

Vancouver Aquarium Marine Science Centre

The Vancouver Aquarium is well known for its accomplishments in heightening the public's awareness of the importance of aquatic environments. The display of fish and animals in habitats that resemble their natural homes, gives people a window to the aquatic world that few could access any other way. Keeping animals healthy at Vancouver Aquarium is not a simple feat and would not be possible without its Class III Water Treatment Plant.



Foam Fractionator

Important facts:

- Plant classification - Water Treatment Class III
- Fresh water source - City of Vancouver domestic water. Rapid pressure sand filters and activated carbon provide primary filtration.
- Salt-water source - Vancouver harbor. Rapid open bed sand filters provide primary filtration.
- Secondary filtration is provided by rapid open bed sand filters, pressure sand filters, vacuum diatomaceous earth filters, screen drum filters, foam fractionators and biological filtration.
- Disinfection is accomplished with ozone, UV light, and sodium hypochlorite.
- Total water on site in displays and reservoirs is 9690 cubic meters. (9245 cu. M salt, 445 cu. M fresh)
- The water in the complex is continually recirculated from reservoir - to animal tanks - to filters - and back to reservoirs.
- The total volume of water is recirculated through filters every 125 minutes. This equates to a total volume of 111,059 cu. meters pumped in 24 Hrs.

Seawater is pumped from Burrard inlet by two vertical turbine pumps, to three one hundred square foot Rapid sand filters. The maximum flow rate is 4500 litres per min. with the average being 2700 l/min. The water leaves the sand filters and is held in a 340 cu. M reservoir from which it is distributed to eight separate animal systems. Each animal system has its own water treatment process.



Dolphin Training

The 3785 cu M Wild Coast pool is the largest and most complex. It is home for several harbor seals, stellar sea lions and two pacific white sided dolphins. Primary filtered seawater enters the pool at a rate of 225 litres per Min. and displaces an equal amount from the pool which is dechlorinated and returned to the ocean. The pool contents is continually filtered and the entire 3785 cu M of water is passed through four vacuum diatomaceous earth filters and eight pressure sand filters every 100 Min. The animals in the

pool are mammals and breath air rather than water. Therefore, certain disinfectants can be used in the pool. Routine on site micro testing, is done to confirm the constant free chlorine level of 0.25 mg/l and the addition of 600g of ozone per hour are effective in controlling the microbiology in the water. On-line analyzers control diaphragm chemical dosing pumps which feed sodium hypochlorite and hydrochloric acid for pH and chlorine level maintenance.



Vacuum Diatomaceous Earth Filter



Vacuum Diatomaceous Earth Filter

Some systems consist of a number of smaller fish tanks rather than one large tank as in the previous scenario. In this situation reservoirs of up to 350 cu. M are included in the water circuit to increase water volume in the system, and enhance stability of water quality parameters such as pH, dissolved oxygen and temperature.

The fresh water systems operate in the same manner as the salt systems but on a much smaller in scale.

Operational automation of equipment and processes is minimal. Critical water quality parameters are monitored by on-line computerized equipment.



Pressure Sand Filters

Thanks to Kent Hannestad.