

SPRINGVILLE STORM WATER STORAGE FACILITY POLICY

This policy has been prepared to provide design standards and regulations for evaluating and designing storm drain and flood control facilities in the City of Springville (City). The objective of this policy is to ensure that storm water facility planning and design for small areas and local developments within the City are consistent with the City's Storm Drain Master Plan.

All storm water facilities shall conform to requirements in this Storm Water Facility Policy, the City's Storm Drain Master Plan, and shall be approved by City Engineer.

STORM WATER DETENTION FACILITY DESIGN CRITERIA

All storm water detention facilities shall be designed according to the following criteria:

1. The maximum side slope of the basin shall be 3H:1V. The maximum side slope for any basin designed or intended for multiple use shall be 4H:1V.
2. Basins adjacent to pedestrian walk ways must be set back a min. of 8 feet from the back of walk before the basin side slope begins.
3. A basin may be designed for dual use, but uses other than the detention of storm water must be approved by the City Engineer.
4. Storm water storage facility must be sized such that the peak flow rate released from the site does not exceed 0.15 cubic feet per second per acre of development (cfs/acre). The amount of storm water may be further restricted by the capacity of the existing storm drains or drainage facilities as determined by the City Engineer. In the event such additional restrictions are necessary, the developer shall provide additional detention storage of a capacity designated by the City Engineer.
5. Low flow pipes or channels will not be allowed in detention facilities unless suitable pre-treatment is provided.
6. The minimum area of the discharge orifice shall be six (6) square inches.
7. The volume requirements shall not be reduced based on evaporation or infiltration due to percolation.
8. The basin maximum depth shall be approved by the City Engineer. Prior to the design of the storm water facility (above or below ground) the maximum groundwater level, including irrigation induced water level, shall be identified on the site. The maximum ground water table shall be determined by one or more of the following methods:

- a. Direct visual observation of the maximum ground water table in a soil exploration pit during the anticipated time period of maximum ground water table, including irrigation induced water table.
- b. Regular monitoring of the "ground water table" or "ground water table, perched" in an observation well for a period of six months, or for the period of anticipated maximum ground water table, including irrigation induced water table.
- c. Observation of soil in a soil exploration pit for evidence of crystals of salt left by the maximum ground water table; or chemically reduced iron in the soil, reflected by a mottled coloring.

The maximum ground water level is to be documented in the soils report by a professional geotechnical engineer or geologist licensed in the state of Utah. A City representative shall be present on site at time the high water elevation is determined. The invert or lowest point in the pond shall be not less than 12-inches above the existing or historical groundwater levels (whichever is higher).

The maximum depth of the basin shall be three feet; a maximum water depth of three (feet) below the emergency overflow. Additionally one (1) foot of freeboard above the emergency overflow shall be provided. All other basins require special design, approval, and permitting including safety precautions on a case by case situation.

9. The bottom of the basin shall be sloped at a minimum two percent (2%) slope toward the outlet.
10. Provide a plan for long-term maintenance and monitoring of the facility.
11. Provide vehicular access to all drainage control and pre-treatment structures.
12. Provide an emergency overflow spillway to safely discharge runoff from the facility in the event that the outlet is inoperable or the inflow exceeds the outlet capacity. The overflow shall be designed such that water will escape from the facility before reaching finished floor elevations on site or escaping onto neighboring properties.
13. Each detention basin shall have an outlet to the City storm drain system. A trash rack shall be installed at the outlet(s) to prevent debris from entering the storm drain system
14. Storm water may be detained underground in an approved underground system. Underground storage system designs shall be discussed with the City Engineer before submittal and will be approved on a case by case basis. The following limitations apply to underground detention storage:

- a. Basins are to be designed such that when runoff exceeds design values or when restrictions plug, excess storm water will be directed to the street system or bypass the restriction by entering the piped system via a free flowing overflow to pass the 100 year event.
 - b. The private property owner benefiting from the underground detention storage will be responsible to maintain the operation of the system.
 - c. Underground systems shall provide adequate access points for cleaning and maintenance.
 - d. Emergency overflows and the flow path of the overflows shall be mapped for purpose of flooding and flood insurance requirements.
15. All facilities shall be landscaped in accordance with City Standards. Approved landscaping for storm water storage facilities based on zoning/use is as follows:

Residential	Non-Residential	Regional
Turf Grass ^A	Turf Grass ^A	Turf Grass ^A
	Rock mulch with plants ^B	Rock mulch with plants ^B
		Native Grasses ^C

NOTE :

- A) Grass lined basins will be required to install a underground sprinkler system to adequately water the basin to keep the grass alive.
 - B) The rock in rock lined basin shall be ¾” to 3” washed rock. Mirafi fabric shall be laid prior to the placement of the rock to act as a weed barrier. Underground irrigation (sprinkler or drip) shall be provided to adequately water all plants/trees. Plants in the basin may be optional for sites that have already met the landscape requirements as established by City Code.
 - C) Native grass mix must be approved by the City.
16. Detention basins may be constructed in the required landscape for commercial/industrial properties. Storm water may **NOT** be detained above ground in parking/hard surface areas.
17. The City Engineer shall have authority to modify the criteria as needed to meet changing or unusual needs or conditions.

TEMPORARY STORM WATER STORAGE FACILITIES

The City Engineer may approve temporary drainage facilities for on-site detention that will allow development to continue pending completion of the permanent (i.e. regional) storm drainage improvements as outlined in the City’s Storm Water Master Plan.

Temporary facilities shall meet the storm water design criteria listed above and provide the same level of flood protection at all times that will be provided by the completed permanent system. All costs of temporary facilities shall be paid for by the developer in addition to the other costs and fees.

STORM WATER RETENTION FACILITY DESIGN CRITERIA

Retention facilities (basins, sumps, or underground infiltration systems) **will not be allowed** without prior written approval of the City Engineer. Sumps shall not be located in areas with a constant or seasonally high groundwater table (including irrigation induced water levels), or shallow bedrock. Identification of the high groundwater level will be accomplished in the same procedure outlined for detention facilities above. **No sumps or retention facilities will be allowed west of 400 West.** If sumps are allowed they shall be designed according to the following criteria:

1. The bottom of the sump shall be at least 10 feet above the seasonal high water table, and at least 3 feet above bedrock.
2. Sumps shall provide adequate water quality treatment to prevent contamination of the ground water aquifer.
3. All basins/sumps shall drain within 3 days (72 hours) from the end of the storm event. This is to be documented with a certified percolation test and documented in the soils report. The percolation test must be performed at or below the bottom elevation of the proposed retention structure. The percolation test must be performed by professional geotechnical engineer licensed in the state of Utah. Percolation rates must be 20 min per inch or higher. The regulatory authority shall have the option of inspecting the open soil exploration pits and monitoring the percolation test procedure.
4. All sumps must be designed for the 25-year storm. All design data including soil log, percolation tests, etc., must be submitted with the drainage plans.
5. Underground retention shall conform to the design requirements for underground detention systems listed above.
6. Basins are to be designed such that when runoff exceeds design values or when restrictions plug, excess storm water will be directed to the street system or bypass the restriction by entering the piped system via a free flowing overflow to pass the 100 year event.
7. Emergency overflows and the flow path of the overflows shall be mapped for purpose of flooding and flood insurance requirements.