list as prepared is complete, incomplete or whether or not things should be added or deleted therefrom.

STATE OF NEW YORK
EXECUTIVE DEPARTMENT
ADIRONDACK PARK AGENCY

MEMORANDUM

: Dick Persons

FROM : John Wargo

DATE : October 5, 1976

SUBJECT: 90 M Jump Alternative Sites.

This is a very preliminary list of criteria that would be logical to use on a search for alternative sites. The list is by no means exhaustive and represents our staff's research. We're awaiting the criteria of the LPOOC and the weights which they'll assign.

1. Wind Conditions
2. Exposure
3. Snow Conditions/Elevation
4. Elevation Change
5. Wetlands
6. Wildlife Habitats
7. Floodplains
8. Adjacent Land Use Compatibility
9. Archeological, Historical and Cultural Sites
10. Aesthetics
11. Traffic Congestion/ Safety
12. Surface Water - Lake, River, Pond, Streams:
13. Groundwater
14. Fog Pockets
15. Distance from Lake Placid
16. Committments to I.O.C., F.I.S.
17. Accessibility
18. Existing Facilities
19. Maintenance and Operation (Long term ownership)
20. Voluntary Help
21. Construction Costs
22. Site Acquisition Costs
23. Maintenance Costs
24. Economic and Fiscal Impacts
25. Training Facility Viability
26. Tourist Attraction Viability

JPW:jm

THE HEARING OFFICER: All right, with that I turn Mr. Reinhardt back over to Mr. Hanna.

MR. HANNA: What was the number of this exhibit, 1?

THE HEARING OFFICER: 1 for today. Oh, I am going to --

MR. HANNA: I believe we left --

THE HEARING OFFICER: Excuse me a moment. I am going to introduce for the record as an exhibit the paper referred to by Dr. Dewey from the Ski Annual 1934, United States Eastern Amateur Ski Association, a paper entitled "Ski Hil Design" by Godfrey Dewey consisting of Pages 44 through 54 inclusive of that volume and ask that it be designated Exhibit 761207:2 and that it be inserted in the record ahead of this particular discussion and at the close of Dr. Dewey's testimony as if Dr. Dewey had testified thereon therewith.

MR. HANNA: Are you going to put in his resume too?

THE HEARING OFFICER: Yes, and preceding that, at the same point we'll designate it 761207:3, the resume of Dr. Dewey.

RESUME
GODFREY DEWEY
LAKE PLACID CLUB, LAKE PLACID, NY

BIRTH: September 3, 1887

EDUCATION: Albany Academy, 1904

Harvard College A.B., 1909

Harvard Graduate School of Education ED.M. 1921

Harvard Graduate School of Education ED.D. 1926

BACKGROUND: Executive officer, Lake Placid Club and affiliate corporations - 1908-1932, 1948

Chairman, Lake Placid Co. Executive Committee - 1955

Captain Army Corp. of Engineers - 1918

1932 Olympic Games Committee and President 1928-1932

Lake Placid Club Convention Manager, 1934-35

President, Emerson College, 1934, 1949-51

Harvard Center for the Study of World Religions and Colgate University Chapel House - 1955-60

AUTHOR: Numerous articles, books and publications, including: "Ski Hil Design," The Ski Annual, 1934, U.S. Eastern Amateur Ski Association pp. 44-54

76Rot

761107 3

U. S. EASTERN AMATEUR
SKI ASSOCIATION

THE SKI ANNUAL

1934

Second Edition — Price, 75 cents

CONTENTS

SKI HIL DESIGN

By GODFREY DEWEY*

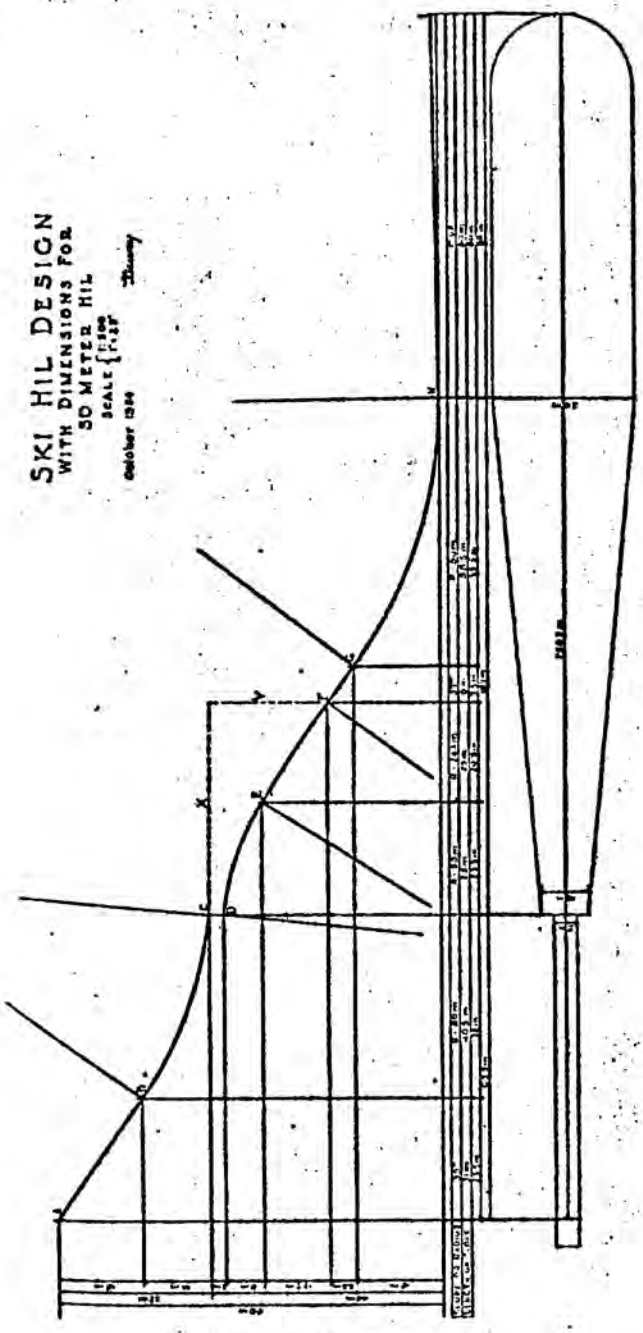
SKI hil design has come far since Norwegian lads first shoveld snow together half way down a natural hilside slope to form a crude *spraet bop* and launchr themselvs into the air. As jumps hav lengthend rapidly since the turn of the century considerations of velocity, trajectory, impact, etc, hav forst themselves upon the hardy skier and the engineer has been increasingly cald upon until today the profile of a major ski hil is completely a product of engineering design and construction. In a field, however, which involvs factors varying as widely and rapidly as the coefficient of friction of skis on snow, or as difficult to mesure as the amount and direction of the energy expended by the jumper in his spring, theory must be strongly supported by practical experience and direct observation if it is to make a valid contribution. This article seeks to strike a just balance between untested theory and uncomprehended practis. Design, construction and test of half a dozen hils of widely varying sizes, and observation and study of many more, hav gone far toward confirming its principal conclusions.

Ski hil design has two main fases: determining the ideal profile for a jump of any given length, and adapting that profile to construction or reconstruction of an actual hil with the least sacrifice of ideal characteristics compatible with a minimum construction expense. This article wil attempt to deal with the first fase quite definitly, tho with a minimum elaboration of discussion, and for the second fase will suggest a tecnic which should be helpful in dealing with each individual problem.

A ski hil may be regarded as consisting of four principal parts: upper hil, take-off, lower hil, and outrun. More accurately, the ideal profile may be resolvd into eight elements, identified on the accompanying profile as follows:

A-B) Upper hil tangent
B-C) Upper hil transition curv to take-off
C-D) Take-off
D-E) Lower hil curv from take-off to landing slope, often referd to as the bump
E-F) Landing slope
F-G) Recovery tangent
G-H) Lower hil transition curv to outrun
H-I) Outrun

*At the writer's request this article is speld as recommended by the Simplified Spelling Board.


SKI HIL DESIGN
WITH DIMENSIONS FOR
30 METER HIL
SCALE 1 FOOT
October 1964

45

In considering these separate elements, bear in mind that the hil as a whole exists solely for the purpose of the jumper's flight thru the air. This path of the jumper thru the air is conditiond by: velocity at the take-off; slope of the take-off; direction and force of the jumper's spring; position of the jumper's body in the air, to decrease air resistance to horizontal motion and increase resistance to vertical motion; and vertical distance of landing point below take-off. The task of the hil designer is to plan a trajectory which shal achiev the specified distance with a minimum expenditure of energy and effort; to accelerate the jumper from rest to the required velocity at the take-off and decelerate him to rest again below the landing point with the least stres or shock to mar his stediness.

A few words now as to each unit of the hil before considering the hil as a whole.

A-B) The slope of the upper hil tangent should be sufficient for rapid acceleration but not so much as to cause unstediness. A slope rufly equal to the maximum slope of the lower hil is usually advantageous. In practis 35° (7′ drop in 10′ horizontal distance) is best for most hils, with 30° for the smallest, 40° for the largest.

The length of A-B is usually the last factor in design to be determind. Where a natural slope of ample length is available this is not important, but where a tower must be bilt, accurate determination of A-B in advance is vital. A length which makes the total vertical height above the take-off not less than 40% of the total vertical height from starting platform to outrun is sufficient to permit a maximum jump under average snow conditions.

B-C) The transition curv between tangent and take-off should be a simple circular curv of a radius sufficient so that centrifugal force shal not subject the jumper to an immoderate pressure at the take-off. In general a pressure which increases the apparent weight of the jumper by not more than 50% wil not be excessiv. The suggested radii for B-C (80 meters radius for a 50 meter hil, etc) keep within this theoretic limit and hav proved entirely satisfactory in practis.

C-D) Long experience on many hils of widely varying size and form confirms a slope of about 6° below horizontal, or about 1 in 10, as the most desirable inclination for the take-off. *There should be no actual tangent at the take-off*, but insted the transition curv B-C should end at the take-off with the desired 6° slope. I hav discust this feature at sufficient length in a previous article (1929 Yearbook, p 31) and wil not repeat here. Suffice it to say that this radical departure from former practis has been thoroly tested on leading hils abroad and the 60 meter Olympic ski hil at Lake Placid and has fully proved its markt superiority.

The height of the take-off C-D should be sufficient to assure that the average jumper shal ar least clear the "bump" and reach the landing slope even under unfavorable snow conditions, but no higher. The dimensions given (3 meters for a 50 meter hil, etc) when combined with the other features of design here presented, meet this condition.

D-E) The design of the bump, while in a sense immaterial in that the jumper should never tuch it, is critically important for the correct location of the landing slope in relation to the take-off. It may be assumed from experience that a landing slope extending from the longest jump half way back toward the take-off is amply sufficient. The ideal slope at the landing point for a jump of any given length must be predetermind as one of the most fundamental factors in ski hil design. If now a simple circular curv be commenst at the foot of the take-off, on the same 6° downward slope as the take-off above, with such a radius that it meets the landing slope at the half way point with the correct ideal slope, the profile of the bump wil follow the trajectory of the jumper's flight to a very satisfactory degree and, much more important, experience proves that the landing slope wil be correctly located in relation to the take-off—a simple and fairly obvious, yet wholly dependable solution of what is often one of the most baffling problems of ski hil design.

E-F) No decision is more important for a successful ski hil than the correct landing slope. The figures here given ar based on study of leading hils both here and abroad and discussion of their caracteristics with jumpers familiar with their actual use as wel as with engineers, and on design and construction and subsequent test and discussion of several hils ranging from less than 20 meters to more than 60 meters. In particular, in twice redesigning the original Lake Placid Club 35 meter Intervales ski hil into the final 60 meter Olympic ski hil, I had an opportunity to test and discuss with leading American jumpers three different profiles, ranging from 32° at 50 meters to 37° at 50 meters, and to confirm the final result by the judgment of Olympic jumpers from eleven nations. Accordingly I present these critically important dimensions with confidence that they meet the approval of a large body of highly qualified jumpers.

The landing slope varies uniformly from 33° at 30 meters to 39° at 60 meters, or 2° per 10 meters, corresponding to a radius of about 285 meters. Below 30 meters it varies 3° per 10 meters, corresponding to a radius of about 190 meters. Above 60 meters it varies only 1° in 10 meters, corresponding to a radius of 570 meters. For these inordinately long jumps I regard the greater accuracy to be obtaind by compounding the landing slope curv, as shown in the tables, as justified.

Emfasis is sometimes placed on the ratio between the vertical dis-

tance y from take-off to landing point and the horizontal distance x between the same points, which, it is said, should not exceed 0.6. I hav not stress this y/x ratio as a separate feature because the method of construction here presented automatically takes care of this, and the changes most often made in adapting the ideal profile to an actual hil tend to decrease rather than increase this ratio, which for the figures given ranges from 0.51 for the 20 meter hil to 0.60 for the 80 meter hil.

F-G) Following a jump of maximum length on any hil a moment's pause in which to become poised before experiencing the pressure of the final curv to the outrun is very necessary, if good form as wel as safety is to be maintaind. The recovery tangent, on the same slope as the end of the landing slope, provides for this. The dimensions given allow about ½ second for recovery, which has been found in practis to suffice.

G-H) This final curv must be of sufficient radius to obviate excessiv pressure due to centrifugal force. It need not, however, provide for as perfect poise as is desirable at the take-off, so that altho the velocity at G is about 20% greater than at C a radius about 10% greater wil suffice.

H-I) The outrun should if possible be long enuf so that, even on fast snow, speed wil be reduced to the point where a sharp stop turn may be made without danger of falling. Where the terrain permits, an upward slope of 1° or 2° is a desirable feature, but distances given wil ordinarily suffice even tho the outrun be level.

As regards the width of a ski hil, no definit rules can be laid down. For a hil of average size (50 meters) 5 meters width for the upper hil is not too much, yet where a high tower must be built and snow often carrid up from the ground, and where there is no question of double or triple jumps or of an intermediate starting platform, 3 meters or in extreme cases even 2 meters (not counting the width of the return stairway) can be made to suffice. Below the take-off ample width is much more important for safety, and 10 meters at the take-off, widening to 30 meters at the outrun, is not too much. Under no circumstances should this be reduced (for a 50 meter hil) to less than 8 meters at the take-off, tapering to 20 meters at the outrun, and for these dimensions great pains should be taken to see that the sides of the lower hil ar graded or fenst smoothly with no projections.

Interest centers naturally on the group of hils lying between 40 and 60 meters—a range which includes a majority of the known hils in this country at least. Very few hils anywhere in the world lie below 20 meters or above 80 meters. I hav extended the table following to include 10 meters because I believ that a good 10 meter hil, which can usually be provided with little cost, is a valuable "starter" for the smallest youngsters and most hesitant beginners. I hav extended it to

90 meters because of the announst intention of the German Olympic Committee to provide for the Fourth Olympic Winter Games at Garmisch-Partenkirchen in 1936 a hil on which jumps of 90 meters shal be possible. Incidentally, altho I realize the dangers of profecy in so unsettld a field, I venture the prediction that if the dimensions stated and shown in the official release of January 31, 1934 ar adhered to, this wil not be successfully accomplisht. The total height available is ample for 70 meters, but could hardly be stretcht beyond 80 meters without making the bottom curvs of both upper and lower hils altogether too sharp, which has been done. Altho the y/x ratio of vertical to horizontal distance from take-off to landing point is a maximum, the landing slope is several degrees too flat for ideal conditions. The height of the upper hil provided cannot possibly permit a 90 meter jump from a 6° take-off, and if the distance be achievd by flattening the take-off to throw the jumper high in the air, the shock of landing on the too flat landing slope wil be extremely severe. There is, in my judgment, no mecanical or aerodinamic reason why, given sufficient vertical height and the most favorable design, jumps of 90 or even 100 meters should not be successfully achievd, but I personally adhere to the position stated in a previous article, that so long as the tensile strength of human bone and sinew remains substantially a constant, while the kinetic energy to be absorbd in a fall increases as the square of the velocity, the development of hils for jumps of much above 60 meters is not for the best interests of the sport.

I hav workt thruout in the international metric system, which is universal in science and wel-nigh universal in sport (in fact for every purpose excepting only in the English-speaking countries) including the elaborate tables required to judge a ski jump or a combined running and jumping event. The metric system is much simpler to use and wil facilitate comparison with other studies abroad. The engineer or contractor who feels it necessary to work in English mesures need experience no difficulty, for the metric scale of 1:300 which is convenient for drafting all but the smallest hils corresponds exactly to the English mesure scale of $1'' = 25'$, and may be scaled quickly and accurately with a 50 to the inch scale, while a slide rule provides a quick and easy means of ample accuracy for converting dimensions from one system to the other.

With these comments I present in the accompanying table every dimension necessary for constructing a thoroly satisfactory ski hil for a maximum jump of any length from 10 to 90 meters. The dimensions, which ar given to the nearest ½ meter or ½ degree, hav been checkt with each other so that for length between the even 10 meters units, figures may safely be interpolated. On the profile which accompanies and interprets the table I hav added the complete dimensions for a 50 meter

SKI HIL DESIGN

Table of dimensions

All dimensions ar given in meters, to the nearest ½ meter, or degrees to the nearest ½ degree

	Jump	Upper Hil	Lower Hil	Over-all	A-B	B-C	C	C-D	D	D-E	E	E-F		F-G	G-H	H-I
Slope or radius					30°	r=30	6°		6°	r=15	25°30′	r=190		27°	r=40	1° up
Length on slope	10	20			7.5	12.5				5		5		5	19	30
Horizontal length		18.5	32.5	81	6.5	12				5		5		4.5	18	30
Vertical height		7.5	11	18.5	3.5	4		1		1.5		2		2	4.5	
Slope or radius					30°	r=45	6°		6°	r=27	27°	r=190		30°	r=55	1° up
Length on slope	20	34.5			15.5	19				10		10		6	30	45
Horizontal length		31.5	52.5	134	13.5	18				9.5		9		5	29	45
Vertical height		13.5	20	33.5	8	5.5		1.5		3		5		3	7.5	
Slope or radius					30°	r=60	6°		6°	r=38	28°30′	r=190		33°	r=70	1° up
Length on slope	30	49			24	25				15		15		7	40	60
Horizontal length		44	71.5	175.5	20.5	23.5				14.5		13		6	38	60
Vertical height		19.5	29	48.5	12	7.5		2		4.5		7.5		4	11	
Slope or radius					35°	r=70	6°		6°	r=46	31°	r=285		35°	r=80	1° up
Length on slope	40	58			22.5	35.5				20		20		8	49	70
Horizontal length		52	89.5	211.5	18.5	33.5				19		17		6.5	47	70
Vertical height		25.5	38.5	64	13	12.5		2.5		6.5		11		4.5	14	
Slope or radius					35°	r=80	6°		6°	r=55	32°	r=285		37°	r=90	1° up
Length on slope	50	71.5			31	40.5				25		25		9	58.5	80
Horizontal length		63.5	107	250.5	25.5	38				23.5		20.5		7.5	55.5	80
Vertical height		32	48	80	18	14		3		8		13.5		5.5	18	
Slope or radius					35°	r=90	6°		6°	r=64	33°	r=285		39°	r=100	1° up
Length on slope	60	86			40	46				30		30		10	68	90
Horizontal length		75.5	124.5	290	32.5	43				28		24.5		8	64	90
Vertical height		38.5	58	96.5	22.5	16		3		9.5		17.5		6	22	
Slope or radius					40°	r=100	6°		6°	r=72	34°	r=285	r=570	40°	r=110	1° up
Length on slope	70	94			34.5	59.5				35		25	10	10	76.5	100
Horizontal length		80.5	141	321.5	26	54.5				33		20	8	8	72	100
Vertical height		45	68	113	22	23		3.5		11.5		14.5	6.5	6.5	25.5	
Slope or radius					40°	r=110	6°		6°	r=79	35°	r=285	r=570	41°	r=120	1° up
Length on slope	80	107			42	65				40		20	20	11	85.5	110
Horizontal length		92	157	359	32	60				37		16.5	15.5	8	80	110
Vertical height		52	78	130	27	25		3.5		13.5		12	12.5	7.5	29	
Slope or radius					40°	r=120	6°		6°	r=86	36°	r=285	r=570	42°	r=130	1° up
Length on slope	90	120			49.5	70.5				45		15	10	11	94.5	120
Horizontal length		103	174	397	38	65				41.5		13	9	8	88.5	120
Vertical height		59	88.5	147.5	32	27		4		15.5		6	5	5	33	

hil, but the same profile wil serve almost equally wel to interpret any other set of dimensions substituted from the table.

The most thoro tecnical discussion of ski hil design with which I am familiar is a long article by R. Straumann of Waldenburg, Switzerland, entitld "Ski Jumping and its Mechanics," publisht (in German) in the 1927 Yearbook of the Swiss Ski Clubs Association. This includes data gathered by wind tunnel experiments with a ¼ size model of a skier at the University of Göttingen, and deals exhaustivly with every fase of the subject with many formulae involving higher mathematics. As a study of the best posture for a ski jumper while in the air, this article makes an important contribution, but from the standpoint of ski hil design there is too little evidence that the theory of this investigation has been temperd by practical observation and experience. It may be interesting to note, therefore, 5 respects in which I regard the profiles here presented as superior to those to be deduced from Straumann's tables.

1) A tangent at the take-off is eliminated.

2) Landing slopes ar 5 to 15% steeper, especially for the shorter hils.

3) Transition curvs (B-C and G-H) ar 10 to 20% longer.

4) Vertical height required for upper hil is 20% less.

5) Observd average velocity from take-off to landing point is about 25% less (18 meters per second, or about 40 miles per hour, on the 60 meter Olympic hil as compared with 24.5 meters). This is a very important factor on which I wish that further data might be collected from other major hils. Holding an ordinary stopwatch in the judges' stand it is not difficult to take the elapst time from take-off to landing to the nearest 1/5 second. I shal be grateful to any skiing enthusiast who wil send me (addrest to me at Lake Placid Club, N.Y.) a series of such stopwatch times, with the length of jump, either in meters or feet, corresponding to each time, and any data conveniently obtainable regarding the hil on which they were made and the general snow conditions, favorable or unfavorable, at the time of the jump.

The problem of adapting an ideal profile to construction or reconstruction of a real hil is peculiar to each individual case, but a few suggestions regarding tecnic may be given which should be quite generally applicable.

First, of course, no hil should be constructed except where climate and exposure give reasonable assurance of dependable snow conditions during the desired season, so that a meet may be scheduled weeks or months in advance with the justifiable expectation that it wil be held as scheduled. For this, in the northeastern United States at least, a northerly slope is practically essential, preferably facing between northeast and northwest.

about 60% of the total available height.

In preliminary scouting for a satisfactory site three rule-of-thumb approximations wil be helpful:

1) About 40% of the total vertical height available, including tower if any, wil be required for the upper hil; that is, wil lie above the take-off.

2) The steepest part of the lower hil wil lie between 50% and 60% of the vertical height of the lower hil below the take-off.

3) The longest jump which can be developt without undue sacrifice of desirable caracteristics wil be from 5 to 15% longer than the vertical height of the lower hil. (= 7½ to 12½ ft.)

Thus, for example, a natural slope of sufficient steepness 60 meters (about 200') high, if developt with no tower, would hav the take-off about 24 meters (vertically) below the brow of the hil; the steepest required slope about 20 meters below the take-off; and would permit a satisfactory maximum jump of about 40 meters. If developt with a maximum tower, 40 meters high, forming the entire upper hil, the take-off would be, of course, at the summit, the steepest slope about 33 meters below, and the maximum satisfactory jump about 65 meters. If developt with a tower 20 meters high—a reasonable compromise for such a site—giving 80 meters total height, a perfect 50 meter hil could be produced.

In scouting for a site, always keep in mind that a fairly good site near the community and easily accessible is considerably more valuable than an intrinsically much better site distant or inaccessible.

With a site tentativly selected, it wil always pay as a next step to obtain an accurately surveyd center line profile of the natural slope, with enuf side shots where the ground is uneven to permit accurate estimating of cuts and fils. For convenience this profile should be plotted on a scale of 25 feet to the inch, with the high point to the left, preferably on 10 x 10 to the inch cross-section paper.

Next decide how large a hil you ar trying to bild: whether a natural hil wholly on the ground or one with the upper hil partly or wholly on a tower. The first four columns of the table, preceding the letterd dimensions, should be helpful at this point. A natural hil is always preferable psicologically, and in convenient maintenance and protection from cross winds, but wel located sites for natural hils of more than 40 meters ar rare in the northeastern United States.

With this crucial decision made, plot the idea profile for a hil of the determind length on thin 10 x 10 cross-section tracing paper to a scale of 1″ = 25′, using the methods and dimensions given in the first part of this article. It wil be found more accurate and convenient to plot the lower hil from the take-off down, the upper hil from the take-off up.

Now lay this ideal profile over the surveyd profile, with the take-off

at the approximate height cald for by the decision with respect to a tower, and move it back and forth and to a lesser extent up and down, studying the various cuts and fils which may be required, seeking to reduce the cuts and fils to a minimum, to hav them more or less balance, and to hav the cuts in general above the corresponding fils. When the most economical location has been found, it wil usually pay to make a ruf computation of the actual cuts and fils, taking account of the width at each point, with preliminary estimates as to their cost.

If the cost of the project now appears too great, careful study of possible modifications should be made before deciding to abandon the site or develop a smaller hil. Possible modifications of each element wil be discust briefly.

A-B) Where a natural slope of ample length is available, considerable liberties may be taken with A-B, providing that no abrupt changes of grade ar permitted and that the minimum grade is not less than 20° or, better, 25°. A flatter slope wil require slightly more total vertical height. Where the upper hil is on a tower, only a little wil be saved by increasing the slope of A-B, which should not be increast more than 5° in any event.

B-C) This radius may be shortend not more than 20%, or lengthend as much as 25%, or possibly 33%. The lengthening is often helpful in reconstrucing an old hil to eliminate a tangent at the take-off.

C-D) The height of the take-off should not be increast, nor should it be reduced ordinarily more than about 0.5 meter.

To flatten the 6° slope at C even 1° or 2° wil lower the required height of the upper hil by several meters, but is an abnormal "jazzing-up" of the easiest trajectory, throwing the jumper much higher into the air to land more hevily, which goes far toward destroying the best features of the ideal profile. Do not reduce this 6° slope except as a last resort, to avoid, for example, the expense of reconstructing an existing tower.

To flatten the 6° slope at D by as much as 3° or 4° is one of the least objectionable changes which can be made, and is often helpful in gaining a little vertical height, which is the "working capital" of ski hil design. If this is done, however, the take-off height must not be lowerd even slightly.

D-E) Change of this radius is the incidental outcome of changing the slope at D or the landing slope E-F, which it must couple together smoothly.

E-F) This is a critically important part of the hil, which should be changed only after careful consideration of the consequences, but the ideal profile has delt so generously with this factor that only ease rather than safety wil be sacrificed by reducing the slope not more than 2°

for the larger hils or 3° for the smaller. The relativ slope for varying jumps, that is, the radius or radii, should not be changed.

F-G) The recovery tangent is a very necessary factor for safety and good form. It should not be reduced more than 1 or 2 meters at most, if at all.

G-H) This radius may be reduced as much as 10% without too serious consequences, but not more.

H-I) The length of outrun is, of course, subject to considerable variation if necessary, but if the snow is fast the distances given ar none too great, and if they ar materially reduced, a bank of loose snow or hay should be provided at the end as a safety factor.

Each change considerd must naturally be tested by redrawing on tracing paper and reorienting on the surveyd profile: When the hil profile to be adopted is finally determind, locate the take-off accurately on the surveyd profile by pricking thru the tracing, and redraw the hil profile carefully with sharp fine lines on the same sheet with the surveyd profile. From such a careful drawing, to the suggested scale, dimensions may be scaled with sufficient accuracy for the ruf grading. The final grading, of the landing slope especially, should be carrid out with the aid of properly curvd templates at least 4 meters long, laid vertically on the slope, gided by horizontal screeds set into the slope about 2 meters apart.

In reconstruction of an existing hil, especially where a high tower has been bilt or a take-off produced by heavy cut and/or fil, the task of adaptation is often more difficult, but the same tecnic and limitations apply, gided, of course, by the particular defects which it is considerd important to remove.

These data and suggestions ar offerd for what they may be worth, on the basis of a considerable experience which has combined the engineering and the sport point of view, with no thought that the final word on ski hil design has been spoken, but with the hope and expectation that they may result in producing, for the future, ski hils more nearly perfect than in the past, and at less cost.

THE HEARING OFFICER: All right, proceed.

ROBERT DENNIS REINHARDT,

recalled as a witness for and in behalf of the Applicant, having been previously duly sworn, was examined further and testified as follows:

MR. HANNA: I tried to remember the pending question. I think the witness was starting to answer when we broke. I had asked him where in general such as in the application or in some other document were contained the consideration of other alternatives referred to.

THE WITNESS: Mr. Hanna, in -- excuse me, in the period since we broke, I have had an opportunity to identify that area within the application or at least a portion of that area, a significant portion being on Pages Roman III-Arabic 23 through- Roman III-32. I'm certain that the application, however, contains other substantive discussions of alternatives and their consideration and/or identification and the criteria associated with that question.

THE HEARING OFFICER: As far as

those portions you've just identified are concerned, have you had occasion to review them yourself personally?

THE WITNESS: Yes.

THE HEARING OFFICER: Do you support the conclusions and statements contained therein?

THE WITNESS: I do.

THE HEARING OFFICER: If you were asked to testify as to the matters considered therein, would you testify substantially in accordance with that written material?

MR. HANNA: Mr. Hearing Officer, I believe the witness said before that he was not completely involved with the criteria.

THE HEARING OFFICER: That's why I'm asking him. Would you testify substantially in accordance with the substance thereof?

THE WITNESS: Yes, I would. To clarify my --

THE HEARING OFFICER: No, wait a minute, let me finish my questions please. Would you adopt the statements and conclusions therein as your own?

THE WITNESS: Substantially.

THE HEARING OFFICER: All right, I'm going to ask that they -- those appropriate pages be inserted in the record at this point numbered in serial order and be considered testimony by the witness, subject to whatever qualifications the witness feels are necessary upon his review or upon questions of counsel. Proceed, Counselor.

MR. HANNA: Well, I think we might start by asking what's meant by "substantially" in his last answer to you, to your knowledge?

THE WITNESS: Well, to clarify my earlier --

THE HEARING OFFICER: I'm going to entertain an objection to the form of the question. Rephrase the question. Are there any differences in your opinion and the statements contained therein. If so, please identify them, or are there any portions you do not wish to adopt as your own opinion?

THE WITNESS: I would prefer to have another opportunity to read the material. The

latest time that I read the material was last night and yet I would not at this juncture care to conclude that I am in wholehearted agreement with every word, sentence, phrase of that section. Substantially I am. With that qualification of an accurate detailed review --

THE HEARING OFFICER: Again, Mr. Hanna, proceed, and as you get to specifics, if the witness specifically disagrees with the statement contained therein, he can reject it.

MR. HANNA: Well, I take it that what these pages have been introduced for is for the purpose of showing what Sasaki did. To the extent whether this witness can adopt them is still sometime in the future.

THE HEARING OFFICER: That's correct.

BY MR. HANNA:

Q. Did you suggest any other criteria than those used for the consideration of the Intervale site?

A. Than those identified in these pages?

Q. That's right.

A. There may have been other criteria suggested informally, but the basis, the initial basis for

adopting as an element of the study, for adopting criteria, was the set of criteria derived from public agencies, principally the Adirondack Park Agency, the DEC and other agencies with jurisdiction. That set of criteria is generalized on the first page of the area in question, first and second page, incidentally.

THE HEARING OFFICER: Mr. Reinhardt, with reference to Exhibit 761207:1, the memorandum from John Wargo to the Adirondack Park Agency, do you have any substantial objection to the list of preliminary criteria identified on that memorandum?

THE WITNESS: Would you give me a minute to read through them?

THE HEARING OFFICER: Yes.

THE WITNESS: I'll -- if I do, I will identify them. I want to have further definition of certain words such as "exposure."

THE HEARING OFFICER: Exposure, O.K. What else?

THE WITNESS: And the meaning of "elevation change" in the context of these criteria,

Number 9, suggesting onsite distribution of archaeologic, historic, cultural sites, I would question -- well, in general, when I get to Number 9 I then begin to see the need for a further definition of these as criteria before reaching any conclusion as to whether I would concur with that.

THE HEARING OFFICER: Assuming that we take the general dictionary definition of each word contained on this list, is there any question in your mind, and again refer to each one individually, that these are factors which ought to be considered whether -- whatever weight might be given to them in determining whether or not a particular site is a suitable site?

THE WITNESS: I would further question "fog pockets" as to the relative relevance of that criterion, "voluntary help" and I would question the relevance of the final one "tourist attraction viability."

THE HEARING OFFICER: All right. With the exception of those items designated "2. Exposure, 4. Elevation Change, 9. Archaeological,

Historical and Cultural Sites, 14. Fog Pockets, 20. Voluntary Help, and 26. Tourist Attraction Viability." Do you have any philosohpical or professional objection to consideration of the other factors as relevant criteria without assigning weight thereto or relative weight thereto --

MR. KAFIN: Mr. --

THE HEARING OFFICER: -- as relevant site selection criteria?

2x1

MR. KAFIN: I wanted to be sure that the question was clear as to whether these are exclusionary criteria for the site selection or once you find a site selection whether they are comparative factors between sites.

THE HEARING OFFICER: They are criteria meaning --

MR. KAFIN: That's the proper --

THE HEARING OFFICER: -- items to be considered. We're not saying how they're to be considered, the relative weight to be given to each item, just whether or not that item should be considered in any way.

MR. KAFIN: At any time.

THE HEARING OFFICER: At any time in the process.

MR. KAFIN: O.K. I understand.

THE WITNESS: With certain definitional qualifications, yes. I believe all of those that I had have already been incorporated within the study program, all that I did have been under consideration as such criteria.

THE HEARING OFFICER: That's the next question I was going to ask you, whether those other than those that have been excluded had been considered in your analysis of the site at Intervale. Now, I'm going to ask the next question: Did you or anyone under your control or supervision consider similar criteria with respect to any other site?

THE WITNESS: Yes. However, the list may not be absolutely coincidental.

THE HEARING OFFICER: O.K., Mr. Hanna, proceed.

I'm now going to designate Exhibit 761207:1 as an exhibit in evidence excluding items 2, 9, 14, 20 and 26 thereof. I'm giving the

STATE OF NEW YORK
EXECUTIVE DEPARTMENT
ADIRONDACK PARK AGENCY

MEMORANDUM

) : Dick Per...

FROM : John Wargo

DATE : October 5, 1976

SUBJECT: 90 M Jump Alternative Sites.

This is a very preliminary list of criteria that would be logical to use on a search for alternative sites. The list is by no means exhaustive and represents our staff's research. We're awaiting the criteria of the LPOOC and the weights which they'll assign.

1. Wind Conditions
2. Exposure
3. Snow Conditions/Elevation
4. Elevation Change
5. Wetlands
6. Wildlife Habitats
7. Floodplains
8. Adjacent Land Use Compatibility
9. Archeological, Historical and Cultural Sites
10. Aesthetics
11. Traffic Congestion/ Safety
12. Surface Water - Lake, River, Pond, Streams:
13. Groundwater
14. Fog Pockets
15. Distance from Lake Placid
16. Committments to I.O.C., F.I.S.
17. Accessibility
18. Existing Facilities
19. Maintenance and Operation (Long term ownership)
20. Voluntary Help
21. Construction Costs
22. Site Acquisition Costs
23. Maintenance Costs
24. Economic and Fiscal Impacts
25. Training Facility Viability
26. Tourist Attraction Viability

JPW:jm

Reporter my marked copy and asking her to --

MR. HANNA: Which one are you excluding, Commissioner?

THE HEARING OFFICER: 2, 4, 9, 14, 20 and 26.

MR. HANNA: Who established the criteria found on Page III-24 and III-25 under the heading "Specific Exclusionary Criteria for Screening Alternative Sites for the 90-Meter Jump"?

A. Criteria listed on those two pages is essentially a compilation and to some extent a generalization of those criteria found within the regulatory or guideline mechanisms of the Adirondack Park Agency and the Department of Environmental Conservation, probably local agencies, though my recollection is not specific in those areas. In other words, we concluded, based on the review of extant criteria already adopted as guidelines or guiding criteria of the agencies, that a subset of these is highly appropriate and, to my recollection, we did not exclude any from consideration that might be sensitive. As an example, we did not exclude wetlands even though

we, in early cut on the information, determined that there were not large significant areas of wetland on the site. Neither did we exclude 2500 feet of elevation even though we knew Intervale did not exceed that. In other words, these are generalized criteria adopted from those already agreed upon, presumably agreed upon and used by the agencies that we had access to.

Q. Well, for example, what was the basis for developing the criteria found on Page III-25 labeled Arabic 1, tower height of 150 feet above grade at top of the hill.

A. Now, the initial set of criteria 1 was directly involved in assembling, after the first cut in a sequential set of activities --

Q. Could you describe what you mean by "first cut"?

A. Well, after the first -- after a first round of evaluation of alternatives that were -- that came to our attention through various mechanisms, essentially in the early stages of the study we did, we conducted a preliminary evaluation of all of these sites without at that point rejecting any of them under consideration, later subsequently

conducted further evaluations of these sites and began them to identify those that exceeded certain threshold criteria, for example, adverse effect or physical effect on lands classified wilderness or wild, and the set on Page III-25 then takes on more specific dimensions, and I was not involved in discussions which concluded that 150 feet should be identified as a criterion for tower height consideration, further screening of alternatives. I would defer in later -- in presumed later testimony to Jerry Chapman who is principally involved in the development of these second-stage criteria.

Q. That would include all of them, including the ones labeled 2 and 3 on Page III-25, the same answer with respect to both of those?

A. Yes, essentially. I understand the criteria but in terms of how it was divined, I would defer.

Q. Now, with respect to the projects you referred to on today's Exhibit 61 as being relevant, starting with the State Park at Rockwood Hall, did you have occasion to consider -- did you consider alternatives with respect to that project?

A. We considered in a --

THE HEARING OFFICER: Mr. Reinhardt, yes or no, if you can answer it.

THE WITNESS: Yes.

Q. And did you develop criteria for considering alternatives?

A. Yes, we did.

Q. And were those criteria the same as were developed here?

A. No, they were not.

THE HEARING OFFICER: I'm going to sustain an objection to that question and a motion, and grant a motion to strike the answer unless it's previously established that the criteria could in any way be comparable. I do not believe the State Park at Rockwood Hall included any consideration of winter sports activities similar to the project application before us.

MR. HANNA: I believe, Mr. Hearing Officer --

MR. BROOKS: So moved.

MR. HANNA: That this witness has stated that that project was relevant to this one.

THE HEARING OFFICER: And I think I established --

MR. HANNA: I take it --

THE HEARING OFFICER: -- that the extent of the relevance is that it involved considerations of a general nature involving systems ecology and the expertise of this particular witness with reference to environmental research and environmental design arts. I do not believe there is anything involved here that is directly similar to the facilities under consideration and unless the witness can so indicate, I will not permit consideration of specific discussion of any of these -- of the project. They go to the issue of competence and expertise. They do not go to the relevance, that is to the subject matter of these hearings.

MR. HANNA: It strikes me, Mr. Hearing Officer, that I have to respectfully disagree that the question of selecting alternative sites is going to set forth certain criteria as relevant to know whether those are the same or not.

siting.

THE HEARING OFFICER: And do you so consider it as an issue, a relevant issue in consideration of alternatives in other projects you've been a part of?

THE WITNESS: Yes.

THE HEARING OFFICER: All right, go ahead, Mr. Hanna.

BY MR. HANNA:

Q. I would like to know in general with respect to the criteria to be used in this case whether he followed those criteria in the state park situation at Rockwood Hall.

THE HEARING OFFICER: Again, you must lay a foundation. You must establish that the two projects are in any way related.

MR. HANNA: I repeat he's the one who says they're relevant and you yourself stated they're relevant.

THE HEARING OFFICER: Counselor, I've established the issue of relevance solely for the purpose of establishing the competence of this witness as an expert, not as to the similarity

of projects. Ask the proper question and lay the proper foundation or I will. Mr. Reinhardt, does the state park at Rockwood Hall in Westchester County Project bear any similarity to the 1980 Winter Olympic Games Project at Lake Placid?

THE WITNESS: There are classes of similarities and --

THE HEARING OFFICER: Would you identify those classes of similarites?

THE WITNESS: Both projects involve siting of facilities not previously sited on the lands in question.

THE HEARING OFFICER: Are there -- are there any general site selection considerations which were -- which are different in the 1980 Winter Olympic Games selection process and the state park at Rockwood Hall in Westchester County selection process?

THE WITNESS: Yes.

THE HEARING OFFICER: What are they?

THE WITNESS: One significant difference is the presence on the Rockwood Hall site of a historic resource on the site.

THE HEARING OFFICER: What is the historic resource?

THE WITNESS: It is the --

THE HEARING OFFICER: What was it?

THE WITNESS: It was the, I believe, site of the former estate of William Rockefeller.

THE HEARING OFFICER: That's historic?

THE WITNESS: Yes, declared locally as historic. The biophysical differences may turn out to be similarities. Rockwood Hall is adjacent to an estuary. The level of impacts possible from the development at that site were of such a magnitude as to necessitate significant and substantial investments in estuarine research associated with the planning and site -- site planning and program developments on that site. It is my aforestated judgment that the difference here is the level of impact anticipated in the Ausable River will be substantially mitigated by the measures discussed earlier and, therefore, do not take on the same order of magnitude as those within the Hudson River.

THE HEARING OFFICER: All right, go ahead, Mr. Hanna.

BY MR. HANNA:

Q. What studies were made by you with respect to assessing the impact on the Adirondack Park Region referred to in your testimony?

A. The segments of the Environmental Impact Statement that included socioeconomic community impacts and economic impacts, dealt with a scope to include much -- most of the Adirondack Park. The site specific and systems evaluations in the natural arena, biotic and abiotic, were not as extensively evaluated. They were to the extent that river systems were involved and in any other instance where a direct physical linkage was identified, the study included a consideration of those linkages.

Q. One moment please. Is there a copy of the regulations readily available?

MR. KAFIN: Regulations of the Adirondack Park?

MR. HANNA: Regulations of the Adirondack Park Agency.

THE HEARING OFFICER: I have Mr. Glennon's copy which I'll loan you.

MR. HANNA: Could the witness --

MR. JONES: It's for the witness.

MR. HANNA: Could the witness be shown --

THE HEARING OFFICER: What section thereof?

MR. HANNA: 581.10, the second and third pages of that section, the listing.

THE HEARING OFFICER: Of natural resource considerations commencing with --

MR. HANNA: Yes.

THE HEARING OFFICER: Arabic numeral 1.

MR. HANNA: Yes.

THE HEARING OFFICER: And proceeding through water, air, land, noise, critical resource areas, wildlife, aesthetic, historic considerations, site development considerations.

MR. HANNA: So forth, yes.

THE HEARING OFFICER: Governmental considerations and governmental review considerations.

MR. HANNA: Yes, that's right.

THE HEARING OFFICER: All right.

BY MR. HANNA:

Q. Now, with respect to each of those matters, did you consider -- did you make any studies with respect to the Adirondack Park Region as a whole or, maybe to make it easier, are there any with respect to which you did not make a study with respect to the Adirondack Park Region as a whole?

THE HEARING OFFICER: I'm going to sustain an objection on the grounds that there is no obligation to provide all of this information for the Adirondack Park Region, the entire blue lined area.

MR. HANNA: The question, Mr. Hearing Officer, even in the absence of my hearing any objection other than from the Hearing Officer, is that he says that, if my notes are correct, there was something done about assessing impact on the region. I'd like to know what he did.

THE HEARING OFFICER: You missed the -- you missed the qualification to that.

MR. BROOKS: Note my objection, by the way, to the question, please.

THE HEARING OFFICER: Thank you. In a systems sense, considering the Adirondack Regional Environmental System, with a capital "R," capital "E," and capital "S," with that qualification, Mr. Reinhardt, go ahead and answer the question.

THE WITNESS: Well, with that -- with that qualification certainly, the factors or elements listed on the two pages were given consideration though explicitly the vegetative cover is a study element, for example, which was confined to the site. Mineral resources did not particularly apply as I can recollect. Other aspects they applied were studied on a site-specific basis.

In terms of the Overall consideration of the overall systems impact of the Olympic Games, certainly the topics listed here were given some consideration, but not as study elements that reflected the entire data base that the Adirondack Park might encompass.

THE HEARING OFFICER: The Hearing Officer will take administrative judicial notice that no data base exists either prepared by, for or on behalf of the Adirondack Park Agency or any private agency which accounts for all the considerations set forth in Rule 301.10 (e) Arabic 1 through Arabic 5 inclusive, of all the subdivisions thereof.

The Hearing Officer will also rule that there is no obligation on the part of the project applicant in the absence of evidence to the contrary indicating impact on any of these features or elements as they exist on a systemwide basis to conduct such an investigation.

MR. BROOKS: Thank you.

BY MR. HANNA:

Q. Are any studies that you have made with respect to the impact on the Adirondack Region contained in the

application someplace?

A. There are reference to and substantive components of certain studies conducted especially by public agencies, notably DEC and APA, that are either included as appendix material, may or will be included in the hearing record or are a part of the Environmental Impact Statement.

Q. Could you identify those with respect to what area?

THE HEARING OFFICER: I'm going to sustain an objection unless you become more specific as to which area you're interested in and then establish the relevance of the line of inquiry.

MR. BROOKS: So object.

MR. HANNA: It's his -- it's his statement with respect to the impact, Mr. Hearing Officer.

THE HEARING OFFICER: He's made his statement.

MR. BROOKS: I would like to ask --

MR. HANNA: He said he's made some studies and I would like to ask him if they're there and where are they.

MR. BROOKS: Well, if I may, I

realize this is cross-examination, but I would like the referee to rule that the questions be a little more specific than they are so that we can proceed a little more rapidly. They're just a bunch of generalities.

THE HEARING OFFICER: In the absence of discovery procedures, I am reluctant to foreclose any line of inquiry by counsel even if it is in the nature of a fishing expedition. However, in this particular case, Mr. Reinhardt, and in the course of your professional activities in the association with Sasaki Associates in the preparation of the federal Draft Environmental Impact Statement for the Economic Development Administration of the United States Department of Commerce or in the preparation of this project application or any portion thereof, did you have occasion to rely upon studies prepared by other governmental agencies?

THE WITNESS: Yes.

THE HEARING OFFICER: Did you have occasion to rely upon information furnished by the Adirondack Park Agency?

THE WITNESS: Yes.

THE HEARING OFFICER: Did you have occasion to rely upon independent judgment and evaluation of such studies?

THE WITNESS: Yes.

THE HEARING OFFICER: Did you incorporate all of this information as the basis of your opinion?

THE WITNESS: To the extent that it was relevant in particular issues, yes.

THE HEARING OFFICER: All right, I am going to ask counsel to limit the inquiry to specific questions and on specific questions at specific points, you may request the basis of the witness' judgment. However, in view of the fact the witness has been duly qualified as an expert and as an expert in systems ecology among other things, if it is the witness' testimony that it is his considered professional opinion upon the review of all sources and information, then I must foreclose any further more specific inquiry. You may challenge that statement by producing evidence of your own and the challenge will go to the weight which I will accord this witness' testimony but you cannot inquire

further beyond that statement should it be made. Proceed.

MR. HANNA: You will note my objection, Mr. Hearing Officer.

THE HEARING OFFICER: There are exceptions as a matter of record to every ruling I make given to all parties.

BY MR. HANNA:

Q. During the course of your testimony, you referred to the fact that with respect to some studies, some unspecified studies were not done and would have been done if you had more time. First off, would you explain what you meant by "more time"?

MR. KAFIN: Objection. I think that is a characterization of the testimony that's not in accordance with what he said.

THE HEARING OFFICER: That's exactly what he said. Mr. Reinhardt, what did you mean by "more time" in the context of the answer you originally gave?

THE WITNESS: The answer as I originally gave, as I recollect, indicated that within the time frame of the -- of the Sasaki

participation in these studies, the --

THE HEARING OFFICER: Since January of 1976?

THE WITNESS: February, since the beginning of February, 1976.

THE HEARING OFFICER: And concluding October or thereabouts 1976 when this report was delivered --

THE WITNESS: Yes.

THE HEARING OFFICER: All right.

THE WITNESS: That considerable and extensive, if not intensive studies have been accomplished during that period both by the consultant to the applicant as well as by other parties, many of whom initiated and were conducting or carrying on studies prior to our participation in this activity; that within that time frame, I indicated that substantial information had been assembled adequate to render a conclusion on general nature of impacts for -- or more specific impacts as they affected more particular sites and more particular parts of the program. I did not imply or suggest in that response that I would have, if I had extensive

time, initiated substantially greater studies for the purposes of the Environmental Impact Statement. I did imply, however, in a subsequent response related to mitigative measures, that certain continuing activities, notably monitoring and design definition of mitigative measures should, in my judgment proceed with more specificity as time goes on to enable the applicant and others involved in site development construction activities to remain within the bounds of the general criteria identified in these documents which criteria may even become more specific as the development proceeds.

MR. HANNA: I believe your response though with respect to whether you -- if you had more time was related at least in part to socio-economic effects?

MR. BROOKS: I object to that characterization. That is not what his answer was.

THE HEARING OFFICER: That is not my recollection.

MR. HANNA: Well --

THE HEARING OFFICER: If you want to ask him that question, you may ask him that

question anew.

MR. HANNA: With respect to, I take it, the witness is certainly competent to answer, though if that's incorrect, but at any rate, I will ask him what -- with respect to which elements you were referring when you said if you had more time.

MR. BROOKS: I think he just answered that.

THE HEARING OFFICER: The question has been asked and answered. Sustained.

MR. HANNA: No, I don't believe that if he --

THE HEARING OFFICER: Counsellor, ask him a specific question.

MR. HANNA: I have asked him a specific question, Mr. Hearing Officer. I have asked him with respect to his answer if he had more time was there anything else involved other than mitigative measures that he was talking about later with respect to the banks.

THE HEARING OFFICER: Answer that question yes or no.

THE WITNESS: I'm sorry, the question is not clear with respect to a yes or no answer.

Would you restate it please?

THE HEARING OFFICER: The witness doesn't understand your question, Mr. Hanna. I suggest you rephrase it or ignore it.

MR. HANNA: I heard the witness, Mr. Hearing Officer.

Q. You stated, as I recollect, and you can correct me if I'm incorrect, that you had less than a one-year study and then you made a reference to if you had more time.

A. If I -- if I might interrupt and clarify that issue, even if we have to go back to the tape, I don't recollect saying if I had more time.

Q. With respect to my inquiry with respect to transportation made by your organization, were any -- were any consultants involved with consideration of transportation matters other than the Department of Transportation which is obviously not a consultant, but I would accept them for this purpose, were there any other persons involved in the consideration and study of transportation matters other than the Department of Transportation?

A. Well, certainly the study team comprised indi-

viduals in groups although not directly associated and affiliated with transportation planning that had input to that activity. I would include as an ancillary individual, an individual from Energy Resources Company that spoke to us, delivered expert information on energy aspects of the proposed games, for example, but other than that, the Department of Transportation was the principal entity, has been the principal entity with whom we have associated with respect to transportation activities.

Q. What was the name of that other organization again?

A. Energy Resources Company in Cambridge.

Q. Were any studies and reports of theirs included in any of the material in the application or submitted to date?

A. A summary submitted by the Energy Resources Company was included in the Environmental Impact Statement and maybe in the application.

Q. In answer --

THE HEARING OFFICER: You would -- excuse me a minute. Do you adopt those findings?

THE WITNESS: I do.

THE HEARING OFFICER: As your own? All right, I ask the applicant to find the appropriate report and insert it in the record at this point as if it were the witness' testimony. If I remember correctly, it's in the Draft Environmental Impact Statement.

MR. KAFIN: You don't want us to do that right now, do you?

THE HEARING OFFICER: No, but make sure that the Hearing Reporter has copies of all this material that has to be entered into the record before she goes home today.

MR. KAFIN: We'll take care of that.

MR. WARGO: Is that Page 297 of the Draft?

THE HEARING OFFICER: Take a look, will you, Mr. Reinhardt?

THE WITNESS: 297 -- and if I recollect, there are four or five pages following, of the Draft.

THE HEARING OFFICER: All right, proceed, Mr. Hanna.

MR. HANNA: Are we going to have the question answered or are we putting that off until later?

THE HEARING OFFICER: Read the question back, Madam Reporter.

MR. HANNA: No, you just asked him for the document to be produced.

THE HEARING OFFICER: Yeah, it will be produced and made part of the record.

MR. HANNA: No, I'm sorry, I was waiting for that.

THE HEARING OFFICER: No, that's a direction; that's not a question.

MR. HANNA: Oh, I'm sorry.

Q. In your testimony, you stated that -- and again correct me if I'm misrecollecting your testimony -- that most of the impact as a result of the 1980 Games would be an acceleration of changes rather than a qualitatively different set of changes, am I characterizing your testimony accurately?

A. Yes.

Q. Now, would you characterize the visual impact of a 266-foot tower and a 110-foot tower at the

Intervale site, you say the visual impact first is a qualitatively different change or an acceleration of a change that would otherwise occur?

A. Well, I'm happy that you've recollected that I said "most." Obviously, the increase in height of the ski jump over the existing 70-meter facility is of a different order of magnitude than that which exists there now and whether that would be a kind of change that one could classify as accelerative or not or a change sutstantively in the type of facility, I would not wish to speak to.

THE HEARING OFFICER: Mr. Hanna --

THE WITNESS: Likely --

THE HEARING OFFICER: Mr. Hanna, the Hearing Officer will take administrative judicial notice of the fact that ski jumps, unlike trees, do not naturally grow in height. Therefore, the imposition of a 266-foot tower on a site where one does not presently exist is, in fact, a qualitative change rather than a rate change.

Q. And am I to understand the answer to your original question related to a natural change as opposed to

man-made changes?

THE WITNESS: I think my original response encompassed essentially both.

THE HEARING OFFICER: My understanding, Mr. Hanna, was that the acceleration of change involved social, socioeconomic, societal, natural phenomena and the witness indicated that most of them, most of the changes were merely accelerations of underlying processes. It is obvious that the construction of the actual tower and its associated visual impact is, in fact, a qualitative change, not an accelerative change or a rate change.

BY MR. HANNA:

Q. Can you tell us any of the other impacts that you would not include within your definition of "most," in other words, exceptions to that statement?

THE HEARING OFFICER: If any.

MR. BROOKS: Do I understand this is with the 90-meter ski jump area only?

MR. HANNA: That question related to the 1980 Olympics?

MR. BROOKS: We're just off the

visual impact of the ski jump and now you're into the broad brush.

THE HEARING OFFICER: Mr. Brooks, the question is self-explanatory. The witness can answer it if he can.

THE WITNESS: Well, I -- I could not identify now any other aspect that may be significant change in kind versus change in rate with the exception of the identification of the area as the host to the 1980 Olympics in addition to the 1932, et cetera. I -- I believe you have identified the one that I would conclude would be the principal change in kind.

MR. HANNA: Yesterday, Mr. Boiteau -- Mr. Boiteau and Mr. Foster testified that the worst case of sediment runoff at Intervale would involve 47 acres. In that worst case what --

THE HEARING OFFICER: Counselor, 47 acres of runoff drainage shed is the maximum drainage area from which runoff could be predicted or expected at the site at Intervale.

MR. HANNA: I'll accept the amendment.

Q. What would be the effect on the west branch of the Ausable if all of that sediment were deposited in the river and by effect, I mean effect on, one, dissolved oxygen and, two, effect on trout?

THE HEARING OFFICER: Since the witness was not here, I am going to present to the witness and take the liberty of doing this myself, the worst case that was posited, and that was if as much as 15- or 20,000 cubic yards of raw fill, runoff, erosion, were deposited directly in the river and effectively dammed it, I believe that was the worst case.

MR. BROOKS: If I might, wasn't there further testimony, however, by that witness that only approximately two, a little bit more than two acres --

THE HEARING OFFICER: We're not interested in that, Counselor. We're interested, I assume from Mr. Hanna's question in the worst case. We want to know how bad things can be if all possible disasters do occur. To the extent that trout spawning areas may be associated with areas of deposition within the river and to the

extent that fines, silt-sized particles, perhaps even larger particles but essentially silt-sized particles may be deposited in spawning beds some distance, I would not even want to estimate the distance downsite or downstream, there would most decidedly for a period of time, and again I would not wish to estimate what that period of time would be because of the differential scouring rates depending on runoff volume and so forth, that there would most decidedly be an adverse, in my judgment, impact on the spawning activities in particular of the trout species within the river. In addition, certainly the macroinvertebrate populations would be adversely affected. To some extent BOD and COD would change, but again, I would not wish to make -- to render any opinion as to the effect of that. Extrapolating the worst-case situation, I would say very decidedly there would be significant impacts for a period of time within the Ausable River.

MR. HANNA: Would the effect be --

THE HEARING OFFICER: Mr. Reinhardt -- excuse me, Mr. Hanna. So there is no

misunderstanding, there is no question in your mind that in the event worst case does occur, the benthic organisms at the immediate site of the disaster and certainly for a considerable distance downstream will be wiped out for a period of time.

THE WITNESS: Certainly.

THE HEARING OFFICER: And that period of time is certainly longer than probably a year under those circumstances?

THE WITNESS: I would say the recovery rate would extend beyond the period of a year.

THE HEARING OFFICER: And it might extend as long as five or six years?

THE WITNESS: It -- it could.

THE HEARING OFFICER: It could even extend, assuming the scouring rate is quite slow and it takes a bit of time for the bottom to recover, it could extend as long as ten years, could it not, in view of the seasonal conditions here?

THE WITNESS: That would be purely

speculative on my part. It might.

THE HEARING OFFICER: But it certainly would probably extend beyond a year?

THE WITNESS: Certainly.

THE HEARING OFFICER: All right. Now, with reference to the ability of the area to be -- the suitability of the area for trout spawning or other game fish spawning, that too would be totally precluded for a period of time in excess of a year, correct?

THE WITNESS: Yes. I must qualify my response so that question to the extent that I am not intimately familiar with the frequency of trout spawning within the area adjacent to the Intervale site.

THE HEARING OFFICER: Well, it certainly depends on the existence of the appropriate bottom, does it not?

THE WITNESS: Yes, yes, decidedly.

THE HEARING OFFICER: And the bottom isn't going to be suitable for trout spawning for some time in the event of the worst case disaster occurring?

THE WITNESS: Yes.

THE HEARING OFFICER: All right, Mr. Hanna, go ahead.

BY MR. HANNA:

Q. What would be the effect on the west branch of the Ausable of a worst case relating to septic system which, as I understand the testimony yesterday, was 14,000 square feet of leach field at a maximum of 100 feet from the bank of the west branch?

MR. KAFIN: Objection. The question, it's a hypothetical question, doesn't contain what is necessary and if the statement is to include what is already in evidence, it doesn't include that correctly either.

THE HEARING OFFICER: I'm going to sustain the objection. I'm going to rephrase the question on behalf of the Adirondack Council through the Hearing Officer as follows: I want you to assume that the raw sewage effluent equivalent of 10,000 human beings is discharged directly over a period of time in excess of four to six weeks to the west branch of the Ausable River. Now, with that assumption, tell us what, if any, effects on the flora and fauna of the river are likely to occur.

A. Well, the BOD loadings would certainly increase. The --

THE HEARING OFFICER: Mr. Reinhardt, concomitantly with the oxygen available it could decrease perhaps to zero?

THE WITNESS: And for a -- for a length or a reach it might; I would seriously question zero. The net effects on the population may be a change in

the species distribution, ultimately affecting the

both energy and food linkages within the population structures for a period of time for a linear distance.

THE HEARING OFFICER: All right. Would such an effect be generally characterized as a shock effect?

THE WITNESS: Well, I would say that if the raw effluent were injected over land or through -- hypothetically through a pipe into the river directly, it could. Again, it would depend on the volumes being carried by the river and any other contributions either from that site or upstream.

THE HEARING OFFICER: Assume that at some point in time, such input was cut off; is it to be reasonably expected that the river will recover?

THE WITNESS: It is.

THE HEARING OFFICER: And that this recovery is determined almost exclusively by the flow rate and the quality of the water arriving from upstream then?

THE WITNESS: Right. Not necessarily.

THE HEARING OFFICER: What are the para-

meters that affect the recovery?

THE WITNESS: The other parameters may include the behavior of the redistribution, repopulation of the area by species that may have been temporarily displaced and the competitive or interactive, at least interactive components of the ecosystem that may take some time to recover.

THE HEARING OFFICER: Based on your knowledge of the west branch of the Ausable River acquired during your studies for the -- as a member of the Sasaki Associates team, could you estimate the approximate length of time before the river species population might return to normal following a shock load as described?

THE WITNESS: I would say that the period of time would not be as long as the period of time following a deposition of silts. Whether it would extend beyond a year or two is purely speculative. I do not have that information.

THE HEARING OFFICER: All right. It could extend as long as two years?

THE WITNESS: It might.

THE HEARING OFFICER: All right. Is there

any question on your -- in your mind or any doubt that as part of the permit requirements dealing with construction and implementation of the design if it should be approved at that site, erosion and sedimentation have to be prevented and no sewage discharge should be permitted to the river at the site?

THE WITNESS: There is no doubt in my mind.

THE HEARING OFFICER: O. K. Mr. Hanna?

MR. HANNA: I have no further questions.

THE HEARING OFFICER: Thank you very much. Any redirect?

NR KAFIN: Is there more cross?

THE HEARING OFFICER: I hope not. Mr. Gitlen?

BY MR. GITLEN:

Q. Mr. Reinhardt, did you inspect the west branch of the Ausable River in the course of your work for Sasaki?

A. Mr. Gitlen, I have observed the west branch of the Ausable River and I have read materials produced by the DEC on the river.

From what distance?

A. I have not personally participated in the monitor-

ing, direct monitoring, data collection, within the aquatic domain.

THE HEARING OFFICER: Did you visit the river at the site of the proposed Intervale ski jump?

THE WITNESS: The latest visit was about five or six hours ago, yes.

BY MR. GITLEN: Q. That was when you drove over it?

A. Yes, but more extensively on earlier visits, yes.

Q. And are you familiar -- strike that. Do you have the application up there?

A. Yes.

Q. Did you write the section on Page III-2 that states that --

THE HEARING OFFICER: III-what, Mr. GItlen?

MR. GITLEN: 20.

Q. (Continuing) -- that states that the "environmental assessment of facilities proposed for the 1980 Winter Games identified two potential significant impacts at the Intervale site, the first being the close proximity of the proposed outlet of the Ausable

River, potential for siltation.

A. That -- at one point in the drafting of this document, yes, I contributed to that sentence if not writing the whole sentence, which was rewritten.

Q. O. K. And you've testified just earlier today, have you not, that the potential referred to there, which was mitigated by the mitigative measures which were proposed in the application with two qualifications, those being the implementation of those measures and the second being an infrequent storm of the type of a 25-year rainfall.

A. Yes, except that the estimate of the period, the storm frequency period was simply to illustrate. I would not wish to be tied down to the 20-year storm.

Q. It could be a five-year rainfall; could be a 100-year rainfall?

A. What I was -- what I was suggesting there was most decidedly in the short term effects and if it was a 100-year storm, it would most decidedly have a different order of magnitude effect than a 20-year storm. I believe of those two conditions, the implementation conditions are significant.

Q. Now, you've also assumed in your impact analysis with respect to the west branch that there would be no alterations to the bed or the bank of the river; is that correct?

A. My understanding is that there -- is that the applicant intends and expects no alteration of the bed or bank and the bed of the Ausable River within the vicinity of Intervale.

Q. Now, to the extent that such an alteration were to occur there would be the potential assuming mitigative measures were not applied for further erosion along the bank of the river, and siltation; is that not correct?

A. Yes.

Q. Now, on Page IV-2 of the application, you're indicated as being the witness who is responsible for that page. The last sentence of the first paragraph you indicate that some impact on a small portion of the bottom land adjacent to the present grandstand will be unavoidable. How much distance is there if you know, approximately, between the grandstand and the wooded zone which is the buffer between the landing area and the west branch of the Ausable River?

A. Well, my understanding initially is that the criterion, the distance criterion --

Q. Excuse me, the question was how much distance is there between, if you know?

A. Between the grandstand?

Q. Between the grandstand and the wooded area which is the buffer zone between --

A. -- and the wooded area? I don't have that data, if you wish me to take a measure off the map I will.

Q. You don't recall from your own personal investigation?

A. No.

Q. That's O. K. In what area were you referring to the removal of vegetation in that sentence; in what specific area?

A. Essentially in the grandstand area.

Q. In other words, there's vegetation in the grandstand or do you mean adjacent to the grandstand?

A. Well, there is some vegetation in the area to be occupied by the grandstand most decidedly.

Q. The area to be occupied by the proposed grandstand, not the grandstand itself?

A. No.

Q. Is there any proposal that you know of to remove any of the wooded vegetation which now is the buffer zone between the landing area and the west branch of the Ausable River?

A. How would you define that buffer zone?

Q. The area should be --

A. The way it's been defined.

Q. The entire area of trees?

THE HEARING OFFICER: No, the buffer zone has been defined as the existing vegetation, whatever it might be.

Q. Well, that can include grass all the way up to the top of the mountain but I'm referring to the trees.

A. Well, now, the question of whether the vegetation extends away from the river bank more than 50 feet, I think is important here. I'm not certain that it does. 50 feet has been indicated as the absolute boundary, any site disturbance adjacent to the Ausable River.

Q. So your understanding that the boundary of work would be 50 feet from the bank of the river?

A. Yes, and that there are other qualifications

within the 100-foot zone?

Q. And what are the qualifications within the 100-foot zone?

A. If you will permit me to reread them, I'll try and identify them.

Q. Did you write them?

A. I did not write that particular one, no.

Q. Do you know who did?

A. Development to occur within a hundred feet of any stream should be sited on the most ap... the most level topography possible; otherwise dangerous erosion could result and increase turbidity.

Q. Right.

THE HEARING OFFICER: Mr. Gitlen, we must take into account the fact that it has already been established and I don't think there is any question certainly in the minds of the project applicant and probably all the other parties here that as a condition precedent to the issuance of any permit for construction at this site there can be no erosion and siltation of the west branch of the Ausable River at that point, and the maintenance of all the vegetation along that river in its present undisturbed

state is critical.

MR. GITLEN: Are you done?

THE HEARING OFFICER: Yes.

Q. Now, with respect to Bassett Mountain, did you perform any site analyses at that location?

A. No, I did not.

Q. You never visited the location?

A. I have not.

MR. GITLEN: I have no further questions.

THE HEARING OFFICER: All right, any further questions? Mr. Hanna?

(Mr. Hanna shakes head.)

THE HEARING OFFICER: All right, Mr. Reinhardt, I'm going to show you, refer your attention to Pages Roman IV-Arabic 47, thereafter.

THE WITNESS: Yes.

THE HEARING OFFICER: 48,49, 50, 51, 52.

THE WITNESS: Yes.

THE HEARING OFFICER: And ask you to examine the sketches and the views contained therein. I note from your summary of experience and back-

ground that you have been actively involved in aerial photo interpretation in the aerial photo reconnaissance as well as the utilization of modern methods of photo reconaissance and the like for environmental systems analysis. In your professional opinion, are these sketches fair and accurate representations of the visual impact of the structure as described in the sketch or photograph prepared by Stone & Webster which has previously been shown to all the parties and exhibited herein designated Exhibit 761129:--

MR. HANNA: Mr. Hearing Officer, before the witness answers --

MR. KAFIN: -29:22.

THE HEARING OFFICER: 22. Go ahead, Mr. Hanna.

MR. HANNA: Mr. Hearing Officer, it appears that the Hearing Officer is getting into questions of aesthetics which were not scheduled for cross examination today and I would find that prejudicial.

THE HEARING OFFICER: Counsellor, you really want to recall the witness, you're perfectly free to do so. At the present time, I'm conducting an

inquiry in the hopes that we can resolve some of these matters. I'll ask the questions. The witness is certainly available for recall;if the applicant won't produce him , I'll issue the appropriate subpoena on behalf of the Agency. Now, meanwhile,Mr. Reinhardt, do the sketches designated Sketch 1, Sketch 2, Sketch 3, Sketch 4, Sketch 5, fairly and accurately represent your judgment of the view of the proposal as conceived by Stone * Webster in that sketch and the existing area?

THE WITNESS: I believe they do with two exceptions.

THE HEARING OFFICER: Which two?

THE WITNESS: Sketch one does not explicitly show the 70-meter jump. Sketch 4 does not show explicitly the 70-meter jump. Granted both of those are in the -- are identified as middle view jump some distance away. The other sketches as sketches, I believe, approximate the graphic that was -- that has been referred to.

THE HEARING OFFICER: All right, I'm going to show you now a series of photographs prepared by the Adirondack Park Agency staff including indica-

tions of representations thereon of the 90-meter tower and inrun as again envisioned by the artist and ask you if you have any objections to accepting them as what they purport to be, indications of the visual impact of the proposed structure? I'm going to show you first the one which we will designate the next exhibit number and ask you if that accurately designates the area.

MR. KAIFN: Could we, number one --

THE HEARING OFFICER: We better pick up the exhibit numbers.

MR. KAFIN: We're up to 4.

THE HEARING OFFICER: This will be 4.

MR. KAFIN: We're up to 4. Could we get before we do that, could we arrange to have copies to the parties?

THE HEARING OFFICER: Copies will be furnished to all the parties. I just want to establish this for the record, while we have the first expert here who happens to be an expert on photos and photo reconaissance and photo recognition techniques.

MR. KAFIN: Number two, could we identify

the vantage point from which each photo was taken?

THE HEARING OFFICER: Not really. I just want the witness, if he is familiar with the view -- they're similar in large measure to the views indicated in the exhibits already before us and in the testimony already before us which portions of the record namely, pages Iv-48 through -52 I'm asking the hearing reporter to enter into the record at this time and place.

Now, Mr. Reinhardt, with reference to Exhibit 761207:04 --

MR. KAFIN: Mr. Hearing Officer.

THE HEARING OFFICER: Yes.

MR. KAFIN: The testimony doesn't make any sense unless we know where the picture was taken from and what it is a view of.

THE HEARING OFFICER: It is a view of the general scene of the area with a superimposed indication of the outline schematic of the proposed tower in accordance with the Stone &Webster view thereof and I'm asking the witness whether he has any objection to that photograph. I'm going to show him a large series of photographs. Those which can be accepted by the

witness will be accepted; those which can't be, the witness is free to reject.

THE WITNESS: Excuse me, Mr. Hearing Officer. There are four -- five black and white sketches within the document.

THE HEARING OFFICER: That's correct.

THE WITNESS: Recently referred to. Now, this Number 4 --

THE HEARING OFFICER: This is an exhibit number, this is 761207:04.

THE WITNESS: I see. I understand.

THE HEARING OFFICER: First of all, can you identify and relate to any of the five sketches which are designated Sketch 1, Sketch 2, Sketch 3, Sketch 4 and Sketch 5 any similar location or similar sketch to the exhibit I just showed you, 04, today?

THE WITNESS: Yes.

THE HEARING OFFICER: All right, would you identify which sketch?

THE WITNESS: I would, based on scale, suggest that Sketch 1 is approximately the same position.

THE HEARING OFFICER: All right. Based on your knowledge of photo interpretation and recognizing that the overlays are simply schematic in nature, is that approximately the location of the tower and roughly what it will appear assuming it's constructed at that site?

THE WITNESS: Excuse me, sir. I would like to change my responee to Sketch Number 4 as being the most likely approximation of the similar location. It now becomes obvious to me that they are both taken from approximately the Olympic arena. I would say that the sketch or the photograph that you have just handed me is not of the same order of magnitude and I disagree with the use of dubbing techniques on photos that are not an accurate depiction photographically of the -- and from the standpoint of explicit measurements of the device in question. I've had some considerable experience with that at Lake Tahoe.

THE HEARING OFFICER: All right.

THE WITNESS: I would suggest that if the photograph could be used that the device or the objection question be dubbed in rather explicitly.

I would question whether it is -- whether it is possible to do this with the level of information that we have, so therefore, the technique of sketching in my judgment renders a more balanced view and if the measurements are in order and if the scale is accurate for such a structure, I would have no difficulty with it. I do have some difficulty with the one that you've just showed me.

THE HEARING OFFICER: All right. In other words then, it's your testimony that you would prefer to rely upon the sketches as designated Sketch 1, Sketch 2, Sketch 3, Sketch 4 and Sketch 5 in the application than photographs with superimposed schematics.

THE WITNESS: As long as the sketch has an accompanying photographs.

THE HEARING OFFICER: All right.

THE WITNESS: I'm familiar with the original.

THE HEARING OFFICER: Do the sketches, in your opinion, represent a fair and accurate consideration and rendering of the photograph in each of those five sketches?

THE WITNESS: In a schematic, and I would not want to define "schematic," but in a schematic sense they do.

THE HEARING OFFICER: In the same schematic sense as the proposed tower represents a fair and accurate representation of the artist's rendering?

THE WITNESS: I believe so.

THE HEARING OFFICER: All right, I have no further questions. I will withdraw the offer of Exhibit 761207:04 although I'll leave it identified for identification.

MR. GLENNON: Mr. Examiner, I have two additional sketches. Is it your intention not to include them?

THE HEARING OFFICER: Which two additional sketches?

MR. GLENNON: About four pages back from the original four.

THE HEARING OFFICER: Give me a page number, please.

MR. GLENNON: They immediately follow Roman IV-56.

THE HEARING OFFICER: All right, that's Pages Roman IV-57, Roman IV-58, Sketches Numbers 6 and Sketch Number 7. If I were to ask you the same question with reference to these two sketches, would your answers be substantially the same or different?

THE WITNESS: My answer there would be substantially the same. I would be -- with the exception of the sketch on Roman IV-58, I believe that's been rendered better.

MR. KAFIN: Mr. Hearing Officer, may I say each of these sketches has an exhibit number.

THE HEARING OFFICER: All right, you can identify the exhibit numbers but I'd prefer they were also identified by the page numbers since the pagenation is in serial order in the application and I want them inserted into the record at this point.

MR. KAFIN: Let me just say so that someone in the future, if they want to refer back that the exhibit identifications of sketches appears at Pages 122 and 123 of the transcript.

THE HEARING OFFICER: That's correct. All right, if there are no further questions, we will reconvene --

MR. GLENNON: Mr. Examiner, am I once again being foreclosed from inquiring?

THE HEARING OFFICER: What's the substance of the inquiry?

MR. GLENNON: I would like to know the date that the witness examined the DEC data, I'd like to hear some testimony on the quality of the trout in that stream among other things.

THE HEARING OFFICER: Not from this witness.

MR. GLENNON: I don't believe that data is in the record. The witness did testify he had examined certain data in examining the trout species directly.

THE HEARING OFFICER: We must assume as a matter of law that there is a designation of

this river as a trout stream. That's already in the record. It was established yesterday. It has a stream classification of C(trout) and to the best of my knowledge that implies a great deal under the laws of the State of New York as administered by the Department of Environmental Conservation and they speak for themselves.

MR. GLENNON: Then you would not grant my request that that data be brought forth at this time?

THE HEARING OFFICER: Sure, call upon the Department of Environmental Conservation to produce it.

MR. GLENNON: O.K.

THE HEARING OFFICER: And you can do this by internal agency memorandum and when it's produced, I'll deem it a part of the record but for the purpose of the conceptual hearing at this stage we are assuming that that is a trout stream and we're assuming in the worst-case situation that it's a quality trout stream in which trout spawn.

MR. GLENNON: You didn't --

THE HEARING OFFICER: Which to my

knowledge is the highest quality water in the State of New York supposedly.

MR. GLENNON: You did also send forth Mr. Boiteau with certain instructions last night, certain things he was to enter.

THE HEARING OFFICER: He will eventually but again that information does not bear on the conceptual question of site selection.

MR. HANNA: Mr. Hearing Officer.