



PAMPANGA RIVER BASIN FLOOD FORECASTING & WARNING CENTER

YEAR END REPORT 2019



Pampanga River Basin Flood Forecasting & Warning Center (PRFFWC)
Diosdado Macapagal Government Center (DMGC)
Barangay Maimpis, City of San Fernando, Pampanga 2000

@ prffwc_ffb@yahoo.com

0999 336 6416

(63) (045) 455-1701

f PRFFWC

What made the year 2019 not only a good year but a GREAT year for the Pampanga River Basin Flood Forecasting & Warning Center (PRFFWC)?

Reflections of a GREAT Year 2019 for PRFFWC...

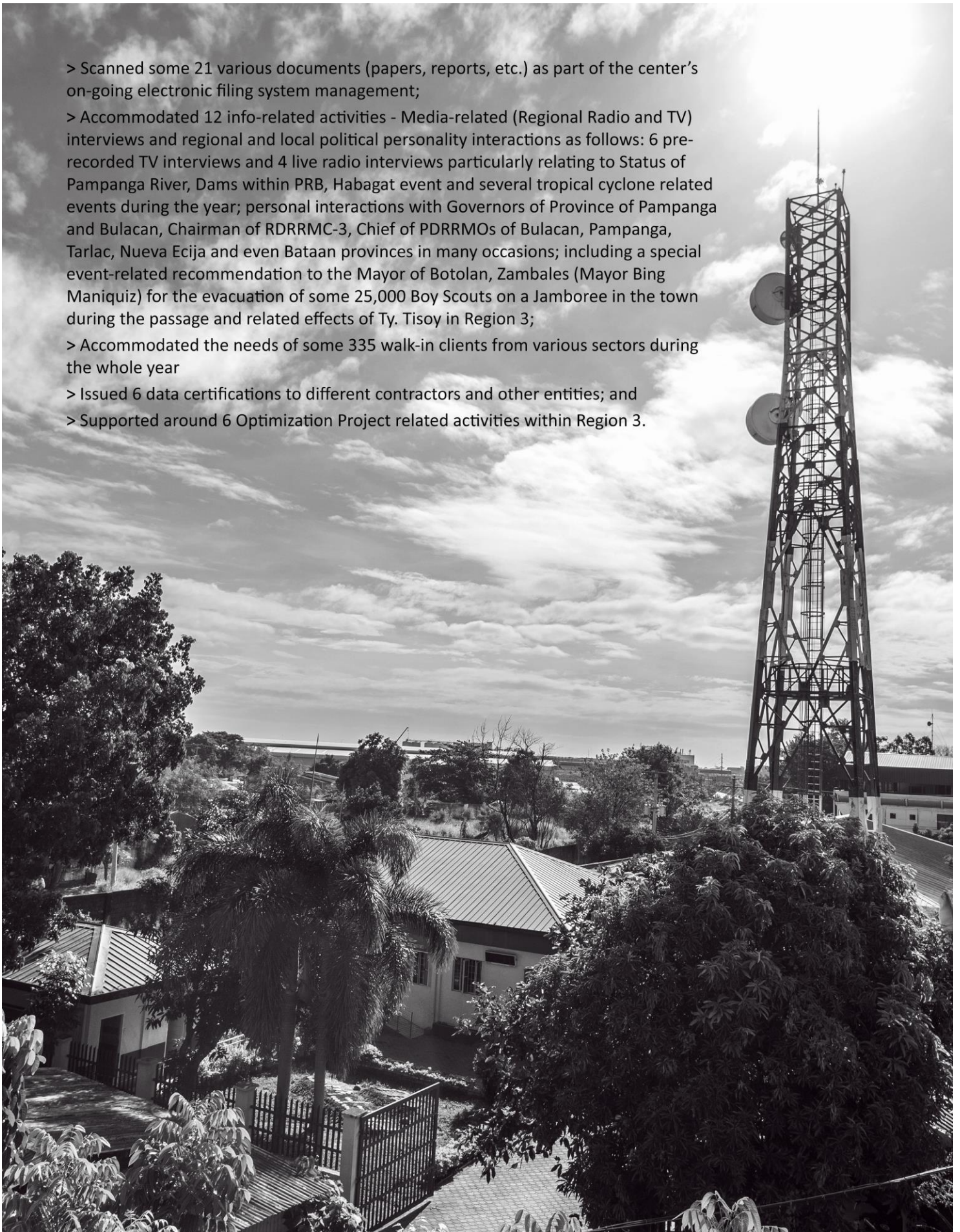
- > First of all, the Pampanga River Basin (PRB) did not have any major flood event during the year
- > Once again, the center led in organizing and implementing another first for PAGASA - The 1st Stream Gaging Workshop for the PAGASA's River Basin Flood Forecasting & Warning Centers with the help and support mainly of the NCR-PRSD, the Training Division of RDTD, and the HMD; Likewise, PRFFWC had also proposed and helped organized a similar undertaking, eventually supported and fully conducted the Capability Development Training and Workshop in Basic Hydrology and Stream Gaging for NIA-UPRIIS personnel
- > The center also helped organized and supported the Provincial Government of Bulacan through its Bulacan PDRRMO the 10th SHINE Annual Conference for the Province of Bulacan
- > Kick-off of the SHINE programs in other LGUs during the year (i.e. Jaen and Angeles City LGUs)
- > SHINE program was adjudged the year's GAWAD PAGASA Innovation Outstanding Award (1st Prize)
- > PRFFWC was the 2019 GAWAD PAGASA Best Flood Forecasting & Warning Center in both Agency and Division (of course NCR-PRSD) levels
- > ... and three other personnel of PRFFWC were GAWAD PAGASA awardees in different categories relating to flood forecasting & warning activities



Other Highlights for the year:

- > Issued 27 Flood Advisories and 5 Flood Bulletins in 7 flood-related events that affected the PRB;
- > 365 days' issuance of hydrological forecasts including rainfall and water level status updates in the center's website (prffwc.synthasite.com);
- > Carried-out 20 Stream Gaging activities: 14 river cross-sectioning and 6 river velocity measurements at various stream gaging stations within PRB and several river cross-sectioning at the adjacent watershed of Sta. Maria River with the support of Bulacan PDRRMO;
- > Assisted and supported the HMTS of HMD in the quarterly maintenance of all telemetry stations within the PRFFW System (4 quarterly and 2 emergency maintenance fieldworks); 4 other emergency activities were also carried-out by center personnel;
- > Conducted around 42 air-conditioner operation changes at San Rafael telemetry-repeater station including 4 physical maintenances and cleaning of said station surroundings;
- > Continued calibration of RRI model; development of other simple relational model for the PRB;
- > Attended and participated in more than 60 various events/activities such as national, regional and local DRRM-related meetings, assemblies, conferences, etc.;
- > Conducted presentations and lectures in about 67 activity events with a total participation of 4,353 persons (2,658 males, 1,695 females);
- > Actively participated in several national and regional hydrological, DRRM, CCA, Capacity development undertakings such as in the 3rd PAGASA River Basin Flood Forecasting & Warning Centers (RBFFWCs) Conference, Regional (Reg. 3) and Provincial DRRM Quarterly Full Council meetings and summits, and PAGASA Regional (NCR) Services Division CMO Conference and team building, the 10th School Hydrological Information Network (SHIne) Conference, Optimization Project national summits and several Pre-Disaster Risk Assessment (PDRA) meetings, National and Regional Science Technology Week event showcase, etc.;
- > Various coordination meetings with international entities (JICA, KOICA, NCHM of Bhutan), national and regional government agencies (NGAs), NGOs, LGUs, including immersion program of several senior high school students;
- > Participated in, and even conducted, several national and regional trainings in various aspects including those related to external and inter-office activities;
- > Validated 106 and 54 station-months of rainfall and water level data (2018 and 2019), respectively, including append and data quality control; encoded 12 station-months (2019) of rainfall data for PRFFWC station;

- > Scanned some 21 various documents (papers, reports, etc.) as part of the center's on-going electronic filing system management;
- > Accommodated 12 info-related activities - Media-related (Regional Radio and TV) interviews and regional and local political personality interactions as follows: 6 pre-recorded TV interviews and 4 live radio interviews particularly relating to Status of Pampanga River, Dams within PRB, Habagat event and several tropical cyclone related events during the year; personal interactions with Governors of Province of Pampanga and Bulacan, Chairman of RDRRMC-3, Chief of PDRRMOs of Bulacan, Pampanga, Tarlac, Nueva Ecija and even Bataan provinces in many occasions; including a special event-related recommendation to the Mayor of Botolan, Zambales (Mayor Bing Maniquiz) for the evacuation of some 25,000 Boy Scouts on a Jamboree in the town during the passage and related effects of Ty. Tisoy in Region 3;
- > Accommodated the needs of some 335 walk-in clients from various sectors during the whole year
- > Issued 6 data certifications to different contractors and other entities; and
- > Supported around 6 Optimization Project related activities within Region 3.





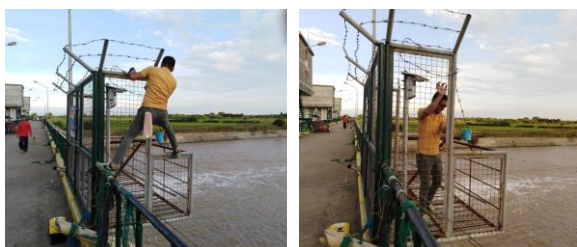
There were few center related physical improvements during the year which included a steel mesh set-up cover for backdoor entrance to the center building, painting of corrugated roof sidings at the back of the center's garage and some minor garden enhancements.



Above shows the present (as of January 2020) status of the center premises structures (L to R) the GAD comfort rooms at the west-end side of the compound; the main operations building; and the 3-vehicle car park shed.

Hydrological telemetry data reception downtimes for the year was around 36.9% for rainfall and 44.9% for water level. These downtime percentages were a lot higher than from last year's percentage downtimes of 18.3% and 20.4% for rainfall and water level, respectively. The data received for the year also included info that were deemed erroneous. Partial quality-control of data have already been undertaken. Mayapyap rainfall, which had been down since May 2015, was restored to another location from its original location in Valdefuente Bridge to NIA-UPRIIS compound in Cabanatuan City. Mayapyap water level has yet to be operationally restored to complete the whole PRFFW System. Lately (around Nov 2019), San Isidro WL became out of order due to the on-going DPWH contracted bridge repairs at the site.

Stream gaging activities carried-out during the year were mostly river cross-sectioning at several forecasting points of PRB (Zaragoza, San Isidro, Penaranda and at Sulipan stations), and also at points along the adjacent river basin of Sta. Maria (requested and supported by Bulacan-PDRMO). River velocity measurements were also quite limited considering that the center has already a Radar Profiler (RP-30) and a "Redback" brand current meter. It was also during the year that the center led in the responsibility task of securing a lot for a proposed synoptic station in the province of Bulacan. Coordinated arrangements are still on-going with the LGU of the town of San Ildefonso, Bulacan where the proposed station is hope to be established.



PRFFWC gave its full support to the Optimization Project for Region 3 particularly maintenance of its various facility set-ups as well as other related activities of the said project. (Left picture) PRFFWC-based optimization personnel doing maintenance works of the water level sensor at Cong Dadong Dam in Arayat, Pampanga.



(L to R) A view of the steel mesh set-up installed just adjacent to the operations building service backdoor; PRFFWC personnel in a coordination meeting with San Ildefonso LGU officials (with Mayor Paula Carla Galvez-Tan) regarding request for a Synoptic station lot within the municipality; and stream gaging activities at Penaranda Bridge being carried out by center personnel

I. Operational Activities

1.1 Flood Monitoring and Warning Activities

There were seven flood-related events monitored within the PRB during the year and fortunately, none of them was a major flood event. Hence, there were more flood advisories issued during the year.

2019 Events	Period	FA issued	FB issued
Southwest Monsoon as enhanced by Typhoon Hanna (Lekima)	August 09-11	6	
Effects of Tropical Cyclone Jenny (Podul)	August 27-29	5	
Southwest Monsoon as enhanced by Tropical Cyclone Liwayway (Lingling)	September 03-05	3	
Southwest Monsoon	September 09-11	3	
Southwest Monsoon as enhanced by Tropical Cyclone Nimfa (Tapah)	September 18-22	2	5
Effects of Typhoon Tisoy (Kammuri)	December 01-05	5	
Effects of Typhoon Ursula (Phanfone)	December 25-27	3	
	Total	27	5

The PRFFWC has already been using a new format of Flood Advisory (FA) which was initiated by the center since 2018 and was first issued at the height of the SW monsoon as enhanced by Tropical Storm Inday (July 19, 2018) – a sample of one of the issued FA during the enhanced Southwest Monsoon as enhanced by Tropical Cyclone Liwayway (Lingling) last September 03-05, 2019 is shown on the right.

The new FA format is planned to be presented in a Focused Group Discussion- Workshop with the other river basin centers of PAGASA within the year 2020.

There were no post-flood reports generated for any of the above events. The Center will prepare instead an event summary of 2019 events, hopefully, by mid-year of year 2020.



Republic of the Philippines
DEPARTMENT OF SCIENCE AND TECHNOLOGY
Philippine Atmospheric, Geophysical and Astronomical Services
Administration (PAGASA)

PAMPANGA RIVER BASIN FLOOD FORECASTING & WARNING CENTER (PRFFWC)
DOST-3 Compound, Bgy. Mainitis, City of San Fernando, Pampanga 2000, Tel. (045) 455-1701

FLOOD ADVISORY #1
PAMPANGA RIVER BASIN & ALLIED RIVERS
ISSUED AT 8:00 AM, 03 SEPTEMBER 2019
(VALID FOR THE NEXT 24-HOURS UNLESS THERE IS AN INTERVENING ADVISORY OR AN INITIAL FLOOD BULLETIN TO BE ISSUED)

AS OF 7:00 AM TODAY, WATER LEVEL OF MAIN PAMPANGA RIVER REMAIN BELOW ALERT LEVEL STATUS. WATER LEVEL OF CANDABA SWAMP AREA IS ABOVE ALERT LEVEL. SLOW RISE OF THE LOWER MAIN PAMPANGA RIVER IS LIKELY BEGINNING TODAY.

- The Southwest Monsoon will bring scattered LIGHT to MODERATE RAINS with at times intermittent HEAVY rain showers over the Pampanga River Basin area until tomorrow (04 September 2019, Wednesday).
- The public and the Local Disaster Risk Reduction and Management Councils (LDRRMCs) within the basin are advised to take precautionary measures to mitigate the adverse impacts of possible flooding due to the accumulation / ponding of rainwater combined with the effects of high tides and to continue monitoring for updates particularly Thunderstorm / Rainfall Advisories and Heavy Rainfall Warnings issued by PAGASA Regional Services Divisions.

Average Basin Rainfall as of 6:00 AM, today, Past 24-hr observed 8 millimeters Forecast 24-hr basin rainfall 10 to 15 millimeters

WATERWAYS AND AREAS OF CONCERN / IMPACTS		
Sub-basins: River Channels, Tributaries, Swamp	Areas likely to be affected	Impacts
Upper Main Pampanga River (Tributaries Digmaia, Penaranda, Coronel and Rio Chico Sub-Basin)	Nueva Ecija & Southeastern part of Tarlac Provinces (within PRB)	Possible flooding and landslides / riverside erosions
Pasac-Guagua River Sub-Basin: Abacan, Porac-Gumain, Pasig-Potrero Rivers	Sasmuan, Guagua, Lubao, Minallin, Sto Tomas, Mexico, San Fernando City, Macabebe, Masantol, Floridablanca and other adjacent towns	Flooding due to accumulation / ponding of rainwater at low-lying areas and areas with poor drainage system; coastal flooding as a result of high tide at riverside and coastal areas.
Lower Main Pampanga River Basin: Candaba Swamp and the stretch of the Lower Main Pampanga River	Bulacan-Pampanga Delta Areas: Candaba, San Luis, San Simon, Apalit, Calumpit, Hagonoy, Paombong, Macabebe and Masantol towns along Angat River	Flooding due to accumulation / ponding of rainwater at low-lying areas and areas with poor drainage system; coastal flooding as a result of high tide at riverside and coastal areas; possible riverside erosions

PRFFWC: HTH / NBN / JRD

"Tracking the sky...helping the country"

Science Garden Compound, BIR Road, Quezon City,
Metro Manila, Philippines 1100
Postal Address: P.O. Box 3270 Manila

Tel. Nos. (032) 284 0800
Fax: (032) 529 48 05
Website: <http://raging.pagasa.dost.gov.ph>

1.2 Daily Hydrological Forecast / other related info

December 25, 2019
ISSUED AT 6 AM (LST)

PAMPANGA RIVER BASIN AND ALLIED RIVER BASIN OF PASAC-GUAGUA HYDROLOGICAL FORECAST

AREA	GENERAL WEATHER CONDITION	PRESENT RIVER STATUS	RIVER TREND	POSSIBLE IMPACTS
Upper Pampanga River Basin (Coronel-Santor, Digma, Penaranda, Rio Chico River)	Partly cloudy to cloudy skies with isolated rainshowers. (Bahagyang maup hanggang sa maup na papawirin na may pulu-pulong mga pag-ulan.)	BELOW ALERT LEVEL AT RIO CHICO (Nasa baba ng Alert level ang kailugan ng RIO CHICO)	no significant change	No significant hydrological impacts
Lower Pampanga River Basin (Candaba swamp area, Pampanga Delta, Angat River)	Partly cloudy to cloudy skies with isolated rainshowers. (Bahagyang maup hanggang sa maup na papawirin na may pulu-pulong mga pag-ulan.)	CANDABA SWAMP AREA IS BELOW ALERT LEVEL (Nasa babang antas na ng Alert level ang Candaba swamp area)	Very slow recession (Masayong mabagal na pagbababa ng tubig)	No significant hydrological impacts
Pasac-Guagua Allied Sub-basin (Abacan, Porac, Gumain, Pasig-Potrero Rivers)	Partly cloudy to cloudy skies with isolated rainshowers. (Bahagyang maup hanggang sa maup na papawirin na may pulu-pulong mga pag-ulan.)	BELOW ALERT LEVEL (Nasa baba ng antas ng Alert level ang kailugan)	no significant change	No significant hydrological impacts
Coastal Areas (Hagonoy, Paombong, Malolos, Macabebe, Masantol, Lubao, Sasmuan)	Partly cloudy to cloudy skies with isolated rainshowers. (Bahagyang maup hanggang sa maup na papawirin na may pulu-pulong mga pag-ulan.)	HIGH TIDE TODAY Mataas na pagkrati ngayong gabi, 8:57 PM / 1.13 m. / 3.70 ft.		Slight flooding at low-lying riverside/coastal areas. (Pagbababa sa tabing ilog / baybaying dagat at mga mababang lugar)

Daily hydrological forecast presented in matrix format were readily issued by the center throughout the whole year. The new format shows a hydrological condition on a sub-basin approach with possible hazard impacts stated. It is hoped that future developments would focus on effects of the hazard impacts rather than hazard-based.

The center is also preparing to come up soon with an animated hydrological forecast that will be more recipient-friendly and a lot easier to comprehend. The center's maintained websites are:
prffwc.synthasite.com
https://prffwc.webs.com

FB and Twitter accounts



FB: <https://www.facebook.com/prffwc/>

Twitter: <https://twitter.com/prffwc>

The PRFFWC is a redundant messaging hub for dam information for Angat and Pantabangan Dams as per dam warning dissemination protocol. For 2019, there were no significant dam warnings forwarded by the center.

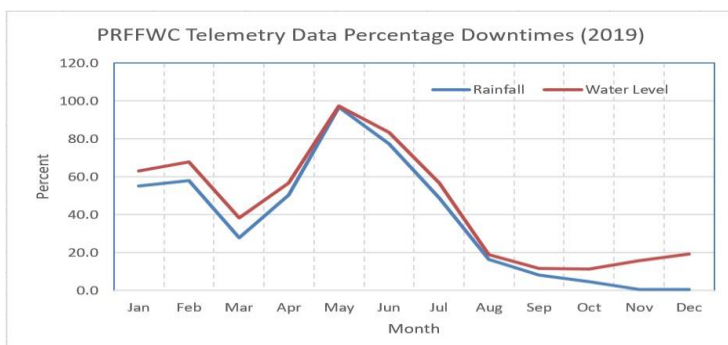
1.3 PRB hydrological data for year 2019

Telemetry data received in 2019 from all stations went down significant particularly for the lower half of the basin for both rainfall and water level. Mayapyap rainfall, which was only restored midway of October was the only station which showed a positive percent change. Erroneous data were considered in the data reception for the year. There were irregular observations such as sudden water level increases at Zaragoza station and a rather sluggish rainfall observation at Sulipan station.

Telemetry RR stations Data Reception Summary (2019)																
Monthly Telemetry RR data received (station-hours)																
Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (stn-hrs) for the year	% data received (2019)	% data received (2018)	% change
Monthly total (baseline)	744	672	744	720	744	720	744	744	720	744	720	744	8760			
Muñoz	734	670	744	711	61	389	739	673	703	732	717	743	7616	86.9	96.7	-9.7
Sapang Buho	734	670	744	711	61	389	739	673	703	732	717	743	7616	86.9	96.7	-9.7
Calaanan	734	670	744	711	61	389	733	673	703	732	717	743	7610	86.9	96.7	-9.8
Mayapyap	0	0	0	0	0	0	0	0	0	380	717	743	1840	21.0	0.0	21.0
Gabaldon	734	670	744	711	61	389	737	673	703	732	717	743	7614	86.9	96.6	-9.7
Palali	734	670	744	711	61	389	733	673	701	732	717	740	7605	86.8	96.7	-9.8
Zaragoza	699	629	734	683	61	389	735	673	695	728	717	743	7486	85.5	96.4	-10.9
Peñaranda	734	670	744	711	61	389	733	673	703	732	717	743	7610	86.9	96.7	-9.8
San Isidro	64	15	444	130	0	4	144	654	705	732	717	743	4352	49.7	80.3	-30.6
Sibul Spring	62	16	435	129	0	4	148	651	705	732	717	743	4342	49.6	80.9	-31.3
Arayat	62	15	435	123	0	4	146	654	705	715	700	708	4267	48.7	76.2	-27.5
Candaba	56	14	435	126	0	4	145	654	705	732	717	743	4331	49.4	80.3	-30.8
Porac	64	16	435	132	0	4	153	652	705	732	717	743	4353	49.7	80.6	-30.9
Mexico	64	15	435	132	0	4	146	652	705	732	717	743	4345	49.6	80.1	-30.5
San Rafael	53	17	435	85	0	4	155	655	705	732	717	743	4301	49.1	77.6	-28.5
Sasmuan	65	16	435	132	0	4	150	652	705	732	717	743	4351	49.7	75.8	-26.1
Sulipan	60	14	435	128	0	4	152	652	705	730	717	743	4340	49.5	80.2	-30.7

Telemetry WL stations Data Reception Summary (2019)

Monthly Telemetry WL data received (station-hours)													Total (stn-hrs)	% data received (2019)	% data received (2018)	% change
Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
Sapang Buho	738	671	744	712	61	389	742	684	707	734	719	743	7644	87.3	97.0	-9.7
Mayapyap	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Zaragoza	717	646	740	697	61	389	729	680	703	732	717	743	7554	86.2	96.8	-10.6
Peñaranda	738	671	744	712	61	389	739	684	707	734	719	743	7641	87.2	97.0	-9.7
San Isidro	95	30	421	167	0	4	165	664	708	734	419	82	3489	39.8	86.0	-46.1
Arayat	92	29	387	163	0	4	165	664	708	722	709	717	4360	49.8	82.7	-32.9
Candaba	90	30	387	164	0	4	165	664	708	734	615	743	4304	49.1	86.0	-36.8
Mexico	93	28	387	168	0	4	165	662	708	734	719	743	4411	50.4	86.0	-35.7
Sasmuan	96	31	387	168	0	4	168	662	708	734	719	743	4420	50.5	77.8	-27.3
Sulipan	92	28	387	166	0	4	169	662	708	733	719	743	4411	50.4	86.2	-35.8



Downtimes were quite evident during the months of May and June when the telemetry system was damaged by a lightning associated with a thunderstorm over the center, 1430H on May 03. System was partly restored roughly 2 months after. Significant downtimes in San Isidro WL data during the last 2 months of the year due to the bridge repairs that affected the sensor cables of the station.

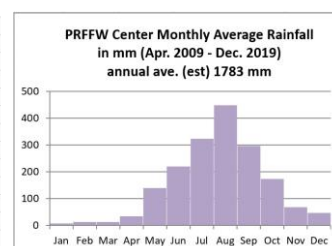
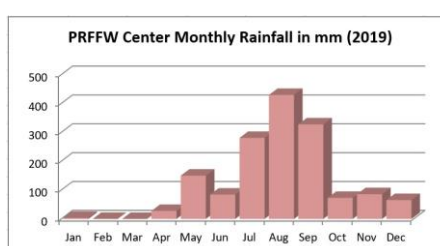
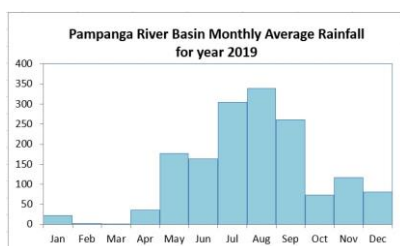
1.4 PRB available station data summary for the year

Summary of available RR and WL data of all stations within the basin and at the center:

Available Monthly Rainfall Totals Summary for 2019

PRB Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total for the year *	Number of RR days *	Max 24-hr RR (Met day)
Muñoz	36	0	0	24	161	185	249	493	335	88	161	24	1756	114	134
Sapang Buho	23	0	0	8	247	252	313	391	286	36	97	28	1681	122	80
Gabalton	147	21	2	14	296	133	345	375	253	92	136	268	2082	149	167
Zaragoza	14	0	3	43	104	132	330	263	220	148	65	45	1367	119	126
Mayapyap										26	106	55	187	17	37
Peñaranda	28	0	0	11	216	125	322	295	240	49	195	60	1541	130	125
Calaanan	31	0	0	0	309	178	337	426	347	64	140	79	1911	131	82
Palali	24	1	0	2	422	113	311	316	329	92	131	211	1952	129	89
San Isidro	19	0	0	21	141	229	331	230	230	45	87	46	1379	112	67
Arayat	7	0	0	62	171	133	247	437	234	96	156	75	1618	111	116
Candaba	6	0	0	28	141	123	212	238	208	41	88	46	1131	123	50
Sibul Spring	15	3	5	34	212	224	463	372	341	55	171	136	2031	136	109
Sasmuan	1	1	2	47	32	169	234	390	263	37	68	61	1305	102	98
Sulipan	0	0	0	74	27	158	275	156	99	76	64	41	970	98	79
Mexico	1	0	0	29	21	84	173	244	224	65	77	53	971	92	56
Porac	3	1	1	152	232	145	357	432	367	107	98	50	1945	122	129
San Rafael	2	0	9	21	86	228	378	368	202	78	154	86	1612	122	100
PRFFWC	3.6	0.3	0.0	27.9	150.1	84.6	280.9	429.8	327.7	73.2	85.9	65.5	1529.3	123	74.4

* red value indicates incomplete data



PRB Water Level Stations

Station	Max WL observed for the year (meters) *	Time / Day of Max WL (2019)	Remarks (event of maximum WL for the year) *
Sapang Buho	2.94	2000H / 01 Jan	
Zaragoza			Erroneous record of maximum
Mayapyap			Non-functioning since May 2015
Peñaranda	2.23	0300H / 04 Dec	Effects of Ty. Tisoy
San Isidro	2.28	0300H / 20 Sept	Enhanced SW by T.C. Nimfa
Arayat	7.29	1000H / 20 Sept	Enhanced SW by T.C. Nimfa
Candaba	5.12	0800H / 22 Sept	Enhanced SW by T.C. Nimfa
Sasmuan	3.50	2100H / 01 Nov	
Sulipan	2.76	0400H / 22 Sept	Enhanced SW by T.C. Nimfa
Mexico	1.75	1300H / 15 Apr	

**as per available data*

1.5 Telemetry System and Station Physical Maintenance:

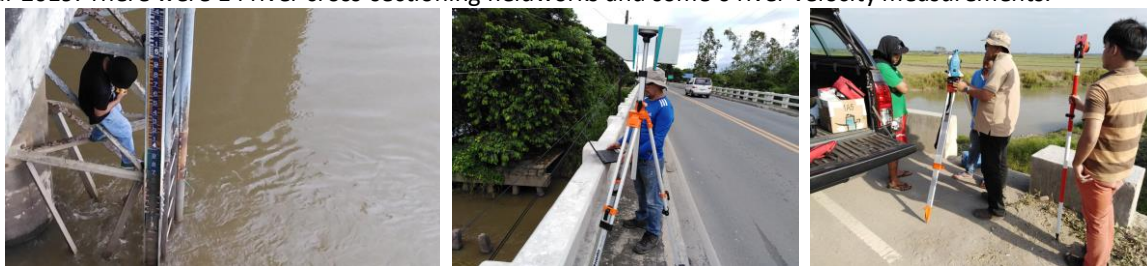
PRFFWC personnel participated and assisted HMTS of HMD in 4 quarterly maintenance work of all telemetry stations of the PRFFW system including 2 emergency fieldworks. Likewise, center personnel, on their own, carried-out 4 emergency fieldworks, and 42 air conditioner operation changes with 4 station surrounding clean-ups at the San Rafael Repeater station.



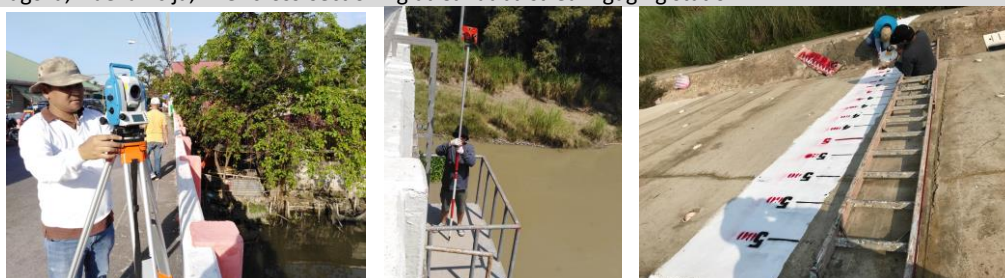
(Above pictures, Left & Middle) Cleaning of air conditioners at San Rafael Repeater station; (Right) PRFFWC personnel supported HMTS in the replacement of WL sensor at Zaragoza station (August 23, 2019)

1.6 Stream Gaging and other hydrological field activities

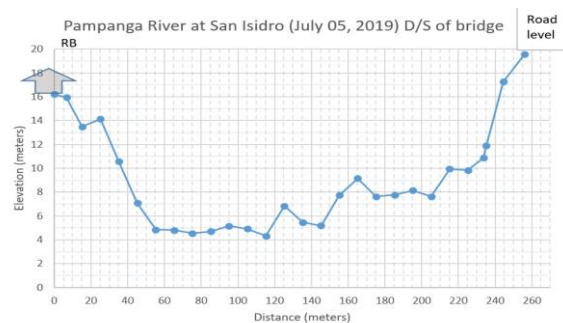
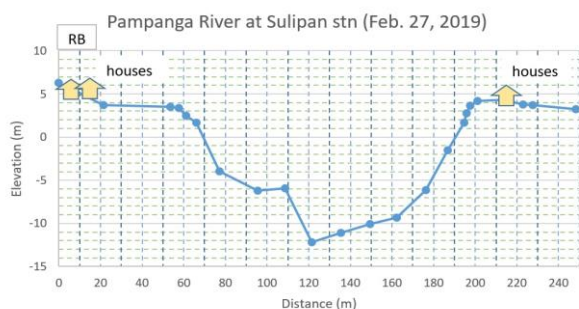
A total of about 20 stream gaging related activities and several hydrological-related works were undertaken by PRFFWC in year 2019. There were 14 river cross-sectioning fieldworks and some 6 river velocity measurements.



Top pictures (L to R): WL validation at Zaragoza station; river velocity measurements using the RP-30 at upstream side of Rio Chico Bridge in Zaragoza, Nueva Ecija; river cross-sectioning at Candaba stream gaging station.



Above pictures (L to R): River cross-sectioning at San Juan Bridge in Hagonoy, Bulacan (supported by Bulacan-PDRMO); cross-sectioning at downstream side of Rio Chico Bridge in Zaragoza, Nueva Ecija; Painting of staff gage along a revetment at San Isidro Bridge (Supported by Jaen-MDRMO)



River Cross-sections of Pampanga River at Sulipan (Left) and San Isidro (Right) stream gaging stations.

II. Public Information, Data provision, Trainings and other similar related Center Functions

2.1 Presentations & lectures in events, various occasions and functions

There were around 67 presentations-lectures given by the center in 2019 covering a total of 4,353 individuals (2,658 males and 1,695 females). Usual presentations were mainly relating to hydrometeorological and climatological issues.

- Jan to Feb: “PRB & PRFFWC Orientation” to Senior High Students of La Verdad Christian Colleges, Apalit
- Feb 14 and 15: “Hydromet Hazards awareness & mitigation” to Women and NGO Sectors in the DRRM training program of RDRRMC-3 led by OCD-3
- Feb 28: “Latest Climate Outlook” in the 1st Quarter meeting of Pampanga PDRRMC



(L to R) Guagua Municipality on LCCAP formulation (Mar 11); DRRM training of Informal Settlers Sector (Mar 19-22); Pampanga PDRRMC 1st Quarter Meeting (Feb 28)

- Mar 11: “Understanding the Concept of CC: Temperature Change, Varying Precipitation, Extreme Events Downscaled Climate Projects & Patterns of Change for RCP 4.5 & 8.5 and Climate Risk Assessment Matrix (CLIRAM) and Latest Climate Outlook” in the LCCAP formulation of Guagua Municipality
- Mar 15: “Latest Climate Outlook” in the 1st Quarter meeting of RDRRMC-3
- Mar 19-22: “Hydromet Hazards awareness & mitigation” to Senior Citizens, Artisanal Fisher folks, Informal Settlers, and Children Sectors in the DRRM training of RDRRMC-3 led by OCD-3
- Mar 27: “Latest Climate Outlook” in the joint PDRRMC-C/MDRRMC Meeting of Bulacan Province
- Apr 01-05: 1st Stream Gaging Workshop for PAGASA River Basin Flood Forecasting & Warning Centers



(Top left) Lecturers and participants in the 1st Stream Gaging Workshop for PAGASA RBFFWC (April 01-05); (Top right) River cross-sectioning along Pampanga River as part of the hands-on activity of the said workshop.

- Apr 02-03: “Hydromet Hazards awareness & mitigation” to Urban Poor & Persons with Disabilities Sectors in the DRRM training program of RDRRMC-3 led by OCD-3
- Apr 26: “PRB & PRFFWC Orientation” to visiting personnel of National Center for Hydrology & Meteorology of Bhutan (NCHM)
- May 21: “Latest Climate Outlook” in the 2nd Quarter meeting of Pampanga PDRRMC
- May 27: “Hydromet Hazards awareness & mitigation” to Cooperative, Indigenous, Cultural Communities, Youth & Students Sectors in the DRRM training program of RDRRMC-3 led by OCD-3
- May 31; “Latest Climate Outlook” to Local Barangay & Public Officials of Guagua Municipality

(Right) RDRRMC-3 Joint Council Meeting in Preparations for Rainy Season (Jun 04); (Far right) 2nd Quarterly meeting of the Pampanga PDRRMC and PRFFWC is a regular member of the said council (May 21)



- Jun 03-04: “Hydromet Hazards awareness & mitigation” to Farmer & Landless Rural Workers, Victims of Disasters & Calamities Sectors in the DRRM training program of RDRRMC-3 led by OCD-3
- Jun 04: “Latest Climate Outlook / Preparations for the Rainy Season” in the Joint Council Meeting of Regional DRRMC-3
- Jun 20: “PRB & PRFFWC Orientation” to visiting University of the Philippines IESM students
- Jun 26: “Latest Climate Outlook” in the Quarterly Meeting of Tarlac PDRRMC



(L to R) NCMH of Bhutan on a field visit to the center (Apr 26); PRFFWC personnel together with PSTC- Tarlac personnel and Tarlac Governor Susan Yap (2nd from left) in the Quarterly meeting of Tarlac PDRRMC (Jun 26); Orientation of visiting UP IESM students together with Dra. Raquel Francisco (Jun 20)

- Jul 03: “Latest Climate Outlook” to DA-BFAR field station managers
- Jul 15, 24, 25, 29, 30 & 31: “PRB & PRFFWC Orientation” in the Angat Dam IEC program
- Jul 18: “Possible Effects of T.C. Falcon in the Region” during the RDRRMC-3 PDRA
- Jul 24: “Latest Climate Outlook & Brief on Strom Surge” in the DRRM Summit of Pampanga PDRRMC
- Jul 23 & 25: “Hydromet Hazards awareness & mitigation” to elementary & secondary students in the School and Community-based Resilience Caravan 2019 organized by RDRRMC-3 and led by OCD-3



(L to R) Participants in the DRRM training for Victims of Disasters sector (Jun 03); participating students in the School and Community-based Resilience Caravan (Jul 23); NWRB and KOICA personnel who were oriented during their field visit to the center (Jul 26)

- Jul 23, 24 & 29: “Hydromet Hazards awareness & mitigation” to Cooperative, Students, Women, Farmers, Fisher folks, Indigenous people & Cultural Communities Sectors for the organized DRRM Training for the Province of Aurora as per RDRRMC-3 regional programs
- Jul 26: “PRB & PRFFWC Orientation” to visiting NWRB & KOICA personnel regarding the project “Establishment of an Integrated 3D-GIS based WRM Info System in the Provinces of Pampanga & Bulacan”
- Jul 31: “SHINE Orientation” to students of 5 Secondary Schools in the Municipality of Jaen as per SHINE Kick-off program in Region 3
- Aug 01-02: “PRB & PRFFWC Orientation” in the Angat Dam IEC program
- Aug 08: “PRB & PRFFWC Orientation” to visiting PAGASA MTTC trainees
- Sept 17: “Latest Climate Outlook” in the joint 3rd Q meeting of PDRRMC-C/MDRRMC of Bulacan Province
- Sept 19: “SHINE Orientation” to students of 2 Secondary Schools in the City of Angeles as per SHINE Kick-off program in Region 3
- Sept 27: “Latest Climate Outlook” in the 3rd Q meeting of Pampanga PDRRMC



(L-R) SHINE orientation to 5 Secondary schools in the Municipality of Jaen, N.E. (Jul 31); Pampanga PDRRMC DRRM Summit (Jul 24)



Participants and the administrative officials of NIA-UPRIIS in the PRFFWC organized Training on Basic Hydrology & Stream Gaging Workshop of various operational divisions of NIA-UPRIIS personnel (Oct 14-18)

- Oct 01-03; “SHINE Reorientation” to students from 33 Elementary & Secondary Schools in the Province of Bulacan in preparation for 10th SHINE Annual Conference
- Oct 11: “SHINE Orientation” to students of 1 Secondary Schools in the City of Angeles as per SHINE Kick-off program in Region 3
- Oct 14-18: “Basic Hydrology & Stream Gaging” in the Capability Development Training of NIA-UPRIIS personnel
- Oct 30: “Hydromet Hazards awareness & mitigation” to Bureau of Jail Management & Penology of Reg.3 personnel as per RDRRMC-3 regional programs
- Nov 05: “Latest Climate Outlook” in the Local Seasonal Climate Forum for Farmers, Farmer groups & associations in the Municipality of Paniqui as organized by Paniqui Municipal Agricultural Office
- Nov 15: “Latest Climate Outlook” in the 4th Q meeting of RDRRMC-3
- Nov 20: “Flooding in Bulacan Province” in the Bulacan Chamber of Commerce & Industry, Inc. Investment Forum
- Nov 21: “SHINE Updates” in the 10th SHINE Annual Conference of Bulacan Province
- Nov 27: “Latest Weather Updates / Forecast” in the final coordination meeting for the 30th SEA Games Sub Task Group CL EPR
- Dec 02: “Updates on Ty. Tisoy & its possible effects to the Region” in the joint PDRA & 4th Q meeting of the Pampanga PDRRMC

- Dec 02: “Briefing on Ty. Tisoy” in the RDRRMC-3 pre SEA Games meeting
- Dec 17: “Latest Climate Outlook” in 4th Q meeting of Preparedness Cluster of Pampanga PDRRMC
- Dec 19: “Latest Climate Outlook” in the Gender Responsive Summit on DRRM-CCA by Tarlac PDRRMC



(Top L-R) The 10th SHINE Annual Conference hosted by the Provincial Government of Bulacan (Nov. 21); Bulacan Chamber of Commerce & Industry, Inc. Investment Forum (Nov 20); (Bottom R) Gender responsive summit on DRR-CCA by Tarlac Agricultural University (TAU) & Tarlac PDRRMC (Dec 19)



2.2 Public information and Briefings (Multi-media)

A number of media (radio and TV) interactions with live and pre-recorded interviews were accommodated for year 2019 and a view of some of those sessions are pictured below:



(Top L to R) Pre-recorded interview as follows: on the status of Dam WL within PRB with CLTV-36 reporter Jennifer Salenga (Mar 15); latest updates on El Niño with CLTV-36 reporter Angelica Simpao (Mar 05); again, with CLTV reporter Angelica Simpao on hydrological condition of Pampanga River Basin (Apr10). (Bottom L to R) Live radio interview with GVAM 792 host Manay Gina about effects of April 22 earthquake to the PRB (Apr 23); Interview on the status of Pampanga River with CLTV-36 reporter Jenny Lumbang; with Pampanga PIO reporter Louise Rutao during the DRRM Summit of Pampanga PDRRMC (Jul 25)



(L to R) Updates and effects of Ty. Tisoy during the Pampanga PDRRMC PDRA with ABS-CBN Reporter Gracie Rutao (Dec 02); and interviews by Pampanga Public Information Office on the same issues.

III. Participation in various events, occasions & other undertakings (meetings, seminars, workshops, conferences, etc.)

The PRFFWC participated in more than 60 events (meetings, seminars, workshops, conferences) during the year 2019. Events were mostly provincial and regional undertakings relating to hydrometeorological issues. A rundown of some of these events / occasions are given as follows:

- Coordination meeting on the DREAM / DRRM Run for Resiliency by the RDRRMC-3 (Jan-Feb)
- ICHARM's Technical Meeting and Plenary Session of the Platform on Water Resilience and Disasters in the Philippines (Feb 07, Luxent Hotel)
- Coordination meeting with Calumpit LGU officials together with ICHARM personnel for updates on contingency planning workshop (Feb 08)
- Project for Strengthening Capacity of Integrated Data Management of Flood Forecasting & Warning (PAGASA – JFreeDAM) (Feb 19, Amihan Conference Room)
- Focus Group Discussion (FGD) and Consultative Workshop on the Regional GovNet Project led by DICT Regional Office Cluster 2 (Apr 01; SACOP-Epatha, CSFP)
- Participated as one main program solicitor and as participants in the 3K & 5K run events of DRRM Dream Run for Resiliency organized by the DRRMOs Association of Central Luzon Incorporated and spearheaded by the RDRRMC-3 (Apr 06; Clark Global City Gateway)
- Participated as member of the Regional KALASAG 2019 validators of various DRRM-related entities within Region 3 (May 7, 9, & 10)



(L to R) Coordination meeting with Calumpit LGU together with ICHARM representatives (Feb 08); and pre-coordination meeting between PRFFWC and ICHARM group (Feb 07); NCR-PRSD CMO Conference participants with the PAGASA Administration group (May 22-23)

- Attended and participated, as member of the PDRRM council, in the validation of Pampanga PDRRMC as a candidate in the Regional GAWAD KALASAG 2019 award (May 9, Pampanga Provincial Capitol)
- NCR-PRSD CMO conference (May 22-23; Estancia Hotel, Tagaytay)
- 8th JCC Project for Strengthening Capacity of Integrated Data Management of Flood Forecasting & Warning (PAGASA-JFreeDAM) (Jun 11; Amihan Conf Room, Q.C.)
- 2nd Quarter Preparedness Committee meeting of the PDRRMC-Pampanga chaired by Provincial DILG and PRFFWC being a member of said committee and an agency member of PDRRMC (Jun13; PDRRMO conf. room)
- 3rd River Basin Annual Conference & 3rd Optimization Project Quarterly meeting; Optimization-based JOs in PRFFWC participated in the Stream Gauging Training (Jun 04 to 10; Baler, Aurora)



PRFFWC was given a Plaque of Appreciation for its unwavering support to the 21st Regional GAWAD KALASAG (Jul 26)

- PAGASA 3rd Administrator's Cup Bowling Tournament (Jul 03-04; Playdium Bowling Lanes)
- NSTW showcase at World Trade Center featuring the 3-D Scale Model of PRB and PRFFWC system (Jul 16 to 21) with 2 center personnel acting as showcase briefer.
- Regional Consultation on the Formulation of the Philippine Development Plan (PDP) 2017-2022 Midterm Update organized by NEDA-3 through the RDC-3 (Jul 24; NEDA-3 Conference room)

- Central Luzon 21st GAWAD KALASAG Regional Awards for Excellence in DRRM and Humanitarian Assistance (Jul 26; Fontana, Clark, Pampanga); PRFFWC received a Plaque of Appreciation for its support in the 21st GAWAD KALASAG regional awards search for excellence in DRRM.
- Regional Science and Technology Week (RSTW) activities for Region 3 (Jul 29 to Aug 02; Vista Mall, Balanga, Bataan)
- 3-Day Workshop for the Formulation of Regional Disaster Response Plan for RDRRMC-3 as organized by OCD-3 (with tabletop exercise) (Aug 19-21; Orchids Hotel, CSFP)
- RDRRMC-3 PDRA in connection with TC Jenny and the possible enhancement of SW Monsoon (Aug 22 & 27; OCD-3 Conference room)
- PDRA called for by RDRRMC-3 re: T.C. Liwayway & enhanced SW monsoon (Sept 03; OCD-3 conf. room, CSFP)
- 1st Validation Workshop on the Formulation of the CL Regional Development Plan 2017-2022 Midterm Update as per invitation by the RDC-3 / NEDA-3 (Sept 04; NEDA 3, CSFP)



PRFFWC's 3D Scale Map of the Pampanga River Basin was one of PAGASA's showcase in the National Science & Technology Week (NSTW) at the World Trade Center with 2 PRFFWC personnel facilitating the PRFFWC showcase briefing (Jul 16-21)

- 3rd Quarter Mitigation & Prevention Committee Meeting of the PDRRMC-Pampanga (Sept 26; Pampanga Province Capitol Bldg., CSFP)
- Regional consultation workshop on the NDRRM plan (Luzon Cluster) (Oct 15-17; Upper Storey Apts., Cubao, Q.C.)
- PAGASA Strategic Planning Writeshop (Oct 25-26; First Pacific Leadership Academy, Antipolo, Rizal)
- 3rd Quarter meeting for Optimization Project (Nov 5-7; Bacolod)
- NCR-PRSD Team Building activities (Nov 15-17; Talisay, Batangas)
- PDRA re: T.C. Tisoy called for by OCD-3 (Nov 28 & 30; OCD-3 Conf. Rm)



Participation in various Pre-Disaster Risk Assessment (PDRA) meetings with RDRRMC-3 (L-R) during T.C. Hanna (Aug); T.C. Liwayway (Sept); and Ty. Tisoy (Dec)

IV. Trainings and other related events

There were limited trainings undertaken by the PRFFWC personnel in 2019.

- Attended and participated in the specialized Stream Gaging Workshop for DPWH using the "Redback" Current Meter (Jul 08-09; Bliss Hotel, CSFP)
- One center personnel attended and participated in the Emergency Operations Center (EOC) Training for Formal Sector (PRFFWC as RDRRMC members) (Sept 04 – 06; Widus Hotel, Clark Freeport Zone)
- One center personnel attended and participated in the GHG Inventory Training organized by Pampanga PDRRMC (Sept 25-27; Orchids Hotel, CSFP)



(L to R) PRFFWC personnel with Hyquest training staff during the specialized Stream Gaging workshop for DPWH using "Redback" current meter; river velocity measurements during the training's fieldwork (Jul 08-09)

On the other, the center hosted some event trainings, capability development programs, etc. for the year 2019. Trainings provided by the center were more notable than those trainings that were participated in by the center personnel. Below is a list of trainings that were conducted by the PRFFWC:

- Immersion program to 6 senior high school students of La Verdad Christian College, Inc. which included lectures on hydrometeorological hazards, hydrological issues, etc. (around 80 hours of training from Jan 04 to Feb 22)
- Conducted the 1st Stream Gaging Workshop of PAGASA RBFFW Centers (April 01-05, Bliss Hotel, CSFP); for related info: <http://prffwc.synthasite.com/resources/SG%20wrkshp%20apr2019%20proceedings.pdf>
- SHINe 1-day Orientation to students representing 5 high schools of Jaen, N.E. (Jul 31) and 3 high schools of Angeles City, Pampanga (Sept 19 & Oct 11)
- Capability Development Training and Workshop in Basic Hydrology and Stream Gaging for NIA-UPRIIS personnel (Oct 14-18; Farmers Training Center, NIA-UPRIIS, Cabanatuan City, N.E.)
- "SHINe Reorientation" to students from 33 Elementary & Secondary Schools in the Province of Bulacan (Oct 01-03)



(L-R) 1st PAGASA Stream Gaging Workshop lecturers & participants; fieldwork activities using RP30 and RQ30 being undertaken by workshop groups at Candaba stream gaging site; using a bridgeboard with pulley at San Luis Bridge as part of the stream gaging fieldwork activities (Apr 01-05)



SHINe reorientation of Bulacan secondary schools with venue at San Rafael National Trade School, San Rafael, Bulacan on Oct 02 (Top Left), and at Guiguinto National Vocational High School on Oct 03 (Top Right); (Right picture) Fieldwork activities using various river velocity measurement methods during the Capability Development Training & Workshop in Basic Hydrology & Stream gaging to NIA-UPRIIS personnel (Oct 16)



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



Only one report was prepared last year: The Workshop Proceedings of the 1st Stream Gaging Workshop for PAGASA RBFFWCs:

- <http://prffwc.synthasite.com/resources/SG%20wrkshp%20apr2019%20proceedings.pdf>

For workshop related video:

- <https://www.youtube.com/watch?v=M7lsJO6Zegc>

A center proposal entitled “Enhancement of Pampanga River Basin Flood Forecasting & Warning System through the establishment of additional observation stations and as a back-up monitoring system in the Pampanga River Basin” was likewise prepared and submitted to NCR-PRSD for possible implementation within the year 2020.

VI. Recognitions for 2019

Two top prestigious awards were given to the PRFFWC in 2019 by PAGASA:

- GAWAD PAGASA Innovation Outstanding Award (1st Prize) for the School Hydrological Information Network (SHINe) Program
- GAWAD PAGASA Best Flood Forecasting & Warning Center

Other awards received by the center and individual awards included as follows:

- GAWAD PAGASA Best Flood Forecasting & Warning Center of NCR-PRSD (Division Level)
- GAWAD PAGASA Best Hydrologist (Agency & Division level)
- GAWAD PAGASA Best Hydro Technician (Agency & Division Level)
- GAWAD PAGASA Clerical Staff (Division Level)

Recognitions outside PAGASA:

PRFFWC received a Plaque of Appreciation from the RDRRMC-3 as a grateful recognition of its support in the 21st GAWAD KALASAG regional awards search for excellence in DRRM and Humanitarian Assistance (July 26).



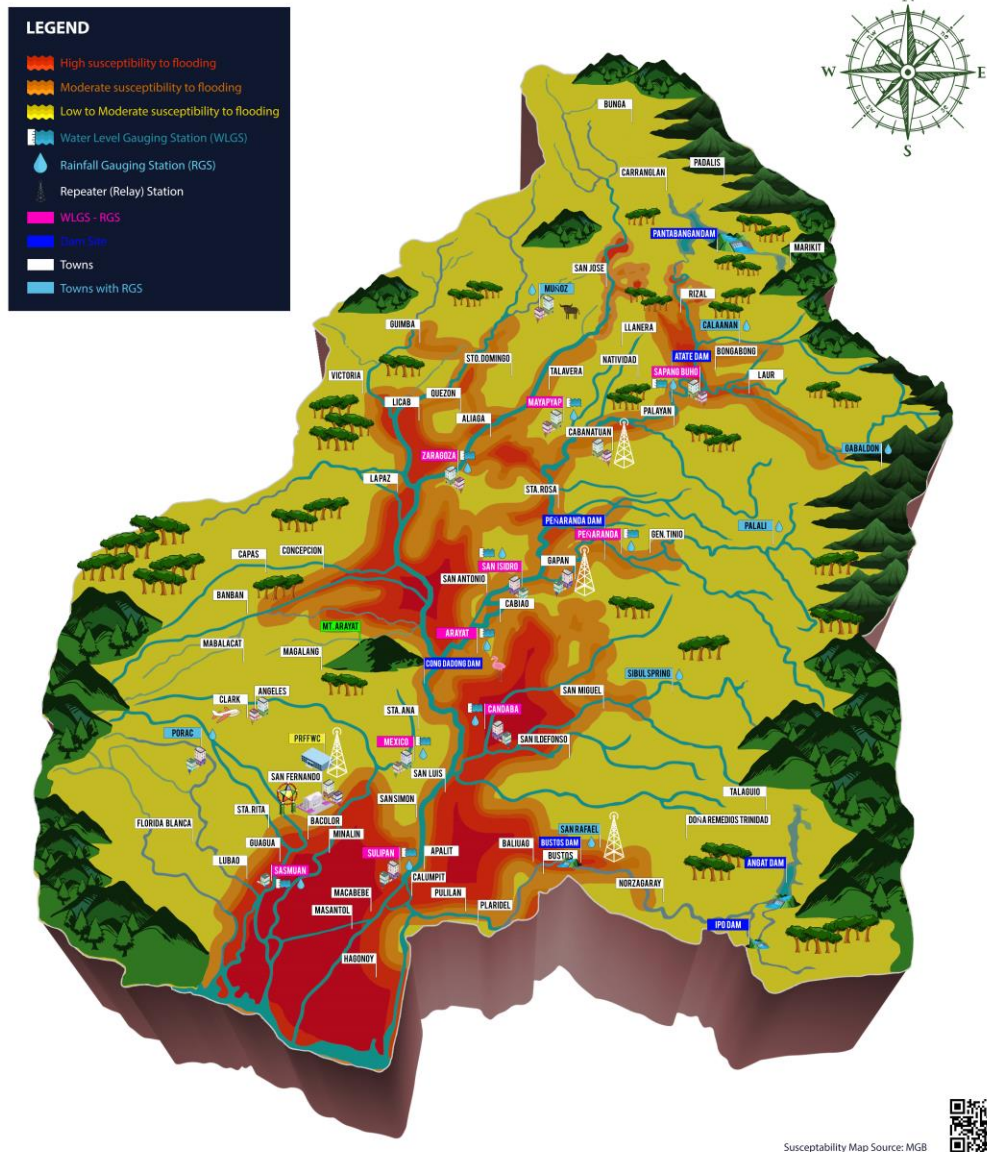
VII. Programs (intended) for 2020

PRFFWC Intended programs for year 2020:

- Community-Friendly Flood Susceptibility (see sample map pictured below) and Topographical Maps of Pampanga River Basin – hopefully to be produced and distributed to target LGUs (communities) and partner agencies within the Pampanga River Basin (Between Jan to Jun)
- Come up with the center’s new website (within the year)
- 2nd Stream Gaging Workshop for PAGASA’s River Basin Flood Forecasting & Warning Centers – as a follow-up activity in last year’s initial activity (1st Stream Gaging Workshop) (Between Mar – Apr); Possible topics to be undertaken
 - Review of Stream Gaging activities for RBFFWCs of PAGASA

- Elements of Post-Flood Investigation and Analyses
- Development of forecasting point (WL) assessment levels
- New approaches to river monitoring (back-up system for existing hydrological monitoring stations within the basin)
- Presentation on the development of River Basin Annual Hydrological Summary
- Focus Group Discussion (FGD) and Workshop on the Harmonization and Standardization of Hydrological Information for RBFFWCs of PAGASA (Between Mar – May)
- Development of animated hydrological information (within the year)

PAMPANGA RIVER BASIN FLOOD SUSCEPTIBILITY MAP





PRFFWC production 2019-20
Previous annual reports available at the following link:
<http://prffwc.synthasite.com/annual-reports.php>

PRFFWC Contact details:

@ prffwc_ffb@yahoo.com

(63) (045) 455-1701

0999 336 6416

f PRFFWC

www.prffwc.synthasite.com / www.prffwc.webs.com

