

The Living Machine at SFPUC Headquarters



John Scarpulla Urban Watershed Planner SFPUC – Wastewater Enterprise





On-site Non-potable Water Use at SFPUC Headquarters

Rainwater Harvesting System

- 25,000 gallon cistern
- Reuse for irrigation
- 25 Micron Filtration
- UV (optional)

Living Machine

- Collects and treats building's wastewater
- Reuse for toilet flushing
- 5,000 gpd capacity















- Wastewater directed to a primary treatment tank
- Contains hydraulically separate trash chamber and settling chamber

Component	Function	Capacity	Notes
Trash Chamber	Receives sewage flow, settling and screening of larger solids from influent	Nominal: 2,500 gal. Net: 2,000 gal.	Also pumps excess wastewater to sewer
Settling Chamber	Removal of settleable and suspended solids from influent	Nominal: 7,500 gal. Net: 6,200 gal.	Filtered wastewater flows to Equalization Tank













Equalization and Recirculation Tanks

Component	Function	Capacity	Notes
Equalization tank ^{(©}	Flow equalization	Required net vol. Net: 3,000 gal.	Assumes 500 gal. pump submergence vol.
Recirculation tank (*)	Dilution and recirculation for Tidal Wetland stage 1	Required net vol. Net: 6,000 gal	





Equalization and Recirculation Tanks



Tidal Flow Wetland – More Detail

Tidal Flow Wetland - Construction

Polishing Vertical Flow Wetlands

Polishing Vertical Flow Wetlands – Under Construction

Polishing Vertical Flow Wetlands

Disinfection Equipment

2) 5µ Cartridge Filter

4) Tablet Chlorinator

Operating the Living Machine

SFDPH Water Quality Requirements

Measure	Minimum	Average	Maximum
Treatment Requirements			
BOD ₅	N/A	<=30 mg/L	<=45 mg/L
	N/A	N/A	<=45 mg/L
BOD₅	N/A	>=85% removal	
Suspended Solids	N/A	<= 30 mg/L	<=45 mg/L
	N/A	N/A	<=45 mg/L
Suspended Solids	N/A	>=85% removal	
pН	>=6.0		<=9.0
Turbidity	N/A	5 NTU	10 NTU
Chlorine Residual	>= 0.5 mg/L		<=4 mg/L
Total Coliform		<=23 MPN/100 mL	<=240 MPN/100mL
Total Coliform		<=2.2 MPN/100 mL	
Odor			non-offensive

Other SFDPH Safety Requirements

NOTICE CONTACT BUILDING MANAGEMENT BEFORE PERFORMING ANY WORK ON THIS WATER SYSTEM.

Collaboration

Public: San Francisco Department of Public Health & San Francisco Department of Building Inspection.

Private: Living Machine Inc. & Aqua Nova Engineering

Services of the San Francisco Public Utilities Commission

San Francisco

Department of Public Health

SFPUC Provides Technical Assistance and Financial Incentives

- On-site Non-potable Guidebook
- Water Use Calculator
- Grant program
- Project review meetings

http://www.sfwater.org/np

Any questions?

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