

## **UPTOWN PLACE STORMWATER SYSTEM DESCRIPTION (Version 6.0 Final)**

We have a stormwater collection system onsite which operates similar to a retention pond - capturing stormwater runoff and filtering it to minimize pollution so that contamination does not occur downstream. Eventually the stormwater from our system gets routed to lakes, rivers, and such.

Our stormwater system is designed to capture and retain a certain volume of water as required by permit. Retained water is routed to an onsite exfiltration vault where it is supposed to percolate into the ground. The exfiltration vault, which is located beneath the garage, is a concrete vault with two sections (*one section is for collecting stormwater from the north side of the building while the other section is for collecting stormwater from the south side of the building – the north and south sides of our stormwater system are not connected and operate independently of each other and can be evaluated and troubleshooted in an independent fashion*). The vault is comprised of concrete walls on all sides and the top but is open at the bottom where the stormwater filters through the underlying soil (*it's designed to act like a retention pond*).

Surrounding our building are inlet pipes (*those closest to the building*) which collect water from the courtyard, the building roof gutters, the parking garage and the curb inlet in the parking area outside the parking garage. These pipes route the stormwater into our two-sided vault beneath the garage. All building gutters are connected to the inlet pipes. Because the water collected by the gutters comes from 5 floors up, it enters the stormwater inlet pipes with quite a bit of force. Under normal system operation, this should not create a problem.

The stormwater system is designed to overflow once it has retained the volume of water required by permit. This happens automatically in stormwater junction boxes that have built in overflow walls. When the stormwater in our system rises to a certain level, it goes over the overflow wall and sends the excess stormwater into the outlet pipes (*those closest to the streets*) that route it off property where the water comes out of grated tops. Water comes out the top of these grates and spills into the roadway where it is carried away by the city's drainage system. For the northern system located on Weber Street there is not only an overflow grate but also a curb outlet where water is discharged into the street over the weir built on the front side of the inlet. The weir was constructed to better prevent Weber Street runoff from entering the system as the curb outlet is designed to be exit only. There is also an overflow grate for the southern system located at Pasadena and Marks. The outlet pipes have no drainage system aside from the overflow grated tops and/or the curb outlet on Weber Street – so water may remain in the outlet pipes until the water rises to such a level as to trigger discharge via the overflow grated tops and/or the curb outlet on Weber Street.

Under normal operation, the stormwater collected and retained in our system will gradually drain down as it percolates through the bottom of the exfiltration vault. The system is designed such that this is supposed to happen quickly enough to accept stormwater from the next rainfall event (per the approved design permit, our stormwater system drains halfway within 24 hours and fully drains within 72 hours). There can be standing water in our system at times, but it should drain over time. If we experience excessive rainfall, or the bottom of the exfiltration vault becomes covered with debris (leaves, silt, trash), the stormwater system will tend to fill quickly until stormwater has nowhere to go – due to the overflow system not being able to keep up with the rush of water coming in, particularly from the roof gutters and the parking garage drainage pipes. During these events, shock waves can be created within our system and water will start coming out wherever it can find openings (*area drains, pushing up manhole covers, flowing out of inlets*). The lowest points of our building are the garage and courtyard areas - so those areas will tend to

flood or overflow first when the stormwater system becomes overburdened.

A good indicator our stormwater system needs maintenance is when the stormwater within our system drains slowly or not at all such that there is standing water in the inlet pipes. The outlet pipes will frequently have standing water in them based on how the system is designed as indicated above. However, our stormwater system should gradually drain the inlet pipes as the retained water percolates into the ground in the exfiltration vault. Any maintenance needed can only be determined by an inspection of the system by a stormwater system expert - primarily the exfiltration vault. If the soil at the bottom of the vault has been covered with debris, it may be necessary to clean the debris out and some of the native soil as well if it has been clogged and doesn't allow water to easily exfiltrate into the soil. Any actions required to properly maintain the system or improve system performance must be determined by experts familiar with the operation of these types of systems. The frequency of maintenance can be determined by these experts, via regular inspections, or via the technical documents associated with the stormwater system.

Keeping key areas that feed into our system clear of debris/leaves/trash can help better ensure our stormwater system and the overflow into the outlet pipes operate properly so that excess water goes into the City's system instead. Debris getting into our system will only hamper proper system operation.

#### **Key Observations/Issues:**

It is a good practice, on a periodic basis, to observe the inlet pipe side of the exfiltration boxes. If water drains slowly or not at all (*without the use of external pumps*), then there are potential clogs in (*or issues with*) our stormwater system. The exfiltration process will only work if the soil at the bottom of the exfiltration tank is clean. The stormwater system should be inspected on an annual basis by a stormwater system expert. If any issues are detected, then maintenance actions might be needed (*e.g., draining, unclogging, and cleaning the exfiltration tank, inlet/outlet pipes, and such*).

Stormwater from the streets surrounding our condominium building should only be able to enter our stormwater system under extreme weather conditions. If this kind of system behavior is observed under more normal weather conditions, then this could be an indication that we need to troubleshoot our system to determine if there are any clogs or other issues. For example, if we observe water continuing to build in the outlet pipes (*without exiting*) which eventually overflows into the inlet pipes, then we will need to have the outlet pipes and such inspected and take any required corrective actions (*clearing clogs or otherwise addressing anything contributing to the problem*).

Our stormwater system was not constructed as originally designed by our developer. The storm collection grates in the courtyards are lower than they should be and could overflow under the right conditions.

If flooding or overflowing issues persist with our stormwater system after the inspection and maintenance actions have been performed, then we might need to hire a civil engineer specialized in hydraulics and drainage to evaluate our system to determine how to improve system performance. One option might be to disconnect the roof gutters from the stormwater system. Alan Oyler, from the City of Orlando, is willing to work with our civil engineer to help make that happen.