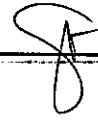


SENATE

Senate Bill No. 36

'19 JUL -1 A11 :10

RECEIVED



Introduced by Senator FRANCIS N. PANGILINAN

AN ACT
PROVIDING FOR THE MANAGEMENT, CONTROL, REGULATION, AND
UTILIZATION OF RAINWATER RUNOFF, AND THE 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

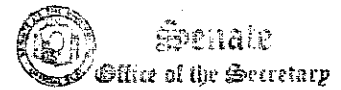
EXPLANATORY NOTE

The United Nations Environment Programme (2009) suggested considering rainfall as an important resource in water management policies, strategies and plans. Rainwater harvesting can be an effective complementary and viable alternative to large-scale water withdrawals and can ensure environmental sustainability. In the context of the Philippines, torrential rains have caused severe flooding due to poor planning, control and regulation of runoff rainwater.

It is then the objective of this bill to conserve rainwater as well as reduce its runoff. As to the utilization of rainwater, this bill provides that it will be for urban and rural irrigation, groundwater recharge, firefighting, and non-potable water supply source – such as watering plants, flushing of toilet, and washing of cars and floor yards, among others. This also seeks to help in the issue of water shortage that several areas in the country experience. A version of this measure was filed by Senator Poe in the 17th Congress.

Due to the limits in Republic Act No. 6716 or An Act Providing for the Construction of Water Wells, Rainwater Collectors, Development of Springs and Rehabilitation of Existing Water Wells in all Barangays in the Philippines in terms of managing, controlling, regulating, and utilizing rainwater runoff, the approval of this bill is earnestly sought.


FRANCIS N. PANGILINAN



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AN ACT

PROVIDING FOR THE MANAGEMENT, CONTROL, REGULATION, AND UTILIZATION OF RAINWATER RUNOFF, AND THE 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

Be it enacted by the Senate and the House of Representatives 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 following
4 objectives:

- 5 a) Minimize increase in rainwater runoff from any development, both existing
6 and 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 nonpoint 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 nonpoint
15 source pollution, wherever possible, through rainwater management

1 controls and to ensure that these management controls are properly
2 maintained and pose no threat to public safety.

3 **SEC. 2. *Definition of Terms.*** – As used in this Act:

- 4 a) *Applicant* – means a property owner or agent who has filed an application for
5 a rainwater management permit;
- 6 b) *Building* – any structure built for the support shelter, or enclosure or person,
7 animals, chattels, or moveable property of any kind and which is
8 permanently affixed to the land;
- 9 c) *Building Official* – Local Building Official as appointed or designated
10 pursuant to PD 1096;
- 11 d) *Certificate of Occupancy* – a permit issued by the Zoning Officer indicating that
12 the use of the building or land in question is in conformity with the Zoning
13 Ordinance or that there has been a legal variance therefrom, as provided by
14 the ordinance;
- 15 e) *Channel* – means a natural or artificial watercourse with definite bed and
16 banks that conducts continuously or periodically flowing water;
- 17 f) *Dedication* – means the deliberate appropriation of property by its owner for
18 general public use;
- 19 g) *Detention* – means the temporary storage of rainwater runoff in a rainwater
20 management practices with goals of controlling peak discharge rates and
21 providing gravity settling of pollutants;
- 22 h) *Developer* – means a person or entity who undertakes land disturbance or
23 development activities;
- 24 i) *Development* – means any man-made change to improve or unimproved real
25 estate, including but not limited to buildings or other structures, mining,
26 dredging, filling, grading, paving, excavation, or drilling operation;

- 1 j) *Drainage Easement* – means a legal right granted by the landowner to a
2 grantee allowing use of private land for rainwater management purposes;
- 3 k) *Erosion and Sediment Control Plan* – means a plan that is designed to minimize
4 the accelerated erosion and sediment runoff at a site during construction
5 activities;
- 6 l) *Hotspot* – is an area where land use or activities generate highly contaminated
7 runoff, with concentration of pollutants in excess of those typically found in
8 rainwater;
- 9 m) *Impervious Coverage* – refers to those surfaces that cannot effectively infiltrate
10 rainfall (e.g. building rooftops, pavement, sidewalks, driveways etc.);
- 11 n) *Industrial Rainwater Permit* – refers to a National Pollutant Discharge
12 Elimination System permit issued to a commercial industry or group of
13 industries which regulates the pollutant levels associated with industrial
14 rainwater discharges or specifies on-site pollution control strategies;
- 15 o) *Infiltration* – is the process of percolating rainwater into the subsoil;
- 16 p) *Infiltration Facility* – is any structure or device designed to infiltrate water to
17 the subsurface. These facilities may be above grade or below grade;
- 18 q) *Land Disturbance Activity* – is any activity which changes the volume or peak
19 flow discharge rate of rainfall from the land surface. This may include
20 grading, digging, cutting, scraping, or excavating of soil, placement of fill
21 materials, paving, construction, substantial removal of vegetation, or any
22 activity which bares soil or rock or involves the diversion or piping of any
23 natural or man-made watercourse;
- 24 r) *Landowner* – means the legal or beneficial owner of land, including those
25 holding the right to purchase or lease the land, or any other person holding
26 proprietary rights in the land;

- 1 s) *Off-site Facility* – means a rainwater management measure located outside the
2 subject property boundary described in the permit application for land
3 development activity;
- 4 t) *On-site Facility* – means a rainwater management measure located within the
5 subject property boundary described in the permit application for land
6 development activity;
- 7 u) *Recharge* – means the replenishment of underground water reserves;
- 8 v) *Redevelopment* – means any construction, alteration or improvement
9 exceeding 100 square meters in areas where existing land use is high density
10 commercial, industrial, institutional or multi-family residential;
- 11 w) *Stop Work Order* – means an order issued which requires that all construction
12 activity on a site be stopped;
- 13 x) *Rainwater Design Manual* – means the planning and design manual for the
14 control of erosion, sediment and rainwater written by Department of Public
15 Works and Highways;
- 16 y) *Rainwater Management* – means the use of structural or non-structural
17 practices that are design to reduce rainwater runoff pollutant loads,
18 discharge volumes, and/or peak flow discharge rates;
- 19 z) *Rainwater Retrofit* – means a rainwater management practice designed for an
20 existing development site that previously had either no rainwater
21 management practice in place or a practice inadequate to meet the rainwater
22 management requirements of the site;
- 23 aa) *Rainwater Runoff* – means water flow on the surface of the ground, resulting
24 from precipitation;
- 25 bb) *Rainwater Treatment Practices* – mean measures, either structural or non-
26 structural, that are determined to be the most effective, practical means for

1 preventing for reducing point source or nonpoint source pollution inputs to
2 rainwater runoff and water bodies; and

3 cc) *Watercourse* - means a permanent or intermittent stream or other body of
4 water, either natural or man-made, which gathers or carries surface.

5 **SEC. 3. Requirements for Rainwater Management Plan.** - All landowners or
6 developers of proposed commercial, industrial, and residential development or any
7 residential multi-dwelling units of more than 1,000 square meter land area must submit
8 a Rainwater Management Plan (RMP) as part of the site development application and
9 approval process.

10 The RMP shall include the following information:

11 a) *Description of Existing Conditions* - description of the existing condition shall
12 be shown on a map. It shall include:

13 i. Topographic map with 1.0 meter minimum contours line or an
14 appropriate contour interval of the land proposed for development
15 or redevelopment;

16 ii. Location of natural waterways including banks and centerline of
17 streams and channels;

18 iii. The normal shoreline, coastlines, outline of lakes, natural
19 depression and ponds, including drainage flow lines; and

20 iv. Quantification of flows (discharge and volume) in its natural
21 condition shall be provided.

22 b) *Proposed Site Development Plan* - the proponent shall provide Site
23 Development Plan (SDP) in an appropriate scale and size showing the
24 following:

25 i. Retention/detention basins and lines of inflow and outflow;

26 ii. The location, size and slope of rainwater conduits and drainage
27 swales;

- 1 iii. Rain, sanitary and combined sewer and outfalls; and
- 2 iv. Delineation of upstream and downstream drainage features and
- 3 watersheds which might be affected by the development; and
- 4 other environmental features including limits of wetlands areas,
- 5 green buffers, planting strips, and any designated natural areas for
- 6 rainwater management.

7 c) *Description of Proposed Rainwater Management System (RMS)* – the proposed
8 RMS shall be designed to safely and completely managed rainwater runoff
9 onsite or offsite and provide facility to regulate the increased rainwater
10 runoff, thus, maintain the natural hydrologic cycle and condition of flow in
11 a locality. The purpose of the RMS is to reduce the risk of downstream
12 flooding by reducing the amount of runoff and regulating the discharge
13 release at a given time.

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

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

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

- 23 i. The extent of catchment, drainage channels on site and direction of the flow
24 of the channels including the final outfall of the discharge from the site;
- 25 ii. Hydrologic and hydraulic design calculations for the pre-development and
26 post-development conditions for the design storm proposed in Section 5.
- 27 The calculations for determining peak flows are found in the Rainwater

1 Design Manual to include description of design storm frequency, intensity,
2 and duration, time of concentration, soil curve number or runoff
3 coefficients, peak runoff rates and total runoff volumes, infiltration rates,
4 culvert capacities, flow velocities, data on the increase in rate and volume
5 of runoff for the design storm; and

- 6 iii. Technical specifications of the proposed SMS, providing descriptions of
7 proposed rainwater conveyance practices to be on-site, existing off-site
8 rainwater conveyance system including receiving streams, channels, and
9 outfall and inlet locations. Include the elevations of locations and high
10 water elevations.

11 **SEC. 4. Utilization of Rainwater.** - The following are the specific utilization of
12 rainwater and the recommended facility to harness its volume for the intended use:

13 a) *Rainwater for rural irrigation* - agriculture in the Philippines is predominantly
14 rainfed. Rainwater catchments thus hold a significant potential to improve
15 efficiency and sustainability of rainwater use for rainfed and upland
16 agriculture in the country.

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

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

1 c) *Rainwater for groundwater recharge* – the RMS is intended mainly to ensure
2 natural balance of the hydrologic cycle by allowing rainwater to recharge the
3 groundwater table that sustains the yield and production of deep wells. The
4 proposed facility to allow for recharge may be in the form of the following
5 best management system:

- 6 i. Lagoon or retention pond that allows for natural seepage to the
7 ground water aquifer;
- 8 ii. Swales and depression storage;
- 9 iii. Porous or pavers blocks on some developed areas; and
- 10 iv. Retention channels.

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

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

22 e) *Rainwater for non-potable water supply source* – rainwater subjected to primary
23 and secondary treatment can be a viable secondary source for water supply
24 in urban and rural areas. It can be used for the following purposes:

- 25 i. Watering plants;
- 26 ii. Washing of cars, floor yards;

- 1 iii. Flushing of toilet (water quality should meet certain standard to
- 2 avoid discoloration of fixtures); and
- 3 iv. Fish ponds.

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

- 8 f) *Rainwater for ecological requirements* - seasonal fluctuation of rainfall affects
9 the flora and fauna of waterways. The management of rainwater runoff
10 provides steady release of water to the waterways enhancing their continued
11 supply.

12 **SEC. 5. Preparation of the Rainwater Design Manual.** - The Department of Public
13 Works and Highways (DPWH) is hereby directed to prepare the Rainwater Design
14 Manual which should incorporate the following criteria:

15 In the interim period (within 1 year), the following shall be enforced:

- 16 a) All sites shall establish rainwater management system to control the peak
17 flow rates of rainwater discharge associated with specified design storms and
18 reduce the generation of rainwater for the site to provide treatment for both
19 water quality and quantity. Peak post-construction rainwater runoff will not
20 exceed peak pre-construction rainwater runoff from the site to the greatest
21 extent possible.
- 22 b) All rainwater runoff generated from any development shall not discharge
23 untreated rainwater directly into a jurisdictional wetland or local water body
24 without adequate treatment.
- 25 c) Structural and non-structural Rainwater Treatment System (RTS) shall be
26 designed to treat the first 20 mm of rainwater runoff. That means for every
27 one (1) hectare of new development, a 200 cubic meters of

1 detention/retention tank shall be constructed to minimize flooding and
2 improve water quality.

3 d) Sanitary wastewater treatment facilities shall be designed and installed to
4 comply with existing health regulations and meet the Effluent Standard of
5 the DENR. Untreated sanitary waste should not be discharge to waterways
6 and land surface without proper treatment and shall not come in contact with
7 rainwater runoff. For discharge of treated effluent to water bodies, it shall
8 meet the river classification. For unclassified rivers and water course, Class
9 C water shall be met. For discharge to urban drainage system, the minimum
10 requirement shall be Class D effluent. Any variation with the required
11 standard set by DENR, the prescription provided by the DENR shall be
12 followed.

13 e) To protect stream channels from degradation, velocity of runoff water shall
14 be limited to less than 1.0m/s otherwise bank protection shall be provided.

15 f) Rainwater discharges to critical areas with sensitive resources (including
16 shellfish beds, swimming areas, water supply reservoirs and groundwater
17 recharge areas) may be subject to additional performance criteria, or may
18 need to utilize or restrict certain rainwater management practices.

19 g) Rainwater discharges from land uses or activities with higher potential
20 pollutant loadings, known as "hotspots," may require the use of specific
21 structural and pollution prevention practices.

22 h) Prior to design, applicants are required to consult with the building official
23 to determine if they are subject to additional rainwater design requirements.

24 i) For existing development or develop areas, the rainwater management
25 system requirement may be imposed on the following conditions:

26 i. Existing or old development shall submit to the building officials
27 plans of existing rainwater management system to demonstrate its

1 contribution to flood control and mitigation and rainwater
2 management program;

3 ii. That at least 50 percent of the required volume shall be met within five
4 (5) years from the effectivity of this Act; and

5 iii. The total required volume of storage may be the cumulative volume
6 store from various storage such as cistern, lagoon onsite or offsite, and
7 depression storage.

8 **SEC. 6. *Construction Inspection.* –**

9 a) The applicant must notify the building official in advance before the
10 commencement of construction.

11 b) All applicants for commercial and multi-family residential units over four (4)
12 units are required to submit actual record drawings for any rainwater
13 management practices located on-site after final construction is completed.
14 The plan must show the final design specification for all rainwater
15 management facilities and must be certified by a professional engineer. A
16 final inspection is required before the release of any performance security,
17 performance bond, or guaranty.

18 c) Permanent vegetation must be seeded or planted within 30 days after the
19 final grade is reached. Planting guidance for permanent vegetative practices
20 is included in the Rainwater Design Manual. Any area of re-vegetation must
21 exhibit a survival of a minimum of seventy-five percent (75 percent) of the
22 crop cover throughout the year immediately following re-vegetation. Re-
23 vegetation must be repeated in successive years until the minimum seventy-
24 five percent survival for one year is achieved.

25 d) The City/Municipal Engineer shall inspect all drainage facilities while under
26 construction. When facilities were not constructed according to approved
27 plans, the local government unit (LGU) has the explicit authority to compel

1 compliance and have any situations corrected which are not according to the
2 approved plans. All drainage facilities located on private property, whether
3 dedicated to the LGU or not, shall be accessible at all times for inspection by
4 the City/Municipal engineer or other responsible public official.

- 5 e) The City/Municipal Engineer shall inspect all sanitary waste treatment
6 facilities while under construction and upon completion to insure proper
7 installation and connection to waste water collection systems when
8 applicable. Proper function of sanitary waste treatment facilities is required
9 prior final approval and issuance of a certificate of occupancy.

10 **SEC. 7. *Maintenance and Repair of Rainwater Facilities.* -**

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

1 These records shall be made available to the city during inspection of the
2 facility and other reasonable times upon request.

- 3 d) The building official shall notify the owner in writing that maintenance is
4 required. The owner will have 60 days from the receipt of such written notice
5 to bring the facility into proper working order.

6 **SEC. 8. Enforcement and Penalties. –**

- 7 a) Any person found to be in violation of any of the terms and provisions of this
8 Act shall be found guilty of a misdemeanor and subject to a fine not to exceed
9 Php50,000.00 or imprisonment for no more than ninety (90) days or both fine
10 and imprisonment. A continuance of a violation without reasonable effort on
11 the part of the defendant to correct shall constitute a new and separate
12 offense each day.

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

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

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

1 **SEC. 9. *Separability Clause.*** – If any provision of this Act is declared invalid or
2 unconstitutional, the other provisions not affected by such declaration shall remain in full
3 force and effect.

4 **SEC. 10. *Repealing Clause.*** – All laws, executive orders, administrative orders, and
5 rules and regulations inconsistent with this Act are hereby repealed or amended
6 accordingly.

7 **SEC. 11. *Effectivity Clause.*** – This Act shall take effect fifteen (15) days after its
8 complete publication in the *Official Gazette* or in two (2) newspapers of general circulation.

Approved,