I. INTRODUCTION

Florida maintains an extensive network of natural resource management programs. This network starts with the state planning process that evaluates projected land use changes. The process continues through various regulatory and permit programs for specific proposed projects and activities. The process is completed through monitoring and enforcement programs, to ensure that management approaches are correctly implemented, functioning, and maintaining a minimum level of environmental quality. The success of this network is ultimately measured by Florida's citizens through their economic prosperity and quality of life.

Despite Florida's extensive network of natural resource management programs, there are perceived and real gaps in Florida's environmental management system. Recognition of these gaps partially led to the creation of the Charlotte Harbor National Estuary Program. The committees that comprise the program's Management Conference identified three main categories of natural resource issues in the study area. These **priority problems** as well as the land use and information intricately related to them include: 1) **Fish and Wildlife Habitat Loss**; 2) **Hydrologic Alterations**; and 3) **Water Quality Degradation**. Volume I of the Base Programs Analysis identified the local, regional, state, and federal programs currently in place to address these problems. This document, Volume II, identifies how these programs are successfully linked. It also identifies the weaknesses or failures of those linkages to manage adequately the area's natural resources. Those connections are detailed in the information below and perceived gaps are described in Section II.

Starting from the early 1970s and continuing to the present, Southwest Florida has seen the creation and evolution of a number of resource management programs. These programs have maintained or, in some cases, helped restore the environmental quality of the Greater Charlotte Harbor Watershed. This section summarizes the results of the base programs that have acted to manage, maintain, or restore the environment.

II. THE WORKING CONNECTIONS

A. Hydrologic Alterations

1. Authority

Generally, the authority for water management has been established through legislation, and judicial interpretation has established its extent and limits. Linkages with land use agency decisions are weak, since statutory direction regarding priority of public policy is unclear. Major land use decisions are often guided through coordinated review processes, such as for Developments of Regional Impact (DRI) or power plant sitings, that improve the land and water linkages. However, the cumulative impact of many small land and water decisions is not

recognized until after problems with hydrology arise. Since sufficient examples of institutional arrangements coordinating land and water decisions exist, a more reliable process can be replicated to protect harbor resources while still accommodating some (or all) forecasted development.

2. General Resource Assessment, Protection, and Use

Assessment data for surficial fresh water bodies has been largely accomplished and is generally available. Information on groundwater is not as complete, but is being developed according to schedules approved by water management districts. Information about the Greater Charlotte Harbor Watershed is available for certain parts of the system. When the information is available, it is commonly used in management decisions, or promoted for use by either opponents or proponents of change.

One such management decision, method, or tool is that of water protection through land acquisition. Acquisition programs exist for the protection of the more threatened remaining natural hydrologic systems. The best known of these is the *Save Our Rivers* program, managed through the water management districts, but it is not the sole program protecting the region's hydrology. Other acquisition programs by public and private entities for preservation usually include criteria for hydrologic protection. This includes the habitat programs of the Florida Game and Freshwater Fish Commission, the Conservation and Recreational Lands program of the Florida Department of Environmental Protection (formerly the Department of Regulation) which also manages the state park system, and the activities of the Florida Division of Forestry, Department of Agriculture.

3. Use Permitting, Planning, and Public Benefit Test

Water use and its changes have a stronger standard to meet than land use and its changes, since there is a public benefit test for approving water use permits. In comparison, land use regulation through denials, such as the prevention of the expansion or creation of non-conforming land uses, is buttressed by nuisance law. With the development and availability of information regarding the extent and limitations of water resources, water use permits are receiving stricter review for their area-wide and cumulative impact. As water management districts and other planning agencies complete the region's existing hydrology-based information gaps, the public benefit test may be expanded to include a comprehensive consideration of the region's information and the long-term regional impact.

4. Public Policy

Public policy guiding most water use permits, particularly for surface water management (also referred to as drainage or flood control), requires storm water management conditions that exist after development to be equal to or better than the conditions that existed before development, from an area-wide perspective. This "post equals pre" rule applies to water

volume, direction, timing, flow, and quality. There is an extensive review process (noted in item 3, above) to assure this standard is applied through a permitted project's engineering and implementation.

5. Modeling and Prediction Base

Much of the available hydrologic information is used in evaluative and predictive modeling. Such modeling is not readily available throughout the greater watershed, but can be developed, made available, and collaboratively used. Models have also been created to address water quality issues. As modeling accuracy improves, there is likelihood of increased budgeting for models as a predictive resource management tool.

6. Restoration and Mitigation

With the establishment of hydrologically-oriented permit programs, hydrologic flows in parts of the watershed have been reestablished. Some of the restoration has occurred through changes in land use, with higher value uses such as residential development-providing the capital to reestablish lost or damaged hydrological components that might have resulted from early agricultural drainage practices. Restoration has also occurred as permits expire, and new or renewed permits become approved on condition of damage reduction or mitigation. Such permits commonly address issues of water quality, and habitat, as well as hydrologic issues.

B. Water Quality Degradation

1. Authority

There is a general level of authority established through federal and state statute, and some local law, for the prevention or elimination of pollution through regulatory programs. The institutional infrastructure exists for permitting those land, water, or air uses that are generally established as producing pollution. Certain activities, such as producing or utilizing hazardous materials or wastes, undergo special reporting procedures to keep information regarding such uses and materials relatively current.

2. Information and Modeling Base

Water samples have been taken both irregularly and consistently from various water bodies for over 25 years. Water bodies with a reasonably reliable data set of sampling data serve as snapshots for how conditions have changed. Some areas indicate stability or improvement of water quality. Therefore a degree of calibration, or the establishment of a baseline from which to measure environmental change, may occur regarding the effectiveness of different treatment or pollution prevention technologies. Success stories, such as Tampa Bay's general improvement in water quality, provide further justification for continuing the course of monitoring and conservation. As with hydrology, modeling has been developed, and the ability for models to

accurately predict results is improving as information gaps are eliminated. Consequently, accurately predicting program's effectiveness increases the likelihood of budgeting towards the desired results.

3. Use Permitting

Pollution law is generally recognized as having as its basis nuisance law; nuisance law is a broad concept characterizing anything which disturbs the free use of one's property or renders its ordinary use uncomfortable. Whereas the standards for recourse for nuisance law are not as compelling as that for public benefit, nuisance abatement and enforcement can be pursued through the civil courts by substantially affected persons. The right to use or withdraw water is granted by the water management districts through the issuance of consumptive use permits. The permit, however, does not convey a property right to the allocated water and the right to the water exists only for the duration of the permit. A three-pronged test must be met before receiving a permit: the water use must be 1) reasonable-beneficial; 2) not interfere with existing uses of water; and 3) be consistent with the public interest. The permittee must also incorporate criteria for conservation and demand management, for resource protection, and for the prevention of interference with other existing uses. If a prospective water user is still unsatisfied with access to water, the appellate and review capabilities of the court provides such persons a degree of monitoring and enforcement beyond that provided for by public budgets and agency enforcement programs.

4. Best Management Practices

Engineering technologies are available for uses of land, water, and air resources that provide for the resource's use, as well as the mitigation or abatement of negative impacts. The benefits of best management practices such as detention ponds for residential development and improved irrigation systems for agriculture activities are well documented. Some recognized sources of pollution, such as septic tank systems or channelized drainage, have been re-engineered, or standards for their use have been updated, to enable their use to be judiciously permitted. Overall, simple alterations in land form or resource management reduce ambient point and nonpoint source pollutant loading to water bodies.

C. Fish and Wildlife Habitat Loss

1. Basic Research and Understanding

Among the Charlotte Harbor National Estuary Program priority problems, the importance of habitat and habitat protection is possibly under the most intense discussion at this time. The intensity is due, in part, to the Florida Game and Freshwater Fish Commission completion of a statewide reconnaissance of habitat and its relationship to listed wildlife species. The Commission also produced maps depicting the likelihood of species presence. The maps have been fairly widely distributed as a research tool and a guide for on-site investigations.

Consequently, the general public and those interested in resource development have a better indication of what fauna may be present in specific areas and of interest to regulatory agencies and private conservation groups.

2. Land Acquisition, Restoration, and Other Mitigation Programs

Over the last 25 years substantial amounts of land have been acquired by public or private conservation groups. Additional lands have been placed into conservation status by private interests. The acquisition has resulted from federal, state, local, and private purchase programs, while the conservation status has been established through either private initiative, or by taking advantage of available tax exemptions. Whereas acquisitions are commonly the result of limited or local initiatives, a more coordinated area-wide strategy for habitat can be fairly easily developed, particularly if additional resources are allocated to programs. It should be noted that these programs have received endorsements by some private development organizations when they provide timely and fair compensation in exchange for land or development rights.

Over the same time period, various restoration programs have been tested, and the more successful programs have been accepted by permitting agencies in development proposals. Typically, restored lands are placed into a conservation status by the owner. These lands also add to the total lands reserved for habitat.

Finally, the concept of land banking or mitigation banks is supported by practical experience. Such banks now exist, and whether publicly or privately owned, provide for the option of preserving habitat in parcels of sufficient size to be managed for habitat value.

3. Jeopardy

The public has responded positively to habitat and wildlife loss prevention programs when there is a reasonable relationship between prevention of loss and species survival. Significant data bases and documents have been developed and provided to the public regarding the potential location of listed endangered or threatened species. This information, and the ability of the public to promote enforcement actions by public agencies when "jeopardy" (a risk of harm or injury to a listed species from human action such as development) exists for listed species has lead to the public and private sectors developing acceptable mitigation and prevention programs. Consequently, the willingness to provide defensible "jeopardy" findings regarding listed species has resulted in changes to development proposals that have subsequently enabled modified development to move forward while protecting at-risk species and their habitat.

D. Land Use and Management

1. Authority

Generally, the authority for land management has been established and its limitations

defined. The regulatory authority for land use has been assigned to local governments, with state and regional overview and intervention, if necessary. Further, local governments are required to keep a land management function in place. Technical assistance is usually available for local governments, from each other, or from state, regional, or federal sources.

2. Special Siting Processes

Florida has a number of special siting processes that have been developed for complex development proposals. These processes have strong environmental assessment requirements and have evolved systems of on-site or off-site mitigation when the public benefit review warrants the approval of the basic proposal.

3. Critical Sites

Through time, Florida has evolved information development processes that have detected or indicated critical environmental resources. This information is generally available for most resources of the Greater Charlotte Harbor Watershed.

4. Forecasting

The state's land management processes require a certain degree of land use forecasting to guide capital investment and environmental management. The processes to make changes in the forecasts require a relatively high degree of public notification and exposure, so the debate regarding the public benefit or harm from the change is relatively open.

Special organizations exist within Florida's metropolitan areas that assist in forecasting. These organizations, Metropolitan Planning Organizations (MPO), exist within the Charlotte Harbor basin in the Charlotte, Lee, Sarasota/Manatee, and Polk metropolitan areas. The primary mission of an MPO is coordinating transportation projects, and evaluating alternatives for transportation needs. To perform these tasks, however, the MPOs undertake population and land coverage and use forecasts that are used, and jointly prepared by the participating local governments, as well as regional and state entities. The forecast end date currently in use is the year 2020.

5. Citizen Standing

National and Florida law provide a degree of citizen standing to those who feel that land use decisions are not complying with general federal and state statutes or local law. Standing is defined as the legal right of a person or group of persons to challenge in a judicial forum the conduct of another, particularly with respect to governmental conduct. Related to the state and regional consistency test, this "standing" provision has been used in the Greater Charlotte Harbor Watershed to promote area-wide goals.

E. Linkages

1. Authorities

Simply stated, a network of resource management institutions exist. In some cases, the needed linkages between the agencies are not implemented. The following is a sample of collaborative programs and the problems they address that have served to link institutions to the private sector with a goal of resolving environmental management problems:

- *Water Management District's Surface Water Improvement and Management (SWIM) Program* - addresses issues of hydrology and water quality.
- *Development of Regional Impact (DRI) Review Process* - addresses land use impacts on hydrology, water quality, and habitat.
- *Resource Planning and Management Committees* - addresses land use impacts on hydrology, water quality, and habitat.
- *Ecosystem Management* - a new, evolving program addressing hydrology, water quality and habitat.
- *Metropolitan Planning Organizations* - addresses issues of transportation congestion that lead to air quality issues, as well as linking transportation entities to the Florida Department of Environmental Protection.

2. The Public

Whether the privately employed scientist, the activist organization, or the substantially affected person, the public recognizes when a system is or is not working. Public understanding of the purpose for creating the resource management system exists and provides the creative tension necessary for reform and improvement.

III. PERCEIVED GAPS

Identification of gaps in Florida's management network was performed with the input of the program's Technical Advisory Committee (TAC) and Citizens' Advisory Committee (CAC). The purpose of this analysis is to identify weaknesses in management programs and methods for improving Florida's environmental management network and, eventually, recommending those improvements in the program's Comprehensive and Conservation Management Plan (CCMP).

A. Weaknesses in Planning and Linkages Among Programs

Efforts to link different components of our governance activities currently exist. Despite these efforts however, some parts of governance do not work in harmony, resulting in loss of effectiveness and efficiency.

1. Out-dated Comprehensive Plan

The problem of linkages exists despite the underlying direction of Florida's state planning program. This program promotes linkages by directing all agency and regional plans be reviewed by the Governor's Office of Planning and Budgeting for consistency with the State Comprehensive Plan. For a state-level planning document to accurately reflect Florida's population and economic growth, growth management factors should be reflected in the state's long-term plan. However state legislation from 1993 calling for updating the State Comprehensive Plan (*Chapter 187, Florida Statutes*) with a growth management component has not been implemented. Consequently, the State Plan is becoming less realistic and therefore less useful in guiding state actions.

2. Lack of Coordination: State Planning and Budget Process

In 1992, Florida's voters amended the State Constitution to direct the Legislature and the Governor to set the budget accordingly to correspond to the state plan. However, implementing legislation was never developed to identify what constitutes the state plan for this purpose. The State Comprehensive Plan would seem to be the logical choice, but the failure of the executive branch to update this comprehensive plan hampers the constitutional mandate to set the budget corresponding to legislatively-adopted planning objectives. Notwithstanding these limits, recent legislative directives for state agencies identifying strategic budgeting objectives in their agency plans and submitting budgets tied to performance of those objectives is a step in the right direction.

3. Uncoordinated Management Among Agencies

There often lacks an inter-agency forum for coordinating management programs and activities. Beyond intentional legal and legislative barriers, incentives that encourage agencies to work together are uncommon. This isolation can lead to a kind of dysfunctional incrementalism, or an inefficient piece-meal management approach, as programs try to manage resources independently of one another. When disconnects occur, it may appear that the only solution to restore continuity is to make legislative changes. It is possible, however, that coordinated approaches among multiple agencies would be more effective.

Resource management agencies contain a solid core of professionals and managers that should create coordinated paths with other agencies, develop shared missions, and make governance work more efficiently. It is discouraging, however, to observe state legislative proposals attempting to limit public agencies from communicating effectively, such as forbidding water management districts from requiring a zoning clearance from the local government as a condition for a completed water permit application. Thankfully, these types of bills are infrequently enacted into law.

4. Sustainable Level of Urban and Rural Development

There is continual discussion regarding maintaining "the quality of life" of our communities and maintaining "sustainable" communities, but there has been no publicly-accepted approach for establishing or measuring what these terms mean or how they should be achieved. To manage the Greater Charlotte Harbor Watershed's environmental resources, society must ensure a desired level of productivity and health, and provide some reliability in the decision-making political and regulatory process. It is important that some form of measurement be established for these concepts.

Determining the level of "sustainability" or "build out" is complicated by pending redevelopment of much of the greater watershed's developed areas, including rural lands that have been developed through mining or intense agricultural use. Redevelopment can, and lately, will improve the on-site natural resource amenities and characteristics. However, many redevelopment proposals increase the demand for regional resources by requiring the importation of additional water and by increasing the contribution of air pollutants. Since public policy promotes redevelopment, increasing densities or intensities of uses can also exact a further price on area-wide resources.

A recognized balance between user groups does not exist. There is no real system of publicly adopted priorities between uses, whether by type or geography. Consequently, when forecasts indicate future shortages, the ability to plan reallocation of resources is impeded. Sustainability presumes the establishment of a balance between natural systems, and the urban and rural uses of those systems by man. There has been no successful predictive model developed for estimating the degree of use that may occur in the Greater Charlotte Harbor Watershed (or Florida) before the natural system begins to fail.

5. Definition of Economic Development

There is no public consensus as to what the term economic development means. Consequently, there also lacks public consensus defining the desired, measurable outcomes of economic development. Do communities with tight urban service areas and high land costs meet economic development goals more than areas with few standards and cheap land? Are areas with large forecasted population increases meeting economic development needs more than areas with lower rates of projected population increases? Since economic development and growth management are important factors in planning for infrastructure, transportation, municipal services, and natural resource protection, it would be helpful to reach some agreement within local communities about the definition of achieving economic development and the costs and benefits associated with those goals.

6. Strategic Habitat Acquisition Program

A strategic habitat acquisition program does not exist in Florida. Public land acquisition under most of the existing state programs begins with the initiative of landowners, not the scientific assessment of the most ecologically valuable parcels needed for species survival.

Therefore, as landowners and their willingness to sell their properties changes from year to year, so do acquisition priorities. These rapidly changing priorities for land acquisition are confusing to the public, often giving the appearance of politically-driven priorities. Furthermore, changing priorities and the difficulties in dealing with individual land owners can cause lengthy delays in land acquisition; an example being the two decade delay in acquiring all of Cayo Costa, a coastal barrier island, for which eminent domain was granted.

In comparison, Metropolitan Planning Organizations use predictive models for transportation planning to identify needed corridors which translates into future facilities and finally, the exact routes for right of ways. Corridor priorities are ranked and once introduced into the five-year plan, are rarely changed until the project is completed. Only with new fiscal resources are new projects introduced. Unfortunately, land acquisition for habitat protection is rarely as structured and consistent from conception through implementation.

The eminent domain legal vehicle, which is the ability to "take" lands for public purposes after the payment of just compensation, has been made available on occasion (such as for Cayo Costa and the Charlotte Harbor Wetlands) for the purpose of acquiring sensitive lands. However, landowners are seldom given any certainty in decision making time lines. Instead, they are subjected during the uncertain time of land transfer to the threat of jeopardy findings for many normal land development activities. A more clearly defined policy framework for identifying high quality habitat areas, discussing community land and water needs, and creating a land-owner friendly acquisition process would be helpful.

B. Hydrologic Alterations

Water is the single most important resource component that defines Florida's ecology. It functions as a type of ecological currency of exchange between natural systems, with scarcity leading to "depressions," or die-offs through drought, and overabundance leading to "inflation,"or die-offs due to flooding and drowning. In many ways, it is the second currency of the state's economy since most of Florida's largest commercial sectors are water-dependent. Managing water and its uses may be the activity with the most internal policy conflicts, and many of the water management mistakes of the past will be with us forever. The challenge for the Greater Charlotte Harbor Watershed, particularly in areas with extensive platted lands not yet fully developed, is to identify those mistakes that can be reversed, and not continue the land use practices such as over drainage, direct sewerage and stormwater discharge, and development in low lying flood plains that are plaguing other parts of the state. The gaps in our current hydrologic management scheme are summarized below.

1. Reactive Water Management

The largest drainage works builder within any one water management district jurisdiction (with the exception of the mass of the Water Conservation Areas in southeast Florida) is the Florida Department of Transportation (FDOT). Statewide, FDOT sponsors the construction of

roadside drainage ditches to keep their road beds stable and to convey excessive water to receiving areas. These areas are often natural water bodies.

The primary managers of water in any urban area are the local governments of jurisdiction. These entities have a management imperative to keep their capital facilities adequately drained, and compatible with the water management district's flood control mission. As the population grows or new areas are developed, new roadways and urban areas will require the same management approach. However, the public policy to keep transportation structures outside of areas subject to frequent flooding, with the exception of wetlands, is weak and therefore destines us to nearly endless additions of water conveyance systems accompanying new transportation projects.

2. Fresh and Salt Water Management

Most municipal water supplies and many agricultural and commercial water supplies rely on groundwater wells that draw on underground aquifers. When too much water is withdrawn from an aquifer, salty non-potable groundwater from saline rich aquifers may contaminate this water source. In the greater watershed, evidence of saltwater intrusion into potable aquifer water sources is common. In some areas, this indicates a reverse in the direction of water flow, where fresh water once naturally flowed into salt water systems. The water management district's Surface Water Improvement and Management (SWIM) program was created as an effort to connect these problems under one management program. Unfortunately, funding for the SWIM program has been declining due to competing priorities.

The SWIM program's current priorities are targeted to prevent additional degradation of water resources through improved management of future development's impacts on freshwater quality and quantity. However, the current problem areas have not been corrected, in many respects because the issue of groundwater use is receiving low policy priority. This is also due to public opposition to reducing groundwater use, as well as public reluctance in changing the existing storm water management or domestic waste water treatment methods.

Using sewerage as an example, new suburban development areas will likely be required to connect to municipal sewers to ensure a minimum level of water treatment or these areas will be zoned at the lower densities which enable septic tanks to function properly. But existing high density areas with septic tanks and recognized ground and surface water problems will stay unchanged unless referendums are passed providing either the fiscal or legal resources to correct such problems.

Possibly the best indication of a disconnect between fresh and salt water resource management is the existence of two separate uniformed law enforcement agencies: one for freshwater (uniformed and armed game wardens with arrest powers), and one for salt water (uniformed and armed marine patrollers with arrest powers). Fortunately, the agencies have well established communications and assistance agreements that temper the disconnect, but there is a

separation of management based on salinity.

3. Deficiencies in Measurable Objectives

Policy conflicts within agency's water management mission statements may be a reason why measurable objectives are difficult to develop, but gaps in declaring measurable outcomes are the result. Therefore, it is very difficult for legislative bodies to budget towards results. The debate over minimum freshwater flows (what level of flows are necessary, as a bare minimum, to maintain the integrity of the ecosystem) for the entire greater watershed continues because the science is not complete to predict accurately the results of management actions.

Furthermore, questions concerning the necessary minimum flows are only the first of many questions that are difficult to answer and scientifically defend. What is a basin's median flow, annual flow, and optimum flow, and what aquatic species of flora and fauna are more dependent on these flows and totals? To a certain extent, this is part of the incomplete knowledge in the greater watershed.

4. Insufficient Monitoring

Comprehensive, systematic, and statistically reliable resource monitoring is nonexistent in the greater watershed. The recently completed *Compendium of Existing Monitoring Programs* should provide guidance to the Management Conference to give direction to addressing this issue.

5. Inadequate Enforcement and Penalties

"Forgiveness is easier than permission" is a broadly repeated perception and "inspectors are thin on the ground" is another. The difficulty in stretching limited tax dollars for regulatory and enforcement agencies to meet all of their objectives has resulted in lower than recommended staff sizes. Small staff sizes and increasing responsibilities, in turn, result in limited inspections and reduced ability of agencies to pursue enforcement through expensive legal processes.

There is a perception that penalties are inadequate. Part of a penalty system's value is its deterrence effect in discouraging offenders from perpetrating or repeating an offence and in encouraging others from not imitating the offender. Thus, it is possible that penalties don't serve as a deterrent and aren't equal to the violation.

C. Water Quality Degradation

The issues of hydrology are intertwined with those of water quality. Modeling, monitoring, and enforcement remain relevant as "gaps" for this subject area.

1. The "Best" Level for Nutrients?

Nutrients in the water such as nitrogen and phosphorus are important for the health of aquatic plants and animals. As these nutrients are taken up, they are passed up through the food chain and eventually broken down by bacteria and recycled. However, too much nutrient input to both fresh and saltwater systems has undesirable consequences that can include large fish kills, foul smelling water, and murky, opaque water. However, determining what level of nutrients are too much, just right, or not enough, and how seasonal nutrient needs vary is not fully understood. Also, realistic pollution load reduction goals, linked to the land uses that contribute nutrient loads, are not complete. Best management practices to minimize nutrient inputs and other pollutants for new development are not widely evaluated, nor are the results widely distributed.

2. Competing Fiscal Demands

Dedicated funding sources for water quality management compete with other public policies. For example, habitat restoration funding is difficult to justify without a clear link to protecting or improving public health. Public health statistics that can be related to environmental causes are rarely high-profile issues. Recent funding initiatives monitoring water quality for threats to public health at popular beaches illustrates this issue.

3. Voluntary Prevention versus Mandatory Correction

Public policy should support the rights of the individual as he or she deems fit, until those actions create harm for the public health, safety, and welfare. Known technologies that prevent or reduce water quality degradation have been developed and described as voluntary best management practices. When development density or intensity is low, degradation of regional resources generally does not result, but failing complete implementation of best management practices (partly due to their voluntary nature), area-wide degradation of water quality will increase.

The essential question is, "what level of degradation justifies a transition from voluntary approaches to enforceable mandates?" The decision tree for making this policy shift is not established and therefore rarely made.

4. Interlocking Public Policy

Declared public policy for agencies supporting common goals is not well established. For example, the lack of support, as demonstrated by the lack of legal action, for local governments from environmental agencies pursuing mandatory sewer hookups is startling, as is witnessed recently by Punta Gorda's experience expanding its municipal sewer system. Similarly, Lee County's continued attempts to deny land use changes that would have resulted in extensive wetland filling was not met with support from other agencies *(see Lee County vs Reahard).* The agencies that would have acted negatively on such permit applications were not evident in the

court proceedings.

There is a categorical difference between regulations for community character, by which each community determines its own unique qualities, and those regulations that implement an area-wide goal that should be supported by all the agencies. If agencies do not support each other on area-wide goals, then the legitimacy of those goals may be lost.

D. Fish and Wildlife Habitat Loss

The underlying problem maintaining fish and wildlife habitat is that a land use or any other alteration, such as for water management or transportation, changes the land's habitat value for wildlife. Only recently has the impact on wildlife been considered part of the public review and permit process. Even now, public policy on the value of fish and wildlife habitat is not clearly articulated to developers or to regulatory professionals.

1. Gaps in Habitat Issues

Habitat for its own sake is seldom protected except through land acquisition programs or for specific threatened or endangered plants and wildlife. When land is not owned by a government entity, property owners, by right, are not obliged to manage their acreage as potential wildlife habitat. Since little direct habitat management on private property is possible unless it is performed by the land-owner for his/her own purposes, and publicly-held lands are not always managed to provide quality habitat, few places exist where habitat is effectively provided. Although some local regulations address landscaping criteria and limit tree removal, the purpose of virtually all local flora regulation is for coverage or visual appearances. The issue of habitat protection and management is often raised during public comments and permit review activities, often surprising private (and public) applicants with issues for which they were not prepared to assess.

2. Separation of Flora from Fauna

Management of animal species and their habitat is the responsibility of the Florida Game and Fresh Water Fish Commission. The Commission has the responsibility of evaluating listed species for their sustainability and preparing plans to restore listed species to sustainable levels. Management of plants and their habitat, however, is the responsibility of the Department of Agriculture and Consumer Affairs, whose interest in flora largely depends upon its commercial marketability or its scarcity. Although in biological or ecological terms it is commonly recognized that animal and plant populations operate as an integrated system rather than as separate populations, the management of the ecosystem is conducted through different agencies with different objectives.

3. Habitat Preservation in "Penny Packets"

Since habitat protection initiatives have few legal authorities on private land, habitat management that does occur is frequently implemented through the land and water permitting agencies. However, these agencies seldom protect entire ecosystems, since they review permits based on property boundaries, not ecological boundaries, and development proposals are usually for a small, defined area that seldom encompasses entire habitat communities. When evaluating agricultural land uses, permitting agencies must consider that agricultural enterprises must convert land and have access to water resources in order to be economically profitable and often must pursue large scale operations in order to achieve economies of scale.

One new initiative to protect habitat in connected, continuous parcels is the Florida Greenways and Trails Initiative. This effort is attempting to identify complete habitat communities for conservation. However, this initiative is limited to property authorized for inclusion in the trail system by willing landowners, limiting its scope and range.

4. Baseline Habitat Protection

The Florida Game and Freshwater Fish Commission *GAP* maps are the latest statewide effort to identify, with a high level of detail, Florida's vegetation communities. Such maps currently include virtually all undeveloped lands, and some lands that have developed at a low intensity. Efforts to classify such areas for priority in preservation have strong logic but weak public policy. For example, high priority lands are usually identified by the Game Commission for protection for baseline species; however, land use forecasts may include such lands as necessary to meet the economic assumptions of the community or region. Protection is not likely to occur unless specific harm can be predicted to specific wildlife. Furthermore, when habitat is converted to a more intensive use, it is often difficult to document the direct effects on the entire wildlife community, that also makes habitat protection programs and permit limitations more difficult to defend in a legal setting.

E. Land Use and Management

Our changing social and economic environment will lead to changing land uses throughout the greater watershed. Land use planning goals must include predicting and incorporating change into planning for the future, as well as clearly managing existing uses to meet feasible private and public goals. A variety of problems and gaps make land use planning difficult to achieve and are described below

1. Future Land Use Projections

Future land use projections are only rough estimates and are particularly unreliable for areas designated as mixed use without quantification of those uses. This unreliability causes accuracy problems for water quality and quantity predictive models that are used to understand

how land use is related to water quality and quantity. Further, these land use projections are tied to population forecasts for areas with extensive platted lands that are largely undeveloped. Lee County, Charlotte County, and the City of North Port are notoriously inaccurate for five year, 10 year, and 20 year population projections.

2. Land Use Controls

The Local Government Comprehensive Planning Act (*Chapter 163, Florida Statutes*) is a delegation by the Legislature of planning and oversight of land use and property management to local governments. Under the authority of this act, local comprehensive plans are guided by the economic assumptions of the local government. However, due to legislative direction towards growth management, local governments tend to focus their efforts on management of urban land uses, or the conversion of agriculture and open lands to urban uses, even though agriculture is often the single largest land use, particularly for county level planning activities.

In reality, water management districts effectively regulate agriculture and open space through their permitting activities, but not necessarily in correspondence to the applicable local comprehensive plan. Similarly, local governments do not fully assess the cumulative impact of urban or rural land use decisions, under the presumption that permitting agencies are assessing the local comprehensive plans through predictive models.

3. Cumulative Effect Consideration

Most individual land use regulations and permits can mitigate predicted storm water, habitat, and wetlands impacts for a single site. However, decisions are seldom made within the context of cumulative impacts. Cumulative impacts are rarely incorporated into permit limitations or mitigation strategies in large part because their scale extends beyond borders of single-focus programs or agencies. Local efforts that created the need to discuss issues in a multi-agency setting along with private and public input reaffirmed the importance for incorporating the cumulative effects of individual actions in the greater watershed.

4. Weak Implementation of BMPs

The local planning process has a mandatory Evaluation and Appraisal Review (EAR) process where local planning implementation is assessed. This opportunity to measure progress is seldom used effectively for several reasons. First, it is a self-audit and not an independent evaluation, and therefore lacks objectivity. Second, it is undertaken too infrequently to train staff or educate the public how to conduct the evaluation effectively. Third, it is too cumbersome to pursue voluntarily, even though it may be valuable as a learning tool for other communities. Consequently, land use management strategies and best management practices are not always effective because they lack adequate evaluation.

IV. MATRIX OF AGENCY INVOLVEMENT:

The Working Connections and Perceived Gaps.

The Working Connections

Entity	Land Use and Management					Fish and Wildlife Habitat Loss			Hydrologic Alterations						Water Quality Degradation				Linkages	
see note below:	1	2	3	4	5	1	2	3	1	2	3	4	5	6	1	2	3	4	1	2
Federal																				
Department of Agriculture: National Resource Conservation Service			A	A	A	A			A	A	A	A	A	A	A	A	A	A	A	
Department of Commerce		X A	A			AO			X	OA		A		OA	A				OA	
Department of Defense	X	X			XA		X	X	PO X	PX	OX	X		XA	X		X		X	
Department of Housing and Urban Development	O											A							AO	
Department of Interior: United States Geological Survey			A			A			A	A									A	
Department of Interior: Fish & Wildlife Service	PX	X	AP			A	PX	X	X	PX	PX	A			X				PXA	
Department of Transportation						XA													XA	
Federal Emergency Management Agency		A							A			XA							XA	
Environmental Protection Agency	A	XA	A		XA	O	OX	X	OX	OX	X	X	O	O	X		X	OA	OXA	

Note: column numbers correspond to sections in text; e.g. Hydrologic Alterations 2, refers to "General Resource Assessment, Protection, and Use"

P = Entity has a property owner role

X= Entity has regulatory or review authority

O= Entity funds programs related to the "Working Connection"

A= Entity sustains a technical role through developing information, or providing direct technical assistance

The Working Connections

Entity	Land Use and Management					Fish and Wildlife Habitat Loss			Hydrologic Alterations						Water Quality Degradation				Linkages	
see note below:	1	2	3	4	5	1	2	3	1	2	3	4	5	6	1	2	3	4	1	2
State of Florida																				
The Board of Trustees of the Internal Improvement Trust Fund	P						P		P	P	P			P	P				P	
Florida Land and Water Adjudicatory Commission	X	X						X	X	X	X	X			X		X		X	
Attorney General					XA			X	X		X				X		X		XA	A
Department of Agriculture	PA		A	A		A		A	A	PA	PA	A		P	A			A	PA	
Department of Education	P			A		A				A						A			PA	
Department of Community Affairs	XA	X	XA	O	XA		O	X	X	OX	X	X			X			A	XOA	
Department of Environmental Protection	PX	X	XA		A	A	PO X	X	PX	OP AX	X	PX	A	X	PO AX	A	X	OA	POAX	
Department of Health		XA	XA				A			XA	A							A	XA	
Department of Transportation	PX	OA		OA	A		PO		P		P								POAX	
Florida Game and Fresh Water Fish Commission	PX A	X	PA	A	A	A	PX A	X	A	PA	PA	P		P					PXA	

Note: column numbers correspond to sections in text; e.g. Hydrologic Alterations 2, refers to "General Resource Assessment, Protection, and Use"

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The Working Connections

Entity	Land Use and Management					Fish and Wildlife Habitat Loss			Hydrologic Alterations						Water Quality Degradation				Linkages	
see note below:	1	2	3	4	5	1	2	3	1	2	3	4	5	6	1	2	3	4	1	2
Regional Government																				
Water Management Districts	PX	OX	PX A	OA	A	AO	PO X	X	PO XA	PO AX	PO AX	PO AX	A	PX O	PA X	A	X	OA	POAX	
Regional Planning Councils	A	XA	PX	A	A	A	A	X	A	XA	A	A	A		A		A		XA	
West Coast Inland Navigation District	P	PO	PA	O			OA			A									POA	
Peace River/Manasota Regional Water Supply Authority	P		P			O			P	P	P								PO	
Englewood Water District	P		P						P	P	P								P	
Special Initiatives																				
Governors Commission, Sustainable South Florida and South Florida Ecosystem Recovery Task Force	A	A	A		A	A	A	A	A	A	A	A		A	A			A	A	A
Estero Bay Agency on Bay Management	A	A	A		A	A	A	A	A	A	A	A		A	A		A	A	A	A
Resource Planning and Management (Charlotte Harbor)	A	A	A	A	A	O	A	A	A	OA	A	A	A	A	A	A		A	OA	A

Note: column numbers correspond to sections in text; e.g. Hydrologic Alterations 2, refers to "General Resource Assessment, Protection, and Use"

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The Working Connections

Entity	Land Use and Management					Fish and Wildlife Habitat Loss			Hydrologic Alterations						Water Quality Degradation				Linkages	
see note below:	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**1**	**2**
County Governments	X	X	PX	OA	A	OA	PO AX	X	PO X	PO X	PO X	PX		PO AX	PO AX		X	OA	POAX	
City Governments	X	X	PX	OA	A	OA	PO XA	X	PO X	PO X	PO X	PX		PO AX	PO AX		X	OA	POAX	
Special Districts	P		P			O	P		P	PO	PO			PO					PO	

Note: column numbers correspond to sections in text; e.g. Hydrologic Alterations 2, refers to "General Resource Assessment, Protection, and Use"

P = Entity has a property owner role

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Perceived Gaps

Entity	Weaknesses: Planning and Linkages among Programs						Land Use and Management				Fish and Wildlife Habitat Loss				Hydrologic Alterations					Water Quality Degradation			
see note below:	1	2	3	4	5	6	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4
Federal																							
Department of Agriculture: National Resource Conservation Service					A		A		A	A	A	A	A		A		A	A		A		A	
Department of Commerce					A				A	A	A		A	A		A		A		A	O	A	
Department of Defense						X			X	X	X	X	X	X	X	OA X	AX	X	X		O	X	
Department of Housing and Urban Development					A			O															
Department of Interior: United States Geological Society																							
Department of Interior: Fish & Wildlife Service						X			A		PA	PA	A	A		A	A	A		A	PO	A	
Department of Transportation								A									OA						

Note: column numbers correspond to sections in text; e.g. Hydrologic Alteration 2, refers to "Fresh and Salt Water Management"

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A= Entity sustains a technical role through developing information, or providing direct technical assistance

Perceived Gaps

Entity	Weaknesses: Planning and Linkages among Programs						Land Use and Management				Fish and Wildlife Habitat Loss				Hydrologic Alterations					Water Quality Degradation			
see note below:	1	2	3	4	5	6	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4
Federal Emergency Management Agency										XA						XA							
Environmental Protection Agency					A	X			OX A	A	A		A		A	OA X	OA	A	X	O	O	XA	
State of Florida																							
The Board of Trustees of the Internal Improvement Trust Fund						PO		P	P	P	P	P				P							
Florida Land and Water Adjudicatory Commission						X		X	X		X	X	X	X		X	X		X			X	X
Attorney General								X															
Department of Agriculture					A	OA	A	A	A	PA	PA	PA	A	A	PA			A		A	PO	A	A
Department of Education							A				A							A		A			
Department of Community Affairs				OX A	OX A	OX A	A	X	XO	XA	O X		OX		X	X	OX	X	X		O	X	OX
Department of Environmental Protection						OX A		X	PX	PX A	PO X	PX	OX	PO AX	PX	PX AO	PO X	PO X	X	PO A	PO	X	PO AX

Note: column numbers correspond to sections in text; e.g. Hydrologic Alteration 2, refers to "Fresh and Salt Water Management"

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Perceived Gaps

Entity	Weaknesses: Planning and Linkages among Programs						Land Use and Management				Fish and Wildlife Habitat Loss				Hydrologic Alterations					Water Quality Degradation			
see note below:	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**
Department of Health								X	AX	A						X	A	AX	X	A		X	AX
Department of Transportation					A		A	X					P		PX			A					A
Game & Fresh Water Fish Commission					A	OA		A	PA	A	PO A X	PA	A	PO A	P	PA	PA	PA		PA	PO		A
Regional Government																							
Water Management Districts				XA	A	PO X	A	X	PO AX	XA	PO X	PO X	PX	P	PO AX	PO AX	PO AX	PO AX	X	PO A	PO	X	PO AX
Regional Planning Councils				AX	AX	AX	A	XA	XA	XA	X A	XA	XA	XA	A	A	XA	XA				A	XA
West Coast Inland Navigation District						OA					PO	PO	P				PA				PO		
Peace River/ Manasota Regional Water Supply Authority									P														
Englewood Water District									P														
Special Initiatives																							

Note: column numbers correspond to sections in text; e.g. Hydrologic Alteration 2, refers to "Fresh and Salt Water Management"

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Perceived Gaps

Entity	Weaknesses: Planning and Linkages among Programs						Land Use and Management				Fish and Wildlife Habitat Loss				Hydrologic Alterations					Water Quality Degradation			
see note below:	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**
Sustainable South Florida Commission and South Florida Ecosystem Recovery Task Force				A	A	A		A	A	A	A	A	A	A	A	A	A	A		A		A	A
Agency on Bay Management						A		A	A	A	A	A	A	A	A	A	A	A		A		A	A
Resource Planning and Management (Charlotte Harbor)						A		A	A	A	A	A	A	A	A	A	A	A		A		A	A
County Governments				AX	OX A	PO X	A	X	PO AX	XA	PO X	PO X	PO X	PO X	PO X	PO X	PO X	PO X	X		PO	X	PO AX
City Governments				AX	OX A	PO X	A	X	PO AX	XA	PO X	PO X	PO X	PO X	PO X	PO X	PO X	PO X	X		PO	X	PO AX
Special Districts								P	P							P							

Note: column numbers correspond to sections in text; e.g. Hydrologic Alteration 2, refers to "Fresh and Salt Water Management"

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V. FISCAL AND STAFFING RESOURCES

Volume I of the *Base Programs Analysis* discussed the agencies and their legal and regulatory capacities. The first two sections of Volume II reports the manner in which agencies support each other, and some notable gaps in the governmental management structure. This section describes the degree to which staffing and budgets constitute reinforcement or gaps.

The two major indicators used in this section are staff size and budget. The first indicator is the number of staff devoted to work within the Greater Charlotte Harbor National Estuary Program Watershed on the issues identified to be of importance. The second indicator is the budget devoted for those issues, which reflects either the staff and related costs, or grants provided by the different agencies to private or other public entities to address the issues. The effort devoted to a particular issue of the Charlotte Harbor National Estuary Program is reflected as a percentage of the budget. For example, an organization with a staff of 10 and a budget of $500,000 may be described as providing a certain percentage of its effort (as an example, 50%) towards one issue, the remainder (again, 50% for example) towards another, and no effort towards the rest. All the agencies shown as budgeting or staffing towards the issues represent the "connections," whereas issues receiving little attention (particularly within local jurisdictions) may represent "gaps."

A simple survey instrument was used (*see attachment*) to gather this information, which was supplemented by phone calls.

In many cases this information is a best guess, particularly for state and federal entities, since their service office areas only infrequently coincided with the study area boundary. Consequently, for those entities work and budget estimates are approximations developed after discussions or results of the questionnaire.

A. Staff Size

Staff size estimates were developed in full time equivalents (FTEs) for the fiscal year and incorporates all staff, just not technical/scientific personnel. These estimates include administrative and clerical personnel for the service offices. What may not be included are administrative, clerical, and technical assistance personnel for the headquarters of agencies if these offices are outside of the study area, particularly within the state capital or regional federal offices. It should be recognized that the respondents frequently indicated that, for example, their office had ten persons, who devoted (for example) twenty percent of their time to the study area; when this happened, the staff size was converted to the full time equivalents discussed above, which in this case would be reported as two staff.

It should be noted that the discussed activities within the study area are undertaken by many private or commercial entities. The volume of that activity is not reflected in this report.

B. Budget

The budget estimates are for the fiscal year 1997-98. It should be noted that these estimates are not completely accurate for all agencies, particularly for those receiving grants or private funds under contract. Additionally, for those agencies with service areas outside the Greater Charlotte Harbor National Estuary Program Watershed, budget estimates and staff sizes are rounded estimates.

It should be noted that the huge majority of expenditures within the greater watershed are spent by private interests, since governmental expenditures are only a fraction of the gross domestic product of the study area.

C. Effort Categories

There are six broad categories of effort for an analysis of staff and budget. These management topics are land use, water quality, hydrology, habitat, research (in the preceding four topics), and grants to other entities for the preceding five topics.

The priority problem statements and the goals of the Charlotte Harbor National Estuary Program coincide with these categories as follows:

1. *Land Use* - mitigating the negative and accentuating the positive impacts of population growth, economic development, and land use change, including beach management and forestry.
2. *Water Quality* - managing for nutrient enrichment specifically, and other indicators of water quality change, including impact on fresh and marine resources.
3. *Hydrology* - the activities of water supply (including agricultural water supply), floodplain management, water table management, and management of wetlands or water retention (or drainage).
4. *Habitat* - the management of land as well as fresh and marine water resources for the yield or sustainability of the species.
5. *Research* - the development of information resources which may be used by other entities in activities discussed in the above four categories.
6. *Grants* - providing funds to other entities for the above five activities.

It should be noted that grants from one entity to another, such as from a water management district to a local government, could be counted twice. This analysis has attempted to eliminate such double counting by including the grants from the donor agency but not the equivalent expenditure of the receiving agency.

D. Matrix of Participation

The following matrix depicts the different levels of public agency participation, beginning

with the federal, and then state, regional and local entities. Within each level there are a number of participating agencies, which are provided in alphabetical order. The staff size, budget, and percent of effort in each of five issue topics are listed for each agency involved in the management of priority issues. A sixth topic, "grants to other entities," is also provided, when appropriate.

It should be noted that the numbers for an entity may not equal to 100% because some of the agency's activities are not classifiable according to these categories.

Matrix of Participation

Level	Agency	Staff Size	Funds; in $1000s	Effort (%)					
				Land Use	Water Quality	Hydrology	Habitat	Research	Grants
Federal									
	Environmental Protection Agency	1	500						100
	US Army Corps of Engineers	5	?		33	33	33		
	US Fish and Wildlife Service	17	1100	55	6		31	5	3
	United States Geological Survey	45	?						
	National Resource Conservation Service (-see each county)								
State									
	Florida Department of Environmental Protection								
	-Tampa	1	27	50	50				
	-Fort Myers	11	408	20	12	12	38	18	

Matrix of Participation

Level	Agency	Staff Size	Funds; in $1000s	Effort (%)					
				Land Use	Water Quality	Hydrology	Habitat	Research	Grants
	-Tallahassee	3	2500		12	1	7	5	75
	Department of Community Affairs								
	-Coastal Zone Management	1	200	5	5	5	5	5	75
	- Area of Critical State Concern	3	240	75	8	8	9		
	-Resource Planning and Management	4	320	80	5	5	5	5	
	Department of Health (-see each county)								
	Department of Agriculture -Forest Service	10		100					
	Florida Game and Fresh Water Fish Commission	10	500				75	25	
	University of Florida -Sea Grant	2	100					100	

Matrix of Participation

Level	Agency	Staff Size	Funds; in $1000s	Effort (%)					
				Land Use	Water Quality	Hydrology	Habitat	Research	Grants
	-Center for Governmental Responsibility	2	300					100	
Regional									
	Southwest Florida Water Management District	103	7441		1	24	4	13	58
	South Florida Water Management District	9	2100		17	25	3	54	1
	Southwest Florida Regional Planning Council	11	1.1	40	15	15	10	20	
	Central Florida Regional Planning Council	7	600	60	15	5	10	10	

Matrix of Participation

Level	Agency	Staff Size	Funds; in $1000s	Effort (%)					
				Land Use	Water Quality	Hydrology	Habitat	Research	Grants
	Peace River /Manasota Regional Water Supply Authority	4	11800		1			5	2
	West Coast Inland Water Navigation District	3.5	1800	10			10	10	70
Local									
	Charlotte County- Planning	17	930	65	12		18	6	
	-Health	14	700	43	43			14	
	-Drainage	35	4300		25	70		5	
	DeSoto County -Planning	2	75	85	5	5	5		
	-Drainage	6	333	8	50	3	15		
	-Health	5	250	43	43			14	
	-Soils	NA							

Matrix of Participation

Level	Agency	Staff Size	Funds; in $1000s	Effort (%)					
				Land Use	Water Quality	Hydrology	Habitat	Research	Grants
	Hardee County -Planning	3	195	90	4	4	2		
	-Health	5	250	43	43			14	
	-Drainage	NA							
	-Soils	NA							
	Lee County -Planning	17	1600	55	9	9	26	1	
	-Laboratory	7	700		95			5	
	-Health	42	2100	43	43			14	
	-Drainage	NA							
	-Soils	2	200					100	
	Manatee County -Drainage	1	80		100				
	Polk County -Planning	20	1000	80	10	5	2	3	
	-Drainage	73	10000	2	10	77	10		1
	-Health	28	1400	43	43			14	

Matrix of Participation

Level	Agency	Staff Size	Funds; in $1000s	Effort (%)					
				Land Use	Water Quality	Hydrology	Habitat	Research	Grants
	-Soils	NA							
	Sarasota County -Planning	35	2000	80	2	2	6	10	
	-Drainage	NA							
	-Soils	NA							
	-Health	28	1400	43	43			14	
	City of Cape Coral	8	500	80	5	5	5	5	
	City of Fort Myers	7	300	70	2	3	5	20	0
	City of Fort Myers Beach	1	375	80	20				
	City of Sanibel	4	250	25	10	15	50		
	City of Punta Gorda	5	300	47	47		6		
	City of North Port	5	60	20	20				
	City of Venice	12	1500	33	33	33			1

E. Summary

The matrix of participation indicates significant staffing and expenditure levels within the Greater Charlotte Harbor National Estuary Program Watershed. However, there is no particular pattern of staffing tied to geography. This is partly due to the missions of the organizations differing at different locations throughout the study area. Issues that involve direct day-to-day management receive significant local support, with connections to regional, state, and federal entities. Issues that are reactive, or incident driven, have more limited support at local levels, but receive more generic support from regional, state, and federal levels. Finally, data development and management does not occur on a regular basis in the region as a whole, as depicted by general staffing levels. Day to day management issues are those of water volume management (hydrology) and land use. Staffing levels for both issues are recognizable throughout the entire basin.

With the growth in the coastal communities and Polk County, land management agencies have increasing operational demands. Experience in the coastal communities has shown that appropriate land management leads to economic savings and reduced levels of political friction. This has not been as dramatic for inland counties, but a recognizable system of local land management contact persons with regional support is evident. Public land management demands are more intense for urban and suburban communities and less evident for rural, unincorporated areas.

Water management is another continuing operational issue for all communities varying between drainage operations in the wet season, and water supply development and conservation in the dry season. Also, with the relatively flat terrain, the rural area's agricultural operations require ongoing water management activities of drainage and water supply.

The reactive issues are those of habitat and of water quality. Habitat is protected through reactive regulatory activities such as when a water or land management permit is requested. However, many land clearing operations are exempt, such as agriculture, and forestry. With extensive exemptions, there is a need for very low staffing levels in many communities.

Regarding water quality, the prevalent management entity in every county is the local health department, with its recognized role in attempting to manage disease vectors resulting from contaminated groundwater and surface water. Less evident due to staffing levels, but with strong regulatory permit review authority, are the regional and state permitting agencies. Based upon the size of the study area, staff coverage for inspecting water quality is low except where there is also a local water quality function.

The resource management agency most evident with a research/technical assistance role is the National Resources Conservation Service. This federal agency is largely limited to rural uses, since urban and suburban uses complicate the options available for land, water, and habitat management. Other research functions are irregularly available, which is one of the driving factors for pursuing the Charlotte Harbor National Estuary Program designation.

Grant availability is traditionally a federal and state role. However, grant opportunities arise from diverse sources and are available for an area much broader than the boundaries of the Charlotte Harbor National Estuary Program study area. The two water management districts in the region also have grant programs, but these are narrowly focused toward improving the effectiveness of water quantity management and flood control. Local governments contribute towards grant programs, but do not have significant programs themselves. Finally, and not mentioned in the matrix, there are private foundation grant programs available for most of the issues. These are typically highly competitive, structured to initiate programs, and usually for purposes of promoting a particular advocacy position.

BASE PROGRAMS ANALYSIS

Volume 2:
CONNECTIONS AND GAPS

Prepared for:

Charlotte Harbor National Estuary Program
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August 1998

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Technical Report No. 98-03

Cover Artwork by Diane Pierce

This document is funded in part by the U.S. Environmental Protection Agency, Region 4 through a cooperative agreement for the Charlotte Harbor National Estuary Program.

Charlotte Harbor National Estuary Program

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Florida Deptartment of Environmental Protection

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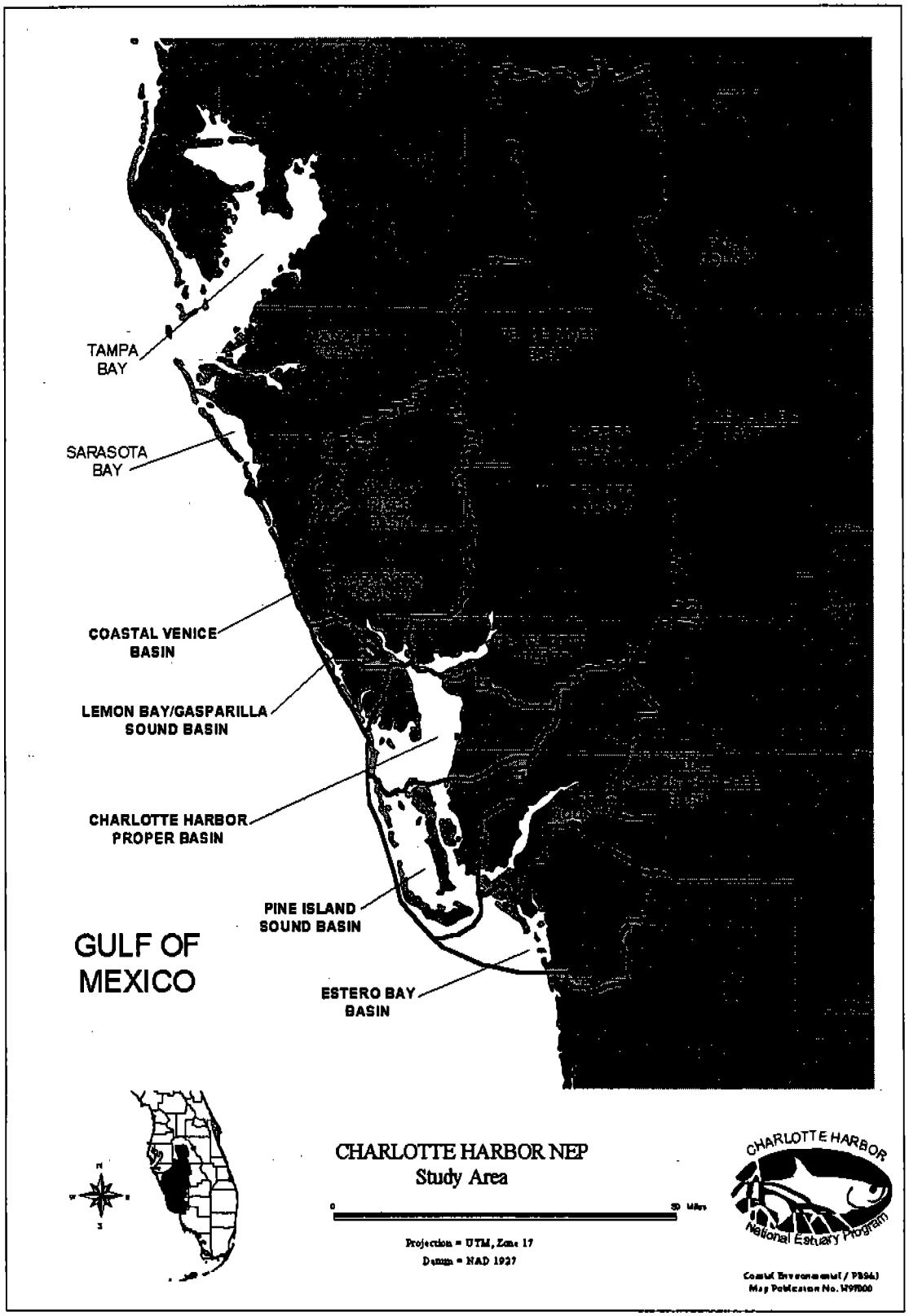
TAMPA BAY
SARASOTA BAY
COASTAL VENICE BASIN
LEMON BAY/GASPARILLA SOUND BASIN
CHARLOTTE HARBOR PROPER BASIN
PINE ISLAND SOUND BASIN
ESTERO BAY BASIN
GULF OF MEXICO
CHARLOTTE HARBOR NEP
Study Area
0
30 Miles
Projection = UTM, Zone 17
Datum = NAD 1927
CHARLOTTE HARBOR
National Estuary Program
Coastal Environmental (PBS&J)
Map Publication No. 979000

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