



Pampanga River Basin Flood Forecasting & Warning Center (PRFFWC)

Annual Report 2012: Programs, Activities and Accomplishments

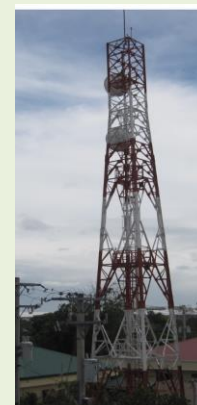
I. Background:

The Pampanga River Basin Flood Forecasting and Warning Center (PRFFWC) of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) has been the primary (and only) source of flood information and warning to flood-prone communities within the Pampanga River Basin and its allied river system - the Pasac-Guagua. It is the pilot flood forecasting and warning center in the country; started its operations in 1973 and has remained as the focal lead FFWC of PAGASA.



The center mainly operates on a 24/7 monitoring of its basin's hydrological situation, maintains its center facilities and equipment, and when need arises issue flood information and warnings. Other functions, among others, include carrying-out hydrographic measurements, conduct public information and dissemination drives, and participate and interact with various entities, institutions (educational), organizations and agencies in issues relating to flood awareness and mitigation, and other matters pertaining to other PAGASA-related functions and services. The center is presently located at the DOST region 3 compound in the City of San Fernando, Province of Pampanga.

The advent of 40 years (1973-2013) of operational flood forecasting and warning services in the country, which all started in the Pampanga River Basin, has led into the emergence of similar systems only after more than 10 years covering a wider area of flood monitoring and warning services in Luzon. Eventually, other conventional telemeterized systems, community-based or locally-based flood warning set-ups and the like had sprung-up at the turn of the century; this and many other flood related aspects have all started with the PRFFWC. The PRFFWC has mainly led in its field of concern and remained in the forefront of flood warning activities not only in its basin area but generally in a lot of areas in the country, as a mentor and as a model FFWC.



II. The PRFFWC in Year 2012...

The year 2012 had been a significant year for the center both in terms of monitored flood events and in its overall performance. There were 10 events covered during the year, five of which were medium to major flood events in the basin, while the rest were just potential/minor events. An event record of 22 flood bulletins was issued for one flood episode, the longest operational flood watch activity yet for the basin. The year has also been a feat for the center being given recognitions not only by its mother agency, PAGASA, but by several other agencies/entities. Indeed, it was one momentous year for the center and the people behind its operations.

The center boast itself of its 5-man personnel, though undermanned but complementing each other in the center's operational activities. With limited resources and logistics, it has continued to provide a high-level of competence in its responsibilities and committed services. Aside from the operational flood warning services, the center also takes pride of its numerous public information appearances and event presentations not only within the basin but in national and international gatherings as well. Public Information occupies a bulk of the center's year-long activities.

The following report summarizes the center's various programs, activities, accomplishments, recognitions and other related undertakings during the operational year 2012.



III. Operational Activities

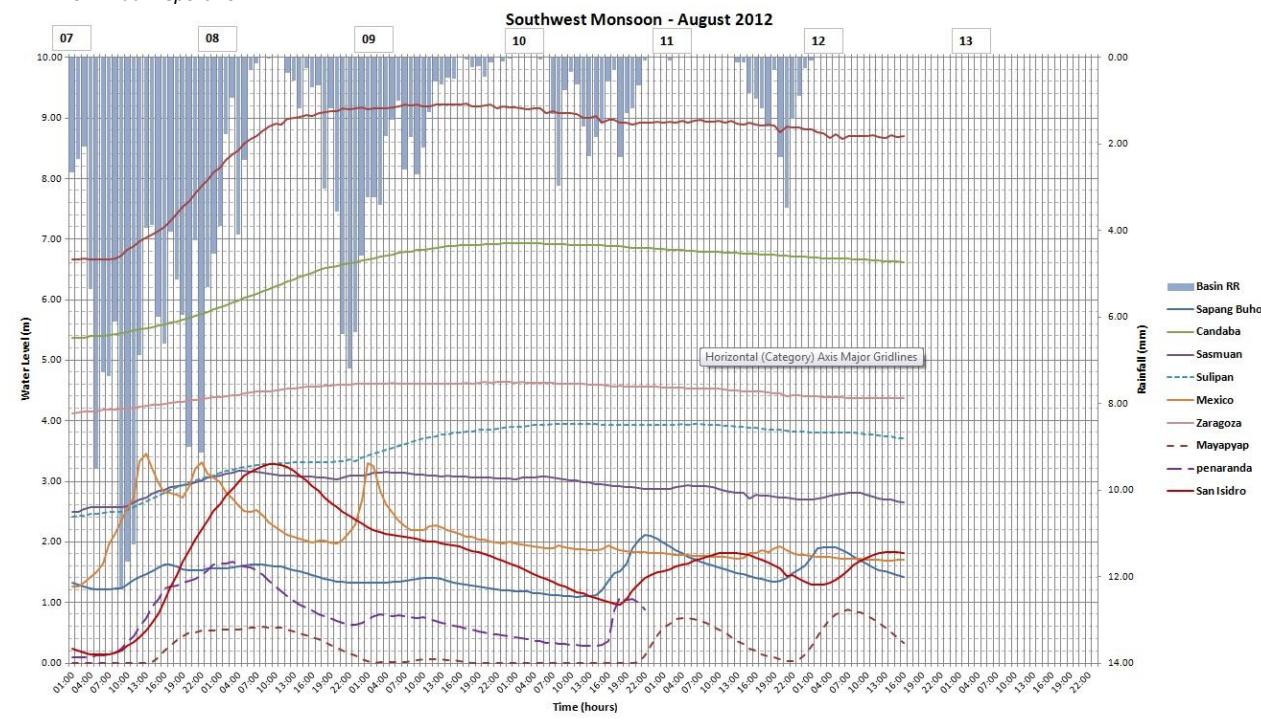
1. Flood Monitoring and Warning Information:

There were 10 events (combinational) covered by the center during the year. A total of 20 Flood Advisories (FAs) and 56 Flood Bulletins (FBs) were issued during the period.

Breakdown of FAs and FBs for the year:

Event	Period	FA issued	FB issued
Tropical Storm "AMBO" (MAWAR)	June 02-03	2	
Typhoon "BUTCHOY" (GUCHOL)	June 14-18	5	
Tropical Storm "DINDO" (DOKSUR)	June 28-30	3	
Low Pressure Area (LPA)	July 03-05	3	
Tropical Depression "FERDIE" (VICENTE), SW Monsoon and LPA	July 20-26	2	8
Tropical Storm "GENER" (SAOLA) and SW Monsoon	July 29 to Aug 03		12
SW Monsoon (HAIKUI influenced) and T.S. "HELEN" (KAI-TAK)	Aug 05-17	1	22
SW Monsoon and Typhoon "KAREN" (SANBA)	Sept 15-19	1	8
SW Monsoon and Tropical Storm "MARCE" (GAEMI)	Oct 03-04	2	
NE Monsoon and Tropical Storm "OFEL" (SON-TINH)	Oct 26-29	1	6
	Total	20	56

Highlights during the year included a center record issuance of 22 FBs during the SW Monsoon event (August 2012) overshadowing the 18 FBs issued during the combined events "Pedring" and "Quiel" (2011). Further, the enhancement of the center's Flood Bulletin's webpage that included an uploaded image of the basin's rainfall and hydrographs of the various water level stations updated up to the time of issuance of the FB (see figure below). As usual, the continued provision of issued FAs and FBs by fax to immediate recipients, and dissemination via e-mails and through social networks "twitter" and "facebook". The center's website is: www.prffwc.webs.com



Department of Science and Technology
PHILIPPINE ATMOSPHERIC, GEOPHYSICAL AND ASTRONOMICAL SERVICES ADMINISTRATION (PAGASA)
Pampanga River Flood Forecasting and Warning Center, Hydro-Meteorology Division/NCR-PRSD
Brgy. Maimpis, San Fernando, Pampanga (Government Center) <http://www.prffwc.webs.com>

FLOOD BULLETIN NO. 4 – PAMPANGA RIVER BASIN AND ALLIED RIVERS

ISSUED AT: 5:00 PM, 08 AUGUST 2012

VALID UNTIL THE NEXT ISSUANCE AT 5:00 AM TOMORROW UNLESS THERE IS AN INTERMEDIATE BULLETIN

BASIN RAINFALL AS OF 4:00 PM TODAY:

PAST 24-HR = 58.8 MM

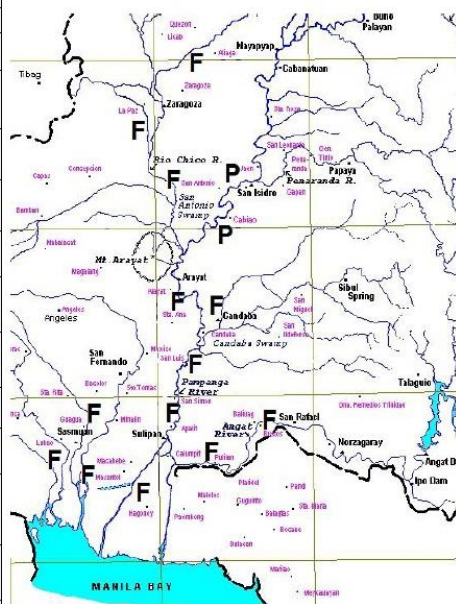
FORECAST 24-HR = 30 TO 50 MM

BASIN EXPECTED RESPONSE:

WATER LEVEL STATION (STN)	RIVER/ SWAMP WATER LEVEL (WL) TREND AT STATION	FLOOD SITUATION MESSAGE	PARTICULAR LOW-LYING AREAS
ZARAGOZA STN., RIO CHICO RIVER	NOW AT 4.56 M / FURTHER SLIGHT RISE ABOVE THE 4.5 M. CRITICAL WL UNTIL LATE TODAY	FLOODING TO PERSIST FOR A FEW DAYS	RIVERSIDE AREAS OF LA PAZ, SAN ANTONIO, ZARAGOZA, LICAB, ALIAGA
PEÑARANDA STN., PEÑARANDA RIVER	NOW AT 0.87 M / HAD PEAK THIS MORNING AND NOW SLOW RECESSION IS IN PROGRESS	FLOODING IS NO LONGER EXPECTED TO OCCUR. A FINAL MESSAGE	PENARANDA, SAN LEONARDO, GAPAN
SAN ISIDRO STN., PAMPANGA RIVER	NOW AT 2.93 M / HAD PEAK JUST ABOVE 3.2 M ALERT WL AND NOW SLOW RECESSION IN PROGRESS	FLOODING IS STILL POSSIBLE IN THE NEXT 24 HRS	SAN ISIDRO, CABIAO, JAEN
ARAYAT STN., PAMPANGA RIVER	NOW AT 9.04 M / FURTHER SLIGHT RISE TO PEAK BELOW 9.2 M LEVEL TONIGHT (CRITICAL WL IS 8.5 M)	FLOODING TO PERSIST FOR A FEW DAYS	ARAYAT, SAN LUIS, SAN SIMON
CANDABA STN., CANDABA SWAMP	NOW AT 6.45 M / SLOW RISE FURTHER, TO PEAK TOMORROW MORNING (CRITICAL WL IS 5.0 M)	FLOODING TO PERSIST FOR SEVERAL DAYS	CANDABA SWAMP AREA, PORTIONS OF SAN LUIS, SAN SIMON, APALIT
SULIPAN STN., PAMPANGA RIVER	NOW AT 3.30 M / FURTHER SLOW RISE TO REACH JUST BELOW THE 3.60 M ALERT WL LATER TONIGHT	FLOODING TO PERSIST FOR A FEW DAYS	RIVERSIDE AREAS OF APALIT, CALUMPIT, HAGONUY
MEXICO STN., ABACAN RIVER	NOW AT 1.99 M / SLOW RECESSION IN PROGRESS	FLOODING TO PERSIST FOR A FEW DAYS MORE	MEXICO, SAN FERNANDO, STA. ANA, STO. TOMAS
SASMUAN STN., GUAGUA RIVER	NOW AT 3.08 M / TO SLOWLY FLUCTUATE (TIDE INFLUENCED) BELOW THE 3.2 M LEVEL	FLOODING TO PERSIST	SASMUAN, LUBAO, GUAGUA
ANGAT RIVER		FLOODING TO PERSIST BUT HAS SUBSIDED CONSIDERABLY	RIVERSIDE AREAS OF NORZAGARAY, BUSTOS, BALIUG, PLARIDEL, PULILAN
COASTAL FLOODING IN THE LOW-LYING AREAS WILL CONTINUE TO PERSIST (TIDE INFLUENCED AREAS)			HAGONUY, PAOMBONG, MACABEBE, MASANTOL
THE RESIDENTS AND THE LOCAL DISASTER RISK REDUCTION & MANAGEMENT COUNCILS (LDRRMCs) CONCERNED ARE ADVISED TO TAKE APPROPRIATE ACTIONS			

EXPECTED FLOOD SITUATION:

P = POSSIBLE
T = THREATENING
O = OCCUR
F = PERSIST



HTH / NBN / RPY / RFD

A sample of a Flood Bulletin (No. 4) issued and uploaded to the center's website (above) during the event SW Monsoon of August 2012.

The center's website is updated on a daily basis: The status of rainfall and water levels in the basin which is the 24-hour rainfall (RR) total ending at 8 am and the instantaneous 8 am water level (WL) information, and the hydrological forecast for the day. The high tide info for the year 2012 are also uploaded and included as a table in the website. The website also has links to the Bulacan SHINE programs, to the Bulacan-PDRMO and a lot more.

The PRFFWC website has been a major information link to many of the LGUs and communities within the basin and even to other outside individuals.

2. Data maintenance and analysis:

There were relatively few downtimes in terms of data received (RR and WL) during the year. A total of 149,266 station-hours of rainfall data and 86,805 station-hours of water level data were received during the year. Downtimes of 62 and 1035 station-hours for rainfall and water level data, respectively. This translates to a 0.04% rainfall data downtime and a 1.18% water level data downtime for the year, which is definitely quite low for operational activities. Higher downtimes in water level can be attributed mainly to the stolen sensor cables at Arayat station from the start of the year until the first week of February, and the damage cable at Peñaranda station in the month of August. Hydrological data received at the center is also available at the MOC-HMD in WFFC in Diliman, Quezon City. Quality-control of dataset and working-out data gaps (downtimes) is presently being undertaken by the center.

A digital tipping-bucket rain gauge at the center (San Fernando station) had a 100% daily observation data or 12 station-months with minimum period observations of hourly undertaken at certain events during the year. The said data is only available at the center.

Summary stats for RR and WL stations within the basin are as follows:

PRB Rainfall Stations

Station	Total for the year (mm)	Maximum 24-hr RR (mm)	Date of 24-hr Max RR	Number of RR days	Maximum 1-hr RR (mm)
Muñoz	1893	75	Aug 11	131	45
Sapang Buho	2201	86	Sept 02	135	50
Gabalton	2729	205	Oct 25	176	37
Zaragoza	1904	117	Jun 27	134	64
Mayapyap	1878	87	Jun 01	141	68
Peñaranda	1950	116	Oct 25	140	44
Calaanan	2415	83	Jun 25	146	67
Palali	2216	88	Aug 07	145	47
San Isidro	1776	141	Aug 07	133	48
Arayat	2047	158	Aug 07	131	43
Candaba	1788	132	Aug 07	125	43
Sibul Spring	2383	134	Oct 25	155	56
Sasmuan	2558	262	Aug 07	127	44
Sulipan	2155	192	Aug 07	128	30
Mexico	2104	176	Aug 07	124	34
Porac	2116	159	Aug 07	116	52
San Rafael	2601	174	Aug 07	144	78
San Fernando	2119	163.3	Aug. 7	137	**

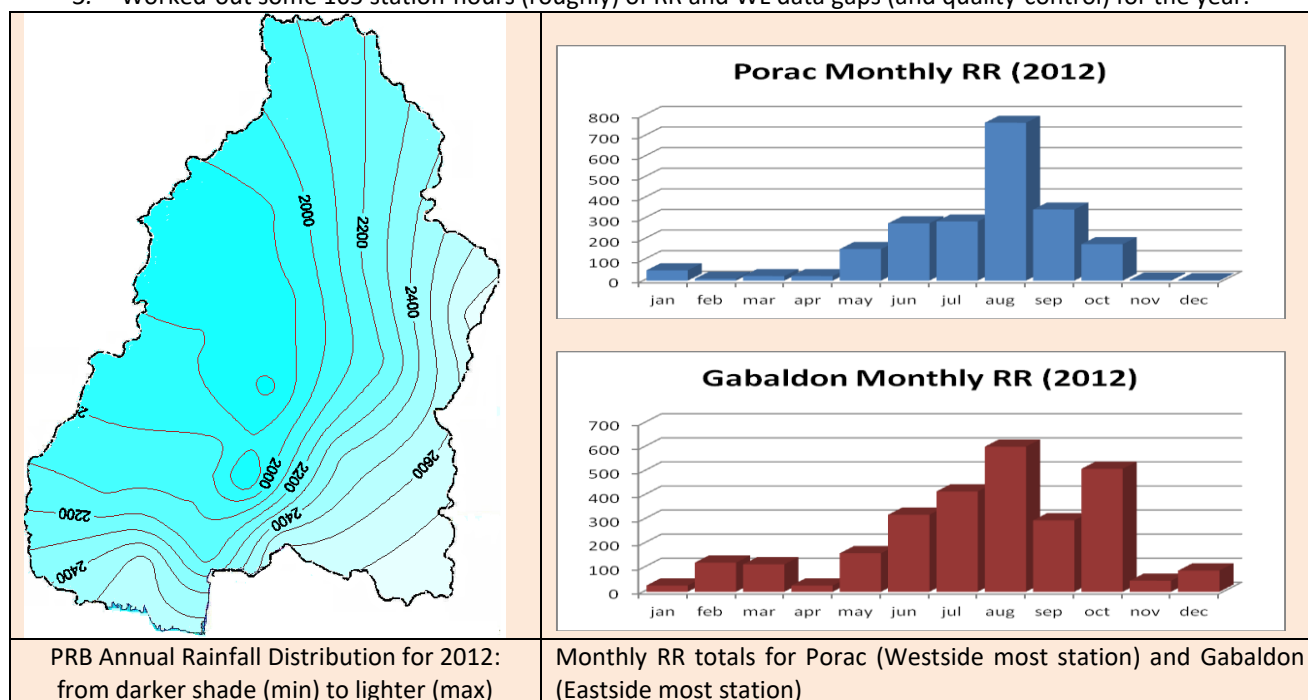
PRB Water Level Stations

Staion	Max WL for the year	Time / Day of Max WL	Remarks
Sapang Buho	4.38	1100H / Oct 27	
Zaragoza	4.64	2000H / Aug 09	
Mayapyap	2.35	1800H / Oct 27	
Peñaranda	3.00	2300H / Oct 25	WL sensor was out of order: Aug 10-14
San Isidro	3.94	1200H / Oct 27	
Arayat	9.24	1700H / Aug 09	WL sensor was out of order: Jan – Feb 8
Candaba	6.93	2300H / Aug 09	
Sasmuan	3.17	0400H / Aug 08	
Sulipan	3.95	0700H / Aug 10	
Mexico	3.53	1500H / Sept 15	

For its continuing activity of updating its database, the center was able to work-out the following activities on the telemeterized rainfall (RR) and water level (WL) data:

1. Encoded some 204 station-months of RR data and 119 station-months of WL data from all the reporting telemetering stations within the PRB system.

2. Encoded and processed 12 station-months of RR data for San Fernando Station; processed information from the encoded data which includes monthly RR, maximum 24-hour RR, day of occurrence of maximum 24-hour RR, and the number of RR days for each month.
3. Worked-out some 105 station-hours (roughly) of RR and WL data gaps (and quality-control) for the year.



3. Physical Hydrological Station and Telemetry Systems Maintenance:

Station problems such as theft of telemetry cables and extended parts remain an issue in the system. Arayat WL station was still out of order upon the start of the year, having had its cable forcibly taken by vandals since December 17th of 2011. The station was restored back to operational mode on February 8, 2012. Similarly, Peñaranda WL station was out of order on August 10 to 14 due to cable problems.

Considering the limited manpower of the center, participation in the telemetry system maintenance was carried-out on several occasions for PRB:

1. One center personnel participated in restoring the Arayat WL station back into operational mode (Travel activity date: Jan. 30 to Feb. 08)
2. Quarterly Telemetry maintenance (in support of HMTS-HMD) of the various telemetry stations within the PRB (1 center personnel supported the activity) - April 16 to 22
3. Participation of one center personnel in the quarterly telemetry maintenance of all stations within PRB. (Jul 23 to 30)
4. Routine quarterly maintenance (in support of HMTS-HMD) of all telemetry stations within PRB (Nov 6 to 13))

No physical maintenance of telemetry station housings or its surroundings and on streamgaging sites were undertaken by the center during the year. Obvious reasons such as lack of manpower and no available vehicle at the center still plague the office. However, minor preventive maintenance and repairs of center facilities were carried-out during the period.

It should be noted that station's physical and telemetry system maintenance are important and necessary activities for the continued operational function of the FFWS.

4. Streamgaging and hydrological related activities:

River cross-sectioning and post-flood surveys comprised the lot of field hydrological activities that were undertaken by center within the PRB. Streamgaging works within the PRB including collaborative undertakings with other entities are as follows:

1. Joint River Cross-sectioning activity of the major river systems within the PRB, particularly the main Pampanga River, in coordination with HMD as per JICA TCP on strengthening of FFWSO within the said basin during the following said dates:

- a. April 16-21 - 1 center personnel involved
- b. April 23-28 - 2 center personnel involved
- c. May 1-7 - 1 center personnel involved
- d. May 14-20 - 2 center personnel involved
- e. May 21-27 - 1 center personnel involved
- f. June 26 to July 2 - 2 center personnel involved

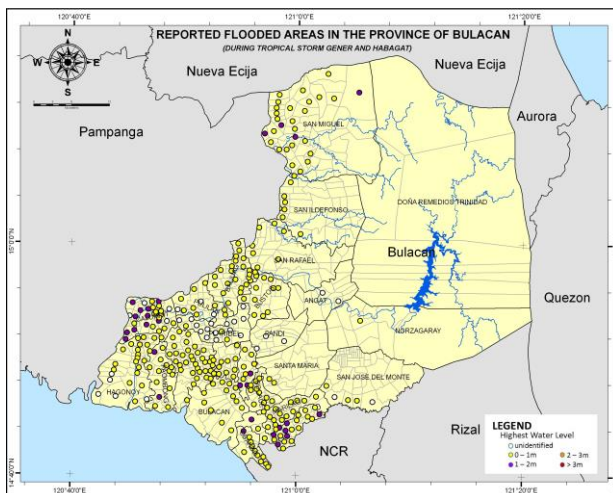


Joint river cross-sectioning activities (above pictures) with the HMD group undertaken at various river channel sections along major rivers and tributaries within the Pampanga River Basin.

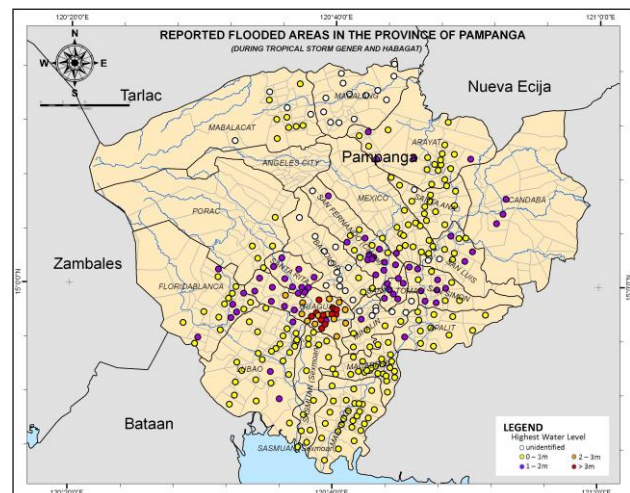
2. Post-Flood Survey of the provinces of Pampanga, Bulacan (and including Cavite) in connection with the flood event due to the SW Monsoon of August 2012. (1 PRFFWC personnel participated, Aug. 20 to 31)



Some flooded areas during SW monsoon event: Right – Poblacion, Candaba (Aug 10); Middle – Jose Abad Santos (Intersection) Hi-Way (Aug 07); Left – SFDO-Mexico Road front of SM SFDO (Aug 07).



Point Flood Map of Bulacan Province during the passage of Tropical Storm "Gener" and Habagat



Point Flood Map of Pampanga Province during the passage of Tropical Storm "Gener" and Habagat

Other related activities outside the PRB such as hydrological survey of watersheds for a CBFFWS set-up (Banica-Okoy watershed in Negros Oriental) and mapping of storm surge vulnerability in the Navotas-Malabon-Manila-Pasay area (GMMA-READY) were also carried-out by some of the personnel of the center during the year.

Streamgaging include river cross-sectioning, river velocity measurements, post-flood surveys and other hydrological related surveys, etc. These activities are regular basic activities required in the improvement and the enhancement of flood forecasting and warning operations of the center.

IV. Public Information, Data / Info provision, Trainings and other related Center Functions

1. Presentations and lectures to various functions

The bulk of the center's year-long activities were mostly in its provision of presentations and lectures to various entities within and outside the PRB. Requests for these information sharing covering a whole lot of topics ranging from the general operations of an FFWS center, basin and weather hydrological situations, flood disaster awareness and mitigation, disaster risk reduction and climate change adaptation issues, community-based flood warning systems, local flood warning systems networking, school-related DRR activities, and other similar related topics were given throughout the whole year of 2012.

Highlight for the year - some 4,135 persons (more than 200% increase as compared to last year's total number of individuals) coming from various LGUs, institutions, organizations, agencies and other entities were provided with presentations and lectures of the abovementioned topics.

The list of presentation topics, lectures and events for the year are as follows:

1. January
 - a. Center Operations Orientation to JICA representatives as part of the continuing program of the rehabilitation and strengthening of the PRFFWS. (3-man Japanese team and 2 HMD personnel) Jan. 26
2. February
 - a. Center Operations Orientation to visiting ADB, JICA & ICHARM representatives (Messrs. Ichijara, Motoki and Okamoto, Feb. 07)
 - b. "Flood Early Warning System" to barangay personnel in connection with the PHUMP III Project of DPWH "Sustaining the Community-Based DRR Initiatives towards its Institutionalization" in one of its target areas in Guagua (30 barangay personnel); SHINE orientation to Pulung Masle High School (16 students and 1 adviser) – Feb. 28
3. March
 - a. SHINE Orientation program at the following schools:
 - i. Archbishop Emilio Cinense Memorial Elementary School, San Fernando, Pampanga (30 elementary students, 10 teachers), Mar. 07
 - ii. Sta. Monica High School, Hagonoy, Bulacan (30 students, 1 teacher) Mar. 08
 - iii. San Pedro High School, Hagonoy, Bulacan – (30 students, 1 teacher-adviser), Mar. 09
 - iv. Mayor Ramona Trillana High School – (30 students, 1 teacher-adviser), Mar. 15
 - v. Iba National High School, Hagonoy, Bulacan – (30 students, 1 teacher-adviser), Mar. 22
 - vi. St. Mary's Academy, Hagonoy, Bulacan – (30 students, 1 teacher-adviser), Mar. 23
 - b. "Typhoon and Flood Awareness and Mitigation" to Elementary students and Adults on the program of "Emergency Response and Early Recovery of Children and Families affected by Typhoons Nesat and Nalgae" by Save the Children (SCI), ECHO, Bill Gates Foundation and SIDA (50 school children, 20 teachers and adults at Guiguinto, Bulacan) Mar. 21
 - c. Center Operations Orientation to visiting Bhutan hydrologists led by Mr. Karma Dupchu (4 Bhutanese hydrologists) Mar. 29
 - d. Center Operations Orientation to visiting APEC training course participants on "Quantitative Precipitation Estimation / Forecasting (QPE / QPF)" (60 persons) Mar. 30

APEC training course participants visited the PRFFWC last March 30 as one of the areas of interest to be visited in their field trip at the end of the course program.



4. April
 - a. "Best Practices on Community-based Flood Warning System" in the Workshop on the Development of Rainfall Warning System for Metro Manila (about 65 persons from various divisions of PAGASA, Amihan Conference Room, C.O.) Apr. 10
 - b. "Understanding Hydrometeorological Hazards" in the DRM & Contingency Planning Formulation Workshop of the PDRRMC of the province of Pampanga (120 participants from various LGUs of Pampanga, Kings Royale, CSFP) Apr. 11

- c. "PRB system and the PRFFWC" in the Planning Workshop on the conduct of Public Information & Education Drive in the Province of Bulacan led by NPC-Angat Dam FFWSO and PGB (30 persons from various towns and agencies within the Angat River watershed, Hiyas Convention, Malolos, Bulacan) Apr. 17
 - d. "Understanding Weather Disturbances and Early Warning Signals" in the briefing of regional directors and staff directors of PIA (30 PIA personnel, Sulo Hotel, Q.C) Apr. 18
 - e. "Introduction to Hydrometeorological Hazards" in the Barangay DRRM seminar of various coastal barangays of the town of Malolos, Bulacan (25 barangay personnel from various coastal barangays of Malolos) Apr. 25
5. May
- a. "Hydromet Hazards: Awareness & Mitigation"
 - i. IOM seminar at Malolos, Bulacan; (40 participants) May 08
 - ii. IOM seminar at Candaba, Pampanga (40 participants) May 10
 - iii. Gabaldon-N.E. MDRRMO seminar/workshop (50 participants) May 10
 - b. Presentation on "Post-flood Investigation and Analyses" to the Operational Hydrology Training (30 participants, Central Office, PAGASA) May 11
 - c. "PRB System & PRBFFWC" in coordination with NPC-Angat Dam FFWSO & Bulacan-PDRRMO in the conduct of PIED to various MDRRMOs within Angat River system as follow:
 - i. Hagonoy & Paombong (60 participants) May 24 (AM)
 - ii. Calumpit & Pulilan (50 participants) May 24 (PM)
 - iii. Plaridel (55 participants) May 29 (AM)
 - iv. Baliuag (60 participants) May 29 (PM)
 - v. Bustos (50 participants) May 30 (AM)
 - vi. San Rafael (55 participants) May 30 (PM)
 - vii. Angat & Norzagaray (80 participants) May 31
 - d. "Climate Outlook" during the RDRRMC-3 joint meeting (50 participants from various regional agencies at OCD-3 Conference room) May 04
6. June
- a. "Climate Outlook" at "Tapatan sa Central Luzon" of DILG Region 3 (300 participants from various LGUs within the region, Clark) Jun 06
 - b. "Hydromet Hazards: Awareness & Mitigation" to the Philippine contingent Peace Keeping Force to Liberia (150 soldiers, Camp O'Donnell, Tarlac) Jun 14
 - c. "Hydromet Hazards: Awareness & Mitigation" to personnel of the Government Arsenal in Limay, Bataan (30 participants) Jun 18
7. July
- a. "Project SHINE and related activities" in the comeback visit presentations at Tibagan National High School, Bustos, Bulacan & San Rafael National Trade School, San Rafael, Bulacan in coordination with Bulacan-PDRRMO (85 students and teachers in attendance) Jul 10
 - b. "Typhoon and Flood hazards: awareness & mitigation" in the Contingency Planning training of the Municipality of Hagonoy (380 municipal employees, Hagonoy Town Hall) Jul 02 – 06
 - c. "Typhoon and Flood hazards: awareness & mitigation" in the Capacity-building training of Youth for Bulacan group (80 youth participants from various LGUs within Bulacan) Jul 07
 - d. "Flood Warning System and Preparedness" for the various Local DRRMCs of Bataan Province in coordination with Bataan-PDRRMO (100 participants, Bataan Provincial Capitol) Jul 11
 - e. "Hydromet Hazards: Awareness & Mitigation" to students of Eastwood International Institute of Science & Technology in Apalit, Pampanga (100 students and teachers) Jul 21
 - f. "Hydromet Hazards: Awareness & Mitigation" to the DRR training of Children & Adults sponsored by Save the Children Incorporated (20 children and 40 adults, St. Agatha Resort, Guiguinto, Bulacan) Jul 26
 - g. "Pampanga River Basin & the PRFFWC" to visiting students of two Guagua High Schools as supported by PDRRN & the LGU of Guagua (45 students and teachers) Jul 23
 - h. "Understanding Weather Disturbances & Early Warning Systems" to various media personnel in the Media Briefing on DRRM sponsored by OCD-3 & PIA-3 (50 media personnel, Kings Royale, CSFP) Jul 27
 - i. "Replication of SHINE" to Municipal employees/representatives of Baggao, Cagayan in the DILG's Replication Inception Workshop of SHINE program to said municipality in coordination with Bulacan-PDRRMO (15 municipal employees from Baggao including the mayor present during the event, Club Royale Resort) Jul 18-19



Bagao Municipal Mayor and his staff visited the San Rafael National Trade School SHINE group as part of their program in the DILG's Replication Inception Workshop of the SHINE program in their municipality.

8. August

- a. "Status of PRB – SW Monsoon event" in the Joint emergency meeting of PDRRMC-Pampanga called for by Gov. Lilia Pineda in preparation for the passage of T.S. Helen (150 persons, PDRRMC operations center) Aug 13

9. September

- a. "Weather Hazards Awareness & Mitigation / Climate Change" in the Regional Trainer's Training of DRRM for NSTP Facilitators (100 persons, NEUST) Sept. 05
- b. Center Operations Orientation to visiting NWRB-KOICA team (6 from KOICA & 3 NWRB personnel) Sept. 25

10. October

- a. "Risk Assessment, Early Warnings, Hazards and Vulnerabilities" in the Orientation Briefing on Disaster Preparedness Survey Tool for Barangays in the Province of Pampanga (120 barangay personnel per day, Capitol Conference Hall, CSFP) Oct. 22 to 24
- b. SHINE Orientation in Baliuag University, Bulacan in coordination with Bulacan-PDRRMO (50 students and teachers) Oct. 25 (see pics below)



- c. "Tropical Cyclones and Floods – Awareness and Mitigation" for the Benpres Building Emergency Preparedness Plan (20 persons, Benpres Bldg., Ortigas Center) Oct. 25

11. November

- a. "Updates and program of activities of SHINE in Bulacan Province for 2012" in the comeback visits to various SHINE groups in 11 secondary schools within Bulacan in coordination with Bulacan-PDRRMO (40 students and 2 advisers per school) as follows:
 - i. Akle H.S. and San Rafael National Trade School, Nov. 06
 - ii. John J. Russell H.S. and Vedasto H.S. (both in San Miguel, Bulacan), Nov. 07
 - iii. Binagbag H.S. and DRT H.S., Nov. 13
 - iv. San Jose del Monte H.S. and F. Halili National Agricultural School, Nov. 14
 - v. Tibagan, Taboc and Norzagaray High Schools, Nov. 15

12. December

- a. "SHINE Program Updates" in the 3rd Bulacan SHINE Annual Conference in coordination with the Provincial Government of Bulacan through the Bulacan-PDRRMO (120 students and teacher-advisers, Club Royal Resort, Malolos, Bulacan) Dec. 06

Related site: www.bulacanshine.webs.com

Main link: <http://bulacanshine.yolasite.com/3rd-shine-conference-2012.php>



School SHINE delegates to the 3rd SHINE Annual Conference held at Club Royale, Malolos, Bulacan
(December 06, 2012)

- b. "Typhoon and Floods Awareness and Mitigation" to students of Bulacan Agricultural State College in San Ildefonso, Bulacan. (around 300 students and teachers, BASC compound, San Ildefonso, Bulacan) Dec. 06
- c. Center Operations Orientation to the following
 - i. Volunteers for promotion of Community Early Warning (VCEW), Japan-based NGO (3 persons) Dec. 13
 - ii. Visiting GIZ personnel (4 persons) Dec. 17

2. Public information through TV, Radio and Newsprint interviews

The center is committed in providing its latest information to the public. It had actively supported the various media practitioners in the region not only during times of disasters (flood events) but also during normal weather conditions over the basin. Radio and TV station interviews and talk show programs have been a normal part of the center's 'from end to end' media information drive.

1. Radio Interview at DWRW-FM 95.1 (CSFP) in the program "Talakayan Ngayon" through the initiative of PIA-3 on issues relating to PRFFWC's activities, etc. (1 center personnel interviewed, Feb. 29)
2. Documentary interview by CLTV 36, regional television station in CSFP on the topic "Central Luzon, Handa ba sa mga Kalamidad" aired in the documentary program "ISAPUBLIKO" (May)
3. Various Radio, Newspaper and TV interviews by GV-FM, CLTV-36, ABS-CBN Pampanga; DWNE, Cabanatuan, Inquirer during the following events:
 - a. Ferdie", "Gener" and the surge of SW Monsoon that affected the basin (July)
 - b. "SW Monsoon" and "TS. Helen" (August)
 - c. "SW Monsoon" and "T. Karen" (September)



4. Regular basin condition updates provided through the station GV-FM/AM.

3. Participation in international, national, regional and local undertakings; meetings and other activities

The center has maintained its active involvement and support in various undertakings related primarily to hydrological monitoring, information and operational activities in the PRB throughout the year considering its limited logistical capacity. Participation in local, regional and national and international undertakings has been a major social commitment of the center. It had also actively shared hydrological information to various entities as part of the center's special functional activities. These efforts provided by the center has benefitted quite a number of groups who have been, in one way or another, a partner in many successful programs and projects.

1. January:
 - a. Participated and represented PRFFWC-PAGASA in the Partner's Meeting of the project "Sustaining the Community-based DRR Initiatives towards its institutionalization" with OCD-3, DPWH, NK, PDRRMO-Pampanga, DepED-3, and PDRN. (20 persons in attendance, OCD-3 Conference Rm.) – Jan. 10
 - b. Participated in the planning meeting for rainfall and flood monitoring in Region 3 with OCD-3 officials (OCD-3 Conference Rm.) – Jan. 13
 - c. Produced GIS-based map of PRB including its sub-basins.
 - d. Produced a map of the identified storm surge high-risk areas in the Philippines under the READY-2 project (1 PRFFWC personnel involved)
 2. February:
 - a. Participated and represented PRFFWC-PAGASA in the meeting of the Working Group on FFWS, re: Organization & System, Updating of Operational Manuals, etc. (1 center personnel attended, WFFC conf.) - Feb. 09,
 - b. Participated and represented PRFFWC-PAGASA in the test operations of the Angat River Flood Model as per FFWSDO rehabilitation activities (1 center personnel participated, Angat Dam FFWSDO office) - Feb. 16
 - c. Participated and represented PRFFWC-PAGASA in the 1st Pre-Water Summit Conference meeting called for by Congresswoman Josefina Joson (1 center personnel participated, House of Representative Conf. Room) - Feb. 23
 - d. Prepared and submitted a Position Paper on the issue of establishing a "Philippine Dam Authority" as per instructions from PAGASA Administrator - Feb. 14
 - e. Produced digitized maps of the basin with towns/cities, major rivers and tributaries, provincial administrative boundaries; SRTM; sub-basins; etc.
 3. March:
 - a. One center personnel participated in the RDMMC-3 general meeting re: earthquake and fire drill, summer vacation contingency plans, etc. (about 25 representatives from various regional offices in attendance, OCD-3 Conf. Rm.) – Mar. 07 and Mar. 12
 - b. One center personnel attended the NRCP General Assy. Meeting (Sofitel Hotel) - March 6-7
 - c. Participated in the celebration of WMO day – May 23
 4. April:
 - a. Participated in the Workshop on the Development of RR Warning system for Metro Manila. (Amihan Conference Room; 2 center personnel participated) - April 10-11, 2012
 5. May:
 - a. Participated in the Expanded Meeting of Working Groups in the JICA-TCP on Strengthening of FFWSDO (Amihan Conf. room) – May 03
 - b. Participated in the Coordination Meeting with ICHARM & ADB in the application of IFAS in selected river basins in the country (WFFC Conf. Rm.) - May 25
-
- The "1st International River Summit" was held at the Centennial Resort Convention Center in Iloilo City last May 30 to Jun 01, 2012. The theme of the said event was "My River, My Life". It was attended by more than 1,200 delegates coming from various entities here and abroad.
- c. Participated in the "1st International River Summit" (more than 1,200 delegates from various agencies, LGUs, academe within and outside the country; Iloilo City; 1 center personnel attended) - May 30 to Jun. 01
6. June:
 - a. Participated and represented PRFFWC-PAGASA in the "Replication Inception Workshop" for the project "SHINE" as organized by DILG (Malolos, Bulacan) – Jun. 4-5
 - b. Attended the Technical Working Group meeting on the JICA-TCP on Strengthening of FFWSDO in particular on the issue on Organization and the System (WFFC, Q.C.) - Jun 25
 - c. Participated and represented PRFFWC in the CMO conference and meeting with Sec. Montejo (Amihan Conference Room, Q.C.) Jun. 12 to 14



- d. Participated in the Flood Modeling Workshop organized by GIZ and UP. June 08, 2012, Imperial Palace Suites, Q.C.
- 7. July:
 - a. Participated in the Evaluation Session of the Integrated Flood Drill in connection with JICA-TCP on Strengthening of FFWSDO (Malolos, Bulacan; 1 center personnel attended) - Jul 17
 - b. Attended the event launching of the DOST Project NOAH (1 center personnel participated) – Jul. 05
 - c. Participated in the MIKE-11 workshop in connection with JICA-TCP on Strengthening of FFWSDO (WFFC, Q.C.; 1 center personnel participated) - Jul 23
- 8. August:
 - a. Provided JICA flood Modeller, Mr. Wahid Palash, raw river cross-section data of rivers within PRB, PRFFWC being a WG member on Inundation Analysis in the TCP on Strengthening of FFWSDO.
 - b. Participated in the semi-annual PRA 2012. (1 PRFFWC personnel attended) - Aug. 08 to 10
 - c. Participated in the TWG meeting on Inundation Analysis-MIKE II (1 PRFFWC personnel attended) - Aug. 16
 - d. Participated in the International Disaster and Risk Conference (IDRC) 2012 held in Davos, Switzerland. Did a collaborative presentation with a GIZ partner on the topic “Low cost flood early warning systems based on linking local governments and communities in the Philippines”, (<http://tiny.cc/idrc2012>) – Aug. 26 to 30

As a partner resource speaker with GIZ on the topic “Low cost flood early warning systems based on linking local governments and communities in the Philippines” during the 2012 IDRC in Davos, Switzerland.



- e. Participated in the 2012 SEAMEO-Japan ESD Award with the theme “Education for Disaster Risk Reduction” by Submitting the “Tibagan High School SHINE (School Hydrological Information Network) Program” – Aug. 2012
- Link: http://www.seameo.org/index.php?option=com_content&view=article&id=188&Itemid=558
- 9. September:
 - a. Participated in the joint session meeting with Pampanga Sangguniang Panlalawigan and various related NGAs on the investigation of breaching of the portion of the tail dike in Sto. Tomas-Minalin last August 08, 2012, as per invitation by Sangguniang Panlalawigan of Pampanga. (Pampanga Provincial Capital, CSFP, 50 persons in attendance) – Sept. 10
 - b. participated in the TWG meeting on Inundation Analysis-MIKE II (Science Garden, 20 persons in attendance, 1 PRFFWC personnel attended) – Sept. 12
 - c. Participated in the community meeting with local officials of Bgy. Sta. Lucia, CSFP, regarding the exchange of Hydrometeorological information/data with said barangay during inclement weather affecting the province. (PRFFWC) – Sept. 18
 - d. Participated in the “Pre-Dam Break Drill for Angat Dam” meeting called for by OCD-3 (OCD-3 Conference Room, 30 persons in attendance) - Sept. 20

- e. Meeting with JICA-NK consultant, Mr. Shimano, on information relating to SHINE program issues and activities. (PRFFWC) - Sept. 21
10. October:
- a. Participated in the meeting on Rehab and Reconstruction for Region 3, PRFFWC being a member of the RDRRMC-3 (OCD Conference rm., CSFP. 30 member agencies in attendance) - Oct. 30
 - b. Attended / participated in the following meetings as per TCP on the Strengthening of FFWSO:
 - i. Working Group meeting on Inundation Analysis (WFFC, Q.C.) – Oct. 03
 - ii. Working Group meeting on Organization and System (WFFC, Q.C.) – Oct. 09
 - iii. Working Group meeting on Inundation Analysis (WFFC, Q.C.) – Oct. 09
 - iv. Final Seminar on FFWSO (EDSA Shangrila Hotel) – Oct. 16
 - c. Participated in the 2012 Joint commemoration of the celebration of IDDR (International Day for Disaster Risks) and ADDM (ASEAN Day for Disaster Management) with the theme “The participation of Women and Children in LFEWS”. Did a presentation on “LFEWS good practice in the Philippines” (Thammasat University, Bangkok Thailand, 1 PRFFWC personnel participated as a presenter; 60 persons from various sectors representing the NGO, Govt, ASEAN and International Org. in attendance) – Oct. xxxx
 Link: <http://prffwc.synthasite.com/resources/LFEWS-good%20practice-philippines-2.pdf>



The Round Table Discussion (RTD) on the participation and role of women and children in the Local Flood Early warning System during the 2012 IDDR and ADDM celebrations in Bangkok, Thailand.

11. November:
- a. Participated in the initial meeting for the Contingency Planning Formulation Workshop for the 24 LGUs in the Province of Bulacan as per invitation by OCD-3 (Malolos, Bulacan; more than 50 persons in attendance) – Nov. 23
 - b. Participated in the 2012 South Luzon Cluster S & T Fair and Exhibits (Walter Mart Activity Center, CSFP; 1 center personnel participated) – Nov. 22 to 24
12. December:
- a. Participated in the READY-GMMA Planning Workshop (Binangonan, Rizal.; 1 center personnel participated) Dec. 03-04
 - b. Participated in the year-end meeting of the Regional Disaster Risk Reduction and Management Council-3, PRFFWC being a member of the council and the technical working group of the said council. (OCD-3 bldg., about 30 agency members in attendance) – Dec. 21

4. Personnel Trainings

There were several trainings and enrichment programs undertaken by some of the center personnel during the year including one outside the country training-workshop program.

1. “APEC Training Course on Quantitative Precipitation Estimation / Forecasting (QPE / QPF)” (Crowne Plaza Manila Galleria; 60 participants from various APEC member countries; 1 center personnel attended) - Mar. 27 to 30
2. “Personnel Development Course” (WFFC, Q.C.; 1 center personnel attended) – Apr. 17-19
3. “Operational Hydrology Training” (Central Office; 2 center personnel participated) - May 7 to 11
4. “Supervisory Development Course (SDC)” (Amihan Conference Room, PAGASA; 2 center personnel participated) - Jul 03 to 07
5. “Training on Capacity Development for Flood Management in River Basins of the Philippines” sponsored by PAGASA-ICHARM-ADB. (Timberland, San Mateo, Rizal; 50 persons in attendance) – Sept. 26 to 28



6. "Training-Workshop on Flood Inundation Analysis" sponsored by ADB-ICHARM (ICHARM center in Tsukuba, Japan; 1 center personnel participated) – Nov. 12 to 22
Link: <http://prffwc.synthasite.com/resources/RRI-PRB%20simulations-nov2012.pdf>



5. Published Reports (In-house), features and other hydrological-related materials

Relevant materials produced by the center during the year are listed below. All materials are available upon request at the center but some are available through the respective provided links.

1. Initial Post-Flood Summary draft report on events SW Monsoon and TS. Helen (Aug. 2012)
Related link: <http://prffwc.synthasite.com/resources/PRFFWC%20SW-Aug2012%20Post-initial.pdf>
<http://prffwc.synthasite.com/site-related-documents.php>
2. Point Flood Map of Bulacan and Pampanga Provinces during the passage of Tropical Storm "Gener" and combined effects of the SW Monsoon 2012. (see section 4: hydrological works and hydrological related activities)
3. Proceedings on the 3rd Bulacan School Hydrological Information Network (SHINe) Conference, Dec 06, 2012
Related link: <http://bulacanshine.yolasite.com/3rd-shine-conference-2012.php>
4. Featured article on "40 years of Flood Forecasting and Warning Service in the Philippines: Complementing the structural flood mitigation program of the Philippine government" in celebration of the FFWS Ruby anniversary on year 2013.
Related link: <http://prffwc.synthasite.com/resources/PRFFWC%20Historical%20feature.pdf>

6. Special Awards and Recognitions received by the Center for 2012

Year 2012 was definitely was a momentous one for the center. Several awards and recognitions were given to the center for its commendable general performance during the year. Likewise, several center individuals were also presented with similar recognitions for outstanding performances for the period. This year's awards and recognitions (appreciations) are as follows:

- Overall GAWAD PAGASA "Best Flood Forecasting and Warning Sub-Center" (National Agency Level)
- GAWAD PAGASA "Best Flood Forecasting and Warning Sub-Center" (National Capital Region of the PAGASA Regional Services Division)
- Plaque of Appreciation for its response and unwavering support to the RDRRMC-3 during the events T. "Gener", SW Monsoon, and T.S. "Helen" (Office of Civil Defense Region 3)
- Certificate of Appreciation for the invaluable service and support (information) to the National Telecommunications Commission during the OPLAN LIGTAS BYAHE for UNDAS 2012. (NTC Region 6)
- Individual Award for Overall GAWAD PAGASA "Best Hydrologist": Hilton Hernando (National Agency Level)
- Individual Award for Overall GAWAD PAGASA "Best Hydrologist": Hilton Hernando (National Capital Region of the PAGASA Regional Services Division)
- Individual Recognition (Plaque of Appreciation): Hilton Hernando for invaluable service and unwavering support to the the RDRRMC-3 during the events T. "Gener", SW Monsoon, and T.S. "Helen" (Office of Civil Defense Region 3)..and finally,

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- Individual Award for Overall GAWAD PAGASA “Best Technician”: John R. Dabu (National Capital Region of the PAGASA Regional Services Division)



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