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OUTDOOR EDUCATION CENTER, PLANNING PROJECT REPORT.

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ALBUQUERQUE PUBLIC SCHOOLS, NEW MEXICO

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REPORTED ARE THE PLANS FOR A PROPOSED OUTDOOR EDUCATION  
PROGRAM FOR THE ALBUQUERQUE PUBLIC SCHOOLS. DISCUSSED ARE (1)  
A PROGRAM RATIONALE, (2) CURRICULUM, (3) MATERIALS FOR  
OUTDOOR TEACHING, (4) STAFFING, (5) PUPIL SELECTION, (6) THE  
EDUCATIONAL PLAN; (7) DESCRIPTION OF PROPOSED FACILITIES AND  
PHYSICAL CHARACTERISTICS, (8) BUDGET ESTIMATES, (9)  
COOPERATING AGENCIES, AND (10) THE FRAMEWORK FOR EVALUATION.  
(DS)

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# OUTDOOR EDUCATION CENTER

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Albuquerque Public Schools  
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PINE  
CONES

ROCKY CLIFFS  
RODENT HOMES  
STRATIFIED ROCK

WILD FLOWERS

EXCAVATION

7000

RODENT HOMES

SANDSTONE

SANDSTONE

SOIL PROFILE

LICHEN

GRAY ROCK

WOODPECKERS

MOSS  
FUNGI

MITES SPIDERS

RED ROCK HILL

FIRE PITS

ROOTS EXPOSED

CALICHE

BOWL

RIDGE

6808

BIRD SANCTUARY

WEATHER  
STATION

TELESCOPE

BUILDINGS

ARENA

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THE OUTDOOR EDUCATION CENTER  
PLANNING PROJECT REPORT

This report is intended to be a reflector of the several processes, aspects and outcomes of the planning project. Using the objectives listed in the original proposal as a frame of reference for the entire study, an attempt was made to pursue each objective as far as possible within the short period of time available.

Since outdoor education is in many ways quite innovative to the educational effort in New Mexico, it was felt that perhaps a belaboring of theory or an instance of becoming very specific here and there was justifiable.

Enthusiasm and cooperation among those individuals and organizations contacted in connection with the project has been commendable. Season of the year as well as span of time have limited contacts to somewhat short of ideal. However, a great deal of intercommunication has occurred among personnel from all cooperating departments, agencies and organizations.

It is with appreciation and optimism that this report is submitted for consideration by Albuquerque Public Schools and others having an interest in outdoor education programs.

Lloyd Cockrell  
Planning Project Director

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## OUTDOOR EDUCATION --A POINT OF VIEW

Essential in the early stages of planning an outdoor education center is the consideration of the characteristics of outdoor education. What are the purposes for having an outdoor school? How can outdoor experiences be effectively integrated into the on-going curriculum? The general consensus is that outdoor education is basically the kind of quality education that has been advocated for some time, yet has only been able to exist in rare instances. In light of man's need for understanding his relationship with man, self, and environment, the ability to make such relationships meaningful to youth is basic in the development of an enlightened citizenry. In this sense, outdoor education offers one approach to fulfilling the objectives of general education.

Outdoor education, with no claim to a separate body of subject matter or discipline, dramatically emphasizes the effective utilization of the outdoor setting as a means of curriculum enrichment. Thus, outdoor education might very well be considered as another resource for helping make learning more personally meaningful in the total continuum of planned learning experiences provided by the school.

Direct involvement in the natural setting brings to the learning situation all five of the senses that we generally think of as the avenues for a rich experiential base on which to build conceptual development and affective awarenesses. We know very well that all learning has its basis in experience gained through the senses and that the more senses we can involve in the learning process, the more efficient, and the more permanent the learning will be. When we are able to bring to the learning situation the senses of touch, smell, and taste, as well as sight and sound, we are able to make more meaningful the concepts we are attempting to teach. Outdoor education emphasizes the use of all these senses, exposing the learner to concrete reality in the context of real situations, or as near as we can make them real. Here, a student finds himself considerably more motivated to carry on with his study as a result of direct contact with the situation in which he is working.

The outdoor setting provides a learning climate in which youngsters can find the subject matter more or less in its original condition, in that context where it belongs whenever they begin to examine and relate it to the total environmental picture.

The purpose of the outdoor school is to provide enriching experiences which can not be structured or furnished for the student within the confines of the regular classroom. It does not seek to duplicate nor replace any part of the regular classroom program. A major emphasis in the outdoor education thesis centers around the problem solving approach. Key elements in this approach are: (1) involving the student in formulating questions he might have about areas of concern, (2) hypothesizing or speculating as to what he thinks the answers might be, (3) gathering pertinent information, (4) and then following up with an investigation. In this process, the teacher plays a role of providing encouragement, guidance, and assistance as needed. Once the student is able to arrive at tentative conclusions, he will have progressed in strengthening and deepening concepts and general-



izations which he will be able to fit into previous learning and transfer to new or similar situations.

There is in this description of an approach to teaching in the outdoors a similarity to the scientific method, usually made up of these steps:

1. Identifications of the problem
2. Hypothesizing as to what might be the solution
3. Data gathering
4. Testing the original hypothesis
5. Reaching conclusions

It is generally recognized by psychologists and learning theorists that this is a very efficient method to employ for certain kinds of learnings to occur.

One of the difficulties encountered in typical classroom instruction is that the youngster is not able to integrate new information and concepts into previous knowledge because his previous knowledge does not have a strong enough basis in concrete experiences. Because of his lack of concrete experiences the original concepts are too vague to be related closely and correctly with the new knowledge. Thus the relationship becomes weaker and weaker until finally the youngster finds himself in the position of attempting to memorize, simply because he has nothing to which to attach his knowledge. The student's capacity to memorize is limited and he soon finds himself frustrated, because he cannot remember all the things that he is expected to know. This is the reasoning behind the statement that the student is motivated by the use of the outdoor classroom.

Probably more than ever before he is able to relate one concept to another or one bit of knowledge to another. And for the first time in many cases he begins to find satisfaction in the formal educational process. In some instances a child comes to see himself as a learner in a situation where learning can be a pleasant and meaningful experience. He loses part of the reluctance that he had to participate in classroom experiences. Whether the student falls into the category of non-motivated, slow-learner, or other conditions that detract from school success, there are some obvious advantages to this kind of approach in structuring a learning situation.

As a result of discussions with different people who have given some thought to planning an outdoor school for the Albuquerque area, several kinds of outdoor experiences have been identified. Such experiences could be placed in separate categories and given priority ratings in terms of long range development. It is hoped that definition in this way will help when the time comes to implement the outdoor education program.

The first category identified involves an integrated experience living in a natural setting and might be called resident outdoor education. This usually consists of taking an entire class of students and their teacher from a self contained classroom to the outdoor center for an entire week of study. This is an approach which some school systems have found to be most beneficial in meeting some of the needs of their community. They feel that through this approach they get more results for the time, effort and cost that goes into an outdoor school. The assumption is that resident outdoor education can be-

come a permanent part of the outdoor facility that is being planned.

A second category includes "short stay" experiences. These include all day trips, field trips, and other miscellaneous activities such as individual research investigations, work projects, and club activities which might be considered as an integral part of the academic program. These experiences are closely connected with, or complementary to the regular school curriculum. Two advantages in structuring these outdoor learnings are: (1) minimum cost to the student and (2) the fact that no overnight provisions are needed. ~~Transportation, teaching materials and instruction would be the main items of cost~~ to the school system. It is hoped that these things can be made available to teachers within the area who desire to take advantage of such experiences at various times throughout the year.

The third category might include experiences not directly associated with academic studies. Such recreational experiences might include weekend outings, overnight campouts, meetings of various interest groups, and a summer program which could operate as a recreation oriented activity. Summer session classes might also take advantage of the outdoor facility.

The fourth category which it is hoped can be developed in the planning of the outdoor education center is in the area of cultural and aesthetic enrichment programs. A tract of land on the site could be developed which would be a suitable setting for performances in music, dance, drama, and other events of this nature.

It would be desirable to plan eventually for providing a broad and comprehensive program of outdoor education. In considering the possibilities for determining direction and priority it should be kept in mind that outdoor education programs can make their greatest contribution to the over-all school programs when they:

1. Enrich and supplement the regular curriculum.
2. Stress pupil participation at every possible opportunity in planning, executing and evaluating.
3. Permit pupils to work in an atmosphere of flexibility and informality with a minimum of pressure and unnecessary rigid structuring of activities.
4. Are active, doing programs involving as many of the senses as possible.
5. Integrate knowledge, relating one area of school curriculum to the other areas.
6. Afford learning situations which would not ordinarily be available through other means.
7. Emphasize concepts, generalizations, and cause-effect relationships above identification and memorization.
8. Emphasize observation, investigation and speculation as a means to verification and generalization in all possible learning experiences (scientific method).
9. Motivate students through experiences, questions and discussions to discover for themselves the function and relationship of the thing being studied.
10. Do not provide ready made answers for questions which have not occurred to the pupils.

11. Have a strong, positive emotional impact on pupils, inculcating in them humility and aesthetic appreciations for the wonders in nature and for close interpersonal relationships.
12. Place before pupils problems that are pertinent to their physical and psychological needs, allowing pupils to assume responsibility for solutions in proportion to the maturity of the pupils.
13. Emphasize use of natural surroundings and materials indigenous to the area.

In spite of the growth in outdoor education over a period of the past fifteen years, and in spite of considerable descriptive materials that are available explaining programs in outdoor education, there still exists a great lack of understanding about how outdoor education can be used to the advantage of the school and student. The responsibility to carefully weigh the implications of adapting any or all of an outdoor program cannot be overly stressed.

Resident outdoor education will involve a great complexity of organization, programing, and logistics. Also, staffing and capital outlay will have to be dealt with in bringing such a program to fruition. Therefore, it might be well to discuss in some detail a few of the basic considerations that need to be examined in determining the direction that this phase of the outdoor center's program might take.

There are two approaches which might be described as the two extremes, no doubt separated by a difference in philosophy underlying each approach. One has been described as school centered approach to resident outdoor education. The other has been described as the camp centered approach. While this gives some clue to the difference between the two, further description may help to clarify this difference. Under the school centered approach, these five statements may be of some help.

1. Resident experiences are evaluated on their contribution to the work of the classroom.
2. Experiences are planned in the classroom. Practical applications are possible at the center so the experiences are more meaningful.
3. The program is centered around activities in mathematics, science, English, art, and other classroom subjects of the school. Time is given to recreational activities but this is not stressed.
4. The classroom teacher is the key person in developing the program with the help of resource persons in much the same manner as the resource person is brought into the classroom.
5. Pupils are housed in comfortable cabins and their food is prepared by hired personnel. Occasional cook-outs give limited experiences in living in the open but this aspect of the program is not considered highly important.

These five statements describe the camp centered approach.

1. Camping experiences supplement the school curriculum with new and different experiences which are not directly connected with the classroom work.



2. The experiences are not planned to bring out specific learnings, but valuable concepts are gained by incidental experiences.
3. Recreation type activities dominate the program with nature study groups, craft groups, and other activities which contribute to academic learnings but are not named to parallel the course offered in the school.
4. A trained staff in outdoor education operates the program with the pupils and teachers participating.
5. Much time is devoted to living. Primitive living, including out-of-door cooking and building shelters, takes a large portion of the time. One of the major objectives of the camping experiences is recapturing some of the aspects of our pioneer ancestry.\*

From these descriptive statements can be seen obvious differences in the manner in which a program could be carried on. These differences are very significant in terms of staffing, both for professional teaching staff and the non teaching staff of an outdoor education center. The duties of these people would differ depending upon the approach taken. Also facilities needed would differ markedly for each approach. It's not suggested that either one of these so-called extreme approaches is better than the other. Generally, schools assume a position somewhere between the two approaches. Regardless of which approach, or what combination of the two approaches is used, the learning experiences are still quite valuable. However, it is felt that a large proportion of students in this area might have had an opportunity to participate in some of the more camp-oriented or camp-centered activities and might therefore benefit more from a school-centered approach. Also, it can be said that the school-centered approach has somewhat more appeal to the average taxpayer.

\*Adapted from William H. Freeberg, and Loren E. Taylor, Philosophy of Outdoor Education, Minneapolis: Burgess Publishing Company, 1961. p. 196

## PROGRAM

### Curriculum

An outdoor center is unique in its ability to provide for a range of study activities. The vast natural setting is essentially the curriculum of the center, always available for discovery and exploration. From carefully developed plans and objectives emanating in the classroom, students and teacher embark on an adventure into the "outdoor classroom". Following this direct involvement of the group in the outdoors, the search for gaining meaning continues at the center as sensory experience becomes the motivation and guide to investigative activity. This in turn provides direction for further study back in the classroom where appropriate means are employed to evaluate, carry on and expand learning. Thus, the outdoor experience grows out of the classroom and leads back to the classroom as an integral part of the school program. It becomes apparent then that the key professional person involved in outdoor education is the classroom teacher, assisted by specialized personnel.)

This conceptualization of an outdoor education program can be outlined as follows:

Objective: To develop an understanding of man's relationship to man, self, and his environment.

Planning: Initiated in the classroom through pupil-teacher interaction to determine reasons for going to the center.

Initial Process: Direct involvement in the out-of-doors  
A. Curiosity, adventure, uniqueness  
B. Sensory, kinesthetic, feeling, awareness  
C. Inquiry, exploration, questioning  
D. Wholeness, context, relationships

Investigative Activities: Continuation of the learning process growing out of direct experience out-of-doors:

<u>EXPRESSIVE</u>	<u>INTERPRETIVE</u>	<u>SYMBOLIC</u>	<u>CONFRONTIVE</u>
Art	Experiment	Reading	Sharing
Crafts	Micro-observa-	Viewing	Reporting
Photography	tion	Listening	Verbalizing
Dance	Identify	Writing	Discussing
Games	Classify		Evaluating
Music	Manipulate		
Creative writing			
Dramatics			

Follow-up: Taking back to the classroom elements of the experience for further study.

Outcomes: Interrelated development and growth  
A. Cognitive  
B. Affective  
C. Psycho-motor  
D. Social-emotional

than it would appear from first glance. Ratios, areas, volumes and linear measurement offer greater than usual advantage to set up problems dealing with outdoor materials. Earth-sun relationship include many concepts which are often hazy and vague for pupils.

These concepts can be clarified and strengthened by adequately guided study in the outdoors. For instance, the problem of constructing an accurate sundial, when solved, cannot help but leave the learner with a good many worthwhile mathematical understandings.

#### MEASURING OFF AN ACRE

##### Pertinent Areas - Arithmetic

Learning to be derived from the activity

Cognitive: Area in square feet (factual information), gain frame of reference for estimation of areas, dimensions of acre of specific shape, how to measure distances, square root and its use

Psychomotor: Adjusting pace to uniform length  
Improved computational skills

Affective: Improved attitude toward arithmetic and how to apply it

Procedure: Assign groups of 3-5 pupils a problem of laying out and marking one acre. Demonstrate and practice stepping until pupils develop ability to pace distance accurately and to estimate distances.

Some questions to be answered - How big is an acre? What is the shape of an acre? Can an acre have more than one shape? How would you lay out an acre in the shape of a square? How does area differ from distance?

Materials Needed: Some measuring device - tape or yardstick and string - reference books with area of acre and other information pertinent to the problem.

Evaluation: Cognitive; testing where appropriate - transfer of concepts?

Psychomotor: Observation and testing - how well do they estimate?

Affective: Observation now and in following lessons. Do they see more value in arithmetic? More interested?

#### Arts and Crafts

The arts and crafts comprise a category which includes so many activities as to render inadequate any discussion pertaining to them. The outdoor school affords the inspirational and emotional atmosphere conducive to high quality performance and satisfying experience in the arts. Whether it be painting or photography, adequate subjects are available to challenge the artist.

The greatest gains in crafts are to be made from making use of available materials for creative projects. It is suggested that while some man-made materials will be necessary to supplement the natural materials, too much use of man-made arts and crafts materials will constitute or border on duplication of arts and crafts projects from the home school. The rule to guide this program should suggest maximum utilization of local natural materials and minimum

not permit the preparation of detailed plans for all levels and areas. It is hoped that those included in this report will provide sufficient direction for personnel involved to continue with a reasonable degree of confidence.

### Language Arts

Some of the most productive language arts activities growing out of outdoor education are creative writing and oral expression. The point to remember is that effective verbal expression must grow out of an experience. Until the person has had basic experiences from which to draw ideas, he has nothing to express. No wonder the poor scholar couldn't get going on "What a daffodil thinks of spring".

Descriptive writing may be the beginning place for many pupils. Topics such as "How do your feelings change when you are around the campfire?", or "What have you liked or disliked most during our stay at the outdoor school?" are possibilities.

Vocabulary building will be rather automatic, but a reasonable degree of note-taking and list-keeping might be advisable to aid in this. Sharing of experiences and production of skits are naturals for translating and reinforcing learning.

### Social Sciences

For instructional purposes it might be said that conservation education can be divided into two broad categories, consisting of social science as one and the natural and physical sciences as another. The "why" of conservation constitutes social studies. A study of the problems and needs relating to conservation is essential to the understanding we want learners to have. However, the job is not complete until the learner has answered for himself these questions. What can be done about conservation? How do I go about doing these things? The "how to do it" leads directly into the natural and physical sciences, and a good deal of knowledge in these areas is prerequisite to effective contributions in conservation.

In endeavoring to promote problem-solving ability and critical thought patterns through social studies, a short sample plan is offered:

#### RUINS INVESTIGATION

##### Pertinent Areas - Social Science

Learning to be derived from the experience

Cognitive: History of the local area

Sources of water, food, and shelter for early inhabitants of the area (both Indians and pioneers)

Comparison of past to present conditions

Psychomotor: Skill in critical thinking

Skill in self-expression

Affective: Attitude of critical thought

Appreciation for hardships borne by past generations

Appreciation for convenience of the present



Procedure: Without disturbing the ruin to the disadvantage of succeeding classes, have pupils speculate on the following questions.

Questions to be answered - Who might have built the structure originally? What could have been the purpose for the person's being here? Why was the structure not built from some other material? Why was it located where it is? How long ago do you think it was built? What would have been used for warming the structure? For lighting?

Have pupils check speculations against references to mold thinking into a realistic pattern. Many of the answers to questions will not be available.

Evaluation: Cognitive: Can be tied in well with language arts (Creative writing). Pupils could describe life here at the time the structure was built, or could write a short story as a take-off from a beginning furnished by the teacher.

Affective: Evaluate long-range performance and attitude in social science.

Study of land forms which are available on the site can reinforce and clarify for pupils concepts to which they may have been exposed previously. Studies concerning water supply, garbage and sewage disposal are more effective where small scale operations are available for inspection, as they would be at the outdoor school.

#### Music

It would be unrealistic to pretend that the outdoors has no limit with regard to the teaching and enhancement of music. It would also be unrealistic to say that the outdoors does not offer opportunities and circumstances which can render considerable support to a music program. The greatest contribution the outdoor environment makes to music and other similar arts is that of providing a proper atmosphere. Situations can be structured in which participants are emotionally moved to sing. The person who has no inclination to sing when he is in the dark alone, probably will be eager to join in group singing around the campfire. Recognition and use of the emotion-influencing possibilities of outdoor education is another example of putting into practice what is known to psychological research about efficient and permanent learning. The skillful leader can manipulate circumstances within the outdoor environment to produce a lasting positive emotional impact upon people involved.

Such activities as construction of primitive musical instruments can combine arts and crafts with music, but for purposes of education of present day youngsters, the value in such activities would lie largely in the crafts.

Listening to bird calls and setting them to music provides a problem-solving approach to music instruction, but again, the value is limited somewhat by how the birds cooperate in sitting still and singing. Ingenious teachers will find many other ways to utilize the out-of-doors to enhance music programs.

#### Mathematics

The field of mathematics has greater possibilities for outdoor teaching



than it would appear from first glance. Ratios, areas, volumes and linear measurement offer greater than usual advantage to set up problems dealing with outdoor materials. Earth-sun relationship include many concepts which are often hazy and vague for pupils.

These concepts can be clarified and strengthened by adequately guided study in the outdoors. For instance, the problem of constructing an accurate sundial, when solved, cannot help but leave the learner with a good many worthwhile mathematical understandings.

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utilization of man-made materials.

Some programs do bring in natural clay from deposits which are not found in the immediate area. The value of doing so certainly outweighs any objection to importing supplies.

A great deal of printed material is available which will aid teachers in teaching arts and crafts in the outdoor setting. One valuable reference is Creative Nature Crafts, by R. O. Bale, published by Burgess Publishing Company, Minneapolis, Minnesota.

#### WOODBURNING WITH GLASS LENS

Pertinent Areas - Physics, Art

Learning to be derived from the activity

Cognitive: Light refraction, solar heat, properties of materials  
(wood, glass)

Psychomotor: Designing, following pattern

Affective: Appreciation for sunlight, wood, art  
Pride in workmanship

Procedure: Have the pupil trace a pattern or outline on a wood surface. Flowers, animals, or his own name should hold interest for him. Have pupil use hand lens to concentrate light and heat to burn wood.

Questions to be answered - What causes the light to be concentrated in a small area? What are the properties of the glass that make it possible? Are there other materials that could be used to refract light? What is the difference between refraction and reflection? How is a solar stove made? Upon what principles does a solar stove operate?

Materials needed: hand lenses, wood, books of references concerning refraction.

Evaluation: Cognitive: How much transfer of concepts to new problems?  
Testing on factual information  
Psychomotor: Neatness  
Affective: By observation of increased interest, and number of questions growing out of the activity.

#### Physical Education

There lies within the area of physical education a range of excellent available experiences which can be called outdoor education. There are about as many ideas as there are educators about the proper combination of physical education experiences for use in an outdoor school. When the terms of health, physical education, and recreation are included, the possibilities for outdoor education are expanded almost beyond comprehension. The most obvious reason for confusion here is that most of the learning experiences in outdoor education include a certain amount of physical activity. Thus, the need for specially structured physical activities is reduced accordingly.

Any number of activities within a tremendous range can be appropriate for including in the outdoor school curriculum. However, the inclusion or exclusion of certain activities should be made easier by referring to a rule of thumb which essentially says, "If it can be done as well or better back at the

home school, it probably should not be done at the outdoor school." This would be in keeping with the attempt to provide experiences at the outdoor school which would not be duplications of those available at the home school. All activities should be related to regular school, but should not be duplication of regular school, which actually makes the outdoor education program one of enrichment, rather than one of replacement.

### Natural and Physical Sciences

Because the curricular connections between the outdoors and the sciences are so obvious, this area probably needs less emphasis than any other in explanation and suggestions for implementation. The transition from classroom to outdoor laboratory will be such a radical change for teachers that most will feel some insecurity in the process. Hopefully, the limited suggestions included will help the teachers to gain additional insights into outdoor teaching in the sciences.

The guiding principles for outdoor science are those which emphasize generalizations above factual knowledge. It is important to realize that facts are important in that they provide a basis for generalizations, but unless they can be used to form general principles, they have little or no value. For instance, it is possible to teach a pupil that the barometric pressure varies inversely with the altitude - as the altitude goes up, the barometric pressure goes down.

Individual specific readings of barometric pressure would have no significance except as they can be used to generalize or make rules which can be applied to similar problems. This can be related verbally to the pupil, in which case it is to him a vague generalization. He may or may not be able to transfer this generalization to new problems, depending upon just how vague it is.

The outdoor education approach to teaching this concept would be to have the pupil investigate a problem in which he would need to determine facts and generalize from them. If a pupil should successfully estimate the difference in altitude between locations at the weather station and at the spring by measuring the barometric pressure at each of the locations, he cannot escape having mastered the relationship between altitude and air pressure. From the same problem could come a consideration of how temperature fits into the problem. Here the pupil is actually mastering concepts which are usually offered in chemistry at high school or college level.

Other more specific examples of utilizing outdoor education method and materials for enriching the sciences follow:

#### STUDY OF FUNGUS

Pertinent Areas - Science (botany), (weather and climate)

Learning to be derived

Cognitive: Climate conditions favorable to certain plants, non-green plants as a group (saprohytes), factors determining climate and weather, characteristics of non-green plants, function of saprophytes, how man controls climate for his purpose.



Psychomotor:

Affective: Appreciation for saprophytes and their function.

Appreciation for functional design in nature

Procedure: Locate with class or group the different types of fungus at southernmost end of site (see map) on north slope. Inspect closely with hand lens and/or collect specimens to go to investigation center. Observe surroundings closely.

Questions to be answered - Upon what material does the fungus grow? What other plants do you know like this? What function does the fungus perform? Is this function good or bad? Why? How do the surroundings in which you found the fungus differ from the surroundings where there are no fungus plants? What causes these differences? How does the moss in the same area differ from the fungus?

Materials needed: Magnification lenses or stereo - microscope, reference books, notebooks

Evaluation: Cognitive: testing, if desired  
Affective: by observation

#### ROCK STUDY

Pertinent Areas - Science - Social Science

Learning to be derived from the activity

Cognitive: Characteristics of rocks indigenous to the area - hardness, color, etc., economic value of rocks, chemical properties of rocks

Psychomotor: Skill in use of tools - rock-hammer, laboratory equipment

Affective: Appreciation for rocks as man uses them to make a more comfortable and satisfying life for himself

Procedure: Pupils select rocks that appeal to them or teacher can structure lesson to limit or determine kinds studied. Test rocks for degree of hardness, texture, color, etc., by breaking, crushing, scratching, and acid testing for effervescence; use key and reference books to determine qualities and uses of rocks.

Questions to be answered - How do you distinguish between one rock and another? Why are there different kinds of rocks? What kinds of rocks are there? Identify examples of each. For what can these rocks be used to benefit man? Do other animals benefit from these rocks? In what way? How do rocks relate to chemistry? To soil? To plants?

Materials needed: Rock hammers, magnification, nails for scratching, glass for hardness tests, acid (HCl) or muriatic acid, rock keys, references, etc.

Evaluation: Cognitive: test for facts - test for transfer of concepts to new problems

Psychomotor: Observe laboratory skills, use of tools

Affective: Appreciation for rocks and their contribution to: soils, building programs, etc.

## SOILS INVESTIGATION

Pertinent Areas - Science - Social Studies

Learning to be derived from the activity

Cognitive: Origin of soils, components of soil (sand, silt, clay); physical characteristics of each of these components; their contributions to quality of soil; wind and water erosion - effects and prevention of erosion

Psychomotor: Skill in using tools and laboratory equipment

Affective: Appreciation for process of soil formation - attitude of concern for soil conservation

Procedure: Close observation by sight and touch, and occasionally taste, smell and hearing can be used. Look for layers of soil - topsoil, subsoil, parent material (usually best demonstrated where soil is not too deep). Look for layers of new or recent vegetation, layers of last year's vegetation, older decaying vegetation, humus, etc., gather samples for laboratory study. Mix soil and water in jar and shake. Observe mixing and settling.

Questions to be answered - What causes the soil to be in layers in its original condition? What are the influences that try to mix the soil (plant and animal)? Why does the soil settle into layers after shaking in water? How do sand, silt, and clay compare in relative size? How does each react when wet? When dry? What per cent of the earth is soil? What other media produce food for animals besides the soil?

Materials needed: Small tool for digging, jar of water, magnification (hand lenses and stereo-microscope), examples of erosion in the area.

Evaluation: Cognitive: May test for facts

Psychomotor: Laboratory skills; observation skills

Affective: Observation of appreciation for importance and function of soil. Observation of sense of urgency relating to conservation.

In a city like Albuquerque, and considering its surrounding population, a great diversity of experiential background will be found among groups of pupils and even among individual pupils within each group. In planning the particular activities which will comprise the outdoor curriculum, consideration needs to be given to the background of experiences for each group. While a particular activity might be very beneficial for one group, it might be somewhat elementary or possibly even repetitive for another. This diversity indicates a very definite need for avoiding over-standarization of the curriculum in the outdoor school. Cooperative planning of the experiences for each group should be done well ahead of the outdoor experience in order to tailor activities appropriately for each group. Also, cooperative planning encourages tie-in and follow-up in the regular classroom work.



## Materials for Outdoor Teaching

There are certain materials and pieces of equipment which would be essential to a program of outdoor activities regardless of the location. For this purpose a more or less standard list will suffice. There are activities which may be peculiar to the Albuquerque Outdoor Education Center, and for these activities special materials and equipment may be needed. Some of the special equipment will have to be devised and constructed at the site.

There will be need also for certain kinds of materials for which there would be no cost. This will include cans, jars, and other materials which can usually be had for the asking. Some of the materials which would be considered standard for the school system should be obtainable without difficulty. This report will be concerned only with those materials and equipment which might be considered unique to and appropriate for an outdoor education program.

A standard list should include the following items as a minimum:

For each investigation center:

1. Stereo microscopes 3
2. Student microscopes 3
3. Telescope 1
4. Soil testing kits 2
5. Bunsen burners 2
6. Rock hammers 12
7. Thermometers 12
8. Sighting levels 12
9. Farm level 1, and target rod, 1
10. Miscellaneous laboratory equipment - hose, tubing, test tubes, killing jars, beakers, hydrochloric acid in dropper bottles, funnels, fillers, etc.
11. Hand lenses 12
12. Binoculars 12
13. Compasses 24
14. Reference books for each study area listed in educational specifications
15. Yardsticks 24
16. Soil thermometer
17. Hand tools for woodworking - saws, rasps, jackknives, drills, vises, etc.
18. Developing trays for work with light sensitive paper
19. Supplies of plaster of Paris, clay, seeds, glue
20. Reference books or reference materials for use in crafts program

For the weather station:

1. Maximum - minimum thermometer 1
2. Barometers 2
3. Hygrometers 2 types
4. Rain gauge
5. Wind direction indicator
6. Wind meters 4
7. Standard shelter for housing instruments

For the bird feeding station:

1. Platform 4-5 feet above ground -- 18" x 24"

If a trapping and banding program is planned as part of the program, the first step is to make application for a permit to:

U.S. Department of the Interior  
Bird Banding Laboratory  
Migratory Bird Populations Station  
Laurel, Maryland 20810

It will be necessary to designate a person who can identify most of the birds in the area in order to qualify for a permit to band. Also the Department of The Interior will require a stated reason for requesting the permit.

Such a program has a high interest value for youngsters, usually giving them their only chance to have close contact with birds. As has been suggested elsewhere, it would be advisable to have separate areas for the banding program and for the feeding stations. While this actually constitutes two feeding areas, one with traps and one without traps, it would provide for one group to engage in bird study without interference from the trapping.

For a trapping and banding program, different kinds of traps and different kinds of bait feed would be necessary. This need might be summarized this way.

1. Wire trap hanging on the trunk of tree, baited with suet - woodpeckers
2. Wire trap on the ground, baited with seeds -- for ground-feeding birds
3. Wire trap on platform, baited with seeds -- for off the ground seed eaters
4. Nylon mist net hung between trees or poles -- for insect eaters

The use of the nylon mist net requires a great deal of careful attention, because birds left entangled for long periods of time will usually harm themselves. Some species will harm themselves if left in wire traps for more than a few minutes.

For the feeding - watching area it maybe advisable to build a blind unless natural vegetation is adequate.

For the salt-lick area: block salt placed in a semi-open area, usually upon a stake off the ground.

For the gardening area: open, rather flat area, usual hand tools for gardening, moderate water available.

## STAFFING THE OUTDOOR SCHOOL

Persons who work in an outdoor school should have a general orientation toward the educational process which would include the following characteristics:

1. Flexibility
2. Desire to experiment
3. Affinity for informality
4. Patience enough to allow children to experiment within limits
5. Understanding of child growth and development
6. Acquaintance with physical and natural sciences, ecological relationships and conservation education
7. Good understanding of curriculum implications, especially at the elementary and middle school levels
8. Psychologically inclined to derive satisfaction from seeing pupils mature through their own efforts

Principal The principal should have a balanced outlook on the total school system effort. He should be amenable to irregular hours and circumstances. He must be able to maintain direction with conviction and at the same time be flexible. A sense of humor is essential.

The principal should hold the same status in authority and salary as other principals with a similar degree of responsibility. He should be professionally qualified as an administrator and should have a broad perspective as indicated in general considerations. Strength in curriculum and instruction should take precedence over administrative ability.

Certified Teachers Preference would be for young, energetic teachers of either sex, although some teachers of middle age and over can perform very satisfactorily under the circumstances found in the outdoor school. Personality and professional qualifications should take precedence over age consideration.

Because many questions will arise in the out-of-doors which cannot be readily answered by the teacher, he must be psychologically equipped to assume a "learn-together" attitude, rather than an aggressive attitude which would tend to stifle curiosity and student questioning.

A good deal of self-restraint is necessary on the part of the teacher in order to withhold quick answers, questioning the pupil and guiding him to apply his knowledge to solving problems. The prevailing attitude should be one of faith in the pupil, giving him assurance, encouragement and credit for accomplishment.

The program should be staffed at a ratio of one teacher for every twelve to fifteen pupils regularly in residence at the school, plus whatever additional teachers are needed for helping with short term or day experiences at the same teacher-pupil ratio. Other teachers should be included to provide enough margin for a teacher to be available for planning with the classroom teacher and the class before the class goes to the outdoor school. Usually, one day of cooperative planning with the teacher and class before going to the outdoor school would be sufficient, therefore, the planning margin would increase the number of regular staff by approximately twenty per cent for the resident program. Conditions of planning and teaching in the outdoor school lend themselves very

well to the use of team teaching, and many times there is definite advantage in its use. Ordinarily, the type of teacher personality essential to the outdoor school will encounter little difficulty in fitting into the team teaching approach.

The regular Classroom Teacher The role of the regular classroom teacher can vary with the competence and confidence the teacher has in the out-of-doors. Naturally, a teacher going to the outdoor school once per year cannot be expected to be as familiar with the program and materials as the regular staff, but the overall value of the pupils' work at the outdoor school is very dependent upon preparation for the outdoor experience, participation in it, and follow-up activities after the class resumes its work back at the home school. Neither can the regular teacher be expected to be an active participant in all activities and remain alert and energetic to the end of the week. It then becomes a matter of utilizing the talents of each individual teacher in ways that are most beneficial. There are many functions which the regular classroom teacher may perform, as suggested by the following list.

#### A tentative description of the role of the Classroom Teacher

1. Assumes overall responsibility for his pupils
2. Acts as a resource for the outdoor-teachers in interpreting class objectives, classroom program, the home community, and children's behavior
3. Develops an atmosphere with his pupils that is most conducive to deriving benefit from the total experience, and helps to maintain this atmosphere throughout the week
4. Maintains close-contact with his pupils through teacher-pupil evaluation sessions, living in the teacher's room of the dormitory, participation in recreational and evening programs, observation during activity periods, eating with pupils at meals, and assisting with housekeeping and group living responsibilities as needed
5. Serves as coordinator for his class in arranging for total class meeting places and times, in making announcements pertaining to his class, and in developing continuity for the week
6. Participates in staff seminar meetings
7. Follows up the experience back in the classroom with his pupils, integrating new learning and experiences with the on-going curriculum
8. Makes arrangements for sharing the week's learnings with parents and other classes in the school

Non-Certified Teachers Because the teaching day in the outdoor school begins when the pupils awake in the morning and ends when they go to sleep at night, the teaching day is too long for a teacher to endure for a week-long period. Some of the teaching responsibilities in such areas as dining hall, house-keeping, recreation, etc., can be handled by non-certified teachers on a part-time basis. The possibility of incorporating university students majoring in elementary education or recreation into these responsibilities has been explored to some extent with UNM officials. This idea should be further explored to determine possibilities available and feasibility of such a cooperative effort.

When part-time staffing is used, a definite written plan should be provided so that the continuity of the program is maintained. This is especially true in



the event new personnel are added. After part-time staff are accustomed to the new routine, variations may be appropriate. The evening faculty handbook mimeographed by the Outdoor Education School, Rockford, Illinois provides an example of directions for part-time teachers.

Nurse In order to protect the health of pupils and to provide assurance of this protection to parents, administrators and teachers, it is recommended that a nurse be available to the outdoor school. Interpretation of health forms submitted by parents of pupils, supervision of administration of prescribed medication, furnishing a list of bedwetters to night staff, examination of suspected illnesses and general health precautions are all part of the duties of the nurse. While the nurse will not usually be very busy except during the day when groups arrive, a nurse will be necessary in the case of outbreaks of the usual childhood diseases. Often pupils will attempt to avoid detection of these illnesses by teachers in order to remain with the group in the outdoor school. The nurse can identify and isolate these cases with more confidence and authority than can the teacher.

Caretaker or maintenance personnel The responsibilities of caretakers are also different in the outdoor school from the responsibilities of the custodian in the traditional school. In the outdoor school, most of the cleaning of dormitories, bathrooms and classrooms should be done by pupils who use these facilities as a part of their learning experience. Occasionally the maintenance personnel will be needed to assist or direct, and can be used to clean after adult meetings, conferences etc. but should be used to best advantage with such tasks as:

1. General watchman, helping to control unauthorized traffic, both automobile and pedestrian
2. Maintenance of plant, including seasonal and annual servicing of appliances, well pump, furnances, storm windows, and general repair and upkeep of grounds and walks

Heavy work in kitchen when needed One man should be hired to be on 24 hour call for caretaking responsibility. Housing for this caretaker should be available at the school, preferably located near the entrance to the school site. This location would make it easier for him to keep close watch on incoming traffic. Other maintenance help should be employed to assist whenever needed. Probably one person in addition to the resident caretaker would suffice, and could be full-time or part-time as needed. One definite need is to relieve the resident caretaker periodically (weekend or days off) to provide a respite from his otherwise uninterrupted responsibility. The resident caretaker and the principal should have maps, diagrams, etc., as needed to locate immediately all utility connections, cutoffs, septic tanks, drain fields, etc.

Cooks The extent to which pupils are utilized in helping with tasks such as dishwashing, cleaning, etc., will influence the ratio of cooks to pupils. Unless more than the ordinary responsibilities of cooks apply, a ratio of one cook to forty pupils should be satisfactory. Where the dining hall operates weekends, extra part-time help will need to be scheduled to relieve regular cooks occasionally.

The head cook should have knowledge of dietetics so that a menu of balanced



meals can be planned with the most practical economy possible. While every attempt should be made to maintain a regular meal time schedule, the cooks should be of a tolerant and flexible nature. Too much rigidity tends to take away from the desired atmosphere.

As the capacity of the outdoor education facility grows and the volume of student participation increases, it may be necessary to reassess personnel needs, especially at the administrative level.

### Selection of pupils

The selection of pupils for participation in experiences provided at the outdoor education center will need to be governed by consideration of several factors. Not the least of these are the spirit of policy and objectives of Title III. An exemplary program which demonstrates the incorporation of results of educational research into teaching practices will be in keeping with Title III objectives.

In order to make greatest use of the outdoor school as an exemplary program, it would be advantageous to draw pupils from all possible organizations which are sources of pupils. When pupils from an organization can be involved in an exemplary program, interest and knowledge concerning the program are generated within that organization. In this way, leadership from each organization can become familiar with the exemplary aspects of the program, and hopefully will be in a better position to interpret and institute or promote these aspects in their home communities.

Resident Study Invitation to participate in the outdoor education program should be extended to cooperating schools based upon the ratio of classrooms in operation in a particular school to the total classrooms in operation in all schools involved. On the assumption that participation will necessarily be limited to a specified grade level for the resident or week-long study, only classrooms at a specified grade level would be included in the total determining ratio. For instance, if Albuquerque Public Schools have 120 sixth grade classrooms, and all other cooperating schools have 20 sixth grade classrooms in operation, a ratio of 1 to 6 is established. On this basis, one sixth of the classes scheduled to attend the outdoor school should be from schools other than the Albuquerque district.

The most obvious advantage of assigning pupils on this basis for the resident experience is that it provides a common association among pupils of varied circumstances. Pupils from various ethnic, geographic, economic, educational and social backgrounds are allowed to benefit from contacts with pupils whose background differ markedly. This cooperative, problem-solving approach to community living has a sizable contribution to make to the development of effective citizenship.

Summer, short-term, and weekend participants Some participants can be selected on a class basis from regular classes and special programs which are being conducted as a part of the public school summer program. However, these sources will likely be limited. A highly productive use of the outdoor school could be made through the scheduling of in-service education programs for teachers, both during the summer and on weekends. These workshops or teacher education sessions should prove very valuable in orienting teachers in the system to the almost unlimited opportunities for learning which are afforded by an outdoor education facility. This approach enables teachers to apply learning theory to their own education, and makes the application of theory to their teaching more realistic. It is impossible to anticipate at what point in time the need for teacher orientation would diminish, but in the long-range view, this aspect of facility use should have some priority.

Other use to which the school could be put would be for depth studies be-

yond the difficulty of experiences provided in the sixth grade level resident experiences. Duplication of previous experience should be avoided, and depth study following upon some previous experience should be appropriate. This would necessitate a very individualized approach because pupils not coming as specific classes would bring exaggerated variety of background experience. Pupils selected for these experiences would likely come from groups with voluntary membership.

Other groups, with objectives of a somewhat different nature, such as school bands, church organizations, 4-H clubs, choral and drama groups can be scheduled as need and availability of the facilities coincide. Although scheduling will tend to get complicated, as long as one activity does not conflict or interfere severely with another activity, two or more types of activities can be accommodated simultaneously. A field trip for high school students scheduled during the week while sixth grade classes are in residence should not cause much inconvenience at the outdoor school, and should be encouraged.

Adult Participation While the greatest benefits can be expected to accrue from bringing as many school-age people as possible into contact with the outdoor education program, the value of using the facility for adult education should not be overlooked. If an arrangement for supervisory and teaching staff can be worked out, there should be some potential for learners among the adult population. There are two very obvious advantages to be gained from attempting to reach the adult segment of the community. First, a great many adults need additional information about the outdoors, natural science, conservation and preservation of wildlife habitat. Second, as many of the adult population as possible need to become informed about what the public schools are doing to provide quality education for the children of Albuquerque and surrounding districts.

Some precaution beyond that used with student groups will be necessary with adult groups. The lack of complete control and lack of previous contact for orientation will prove somewhat disadvantageous.

Facilities designed to handle groups of youngsters will not be ideal for family camping, and the design of roads will not allow automobiles throughout the site. Family overnight participating would likely necessitate the use of tents for shelter, and the alternatives would be available of cooking separately on individual camp stoves or combining resources for a community dining arrangement.

## THE PHYSICAL PLAN

### I. The Educational Plan

#### A. Program

##### 1. Philosophy and Activities

The objectives pursued in the outdoor school do not differ appreciably from the stated objectives of other schools. The activities undertaken, however will differ greatly in that most activities will be of an informal nature. Approximately 60% of the pupils' time will be spent outside the buildings. Another 30% of study time, pupils will be inside the buildings, informally moving about, researching for answers and solutions to problems. Use of microscopes, testing kits, hand tools, reference books, informal discussions and individual study are typical activities. Approximately 10% of the study time will be in planning and evaluation sessions in groups up to 40 in size. The program is deliberately designed to promote shifting of responsibility for learning from the teacher to the student as soon as the student has the maturity to accept this responsibility.

Knowing that pupil experimentation and trial and error learning must inevitably result in some error, the entire facility must be of durable, yet aesthetically pleasing character. Rugged and rustic, yet incorporating modern convenience, should be the theme of the development of capital outlay. Specimens of rocks, plants, insects, reptiles, mammals, etc. will need to be brought into investigation centers for study. Traffic from muddy or dusty areas cannot be substantially restricted without restricting the educational program. The advantage of going to the outdoor school would be lost if too much emphasis is placed upon convenience and protocol.

##### 2. Administrative Considerations

- a) Facilities of the outdoor school are to be located on a 130 acre site owned by the Albuquerque Public Schools. The site is located two and one-half miles north of Interstate Highway 40, one-half mile west of Highway 10, approximately 15 miles east of Albuquerque. The site borders on the Cibola National Forest for a distance of three-fourths mile. The area varies 300 feet in altitude and contains an abundance of teaching materials well suited to the middle-school curriculum. Other materials and situations for effective teaching can be developed with a minimum of expense.

It is anticipated that a large majority of pupils using the outdoor school will be at or near the sixth grade. The optimum capacity of the school is expected to be 140 pupils, plus instructional and service personnel to total 150 person in residence Monday through Friday, September through May.

Classes of elementary pupils, senior high school pupils, and groups of adults will be accommodated also. Some will come during school days, some for weekend instruction, and some for summer instruction of up to a week or longer duration.



The facility is being planned to accommodate educational conferences workshops and other in-service education functions, as well as practices and performances in the performing arts.

b) Personnel

- (1) Ten certified teachers
- (2) Four non-certified teachers
- (3) One principal
- (4) One nurse
- (5) Four cooks
- (6) One secretary
- (7) Two caretakers

II. Physical Characteristics

A. Site

The site should be left as near its original condition as possible, considering the addition of modern educational structures. Because the outdoor school provides a link to connect the regular school to primitive conditions in which all subject matter cannot be pigeonholed, it becomes a marriage of the modern to the primitive. Therein lies a great deal of its appeal to the otherwise apathetic pupil.

B. Buildings

1. General Suggestions

a) Functionality should take precedence over other considerations such as beauty, aesthetic appeal, cost, etc. Buildings should be of type and construction that blend well with the surrounding site. They should not appear to interrupt the theme of semi-isolation from the metropolis. Wherever possible, materials indigenous to the Sandia Mountains should be used in a compromise that would incorporate protection against fire hazards.

b) All buildings should be winterized to provide maximum health protection for occupants during weather extremes.

c) Heating should be thermostatically controlled. Thermostats should be locking or housed in some way as to be inaccessible to pupils.

d) Walls should be of durable, washable finish suitable for use in teaching pupils to care for their own programs and custodial needs.

e) Each building should have storage space for cleaning materials and equipment, so that pupils will have access to it when cleaning buildings.

f) All buildings should have provisions for hanging heavy wraps during the cold season.



g) Toilet fixtures should be standard size, and toilet requirements for each building will vary with intensity of building use.

h) Adequate natural light is desirable.

i) Buildings should be acoustically treated to the greatest possible degree to aid in keeping down noise that accompanies informal activities.

## 2. Buildings essential to the program

a) Housing for caretaker

b) Administration center

(1) Lobby

(2) Secretary-reception space

(3) Record room and storage for special supplies

(4) Principals office

(5) Clinic-nurses office

(6) Teachers office spaces

(7) Teachers workroom and lounge

c) Dining hall

(1) Kitchen

(2) Office space for head cook

(3) Food storage (dry)

(4) Refrigeration and freezing

(5) Dining and meeting area (multipurpose)

d) Dormitories

(1) Sleeping space

(2) Toilet facilities

e) Investigation centers

f) Crafts rooms

g) Caretakers work area, maintenance shop, space for filing cabinets and records.

## III. Administration Center

### A. Factors bearing upon planning of the administration center

1. The administration center should be located near the entrance to the site so that visitors can easily locate it, thus eliminating any need for visitors or strangers to proceed into the interior of the site without being identified and screened.

2. The center should follow the theme of fitting into the landscape and should lend to the general atmosphere of informality.

3. Redwood signs etched with a router should be used in preference to plastic or some other synthetic or man-made material.

4. The administration center should be a unit which facilitates communication of ideas and information. Student records will be limited and temporary, but should be immediately accessible to secretary, nurse, principal and teachers.

5. Central toilets would suffice except that the clinic should have separate facilities for use by students under the care of the nurse.

6. Unless another structure such as an investigation center or crafts room is attached to the administration center, rather limited toilet facilities should suffice.

7. Women's toilet should not need more than two water closets and the customary accompanying fixtures - sinks, mirrors, etc. One shower stall should be included for use by faculty women.

8. Men's toilet should include one water closet and one urinal, two sinks, mirrors, one shower.

9. One location for cleaning equipment and janitorial supplies should suffice for this building since most of the cleaning here will likely be done by regular custodial staff.

#### B. Components of the administration center

##### 1. Lobby

a) Lobby area should include a fireplace opposite the main entrance to the building.

b) The lobby should have an appearance of informality and roominess.

c) There should be included space for displays and bulletin boards.

d) The room should be of natural finish.

e) Furniture should be sturdy and compatible with the informal setting.

f) A telephone for pay calls should be located in the lobby in as inconspicuous location as possible.

##### 2. Secretarial work and reception area

a) Most of the administrative details will be handled in this area. Incoming calls, visitors, correspondence, typing, and keeping of records will be handled here.

b) Storage for special supplies such as light-sensitive paper, camera film, pencils, candy, and other materials used for the store experience need to be provided here so secretary has control of supplies.

### 3. Record Room

a) Storage for special equipment such as binoculars, telescope, etc., should be incorporated with or near the clerical area.

b) Student records need to be stored in or near this area and readily accessible to all staff and faculty.

c) Typical activities for the area

(1) Dispensing supplies

(2) Studying health records

(3) Checking out equipment the nature of which makes it necessary to control or restrict its use.

### 4. Principal's Office

a) Office space for the principal should provide a dignified yet relaxed atmosphere. Since most of the efforts of the principal will be directed toward scheduling and assisting with the program, office space requirements should not be great (12' x 14').

b) Parent conferences can be expected to be few.

c) Large group conferences will not be held here. Office should accommodate furniture for four-person conferences.

d) Office should have desk, file cabinets, bookshelves, chairs and telephone.

e) Walls should be of natural finish with space for displays or pictures fitting the outdoor theme.

f) Principal's office should have a back entrance in addition to the entrance through secretarial area.

### 5. Clinic - Nurse's Office

a) Typical activities

(1) Administration of first aid and medication

(2) Isolation of ill pupils

(3) Examination of illness suspects

(4) Storage of medical supplies, towels, linens, etc.

(5) Keeping necessary notes and records (schedule of pupils prescribed medication)

(6) Due to proximity to the city, extreme cases should be returned home, rather than kept at school.

b) Location - end of wing or corner of building, isolated from noise and traffic. Should have a back entrance to avoid having ill pupils report through office.

c) Appearance - combination of light colors, easily kept appearing neat and clean.

d) Spaces

- (1) Boys ward - 2 bunks
- (2) Girls ward - 2 bunks
- (3) Toilet facilities for each ward
- (4) Nurses examining and treatment room - with supply storage and sink with knee operated controls, hot and cold water.
- (5) Nurses office and waiting room combination
- (6) Closets for personal clothing items

e) Furniture

- (1) Desk
- (2) Chairs - 4
- (3) Bookshelf
- (4) Bunks - 4 single or 2 double bunk beds
- (5) Nite stands - 2

6. Teachers' Office Space

a) Office space should be provided for full-time teachers to study and to store personal teaching materials. Although separate offices are not absolutely necessary, separate desks and filing cabinets are highly desirable. Separate bookshelves are essential.

b) Location should be near teacher's workroom-lounge

7. Teacher's Workroom-lounge

a) Activities typical of the area

- (1) Principal-faculty conferences
- (2) Committee or teaching team meetings
- (3) Informal discussions among staff
- (4) Work of a nature requiring more room than is available in offices
- (5) Area for relaxing between teaching duties

b) Location

- (1) Should be near teacher's office space
- (2) Should be near toilet facilities

c) Suggested space - 300 square feet

d) Appearance - informal, pleasant, spacious



e) Equipment

- (1) Conference table - 1
- (2) Chairs - 10 straight
- (3) Sofas - 2
- (4) Easy chairs - 2
- (5) Shelves for periodicals and a few professional books
- (6) Bulletin board
- (7) Drapes
- (8) Storage for incidental supplies

IV. Dining Area and Kitchen

The dining hall and kitchen spaces could be combined with dormitory spaces without detracting from the program if the architects feel that the combination of these spaces would be advisable. There are some physical considerations which will affect the decision relative to combining these: comparative costs of centralized vs. decentralized heating and plumbing; duplication of heavy wrap hanging area in decentralized or separate plan; noise from kitchen as a disturbance to sleeping pupils; and size of buildings and how each fits into the landscape aesthetically.

A. Dining Area

1. Typical activities

- a) Family style eating
- b) Group meetings
- c) Evening indoor recreation
- d) Occasional cafeteria style dining

2. Location

- a) Rather central among all buildings in the complex
- b) The administration center and caretaker's cottage should be the only buildings located between the dining hall and the entrance to the site.
- c) No roads or drives should be near the dining hall except the service road loop which allows delivery trucks access to the kitchen.

3. Suggested Size

- a) Dining hall should accommodate 160 people seated in groups of 8, approximately
- b) Overall dining area should provide a minimum of twelve square feet per person to be seated (approximately 2,000 square feet).
- c) Additional space should be provided for storage of folding tables, chairs, etc.; and also for piano or organ to be kept here.

4. Appearance

- a) The area should be relaxed, roomy, informal and pleasant in appearance.

- b) Adequate natural light should be planned into the structure.
- c) A fireplace should be centered in a wall, possibly opposite the kitchen.
- d) The fireplace location should allow a maximum number of pupils to gather around it for evening activities.
- e) The window view from the dining hall should take advantage of the best possible view from the location.
- f) An exposed beam ceiling would be helpful in giving a roomy appearance.
- g) Acoustically treated ceiling and all possible acoustical treatment are essential in the dining hall. Separate conversations at each table make it imperative that echoes, and reverberations be kept to a minimum.

#### 4. Equipment

- a) Tables should be round, folding, hard finish variety to facilitate family style dining, encourage total participation in discussions, and to enable convenient, compact storage while the area is being used for other than dining purposes.
- b) Twenty tables will be needed to support the capacity of the dining area.
- c) One hundred sixty chairs should be provided.
- d) Chairs should be of durable material, preferably stacking variety, rather than the variety which can be upended on the tables. Chairs upended on tables for cleaning are not suitable for use when children are doing their own cleaning. A fiber-glass or padded steel stackable chair is recommended.
- e) A drinking fountain and a source of drinking water for table use should be included.
- f) Space and facilities are needed for temporary storage of heavy over clothes during inclement weather.
- g) Shelving near the entrance should be provided for storing books during meals.

#### B. Kitchen

##### 1. Typical Activities

- a) Preparation of complete hot meals
- b) Preparation of cold lunches to be taken out
- c) Issue of food for outdoor cooking
- d) Washing dishes (service for 160)

- e) Storage of prepared food (desserts and salads)
- f) Storage of canned and dry foods
- h) Storage of perishables (meats, milk, eggs, vegetables)

## 2. Location

- a) Should join dining hall with two separate areas open between one for dispensing food, and one for receiving dirty dishes.
- b) Kitchen should join service road loop so that supplies can be delivered without having vehicles circle dining hall.

## 3. Suggested Size

- a) Should have a minimum of three square feet per person to be served (approximately 480 - 500 square feet).
- b) Refrigeration adequate to handle frozen foods, and cooling (preferably walk-in, except for small cooler for incidentals and left-overs, butter, cream, etc.) Two and one-half cubic feet of refrigeration per person served is recommended.

## 4. Equipment and Facilities

- a) Food storage area
- b) Food receiving area (dock)
- c) Refrigeration area
- d) Serving area
- e) Food preparation area
  - (1) Baking
  - (2) Frying
  - (3) Stove top cooking
  - (4) Vegetable preparation area with sink
  - (5) Counter space
- f) Dishwashing area
  - (1) Should be in separate alcove
  - (2) Provide receiving space for dirty dishes
  - (3) Provide space for scraping and racking dishes
  - (4) Locate dish storage handy to dishwashing area and food dispensing area
  - (5) Area should include dishwashing machine and garbage disposal unit or space for these to be added.
- g) Office space should be provided for head cook to keep records, desk, file cabinet and phone.

## 5. Special Features

- a) Hoods to vent cooking area. If the hoods have fans, additional vents will be needed to avoid competition with fireplace draft. Fireplace cannot draw if kitchen fans pull against it.

b) Alternate to hoods for venting would be adequate cross-ventilation.

c) Thermal units to provide food service for decentralized camping.

d) Hot water capacity of one and one-half gallon per person per meal (250 gallons) for cooking and dishwashing.

e) Special carts and racks for washing, storing and moving dishes.

f) Flexible roll-down door to separate kitchen from dining area when dining area is used for meeting, recreation, or other functions where noise or dust needs to be restricted.

g) Kitchen floor must be impermeable to grease.

h) Floors, walls, and ceiling should be of easily cleaned surface.

V. Investigation Centers (combination of laboratory, library, arts, crafts, display and storage area)

A. Typical activities

1. Rock study
2. Soil testing
3. Insect study
4. Containing and displaying animals
5. Use of microscopes
6. Use of Bunsen burners
7. Use and storage of chemicals, rock hammers, etc.
8. Use and shelving of reference books, specimens, rock keys, charts, etc.
9. Woodworking
10. Block printing
11. Plaster casting
12. Making seed pictures
13. Storage of tools for pupils projects
14. Storage of supplies

B. Location

1. Should be between dining hall and woods area
2. Locate far enough from dining hall to avoid appearance of congestion
3. Materials and specimens will be brought from outlying areas to the investigation centers for study and display.

C. Suggested Size

1. Should be large enough for meetings of groups of 40 in addition to peripheral work area, storage and book shelving
2. Should provide ample room for pupil movement around six 4 x 8 feet work tables
3. Overall size suggested 2000 square feet minimum



#### D. Appearance

1. ~~Should be flexible and informal~~
2. Should have separate work areas around the outside of room for:
  - a) Geology and soils
  - b) Plants
  - c) Mammals
  - d) Fish and water animals
  - e) Reptiles and amphibians
  - f) Insects
  - g) Weather and air pressure
3. One area should be provided for those reference books which will be used mostly without laboratory equipment and workspace (astronomy, mathematics, physical sciences) and for strictly pleasure reading
4. Space in one area of the room should be provided for semi-quiet reading.
5. Storage for materials such as chemicals should be provided with locks to limit access.

#### E. Equipment

1. Acid resistant sink with running water
2. Gas for burners
3. Adequate electrical outlets around work areas
4. Soils testing kit and soil auger
5. Aquarium
6. Microscopes
7. Hand lenses
8. Rock hammers, etc.
9. Book shelves
10. 6 - 4' x 8' tables, with easily cleaned tops
11. 40 folding or stacking chairs
12. Chalkboards
13. Cages
14. File cabinets
15. Work benches
16. Wood vises
17. Woodworking tools
18. Shelving or bins for wood scraps and lumber
19. Shelving for storage of cans, bottles, etc.

#### F. Special features

1. Accommodations for temporary storage of heavy over clothes during inclement weather

### VI. Dormitories

#### A. Typical activities

1. Sleeping
2. Storage of extra clothes changes
3. Drying damp clothes and towels
4. Shower and toilet needs

## B. Location

1. Should be located either in conjunction with dining hall or between dining hall and outdoor study areas
2. If not in conjunction with dining hall, then locate far enough away to avoid appearance of crowding and congestion

## C. Suggested size of sleeping area

1. Should accommodate 36 pupils plus 1 teacher
2. Each occupant should be allowed a minimum of 30 square feet of floor space
3. There should be at least six feet between the heads of sleepers
4. Adequate room for clothes storage (individual)

## D. Appearance

1. Should be roomy, adequate for moving about between bunks
2. Should have ceiling of minimum height of eight feet to accommodate double bunk beds
3. Windows should be above eye level and should not expose top bunks to view from outside
4. Should be adequately lighted and ventilated without exposing occupants to view from outside
5. Window blinds could be used, but should be of a rugged, strong type. One-way or translucent glass would be preferable

## E. Washrooms

1. Should have separate room with bath facilities for teachers
2. Washroom facilities should be a type that are easily cleaned and maintained
3. Should have dressing area with hanging facilities for clothes and towels
4. Should have gang shower (1 per 15 pupils) with one private shower for girls
5. Should have adequate water closets, sinks, mirrors, and shelving (1 lavatory per 10 pupils)
6. Dormitories intended to house boys may have some urinals substituted for water closets

7. Should have a floor drain
8. Should have non-skid floor

#### F. General considerations

1. Night lights should be located in each dormitory to allow supervision and for pupils to see to go to restroom during the night
2. Provisions should be made for maintaining optimum temperature and ventilation
3. Mattresses should be protected by waterproof covers. Alternative would be to waterproof certain mattresses and be sure potential bedwetters sleep on these
4. Each pupil should have a place to store his suitcase and extra clothing
5. Tempered water should be available through a mixing faucet
6. A desirable arrangement would be to have possibility of dividing pupils into small group size areas for sleeping without increasing need for close supervision (partition, L-shaped spaces?)
7. Some area and means for drying clothing should be planned into dormitories

#### VII. Caretaker's Quarters

- A. Housing for a caretaker should be provided to assure having a responsible person on the site at all times. A cottage or apartment should be provided in order to improve chances of obtaining and holding a person of high quality and diverse talents.
- B. The caretaker's housing should be located just inside the entrance to the site, probably somewhat behind the administration center, with a vantage point which provides a view of the entrance, parking lot, and as many buildings as possible.
- C. Suggested size
  1. Modest two-bedroom
  2. Could combine garage and general maintenance area for storage and repair of necessary tools and equipment such as wrenches, shovels, saws and hammers
- D. Appearance
  1. Should be of same materials and general theme as other buildings
  2. Should have adequate window area facing entrance and area where most attention will likely be needed to control incoming traffic

#### E. Equipment

1. The cottage should be furnished with the larger kitchen appliances stove and refrigerator
2. Should have comforts equal to comparable city housing

### VII. Maintenance Area

#### A. Activities

1. Storage and repair of maintenance tools and equipment
2. Storage of file cabinets with maps, diagrams and records
3. Storage of assorted lumber supplies
4. Building of special needs not available through regular sources (signs, display equipment, cages)

#### B. Location

1. Maintenance area can be joined with the caretakers cottage, or can be separate without altering the program. The combination of facilities would make for economy in heating, plumbing, etc.

#### C. Suggested Size

1. Should be large enough to accommodate two motor vehicles plus storage of maintenance equipment and supplies
2. Must have space for file cabinets, records and maps
3. Must have storage for power equipment to be used in maintenance area only

#### D. Appearance

1. Should have outside appearance similar to other buildings
2. Should be finished, insulated and heated in separate area where caretaker keeps records

#### E. Equipment

1. File cabinets
2. Chair, small desk
3. Miscellaneous carpenter's tools
4. Miscellaneous mechanic's tools
5. Miscellaneous painter's equipment
6. Storage racks for lumber (assorted)
7. Miscellaneous plumber's tools

#### F. Special Features

1. Should have separate area where combustibles can be stored safely
2. Extent to which this part of facility must be developed and equipped will depend upon amounts and kinds of services available from work crews attached to the central maintenance shop in the city system

### IX. Staff Housing

- A. Housing for faculty who are full time outdoor education teachers is an item which must be considered in view of the overall program of the school. The ordinary teaching day in the resident outdoor school



begins when pupils rise in the morning and ends after they are asleep at night. While the circumstances and conditions of teaching in this kind of program are usually considered pleasant and stimulating, these conditions are very demanding upon the physical stamina of the teachers. When teachers work in such a program for extended periods of time, some compensation needs to be made which will allow them to avoid becoming over-tired. One possibility for making the assignment less demanding physically is to provide housing on the site of the school.

In establishing priority for staff housing the principal or director should be housed on the site so he could be available upon 24 hour call. Additional housing for teachers is most valuable for the greater benefits which accrue to the overall program because teachers are more easily recruited, are more available and have more time and energy to devote to their work.

B. Location

1. Should be located on the periphery of the building group
2. Should be off of but near the service loop road
3. Should be behind the main buildings in a rather inconspicuous location

C. Suggested Size

1. Should consist of one and two bedroom apartments or cottages
2. Some should accommodate single persons
3. Some should accommodate families of 4 - 5
4. Should total nine apartments ( 1 principal - 8 teachers)

D. Appearance

1. Should have similar outward appearance to other buildings

E. Equipment

1. Refrigerator
2. Stove for cooking

XI. Grounds

A. General considerations

1. Leave as much undisturbed from the natural as possible

B. Entrance, Drives and Parking

1. Adequate signs which blend with the theme and atmosphere should direct traffic in the desired directions
2. All drives should be surfaced with crushed rock and built to withstand bus and delivery truck traffic
3. Entrance road terminates at parking lot near administration center
4. Service drive loop goes to caretakers cottage, maintenance area, and back of dining hall
5. Spur drive goes to staff housing
6. Drives follow contour of the site
7. Gate should divert traffic to caretakers cottage when school is not in use
8. Parking lot should accommodate 12 vehicles, including six buses

9. Parking lot may be divided into small areas rather than one large area
10. Parking lot should be expandible without surrounding buildings
11. It should have good drainage

C. Walks

1. Walks between buildings should be approximately four feet wide, allowing for pedestrians to walk two abreast
2. Cover with gravel or crushed rock
3. Follow contour where possible
4. Use posts for building steps where steep grade in walks is necessary
5. Walks should be limited to minimum necessary for traffic

XII. Utilities

A. A well and water system should be developed which will meet these requirements:

1. Capacity of 10,000 gallons pure water per day
2. Locate a minimum 100 feet from buildings and septic tanks
3. Locate at altitude which will require minimum of pressure to affect flow to all buildings (preferably gravity flow)
4. Protect all lines by burying sufficient depth to prevent freezing and damage by erosion
5. Include sufficient tees in water lines to allow for expansion

B. Sewage Disposal

1. Particular attention should be paid to size of septic tanks at dining hall
2. Grease traps should be provided where appropriate
3. Garbage disposal unit will increase needed capacity, especially for septic tank
4. Dish washing machine will increase needed capacity, especially for drain field
5. Drain field should be planned and laid out to provide sub-irrigation of open areas
6. Sewage lines should not cross fresh water lines at any point

C. Air Temperature Control

1. Heating of buildings should be done with gas
2. If natural gas can be made available, it is to be preferred to liquid petroleum gas
3. Use of fireplaces will aid in heating, but will not be significant source of heat
4. Cooling air may not be necessary if adequate ventilation with fans is provided

D. Electric Power

1. A power line already exists on the property
2. Poles and lines should be as inconspicuous as possible
3. Electric power (115 volts) should be provided in all buildings and at well
4. Additional power (230 volts) should be provided in kitchen

#### E. Telephone

1. Phone service should be connected to the following spaces:
  - a) Principal's office
  - b) Secretarial area
  - c) Nurses office
  - d) Head cook's office
  - e) Pay phone in administration center

### XIII. Outdoor Teaching Areas

#### A. Fresh water boilogy area

A pond with a minimum diameter of 50 feet should be developed to maintain a supply of whatever specimens will thrive in the area. Some water plants and animals can be transplanted into the pond while others will be introduced naturally. The particular species is less important than are the number of species and the supply of each.

A variety of depth of water will increase the number of species which will survive in the pond. Also the perimeter of the pond should be shallow and should have a surrounding flat muddy area which will take and hold animal tracks and evidence of any activity which takes place near the water.

This pond needs to be in a flat area and also needs to have some trees and other cover nearby so that wildlife will frequent the pond without venturing too far out into the open. It must not be located where it can be damaged by rushing water from a thundershower.

One such area should be located so as to use water from the well. It is hoped that another pond could be developed to make use of surplus water from Mud Spring.

#### B. Bird study area

In the west-central part of the 130 acre site is a location which could very easily be developed into an area where bird study activities could be conducted. Feeding stations should be set up to attract several species of birds. The woodpeckers will be attracted to beef suet feed, seed-eating birds can be attracted by a mixture of seeds. Some seed-eaters will eat seed only off the ground, while others will eat only off platforms a few feet above the ground.

It would be possible to trap birds in this same area, but one disadvantage would be that traps could not be as easily attended as if they were placed in the peripheral areas near the investigation centers. In other words, bird observation areas should be somewhat separated from the bird trapping areas. Also, if the center obtains a permit for trapping and banding birds, banding equipment would need to be kept at the investigation center.

### C. Weather study

A weather station should be set up in the open area near the building complex, probably northeast of the dormitories. Instruments included in the station should be substantial enough to allow pupils to handle them and should also be accurate enough to make weather observations realistic.

Equipment included in the weather station should meet the following as a minimum

1. Structure to house instruments such as thermometer, barometer, hygrometer, etc. This must provide shade, ventilation, and protection for these instruments
2. Thermometer (preferably high and low type)
3. Barometer
4. Hygrometers (wet and dry bulb and one constructed with hair components)
5. Rain gauge
6. Wind direction indicator
7. Anemometer (or some simple gauge such as a wind meter)

### D. Trails

The development and construction of trails or paths by which to get from the investigation centers to outdoor teaching areas should be consistent with the over-all philosophy of keeping disturbance of the outdoor area to a minimum. Trails need to be obvious enough to allow the person unfamiliar with the school to find his way to the teaching areas with the aid of a map. Trails should be cleared enough to reduce danger of sprained ankles, and trails through dense growth should have growth cleared enough to allow a person to walk upright. No special surfacing should be necessary.

It would not be necessary to provide cleared trails to each individual area of interest. Teachers familiar with the many possibilities and materials available will only need a few trails to get to all locations on the site. Once the trails have been laid out and cleared, a map should be made which can be displayed in a prominent place, so that all pupils and teachers can use it as a reference for finding a desired location.

Points of interest upon the site which are frequented in teaching should be named for convenient communication. Names can be given by pupils but once a location is named, it should be permanent. Usually some name which is humorously descriptive has a great deal of appeal to all youngsters. For instance the trail to the excavation might be "Clementine Trail". Any name which ties to language arts or other curriculum areas is most appropriate.



E. Other teaching materials

Many of the available materials for use in the outdoor school will be seasonal in nature. This tends to emphasize the necessity for teachers to be informed, alert, flexible, and willing to explore. They need to know where and when, for instance, that they are likely to find a nest of ant eggs, a molehill, or a spider web.

## The National Forest Area

The site of the outdoor school and the Cibola National Forest have a common boundary extending along a distance of three-fourths mile. Although the boundary is fenced, the forest area will be available for use by school groups in the same manner it would be available for any other citizen or group of citizens.

The possible use of the forest for educational purposes has been explored in consultation with forest rangers from the District Ranger Station at Tijeras. It was agreed that any proposal for effecting a physical change in trails, springs, etc., would be submitted in writing to the Cibola National Forest Engineers Office in Albuquerque by way of the District Ranger Station at Tijeras.

It is recommended that, as soon as funds are available to begin development of the site, Mud Spring be utilized in part to develop a pond for fresh water biology and wild life study. It will be necessary to provide some type of trough at the spring from which wild animals can obtain water, and also a source of drinking water for hikers. The remainder of the water can be diverted through pipes to a better location for use. Presently, the water (approximately two gallons per minute) flows only a few feet from the source of the spring and soaks back into the soil. The excess should be diverted to a rather flat surface where a pond could be maintained.

The soil on most of the site is quite porous, being either rocky or sandy. In order to make greatest use of available water in maintaining a pond, one possibility might be to add a layer of rather impervious soil as a liner. Another possibility might be to line a limited area with plastic to hold the water.

Aside from the use of surplus water from the spring, no immediate changes are recommended for forest property. There are some teaching materials within the forest, such as species of fungi and fossil bearing rocks, which will be advantageous for study, but constructed trails to these locations should not be necessary. Many of these spots can be reached by game trails, once the teachers are familiar with them.

It is likely that hiking on all day trips will be a regular part of a future summer program. Trips through forest property to the crest of the mountains may necessitate cooperative development of trails according to forest service standards, but it is recommended that trail construction take second place to incidental travel within the forest.

## Amphitheater - Alternative - 1

The bowl contains an estimated 25 000 square feet of usable area, in the shape of a triangle with a base of 150 feet and an altitude of 350 feet. The distances are approximate, and the perimeter of the triangle is somewhat uneven.

There appears to be sufficient room for seating beyond a capacity of 200 plus parking space. However, seating should take precedence over parking up to a seating capacity of 200. After allowing for seating 200, then the seating capacity should be in relation to the parking spaces and number of people estimated per car.

The only real advantages to be gained in the use of amphitheaters are (1) to take advantage of the aesthetic value of the surroundings and (2) cost compared to the cost of an indoor theater or auditorium. The aesthetic value and the emotional impact inherent in such an area as exists on the outdoor education site will be recognized more in the future among educators than they have been in the past. In order to utilize the aesthetic value of the bowl to its greatest advantage, it seems advisable to locate the performing area (stage or platform) in the west end of the bowl.

The stage can be placed on the present level of the ground or could be set below the present ground level without destroying the beauty of surrounding vegetation. Setting it lower than the height of the acoustical shell would detract from the surroundings. The surface for seating could be excavating a few feet for the stage and moving the earth down hill to the east.

The moving of this earth eastward would provide a rise at the east end of the seating area which would separate the parking lot from the seating by placing parking on a level below seating. This isolation of parking should also lend to the beauty of the performance area.

~~Steps up the steep incline from the parking area to the seating are recommended.~~ Also recommended are ramps for walking up either side from the parking area to about midway of the seating.

Water diversion and drainage ditches will be necessary to carry away water from thundershowers. The water shed west of the bowl has at times permitted considerable runoff to occur. Any excavation such as that recommended for lowering the stage will emphasize the runoff problem at or near the stage end of the amphitheater.

Sketches included may help to clarify circumstances surrounding the development of this particular area. (see appendix)

The area also should provide inspiration and subjects for art. There are other cultural and social activities which could be very well adapted to a facility of this kind. Through the warmer seasons, such a facility should be in great demand.

An important point to remember is that an elaborate outdoor auditorium could reach a point in development at which the man-made characteristics could overwhelm the natural characteristics. At this point, the amphitheater ceases to be what was intended and becomes a duplication of some similar structure in the city.

#### Alternative 2

The possibility exists that access can be gained on the road near the north end of the site. If this access can be gained, then the placement of the building complex will likely be near this north access. It would be advantageous from the standpoints of building and program to have a north access. In such case, the usability of the amphitheater bowl area would be lessened.

An alternative exists to develop a smaller outdoor theater for small groups. The large bowl area could be used for other activities such as adult instructional programs if arrangements for water can be worked out satisfactorily.

#### Alternative 3

The large bowl area could be used for developing a small performance area with the stage facing another direction other than that indicated in alternative 1, and with other seating arrangements. The capacity of such a facility will be smaller with any arrangement other than alternative 1 unless a good deal of the vegetation is removed from the hill in favor of placing seating there.

Water supply will continue to be a problem in the development of the area, whatever use is made of it.



## PHASING INTO OPERATION

### Long-Range Development

The development of the outdoor education center depends to great degree upon the availability of Title III funds. If Title III funds are available, obviously the center can be put into full operation at an early date. Even if this is the case, there will be a time in the interim when a start can be made. Considering the fact that a program in outdoor education will be new to the Albuquerque Public Schools, it would seem appropriate to do some phasing into the operation.

There are two reasons for beginning the phasing as soon as possible. First, valuable learning opportunities should not be passed up for a large number of pupils. The site is available. The natural area, while less convenient and less effective with out buildings and other developments, does afford many worthwhile materials for profitable study. It has sufficient value as is to justify its immediate use.

Second, the educators in the school system need to begin as soon as possible to familiarize themselves with the outdoor education approach. Any new and different procedure can be overwhelming if approached too rapidly. Several aspects of preparation need to be undertaken simultaneously. The school needs development of access roads, teaching areas and water system. Leadership and teaching personnel need to be assigned or recruited. Teachers who will be participating in the program will need considerable orientation, as will the specialized outdoor teaching staff.

With the above reasoning as a basis, the following plan is suggested:

#### Phase I - Pilot Project, Field Trips with On-site Investigative Activity

1. Complete access road
2. Develop water supply
3. Develop outdoor teaching areas
4. Assign leadership and special personnel to coordinate and assist with field trips
5. Begin use of site for field trips
6. Begin appropriate in-service education (workshops, courses, and/or necessary travel for observation of outdoor program in progress)
7. Develop reference book and teaching materials inventory, including references for professional libraries in city schools
8. Supply temporary toilet and shelter facilities
9. Construct investigation center
10. Evaluate program in progress
11. Carry on interpretation activities for community of Albuquerque and surrounding districts.

Phase II - Pilot Project, Resident Outdoor Education and Continuation of Phase I

1. Assign additional personnel to coordinate and assist with field trips
2. Increase scope of field trip and investigative activities, and introduce innovations in other pilot projects
3. Continue development of teaching areas, materials, and reference holdings
4. Continue in-service education programs
5. Complete pilot resident facilities
6. Begin pilot program in resident outdoor education when facilities are available
7. Continue interpretation of program to community
8. Evaluate programs in progress

Phase II of the long-range development may extend beyond a period of one year, perhaps even two years, depending upon availability of funds and building schedules. Priority should be given to construction of dining hall, dormitories and caretakers cottage - maintenance center. The clinic could be constructed to become a wing of the administration center.

Phase III - Extension, Retirement and Stabilization

1. Continue in-service education
2. Reassess personnel needs and assign personnel
3. Construct buildings to bring operation to capacity (investigation center - 1, dormitories - 2, administration center, staff housing)
4. Add classes to reach capacity of the center as facilities are completed
5. Continue interpretation activities
6. Evaluate programs and adjust to community need

Phase III could easily extend into the fourth or fifth year of operation. For the ultimate quality in program, adequate facilities are necessary. For purposes of maintaining quality, the program should not be expanded beyond the capacity of facilities and personnel.

## BUDGET ESTIMATES

### Development of Water Supply

Casing pipe 200 feet at \$2.50 per	\$ 500
Drilling 200 feet at \$6.00 per foot	1200
Pump and pipe - to surface only	450
Concrete work and labor	200
Storage tank - 400 gallon capacity	560
Well house - insulated	500
Additional plumbing to buildings	2000
Total	\$5410

### Buildings

Costs of buildings were estimated by applying a figure of \$12 per square foot to the recommended dimensions of each building. It is recognized that some buildings will exceed this cost per square foot. It is hoped that others will not.

### Teaching Materials

Books and charts	\$ 500
Weather Station	150
Investigation centers - each	1900
Miscellaneous tools and supplies	500
Total	\$3050

### Staffing

Costs of staffing the outdoor school are estimated on the basis of the 1966-67 salary schedule for Albuquerque Public Schools. On the assumption that most teachers assigned to the school will be younger than the average for the system or will be new to the system, estimates are somewhat lower than the average salary for similar responsibilities.

Salary estimates for personnel are included in the budget for phasing the program into action. Although the possibility of using non-certified teachers is mentioned in the report, no estimates are included for the item.

### Transportation

Mr. Paul Gallegos, Director of Transportation for Albuquerque Public Schools, estimates that the cost per round trip from the city to the outdoor school will average about \$20. Trips can be arranged for the same cost whether the trip is for one day or for the week stay. If classes number 30 pupils and a 60 passenger bus can be used, taking two classes per trip, perhaps some economy could be effected. In the case of the resident experience, additional transportation for luggage would be necessary. A school owned pick-up truck should suffice for such extra transportation.

It is recommended that, as soon as the first two dormitories are completed, the pilot program include two resident classes. However, when two more dormitories are completed, plans call for four classroom units per week, plus whatever field trips and special events occur.

Based upon capacity use for 48 weeks per year, a budget of \$6,000 for transportation is anticipated.

1966- 67 - second semester operation  
 field trips - 150 at \$20 = \$3,000

1967-68 - full year operation  
 resident student groups - 60 at \$20 \$1,200  
 field trips 150 at \$20 3,000  
 summer and weekend 40 at \$20 800  
 \$5,000

1968- 69 - capacity operation  
 resident student groups 120 at \$20 \$2,400  
 field trips 150 at \$20 \$3,000  
 summer and weekend groups 40 at \$20 800  
 \$6,200

For the resident outdoor education program only operating at full capacity, transportation estimated is \$2,400. Unless the Albuquerque Public Schools accept Title I or Title III financing under agreement to furnish transportation for adjacent school districts, then this figure (2,400) would be reduced by \$20. for each group of pupils from other districts. Likewise, the estimates for transportation for summer and weekend groups would be reduced by \$20. for each group from outside the Albuquerque Public School district.

#### Cost to Pupil

A rule of thumb which has prevailed over the years in outdoor education programs is that the parent should assume the costs of food and lodging as he would ordinarily and the school district should assume the costs of instruction and transportation as it would under normal circumstances. With federal funds entering the picture, it is somewhat more complicated.

Estimates and calculations need to be placed upon a per pupil, per meal, per night lodging, and per day instruction in order to arrive at a reasonable figure for adjusting cost to pupils and for purposes of sharing costs among cooperating districts. Some formula can be worked out to allow for contributions and obligations of each district. In working out this formula, it would be reasonable to keep in mind the contribution made by the Albuquerque Public Schools in the form of land furnished for the school.

#### Food

The summer camping program operated by the school system has, with the help of surplus commodities, been able to provide meals for 9 - 13 year old youngsters (1966) for about 27 cents per meal. The San Diego City Schools' Camp Cuyamaca has provided a family style meal for 12 - 13 year old youngsters (1965-66) for about 35 cents. For the type of program recommended in this report, considering the decline in availability of surplus commodities, a family style meal for 12 - 13 year old youngsters can be expected to approximate 40 cents. Cost would vary with maturity and



sex, but if it is possible to avoid a sliding scale, an across the board price per meal, is recommended.

#### Cost of Food Preparation

Figured on a ratio of one cook per 40 pupils, and at a daily pay rate of \$12 per cook, and figuring 13 meals per week for resident pupils, cost of food preparation per meal would be approximately 12 cents.

#### Instruction and Health Service Costs

Teaching, administrative, and nursing salaries plus cost of equipment and supplies could be combined for purposes of estimating per pupil per day instruction costs. This figure would again be helpful in working out cooperative arrangements in which staff is furnished by the Albuquerque Public Schools for pupils from other schools.

#### Lodging Cost Per Pupil

Costs of lodging should include depreciation and upkeep of buildings and grounds, plus utilities.

These costs need to be estimated on a per pupil basis so that it will be possible to differentiate fairly between pupils from Albuquerque Public Schools and those from cooperating districts. What constitutes fair differentiation will depend largely upon the proportion of federal funding support.

Cooperating schools or agencies outside the Albuquerque Public Schools district probably will be required to contribute slightly more than Albuquerque schools because of the large investment the Albuquerque Board of Education has in the 130 acres of land.

BUDGET FOR NEEDED PROGRAM SUPPORT

Phase I - Pilot Project With On-site Investigation Activity

Administration	
Principal ---- 8 months	\$8,000
Consultants -- (inservice, evaluation, and general 60-days at \$100	6,000
Travel -- director and consultants	2,800
Clerical -- 8 months	2,400
Instruction	
Teachers -- 4, 8 months	18,000
Transportation	
150 field trips at \$20	3,000
Operation of Plant	
Utilities -- electric, phone, gas	800
Supplies -- paper goods, cleaning supplies and equipment	400
Maintenance of Plant	
Custodial salary	2,400
Community Services	
Interpretation of program <u>travel and materials.</u>	1,800
Capital Outlay	
Equipment only -- weather instruments, laboratory equipment and supplies, references	4,950
Furniture and fixtures	2,000
Capital Outlay	
Site improvements -- grounds, roads, teaching areas	6,900
Buildings -- toilets, shelters, investigation center 2500 square feet at \$12	30,000
Water system - drilling, pump, storage, piping	5,410
Total	\$94,860

Phase II - Pilot Project in Resident Outdoor Education and Continuation  
of Phase I

Administration	
Principal	\$12,000
Consultants (in-service, evaluation, and general 50 days at \$100	5,000
Travel -- principal and consultants	2,000
Clerical	3,600
Instruction	
Teachers -- 7, eleven months.	56,000

Health Services	
Nurse	6,000
Supplies for clinic	200
Transportation	
Field trips	3,000
Resident class trips	1,200
Summer and weekends	800
Operation of Plant	
Utilities - - electric, phone, gas	3,000
Supplies -- paper goods, cleaning supplies and equipment	2,400
Maintenance of Plant	
Custodial salary	3,300
Food Services	
Cooks' salaries - (2)	6,000
Community Services	
Interpretation of Program - travel and materials	1,200
Capital Outlay	
Equipment only - dining hall, kitchen, clinic, dormitories	10,500
Capital Outlay	
Buildings - dining hall, dormitories, clinic, caretaker's cottage 9,300 square feet at \$12	111,600
Total	\$227,800

Phase III - Extension, Refinement, and Stabilization

Administration	
Principal	\$12,500
Consultants (inservice, evaluation)	5,000
Travel -- principal and consultants	2,000
Clerical --	3,700
Instruction	
Teachers -- 10, eleven months	81,000
Health Services	
Nurse	6,000
Clinic supplies	300
Transportation	
Field trips	3,000
Resident class trips	2,400
Summer and weekend	800
Operation of Plant	
Utilities	3,600
Supplies	2,800

Maintenance of Plant		
Custodial salaries one and one-half		5,100
Food Services		
Cooks' salaries -- 4		12,000
Community Services		
Interpretation of program - travel and materials		1,200
Capital Outlay		
Equipment only - investigation center, dormitories, administration center, staff housing		11,000
Capital Outlay		
Buildings - investigation center, dormitories, administration center, 10,300 square feet at \$12		123,600
Staff housing if desired 9,600 square feet at \$12		115,200
Total - (without staff housing)		\$276,000
Total - (with staff housing)		\$391,200



## COOPERATING AGENCIES

Several agencies have been contacted in the course of planning the outdoor school. These contacts were made with a two-fold purpose. From a standpoint of furthering the interests of the outdoor education center, an attempt was made to assess the potential participation and support which might be expected from cooperating agencies. From the standpoint of rendering service to cooperating agencies and exerting influence in the improvement of educational opportunities for people outside the Albuquerque Public Schools, an attempt was made to communicate to these agencies the objectives and program being sought through the planning grant and the proposal for operational grant.

### Public Schools

1. Bernalillo Public Schools, Pete Santisteran, Superintendent
2. Belen Public Schools, Alfonso Garde, Superintendent
3. Los Lunas Public Schools, Bernard Baca, Superintendent
4. Mountainair Public Schools, G.C. Williams, Superintendent
5. Estancia Public Schools, Roy Isler, High School Principal
6. Moriarty Public Schools, Jerry Honaker, Elementary Principal

Sessions were held with the named representatives of the above organizations for the purpose of interchange of ideas concerning the outdoor education program being planned. All expressed interest in the program, and also a tentative willingness to have pupils from their districts participate in such a program of an experimental basis. All these schools are within a fifty mile radius of the site of the outdoor education center. Total enrollment in these schools (1966) was 8,323 students:

There were other organizations not directly connected with public elementary and secondary schools with which meetings were held.

### University of New Mexico

Chester Travelstead, Dean, College of Education, was already somewhat informed in that he had viewed the film describing the resident outdoor education program at Northern Illinois University. As a result of our discussion with Dr. Travelstead, we were referred to Dr. Harold Drummond, Chairman of Elementary Education, and Dr. Armond Seidler, Chairman of Health, Physical Education and Recreation, for further discussion. In addition, a conference was held with Mr. John Montgomery and Dr. Ed Health of the Department of Health, Physical Education and Recreation

All persons of this group expressed a desire to assist the public schools in any way with the development and operation of the outdoor education center. Dr. Drummond has had some experience with school camping at George Peabody College for Teachers, Nashville, Tennessee.

Specifically, the outstanding possibilities for cooperative endeavor between the University of New Mexico and the public schools in the outdoor education program lie in two areas. It would be an advantage to both organizations if details and mechanics of operation could be agreed upon.

Having elementary education majors to do observation, supervision and student teaching as a part of their pre-service education has been done in other sections of the United States and has met with unusual success. The evening activities ordinarily offered in outdoor education programs afford many opportunities for physical education and recreation majors to practice leadership skills which are objectives of their pre-service education. Both should be considered.

Any attempt to coordinate efforts in this manner could make considerable use of the Handbook for Outdoor Teacher Education, published by Educational Bulletin Service, Northern Illinois University, Dekalb, Illinois.

#### Educational Services Center

This organization is a Title III funded cooperative unit consisting of authorization from member schools of the New Mexico Cooperative Research and Study Council, itself an organization sponsored by the University of New Mexico. A conference was held with Mr. Gene Shepard and Mr. Ed. Tangman, representatives of Educational Services Center. A tentative request was made by these representatives for Albuquerque Public Schools to invite participation from schools that are members of New Mexico Cooperative Research and Study Council. This participation would consist of sending classes for the resident outdoor education experience, and also of teacher participation in workshops for the purpose of becoming acquainted with outdoor education methods.

This plan has much to recommend it as a means of making the outdoor education center truly exemplary. The membership of the New Mexico Cooperative Council is made up of twenty-seven separate school districts with a total pupil enrollment of 47,583, including the 8,323 pupils mentioned previously in the section on public schools.

#### U. S. Forest Service

Mr. Alan Hinds and Mr. Doug Barton, rangers from the Tijeras Ranger Station, accompanied us to the outdoor education site to explore and discuss the use of adjacent Cibola National Forest property for developing and extending the outdoor education program. They indicated a desire to cooperate in permitting use of the forest area, and in furnishing resource people to assist in the program whenever possible. The stipulation was made that any proposed physical changes in the forest property would be submitted in writing for review by Forest Service Officials. It was recommended that any proposal be submitted at least six weeks ahead of the date of the anticipated change.

Mr. George Worley, an education and information official with the forest service, conferred with us in the central office at Albuquerque Public Schools, and supplied us with information concerning cooperative efforts of the forest service and National Audubon Society. He also indicated his desire to encourage and support the outdoor education center both professionally and personally. Mr. Worley's broad background of experience would be of considerable value in in-service programs in conservation education for teachers.

### National Audubon Society

The National Audubon Society has been the source for considerable reference material used in the planning of the outdoor education center. Materials were furnished for consideration in the areas of both facilities and program. Public school programs in outdoor education usually are directed toward elementary and secondary students, while Audubon programs are intended to reach all age groups of children and adults. Therefore, specific sections of Audubon materials had greater relevance than others.

### Catholic Office of Education, Archdiocese of Santa Fe

A meeting was held with Sister Maura in the Catholic Office of Education. Sister Maura expressed a desire to learn more about the outdoor education center. She was delivered a copy of the planning grant proposal to study, as well as copies of evaluation forms submitted by parents of a fifth grade class which had participated in a week of outdoor education.

Two factors were mentioned by Sister Maura which may affect the participation of Catholic elementary school pupils in the outdoor program. These were cost to the pupil and the fact that elementary classes in the Catholic elementary schools will be about forty in number. This difference in number per class will have some effect upon the organization of the experience for these youngsters because it will raise the teacher-pupil ratio or else require that more special teachers be assigned when parochial school pupils attend the outdoor school.

It appears that if these two limiting factors can be dealt with satisfactorily, the parochial schools can be expected to participate in the outdoor education programs.

### Agricultural Extension Service

Mr. E. H. Wallace of the Bernalillo County Agricultural Extension office reported 1,100 young people between ages 10 and 20 enrolled in 4-H Clubs within Bernalillo County. At present, no camping or outdoor education activities are carried on by the 4-H Club program within the county. While exposing 4-H Club members to outdoor education programs may constitute some duplication of school effort, this duplication is not likely to be great. The 4-H Club groups should be considered potential for summer or weekend programs at the outdoor education center.

### D. W. Falls, Inc.

A meeting was held with Mr. Falls to explore the possibility of using the road leading through property being developed by Mr. Falls and associates. This road is the only access to the area where the amphitheater is being planned. According to Mr. Falls, when the road is constructed, it will become a county road, in which case it would be open to public use. He sees no difficulty as far as the schools use of the road to gain access to the area is concerned.

## Consultant Services

Three persons in addition to the director of the planning project were used on a consultant basis. These four persons brought a wealth of experience and formal education to the project. It is hoped that by using great variety of background experiences, the final outcome of all planning effort will be a higher quality educational program for the pupils of Albuquerque and also of the entire State of New Mexico.

Personnel assisting with the planning and their qualifications are as follows:

Charles Renfro, Albuquerque Public Schools

M.A., University of New Mexico

Coordinator of Health, Physical Education, and Recreation

Initiated public school summer camping and supervised it for past fifteen years.

Paul Claussen, Local Council Scout Executive, Boys Scouts of America, Tucson, Arizona

South Dakota, State Graduate

President of American Camping Association, Coronado District

Morris Wiener, Northern Illinois University

Ed. D., Michigan State University

Outdoor education experiences in:

Tyler, Texas

Peabody College for Teachers, Nashville, Tennessee

Northern Illinois University, Dekalb, Illinois

Lloyd Cockrell, San Diego State College

Ed. D., University of New Mexico

Planning project director

Formerly with Department of Outdoor Teacher Education

Northern Illinois University, Dekalb, Illinois



## EVALUATION

From a careful examination of the preceding sections of this report it becomes evident that outdoor teaching and learning cannot be equated with classroom programs and procedures. Although there are obvious similarities in overall goals, there exist essential differences in intent or purpose, the nature of experiences, and the time involved. It follows then that evaluation of an outdoor education program must focus upon those elements of education for which the objectives of the program were established.

Short term, intensive programs such as field trips and five day resident experiences at the Outdoor Center cannot be assessed with the same criteria and instruments that are used to measure academic achievement over a whole school year. The impact of outdoor education must point to a broader range of more basic components of human behavior than just particular aspects of intellectual development.

What seems to be significant in the outdoor experience is the degree of involvement that occurs in gaining personal meaning - affecting the learner's feelings, emotional response, as well as conceptual development. "Knowing reality rather than knowing about reality" as a basis for responding to life, reflects a value orientation that underlies the outdoor education thesis. It is this rationale that serves as a hypothetical foundation upon which to build a program of evaluation. Therefore, it is suggested that the following items be considered in developing specific evaluative criteria and instruments:

1. A theoretical frame of reference should be identified that reflects a perceptual orientation to learning and behavior. This would reflect a concern for evaluating how reality appears to the individual... his perception of self, others, and the environment. Thus, openness to experience, a provocative learning climate, and positive self regard would be valued in the outdoor learning situation.
2. Judgments concerning progress, strengths and weaknesses, and validation of the hypothetical basis should be made from a critical analysis of information gathered using a variety of appropriate instruments and procedures. This information should be weighed against a carefully developed list of criteria reflecting the related needs of the community.
3. Means of gathering information for determining effectiveness might include 1) structured interviews, 2) interest inventories, 3) narrative accounts, including both teacher and pupil logs, 4) attitude scales, 5) projective (open-ended) devices, 6) subjective reports and anecdotal records, 7) oral conferences, 8) community opinion surveys, and 9) expert opinion.

4. Although comprehensiveness should be one criteria of the evaluation scheme, caution should be taken in not letting this become the end rather than the means. All involved in the program of outdoor education should be a part of the evaluation, including students, teachers, administrators and parents, as well as other members of the lay public. However, as with any innovation, time must be allowed for changes in roles of both the teacher and the learners. Too much emphasis upon formal evaluation may become stifling. Opportunity must be provided for expected initial fumbling, mistakes, and readjustments.

5. Assistance in developing and carrying out the evaluation program should be sought both from within the school system and from others engaged in similar programs throughout the country. And conversely, information should be disseminated to those seeking insight into evaluative procedures for outdoor education.

## CONCLUDING STATEMENT

### Related Programs

Some discussion should be included concerning the present camping program carried on during summers by the Albuquerque Public Schools and to the possibility of expanding outdoor education programs in the future. The expansion of summer programs should be dependent upon quality, cost, and demand for the experience. Quality and cost of the four-day camp during the past summer were very favorable. The quality of the camp was as high as could possibly be expected, including such activities as, visiting the fish hatchery, fishing in the river, hiking, nature study, astronomy, crafts, dramatics, etc. Ideally, perhaps some in-service education and evaluation by involved staff would produce some change for the better, but the program is good as it has been operated.

The cost of the camp has been \$10 for four days, including transportation, meals and instruction. Meals were adequate, balanced, and well prepared. The atmosphere and spirit among all personnel involved appeared to be desirable. It would be difficult to provide a more worthwhile experience for the same cost.

The cost to the public schools for the summer camping program is minimal. Various support, such as furnishing the activity bus, furnishing storage for equipment, and furnishing administrative and secretarial service from the central office, are apparently the only actual costs of the camp not paid by fees, other than the new kitchen and shelter building added this year.

For the sake of efficiency, there are some items which would be very helpful to the summer camp. These include:

1. Boxing-in the spring
2. Piping water to the kitchen
3. Installing water heater in kitchen
4. Installing sink in kitchen
5. Increasing refrigerator capacity
6. Installing liquid petroleum gas lights

Whether all of these improvements would be advisable would depend largely upon the volume of campers attending. Tentative count would indicate considerable potential in the city beyond the number presently attending. Of the 70,000 pupils enrolled in public schools alone, approximately one third should fall within the 9 - 12 age range. Of this number, if each child attended once between the ages of 9 - 12, the attendance would be 6,000 per year. Present camping enrollment figures indicated that only about one child in ten from the potential is attending the school summer camping program. It is doubtful if this figure reflects the quality of the program or even the ability of parents to pay the cost.

Increased publicity should increase the demand. If the attendance can be increased, it may be advisable to look to the future and attempt to acquire additional land to replace the present site at the expiration of the lease.

The Sandia Mountain site of the proposed outdoor education center could be used to supplement the Jemez Mountain site, but would necessarily provide a different set of experiences, at least in part, because of the differing resources.

#### Final

As time for completion of this report drew near, developments were still progressing and it became evident that all implications of late developments could not be included. To do so would require continuous reconsideration and rewriting of certain aspects of the report.

An attempt has been made to weigh all possible circumstances, as well as to take advantage of counsel from a variety of experience backgrounds. It is felt that the program suggested in the report, while perhaps somewhat short of ideal, if placed in operation, can make an outstanding contribution to the Albuquerque Public Schools and to education in New Mexico.



# Side View

toward stage  
excavation to change  
to parking  
limited slope

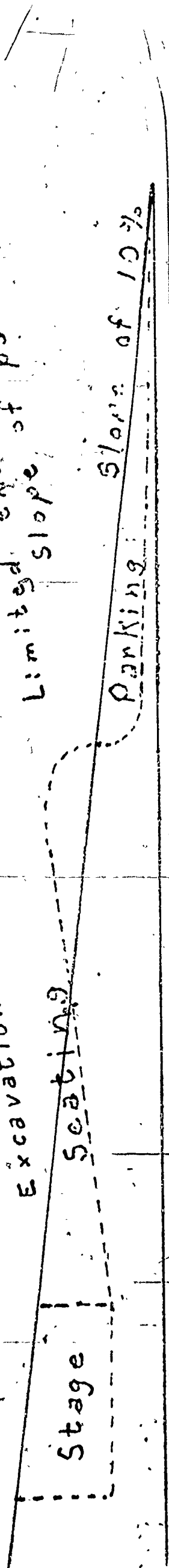
Excavation to provide slope

Seating

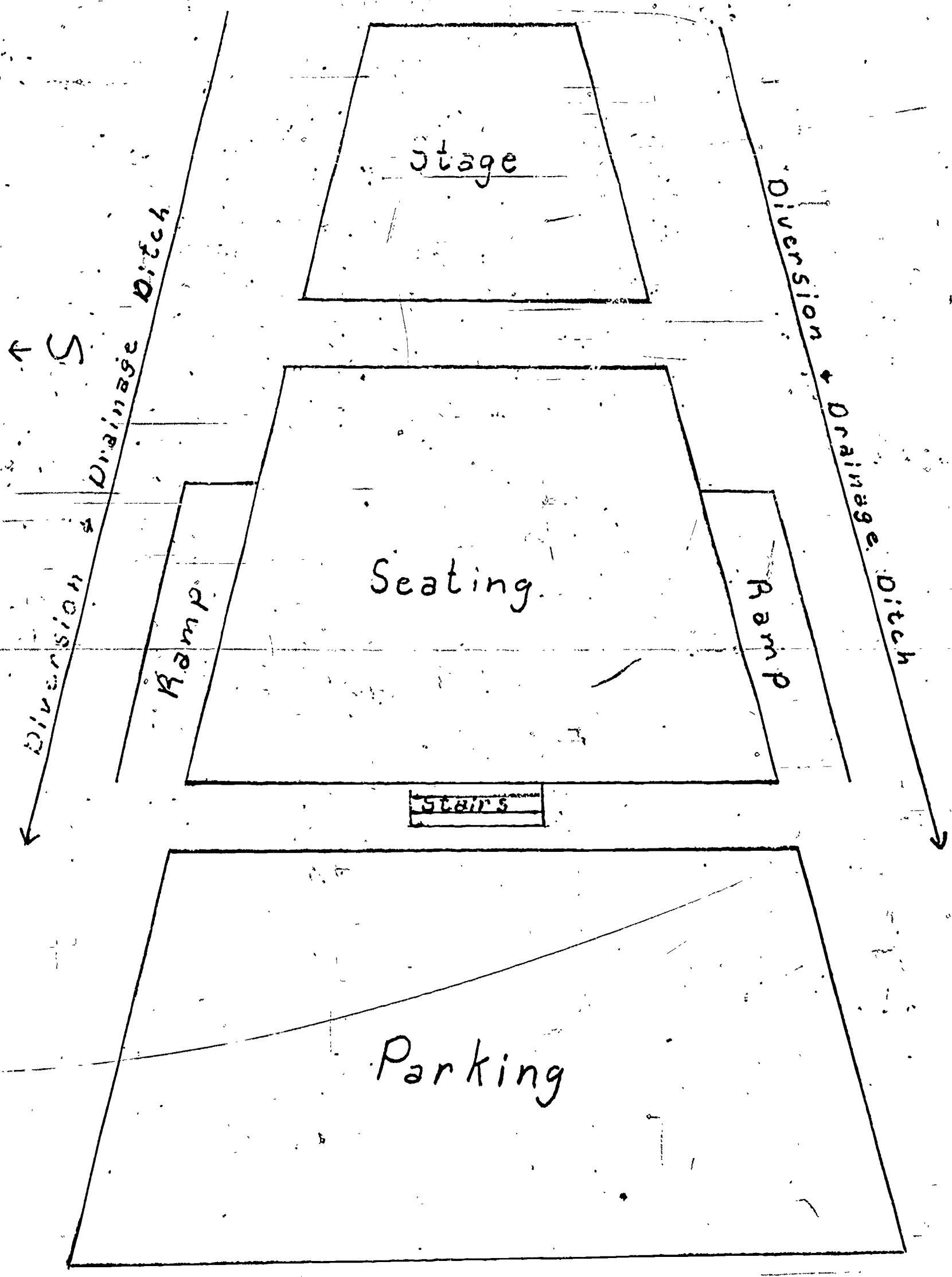
Parking Slope of 10%

Level

Alternative I

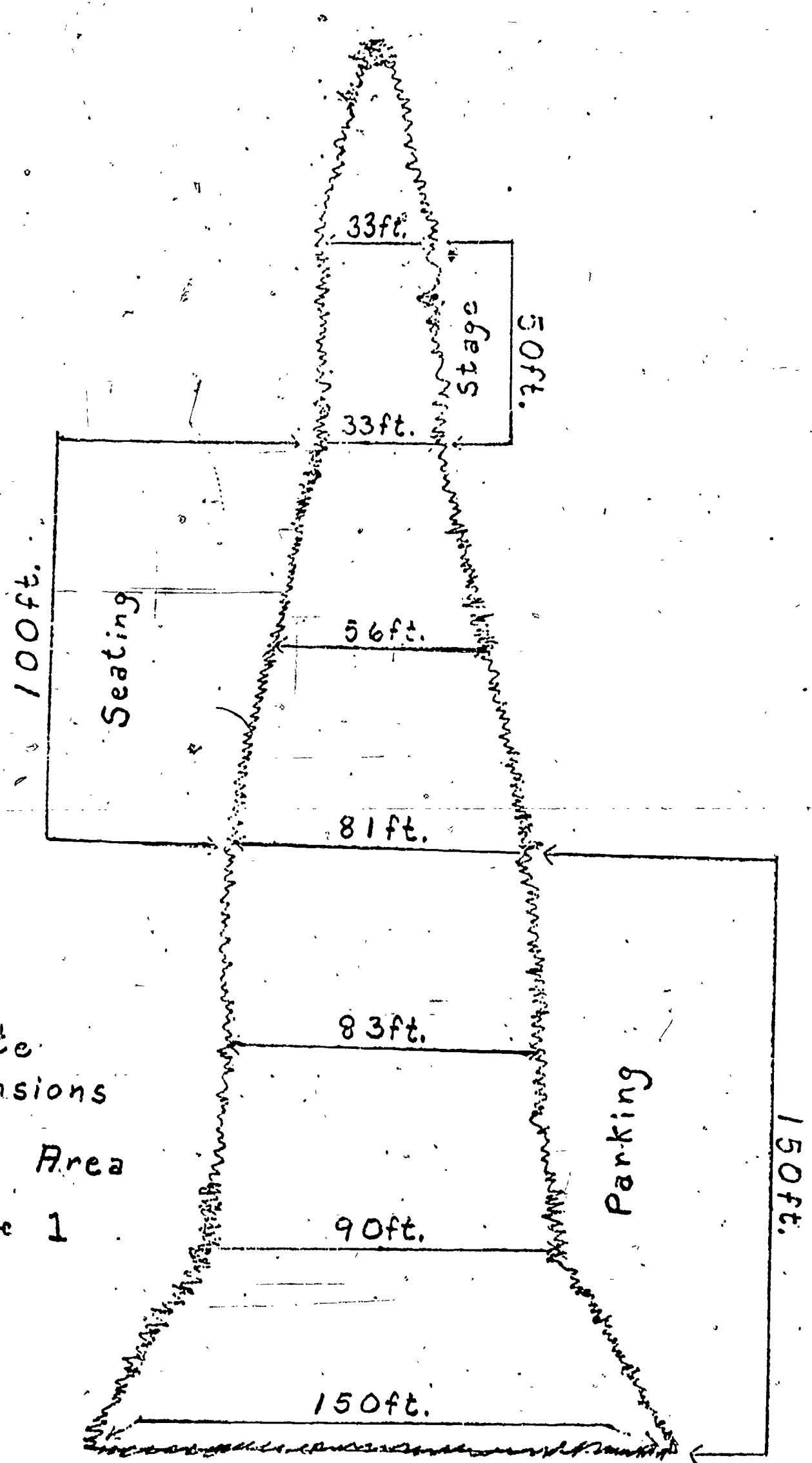


TOP VIEW



← S

W



Approximate  
Dimensions

Amphitheater Area

Alternative 1