The Ecosystem of Nam Can Tho University

Nam Can Tho University was established on January 25, 2013, under Decision No. 230/QĐ-TTg by the Prime Minister. It was granted permission by the Ministry of Education and Training to conduct training activities on April 12, 2013, under Decision No. 1335/QĐ-BGDĐT. The university's mission is to provide Vietnamese students with access to an educational environment that meets international standards. It aims to nurture talented individuals and prepare them for internationally-oriented university programs and global job opportunities in the future. Additionally, the university serves as a platform for students to gain practical experience and learn from real-world situations. The university is constantly striving to enhance and expand its facilities in order to better accommodate the increasing demand for a diverse range of training programs. Additionally, the university is committed to creating a modern and spacious campus environment, while also fostering a research-oriented atmosphere that integrates theoretical concepts into practical applications across various sectors.

1. Green campus

- **Areas A and B:** In 2012, areas A and B were inaugurated and put into use, covering a total area of over 100,000 m^2.

- **The Dormitory** was inaugurated and put into use at the end of 2014. It boasts an impressive area of over 10,000 m^2, providing accommodation for approximately 2,000 students.

- **Area C**, with an expansive area of over 100,000 m^2, was officially opened and began operations in October 2015.

- **Area D**, with an expansive 10,000 m^2, was inaugurated and put into use in October 2016.

- **The Electronic Library Center**, with an area of over 4,200 m^2, was inaugurated and opened for use in October 2017.

- **The Auto mechanical hall**, with an area of over 1,200 m^2, was inaugurated and put into use in July 2018.

- **The DNC Library & Faculty Resort** was inaugurated and opened for use in August 2018, boasting an impressive area of over 2,000 m^2.

- **The Multi-functional practice area (Area E)** was inaugurated and put into use on June 9, 2020, covering an impressive area of over 30,000 m^2.

- **The DNC Software Development and Application Center** was inaugurated and put into use in July 2023, covering an area of over 7,500 m^2.

2. Water consumption per capita

2.1 Water consumption monitoring system

- The University has experienced significant growth, and as a result, its infrastructure has also expanded to accommodate this development. This includes the implementation of a "Water Supply and Consumption Monitoring System."
- The University has entered into a contract with Bong Vang Water Supply and Drainage Company to provide domestic water supply to all areas on campus. Currently, the water supply is sourced from two branches of Bong Vang Water Supply and Drainage Company.
- To monitor water consumption, two water meters have been installed at the source of these two branches. Additionally, each building area is equipped with sub-meters to track and compare usage with the main meter. These sub-meters also aid in identifying any losses, such as broken or leaking water supply pipes, so that repairs can be promptly addressed.

2.2 Water consumption per capita

- According to QCVN 01-1:2018/BYT, the national technical regulation on clean water quality for domestic use issued by the Ministry of Health, and Circular No. 41/2018/TT-BYT on December 14, 2018.

- In addition, Decision 06/2006/QD-BXD, issued by the Ministry of Construction on March 17, 2006, promulgated TCXDVN 33:2006 "Water Supply - Pipeline Networks and Works - Design Standards".

- The University strictly adheres to QCVN 01-1:2018/BYT and Decision 06/2006/QD-BXD for domestic water supply.

Water users	Water supply standards per capita

	(average days per year) L/person/day
Big cities, tourism cities, resorts, big industrial zones	300-400
Cities, small and medium villages, small industrial zones	200-270
Towns, Centers of industry and agriculture, centers of industry and fishery	80-150
Countryside	40-60

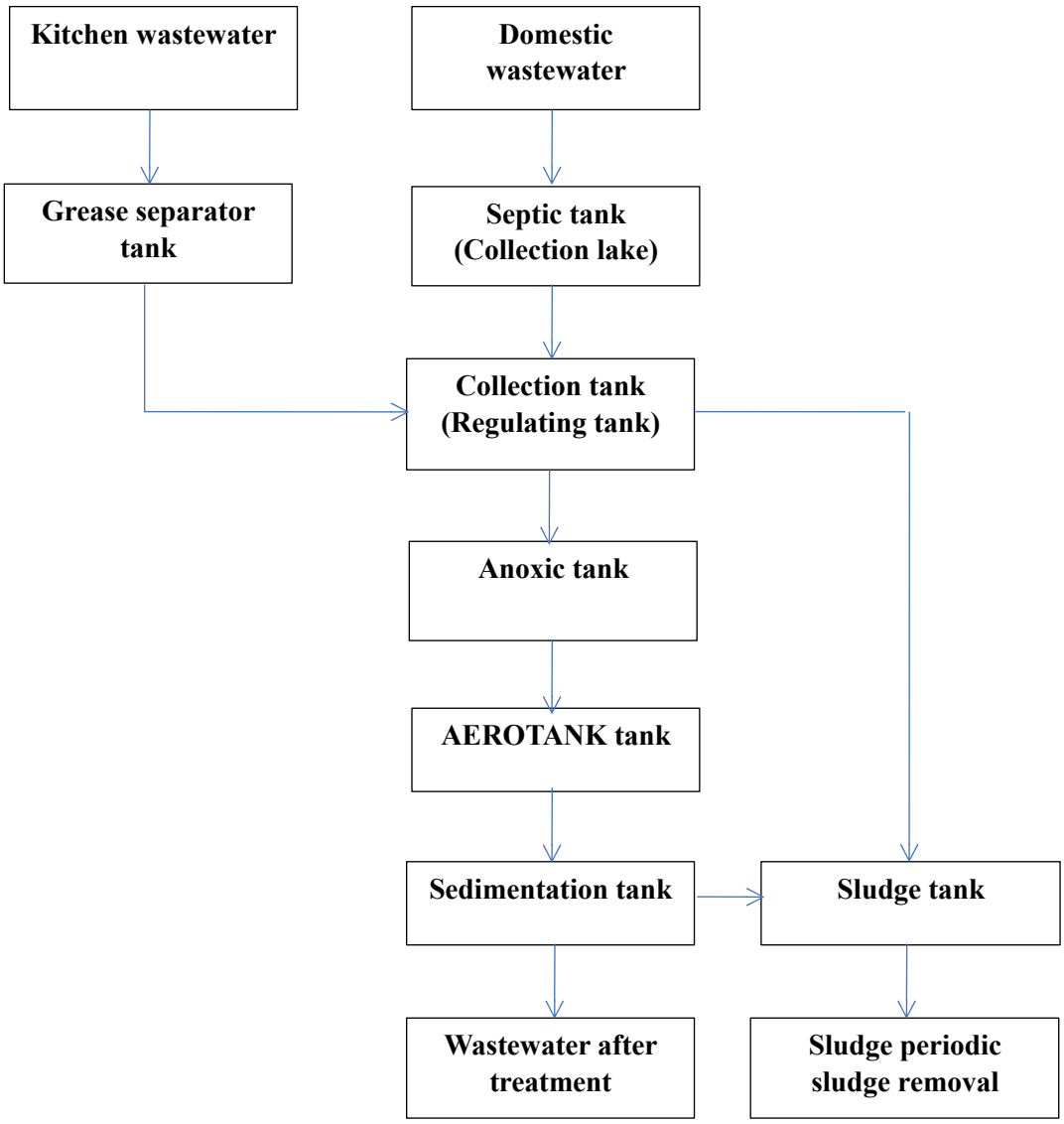
3. Use and save water

3.1 Perform used water treatment

- After conducting research, it was discovered that wastewater is primarily generated from two sources: human and animal waste, as well as daily activities like bathing, cleaning, and cooking.
- These source contribute to the presence of various components in domestic wastewater, including biodegradable organic substances, inorganic substances, detergents, grease, and microorganisms.
- Of these components, organic matter is the most prevalent and includes protein compounds, hydrocarbons, and other substances that are difficult to break down. The concentration of organic matter in domestic wastewater typically ranges from 150 to 450 mg/l, which can have negative impacts on the survival and development of natural ecosystems.
- Domestic and urban wastewater contains a significant amount of both organic and inorganic compounds, including:
    - Suspended matter: This component is typically found in granular form in urban wastewater and consists of approximately 25% minerals and 75% organic matter.
    - Insoluble solids: These include substances such as organic nitrogen, ammonia, organic phosphorus, and inorganic phosphorus.
    - Harmful microorganisms, bacteria, and germs are also present in urban wastewater. - Additionally, urban wastewater often contains moss, algae, trash, and mud.
- The domestic wastewater treatment diagram can be explained as follows:
    - Wastewater from sources such as bathrooms, toilets, and kitchens is first filtered to remove residues, large solids, and suspended impurities using garbage screens.

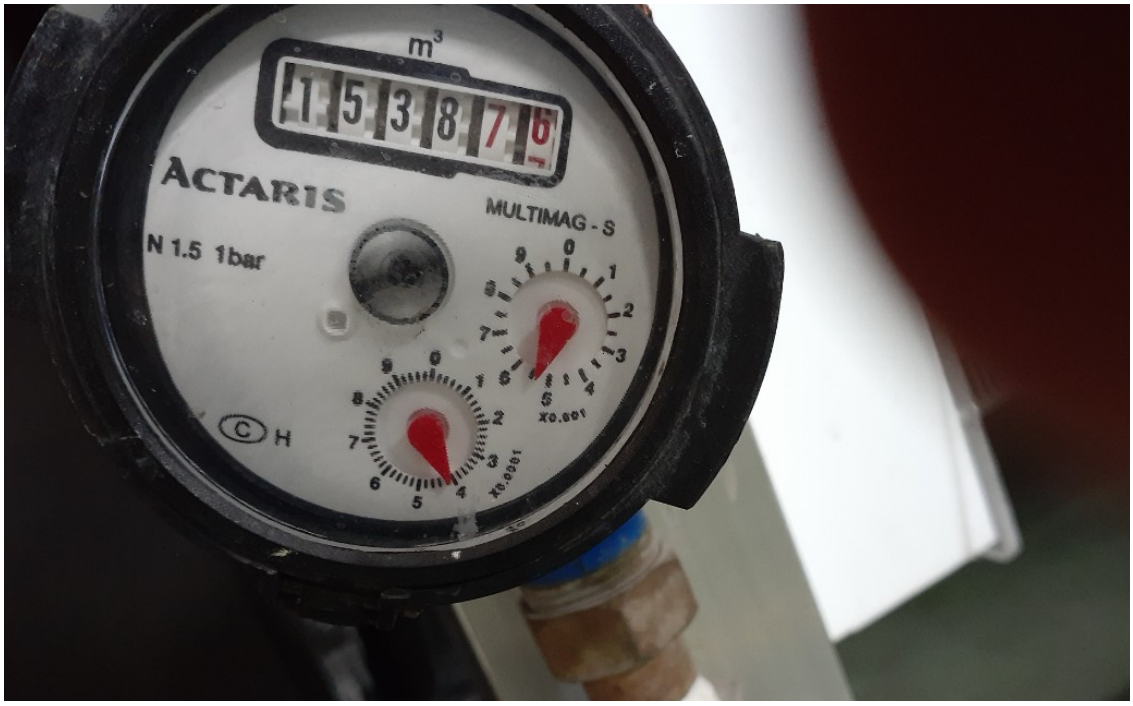
- The filtered wastewater is then directed to either a grease separator tank to remove oil and grease or a septic tank to decompose residues and prevent clogged pipes.

- According to the domestic wastewater treatment diagram, the first step is to transfer the wastewater into a collection tank, also known as a regulating tank. This tank is responsible for regulating the flow of wastewater into the treatment system. Next, the wastewater is fed into a domestic wastewater treatment system that utilizes biotechnology, specifically an anoxic tank. This tank relies on anoxic microorganisms to decompose nitrogen-containing compounds and phosphorus found in domestic wastewater. After this, the wastewater is then transmitted to the Aerotank tank. This tank is responsible for removing organic substances that cause odors and foul odors, as well as eliminating pathogens and disease-causing bacteria found in domestic wastewater.
- Next, the wastewater will be transferred into a sedimentation tank (according to traditional technology), which has the effect of settling sludge, sand and suspended particles out of the wastewater. Wastewater containing sludge is passed through a sludge tank where the sludge settles at the bottom of the sludge tank and is then removed from the system for treatment. The remaining wastewater will be transmitted back to the equalization tank to continue the circulatory process of domestic wastewater treatment according to the diagram of domestic wastewater treatment.



3.2. Measuring the amount of water reused in the School:

- The quality of treated wastewater must comply with the standards and technical regulations prescribed for the use of water for different purposes without affecting people's health, and treated wastewater must ensure environmental hygiene and safety.
- The School measures the amount of water reused by installing wastewater control meters to serve irrigation and plant care.
- Wastewater flow meters are used to monitor the amount of wastewater and also the amount of rainwater. The use of wastewater meters is a mandatory requirement to accurately measure the amount of water discharged into the environment to support the calculation of wastewater treatment costs.
- According to regulations of the Natural Resources and Environment sector, all wastewater output in the School is required to be closely monitored. Therefore, installing a wastewater flow meter is extremely necessary.
-



Wastewater flow meter

- Today, waste in domestic water contains many dangerous impurities that affect human health as well as seriously pollute the environment. Therefore, measurement indicators taken from wastewater flow meters will effectively support the assessment, control and development of appropriate treatment plans for each wastewater source when signs of dangers are detected.
- Protect the environment and water resources.
- Wastewater seeps very quickly into the ground, causing widespread pollution. If not promptly remedied, it will have very serious consequences. Therefore, the installation of water flow meters must be emphasized to help the School and authorities easily check the quality of wastewater sources, minimize environmental pollution, and protect water resources in the best way, and promptly handle situations of illegal discharge into the environment.

3.3. Water pollution prevention system

Procedures for preventing contaminated water from entering the university's water system, including contamination from accidents and incidents, are outlined below:

- Identify and assess potential sources of pollution: These sources may include domestic wastewater, industrial wastewater, rainwater, and pollution resulting from accidents and incidents.

- The prevention plans: The prevention plans must include concrete actions such as building a separate wastewater drainage system, planting trees, installing manholes at strategic points to collect and divert wastewater, and conducting regular inspections and maintenance on the water system.

- Implement prevention plans: implementation of prevention plans needs to be regularly monitor and evaluate the implementation of prevention plans to ensure effectiveness.

- Nam Can Tho University implements the following measures to prevent polluted water from entering the water system:

+ Separate wastewater drainage systems should be built for domestic and industrial wastewater.
+ Trees should be planted to prevent rainwater from carrying pollutants.
+ Sewage collection manholes should be used to prevent waste from entering the water system.
+ Regular maintenance and checks of the water system should be conducted to promptly address any issues.
+ Additionally, the university educates students on the importance of protecting clean water sources and preventing polluted water from entering water systems. Students should be instructed on how to use clean water efficiently and effectively, as well as how to properly classify and treat waste.

3.4. Providing free drinking water

DNC pure drinking water production

	
20 L pure water jugs - DNC	*330 ml pure water bottles - DNC*

- **Bottled water production process at DNC Drinking Water Factory**
  - DNC Drinking Water Factory has divided its bottled water production process into three main stages. Each stage is crucial in ensuring the quality and safety of the final product. The advanced filtration and purification techniques used in this process showcase its depth and sophistication. Furthermore, this process showcases its depth and sophistication through the following detailed steps:
  - ***Stage 1: Filter water to meet standards***

    In order to ensure the best results, there are several detailed steps that should be followed in the water filtration process. These include:
    - Filtering out coarse residue
    - Removing iron and manganese
    - Softening minerals and removing other minerals
    - Deodorizing and decolorizing the water
    - Balancing the pH level
    - Using a reverse osmosis membrane or Nano membrane for pure filtration
    - Final disinfection with ultraviolet rays
  - ***Stage 2: Filling - Bottling***

The filling and bottling process at DNC Drinking Water Factory consists of several detailed steps.

First, the water is pumped to the filling system after undergoing filtration processes. Next, the lid is prepared through four processes, including washing and soaking twice, sterilizing with a specialized solution, and repeating the process before use. The bottle is also prepared by washing it with food sterilization chemicals, sterilizing it a second time, and rinsing it with pure water. Then, the bottle is passed through an automatic water filling machine and the lid is automatically closed. Finally, the completed products are inspected and transferred to the general warehouse. This process is not only a series of technical steps, but also a combination of water quality, advanced technology, and strict production processes to ensure the production of standard and safe bottled drinking water products.

- ***Phase 3: Testing & Distribution***

  The DNC Drinking Water Factory has a capacity of 3 m^3 per day/night and serves as the primary source of drinking water for students, lecturers, and staff at the university.

  This ensures convenient and highly effective research and learning. The production system for DNC bottled drinking water is fully automated and closed, guaranteeing the safety and quality of the product. Additionally, the university participates in annual testing of the bottled drinking water quality, conducted by the Department of Science and Technology of Ho Chi Minh City.

- Certificate of Facility Meeting Food Safety Standards, No. 33/2023, issued on February 20, 2023 by the Can Tho Department of Health.

CAN THO CITY PEOPLE'S COMMITTEE
UBND THÀNH PHỐ CẦN THƠ

SỞ Y TẾ

DEPARTMENT OF HEALTH

Số: 33/2023/ATTP-CNĐK

Number: 33/2023/ATTP-CNĐK

SOCIALIST REPUBLIC OF VIETNAM

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

Independence – Liberty - Happiness

CERTIFICATE

GIẤY CHỨNG NHẬN

CƠ SỞ ĐỦ ĐIỀU KIỆN AN TOÀN THỰC PHẨM

QUALIFIED FACILITY FOR FOOD SAFETY

OWNER: NGUYỄN TIẾN DŨNG

CHỦ CƠ SỞ: NGUYỄN TIẾN DŨNG

Name of headquarter: ONE-MEMBER LIMITED LIABILITY COMPANY, NAM CAN THO UNIVERISITY MEDICAL CENTER

Tên cơ sở: Chi nhánh Công ty TNHH MTV Bệnh viện Đại học Nam Cần Thơ

Address:

Địa chỉ: 168, đường Nguyễn Văn Cừ nối dài, phường An Bình, quận Ninh Kiều, thành phố Cần Thơ

Phone number:

Điện thoại: 02923 886168 – 02923 798668

MEET THE REQUIREMENTS OF FOOD SAFETY ELIGIBILITY

ĐỦ ĐIỀU KIỆN AN TOÀN THỰC PHẨM THEO QUY ĐỊNH

Sản xuất nước uống đóng chai

Manufacture bottled water

GIẤY CHỨNG NHẬN NÀY CÓ GIÁ TRỊ 3 NĂM KỂ TỪ NGÀY KÝ

THIS CERTIFICATE IS VALID FOR 3 YEARS FROM THE DATE OF SIGNING.

Can Tho, February 20, 2023

Cần Thơ, ngày 20 tháng 02 năm 2023

Sign for DIRECTOR **KT. GIÁM ĐỐC**

VICE DIRECTOR **PHÓ GIÁM ĐỐC**

CỘNG HÒA X.H.C.N VIỆT NAM
SỞ Y TẾ
THÀNH PHỐ CẦN THƠ

Cao Hoàng Anh

CASE
SỞ KHOA HỌC VÀ CÔNG NGHỆ TP. HỒ CHÍ MINH
DEPARTMENT OF SCIENCE AND TECHNOLOGY
CHI NHÁNH CẦN THƠ - TRUNG TÂM DỊCH VỤ PHÂN TÍCH THÍ NGHIỆM TP. HCM
CAN THO BRANCH - CENTER OF ANALYTICAL SERVICES AND EXPERIMENTATION HCMC
VIMCERTS 156

Mã số mẫu/ Sample code BN22310.31143344 MM22310.311433441	**KẾT QUẢ THỬ NGHIỆM** *TEST REPORT*	BMKD 03/1 - LBH 01 Ngày/ Date: 08/11/2023

Tên khách hàng/ *Customer* : **CÔNG TY TNHH MTV BỆNH VIỆN ĐẠI HỌC NAM CẦN THƠ**
Địa chỉ/ *Address* : SỐ 168, ĐƯỜNG SONG HÀNH QL1A, KDC HỒNG LOAN, PHƯỜNG HƯNG THẠNH, QUẬN CÁI RĂNG, THÀNH PHỐ CẦN THƠ, VIỆT NAM
Tên mẫu/ *Name of sample* : **DNC WATER**
Số lượng/ *Quantity* : 1
Mô tả mẫu/ *Sample description* : Nước đựng trong bình nhựa và chai thủy tinh. Tham khảo theo QCVN 6-1:2010/BYT
Ngày nhận mẫu/ *Date of receiving* : 31/10/2023
Ngày hẹn trả KH/ *Date of issue* : 08/11/2023

STT/ *No*	Chỉ tiêu kiểm nghiệm/ *Parameters*	Đơn vị tính/ *Unit*	Kết quả/ *Result*	Phương pháp/ *Test method*
1	Cd	mg/L	Không phát hiện, MDL = 0,0001 (Giới hạn cho phép: 0,003)	EPA Method 200.8 (*) (#)
2	CN^-	mg/L	Không phát hiện, MDL = 0,002 (Giới hạn cho phép:0,07)	TCVN 6181:1996 (ISO 6703-1:1984(E)) (*) (#)
3	Pb	mg/L	Không phát hiện, MDL = 0,0002 (Giới hạn cho phép: 0,01)	EPA Method 200.8 (*) (#)
4	Sb	mg/L	Không phát hiện, MDL = 0,0002 (Giới hạn cho phép: 0,02)	EPA Method 200.8 (*) (#)
5	Bromate (BrO_3^-)	mg/L	Không phát hiện, MDL = 0,004 (Giới hạn cho phép: 0,01)	EPA Method 300.0 (*) (#)

Not detected
Allowable limit

STT/ *No*	Chỉ tiêu kiểm nghiệm/ *Parameters*	Đơn vị tính/ *Unit*	Kết quả/ *Result*	Phương pháp/ *Test method*
6	Clorat (ClO_3^-)	mg/L	Không phát hiện, MDL = 0,004 (Giới hạn cho phép: 0,7)	EPA Method 300.0 (*) (#)
7	Clorit (ClO_2^-)	mg/L	Không phát hiện, MDL = 0,004 (Giới hạn cho phép: 0,7)	EPA Method 300.0 (*) (#)
8	As	mg/L	Không phát hiện, MDL = 0,001 (Giới hạn cho phép: 0,01)	TCVN 6626:2000 (ISO 11969:1996) (*)
9	B	mg/L	0,054 (Giới hạn cho phép:0,5)	EPA Method 200.7 (*)
10	Ba	mg/L	Không phát hiện, MDL = 0,005 (Giới hạn cho phép: 0,7)	EPA Method 200.7 (*)
11	Chlorine	mg/L	Không phát hiện, MDL = 0,15 (Clor) (Giới hạn cho phép: 5)	SMEWW 4500-Cl.B:2017 (*)
12	Cr	mg/L	Không phát hiện, MDL = 0,005 (Giới hạn cho phép: 0,05)	EPA Method 200.7 (*)
13	Cu	mg/L	Không phát hiện, MDL = 0,005 (Giới hạn cho phép: 2)	EPA Method 200.7 (*)
14	Florua (F^-)	mg/L	Không phát hiện, MDL = 0,05 (Giới hạn cho phép: 1,5)	TCVN 6195:1996 (ISO 10359-1:1992(E)) (*)
15	Hg	mg/L	Không phát hiện, MDL = 0,0003 (Giới hạn cho phép: 0,006)	TCVN 7877:2008 (ISO 5666:1999) (*)
16	Mn	mg/L	Không phát hiện, MDL = 0,005 (Giới hạn cho phép: 0,4)	EPA Method 200.7 (*)
17	Mo	mg/L	Không phát hiện, MDL = 0,01 (Giới hạn cho phép: 0,07)	EPA Method 200.7 (*)
18	Ni	mg/L	Không phát hiện, MDL = 0,01 (Giới hạn cho phép: 0,07)	EPA Method 200.7 (*)

1/ KẾT QUẢ NÀY CHỈ CÓ GIÁ TRỊ TRÊN MẪU THỬ/ THIS RESULT IS ONLY VALID ON TESTED SAMPLE.
2/ Thông tin về mẫu được ghi theo yêu cầu của khách hàng/ The sample information is written as customer's request.

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kinhdoanhcantho@case.vn ; nhanmaucantho@case.vn ; ketoancantho@case.vn

VP ĐẠI DIỆN MIỀN TRUNG
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(84.258) 246 5355
vanphongmientrung@case.vn

STT/ *No*	Chỉ tiêu kiểm nghiệm/ *Parameters*	Đơn vị tính/ *Unit*	Kết quả/ *Result*	Phương pháp/ *Test method*
19	Nitrat (NO_3^-)	mg/L	0,339 (Giới hạn cho phép: 50)	TCVN 6180:1996 (ISO 7890-3:1988 (E)) (*)
20	NO_2^-	mg/L	Không phát hiện, MDL = 0,02 (Giới hạn cho phép: 3)	TCVN 6178:1996 (ISO 6777:1984 (E)) (*)
21	Se	mg/L	Không phát hiện, MDL = 0,001 (Giới hạn cho phép: 0,01)	TCVN 6183:1996 (ISO 9965:1993 (E)) (*)
22	Bào tử vi khuẩn kỵ khí khử sulfite	CFU/50mL	0 (Ngưỡng giới hạn cho phép, nhóm A: 0 CFU/50 mL)	ISO 6461-2:1986 (*)
23	Coliforms	CFU/250mL	0 (Ngưỡng giới hạn cho phép, nhóm A: 0 CFU/250 mL)	ISO 9308-1:2014/Amd.1:2016 (*)
24	Escherichia coli	CFU/250mL	0 (Ngưỡng giới hạn cho phép, nhóm A: 0 CFU/250 mL)	ISO 9308-1:2014/Amd.1:2016 (*)
25	Pseudomonas aeruginosa	CFU/250mL	0 (Ngưỡng giới hạn cho phép, nhóm A: 0 CFU/250 mL)	ISO 16266:2006 (*)
26	Streptococci faecal	CFU/250mL	0 (Ngưỡng giới hạn cho phép, nhóm A: 0 CFU/250 mL)	ISO 7899-2:2000 (*)

(*) Phương pháp được VILAS công nhận/ *Method is accreditated by VILAS.*
(#) Kết quả do CASE TPHCM thực hiện/ *Analysed by CASE HCMC.*
MDL Ngưỡng phát hiện của phương pháp/ *Method Detection Limit.*

Phụ trách phòng thử nghiệm/
Officer in charge of laboratory

Trần Văn Trương

GIÁM ĐỐC/ DIRECTOR

TRUNG TÂM DỊCH VỤ PHÂN TÍCH THÍ NGHIỆM TP.HCM
CHI NHÁNH CẦN THƠ

Nguyễn Quang Sử

1/Thông tin về mẫu được ghi theo yêu cầu khách hàng/ *Information of sample is written as customer's request.*
2/Không được sao chép kết quả này, 1 phần hay toàn bộ, nếu không được sự đồng ý bằng văn bản của Giám Đốc Trung Tâm Dịch Vụ Phân Tích Thí Nghiệm TPHCM
This above result shall not reproduced, partly or fully, unless written approval of Director of CASE.
3/Kết quả phân tích chỉ có giá trị trên mẫu thử/ *This testing result is only valid on tested sample.*

3.5. Construction and renovation policies focusing on water saving

- Circular No.01/2016/TT-BXD, issued by the Ministry of Construction on February 1, 2016, pertains to the "Promulgation of the National Technical Regulations QCVN 07-1:2016/BXD for technical infrastructure works related to water supply construction".
- Circular No.01/2021/TT-BXD, released on May 19, 2021, by the Ministry of Construction, focuses on the "Issuance of QCVN 01:2021/BXD, the National Technical Regulations for construction planning."
    - Applying the above construction standards to minimize water use is the priority solution to achieve the goal of "Sustainable development of clean water and sanitation."
    - Nam Can Tho University is dedicated to implementing these standards in order to create a sustainable future with access to clean water sources and efficient water usage.
    - When constructing new buildings or renovating existing ones, the university adheres to construction standards and prioritizes the efficient and economical use of water. This includes utilizing advanced technology and equipment to minimize the amount of water required during both the construction process and the ongoing operation of the project.
    - Furthermore, the university actively promotes the construction of rainwater collection systems and water-saving irrigation systems in specific buildings on campus. The university aims to use recycled water in these buildings and reduce water consumption through the implementation of water-saving flushing systems, smart faucets, and water reduction devices.
    - The university also implements educational and training initiatives to increase awareness among contractors, architects, and workers about the importance of conserving water during construction. Additionally, strict policies and regulations are enforced to ensure compliance with building standards that aim to minimize water usage in the design and construction of buildings.
    - The university recognizes the significance of implementing building standards to reduce water consumption in order to create a sustainable built environment and achieve sustainable development goals. This effort aligns with the United Nations' SDG 6, which aims to provide clean and safe water for all individuals.
    - Nam Can Tho University is committed to continuing efforts to build and maintain green buildings, use water efficiently, and protect water resources for the community and the environment.

3.6. Applying water-saving irrigation technology helps increase crop productivity:

- Drip Irrigation/trickle Irrigation is a basic form of water-saving irrigation technique (or micro irrigation). This is a form of bringing water directly on the ground to the

root area of plants continuously in the form of drops thanks to typical devices such as droplet nozzles (supplied by a pressurized water pipeline system)

- Sprinkler irrigation is a technique of delivering water to plants in the form of artificial rain using appropriate sprinkler generation devices (rain rays). This method is popular and widely applied.
  - When water is initially supplied, the water pressure will flow through the check valve, adjustment valve and into the tank and dissolve nutrients under appropriate pressure. Part of the flow is directed through the tank. If the tank contains soluble fertilizer or pesticide, the flow will mix and carry that substance out of the tank and into the main pipe. Water is purified when it passes through the filter.
  - Depending on water usage needs, the system manager adjusts the flow and pressure through control valves at the beginning of the pipes. Pressurized water moves through pipes to irrigation equipment to supply plants.
  - Depending on the structure and different functions of each irrigation device, water is supplied and distributed to plants in different forms and scopes. Small irrigation pipes, small pipe clusters, perforated pipes, and droplet generators produce water droplets or ooze at a small constant flow under air pressure or close to air pressure. Sprinkler irrigation equipment will split the water stream into the air in the form of small raindrops when the pressurized water flow hits the shield or rotating blades.

3.7. Properly planting trees can help reduce the amount of irrigation water needed

- Proper watering for plants involves ensuring that the amount of water is adequate for the specific plant. This means avoiding overwatering, which can lead to waterlogging of the roots, as well as under-watering, which can deprive the plant of necessary hydration. It is important to note that different plant varieties have varying water requirements. Plant species that thrive in humid conditions require frequent watering and ample amounts of water to maintain a moist environment for optimal growth." As for drought-resistant plants, they do not need too much water. Too much watering will cause waterlogging or damage to plant parts.
- Watering at the right time is crucial for the health of your plants. In general, the best times to water are early morning and late afternoon. This allows the plants

  to absorb the water before the heat of the sun evaporates it, preventing the leaves from drying out.
- The university has replaced the previous manual watering method with automatic systems, which are being increasingly utilized. The irrigation equipment is highly advanced and promotes efficient water usage. This reduces the amount

  of effort required by individuals. Additionally, smart controllers are an excellent tool for managing the entire irrigation system.
- Drip irrigation systems supply water directly to plant roots, minimizing the possibility of partial water evaporation. Installing a drip irrigation system with a

timer can save up to 80% of irrigation water when compared to traditional sprinkler systems.

4. Save water in the community

4.1. Utilize the water sources available on campus (rivers, lakes, etc.)

In 2020, the university constructed a water reservoir with a surface area of over 3,000 m2. This reservoir is connected to the local canal system, providing benefits such as regulating water levels, preventing flooding, and enhancing the ecological environtment. It also serves as a source of irrigation for crops.

4.2 Plants that require little watering on campus

- To promote a clean environment and reduce odors and pollutants such as nitrogen oxides, ammonia, sulfur dioxide, and ozone, the University Board has constructed an ecological garden spanning over 5,000 m^2. This garden features a diverse range of plants, with a focus on those that require minimal watering such as Aloe vera, Aroid palm, Cathedral bells, Snake plant, Cactus, Pothos, Tillandsia, Peace lily, Date palm, Coconut trees, Grapevine, Flamboyant trees, etc.

- Benefits of planting trees:
  - Anti-greenhouse effect: Trees absorb CO_2, remove and store carbon while releasing oxygen back into the air.
  - Provide oxygen.
  - Create shade in the university: Trees cool the air through their leaves and prevent sunlight from shining directly on the ground.

- Help prevent water pollution: Trees reduce runoff by breaking up rainfall directly onto the ground, allowing water to flow down the canopy and tree trunk before reaching the ground.
- Help prevent soil erosion.
- Protect against ultraviolet rays.
- Provide medicinal materials.

Some typical images of trees in the university:

Aloe vera garden

Her betel tree garden

Snake plants garden

Money tree garden

Cactus garden

Peace lilies garden

Coconut tree garden

Date palm garden

Vineyard