

SAIPAN BOAT-BASED CREEL SURVEY DOCUMENTATION

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1.0 INTRODUCTION

The purpose of this manual is to document the CNMI¹ Department of Land and Natural Resources Division of Fish & Wildlife (DFW) Boat-based Creel Survey Program and to provide standard guidelines for this program. This manual may be used by creel survey program managers, data collection technicians, data entry technicians, data managers, and programmers to guide their work and to train new staff. This manual can also be provided to users outside of DFW who want to learn more about the island creel survey programs. DFW also has a Shore-based Creel Survey Program that monitors fishing activity that originates from shore. A similar manual is available for that program (see Oram, Risa. et al., 2010. "*Saipan Shore-based Creel Survey Documentation*").

The objective of the Saipan Boat-based Creel Survey Program is to quantify fishing participation, effort, methods used, and catch from vessels to support effective management of CNMI's marine fishery resources. This requires the collection and analysis of boat-based fishery data. The Boat-based Creel Survey is one of the major data collection systems used by DFW to monitor and manage fisheries resources. This survey was formerly known as the CNMI Offshore Creel Survey (or sometimes erroneously as a creel census). The preferred term is "boat-based" because it covers all the fishing done from a boat regardless of where the fishing occurred, for example, inside or outside the reef or lagoon. This is an important distinction because where the fishing is initiated (shore vs. boat) determines how that type of activity will be accounted for in the survey systems. For instance, very small boats launched from non-standard launching areas, e.g., from the back of a pickup truck on a beach, are not included in the Boat-based Creel Survey.

DFW had an early creel survey data collection program from 1988 to 1996, however since the methods were not standardized, the data collected in that program are not being used. The early program was terminated due to a lack of resources. In April 2000, the DFW fishery staff reinitiated the Boat-based Creel Survey Program following a three year hiatus. The survey collects data on the island's boating activities, for both commercial and non-commercial fishing, and interviews returning fishermen at the three most active launching ramps/docks on the island: Smiling Cove; Sugar Dock; and Fishing Base. With the assistance of the Western Pacific Fisheries Information Network (WPacFIN) program at the Pacific Islands Fisheries Science Center (PIFSC), data processing software and a database were developed to process these survey data. Data expansion software was also developed to create annual expanded (estimated) landings for this fishery.

This documentation covers data collection procedures, including survey sites, survey methodology, scheduling methodology, and quality assurance and quality control procedures. Survey forms and maps used by the program are shown in the Appendices.

¹ Commonwealth of the Northern Mariana Islands, also known as Saipan

2.0 SURVEY METHODOLOGY

Saipan's Boat-based Creel Survey is a stratified, randomized data collection program, which collects two types of data to estimate catch and effort information and to collect information on fishing activity of the boat-based fishery: 1) Participation Count and 2) Access Point Boat Log and Creel Surveys. The data collected from this program are used to expand and create annual estimated landings for this fishery.

In mid-1999, before the reinitiation of the Boat-based Creel Survey Program, a pilot study was conducted for several months with the purpose of determining the distribution of fishing effort throughout the day. The results of this pilot study were used to design the scheduling and sampling regime (e.g., which ports to survey, and the time to conduct the participation runs) for this survey. The initial design of the boat-based survey was only conducted for the day shift (10:00 to 18:00) due to limited resources available to run this program. The participation count was conducted at two time intervals (10:00 and 13:00). As the pilot project demonstrated, doing participation counts of vessels at these times covered essentially 100% of the day time fishing activity. The Access Point Boat Log and Creel Survey was conducted at a selected port from 10:00 AM to 18:00 PM. In August 2005 an additional night shift from 18:00 – 02:00 was added to the survey. Two additional time intervals of 20:00 and 22:00 were also added to the participation count. The Access Point was extended from 18:00 – 02:00.

3.0 SURVEY SITES

Saipan's Boat-based Creel Survey Program currently collects data mainly on the western side of Saipan because all of the boat docks or ramps are located on the western side of the island. The Participation Count collects data from all ports in this region, including Sugar Dock, Fishing Base, Smiling Cove, Tanapag, and the DFW Ramp. However, the Access Point (Boat Log and Interview) only collects data at the three most active ports, Sugar Dock, Fishing Base, and Smiling Cove (see "Appendix 1 Boat-Based Survey Areas").

4.0 DATA COLLECTION

The Boat-based Creel Survey Program uses two types of data collection methods to estimate the catch, effort, and fishing activity of the boat-based fishery: a Boat-based Participation Count that involves counting the number of trailers attached to a vehicle at all public boat launching areas; and an Access Point Survey that includes boat log data and interview data. The Access Point Survey collects data on the fishing activities that are happening on any given day at the sampled port. Boat Log data are used to determine the number of boat trips engaged in each fishing method per selected port. Interviews involve interviewing fishermen after they return from their fishing trip.

4.1 Participation Count

The Participation Count collects data on the total number of boat trips, and are used to estimate participation, or overall fishing activity out of all ports. The data are used to calculate

the adjustment ratio of sampled versus non-sampled ports, to create an island-wide expanded estimate of landings. To assist in this data collection, staff use a dock or marina diagram or drawing called a Boat Presence/Absence Map and a Charter Boat Activity and Participation Count Form.

4.1.1 Boat Presence/Absence Maps

Boat Presence/Absence Maps are used to mark which boats are not at their slip at the dock or marina and also to mark where parked fishing trailers are physically located at the port. Staff know how to distinguish between a regular fishing trailer and a non-fishing recreational trailer (e.g., jet skis or kayaks) based on trailer design. There are five ports with associated maps that are used for this purpose (see "Appendix 3 Sugar Dock (Susupe) Boat Launching Ramp Survey Map" – "Appendix 7 DFW Launching Ramp Survey Map").

Boat Presence/Absence Maps include:

- Date of the survey.
- Staff name for AM and PM shifts.
- Total count for day and night of the following: vehicled-trailers; non-fishing vehicled-trailers; and fishing vehicled-trailers.

Throughout each of the four times that all the ports are sampled in the day, Boat Presence/Absence Maps are filled out by marking the area on the map where vehicle trailers are located, along with the time it was seen there. License plate information of the vehicles is also recorded on a map for the fishing vehicled-trailers (only the vehicle's license plate is recorded because most of the trailers do not have license plates). At the end of the day, the totals for each port are tallied for the number of trailers fishing and the number of non-fishing trailers (a non-fishing trailer is a non-fishing boat that may be a jet ski or parasail or some other tourist or recreational boat).

4.1.2 Charter Boat Activity, and Participation Count Forms

Staff drive along the designated route and record the number of vehicles with empty boat trailers attached, trailers by themselves, berthed boats not at their berths, and charter-berthed boats on the Charter Boat Activity & Participation Count Survey Form (see "Appendix 2 Boat-based Charter Boat Activity & Participation").

Charter Boat Activity & Participation Count Forms include:

- Date of survey.
- Staff name for AM and PM shifts.
- Number of charter vessels out fishing for each shift including: vehicled-trailers; non-fishing vehicled-trailers; and fishing vehicled-trailers.

There are two types of charter boat activity in Saipan; head boat and 6-pack. Head boats are boats that take 20 – 40 people out to conduct shallow water bottomfishing. The 6-

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pack is a regular charter boat that takes up to 6 paying passengers out, typically trolling. Each of these types of charter boats are considered separate strata and are expanded separately because their types of trips, lengths, methods used, and frequency of trips are different. Some charter boats take two or three trips per day. On the Boat-based Participation Form, staff mark the charter boat activity by placing a check mark next to the boat in the proper participation count time (10:00 or 14:00). If new boats enter or exit the fishery, the boats listed on the Charter Boat Activity/Participation Count Survey Forms are updated.

The lower portion of the Boat-based Participation Form has an area for West Coast Day (10:00 and 14:00) and West Coast Night (20:00 and 22:00) vessel participation counts. Staff mark the total number of trailers present at each port and indicate if this is a fishing or non-fishing trailer. It is assumed that all trailers that are fishing-trailers are out fishing if they are parked in the port areas.

For the 10:00 shift, staff write the car license plate number if the car is present or just highlight the trailers present in one color and mark the fishing trailers with a checkmark, and with an x for the non-fishing trailers. When staff return at 13:00, the trailers that are present are marked in a second color (for PM) and marked with a check mark for fishing and an x for non-fishing. For the final two participation counts (20:00 and 22:00) staff mark the trailers that are fishing and non-fishing, write the car's license number, and the time. At the end of the night, staff write the totals at the bottom of the sheet. Participation counts are collected four separate times per scheduled day: 10:00 and 13:00 for the day shift, and 20:00 and 22:00 for the night shift (See Table 1). The shift continues until they are finished counting (it usually takes about one hour to complete). The counts are essentially a census of boat-based fishing activity for a sample day.

Table 1. Boat-based Participation Survey Schedule

Location	Minimum Survey Days per Quarter	Morning (AM) Shift		Evening (PM) Shift	
Sugar Dock SD, Fishing Base FB, Smiling Cove SC	9 weekdays and 9 weekends/holidays	10:00-18:00		18:00 - 02:00	
		Participation Survey Times:			
		10:00	14:00	20:00	22:00

4.2 Access Point

The Boat-based Access Point Survey collects Boat log data and interview data. These data are used to measure the fishing activity that occurs on any given day at the sampled port. Staff conduct Boat-based Boat Log surveys on a minimum of nine randomly-chosen weekdays and nine randomly-chosen weekends per quarter, excluding holidays due to restrictions by the government. Boat log data and interviews are normally started at 14:00. If a boat comes back during a participation run at the scheduled port prior to 14:00, staff collect the boat log information and interviews at that time (see Table 2).

Table 2. Boat-based Boat Log and Interview Survey Schedule

Location	Minimum Survey Days per Quarter	Morning (AM) Shift	Evening (PM) Shift
Sugar Dock SD, Fishing Base FB, Smiling Cove SC	9 weekdays and 9 weekends/ holidays	14:00-18:00	18:00 - 02:00

4.2.1 Boat Log Data

This survey is conducted at the three main ports/boat launch locations from which most fishing activities occur, Sugar Dock (SD), Fishing Base (FB), and Smiling Cove (SC). The Boat Log data are collected for each scheduled survey day and are used to determine the number of boat trips engaged in each fishing method per selected port. Staff use the same Boat Presence/Absence Maps for each of these sites (described in section "4.1 Participation Count") to identify the number of boats that are out fishing. Boat Log forms are also used to collect these data.

A Boat Log Form is completed for each scheduled survey day and is used to determine the number of boat trips engaged in each fishing method per selected port. Fisheries staff record Boat Log data starting at the beginning of each shift. The staff log all boats going out and coming back in, even if they are not fishing. When boaters are going out, staff ask questions such as, "Will you be doing any fishing today?" and "What types of fishing will you do today?" (see "Appendix 8 Boat-based Boat Log Survey Form").

The Boat Log Form includes:

- Date of survey.
- Type of day – weekday (WD) or weekend/holiday (WE/H).
- Interviewer's name.
- Start time and end time for AM and PM shifts.
- Port location.
- Interview number (if interview is obtained).
- Departure time for each logged boat.
- Return time.
- Boat registration number and/or name.
- Whether or not it is a charter boat.
- Type of activity.
- Whether the boat is fishing or not.
- Remarks.
- Staff also record the estimated time of arrival of a boat that went out fishing so that the night staff will have an idea of what time to expect them back.

Since the boat log form is designed to be a census of all boat-based fishing activity during the sample day, staff are instructed that it is most important to obtain boat log information over sample interview information. This helps prevent the situation where staff

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spend all their time interviewing boats and miss recording boats that are departing. If a boat arrives that is not on the boat log, staff give that boat priority for obtaining information.

4.2.2 Interview Data

Data collected with the Boat-based Interview are used to calculate catch per unit effort (CPUE) at the stratum level (expansion period [quarterly or annually], port, charter, or non-charter day type [weekday or weekend], and gear type). These interview data are also used to validate other DFW fishery-independent data collection programs. Detailed species composition and length-weight information are collected and used to calculate length-weight regressions, and to create the estimated landings for individual species.

Interview data are collected, at a minimum, 18 surveys per quarter (9 weekend/holidays and 9 weekdays). Staff members conduct interviews with fishermen returning from their fishing trips to collect data on fish catch and effort. Boats are chosen on a first-come-first-served basis for interviews. For returning boats, staff may ask "How did you do today?" or "What types of fishing did you do?"

Interviews are conducted at the same time as the Boat Log surveys and the data are recorded on the Interview Survey Form (see "Appendix 9 Boat-based Interview Survey Form").

The Interview Survey Form includes:

- Date of interview.
- Whether this was an opportunistic interview or not.
- Type of day – weekday (WD) or weekend/holiday (WE/H).
- Landing location or port.
- Interviewer's name.
- Interview number.
- Interview time.
- Boat name or number.
- Towing vehicle license number.
- Whether it is a charter boat and the number of people.
- Whether the boat is berthed and the number of guests.
- Weather conditions;
- Fishing method.
- Number of gears.
- Number of hours fished.
- Area fished.
- Percent of catch to be sold and buyer.
- Percentage of catch that will not be sold.
- Bycatch – Staff ask the fishermen if there was any fish thrown back (bycatch), and if there was, staff ask the species name; number of pieces of fish released; number of those released live; number of fish released dead; fish length in centimeters; fish

weight in kilograms; number of pieces of fish (actual or estimated); weight of fish (actual, calculated or estimated).

- Fish Aggregation Device (FAD) – Staff ask fishermen whether they fished at a FAD. If so, staff will ask the number of the FAD; number of hours fished there; number of pieces of fish caught; and species name.

After conducting an interview, staff make sure the interview number on the Boat Log form matches the interview number on the Interview form. The survey locations and times should also match. If the fishermen changed their fishing method from what they originally stated on the Boat Log, fished additional methods, or did not fish as recorded by AM staff, staff update the Boat Log to reflect the fishing method that was actually used. Information common on the Boat Log and Interview Forms should match. Corrections are made by crossing out erroneous data and explaining it in the remarks section.

Each fishing trip may have multiple fishing methods conducted by a fisherman, however each interview should be broken down to the method level (including catch information) when the information is collected. When too many boats return at the same time and cannot all be interviewed, staff prioritize interviews so that boats fishing with the least-encountered methods for the past month are interviewed first and most completely. Fishing methods that are often needed include all types of spearfishing, deep bottomfishing, and shallow bottomfishing.

Fish Identification, Measure, and Weight -- During the interview, staff ask if they may examine the catch to identify, measure, and weigh the fish caught. For smaller catches, staff attempt to identify, measure, and weigh all fish, time permitting. At times, fishers allow staff to obtain both length and weight information, especially for rarely seen specimens. This is important for improving length-weight regressions. For large catches, staff attempt to quickly identify and enumerate all the different fish species and measure at least three individual fish per species. Each individual of a particular size is randomly selected with no preference for fish size. For fish species having two or more definite size categories (e.g., 3-5 lbs of tuna vs. 15-20 lbs of tuna), at least three individual fish per size category are measured. When an interview is difficult to obtain (e.g., the fisherman is a rush), staff attempt to estimate the fish catch by species level or by family level (e.g., miscellaneous reef fish, miscellaneous bottomfish).

When conducting the Boat-based Creel Survey Program, several standard units of measurement are followed. For instance, all fish are measured with measuring boards or tapes and recorded in centimeters/millimeters and grams/kilograms. For finfish with forked tails, fork length (FL) is the standard unit of measurement. Billfish are measured from the tip of the lower jaw to the notch of the tail. For all other fish, whichever jaw extends the furthest is used and measured to the notch of the tail. For species with rounded or truncated tails, FL equals total length (TL).

A Complete Interview -- A complete interview accounts for all of the catch and ensures that there are no missing or erroneous data. It is important to have a complete measure of all the catch per fishing trip since these data are used to determine the average catch per unit (trip) effort (CPUE) calculation. If staff are unable to count all of the catch during an interview,

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then they do not have the whole landing for that trip. If all catch cannot be measured during the interview (e.g., fisher was in a rush, uncooperative, etc.), staff should attempt to: 1) estimate total number of fish per species, or if they cannot do that, then 2) estimate the total weight of the entire catch per species. If not all fish are measured, and an estimate of species composition and estimated weight per species cannot be made, this entails an incomplete interview and is not used for data expansion purposes. Generally speaking, this is a rare event as complete interviews are typically collected by survey staff.

Participating in the interviews is voluntary. If staff sense that a fisher does not want to provide data (e.g., fisher ignores staff, fisher states that he is in a rush), they cease the interview and thank the fisher for his/her time. Most fishers are cooperative and support CNMI's overall fishery management program. However, a small percentage of fishers decline interviews.

5.0 SURVEY SCHEDULING

CNMI's Boat-based Creel Survey uses a stratified, randomized scheduling regimen for data collection. The stratification consists of quarters, ports, and day type (weekday or weekend/holiday). These stratum are selected randomly without replacement.

Staff that work on the Boat-based Creel Survey Program also work on the Shore-based Creel Survey Program and scheduling for both is conducted at the same time. Scheduling for the Boat-based Program was set up with the limited logistical resources in mind. It has been designed and implemented to get the best representative samples as possible with the available resources. Consequently, the minimum scheduling times are not statistically ideal samples, but rather constrained by available resources.

The scheduler first prints out two copies of blank calendars for each month to be scheduled. One copy of each month is set aside for writing the schedule onto as the dates are chosen. The other copy of each month is cut into small pieces so that one date is on each piece of paper (e.g., June 06). These "dates" are separated into weekends/holidays and weekdays and placed into two separate containers (one for weekends/holidays and one for weekdays). The three boat-based survey sites (Smiling Cove-SC, Sugar Dock-SD, and Fishing Base-FB) are also written on three different small pieces of paper and placed into a third container (see "Appendix 1 Boat-Based Survey Areas Map").

The scheduler begins the scheduling by picking a weekend/holiday date, and then picking a site (both are chosen randomly from pieces of paper in the respective weekend/holiday and site containers). "Boat-based" is then written on the chosen weekend/holiday date on the calendar, along with the site name that was chosen. The three sites are rotated in the order of Smiling Cove-SC, Sugar Dock-SD, and Fishing Base-FB, so that the same site will not be selected within the same week. The first weekend scheduled is based on the last port that was surveyed the previous month. The scheduler then proceeds to choose another weekend/holiday and another site from the respective weekend/holiday and site containers and writes this on the calendar along with "Boat-based". A third weekend/holiday date and the final site is chosen and written on the calendar along with "Boat-based". At this

point, the site names are placed back into the site container. The same process is then repeated for the other two months in the quarter until a total of nine weekend/holiday dates are chosen for the three-month period. This means that each of the three sites will be scheduled three weekend/holiday dates during this three-month period. Staff teams will be assigned to work both the day and night shift for each of the weekend/holiday dates that are selected.

The scheduler then begins scheduling the weekday dates and sites. The same process is followed three times in its entirety to choose weekday dates and locations, which results in selection of nine weekday dates for the three-month period. Further, this means that each of the three sites will be scheduled for three different weekday dates during this three-month period. Staff teams are assigned to work both the day and night shift for each of the weekday dates that are selected. This concludes the boat-based scheduling.

5.1 Scheduling Rules

Only one weekend and one weekday are scheduled per week. No weekdays back-to-back to weekends are scheduled because it does not allow enough time for the staff to rest. The same port cannot be sampled day after day. The same day type and port must be a couple of days apart. If a holiday is selected during this activity, the piece of paper is removed and the survey date is discarded due to government restrictions about working on holidays. A new piece of paper is selected instead. For data expansion purposes, holidays are treated as weekend days for levels of participation, etc.

6.0 DATA QUALITY CONTROL

The Boat-based Creel Survey Program employs several methods to ensure quality assurance and quality control of the data that are collected. All new staff members are trained to identify fish to the family level when they are hired. Staff receive on the job training to identify the main species down to the species level. Staff are able to identify pelagic fish to the species-level excellently. The staff's ability to identify Bottomfish Management Unit species (BMUS) to the species-level is good. Staff can identify all of Coral Reef Ecosystem Management Unit Species (CREMUS) to the family level, and some of these to the species level.

Data collection technicians are responsible for gathering all the necessary survey forms and filling in all the fields during the survey period. To expedite this, staff usually assemble multiple copies of the Boat-based forms into bundles ahead of time and staple them together. Because they are not sure how many interviews they will get for each shift, staff take 15-20 interview forms to accompany their bundle of other boat-based forms each time. At the end of the shift, staff review their sheets, ensuring that the forms are complete and legible. They staple all the sheets for one day and hand them off to the project leader.

The project leader reviews the participation and interview forms and ensures they are complete. The first thing the project leader checks is the Boat-based Participation Count Forms to ensure that the number of fishing trailers and non-fishing trailers marked on the form are totaled correctly for both the day and night shifts.

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The project leader then reviews the Boat Log forms and ensures that the date, time, the boat came into port and left out of the same port, and the fishing activities are all filled in. The project leader continues to review the forms as he enters the data into the computer. Data is entered into the computer as soon after the point of collection as possible.

Occasionally data collection technicians are asked to enter the data. In this case, the project leader spot checks the data entry compared to the paper form to ensure that the data is entered in correctly. The project leader backs up the database on a routine basis.

After the project leader or staff are finished reviewing the forms and entering them into the computer, staff staple the forms together and organize them by month in the file cabinet. The file cabinet currently contains survey forms since 2000. The project leader scans and archives the paper data forms on an on-going basis, at least once a month, using the Document Imaging Archival System (DIAS), developed by WPacFIN.

7.0 REPORTS

The WPacFIN data processing application generates data-entry validation reports, maintenance reports, and various data summary reports, including expanded catch and effort reports (see "7.1 Boat-based Daytime Expanded Catch and Effort Report"), and expanded species composition reports (see "7.2 Boat-based Daytime Expanded Species Composition").

7.1 Boat-based Daytime Expanded Catch and Effort Report

The following is an annual creel survey expansion report of estimated total catch by type of day and method during the day time:

Division of Fish & Wildlife Saipan											
November 15, 2009 12:06 PM		Boat-Based Daytime Creel Survey Expansion Summary								Page: 1	
For January to December, 2008											
Based on Expanding Full Time-Period Data											
Method	Type of Day	Num of Int	Expanded Data (CV %)								
			lb/hr	lb/gr-hr	lb/trip	Trip	Catch(lb)	Hour	Person	Prsn-hr	Gear-hr
Weekday											
TROLLING		88	22.19	11.87	119.60 (31.5)	3,182 (6.6)	380,600 (10.4)	17,154	6,188	32,268	32,067
BOTTOM		21	5.22	1.12	21.84	1,164 (7.8)	25,427 (25.2)	4,868	10,979	26,110	22,657
ATULAI		10	2.39	1.14	12.30 (45.0)	308 (10.8)	3,785 (24.1)	1,581	587	3,168	3,321
SPEAR/SNORKEL		5	12.50	3.96	40.71 (79.0)	128 (7.8)	5,209 (14.4)	417	383	1,133	1,316
CAST NET		2	11.57	6.61	32.40	63 (8.4)	2,033 (8.4)	176	188	552	307
GILL NET		1	5.42	1.95	20.06	31 (14.0)	627 (14.0)	116	94	431	322
Weekend/Holiday											
TROLLING		50	24.40	14.11	135.46 (43.7)	1,557 (4.7)	210,889 (11.0)	8,644	2,824	15,389	14,951
BOTTOM		22	2.76	0.84	9.69 (72.3)	754 (5.9)	7,312 (13.5)	2,653	3,819	10,019	8,678
ATULAI		3	1.25	0.42	5.00	161 (5.6)	808 (83.3)	646	538	1,937	1,937
SPEAR/SNORKEL		3	8.52	2.46	32.13 (87.0)	46 (4.9)	1,486 (29.8)	174	135	433	604
CAST NET		1	11.57	6.61	32.41	33 (12.9)	1,059 (12.8)	92	98	288	160
Combined Day-Type											
TROLLING		138	22.93	12.58	124.81 (56.2)	4,739 (4.7)	591,489 (7.7)	25,798	9,012	47,657	47,018
BOTTOM		43	4.35	1.04	17.06	1,918 (5.3)	32,739 (19.8)	7,522	14,799	36,129	31,336
ATULAI		13	2.06	0.87	9.79	469 (7.3)	4,593 (24.7)	2,227	1,125	5,105	5,258
SPEAR/SNORKEL		8	11.33	3.49	38.43	174 (5.9)	6,695 (13.0)	591	518	1,566	1,920
CAST NET		3	11.57	6.61	32.41	95 (7.1)	3,093 (7.1)	267	286	840	468
GILL NET		1	5.42	1.95	20.06	31 (14.0)	627 (14.0)	116	94	431	322
TOTAL:		206	17.50	7.41	86.06	7,428 (3.3)	639,236 (7.2)	36,520	25,834	91,728	86,321

7.2 Boat-based Daytime Expanded Species Composition

The following is an annual expanded report that shows estimated species composition caught by gear type during the daytime:

Division of Fish & Wildlife Saipan								
November 15, 2009 12:07 PM	Boat-Based Daytime Creel Survey Species Composition							Page: 1
	For January to December, 2008							Weight Unit: lb
	Based on Expanding Full Time-Period Data							
All Species	TOTAL	Trolling	Bottom	Atulai	Snorkel	Scuba	Gill Net	Others
Skipjack Tuna	429,251	429,251						
Mahimahi	82,574	82,574						
Yellowfin Tuna	33,833	33,833						
Blue Marlin	18,740	18,740						
Rainbow Runner	7,906	7,906						
Redgill Emperor	6,945		6,778		167			
Wahoo	6,271	6,271						
Saba (kawakawa)	5,420	5,420						
Tunas (misc.)	4,863	4,863						
Bigeye Scad	4,659		157	4,502				
Blackspot Emperor	4,381		3,916				466	
Triggerfish (misc.)	2,612		2,612					
Yellowtail Emperor	2,146		2,146					
Emperor (mafute/misc.)	1,992		1,992					
Yellow Spotted Trevally	1,753		1,753					
Dogtooth Tuna	1,709		1,709					
Parrotfish (misc.)	1,488		9		1,327			152
Opakapaka (pink Snp)	1,459		1,459					
Sailfish	1,293	1,293						
Gindai (flower Snap)	1,058		1,058					
Onaga (red Snapper)	991		991					
Ehu (red Snapper)	955		955					
Snapper (misc. shallow)	930		787		143			
Jobfish (uku)	875	38	837					
Unicornfish (misc.)	744		123		621			
Barracuda	727	727						
Goatfish (misc.)	664	37	474	8	67		78	
Lyretail Grouper	625		393		232			
Wrasse	590				590			
Surgeonfish (misc.)	587		178		408			
Blueline Snapper	505		505					
Maitai (blk-tipped Grper)	503		503					
Rudderfish (gulli)	496							496
Yellowstripe Emperor	484		484					
Flagtail Grouper	453		453					
Kalikali (pink Snap)	386		386					
Yellowlips Emperor	343		343					
Grouper (misc.)	309		295		13			
Brassy Trevally	306	280	26					
Deepwater Bream	305		305					
Orangespine Unicornfish	289				182			107
Goby	228		228					
Mackerel Scad	185	114	70					
Ornate Emperor	145		145					
Rabbitfish (sesjun)	138							138
Yellowspot emperor	125	125						
Jacks (misc.)	113		113					
Bluespine Unicornfish	88				23			65
Rabbitfish (hitting)	83						83	

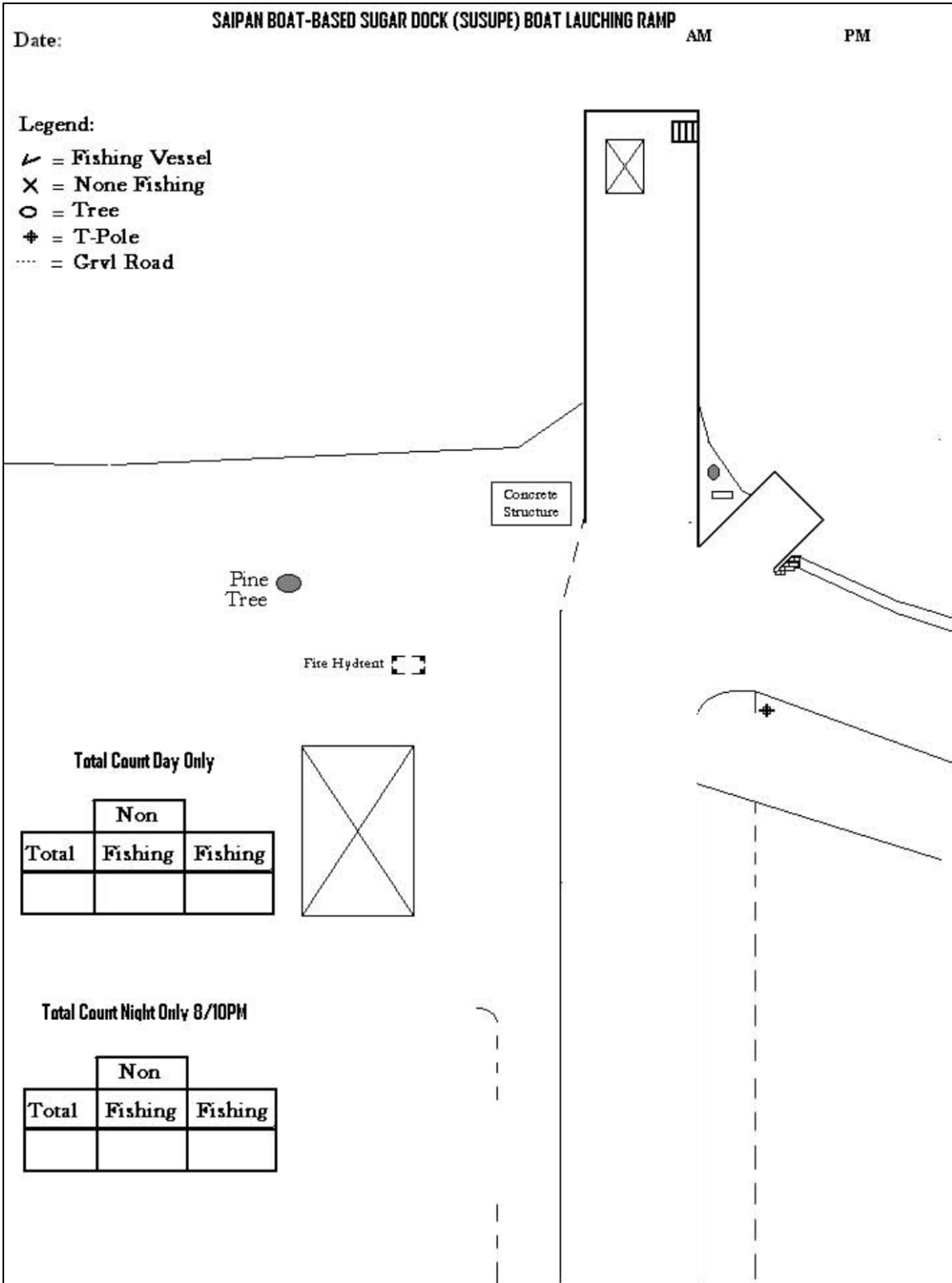
APPENDIX 1 BOAT-BASED SURVEY AREAS MAP



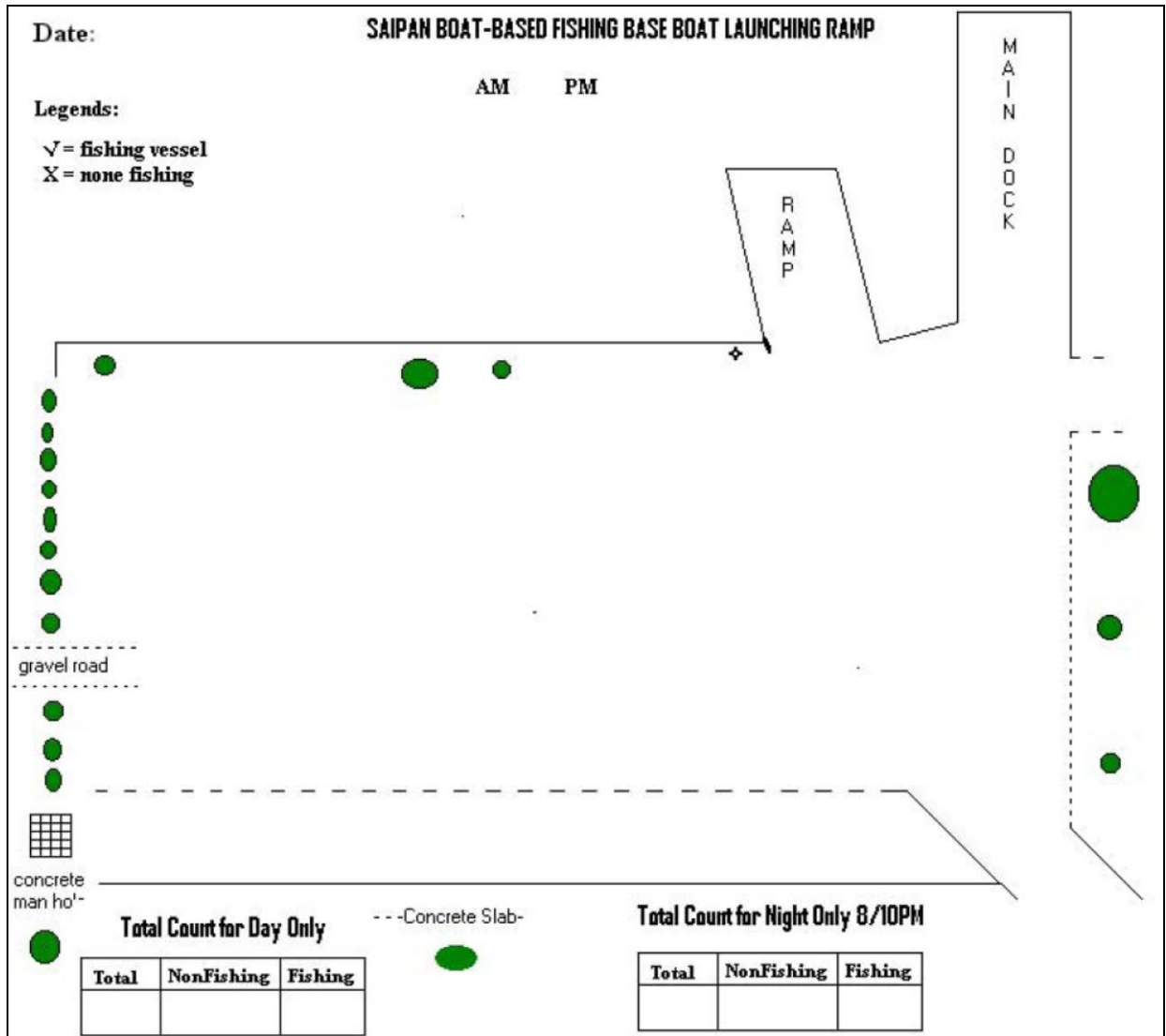
**APPENDIX 2 BOAT-BASED CHARTER BOAT ACTIVITY & PARTICIPATION
COUNT SURVEY FORM**

SAIPAN BOAT-BASED CHARTER BOAT COUNT CHARTER BOAT ACTIVITY			
Date: _____		AM Staff: _____	
		PM Staff: _____	
	VESELS	OUTFISHING	
		AM	PM
	Blank Check		
	CM 297 PU		
	Relax		
	Connie B		
	Eileen II		
	Kaiyu II		
	Kampai		
	Mizuwari		
	Napa		
	Nombei		
	Phantom		
	Relax I		
	Relax II		
	Sea Hunter		
	Sea Star		
WEST COAST DAYCOUNT - 10:00 & 14:00 VESSEL PARTICIPATION COUNTS			
	PORTS	TOTAL	NON FISHING FISHING
	Sugar Dock		
	Fishing Base		
	Smiling Cove		
	Tanapag Camalin		
	DFW Ramp		
WEST COAST NIGHT COUNT - 20:00 & 22:00 VESSEL PARTICIPATION COUNTS			
	PORTS	TOTAL	NON FISHING FISHING
	Sugar Dock		
	Fishing Base		
	Smiling Cove		
	Tanapag Camalin		
	DFW Ramp		

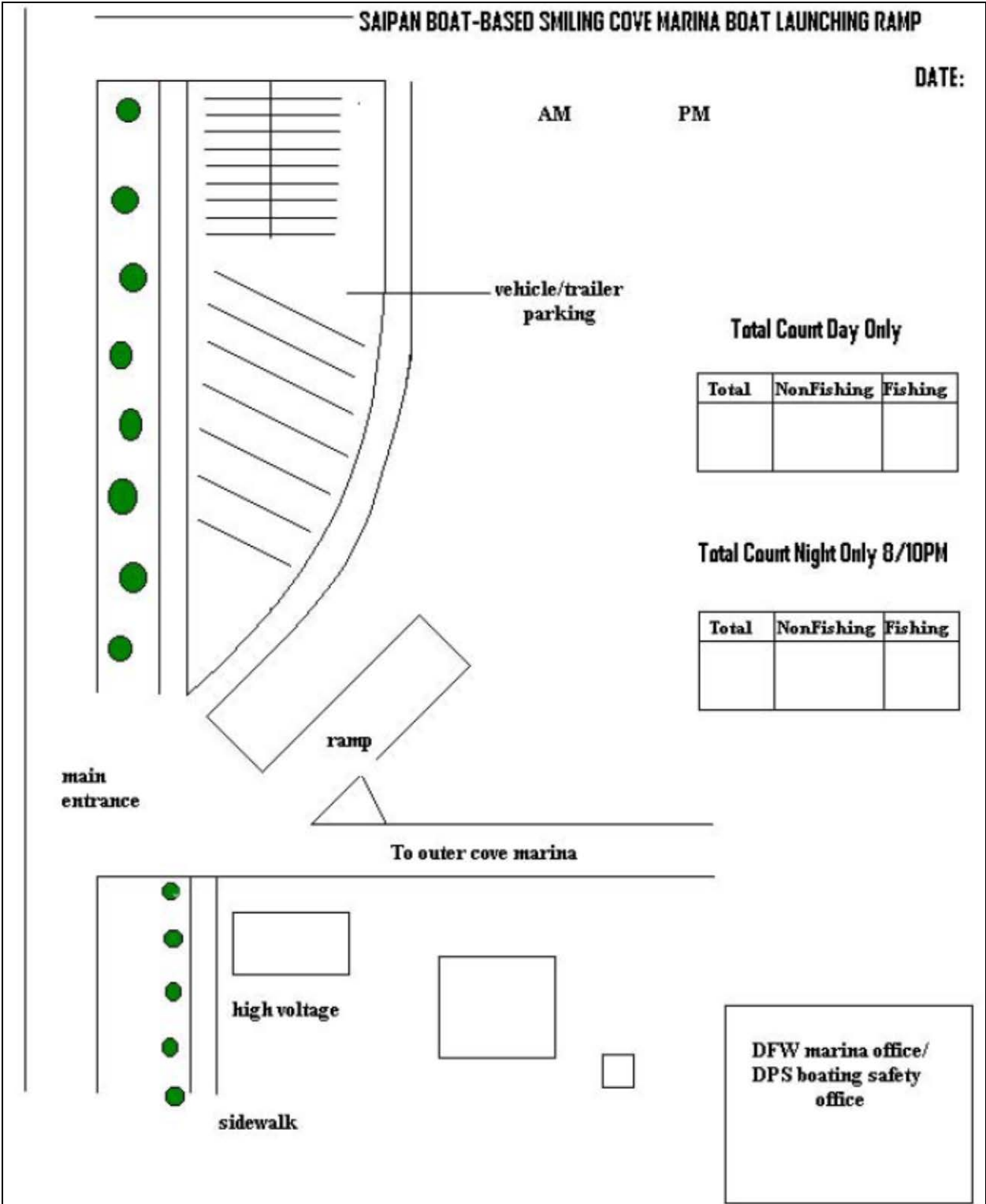
APPENDIX 3 SUGAR DOCK (SUSUPE) BOAT LAUCHING RAMP SURVEY MAP



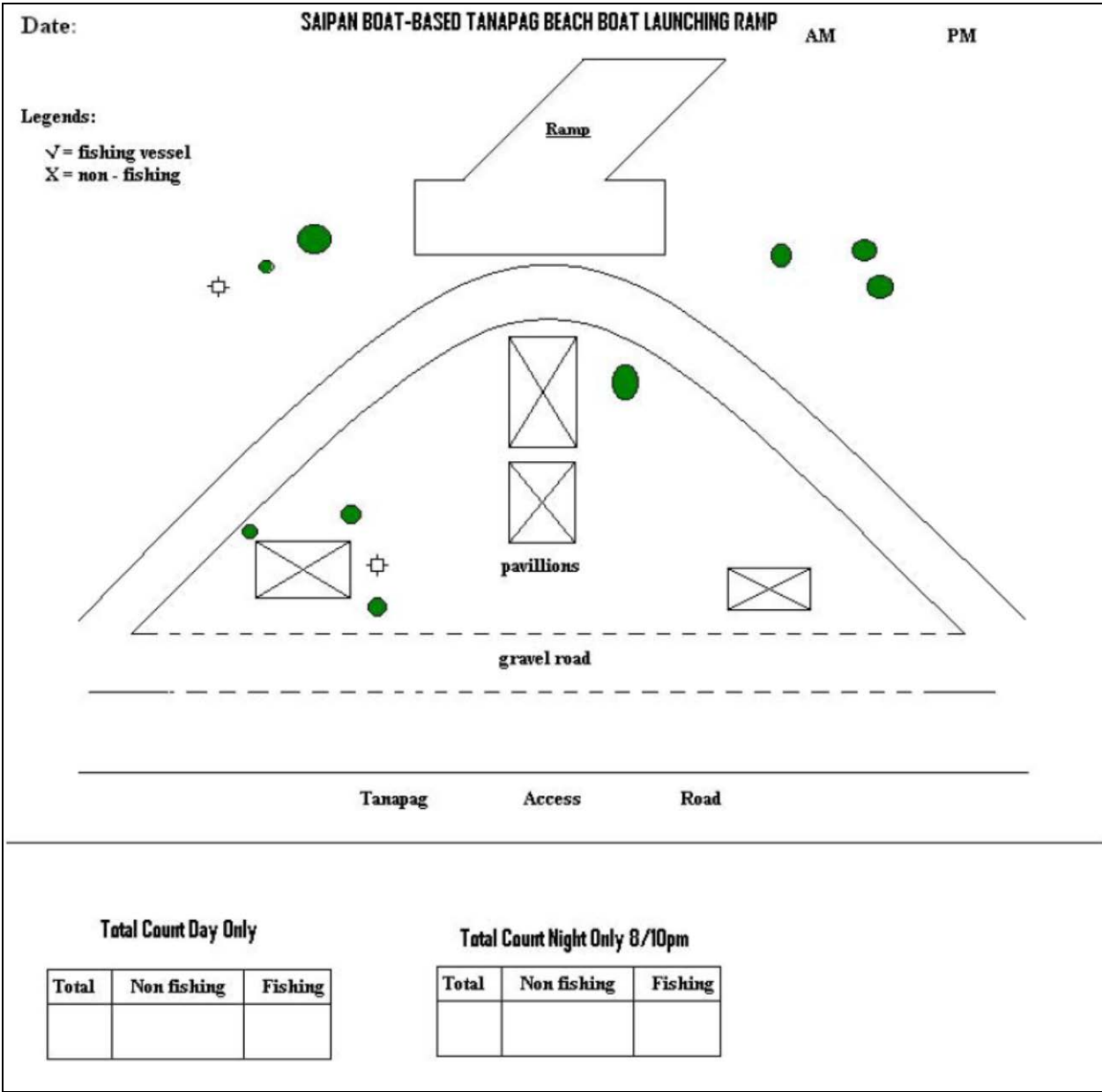
APPENDIX 4 FISHING BASE BOAT LAUNCHING RAMP SURVEY MAP



APPENDIX 5A SMILING COVE MARINA BOAT LAUNCHING RAMP SURVEY MAP



APPENDIX 6 TANAPAG BEACH BOAT LAUNCHING RAMP SURVEY MAP



APPENDIX 7 DFW LAUNCHING RAMP SURVEY MAP

SAIPAN BOAT-BASED DFW BOAT LAUNCHING RAMP

Date: _____

AM PM

DFW Ramp

M. Falig Fish Warehouse

DFW Main Office

Total Count Day Only

Total	Non-Fishing	Fishing

Total Count Night Only 8/10pm

Total	Non-Fishing	Fishing

APPENDIX 8 BOAT-BASED BOAT LOG SURVEY FORM

Saipan Boat-based Boat Log Form																
Date:		WD		WE/H												
<i>Interviewer</i>	<i>Time</i>															
	Start	End														
			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">PORTS</th> </tr> </thead> <tbody> <tr> <td style="width: 80%;">Sugar Dock (8)</td> <td style="width: 20%;"></td> </tr> <tr> <td>Fishing Base (14)</td> <td></td> </tr> <tr> <td>Smiling Cove (18)</td> <td></td> </tr> </tbody> </table>						PORTS		Sugar Dock (8)		Fishing Base (14)		Smiling Cove (18)	
PORTS																
Sugar Dock (8)																
Fishing Base (14)																
Smiling Cove (18)																
Log #	Int. #	Depart time	Return time	Boat # / Name	Charter Y / N	Type of Activity	Fish Y / N	Remarks								
1.				CM												
2.				CM												
3.				CM												
4.				CM												
5.				CM												
6.				CM												
7.				CM												
8.				CM												
9.				CM												
10.				CM												
11.				CM												
12.				CM												
13.				CM												
14.				CM												
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24.				CM												
25.				CM												
26.				CM												
27.				CM												
28.				CM												
29.				CM												
30.				CM												

APPENDIX 9 BOAT-BASED INTERVIEW SURVEY FORM

Saipan Boat-Based Interview Form

Opportunistic Interview: Y N

Date: _____ WD WE/H Interview # _____ Time: _____
 Interviewer: _____

Location/Port: _____ Charter: Y N Berthed: Y N
 (SD-8 / FB-14 / SCM-18) # people: _____ # guests: _____

Boat name/# : _____

Towing vehicle lic. # : _____ Weather: _____

Method	Gear Units	Hrs. fished	Area(s) fished	% Sold		% Unsold	By Catch :	Y	N
				dockside	store				
Trolling (1)									
Bottom S D M U (2)									
Atulai (3)									
Spear/Snorkel (4)									
Spear/Scuba (5)									
Other (specify) (20)									

Bycatch Information

Species ID: _____
 # pcs. Released: _____
 # Live: _____ # Dead: _____

Species ID: _____
 # pcs. Released: _____
 # Live: _____ # Dead: _____

SPECIES/Code	Length (cm.mm)	Weight (kg.)	Length (cm.mm)	Weight (kg.)	Total Number		Total Weight		
					Act.(1)	Est.(3)	Act.(1)	Calc.(2)	Est.(3)

FAD Information

FAD #	# hrs.	# pieces	Species