Campus Sustainability Office

**APPROVED**
Chancellor's Council
07 MARCH 2019

**Title of Policy** : **General Guidelines on Water Conservation and Management**
**Classification** : **Guidelines**
**Approval Authority** : **Chancellor's Council**
**Implementation Authority** : **Campus Sustainability Office**
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## 1. Purpose:

A study conducted by the Japan International Cooperation Agency (JICA) and National Water Resources Board (NWRB) estimated that Metro Manila, where the University is situated, along with other major cities in the Philippines will experience water shortages by 2025 (Policy Brief, Senate Economic Planning Office). The promotion of water conservation and management will help meet demand for water supply in the future and alleviate effects of the forthcoming water shortage. Water conservation and management also leads to energy conservation, given the energy associated with the transportation, treatment and use of water.

## 2. Scope

This document provides specific guidelines on the proper and efficient use of water resources of the university. It shall cover the utilization and management of the following water resources:

a) Potable water supplied by the water utilities provider (i.e. Maynilad Water) used in the lavatories, laboratories, maintenance work, and the university gardens and greens.
b) Drinking water supplied by the water utilities provider (i.e. Maynilad Water) and those outsourced from drinking water stations.
c) Gray Water/Black Water/Non-potable water from the Sewage Treatment Plants within the university, which is either recycled or discharged.
d) Rainwater and Stormwater/Runoff

Furthermore, this policy will also cover the proper management of water treatment facilities (e.g. Sewage Treatment Plants, Septic Tanks etc.) ensuring that waste water and effluents are in compliance with the provisions of the Clean Water Act. With the development of technologies related to water utilities, the university shall explore and promote water conserving/recycling technologies that will help the school efficiently manage and conserve its water resources.

This policy shall be implemented wherever applicable to the following Campuses and Facilities:

a) DLSU Taft Campus
b) DLSU Laguna Campus
c) DLSU Rufino Campus
d) Lasallian Center
e) Charles Huang Conference Center
f) DLSU Marine Station
g) Condominium Units of the University

**Definitions:**

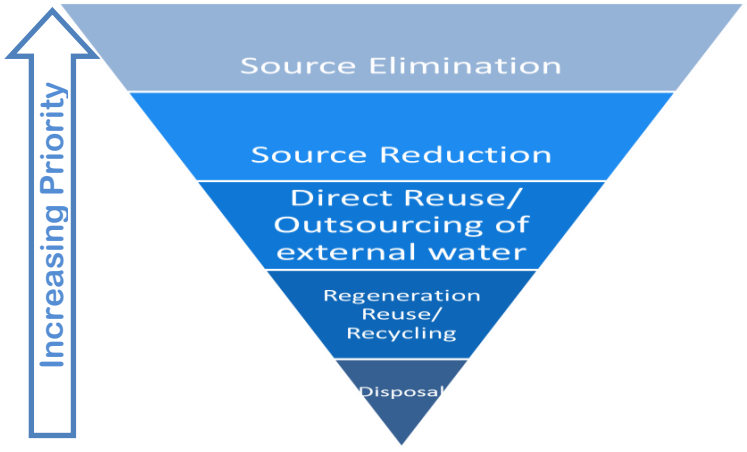
GRAY WATER – all wastewater generated in households or office buildings from streams without fecal contamination, i.e. all streams except for the wastewater from toilets. Sources of greywater include, sinks, showers, baths, clothes washing machines or dish washers.
POTABLE WATER – water that is safe to drink or to use for food preparation.
RAINWATER – refers only to the rain that falls on the roof, which can be harvested into a storage tank prior to contact with the ground.
RUNOFF – the draining away of water (or substances carried in it) from the surface of an area of land, a building or structure. The term stormwater is used in a much broader sense, like heavy rainfalls whereas the term runoff is used to indicate small quantity of water draining away.
SEWAGE TREATMENT PLANT – a place where sewage is cleaned so that it is not harmful or dangerous to the environment.
STORMWATER – refers to the water that drains off a land area from rainfall. This includes rain that falls on rooftops, directed through gutters and downpipes onto land or into drains, as well as rain falling on ground surface areas such as roads, driveways, foothpaths, gardens and lawns.
WATER FOOTPRINT – indicator that accounts for both the direct (domestic water use) and indirect (water required to produce industrial and agricultural products) water use of a consumer or producer.

**3. Policy Statement:**

The *General Guidelines on Water Conservation and Management* aims to provide guidance to members of the Lasallian community on procedures and practices that promote waste minimization and conservation in the use of water, guided by the following principles:

a) **Water Neutrality.** De La Salle University is committed to monitoring and lowering its water footprints with the aim of achieving a neutral (or better) water footprint status without compromising work productivity and efficiency as articulated in the principles and standards of Modern Conduct of Schools – Facilities and Environmental Programs Management (MCS-FEPM)[1].

b) **Water Management Hierarchy.** The Water Management Hierarchy is a framework for prioritizing various water management options in order of preference. With the most preferred option at the top of the hierarchy (Source Elimination) and the least preferred at the bottom (Disposal).




[1] The "Modern Conduct of Schools" initiative was conceived and launched to build the manuals that would define process excellence across seven (7) strategic functional areas, including the Facilities and Environmental Program Management.

### 3.1. Guidelines

#### 3.1.1. Water Supply and Storage

**3.1.1.1. Water Utility Companies.** The University purchases the majority of its potable water supply from Maynilad Water Services, Inc. (MWSI). For safe keeping, the contract/s of this engagement should be turned over to the Office of the University Legal Counsel (OULC). For the summary of the existing accounts of DLSU with MWSI, please refer to *Appendix A: DLSU Accounts with Maynilad Services, Inc.*

**3.1.1.2. Rainwater/Stormwater Harvesting.** In many countries, including the Philippines, climate change is expected to pose serious threats to fresh water supplies. In response to the effects of climate change on the water resources, the University shall seek other sources of water, one viable source is rainwater.

**3.1.1.2.1.** The Office of the Associate Vice Chancellor for Campus Development (OAVCCD) shall integrate a system for rainwater and/or stormwater harvesting in the design of new buildings to be built and in major renovations of existing buildings whenever applicable.

**3.1.1.2.2.** The design and storage tank size of the rainwater/stormwater collection system shall be in accordance to The Philippine Green Building Code, a referral code to The National Building Code of the Philippines.

**3.1.1.2.3.** The rainwater/stormwater collected shall be used for non-potable purposes such as flushing of toilets and urinals and for gardening.

**3.1.1.2.4.** Rainwater drainage shall not discharge to the sanitary sewer system.

**3.1.1.3. Storage.** Water storage tanks offer a direct and easily implementable solution to the continuing global crisis of water shortage. Water storage tanks can provide water during school hours when there is shortage and can be refilled when water becomes available. The University uses underground and elevated water storage tanks[2] to store potable water from the utility supplier and non-potable water processed from the STP. The CSWO shall be the unit responsible for the maintenance of the water storage tanks and ensure safe water supply.

**3.1.1.3.1.** Water storage tanks, underground or elevated, should be inspected every year, and cleaned if necessary.

**3.1.1.3.2.** In underground tanks, the access cover should fit properly, be in good condition, and easy to remove for cleaning.

**3.1.1.3.3.** The access cover should be protected to avoid rainwater seeping into the tank.

**3.1.1.3.4.** Where there is a water pump, periodical checks should be done.

#### 3.1.2. Wastewater and effluents

**3.1.2.1. Sewage Treatment Plants.** The STPs process the wastewater from the different buildings within the campus to remove the contaminants and ensure that the quality of water it produces pass the parameters set by the government. For additional information on the STPs, their capacity, the sources of wastewater processed for each and the buildings supplied with treated water, please refer to *Appendix B: Sewage Treatment Plants in DLSU.*

**3.1.2.1.1.** STP Operation and Maintenance. The CSWO shall be the responsible for the operation and maintenance of all STPs.

[2] There are a 40 water storage tanks within the University. Thirty-two (32) tanks with a combined capacity of 2,387.8 $m^3$ are used to store potable water while the remaining eight (8) tanks with a combined capacity of 278.1 $m^3$ are used to store non-potable water.

**3.1.2.1.2.** The CSWO shall conduct regular checks of all components of the STP in accordance with the Operations Manual provided by the supplier.

**3.1.2.1.3.** The STP operators shall maintain a complete and accurate operation records and submit regularly to CSWO.

**3.1.2.1.4.** The STP operators shall notify the CSWO immediately of any potential problems or breakdown in any equipment or machinery of the plant.

**3.1.2.1.5.** Recycling of Treated Water. The University shall recycle water processed from the in-house STPs in order to save on the use of potable water purchased from the water utility company (i.e. MWSI). As much as possible the following measures should be implemented:

3.1.2.1.5.1. The OAVCCD shall include a water treatment and recycling facility in all future developments and in major renovations of existing buildings whenever applicable.

3.1.2.1.5.2. Utilization of treated water from existing STPs. An additional filtration must be installed for the treated water to be viable for use in flushing the toilets and urinals and for watering the greens.

3.1.2.1.5.3. Additional pipelines shall be installed in select buildings that are connected to an STP but does not utilize the treated water coming from the STP. The buildings that utilize the treated water from the STPs have dual pipe water supply wherein one supply carries fresh water for drinking and other human consumptions whereas treated water from the second line are utilized for flushing the toilets and urinals.

3.1.2.1.5.4. Currently, there are faucets used for gardening that still uses potable water bought from Maynilad Water Services Incorporated (MWSI). These faucets may be shut-off or a re-piping can be done so as to connect these faucets to the STP. Using the treated water for gardening can further reduce the potable water demand of the university.

3.1.2.1.5.5. Pipes and fixtures connected to the STP that contain/use non-potable water should be labelled/color coded accordingly to avoid consumption of unsafe water.

3.1.2.1.5.6. The viability of using treated water for car washing shall be thoroughly studied to further utilize the treated water generated from the STPs and to reduce the potable water demand of the university.

**3.1.2.1.6.** Testing and Monitoring. The CSWO and CSO shall work together to ensure that the wastewater processed in the STPs passed all standards in accordance with the Department of Environment and Natural Resources (DENR) Administrative Order 2016-08.

3.1.2.1.6.1. Analyses of the effluent/discharge from all STPs shall be done only by a laboratory duly accredited by the Laguna Lake Development Authority (LLDA). Analyses shall be done regularly on a quarterly basis or whenever necessary.

3.1.2.1.6.2. The University's STPs shall be operated in compliance with the Discharge Permit issued by the LLDA. The permit specifies the monitoring requirements, reporting schedule, limits and conditions, and the significant effluent quality parameters applicable to the University. For the list of effluent quality parameters, please refer to *Appendix C: Effluent Quality Parameters*.

**3.1.2.2. Septic Tanks.** The CSWO and CSO shall work together to ensure that the septic tanks are well maintained and does not have any leak. The maintenance of the septic tanks should be in accordance to P.D. 856 otherwise known as the Code on Sanitation of the Philippines.

**3.1.2.2.1.** Septic tanks shall be cleaned before excessive sludge or scum is allowed to accumulate and seriously reduce the settling efficiency.

**3.1.2.2.2.** Septic tanks shall be inspected at least once a year and be cleaned when the bottom of the scum mat is within 7.5 cm (3 in) of the bottom of the outlet device or the sludge and scum has reduced the liquid capacity by 50%.

**3.1.2.2.3.** Tanks shall not be washed or disinfected after cleaning. A small residual of sludge shall be left in the tank for seeding purposes.

**3.1.2.2.4.** Sludge from the septic tanks shall be disposed of by burial or by any other method approved by the Department of Health (DOH) and not by being emptied into open field, ditches or bodies of water.

**3.1.3. Metering and Distribution**

**3.1.3.1. Metering.** One way to manage the university's water demand is to measure how much water is being used. The University shall ensure that all water meters are calibrated, in good working condition and that the data can be used to assist the university in reaching its water conservation goals. For the list of submeters installed within the campus, please refer to *Appendix D: Submeters installed in DLSU*.

**3.1.3.1.1.** Submeters shall be calibrated regularly to ensure that the data gathered are accurate. Calibrated submeters can help in tracking the progress of the university's water conservation programs.

**3.1.3.1.2.** Flow-appropriate submeters shall be used/installed. Using the wrong-sized meter affects its accuracy and the flow of the water. A larger size water meter would not be able to accurately measure at low flow rates.

**3.1.3.1.3.** Submeters shall be placed in strategic locations to help pinpoint leaks, verify the water utility provider's billing data and bill the concessionaires accordingly for their water usage. Also, the meters should be located in a place where it can be easily accessed to conduct readings.

**3.1.3.1.4.** Water intensive processes and/or equipment (e.g. boiler, cooling tower) shall be installed with a flow meter to allow the operator to know how much water is being used and to help in the identification of excessive water use due to leaks.

**3.1.3.2. Distribution System.** The CSWO shall maintain and update the as-built plans of the water distribution system of the University. These shall serve as basis for the conduct of routine check-ups, repairs and system upgrades.

**3.1.3.2.1.** Pressure management shall be implemented to help in reducing water losses through undetected leakage. Water pressure can be decreased at night, during weekends or long holidays/breaks.

**3.1.3.2.2.** Control valves shall be installed in strategic locations to help reduce water losses through leakages especially in interconnected buildings.

**3.1.3.2.3.** A regular evaluation of the water distribution system of the University shall be done to help the CSWO in conducting repairs and system upgrades.

**3.1.4. Fixtures and Facilities**

**3.1.4.1. Comfort Rooms, Lavatories and Shower Rooms.**

**3.1.4.1.1.** The University shall have signage posted in conspicuous areas that promotes conservation and efficient use of water resources.

**3.1.4.1.2.** The University shall promote the use of water efficient fixtures (e.g. use of aerators in faucets, dual-flush toilets, low-flow showerheads and urinals).

**3.1.4.2. Laboratories**

**3.1.4.2.1.** The University shall promote the use of water efficient fixtures in the laboratories by installing flow-restricting aerators on all faucets.

**3.1.4.2.2.** A washbasin shall be used in all laboratories that involve washing of laboratory glassware.

**3.1.4.2.3.** Automatic glassware washers shall be used only when it is at the optimum capacity.

**3.1.4.3. University grounds**

**3.1.4.3.1.** To reduce or eliminate the use of potable water for non-drinking purposes, treated water from the STPs shall be utilized for gardening.

**3.1.4.3.2.** To reduce water losses through evaporation, watering of the greens shall only be done on early mornings before 8 am and late afternoon after 4 pm.

**3.1.4.3.3.** The University shall promote the use of low-maintenance water and drought-resistant plants and/or grasses when planting new lawns.

**3.1.4.3.4.** The design of new lawns to be created should be patterned after a bioretention cell/system. A bioretention cell/system is designed to act as a sponge and to filter stormwater runoff. It has specially selected soils and plants that are both water and drought tolerant.

**3.1.4.4. Heating, Ventilation and Air-Conditioning (HVAC) Systems**

**3.1.4.4.1.** Regular monitoring of the water consumption for the cooling towers must be undertaken by the Mechanical and Electrical Works Office (MEWO) to know if there will be excessive consumption during regular operations.

**3.1.4.5. Canteen Concessionaires**

**3.1.4.5.1.** The University shall promote water conservation to canteen concessionaires by eliminating or minimizing the use of flowing water to defrost food. If it is legally required to use flowing water to defrost food, only the minimal flow possible should be used.

**3.1.4.5.2.** The canteen concessionaires are encouraged to use a basin while washing the dishes and avoid the continuous flow of water.

**3.1.4.5.3.** Concessionaires, especially the larger ones, are allowed to install an automatic dishwasher provided it is the appropriate type and size for their operation. The Office of the Associate Vice Chancellor for Campus Services, in close coordination with the CSWO and MEWO shall regulate and approve the installation of automatic dishwashers by the concessionaires.

**3.1.4.6. Drinking Fountains and Water Dispensers**

**3.1.4.6.1.** The University Safety Office is in charge of the regular water quality testing and monitoring of all drinking fountains throughout the campus. The quality of drinking water shall conform to the criteria set in the latest approved.

**3.1.4.6.2.** All drinking fountains scattered throughout the campus must have a bottle filler faucet installed to reduce water losses when filling a bottle from the bubblers.

**3.1.4.6.3.** A trash bin should not be placed near a water dispenser; this is to discourage anyone from throwing any excess water to the bin.

**3.1.4.7. Swimming Pool**

**3.1.4.7.1.** The University Safety Office is in charge of testing and monitoring the water quality of the swimming pool.

**3.1.4.7.2.** The swimming pool should be regularly checked for cracks and/or leaks to prevent water wastage.

**3.1.4.7.3.** Water should be utilized for cleaning and watering of greens on campus during the periodic cleaning of the pool were replacement of the water is necessary.

**Special Situations:**

**Responsibilities:**

| Responsible Office/Unit | Area of Operation |
|---|---|
| **Office of the Vice Chancellor for Administration** | |
| • University Safety Office | Periodic Safety Audit and Inspection of drinking fountains<br>Periodic Check and Water Quality Monitoring of the Swimming Pool |
| **Office of the Associate Vice Chancellor for Facilities Management** | |
| • Civil and Sanitary Works Office | Periodic Check and Maintenance of the Water Storage and Distribution Systems<br>Operation and Maintenance of Sewage Treatment Plants<br>Updating of the as built plans of the water distribution systems<br>Environmental Legal Compliance |
| • Building and Grounds Management Office | Watering the gardens and greens<br>Planting of drought-resistant grasses, shrubs and plants |
| • Mechanical and Electrical Works Office | Periodic Check and Maintenance of the cooling towers |
| **Office of the Chancellor** | |
| • Campus Sustainability Office | Environmental Legal Compliance<br>Periodic Water Audit<br>Monitoring of Compliance to Water Conservation and Management Guidelines<br>Awareness Campaign and Promotion of Water Conservation and Management Education |
| **Risk Management, Compliance and Audit Office** | General Legal Compliance<br>Compliance to MCS-FEPM |
| **Office of the Associate Vice Chancellor for Campus Development** | Green Building Development |

**Appendices:**

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**Appendix A: DLSU Accounts with Maynilad Services, Inc.**

| Account Name | Account No. | Meter No. | Areas/Buildings Being Supplied |
|---|---|---|---|
| St. Miguel Hall | 55375412 | AC40-17-000175 | Velasco Hall, Miguel Hall, Br. Bloemen Hall, St. Mutien Marie |
| Velasco Hall | 51966078 | AC-40-170001-77 | |
| William Hall | 51966023 | AS-255-000682-09 | |
| SPS Hall / Br. Connon Hall | 51965925 | 00182AT-98Z | Br. John Hall |
| Yuchengco Hall | 55847993 | SE50-000020-14 | Yuchengco Hall and SPS Hall |
| St. Joseph Hall | 55375369 | AJ40-000092-14 | St. Joseph Hall, Faculty Center, Br. William Hall |
| Gokongwei Hall | 55375476 | AJ25-000112-06 | Gokongwei Hall |
| Science and Technology Research Center (STRC) | 52503085 | AJ40-000044-16 | STRC and Gokongwei Hall |
| St. La Salle Hall | 55375305 | SE50-000113-13 | St. La Salle Hall |
| Br. Andrew Gonzalez Hall (AGH) | 57108270 | AS255-000638-09 | Br. Andrew Gonzalez Hall |
| Enrique Razon Sports Center (ERSC) | 54321081 | SE50-000103-14 | Enrique Razon Sports Center (ERSC) |
| Retreat House | 53677886 | 23188-AT-98 | Retreat House |
| Pre-School | 56269776 | SP15-12-014134 | Pre-School, Legal Aide Clinic, Tuluyan House, In House (Carpentry, Painting) |
| Henry Sy Sr. Hall | 62196415 | AC-75-000043-17 | Henry Sy Sr. Hall (HSSH) |

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**Appendix B: Sewage Treatment Plants in DLSU**

| STP Location | Capacity | Sources of Wastewater | Buildings Being Supplied with treated water |
|---|---|---|---|
| Yuchengco Hall | 85 $m^3$ | Yuchengco and Connon Hall | Yuchengco Hall |
| William Hall | 190 $m^3$ | Willian Hall, Miguel Hall, Velasco Hall, Faculty Bldg., St. Joseph Hall | William Hall |
| STRC | 215 $m^3$ | STRC, Gokongwei Hall, Andrew Hall, ERSC | Discharged to nearby creek |
| HSSH | 250 $m^3$ | HSSH and St. La Salle Hall | HSSH |

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**Appendix C: Effluent Quality Parameters**

| Parameter[3] | DENR Standard[4] | Unit |
|---|---|---|
| **Physico-chemical** | | |
| Biochemical Oxygen Demand | 50 | mg/L |
| Oil & Grease | 5 | mg/L |
| Surfactant (MBAS) | 15 | mg/L |
| Ammonia as $NH_3$-N | 0.5 | mg/L |
| Nitrate as $NO_3$-N | 14 | mg/L |
| Phosphate | 1 | mg/L |
| **Bacteriological** | | |
| Fecal Coliform | 400 | MPN/100mL[5] |

[3] Significant effluent quality parameters for PSIC Code 85 & 37000
[4] General Effluent Standards from DAO 2016-08 for Class C water classification.
[5] MPN/100mL – Most Probable Number per 100 milliliter

**Appendix D: Submeters installed in DLSU[6]**

| Count | Submeter Location |
|---|---|
| 1 | Brother's Community - SW |
| 2 | Brother's Community - NW |
| 3 | Brother's Community – Kitchen (870435) |
| 4 | Brother's Community – Kitchen (805004) |
| 5 | Brother's Community – Laundry (870979) |
| 6 | Brother's Community – Laundry (805005) |
| 7 | Animo Canteen (beside Perico's) |
| 8 | Enrique Razon Sports Center – Yoga |
| 9 | Marco Polo Canteen |
| 10 | College Canteen (Bloemen) |
| 11 | Enrique Razon Sports Center – La Casita Canteen |
| 12 | Br. Connon Hall roofdeck |
| 13 | William Hall roofdeck |
| 14 | Enrique Razon Sports Center – near vehicular ramp |
| 15 | Retreat House meter #2 |
| 16 | Retreat House meter #3 |
| 17 | Tuluyan House |
| 18 | In house (Carpentry, Painting) |
| 19 | Yuchengco Hall (after STP) |
| 20 | Br. Andrew Gonzalez Hall – 21/F |
| 21 | Br. Andrew Gonzalez Hall – 20/F |
| 22 | Br. Andrew Gonzalez Hall – La Casita Canteen |
| 23 | Animal House |

**Procedures:**

**Instructions/Forms:**

**Standards: MCS – Facilities and Environmental Programs Management**

**Parent Policy: DLSU Environmental Sustainability Policy**

**Related Policies: n/a**

**Related Information:**

[6] Additional 23 submeters located throughout the campus, aside from the 14 main meters connected to MWSI.

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**References:**

1. **Modern Conduct of Schools – Facilities and Environmental Programs Management Manual**
2. **Policy Brief, Senate Economic Planning Office (August 2011); (https://www.senate.gov.ph/publications/PB%202011-08%20-%20Turning%20the%20Tide.pdf)**
3. **The Philippine Green Building Code**
4. **The National Building Code of the Philippines (Presidential Decree No. 1096 – R.A. 6541 Revision)**
5. **DENR Administrative Order 2016-08**
6. **The Code on Sanitation of the Philippines (Presidential Decree No. 856)**

**History:**