



October 18, 2017

**Reclaim Effluent Quality Estimate for  
PurWater Reclaim Systems**

Vehicles will attract contaminants predicated on the region of the country, and the roads traveled. These contaminants will consist of soil, road film, tree sap, bird droppings, pollen, insects, oil, and greases. Depending on if the region has snow and ice, then whatever will stick in the snow and ice will also stick to the vehicle. Snow and ice removal materials, which include but are not limited to sand, salt, liquid magnesium chloride which is often applied with a molasses to help it adhere to the road can and will stick to your vehicle as well. All of these contaminants will wash from the vehicle and will end up in the water reclamation tanking system.

The PurWater Reclaim System consists of two primary components ... the underground reclaim tank(s) and the above ground PurWater unit. The below ground tanks are normally supplied by a local concrete vault vendor, with their capacity and lay-out per PurWater specifications. The primary purpose of the reclaim system is to provide quality water to the wash so that the water can be re-used within the wash and still provide a clean car. The re-use of the water allows the operator to minimize the amount of incoming fresh water to the wash and the amount that is discharged from the wash. The reclaim system is not designed to meet a specific effluent quality of the discharge, although in many cases the water discharged from the system goes directly to sewer or a leach field.

As the primary purpose of the PurWater Reclaim System is to provide quality water for re-use within the wash, the system is designed to separate settleable solids (typically sand, grit) and free oils from the water going to the wash. These solids and oils can affect the wash quality, and increase the maintenance on wash pumps, piping, and nozzles. The large settleable solids (60-70 micron and larger) are settled within the underground tanks prior to entering the above ground PurWater unit. The PurWater unit uses high efficiency cyclones to remove down to 5 micron settleable solids prior to the wash. The solids-laden water from the PurWater unit is re-introduced into the reclaim water at the front end of the underground tanks, where some solids settle and some continue with the water phase to be re-treated or go out with the effluent. The free oils (60-70 micron and larger) float to the surface within the underground tanks and are trapped within the tanks. Accumulated settleable solids and free oils are periodically (normally every 3-6 months) removed from the reclaim system by pumping out the underground tanks and replacing with fresh water.

Some amount of water is continuously discharged from the reclaim system in order to satisfy the water balance for the wash. The volume of discharge is dependent on the amount of fresh water used by the wash, less any water that is lost to evaporation and carry-out. Depending upon local municipal requirements, the discharge can be sent directly to sewer or to a leach field, or may require additional treatment before final discharge. As each municipality will have its own discharge requirements, it is important to understand what contaminants the PurWater Reclaim System can and cannot affect.

The PurWater Reclaim system uses two processes to reduce contaminant loading. The first is physical separation using centrifugal force (the cyclones) and gravity settling (the reclaim tanks). Physical separation will directly affect the amount of free oil & grease (FOG) and total suspended solids (TSS) left in the discharge water, and indirectly affect the BOD / COD level as it removes oil & grease. The second process is chemical, oxidation using ozone. Ozone will affect the bacterial count, BOD / COD, total suspended solids (primarily bacterial), and some dissolved oils and chemicals. From field testing and experience, the PurWater Reclaim system has been shown to produce effluent qualities as follows:

CONTINUED NEX PAGE

Total Suspended Solids (TSS): 15-100 ppm  
Free Oil & Grease (FOG): 10-25 ppm  
BOD: 15-50 ppm

TSS, FOG, and BOD are typically the main concerns by municipalities receiving an effluent from a car wash. Given the type of processes used by the PurWater Reclaim system, there is no effect on total dissolved solids (TDS), pH, or temperature. There may also be little to no effect on certain chemicals dissolved in the water, emulsified or dissolved oils, and non-settleable solids.

The above effluent qualities are going to be similar for other types of systems that incorporate physical separation (plate separators, screen / bag filters, media filters, etc.) and chemical oxidation. Biological processes, when operating properly, may produce lower TSS, FOG, and BOD levels than the above, but still will not affect dissolved minerals and some dissolved chemicals in the water.

The above effluent quality estimates are based on normal contaminant loadings seen by car washes. The estimates are not a guarantee of performance. The estimated discharge quality from the PurWater Reclaim System may or may not be acceptable for direct discharge to sewer or a leach field. Local authorities and municipalities should be consulted to determine whether additional treatment is required to meet discharge permits.

If you have any questions or comments on the above, please contact our Sacramento office.

Sincerely,

Charlie Borchard  
Vice President of Operations  
New Wave Industries  
PurClean / PurWater