and back eddies (Weber 1976).

The major rapids to be affected by the Project consist of those located within Vee Canyon, upstream of the Watana Dam site, and those within Devil Canyon, located both upstream and downstream of the Devil Canyon Dam site. Vee Canyon is a two-mile long portion of the Susitna River cutting through a narrow, double-curved canyon. The rapids are approximately 40 miles upstream of the proposed Watana Dam site. An experienced kayaker who has run both Devil Canyon and Vee Canyon rated the difficulty of Vee Canyon as Class III to IV (Lesser, 1984).

Of the entire 207 miles of river downstream of the Denali Highway, the Devil Canyon rapids constitute the more significant portion of the trip because of

its relative uniqueness. The rapids are considered a world-class segment of whitewater (Leaper 1984). Devil Canyon is an eleven-mile stretch of narrow river canyon, which contains, according to kayaking experts, some of the most challenging whitewater in the world. The canyon was described as the Mt. Everest of kayaking by Dr. Walt Blackadar, considered a national expert on kayaking and one of the first to run the rapids (Allen 1979). In the eight years since the rapids were first run, the Canyon has become known to kayakers throughout the United States as well as in other countries.

Devil Canyon includes four sets of rapids classified as Class VI on the International Whitewater Scale. The canyon provides approximately five miles of Class VI rapids. Class VI represents the top of the difficulty scale and is defined as "the limit of navigability, difficulties of Class V carried to the extreme of navigability; nearly impossible and very dangerous; for teams of experts only, after close study and with all precautions taken" (Mosby and Dapkus 1983). Between the Class VI rapids is fast moving water classified as Class II and III. Devil Canyon begins just downstream of the mouth of Devil Creek and ends approximately 1.5 miles upstream of Portage Creek (Fig 1).

Devil Canyon rapids are considered a supreme challenge to kayakers because they represent the upper limit of navigability and provide this challenge over a relatively long stretch of river. The powerful flows constricted within the particular configuration of the canyon also contribute to this challenge. According to an experienced kayaker, Devil Canyon is one of approximately six known stretches of river in the world that maintain the outer limits of navigability for at least four miles (Leaper 1984).

In Alaska there are at least two other rivers classified as Class VI that have been run: the Kotsina and the Nellie Juan Rivers (Mosby 1984). As more rivers are explored in Alaska and other parts of the world, additional accessible Class VI rapids comparable to Devil Canyon may be discovered. Although Devil Canyon is considered a significant whitewater resource, the Susitna River was not included as part of the wild and scenic river system or given other protected status under the studies done for the Alaska National Interest Lands Conservation Act (ANILCA).

Use. Exact figures on the number of boaters running different portions of the Susitna River are not currently available, but it is estimated that the most widely used portion of the river has been the stretch between Gold Creek and Talkeetna. This 37-mile, two-day trip has been popular among canoeists, kayakers, and rafters primarily because of the convenient access to Gold Creek by train and the remote setting. It is not unusual on weekends for a boater to see several other boats on this stretch on the same day (Goodwin 1984). However, the Alaska Railroad changed its policy in the summer of 1984 to only allow collapsible kayaks or rafts on the train (Prudence 1984 pers. comm.). Consequently, it is anticipated that the level of whitewater boating use for this stretch will decline.

The river segment between the Denali Highway and Devil Canyon is favored among whitewater enthusiasts because it is a relatively long (approximately seven day) trip through a remote setting with abundant wildlife (Rhodehamel 1982). In addition, access to the put in point, the Denali Highway bridge, relatively easy. Boaters can exit the river by either portaging Devil Canyon and travelling down to Talkeetna or by portaging to Stephan Lake and boating down Prairie Creek and the Talkeetna River to Talkeetna. Both portages are long and difficult because of the elevation changes and rugged terrain. The trip from the Denali Highway to the Stephan Lake portage is approximately 125 miles. The trip downstream to Talkeetna is 194 miles via Devil Canyon portage.

The Denali Highway to Devil Canyon segment is not heavily used, however, because of its remoteness, few accessible locations, and the time required to run it. Lodge operators in the vicinity of the upper Susitna River interviewed during field studies for the Project in 1984 indicated that they have observed some canoeists and kayakers occasionally travelling down this portion of the river. Exact numbers are not available, but it is estimated that two to three expeditions with two to four persons each are made per year (Hession 1982). In addition, some boaters float only as far as the Tyone River and motor up the Tyone River to Lake Louise (APA 1983).

The Vee Canyon rapids within the Denali Highway to Devil's Canyon segment, are either run or portaged by the boaters travelling downstream from the Denali Highway. The Vee Canyon rapids do not appear to be an attraction in themselves (i.e. people do not travel to the canyon just to run the rapids). They do provide one of the main highlights of the trip between the Denali Highway and Talkeetna. The rapids were first run in 1970 when two kayakers put in at the Denali Highway, 66 miles upstream. One person is known to have died attempting those rapids in 1980.

Because of their extreme difficulty, the Devil Canyon rapids are not widely used. They were not discovered for whitewater boating until 1970. Boaters have access to the Devil Canyon rapids either by air or water. Some boaters fly in to High Lake and portage to the mouth of Devil Creek. Others paddle the 130 miles down the Susitna River from the Denali Highway. The first attempt at running the rapids occurred on August 3, 1976. It was filmed by ABC-TV for the "American Sportsman" series and aired February 27, 1977. Two of the five kayakers successfully negotiated the rapids on this attempt.

At least 27 kayakers have tried running the rapids between 1976 and 1982 (Embicks 1982). Of these, only ten ran the entire rapids successfully, five ran part of the rapids and portaged the remaining portion, eight "swam" portions of the rapids, and three walked out. In addition, six persons ran the canyon in a paddle raft, portaging the four main rapids in 1981 and, an unsuccessful attempt was made to run the rapids upstream in a jet boat. In 1982, one person was killed attempting the rapids (Embicks 1982). Approximately half of the kayakers that have attempted the rapids were Alaskans. Other attempts included kayakers from the contiguous United States and two from West Germany.

The attempted runs on Devil Canyon have all been made during July and August (Embicks 1982). It is assumed that this is due to the warmer weather and the more moderate flows occurring during this period. The river's median

flow[1/] is approximately 23,000 cfs in July and 20,000 cfs in August, as compared to the 27,000 cfs median flow in June and the 13,000 cfs median flow in September (Gold Creek Station). Flows at the canyon during attempted runs ranged from 13,600 cfs in August 1982 (in which one person was killed) to 28,000 cfs in 1976 (Embicks 1982). During most of the other known attempts, flows were in the 20,000 to 26,000 cfs range. According to a kayaker who has run the Devil Canyon rapids several times, the lower flows of 13,000 cfs or less are much more dangerous than the higher flows up to about 31,000 cfs. Flows above 31,000 cfs appear considerably more dangerous (Lesser 1984).

Future Use. It is expected that occasional use of Devil Canyon would continue in the future without the Project, or would gradually increase. This assumption is based on the fact that the rapids are considered world-class whitewater by kayakers and have been the subject of a nationally televised documentary (ABC-TV February 27, 1977) as well as a locally produced documentary (Hession 1982). With continuing publicity and increasing population, it is assumed that attempts on the rapids would continue and gradually increase but not significantly because of their difficulty and remoteness. Continued use of the rapids, however, could be restricted since the adjacent land has been selected by the Native corporations. Some Native groups have indicated they may restrict access to the rapids because of the high risk to life and potential liability concerns (Bedard 1984).

Project Impacts. The proposed Project will affect the existing whitewater resource by inundating the Susitna River within the reservoir boundaries and by altering the natural flows of the river downstream of the reservoirs. Approximately 85 miles of the total 207 river miles between the Denali Highway and the Parks Highway are located within the reservoir boundaries and will change in character from a wilderness river environment with occasional rapids to a flatwater condition. The reservoirs will be less

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[1/] Median flows derived from flow duration data based on monthly average flows.

desirable to negotiate in small boats such as canoes, kayaks, and rafts because of the large size of the reservoir, high winds, and choppy waters. The Devil Canyon and Watana Dams would represent both obstacles requiring portaging to those continuing downstream.

Downstream of the Devil Canyon dam, approximately 53 miles of river (Devil Canyon to Talkeetna) will be affected by the discharge from the completed Project. During the boating season, the discharges between Devil Canyon and Talkeetna will be lower with the Project than under natural flows. The median flows with the Project will be approximately 9,000 cfs during July and August, approximately 10,500 cfs in June and 8,000 cfs in September (Gold Creek). Minimum flows will be 8,000 cfs (APA 1984). The existing median flows are approximately 27,000 in June, 23,000 cfs in July, 21,000 in August, and 13,000 in September. These with-Project flows will not limit small craft such as canoes and kayaks in this stretch of the river, since jet boats have been using the river at this flow range during the studies for the Project.

Downstream of Talkeetna, effects of the Project on whitewater or nonmotorized boating will not be significant. The impact on flows will be less extensive than in the upstream portion because of the moderating effect of the Chulitna and Talkeetna Rivers. In addition, as noted above there is less whitewater boating in this portion of the river.

The 54-mile portion of the river between the Denali Highway and the upper limits of the Watana reservoir maximum pool will not be affected by the Project. Boaters will continue to be able to put in at Denali Highway and reach the Tyone River. The trip to Stephan Lake will not be possible after the Project is completed, unless the boaters traverse the Watana Reservoir and are able to portage the Watana dam.

Both the Vee Canyon rapids and the Devil Canyon rapids will be lost as a result of the Project. The Watana Reservoir will inundate the Vee Canyon rapids with 155 feet of water during the minimum pool levels. After

completion of the Devil Canyon Dam, three of the four Class VI rapids in Devil Canyon will be inundated by the reservoir. The remaining one-mile portion of the Devil Canyon rapids between the dam and the tailrace channel outlet will be dewatered except for minor flows from seepage and occasional discharges from the fixed cone valves.

During the eight-year construction period for the Watana Dam, there should be no impact on the Vee Canyon or Devil Canyon rapids, except during the three-year filling period, during which flows will be reduced in Devil Canyon and water levels will gradually increase in Vee Canyon. During this filling period, July and August median flows at Gold Creek will be approximately 9,000 cfs (except during the first year in which the median August flow will be approximately 15,000 cfs). During low flow years[2/] the discharge would be 8,000 cfs and during high flow[3/] years discharge would be 13,000 to 17,000 cfs or greater. Thus, depending on the amount of rainfall during filling, it may be possible to run Devil Canyon in high flow years. As discussed above, flows of 13,000 cfs or lower are considered much more dangerous, if not impossible, to run.

During construction of the Devil Canyon Dam, the rapids will be affected by discharges of the Watana Dam. The discharges are expected to be similar to the discharges from the completed Project. Median flows will be approximately 10,000 cfs in July and August and 11,000 cfs in September. High flows will be approximately 13,000 cfs in July, 17,000 cfs in August, and between 14,000 and 24,000 cfs in September (APA 1984). Running the rapids, if these modified flows can be run, will probably not be practical during Devil Canyon Dam construction because of the difficulty of exitting the canyon before reaching the dam site.

[2/] Low flows are those flows equalled or exceeded 90 percent of the years within the 34-year period of record.

[3/] High flows are those flows equalled or exceeded 10 percent of the years within the 34-year period of record.

Access to the Devil Canyon rapids will be affected both during construction and after completion of the Project. During Watana Dam construction, access to Devil Canyon will be reduced since it will be difficult, if not impossible, to paddle downstream from the Denali Highway and portage around the Watana project site. Access to project lands will be restricted and exitting the steep river bluffs prior to the Watana dam site may be difficult for boaters. Access to Devil Canyon via High Lake will still be possible.

During Devil Canyon construction, access to the rapids would be more limited. Assuming boaters were interested in attempting the rapids at the lower flows discharged from Watana Dam, access from High Lake would still be possible. However, if the first three sets of rapids above the dam site were run, it would be difficult to exit the canyon before reaching the dam site because of the fast water and steep canyon walls.

After project completion, the access road will be open to the public and access provided to the reservoirs. The access road will benefit users desiring to boat the Gold Creek to Talkeetna river stretch if access is provided to the river below the Devil Canyon outlet. However, some of the project lands may be conveyed to the Native corporations in which case access may be more restricted.

Mitigation Measures Endorsed by the Alaska Power Authority

1. Provide a boat launch and parking area for improved access to the Susitna River at the Denali Highway (APA 1983 p. E-7-74).

2. Provide access to the Susitna River downstream of the Devil Canyon Dam tailrace outlet for whitewater boating to Gold Creek, Talkeetna, or the Parks Highway. This measure recognizes that agreements with Native landowners may be needed, and that user fees may be charged.

3. During construction, post signs at upstream launch sites to alert boaters of construction activities.

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