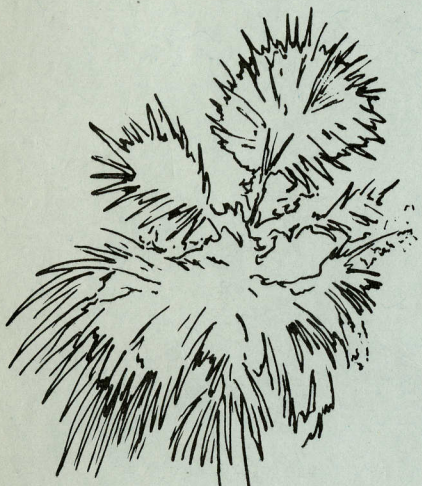


east everglades resources planning project



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Base and Alternate Scenarios

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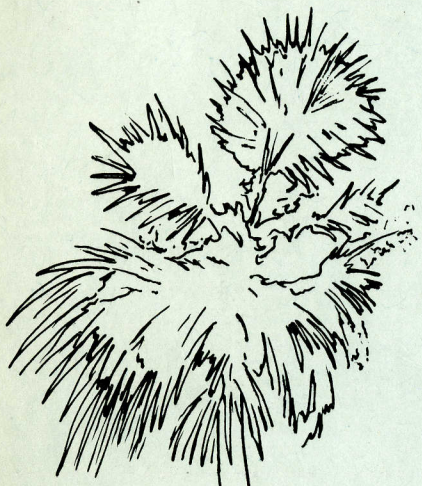
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This working paper describes existing conditions and projects in

BASE AND ALTERNATE SCENARIOS FOR THE EAST EVERGLADES

Metropolitan Dade County Planning Department

1979

Task I in Work Element IV A of the East Everglades Resources Planning

Project Plan of Study.

SUMMARY

This document is a combination of two reports prepared by the Metropolitan Dade County Planning Department for the East Everglades Resources Planning Project. The first report is the Base Scenario for the East Everglades Study Area and the second, which begins on page 34, is titled Alternative Scenarios for the East Everglades Study Area.

description.

Existing conditions in the East Everglades are not favorable to extensive

The East Everglades Resources Planning Project is being conducted with financial and technical assistance from the U.S. Environmental Protection Agency under the provisions of Section 208 of the Federal Water Pollution Control Act (P.L. 92-500).

Everglades National Park. It has a rural atmosphere with agriculture

and residential activities as major land uses. Ninety-one (91) percent

of the SAV wetlands area is still in an undisturbed, essentially

natural state. In the central and southern sections of the East Ever-

glades row and grove crops are the primary land use. The primary

Base Scenario for the East Everglades Study Area

Purpose

This working paper describes existing conditions and projects, in general terms, the base scenario to the year 2000. The base scenario, by definition, assumes that existing trends are continued and no new development controls or policies are enacted. This work represents Task 1 in Work Element IV A of the East Everglades Resources Planning Project Plan-of-Study.

Summary

The working paper is divided into two major sections consisting of existing development conditions in the study area and the base scenario description.

Existing conditions in the East Everglades are not favorable to extensive future growth. The study area is a rugged, wetland environment located approximately twenty (20) miles from downtown Miami adjacent to the Everglades National Park. It has a rural atmosphere with agriculture and residential activities as major land uses. Ninety-one (91) percent of the 240 square mile area is still in an undisturbed, essentially natural state. In the central and southern sections of the East Everglades row and grove crops are the primary land use. The primary

residential areas are located in the north-central section near Howard and Richmond Drives. The residential pattern is interspaced with vacant and agricultural parcels among limestone-fill roads. The estimated permanent population in the study area is 418 persons. Current zoning permits one (1) unit per five (5) acre parcel. Most of the area is classified as Environmentally Sensitive in the Dade County Comprehensive Development Master Plan. Development pressures are building in the East Everglades for three basic reasons: 1) some people want to get away from city life, 2) population growth and a strong County economy are driving up land prices in areas such as Kendall, making the price of land in the study area more attractive, 3) agricultural lands in other parts of South Dade County are being converted into residential use forcing growers into the marginal agricultural lands of the East Everglades.

The base scenario assumes that existing policies and trends are continued through the year 2000. Permanent resident population is estimated to be 525 persons by 1985 and 1,050 by the year 2000. Generally, agriculture and low-density residential uses are expected to be the major land uses in the East Everglades through the year 2000. The commercial tourist uses along Tamiami Trail are not expected to expand significantly. In Township 54-38, some rockmining operations are possible in the future. The primary residential areas around Howard and Richmond Drives are anticipated to "fill in" among existing development and expand somewhat to the west toward Grossman Hammock Road. The Chekika area is anticipated to remain a marginal growth locus, due primarily to environmental constraints.

The agricultural sections in the central and southern portions of the East Everglades are expected to also "fill in" vacant sections in presently developed areas and expand slightly, limited by high water levels, westward.

The central and northern sections of the study area near the eastern boundary (L-31) are potential wellfield areas for the expected water supply expansion of the Dade County water system in the future.

BASE SCENARIO

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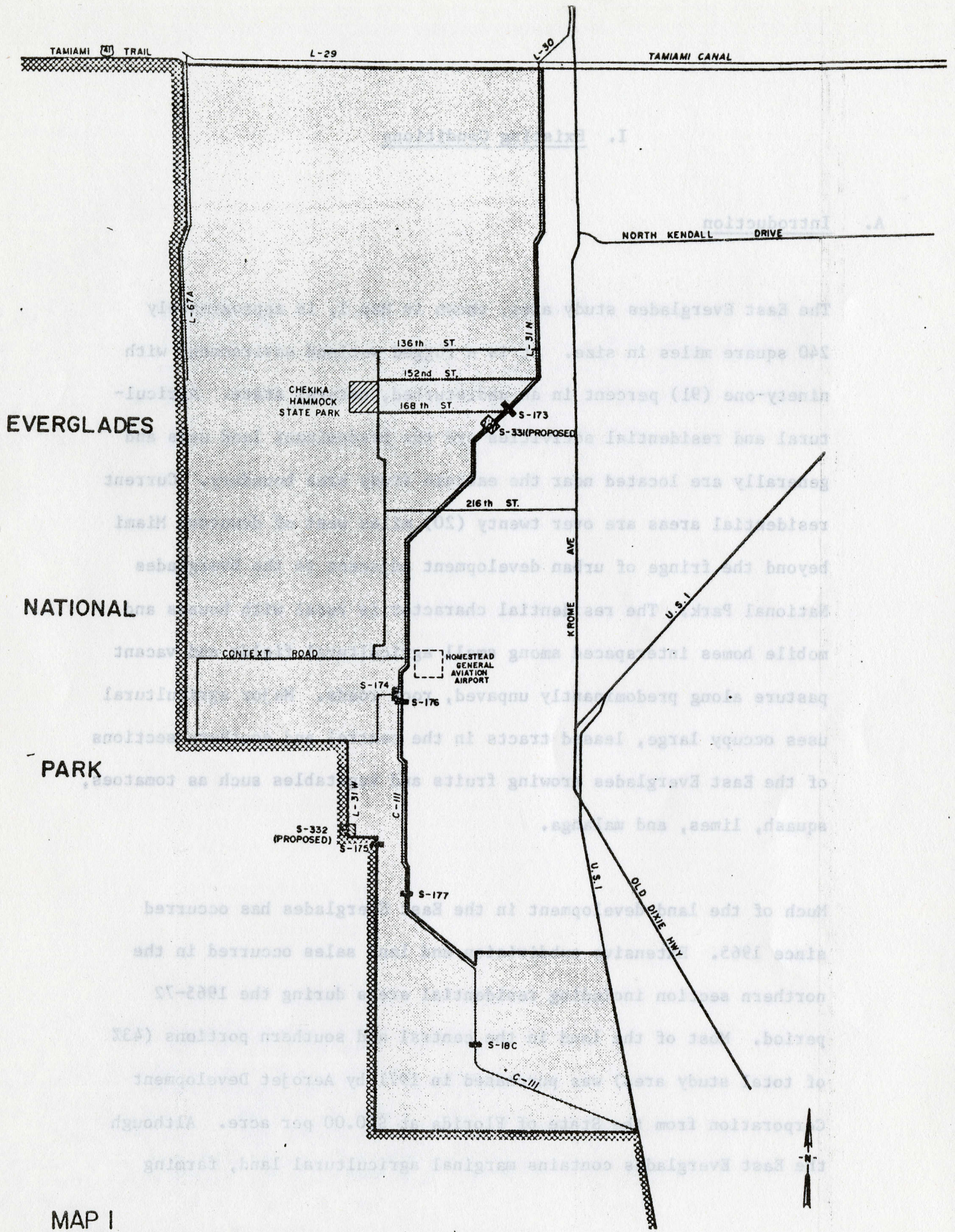
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I. Existing Conditions

A. Introduction

The East Everglades study area, shown in Map 1, is approximately 240 square miles in size. It is a rugged wetland environment with ninety-one (91) percent in an undisturbed, natural state. Agricultural and residential activities are the predominant land uses and generally are located near the eastern study area boundary. Current residential areas are over twenty (20) miles west of downtown Miami beyond the fringe of urban development adjacent to the Everglades National Park. The residential character is rural with houses and mobile homes interspaced among small agricultural fields and vacant pasture along predominantly unpaved, rock roads. Major agricultural uses occupy large, leased tracts in the central and southern sections of the East Everglades growing fruits and vegetables such as tomatoes, squash, limes, and malanga.

Much of the land development in the East Everglades has occurred since 1965. Extensive subdivision and land sales occurred in the northern section including residential areas during the 1965-72 period. Most of the land in the central and southern portions (43% of total study area) was purchased in 1971 by Aerojet Development Corporation from the State of Florida at \$50.00 per acre. Although the East Everglades contains marginal agricultural land, farming



MAP I
EAST EVERGLADES STUDY AREA

Source: Dade County Planning Dept.

PROJECT BOUNDARY
ENP BOUNDARY

has expanded since the late 1960s in direct proportion to the dwindling supply of arable agricultural lands in other parts of Dade County lost to urban development.

This section of the working paper briefly addresses existing development conditions in the East Everglades. Additional detailed information on each topic discussed here is available in East Everglades Resources Planning Project (EERPP) working papers on residential, recreation, and agricultural land use in the study area.

B. Land Use

Agricultural and mixed (agriculture and residential) land uses in the East Everglades are shown in Map 2. Only 9 percent of the 153,000 acres in the study area exhibit some type of land use. The most prevalent land uses, acreage of each, and percentage of total study area size are presented below in Table 1.

Table 1 - Land Uses in East Everglades (November 1978)

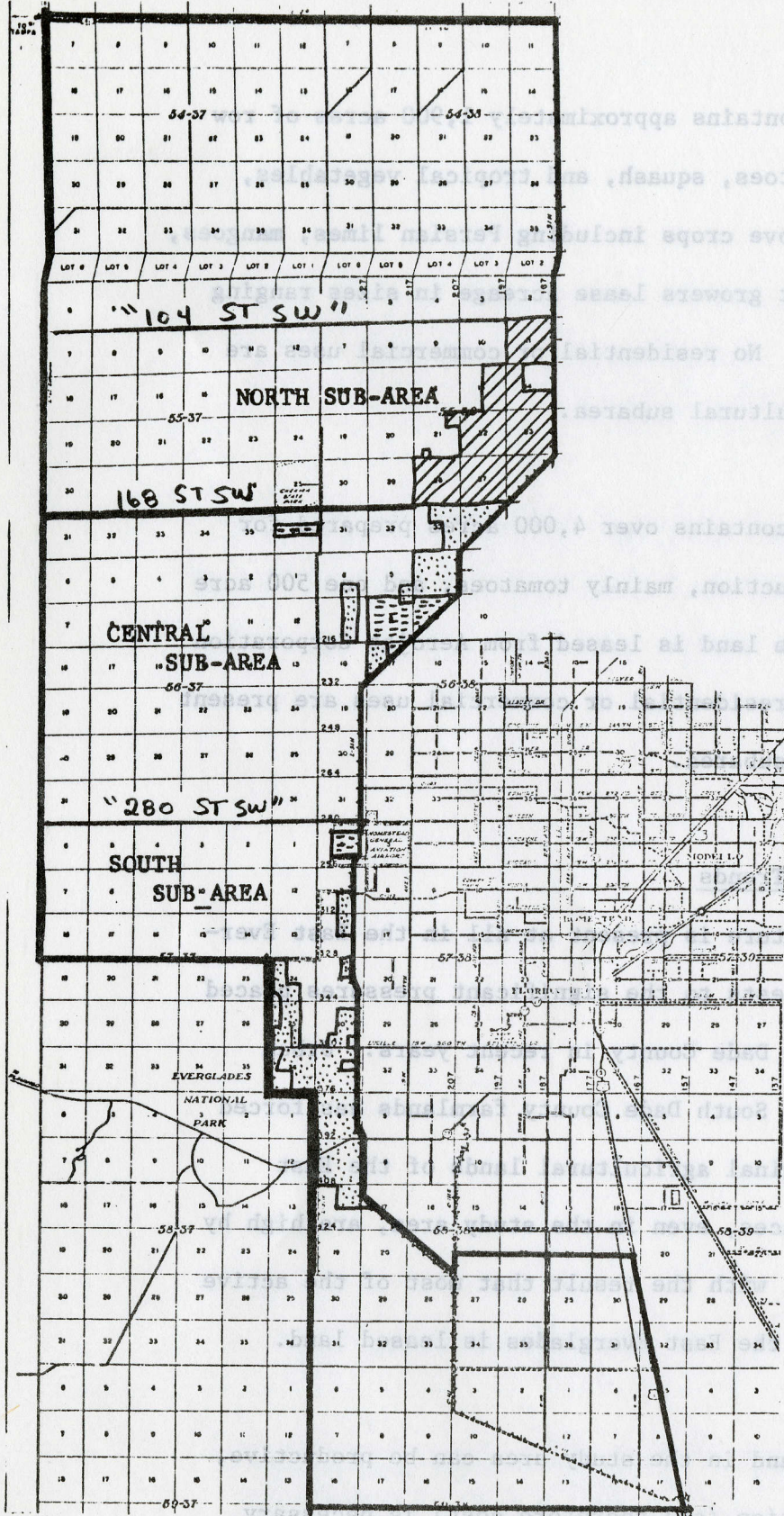
<u>Land Use</u>	<u>Acreage</u>	<u>% of Total Study Area</u>
1. Active Agriculture	9,440	6.10
2. Disturbed Land	3,529	2.30
3. Broadcasting, Transmission Lines	383	0.25
4. Residential	227	0.15
5. Parks	180	0.12
6. Cultural and Entertainment	91	0.06




1. Agriculture

Map 2 indicates the agricultural lands in the East Everglades and divides them into three subareas. Generally, farmland is located within a two (2) mile band along the eastern study area boundary and includes 8,146 acres of row crops, 1,163 acres of grove crops, and 131 acres of nurseries.

The northern agricultural subarea contains row crops and small groves interspaced with residences, vacant land, and roads. It encompasses the major residential areas of the East Everglades and most land is held in 1.25 - 10 acre parcels. Row crops produced include tomatoes, squash, sugar cane, and tropical vegetables (such as malanga). Grove crops found in this subarea are limes, bananas, and avocados. All of the plant nursery activities found in the East Everglades and a packing house for tropical fruits and vegetables are in the northern agricultural subarea. Most growers own small parcels, and lease additional acreage. In addition to the full time farmers, there are several who farm 10 - 40 acres on a part time basis while holding full time jobs in urban areas. Some owners use their parcels for weekend recreation which includes large scale gardening. Substantial numbers of residents maintain gardens, fruit trees, and/or domestic animals on their residential parcels.

MAP 2. AGRICULTURAL USES IN THE EAST EVERGLADES STUDY AREA



-  Mixed Agricultural & Residential Use
-  Row Crops
-  Groves

Source: Dade County Planning Dept.
October, 1978

MAP 2. AGRICULTURAL USES IN THE EAST EVERGLADES STUDY AREA

The Central subarea contains approximately 1,900 acres of row crops, primarily tomatoes, squash, and tropical vegetables, and 1,000 acres of grove crops including Persian limes, mangoes, and lemon-limes. Most growers lease acreage in sizes ranging from 100 - 300 acres. No residential or commercial uses are present in this agricultural subarea.

The Southern subarea contains over 4,000 acres prepared for winter vegetable production, mainly tomatoes, and one 500 acre lemon-lime grove. The land is leased from Aerojet Corporation in large tracts. No residential or commercial uses are present in this agricultural subarea.

Current Agricultural Trends

The fact that agriculture is present at all in the East Everglades study area attests to the significant pressures placed upon this activity in Dade County in recent years. Urban expansion into former South Dade County farmlands has forced farmers into the marginal agricultural lands of the East Everglades. Land prices, even in the study area, are high by historical standards, with the result that most of the active agricultural land in the East Everglades is leased land.

While agricultural land in the study area can be productive, considerable preparation (and therefore cost) is necessary.

Typically, potential farmland must be rockplowed, bedded up, and treated with fertilizers, pesticides, and fungicides before planting. This extensive preparation increases costs for the farmer that he passes on to the consumer market. In addition, farming in the East Everglades carries with it greater risks of flooding and frost damage than those found in higher lands east of the study area.

Agricultural activity in the study area has come under extensive regulatory control in recent years. The Water Management District allows no positive drainage in the study area and rockplowing is receiving close scrutiny from the Corps of Engineers and the Dade County Department of Environmental Resources Management. Under increasingly stringent regulatory conditions, development of new agricultural lands in the East Everglades is presently difficult.

Despite increasing land prices and regulatory controls, agriculture in Dade County and the East Everglades is flourishing. The unique winter marketing advantage enjoyed by Dade County growers enables cost increases to be passed along with little effect on quantities sold. Current market problems center on imported Mexican vegetables which directly compete with Dade County produce in the winter season. Winter vegetables from

Mexico are sold in this country at a cost generally lower than United States produce. South Florida farmers feel that Mexican producers are selling their vegetables at less than cost and therefore engaging in illegal "dumping" of Mexican vegetables in United States markets. A coalition of Florida farm groups is presently seeking to prove this dumping accusation before Federal officials and spur the imposition of tariff charges by the United States Government on Mexican produce.

2. Residential

Residential land use in the East Everglades, can be divided into four subareas. These are delineated in Map 3. Table 2 indicates the basic housing mix, consisting of permanent and "weekend" residences for each subarea.

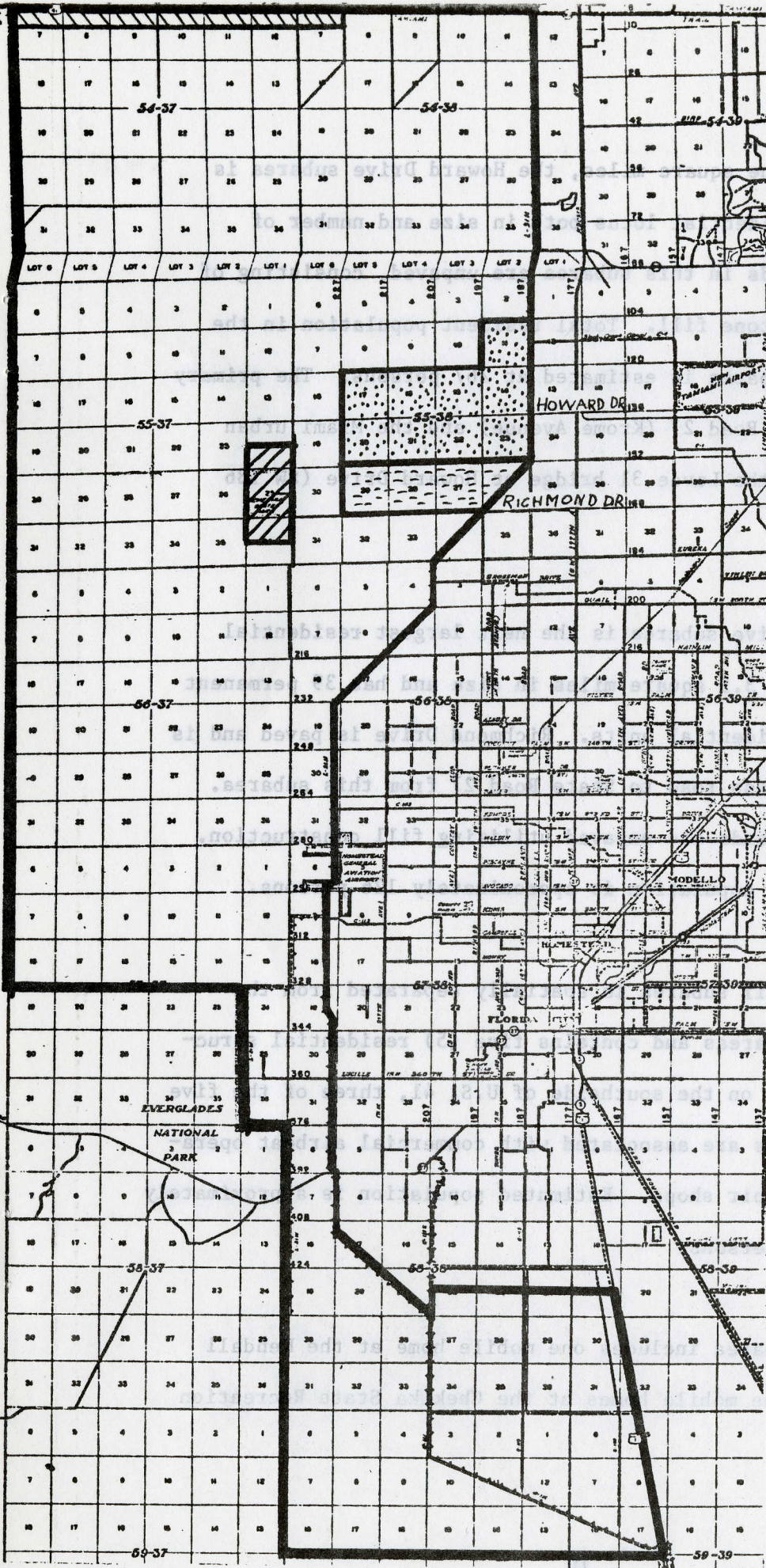
Table 2

Basic Housing Mix by Subarea - East Everglades





<u>Subarea</u>	<u>Single Family Detached</u>	<u>Mobile Home</u>	<u>Total</u>
Richmond Drive	25	14	39
Tamiami Trail	3	2	5
Howard Drive	53	42	95
Chekika	<u>1</u>	<u>4</u>	<u>5</u>
Total	82	62	144

Map 3

East Everglades Study Area Residential Subareas



Legend:

-  Tamiami Trail Subarea
-  Howard Drive Subarea
-  Richmond Drive Subarea
-  Chekika Subarea

Source: Dade County
Planning Dept.
October 1978



Map 3
Encompassing nine square miles, the Howard Drive subarea is the largest residential locus both in size and number of units. All roads in this subarea are unpaved, consisting of (crushed) limestone fill. Total resident population in the Howard Drive subarea is estimated at 267 persons. The primary outlet to State Road 27 (Krome Avenue) and the Miami urban area is across the Levee 31 bridge at Howard Drive (SW 136 Street).

The Richmond Drive subarea is the next largest residential subarea. It is 3.5 square miles in size and has 39 permanent and weekend residential units. Richmond Drive is paved and is the primary access road to State Road 27 from this subarea. All secondary roads are unpaved utilizing fill construction. Total permanent population is approximately 126 persons.

The Tamiami Trail subarea is spatially separated from the other three subareas and contains five (5) residential structures. Located on the southside of U.S. 41, three of the five residential uses are associated with commercial airboat operations and souvenir shops. Estimated population is approximately fourteen (14) persons.

The Chekika subarea includes one mobile home at the Kendall Glideport, three mobile homes at the Chekika State Recreation

Area and a single-family residence at the Rocky Lake Farms development. Grossman Hammock Road is paved and provides primary transportation. The estimated population in this small subarea is 11 persons.

Residential land use in the East Everglades is decidedly rural.

The estimated permanent population is 418 persons and ninety-four (94) percent of the residents live in the Howard and

Richmond Drive subareas. In these subareas, houses (and mobile homes) typically occupy 1.25 to 5 acre parcels and residential lots are often interspaced with vacant or agricultural land. Many residential lots are surrounded by metal

fencing and "guard" animals are prevalent. Residents typically use on-site wells for drinking water and septic tank systems

for waste disposal. Average household size ranges from 3.5 to 4.0 persons. An estimated one-fifth of the houses and mobile

homes serve as "weekend retreats" for Miami residents.

Houses range from large, CBS structures with manicured lawns to dilapidated trailers surrounded by domestic animals. Many residential parcels include ancillary uses such as grove

crops, gardening, and animal raising.

Most residents were born in either the U. S. or Cuba and work outside the East Everglades study area. Very little subsistence

farming occurs. Many residents moved to the area to get away from city life.

Most residences have electric and telephone service, however, other services are generally poor. Garbage collection is performed in a very limited basis, and illegal disposal sites are sometimes used. No water or sewage companies operate in the study area. Roads are not county-maintained and postal service is not provided directly to residential lots. Police, fire, and emergency medical units generally exhibit long response times on calls from the area. For example, fire response time to the Richmond Drive residential area, from the Modello substation, is approximately 20 minutes.

Current Residential Activity

Twenty-four houses are presently under construction in the East Everglades. Many appear to be long-range "weekend" projects by individual owners, however, some sites are being worked daily by construction crews. One house under construction is proposed as a "model" home for use in showing a standard floor plan to potential buyers.

The construction activity is balanced between the Howard and Richmond Drive areas, generally within three (3) miles of L-31 canal. Sections 15 (4 units) and 21 (3 units) are the primary construction areas near Howard Drive. Sections 27 (4 units) and 28 (4 units) are the focal points of building activity around Richmond Drive. A large house under construction west of SW 237 Avenue (Grossman Hammock Road) and north of the

of SW 237 Avenue (Grossman Hammock Road) and north of the Chekika State Recreation Area represents the western boundary of residential development thus far in the East Everglades.

While block land subdivision and marketing has declined in the East Everglades, it is currently being attempted west of SW 237 Avenue in Section 13 (T55, R37) by Suburban Acres, Inc. The development, known as "Don Quixote Estates," offers five (5) acres "ranchettes" (\$14,000), however, Suburban officials indicate that sales are not presently active.

Potential residential lots of five (5) acres and less are readily available around Howard and Richmond Drives near L-31 canal and westward. Suburban Acres, Inc., a real estate company specializing in land around Howard Drive, is listing for resale many parcels sold to clients in the 1967-72 boom period. In addition, many contracts for deed entered into during the late 1960s are now being paid off, making loans for improvements such as houses available. Cavalier Group officials indicate that they have "deeded out" over 200 parcels for contracts satisfied in 1977 and 1978 on East Everglades land. A similar situation is occurring in real estate transactions handled by Suburban Acres. Thus, the potential for residential development at densities greater than 1 unit per 5 acres in the near future is present.

3. Recreation

Recreational activities in the East Everglades are extensive because it is one of the few remaining (rugged) wetland areas in Dade County outside the Everglades National Park. It is part of the unique Everglades system teeming with a wide diversity of wildlife and plants. Primary recreational activities include commercial airboat establishments, a State recreational area, hunting, fishing, soaring, and skydiving.

Three commercial airboat establishments are located along U.S. 41 on the northern study area boundary and serve travelers along Tamiami Trail. The airboat rides travel in the marshlands and canals of upper NE Shark Slough.

The Chekika State Recreation Area is located in the central portion of the East Everglades in Section 25 (T55, R37) just west of SW 237 Avenue. The entire section is owned by the State of Florida, however, the Recreation Area currently occupies approximately 180 acres. It offers camping, freshwater swimming, picnicking, a boardwalk, and interpretive walking trail and attracted 60,194 visitors last year (October 77 - September 78).

Hunting in the East Everglades includes ground game such as deer, raccoon, fox, bobcat, and rabbit, and birds such as snipe, duck, quail, and dove. Hunting seasons generally run from October through February. Hunters typically use ORVs (Off Road Vehicles) including airboats, large-wheeled "glades" buggies, and tracked vehicles to gain access to the more remote areas. The Florida Game and Fresh Water Commission estimates hunting activity in the East Everglades at 4,000-5,000 hunters per year. The primary source of hunting trips into the NE Shark Slough area is from the Airboat Owners Association located in the East Everglades on the south side of U.S. 41. The association's president estimates that approximately 400 airboat trips are made weekly into the study area from the club and about 4,000 hunters use the facilities for hunting trips during quail and dove season.

Fishing, primarily freshwater, generally occurs in the canals along the eastern study area boundary, in Levee 67 canal, and in the borrow canal along the eastern side of Grossman Hammock Road (SW 237 Avenue). Game fish consist of bass and panfish such as speckled perch and bream.

Soaring and skydiving are offered at the Kendall Gliderport just south of the Chekika State Recreation Area. Between 5 - 12 sailplanes go up each weekday while weekend activity reaches

20 flights per day. Skydiving is offered only on weekends and estimated usage is between 5 - 10 planeloads of divers each (weekend) day.

Thus, while recreational activities do not occupy a substantial portion of land in the East Everglades, they do constitute a major usage in the area. Existing conditions do not indicate significant expansion in the future of recreational land uses.

C. Permitting

Because the East Everglades area is a wetland system prone to flooding, several permits, not normally needed in higher areas, are required in undertaking residential construction and agricultural activities.

In residential construction, a septic tank installation permit and first floor elevation above the 100-year flood level is required. For septic tank installation, a residential parcel must have 20,000 square feet of land area elevated to the level of the 100-year flood. Drainfields must be a minimum of 100 square feet per bedroom (minimum - 200 square feet total). Many structures in the study area have been constructed without building permits (which require adherence to the above criteria), however this practice has decreased substantially due to recent enforcement actions by county officials.

To begin agricultural activities in the East Everglades, the underlying limestone must be broken up. This process, called "rockplowing," requires a permit from the Corps of Engineers and has recently been determined by the Corps to be outside the realm of "normal agricultural operations." While this interpretation may change at any time, the Corps is presently requiring permits for rockplowing in the area and has issued a cease and desist against one such operation. The County Department of Environmental Resources Management issued a cease and desist order to prevent a large scale rock plowing operation in the study area in 1976.

D. Roads

The East Everglades contains only four paved roads. These are:

1) U.S. 41 or Tamiami Trail, 2) Grossman Hammock Road (including southern extension to Context Road), 3) Richmond Drive, and 4) U.S.

27. Only Richmond Drive serves the primary residential areas. The unpaved roads in the study area range from improved, filled facilities to unimproved buggy trails. The improved roads, filled with crushed limestone, are typically laden with pot holes, particularly during the wet season, making travel slow and damaging to vehicles.

Study area roads are not maintained by the County and residents usually pool resources to fill pot holes and regrade roads in their particular areas. The Dade County Comprehensive Development Master

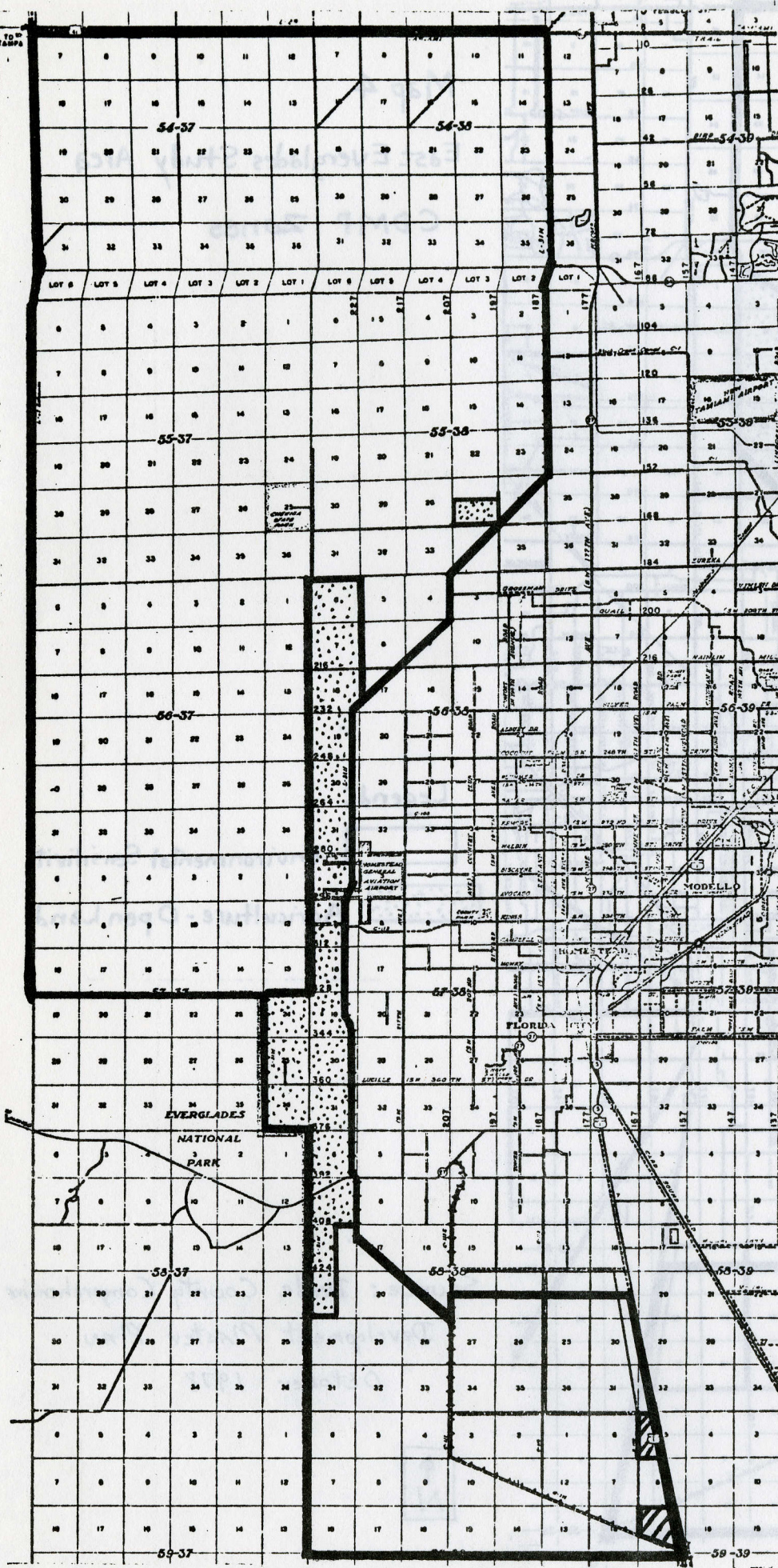
Plan's Year 2000 Transportation Element projects no road improvements or new roads in the East Everglades through the year 2000.

E. County Master Plan (CDMP)

The Comprehensive Development Master Plan for Metropolitan Dade County indicates two land use categories for the East Everglades. There are: 1) Agricultural and Open Land, and 2) Environmental Sensitivity. Map 4 shows the master plan category boundaries. The Agricultural and Open Land designation encompasses the Howard and Richmond Drive residential areas and allows a maximum density of one unit per five acres. Allowable uses in this category include amenity and recreation, conservation, agricultural, and extraction activities. The Environmental Sensitivity category covers the major portion of the East Everglades. This use category restricts land uses to those compatible with the area which would not adversely affect the surrounding ecological system.




F. County Zoning

Present zoning in the East Everglades primarily includes two categories, agricultural use (AU) and interim use (GU), both of which allow maximum density of not more than one residential dwelling unit per five acres. Map 5 shows the zoning category boundaries. All residential areas, except for a half section above Richmond Drive, are zoned GU.



Map 5
 East Everglades Study Area
 Zoning Categories

Legend:

-  General Use
-  Agriculture Use
-  Industrial Use Controlled

Source: Dade County Planning
 Dept.
 October 1978



In March, 1974, Dade County imposed a building moratorium in the East Everglades area in order to allow time to properly study zoning alternatives for the area. Previous zoning allowed general and agricultural uses with one residential unit per acre maximum density. As a result of the moratorium study, the zoning categories were altered to limit maximum density to one unit per 5 acres in AU and GU areas. Any residential parcels purchased before March 19, 1974, are "grandfathered in," meaning one residential unit may be constructed on such parcels even though they may be less than five (5) acres in size.

G. Land Ownership

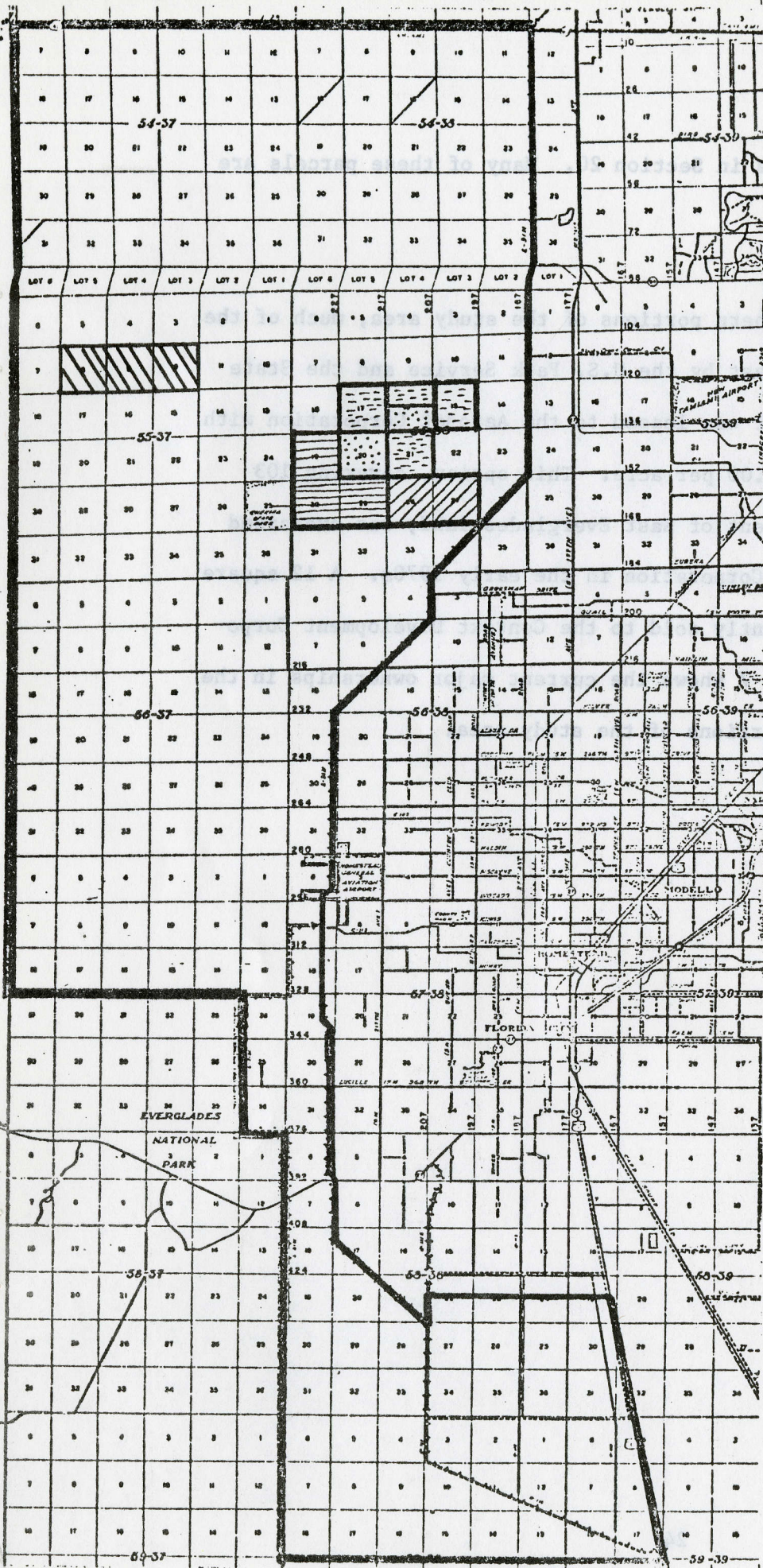
Historically, the East Everglades have been subject to extensive land sales speculation. To a much lesser degree, it is still occurring. There is a substantial difference in land ownership history between the northern one-third of the East Everglades and the central and southern areas. Thus, these areas will be addressed separately.

Land in the northern area was extensively subdivided and sold, typically in 1.25 acre parcels, during the 1965-72 period. These sales were generally under "contract for deed" arrangements where the deed is transferred to the purchaser after an installment contract is paid off. Installment contracts usually have a 8 - 10






year term. Florida Leisure Time, Inc. is a typical land sales company that sold land in the East Everglades during the 1965-72 periods and is still active in the area. The company owned three sections of land (Sections 8, 9, 10 - T55, R37), indicated in Map 6 northwest of Chekika State Recreation Area. The land, inaccessible by automobile, was subdivided and sold primarily to out-of-state and foreign investors under contracts for deed.

In the current residential areas near L-31 canal, a similar land sales trend occurred in the 1965-72 period and rock filled roads were constructed. Mr. Louis Rotfort, owner of Suburban Acres, Inc., constructed many of the existing roads in the Howard Drive area during 1965-67 and subdivided much of the area, opening it to residential development. Map 6 shows current major land holdings by private companies in and around the primary residential areas. Context Corporation owns and is marketing property in Sections 27 and 28 (T55, R38) near Richmond Drive. The primary Context holding is (492 acres) in Section 27 under the marketing name of Richmond Ranch Estates. The Cavalier Group, Inc. owns 160 acres in Section 29 (T55, R38), 640 acres in Section 30, and 480 acres in Section 19. Much of this land is presently sold under deed contracts. The Central Bank Trust Company holds 63 acres in Section 15 (T55, R38), 177 acres in Section 16, 521 acres in Section 17, and 105 acres in Section 21. The Dynamic Development Corporation, a subsidiary of Florida Leisure Time Inc., owns 263 acres in Section 16

Map 6
 East Everglades Study Area
 Major Land Ownerships
 in the Northern Section



* Legend:

-  Context Development Corp.
-  Cavalier Group Inc.
-  Central Bank and Trust Co.
-  Dynamic Development Corp.
-  Florida Leisure Time

*Note: Representation of ownership on this map does not indicate complete ownership within an area. Consult the text for the amount of land owned within a particular section of land by the indicated company.

Source: Dade County
 Planning Dept.
 October 1978



(T55, R38) and 312 acres in Section 20. Many of these parcels are under deed contracts.

In the central and southern portions of the study area, much of the land was owned in the past by the U.S. Park Service and the State of Florida. In 1961, it was leased to the Aerojet Corporation with an option to buy at \$50.00 per acre. This option, covering 103 square miles or 43 percent of East Everglades land, was exercised by Aerojet Development Corporation in the early 1970s. A 12 square mile tract was subsequently sold to the Context Development Corporation by Aerojet. Map 7 shows the current major ownerships in the central and southern portions of the study area.

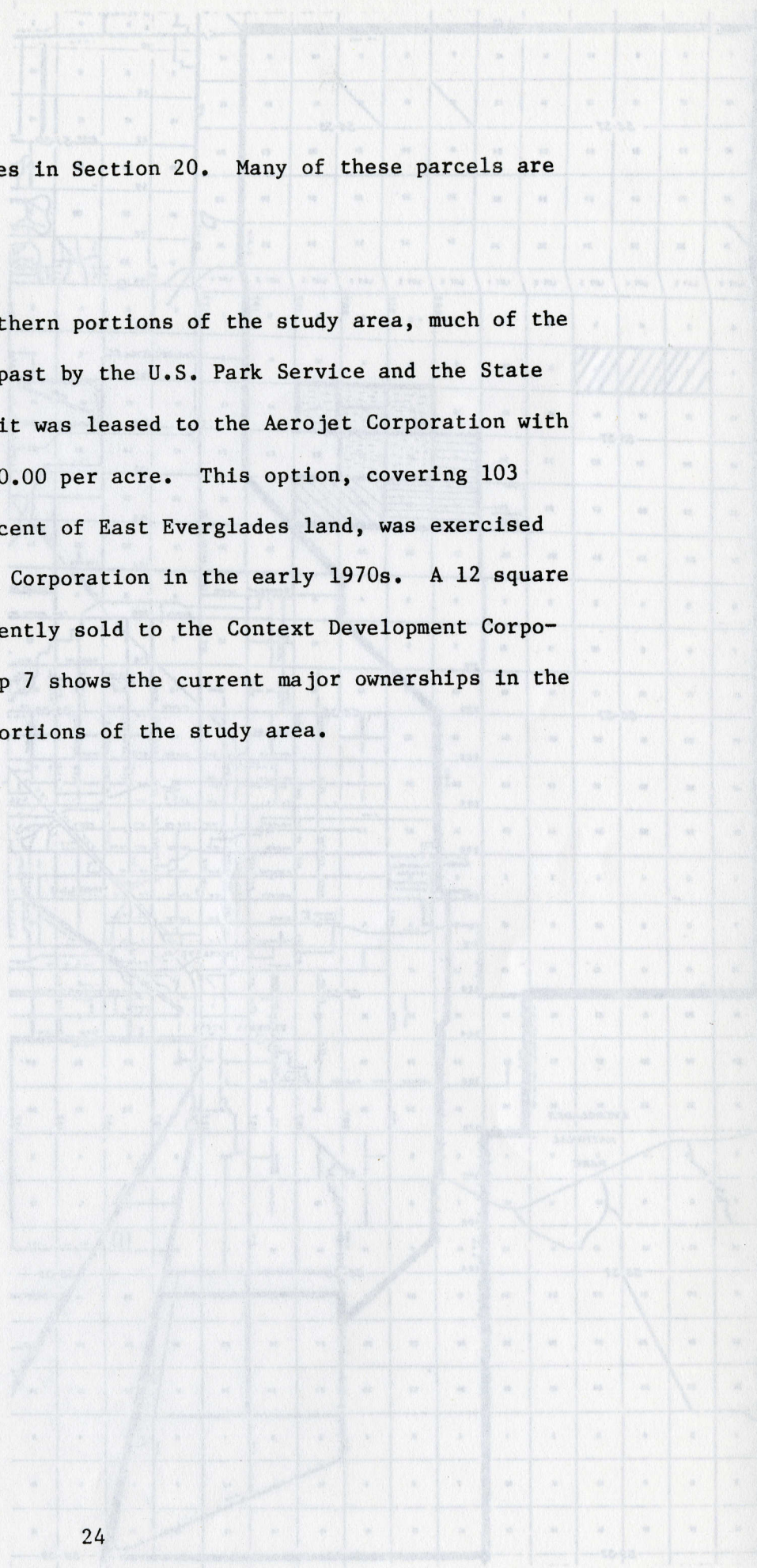

Map 6
East Everglades Study Area
Ownership

Legend:

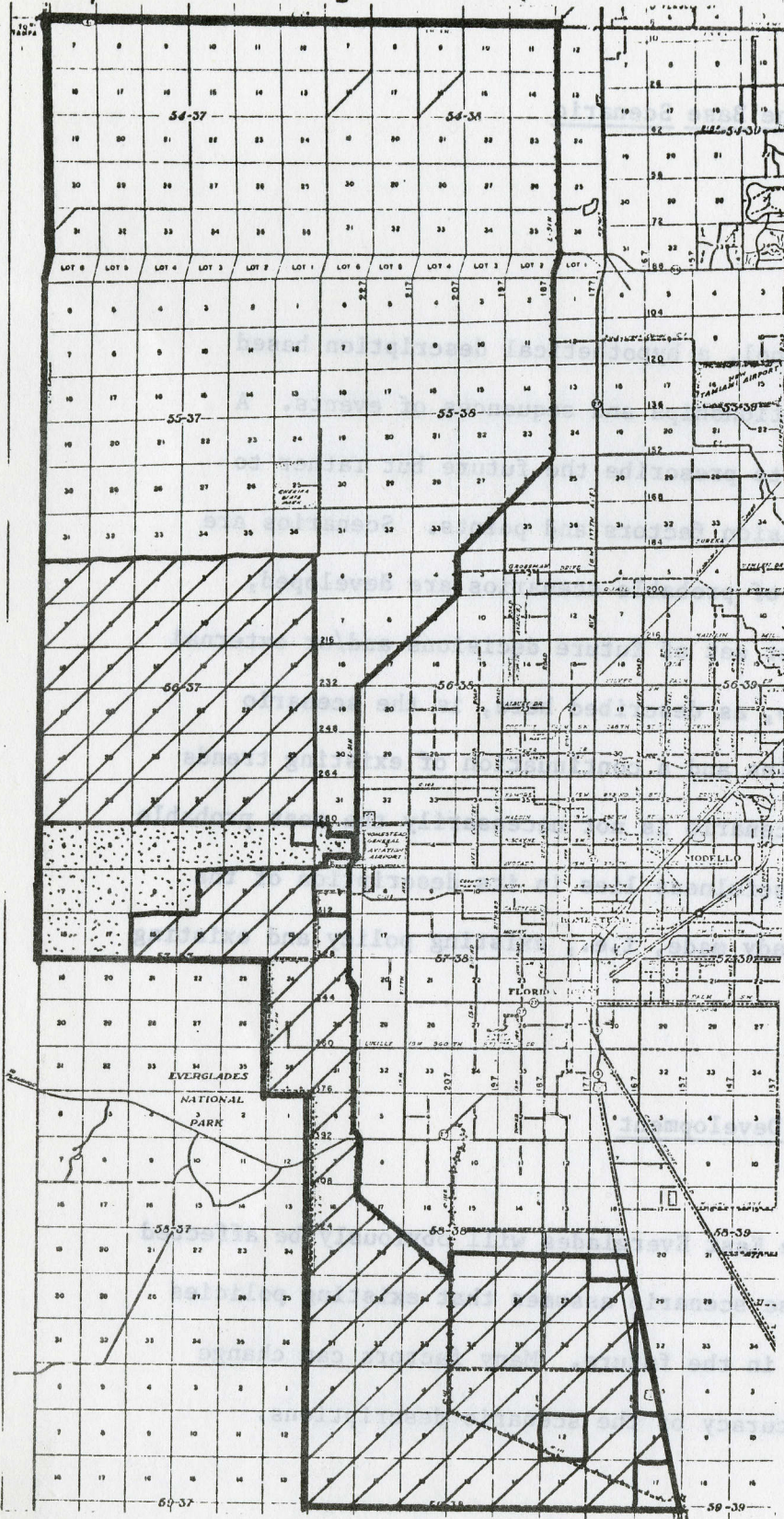
- Context Development Corp.
- Cavalier Group Inc.
- Central Bank and Trust Co.
- Dynamic Development Corp.
- Florida Leisure Time

*Note: Representation of ownership on this map does not indicate complete ownership within an area. Consult the text for the amount of land owned within a particular section of land by the indicated company.



Source: Data County Planning Dept.
October 1978



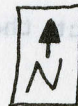
Map 7 - East Everglades Study Area - Land Ownership in the Central and Southern Sections



Legend:

-  Aerojet General Corp.
-  Context Development Corp.

Source: Dade County
 Planning Dept.
 October 1978



II. The Base Scenario

A. Introduction

A scenario is a planning tool, a hypothetical description based upon cause and effect relationships and sequences of events. A scenario does not attempt to prescribe the future but rather to draw attention to key decision factors and points. Scenarios are most effective when a set of probable scenarios are developed, each based upon a different set of future decisions and/or external trends. The base scenario, as described here, is the scenario which uses existing policies and a continuation of existing trends as its basis. The base scenario is not necessarily the most probable scenario. However, its usefulness lies in its description of the effects of decisions already made, i.e., existing policy and existing trends.

B. Factors Affecting Future Development

Future development in the East Everglades will obviously be affected by many factors. The base scenario assumes that existing policies and trends will continue in the future. Many factors can change which will affect the accuracy of the scenario descriptions.

Probably the most important of these is the economic situation. An extended economic downturn in the future would dry up capital markets making residential and agricultural development difficult. On the other hand, substantial economic growth could facilitate development in the East Everglades beyond the expectations of the base scenario.

Population changes are another significant factor in projections. Unforeseen population growth in Dade County, particularly from immigration, would increase development pressures in the study area. Such a phenomenon could result from future energy shortages in cold Northern states spurring migration to southern states. The opposite trend, a decrease in the expected population growth rate, would contribute to a lessening of development pressures in the East Everglades.

Technological changes can also alter development predictions. For example, the development of hybrid tomato plants which are very water-tolerant could change the agricultural outlook, making farming more feasible in the study area.

Even though the base scenario assumes existing public policies will continue, these management tools if substantially altered could have far-reaching impacts on the area. Presently, the Comprehensive Development Master Plan (CDMP) considers most of the East

Everglades as Environmentally Sensitive land and zoning imposes a 1 unit per 5 acre maximum density. In addition, public policies from all levels of government support the protection of wetlands. However, public attitudes can change rapidly and any swing away from environmental protection in the future could help spur residential and agricultural development in the study area.

C. Assumptions of the Base Scenario

The future development of the East Everglades is considered to be a function of the metropolitan system of Dade County. In simpler terms, the future of the East Everglades is determined in large part by the quantity and patterns of growth throughout Dade County. For example, the urbanization of existing agricultural lands east of Levee 31N would increase pressures for development west of the levee. Thus, the base scenario must be based upon assumptions of the future of development at the county-wide scale. The base scenario uses the following assumptions about metropolitan wide growth and development patterns.

1. The CDMP will continue to be implemented without major policy or development pattern changes.
2. The continued implementation of the CDMP will contain most future urban growth within the 1985 and 2000 urban development boundaries.

3. While the CDMP will prevent the large scale conversion of agricultural lands in the agriculture and open land areas, low density residential uses will compete strongly with agriculture, resulting in incremental losses of farmland due to escalating land values, user conflicts, and actual conversions.

The base scenario is also based upon the following set of assumptions which concern the East Everglades directly:

1. Based upon the development policies of the CDMP, no substantial urban services will be provided to the East Everglades area through the year 2000.

2. Conversions of agricultural land east of the levee, along with traditional patterns of agricultural use which favor the farming of raw land, will increase pressures to convert undeveloped land west of the levee to agriculture.

3. Urban growth east of the levee will direct increasing numbers of persons, in search of a non-urban environment and/or lower land prices, to the East Everglades.

4. No new drainage works or structures, and thereby no increase in flood protection, will be provided to the East Everglades.

D. Population Scenario

At the present time (1978), approximately 420 persons reside in the East Everglades study area. Based upon an analysis of census tract population projections, land use in the study area and adjacent areas, and an assumption of the continuation of existing public policies and development trends, a range of population estimates for the years 1985 and 2000 were developed. For 1985, a population in the range of 475 to 625 can be expected, with a mid-range estimate of 525. For the year 2000, a population range of 750 to 1,250 is projected, with a mid-range projection of 1,050.

It must be cautioned that these projections like all small area population projections, are very judgemental and do not have a high degree of accuracy. However, given existing county-wide growth patterns and trends, localized growth patterns and trends and existing public policies, these estimate ranges of population can be reasonably expected, barring any major changes in the factors affecting the area.

E. Land Use Scenario

Generally, agriculture and low-density residential uses are expected to be the major land uses in the study area through the year 2000. The land uses expected can best be described by subarea.

1. Tamiami Trail

No major changes or increases in land use are expected along Tamiami Trail. The commercial tourist uses are expected to continue but not significantly expand. No new residential, recreational or utility uses are expected.

2. Township 54-38

In Sections 11, 14, 26 and 35 of Township 54, Range 38 some rockmining operations may be expected in the future, dependent upon economic conditions and the legal ability of the County to regulate or prohibit such activities.

3. Howard Drive

The Howard Drive area will continue to experience most of the future growth which will occur in the study area. A significant amount of land is available for accomodating future growth within the sections already developed or disturbed. An important variable is the ability of agricultural uses to remain in the area in the face of increased residential development pressures. In any event, some spread of residential development is expected to the north and west. Agricultural uses may show a similar trend but are likely to be restrained from moving too far west or north by high water levels.

4. Richmond Drive

The Richmond Drive area is expected to remain the secondary residential growth area. Large, vacant parcels in the existing residential pattern will be developed first, with residential land use eventually spreading to the adjoining western section (Section 30, T55, R38).

5. Chekika

The Chekika area is expected to remain a marginal growth area, due in large part to the environmental constraints and special regulatory controls imposed upon the area. However, increased development pressures are expected and some limited residential development is likely to occur. The existing recreational uses are expected to remain (state recreation area, gliderport) and existing agriculture (grove) is not expected to expand due to high water levels.

6. Agricultural Zone

The area south, within approximately two miles of L-31, and north of theoretical 408 Street, is presently used exclusively for agriculture. This (exclusive) agricultural use is expected to continue and expand, filling in vacant areas within the

sections already developed and moving westward into the sections just west of 237 Avenue. High water levels are expected to restrain further westward movement.

7. Remaining Areas

While no significant amounts of new land use are expected in the remaining portions of the study area, further human disturbance and alteration are. Roadbuilding and land clearing may continue to spread throughout the study area despite existing regulations. The future use of the C-111 and Taylor Slough areas will depend in large part upon the decisions of the limited number of large land-owners. The future of the Shark River Slough area and remaining areas is complicated by the large numbers of small parcels and landowners.

Note should be made here of the possibility of wellfield development in the study area. The Dade County Water and Sewer Authority anticipates the need in the near future for a new wellfield in southwest Dade County. The wellfield is expected to be located north of Homestead near rail transportation. While the site has not been selected, the northern and central sections of the study area near the eastern boundary (L-31), irrespective of hydrologic factors, would seem to contain potential wellfield sites.

Alternative Scenarios for the East Everglades Study Area

Purpose

This working paper develops two alternative land use scenarios for the East Everglades study area. It represents the completion of Task 4, Work Element IVA in the Project Plan-of-Study. The purpose of the working paper is to assess the impacts of alternative scenarios involving high, unexpected residential and agricultural development in the East Everglades through the year 2000. High levels of development, far above current projections in the Base Scenario and the Dade County Comprehensive Development Master Plan, are selected for each and general impacts analyzed. While neither scenario is likely to occur given current conditions, this working paper should enable decision-makers to closely examine assumptions concerning development in the study area.

Summary

The basic assumption, expected to provide the spur to the development projected in both the alternative residential and agricultural scenarios, is that high, unforeseen population growth in Dade County through the year 2000 will: 1) directly increase study area residential land use and, 2) force the rapid conversion of current agricultural lands on the County's urban fringe, thus raising new agricultural development in the East Everglades far above expected levels.

The alternative residential land use scenario assumes a year 2000 population, including permanent residents and "weekend" users, in the study area of 4,000 persons, which represents a four-fold increase over projections in the Base Scenario working paper. The scenario assumes that sixty percent of this residential use will be accommodated in current residential areas while the remaining forty percent will inhabit new areas. Residential growth is expected to open up new areas north, west, and south of the present residential core around Howard and Richmond Drives. New development is also projected south of Tamiami Trail (U.S. 41). Impacts from this (extensive) residential development include adverse environmental effects, favorable short-term impacts for the local economy, probable long-term costs associated with loss of wetland functions, and conversion of current mixed use (residential and agriculture) areas to practically exclusive residential use.

The alternative agricultural scenario assumes that farm acreage in the East Everglades by the year 2000 will reach 28,000 acres, a three-fold increase over the current 9,500 acres. This hypothetical agricultural development is expected to "fill in" current agricultural areas and open up new farmlands some two to three miles west of SW 237 Avenue into Taylor Slough and several miles south of U.S. 27 (as it enters the Everglades National Park). The expected impacts from this development activity center around environmental considerations such as loss of animal and vegetative habitats, water quantity effects associated with

increased irrigation needs and water quality impacts from fertilizer and pesticide application, and economic factors including short-term benefits to the local agricultural sector and the national winter vegetable markets and long-term costs from the loss of wetland functions.

The alternative agricultural scenario assumes that farm acreage in the East Everglades by the year 2000 will reach 28,000 acres, a three-fold increase over the current 9,500 acres. This hypothetical agricultural development is expected to "fill in" current agricultural areas and open up new farmlands some two to three miles west of SW 237 Avenue into Taylor Slough and several miles south of U.S. 27 (as it enters the Everglades National Park). The expected impacts from this development activity center around environmental considerations such as loss of animal and vegetative habitats, water quantity effects associated with functions, and conversion of current mixed use (residential and agricultural) areas to practically exclusive residential use.

Impacts from this (extensive) residential development include adverse environmental effects, favorable short-term impacts for the local economy, probable long-term costs associated with loss of wetland functions, and conversion of current mixed use (residential and agricultural) areas to practically exclusive residential use.



I. INTRODUCTION

Planning inherently assumes some image of the future. The development of scenarios is simply the act of describing more comprehensive images of the future and providing images so a wider range of alternative assumptions can be examined.

The draft project working paper entitled Base Scenario for the East Everglades Study Area has developed a base scenario future to the year 2000. This scenario is not necessarily the most probable future but simply an extension of present trends.

The purpose of this working paper is to develop alternative scenario futures which emphasize unforeseen growth of key land uses in the East Everglades through the year 2000. The East Everglades study area is shown in Map 1. Expanded land use patterns are examined separately for the residential and agricultural sectors of the study area. Unforeseen population growth in Dade County through the year 2000, perhaps spurred by immigration from (cold) northern states or Latin American countries, provide the main theme for each alternative scenario. The underlying assumption for the scenarios provide that this high, unforeseen population growth in Dade County will:

1. direct increasing numbers of persons east of Levee 31, in search of a non-urban environment and/or lower land prices, to the East Everglades, providing the basis for an alternative residential scenario, and
2. contribute toward a more rapid conversion of prime County agricultural lands east of Levee 31 and C-111 to residential use, increasing agricultural pressure on East Everglades lands and providing the basis for an alternative agricultural scenario.

In this working paper the residential and agricultural scenarios are discussed separately in order to reduce any possible confusion and to facilitate a clear and concise analysis of each case. However, it is entirely possible, especially since they both are initiated by the same basic theme, that the two scenarios would, in reality, develop in combination. At a minimum, there are areas of geographic overlap in constructing the two scenarios. These transition areas are addressed in each scenario discussion. However, given the spatial separation of the primary agricultural areas from the residential core in the study area, the separate discussion of the alternative scenarios should not hinder the accuracy and feasibility of each.

II. ALTERNATIVE RESIDENTIAL SCENARIO

This future alternative scenario analyzes a situation where future residential development in the East Everglades reaches proportions far beyond levels foreseen in the base scenario and the Dade County Comprehensive Development Master Plan. As previously mentioned, the underlying theme hypothesizes high, unexpected population growth in Dade County through the year 2000 which translates into substantially increased residential activity in the East Everglades study area.

In developing this scenario, it is immediately obvious that other developmental factors, in addition to population growth, will have to function in certain ways in order for the scenario to achieve the target level of projected residential activity in the East Everglades by the year 2000. These factors fall into four general categories - economy, government, technology, energy - and are briefly discussed below.

In order to facilitate the movement of prospective residents to the study area through the year 2000, favorable economic trends at the local and national levels will be needed. Potential study area residents will require ample mortgage monies at reasonable interest rates. In addition, the local economy will need to provide jobs and shopping

areas near the study area. Prolonged economic recessions or depressions during the period to the year 2000 could make the residential activity hypothesized in this alternative scenario impossible. This scenario is developed on the assumption that the economic picture in Dade County will be generally favorable to residential development through the year 2000.

Another factor important to future residential growth in the East Everglades is the public policies and regulations affecting the area through the year 2000. Currently, local state and federal agencies regulate dredging and filling and interruption of sheet flow associated with wetland development. The South Florida Water Management District has deactivated additional water control plans for the area in recent years and does discourage positive drainage in the East Everglades. The Dade County Comprehensive Development Master Plan envisions no public services for the study area through the year 2000 and zoning allows one residential unit per five (excepting "grandfathered" parcels) acres. It is uncertain whether these public environmental regulations would have to be "loosened" to facilitate the level of residential development described in this alternative scenario. Real estate agents in Dade County have indicated that the zoning change in 1974, lowering zoning densities to one unit per five acres, has stifled potential residential land purchases in the study area in recent years. Certainly, more stringent controls on residential development from governmental

entities in the future would hinder the growth envisioned in this scenario. The scenario assumes that land development regulations will remain substantially unchanged with the notable exception that Dade County will allow roads to be built to accommodate new residential areas in the East Everglades.

A third developmental factor involves future methodological changes and technological advances, particularly in construction techniques. Changes and advances of particular note to this scenario are those which will enable construction of roads and homes with reduced costs and/or environmental impacts. A methodological change would be a technique currently known but not extensively used which becomes widely used because of environmental and/or cost advantages. For example, the future widespread use of composting toilets* in the future in residential wetland development replacing (currently favored) septic tank systems constitutes a methodological change. Such a development would reduce the amount of fill (therefore costs) needed in home construction in the East Everglades and thus, the environmental impacts associated with land filling. Any future improvements in composting toilets which make them more efficient (and therefore more attractive for use) than current models would constitute a technological advance. Improvements such as these will allow greater residential development in the study area than could otherwise occur under current environmental regulations.

* Alternative wastewater disposal systems, such as composting toilets must be approved by Dade County's Department of Environmental Resources Management prior to installation.

This scenario assumes that sufficient methodological changes and technological advances occur in the future to facilitate residential development.

The final major developmental factor is the availability and price of energy resources, particularly gasoline, in the future. As the cost of gasoline rises, the length of repetitive trips such as those to work and to shopping areas become increasingly important. In the East Everglades, potential residents will be hesitant to move to the area if employment and shopping areas are located substantial distances away. Thus, for the purposes of achieving this alternative scenario, it is assumed that activity centers such as work places and shopping areas will be located within reasonable distance of the East Everglades study area.

A. Population

In order to approximate the extent of residential land use in this alternative scenario, it is necessary to project a year 2000 target population consisting of permanent and "weekend" residents. The current permanent resident population in the East Everglades is estimated to be 418 persons (Draft Residential Land Use - East Everglades, Dade County Planning Department, November 1978).

The Base Scenario working paper (East Everglades Project, Dade County Planning Department, January 1979) develops a year 2000 population range of 750 to 1,250 persons giving a mid-range forecast of 1,050 permanent residents. This population estimate is based on Dade County Comprehensive Development Master Plan projections and census tract data.

This alternative scenario assumes a year 2000 population figure of 4,000 persons including both permanent and "weekend" residents. The hypothetical projection represents an approximate four-fold increase over the year 2000 base scenario figure and provides a substantial expansion of residential activity for the scenario impact discussion.

B. Residential Land Use

With a target population projection now determined, the approximate extent of residential development in the East Everglades for the year 2000 is estimated.

Presently, residential development densities (within individual land sections) range from 1 unit per 180 gross acres to 1 unit per 27 gross acres giving an average total density for existing residential areas in the East Everglades of approximately 1 unit per 70 gross acres. The existing residential

the East Everglades are classified as mixed use areas in the Current Land Uses working paper. Mixed use refers to residential parcels interspaced with agricultural and open lands.

In developing the projected year 2000 residential land use based on the above alternative population estimate, several explicit assumptions and planning "ground rules" are needed to guide the scenario analysis. These are listed below:

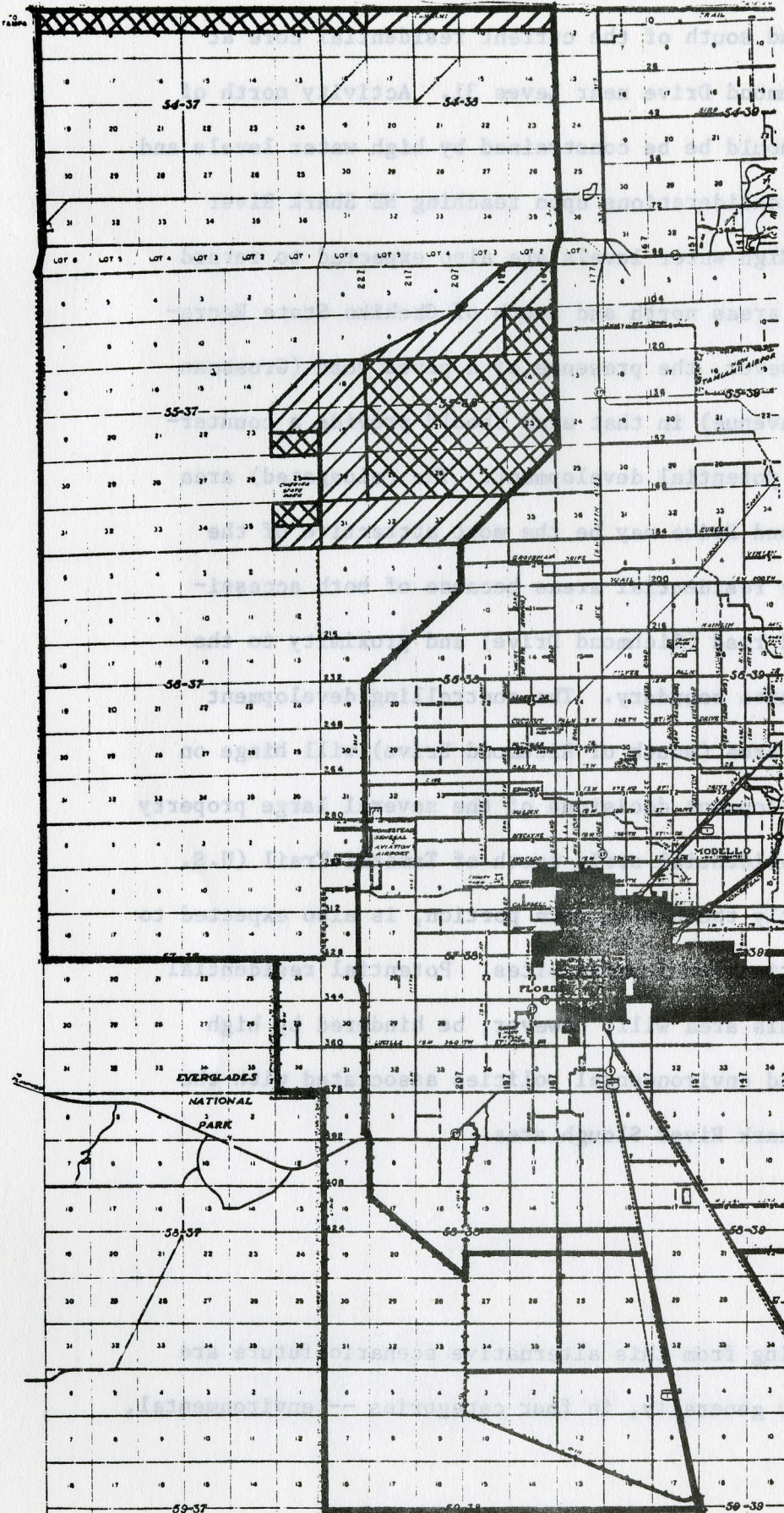
- 1) The CDMP will be implemented, with the exception that the County will allow roads to be extended to new areas of residential development.
- 2) Zoning densities in the area will remain at one residential unit per five acres.
- 3) Current permitting requirements of county, regional, state, and federal agencies associated with land modification in wetland areas will remain substantially unchanged.
- 4) Average household size for future residential development will remain at approximately 3.5 persons per household through the year 2000.

- 5) No new drainage works or structures, and thereby no increase in flood protection, will be provided to the East Everglades area.
- 6) Sixty percent of the projected population expansion will be accommodated in presently developed areas with the remaining 40 percent settling in new residential areas.
- 7) The section of State-owned land (55-37-25) on which Chekika State Recreation Area is located will not be included in future residential development projections.




Map 2 presents the areas of estimated residential land use for the year 2000 under this alternative scenario. Housing density is projected to average 1 unit per 15 acres in existing residential areas and 1 unit per 20 acres in new residential areas with several notable exceptions. The new residential areas south of Tamiami Trail and Richmond Drive (SW 168 Street) should develop higher density levels than other new areas due to accessibility by paved road and their location near the eastern project area boundary.

Map 2 also differentiates existing from new residential areas thus providing a look at (assumed) scenario trends in future residential development in the East Everglades. Generally, residential growth will occur in a semi-circular band to the

MAP 2 - Year 2000 Residential Development - Alternative Scenario



Legend:

-  East Everglades study area
-  Existing Residential Development
-  New (Projected) Residential Development

MAR 2 - Year 2000 Residential Development - Alternative Scenario

north, west, and south of the current residential core at Howard and Richmond Drive near Levee 31. Activity north of Howard Drive should be constrained by high water levels and environmental considerations upon reaching NE Shark River Slough area. High water levels are also expected to retard development in areas north and south of Chekika State Recreation Area, however, the presence of a paved road (Grossman Road - SW 237 Avenue) in that area should provide a counter-acting spur to potential development. The (elongated) area south of Richmond Drive may be the most attractive of the projected (new) residential areas because of both accessibility by paved road (Richmond Drive) and proximity to the eastern study area boundary. The controlling development factor in this area (south of Richmond Drive) will hinge on the future development decisions of the several large property owners. The residential strip south of Tamiami Trail (U.S. 41), particularly the new eastern portion, is also expected to provide attractive development sites. Potential residential land uses in this area will, however, be hindered by high water levels and environmental policies associated with the sensitive NE Shark River Slough area.

C. Impacts

Impacts resulting from this alternative scenario future are discussed below generally, in four categories -- environmental,

land use, economics, and public policy -- and within each at different levels ranging from the study area itself to the national level.

1. Environmental

The environmental impacts register primarily on the negative side. The residential development theorized in this alternative scenario will impinge on the two primary wetland sloughs in the East Everglades, NE Shark River and Taylor. The land modifications required for residential development such as roads, house foundations, septic tank drainfields, and water wells will alter the hydrologic regime locally in the residential areas and could have significant impacts on the quality, quantity, and timing of water flows in the larger East Everglades sub-basin and the Everglades National Park. Changes in drainage characteristics could also increase flood hazard risks in the residential areas themselves and in the related East Everglades sub-basin. New residential development may alter the hydrologic characteristics of recharge to the Biscayne Aquifer in certain areas generating a potential impact on the water supply to agricultural irrigation and drinking water wells in South Dade County. In addition, any reduction in the quantity of aquifer recharge (possibly) caused by future residential development will

reduce the freshwater (head) pressure in the aquifer which aids in the control of saltwater intrusion in the C111 (near U.S. 1) canal area.

Another set of important environmental impacts are associated with the irreversable loss of wetlands and related native animal and vegetative habitats, particularly in areas which have not yet been directly modified by man's activities. Specifically, residential development south of Chekika Park and Richmond Drive will consume part of the federally-designated critical habitat for the endangered Cape Sable Seaside Sparrow. Destruction of native vegetation associated with residential land filling and other changes in the hydrologic system in previously unmodified areas would also contribute to the spread of exotic vegetation such as Brazilian Pepper, resulting in a reduction in general species diversity in affected areas. New development in the Rocky Glades province could destroy areas of pinnacle rock formations, a unique geologic phenomenon becoming rapidly less prevalent in the Everglades basin. Generally, development will consume part of a dwindling wetland resource important to maintaining the quality and diversity of the Dade County environment.

2. Land Use

The infilling of current residential areas and development of new residential areas, particularly those south of Richmond Drive near Levee 31, will have a considerable impact on land use.

Currently, residential areas are classified (Agricultural Land Use in the East Everglades, Dade County Planning Department, November 1978) in a mixed use category combining residential and agricultural activities. With the projected increase in gross densities per acre in existing residential areas, agricultural operations (grove and row crops) will be displaced by new residential development, converting these areas to (practically) exclusive residential use. The new residential area south of Richmond Drive near Levee 31 will displace approximately 600 acres of current agricultural use.

3. Economics

Extensive residential development in the East Everglades will provide beneficial impacts to several sectors of the local economy. The construction, financial, and land sales sectors will all receive increased revenues from new East Everglades residential development which would

require land to be sold, mortgages to be financed, and houses to be built. Demand for residential land will be high, increasing land values and thus, benefiting land sales companies, mortgage investors, and land owners. This benefit to land owners will be tempered somewhat by increased property taxes.

The Dade County agricultural sector will also be affected. The displacement of grove and row crops by expanding development in existing residential areas and residential activity in new areas, will result in decreases in East Everglades agricultural output. The duration of the reduced output will be determined by how successful displaced farm operators are in leasing lands elsewhere in the study area or Dade County. Personal income losses to displaced farm operators (leasees) and workers will be generally short-term, unless other comparable lands are not available.

Another side of the economic picture involves the valuation of natural resources. While the monetary value of land is determined in the marketplace, the total value of environmentally sensitive wetlands which perform vital functions such as filtering and storing water for agriculture and drinking in Dade County is not reflected.

The incremental loss of wetland functions and habitats in new residential development areas will not be felt immediately in the local economic system. However, over the longer term, such costs could surface, for example, in future losses in agricultural output due to water shortages in South Dade County caused conceivably by land development activities in aquifer recharge areas of the East Everglades or future demands for (expensive) additional water control systems.

Thus, while the short-term economic benefits of increased residential development in the study area should be substantial, particularly to the real estate sector and East Everglades landowners, the long-term costs for Dade County in terms of irreversible loss of wetlands and associated functions could also be important.

4. Public Policy

While the assumptions for this scenario state that public policies concerning land development activities will remain essentially unchanged, inevitable pressures from citizens and interest groups to alter governmental regulations should be discussed. The extensive residential development envisioned in this scenario will create

pressure on governmental agencies to relax environmental restrictions on wetland modifications in order to lessen building costs and provide urban services. This impact could take the form of citizen desires for Dade County to increase zoning densities in the East Everglades and/or improve roads in the area. In addition, the South Florida Water Management District will experience pressure to alter drainage characteristics in the study to increase positive drainage and reduce flood hazards. Should public agencies bow to these pressures, the possible realization of this alternative scenario will be heightened. However, it will also change the "rules" of the scenario and influence other impact categories beyond what has been enumerated in this working paper. For instance, increased zoning densities and positive drainage in the East Everglades will have additional environmental and economic impacts, and thus require further analysis.

Public Policy

While the assumptions for this scenario state that public policies concerning land development activities will remain essentially unchanged, inevitable pressures from citizens and interest groups to alter governmental regulations should be discussed. The extensive residential development envisioned in this scenario will create

III. Alternative Agricultural Scenario

This scenario examines a hypothetical situation where future agricultural development in the East Everglades reaches proportions far beyond levels expected in the base scenario and the Dade County Comprehensive Development Master Plan. As in the alternative residential scenario, this expanded agricultural activity is assumed to be primarily caused by high, unforeseen population growth in Dade County through the year 2000. It is expected that this population growth will accelerate the conversion of present agricultural lands on the urban fringe to residential use thus pushing farmers farther west into the East Everglades study area.

In the development of this scenario, several additional factors, besides urban residential pressure, will have to function in beneficial (to agriculture) ways in order for the scenario, in reality, to achieve the level of projected agricultural activity in the East Everglades. These factors include the local and national economies and associated agricultural markets, governmental policy trends, and technological advances in farming methods. These are discussed below.

The local and national economies, as they affect Dade County agricultural interests, will substantially determine the level of agricultural land use under this scenario in the East Everglades.

As farmers are displaced from lands on the County's coastal ridge, each will have to make the economic decision of whether the move to the East Everglades will be profitable for them over the long run. This decision will involve the price (lease) of East Everglades lands, the availability of investment funds, and the near and long-term market outlook for Dade County's winter vegetable and/or fruit crops. The later factor will be particularly important because, typically, Dade County farmers have been able to offset necessary increased production costs by charging higher prices for their winter output due to the County's unique (tropical) winter market situation. In recent years, winter competition from Mexican fruits and vegetables have troubled local producers in setting prices. If the long term market looks strong to a particular farmer displaced by urban expansion, then high prices for investment funds and East Everglades lands can (probably) be accepted. In this alternative scenario, it is assumed that the local economy provides adequate investment funds at reasonable interest rates through the year 2000. Additionally, the agricultural markets for vegetables and fruits will remain lucrative with restrictions (possibly) applied to foreign imports, where necessary, to protect American farm output.

Another factor important to the development of expanded agricultural land use in the East Everglades is governmental restrictions, particularly those involving environmental considerations such as

rockplowing and drainage. Currently, the South Florida Water Management District is discouraging positive drainage in the study area and in recent years, the Army Corps of Engineers has issued several cease and desist orders on rockplowing activities (under Section 404 - Dredge and Fill authority, P.L. 92-500) in the East Everglades. In this scenario, it is assumed that the public policies toward rockplowing and drainage will change in the future. Public agencies will allow rockplowing and drainage in selected new agricultural areas to facilitate farming in those areas.

The final developmental factor involves future methodological changes and technological advances in agricultural practices which lessen the environmental impacts and costs of farming in wetlands. One methodological change already occurring in the East Everglades is the move to drip irrigation systems which economize on water and fertilizer applications. A technological advance would be the possible development of a very water-tolerant strain of feed grass which would be grown during wet summer months, allowing profitable use of East Everglades Farmlands during those months. This scenario will assume that many methodological changes and technological advances occur which will make agricultural uses less environmentally harmful and costly in wetland areas.

A. Agricultural Land Use

Currently, agricultural land uses (including mixed use areas in residential sections) encompass approximately 9,440 acres or 6.1 percent of the East Everglades study area, as shown in Map 3. An estimated 86 percent of this acreage is annually in row crops, 12.5 percent in grove crops, and 1.5 percent in nursery operations.

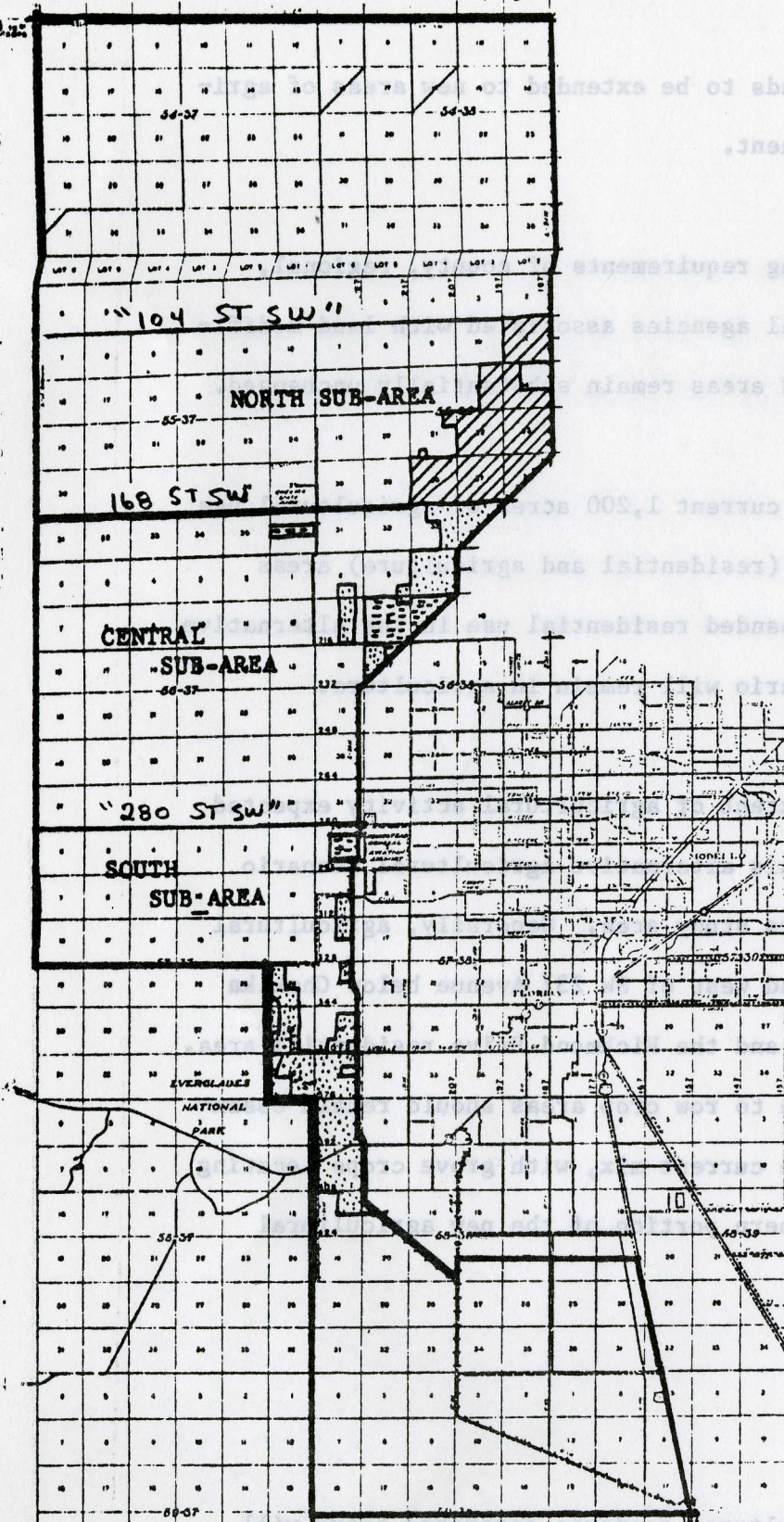
The Base Scenario working paper (January, 1978, Dade County Planning Department, Metropolitan Division) indicates that (exclusive) agricultural use should continue and expand, filling in vacant areas within sections already developed (for agriculture) and moving westward into areas just west of SW 237 Avenue. High water levels are expected to restrain further westward movement in the future.




This scenario assumes an approximate three-fold increase in total agricultural land use to 28,000 acres by the year 2000.

In projecting where this agricultural activity will locate within the study area, several guiding assumptions concerning the future are necessary. These are stated, as follows:

1. The CDMP will be implemented, substantially in its present form, with the exception that the County will

MAP 3 AGRICULTURAL USES IN THE EAST EVERGLADES STUDY AREA



-  Mixed Agricultural & Residential Use
-  Row Crops
-  Groves

allow utility roads to be extended to new areas of agricultural development.

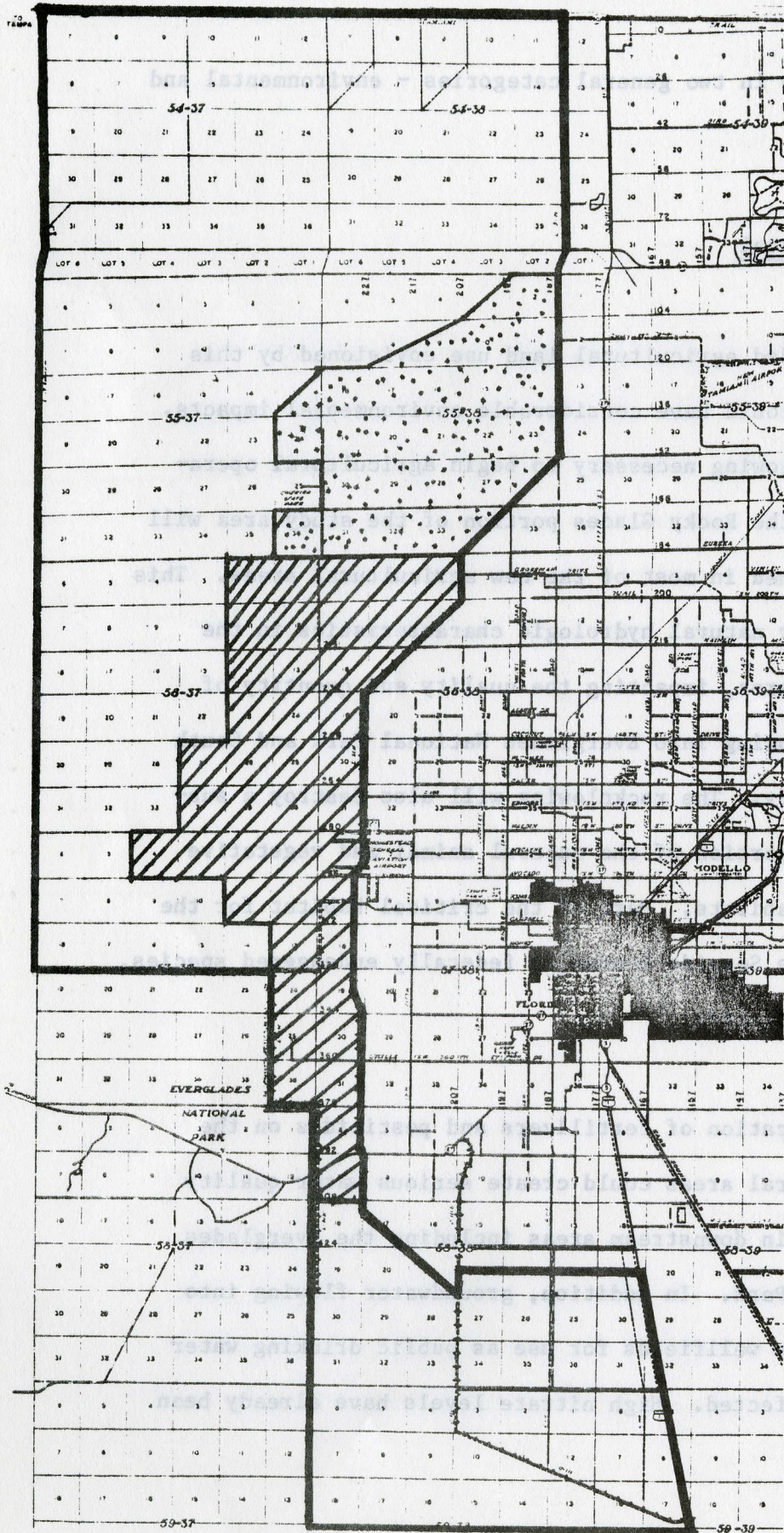
2. Current permitting requirements of county, regional, state, and federal agencies associated with land modification in wetland areas remain substantially unchanged.
3. One third of the current 1,200 acres of agricultural use in the mixed use (residential and agriculture) areas projected for expanded residential use in the alternative residential scenario will remain in agriculture.

Map 4 indicates the extent of agricultural activity expected by the year 2000 in this alternative agricultural scenario for the East Everglades study area. Generally, agricultural development will expand west of SW 237 Avenue below Chekika State Recreation Area and the Richmond Drive residential area. The ratio of new grove to row crop areas should remain essentially the same as the current mix, with grove crops locating primarily in the northern portion of the new agricultural areas shown in Map 4.




B. Impacts

The alternative agricultural scenario described above will have extensive impacts in many areas. These are grouped and

MAP 4 - ALTERNATIVE AGRICULTURAL SCENARIO - YEAR 2000



LEGEND:

-  East Everglades Area
-  Agricultural Area
-  Mixed Use

discussed below in two general categories - environmental and economic.

1. Environmental

The expanded agricultural land use envisioned by this scenario could have considerable environmental impacts. The rockplowing necessary to begin agricultural operations in the Rocky Glades portion of the study area will be performed in most of the new agricultural areas. This will alter natural hydrologic characteristics in the affected area, impacting the quality and quantity of waters flowing into Everglades National Park and South Dade County. The rockplowing will also destroy a substantial portion of the natural animal and vegetative wetland habitats. Part of the critical habitat for the Cape Sable Seaside Sparrow, a federally endangered species, will be affected.

The application of fertilizers and pesticides on the agricultural areas could create serious water quality problems in downstream areas including the Everglades National Park. In addition, groundwater flowing into South Dade wellfields for use as public drinking water may be affected. High nitrate levels have already been

found in wells along the U.S. 1 corridor downstreams of the East Everglades, traceable either to fertilizers or the drying of muck soils.

The extensive agricultural use projected in this alternative scenario will also require large quantities of water for irrigation purposes. This water use will be competing with burgeoning future residential water requirements and the need to keep adequate water pressure (head) in the Biscayne Aquifer to hold back saltwater intrusion.

2. Economics

The increased agricultural development, portrayed here, will beneficially impact several sectors of the local economy. Real estate values in the new agricultural areas will increase and agricultural exemptions will be available to affected property owners. The agricultural labor and services (i.e., farm equipment, etc.) sectors of the local economy will benefit greatly. The availability of farmlands in the study area will preserve the level of revenues (including wages) historically collected by each, in the face of urban encroachment on current County agricultural lands.

At the national level, the winter vegetable and fruit markets, supplied primarily by Dade County, will remain viable. These markets should not be forced to rely heavily on Mexican fruits and vegetables.

Another side of the economic picture may not be beneficial. Since the true worth of wetlands, indicating the value of their habitat and water quantity and quality functions, is not reflected in the marketplace, the economic decision to convert to farmland may be one-sided and the wetland values lost. While the loss will not be felt in the short-run, over the longer term, the effects could show up in higher future water treatment costs for drinking water in South Dade County.

