



**SENATE**  
**S. No. 579**

'19 JUL 17 P5:48

Introduced by Senator Grace Poe

RECEIVED

**AN ACT**  
**PROVIDING FOR THE MANAGEMENT, CONTROL, REGULATION, AND**  
**UTILIZATION OF RAINWATER RUNOFF, AND IMPROVEMENT OF**  
**ECOLOGICAL CHARACTERISTICS OF CATCHMENTS TO ADDRESS**  
**FLOODING AND WATER SUPPLY NEEDS IN URBAN AND RURAL CENTERS,**  
**AND CREATING THE NECESSARY INSTITUTIONAL MECHANISMS**  
**THEREFOR**

EXPLANATORY NOTE

The Philippines has witnessed an increasing frequency and intensity of rain which causes severe flooding and results to unquantifiable economic losses. Although this has been primarily attributed to climate change, data shows that these woes are the result of poorly planned development with no provisions for control and regulation of runoff flows. Land use conversion, deforestation, coupled with the lack of retention/detention system are among the reasons why flooding occurs.

On the other side of the scale is the issue of the security of water supply for the growing urban and rural centers. The problem on one side could be the solution for the other if the necessary management, control, and regulation of such runoff volume of water is established. Thus, the solution being forwarded is to capture and store rainwater and utilize it for irrigation, groundwater recharge, firefighting, and other water supply purposes. Through this, water is conserved and runoff is reduced.

The quantity and quality of runoff water is directly correlated with the quality and size of our catchment. Hence, emphasis on the protection, planning, management of catchment is at the core of the program. This will require the

participation of the agencies such as the Department of Environment and Natural Resources (DENR), Department of Agriculture (DA), Department of Public Works and Highways (DPWH), and the respective local government units.


Thus, the immediate approval of this bill is eagerly sought.



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**ECOLOGICAL CHARACTERISTICS OF CATCHMENTS TO ADDRESS FLOODING**  
**AND WATER SUPPLY NEEDS IN URBAN AND RURAL CENTERS, AND**  
**CREATING THE NECESSARY INSTITUTIONAL MECHANISMS THEREFOR**

*Be it enacted by the Senate and the House of Representatives of the Republic of the Philippines in Congress assembled:*

- 1           Section 1. *Purpose.* – The purpose of this Act is to establish minimum rainwater  
2 management requirements and controls to protect and safeguard the general health,  
3 safety, and welfare of the public. This seeks to meet that purpose through the  
4 following objectives:
- 5           a. Minimize increase in rainwater runoff from any development, both existing and  
6           proposed, in order to reduce flooding, siltation, increases in stream  
7           temperature, and stream bank erosion and maintain the integrity of stream  
8           channels;
  - 9           b. Minimize increase in non-point source pollution caused by rainwater runoff  
10           development which would otherwise degrade local water quality;
  - 11           c. Minimize the annual volume of surface water runoff which flows from any  
12           specific site during and following development to not exceed the pre-  
13           development hydrologic regime to the maximum extent practicable; and
  - 14           d. Reduce rainwater runoff rates and volumes, soil erosion, and non-point source  
15           pollution, wherever possible, through rainwater management controls and to  
16           ensure that these management controls are properly maintained and pose no  
17           threat to public safety.



- 1        *Sec. 2. Definition of Terms.* – As used in this Act:
- 2        a) *Applicant* - means a property owner or agent who has filed an application for a
- 3        rainwater management permit.
- 4        b) *Building* - any structure built for the support, shelter, or enclosure or person,
- 5        animals, chattels, or moveable property of any kind and which is permanently
- 6        affixed to the land.
- 7        c) *Building Official* - Local Building Official as appointed or designated pursuant to
- 8        PD 1096.
- 9        d) *Certificate of Occupancy* - a permit issued by the Zoning Officer indicating that
- 10       the use of the building or land in question is in conformity with the Zoning
- 11       Ordinance or that there has been a legal variance there from, as provided by
- 12       ordinance.
- 13       e) *Channel* - means a natural or artificial watercourse with definite bed and banks
- 14       that conducts continuously or periodically flowing water.
- 15       f) *Dedication* - means the deliberate appropriation of property by its owner for
- 16       general public use.
- 17       g) *Detention* - means the temporary storage of rainwater runoff in a rainwater
- 18       management practices with goals of controlling peak discharge rates and
- 19       providing gravity settling of pollutants.
- 20       h) *Developer* - means a person or entity who undertakes land disturbance or
- 21       development activities.
- 22       i) *Development* - means any man-made change to improve or unimprove real
- 23       estate, including but not limited to buildings or other structures, mining,
- 24       dredging, filling, grading, paving, excavation, or drilling operation.
- 25       j) *Drainage Easement* - means a legal right granted by the landowner to a grantee
- 26       allowing use of private land for rainwater management purposes.
- 27       k) *Erosion and Sediment Control Plan* - means a plan that is designed to minimize
- 28       the accelerated erosion and sediment runoff at a site during construction
- 29       activities.
- 30       l) *Hotspot* - is an area where land use or activities generate highly contaminated
- 31       runoff, with concentrations of pollutants in excess of those typically found in
- 32       rainwater.

- 1 m) *Impervious Coverage* - refer to those surfaces that cannot effectively infiltrate  
2 rainfall (e.g., building rooftops, pavement, sidewalks, driveways, etc.)
- 3 n) *Industrial Rainwater Permit* - refers to a National Pollutant Discharge  
4 Elimination System permit issued to a commercial industry or group of  
5 industries which regulates the pollutant levels associated with industrial  
6 rainwater discharges or specifies on-site pollution control strategies.
- 7 o) *Infiltration* - is the process of percolating rainwater into the subsoil.
- 8 p) *Infiltration Facility* - is any structure or device designed to infiltrate water to the  
9 subsurface. These facilities may be above grade or below grade.
- 10 q) *Land Disturbance Activity* - is any activity which changes the volume or peak  
11 flow discharge rate of rainfall from the land surface. This may include grading,  
12 digging, cutting, scraping, or excavating of soil, placement of fill materials,  
13 paving, construction, substantial removal of vegetation, or any activity which  
14 bares soil or rock or involves the diversion or piping of any natural or man-  
15 made watercourse.
- 16 r) *Landowner* - means the legal or beneficial owner of land, including those  
17 holding the right to purchase or lease the land, or any other person holding  
18 proprietary rights in the land.
- 19 s) *Off-Site Facility* - means a rainwater management measure located outside the  
20 subject property boundary described in the permit application for land  
21 development activity.
- 22 t) *On-Site Facility* - means a rainwater management measure located within the  
23 subject property boundary described in the permit application for land  
24 development activity.
- 25 u) *Recharge* - means the replenishment of underground water reserves.
- 26 v) *Redevelopment* - means any construction, alteration or improvement exceeding  
27 100 square meters in areas where existing land use is high density commercial,  
28 industrial, institutional or multi-family residential.
- 29 w) *Stop Work Order* - means an order issued which requires that all construction  
30 activity on a site be stopped.



- 1 x) *Rainwater Design Manual* - means the Planning and Design Manual for the  
2 Control of Erosion, Sediment and Rainwater written by Department of Public  
3 Works and Highways.
- 4 y) *Rainwater Management* - means the use of structural or non-structural  
5 practices that are design to reduce rainwater runoff pollutant loads, discharge  
6 volumes, and/or peak flow discharge rates.
- 7 z) *Rainwater Retrofit* - means a rainwater management practice designed for an  
8 existing development site that previously had either no rainwater management  
9 practice in place or a practice inadequate to meet the rainwater management  
10 requirements of the site.
- 11 aa) *Rainwater Runoff* - means water flow on the surface of the ground, resulting  
12 from precipitation.
- 13 bb) *Rainwater Treatment Practices* - mean measures, either structural or  
14 nonstructural, that are determined to be the most effective, practical means for  
15 preventing or reducing point source or nonpoint source pollution inputs to  
16 rainwater runoff and water bodies.
- 17 cc) *Watercourse* - means a permanent or intermittent stream or other body of  
18 water, either natural or man-made, which gathers or carries surface.

19 Sec. 3. *Requirements for Rainwater Management Plan.* – All landowners or  
20 developers of proposed commercial, industrial and residential development or any  
21 residential multi-dwelling units of more than 1,000 sqm land area must submit  
22 Rainwater Management Plan (RMP) as part of the site development application and  
23 approval process.

24 The RMP shall include the following information:

- 25 a. Description of Existing Conditions - Description of the existing condition shall  
26 be shown on a map. It shall include:
- 27 1. Topographic map with 1.0 meter minimum contours line or an  
28 appropriate contour interval) of the land proposed for development or  
29 redevelopment.
- 30 2. Location natural waterways including banks and centerline of streams  
31 and channels.

1           3. The normal shoreline, coastlines, outline of lakes, natural depressions  
2           and ponds, including drainage flow lines.

3           Quantification of flows (discharge and volume) in its natural condition shall be  
4           provided; and

5           b. Proposed Site Development Plan - The proponent shall provide Site  
6           Development Plan (SDP) in an appropriate scale and size showing the following:

- 7           i. Retention/detention basins and lines of inflow and outflow;  
8           ii. The location, size and slope of rainwater conduits and drainage swales;  
9           iii. Rain, sanitary and combined sewer and outfalls; and,  
10          iv. Delineation of upstream and downstream drainage features and  
11          watersheds which might be affected by the development; and other  
12          environmental features including limits of wetlands areas, green buffers,  
13          planting strips, and any designated natural areas for rainwater  
14          management.

15          c. Description of Proposed Rainwater Management System (RMS) - The proposed  
16          RMS shall be designed to safely and completely managed rainwater runoff  
17          onsite or offsite and provide facility to regulate the increased rainwater runoff,  
18          thus, maintain the natural hydrologic cycle and condition of flow in a locality.  
19          The purpose of the RMS is to reduce the risk of downstream flooding by  
20          reducing the amount of runoff and regulating the discharge release at a given  
21          time.

22                 The proposed RMS shall be accompanied by hydrologic and hydraulic  
23                 calculations to adequately demonstrate the effectiveness of the plan.

24                 The proposed RMS shall be designed to meet the desired flood frequency  
25                 which is designated to a particular drainage structure as stated in the Design  
26                 Manual of the DPWH. Higher flood frequency such as 25-year or higher may be  
27                 required for major rivers and waterways. Specific details of the design criteria  
28                 are incorporated in Section 4.

29          The plan shall be accompanied by relevant data (such as rainfall data in a locality),  
30          maps and other descriptive material to include the following.

- 31          1) The extent of catchment, drainage channels on site and direction of the flow of  
32          the channels including the final outfall of the discharge from the site;



1        2) Hydrologic and hydraulic design calculations for the pre-development and post  
2        development conditions for the design storm proposed in Section 5. The  
3        calculations for determining peak flows are found in the Rainwater Design  
4        Manual to include description of design storm frequency, intensity, and  
5        duration, time of concentration, soil curve number or runoff coefficients, peak  
6        runoff rates and total runoff volumes, infiltration rates, culvert capacities, flow  
7        velocities, data on the increase in rate and volume of runoff for the design  
8        storm; and,

9        3) Technical specifications of the Proposed SMS, providing descriptions of  
10       proposed rainwater conveyance practices to be on-site, existing off-site  
11       rainwater conveyance system including receiving streams, channels, and outfall  
12       and inlet locations. Include elevations of locations and high water elevations.

13       Sec. 4. *Utilization of Rainwater.* – The following are the specific utilization of  
14       rainwater and the recommended facility to harness its volume for the intended use:

15       a) Rainwater for Rural Irrigation - Agriculture in the Philippines is predominantly  
16       rainfed. Rainwater catchments thus hold a significant potential for improvement  
17       of rainwater use efficiency and sustainment of rainfed and upland agriculture  
18       in the country.

19       b) Rainwater for Urban Irrigation - Most of the urban centers are currently  
20       dependent on Class A water quality for irrigation supply which are costly and  
21       environmentally unsustainable. Utilization of Class A water for yard irrigation  
22       shall be minimized if not prohibited. Instead, rainwater shall be utilized for such  
23       purposes. The irrigation water shall come from the rainwater detention system.

24       Rainwater as source for urban irrigation and/or watering of lawns shall  
25       be indicated in the development plans. Secondary source of water for irrigation  
26       may also come from treated grey water from effluent of treatment facility.

27       c) Rainwater for Groundwater Recharge - The RMS is intended mainly to ensure  
28       natural balance of the hydrologic cycle by allowing rainwater to recharge the  
29       groundwater table that sustains the yield and production of deep wells. The  
30       proposed facility to allow for recharge may be in the form of the following best  
31       management system:



- 1) Lagoon or retention pond that allows for natural seepage to the ground water aquifer.
- 2) Swales and depression storage
- 3) Porous or pavers blocks on some developed areas
- 4) Retention channels, etc.

The sizes and dimensions of the above facility is dependent on the rainfall intensity and the size of the development.

d) Rainwater for Firefighting - Considerable amount of water is also needed for firefighting. At present, water for firefighting comes from potable water sources which are expensive. Rainwater is a good substitute. The quality requirement may be upgraded to meet required standard that may not cause health issues and abrasion to machines. A separate storage tank for fire water reserve shall be constructed. Upgrading of the quality of water may be done using simple filtration system to remove suspended solids and other coarse materials that will interfere with electromechanical and pipe systems. Other laws concerning the requirement of water for firefighting shall be considered.

e) Rainwater for Non-Potable Water Supply Source - Rainwater subjected to primary and secondary treatment can be a viable secondary source for water supply in urban and rural areas. It can be used for the following purposes:

- 1) Watering plants;
- 2) Washing of cars, floor yards;
- 3) Flushing of toilet (water quality should meet certain standard to avoid discoloration of fixtures); and
- 4) Fish ponds, etc.

It is necessary to provide separate guidelines for water quality on the above mentioned usage for various commercial and industrial purposes. For potable water supply, strict compliance of water quality that will meet the Philippine National Standard for Drinking Water (PNSDW) is required.

f) Rainwater for Ecological Requirements - Seasonal fluctuation of rainfall affects the Rain flora and fauna of waterways. The management of rainwater runoff provides steady release of water to the waterways enhancing their continued supply

1       Sec. 5. *Preparation of the Rainwater Design Manual.* – The Department of  
2 Public Works and Highways (DPWH) is hereby directed to prepare the Rainwater  
3 Design Manual which should incorporate the following criteria:

- 4       a) All sites shall establish rainwater management system to control the peak flow  
5       rates of rainwater discharge associated with specified design storms and reduce  
6       the generation of rainwater for the site to provide treatment for both water  
7       quality and quantity. Peak post-construction rainwater runoff will not exceed  
8       peak pre construction rainwater runoff from the site to the greatest extent  
9       possible.
- 10      b) All rainwater runoff generated from any development shall not discharge  
11      untreated rainwater directly into a jurisdictional wetland or local water body  
12      without adequate treatment.
- 13      c) Structural and non-structural Rainwater Treatment System (RTS) shall be  
14      designed to treat the first 20 mm of rainwater runoff. That means for every one  
15      (1) hectare of new development, a 200 cubic meters of detention /retention  
16      tank shall be constructed to minimize flooding and improve water quality.  
17      Sanitary wastewater treatment facilities shall be designed and installed to  
18      comply with existing health regulations and meet the Effluent Standard of the  
19      DENR.
- 20      d) Untreated sanitary waste should not be discharge to waterways and land  
21      surface without proper treatment and shall not come in contact with rainwater  
22      runoff. For discharge of treated effluent to water bodies, it shall meet the river  
23      classification. For unclassified rivers and water courses, Class C water shall be  
24      met. For discharge to urban drainage system, the minimum requirement shall  
25      be Class D effluent. Any variation with the required standard set by DENR, the  
26      prescription provided by the DENR shall be followed.
- 27      e) To protect stream channels from degradation, velocity of runoff water shall be  
28      limited to less than 1.0 m/s otherwise bank protection shall be provided.
- 29      f) Rainwater discharges to critical areas with sensitive resources (including  
30      shellfish beds, swimming areas, water supply reservoirs and groundwater  
31      recharge areas) may be subject to additional performance criteria, or may need  
32      to utilize or restrict certain rainwater management practices.



- 1 g) Rainwater discharges from land uses or activities with higher potential pollutant
- 2 loadings, known as "hotspots," may require the use of specific structural and
- 3 pollution prevention practices.
- 4 h) Prior to design, applicants are required to consult with the Building Official to
- 5 determine if they are subject to additional rainwater design requirements.
- 6 i) For existing development or develop areas, the rainwater management system
- 7 requirement may be imposed on the following conditions:
- 8 1) Existing or old development shall submit to the Building officials plans of
- 9 existing rainwater management system to demonstrate its contribution
- 10 to flood control and mitigation and rainwater management program;
- 11 2) That at least 50% of the required volume shall be met within five (5)
- 12 years from the effectivity of this Act; and
- 13 3) The total required volume of storage may be the cumulative volume
- 14 store from various storage such as cistern, lagoon onsite or offsite, and
- 15 depression storage

16 *Sec. 6. Construction Inspection. –*

- 17 a) The applicant must notify the Building Official in advance before the
- 18 commencement of construction.
- 19 b) All applicants for commercial and multi-family residential units over four (4)
- 20 units are required to submit actual record drawings for any rainwater
- 21 management practices located on-site after final construction is completed.
- 22 The Plan must show the final design specification for all rainwater
- 23 management facilities and must be certified by a professional engineer. A final
- 24 inspection is required before the release of any performance security,
- 25 performance bond, or guaranty.
- 26 c) Permanent vegetation must be seeded or planted within 30 days after the final
- 27 grade is reached. Planting guidance for permanent vegetative practices is
- 28 included in the Rainwater Design Manual. Any area of re-vegetation must
- 29 exhibit a survival of a minimum of seventy-five percent (75%) of the crop
- 30 cover throughout the year immediately following re-vegetation. Re-vegetation
- 31 must be repeated in successive years until the minimum seventy-five (75%)
- 32 survival for one (1) year is achieved.



- 1 d) The City/Municipal Engineer shall inspect all drainage facilities while under  
2 construction. When facilities are not constructed according to approved plans,  
3 the local government unit (LGU) has the explicit authority to compel  
4 compliance and have any situations corrected which are not according to the  
5 approved plans. All drainage facilities located on private property, whether  
6 dedicated to the LGU or not, shall be accessible at all times for inspection by  
7 the City/Municipal engineer or other responsible public official.
- 8 e) The City/Municipal Engineer shall inspect all sanitary waste treatment facilities  
9 while under construction and upon completion to insure proper installation and  
10 connection to waste water collection systems when applicable. Proper function  
11 of sanitary waste treatment facilities is required prior final approval and  
12 issuance of a certificate of occupancy.

13 *Sec. 7. Maintenance and Repair of Rainwater Facilities. –*

- 14 a) All rainwater management facilities must undergo a regular yearly inspection  
15 process at a frequency sufficient to determine the functioning ability of the  
16 conveyance system and any repair needs; at a minimum this should include  
17 inspection prior to the beginning of Typhoon Season, prior to any forecast  
18 major rains that may equal the design requirements and after any major rain  
19 events.
- 20 b) All drainage facilities located on private property, whether dedicated to the LGU  
21 or not, shall be accessible at all times for inspection by the City/Municipal  
22 Engineer or other responsible public officials. All sanitary waste treatment  
23 facilities located on private property shall be accessible for inspection for proper  
24 function by the City/Municipal Engineer or other responsible public officials  
25 where there is reason to suspect that a malfunction has resulted in rainwater  
26 runoff pollution by unsanitary waste.
- 27 c) Parties responsible for the operation and maintenance of a rainwater  
28 management facility shall make records of the installation and of all,  
29 maintenance and repairs, and shall retain these records for at least five years.  
30 These records shall be made available to the City during inspection of the facility  
31 and other reasonable times upon request.

1 d) The Building Official will notify the owner in writing that maintenance is  
2 required. The owner will have 60 days from the receipt of such written notice  
3 to bring the facility into proper working order.

4 *Sec. 8. Enforcement and Penalties. –*

5 a) Any person found to be in violation of any of the terms and provisions of this  
6 Act shall be found guilty of a misdemeanor and subject to a fine not to exceed  
7 P50,000 or imprisoned for no more than ninety (90) days or both such fine and  
8 imprisonment. A continuance of a violation without reasonable effort on the  
9 part of the defendant to correct same shall be and constitute a new and  
10 separate offense each day.

11 b) If the Building Official shall find that the provisions of this ordinance are  
12 violated, the person responsible for such violation shall be notified in writing,  
13 indicating the nature of the violation and ordering action necessary to correct  
14 it. Among those actions which he/she may be ordered is discontinuance of any  
15 actions on site.

16 c) In case any post-construction rainwater practice is constructed, reconstructed,  
17 altered, repaired, or converted or any person would be damaged by such  
18 violation, in addition to other remedies, the Building Official may institute  
19 injunction, mandamus, or other appropriate action in proceeding to prevent  
20 violation of the final plan or any element of this plan.

21 d) Violators may be required to restore land to its undisturbed condition. In the  
22 event that restoration is not undertaken within a reasonable time, after notice,  
23 the LGU may take necessary corrective action, the cost of which shall become  
24 a lien upon the property until paid.

25 *Sec. 9. Repeal. –* All laws, orders, rules, regulations, and issuances, or parts  
26 thereof, which are inconsistent with this law are hereby repealed or modified  
27 accordingly.

28 *Sec. 10. Effectivity. –* This Act shall take effect fifteen (15) days after its  
29 publication in the Official Gazette or in a newspaper of national circulation.

*Approved,*