

JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS

V. INDUSTRY SEMINARS AND SPEECHES - SHORT TERM

H. Presentations Sponsored by Other Universities

10. "Land Investment Seminar" sponsored by R.E. Educational Services, Inc., Columbus, OH, December 1, 1973 at the Christopher Inn

July 14, 1973

Mr. Donald Casey Hambleton
President, Real Property Analysts, Inc.
42 E. Gay Street
Columbus, Ohio 43215

Dear Casey:

In response to your note of June 28, I'll confirm for December 1, 1973.
A vita sheet is enclosed.

There has been no time for a detailed outline, but I would like your
response to the following tentative outline:

- I. Introduction
 - A. The Search for a market
 - B. The Search for a site
 - C. The Search for money
 - D. The Search for political support
- II. Which Comes First: Site or Market?
 - A. Quick measures of local demand for building sites
 - B. Quick checks of future need for building sites
 - C. Defining a tentative customer profile
 - D. A Site search checklist
- III. Determining Development Attributes of a Site
 - A. Physical characteristics
 - B. Environmental characteristics
 - C. Marketable characteristics
 - D. Land use--site attribute matrix
- IV. Financial Attributes of Land Development
 - A. Basic cash flow format
 - B. Basic provisions for financial flexibility
 - C. Sources of Financing
 - D. Yield and risk
- IV. The Politics of Land Development
 - A. Identification of protagonist and antagonist
 - B. Bias of regulatory agencies having jurisdiction

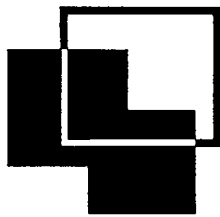
- C. The no-growth syndrome
- D. Alternative political strategies as profit centers

Don't publish the above outline until you and I discuss it a little further.

James A. Graaskamp

JAG:jar

Enclosure



rpa

Real Property Analysts, inc.

Donald Casey Hambleton & Associates, Inc. *Affiliate*

42 E. Gay Street, Columbus, Ohio 43215 • (614) 224-3115

July 17, 1973

Dr. James A. Graaskamp
202-A Breeze Terrace
Madison, Wisconsin 53705

Dear Dr. Graaskamp:

As a graduate student in real estate and finance at Ohio State University, I am pleased that Mr. Hambleton has asked me to help in coordination of the seminar efforts.

Real Estate Educational Services, Inc., is pleased to receive your confirmation of the December 1, 1973 seminar date. Your tentative outline seems appropriate at this time and can be further discussed when more fully developed.

I will arrange accommodations for the nights of November 30th and December 1st. Please reply as soon as possible the number of rooms and type of accommodations you desire.

Cordially,

REAL ESTATE EDUCATIONAL SERVICES, INC.

Norman G. Miller

Norman G. Miller

NCM:lms

cc: S. Powers
R. Weiler
D. Kelley
R. Royer
G. Seckel
R. Emens

LAND INVESTMENT SEMINAR
Sponsored by
Real Estate Educational Services, Inc.
The Christopher Inn, Columbus, Ohio
December 1, 1973

Instructor: Professor James A. Graaskamp
University of Wisconsin School of Business

I. Concepts and Definitions Basic to Land Investment

- A. Real estate is a dynamic space-time interface of land (public resource), people (cultural preference) and artifacts (improvements). These forces can be reduced to specific decision makers - a consumer, a producer, and a political agency. The planner is an arbitrator.
- B. Each of the three decision makers represents an enterprise. An enterprise is an organized undertaking and some enterprises are cash cycle enterprises constrained by a need for solvency, short term and long term.
1. The interface occurs where the consumer, producer, and governmental cash cycle each achieve solvency.
 2. The business of real estate is the process of converting space-time to money-time.
 3. The business of real estate is a service industry using manufactured products to create profit opportunities for services.
- C. The general theory of the management process for any enterprise can be converted to real estate semantics:

<u>Column 1</u>	<u>Column 2</u>
Values, objectives, policy	Strategic format
Search for opportunity alternatives	Market trend analysis
Selection of an opportunity	Merchandising target with monopoly character
Program to capture opportunity	Legal-political constraints
	Ethical-aesthetic constraints
	Physical-technical constraints
	Financial constraints
Construction of program	Project Development
Operation of program	Property Management
Monitoring and feedback	Real Estate research

- D. Until recently the producer - you the land investor and developer - had the dominant role in determining land use, improvement type, and the tempo of development. During the 70's we are in the process of transition to a very different scheme of things for land development and the basic factors are:
1. A public consensus that land is an exhaustible resource and therefore a public utility.

2. Improvements to land are the physical environment or terrarium which shape social behavior and therefore a matter for more extensive control than before.
3. Private rights to land exist only as a residual which remain after definition of public rights.
4. Money, not real estate, is the private resource in the land development process.
5. While land is the first to feel the reapplication of public control, the auto and energy industries will quickly face even more rigid control.
6. During the 70's the public will be developing the mechanics by which it controls land use (and others) while minimizing windfalls and wipeouts of private money assets related to land use.

E. As the public reacquires its right to control land use or internalizes development costs formerly shifted to the public, ownership of land only provides access to opportunity alternatives.

1. The remaining profit centers in alternatives are for various professional services.
2. In a service industry there is no ownership of a product - only control of a customer and land control means customer control.
3. A real estate project is a huge customer for a variety of professional services and therefore the future developer will be vertically integrated to provide as many of the required services as possible.
4. Real estate equity is rapidly becoming the degree to which one controls disbursements of a captive customer for services.

F. A hierarchy of land investment analysis steps:

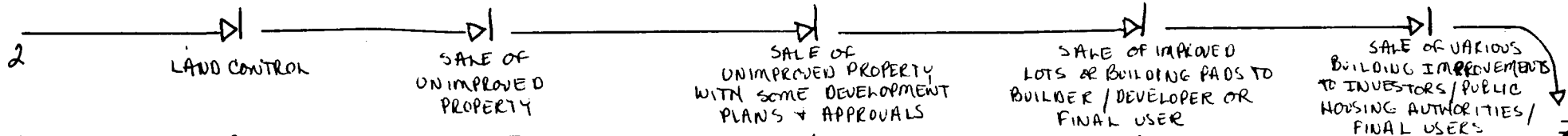
1. Project feasibility is a non-financial concept of fitting site, hardware, and services to a context of public priority and customer need.
2. Land investment is "buying" a set of financial assumptions derived from a set of feasibility assumptions.
3. Investment risk is the potential variance between assumptions taken and realization achieved, between pro forma estimates and a P & L statement.

II. The first step in the land development process is to make explicit the values, objectives, and policy with which the land investor will search, select, and program an opportunity. In short, - investor, know thyself.

A. For discussion purposes there are four phases of land development which might provide alternative investment strategies.

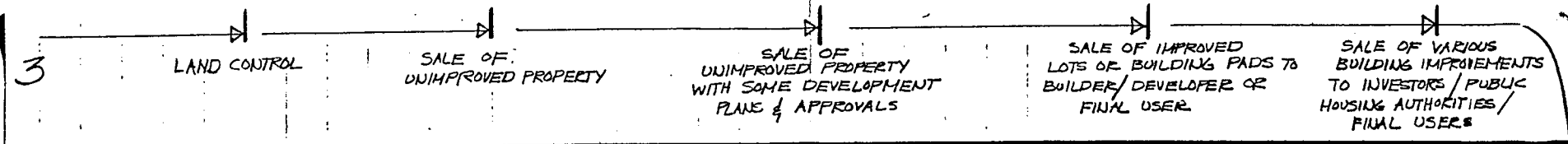
STRATEGIC FORMAT OF DEVELOPER ROLE AND FUNCTION

	LAND CONTROL	SALE OF UNIMPROVED PROPERTY	SALE OF UNIMPROVED PROPERTY WITH SOME DEVELOPMENT PLANS & APPROVALS	SALE OF IMPROVED LOTS OR BUILDING PADS TO BUILDER/DEVELOPER OR FINAL USER	SALE OF VARIOUS BUILDING IMPROVEMENT TO INVESTORS/PUBLIC HOUSING AUTHORITIES/FINAL USERS
DEVELOPMENT ROLE ASSUMED	LAND SPECULATION hold or "land bank" interesting property	"PACKAGING" conceptualize development plan or land use — acquire broader public approvals such as zoning — arrange financing or structure deal.	LAND DEVELOPER undertake and complete land development phase — install roads, utilities, common improvements, survey and subdivide for sale.	BUILDING DEVELOPER undertake and complete various building improvements — offer and consummate sales.	
MAJOR OBJECTIVE	capture "spread" between raw land purchase cost and wholesale price evoked by "mass" market trends.	increase spread or value by bringing an important trend to focus on a specific site or into focus as a potential project. Shift buyer's perception through description, analysis, various "enabling" factors	increase spread or value by virtue of completing improvements that further shift buyer's perception of utility and make sites available for construction.	create construction and sales profit through completion of building improvements that further shift buyer's perception of utility/value and make buildings available for occupancy/ownership	
KEY DETERMINANTS OF ECONOMIC SUCCESS	1) ability to accurately forecast a trend 2) ability to select and control attractive land	1) ability to complete a convincing study of economic feasibility. 2) ability to obtain key public action in timely fashion 3) ability to perform at "conceptual selling"	1) ability to efficiently complete various improvements 2) ability to efficiently (and tastefully) market improved building sites. 3) ability to carry financing cost	1) ability to efficiently complete various building improvements 2) ability to efficiently market 3) ability to carry debt.	
THOSE ELEMENTS OF THE COST/PRICE RELATIONSHIP OVER WHICH THE DEVELOPER HAS SOME CONTROL (major tasks to be completed or costs to be incurred — specific problems of estimating, analysis, evaluation.)	1) land price 2) carrying costs 3) legal expense 4) maximum loss	5) feasibility determination: • site or physical determinants • regulatory or political factors • market determinants • "reappraisal" or investment valuation (what's the deal worth if we <u>do it</u> vs. what's the deal worth if we get out now?) 6. obtain basic public approval = (zoning) 7) arrangement of financing (takeout) 8) marketing costs	9) obtain specific public approvals 10) negotiate and secure various contracts within budget 11) stage/manage/control development on time, within budget + quality standards 12) arrange interim financing — land development loan 13) stage/manage/control the marketing of improved lots or building sites 14) obtain sales approval, registration etc.	15) obtain construction permits + approvals 16) negotiate and secure various contracts within budget. 17) stage/manage/control construction effort on time, within budget + quality standards 18) arrange interim + long term financing (construction loan and mortgage) 19. stage/manage/control the marketing of various building improvements 20. obtain sales approval, registration, etc.	



ELEMENTS OF RISK INCURRED (or places where "slippage" may occur)	LAND CONTROL	SALE OF UNIMPROVED PROPERTY	SALE OF UNIMPROVED PROPERTY WITH SOME DEVELOPMENT PLANS + APPROVALS	SALE OF IMPROVED LOTS OR BUILDING PADS TO BUILDER / DEVELOPER OR FINAL USER	SALE OF VARIOUS BUILDING IMPROVEMENTS TO INVESTORS / PUBLIC HOUSING AUTHORITIES / FINAL USERS
<p>1) various factors or events never materialize in a way that makes the property an attractive candidate for development</p> <p>2) complete lack of analysis, planning, or other preparation for development means that property is never perceived as attractive or ready for development</p>	<p>1) costs of undertaking and completing above-listed analyses, estimates (esp. if feasibility study produces unattractive outcome and development is dropped)</p> <p>2) development cost shifts</p> <p>3) shifts in market situation (new market or competitive standard, general economic conditions)</p> <p>4) regulatory standards change</p> <p>5) cost or availability of financing shifts</p> <p>6) reliability of various estimates + analyses</p> <p>7) lose control of land or development situation</p> <p>8) public approvals denied, delayed, or conditioned</p>	<p>1) delay in obtaining public approvals, attachment of conditions to approval, high costs of soliciting approval, or denial.</p> <p>2) delay in completion of improvements</p> <p>3) cost over-run on improvements</p> <p>4) poor quality of finished improvements or related adverse side effects (eg. class action suits)</p> <p>5) failure to carefully estimate TOTAL cost of improvements (installation, operation/maintenance, assurances)</p> <p>6) lagging market performances</p> <ul style="list-style-type: none"> • slowed pace of sales • lower price of units offered • higher cost of sales 	<p>1) delay in obtaining permits</p> <p>2) delay in completion of improvements</p> <p>3) cost over-run on improvements</p> <p>4) poor quality of finished improvements or related adverse effects (eg. call-backs, class actions)</p> <p>5) lagging market performance</p> <ul style="list-style-type: none"> • slowed pace of sales • lower price of units offered • higher cost of sales 		PROPERTY MISMATCHER

GENERALIZATIONS	entrepreneurial-intensive roles	management-intensive roles
		<p>time necessary to capture profit is diminishing (holding period shortens) and this affects capital turnover? How about "entry fee" or amount of capital needed, however?</p> <p>ratio of value-added to costs is diminishing as the composite cost base builds up?</p> <p>more complexity, more internal variables to control; management burden requirements?</p> <p>increasing "image" or cred. bility exposure — what are the consequences of taking on a deal and failing — a lingering risk even if you escape with the dollars</p>
		<p>incremental cost vs profit centers</p>



DEVELOPER TRAITS LIKELY TO BE STRONG DETERMINANTS OF PERFORMANCE (Key Skills)	foresight, anticipation, imagination, ability to quickly size up a situation and act decisively, ability to handle land control devices and financing with ingenuity FORESIGHT, INGENUITY	conceptual ability/imagination, analytical skills/estimating ability, project evaluation/judgment, "conceptual" selling ability/persuasion structuring deals IMAGINATION, CONVINCING ANALYSIS, DESCRIPTION, SALE	ability to generate reliable estimates, negotiate and fix development costs, stage-manage - control development effort, stage-manage - control marketing effort FINALIZE OR CLOSE, EXECUTE/EXPEDITE, CONTROL, SELL	ability to generate reliable estimates and fix construction costs, stage-manage - control construction effort, stage-manage - control marketing effort SAME AS PREVIOUS BLOCK	PROPERTY MANAGER
COMPONENTS OF COST/PRICE (what's the deal worth if we do it vs. what's the liquidation value of the deal if we get out now?)	<ul style="list-style-type: none"> profit to landholder appraisal (resale forecast) legal fees land control 	<ul style="list-style-type: none"> profit to packager financing commitment structuring the deal acquisition of public approvals project evaluation/display land control 	<ul style="list-style-type: none"> land developer's fee promotion/marketing additional financing cost of improvements financing commitment structuring the deal acquisition of public approvals project evaluation/display land control 	<ul style="list-style-type: none"> developer's fee implementation & sale of building improvements preparation for building improvements implementation of land development preparation for land development land control 	
TRENDS? entrepreneurial	<p>PASSIVE ROLE</p> <p>management-intensive roles</p>	<p>ratio of value added to costs is diminishing as the composite cost base builds up?</p> <p>time necessary to capture profit is diminishing (holding period starts) and this affects capital turnover? How about "entry fee" or amount of capital needed, however?</p> <p>more and more internal variables to control; more complex deals, management burden or time requirements?</p> <p>Also, Graackamp's idea on increasing "invega" or credibility exposure on a deal and</p>	<p>ACTIVE ROLE</p> <p>management-intensive roles</p>	<p>incremental cost vs. profit centers</p> <p>management-intensive roles</p> <p>taking if you escape with the dollars</p>	<p>→</p> <p>→</p> <p>→</p>

1. Sale of unimproved property
 2. Sale of unimproved property with master plan and public approvals
 3. Sale of improved lots and building pads
 4. Sale of totally improved packages to investors/public authorities/
final users (at that point refer to box outline)
- B. For each development role accepted it is necessary to define the strategic format relative to:
1. Elements of customer/marketing channels where developer has some control
 2. Elements of cost/price relationship where developer has some control
 3. Elements required with greatest potential for variance
 4. Devices for maximizing control
 5. Devices for minimizing risk
 6. Development skills of critical importance
 7. Marginal components of cost/price/profit centers
- C. Define enterpriser talents and shortcomings and then fit the organization to the proper strategic phase. This step leads to definition of preliminary opportunity selection screens.
- D. Each of these elements will suggest several criteria or "screens" which will control the search for a land development or investment opportunity for the aggressive investor, for example:
1. Found within 50 miles of the home office and in the same state to limit management travel.
 2. Can be purchased on the land contract conditional on zoning with strict foreclosure the only remedy for the seller.
 3. Can be sold to builders in the area who are short of sites.
 4. Required public infrastructure for roads, sewer, and education already exist.
 5. Permits salvage of a site blighted with gravel pits or strip mining.
- E. Strategic format or "screens" for the passive investor
1. Identification of channeled population and land use demand corridors and rate of movement along corridors.
 2. Identification of linkage force fields which will lead to recycling of obsolete structures.
 3. Pleasure, pain, and bailout theory of management incentives.

4. Predetermination of the necessary liquidation price as a "call" feature (pleasure).
 5. Holding power (pain threshold).
 6. Arrangement of financing as a "put" in the futures market (bailout).
- III. The search for development opportunity within the screens suggested above depends on what options remain open to the investor.
- A. Which comes first - site, expertise, market, or money?
 1. The best position is to first define a market and then search for a site which meets the needs of the market.
 2. The second best position is to recognize or establish control of expertise and then let the experts do their own thing.
 3. The most difficult position is to own a site for which it is then necessary to find a marketable use.
 4. Money is always available for a good opportunity.
 - B. The search for a market is first concerned with quantitative measures and then with qualitative segmentation of the market. The secret to a good market search is the ability to discard most of the information quickly in a systematic way.
 1. Assume a tentative land use type consistent with preliminary screens and identify the largest unit of elimination. For example:
 - a. SMSA
 - b. Community
 - c. Community sector
 - d. Land use type - motel, professional clinic, residential, etc.
 - e. Competitive standard analogy
 2. Name the competitive alternatives and count the total supply.
 - a. Plat books, building permits, announced rentable area, etc.
 - b. Spillover, piracy, statistical tactics
 3. Measure the total absorption rate in terms of the space/time unit sold or renting for these comparables to determine the total absorption rate of space units per year, per season, or per month.
 - a. Name the revenue unit.
 - b. Absorption rate is concerned with aggregate demand, smooth curve averages of sale and inventory functions.
 - c. A search of public records and industrial espionage
 4. Establish an initial capture rate that is reasonable conservative by price range. The capture rate is that percentage of the total absorption rate which could be secured by a single project in a given price range or land use type. The capture rate should be refined as the land development program takes form and must be completed for each land use type. Eventually it becomes the sales quota for the sales manager.

5. The capture rate ultimately represents a definition of the scale of the project and the phasing of the project. For example, if the total market for townhouse pads was 300 per year in the southwest quadrant of town and the capture rate was 15%, then you might plan initially for 45 units a year. At a gross density of 9 per acre that would be 5 acres per year and therefore if your time horizon was 5 years for a sellout, you would want no more than 25 acres of ground.
 6. By letting the market define the site, you are in a better position to buy several small sites, each ideal for a subsection of the market than to purchase one large chunk for which you have to think up multiple uses. (Or redefine market to sell acres, not pads).
- C. Statistical definition of a market from census data may be simplified by the use of computerized census tract data, much of it block by block. One computer service advertises that by terminal or mail-in you can give the longitude and latitude of a site and they will give you all the census data within some diameter of that site, say quarter, half mile, five miles, whatever and they now offer projection updates for 1970 data. The address:
- Michael E. Jakes
SITE Demographic Systems
529 5th Ave., Suite 1901
New York, N.Y. 10017
- D. A more refined approach to a correct customer profile of competitive projects or land uses is the telephone survey using:
1. The reverse telephone directory
 2. The license plate survey
 3. Registers of restaurant, motel, building directories, etc.
 4. The classified ad technique
 5. Low level planning department aerial photographs
- E. Analysis of micro-market customer needs and motivations for certain site attributes.
1. Cross tabulations by computer or card sorts
 2. The search for anxieties or irritations as a possibility for establishing a competitive edge.
 3. General psychological motivation and utility curve studies
 4. The American Land Development Association, 1000 16th St., NW
Washington, D.C. 20036.

- F. If the search for an opportunity begins with a site already owned, then it is best to begin the search for the market by defining the positive and negative attributes of the site in terms of the marketability of alternative land uses.
1. The static attributes are the physical facts of the site in terms of the shape, size, frontage, soils, and special features, both natural and manmade which may be of use or negative characteristics which must be overcome or neutralized by design.
 2. The dynamic attributes of the site relate to peoples relationships and reactions to it in terms of visibility, aesthetics, status image, convenience, anxieties and linkages of activities to and around it.
 3. Political attributes of the site relate to existing zoning, the master plans and biases of those having jurisdiction on the site, its acceptability to key governmental agencies and the historical political concern with the site, if any.
 4. Relating various site attributes to alternative land uses should make possible identification of certain alternative markets which could then be explored.
 5. Price is not a site attribute, even if it is really cheap, until you know more than the seller does about these site attributes.

IV. There has been a revolution in the supply of information about sites which is leading to a revolution and a degree to which the public can police land use within an acceptable cost/benefit ratio. Due process of law requires factual information as to cause and effect and the technology of the space age will have more immediate impact on the use of the surface of this earth than it will for the time being on the surface of the moon.

- A. Louie Carter has a song about things that seem the same but are really not. He refers to a place with birds and bees and grass and trees but to some its just a vacant lot. There is no such thing as raw land or a vacant lot. Option and then study the physical characteristics.
1. A basic list of data types and cheap sources of information is provided in Exhibit A.
 2. Space research and military intelligence have developed some incredible new information gathering devices related to the ERTS program - Earth Resources Technology Satellite (Exhibit B).
 - a. Thermal and infrared photography
 - b. Planning Department high and low survey photography
 - c. Soil conservation service assistance in almost every court house (can mean constructive notice of soil limitation).
 3. Physical limits are also provided by concealed utility easements and old foundations or controls on access. Proximity is not accessibility.

4. Any development proposal must be structured to neutralize and dispose land forms that cannot and should not be developed as well as land which can be improved and sold.
- B. Environmental characteristics can be both positive and negative.
1. Scarce environmental elements can lead to litigation and adverse public image.
 2. Anticipate problems of impending legislation rather than simply meeting current standards relative to:
 - a. Ground water, depth and conservation of high water recharge areas
 - b. Conservation of environmental edges
 - c. Conservation of prime agricultural
 - d. Impact on off-site areas down wind or down stream
 3. Some attributes can lead to a monopoly advantage. For example, if government has not provided adequate flood down stream and built areas, it may encourage developer to build water retention ponds on his development despite protests of naturalists.
 4. Recycling of obsolete buildings and sites within existing urban areas generally produces a favorable environmental impact on site but this may offset other standards of manmade environment.
 - a. Noise as a function of traffic count
 - b. Density as a function of floor area ratio and DU count
 - c. Air pollution as a function of heating system and available energy source
 - d. Environment suitability as a function of security and amenities
- C. The marketable characteristics of a site relate primarily to its dynamic attributes and these begin off site. Site dynamics refers to existing attitudes of land regulators or potential customers as well as potential attitudes which can be formed and exploited by the developer.
1. Approach zone
 2. Historical community reputation and image of the area
 3. Visual factors - visibility, view, background association, potential for controlled site lines (for urban sites read by Kevin Lynch)
 4. Potentials for romancing the politician and the consumer
 5. Anxiety factors of access, security, crowding
- D. Legal political characteristics of the site are not always obvious from existing zoning or recorded easements Consider:
1. Premises of community masterplans still in incubation process
 2. Tax conservancy commitments
 3. Extra territorial zoning or subdivision powers
 4. Attitudes of sewer, water, and highway commissions

5. Contractual agreements among previous buyers and sellers which may or may not run with the land
 6. Attitudes of existing, though dormant, property owners associations
- E. Set up a land use-suitability matrix and then determine how much of the site is actually usable to produce saleable units in terms of floor area ratio, gross acres developable, number of dwelling units, etc. Purchase price must always be related by the buyer to usable net acres even though the seller wants to talk in terms of gross area.
1. Amelia Island Case - Exhibit C
 2. Lily Lake Case - (slides)
 3. Simple suitability overlays on topographic maps
- F. Investment as opposed to crap shooting means review of the alternative outcomes inherent in the facts as one can discover them and the determination that there is a reasonable likelihood of achieving explicit objectives despite known constraints and limited resources.
1. Facts can be assembled at little expense but with some patient inquiry about physical aspects of an investment site. No sense speculating about those.
 2. Physical facts and any proposed improvement plan can be converted into the assumptions of a financial plan which is the subject of the afternoon's presentation.
 3. Cultural preference element however remains highly indeterminant during this transition from a decade of unlimited growth to planned internalizing of the social costs of growth with a resulting redistribution of effective income and shift in the social ethic from consumption to conservation. Some implications of cultural trends are:
 - a. Energy crisis will redefine linkages to utilities regionally as well as locally.
 - b. Energy crisis will mean redefinition of the auto and all auto dependent forms of land use.
 - c. Energy crisis will alter expansive character of current leisure time marketing to reduce dependency on hardware.
 - d. Public controls plus large scale use of condominium and home-owners associations means success of hardware is tied directly to success of group organization software.
 - e. Control of new land development plus control of auto transit means recycling of intown sites.
 - f. As real estate becomes recognized as a service product, fee ownership declines in significance.

LU:CH 12:00 - 1:00

EXHIBIT "A"

INTRODUCTION

This data list is not to be viewed as a final or all inclusive list of needed environmental factors but rather a general framework through which we can work with the County's representatives in identifying the necessary factors needed to assist them in their decision making.

SUGGESTED ENVIRONMENTAL FACTORS

AND POSSIBLE DATA SOURCES

A. PHYSICAL CHARACTERISTICS

1. EARTH

- *a. Mineral resource [Geological studies/U.S.G.S.]
- *b. Construction material [Geological studies/U.S.G.S.]
- *c. Landform [Geological studies/U.S.G.S.]
- *d. Unique physical features [Geological studies/U.S.G.S.]
- *e. Soil [Form 1972 Soil Survey]
 - 1. Depth to bedrock
 - 2. Depth to seasonal high water table
 - 3. Unified class
 - 4. AASHO class
 - 5. Liquid limit
 - 6. Plastic limit
 - 7. Permeability
 - 8. Available water capacity
 - 9. Reaction-ph.
 - 10. Salinity
 - 11. Shrink-swell
 - 13. Suitability-topsoil
 - 14. Suitability-sand and gravel
 - 15. Suitability-road fill
 - 16. Hydrologic soil group
 - 17. Suitability-road location
 - 18. Water retention-embankment

- 19. Water retention-reservoir area
- 20. Agricultural drainage
- 21. Irrigation
- 22. Limitation-septic tank
- 23. Agricultural capability unit

- f. Topography
 - *1. % slope-average predominant type [U.S.G.S.]
 - *2. Centroid elevation [U.S.G.S.]
 - *3. Orientation [U.S.G.S.]

2. WATER

- *a. Surface
 - *1. Lakes or pond [U.S.G.S./Infra Red Photo]
 - *2. Rivers [U.S.G.S./Infra Red Photo]
 - *3. Stream [U.S.G.S./Infra Red Photo]
 - *4. Intermittent stream [U.S.G.S.]

- b. Underground
 - *1. Ground water levels at wells [Hydrologic data]
 - *2. Recharge areas [Geological studies]

3. PROCESSES

- *a. Floods
 - 1. 10 year [Infra Red or Color Photo]
 - 2. 25 year [Infra Red or Color Photo]
 - 3. 50 year [Infra Red or Color Photo]
 - 4. 100 year [Infra Red or Color Photo]

- *b. Stability
 - Slides and slumps [Geological studies/Soil Map/Photo]

- *c. Stress-strain
 - Earthquake [Geological studies/Photo's]

- *d. Air movements [Climatological Data]

B. BIOLOGICAL CONDITIONS

1. FLORA

- *a. Dominant type [Infra Red Photo]
 - 1. Trees
 - 2. Shrubs
 - 3. Grass
 - 4. Crops
 - 5. Swamp
- *b. Endangered species [State/County Studies]

1. Tree
2. Shrub
3. Grass
4. Other

2. Fauna

*Endangered species

[State/County Studies]

C. CULTURAL FACTORS

*1. LAND USE- Dominant type

[Infra Red Photo's]

- a. Wilderness
- b. Wetland
- c. Forest
- d. Grazing
- e. Agriculture
- f. Residential
- g. Commercial
- h. Industrial
- i. Mining and quarrying/wells

*2. RECREATION

[State/County/Infra Red Photo]

- a. Hunting
- b. Fishing
- c. Boating
- d. Swimming
- e. Camping and hiking
- f. Picnicking
- g. Golfing
- h. Tennis
- i. Other

*3. AESTHETICS AND HUMAN INTEREST

[State Studies/Infra Red Photo]

- a. Scenic views and vistas
- b. Wilderness qualities
- c. Landscape design
- e. Unique physical features
- f. Parks and reserves
- g. Monuments
- *h. Rare and unique species or ecos./stems [State/Infra Red Photo]
- *i. Historical or archaeological sites
and objects [State Studies/Infra Red Photo]

4. CULTURAL STATUS

*a. Cultural patterns (life Style) [State/ Photo's]

- *b. Population density [Photo's]
- 5. MAN-MADE FACILITIES
 - *a. Transportation network [U.S.G.S./Photo's]
 - *b. Utility network [County/Photo's]
 - *c. Waste disposal [County/Photo's]
- 6. POLITICAL BOUNDARIES
 - *a. Zoning [County]
 - *b. Special assessment districts [County]
 - *c. Sewage district [County]
 - *d. City boundaries [County]
 - *e. School district [County]
 - High, Junior, Elementary

Exhibit B

INTRODUCTION

Appraisers and real estate counselors are expected to consider a great array of information when reviewing land in its present and projected uses. In attempting to respond to these reviews or assistments these persons must begin to search out and exploit to the fullest all sources of accurate and relevant information.

A variety of government agencies are expanding the number of free and low cost sources of information. This information is available to the citizen, providing he knows how and from where to request the information.

The following list of sources is organized by agency and type of information or data index available from each agency.

I. The United States Geological Survey

Address: Map Information Office
U.S. Geological Survey
Washington, D.C. 20242

Phone: 202/343-2446

A. Topographic Map

A topographic map is a graphic representation of selected manmade and natural features. It is a record in convenient readable form of the physical characteristics of the terrain as determined by precise engineering surveys and measurements. The distinguishing characteristic of a topographic map is that through the use of a contour symbol it portrays the shape and elevation of the landscape. To understand the contour symbol, think of it as an imaginary line on the ground which takes any shape necessary to maintain a constant elevation above sea level.

The colors in which symbols are printed indicate the general classes of map features they represent. Symbols for water features are printed in blue; manmade objects (roads, railroads, buildings, transmission lines, and many others) are shown in black; and green is used to distinguish wooded areas from clearings. The contours which portray the shape and elevation of the land surface are printed in brown.

On recent maps, solid red is used to represent or emphasize certain cultural features, such as the more important roads, fence lines, and the boundary lines of townships, ranges, sections, and land growth in states subdivided by public land surveys.

A booklet describing topographic maps and symbols is available free upon request from the Map Information Office of the U.S. Geological Survey.

B. Status Index Maps

Maps showing the status of various phases of mapping and areas covered by aerial photography in the United States are available free on request. There are three types of status index maps all printed at the same scale. Scale, 1:5,000,000 (1 inch = about 80 miles); Size, 27 x 41 inches.

1. Topographic Mapping--Status and Progress of Operations (7-1/2 and 15 minute series).

Shows the status of topographic mapping and progress of operations in the United States by the Geological Survey and other federal agencies. General appraisal of the adequacy of these maps is indicated by color patterns. Published semi-annually.

2. Status of Aerial Photography.

Shows the areas that have been photographed and agencies holding the film. Aerial photographic coverage is shown only if reproductions are available for purchase.

3. Status of Aerial Mosaics.

Shows areas in the United States for which mosaics or photomaps have been prepared from aerial photographs, scale of negatives, dates of photography, and sources from which copies may be obtained.

C. State Index Maps

Shows published topographic maps in each state, Puerto Rico, and the Virgin Islands. Available free on request

from U.S. Geological Survey, Washington, D.C. 20242, or Federal Center, Denver, Colorado 80225. These indexes contain lists of special maps, addresses of local map reference libraries, local map dealers, and federal map distribution centers. An order blank and detailed instructions for ordering maps are also supplied with each index.

D. Geological Survey Photography

Probably one of the greatest sources of exploitable information is the aerial photograph. Advances in the development of new films and cameras has brought to the decision-maker a totally new dimension in area analysis. Available today is not only the customary black and white photography taken from 5,500 to 24,000 feet above the ground, but also color and color infrared photographs, many taken from an elevation as high as 65,000 feet above the ground.

1. Aerial Photographic Reproductions

The Map Information Office, U.S. Geological Survey, maintains records of aerial photographic coverage of the United States and outlying areas, based on reports from federal and state agencies and commercial companies. From these records, the Map Information Office furnishes data to prospective purchasers on the available photography and the agency or firm holding the aerial film.

Geological Survey vertical aerial photography is obtained primarily for topographic and geologic mapping. Reproductions from this photography are usually satisfactory for general use. Because reproductions are not stocked, but are custom processed for each order, they cannot be returned for credit or refund.

2. Print Sizes

Contact prints are the same size as aerial negatives, approximately 9 x 9 inches. Prints are available with stereoscopic overlap or without such overlap (pictorial coverage). Photographs with stereoscopic overlap, when viewed with a stereoscope, will permit the observer to obtain a mental impression of the three dimensional shape of the

landscape. Stereoscopic coverage requires about twice as many prints as pictorial photography. Orders for photographs or requests for information should specify which type is needed.

Enlargements to an exact ratio or to a specific scale are available. If ratio factors are not furnished by the purchaser, enlargements will be processed to ratios derived from lens focal lengths and flight heights specified in the photographic contract or reported by the contractor.

Prints are processed only from whole negatives; prints of selected parts of negatives are not available.

Index: A complete index listing type of photography, scale, date, direction flight was flown, and lens focal length is available from any of the regional headquarters. Where large areas are involved, photo indexes are essential for selecting prints and should be requested.

3. Photography Orders

Because many types of reproductions are available, requests should state the purpose for which the photographs are desired and define the specific area of interest by means of a detailed description, sketch, or latitude and longitude position. The size of photographs and type of coverage (pictorial or stereoscopic) should also be specified.

- a. Requests for reproductions or information from the following states should be sent to:
Atlantic Region Engineer, U.S. Geological Survey, 1109 N. Highland St., Arlington, Va. 22210.

Alabama, Connecticut, Delaware, Florida, Georgia, Indiana, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Vermont, West Virginia, Puerto Rico, Virgin Islands, U.S.

- b. Requests for reproductions or information from the following states should be sent to:
Central Region Engineer, U.S. Geological Survey, Box 133, Rolla, Mo. 65401.

Arkansas, Illinois, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Oklahoma, Nebraska, North Dakota, South Dakota, Wisconsin.

- c. Requests for reproductions or information from the following states should be sent to:
Rocky Mountain Region Engineer, U.S. Geological Survey, Building 25, Federal Center, Denver, Colorado 80225.

Alaska, Colorado, Montana, New Mexico, Texas, Wyoming.

- d. Requests for reproductions or information from the following states should be sent to:
Pacific Region Engineer, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, California 94025.

Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah, Washington.

Shipment by parcel post or railway express is prepaid. Extra charges for shipment by air express or airmail and special delivery are paid by the purchaser.

Check, money order, or draft payable to the U.S. Geological Survey must accompany the order. Refund will be made for any part of the order that is not filled.

II. ERTS

On Sunday, July 23, 1972, the Earth Resources Technology Satellite (ERTS-A) was launched into orbit. It is a butterfly shaped observatory flying in a 570 mile circular orbit which is nearly polar. From this vantage point, its imaging systems provide useful information concerning agriculture and forest resources, mineral and land resources, water resources, marine resources, land use and environmental quality, and ecology.

ERTS circles the earth every 103 minutes or 14 times per day. The pass is from north to south at an angle of 80° retrograde to the equator. Each pass covers a region 115 miles wide, however there is some overlap between the proceeding and succeeding passes. After 18 days or about 252 passes the satellite returns to the same position. In other words ERTS covers the entire globe every 18 days.

The ERTS-A spacecraft carries two types of imaging sensors: the Return Beam Vidicon (RBV) cameras and the Multi-Spectral Scanner (MSS).

The Return Beam Vidicon cameras are television cameras mounted side by side in the spacecraft and bore-sighted to simultaneously photograph the earth beneath the spacecraft in each of three spectral regions: .475 to .575 micrometers (blue-green, Band 1); .580 to .680 micrometers (red, Band 2); and .690 to .830 micrometers (near infrared, Band 3). These cameras do not contain film but rather their images are stored on photosensitive surfaces within each vidicon camera which in turn is scanned by an internal electron beam to produce a video picture. This process requires 11 seconds to read out and transmit all three pictures. The RBV cameras will repeat the cycle each 25 seconds producing overlapping pictures of the ground scene below with 10% overlap.

The Multi-Spectral Scanner Subsystem (MSS) covers the same area as the RBV system in four wavelength bands: .5 to .6 micrometers (green, Band 1); .6 to .7 micrometers (red, Band 2); .7 to .8 (near infrared, Band 3); and .8 to 1.1 (near infrared, Band 4).

The Multi-Spectral Scanner and Return Beam Vidicon cameras on ERTS-A take pictures in specific wavelength bands for very particular reasons.

1. Green, Band 1, .5 to .6 micrometers.

This band appears green to the naked eye. Water is quite transparent in this band which consequently tends to enhance features contained within water such as sediment. Unfortunately, light scattering in the atmosphere makes "seeing" in this band difficult at times.

2. Red, Band 2, .6 to .7 micrometers.

This band appears red to the eye. Unlike the green band, the red easily penetrates the atmosphere. This is good for land use mapping where regional population patterns need to be observed against the vegetation patterns. The red band shows good contrast between natural surface cover such as vegetation which absorbs most of this energy against manmade structures which strongly reflect this energy. Many manmade structures appear very bright against dark appearance of vegetation. Bare soil is often highly reflective in this band, so that deserts are best seen in this band.

3. Infrared, Bands 3 and 4, .7 to 1.1 micrometers.

This is invisible to the human eye. Water appears black in the infrared because water almost totally absorbs the radiant energy in these wavelengths. A significant characteristic about the infrared bands is that vegetation appears bright and water appears dark. As a comparison, vegetation is as bright in the infrared as snow is in the visible region.

The average green leaf reflects about 20% of green light and absorbs the other 80%. It absorbs approximately 95% of red light due to absorption by chlorophyll and is frequently called the chlorophyll absorption band. It reflects approximately 80% of the infrared light and transmits the other 20%. The brightness of vegetation in this band depends upon several things. First, the type of vegetation, i.e., big leaves will be brighter than small ones. Hardwood trees (deciduous) show up brighter than pine (evergreen). Because of leaf thickness, tobacco shows up brighter than wheat. Second, in the infrared, crop brightness depends upon plant health. Healthy crops, in the infrared will be much brighter than diseased vegetation.

A. How ERTS Imagery May Be Obtained

ERTS imagery may be obtained at cost from several sources: EROS (Earth Resources Observation Systems), NOAA (National Oceanographic and Atmospheric Administration), and The Department of Agriculture.

1. The EROS Data Center

The EROS Data Center in Sioux Falls, South Dakota, is operated for the Earth Resources Observation Systems Program of the Department of the Interior by the Topographic Division of the Geological Survey to provide access to Earth Resources Technology Satellite (ERTS) imagery, USGS aerial photography, and NASA aircraft data for the general public, domestic government agencies at all levels, foreign government agencies at all levels, and foreign government. Facilities are available for data storage, retrieval, reproduction, and dissemination, and for user assistance and training.

a. ERTS Imagery

ERTS imagery, originally processed at the Goddard Space Flight Center, NASA Data Processing Facility (NDPF), is a significant part of the Data Center imagery file. Each scene, covering 10,000 square nautical miles, is imaged seven times from ERTS-A. The raw data is either system corrected images (bulk processed) and provided to the Data Center in the form of 70 mm film, or scene corrected images (precision processed) and provided on 240 mm film at a scale of 1:1,000,000. The Data Center has a catalog of the ERTS imagery and a 16 mm browse film including only one RBV image and one MSS image per scene for rapid evaluation of coverage and cloud cover.

Copies of the system corrected individual images are available at contact scale, 1:3,369,000 approximately 2-1/2 x 2-1/2 inches or enlarged by a factor of 3.369 to 1:1,000,000 scale, approximately 9 x 9 inches including marginal data. Color composites, derived by processing the three RBV or three of the four MSS images together are available only at a scale of 1:1,000,000 of those frames prepared by NDPF.

Copies of scene corrected (precision) images may be obtained only at scales of 1:1,000,000 or larger. These images have been rectified at the NDPF to orthographic photographs and have been overprinted with the UTM grid.

Both individual and color composites are available at 1:1,000,000 scale, approximately 9 x 9 inches including marginal data. Only about 5% of the ERTS images available in the Data Center will have been precision processed.

b. NASA Aircraft Imagery and Photography

Imagery and photography obtained by NASA, as part of its aircraft program in support of the development of Earth Resources Surveys by aircraft and spacecraft, are processed at the Manned Spacecraft Center, Houston, Texas, and at the Ames Research Center, Moffett Field, California. The data was acquired for specific purposes and to varied specifications as to time, aerial coverage, and sensors, and is primarily of test sites within the continental United States. Supplementary to the NASA aircraft program data, are the earth-oriented photographs from the Apollo and Gemini manned spacecraft missions. A catalog of all this NASA imagery and photography, and browse films, is also at the Data Center.

Copies of these images and photographs may be purchased at contact scales, enlargements, or reductions, in color or black and white, on film or on paper, in rolls or cut. Provided with each image order are annotations on a computer printout that provide: date, local time, geographic coordinates, print scale, flying height, film, filter, sensor, originating agency, project, roll and frame, and order number in an understandable code.

c. USGS Aerial Photography

Aerial photographs taken by the U.S. Geological Survey primarily for purposes of topographic and geologic mapping are available from the Data Center. The vast majority are black and white vertical photographs at a scale of approximately 1:24,000, but they range in scale from 1:12,000 to 1:66,000. In addition, photography flown in support of various projects of the Bureau of Reclamation and Land Management is routinely provided to the U.S. Geological Survey for indexing and general distribution.

These photographs are at various scales reflecting the specifications of the particular project.

Photographs obtained prior to 1941 are held by The National Archives and Record Service. This material is available on request but not within the normal one week reproduction time.

d. How to Place an Order

To obtain data from the EROS Data Center you may:

Telephone from: 7:00 a.m. to 7:00 p.m., Central Time
605/339-2270 (Commercial)
605/336-2381 (Federal Telephone System Users)

Visit from: 7:45 a.m. to 4:30 p.m., Central Time
EROS Data Center
10th and Dakota Avenue
Sioux Falls, South Dakota

Write at any time:

EROS Data Center
Data Management Center
Sioux Falls, South Dakota 57198

If you should need assistance EROS personnel will help you identify the data best suited to your needs, but you must be prepared to tell them:

1. Limits of the geographic area of interest,
2. What you want to use the data for, and
3. How you want to use the data.

e. Browse Films

Copies of ERTS imagery, aircraft program imagery and photography, and USGS photography produced on 16 mm film are available for purchase. These films are not intended for basic research.

They are designed to provide prepurchase evaluation of such things as: aerial coverage, cloud cover, and sensor angle. Most of the browse films have two indexes to locate scenes at high speeds: Kodamatic Indexer Code Lines and Image Control; NASA aircraft program imagery and photography browse films have only Image Control. The film is supplied on an open reel and each film is designed so that it can be cut and mounted by the user for microfiche presentation. Browse films for ERTS data are updated every 18 days and are available on a subscription basis. Updating of the other browse films is irregular and films must be purchased individually.

Browse file locations have been established by the Department of the Interior at:

EROS Data Center
U.S. Geological Survey
10th and Dakota Avenue
Sioux Falls, South Dakota 57198
Phone: 605/339-2270

EROS Program Assist. Office
Room B-210, Building 1100
U.S. Geological Survey
Mississippi Test Facility
Bay St. Louis, Miss. 39520
Phone: 601/688-3541

Map Information Office
U.S. Geological Survey
Room B-310, GSA Building
18th and F Streets, NW
Washington, D.C. 20242
Phone: 202/343-2611

Regional Topographic Engineer
U.S. Geological Survey
Room 2404, Building 25
Denver Federal Center
Denver, Colorado 80225
Phone: 303/234-2351

CARETS Information Center
U.S. Geological Survey
Room 837, 1717 H Street, NW
Washington, D.C. 20242
Phone: 202/343-5985

Water Resources Division
U.S. Geological Survey
Room 5107, Federal Building
230 North 1st Avenue
Phoenix, Arizona 85025
Phone: 602/261-3188

Water Resources Division
U.S. Geological Survey
Room 343, Post Office and
Court House Building
Albany, New York 12201
Phone: 518/472-3107

Public Inquiries Office
U.S. Geological Survey
Room 7638, Federal Building
300 N. Los Angeles Street
Los Angeles, California 90012
Phone: 213/688-2850

U.S. Geological Survey
5th Floor, 80 Broad Street
Boston, Massachusetts 02110
Phone: 617/223-7202

Public Inquiries Office
U.S. Geological Survey
Room 678, U.S. Court House Bldg.
West 920 Riverside Avenue
Spokane, Washington 92201
Phone: 509/456-2524

Public Inquiries Office
U.S. Geological Survey
108 Skyline Building
508 2nd Avenue
Anchorage, Alaska 99501
Phone: 907/277-0577

Regional Topographic Engineer
U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025
Phone: 415/323-8111

Inter American Geodetic Survey
Headquarters Building
Fort Clayton, Canal Zone
Phone: 117-1201
Panama Routine 833-227

Topographic Division
U.S. Geological Survey
961 Pine Street
Rolla, Missouri 65401
Phone: 314/364-3680

State Topographic Engineer
Florida Dept. of Transportation
State Topographic Office
Lafayette Building
Koger Office Center
Tallahassee, Florida 32304
Phone: 904/599-6212

Director
Portland Service Center
U.S. Bur. of Land Management
710 N.E. Holladay
Portland, Oregon 97208
Phone: 503/234-4100

EROS Program Library
U.S. Geological Survey
Room 827, 1717 H Street, NW
Washington, D.C. 20244
Phone: 202/343-7500

Chief, Maps and Surveys Branch
Tennessee Valley Authority
200 Haney Building
311 Broad Street
Chattanooga, Tennessee 37401
Phone: 615/755-2133

Dr. Everett A. Wingert
University of Hawaii
Department of Geography
Physical Science Building
Room 313-C
Honolulu, Hawaii 96822
Phone: 944-8463

EROS Coordinator
Office of the Governor
Pago Pago, American Samoa
Phone: 32203

EROS Coordinator
Trust Territory of the Pacific
Islands
Office of the High Commissioner
Saipan, Mariana Islands 96950
Phone: 202/343-2141 or 2176

Dr. Frank J. Janza
Sacramento State University
Dept. of Electrical Engineering
6000 Jay Street
Sacramento, California 95819
Phone: AC-916/454-6545

Dr. Douglas Smith
University of Guam
EROS/P.I.E.R. Program
Section of the Pacific Room
P.O. Box EK
Agana, Guam 96910
Phone: 749-2921, Ext. 363

2. National Oceanographic and Atmospheric Administration

The Department of Commerce, National Oceanographic and Atmospheric Administration (NOAA) has an Earth Resources Data Center at Suitland, Maryland. This center will furnish data gathered by ERTS to users in the oceanographic, hydrologic, and atmospheric sciences as well as to the general public.

To aid in selecting the data desired, NOAA has established public browse files at 22 locations around the nation. They are located in:

Hillcrest Heights, Md.	Fort Worth, Tex.
Rockville, Md.	Salt Lake City, Ut.
Silver Spring, Md.	Anchorage, Alaska
Washington, D.C.	Honolulu, Hawaii
Miami, Fla.	Norman, Okla.
Norfolk, Va.	Boulder, Colo.
Garden City, N.Y.	LaJolla, Calif.
Woods Hole, Mass.	Tibaron, Calif.
Asheville, N.C.	Seattle, Wash.
Detroit, Mich.	Madison, Wisc.
Kansas City, Mo.	College Station, Tex.

Reproductions may be ordered from the National Climate Center, NOAA Environmental Data Service, Federal Building, Asheville, N.C. 28801.

3. Department of Agriculture

The Department of Agriculture also sells ERTS imagery dealing with agriculture. Photos may be obtained from the Western Aerial Photo Laboratory, Agricultural Stabilization and Conservation Service, USDA, 2505 Parley's Way, Salt Lake City, Utah 84109.

It is now possible to order ERTS Standard Catalogs from the Superintendent of Documents. Private individuals should direct requests to the NASA Publications Desk, at the main GPO bookstore, 710 North Capital Street, Washington, D.C. 20402, Telephone: 202/783-3238.

III. U.S. Department of Agriculture - Soil Conservation Service

The U.S. Department of Agriculture, in cooperation with state agricultural experiment stations and other federal and state agencies, has been making soil surveys and publishing them since 1899. These surveys are designed to furnish soil maps and interpretations needed in guiding decisions about soil selection, use, and management.

Since these soil surveys are a basic scientific inventory, they can provide valuable information needed for land use planning, highway location and design, park and open space planning, subdivision layout and designs, planning and design of sewage disposal facilities, zoning and other land use controls, as well as for agricultural and forest land use planning and management.

Soil surveys published since 1957 contain many different kinds of interpretations for each of the different soils mapped in the area. The kind of interpretations included in these recent surveys vary with the needs of the area, but the following interpretations are in most of them: estimated yields of the common agricultural crops under defined levels of management, land-capability interpretations, soil-woodland interpretations, range land interpretations, engineering uses of soils, interpretations for community planning, suitability of the soil for drainage and irrigation, and suitability of the soil for recreation and wildlife.

Most of the soil surveys published since 1957 contain soil maps printed on a photomosaic base. The usual scale is 1:20,000 or 1:15,840 depending upon the needs of the area.

A soil survey published by the U.S. Department of Agriculture that is still in print may be obtained in one of the following ways:

1. Land users in the area surveyed and professional workers who have use for the survey can obtain a free copy from the local office of the Soil Conservation Service, from their county agent, or from their congressman. Those outside the area surveyed who have

use for the survey can obtain a free copy from the Information Division, Soil Conservation Service, Washington, D.C. 20250.

2. For a time after publication, copies may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
3. Many libraries keep published soil surveys on file for reference. Also soil conservation district offices and county agricultural extension offices have copies of local soil surveys that may be used for reference.

A list of all published soil surveys may be obtained by writing the Information Division, Soil Conservation Service, Washington, D.C. 20250.

Requests for information pertaining specifically to soil conservation service photography should be addressed to: Director, Cartography Division, Soil Conservation Service, USDA Federal Center Building, Hyattsville, Maryland 20781.

IV. Additional Federal Agency Photography

Besides the Geological Survey and Soil Conservation Service, several other federal agencies regularly make extensive use of aerial photography. These include the Agricultural Stabilization and Conservation Service and the U.S. Forest Service.

Requests for information pertaining to Agricultural Stabilization and Conservation Service Photography should be addressed to a regional laboratory.

Orders for photographs of the following states should be addressed to: Western Aerial Photography Laboratory, Compliance and Appeals Division, ASCS-USDA, 2505 Parley's Way, Salt Lake City, Utah 84109 (Tel. 801/524-5856).

Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Kansas, Louisiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, Texas, Utah, Washington, Wyoming.

Orders for photographs of the following states should be addressed to: Eastern Aerial Photography Laboratory, Compliance and Appeals Division, ASCS-USDA, 45 South French Broad Avenue, Asheville, North Carolina 28801 (Tel. 704/254-0961, Ext. 610).

Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, Wisconsin.

Requests for information pertaining to U.S. Forest Service Photography should be addressed to: Division of Engineering, Forest Services, USDA, Washington, D.C. 20250.

V. Conclusion

The interpretation of aerial photographs and soil surveys represents a tool for efficient, economical, and highly detailed landscape evaluation. It is hoped that the use of these new and ever expanding data sources will assist in providing socially acceptable decisions concerning the land development and valuation process.

The sources of information outlined in the paper do not begin to represent all the available information, either by agency or within agency. These information sources do represent an initial contact point from which other information concerning a particular area or problem can be identified if needed.

EROS Data Center Photographic Products Price List -- November 1972

Contact prints, enlargements and transformed prints are unmounted and untrimmed. The reproduction will be printed on standard paper stock unless the order specified other materials.

<u>PRODUCT</u>	<u>PRICE</u>	
<u>Black and white paper prints</u>	<u>1 to 25</u>	<u>Over 25*</u>
Contact prints:		
70 mm	\$ 1.25	\$ 1.00
5 in x 5 in	1.50	1.00
9 in x 9 in	1.75	1.25
10 in x 12 in*	2.50	2.50
20 in x 24 in**	3.00	3.00
<u>Enlargements:***</u>		
20 in x 20 in	3.50	3.00
30 in x 30 in	4.50	3.50
40 in x 40 in	9.00	8.00
<u>Black and white film transparency</u>		
Contact prints:		
16 mm (100 ft. roll)	15.00	15.00
35 mm (100 ft. roll)	20.00	20.00
70 mm	2.50	2.50
5 in x 5 in	2.75	2.75
10 in x 10 in	3.00	3.00
<u>Color paper print</u>		
Contact prints:		
70 mm	4.00	2.50
10 in x 10 in	7.00	3.00
<u>Enlargements:***</u>		
20 in x 20 in	12.00	9.00
30 in x 30 in	17.00	13.00
40 in x 40 in	25.00	20.00
<u>Color film transparency</u>		
Contact prints:		
16 mm (100 ft. roll)	20.00	20.00
35 mm (100 ft. roll)	25.00	25.00
70 mm	4.00	2.50
10 in x 10 in	7.00	4.00
<u>Enlargements:***</u>		
20 in x 20 in	15.00	8.00
30 in x 30 in	19.00	15.00
40 in x 40 in	27.00	22.00

	<u>1 to 25</u>	<u>Over 25*</u>
Transformed prints from either convergent or transverse low- oblique photographs	\$ 3.50	\$ 3.00

* Quantity prices apply only to those prints ordered in excess of 25 of the same size, i.e., 26 contact prints cost: 25 at \$1.75 each--\$43.75 plus 1 at \$1.25 - \$45.00.

** Photo indexes.

*** For an intermediate-size enlargement, use the price listed for the next larger size.

The EROS Data Center is located at 10th and Dakota Avenue,
Sioux Falls, South Dakota 57198, Telephone: 605/339-2270.

REFERENCES

1. Avery, T. Eugene, Interpretation of Aerial Photographs, Burgess, Minneapolis, Minnesota, 1962.
2. Bartelli, Linda, ed., Soil Surveys and Land Use Planning, Soil Science Society of America, Madison, Wisconsin, 1966.
3. Geological Survey Circular 645, "A Procedure for Evaluating Environmental Impact", U.S. Geological Survey, Washington, D.C., 1971.
4. Gruen, Gruen and Associates, The Impacts of Growth, California Better Housing Foundation, Inc., Berkely, California, 1972.
5. Guidelines for the Preparation and Evaluation of Environmental Impact Reports, State of California Office of the Secretary for Resources, Sacramento, California, 1973.
6. Kiefer, Ralph W., "Terrain Analysis for Metropolitan Fringe Area Planning", Journal of the Urban Planning and Development Division, ASCE, Vol. 93, No. UP4, Paper 5649, 1967.
7. Kiefer, R. W. and M. L. Robbins, "Computer-Based Land Use Suitability Maps", Paper presented to 1972 Annual and National Environmental Engineering Meeting, Houston, Texas, October, 1972.
8. List of Published Soil Surveys, U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C., January, 1972.
9. Lueder, Donald R., Aerial Photographic Interpretation, McGraw-Hill, New York, 1959.
10. Lynch, Kevin, Site Planning, The M.I.T. Press, Cambridge, Massachusetts, 1962.
11. McHarg, Ian L., Design With Nature, Natural History Press, Garden City, New York, 1969.
12. Miller, Allen H. and Bernard J. Niemann, An Interstate Corridor Selective Process, Environmental Awareness Center--Department of Landscape Architecture, University of Wisconsin, Madison, Wisconsin, 1972.

13. Scherz, James and Alan Stevens, An Introduction Photography and Remote Sensing, Department of Civil and Environmental Engineering, University of Wisconsin, Madison, Wisconsin, 1969.
14. "Topographic Maps", U.S. Geological Survey, Washington, D.C.

LAND INVESTMENT SEMINAR
Sponsored by
Real Estate Educational Services, Inc.
The Christopher Inn, Columbus, Ohio
December 1, 1973
Instructor: Professor James A. Graaskamp
University of Wisconsin School of Business

Afternoon Session

- V. A thorough analysis of a market segment and a site opportunity as discussed this morning leads to a step for testing alternative development schemes for the site in question. These development schemes for the land planner are closely related to the prearchitecture program which is used to define the design program for the architect.
- A. The function of the preplanning program is to provide a specific definition of the space-time product in terms of quantity, features, and alternative scale and time which will permit conversion from space-time to money-time forecasts.
- B. The investment potential of land development eventually means buying a set of financial assumptions which converts a set of physical assumptions to outlays and receipts of cash. These assumptions must include:
1. Definition of desired profit centers (Appendix H)
 2. Definition of a timeline over which events will still take place
 3. Assumptions on the capital budget and sequence of source and application of funds
 - a. Direct construction or purchase cost
 - b. Indirect and capitalized carrying cost
 4. Assumptions on operating budget and sequence of source and application
 - a. Pattern of sales revenues
 - b. Pattern of sales and operating expenses
 5. Financing plan holding power
 - a. Credit amounts and terms
 - b. Equity amounts and terms
 - c. Holding power
 6. Profits classified as to type and tax
 - a. Cash from operations
 - b. Cash from capital gains
 - c. Cash surplus from financing
 - d. Cash from tax savings on other income
 - e. Cash from reduction or shift of fixed outlays
 - f. Indirect non-cash benefits
 7. Selected measures of profitability
 - a. Definition of investment
 - b. Definition of profit

8. Selected measures of risk
 - a. Payback periods
 - b. Capacity for variance
 - c. Variance control

- C. Some basic elements of a land investment model
(Appendix D - a computer terminal teaching model by EDUCARE)

- D. Since the planning process becomes a series of sensitivity studies which are attempting to balance product decisions with cash management decisions a more elaborate model is desirable which is capable of handling ever greater levels of detail as the project plan becomes more detailed. An example of such a model is provided in Appendix E. This model includes sub-models for:
 1. Capital budgeting in terms of modular cost units for both general and assignable costs
 2. A raw land inventory model
 3. A saleable product and finished goods inventory model
 4. A sales model adjustable by product absorption rate and time
 5. An accounts receivable model
 6. A financial package model
 7. A tax model
 8. A yield and risk model

- E. The impact of a new concentration of people and activities represented by a land development affects not only the physical environment but also the financial balance of the community affected. Fiscal zoning has always been attempted by simple minded concepts such as large lot zoning or exclusionary zoning and the courts have rejected these as "no growth" avoidance of government responsibilities to provide services or as discriminatory against lower income or minority group citizens. However, two very significant cases have demonstrated alternative controls which tie the developers cash flow directly to community budgets and capacities to provide services.
 1. The Ramapo New York plan in which the developer must obtain a permit to initiate an approved subdivision plan construction phase. The permit is only granted if the site scores a given number of points representing the availability of 5 municipal services. Community has established a master plan for land use and an 18 year capital budget for completing the required municipal services. The first six years are very carefully detailed and the developer receives points for services in line with the plan even if the community fails to complete construction on time. Nevertheless the tempo of development is tied to capital budget of the community and this approach has been approved by the New York Supreme Court.
 2. The alternative is impact zoning and the classic demonstration first appeared in House & Home in August 1972 as an article called "Impact Zoning" and then in October 1973 as "Here is a New System for Figuring Project Feasibility".
 3. Impact zoning considers four areas of impact:
 - a. Natural determinates and constraints of the site
 - b. Developers rate of marketing and capacity of the community to grow
 - c. Essential infrastructure of public services and community ability to supply them

- d. Municipal cash flow is the cost of servicing a new project vs. the tax revenue it will generate.
 - 4. The system is developed by Rahnkamp, Sachs, Wells & Associates together with an attorney, Lenard Wolffe of Philadelphia.
 - F. We are interested in the cash flow model which balances the municipal position against the developers cash position as demonstrated in Appendix F. Impact zoning can either be an explicit community program or the process of negotiating under existing subdivisions and planned unit development ordinances.
- VI. The concept of yield and risk is important as both a decision tool in accepting or rejecting a given plan but also in understanding the fine points of negotiation for both credit and equity financing.
- A. The risk management process is both a philosophy of inquiry or of analysis and a systematic management process which is attempting to answer "WHAT IF...?" questions, to anticipate surprise, and to provide for response or adjustment in advance of the contingency. (WIBA case)
 - 1. Variance sometimes is a binary--yes-no question. You will or you won't receive zoning approval.
 - 2. Variance sometimes is the possible range around an average or a median--a distribution of alternative costs or revenue possibilities.
 - 3. Dynamic risks can produce profit or loss and are best controlled by the finesse of management execution of a plan.
 - 4. Static risks are those which can only cause a loss due to surprise upset of a plan.
 - B. Risk evaluation of comparison grows out of the function of risk management for an enterprise. Risk management has two objectives:
 - 1. Conservation of existing enterprise assets despite surprise events
 - 2. Realization of budgeted expectations despite surprise events
 - C. The process of risk management involves systematic and continuous:
 - 1. Identification of significant exposures to loss
 - 2. Estimation of potential loss frequency and severity
 - 3. Identification of alternative methods to avoid loss
 - 4. Selection of a risk management method
 - 5. Monitoring execution of risk management plan
 - D. Significant has to do with potential loss frequency, loss severity, and degree of uncertainty.
 - 1. Very frequent and minor become expense accounts
 - 2. Less frequent but predictable and major become reserves or budget allowances.
 - 3. Infrequent, uncertain but very severe become issues of risk management.
 - 4. A 50/50 probability is the most uncertain outcome.
 - 5. See Appendix G

E. The alternative methods of avoiding loss which everyone subconsciously uses include:

1. Eliminate risk exposure
2. Reduce frequency or severity of loss (mortgage loan closing process)
3. Combine risks to increase predictability (reserves for expenses)
4. Shift risk by contract (subcontracts or escape clauses)
5. Shift risk by combination by contract (insurance)
6. Limit maximum loss (corporate shell or limited partnership)
7. Hedging (sale and leaseback, options, contingent sales)

F. There are several useful financial ratios for measuring the residual risk which cannot be controlled through good business practice.

1. Rate of equity payback - the cumulative return of cash to equity investors over time divided by original cash investment plus value of personal endorsements on development liabilities.
(Relates to conservation of existing asset position)
2. Profit center ratio to gross receipts above the net income line-- dollar amounts of commissions, fees, and salaries with priority claim or payment before debt service and taxes.
3. Default point or cash breakeven point as a percent of potential gross cash receipts.
4. Potential foreseeable cash flow deficit as a percent of holding power reserve.

VII. There is no one measure of yield which is correct for all investors. The basic rule is buy low, sell high, and move fast. Any rate of return is simply a refinement for comparison purposes of the basic relationship of cost to sale price over time. Some useful measures of progressive sophistication are based on capital budgeting theory as used in corporate finance.

A. There are essentially two types of investors:

1. A conventional investment - one or more outlays followed by a series of receipts.
2. A nonconventional investment - one or more outlays interspersed with a series of receipts.

B. There are essentially three common decision types to be made by a review of investment yield:

1. Accept or reject decisions
2. Engineering comparison of alternative decisions
3. Marginal investment optimizing decisions

C. Some useful financial yield calculations related to three decision types:

1. Discounted value has the present value of the cash return to equity including tax savings of other income assuming liquidation at some future point in time - accept or reject.

2. The internal rate of return - that discount rate which makes the present net value different between the present value of the outlays and the present value of the receipt equal to 0. Engineering alternative comparisons for conventional investments.
3. Modified internal rate of return is the internal rate of return computed after converting outlays to the present value at the opportunity cost of money and compounding the receipts at the reinvestment rate of money - comparison of alternatives with different time lines for nonconventional investment or for marginal investment.
4. After tax cash on total cash or marginal cash investment on a year by year basis. Nonconventional investments or marginal investments (the tax trap problem).

COFFEE BREAK

- VIII. Land development income tax questions are greatly overemphasized by advisory services and so we are deliberately downplaying this aspect. Income tax advantages are tactical but not strategic investment objectives in land investment. It is the only reason for the investment the investor is doing himself, a piece of the environment, and society a big disfavor.
- A. The big problem in land development is avoiding dealer status with ordinary losses and ordinary gains for as long as possible or for some of the profit centers. There are two initial strategic factors to be recognized:
1. Is the major profit center the long term appreciation of land over base cost? If so, the vehicle should be structured to protect this capital gain.
 2. Is land development in one way or another a liquidation process for lands accumulated for other purposes - Section 1237?
 3. This section permits possible capital gains treatment of income from subdividing where:
 - a. Tax payer has investor status (not a dealer)
 - b. Tract has been owned for five years or acquired by inheritance
 - c. Seller has not or will not make any substantial improvement (including other controlled entities) to building of temporary structures, surveying, filling, draining, clearing, and construction of gravel roads are not considered substantial improvement. Where the tract has been held 10 years or more the installation of water, sewer, drainage, or hard surface roads will not be considered substantial if these are necessary for liquidation at full market value or land was acquired by foreclosure.
 - d. There are further limitations which limit capital gain treatment to first five parcels sold in the same taxable year which makes 1237 a very limited benefit but a possibility for the small project or developer.

4. An excellent source for the layman of tax information is:
Federal Taxes Affecting Real Estate by Arthur Anderson & Company,
 and distributed by National Institute of Farm & Land Brokers,
 155 E. Superior St., Chicago, Ill. 60611.

- B. The alternative methods of financing a land development should be regarded as primary risk management schools for the investor-developer and only to a minor degree as a leverage device as in mortgage lending on income property, etc. All forms of land financing will be expensive so the decision should really be made on loss control and cash flow management rather than leverage.

- C. You are aware of the spectrum of alternatives which are available in land financing but it's useful to look at them as risk controlled devices both from a development viewpoint and a money partner viewpoint.
 1. Secured credit for outright purchase
 - a. High risk to buyer
 - b. Escape hedge arrangement

 2. Land contract
 - a. Strict foreclosure only remedy
 - b. Segmented price formula
 - c. Down payment tailored for tax deductibility and long term spendable cash for seller
 - d. Release clauses with continuity clause, access, and shape restraints
 - e. Escrow arrangement with corporate trustee
 - f. Substitute collateral clause
 - g. Cooperation on public petitions, dedications, etc.

 3. Option to purchase
 - a. Same features as land contract
 - b. Prepurchase access in testing
 - c. Fixed damages for testing if option is not exercised
 - d. Conditions for extension should governmental action fail to meet option date with a finite extension term
 - e. Credit of option money against purchase price on incentive scale

 4. Rolling block option
 - a. Land development agreement to protect owner with incentive for developer
 - b. Developer and land seller must agree on a general plan, timetable, pricing, and annual rate of takedown
 - c. Purchase price formula with escalator
 - d. Preservation of developer freedom to walk away

 5. Land banking via an institution such as REIT
 - a. Care to avoid dealership taint
 - b. Rolling block option or sale and buyback plan
 - c. Default privilege of developer
 - d. Cumulative interest added to balance
 - e. Real estate tax added to balance
 - f. Limited release without release payment

- D. The institutional land banker has some major negotiation problems partly related to the fact that the institution wants to think like a lender and collect profits like a risk taker. Some of the problems are:
1. Control
 - a. Unanimity vs. majority approach
 - b. Day-to-day operations
 - c. Institutional inertia
 - d. Policy decisions
 - e. Institutional image
 - f. Development and construction
 - g. Management
 2. Buy-sell
 - a. Disputes or defaults
 - b. Appraisal vs. offer approach
 - c. Institutional "economic clout"
 3. Transfer of developer's interest
 - a. Personal relationship
 - b. Death
 - c. Bankruptcy
 - d. Sale of interests - SEC problems
 4. When does institution contribute?
 - a. Land purchase
 - b. Land development
 - c. Completion of improvements
 5. How much does institution contribute?
 - a. Ceiling on initial obligation
 - b. Priority to recapture contribution
- E. Syndication of land investment can be good or bad depending on purpose of syndication. Correctly used it can lower the default point by making interest or dividends to the limited partners contingent on earnings while giving passive investors limited liability and some tax pass through.
1. Repurchase price should be no more than developers loan ratio for construction and represents a "call" price.
 2. Sale of land to limited partnership with a buyback with limited remedies under a land contract amounts to a "put".
 3. Specification and clear thinking as to which profit center go to limited partners presumes a master plan and measurement of different profit centers before the fact.
 4. Limited partner format can provide an employee bonus system or broaden political structure constituency.
 5. Controlled liquidity by assigning 10% of earnings to a buyback fund for offerings by limited partner subject to a penalty and maximum annual repurchase ala Tejon Properties offering.

IX. New developments in federal law of land development

A. SEC guidelines for registration of syndications

B. Midwest Securities Administrators Association - MSAA have published a landmark policy statement which is being adopted by most midwestern states relative to real estate syndications and the sponsor-investor relationship. These guidelines are largely intended to curb conflicts of interest. They strictly prohibit:

1. Loans from the syndicate program to the sponsor;
2. Commingling of funds by the sponsor;
3. Exclusive agreements for resale of investment properties;
4. Commissions to the sponsor on reinvestment of investor funds;
5. Commissions to the sponsor (or an affiliate) on insurance policies protecting program properties; and
6. Rebates, kickbacks, and reciprocal arrangements benefiting the sponsor.
7. Other practices that are greatly limited include:
sales and leases of property between program and sponsor, loans from the sponsor, exchanges, property management, and other sponsor services

C. Office of Interstate Land Sales Registration has issued extensive revisions of their regulations.

1. Land sales volume in excess of \$500,000 or 50 lot sales in interstate commerce.
2. Condominium is equivalent to a lot and unless completed before sold or 2 years from date of purchase
3. Regulations recognize two categories of proposed amenities - obligatory and non-obligatory.
4. Signed receipt for property report
5. Specific standard for advertising copy
6. Deadline for filing Dec. 1, 1973
7. Trend to 5 acre lots or bigger to secure exemption

X. Suggested readings for land investment and development

1. Real Estate Securities & Syndication, Stephen E. Roulac, Editor, National Institute of Real Estate Securities, National Association of Real Estate Boards, Chicago, Ill. 1973
2. Federal Taxes Affecting Real Estate, Prepared by Arthur Andersen & Co., National Institute of Farm & Land Brokers of the National Assoc. of Real Estate Boards
3. Joint Ventures in Real Estate, by Aronshohn & Kaster, Real Estate Law and Practice Handbook #26, Practising Law Institute, New York
4. Joint Ventures in Real Estate -2D, by Appel, Leon, Roegge, Real Estate Law & Practice, Handbook #44, Practising Law Institute, N. Y.
5. City Planning & Aerial Information, by Melville C. Branch, Harvard University Press, Cambridge Mass.
6. Manual of Color Aerial Photography, American Society of Photogrammetry Ed. Smith & Anson, Fall Church, Va.

X. Partnership organization for land development can take many forms depending on the priorities each partner might have for certain legal, tax, or management attributes.

A. Entities included in definition

1. General Partnerships

- a. Definitions
- b. Non-tax characteristics

1. As an entity
2. Mutual agency
3. Delectus personarum
4. Partner's interest in partnership; transferability
5. Formalities

2. Limited partnerships

3. Joint ventures
4. Syndicates, pools and groups
5. Tenancy in common

B. Partnerships not taxes as partnerships

1. Election to be excluded from Subchapter K
2. Joint stock companies
3. Association

C. Non-tax reasons for partnership format

1. Corporate form may be illegal, improper, or not customary
2. Great flexibility in creating capital account
3. Great flexibility in profit sharing arrangements
4. Permits easy modification of profit ratios even retroactively
5. Flexible tiers of voting rights
6. Easy to organize, even by oral agreement (not recommended)
7. Unlimited liability or interference in management may not be significant for certain types of investment
8. Since 1960 corporations can be numbers of partnerships

D. Tax advantages and problems of partnerships

1. Generally

- a. Conduit approach
- b. Procedural

2. Disproportionate allocations of tax consequences
3. Basis -- limitation on losses -- subpartnerships
4. Partnership interest granted in consideration for services
5. Transactions between partner and partnerships; guaranteed payments
6. Sales of partnership interest
7. Shifting income to low-bracket relatives
8. Possible deferment of income
9. Employee fringe benefits
10. Collapsible partnerships: Dealers in real property
11. Organizational costs
12. State taxes
13. Carry-over of accelerated depreciation methods

E. Trusts**1. Non-tax factors**

- a. Flexibility
- b. Limited liability
- d. Assignability
- d. Executed trusts
- e. Perpetuities

2. Tax features

- a. Flow-through of income
- b. Foreign tax credit
- c. Netoperating loss, depreciation and depletion
- d. Sales of beneficial interest
- e. Liquidation of a trust
- f. Grantor trusts
- g. Trusts taxable as associations
- h. Real estate investment trusts

F. Sub Chapter S Corporations

- 1. Limited liability plus some tax consequences with partnerships
- 2. Volatile status due to election requirements
- 3. Limitations on capital gains pass-through
- 4. Limitations on 10 U.S. residents
- 5. Limitations on pension or profit sharing plan
- 6. Limitations on transfer to a corporation, trust, partnership, or non-resident alien, all of which are disqualified shareholders
- 7. One class of stock
- 8. Limitation on passive income or rents to no more than 20% of gross receipts