FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

STAFFING REQUIREMENTS OF THE FIELD OPERATION SECTION

A Report from

THE INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE

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INTRODUCTION

Early in 2005, the Florida Fish and Wildlife Commission's Division of Law Enforcement (FWCDLE) requested a proposal from the International Association of Chiefs of Police (IACP) to examine the field patrol staffing requirements. The approval of a contract occurred in May of 2005, with field work commencing shortly thereafter. This report presents the results of that work.

STUDY OBJECTIVES

Objectives of the patrol allocation and deployment study were to:

- Determine the number of field patrol officers/first responders required to enable the FWCDLE to meet their core mission and enforcement responsibility to:
  - ensure adequate resource protection of state and federal fisheries, wildlife, threatened and endangered species, control captive and exotic wildlife and protect vital habitats
  - promote safe boating and waterways through safety and education programs, improving signage, removing derelict vessels, and taking action against vessel theft and fraud
  - conduct maritime and wilderness law enforcement patrols to ensure public safety, engage in search and rescue, and reduce trespassing
  - ensure domestic security through mutual aid, port security, and disaster response
  - allow officers to meet administrative requirements satisfactorily, including report writing, training, court, and personal needs.
- Design a model to deploy the required number of first responders cost-effectively, by county and by region, in response to temporal and geographic incidence of demands for resource protection services and public safety.
- Identify data resources upon which to base personnel projections and to suggest modifications to these resources to improve staffing and deployment practices.

STUDY TEAM

Dr. Robert E. Ford, University of Central Florida, IACP Senior Associate Consultant, conducted staffing, deployment, and response time analyses and calculated staffing and deployment requirements. Palmer Wilson, Senior Associate Consultant, conducted extensive fieldwork, data collection and support work. Tim Freesmeyer, Associate Consultant, analyzed CAD data, and programmed staffing and deployment models. Jerry Needle, Director of Programs and Research, IACP, managed the study, and edited the final report.

ACKNOWLEDGMENTS

The IACP study team acknowledges the exceptional support received from FWC's executive and command staff, including:

- Colonel Julie Jones
- Lt. Colonel Don Holway
- Lt. Colonel Jim McCallister
- Lt. Colonel Michael Wiwi
- Major Calvin Adams (Project Coordinator)

Important contributors who must be acknowledged include:

- Major Bruce Hamlin, Major Andy Love, Major Brett Norton, Major David Pridgen, and Major Jeffrey Russo. These regional commanders provided invaluable assistance in our fieldwork.

- Becky Colletti, Nelda Caldwell, and Elizabeth Smith who were always willing to provide assistance in accessing information resources.

- Special notice is given to Lieutenant Steve Van Nortwick, who spent many hours educating study staff on the culture, history, and operations of the FWCDLE and its predecessor agencies.

EXECUTIVE SUMMARY

IACP patrol allocation and deployment analysis sets FWC's first responder patrol officer staffing at 650. Adding recruiting officers, officers staffing the Big Boats, and offset officers for canine, brings the IACP total recommended staffing for the officer rank to 676. This contrasts with the current staffing of 472 officers. It must be noted that this staffing level recommendation reflects a very conservative approach due to data problems. To supervise and support these additional officers, IACP is also recommending an increase in first line supervisors from a current staffing of 128 lieutenants to a recommended 176 lieutenants. One additional captain, 21 investigators and three pilot positions are also recommended. Adding existing administrative and support personnel this would result in a total recommended sworn complement of 1,001 sworn staff.

Table 1

SWORN STAFFING FWCDLE

	Current Staffing	Proposed Staffing	+/-
❑ Colonel	1	1	
❑ Lt. Colonel	4	4	
❑ Major	10	10	
❑ Captain	39	40	1
❑ Lieutenant	128	181	53
❑ Officers	472	677	205
❑ Investigators	60	81	21
❑ Pilot	9	12	3
	723	**1,005**	**283**

Note: Does not include reserve officers

Recommended staffing levels are based on a traditional law enforcement workload analysis, utilizing agency workload data to identify recommended staffing levels. These

recommended staffing levels are data based and fully defensible. The numbers recommended are conservative.

Two factors underscore the conservative nature of these estimates. Data, upon which these estimates are based, as developed in this report, fail to capture the full range of officer activities. Contrasting field observations, as was done, with data suggests that data sources underreport officer activity. Second, the job task analysis reported in the first chapter of this report found that administrative time, travel time, and maintenance efforts in this organization exhausted far more of an officer's workday than in most law enforcement agencies. Taking a conservative approach, a traditional multiplier was used (.3) to estimate time for operational labor. A more appropriate multiplier may have been .25. This would have increased the number of field officers required from 650 to 866.

Study staff recommends that once improvements in data collection (as reflected in the study) are accomplished, that the FWCDLE should periodically review the model to determine where increased staffing would be appropriate.

Resource threats, population trends, fieldwork and qualitative measures such as stakeholder interviews and officer questionnaires convince us that truly adequate staffing for this agencies requires far more officers than is projected by this analysis. These qualitative measures suggest that to fully protect Florida's people, land and waters sworn staffing levels should be in the 1,500-2,000 officer range.

CHAPTER I. JOB TASK ANALYSIS

This first section of the report summarizes the result of a modified job task analysis. The objective of the job analysis is to document the activities conducted by the Division of Law Enforcement officers, determine the frequency of law enforcement tasks, and estimate the average times consumed to complete tasks.

This task analysis is focused on task determinations relevant to staffing and deployment. The main focus of this task analysis is to identify factors that trigger work. Issues such as the amount of physical endurance needed for different work components, personality traits associated with successfully addressing components, or needed training will not be addressed. Emphasis in this analysis will be directed only to aspects of work and workload related to staffing and deployment. Furthermore, this section addresses only non-specialized field officer duties. Specialized duties such as investigations, aviation, or canine will be discussed in another section of the report. Job analysis results were produced from collection, development, and analysis of data from an eclectic and comprehensive array of data sources and employment of a range of methodologies.

- **Published Documents**. FWC organization charts; Florida mutual aid statutes; MOAs (Memorandum of Agreement), including those with NOAA (National Oceanic and Atmospheric Administration) Fisheries and joint enforcement agreements with U.S. Department of Commerce, USDA (United States Department of Agriculture), and NOAA; general orders, codes of conduct; job specifications; and the union contract.

- Print media and the Internet were accessed for contextual materials/ events/issues. Demographics were collected from national and state sources.

- **Operations Analysis**. Interviews with headquarters and regional commanders, supervisors, specialists, and officers. Special operations and other units were studied: special operations group; canine; aviation; investigations; communications; training; and recruitment. Collateral law enforcement responsibilities and associated public safety efforts were analyzed as was the Florida Emergency Plan for Law Enforcement. Hunting and fishing regulations were assessed, with emphasis on seasons. The literature on land management law enforcement roles (national and local) were reviewed.

- **Focus Groups**. Four focus groups were assembled to gather and develop information and insight on Division operations and needs. Each region

and SEA (Special Enforcement Area) was represented in the focus groups. Using daily activity reports, input on key tasks, criticality of tasks, and suggested workload drivers, focus group work helped us frame the job analysis questionnaire.

- **Field Observations**. Fieldwork was conducted at FWC work sites to identify key work and select and develop workload measures. Field observations took place in every region and in land and marine environments.

- **Job Analysis Questionnaire**. A questionnaire was employed to gather information on officers' perceptions of their work, insight into agency culture, and to identify issues of significance for deployment work. Over 300 questionnaires were returned, 278 from officers and 31 from supervisors and investigators.

- **Databases**. Information was extracted from a number of databases:

  - Crime/violation patterns (Arrest-Net)
  - Calls-for-service/activity (Computer Aided Dispatch)
  - Workload Distribution (ActivityNet)
  - Marine Unit Inventory (other agencies)
  - Managed/patrolled lands (Wildlife Management Areas)
  - County demographics (population, type [area], crime activity)
  - Hunting/fishing licenses (place of purchase and type)
  - Registered watercraft (by county and including accident and citation data)
  - Shoreline configurations (coastal, rivers, lakes, bays).

SECTION 1: AUTHORITY AND MISSION

Florida Fish and Wildlife Conservation Commission (FWC) Division of Law Enforcement officers are empowered by state law and have full authority to enforce state criminal laws. While statutes and the grant of police authority establish the parameters, the agency's mission directs and focuses activities of officers. The core mission, identified in a well thought-out and scripted document, focuses activities on:

- Resource protection
- Boating and waterways enforcement
- Marine and wilderness law enforcement patrol

- Mutual Aid Requirements.

The larger proportion of activities focuses on enforcement of criminal statutes relating to resource protection and boating safety.

SECTION 2: JOB PREPARATION AND TRAINING

Officers complete 29 weeks of study at the state law enforcement academy, a facility shared with officers/recruits from other law enforcement organizations. In addition to basic law enforcement training, FWC officers must master the codes and regulations specific to resource protection and boating safety law enforcement and complete field training prior to release for duty. Prior to full duty, officers train for over 10 months.

Staffing calculations must consider pre-service training, which consumes from 3-5% of available officer career hours. Between academy training and field training it is almost a year before newly hired officers are available for full duty. This is a cost for the organization that is acerbated when officer turnover increases. Some departments budget additional positions to compensate for this required pre-service training.

Maintaining law enforcement status requires considerable continuing training. Legally mandated yearly in-service, liability-oriented training, skills enhancement, and annual firearms re-qualification, also deduct from available hours. As specialists, FWC officers require in-service training to address the broader array of laws enforced and the range of complex equipment they utilize. Questionnaires report an average of 60 hours of law enforcement training during the prior year. Continuing expansion of domestic security missions will increase required training hours. As resource laws become more complex, demands for in-service training will increase.

Full police powers introduce work-related implications. Workload analysis demonstrates presence of a constellation of standard law enforcement duties - traffic stops, DUI stops, back-up officers from other agencies, drug arrests, and intervention in crimes that occur in the presence of FWC officers. The result of this broad grant of statewide police authority, while attractive in terms of employability, increases attention to training subjects that might otherwise not be in the resource protection domain. By taking these training courses, FWC officers continue to be an attractive resource and universally deployable for state or local emergencies, protective services, and homeland security details.

SECTION 3: ORGANIZATION AND STAFFING

FWC's Division of Law Enforcement is second in size among state police agencies. As of October 2005, the Division had 902 staff members, 723 sworn:

Table 2

DIVISION OF LAW ENFORCEMENT – STAFF
OCTOBER 2005

Colonel	Lt. Colonel	Major	Captain	Lieutenant	Investigator 1	Investigator 2	LEO	Pilot 2	Sworn Other
1	4	10	39	128	49	11	472	9	

A colonel commands the Division. Staff is deployed by region, six, each commanded by a major. Majors report to a lieutenant colonel, one supervising the North area and one the South. The regions are staffed as follows:

Table 3

REGIONAL STAFFING

Region	Sworn	Civilian	Total
North West	134	20	154
North East	114	16	130
North Central	107	17	124
South West	129	21	150
South	134	29	163
SEA[1]	78	4	82
TOTALS	**696**	**107**	**803**

[1] SEA is the Special Enforcement Area, covering the Florida Keys and Collier County.

Patrol officers are further deployed by county, 67. The smallest number of officers deployed is in Union County (one) and the largest number in Monroe (36). Headquarters is in the Tallahassee.

SECTION 4: LAW ENFORCEMENT ENVIRONMENT

Two themes dominate the FWC law enforcement environment:

- Unique characteristics
- Changing role.

Unique Characteristics. Considerable time and effort is expended to manage a statewide enterprise and coordinate and control local efforts. Time spent is higher than in single site law enforcement agencies where more face-to-face activity can occur. High levels of administrative time are reported by respondents to the questionnaire, an average of 12 hours a week on tasks such as reading and answering emails, writing reports, reading policy and office directives.

The counties and administrative regions are expansive. Travel time to work sites and calls for service are significantly longer than in traditional law enforcement agencies, especially in counties with small numbers of FWC officers. In a number of cases, travel to calls takes more time than completion of the calls themselves. CAD data reveals the average time per call for service to be higher than the 30-35 minutes experienced by traditional police agencies.

Agency policy places most officers on duty when they leave their residences. Considerable duty time is exhausted going to worksites, particularly to boat access ramps. Travel time to meetings at regional headquarters can be lengthy. There is often considerable distances between patrol sites. An officer took over one hour to get to his patrol area from the Regional Headquarters during one ride-along (South Region).

Equipment requirements are demanding. Work often necessitates special equipment, commonly a vessel in addition to a vehicle, or all-terrain vehicles, swamp buggies, or airboats. Officers are responsible for coordinating equipment maintenance. CAD data demonstrates that such equipment maintenance activity consumes a significant number of work hours.

Each of the foregoing characteristics of FWC law enforcement, higher levels of administrative activity, travel time, and equipment responsibilities, lower availability of officers to address operational workload, a factor which must be taken into account to staff and deploy officers properly. These characteristics suggest that longer work schedules may be more efficient (10- or 12-hour schedules), by reducing travel, administrative, and equipment acquisition/maintenance time as a proportion of the work period.

Diversity of work is a further characteristic of relevance. The work environment that

greets FWC officers varies significantly by county and region. Enforcement activities in rural areas vary dramatically from the mix found in more urban counties. Coastal areas present law enforcement demands that differ from those inland. Work varies from South to North and to some extent by season of the year or specific location, such as a WMA. Knowing the changing patterns of an area by season, as well as where vehicles/vessels can access and where they cannot, is important for effective policing. Learning the geography, the channels, and habitat of an area all take time, and can fade with no or infrequent exposure.

The diversity of work has two important implications for deployment. Officers should be assigned to areas that are sufficiently limited geographically to allow them to effectively learn habitats, travel routes, and other key elements. Also, deployment to such areas should be long term.

The Changing Role. As Florida changes, the FWC law enforcement role and work will change. The traditional game warden function will demand a declining proportion of officer time as hunting stabilizes or declines in parts of the state. As the state becomes more urban, animal/human problems will increase. With growing population and threats to natural resources, FWC officers will increasingly address and investigate wildlife resource related environmental crimes and concerns. Calls for service are gradually becoming a larger proportion of the workload of land-based officers as nuisance wildlife, exotic species, threatened species, and environmental concerns grow. As urbanization continues to move west toward the Everglades and areas of the St. Johns River for example, it can be assumed that nuisance alligator calls will increase as their environment shrinks.

Marine enforcement should experience even greater change. As population and recreational boating increase, the current number and duration of marine patrols are likely to become insufficient. While all indications are that commercial fishing will stabilize or decline, recreational fishing will continue to grow and require increased attention. As the mix of work changes, deployment and staffing mixes will have to follow.

FWC law enforcement is changing. The questionnaires chart a major change. Younger officers are clearly more oriented to traditional law enforcement. They appear to view their role as equally split between public safety and resource protection. Older officers focus more on the resource protection mission.

An important constellation of self-initiated officer labor involves situations encountered on the roads on the way to patrol destinations, drunk or reckless driving, for example, or a public safety assist at an accident scene. Interviews during the ride-alongs indicated that officers seem to reserve these interventions for serious or life-threatening

situations. As Florida's population continues to grow, however, these non-FWC directed incidents can only escalate in number.

As the second largest pool of Florida sworn law enforcement officers, FWC is increasingly called upon to respond to state law enforcement needs in local crises, disasters, and domestic security situations. In 2005, ActivityNet recorded 62,313 hours of disaster/security work by FWC officers. There are clear reasons for this. FWC law enforcement has unique assets. Marine capabilities, aviation resources, backcountry expertise, and a wide range of equipment make FWC capable of responding to a range of enforcement situations that few other law enforcement entities can address. This leads to FWC deployment on behalf of marine fisheries, involvement in security for coastal conferences and meetings, and, most recently, partnership with federal agencies to ensure domestic coastline security. During the hurricanes of the last two years, FWC was constantly on the front lines of search and rescue, water-related patrols, and rapid transport of officers to points of need.

SECTION 5: WORK PATTERNS – OVERVIEW

All law enforcement agencies, from local to federal, regardless of specific missions, engage in the following core activities:

- Prevention
- Patrol (directed and random)
- Answering calls for service
- Security (individuals, events, facilities)
- Investigations/compliance checks
- Arrest/apprehension
- Victim services
- Citizen services
- Administrative activities
- Court appearances/related activities.

Patrol is the most crucial activity in which FWC officers engage. Almost 90% of respondents to the job analysis survey cite patrol as their premier function. Field activity reports and field observations support this response. Most patrols are officer-directed.

Security duties are limited. Officers have not been assigned frequently to check

facilities, provide security at events/disasters, or guard individuals/groups/sites. Recently, with the onset of homeland security concerns, port security patrols have increased to protect cruise ships. Officers are increasingly posted to security details, land and water, for executive and event protection. Command staff interviews confirmed that mutual aid/security activities have increased in the last few years.

This growing security and disaster response role is documented in questionnaires. Officers report devoting 62,313 hours to disaster response in 2005 (ActivityNet), an average of 133.6 hours per year. Coverage for local events is estimated to require an additional 40.2 hours per year.

While patrol is clearly the dominant activity, 86% of officers report conducting investigations, weekly. The Division fields a contingent of full-time investigators. Ride-alongs and interviews indicate that patrol officers also get involved in lower level investigations, reducing patrol time. Investigations by regular officers, reported in the survey, account for an average of 3.5 hours per week.

FWC officers may conduct compliance checks of regulated activities, shellfish or fish sales or captive wildlife, to ensure that regulations are observed. Full-time investigators conduct the majority of these checks. In the questionnaire officers estimated 1.9 hours of compliance work per week.

Physical arrests take significantly more time than arrests by municipal agencies. A land-based arrest that occurs in a rural area requires travel to the nearest jail. Arrestees' vehicles require attention, which may involve either towing or securing, likely to take additional time. A second officer is almost always needed as well for most arrests. Marine arrests are even more time consuming. They involve securing an arrestee's vessel, either by finding an alternative driver, or a tow. The marine patrol vessel must also be secured, and the arrestee driven to a local jail, often requiring the assistance of an additional officer. Court appearances and meetings with prosecutors consume an average of 29.1 hours per year, according to questionnaire estimates.

SECTION 6: SOURCES OF IMMEDIATE WORK

Work generates from one of three sources: self-generated work by officers; directed work by supervisors; or calls for service. In municipal police, officers' workload is largely premised on responding to calls for service. In federal investigative agencies, agents are assigned cases - work is directed by supervisors. For example, the work of the rangers of the National Park System and the officers of the National Wildlife Refuge system originates largely from the officers themselves.

Observations, officer reports and questionnaires reveal a more complex picture for FWC officers. Self-initiated work by officers is most common. Directed patrols and assignments from supervisors are the second most important workload component. To increase the number of hours, the FWC has set minimum proportions of time to be spent on water-based patrol. The immediate mission of water-based patrol is normally not specified. There are important exceptions. To protect manatees, monitor shellfishing, and boating under the influence (BUI), patrols are directed to specific areas are required. There are directed patrols for boating safety areas. Big boat assignments are heavily premised on directed patrols, prescribed in joint enforcement agreements (JEAs) or other contracts. An example is the work done for the National Marine Fisheries.

Calls for service, the third source, are received at five FWC dispatch centers, recorded in a CAD (Computer Aided Dispatch) and transmitted to officers for response. Calls appear to be more common for land-based patrols and are more common in populated areas. During ride-alongs, several calls for service were observed, a nuisance alligator call and a danger to a gopher turtle call. In both cases, several FWC units responded, as well as a trapper. On the water, several calls for excessive speed in Manatee zones were observed. A sizeable proportion of calls for service originate from other law enforcement agencies.

SECTION 7: PATROL

FWC officers confront two very different patrol environments - land and water. Land patrols are far more common, 643,768.45 hours during fiscal year 2004-2005, 75% of total patrol hours. Water patrols accounted for 213,183.75 hours during this same period.

FWC does not generally conduct patrol around the clock. Staffing, in most areas, limits patrols to more active hours. The "best eight hours out of 12" schedule, the most common, is primarily deployed with a two shift (days/afternoons) three squad configuration. The third squad fills in leave time for the other two shifts or serves as a power shift for special details. Calls for service dictate 24-hour patrols in more populated areas.

Patrol features a variety of modalities; the most common of which is vehicle patrol, with vessel patrol second, followed by foot and ATV patrols. Specialized units provide air patrol. On water and land patrol officers make frequent contact, 1,151,319 in 2005. (Officer reported.)

Land Patrols. Land patrols focus on two core missions, resource protection and

wilderness law enforcement. Wildlife, threatened and endangered species and habitat focus resource-protection patrols. Wilderness patrols concentrate on public safety, search and rescue, and trespass matters. With a paucity of enforcement resources, FWC officers perform many traditional law enforcement functions, especially in rural areas. In questionnaires, approximately three quarters of officers specified some aspect of resource protection as a mission when on land patrol. Among what appears to be younger officers, public safety mission is a common second response.

Based on work patterns observed, questionnaire responses, and CAD data, land patrol work is triggered by/associated with:

- Resource protection on private, state, and other government land
- Protecting endangered/threatened species
- Regulating hunting/fishing
- Answering calls for service
- Self-initiated law enforcement activities (traditional)
- Regulation/compliance investigations.

In Chapter III, these work constellations will be linked to workload drivers.

The following questionnaire response describes the land patrol function quite well:

> "We patrol for destruction of government property - signage and fence-line destruction, vandalism, trespass by vehicles, boats and livestock. We patrol for violations of hunting/fishing/ regulations during statewide seasons and poaching outside state seasons. We patrol for weapons violations and especially for firearms that are not unloaded and cased when transported. We patrol for time trespass - commercial encroachment and illegal firewood cutting. We patrol for litter and trash dumping."

As a proportion of total enforcement work, land patrols are the largest. ActivityNet records 643,768.45 hours of general inland patrols, about 56% of the total hours worked during fiscal 2004/2005. Land patrols are broken down further in ActivityNet, hunting (134,155.25 hours), dog hunting (8,859.5 hours), and freshwater fishing enforcement (71,034.35). Land patrols can include travel time to and from boat launch or docking locations for officers assigned to water patrol.

Goals vary by area and season. During hunting season the most common land patrol goal is to protect wildlife and regulate harvest. Public education and public safety are additional goals. Resource protection patrols prioritize poaching, destruction of habitat, dumping and littering, environmental hazards, and hunting/fishing violations.

Most land patrols occur in rural and backcountry areas. Patrols do occur, however, on the margins of urban and suburban areas. Officers travel through urban and suburban areas to Wildlife Management areas, wild lands, or to boat access points. In many regions there is a quilt of wildlife and developed areas.

Land patrols are carried out on private, state, and other governmentally managed lands. Wildlife Management Areas (WMA), Wildlife Environmental Areas (WEA), and Water Management District lands are patrolled for both resource protection and security of the facilities, under a contract system. Officers report an average of 10 hours per week of wildlife management area patrol. The majority feel that WMA patrol is not adequate. One officer noted, "twenty percent of my patrol time is devoted to Wildlife Management areas, one WMA is over a half million acres and there are an additional dozen management areas here." While our data on WMAs does not support the "over a half million acres" statement, there are several that come close to a quarter of a million acres, linking WMAs with National Forests, where concurrent jurisdiction exists.

Hunting regulation centers on the twin goals of resource protection and public safety. Hunters and dogs consume considerable officer time as both patrol targets and the objects of complaints. Hunting accidents are usually handled by investigators if an injury occurred.

While needed year round, land patrols are particularly in demand during traditional hunting times, from mid-September through March/April:

> "Seasonal work load is high. There are times when I have more information about illegal activity than I can work. The other officers in my squad feel the same. A fair amount of illegal hunting activity is being under addressed. We have time to do surveillance one or two times and then we are on to the next series of complaints." (Survey 112a)

Officers patrol private wild lands regularly for hunting and fishing violations. Private landowners, who are reported to complain about the infrequency of patrols, provide information to officers on hunting and other resource violations that occur on their lands. Officers frequently stop and talk to private landowners. During regional interviews, this activity was cited as a very large part of the work day.

Fishing regulation is an important workload component. Land patrols check anglers along shorelines and on docks. Checking a catch as anglers disembark or while they load at boat ramps is frequent. Close to the two coastlines, fishing demands more attention than hunting. Officers check the status of shellfish in local markets, measure lobster tails on seafood wholesaler premises, conduct seafood compliance checks at import points such as international airports, and check the sale of fish along roadsides. Officers report that about 10% of their work involves regulation/compliance activities.

Land patrols are driven largely by the size and use of a resource. Sheer acreage is probably the dominant factor with the amount of hunting/trapping/fishing being another important risk factor. Wildlife management areas and other state lands appear to require more attention than private lands.

Scheduling is a challenge for the FWC. Hunting is essentially a daylight activity, starting early and frequently ending at dusk. Most activity occurs during the day. Jack-lighting, dumping, resource theft, poaching, illegal trapping occur at night. In most areas, however, these activities are not consistent enough to justify full time night patrol.

FWC allows latitude in scheduling. With officers adjusting their own patrol times, there are periods when officers are not available to respond to citizen-based calls for service. In cases of emergency, officers from surrounding counties may be dispatched. While some of these calls may be dispatched later when an officer becomes available, the fact that staff observed and data supported, a large number of these events warrants attention and solutions by FWC management. As a result, there has been movement to fixed schedules with officers working, in some areas, around the clock particularly in more populated areas, and for consistent coverage. Staffing limitations have made this impossible in most areas.

Water Patrol. FWC officers are responsible for 8,426 miles of tidal coastline, 2,400 square miles of saltwater bays, 4,442 square miles of lakes and ponds, 11,909 miles of freshwater rives and streams, and 13,200 square miles of offshore waters. Boaters use Florida's expanse of marine and inland waters heavily. Nearly a million Florida-registered vessels and an estimated 400,000 out of state registered vessels ply these waters. Fishing is a major commercial and recreational activity in the state, with well over a million saltwater fishing licenses issued. Commercial fishing is a major industry, producing over 110 million pounds of catch, and involving an estimated 226,710 fishing trips in 2004.

Water patrol is the second most frequent patrol activity, 213,183.75 hours in Fiscal Year 2004-2005. The majority of hours were directed to marine activity 142,159.4 hours 71,024.35 hours of which were directed to freshwater activity. Water patrols commonly

involve the near shore. Offshore patrols require very different deployment and equipment. This section focuses on near shore patrols. Offshore staffing and deployment is treated later.

Water patrols focus on three key missions:

- Public safety
- Resource protection
- Special needs of threatened and endangered species.

Observations indicate that "safety education" is an important component of water patrol.

Water patrols are likely to address multiple missions. An average water patrol may cover a spectrum of enforcement from resource protection (manatee speed zones, fish, shellfish, and crab regulations), to regulatory enforcement (fishing and operator license checks), to boater safety (safety gear, skiing safety, and rider positioning), to unsafe boating (improperly equipped vessels, boating under the influence of alcohol or drugs), and other violation of fishing regulations. During one observation period, an officer completed self-initiated stops of the following nature:

- Resource protection: Fishing license checks
  Catch checks
  Crab size and type checks
  Manatee speed zone violation checks

- Boating registration: New boats without numbers
  Vessels with expired numbers/stickers

- Boating safety: No life jackets on skiers/tubers
  Unsafe operation of boat

The public safety mission centers heavily on boating. In fiscal year 2004-2005, 11,843.05 hours of officer time was invested in boating accident investigations.

Focus groups, questionnaires, and daily activity reports indicate that the number and frequency of boating safety activities correlates directly to vessel traffic. Regional commanders cite vessel accidents as an important deployment criterion. A correlation/ regression analysis of deployment of officers in two regions found a significant correlation between current officer deployment and boating accidents. In the North West Region the correlation was .934 and in the South Region .898. (A correlation of 0 indicates no relationship between vessel accidents and full time law enforcement staff.

One indicates a perfect linear relationship.)

The vast majority of recreational boats remain adjacent to or within short distances of the coasts, in the bays and along the Intracoastal Waterway. Marine patrols are generally conducted in these areas. Vessel concentrations vary. They are particularly high in South Florida, the Keys and in the Tampa Bay Region (e.g., south from Palm Beach County, around the Keys, and up to Hillsborough County). In some areas concentrations are seasonal. Boating increases in the spring, peaks during summer months, and declines during the winter months, particularly in northern parts of the state. Seasonal variation in boating appears to be less marked in southern areas of the state and the Keys. Recreational boating is highest on weekends.

The focus of water patrol varies by season. Summer patrols are more boating-safety oriented. Spring and fall patrols focus more on resource management. An officer noted, "summer months are primarily safety oriented water patrols, spring/fall we primarily address fishing, winter is land patrols primarily for hunting." (5b)

While most marine patrols are confined to daytime hours to regulate recreational boating, some are scheduled for hours of darkness and are directed at identified violators or violations.

Most directed marine patrols remain discretionary. Officers identify patrol times (within schedule parameters), areas and objectives. The division recently directed officers to reserve a proportion of total patrol time for marine patrols, from 10% to 50%. Officers note unanticipated consequences. The "water rule" results in increased patrols in some areas, especially where bodies of water are small. Other areas, according to management, and especially due to equipment maintenance issues or the boats being down, receive no water patrol and some officers cannot achieve even the 10% minimum.

Officers are expected to pay special attention to manatee zones and shellfish areas. Manatee protection areas are zones where boat speeds are controlled to reduce the probability of manatee/prop collisions. Water patrols cover these areas to control speed. FWC has received funding specifically for manatee protection (25 positions). A goal of 50,000 hours of patrol has been set for 356 manatee zones. In 2005, patrol hours, by region, were:

- SEA 5,604.75 hours
- South Region 9,701.75 hours
- Northeast Region 11,499.6 hours

❑ Southwest Region	16,494.5 hours
❑ North Central Region	7,120.5 hours
❑ Northwest	(none)
❑ Unknown Region	408.5 hours
Total	**50,829.6 hours**

Investigations of disturbance of manatees numbered 475, time spent responding to manatee related complaints consumed 1,118.5 hours. Manatee-related citations issued numbered 2,728; 48,721 manatee educational contacts were made.

The patrol of shellfish harvest areas is a priority. Patrols of harvest areas are necessitated by the Food and Drug Administration (FDA) national marketing requirements. There are 38 shellfish zones along Florida's coastline, which require patrols. Officers monitor shellfish harvest, and compliance with regulations governing open and closed harvest areas. Activity–Net documents that 9,114 patrols were conducted during 2005.

Calls for officer assistance, observed incidents, and activities undertaken on patrol necessitate, in a proportion of cases, some degree of follow-up investigation, arrests and court activity. Arrests, follow-up investigations, and court appearances are generally modest for marine patrols.

Officers who have a primary duty to patrol marine areas cite volume and location of watercraft as the primary impetus for public protection patrols. Officers cite boating safety as a primary goal. When marine-based personnel were asked to indicate their main function, many responded with comments such as "Maintaining safe boating environment"; "Being available to boaters in trouble"; and "Ensuring safe boating."

Boating safety includes checks for marine hazards. In 2005, 261,563 vessels were checked, the majority for safety requirements.

CAD and questionnaire data reveal removal of derelict vessels and other marine hazards as an important source of workload. Derelict vessel situations requires research, reports, and considerable investigation. Identifying owners of derelict boats is a major activity of FWC on the water. Actual removal is usually done by localities, using state grants. The current budget does not contain monies for these grants. Thus, most boats remain where they are, generating more complaints.

Search and rescue is a common marine patrol activity. In 2005, 1,043 persons were rescued, about half by marine units. Air patrols provide considerable assistance to

water patrol. These units have no lift capability, however. Accordingly, they locate as opposed to rescue. Air patrols are discussed in a separate section of the report.

Water patrol requires far more preparation and maintenance than land-based activities. CAD reveals that to bring a vessel to a launching spot requires from a few minutes to an hour. Launching and associated preparations take time. The average time spent traveling and preparing may reach as high as two hours. Travel time on the water to get to a manatee zone, a shellfish area, or an area for boating safety checks, varies. At the end of a water patrol, particularly marine patrols, a vessel must be washed and equipment must be stowed.

One interviewee noted:

> "It takes about 20 minutes to get on the water after arrival at in-water patrol boat locations. In the case of trailer boats, it may take an additional 30 minutes to get the boat in the water and ready to go. Vessel clean-up takes about 30 minutes to 1 hour following patrol, particularly for marine patrol where the corrosive impact of salt must be dealt with and then there is travel time back."

SECTION 8: CALLS FOR SERVICE

FWC operates five centers where calls are received and dispatched. They are generally located in the region for which they dispatch. Some are co-located with FHP and other state law enforcement agencies. SEA, which formerly dispatched for Monroe County, is now teamed with South dispatch. Efforts are underway to reduce the number of dispatch points.

From July 2004 through June of 2005, 316,647 "transactions" were recorded at dispatch centers:

- North Central 34,586
- Northeast 46,966
- Northwest 40,808
- South 70,807
- Southwest 61,191
- SEA 62,289

The majority of "transactions" recorded are administrative:

- Calling into service (or in route) for patrol (land, air, water)
- Travel time not related to calls
- Special details
- Maintenance-related activity
- Office activities/other administrative duties/meetings
- Training/education
- Off-duty employment.

In Alachua County, 2,114 activities were recorded. Of these, 66.3% were administrative. In the Southwest region 61,191 activities were recorded, 47,536 (77.7%) of which were administrative.

Calls for service are either citizen-initiated or other agency-initiated. In some areas the majority of calls for service come from other agencies. In rural areas, where the public tends to be more knowledgeable about FWC services, calls for service from residents are more frequent. It appears that calls for service account for about one-quarter to one-third of workload. Citizens may also contact the officer directly using a cell phone; many of these calls do not get recorded by the CAD.

Questionnaires indicate an average of 3.33 hours a week devoted to calls for service on the land and 2.17 hours per week on the water. A number of officers report zero to one hour and a small group reports a larger proportion. Officers from the more populated areas report more calls for service time than their rural counterparts.

CAD data, for every county and region, reveals that about three quarters of incidents are self-initiated by officers and about one quarter result from calls for service. FWC law enforcement is a proactive enterprise. Based solely on the observed activity during IACP familiarization rides, officers record less than 30% of workload with dispatch.

Public calls about small nuisance alligators, dead deer, bears, and manatees are duties that officers feel are not appropriate. A number of calls directed to FWC such as feral cats are more appropriate to municipal or county animal control units. This workload component raises an issue concerning the FWC law enforcement role. Also, confusion exists among the public and other enforcement agencies concerning the role and responsibility of FWC law enforcement relative to domestic animals versus wildlife; FWC does not handle domestic animal issues.

A detailed county by county analysis of calls for service and workload data is addressed in the chapter on workload drivers. For the purposes of a job task analysis, review of CAD and calls for service data, informed by questionnaire responses and

field observation indicates:

- For staffing and deployment planning, risk factors are more important than calls for service analysis.
- A sizeable proportion of calls for service are not being answered in certain areas. This suggests that staffing is not sufficient, deployment disparities exist, or both.
- If calls for service increase as a proportion of workload, round-the-clock staffing may be required.
- Calls for service are directed more to resource protection than boating issues.
- Calls for service due to travel time, on average, take more time per incident than officer initiated activities.

SECTION 9: INVESTIGATIONS

Investigation of an incident or information suggestive of wrongdoing is termed an investigation for purposes of this job analysis. Routine checking of items, locations, or individual to ensure compliance with regulations is termed an inspection. FWC officers engage in both classes of activities.

Complex, large-scale investigations are conducted by full-time investigators in most instances. Investigators also conduct the majority of compliance checks. Officers generally investigate incidents in which they are involved. Officers investigate information they receive unless the process proves too complex or requires special skills. For example, officers frequently investigate accidents. If the accident involves a fatality or serious injuries, however, it is referred to a full-time investigator. Officers are called upon to assist in investigations on occasions.

Boating accidents account for a considerable proportion of investigations by marine officers. Officers report that boating accidents require an average of eight to 10 hours to complete. Fatal boating accidents take far longer. Derelict vessels investigations are very time consuming.

Illegal commercial fishing, such as gill netting, require investigation. Officers report that illegal commercial fishing investigations are limited, two to three times per year (except in a few locations). Illegal hunting, hunting accidents, baiting of fields, and

dumping of trash and waste products are common sources of land-based investigation. Tracking loose hunting dogs takes considerable time. Questionnaire responses estimate an average of 3.5 hours per week for investigations. The FWC does not have a case management system to track investigations. There are regional databases that do.

Inspections, which are not as common as investigations, vary significantly by region and areas within regions. Inspections focus on compliance with regulations, checking roadside sales of fish, checking the size of out-of- state lobster tails in packing houses, and checking supermarkets to ensure fish and shellfish meet requirements. Inspection activities are particularly high at ports of entry, especially at commercial fishing and transshipment ports. In addition, FWC investigators are also responsible for the initial and periodic inspection of sites where captive wildlife permits have been requested or issued. Officers report (questionnaires) that inspection activities average about one hour a week. A later section of this report discusses inspection and investigative activities in greater detail.

Job analysis findings which have implications for staffing and deployment are:

- The larger proportion of investigative (Investigator 1s) and inspectional (Investigator 2s) activity is conducted by Investigator 1s and 2s
- Investigations and inspection activities average less than 10% of the work week
- Case management information to evaluate investigations is not available
- There is little information available to evaluate inspections work.

SECTION 10: SUMMARY OBSERVATIONS

Important observations from this job task analysis that orient the remainder of this report are:

- The county level makes sense as the base upon which to construct staffing and deployment requirements. This should enable officers to field the majority of their calls in their home counties.
- Land and marine based patrols pose very different challenges. They draw work from very different sources. At their extremes, different scheduling and deployment may be required.

- Water resources may be protected by vehicle patrols. Patrol along shorelines can identify problems, and allow a view of boating and fishing. Fishing violations can be identified as vessels offload at shore. To a lesser extent, land resources may be protected by vessel patrol. Vessel patrols may be the most efficient way to check land areas along rivers and streams.

The FWC recognizes this distinction and has been reviewing options. A recent experiment in Volusia County approached land/marine patrols differently and apparently with some success. In the section on issues in deployment and staffing, this topic will be treated in greater detail. This does not negate the need for all personnel to be trained in both marine and land patrols. Seasonality, changing demands, and organizational efficiency suggest that the best use of officers may be to change their generalist skills, at least in terms of differing patrol area needs. This will be discussed further in the concluding section of the report.

CHAPTER II. CURRENT STAFFING CONFIGURATIONS: ISSUES AND CONCERNS

This section addresses:

- Current staffing
- Factors Associated with Current Staffing
- Staffing and Deployment Issues.

CURRENT STAFFING

FWC's Division of Law Enforcement ranks second in sworn staff among state law enforcement agencies. As Table 4, borrowed from FWCDLE reveals, only the State Department of Highway Safety and Motor Vehicles (Florida Highway Patrol) has more sworn officers (1,688). FWC's 667 operational officers make up 16.4% of Florida's 4,072 state-based sworn officers (2004). The sworn numbers used in this analysis address only field-operations personnel, which for FWC includes officers, investigators and lieutenants.

As of October 2005, the FWC Division of Law Enforcement reports 902 staff of which 723 were sworn. Sworn staff included 472 officers, nine pilots, 49 Investigator 1, 11 Investigator 2, 128 lieutenants, 39 captains, 10 majors, four lieutenant colonels, and a colonel.

A director, with the rank of colonel, commands FWC's Division of Law Enforcement from a headquarters located in Tallahassee. The FWCDLE is operationally divided into two areas, North and South, each commanded by a Lieutenant Colonel. The North and South areas are further broken down into three regions each. A major commands each region.

The regions are staffed as follows:

	North	Sworn	Civilian	Total
❑	North West	127	20	147
❑	North East	113	16	129
❑	North Central	108	17	124

Table 4

STATE OF FLORIDA LAW ENFORCEMENT AGENCIES*

County	Agency	2004	2003	2002
State	Florida Department of Agriculture and Consumer Services	232	205	-
State	Florida Department of Business Regulation, Alcohol Beverage & Tobacco	131	149	159
State	Florida Department of Environmental Protection	134	135	125
State	Florida Department of Financial Services, Division Of Insurance Fraud	106	105	106
State	Florida Department of Highway Safety And Motor Vehicles	1,688	1,689	1,668
State	Florida Department of Insurance, Inspector Generals Office	--	2	1
State	Florida Department of Juvenile Justice	16	16	-
State	Florida Department of Law Enforcement (includes Florida Capitol Police)	461*	464*	409 (51)*
State	Florida Department of Lottery, Division Of Security	10	14	13
State	Florida Department of Transportation, Motor Carrier Compliance	228	223	216
State	Florida Division Of State Fire Marshal, Fire Investigation	97	95	99
State	Florida Fish And Wildlife Conservation Commission	667	689	632
State	Office Of The Attorney General, Medicaid Fraud Control Unit	63	42	46
Escambia	State Attorney's Office, First Judicial Circuit	13	14	15

Table 4

STATE OF FLORIDA LAW ENFORCEMENT AGENCIES*

County	Agency	2004	2003	2002
Leon	State Attorney's Office, Second Judicial Circuit	11	10	9
Suwannee	State Attorney's Office, Third Judicial Circuit	4	4	4
Duval	State Attorney's Office, Fourth Judicial Circuit	16	18	19
Marion	State Attorney's Office, Fifth Judicial Circuit	10	12	11
Pinellas	State Attorney's Office, Sixth Judicial Circuit	24	25	24
Volusia	State Attorney's Office, Seventh Judicial Circuit	19	19	18
Alachua	State Attorney's Office, Eighth Judicial Circuit	8	8	8
Orange	State Attorney's Office, Ninth Judicial Circuit	16	16	17
Polk	State Attorney's Office, Tenth Judicial Circuit	11	10	11
Dade	State Attorney's Office, Eleventh Judicial Circuit	19	25	26
Sarasota	State Attorney's Office, Twelfth Judicial Circuit	2	2	3
Hillsborough	State Attorney's Office, Thirteenth Judicial Circuit	11	11	13
Bay	State Attorney's Office, Fourteenth Judicial Circuit	8	9	10
Palm Beach	State Attorney's Office, Fifteenth Judicial Circuit	9	9	13
Monroe	State Attorney's Office, Sixteenth Judicial Circuit	5	4	6
Broward	State Attorney's Office, Seventeenth Judicial Circuit	21	21	21
Brevard	State Attorney's Office, Eighteenth Judicial Circuit	13	13	13
St. Lucie	State Attorney's Office, Nineteenth Judicial Circuit	5	8	7
Lee	State Attorney's Office, Twentieth Judicial Circuit	14	15	20
	Total	**4,072**	**4,081**	**3,793**

* Source: Florida Department of Law Enforcement; sworn staffing on 06/30/04, CJAP

South

❑	Southwest	132	21	153
❑	South	131	29	160
❑	Special Enforcement Area (Keys)	78	4	82
❑	Headquarters (Tallahassee)	34	72.5	106.5
	Totals	**723**	**178**	**902.5**

(Data from October 2005 FWCDLE Position Allocation Chart dates 10/14/05)

Investigations. Each region has an investigative unit commanded by a captain (except for the SEA, which has a lieutenant in charge). Investigative units are further subdivided geographically into teams supervised by lieutenants. In some regions non-supervisory lieutenants are also assigned to the investigative function, a carry-over from the merger (these will eventually be eliminated by retirements or attrition). These non-supervisory lieutenants serve in the capacity as Investigator 2, conducting captive wildlife inspections. Investigations units vary in size and composition by region.

	Region	Captain	Lieutenant	Investigator1	Investigator2
❑	North Central	1	3	8	1
❑	Northeast	1	3	8	2
❑	Northwest	1	2	10	2
❑	SEA		1	5	2
❑	South	1	2	11	1
❑	Southwest	1	3	6	3

(In June 2006, the South Regional Commander advised he had an additional two lieutenants who operate as Inspector 2's.)

Investigator 2 positions are related to the captive wildlife enforcement or inspection process. Investigator 1 positions are more closely aligned with traditional investigative process, which includes responsibility for all fatal boating accidents, hunting accidents, alligator attacks, stolen boat and title fraud, and background investigations. Many are protracted and may develop into complicated and conspiratorial cases (e.g., boat title fraud, etc.).

During FY 2004-2005 the regional investigative units opened 1,606 investigations and closed 1,404 for an 87% closure rate. Unfortunately, data provided by FWC does not capture open and closure by individual case, but rather aggregates it by fiscal year. As interviews have revealed that some fatal boating accident cases can carry on for more

than a year, this closure rate may not truly represent the situation. In addition, the same data records 2,759 dispositions by charging document of some kind, such as felony, misdemeanor, warning, or infraction. Again the aggregated data does not break down by case, so exact closure examination is not possible. Interviews revealed that in many cases, these dispositions may originate from the captive wildlife inspection process or other non-investigative incidents; the data does not reveal that and thus a more in depth analysis is not possible. FY 2004-2005 data is displayed in Table 5 (next page).

Some investigative sections do maintain closer monitoring of case status and include data on the number of hours spent or miles driven associated with a particular investigation. The data is kept in Excel spreadsheets and in some cases provides the underlying data for the monthly report, however, there appears to be no uniform requirement or specification for its maintenance. Clearly, that level of detail would enhance investigative effectiveness analysis. A sample of this data, redacted, can be found below.

Table 6 below shows caseloads for investigators at three levels, INV 1 only, INV 1 and INV2 only, and INV1, INV2, and lieutenants.

Table 6

INVESTIGATIONS CASELOADS

Group	Total Cases	Case Load per Investigator for Year	Case Load per Investigator per Month	Hours per Case
Inv 1 Only	1,606	33.5	2.7	59.2
Inv 1 + 2	1,606	27	2.5	64
Inv 1+2, + Lt	1,606	22	1.8	88

Table 5

INVESTIGATIVE CASE MANAGEMENT SHEET

Incident Number	County	Opened	Closed	Description of Investigation	Felony Arrest	Misd. Arrest	Infraction Issued	Misd. Warning	Infraction Warning	Hours	Miles	Comments
03SW538696E	Charlotte	11/8/03	9/30/04	Taking Deer During The Closed Season.		2				20	60	DNA Cases.
04SW36-3666	Charlotte	6/5/04	1/27/05	Unlawful Purchase of S/W Products	0	9	0	0	0	80	200	Closed 9MM
04SW36-3847	Charlotte	6/12/04	2/19/05	Unlawful Purchase of S/W Products	0	2	0	0	0	70	100	Closed 2MM
04-SW36-3907 CE	Charlotte	6/13/04		"(name removed)Crab sales location		47		1		270	600	Federal Violations forth coming
	Charlotte	7/1/04	7/7/04	"(Name removed) Farms GFl Initial Inspec.						1	30	Approved
04-SW36-4383 C	Charlotte	7/4/04		Fish Monger		2					180	
04-1642-099	Desoto	7/15/04	12/5/04	"(name removed) Alligator Farm						13	320	No Violations
04-M612-100	Desoto	7/20/04	10/25/04	Commercial Grouper Closure	0	0	0	0	0	10	71	
04-M612-105	Hardee	7/20/04	7/1/05	"(Name removed) Commercial Fishing	0	0	0	0	0	70	795	

The above may not accurately reflect caseload due to the supplied aggregate data, but does display some workload information. Additionally, as different cases require different workload levels, more detailed data is needed in order to assess appropriate staffing levels.

In addition, significant investigative time appears devoted to alligator attacks and employee background investigations. The background component should increase dramatically with any significant increase in division personnel. In such a situation, it is conceivable that patrol resources may be tapped to assist the investigative staff or a separate background investigations unit or contract may be required.

Communications. Each of the regions has or had a communications unit assigned. There is currently a total of six communications centers. The communications units for SEA ceased operations in Marathon in January 2006 and its workload has been recently relocated to FWC's Miami Center in the South region. Other FWC communications centers are being co-located with the FHP in regional centers, with the Southwest Lakeland office co-locating to the Tampa Bay Regional Center and the Miami South to the Miami Regional Center by mid-2006. Communications units are generally commanded by a lieutenant and range in size from five dispatchers (SEA) to 19 dispatchers (North West and South).

Communications Staffing*

Region	Lieutenant	Supervisor	Duty Officer
❑ North Central	1	1	10
❑ Northeast	1	1	11
❑ Northwest	1	1	12
❑ SEA**	1	0	4
❑ South	2	2	19
❑ Southwest	1	1	13

* Source: Organizational Chart (April 2005). Includes Vacancies.

** SEA is now collocated with the South's Miami Office

Big Boats. Big Boats (Offshore Patrols) are located in four regions:

- ❑ Northwest: J.J. Brown (lieutenant, two officers)
- ❑ North Central: Guardian (lieutenant, two officers)
- ❑ Northeast: Randall (lieutenant, two officers)
- ❑ SEA: Orion (lieutenant, two officers)
- ❑ SEA-Sanctuary: Peter Gladding (high speed catamaran) lieutenant and three officers, effective April 06.

Current staffing of the four original FWC Big Boats is limited to three personnel each, however the Federal requirement for boats of this size is four officers (two for boarding and two to control the big boat while it stands off from the boarded vessel). This Federal requirement only pertains to the Peter Gladding that was funded by NOAA. Additional comments on recommended staffing can be found in Chapter VI.

These vessels are used for extended patrol operations offshore to Florida. They, through either mutual aid or contract agreements (JEA), enforce National Marine Fisheries regulations, sometimes as far as 200 miles offshore. Typically they patrol for three to five days and will board and inspect fishing vessels. In addition, they enforce certain no fish zones, which are generally reef-related, preventing net or anchor dragging that can destroy the fragile reef system. Most activities of these boats are based upon contract enforcement and include both the Atlantic and Gulf coastal areas. For example, the Randle will patrol Oculina Bank, which lies about 30 miles offshore and varies in depth between 150 to 250 feet. There are NOAA monitoring buoys that will signal the presence of vessels in the area, as well as Vessel Monitoring System equipment on board all commercial vessels, which tells NOAA where and who the vessel is, and NOAA will then notify the Randle crew to respond. In most cases these are shrimp boats, which are also monitored by GPS signals (VMS) if they are in the area. This monitoring and identification system is similar to aircraft transponder equipment. These trips are usually day trip in nature.

During boarding operations, the FWC will put a two person boarding team on board and then FWC vessel will stand-off and monitor the boarding process. This, however, leaves the FWC boat captain with the problem of trying to maintain control over his vessel while at the same time keeping watch over the boarding party. This is why the federal requirement is for four personnel on these vessels, to allow the boat captain to control the boat while another officer monitors the boarding.

During 2004-2005, these vessels accounted for 1541 plus hours of activity, most of which is directed by contracts. Table 7 provides a broader display of their activity.

Table 7

NOAA CONTRACT HOURS FOR BIG BOATS

	Contracted For	Hours Worked	Plus/Minus	Reimbursement
Large Offshore Boat	1500	1541.25	+41.25	$479,220.86

Activity under the JEA contracts is shown in Table 8

Table 8

WORK HOURS – BIG BOATS

	North Central	Northeast	Northwest	SEA	South	Southwest	Admin	
Mid Range Vessel Hrs	650.00	393.50	677.50	1,154.35	516.00	612.75		
Large Vessel Hrs	374.25	388.50	406.50	372.00				
Dockside Hrs	1,658.70	1,615.92	1,582.25	1,572.27	1,153.31	1,221.15	179.00	
TOTAL HOURS	**2,682.95**	**2,397.92**	**2,666.25**	**3,098.62**	**1,669.31**	**1,833.90**	**179.00**	
Patrols	446	408	415	596	458	339		2,662.00
Offshore Boardings	473	184	432	449	226	226		
Dockside Boardings	554	383	564	757	835	324		
TOTAL BOARDINGS	**1,027**	**567**	**996**	**1,206**	**1,061**	**550**		**5,407.00**

While the above data only reflects JEA activity by the big offshore boats, it does display the majority of their operational hours. In addition to JEA requirements, the Big Boats are also used for special events, offshore vessel and body recovery platforms in support of both USCG boat accident or sinkings and NTSA aircraft crash investigations. These vessels will also support any FWC requirements where a large offshore command post is required.

Because of the extended patrol time (three to four days), the Big Boats have difficulty in recruiting personnel. This results in boats leaving the dock with less than the assigned crew. FWC utilizes volunteers to increase staffing, with varied success.

Aviation. The aviation unit provides a key resource for FWC. As officers in the field frequently noted, aviation is a force multiplier. Given the large areas frequently covered by FWC patrols, aviation can frequently address searches, identify problems, and alert ground patrols of areas requiring action in a far more efficient manner than ground or vessel patrol.

Units are distributed by region and are located at airports or fields in several areas. This distribution ensures rapid response to assistance requests. Aircraft and pilots are distributed as per Table 9 and Table 10 and total one captain, four lieutenants, and nine Pilot-2. Two administrative personnel provide support (at Tallahassee).

Table 9

AVIATION AIRCRAFT

Tail Number	Location	Location	Type (R or F)
❑ N118FW	PFN	Panama City	R
❑ N234FW	TLH	Tallahassee	R (Non-Flyable)
❑ N239FW	TLH	Tallahassee	R
❑ N419FW	TLH	Tallahassee	F
❑ N117FW	LQC	Lake City	F
❑ N235FW	LQC	Lake City	R
❑ N932FW	OCF	Ocala	F
❑ N932FW	TLH	Ocala	F
❑ N420FW	SGJ	St. Augustine	F
❑ N238FW	TIX	Titusville	R
❑ N233FW	LAL	Lakeland	R
❑ N421FW	LAL	Lakeland	F
❑ N483FW	MTH	Marathon	F
❑ N86FW	FXE	Fort Lauderdale	R
❑ N945FW	FXE	Fort Lauderdale	F
❑ N548FW			F (Sold)

Table 10

AVIATION PILOTS

Region	County	Pilots
❑ NW	Bay	1
❑ NW	Franklin	1
❑ NE	Duval	1
❑ NE	Columbia	1
❑ NC	Brevard	1
❑ NC	Marion	1
❑ SW	Hillsborough	1
❑ SW	Polk	1
❑ SW	Lee	1
❑ South	Broward	1
❑ South	Broward	1
❑ SEA	Monroe	1

Administrative staff also supports field operations in the respective regions. There is a senior pilot/captain in the headquarters as well as second pilot who provides check flight services throughout the state. The remaining pilots and lieutenants (who are also pilots) staff the regional based equipment, for a total of 12 available pilots at the regional level.

Aviation operations are controlled by General Order 24, "Division Aircraft", and an Aviation Flight Manual, dated January 1, 2005. A variety of email updates also provide guidance. The GO covers scheduling, passenger definitions, and specific regulations relating to safety and operations in support of mission goals.

The scheduling process is described in these documents. The Flight Manual provides limited guidance on what flights may not be accepted, but does not specifically list mission that can be other than to classify them as either law enforcement or biological research in nature. Interviews with staff indicate that a significant number of missions were turned down for variety of reasons including pilot availability and aircraft status, but no current list was available. Regional commanders have a role in the scheduling of aircraft and any officer on the ground may request an airborne aircraft to respond for a law enforcement or SAR mission. FWC may want to review its current mission policy and clarify further its mission acceptance protocol. Interviewees stated that they respond to most all requests as long as there is a pilot available and money in the aviation budget. Some examples of flight requests include Search and Rescue (SAR), endangered species enforcement (manatee and panther specifically), night surveillance, and general patrol, an example being to locate the offshore shrimp boats for patrol vessels to check. They can also be deployed for a variety of other missions that range from controlled burn surveillance, counter-drug enforcement, to ferrying VIPs.

Most mission refusals result from the limit number of pilots. While aircraft may be available, pilots may not. Although the number of aircraft closely matches the number of pilots, pilot leaves and rest factor impacts operations.

Activities for FY 2004-2005 are displayed in Table 11. Aircraft include both fixed and rotary wing configurations for a total of 14 (was 16 when annual data was prepared; one sold and one not flyable now) aircraft. None of the current rotary aircraft have lift capability; however interviewees indicated that FWCDLE was pursuing purchase of replacement units that would have that capability. There are currently more aircraft than pilots, although interviewees indicated that in past years the aviation section had up to 25 pilots assigned. Many of these pilots have left for other agencies generally due to pay issues.

Table 11

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
DIVISION OF LAW ENFORCEMENT
BUREAU OF SUPPORT SERVICES
FLIGHT OPERATION SPREADSHEET
FISCAL YEAR 2004-2005

Month	Hours Flown	Wild Surv	Photo Surv	Burn Hrs	Trans Hrs	Maint Hrs	Ferry Hrs	Trng Hrs	L.E. Hrs	Oth Hrs	SAR Hrs	Asst	CARL Hrs	Pant Hrs	Marij Hrs	FLIR Hrs	NVG Hrs	Arrest	Warn	Maint Days	Maint. Costs	Hangar Cost	Fuel Cost	Total Cost	Cost Per Flt Hour
July	314	0	0	0	0	7	5	12	284	0	6	0	18	0	5	6	25	25	44	83	$17,594.06	$4,187.57	$16,923.27	$38,704.90	$123.42
Aug	305	0	1	0	0	3	0	0	290	0	10	11	19	0	0	0	32	5	2	122	$19,147.02	$4,187.57	$14,734.58	$38,069.17	$124.90
Sept	302	0	0	0	5	11	16	8	252	0	11	0	4	0	0	0	22	8	9	117	$194,363.20	$4,187.57	$15,097.16	$213,647.93	$706.98
Oct	207	0	0	0	0	7	5	3	193	0	0	0	12	0	0	0	51	5	8	146	$21,125.62	$4,187.57	$12,666.68	$37,979.87	$183.48
Nov	307	0	0	0	0	10	15	7	245	1	28	8	16	0	0	13	68	53	17	86	$48,777.74	$4,007.57	$17,281.97	$70,067.28	$228.60
Dec	215	0	1	4	0	6	31	5	100	11	58	3	11	0	0	10	47	25	0	54	$62,668.96	$4,106.87	$12,150.23	$78,826.76	$367.32
Jan	242	0	0	16	0	10	2	19	159	11	25	7	12	0	0	0	43	9	3	59	$36,682.21	$4,106.87	$14,053.86	$54,842.94	$228.80
Feb	261	0	0	18	0	2	3	12	208	0	17	3	5	0	0	12	33	16	8	71	$5,593.50	$4,106.87	$12,479.11	$22,179.48	$85.14
Mar	222	7	4	0	0	3	7	32	160	6	5	2	7	0	0	0	21	36	8	82	$27,643.28	$4,106.87	$12,027.98	$43,778.13	$197.02
Apr	273	36	1	2	6	11	8	19	147	11	33	3	1	0	3	2	28	4	0	65	$7,131.30	$3,931.87	$14,893.22	$25,956.39	$95.22
May	259	23	0	2	4	9	0	34	148	24	16	8	4	0	4	4	11	1	28	101	$25,684.46	$3,931.87	$14,008.45	$43,624.78	$168.18
June	172	27	1	12	3	11	2	23	87	2	4	1	2	0	1	0	24	1	0	67	$136,066.14	$3,931.87	$8,385.03	$148,383.04	$865.21
Total	**3077**	**93**	**8**	**54**	**18**	**88**	**92**	**173**	**2,272**	**65**	**213**	**46**	**108**	**0**	**13**	**47**	**405**	**188**	**127**	**1,053**	**$602,477.49**	**$48,980.94**	**$164,701.54**	**$816,060.67**	**$265.23**

256.40 per month
256.40 per LT/Pilot

Pilots are limited to 16 hours of work after which they must get eight hours of "undisturbed rest" before working again. Official protocol allows cross-region use of pilots to accomplish requested assistance if no pilot is available from the requesting region assets. The pilots work in response to and under the direction of the region commander with a technical chain of command to the Aviation Section in headquarters. However, mission requests can come directly from line officers working a particular case or incident. There is no requirement for these requests to be vetted by supervisory officers, except in very specific situations. Request approval is generally the responsibility of the pilots themselves. Pilots are also required to maintain night flight proficiency, as well as the use of night vision equipment while flying.

During FY 2004-2005, aviation aircraft flew 3,077 hours for an average of 256.4 hours per month. The largest segment of these hours was for general law enforcement (2,272) with next largest segment was for SAR (Search and Rescue). Aircraft average $265.23 per hour to fly, with a total allocation of $816,060.67 to operate the Aviation fleet (not including personnel costs). When personnel costs are added, this activity will certainly cost over a million dollars a year to operate. When not flying, the pilots are required by a headquarters memorandum to conduct field operations in their assigned vehicle or to ride with other land or water-based patrol officers. This activity is required to be documented in weekly reports. A review of these reports provided by the Aviation Section reflects ground activity when not flying by most all of the pilots. While the memorandum (email) requires this patrol, FWC should consider making it part of the Aviation General Order. The arrest/warning activity noted in the FY 2004-2005 data is generated from this type of road patrol operation (or to and from work site activity) and generally is not aviation related, although the weekly reports note numerous examples of where the aviation assets are the source of ground enforcement activity.

Canine. Canine officers are not allocated as a separate unit, and do not have a technical chain of command at headquarters. They are rather assigned as officers on shifts and work for that shift lieutenant. There are 11 teams statewide with four more undergoing training. In addition to any required patrol activity reporting, canine officers complete a K-9 Use Record on any incident where canine are used. Each officer also submits a monthly report of activity to one of two officers functioning as a K-9 coordinating officer, one for the north and another for the south. FWC indicates an effort is underway to standardize and collect canine activity at the headquarters level.

Consolidated K-9 activity for the last CY/FY is not available according to FWC management. While the reports are intact, there is no electronic data to analyze. Canine units generally respond to assistance requests. These requests can include missing persons, escaped convicts, other LE agency requests, and FWC generated searches for suspected illegal wildlife or resource possession. The dogs are trained as tracking, wildlife and firearms detection, and area search capable. Taking an

innovative approach, FWC is involved in training a number of these canines for marine searches – water dogs.

While data is not available on FWC canine utilization, understanding of canine operations from other law enforcement setting argues that training time and animal care time reduce unit availability by about one third. Canine units operating as field units are generally able to address only about two thirds of the regular workload of a non canine unit.

Reserve Program. FWC currently field 76 law enforcement reserves. Reserve officers are fully sworn, having completed a law enforcement academy. Reserve officers are required to work a minimum of 12 hours per month or 36 hours per quarter. They also must attend periodic meetings and training regimens. Reserve officers are not paid and due to budget limitations must purchase their own uniforms and equipment.

In 2005 reserve officers provided 17,358 hours of service. This is the equivalent of the duty hours provided by 10 full time officers. About 10-15% of their duty time was spent in training.

Regional Patrol. The majority of officers are assigned to the patrol function – land or water. To organize patrol, regions are generally further subdivided into between three and four areas, each of which is commanded by a Captain.

The South and Southwest regions have four areas and the Northeast, North Central, Northwest, and SEA have three area commands. Areas vary in composition ranging from single county areas (Miami Dade) to areas comprised of up to seven counties. The SEA areas are comprised of Collier and Monroe County (mainland), the Keys, and the Keys National Marine Sanctuary.

Officers assigned to each area command are further broken down into three to five workgroups (squads). A squad is headed by a lieutenant. Squads are staffed with between four and seven officers.

Officers are assigned by county. Squads are made up of geographic groupings of officers. For example, a squad in the Northeast region is comprised of officers from Flagler County (three) and officers from Putnam County (three). The Flagler officers will patrol mainly Flagler County and the Putnam officers will patrol Putnam. A lieutenant will supervise activities in both counties.

Shift Schedules. The FWC works a variety of work schedules, depending upon work assignment. At the time of the merger, there were 13 different shifts deployed within the agency. The administrative units work the more traditional 8:00-5:00,

Monday through Friday schedule, while operational units tend to reflect a more flexible and diverse scheduling system. Various rationales are given for this flexibility, ranging from type of calls and investigations conducted, to historical schedules and union requirements. A number of these shifts address specialty units such as the Big Boats or investigators.

FWC field officers work a five-day 8-hour shift schedule. Their schedule permits officer or supervisor discretion. Officers when assigned to a shift work the best eight hours of the 12 hours of that shift. The schedule allows for varied reporting times and selection of work windows of up to four hour variation, with supervisory consent. In addition, there are requirements for percentages of water patrol time (with different percentages based on locale and officer) as well as special test schedules in certain counties.

Statewide, patrol officers are broken down into squads, with a lieutenant as a supervisor. These squads work a three-shift rotation, with the shifts named as Alpha, Bravo, and Charlie. The different schedules identify both times to work and days off. The squads work a shift for 28 days and then rotate to the next shift. Shifts are set as follows:

- Alpha Shift (A) 6:00 to 15:00 Saturday/Sunday off
- Bravo Shift (B) 15:00 to 3:00 Monday/Tuesday off
- Charlie Shift (C) 15:00 to 3:00 (Sat./Sun) Wednesday/ Thursday off
  6:00 to 18:00 (Fri. Mon. Tue.)

The Charlie shift is used to back up or fill-in for persons on leave on the Alpha and Bravo shifts. A copy of a monthly shift schedule from Ocala is attached at Appendix A and an example of a daily schedule, also from Ocala, is at Appendix B.

Officers work the best eight out of 12 hours, while lieutenants work the best eight out of 24 hours. This allowed variance has historic and functional roots. The work schedules of the previous Game and Fish Commission allowed for best eight out of 24 as a response to the more traditional game warden approach to enforcement which was officer driven as opposed to patrol response driven. Today's patrol officer variable work schedules, according to interviewees, are functionally driven to address the various times when illegal activity may take place or respond to tips about potential illegal activity. All of the officers interviewed seemed accepting of the current schedule although many indicated they would like to see the schedule followed more closely. Several were adamant that the more rigid schedules worked by the previous Marine Patrol should be adopted, making an argument that such schedules provided a more constant response to the reported needs of boaters and offshore/ICW fisherman.

This variable schedule requires that the officer work an eight hour day but within the 12-hour window of the shift. Thus an officer could come in at 0600 hours and leave at 1400 or 0900 and leave at 1700. At first glance this would seem to result in the supervisor not knowing when his officers are working, except by day. However, there is a requirement that the officer notify his supervisor by the end of the day, what hours he will be working the next day. Prior interpretations of the flexible work schedule saw officers leaving during different periods of the day, but still working an overall total of eight hours. This variation is no longer accepted and the period worked must be consecutive. Vacation and other leave time for the officers working the Alpha and Bravo shifts are covered by the Charlie shift, as are special events and enforcement details.

Some supervisors (Lieutenants) work an even more variable schedule, working the best eight out of 24 hours. This flexibility allows them to flex their work schedule to either of their standard working shifts (Alpha or Bravo), as well as respond to special events and enforcement details. Many of these details (especially those associated with port security operations) are on an overtime basis, although with the flexibility of the schedules many can be accommodated within the normal working hours, but at the expense of routine patrol. Personnel working the Charlie shift are the source of this manpower in most cases.

Area Deployment. Officers are deployed to a county within their region. There are 67 counties with the smallest number of officers deployed in Union county (one) and the largest number of officers deployed in Monroe (36). The average number of officers deployed per county is 7.4.

Review of officer work logs and CAD revealed that the majority of work undertaken by officers occurs within the county of assignment; this generally resultant of the residency requirement. However, officers do respond to calls outside of their home counties and are frequently assigned to details in neighboring counties. With officer's "beats" identified as the county in which they live and with officers assigned a vehicle, officers are on duty as soon as they leave their residence. The downside to this residency requirement is that in many sections of Florida, the line officers cannot afford or qualify for homes due to their salary levels. This is particularly troublesome in the SEA area and some parts of South Florida.

Specialized Patrol Designations. Patrol officer assignment is generally by county not function. However, specified positions are designated to focus on specific enforcement concerns. These positions are designated as manatee and panther positions.

Manatee positions are assigned to vessel patrol with the added responsibility of management of manatee zones and enforcement activities that address manatees. A

similar grouping of land-based officers focuses on the endangered Florida panther. Manatee and panther officers are assigned areas where these endangered animals frequent and in addition to the regular duties engage in enforcement activities protective of these animals.

Fifteen (15) officer positions and three investigator positions were designated as panther positions. Twenty-five (25) positions were designated as Manatee positions.

FWC has contracts with South Florida water authorities to patrol their lands. Two officers are designated to patrol lands owned by the South Florida Management District and four officers are designated to patrol Fish Eater Creek. Similar agreements exist with other Water Management Districts.

Vessel Versus Vehicular Patrol. As ActivityNet reveals, vessel patrols account for a smaller number of hours than land patrols. In an effort to ensure adequate marine and other water-based patrols, FWC has designated proportions of the workday that must be spent in water patrol. Officers are designated as 50%, 25% or 10% vessel patrol officers. This designation identifies the proportion of their work over a year that must be spent in vessel patrol.

FACTORS ASSOCIATED WITH CURRENT STAFFING PATTERNS

Considerable insights can be provided from an analysis of current deployment of officers. Present deployment patterns represent the collective needs and wisdom over time. Present deployment can be suggestive of variables important to staffing and deployment.

To identify factors related to current deployment of officers, attributes of counties were contrasted with FWC law enforcement staffing of these counties. Descriptive data on county characteristics and deployment of FWC officers by county were entered into a database. This data was then analyzed using SPSS (Statistical Package for the Social Sciences). Bivariate correlation, partial correlation, and regression analysis were undertaken.

The results revealed significant relationships between attributes linked to counties and the distribution of law enforcement personnel. A correlation matrix was developed to first identify simple bivariate correlations between county-based measures and their interactions with law enforcement officer staffing.

Table 12 provides an overview of the correlation matrix. A correlation quantifies the strength of a relationship between two variables. For purposes of discussion, a correlation of 0.0 to .3 would be considered weak or non-existent. A correlation of .3 to

.6 would be considered moderate, while a correlation of .6 to 1.0 would be considered strong. The correlations to be discussed basically demonstrate how closely related the deployment of officers is to county characteristics.

Table 12

CORRELATION MATRIX STAFF ASSIGNMENT

County Attribute	Bivariate Correlation	Significance Level
Population (2005)	.547	.01
Population (2000)	.544	.01
Population Change (2000-2005)	.517	.01
County Land Area	.558	.01
County protected areas	.370	.01
Land and Water Area	.828	.01
County Water Area	.761	.01
# of Lakes in County	.003	Not significant
Coastal Counties	.566	.01
County Lake Acreage	.630	.01
Total Vessels	.710	.01
Recreational Vessels	.697	.01
Licenses Sold	.823	.01

The strongest predictor for current assignment of officers to a county is the total land and water area that falls within the county. The correlation of .768 is a strong correlation explaining 59% of the variance in officer assignment. As analysis will demonstrate, this factor is associated with several other variables.

Population (2005 estimates) is moderately correlated. The larger the county's population more likely a larger the number of officers will be assigned. Growth in population is also correlated with current distribution of officers. Population explains thirty percent of the variance in distribution of officers.

Land area (size in acres) is moderately correlated (.558) with the distribution of officers. The larger the land area, the more likely officers are to be assigned. The proportion of variance explained in distribution of officers is very similar to that explained by population (31%). Total acres of protected areas (largely WMAs) are also correlated (.370) with the distribution of officers.

Water area within a county is correlated with assignment of officers at .761. Water area within a county includes fresh or marine. In most counties reporting extensive water areas, the areas are generally marine exampled by Tampa Bay or the vast expanse of marine area in Monroe County. Important freshwater areas would be Lake Okeechobee and the St. John's River.

Given previous correlations between county acreage and officer assignment and county water acreage and officer assignment it is not surprising that when total land and water area within a county are correlated with officer assignment the relationship strengthens to a correlation of .828. A larger number of officers are deployed to counties that have large land areas and significant water areas. Total area (land and water) for counties is also correlated with population.

The variable total land and water area is also correlated with population. Two factors coincide. The more land, the more land resources to be protected. In addition, the more land the more room for people, but probably more significant, populations in Florida have clustered around water. Large cities have grown up around harbors – Jacksonville, Tampa, and Miami. Total county area provides a nexus of land, water, and population.

Number of registered vessels in a county is correlated (.710) with the number of officers assigned. Also strongly correlation (.823) is total number of licenses sold – fishing and hunting.

Bivariate correlations are often difficult to interpret since variables are often highly inter-correlated. Land area is correlated with population. The more land a county has (all else being equal) the more population it should have. Similarly, since populations and cities generally grouped around natural harbors with extensive water areas, population is naturally correlated with water area. To sort out primacy of variables, a technique called partial correlation can be utilized.

A partial correlation permits one to statistically control the action of other associated variables. The three variables, population, land area, and water area for a county were each associated with the number of officers. Each variable was then controlled against the other two. The water area of a county proved to be the dominant variable having a partial correlation of .836. County population had the second strongest partial correlation of .536. County land size had a partial correlation with .42.

The data was subjected to one final analysis – regression. Three independent variables, land area, water area, and population of the counties were regressed against the number of officers assigned to a county. A regression permits one to see how well independent variables predict the distribution of the dependent variable.

When water area, population, and land area were regressed against the distribution of officers a very strong R of .902 was obtained. The proportion of variance in distribution of officers (R squared) was .82. These three variables accounted for 82% of the distribution of officers.

Discussion. The three variables make sense. Land is associated with resource protection. The more land, on the average, the more resource to protect. Population is important since population is related to calls for service, recreational fishing, hunting, and boating. Water area within a county is a key factor in boating, fishing, and protection of water resources.

The contribution of water area in a county is somewhat inflated by the fact that the big boat crews are located at harbors and are assigned to those counties. In addition, Monroe county which has a large water area has a number of federally funded marine officers assigned. Similarly, Miami Dade has one officer patrolling Water Management areas which is funded by the districts.

The three factors that drive FWC work, the two resources, land and water, and population are highly correlated with the current distribution of FWC officers.

STAFFING AND DEPLOYMENT ISSUES

In an analogy to local municipal policing, the basic "beat" for FWC patrol officers is the county. The first issue is does deploying officers by county make sense. Several factors support a patrol structure based on counties as the basic building block:

- Any area larger than a county would pose serious problems for officers to become sufficiently conversant with the people, fauna, and flora.
- Community policing, a guiding philosophy which has been adopted by FWCDLE argues for locally based enforcement.
- Information resources that can direct deployment is available at the county level. The CAD and other data resources of FWC collect information to the county level.
- Deployment at a level larger than counties for patrol officers could acerbate travel times.
- Counties provide sufficient workload to justify at least 1 officer per county.

Deployment by county makes sense. In the larger counties, staff can be assigned to sub districts.

Shift scheduling poses a series of dilemmas for FWCDLE. Currently, a basic shift schedule of five 8-hour days is the most common schedule for patrol officers. The five-day 8-hour shift is an efficient schedule for most law enforcement activities. This shift works well for land-based enforcement. The 5-8 schedule does not work as well for vessel based patrols.

Vessel patrols require a trip to the water resource and then the vessel to be launched. Travel time and set up time cut into the amount of time available for vessel patrol. At the end of each marine patrol, equipment has to be stowed and the vessel cleaned. Given the amount of time these maintenance and travel activities occasion, it would be more efficient in terms of realizing vessel patrol time to work a four-day 10-hour shift. This would effectively reduce the proportion of time devoted to maintenance and travel as compared with marine patrol. In the deployment section of this report, the issue of shift length will be further discussed.

Current shift schedule pose another problem. The best eight out of 12 hours results in at least four hours of a shift where an officer is not on duty. In areas where the work is completely officer initiated this does not pose a problem. However, in many areas – particularly the more populated counties, FWC officers are increasingly dispatched to answer calls for service. With a possibility of four to eight hours of a day with officers unavailable, calls for service are apt to linger. Analysis of CAD data reveals that this is in fact occurring.

Going to fixed shifts, however, without additional personnel will not solve this problem since there are insufficient personnel to cover a 24-hour period, seven days a week in most areas of the state. These concerns will be treated in more detail in the proposed staffing and deployment section of this report.

Vessel Patrols. As previously developed, FWCDLE conducts two very different types of patrol – vessel and vehicular. Until recently officers were deployed to a county and they and their supervisors would identify the specific patrol required. This has resulted in an interesting anomaly. In coastal counties, vehicular patrols are as frequent as in inland counties. This pattern can be seen even in the Keys. For example, in January of 2004, the majority of the patrols in Monroe County (includes the Florida Keys) were vehicle-based.

Vehicular patrols can legitimately focus on water resource concerns. Fishing catches can be checked at the shore or at boat docks. Shore based patrols can observe water-based violations. A large proportion of water resource oriented enforcement is

effectuated through vehicular patrols. However, some water resources and public safety concerns can be addressed only by vessel patrols.

FWC policy since the merger of Florida Marine Patrol and Florida Game and Fish Commission has stressed the single department concept – that FWC officers were neither marine nor land but a combination of both. Officers, thus, have the option to conduct either vehicular or vessel patrol.

This resulted in a larger proportion of patrols, even in coastal counties being land-based. Marine patrols require more maintenance, set up, and clean up than land patrols. To increase the proportion of marine patrols, FWCDLE established minimum proportions of work hours that officers must devote to water patrols. Officers were identified based on where they are deployed as to the proportion of time they must spend on the water – 50%, 25%, or 10%.

In Volusia County an experiment was also tried, where officers were assigned for a period, either water or land patrols. *Initial results seem to support such fixed assignments.* In the section on deployment, the issue of vessel versus vehicular patrols will be treated in greater detail.

The Volusia Experiment. After the merger between the Game and Fish Commission and the Florida Marine Patrol in July of 1999, management encouraged and emphasized a view that officers were no longer either water or land patrol, but rather should now be considered multifaceted officers. Officers should be able to move back and forth from land to water duties as needed.

This appeared to have a two-part rationale, one being to bring the two separate agencies to look at themselves as one, and secondly, to increase flexibility in coverage. While the integration and culture of newly employed officers seems to have been positively impacted with this message, older officers interviewed from the two previously separate organizations seemed less inclined to accept it. Older officers argued the rationale that a generalist can never be as good at his job as a specialist, as well as citing the differing focuses and law enforcement activity between water patrol and land patrol.

For instance, water patrol, while still predominately self-initiated, tended to be incidence driven, with resolution generally concurrent with initiation. On the other hand, land investigation tended to stretch out over several days. Land investigations while somewhat self-initiated, generally came as a the result of information from informal or formal complaints. In both cases, officers indicated that much of their work requires response and/or investigation outside normal working hours, but more so on the landside. In addition, knowledge of the area patrolled appeared to be reduced with the frequency of change between land and water duties. This is analogous to the

current arguments for geographically based and neighborhood focused law enforcement in the more traditional urban and suburban law enforcement agencies.

Problems soon arose. After it appeared that boat operational time was reducing, FWC management also determined that there was an increased incidence of boating accidents and observed reductions in citation issuance in water areas. In addition, land enforcement experienced increased response times to complaints.

To address these emerging problems, a policy was instituted to assign officers to a minimum percentage of their time as mandatory water time. Times assigned ranged from 10% to 50% of their total work time. Interviews and ride-alongs indicated that this mandatory time fluctuates throughout the state, generally at the officer's discretion. In most cases the officers operating in more water related areas, indicated they exceed the mandatory times, especially during periods of water activity by the public. Thus during the summer boating months, officers assigned to 50% minimum water patrol in areas such as Hernando County, may in fact put in up to 90% water time responding to the increased usage. The same issues with transitioning between water and land operations remain.

The actual allocation of work between water, land and air, as well as other activities, is recorded on the officer's bi-weekly activity report and subsequently data inputted into the "ActivityNet" database maintained at headquarters. This database is separate from the bi-weekly payroll database, which is less specific as to activity performed. Individuals associated with the ActivityNet system indicated that it was developed in response to management's need for activity information that was not provided by the payroll system. Both system rely upon employee completion of a paper form and are not quality controlled or validated by direct oversight or mechanical timekeeping equipment.

Given the problems that developed from the more generalist approach to workload assignments, managers have been striving to develop a more effective assignment system. In Volusia County, an experiment is underway that returns the assignment of officers more like it was before the merger. Prior to the merger, there had been the following allocations between the two previous agencies

- **Game and Fish Commission**: 2 Lieutenants 6 Officers

  Area: 147, 210 acres of WMA/Public lands, 132, 000 acres of private lands, 188 NM of St Johns River and associated lakes, 300 lakes not connected to St Johns River

- **Florida Marine Patrol**: 1 Lieutenant 7 Officers

  Area: 44 NM Atlantic Ocean, 112 NM ICW, backwaters and Tomoka River/Basin

After the merger, this area was patrolled by all officers on rotating assignments between the geographic areas.

In an effort to return more concentrated and effective focus to geographic areas, the current experiment was developed and the county allocation established as follows:

- **Coastal Squad**: 1 Lieutenant
  5 Officers
  Patrols coastline, ICW, associated backwater

- **River Squad**: 1 Lieutenant
  4 officers
  Patrols St. Johns River and associated lakes

- **Land Squad**: 1 Lieutenant
  4 officers
  Patrols WMAs, public lands, private lands, lakes not connected to the St. Johns.

Officers are assigned primarily to these areas and become much more familiar with their areas and client base. In addition, they have become more integrated into the communities. Officers working with this type of assignment seemed much happier and felt that productivity was improved. An informal evaluation of the project conducted by Captain Hubert seems to verify this impression. All squads can be assembled to work together on special details. Their work schedule is similar to that of the statewide system, except on a smaller scale and somewhat greater flexibility. An analysis of this model's revealed the following results:

- Water and land patrol hours has increased
- Citations have increased
- Response times have decreased
- Boating accidents have decreased.

Escalating Housing Prices. South Florida – particularly Monroe, Martin, Palm Beach, Broward, and Miami Dade counties and to a lesser extent Collier County are suffering a problem with implications for deployment. The housing market in Florida

has undergone some tremendous changes in the past five years. The price of housing particularly in coastal areas has dramatically increased. This is particularly evident in the Keys and Collier County.

Officers are finding it increasingly difficult to afford to live in the Keys. Newer officers may find more affordable housing in mainland Monroe County. They then commute to their assigned area in the Keys. The commute may be as long as two hours, one-way. This suggests that up to half of a shift is spent commuting. Similarly there are pressures in Collier County where prices are also escalating for officers to live some distance from the marine patrols making travel time an important component of their workday. This issue will be addressed in the final section of this report.

Aviation, Investigations, and Canine. These three units are deployed regionally. There is some data available as to activity levels and demand. However, key information on demand is not available making staffing estimation difficult. Establishment of staffing levels and deployment will be difficult without more detailed activity data. Regional deployment does appear to be appropriate for these functions.

Aviation currently lacks data that identifies demand for aviation services. The current general order that identified appropriate requests and request priority is not sufficiently specific for a staffing analysis. Current airtime for pilots is not exhausted which on face suggests adequate staffing. However, there is information that suggests that pilot airtime may be a function of aircraft availability and fuel constraints.

Given their present locations and operating criteria the current deployment seems appropriate. Consideration should be given to new rotary wing acquisition that includes lift capability to better support SAR. There are an equal number of pilots and aircraft. This implies that when a pilot is on leave, the aircraft is essentially inoperable. IACP generally recommends more than one pilot per aircraft to ensure a pilot when aircraft services are needed.

Investigations, also deployed regionally, appear to suffer from detailed workflow and activity analysis. Data provided from the headquarters level does not provide sufficient detail to analyze caseloads, while databases maintained at the regions appear to vary in format and detail, frustrating any comparison at the regional or statewide level. Case closure classification is lumped together, leaving no ability to review.

Even when looking at the statewide caseload versus investigators, the load appears light at 2.7 cases per INV 1 only, compared to more traditional investigative agencies. If you add in the INV2 and Lieutenants, that caseload figure drops to 1.8 per month. The problems lies in that the data does not reveal cases by type, except to note if it a background investigation. The department needs to look at obtaining a quality case

management system that can provide management with more detailed analysis of the investigative workload.

Canine is deployed by region in a response only type capacity. Canine units do not generate their own cases, but rather respond to requests for assistance. The study team was unable to obtain any workload data for this function. Without data it will be difficult to deploy or estimate staffing levels. While in normal patrol status, canine officers may generate their own patrol-related cases.

Without additional data, it will be recommended in the staffing chapter that regular patrol officers be assigned to the canine function patrol. This is a common approach to canine units in law enforcement agencies. When canine units are not assigned to specialize canine activities, they should undertake regular patrol functions. In the staffing chapter additional suggestions will be made concerning canine units.

Big Boats. Big boats are largely supported by federal contracts. Staffing appears to be a function of contracts. Increase or decrease in staffing is generally related to the availability of contracts. However, in the staffing section when activity increases, additional analysis should be undertaken. Given the federal mandate for staffing on the newest boat, the study team feels from an officer and marine safety standpoint, staffing should be the same as the federal requirement on all FWC Big Boats. In the final staffing section, this issue will be addressed.

SUMMARY

- Deployment of field officers by county makes sense and should be an element in the model.

- Investigators and Aviation should be deployed by region. The investigative section needs uniform case management policy and reporting to support more in-depth analysis of workload data. The aviation component suffers from the absence of a full protocol and general order that sets priority on flight requests, to better determine true asset needs. Additional pilots, however, may be needed to ensure that expensive aircraft is not grounded due to lack of available pilots.

- Canine personnel should be deployed as currently done, with increases in staffing based upon activity data, which should be captured and reviewed monthly.

- Big boat staffing should remain a function of contract requirements and from a safety standpoint, minimum crews should be set to match the

Federal standard of a captain and three crew members. Increased costs associated with such a change should be recouped through contract negotiation.

- Shift schedules may need to be varied by type of activity, such as 10-hour days for water patrol, in order to maximize presence.

- Residency requirements will continue to impact on availability of officers and will required attention by management as the cost of housing and fuel continues to escalate.

CHAPTER III. INFORMATION RESOURCES

This section of the report identifies and reviews information resources available to assist in staffing and deployment decision-making. This section will also:

- Evaluate the potential contribution of each information resources for staffing and deployment
- Identify strengths and weaknesses of each resource
- Recommend changes in data collection or database architecture that could improve the usability of that information resource.

THE ROLE OF INFORMATION IN STAFFING AND DEPLOYMENT

Information is related to staffing and deployment in two ways. Information describes how work distributes (i.e., where and when the activity occurs.) This permits parallel deployment of personnel. Information can also provide the amount of work and indicate when staff levels are insufficient to address current workloads.

Information on workload may be direct or indirect. ***Direct measures*** would be direct counts of enforcement work (ArrestNet, ActivityNet) and activities such as a computer aided dispatch system may provide. Direct and accurate counts of law enforcement work activities are often difficult to obtain due to lack of records, or record keeping that is not designed to provide such information. Incorrect or inconsistent data among the databases may also impede analysis.

Indirect measures provide information that is associated or correlated with law enforcement work such as population, size of area, growth rates, socio economic status and a series of other factors. While lacking the obviousness or direct measure, indirect measures can be amazingly accurate in assessing workload.

The following information resources were analyzed in developing this report:

- Calls-for-service/activity (CAD)
- Distribution of Workload (ActivityNet)
- Crime/violation patterns (ArrestNet)
- Personnel Information (PersonnelNet)

- Inventory of Marine Units (Other agencies)
- Managed/patrolled lands (WMA,WEA, SPA, National Forest, etc)
- Shellfish and manatee zones (FWC provided).
- County demographics (U.S. Census Bureau data, population, type (area), etc)
- Hunting/Fishing licenses (limited to place of purchase and type)
- Registered Watercraft and Boating Accident data (by county and including accident and BUI citation data)
- Shoreline Configurations and distances (includes coastal, rivers, lakes, bays, etc; and, is part of the pending FWC-FWRI GIS development)
- FWCDLE crime and agency delimited personnel statistical databases
- Selected comparative states' databases
- Various FWC databases specific to unit operations (e.g., investigation, aviation, canine, etc.).

In the section to follow, each database analyzed in the course of this study will be identified, its potential contributions for deployment and staffing discussed, and recommended changes to improve the potential contributions of these data resources will be made.

COMPUTER AIDED DISPATCH (CAD)

Of all the FWC databases, CAD holds the most promise for staffing and deployment. CAD provides a real time record of activities. Activities with important implications for staffing and deployment captured by CAD include:

- **Calls for Service**: CAD provides a record of all citizen calls for service and department response to such calls. Information on calls for service include the times the call is received, dispatched, response time by the assigned unit, and time on scene. Information on the nature of the call is also collected.

- **Calls without Service**: CAD provides a record of calls for service when an officer was not available to be sent. This information provides a valuable insight into where and when officers are needed.

- **Patrol Activities**: CAD provides information on types of patrol conducted and times spent on such patrols. It further identifies water, foot, all terrain, and vehicle patrols.

- **Proactive Activities**: Vessel stops, hunter checks, angler checks, vehicle stops, field interrogation contacts and other officer-initiated activities are recorded. Field observation and contrasts with other data sets revealed about a third of self-initiated activity were reported via the CAD.

- **Administrative Activities**: Provides information on times spent on maintenance, training, meetings, and other activities

- **En-route Times**: Provides information on time involved in traveling to work destinations.

- **Workload (Operational Labor)**: CAD information can provide information on overall workload signaling the need for additional personnel or redeployment of personnel. This resource also provides the amount of work in each category.

CAD data can alert administrators when workload, whether it be calls for service or self-initiated activities, become too demanding for current staff. CAD can track workload changes. IACP has developed a methodology to link CAD identified workload with optimum staffing.

CAD data is proving for many agencies the most important data source for management decision systems. CAD provides for information upon which to base decision-making to be immediately available. Many departments utilize real-time or immediate recent data to review work productivity, manage temporary officer assignments, and ensure that all required paperwork is completed at the end of a particular shift. CAD can provide, if it is properly configured and utilized, key data on officer and work group activities, workload by time of day and day of week, deployment relevant information, and immediate information on emerging problems.

FWC's Computer Aided Dispatch system is comprised of six different CAD databases, with each region assigned a different database. This six database configuration makes it difficult to conduct agency wide analysis. As was done in this research, the databases had to be merged to provide any department wide analysis. This can be a demanding

process, especially if there are some differences between the varied centers in their coding and habits (as there were).

In the long term, FWCDLE should integrate the six separate computer aided dispatch systems into a single database to permit easy access to agency wide reports, in a near real-time basis.

IACP staff found that FWC's underlying data coding and input criteria would profit from some additional analysis and administrative review and supervision. While the CAD is based on a system used by other state agencies (specifically the Florida Highway Patrol), it has been modified for use by FWC.

Most of the codes were fairly clear and were valuable for workload analysis. A review of all the codes utilized in the context of the agency's mission would be valuable. For purposes of staffing and deployment it would be particularly useful if clear categories of operational labor (law enforcement related work), administrative activities (maintenance and other organizational related activities, and service (community related activities) could be developed and institutionalized. Consistent coding will also require close supervision by management. It is also noted that when two officers are in the same vehicle or boat, the CAD only records the primary officer. Consideration should be given to adding a code to capture the second officer's workload.

Calls for service should receive specific identification in the CAD. It is cumbersome to conduct a time analysis to identify calls for service. A special code should be developed to identify calls for service not been answered, thus enabling managers to take appropriate remedial action.

Most of the CAD deficiencies, however, are not structural; they resulted from either failure of officers to report activities or from dispatcher shortcuts.

Over time, if not closely monitored, dispatchers will develop shortcuts and special codes that make analysis difficult. For example, as the Collier County data was being analyzed, data would appear where the dispatch time and the arrival time were the same. This suggests that it is a self-initiated activity – since it is impossible to immediately get to a location. However, the received time was two hours previous. So this must have been a dispatched call, but analysis would not define it as such. The dispatcher probably entered both dispatch and on-scene time at the same time to save a later entry.

Special codes did appear. Traffic Stops were sometimes entered when the proper code was TRF. This can create a problem if the analyst does not know of the new designations. Missing information was also common particularly as to location. Location designations were particularly difficult with a number of shortcuts that made

location all but impossible to decipher (e.g., use of some local designation such as "the Sandbar.")

CAD supervisors need to institute quality control checks on dispatcher practices.

The most important limitation of the current CAD database lies in its only partial utilization by field officers. A sizeable amount of officer activity is not being reported. In some categories such as vessel or field stops, the majority of activity is not been recorded on CAD. This makes it difficult to assess current self-generated workload. In most field observations, it was found that a third of actual workload activities were being recorded by the CAD due to the officer's lack of radio usage or calling out on an incident. When queried about this, officers indicated it was a cultural thing that permeates the agency or that in their opinion the duty officers (dispatchers) would not be able to keep up with the radio traffic. Observations in the communications centers did not seem to bear out this "overwork" status of the dispatchers.

Field observations by IACP staff reveals that officers frequently did not call in stops, fishing checks, hunter checks, vessel stops, and other activities. Officers on land patrol frequently did not advise dispatch of their patrol status and in some cases were located by cell phone a mile or two from their parked vehicle on a woodland trail. These officers could be out of their patrol vehicles, far into the woods, while dispatch still thinks they are in the vehicle, possibly at a totally different location. This is not only a data issue but also an officer safety concern.

To test validity of CAD data we contrasted ActivityNet reports for the first quarter of 2005 with corresponding CAD information for this same quarter. Some information was right on the mark. For example in Flagler County, in the three-month period, 90 hours of water patrol were recorded. The CAD recorded 92.76 hours. However, in Seminole County ActivityNet reported for this same time frame 151 hours of water patrol. CAD data for the same reference period only reported 84 hours. Martin County reported 571 hours of water patrol for the first quarter of 2005 in ActivityNet and 89 hours and 22 minutes on the CAD.

During the first quarter of 2005, CAD only recorded one vessel stop in Flagler. ActivityNet recorded 115 vessel inspections and seven UBC citations in Flagler County during this same time period. Seminole reported 19 vessel stops in CAD, ActivityNet reported 106 vessel checks. Martin County reported 109 vessel stops in CAD, and 701 vessel inspections in ActivityNet (1st quarter 2005).

While the above observations suggest that officers are not calling in activities, some of the notations in CAD suggest dispatcher error may also be contributing. In reviewing Martin County, it was observed that officers spent almost as much time enroute to water patrol (82 hours versus 89 hours on the water). When looking at the time spent

on water patrol, there were a number of patrol times of two to six minutes. These did not appear to be times spent on specific locations (recording checks on specific areas). These may be dispatchers simply logging in and out an officer at the same time.

On the positive side CAD does serve as an excellent resource in calculating calls for service. This is an important component of officer workload in many areas and the CAD does permit assessment of the work demanded. Equally important, CAD also can identify calls that could not be answered due to a lack of availability of officers. This will be an important element in any deployment or staffing analysis. The CAD also provides some average times to assess enroute times and maintenance times. While the data is probably incomplete, the sample size is large enough to provide a fairly good sense of how much average times are for both of these categories.

While in its current state the CAD cannot be used to directly deploy personnel, it can (because it does provide average times, etc.) be used in conjunction with ActivityNet to address activity levels. Calls for service information does provide an important variable for assessing officer requirements. Both calls for service responded to and calls for service not answered due to lack of officer availability will provide an important asset for staffing and deploying officers.

The CAD could become a valuable management tool with a number of modifications. To make CAD information bases more complete and useable the following steps should be taken:

- Officers, as a start, should be required to call in and out all work activities. Officers should call in duty at the beginning of each shift and their times in service should be noted in CAD.

- Dispatchers should be monitored to ensure that they fill in all times and that dispatchers only use the department mandated codes.

- Special codes should be developed and officers should be made to report whenever they are involved in patrol of shellfish areas, manatee zones, SPA, WMA, and other areas/tasks of interest to the department. This would provide a real time record of such activities, as opposed to an after the fact recording in logs used to compile bi-weekly ActivityNet reporting.

- All calls for service not responded to by officers should have an associated reason code, to permit analysis for future staffing study. (e.g., no officer working, no officer available due to other calls, call referred to other agency, etc.)

- If all the data were collected in CAD that is currently collected in ActivityNet, ActivityNet could be abandoned. CAD, being real-time, would provide more reliable and accurate data than the after the fact recollection of activity that fills ActivityNet.

- A series of programs should be written to provide regular management reports to management staff at FWC. To facilitate ad-hoc report development by field supervisors, a user-friendly report writer module should be attached.

ACTIVITYNET

ActivityNet provides a database on work related information from officers. Each officer completes a form bi-weekly detailing required activities. This reporting allegedly is distilled from the officer's daily notebook entries which are made contemporaneously with the action. Field observations rarely confirmed this as little or no contemporaneously notations were observed. When asked about this, most officers confirmed that they filled in the notebooks after the workday was over from memory. These forms are then data entered into a database identified as ActivityNet. Information acquired includes:

- Number Of Boating Accident Invest Hours
- Number Of Boating Safety Warnings
- Number Of Dog Hunting Enforcement Hours
- Number Of Enforcement Hours
- Number Of Freshwater Fish Enforcement Hours
- Number Of Hunting Enforcement Hours
- Number Or Manatee Citations
- Number Of Manatee Complaint Hours
- Number Of Manatee Complaints
- Number Of Manatee Educational Contacts
- Number Of Manatee Patrol Hours
- Number Of Marine Fish Enforcement Hours
- Number Of Net Enforcement Hours
- Number Of Other Warnings
- Number Of Resource Warnings

- Number Of Trap Robbing Invest. Hours
- Number Of Users Checked
- Air Patrol Hours
- Disaster Response Hours
- FWC Citations
- Land Patrol Hours
- Manatee Warnings
- Other Citations
- Other Hours
- Search & Rescue Hours
- Shellfish Area 1
- UBC Citations
- Vessel Inspections
- Vessels In Compliance
- Water Patrol Hours.

Categories in ActivityNet are not mutually exclusive except for Land Patrol Hours, Water Patrol Hours, and Other Hours. These three categories should add up to the total hours worked. Trap Robbing Hours, Manatee Enforcement Hours and Net Enforcement Hours, for example, would be included in total Water Patrol Hours.

ActivityNet provides valuable insights into the workload of FWC officers. For example, if one calculates the number of hours spent in water patrol and then divides by the number of vessels inspected, one finds a vessel being inspected approximately every 40 minutes. This does not include stops for alcohol, manatee violations, and other water-related activities.

ActivityNet can be compiled to the regional, county, workgroup level, and individual officer level. It can provide an excellent synopsis of general categories of work for any officer or area of the state. It also provides specific information on a range of specific officer activities. In 2005, ActivityNet provided the following information:

Dog Hunting Hours	8,859.50
Enforcement Hours	146,178.65
Freshwater Fish Hours	71,024.35
Hunting Enforcement Hours	134,155.25

❑ Land Patrol Hours	643,768.45
❑ Other Hours	300,397.15
❑ Water Patrol Hours	213,183.75
❑ Shellfish Area 1	6,803.00
❑ Shellfish Area 2	2,311.00
❑ Search and Rescue Hours	8,518.25
❑ Disaster Response Hours	62,313.00
❑ Air Patrol Hours	9,432.55
❑ Trap Robbery Hours	3,010.00
❑ Net Enforcement Hours	8,503.00
❑ Marine Fish Enforcement Hours	129,783.80
❑ Manatee Patrol Hours	49,314.10
❑ Manatee Complaint Hours	1,028.00
❑ Boat Accident Investigations Hours	11,843.05

❑ Boating Safety Warnings	49,639
❑ Manatee Citations	2,486
❑ Manatee Complaints	431
❑ Manatee Educational Contacts	48,956
❑ Other Warnings	11,483
❑ Number of People Rescued	1,043
❑ Resource Warnings	18,343
❑ Users Checked	1,151,319
❑ FWC Citations	15,667
❑ Manatee Warnings	11,994
❑ Net Limitation Arrests	185
❑ Other Citations	5,830
❑ UBC Citations	12,928
❑ Vessels Inspected	261,563
❑ Vessels in Compliance	199,813

ActivityNet provides a valuable and general overview of officer work. The categories are relatively general. It does provide specific information on officer contacts, warnings, citations, arrests, and vessel inspections. Special hours of patrol are also provided for freshwater fishing, manatee related activities, dog hunting, trap robbing, and boat accident investigations.

As will be developed later in this report, ActivityNet provides a second source of information (to CAD) on officer workload. ActivityNet provides a more complete but less detailed source of information on officer activities – particularly self-initiated activities. ActivityNet analyzed in conjunction with CAD provides a window on officer workload and agency operational labor.

Throughout the study, ActivityNet has provided insights and valuable data. However, the category "other hours" should probably be broken down further since it includes court time, leave time, administrative duties, enroute times, training times and maintenance activities. A better break-out of these activities would be of great assistance for management purposes.

One concern did surface during the fieldwork concerning ActivityNet. Observers did not see officers taking notes as to vessels stopped or time in patrol. When the officers were queried, they advised that they filled out ActivityNet from memory, usually at the end of the shift. While events as citations may be well remembered, times on the water or land patrol as well as not-citation resource user contacts can be misremembered.

ActivityNet was initially developed to respond to certain questions that were being asked about FWC activity and, according to FWC personnel, has been modified since then as other questions related to activity reporting have emerged. The current ActivityNet format was initially developed in a smaller context. Subsequently, as these additional issues have arisen, the expansion of the data collection and the adding of additional items to the form has resulted. The current form has line items that are not consistent with each other, overlap and provide numbers that reflect in many cases "apples and oranges." The report, when viewed in isolation, is confusing and redundant to accurate and complete CAD operations. It is suggested that while FWC may still keep the system pending full development of the CAD, it should put together a workgroup to restructure and clarify and or totally restructure the current form.

While ActivityNet provides an invaluable source of information for the agency, it is, nonetheless, IACP's recommendation that in the long run that ActivityNet be phased out and replaced by information from the Computer Aided Dispatch System. The CAD, with a more consistent reporting focus and emphasis, should be able to replicate all information provided by ActivityNet. This would reduce administrative workload on officers, eliminate redundant data input and related errors, and provide information that is more detailed, thus permitting additional and more robust analysis.

Citations. This data source provides information on arrest and citations. It provides a source of information on workload. Arrests for FWC officers are more demanding than in most law enforcement agencies. Arrests on the water are particularly onerous since the officer may be alone and must gain assistance in securing the other vessel as well as transporting the arrestee. In 2005, 38,316 citations/arrests were issued by FWC officers. This is more than one citation per week per officer.

This database is also replete with errors and omissions in coding. The charge wording is not consistent when grouped against the code sections the tickets are citing. There are instances of blank fields, or fields reflecting the Headquarters data section staff as the arresting officer. There are instances where the county code is "00", a non-code and others that code for the sanctuary as "88". Yet there are charges listed under Monroe County's code which show action in the Sanctuary. Interviews with regional and district office staff indicate that the citations were quality controlled at the local level until recently, when all quality control was taken over by Tallahassee. In most police departments, quality control of submitted charging documents, reports, and other official communications starts with the first line supervisor and receives follow-up through the chain of command, all the way to its final destination. If we are to use the citation data for future deployment, quality control needs improvement at all levels.

Personnel Information (PersonnelNet). PersonnelNet provides information on each employee, leave times, and demographics. This resource provided availability factors for this project. Availability identifies how many hours a year an officer is available for work. Data from this database was used to determine current personnel distribution around the state, forming the base line for distribution decisions. This system provided a base for determining officer availability for establishing staffing levels.

Inventory of Marine Units (Other Agencies). For the project an inventory of marine units mounted by other agencies (police departments, sheriff departments) was gathered based on the distribution of vessel based ticket books. This revealed the following distribution of marine units:

County SO	Cities in County	Total in County
❑ **Alachua**		1
❑ **Bay**	Panama City Beach	2
❑ **Brevard**	Melbourne	2
❑ **Broward**	Ft Lauderdale Hallandale Lighthouse Point Margate Seminole	6
❑ **Charlotte (No SO)**	Punta Gorda	1
❑ **Citrus**		1
❑ **Clay**		1
❑ **Collier**	Marco Island Naples	3
❑ **Dade(Miami-Dade)**	Adventura Indian Creek Miami Dade	4
❑ **Escambia**		1
❑ **Flagler**		1
❑ **Hernando**		1
❑ **Hillsborough**	Tampa	2
❑ **Indian River**	Sebastian Inlet Vero Beach	3

County SO	Cities in County	Total in County
❑ **Lafayette**		1
❑ **Lee**	Cape Coral Ft Myers	3
❑ **Manatee**		1
❑ **Marion**		1
❑ **Martin**	Longboat Key Jupiter	
❑ **Monroe**		1
❑ **Okaloosa**	Niceville	2
❑ **Orange**	Maitland Windermer	3
❑ **Palm Beach**	Boca Raton Boyton Beach Juno Beach N. Palm Beach	4
❑ **Pasco**		1
❑ **Pinellas**	Gulf Port	2
❑ **Polk**	Winter Haven	2
❑ **Putnam**	Crescent City	1
❑ **Santa Rosa**		1
❑ **Sarasota**	Sarasota Venice	3
❑ **Seminole**	Sanford	2

County SO	Cities in County	Total in County
❑ **St Johns (No SO)**	St Augustine	1
❑ **Volusia**	Daytona Beach Edgewater New Smyrna Beach Ponce Inlet Port Orange	6
		67
Additional State	DEP Park Patrol	1
		68

No SO w/books. Includes SO units in Charlotte or St Johns Counties
Data supplied by FWC based on issue of citation books

Note: Subsequent to publication, staff was notified that the listing of other marine enforcement units was not complete, citing examples in Miami-Dade, Broward, and Pinellas counties. There may well be more units that are not listed. The data displayed in the report was provided by FWC based on the issue of Uniform Boating Citation (UBC) books. An updated listing of all agencies from FWC was requested but not received at publication time. The staff recommendation to establish Memoranda of Understanding (MOU) with each supporting local law enforcement agency operating marine patrol units, should resolve the issue of where these units are located and how they interact. A consolidated listing (with contact information) should be maintained in communications and updated annually.

Interviews with FWC personnel indicate that the activity of these units varies widely from almost none to comparable with FWC in the case of the Broward County Sheriff's Marine Units. Additional data would be required on the activity levels of these units for staffing analysis. Such information would permit resource sharing and allow FWC to coordinate vessel patrols with local agencies to ensure efficient and cost effective water patrol. In addition, memoranda of understanding between FWC and these units could further enhance staffing forecasting by clearly identifying responsibility. Such information is not presently available. Current staffing data is not sufficient to premise staffing decisions.

Managed/Patrolled Lands. (WMA, WEA, national forests and state and federal parks). Using information from FWC, a database was generated that identified the number of acres in each county in these designations. Managed land is frequently hunted, generating considerable workload. In addition, officers reported in their questionnaire responses that WMAs generated significant work. Due to their contribution to officer workload, this database will be an element in identifying proper staffing levels.

In addition, there are large areas of private lands over which FWC has jurisdiction, but the land area of which is unknown or not reliability recorded. Many interviewees indicated that a significant portion of the unreported land patrol hours are accumulated coordinating with or responding to complaints by these land owners on hunting and fishing issues. FWC also patrols large segments of federal and state forests, especially during hunting seasons. Many of these forests are partially or totally included in WMAs or WEAs.

Shellfish and Manatee Zones. Both shellfish areas and manatee zone are mandatory patrol areas. As such they are a major contributor to workload for marine patrols. An inventory of these zones was prepared utilizing information gathered from a number of sources in the department (Table 13). These zones were then designated and grouped by county in our databases. Some manatee zones, due to overlapping or duplication by time of day, were either compressed or combined.

Shellfish, Manatee, and Special Preservation Areas (Keys), since they require special patrols, are important for staffing and deployment.

County Demographics/Characteristics. Utilizing a series of data sources particularly U.S. Census Bureau data on population and area characteristics, a profile was established for each county. Particularly important were 2005 population estimates, given the rapid growth that Florida has been experiencing. Data was also collected and analyzed relative to land and water areas within the county. This data

Table 13

SHELLFISH AND MANATEE ZONES

	Shellfish Areas	Manatee Zones*
❑ Alachua		
❑ Baker		
❑ Bay	3	
❑ Bradford		
❑ Brevard	7	20
❑ Broward		18
❑ Calhoun		
❑ Charlotte	1.5	7
❑ Citrus	1.5	15
❑ Clay		
❑ Collier	1	27
❑ Columbia		
❑ DeSoto		
❑ Dixie	1.5	
❑ Duval	1	12
❑ Escambia	.5	
❑ Flagler		
❑ Franklin	2.5	
❑ Gadsen		
❑ Gilchrist	2	
❑ Glades		
❑ Gulf	1	
❑ Hamilton		
❑ Hardee		
❑ Hendry		
❑ Hernando		
❑ Highlands		
❑ Hillsborough	1	6
❑ Holmes		
❑ Indian River	.5	26
❑ Jackson		
❑ Jefferson		
❑ Lafayette		
❑ Lake		
❑ Lee	1.5	30
❑ Leon		
❑ Levy	3	
❑ Liberty		
❑ Madison		
❑ Manatee	1	14
❑ Marion		

Table 13

SHELLFISH AND MANATEE ZONES

	Shellfish Areas	Manatee Zones*
❑ Martin		18
❑ Miami-Dade		24
❑ Monroe	21(SPA)	
❑ Nassau		
❑ Okaloosa	.5	
❑ Okeechobee		
❑ Orange		
❑ Osceola		
❑ Palm Beach		28
❑ Pasco		
❑ Pinellas	.5	2
❑ Polk		
❑ Putnam		
❑ St. Johns	2	
❑ St. Lucie	.5	20
❑ Santa Rosa	.5	
❑ Sarasota	1.5	24
❑ Seminole		
❑ Sumter		
❑ Suwannee		
❑ Taylor		
❑ Union		
❑ Volusia	1	45
❑ Wakulla	1.5	
❑ Walton	.5	
❑ Washington		
❑ Unknown	____	____
TOTALS	**38**	**336**

was entered into a matrix and statistical correlations/regressions were utilized to identify associations. Correlations were identified between current deployment and certain county characteristics.

Population proved to be correlated as well with officer workload. Population will be a factor in the deployment of officers.

Hunting/Fishing Licenses. License data was collected and analyzed. Limiting its usefulness was the fact that place of purchase and license type is not necessarily linked to where they were being used. In addition many of the licenses are multi-use (hunting, freshwater fishing and saltwater fishing) or all licenses combined into one (golden), made discrimination by activity difficult. FWC should consider a field on the license application to indicate primary or by percentage, use as well as use location(s). These factors limited the ability of license data to assist in staffing and deploying.

Registered Watercraft and Boating Accident Data. This data source provided by county all accident and citation data relative to boating accidents. Boating accidents are a potential variable for staffing since high accident rates signal the need for increased enforcement activity. However the number of accidents by county is low, making statistical anomalies probable.

Boating registrations by county provide a valuable source of information. There is one problem with this data source for predicating staffing and deployment. Boats are not always registered where they are used. A small experiment in the Keys identified less than 1/2 of the boats on the water in Monroe County being registered in Monroe County, as well as a significant number not even registered in Florida. Despite efforts by staff to determine visitation data that addressed out of state boats coming into Florida, none was located. Surveys of people who purchase out-of-state saltwater licenses can be of some help in this area, especially those sold via the web where a small number of questions can be easily managed and the data is input directly to a database.

Overall boating registration is linked to workload and will be used as a factor in deploying officers. While vessels may used other than where they are registered, in general, the majority of their use will be close to the registration site.

Shoreline Configurations. (Includes coastal, rivers, lakes, bays, etc; and, is part of the pending GIS development.) This database was reviewed and data abstracted, since the longer and more complex the shoreline, the more patrol time required to effectively provide coverage. GIS databases for waterway and coastline breakdown were provided by FWRI staff. Initial data was online for the Charlotte Harbor area and staff indicates that additional areas (much of what we requested had to be hand tallied) will be online in the future. This information provides statistics on water acreage

within counties and as to miles of coastline. Shoreline configuration will be used as a data resource for deploying officers.

FWCDLE Crime and Personnel Statistical Databases. These databases were reviewed and information gathered to identify the number of state law enforcement officers. This included both state and county level data review.

RECOMMENDATIONS

1. **CAD is basically the front end of all databases. The CAD could become a valuable management tool with a number of modifications. To make CAD information bases more complete and useable the following steps should be taken:**

   - Officers, as a start, should be required to call in and out all work activities. Officers should call in duty at the beginning of each shift and their times in service should be noted in CAD.

   - Dispatchers should be monitored to ensure that they fill in all times and that dispatchers only use the department mandated codes.

   - Special codes should be developed and officers should be made to report whenever they are involved in patrol of shellfish areas, manatee zones, SPA, WMA, and other areas/tasks of interest to the department. This would provide a real time record of such activities, as opposed to an after the fact recording in logs used to compile bi-weekly ActivityNet reporting.

   - Calls for service and calls for service not answered should receive a specific code in CAD to permit easy retrieval and analysis.

   - All calls for service not responded to by officers should have an associated reason code, to permit analysis for future staffing study. (e.g., no officer working, no officer available due to other calls, call referred to other agency, etc.)

   - A detailed data dictionary should be developed that specifies all codes and categories in CAD to ensure that everyone who provides information is operating under the same understanding.

   - If all the data currently collected in ActivityNet were collected in CAD, ActivityNet could be abandoned. CAD, being real-time, would provide

more reliable and accurate data than the after the fact recollection of activity that fills ActivityNet.

- The six computer aided dispatch systems should be integrated into a single database to permit agency wide reports and permit the development of comparative statistics.

- A series of programs should be written to provide regular management reports to management staff at FWC. To facilitate ad-hoc report development by field supervisors, a user-friendly report writer module should be attached, including the capability for supervisors to immediately know what reports were generated by their personnel and which have been turned in.

- MDT should be integrated with CAD to facilitate increased CAD use. To facilitate input by both land and water patrol officers, touch screen entry should be considered that makes maximum use of technology to reduce input choices and information (e.g., let the onboard GPS identify location as opposed to the user putting in his or her "local name" for the incident location.)

- There should be greater front line supervisor review of CAD entry to ensure accuracy and quality control.

2. **ActivityNet provides an invaluable source of information for the agency. Nonetheless, it is our recommendation that in the long run that ActivityNet be phased out and replace by information from the Computer Aided Dispatch System. However in the short run it is recommended that:**

   - Some additional breakdown in the category enforcement would make ActivityNet more useful for staffing analysis

   - A workgroup should be set up to resolve inconsistencies among categories and restructure the instrument to meet agency information needs.

   - A more detailed explanation of categories (a data dictionary) to ensure that everyone is entering data with the same understanding.

3. **A number of information resources currently being collected and stored in separate databases should be consolidated in a single departmental record system. Citation net, ArrestNet, PersonnelNet, and department reports should be consolidated into a law enforcement record system. This system should**

provide easy access through a report generator to all stored data. In addition, more focus should be placed on data collection and analysis for investigative and canine activity to facilitate more management review of their workload and activity. While aviation data collection is comprehensive, there are no protocols to measure mission accomplishment on, thus reducing the usefulness of the data to management.

4. **Detailed information should be gathered on operations of local enforcement agency marine units. Such information could provide an opportunity for resource sharing and avoid overlap. Such information and agreement should be formalized via memoranda of understanding, supported by joint operational testing of the plans.**

CHAPTER IV. IDENTIFYING FACTORS ASSOCIATED WITH WORKLOAD

This section of the report will:

- Identify information resources that can be linked to staffing and deployment
- Review the interactions among data resources
- Choose the data resources that are most efficient for deployment and staffing
- Suggest future data adaptation to make staffing calculations more efficient.

The job tasks analysis provided an overview of the work accomplished by FWC officers and factors driving workload. The analysis of data resources in section three identified a number of information resources that are linked to FWC law enforcement workload. Equally important this analysis also identified a number of weaknesses particularly in the direct workload measures (CAD and ActivityNet).

The job task analysis and the information resource both recommend county-level analysis for deployment and staffing. As a result the factor discussed in this section will reflect this emphasis and will be framed in terms of county level data.

The weaknesses identified in CAD and the fact that a large proportion of FWC workload is self-initiated and frequently not reported reduces the functionality of CAD as a workload driver. Analysis of CAD data for fiscal year 2005 found that 19.6% of activities originated with calls for service and 80.6% of work was self-initiated.

CAD provides an accurate view of calls for service activities. Nearly all calls for service are recorded in CAD. However, our fieldwork and ActivityNet data suggests that CAD records only about one-third of all self initiated work.

This suggests that, while an important source of data for staffing and deployment, CAD cannot by itself provide all the information required for deployment. Workload drivers related to self-initiated work will be needed for officer deployment. Additional and generally indirect information (hazard assessments) will be required to supplement CAD information.

Two types of measures can be utilized to identify the amount of law enforcement work that a county requires. They are often referred to as direct and indirect measures. (Indirect measures are also referred to as risk or hazard analyses).

Direct measures are immediately related to the actual work required. A direct measure, for example, would be the number of incidents that an FWC officer must address. An indirect measure would be the number of people in the county coupled with an estimate on the average number of incidents that this would trigger.

Direct measures are generally preferable – they provide a more exact estimate of the time and effort. At present, there is no FWC accounting system that systematically assesses law enforcement duties that can provide the total direct measures for law enforcement workload. Direct indications of law enforcement workload can be found in CAD relative to dispatched calls for service. However CAD does not provide an accurate measure of officer-initiated work. As a result, while informative, CAD data is not sufficient. To build a model, indirect measures will be required to supplement direct measures (CAD).

For the long term, IACP recommends that as new sources of data become available, FWC should move to direct measures. The final section of this report will identify how implementation measures can proceed.

The organization's mission statement provides the starting point to identify factors upon which staffing and deployment decisions can be based.

Four core missions focus agency activities:

- Resource protection
- Boating and waterways
- Marine and wilderness law enforcement patrol
- Mutual Aid requirements.

The job task analysis identified four sets of variables that relate to organization mission and drive patrol officer workload. These are land-based variables, water-based variables, population-based variables, and calls for service patterns.

In distinguishing between water- and land-based variables, one is not addressing patrol modality. A sizeable proportion of the work related to lakes, rivers, and coastline occurs by vehicle patrol. It may involve checking catches at boat ramps or docks, or shore observation of shellfish gathering, and checking fishing licenses along shorelines.

Calls for service and population are workload drivers that are equally applicable to both inland and marine environment. However, while marine and inland environments share the impacts of both calls for service and population, they

frequently reflect different mixes of tasks. Some factors that drive work in the marine or inland environments are applicable for only inland or marine. Staffing and deployment modeling will require slightly different mixes of variables to staff and deploy inland and marine patrols.

Water acreage of counties will be broken down into two variables, marine and freshwater acreage. The job task analysis found that the larger areas covered, the higher volume of vessels to be supervised, and the nature of the marine environment necessitate somewhat different analyses for marine and freshwater staffing. Marine and freshwater environments require somewhat different logistics.

GENERAL WORKLOAD DRIVER: COMPUTER AIDED DISPATCH/CALLS FOR SERVICE

The computer aided dispatch system provides a valuable source of information on the work undertaken by FWC officers and the factors that drive this work. Officers frequently do not report their activities to CAD. This limits the effectiveness of CAD as a staffing tool. In traditional CAD-based staffing analyses, the amount of officer time utilized in law enforcement activities is calculated. When the amount of time exceeds a certain proportion of an officer's shift hours, the officer is no longer able to respond in a reasonable time frame (tied up on work) and in addition, the officer does not have sufficient time to address preventive and directed patrols. At this point, CAD-based staffing models would call for additional officers to balance workload.

Since our earlier analysis revealed that only between 30% and 50% of self-initiated activities are reported to CAD (by contrasting numbers between CAD and Activity – Net), any analysis of total work time would seriously underestimate staffing needs.

However, CAD does provide data on an important workload driver – Calls for Service. Calls for service are an important source of work for FWC officers. Calls for service currently account for 19.6 % of law enforcement activities reported in CAD. CAD provides the universe of calls for service since calls come to the dispatch center, are recorded and then sent to the officers. CAD also provides the amount of time spent on calls for service.

Calls for service account for a higher proportion of officer workload than their proportion of total workload would suggest. Calls for service take more time on the average than self initiated work. This results since, the activities are often more serious, and travel time is added.

Calls for service more frequently involve land-based activities. There is about a 2 to 1 ratio of inland versus marine calls. Calls for service for marine complaints, however,

generally involve more time and effort by FWC officers since they may involve accidents or search and rescue.

The computer aided dispatch system also provides another important variable with implications for staffing – non-dispatched calls. Analysis of CAD data found 8,392 calls that were not dispatched. Dispatchers and observation of dispatch operations suggest that 75% of these calls were not serviced due to lack of officer availability. (Some calls were not dispatched because they were simply information or to advise as to an event which had already occurred and was over.) A few were multiple calls advising of the same event.

These non-dispatched calls are an important indicator of staffing need. Non-dispatched calls are essentially work not accomplished, most commonly due to lack of staff. They provide a valuable indicator of a need for additional officers.

GENERAL WORKLOAD DRIVER: POPULATION

Review of CAD data, current distribution of officers, questionnaire and interview data, all suggest that population is a key workload driver. Increasingly, as CAD data demonstrates, FWC officers are called to deal with human/wildlife conflicts particularly along suburban/rural interfaces. As population grows, the probabilities of problems with wildlife become more frequent. For example, the most common call for service involves wildlife nuisances and the most common of these involve alligators in subdivision retention ponds. Greater population densities also require increasing activity by FWC officers to protect resources, guard against environmental degradation, and address vandalism and theft on public lands. Population size is also related to the number of exotic pets, and required inspection of sale of fish and wildlife – requiring inspections.

Population has similar impacts on marine patrols. Population is highly correlated with boating registrations. Population is related to fishing, environmental complaints, and boating accidents. Populated coastal communities require more frequent patrols for boating safety. As populations grow boating accidents increase. Increase in coastal populations and boating further require additional protection of stressed marine resources.

Law enforcement is a people business. The greater the number of people, the greater the demand for law enforcement services. For FWC officers, resource areas where populations are high have significantly more use and require more frequent patrols and enforcement actions. A number of protected areas border areas of high-density populations. Freshwater and saltwater fishing is also likely to experience greater pressure in areas of higher population density.

Population is an even stronger driver for marine patrols. A key mission for FWC law enforcement is assuring safe boating. Boating registrations are highly correlated with population. In highly populated areas vessel concentrations are particularly dense resulting in particularly pronounced vessel accident rates.

Current distribution of FWC officers is strongly correlated (.570) with population. Population is an important workload driver for both inland and marine officers.

IDENTIFYING INLAND WORKLOAD DRIVERS - ACREAGE

Inland patrols, as earlier sections of this report have revealed, are driven by several key factors. Protecting and preserving land-related resources are key missions for FWC law enforcement. Protecting wildlife, fauna, and the environment is intrinsically linked to land patrol. To accomplish its mission, patrol of lands – particularly rural lands – is an essential element in FWC law enforcement. Inland patrols:

- Protect wildlife and habitat
- Address environmental abuses such as dumping and toxic spills
- Ensure safer hunting
- Provide assistance to endangered and threatened species
- Serve a public safety function in rural areas.

In interviews and responses to the questionnaire, the most common officer response to the question "What more needed to be done?" was more land patrols. Officers frequently cited how important it was that areas be regularly patrolled both for resource protection and public safety.

Current officer distribution is moderately correlated with county acreage. Land area irrespective of population is thus a key variable. Acreage interacts with workload in several ways. To be manageable a patrol area must be so configured so that an officer can reach any point in the area within a reasonable time frame. This permits reasonable response times. As the CAD reveals response times are likely to lengthily.

Area size is also important due to the nature of FWC patrol. Inland patrols are frequently by foot, off road vehicles, and when in a truck on dirt roads. Such patrols are time consuming. Wildlife is most commonly located in large expanse of forest,

swamp, or prairie. Environmental threats include dumping, abuse of land, and other illegal activities.

Officers are limited in the amount of acreage that they can supervise. Number of acres is a prime variable for inland patrols. Since protecting and managing wildlife is an important workload factor, the acreage patrolled is frequently lightly populated. In the next section of the report, multipliers – formulas that link acreage to number of officers required for acres patrolled – will be developed.

IDENTIFYING INLAND WORKLOAD DRIVERS – PROTECTED LANDS

While sheer acreage is an important variable in its own right, certain lands require more intensive patrol by FWC officers. Private lands are patrolled and protected to a considerable extent by their owners. While FWC officers do patrol and check on private lands and are requested to do so by owners, public lands require even greater attention. Public lands generally also have higher number of people using them. A number of protected areas permit hunting – a work driver in its own right for FWC officers.

"Protected lands" are divided into several categories. Wildlife management areas are the most common. In addition, there are national wildlife refuges and forests (where jurisdiction is shared with federal officers), Public Use Areas (PUA), Wildlife Environmental Areas (WEA), and a number of local, state, and national parks.

These areas involved extensive acreage – well over five million acres. In some areas, the state, through federal funding sources, has provided officers for Florida panther protection. In certain areas of South Florida, FWC officers have been contracted to patrol Water Management District lands. Many of these areas also received service from non-contracted FWC personnel as a by product of the patrol activities.

Several factors argue for more intensive patrol of protected lands:

- These protected lands frequently have environmentally sensitive areas needing special attention.
- Many of these areas permit hunting. To ensure safe hunts intensive FWC patrols are required.
- Public lands – having no owners – are seen by some as areas for dumping, theft, and other abuses.

COUNTY				
Alachua	Grove Park	Alachua	19,637	
	Lochloosa	Alachua	11,149	
	Orange Creek	Alachua	1,325	**32,111**
Baker	Osceloa	Baker	159,762	
				159,762
Bay	Choctawhatchee River	Bay	11,460	
	Pine Log	Bay	6,220	
	Econfina Creek	Bay	16,353	
	St Vincent Island NWR	Bay	1,249	
				35,282
Bradford				
				0
Brevard	Buck Lake	Brevard	929	
	Merrit Island NWR	Brevard	140,000	
	Salt Lake	Brevard	7,805	
	Thomas Goodwin	Brevard	3,870	
	Upper St Johns Marsh	Brevard	107,477	
				260,081
Broward	Everglades and Francis Taylor	Broward	235,141	
				235,141
Calhoun				**0**
Charlotte	Bacock/Webb	Charlotte	885	
	Babcock/Webb Yucca Pens	Charlotte	7,944	
				8,829
Citrus	Citrus	Citrus	44,137	
	Flying Eagle	Citrus	10,247	
	Homosassa	Citrus	5,674	
	Potts	Citrus	7,408	
				67,466

COUNTY				
Clay	Bayard	Clay	9,615	
	Camp Blanding	Clay	56,197	
	Jennings Forrest	Clay	23,995	
				89,807
Collier	Big Cypress	Collier	56,585	
	Okaloachoochee Slough	Collier	5,208	
	Picayune Strand	Collier	76,317	
	Crew WEA	Collier	11,416	
				149,526
Columbia	Alligator Lake	Columbia	484	
	Osceloa	Columbia	106,508	
				106,992
DeSoto				
				0
Dixie	Big Bend Jenna Unit	Dixie	12,522	
	Steinhatchee Springs	Dixie	2,090	
				14,612
Duval	Cary	Duval	1,365	
				1,365
Escambia	Bluewater Creek	Escambia	21,048	
	Escambia River	Escambia	17,238	
				38,286
Flagler	Relay	Flagler	19,672	
				19,672
Franklin	Apalachicola	Franklin	145,459	
	Apalachicola River	Franklin	40,877	
	Box-R	Franklin	8,397	
	St Vincent Island NWR	Franklin	11,241	
	Tate's Hell	Franklin	168,939	
	Tate's Hell Womack Creek	Franklin	9,628	
				384,541

COUNTY				
Gadsden	Joe Budd	Gadsden	11,039	
	Robert Brent	Gadsden	2,559	
				13,598
Gilchrist				**0**
Glades	Fisheating Creek	Glades	18,272	
	Kissimmee River PUA	Glades	3,515	
				21,787
Gulf	Apalachicola River	Gulf	40,877	
				40,877
Hamilton	Big Shoals	Hamilton	2,140	
	Cypress Creek	Hamilton	1,328	
	Holton Creek	Hamilton	2,531	
	PCS Phosphate	Hamilton	3,992	
	Suwannee Ridge WEA	Hamilton	1,425	
	Twin Rivers Blue Springs	Hamilton	1,973	
	Twin Rivers	Hamilton	1,155	
				14,544
Hardee				**0**
Hendry	Dinner Island Ranch	Hendry	19,667	
	Spirit of the Wild	Hendry	7,487	
	Stormwater Treatment 5	Hendry	5,120	
	Okaloachoochee Slough	Hendry	29,513	**43,722**
Hernando	Chassahowitzka	Hernando	33,919	
	Croom	Hernando	17,471	
	Richloam	Hernando	14,100	
	Citrus	Hernando	4,904	
				70,394
Highlands	Hickory Hammock	Highlands	3,791	
	Lake Wales WEA Ridge Royc	Highlands	2,639	
	Kissimmee River PUA	Highlands	4,686	
				11,116
Hillsborough				**0**

COUNTY				
Holmes	Choctawhatchee River	Holmes	14,325	
				14,325
Indian River	Fort Drum	Indian River	20,858	
	Upper St Johns Marsh	Indian River	11,941	
				32,799
Jackson	Apalachee	Jackson	7,952	
	Upper Chipola River	Jackson	7,377	
				15,329
Jefferson	Aucilla	Jefferson	23,766	
	Middle Aucilla River	Jefferson	1,695	
	Flint Rock	Jefferson	11,452	
	St Marks NWR	Jefferson	13,600	
				50,513
Lafayette	Mallory Swamp	Lafayette	29,463	
	Steinhatchee Springs	Lafayette	14,636	
	Troy Spings	Lafayette	1,810	
				45,909
Lake	Emeralda Marsh	Lake	6,476	
	Ocala	Lake	76,482	
	Rock Springs Run	Lake	5,618	
	Seminole Forrest	Lake	12,524	
	Seminole Forrest Lake Tracy	Lake	4,106	
	Green Swamp	Lake	14,930	
	Hilochee	Lake	7,495	
	Lake Woodruff NWR	Lake	10,461	
	Richloam	Lake	8,460	
				146,552
Lee	Crew WEA	Lee	17,124	
	Babcock/Webb Yucca Pens	Lee	5,297	
				22,421

COUNTY				
Leon	Apalachicola	Leon	145,459	
	Talquin	Leon	3,053	
	Ochlocockonee River	Leon	2,790	
				151,302
Levy	Andrews	Levy	3,501	
	Cedar key Scrub	Levy	4,988	
	Deveil's Hammock	Levy	7,635	
	Goethe	Levy	48,442	
	Gulf Hammock	Levy	24,625	
	Lower Suwannee River NWR	Levy	53,000	
				142,191
Liberty	Robert Brent	Liberty	5,972	
	Tate's Hell	Liberty	18,771	
	Tate's Hell Womack Creek	Liberty	4,126	
	Apalachicola	Liberty	145,459	
	Apalachicola Bradwell	Liberty	1,420	
				175,748
Madison	San Pedro Bay	Madison	10,040	
	Twin Rivers	Madison	6,911	
	Middle Aucilla River	Madison	226	
				17,177
Manatee				**0**
Marion	Ocklawaha Prairie	Marion	2,400	
	Ocklawaha River Gores Landing	Marion	2,917	
	Ross Prairie	Marion	3,522	
	Fort McCoy	Marion	8,688	
	Caravelle Ranch	Marion	1,321	
	Ocala	Marion	229,445	
	Orange Creek	Marion	442	
				248,735
Martin	Dupuis WEA	Martin	9,871	
	Jones/Hungry Land WEA	Martin	8,070	
	Alapata	Martin	11,000	
				28,941

COUNTY

Miami-Dade	Southern Glades WEA	Miami-Dade	30,080	
	Frog Pond	Miami-Dade	470	
	Big Cypress	Miami Dade	45,267	
	Everglades and Francis Taylor	Miami-Dade	359,507	
				435,324
Monroe	Big Cypress	Monroe	56,585	
				56,585
Nassau	Nassau	Nassau	13,892	
	Ralph Simmons	Nassau	3,630	
	Cary	Nassau	2,047	
				19,569
Okeechobee	Kissimmee River PUA	Okeechobee	8,202	
				8,202
Okaloosa	Yellow River	Okaloosa	11,113	
	Blackwater	Okaloosa	76,459	
				85,572
Orange	Seminole Ranch	Orange	6,000	
	Toschatchee	Orange	30,701	
	Rock Springs Run	Orange	8,427	
				45,128
Osceola	Bull Creek	Osceola	23,646	
	Three Lakes	Osceola	52,976	
	Three Lakes Prairie Lakes	Osceola	8,859	
	Triple N Ranch	Osceola	15,391	
	Kicco	Osceola	743	
	Lake Marion Creek	Osceola	5,254	
	Kissimmee River PUA	Osceola	3,515	
				110,384
Palm Beach	A.R.M Loxzhatchee NWR	Palm Beach	147,392	
	Everglades and Francis Taylor	Palm Beach	67,183	
	Holey Land	Palm Beach	35,350	
	J.W. Corbett	Palm Beach	60,288	
	Rotenberger	Palm Beach	28,760	
	Stormwater Treatment Area 1 West	Palm Beach	6,670	
	Stormwater Treatment 3/4	Palm Beach	16,772	

COUNTY				
Palm Beach (continued)	Dupuis WEA	Palm Beach	12,065	
	Jones/Hungry Land WEA	Palm Beach	4,345	
				378,825
Pasco	Green Swamp West	Pasco	34,335	
	Upper Hillsborough	Pasco	4,660	
	Richloam	Pasco	8,460	
				47,455
Pinellas				**0**
Polk	Arbuckle	Polk	13,531	
	Hilochee	Polk	1,873	
	Kicco	Polk	6,683	
	Lake Marion Creek	Polk	2,829	
	Walk-in-the-Water	Polk	5,959	
	Upper Hillsborough	Polk	5,178	
	Green Swamp	Polk	9,954	
	Kissimmee River PUA	Polk	3,515	
				49,522
Putnam	Caravelle Ranch	Putnam	25,100	
	Dunns Creek	Putnam	3,184	
	Etoniah Creek	Putnam	7,145	
	Lake George	Putnam	7,076	
	Lake Woodruff NWR	Putnam	652	
	Ocala	Putnam	76,481	
				119,638
Santa Rosa	Blackwater	Santa Rosa	114,688	
	Blackwater Carr	Santa Rosa	590	
	Blackwater Hutton	Santa Rosa	5,243	
	Yellow River	Santa Rosa	7,422	
				127,943
Sarasota	Myakka State Forrest	Sarasota	7,295	
				7,295
Seminole	Little Big Econlockhatchee Kilbee	Seminole	1,646	
				1,646

COUNTY				
St John	Guanna River	St Johns	9,815	
	Matanzas	St Johns	4,688	
	Twelve Mile Swamp	St Johns	19,696	
				34,199
St Lucie				**0**
Sumter	Green Swamp	Sumter	24,884	
	Half Moon	Sumter	9,480	
	Jumper Creek	Sumter	10,512	
	Lake Panasoffkee	Sumter	8,676	
	Richloam Baird Unit	Sumter	11,567	
	Croom	Sumter	3,084	
	Richloam	Sumter	25,380	
				93,583
Suwannee	Little River	Suwannee	2,203	
	Twin Rivers	Suwannee	1,222	
				3,425
Taylor	Big Bend Hickory Mound	Taylor	14,427	
	Beg Bend Snipe Island	Taylor	10,689	
	Big Bend Spring Creek	Taylor	14,600	
	Big Bend Tide Swamps	Taylor	19,538	
	Lower Econfina River PHA	Taylor	2,392	
	San Pedro Bay	Taylor	18,645	
	Auchula	Taylor	23,766	
	St Marks NWR	Taylor	13,600	
	Middle Aucilla River	Taylor	339	
	Steinhatchee Springs	Taylor	4,181	
				122,177
Union	Raiford	Union	6,480	
				6,480
Volusia	Lake George Dexter/Mary Farms	Volusia	14,377	
	Lake Woodruff NWR	Volusia	10,461	
	Tiger Bay	Volusia	19,259	
	Tiger Bay Pima Ridge Unit	Volusia	11,548	

COUNTY				
Volusia	Buck Lake	Volusia	8,362	
(continued)	Lake George	Volusia	28,304	
				92,311
Wakulla	Apalachicola	Wakulla	145,459	
	Flint Rock	Wakulla	13,997	
	St Marks NWR	Wakulla	40,800	
				200,256
Walton	Choctawhatchee River	Walton	8,595	
	Point Washington	Walton	12,414	
				21,009
Washington	Pine Log	Washington	691	
	Choctawhatchee River	Washington	22,920	
	Econfina Creek	Washington	25,208	
				268,819
				5,246,700

- Endangered and threatened species inhabit some protected areas and need special protection (Florida panther and black bears).

When officers in both interviews and questionnaires were asked if their current patrols of WMAs were sufficient, well over 90% noted that patrols of protected areas were deficient and additional patrols were required. Officers frequently noted that while one quarter of their time was currently spent in these areas, they felt that nearly double current patrols was needed.

In other agencies, large areas of protected lands are assigned specific officers whose duties are to protect, patrol, and preserve these areas.

Size and number of areas protected is moderately correlated at .370 with officer assigned. In the next section of this report, acreage of protected areas will be associated with staffing requirements.

IDENTIFYING INLAND WORKLOAD DRIVERS: WATER ACREAGE

Areas of Florida have numerous inland lakes, streams, and swamps. Florida has 114 lakes with over 1000 acres of surface area. These larger lakes combined have a total surface area of over 1, 934,837 acres. In addition to these large lakes, Florida has thousands of smaller lakes and ponds. There are over 7,700 lakes larger than 10 acres. Lake County alone has more than 500 lakes. Retention areas abound. Florida rivers and streams stretch for over 19,108 miles.

These freshwater areas are heavily used both for recreation boating and fishing. Our task group analysis, CAD data, focus groups and field observation, all concurred that freshwater lakes and rivers, particularly the larger lakes, were a major source of work for FWC officers. The most common call for service for FWC officers involved nuisance alligators.

ActivityNet recorded 71,024 hours involved in freshwater patrol. In fact, as much as half the workload of inland officers, particularly during spring and summer months involved patrol by vessel, vehicle, and foot patrol of bodies of water and their shorelines.

Lake area in acreage has a strong correlation (.630) with current posting of officers.

IDENTIFYING WORKLOAD DRIVERS: FISHING AND HUNTING LICENSES

Hunting is a key factor in driving inland patrols. Hunting is seasonal, particularly active in the fall and winter. Hunting is one of the prime workload drivers in season. Hunting contributes to calls for service, as there are frequent complaints about night hunting, dog hunting, and other hunting violations. Hunting requires frequent patrols to protect the resource, to ensure public safety, and to search for lost and injured hunters. Hunting is particularly intense on state lands where hunting is permitted.

Hunting and fishing are major activities in Florida with 2,241,974 licenses sold in fiscal year 2004-2005. While the growth in hunting is stabilizing, hunting will remain at current or decreased levels for the foreseeable future.

Fishing has a similar and important impact on workload. Fishing pressure tends to increase in the spring and early summer. Fishing is active in both freshwater and marine environments. Fishing has two aspects, recreational and commercial.

Commercial fishing is largely marine oriented and remains a major enterprise in Florida. Commercial fishing has been declining in recent years and this decline is expected to continue. Recreational fishing, on the other hand, has been increasing and projected to continue.

The more fishing and hunting licenses issued, the more work that FWC officers face. Fishing and hunting licenses thus prove an important workload driver to assist in identifying gross staffing needs. Due to the nature of the databases, licenses cannot assist in deployment decisions.

Licenses can be associated with the county in which they are sold. However, hunters and to a lesser extent anglers often travel considerable distances from their homes to hunt or fish. The Keys are a good example of this dynamic. The Keys draw anglers from all over Florida. A sizeable proportion of license sales are not listed by county of origin but rather by whether they were purchased over the Internet or by phone. As a result it is difficult to determine where licenses are originating.

A second problem with license data is that while there are separate licenses for hunting and fishing and specific sub licenses for specific fish and animals, there are also a large number of combination licenses that make it difficult to identify whether the person is fishing in salt or fresh water or hunting.

Sales of hunting and fishing licenses, however, can serve as a workload driver. As sales of licenses increase, workload for FWC officers will also increase.

IDENTIFYING WORKLOAD DRIVERS: MUTUAL AID RESPONSE

As developed in the job task analysis, FWC officers are playing an increasing and important role as a law enforcement resource for the state responding to disasters (hurricanes) or serving as a homeland security resource. FWC provides the second largest pool of state law enforcement officers. They are a valuable resource for mobilization in times of need. They are being called upon with increasing frequency.

In 2005, officers spent 62,313 hours for disaster response. Previous years showed similar patterns. With hurricane patterns predicted to continue and with the rise of homeland security needs, these demands on FWC officers are likely to continue and in fact will probably increase. These activities are becoming an increasingly significant and continuing source of work. A disaster security driver will be developed in the next section based on previous year's data from ActivityNet.

IDENTIFYING WORKLOAD DRIVERS: VESSEL REGISTRATIONS

Recreational and commercial boating is a major workload driver for both freshwater and salt water environments. Florida has nearly one million registered vessels (982,907; 2004). Watercraft can threaten resources – illegal fishing, groundings on sensitive aquatic environments, or injure manatees. Boaters can also pose a threat to other boats by unsafe operations and boating under the influence. The number of vessels is an important indicator of work for FWC officers.

Vessels are registered by county of origin. This provides a general sense of where the vessel is used. However, for urban counties such as Orange and Seminole, a sizeable proportion of the watercraft registered in these counties will probably be used in adjacent or nearly coastal counties. Monroe county while it has numerous registered watercraft (29,500) is used by a large number of watercraft from throughout Florida and the nation.

For many other parts of the state vessel registration provide a more valid workload driver.

Similar to hunting and fishing licenses, as vessel registrations increase workload will also.

IDENTIFYING MARINE WORKLOAD DRIVERS: MARINE ACREAGE

Florida as a state is known for its shoreline and bays; second only to Alaska with 2,276 statute miles of tidal coastline. In addition, Florida has over 4,308 square miles of state

waters, about one third of which are fresh water and about two-thirds are salt water. There are over 4,500 islands of more than 10 acres in Florida, the majority of which are coastal. This also ranks Florida second only to Alaska in number of islands.

Most Florida marine-based recreational boating and fishing occurs close to shore. The most highly utilized waterways are generally protected harbors, bays, estuaries, or the Intracoastal waterway. These large sheltered marine areas can be identified through calculating the marine acreage for these counties.

These areas are not only favored by boaters, but also house a number of resources such as shellfish beds, marine mammals, and serve as nurseries for a wide variety of fish. These areas are frequently ecologically fragile and require close monitoring of vessel traffic for resource protection. In addition, the concentration of boats in these areas raises safety issues.

This variable has particular salience for the Keys and the large bays and harbor areas of Jacksonville, Charlotte, Tampa Bay, Apalachicola, Pensacola Bay, and Choctwhatchee Bay, to cite several but certainly not all. The lagoons of the east coast, and the coastal areas of South Florida are all high volume areas for fishing and recreational boating.

The complexity of the coastline also impacts the need for marine patrols. It takes less time overall to patrol an open large expanse of bay than to patrol a complex coastline consisting of islands, bays, inlets and meandering coastline. By calculating the miles of coastline, an indicator of the complexity of the marine patrol area can be estimated.

IDENTIFYING MARINE WORKLOAD DRIVERS: MARINE SPECIAL PROTECTION AREAS

While sheer acreage of the marine environment is an important variable in its own right, certain submerged areas require more intensive patrol by FWC officers. There are several categories of what is identified as "protected waters". Manatee protection areas are the most common. Manatee protection zones are areas where special speed limitations are in place to reduce the risk of vessel/manatee collision. These are areas that require consistent patrol by FWC officers to ensure compliance with speed limitations. Manatee zones vary from no motorized entry, idle, to a speed limit of 25-30 mph. There are 336 manatee speed zones in coastal areas and in the St. John's River. During 2005, FWC officers provided 45,809.25 hours of patrol of manatee zones.

Shellfish areas are another marine area requiring special patrols. Florida, to be in compliance with Federal statutes governing interstate transport of shellfish, must provide patrols of shellfish production areas. Shell production areas require patrols to ensure that regulations are being observed. There are presently 38 shellfish zones that

are being patrolled. As with manatee areas, the requirement of frequent patrols and scrutiny of shellfish gathering is a workload driver for marine officers.

The final special patrol area is the Special Preservation Areas (SPA) located in the keys. Special preservation areas are marine zones that have been designated as areas of special protection. FWC officers have been assigned the responsibility to ensure that the regulations for these SPAs. There are currently 21 SPAs in the Marine Sanctuary and each location should be patrolled approximately three times a day.

In the next chapter of the report these areas will be linked to staffing and deployment levels.

CHAPTER V. STAFFING FWC'S DIVISION OF LAW ENFORCEMENT

In the previous chapter of this report, workload drivers for FWC law enforcement were identified. In this section, a link will be established (a multiplier) between the workload drivers and staffing/deployment. Linking the workload driver with the multiplier provides a recommended staffing level.

This section will focus only on patrol officers. It is necessary first to establish the number of patrol officers required, prior to developing staff levels for supervision and support. Supervisory and support staffing is related to the number of patrol officers. The next section of this report will address supervisory and support staffing.

As with all patrol-based law enforcement staffing, this analysis begins with a basic deployment building block. In a municipal police staffing model this basic block would be a beat, zone, or an area. Workload is assessed for the particular beat and then the number of officers required to meet this workload is assigned. This analysis for the FWC will follow a similar approach.

COUNTY-LEVEL DEPLOYMENT

All areas of the state deserve at least a minimum level of resource protection. To respond effectively, officers must be deployed in such a way as to make response time reasonable and probably more important to provide the officer with a manageable area to get to know in terms of both the area and people (community policing).

The basic building block that will be employed for this staffing exercise is the county. Several factors recommend this approach:

- This is the deployment base currently used by the agency
- Information is collected by county permits workload analysis
- Our job task analysis suggests that county deployment makes sense in terms of workload distribution
- Any larger area than county would defeat community policing efforts
- Any area larger than a county would make it difficult to officers to learn the geography, resources and back areas, especially in terms of where the illegal activity is occurring.

While it is our recommendation that officer deployment be by county, county officers may from time to time be detailed to surrounding areas. During emergencies officers will be sent to other areas of the state. Calls for service will frequently require officers to cross county lines, and officers will be called upon to patrol areas in surrounding counties when needed. As seasons change, officers may be detailed to nearby areas with more pressing needs, specifically to support changing resource activities such as hunting and fishing.

FWC officers suggest, and IACP law enforcement observers agree, that there is a unique mix of work tasks, environments, and necessary knowledge that varies by area patrolled. Knowing the changing patterns of an area by season, knowing where vehicles/vessels can access and where they cannot, knowing the geography, the channels, habitat of an area, all takes time. This has two important implications for deployment. Officers should be assigned to an area that is sufficiently limited geographically so officers can effectively learn habitats, travel routes, and other key elements, and secondly, such deployment of officers to areas should be long term. Both of these reasons are key strategies in contemporary law enforcement and clearly support FWC community policing goals.

STAFFING INDICATORS

Interviews, field observations, questionnaire responses, stakeholder analyses, state growth, and agency data all support the need for additional staff resources for FWC.

- Over three-quarters of the officers in questionnaire responses reported important patrols not being accomplished due to staff limitations
- Interviews with stakeholders provided a consistent message that FWC needs to show more of a presence, as well as reduce response times to calls for assistance
- Population growth has not been offset by a proportional increase in officers over the past several years
- Marine patrols in particular, are far too limited
- Dramatic growth in vessel registrations has not been matched by increases in marine patrols
- Additional homeland security and disaster response duties have been delegated to FWC law enforcement without an accompanying increase in personnel

- A sizeable proportion of calls for service are not receiving a response due to lack of available officers.

Agency data also supports the need for additional officers. Agency data generated by actual workload provides a platform from which to quantify appropriate staffing levels.

ESTABLISHING BASE STAFFING LEVELS

The first step in developing multipliers for workload drivers is to establish jurisdictional (statewide) base staffing levels. Theoretically, base staffing levels can be established by the use of a number of methodologies. A goal of certain patrol intervals for a land or water area can be established and then the number of staff needed to meet that interval can be calculated. Discussions with staff suggest that there is no generally agreed upon patrol interval standard to base such analysis.

More commonly employed in law enforcement agencies are workload-based measures. IACP has long employed this methodology to forecast staff levels for law enforcement agencies throughout the country. Workload-based methodologies review actual time spent by officers on enforcement activities (operational labor) and then estimate based on the current time spent in enforcement, and whether officers are able to meet organizational goals and mission with staff assigned. When workload exceeds current staffing, workload measures then provide a platform to calculate officer numbers to adequately address existing demand. These estimates take into account the need for administrative time, patrol time, and other duties.

Workload measures are most commonly based on CAD data but other data sources can and have been utilized. To estimate base staffing levels for FWC due to database problems discussed in earlier sections, a triangulated approach will be used. Essentially, two different databases, CAD and ActivityNet will be each used to project staffing. These independent estimates will then be contrasted and reconciled. The following paragraphs will provide a brief overview of workload analysis of FWC CAD and FWC ActivityNet. A more detailed accounting of this analysis can be found at the end of this section.

ActivityNet. ActivityNet provides information on hours spent on enforcement. ActivityNet reports a total available labor time of 1,157,349 hours. ActivityNet reported 493,910.5 enforcement hours (operational labor). Enforcement hours, however, included information from some special units and supervisors. Since analysis is directed to calculating only officer contributions enforcement hours were reduced by 25% to remove the contributions of supervisors (field lieutenants), data from Big Boats, aviation officers, and other supervisors. (These positions will be addressed in a separate

analysis.) Review of ActivityNet data revealed approximately 25% of workload to be not related to patrol officers.

Using the common law enforcement standard of 33% of officer time devoted to enforcement (operational labor) for FWC requires 650 officers devoted solely to patrol. To meet what IACP considers the more realistic standard for FWC of 25% operational labor would require 866 officers devoted solely to land and marine patrol. A more detailed accounting of these calculations and explanation of this methodology can be found at the end of this section.

Computer Aided Dispatch. The computer aided dispatch system provides excellent data on calls for service. Self-initiated work, which is the larger component of FWC workload, is only partially reported. To establish reporting rates, ActivityNet data on self-initiated activities were contrasted with comparable activities reported in CAD. Comparing the more complete but not sufficiently detailed ActivityNet with comparable CAD categories across a number of categories, a fairly consistent pattern emerged of about one third of overall self initiated activity was recorded in CAD. Field observations by staff supported a similar figure. Interviewed officers, dispatchers and supervisors lend further credence to a one-third rate.

CAD already accounts for all calls for service but not self-initiated work. With all the self-initiated added, calls for service would account for about 10% of workload. CAD includes activities by first line supervisors, big boat crews, some investigators' fieldwork and the contribution of aviation personnel. Deducting this work from estimates of unreported self-initiated enforcement activities and reducing the proportion due to the full count of calls for services reduces unreported work to a factor of two. Multiplying current CAD estimates of operational labor by a factor of two and utilizing standard law enforcement staffing methodology, FWC CAD data forecasts a need for between 656 (33%) and 864 (25%) first responders. A more detailed analysis of the methodology can be found at the end of this section.

These two measures provide fairly consistent estimates of staffing needs. Given data deficiencies, IACP is recommending a conservative approach to staffing FWC. This approach would staff the agency at the lower end of the staffing range, with a recommended staff level of 650 (the lowest of our estimates) for primary patrol officers.

This number does not include specialists (investigators, aviation, Big Boats, or support staff). This number also does not include supervisors. The ActivityNet and CAD did factored in disaster response and homeland security work.

Deploying First Line Staff. A traditional law enforcement workload analysis has provided a conservative statewide staffing need of 650 first line patrol officers. In a traditional analysis, the same methodology used to estimate the total officers required

would be utilized to deploy staff at the county level. However, as sample sizes grow smaller statistically they become increasing non predictive. To avoid statistical anomalies, to deploy officers at the county level, a traditional risk or hazard analysis will be utilized.

In earlier sections of this report, three major drivers (risk or hazard indicators) were identified as driving patrol workload. Many factors ultimately drive FWC law enforcement work, the resource itself, the forest, the wildlife, the water, and the fishery. The other is human population.

These two factors translate into four major sets of variables that drive officer workload. These variable sets involve land related variables, water related variables, population related variables, and calls for service patterns. Each of these sets of variables strongly correlates with current distribution of patrol staff.

The weight provided each factor is based on information gathered earlier in the study. Our task analysis, focus groups, questionnaires and daily activity reports provided estimates of workload, identified goals and objectives, and provided estimates of the contributions of varied workload drivers.

IACP estimates that land related drivers account for about 40% of current workload. To address land-related factors would require the deployment of 260 officers. Water-related work is about equal accounting for an additional 40%. To address water-related work will require the deployment of 260 officers. Population-related factors have been estimated by IACP to account for about 20% of workload. Population-related factors included calls for service. Population-related factors will direct the deployment of 130 officers.

It is important to understand that while officer deployment will be predicated on land, water, or population, officers will be expected to work on their assignment's workload related to all three factors.

LAND PATROL RELATED VARIABLES AND MULTIPLIERS

As previously developed in the job task analysis, patrol of land is a key variable. Land patrols and land-related activities consume a considerable proportion of activities by officers. Reviewing activities in CAD and ActivityNet, it is our estimate that approximately 40% of officer activity is directed to land patrols and associated activities. Utilizing the base of 650 officers, this would suggest 260 officers assigned to land patrols.

Land patrols focus on hunting safety, poaching control, dog-hunting violations, anti dumping efforts, land-based toxic waste disposal, homeland security, disaster response, resource thefts etc., among others. Land patrols are frequently directed to protected lands. This is evident during hunting season. Also considered as a special protection area will be the range of the Florida panther, which can, due to their roaming tendency, can also include vast segments of private lands. These protected lands are generally public property and in the absence a private protector, FWC officers must pay special attention to these areas. Seventy percent (70%) of the staffing (182) related to land deployment was assigned to a county's square miles, and 30% (78) to a county's protected areas.

Two land-oriented variables will be used for land patrol:

- County Acreage: Multiplier one officer per 296.86 square miles
- Protected Lands: Multiplier one officer per 67,124.359 acres

WATER PATROL RELATED VARIABLES AND MULTIPLIERS

Patrol of areas waters, both salt and fresh, are a major component of FWC workload, our best estimate is that at least 40% of work is related to water patrols (260 officers), and water-related activities. This includes inland lakes and rivers.

The related work is water oriented but does not necessarily require vessel patrols, it may well involve the patrol of a lake shoreline by vehicle to check fishing licenses, or meeting shell fish harvesters at the dock to check the day's take. It would also involve checking markets for varied fish or shellfish. This variable does not include the Big Boats that are treated separately. County water acreage will account for the deployment of 160 officers.

The sheer number of vessels is an important factor in water-related enforcement. A key mission of the agency is to ensure safe boating with the agency having a key goal of the reduction of boating accidents. However, the sheer number of vessels is an important workload driver, for both safety and resource management. Forty (40) officers will be deployed based on vessel registration in the county.

There are some waters, noted in the previous chapter, that require more consistent attention. These involve manatee zones, shellfish areas and Special Preservation Areas. A total of 40 officers will be deployed to address these marine protected areas.

Finally, the intricacies of the coast contribute to patrol times. A multiplier of 20 officers has been built in to address this factor.

In both the land and water areas, staff tried to use hunting and fishing license data to add to the variables. Because there are so many types of licenses (e.g., fresh and saltwater combines, hunting and fishing combined, etc.) any analysis of their impact was impossible. In addition, the data merely revealed where the license was purchased as opposed to where the resource activity occurred and a vast majority were sold via telephone or the Internet, furthering clouding activity locations. Consideration should be given to some additional questions on the license application that might provide better use data in the future. The same comments, to some degree, also applies to the vessel registration data, however for state residents clearer location data was available.

Four water-oriented variables will be used for water patrols:

- Water acreage (officer per 67.68 square miles of water). The water acreage for Monroe County was limited since the acreage is so vast.

- Shoreline mileage (similar to Florida Highway Patrol's distribution of officers by miles of state highway). (Officer per 1020.45 shoreline miles.)

- Vessel Registration (officer per 24,502.5 registered vessels).

- Special Areas (Shellfish, Manatee, and Special preservation areas.) (Shellfish, Special preservation areas, .34 officer per area.) (Manatee zones: .0595 officer per area.)

CALLS FOR SERVICE -- MULTIPLIER

Calls for service average presently about 10-20% of agency activity. While calls for service remain limited, is our expectation that calls for service will, in coming years increase as a proportion of workload. Forty-six (46) officers were deployed based on calls for service. Calls for service for this analysis has two elements, calls dispatched, and calls not dispatched. Non-dispatched calls result largely from a lack of available officers. Twenty-three (23) officers were deployed based on frequency of non-dispatched calls.

The multipliers used for calls for service will utilize the standard law enforcement methodology. Two variables will comprise this work standard:

- Calls for service dispatched: 254.15 per officer

- Calls for service not dispatched: 362.78 per officer (the lesser number of officer per call results from about one third of the non-dispatched calls

involving informational calls or may involve dispatcher error, and would not have led to a dispatch, even if officers had been available).

POPULATION: MULTIPLIER

Land and water generate law enforcement activity only when people are present. Population size proves an important criterion in generating law enforcement activity particularly for water-based activities and for calls for service. Population is already taken into account in the earlier use of vessel registration that is highly correlated with population (.864). Population is also important to a lesser extent in land-based enforcement. However, along the interface between populated areas and wild areas, there are increased resource threats from dumping, spills, and other environmental insults. Human/animal problems are also more frequent.

Population is highly correlated as well with vessel registration and land area. To avoid over counting the influence of population, a fairly low population multiplier has been utilized. Sixty-one (61) officers were deployed based on population size.

Population: Multiplier officer per 137,834 population.

DEPLOYING FWC PATROL

The multipliers just developed have been arrayed in an Excel spreadsheet with the data on these key variables for each of Florida's counties. These multipliers have been used to distribute by county the number of officers identified by the previous staffing analysis.

Table 14 provides an overview of officers deployed by county and contrast this number with current deployment. The current numbers for counties includes big boat crews and recruiters not reflected in the proposed patrol numbers.

Appendix A, at the end of this report, contains a printed version of the spreadsheet model that deploys officers.

Table 15 provides a summary of field officers and field lieutenants proposed detailed by county and by region.

Table 14

CURRENT AND PROPOSED OFFICER STAFFING BY COUNTY

County	Current *	Proposed
❑ Alachua	4	7
❑ Baker	3	5
❑ Bay	11	13
❑ Bradford	2	1
❑ Brevard	19	30
❑ Broward	17	22
❑ Calhoun	3	2
❑ Charlotte	11	10
❑ Citrus	10	13
❑ Clay	3	6
❑ Collier	17	20
❑ Columbia	3	6
❑ De Soto	2	3
❑ Dixie	4	6
❑ Duval	17	13
❑ Escambia	6	9
❑ Flagler	3	4
❑ Franklin	11	20
❑ Gadsden	3	3
❑ Gilchrist	2	2
❑ Glades	7	6
❑ Gulf	5	6
❑ Hamilton	2	2
❑ Hardee	2	3
❑ Hendry	3	5
❑ Hernando	5	6
❑ Highlands	4	6
❑ Hillsborough	10	16
❑ Holmes	2	3

Table 14

CURRENT AND PROPOSED OFFICER STAFFING BY COUNTY

County	Current *	Proposed
❑ Indian River	5	7
❑ Jackson	3	5
❑ Jefferson	3	4
❑ Lafayette	2	3
❑ Lake	4	11
❑ Lee	16	19
❑ Leon	4	7
❑ Levy	6	13
❑ Liberty	2	6
❑ Madison	2	3
❑ Manatee	8	9
❑ Marion	7	14
❑ Martin	7	8
❑ Miami-Dade	21	38
❑ Monroe	36	59
❑ Nassau	4	6
❑ Okaloosa	11	10
❑ Okeechobee	5	5
❑ Orange	4	11
❑ Osceola	4	11
❑ Palm Beach	26	30
❑ Pasco	7	9
❑ Pinellas	8	14
❑ Polk	11	15
❑ Putnam	5	7
❑ St. Johns	7	9
❑ St. Lucie	5	7
❑ Santa Rosa	10	10
❑ Sarasota	7	10
❑ Seminole	2	4

Table 14

CURRENT AND PROPOSED OFFICER STAFFING BY COUNTY

County	Current *	Proposed
❑ Sumter	3	4
❑ Suwannee	3	3
❑ Taylor	6	9
❑ Union	1	1
❑ Volusia	13	18
❑ Wakulla	7	9
❑ Walton	3	8
❑ Washington	3	7

* Includes officers who staff Big Boats and recruiters, proposed numbers do not include these officers

Table 15

PATROL FIELD COMPLEMENT : OFFICERS AND FIELD LIEUTENANTS BY COUNTY AND BY REGION

North West	Officers	Lieutenant	North Central	Officers	Lieutenant	North East	Officers	Lieutenant
Bay	12		Alachua	7		Brevard	27	
Calhoun	2		Baker	5		Flagler	4	
Escambia	9		Bradford	1		Indian River	7	
Franklin	17		Citrus	10		Lake	11	
Gadsden	3		Clay	6		Marion	13	
Gulf	6		Columbia	5		Orange	11	
Holmes	3		Dixie	6		Osceola	11	
Jackson	5		Duval	13		Putnam	7	
Jefferson	4		Gilchrist	2		St. Johns	9	
Leon	7		Hamilton	2		Seminole	4	
Liberty	6		Lafayette	3		Sumter	4	
Okaloosa	10		Levy	13		Volusia	18	
Santa Rosa	10		Madison	3				
Wakulla	9		Nassau	6				
Walton	8		Suwannee	3				
Washington	7		Taylor	9				
			Union	1				
Patrol	**118**	**21**		**95**	**17**		**126**	23

Southwest	Officers	Lieutenant	South	Officers	Lieutenant	SEA	Officers	Lieutenant
Charlotte	10		Broward	22		Collier	20	
Desoto	3		Glades	6		Monroe	52	
Hardee	3		Hendry	5				
Hernando	6		Martin	8				
Highlands	6		Miami Dade	38				
Hillsborough	16		Okeechobee	5				
Lee	19		Palm Beach	29				
Manatee	9		St. Lucie	7				
Pasco	9							
Pinellas	14							
Polk	14							
Sarasota	10							
	124	22		115	22		72	13

Methodology Patrol Staffing. The previous paragraphs identified the staffing levels required and presented a deployment methodology. This section of the chapter will provide the rationale for the staffing methodology deployed.

Patrol is the preeminent function of FWC law enforcement. It is the direct link to the public, the primary provider of services, and the core of resource protection and public safety efforts. Patrol consumes the largest single proportion of FWC's law enforcement resources. For this reason alone, patrol resources must be managed with utmost skill, for public and officer safety purposes, and with recognition for essential needs of parallel functions of an agency.

The objectives of this patrol staffing, deployment, and scheduling study were to ensure that sufficient numbers of first response patrol officers are available to:

- Deploy officers as closely as possible with the temporal and geographic need for resource protection and public safety
- Conduct prevention, suppression, and proactive public safety and resource protection tasks effectively
- Respond to calls-for-service in a fashion that satisfies community expectations
- Respond to disasters and Homeland security needs in an effective manner
- Meet mandatory and essential administrative requirements satisfactorily.

Staffing, deployment, and scheduling plans must comply with officer safety requirements and should maximize cost-effective use of patrol resources.

Analysis in this section focused on ***primary patrol units***, defined as a unit with primary responsibilities to patrol land and water areas, answer calls-for-service, ensure resource protection, and conduct community policing activities within a specified county.

Primary patrol units serve in two capacities:

- As a primary officer with responsibility to protecting the resources and ensuring public safety within their patrol area (county)
- As a primary responder to a call or the self-initiator of a law enforcement activity.

STAFFING AND DEPLOYMENT FUNDAMENTALS

Universally applicable patrol manpower standards do not exist. This is particularly true in resource protection law enforcement. The more traditional theories of ratios, such as officers-per-thousand population, are totally inappropriate bases for calculating patrol staffing requirements. Factors that should be considered when defining the patrol staffing requirements for resource management law enforcement are:

- Threats to resources
- Citizen demand for resource related services
- Policing philosophy
- Amount of land and water areas to be patrolled
- Number, type, and duration of calls-for-service
- Population size, density, and composition
- Topographical configuration of the service area
- Climate, especially seasonality
- Amount of time that officers can commit to duty (availability)
- Trends in the foregoing areas.

Patrol methods, experience, and productivity of officers and supervisors should be considered.

THE INFORMATION PLATFORM

Patrol staffing requirements analysis and calculation is a data-dependent endeavor. For the Florida Fish and Wildlife Commission Law Enforcement, a variety of data sources and statistical techniques were employed.

DATA COLLECTION – PRIMARY

To define the patrol staffing requirements of the FWC, data were sought on:

- **Workload**. The amount, type, and distribution of labor invested by field officers

- **Availability**. The number of hours that field patrol officers work each year

- **Patrol Configuration**. Number, deployment, and scheduling of primary patrol units, field supervisors, and special mission forces

- **Administrative Time.** Time spent in duties necessary for department related tasks, which include training, travel to department meetings, court time, meal and rest breaks, equipment maintenance, and other department-related duties.

Workload data were obtained from computer aided dispatch (CAD) logs for the five FWC dispatch centers. The data documented recorded activity for fiscal year 2004-2005 (July 1, 2004—June 30, 2005), by time, day of week, county, region, unit responding, nature of activity and time spent on each activity.

A series of modifications were made to the CAD database received from FWC. Calls and activities that had reversed times or missing data were removed. Coding errors and missing data were repaired when possible. Two common dispatcher /report time entry errors – zero time entries and failure to enter a completion time, were addressed by inserting mean time for specific activities. This is an important point for FWC staff and supervisors, as it merits close review and guidance to improve data input on the front end of the data trail where it is most critical. Increased accuracy of data will result in better forecasting and deployment of patrol resources.

Since interviews, focus groups, and field observations revealed that a proportion of self-initiated work was not called into dispatch, another data source (ActivityNet) was analyzed for additional information on self initiated activities.

The CAD did provide data on time spent on administrative activities. Administrative activities also were frequently not called into CAD. However, CAD did provide a valuable information resource for the average amount of time spent by administrative activity type. To assess administrative times, field observations, interviews with officers, and data from ActivityNet were utilized.

Availability calculations require data regarding loss factors (time not committed to field patrol) such as vacation, sick leave, training, days off, deferred holidays, and personal days. Information on leave utilization was received from FWC and analyzed. For a number of leave items, data were not available. To compensate, averages based on other comparable agencies previously studied by IACP were used. Based on these data and extrapolations, an availability ratio was calculated. Shift information was gained from shift schedules provided by the regions.

Patrol deployment and primary officer needs were established based on call loads addressed by patrol officers only. Investigators, aviation, supervisors, big boat crews excluded from the analysis of primary patrol officer needs.

DATA FORMATTING

CAD data were converted to an Excel format and analyzed using Excel and the Statistical Package for the Social Sciences (SPSS). To set up analysis, workload was divided into three categories:

- **Operational Labor**. Labor associated with the agency mission. Operational labor originates in the field as a self-initiated activity by the patrol officer or as a call for service. Officer-initiated, crime-related activities are included in this category.

- **Uncommitted Patrol Time**. The time remaining in the eight-hour workday not committed to any other type of labor. Uncommitted time includes time spent on administrative duties such as car maintenance, shift briefing, and other organization support efforts. Uncommitted patrol time is that time that remains when administrative time and operational labor are subtracted from the total available time.

- **Administrative Time.** This is the time spent on administrative duties – ranging from vehicle and vessel maintenance to training, meeting, and

Workload information was extrapolated to yearly data, using standardized mathematical procedures. Dispatch coding errors were identified and effects estimated.

MEASUREMENT FACTORS AND STAFFING STANDARDS

Measurement factors describe important attributes of the patrol work setting and support analysis and definition of patrol staffing and deployment requirements. Measurement factors used for the FWC analysis are:

- Operational Labor

- Uncommitted Patrol Time

Operational labor is the aggregate amount of time consumed in self initiated activities by officers or to answer calls for service generated by the public and associate work for

these activities. Operational labor also includes time consumed writing activity-related reports, time spent process arrests, and writing citations.

Uncommitted patrol time is the total amount of time not consumed as operational or administrative labor. It is necessary for proactive law enforcement activity. It requires special attention when determining patrol staffing requirements. It is important that time spent on administrative duties, time consumed for indirect, non-operational activities such as training, administration, special details, and court. Vehicle care, roll calls, report writing and filing, breaks, and special details are included in administrative time. Uncommitted patrol time not spent on administrative tasks allows:

- Time to conduct adequate resource protection patrols
- Timely response to calls-for-service
- Time for officers to initiate educational contact with boaters and hunters, and other stakeholders such as owners of private lands serviced by FWC
- Time for officers to initiate contact for public service purposes
- Having sufficient staff to address special seasonal increases in work (hunting season, lobster season, and boating events)
- The ability to have multiple officer response capability to single-call priority settings.

Uncommitted time is especially critical for community policing, problem solving, visibility patrols, and officer-initiated resource protection activity.

Considering FWC's law enforcement environment and selected factors set forth earlier, we recommend that as a proportion of the total labor in an officer's workday, Operational Labor should not continually exceed 33%. In fact, analysis from previous sections, argue for a lower level of operational labor due to amount of equipment maintenance undertaken by FWC officers and the amount of travel time. Strong argument can be made for an operational labor ratio of no greater than 25%.

Availability. Due to a variety of factors, including days off, vacation, sick leave and training, patrol officers are not always available to work. To calculate patrol staffing, deploy officers properly by time of day, day of week, and geographical area, and to evaluate productivity, the actual amount of time officers work – availability – must be calculated.

Leave utilization data was not available from the state's system. However, ActivityNet and interviews with staff provided estimates of leave practices. Based on the current duty cycle and comparisons with leave practices in other agencies, the following leave estimates were developed:

> FWC field patrol officers work a potential of 261.7143 days a year when regular days off are subtracted (104.2857). This provides a total 2,085.7144 hours of potential work. Subtracting sick days, vacation, leave, and training days provide an estimated total of 1,709.71 hours a year available to work for the average officer.

WORKLOAD – AMOUNT ACTIVITYNET

ActivityNet reported an operational labor total of 493,910.5 hours. Since one-quarter of the amount of workload identified in this number involves supervisors and others not in patrol, operational labor is reduced to 370,432.875 hours. With an officer availability rate of 1,709.71 hours per year and with officers assigned at the 33% level (569.85 hours), it requires 650 officers to address the workload identified by ActivityNet.

Substituting the 25% operational labor standard and using the same availability numbers, the yearly operational labor contribution of officers falls to 427.88 hours. Dividing the available hours by operational labor (370,432.875) results in a projected need for 866 officers to meet the 25% standard based on ActivityNet workloads.

WORKLOAD – COMPUTER AIDED DISPATCH SYSTEM

The CAD system utilizing the same methodology results in a similar outcome. CAD reports 187,113.51 hours of operational labor. Observation, contrasts with other data sources, and interviews with officers supports a one third reporting rate to CAD of self initiated activity. CAD does capture 100% of calls for service and does include activities by supervisors and staff other than patrol. This reduces the factor needed to estimate true operational labor to a factor of two. Calculating operational labor at 374,227.02 hours and utilizing the same methodology as pervious results in a projected need for 657 officers at the 33% standard, and 875 officers at the 25% standard.

As data resources in NWRS become better honed, more precise indicators will be able to be developed that will most probably generate higher staffing levels. An explanation of the development for each weight is provided in the commentary on the particular factor.

The multipliers are conservative, the true need for FWC law enforcement is probably far higher than our multipliers indicate. However, to develop a defensible model a conservative approach was taken. As mentioned before, better data collection, supervisory emphasis on CAD reporting of activity, and improved consolidation of the many databases to the CAD system, will produce better data for future deployment models. FWC needs to reduce or eliminate the current entry of redundant data throughout their organization.

CHAPTER VI. STAFFING AND DEPLOYING SUPPORT AND SUPERVISION

This chapter focuses on staffing and deployment for:

- Patrol Field Supervisors
- Investigations
- Aviation
- Big Boat Crews
- Administrative Support
- Communications

With the exception of aviation and the big boat staffing, staffing and deployment of support and supervision is closely linked to staff levels and deployment of FWC patrol officers.

Field Supervision. Lieutenants serve as first line supervisors for FWC patrol. Nationally, the first line supervisor to officer ratio for patrol generally ranges from four to eight officers to a supervisor, with the most common ratio being six officers per supervisor.

Current first line supervisor ratio to officer supervised for FWC patrol ranges from four to nine officers with the most common supervisor ratio at six to one.

There is no set standard for patrol supervisory ratios for first line supervisors in law enforcement. Generally, law enforcement management texts call for supervisory ratios ranging from one supervisor to four officers to one supervisor to seven officers. The proportion of front line supervisors to officers is generally a function of several factors.

- The average age and experience of the officers supervised are the most important factors in determining the need for supervision. The FWC work force in most areas is relatively mature and experienced, however since the merger increased numbers of younger officers have been recruited and placed in service.

- In general, the more coordination required among patrol officers in achieving their mission, the more supervision required. FWC patrol work is largely individual officer-initiated.

- The greater the proportion of calls for service, generally the greater the need for supervision to address citizen concerns and citizen request to see a supervisor. FWC patrol addresses far more self-initiated work than calls for service.

- The most common current ratio of first line supervisor to officer is one supervisor to six officers. In general, supervisors and officers found this ratio acceptable. Concerns voiced by supervisors were directed mainly to the amount of administrative tasks required, not to the number of officers supervised.

- Size of work zones for officers are important for supervision. Long distances between supervised officers requires a lesser ration to ensure adequate supervision. There are a number of locations where patrol distances are high. In addition, interviews across the state with supervisors reinforced the geography and distance problems related to supervision. Unlike their city or county colleagues, FWC supervisors cannot routinely co-respond to situations their officers encounter or initiate due to these distances. Thus they are, in some senses, unable to conduct direct individual officer performance oversight.

Four out of the five factors argue for a larger supervisory ratio. However, the fifth factor – distances between those supervised – suggest a more limited ratio. Based on these factors IACP is suggesting an overall ration of 5.5 officers per first line supervisor. This ratio will permit areas where officers are more available to have a ratio of six to one and areas where officers are more dispersed to have a lower ratio.

Multiplying a patrol complement of 650 officers by a supervisory ration of 5.5 requires 119 lieutenants.

Lieutenants should be deployed regionally and to counties or to multiple county areas where their officers are assigned. The current squad system should be continued. The current shift schedule will be discussed in the final section of this report.

Big Boats. There are five Big Boats located in four regions:

- Northwest: J.J. Brown (lieutenants 2 officers)
- North Central: Guardian (lieutenant, 2 officers)
- Northeast: Randall (lieutenant, 2 officers)
- SEA: Orion (lieutenant, 2 officers)
- SEA-Sanctuary Peter Gladding (lieutenant and three officers).

Current staffing of the four original FWC Big Boats is limited to three personnel each, however the Federal requirement for boats of this size is four officers (two for boarding

and two to control the big boat while it stands off from the boarded vessel.) This Federal requirement only pertains to the Peter Gladding which was fully funded by NOAA.

During boarding operations, the FWC Big Boats will put a two person boarding team on board and then FWC vessel will stand-off and monitor the boarding process. This, however, leaves the FWC boat captain with the problem of trying to maintain control over his vessel while at the same time keeping watch over the boarding party. This is why the federal requirement is for four personnel on these vessels, to allow the captain to control the boat while another officer monitors the boarding.

Interviews with Big Boat captains as well as other regional supervisors reinforced the safety issue relative to the current boat staffing. It was pointed out that due to leave and other details, many times these boats only have two crew on board, further complicating the safety issue.

It is our recommendation that all Big Boat crews be established at a lieutenant and three officers, and further should not depart the dock without full crew.

To staff Big Boats under this formula would require 15 officers and five lieutenants.

Investigations. As previously developed each region has an investigative unit commanded by a Captain (except for the SEA, which has a lieutenant in charge). Investigative units are further subdivided geographically into teams supervised by lieutenants. In some regions, non-supervisory lieutenants are also assigned to the investigative function, a carry over from the merger (these will eventually be eliminated by retirements or attrition). These non-supervisory lieutenants serve in the capacity as Investigator 2, conducting exotic wildlife inspections. Investigations units vary in size and composition by region.

Current Investigative Staffing

	Region	Captain	Lieutenant	Investigator 1	Investigator 2
❑	North Central	1	3	8	1
❑	Northeast	1	3	8	2
❑	Northwest	1	2	10	2
❑	SEA		1	5	2
❑	South	1	2	11	1
❑	Southwest	1	3	6	3

Note, June 2006: South Regional Commander advised that two additional lieutenants work as Investigator 2s in the region. Headquarters management advises that a captain has been assigned an additional duty supervising investigations in the SEA.

Investigator 2 positions are related to the captive wildlife enforcement or inspection process. Investigator 1 are more closely aligned with traditional investigative process, which includes responsibility for all fatal boating accidents, hunting accidents, alligator attacks, stolen boat and title fraud, and background investigations.

There are two basic approaches to staffing investigations units. There are the workload and comparative approaches. In the workload approach, caseloads are analyzed for closures (clearances) and for average amount of time to process a case. To utilize the workload approach, the department must have specified goals for specific type of cases requiring investigation and have available historical data on the average time for ~~to~~ completion of the types of cases investigated. As Section 2 of this report has noted, information of this nature is presently not available for FWC investigations.

There is no doubt, however, based on the data collected that FWC Investigations are an active enterprise. During 2004-2005 FY the regional investigative units opened 1,606 investigations and closed 1,404. In addition, the same data records 2,759 dispositions by charging document of some kind, such as felony, misdemeanor, warning, or infraction.

Without investigative information on case type and historical records on time to completion by case type, it is impossible to assess staffing levels based on workload.

Since most police agencies do not have available the quality and type of information needed for workload assessment of investigator staffing, the comparison approach is the most common methodology used to estimate ideal investigator staffing. The comparison's approach tracks the number of investigators in a department and establishes what proportion of the total sworn force are investigators.

The proportion of sworn officers assigned to investigations is compared with national averages of proportion of sworn officers assigned to investigation or contrasted with proportions in law enforcement agencies. For agencies that employed at least one full-time or part-time sworn officer, Reaves and Goldberg (2000) estimate from a national sample of police agencies that about 15% of the full-time sworn personnel are assigned to investigative duties. Horvath, Messig, and Lee (2001) in their replication of some of the Rand's earlier work, utilizing a sample of somewhat larger agencies, found 16.3% of the total full time officers were assigned to investigations. Within these averages, there is considerable variability in percentage assigned to investigations. Reaves and Goldberg (2000) did find that state law enforcement agencies with the exception of those state agencies fully devoted to investigations generally had a smaller proportion of investigators closer to the 10% range. Current ratio of FWC investigator to patrol officers is .125 (12.5%).

Field officers generate a sizeable proportion of investigative work. An increase in the number of field officers will lead to increased work for investigators. Using comparative methodology and a conservative multiplier (12.5%) of the number of patrol officers, IACP recommends a staffing level of 81 Investigators 1 and 2. To provide supervision 14 lieutenants are recommended for the investigations function. An additional captain's position was recommended by the study staff to supervise SEA investigative activity; however FWC management has opted to assign investigative supervision to an existing SEA captain position as an additional duty. FWC will evaluate the effectiveness of this option before acting on the study recommendation. (Investigations is currently headed in SEA by a lieutenant.)

Proposed Investigative Staffing

	Region	Captain	Lieutenant	Investigator
❑	North Central	1	3	14
❑	Northeast	1	3	15
❑	Northwest	1	3	14
❑	SEA	1	2	9
❑	South	1	3	15
❑	Southwest	1	3	15

IACP further recommends that the department seek out and adopt a case management database system that can supply, in a format that is consistent statewide, case activity including hours worked, other case resource expenditures such as miles driven, buy money used, etc., closure categories and documentation, progress reporting, and case investigative decision making such as whether to investigate in the first place or when to stop, when resources expenditure exceeds case value. Collection of this kind of data in the future can further refine the staffing of the investigative function.

Aviation. As specified in an early section of this report, aviation units are distributed by region and are located at airports or fields in several areas. This distribution ensures rapid response to assistance requests. Aircraft and pilots are distributed as per Table 10, and total one captain, four lieutenants, and nine Pilot-2. Two administrative personnel provide support (at Tallahassee). Regional administrative staff also supports aviation personnel field operations in the respective regions. There is a Senior Pilot/Captain in the headquarters as well as second pilot who provides check flight services throughout the state. The remaining pilots and lieutenants (who are also pilots) staff the regional based equipment.

IACP staff could find no department directive or formal priorities upon which field aviation supervisors could evaluate calls for service from the field, nor any established

work plan. As developed in an earlier section, most aviation activity is generated by calls from patrol officers to address a specific situation or concern. Interviews with aviation supervisors indicate that they generally honor all requests from the field until such time as their budget for flying is exhausted. They further indicated that they have been able to accommodate most requests in recent years. Absent the above listed policy or work plans, further evaluation of the aviation section for staffing becomes mute. There is in fact more aircraft than pilots. Aircraft is expensive to buy and maintain. It should not be grounded due to pilot leave, training requirements or other personnel considerations. To ensure availability of pilots, IACP suggests three additional personnel be added at this time. Once policy and mission protocol has been established and calls for service are monitored in the future against that data, further adjustments to the personnel may be warranted.

Canine. Currently, the department deploys 11 canine units, with four additional units in training. These search dogs are called out as necessary. FWC is training some of these canines as "marine" dogs. These canine units will be able to search vessels for targeted contraband. When canine units are not called to a search or similar activity or detail in support of another department, they perform regular patrol duties. It is IACP's recommendation that canine units continue to be utilized as an assignment for patrol officers. Canine units would conduct routine patrol duties when not called upon for special duties. However, as previously developed, canine units can only address about two-thirds of the workload of a regular unit. This is due to the unique training and animal care requirements of canine units. There will need to be an offset to cover the reduced workload by canine units for each region.

The canine function falls liable to the same absence of data as the aviation and to some degree the investigative sections. While canine officers appear to routinely submit monthly activity reports, there did not appear to be a statewide data collection or analysis of these reports. Thus the IACP team was unable to review their activity from any comparative or qualitative standpoint. Thus there is insufficient data at present to identify the number of units required. To establish numbers required, a use/request log is needed that not only keep count of utilization but more important, times when the units were requested and were unavailable. Further this data needs to be consistent in format statewide and available for analysis. Again, an appropriate database is suggested for this activity.

While the appropriate number of canines required cannot at this time be estimated due to the lack of demand-related information, it can be recommended that additional patrol officers will be required to "offset" the training time and search times for other agencies that the canines will require. IACP's long experience with canine units has found that training time and handler time (as legally mandated by Fair Labor Standards Act) reduces canine unit availability by about 25%. In addition, requests for

search assistance by outside agencies will also require some time. IACP's experience has found a reduction of about 30%-35% in availability for canine units.

It is our recommendation that six additional officers positions be staffed. These officers would be deployed in the regions where the canine units are assigned to provide additional patrol time to offset the canine deployment. These units will be noted in the deployment chart as "canine pool positions."

Administration. This report only addresses law enforcement related workload. Analysis was not conducted on office administrative activities. However, field observations, interviews, and questionnaires raised the concern that field supervisors are being distracted from supervisory and law enforcement duties by a high volume of administrative duties. Review of CAD log further supported this contention.

To address administrative duties and to reduce administrative pressures on field lieutenants it is recommended that the number of administrative lieutenants assigned to the regions be increased as follows:

- **Southwest:** Current there is currently an administrative lieutenant in Lakeland. It is our recommendation that two administrative lieutenants be added and assigned to the Tampa and Ft. Myers Offices.

- **North Central:** There is currently an administrative lieutenant in Lake City and an administrative lieutenant in Jacksonville. There is no administrative lieutenant in Crystal River. It is our recommendation that an administrative lieutenant be added for Crystal River.

- **Northwest:** There is currently a lieutenant assigned to Panama City, a lieutenant is assigned to Panama City Beach. There is no lieutenant assigned to Carrabelle and Pensacola. It is recommended that an additional lieutenant be assigned to Pensacola. This will provide the Northwest with three administrative lieutenants, the same as for the other regions.

- **South:** There is a lieutenant assigned to West Palm Beach and a lieutenant assigned to Miami. There is no administrative lieutenant assigned to the Jupiter Office. It is our recommendation that an administrative lieutenant be assigned to the Jupiter office.

- **Northeast:** A lieutenant is assigned to Ocala. There is no administrative lieutenant assigned to Titusville. It is recommended that an administrative lieutenant be assigned to Titusville.

- **SEA:** There is an administrative lieutenant assigned to the Marathon Office. It is recommended that an additional administrative lieutenant be assigned to Marathon.

Communications. FWC operates six independent communications centers. Recently, SEA Communications has been moved to West Palm and now operates at that location. FWC is in the process of co-locating what were all independent regional communications with the Florida Highway Patrol and other state law enforcement agencies in regional centers. Communications centers were found to vary in staffing from low of three in Marathon to a high of 20 in West Palm Beach and Miami combined. Current practice is to have two dispatchers on duty. To staff a center with two dispatchers around the clock theoretically requires 10 dispatchers. The term theoretical is used since with such limited staff, a resignation, personnel problems, or a prolonged illness raises staffing problems.

Current staffing, as of Oct 2005, is reflected below:

Current Communications Staffing

Region	Lieutenant	Supervisor	Duty Officer
North Central	1	1	10
Northeast	1	1	11
Northwest	1	1	12
SEA	1	0	4
South	2	2	19
Southwest	1	1	13

(In June 2006, South Regional Commander advised the two supervisory lieutenants have been transferred to other non-communications related duties.)

Appropriate levels of communications staffing is premised on four key factors:

- Number of dispatches addressed
- Number of officers on the street during a single period
- Number of incoming calls for service
- Amount of additional administrative duties performed.

Analysis of number of dispatches addressed revealed:

- South average of 8.1 dispatches per hour
- SEA average of 7.1 dispatches per hour
- Southwest average of 7.0 dispatches per hour
- Northeast average of 5.4 dispatches per hour
- Northwest average of 4.7 dispatches per hour
- North Central average of 4.0 dispatches per hour.

These averages mask the fact that dispatch activities vary dramatically by time of day and day of the week. Generally dispatch activities are highest around change of shift and during the afternoon to early evening hours. Dispatch activity is generally low in the early morning hours. High activity around change of shifts is somewhat mitigated by the best of 12 hour work schedule which staggers officer on and off duty times.

Analysis of number of dispatches suggests that the number of dispatches per hour are within the range of two on duty dispatchers to address. Breaks and meal periods should be limited to low frequency dispatch periods. The South area, if growth continues in calls for service, will require a minimum of three dispatchers on duty during peak time if the number of hourly dispatches passes an average of 10.0 per hour.

Calls for service are limited and average at all locations less than one per hour. This is well within acceptable standard for current staffing. As FWC changes approached to increase visibility and pro-active patrol, as well as increased attention to the use of CAD for all field activity, these staffing levels may well increase and should be closely monitored.

The number of patrol officers supervised is perhaps the most important variable. Generally, approximately 20% of a department's patrol officers are on duty at any one time. Given, FWC's schedules during certain times of the day as much as 30% of officers may be on duty. An experienced dispatcher can address between 20-22 on duty patrol officers. With two dispatchers on duty, 40-44 officers can be addressed. Current daily staffing levels fall below this guideline.

Based on this analysis it is our recommendation that a minimum of 10 primary dispatchers be assigned to each dispatch center. The South district based on its two dispatch centers will require 20 duty officers. There is question as to why the South would have two dispatch points.

The need for secondary dispatchers is a reality for nearly all law enforcement agencies. Dispatcher turnover, health and personal problems lead to prolonged absences that plague 24/7 schedules. Most dispatch centers must hire above technical minimums to ensure continuity of service. It is further recommended that three secondary dispatchers be assigned to each dispatch center to cover turnover and extended leaves. The South's two dispatch centers would share the three secondary dispatchers.

The distinction between primary and secondary dispatchers is made, since there are several innovative ways to provide secondary dispatchers besides the hiring of full time personnel. These include:

- Sharing secondary cross-trained dispatchers with other agencies in the center
- Having a number of trained part time dispatchers available to fill in
- Having spare dispatch staff at one center address another centers calls by electronic routing
- Using trained sworn officers when regular dispatchers are not available especially officers who might be on light duty restrictions
- Training other administrative personnel to dispatch when required.

An option that should be mention is the consolidation of dispatch in two centers – North and South. This would provide redundancy with two centers. The centers would be co-located with other agencies, and use dispatch console clusters, with assigned dispatchers that know their area, to handle the traffic. This would reduce the physical plant needed, provide for statewide command level control over weekends and when regional staff are off, as well as address the secondary dispatcher issue.

Proposed Communications Staffing

Region	Lieutenant	Supervisor	Duty Officer
North Central	1	1	13
Northeast	1	1	13
Northwest	1	1	13
SEA	1	1	13
South	2	2	23
Southwest	1	1	13

Currently, dispatch staff reports to an administrative lieutenant in each of the regions. This is appropriate. In a couple of the regions the center is actually supervised and run by the administrative lieutenant. It is our recommendation that the centers be supervised, schedule and managed by the duty officer supervisors. The administrative lieutenants should only provide oversight.

Summary. Table 16 (following page) summarizes proposed sworn staffing and then contrasts it with current sworn staffing.

Table 17 provides proposed sworn staffing levels by Region.

Table 17

PROPOSED SWORN STAFFING – BY REGION

	Northwest	North Central	Northeast	Southwest	South	SEA
Officers	123	100	131	121	122	80
Investigators	14	13	15	15	15	9
Lieutenant	28	24	30	28	28	19
Captain	4	4	4	5	5	*4
Major	1	1	1	1	1	1
Total Sworn	**170**	**142**	**181**	**170**	**171**	**113**

* Proposed additional captain for SEA investigations on hold pending evaluation of additional duty assignment to existing captain.

Table 16

PROPOSED STAFFING – SWORN OFFICERS

	Current Staffing	Proposed Staffing	+/-	Patrol	Big Boats	Admin.	Invest	Canine	Aviation	HDQ	Training	Total
Colonel	1	1								1		1
Lt. Colonels	4	4								4		4
Majors	10	10		5			1			4		10
Captains	39	40	**1**	20			6		1	11	2	40
Lieutenants	128	181	**53**	119	5	17	15		4	5	16	181
Officers	472	677	**205**	650	15	6		6				677
Investigators	60	81	**21**				81					81
Pilots	9	12	**3**						12			12
	723	**1006**	**283**	**794**	**20**	**23**	**103**	**6**	**17**	**25**	**18**	**1006**

CHAPTER VII. FUTURE STAFFING, CONTINUING STAFFING AND DEPLOYMENT ISSUES

This final chapter of the report will address will first address a number of deployment and staffing related issues that could impact recommended staffing. This section will then address actions required for future staffing and deployment decision making.

Staffing and Deployment issues addressed include:

- Scheduling
- Residency
- Reserves
- Marine Units Other agencies
- Information Resources.

SECTION 1: STAFFING AND DEPLOYMENT ISSUES

Fixed Scheduling. FWC current schedules make sense. Variable hours permit flexibility in staff hours. This flexibility allows staff to be available to address problems that would normally fall outside the hours of a fixed shift. This is important for FWC since staffing in many areas is insufficient to permit round the clock staffing.

The downside of flexible hours is that calls for service that come in at times when staff are not on duty will be held or not answered. This is not a major problem in most areas since calls for service loads are light and the hours when officers are not on duty are generally the less active times.

There is evidence, however, that calls for service are increasing. As calls for service for the agency increase, particularly in the more populated areas, it will become increasingly important to have round the clock – fixed shift schedules. This assures at least a minimal presence at all times of the day. This is already occurring in several areas.

It is recommended that a policy be established that in areas where the number of officers is sufficient and where calls for service or security concerns warrant it, that fixed, round the clock shifts be established. Staffing should be proportional to workload demand and not necessarily be the same on each shift.

Shift Length. Currently, the FWC utilizes five eight-hour shifts. The 5-8 schedule is an efficient shift schedule and appropriate to most FWC activities. The 5-8 schedule for most patrol endeavors provides the best compromise for availability and coverage.

It is our recommendation, however, that for officers whose are assigned to 50% water patrol, work a 10-hour four-day a week schedule. Our review of CAD data provided considerable support for a 10-hour shift for water patrols. The amount of enroute time, time spent prepping the vessel and cleaning it after completion of the tour of duty, reduce on the water time substantially. A 10-hour shift for 50% officers would provide more water patrol time overall.

Although little evaluation has been done on the Volusia Test Deployment of land and water focused officers, initial statistics provided to the study team seem to indicate potential improvements in service delivery and officer satisfaction may be resultant. In addition, numerous stakeholders indicated a preference for continued presence of the same officer in their areas of use, stating they felt his/her knowledge of the area, people using it, and the resources needing protection, benefited from longer term assignment than currently practiced. The IACP study effort was not designed to evaluate the experiment, however study staff feels that it deserves continued exposure and a comprehensive review of its benefits and use as one of a varied deployment tactic, as part of the long term deployment plan that the IACP is recommending.

Residency. FWC officers must live within a certain radius of their duty station. This is a common practice throughout law enforcement. Residency is required in most agencies to ensure that officers can respond from their homes to emergencies within a reasonable time frame.

FWC has an additional concern. It is agency practice that when an officer leaves their home for their scheduled service, they are on duty. There are important implications of this policy for staffing.

In rural counties and in land patrols, this policy makes sense. One's home is in the middle of the patrol area and generally, the home is as good as base as any to start duty. In urban areas and for water-based patrols, this policy becomes problematic.

As the CAD database amplifies, considerable amount of time is spent in route to work destinations. This enroute time, coupled with maintenance coordination responsibilities, has saddled FWC law enforcement with higher than optimal proportion of officer time devoted to transit administrative activities. Based on a review of CAD data, it appears for marine patrol activities, about 10%-15% of an officer's time is spent in transit. In the populated areas such as Miami-Dade or Jacksonville, the time in transit is higher.

To limit the amount of officer time spent in on duty transit, the agency has set residency limits. Residency requirements have provoked another set of problems. Residency restrictions have long been a problem in a number of high cost areas. Salaries for FWC officers are insufficient for home purchase in a growing number of areas – particularly near the water, and in certain resort communities. Unfortunately, as shown by the deployment model, these areas are the ones where increasing needs for FWC law enforcement exist. Recent escalation in house prices particularly in the Keys and South and South West Florida and in other areas of the state, has driven affordable housing to the margins of many more areas – outside the residency limits imposed by the agency.

The Florida Keys provides the best example of these dynamics – although they are repeated elsewhere. Housing in the Keys is basically unobtainable for a new officer. Even rentals are difficult on an officer's salary. Officers with families who want to buy a home have the option of either transferring to another part of the state or living in Monroe County mainland and commuting to their duty station in the Keys – commutes as long as one hour to two hours one way. The commute would be on duty. This also frustrates recruitment of officers for Keys' assignments and most leave for another part of the state as soon as they are eligible.

An on-duty commute of one hour each way would also be common in urban traffic clogged areas to boat launches for marine patrols. This suggests that up to one quarter of the officer's on duty time would be spent commuting. It will be argued of course is that the officer while commuting is providing a public safety function and available to take law enforcement action. This is true. However, it is also true that this road based law enforcement function is only peripherally related to the agency's mission.

There is no easy resolution to the residency dilemma. Making the residency question particularly troublesome is the issue of salaries and retention. With FWC salaries markedly below comparable municipal and county police salaries in many areas, there is the concern that changes in officer benefits may trigger transfers to other higher paying agencies.

It is our recommendation that a number of changes be made to the current residency and on duty policy be made. The following changes should be considered for the long term:

- All officers should call on duty to CAD at the beginning of their shifts and off duty at the end of their shifts. This should be required.

- All officers should be assigned to duty areas or stations. They should not be considered on duty until they reach their duty stations/areas.

- If duty areas and duty stations are established then residency requirements would be relaxed to permit residency within one county of the duty area or duty station (e.g., may live one county and work the next county over, but in same duty area or station).

- Salary adjustments should be provided to officers that are assigned to areas with higher housing costs and general costs of living.

Introduction of these changes should be in a measured fashion. These changes will take time, will be painful, and could raise labor related issues. They are, however, reality, and must be faced in some fashion by management.

In the long run, it is important that FWC Law Enforcement salaries be made competitive with area law enforcement. This can impact on what otherwise will certainly fuel future exoduses as the disparity grows.

Reserves. In an earlier section of this report reserves were briefly discussed. A frequent question in staffing studies is what are the implications for reserves for staffing the agency. Our review of the current reserve program suggests that the current reserve program does not impact agency law enforcement staffing.

The number of reserves is currently about 76 officers. Their total contribution in hours is equivalent to the hours of about 10 full-time officers. However, given the way the reserve program is structured and the general nature of police reserves, the reserve program does not supplant officers.

Reserves are an excellent program – they provide valued and additional support to the organization. They allow the organization in some circumstances to provide additional services. They provide relief and support to regular officers.

However, given their volunteer status, they cannot be depended upon to staff post and to be available when needed. Their limited numbers, statewide distribution, and uncertain work schedules make relying on these volunteers to perform key agency missions problematic.

A number of resource protection agencies with which IACP has worked are now phasing out part-time and reserve officers as a resource to deliver basic services. What is occurring is that the work of law enforcement is becoming so much more complex and technical that full time staff is required to remain proficient. This can be seen in the high proportion of the duty time spent by reserves simply in training.

The IACP recommends that the reserve program not only be kept, but increased. The reserves, however, should be seen not as an alternative to full-time officers, but rather as a supplemental force that can be called upon in emergencies, special events and other seasonal or short duration high workload times, such as special hunts, etc.

Marine Units, Other Agencies. IACP staff noted (in a previous chapter) that there are numerous other agencies that mount marine/water-based patrols that compliment or duplicate FWC water operations. While many of these units are more directed at boating safety, they also can enforce the resource based law violations that they encounter. In many areas, they actively enforce the manatee zone speed limits. However staff found it difficult to obtain a complete list of these agencies from FWC sources and was forced to initially use a listing of agencies that had requested Uniform Boating Citation (UBC). While this was a good start and was supplemented by information from regional meetings, it does reflect an absence of documented agreements between the FWC and the local agencies. In addition, it appears to be an incomplete listing based on subsequent input. Further, interviews with stakeholders indicated that the level of expertise at either boating safety or resource protection enforcement, varied greatly between these other agencies. They almost universally suggested closer coordination with FWC and FWC training to enhance the local agency interaction with customers.

Initially, it was planned to offset FWC staffing by calculating the contribution of other marine units. The patrols of these local marine units would be then deducted from the shore patrols required of FWC marine units. As noted above, information on other marine units operating along the coastline of Florida was difficult to gather and was insufficient to premise staffing decision-making.

Several other problems also compounded staffing and deployment decision-making. Similar to the problem with reserve officers, these units often are only sporadically fielded. Marine units varied from largely ceremonial programs with infrequent patrols to a few which operated fairly consistent and sophisticated patrols. There is no current database that distinguishes.

Most importantly, nearly all these agencies do not share the full mission of FWC. Most of these agencies are unwilling or unable to fulfill the full scope of FWC's resource protection mission.

However, there is a role that they can play in boating safety, enforcing speed rules, and in maintain the security of Florida's Coast. IACP realizes that efforts are already underway to coordinate coastal security. Nonetheless, it is recommended that FWC:

- Develop a full database of marine law enforcement resources that goes beyond current information resources to including patrol frequencies and current organizational capabilities and performance.

- Building on this database in conjunction with other marine law enforcement with FWC in the leadership role that a coastal security plan be developed. This coastal security plan would have as a key component a coast patrol and staffing plan.

- This plan would be utilized to deploy and staff FWC marine components in the future.

The topic of a marine plan for Florida's coast will be discussed shortly in the concluding discussion of future staffing and deployment for FWC Law Enforcement.

Information Resources. Throughout the study, IACP staff encountered multiple databases, many containing redundant data. Further, the extraction of information from these databases, while available in a batch reporting mode through the centralized IT section, was not readily available for line management personnel. In most case, an on-line report writer was not associated with these databases.

In addition, specific fields were not controlled by data dictionaries resulting in varied wording for the same information. This required many hours of data "cleaning" by IACP staff in order to ensure the accuracy of the model data. This "collection" of independent databases usually indicates ad hoc development of information resources in response to immediate or constantly changing requests for information from management. This suggests that management should review its current data elements and load controls to force more consistent data entry in the field.

In some specialized units, IACP staff found that data was either maintained in a variety of formats and selective information was forwarded to headquarters or no data was maintained on submitted paper activity documents. For example, regional investigative units varied in the formats and detail of their case management information.

In most modern police departments, all agency incident-based activity, whether call for service based or self-initiated, is started at the CAD level. This starts the audit capability of the event through its entire processing by the agency, up to and including final judicial disposition. All reports, items of evidence, witness interviews, charging documents, investigative process, etc, are tied to this event through a number that is issued at the CAD. Subsequent data extractions and reports use this number to validate annual crime statistics, workload activity, personnel reporting, etc., to management and external sources. FWC has started toward this level of management with the implementation of the CAD, but will requires some extra effort to consolidate all of its

other databases into a functional operation. As noted in previous discussions, the workload data entered by officers into the separate personnel database for payroll and the biweekly reporting input to ActivityNet could be easily combined with the CAD on-duty status of officers, using their daily duty status.

Such a change in focus for data management is most important in terms of officer contacts. As noted earlier, staff observations indicate that only about one third of all contacts are reported through the CAD and that even in those that are, the time spent on the contact from the CAD perspective is under-reported due to the officers use of the radio. This absence of radio usage was explained in a variety of ways from it being a cultural thing within the agency to perceptions that the dispatchers would not be able to keep up with all of the activity. IACP staff leans toward the cultural explanation and change from that to more aggressive use of the radio and CAD system will require management focus and reinforcement. Deployment of the mobile data terminals/ laptops will certainly enhance the level of usage, eliminating many current voice communications.

Consideration of including touch screen capability within these units, especially those assigned to vessels and other open air type vehicles, will enable officers to more quickly and accurately input requests or incident initiation/resolution information without having to rely on voice communications. The quicker this equipment is deployed, the more accurate the workload data will be and thus management will be in a better position to respond to changing workload requirements.

Staff recommends:

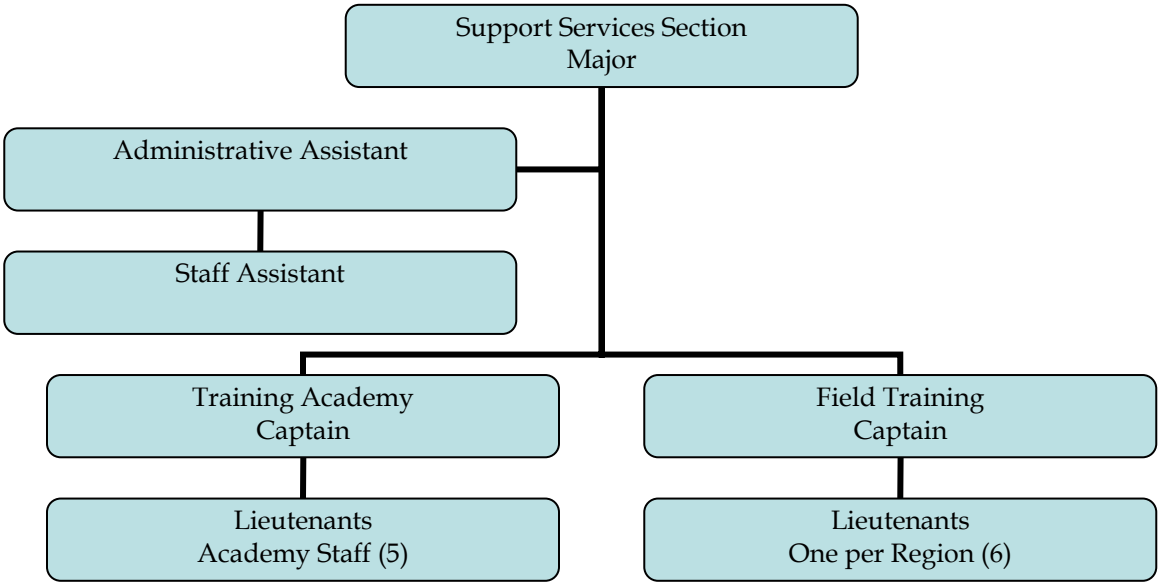
- Reduction in the number of redundant databases, using the CAD as a consolidated front end to control incident numbering and case management

- Review data dictionaries to ensure consistency in data input

- Consider more rapid deployment of the MDT system, using a touch-screen based system, coupled with management focus on more accurate workload accountability.

TRAINING UNIT

Although not part of the original study focus, the recommendation of additional staffing for the Division, prompts the need for comment on such an increase of staffing may have on the Division's training function. The current staffing is as follows:

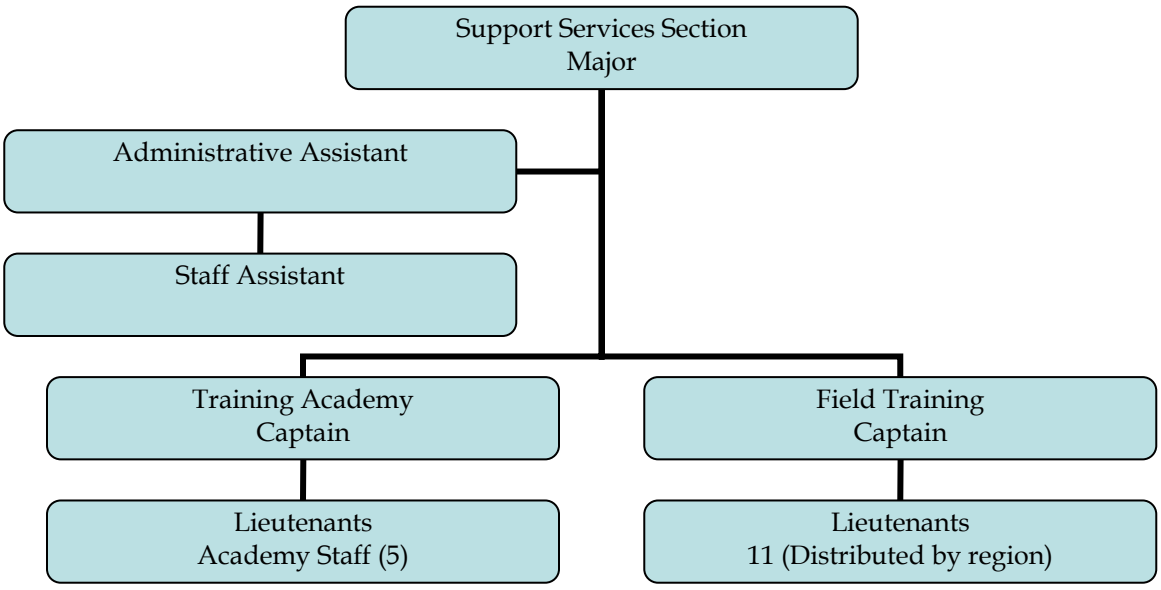


As a generally accepted rule of thumb in allocating in-service training staff to agency size, we have used one trainer per 100 personnel in the past with good results. Using this ratio, the current Division should have eight direct in-service training personnel within its training unit; current in-service staffing is six lieutenants, one for each region. While all agencies generally conduct entry level training at a single location, in-service training is generally conducted in one of three methods: 1) at a single location where all personnel are scheduled, 2) at remote locations to reduce travel time, or 3) a combination of both.

In addition, agencies tend to augment the assigned academy or training staff with field personnel. These personnel are either assigned to supplement the academy staff due to workload or because they have specialized skills or knowledge that is part of either entry level or in-service curriculum. The FWC appears to use the third option, with a significant amount of in-service training, including firearms training, conducted by the lieutenants assigned to the regions. Since these lieutenants are assigned to the regional headquarters their residency is limited to the same boundaries as other personnel assigned to the same regional facility. This makes little sense, since their duty assignments vary within the region to all of the sub-unit facilities located within it. It would appear to make more sense to locate residency within the center of the region, with periodic office hours in the regional headquarters to facilitate coordination with regional staff. The Division's current excellent computer access from portables to the central databases would support the trainer's access from locations other than the regional headquarters.

This regional assignment for in-service training delivery makes sense, particularly in terms of the state-wide dispersal of line personnel. Despite augmentation from local assets within the region, the recommended increase to 1,006 sworn personnel indicates (using the previously discussed ratio) a need to expand the in-service training staff to 10 or an additional four positions beyond current complement. When reserve officer strength of 76 is added, the total required would be 11, or five beyond current staff. The new staffing level may be dispersed to the regions or partially assigned to the academy or both (no distribution was made by study staff in the regional tables). Future documentation of regional workloads may adjust this number. Consideration should be given to an authorized residency location that is geographically central to the entire region to reduce travel time between regional sub-unit locations to affect training delivery. This should be coupled with periodic office hours at the regional facility and remote computer access for training records update. This will adjust the training function staffing to a total of 16 lieutenants.

The academy staffing should be tied to actual workload, including instructor research and preparation time that precedes actual podium delivery time. The current study did not address workload at the academy (or in-service training specifically) and we cannot make a judgment on staffing requirements as the previously stated ratio does not generally apply to the academy or entry level functions. As the recommended increases in sworn personnel will most probably result in increased demands on the academy staff, the Division will need to closely monitor the pace of recruitment against academy resource availability, including the physical structure capacities. Adjustments to staffing should be commensurate with identified need and attention to the accurate recoding of training requirements, staff resources availability and scheduling issues should serve the department well in future staffing decisions for the training function.



SECTION 2: FUTURE STAFFING AND DEPLOYMENT FOR FWC LAW ENFORCEMENT

The modeling presented in this report should adequately forecast staffing and deployment for the next five to seven years. During this period as developed in an earlier chapter, overall staffing should be adjusted based on the average of percent change in three variables, estimated state population change, percent change in vessel registrations, and percent of change in calls for service. In addition, in this time of mission creep, additional duties should also be factored into the equation.

The average of these three variables in percent should then be used to adjust the overall staffing formula. For deployment purposes, the Excel spreadsheet that summarizes deployment should be adjusted for the increases in the three variables, and proportionately reworked to reflect the change in overall staffing. IACP will be available to assist in this process.

In the longer term, it is recommended that staffing and deployment be based fully on the traditional law enforcement workload model, utilizing CAD data. As CAD data improves over time, not only staffing but deployment as well can be based on workload related measures. Attached to this written submission is an Excel spreadsheet that calculates both staffing and deployment by CAD for patrol for each county. This spreadsheet and the underlying model that populates it will become more accurate as CAD use increases and quality control measures take effect.

Support and investigative units in the current term should be increased proportionately as patrol since a sizeable proportion of their work results from patrol actions. In the long run as recommended in earlier sections, staffing levels of these support functions should be on workload analysis as well – basically demand for these services.

APPENDIX A

STAFFING MODEL SPREADSHEET

County	Officers	Population 2005	Coastal 1:40k	Total Area	Land Area	Water Area	Total Vessels	Licenses Sold 2004	Calls for Service	Not Dispatch	Protected Lands	Shellfish	Manatee Zones	Land	Protected	Water	Protected	Protected	Vessels	Shoreline	Population	Calls for Service	Non Dispatched Calls		Present	Rounded
	4	240,764	0	969.1	874.3	94.9	11,019	55,551	148	118	32,111	0.00	0	2.945188106	0.478380732	1.402277408	0	0	0.449709213	0	0.81964604	0.582328227	0.324330772	7.001860499	4	7
	3	23,953	0	588.9	585.2	3.7	2,107	7,072	35	10	159,762	0.00	0	1.97131886	2.380089767	0.054672565	0	0	0.085991225	0	0.081544507	0.137712756	0.027485659	4.73881534	3	5
	11	161,721	567	1033.3	763.7	269.6	***19,998***	59,909	374	130	35,282	3.00	0	2.572618273	0.525621407	3.983709053	1.01694	0	0.816161616	0.555637219	0.550555637	1.471559168	0.357313563	11.85011594	11	12
	2	28,118	0	300	293.1	6.9	2,177	5,425	36	12	0	0.00	0	0.987343742	0	0.101956945	0	0	0.088848077	0	0.095723644	0.141647407	0.03298279	1.448502605	2	1
	19	531,970	889	1557	1018.2	538.8	39,199	59,092	610	408	260,081	7.00	20	3.429933123	3.874614281	7.961507559	2.37286	1.19	1.599795939	0.871184281	1.811014538	2.400136611	1.121414874	26.63246121	19	27
	17	1,740,987	525	1319.6	1205.4	114.2	***49,470***	58,527	355	572	235,141	0.00	18	4.060539566	3.503065109	1.687461327	0	1.071	2.018977655	0.514478906	5.926937171	1.396800815	1.572179676	21.75144023	17	22
	3	13,945	0	574.3	567.3	7	1,403	3,459	42	10	0	0.00	0	1.911020488	0	0.103434582	0	0	0.057259463	0	0.047473725	0.165255308	0.027485659	2.311929225	3	2
	11	154,030	773	859.1	893.6	165.5	22,275	42,987	216	109	8,829	1.50	7	3.010202552	0.131531982	2.445489052	0.50847	0.4165	0.909090909	0.757508942	0.524372745	0.849884439	0.29959368	9.852644301	11	10
	10	132,635	645	773.2	583.8	189.3	16,808	26,400	226	105	67,466	1.50	15	1.966602786	1.005089672	2.797166631	0.50847	0.8925	0.685970819	0.632074085	0.451536578	0.889230941	0.288599416	10.11724093	10	10
	3	169,623	0	643.7	601.1	42.6	12,725	17,005	128	70	89,807	0.00	0	2.024879984	1.337919666	0.629473315	0	0	0.519334762	0	0.577456847	0.503635223	0.192399611	5.785099408	3	6
	17	317,788	1451	2304.9	2025.3	279.6	***23,244***	59,083	173	422	149,526	1.00	27	6.822474517	2.227596691	4.131472742	0.33898	1.6065	0.948637894	1.421921701	1.081863052	0.680694481	1.159894796	20.42003588	17	20
	3	61,466	0	801	797.1	4	4,656	13,494	81	46	106,992	0.00	0	2.68513032	1.593937009	0.059105476	0	0	0.190021426	0	0.209252062	0.318706665	0.12643403	5.182586988	3	5
	2	32,606	0	639.5	637.3	2.2	2,442	5,395	19	13	0	0.00	0	2.146824179	0	0.032508012	0	0	0.0996633	0	0.111002387	0.074758353	0.035731356	2.500487587	2	3
	4	15,377	300	863.7	704	159.7	2,760	6,245	63	39	14,612	1.50	0	2.371511411	0.217685505	2.359786112	0.50847	0	0.112641567	0.293987946	0.052348761	0.247882961	0.107194069	6.271508333	4	6
	17	861,150	1030	918.2	773.7	144.6	33,927	46,042	341	267	1,365	1.00	12	2.606304515	0.02033539	2.136662942	0.33898	0.714	1.384634221	1.009358616	2.931659998	1.341715712	0.733867087	13.21751848	17	13
	6	303,623	253	875.6	662.4	213.2	18,280	34,220	193	64	38,286	0.50	0	2.231376646	0.570374162	3.150321848	0.16949	0	0.746046322	0.247929835	1.033640369	0.759387485	0.175908215	9.084474881	6	9
	3	78,617	182	570.8	485	85.8	4,708	6,551	63	32	19,672	0.00	0	1.633782719	0.293067976	1.267812451	0	0	0.192143659	0.178352688	0.267640149	0.247882961	0.087954108	4.16863671	3	4
	11	10,845	549	1037.5	544.3	493.1	3,405	19,532	176	53	384,541	2.50	0	1.833542132	5.728784688	7.286227501	0.84745	0	0.138965412	0.537997942	0.036920226	0.692498432	0.145673991	17.24806032	11	17
	3	47,713	0	528.5	516.1	12.4	2,593	7,684	52	20	13,598	0.00	0	1.73854693	0.202579216	0.183226974	0	0	0.105825936	0	0.162431973	0.204601809	0.054971317	2.652184156	3	3
	2	16,221	0	355.5	348.9	6.6	1,694	1,518	31	22	0	2.00	0	1.17531297	0	0.097524035	0.67796	0	0.069135802	0	0.055222037	0.121974156	0.060468449	2.257597449	2	2
	7	10,729	0	986.4	773.6	212.8	1,456	5,669	65	7	21,787	0.00	0	2.605967652	0.324576656	3.1444113	0	0	0.059422508	0	0.036525321	0.255752262	0.019239961	6.445895661	7	6
	5	16,479	182	744.6	554.6	190	3,061	17,646	86	27	40,877	1.00	0	1.868238961	0.608974158	2.807510089	0.33898	0	0.124926028	0.178352688	0.05610036	0.338379916	0.074211278	6.395673478	5	6
	2	14,315	0	519.3	514.9	4.5	872	2,091	53	10	14,544	0.00	0	1.734504581	0.21667246	0.06649366	0	0	0.035588205	0	0.048733337	0.20853646	0.027485659	2.338014362	2	2
	2	27,333	0	638.3	637.3	1	1,603	4,675	131	9	0	0.00	0	2.146824179	0	0.014776369	0	0	0.065421896	0	0.093051225	0.515439174	0.024737093	2.860249936	2	3
	3	38,376	0	1189.8	1052.5	37.3	3,208	13,288	41	15	43,722	0.00	0	3.545476931	0.651358175	0.55115856	0	0	0.130925416	0	0.130645514	0.161320657	0.041228488	5.212113741	3	5
	5	150,784	216	589.1	478.3	110.8	8,977	18,793	113	35	70,394	0.00	0	1.611212937	1.048710201	1.637221673	0	0	0.366370778	0.211671321	0.51332221	0.444615471	0.096199805	5.929324397	5	6
	4	93,456	0	1106.3	1028.3	78	10,136	16,993	69	32	11,116	0.00	0	3.463956227	0.165603071	1.152556774	0	0	0.413672074	0	0.318157367	0.271490863	0.087954108	5.873390483	4	6
	10	1,131,546	559	1266.2	1050.9	215.3	46,950	68,521	376	133	0	1.00	6	3.540087133	0	3.181352222	0.33898	0.357	1.916131007	0.54779754	3.852183875	1.479428468	0.36555926	15.57851951	10	16
	2	19,157	0	488.7	482.5	6.3	1,843	1,951	162	11	14,325	0.00	0	1.625361159	0.213409859	0.093091124	0	0	0.075216815	0	0.065217222	0.637413329	0.030234225	2.739943732	2	3
	5	130,043	228	616.9	503.2	113.7	10,965	25,801	67	46	32,799	0.50	26	1.695091679	0.488630364	1.680073143	0.16949	1.547	0.447505357	0.223430839	0.44271249	0.263621562	0.12643403	7.083989465	5	7
	3	49,691	0	954.6	915.6	38.9	4,447	12,398	116	32	15,329	0.00	0	3.084312284	0.228367171	0.57480075	0	0	0.181491685	0	0.169165786	0.456419421	0.087954108	4.782511205	3	5
	23	14,233	44	636.7	597.7	38.9	1,189	1,876	28	18	50,513	0.00	0	2.013426662	0.752528601	0.57480075	0	0	0.048525661	0.043118232	0.04845418	0.110170205	0.049474186	3.640498477	23	4
	2	7,971	0	547.9	542.8	5.1	868	1,760	25	7	45,909	0.00	0	1.828489196	0.683939492	0.075359481	0	0	0.035424957	0	0.027136111	0.098366255	0.019239961	2.767955452	2	3
	4	263,017	0	1156.4	953.2	203.3	20,811	27,888	155	116	146,552	0.00	0	3.210972552	2.183290868	3.004035796	0	0	0.849341904	0	0.895403144	0.609870778	0.318833641	11.07174868	4	11
	16	549,442	1545	1211.9	803.6	408.3	48,247	78,211	432	220	22,421	1.50	30	2.707026377	0.334021812	6.033191419	0.50847	1.785	1.969064381	1.514037924	1.870495422	1.699768879	0.604684491	19.0257607	16	19
	4	271,111	0	701.8	666.7	35	13,685	35,107	143	56	151,202	0.00	0	2.245861729	2.252565272	0.517172911	0	0	0.558514437	0	0.922957991	0.562654976	0.153919689	7.213647005	4	7
	6	37,985	538	1412.3	1118.4	293.9	4,307	20,744	90	44	142,191	3.00	0	3.767469264	2.118321905	4.342774817	1.01694	0	0.175777982	0.527218384	0.129314411	0.354118516	0.120936898	12.55287218	6	13
	2	7,581	0	843.2	835.9	7.3	1,060	3,038	38	15	175,748	0.00	0	2.815832938	2.618244742	0.107867493	0	0	0.043260892	0	0.025808413	0.149516707	0.041228488	5.801759672	2	6
	2	19,696	0	715.8	691.8	24	1,199	3,250	30	16	17,177	0.00	0	2.330414196	0.255898161	0.354632853	0	0	0.048933782	0	0.067052169	0.118039505	0.043977054	3.218947721	2	3
	8	304,364	351	892.8	741	151.7	20,411	38,252	170	70	0	1.00	14	2.496150505	0	2.241575161	0.33898	0.833	0.833017039	0.343965897	1.036162995	0.668890531	0.192399611	8.984141739	8	9
	7	304,926	0	1663	1578.9	84.2	19,521	39,591	220	88	248,735	0.00	0	5.318720691	3.705584734	1.244170261	0	0	0.796694215	0	1.038076243	0.86562304	0.241873796	13.21074298	7	13
	7	141,059	250	752.8	556.6	197.2	17,639	19,131	150	56	17,941	0.00	18	1.874976209	0.26728002	2.913899946	0	1.071	0.719885726	0.244989955	0.480214861	0.590197527	0.153919689	8.316363933	7	8
	21	2,422,075	900	2431.3	1946.1	485.2	***57,256***	55,397	708	902	435,324	0.00	24	6.555679483	6.485335674	7.169494186	0	1.428	2.336741149	0.881963839	8.245602263	2.785732329	2.479206412	38.36775534	21	38
	36	82,413	3601	3737.2	996.9	1740.2	***29,500***	104,859	928	2,133	56,585	21.00	0	3.358181428	0.842987566	25.71383715	7.11858	0	1.20395878	3.528835318	0.280563079	3.651355369	5.862690994	51.56098968	36	52
	4	65,759	431	725.9	651.6	74.3	5,666	12,316	261	37	19,569	0.00	0	2.194995505	0.29153351	1.097884209	0	0	0.23124171	0.422362683	0.223866957	1.026943698	0.101696937	5.590525208	4	6
	11	188,939	173	1082	935.6	146.4	***19,623***	51,159	254	99	85,572	0.50	0	3.151684767	1.274827816	2.163260406	0.16949	0	0.800857055	0.169533049	0.643215361	0.999401146	0.272108021	9.644377622	11	10
	5	37,765	0	891.5	773.9	117.6	5,919	24,358	61	18	8,202	0.00	0	2.60697824	0.122191111	1.737700982	0	0	0.241567187	0	0.128565453	0.240013661	0.049474186	5.126490819	5	5
	4	1,043,437	0	1004.2	907.5	96.7	***34,081***	38,457	203	129	45,128	0.00	0	3.057026428	0.672304372	1.428874872	0	0	1.390919294	0	3.552229592	0.798733987	0.354564997	11.25465354	4	11
	4	235,156	0	1506.4	1321.9	184.5	8,940	18,899	75	74	110,384	0.00	0	4.452984281	1.64447008	2.726240061	0	0	0.364860728	0	0.80055442	0.295098764	0.203393874	10.48760221	4	11
	26	1,265,900	378	2386.3	1974.1	412.2	***44,560***	61,194	532	222	378,825	0.00	28	6.65000096	5.643629312	6.090819257	0	1.666	1.81858994	0.370424813	4.309572538	2.093233897	0.610181622	29.25245234	26	29
	7	406,898	222	868	744.9	123.1	24,991	37,059	190	78	47,455	0.00	0	2.509288139	0.706971369	1.818971011	0	0	1.019936741	0.21755108	1.385225094	0.747583535	0.214388138	8.619915107	7	9
	8	947,744	719	607.7	279.9	327.8	***56,444***	62,946	340	199	0	0.50	2	0.942877903	0	4.843693723	0.16949	0.119	2.303601673	0.704591112	3.226456683	1.337781062	0.546964608	14.19445676	8	14
	11	541,840	0	2010	1874.4	135.6	31,804	63,595	300	150	49,522	0.00	0	6.314149131	0.73776496	2.003675622	0	0	1.297990001	0	1.844615518	1.180395055	0.41228488	13.79087517	11	14
	5	73,764	0	827.2	721.9	105.3	8,809	20,270	153	51	119,638	0.00	0	2.431809783	1.782333594	1.555951644	0	0	0.359514335	0	0.251118816	0.602001478	0.140176859	7.122906509	5	7
	7	157,278	358	821.4	609	212.4	11,750	15,856	160	96	34,199	2.00	0	2.051492115	0.509487174	3.138500753	0.67796	0	0.479542904	0.350825616	0.535430089	0.629544029	0.263862323	8.636645004	7	9
	5	240,039	163	688.1	572.5	115.6	13,398	25,696	152	33	0	0.50	20	1.928537333	0	1.708148244	0.16949	1.19	0.546801347	0.159733451	0.817177883	0.598066828	0.090702674	7.20865776	5	7
	10	136,443	282	1173.6	1016.9	156.7	14,056	27,443	191	69	127,943	0.50	0	3.425553911	1.90605917	2.315457005	0.16949	0	0.573655749	0.27634867	0.46450036	0.751518185	0.189651045	10.0722341	10	10
	7	367,867	396	725.2	571.6	153.6	23,993	42,815	225	87	7,295	1.50	24	1.925505572	0.108678878	2.269650262	0.50847	1.428	0.979206203	0.388064089	1.252349728	0.885296291	0.23912523	9.984346253	7	10
	2	411,744	0	344.9	308.2	36.7	19,116	20,670	101	69	1,646	0.00	0	1.038209967	0.024521649	0.542292738	0	0	0.780165289	0	1.401722597	0.397399668	0.189651045	4.373962954	2	4
	3	74,052	0	580.3	545.7	34.5	3,761	10,737	53	16	93,583	0.00	0	1.838258206	1.394173462	0.509784727	0	0	0.153494541	0	0.25209927	0.20853646	0.043977054	4.40032372	3	4
	3	38,174	0	691.9	687.6	4.3	2,869	9,943	36	26	3,425	0.00	0	2.316265974	0.051024696	0.063538386	0	0	0.117090093	0	0.129957834	0.141647407	0.071462713	2.890987102	3	3
	6	21,310	307	1232	1041.9	190.1	3,900	30,729	80	51	122,177	0.00	0	3.509769515	1.820158908	2.808987726	0	0	0.159167432	0.300847665	0.072546797	0.314772015	0.140176859	9.126426918	6	9
	1	15,046	0	249.7	240.3	9.4	763	1,128	12	5	6,480	0.00	0	0.809480386	0.096537235	0.138897868	0	0	0.03113968	0	0.05122192	0.047215802	0.013742829	1.18823572	1	1
	13	494,649	722	1432.4	1103.3	329.2	30,026	48,524	265	117	92,311	1.00	45	3.716603039	1.375223561	4.864380639	0.33898	2.6775	1.225425977	0.707530991	1.683960618	1.042682298	0.321582206	17.95386933	13	18
	7	26,867	389	735.7	606.7	129.1	4,390	11,283	128	39	200,256	1.50	0	2.04374428	2.983358098	1.907629224	0.50847	0	0.179165391	0.381204371	0.091464796	0.503635223	0.107194069	8.705865452	7	9
	3	53,525	291	1238	1057.6	180.5	4,933	11,805	82	41	21,009	0.50	0	3.562656915	0.312986229	2.667134585	0.16949	0	0.201326395	0.285168308	0.182218082	0.322641315	0.112691201	7.81631303	3	8
	3	23,097	0	615.8	579.9	35.9	2,207	8,945	79	18	268,819	0.00	0	1.953465152	4.004790571	0.530471643	0	0	0.090072442	0	0.078630379	0.310837364	0.049474186	7.017741737	3	7
		130	20		182	160	2,807	237,970			5,235,700	59.00	336	182.0000263	78	160	20	19.992	40	20	60.99999922	45.99999528	22.93403359	649.9258743		650
	492	17,918,357	20409	65754.9	54028	10828.1	980,100	196,056	11,691	8,344				260		238.0220698	19.99982				130.0004861					
		137,834	1020.45		296.8571429	67.675625	17232.52747	**2,241,974**	**46**	**23**	**78**	**0.34**	**0.0595238**	1.428571429							1.000003739					
									254.15217	362.782609	67124.359			182												
ludes Big Boats														296.8571												
es not include Big Boats																										
														170.5												

APPENDIX B

CAD DATA ANALYSIS SPREADSHEET

The CAD Analysis Spreadsheet is being forwarded as a separate Excel file for easier viewing.

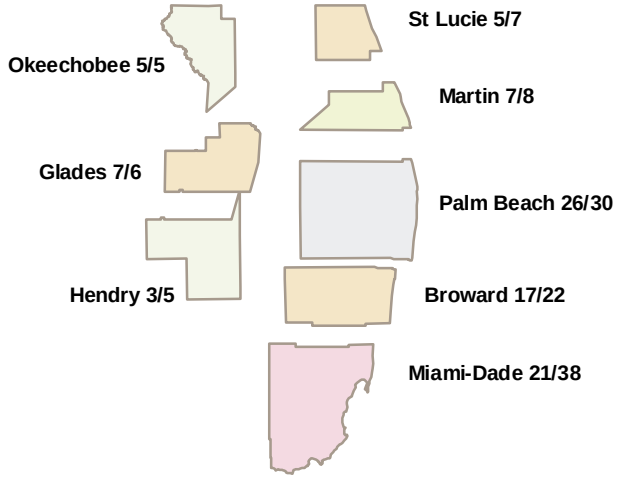
APPENDIX C

PATROL LEVEL DEPLOYMENT BY REGION/COUNTY MAP

Special Enforcement Area

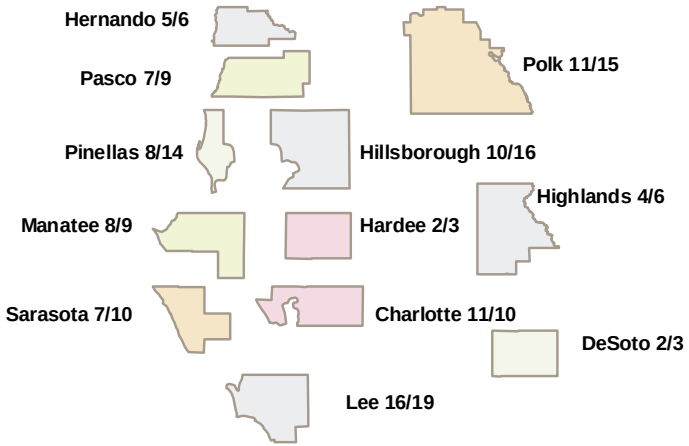
Number format = Previous/Proposed Officer Staffing

South Region



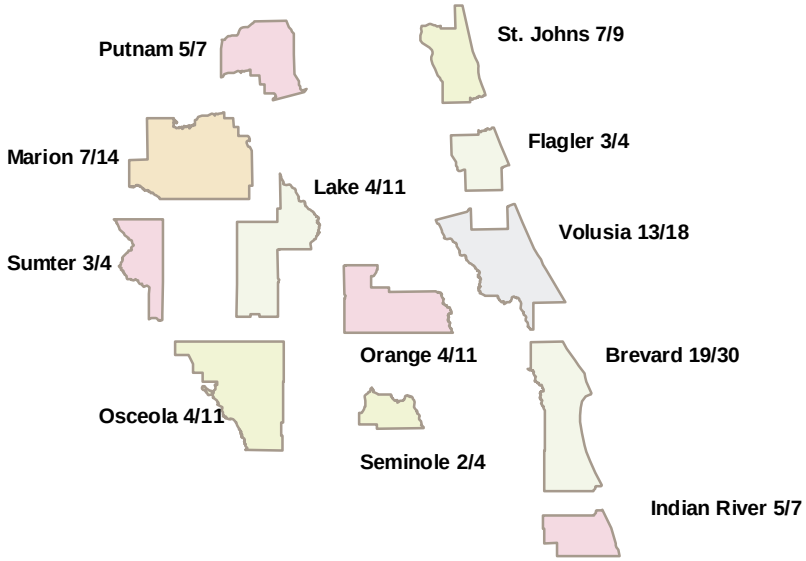
Number format = Previous/Proposed Officer Staffing

Southwest Region



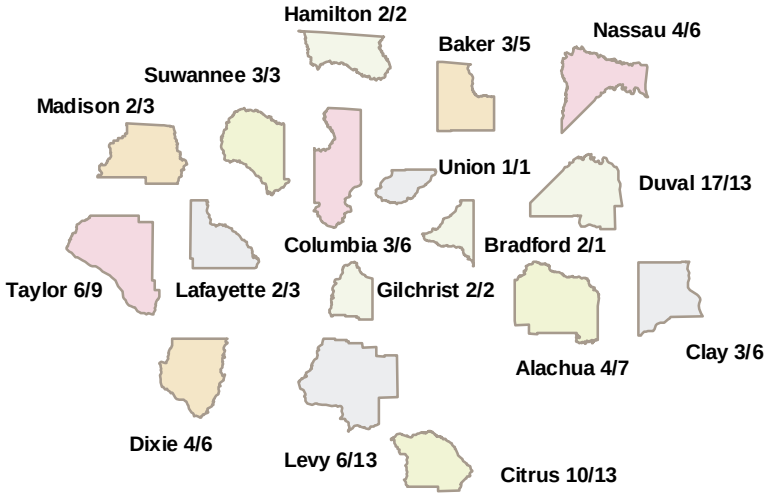
Number format = Previous/Proposed Officer Staffing

Northeast Region



Number format = Previous/Proposed Officer Staffing

North Central Region



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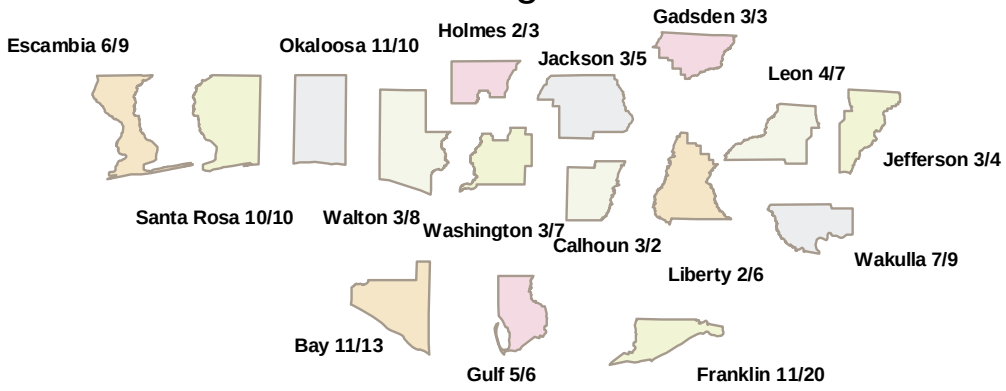
Northwest Region



Number format = Previous/Proposed Officer Staffing