

CITY OF LAKE CHARLES RUNOFF MANAGEMENT PLAN (RMP) GUIDANCE

Lake Charles has established a drainage ordinance that can be found in Sec. 6-481 of the Code of Ordinances. The ordinance provides definitions and requirements for a Stormwater Runoff Management Plan (RMP), Fill Mitigation, and Freeboard Elevations. The ordinance should be reviewed as development plans are being created.

RMP Guidelines

For sites requiring DOTD review for drainage flows:

- Methodology – See DOTD Hydraulics Manual
- Detention Storage Design – See DOTD Hydraulics Manual
- Detention Outlet Structure Design – See DOTD Hydraulics Manual

For other development sites <200 acres:

Step 1: Determine Pre-Development Restrictions

- Peak discharges for pre-development restrictions shall be based upon the Rational Method for 10 year storm event.

Step 2: Determine Detention Storage Volume

- Pond Sizing Analysis – Modified Rational Method (MRM)
- Detention Storage Design – The size and volume of the detention pond shall be designed based upon a 25-year storm event. For design purposes, an outfall structure, appropriate for the 25-year storm event, shall be analyzed. The post-development discharge shall not exceed the pre-development discharge for a 25-year storm event. This design exercise shall only be used to determine the pond size and volume. The actual outfall structure shall be designed according to “Step 3.”

Step 3: Design Detention Outfall Structure

- Detention Outfall Pipe – Outfall pipe shall be designed to limit the post-development discharge from the site to the 10 year pre-development discharge rate as determined by the Rational Method.
- Tailwater – The minimum tailwater shall be elevation 3.0 feet (current National Geodetic Survey Vertical Datum). However, if the outfall discharge elevation is above 3.0 feet, the design is not required to consider tailwater.

For other development sites >200 acres:

Step 1: Determine Pre-Development Restrictions

- Peak discharges for pre-development restrictions shall be based upon the NRCS (SCS) Method for 10 year storm event.

Step 2: Determine Detention Storage Volume

- Pond Sizing Analysis – NRCS (SCS) Method
- Detention Storage Design – The size and volume of the detention pond shall be designed based upon a 25-year storm event. For design purposes, an outfall structure, appropriate for the 25-year storm event, shall be analyzed. The post-development discharge shall not exceed the pre-development discharge for a 25-year storm event. This design exercise shall only be used to determine the

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- Tailwater - The minimum tailwater shall be elevation 3.0 feet (current National Geodetic Survey Vertical Datum). However, if the outfall discharge elevation is above 3.0 feet, the design is not required to consider tailwater.

RMP Submittal Requirements

A RMP completed by a registered professional who can engage in drainage design under Louisiana State Law must be submitted, as required for all large developments or expansions of large developments. The RMP shall include, but not be limited to, the following specifications:

1. Plot or plats drawn to scale providing the following items, data, or information:
 - a. Site location and description
 - b. Topographic survey of the area to be developed based on the current National Geodetic Survey Vertical Datum;
 - c. Existing and proposed property lines;
 - d. Site Watershed map;
 - Delineate drainage boundaries and indicate the acreage.
 - Indicate the location of existing channels/ditches, natural drains, and drainage structures.
 - e. The contributing drainage areas involved/affected;
 - f. Grading plan;
 - g. Provide the square footage of existing and proposed impervious versus non-impervious areas; and
 - h. Layout, size, pipe slopes, and type of drainage structures and pipe on- and off-site to the point of tie-in.
2. A description of the proposed development vegetative cover, proposed drainage structures, existing channels to be rerouted, swales to be constructed, and ditch realignments.
3. The flow rate of stormwater at each large development entry point that will result from the relevant design storm. This determination to be based on future land use of the upstream drainage areas.
4. The flow rate of stormwater at each exit point that will result from the relevant design storm. This determination to be based on future land use of the upstream drainage areas. This calculation will take into account expected construction within the large development that will change the grades, direction of flow, runoff factors, or other existing conditions.
5. The peak water surface elevation in the detention/retention pond or underground retention system for the applicable design storm.
6. A description of the pond embankment stabilization plan. Pond embankment slopes shall be stabilized with vegetation or other means to minimize erosion. A 3:1 side slope for detention/retention ponds is recommended.
7. A description of the pond's overflow plan during extreme storm events. For earthen ponds, there should be a location within the perimeter levee provided to control the overflow during extreme storm events. This area should be protected against erosion by the installation of concrete block mat or other long-term protective measure.

8. When there is an outlet pipe discharging to an open ditch, show that both sides of the ditch are protected against erosion by the installation of concrete block mat or other long-term protective measure, when practical.
9. All necessary outlet structure details, including engineering construction drawings and specifications with reference to mean sea level elevations at invert and overtopping locations.
10. Ownership and maintenance plan for detention/retention pond and system, including responsible party for the maintenance as required by Sec. 6-485 (e).
 - a. Inlet and outlet drainage pipes for the detention/retention pond shall be in a private drainage easement address by the ownership and maintenance plan.
11. The RMP will consist of three distinct and designated parts as follows:
 - a. Summary: The effect of the proposed construction on upstream and downstream areas.
 - b. Design Criteria: Description of methodology, data, and assumptions used.
 - c. Calculations: Clear, concise, step-by-step calculations performed to support the drainage system design.
12. An 8½ x 11-bound copy of the drainage plan shall be submitted with full-size plans.
13. Special conditions which may exist at the proposed development site should be clearly identified including but not limited to such items as:
 - a. Special Flood Hazard Areas
 - b. Regulatory Floodway
 - c. Fill placement location and mitigation requirements