WATER AUDIT REPORT

(Internal)

(2021-2022)

"Water is Driving Force of all Nature"

(Preserve WATER Preserve LIFE)

Adarsh Mahila Mahavidyalaya

Bhiwani (Haryana)

Prepared By: Mrs. Vidushi Jatasra

Assistant Professor

Department of Chemistry

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PREFACE

Water is life for all animated animal which live on the earth. As we know the rapid growth of humiliation and industrialization, there is scarce of water on the earth. There is a need for water conservation, not only to restore the fast deteriorating eco-system of the country but also to meet the inevitable emergency of shortage even for drinking and domestic water in near future. An evaluation is needed to understand its position as an environment friendly, talent nurturing educational institution. This Water Audit was done with the aim to conduct study on water sources and water usage and different water conservation methods adopted in college. The college vision is “mould an enlightened generation by developing the potential of individuals through quality higher education and moral value inculcation". The college is set an example in the area of water conservation for the students for gaining practical knowledge for the same. This report is compiled by the auditor along with the project engineers who are experienced in the field of energy and water conservation. The student volunteers made a mammoth contribution with data collection and preparing an initial skeleton for the report

ACKNOWLEDGEMENT

We express our sincere gratitude to the management of **ADARSH MAHILA MAHAVIDYALAYA** for giving us an opportunity to carry out the project of Water Audit. We are thankful to **Mrs. Rachna Arora** Principal **Adarsh Mahila Mahavidyalaya, Bhiwani** for awarding the work of conducting Water Audit at their college. We are also very thankful to **Mrs. Neelam Gupta IQAC coordinator, NAAC** for her advice and valuable support extended to this project .Our sincere thanks to all respondents from different departments for clearing our doubts with tremendous patience and understanding. We hope that the administration of AMMB will find this report useful in water conservation as well as improvement in system performance. We have made every attempt to adhere to high quality standards, in both data collection and analysis.

We are extremely thankful to all the staffs for their support in carrying out the studies and for input data, and measurements related to the project of Water audit. We also congratulate our Water audit team members for successfully completing the assignment in time and making their best efforts to add value. We are very much grateful for co-operation of all teaching faculties and technical staff, who rendered their valuable assistance and co-operation this water audit.

Fig: 1

3. INTRODUCTION

3.1 About College

Established in 1970 and declared 'Best College 'by the government of Haryana, Adarsh Mahila Mahavidyalaya, Bhiwani has carved a prime niche for itself on the educational map of Haryana. The college has a distinctive proud history of being established by social reformers who were also dedicated to the cause of women education. It has rendered yeoman's service to the cause of women upliftment and education in the area by imparting quality education to the girls for half a century now. The institution was established and nomenclatured with the noble and elevating vision to create 'adarsh' i.e ideal young women who combine the best of Old and New the traditional 'sanskaras' and a modern outlook; and the institute has lived up to its name .The multifarious achievements of the college and its excellent performance in the fields of Academic, Co-curricular activities and Sports compel admiration.

Fig: 2

Affiliated to C.B.L.U Bhiwani, providing education to around 3000 students, the college offers multi faculty U.G courses in Arts, Commerce and Science, PG courses and also professional courses like BCA, ASM, B.COM and B.Sc. with Computers. The college campus combines the Greenery of Nature and Elegance of Infrastructure .It provides very congenial and conducive atmosphere -ideal for all-round growth of the students. Sports grounds, open gym, large lawns, auditorium, hostel facilities, equipped library, pleasant canteen everything blends to create a beautiful ambience a platform for full growth of one's potentials and capabilities. The dedicated and highly qualified faculty and the enterprising college management consistently continue to put in their best efforts to take the college to still greater heights of all-round excellence and glory.

3.2 About College Campus

Adarsh Mahila Mahavidyalaya, Bhiwani has the best infrastructure facilities available for students of the surrounding region. This creates a vibrant campus and motivates students to remain lively and jubilant. Well equipped library, high quality classroom interiors, well equipped seminar rooms and a state of art auditorium. To add to all this eateries are available within the campus offering healthy and hygienic options to students at reasonable fee structure. The College building is well maintained and has adequate space.

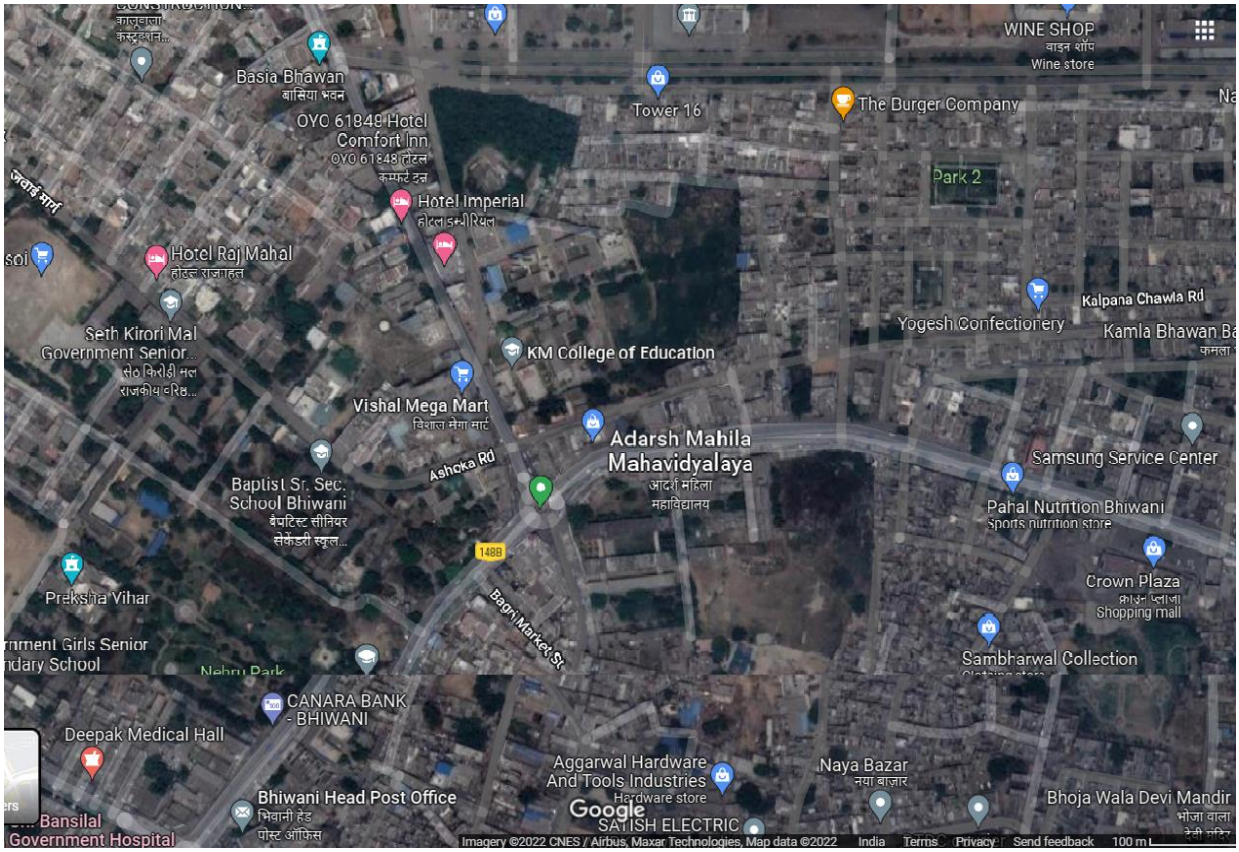


Fig: 3 Goggle Map Location of College Campus

Today, this college is recognized as a premier institution of higher learning that nurtures intellectual and academic striving, vibrant curricular activities, outreach initiatives and civic engagement. The college offers a unique combination of resources where community of inspired faculty and talented students learn and grow together to share the dynamic energy field. It is a place not only of teaching but collaborated scholarship reinforcing a very special interaction between students and faculty.

BUILT UP AREA

The purpose and the built-up area of the buildings are given below. All these buildings have sufficient ventilation and natural sun light. The master plan of College has been drawn to ensure and sustain harmonious blend of human and environmental well-being. Accordingly, spaces for academic, administrative and recreational areas are delineated in harmony with the topography to ensure an eco-friendly campus.

Total Campus Area & College Building Spread Area

Campus Area	42567.87 Sq.M OR 84 Canal 3 Maria
Build Up Area	~-11000 Sq. ft
Green Area	7063 Sq.ft

Table-1 College Area

Physical Structure

Sr. No.	Facility	Area Covered
1.	Management Office	56.6*33.8 =1,913.08 Sq.ft
2.	Administration Block	252*40 = 10,080 Sq.ft
3.	Art Block	255*40 = 10,200 Sq. ft
4.	Science Block	259*40 =10,360 Sq.ft
5.	Commerce Block	110*40 =4,400 Sq.ft
6.	Auditorium Hall	128.3*50 =6,415 Sq.ft
7.	Sports Ground	129*158 =20,382 Sq.ft
8.	Sport Room	36.9*18 =664.2 Sq.ft
9.	Sport Store	24.9*17 =423 Sq.ft
10.	Open Gym	103*46 =4,728 Sq.ft
11.	Basket Ball Ground	116*71 =8,236 Sq.ft
12.	Garden -1 (Management Block)	113*35 =3,955 Sq.ft
13.	Garden -2	94*34 =3,196 Sq.ft
14.	Garden-3(Tulsi Garden)	33.8*27 =912.6 Sq.ft
15.	Canteen	44.5*36 =1,602 Sq.ft
16.	Main Gate	14*8 =112 Sq.ft
17.	Water Tank Road	24*25 =600 Sq.ft
18.	Hostels & mess	230*65+44*36=16535 Sq. ft

Table-2 Buildup Area

Fig: 4 College Building Layout

3.3 Water Auditing Team

The study team constituted of the following faculty members of teaching and non teaching staff technical executives from Adarsh Mahila Mahavidyalaya, Bhiwani.

- Mrs. Vidushi, Assistant Professor (Department of Chemistry)
- Mrs. Nirmal Malik ,Assistant Professor (Department of Zoology)
- Dr. Ritika Chaudhary ,Assistant Professor (Department of Chemistry)
- Ms. Pooja Sharma ,Assistant Professor (Department of Chemistry)

4. College Water Audit

4.1 About Water Auditing

Water auditing is a systematic & scientific examination of water present in the surface of earth. Less than one per cent of the Earth's fresh water source is readily available for human use. There is a need for water conservation, not only to restore the fast deteriorating eco-system of the country but also to meet the inevitable emergency of shortage even for drinking and domestic water in near future.

4.2 Advantage of Water Audit .

- Water audits provide decision making tools to utility i.e., knowing where water is being used in your system allows you to make informed decisions about investing resources such as time and money.
- Water audits also identify which water uses are useful for the utility and which water uses are not. Thus, this leads to more financial capacity in the water system, reduced cost per customer and better management of the water resource.
- Reducing water used at the source may even result in delaying or avoiding capital investments such as a new well, more treatment technology.
- Creating awareness among water users i.e., consumers can see and understand that the utility is taking proactive steps to manage wasted water and save for the future.
- Water audits allow us to efficiently reduce water losses in the campus.
- Water Audit is an effective educational and public relations tool for the water conservation system.
- Compiling the report with the above-mentioned details.

4.3 Objective of Water Audit

The objective of the Water Audit is to ensure optimum water consumption in all operations in the college campus. The other objective is to maintain awareness on optimum utilization of water resources. The following are the major outputs of Water Audit:

- Establishment of water balance of the facility to understand the water consumption and water losses.
- Data analysis for the water supply system from the raw water reservoir to water consuming units, storages, canteen, processes, domestic use etc. including raw water treatment, wastewater treatment and discharge.
- Exploring possibilities and options for appropriate and suitable water conservation activities such as rain water harvesting, groundwater recharge, recycling & reuse etc. are to be suggested under the recommendations for water conservation and management plan based on the outcomes of the observations and analysis.
- Based on the data availability an attempt shall also be made for cost benefit analysis on water saving.
- Quantity of water utilization both through metered and unmetered supplies.
- Identification of source of water supply, major areas of water consumption and water loss areas.
- Scope of improvement for water conservation.

4.4 Target Area of Water Audit

Water audit forms part of a resource management process. Although they are individual events, the real value of water audits is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Target areas in water auditing include onsite assessment of source, water storage, water requirement, analysis of drinking water sample from randomly selected location collecting information about waste water generation and loss of water in college campus.

4.5 Methodology Followed for conducting water Audit

The methodology adopted to conduct the Water Audit of the Institution had the following components.

Phase- 1: Conduction of Audit

- Site visit and measurement(Indoor and Outdoor fixtures)
- Sampling of Water Quality
- Closure of Audit Data & Finding

Phase-: Calculation

- 2Calculation and listing of 3Rs(Reduce ,Reuse &Recycling)
- Evaluate Feasible Options
- Designing Water Management Strategy

Phase -3: Audit Report

- Audit Report Writing
- Summary &Recommendations
- Communication &Presentation of Result

Phase -4: Discussion & Implementation

- Discussion on Proposed Measures & Strategies
- Implementation of Finalized Measures
- Execution of Water Management Strategy

Phase -5: Review

- Review of the Implemented Measures
- Revise Audit Result

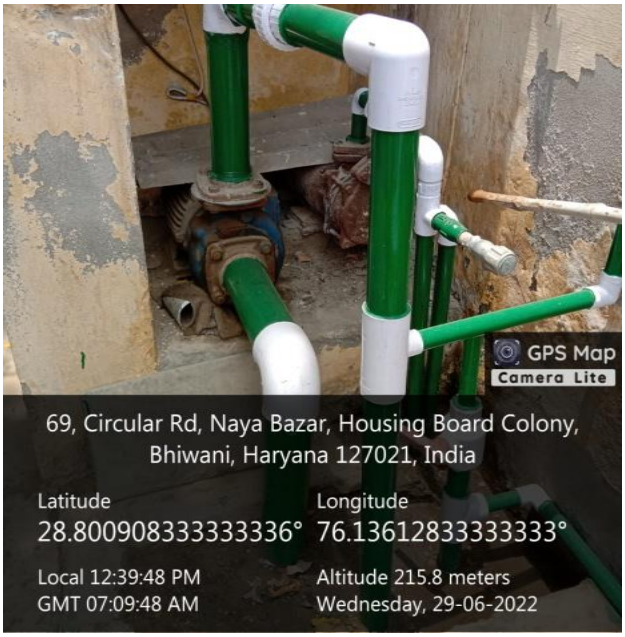
5. Water Resource, Consumption and Waste Water

5.1 Source of Water and Water Storage Capacity in College Campus

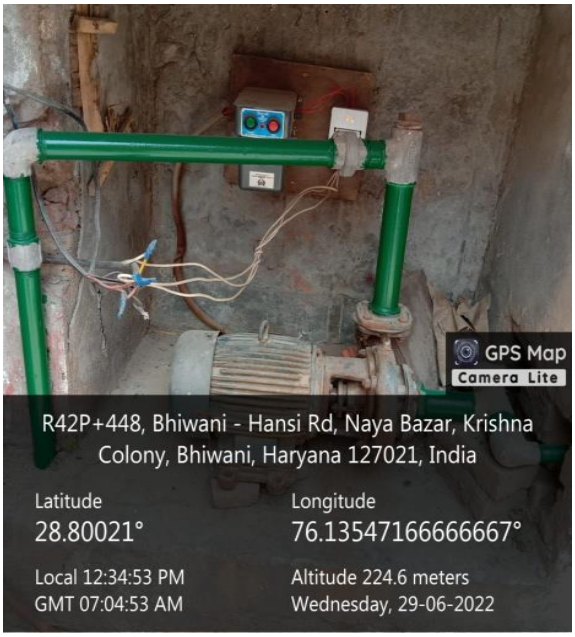
The main source of freshwater is Borewell and Public Health Department Connection for the college. The freshwater is mainly used for drinking, housekeeping, gardening, laboratory activity and any other project. The metered water from the government supply is collected in the underground storage tank. Based upon the requirement and the underground water tank level water is diverted in different area of the college campus. The collected underground water is also pumped to overhead water tanks through the water pump.

Sr. No	Water Source	Location	Quantity
1.	PWD Water Connection No-1	Near Main Gate	**01**
2.	PWD Water Connection No-2	Near Main Gate	**01**
			02

Table-3 Fresh water sources and Supply pumps



Water connection-1



Water Connection-2

Fig: 5 Water Connections in College Campus

The water is distributed in the entire campus from water storage tanks. There are total 20 water storage tank other than one underground main storage tank. These 20 water storage tanks are installed in different areas. The list of the tanks and the storage tank capacity is as below:

Sr.No	Location	Description	No	Capacity	Total
1.	Building No-1	Overhead Tank	2	2000 L	4000 L
2.	Building No-2	Overhead Tank	3	2000 L	6000 L
3.	Building No-3	Overhead Tank	1	2000 L	2000 L
4.	Building No-4	Overhead Tank	1	500 L	500 L
5.	Auditorium	Overhead Tank	2	500 L	1000 L
6.	Management Office	Overhead Tank	1	500 L	500 L
7.	Hostel(Shanti Sadan)	Overhead Tank	2 1	2000L 500 L	4000 L 500 L
8.	Hostel(Kasturba Sadan)	Overhead Tank	3	2000 L	6000 L
9.	Hostel(Sarojani Sadan)	Overhead Tank	2	2000 L	4000 L
10	College Main Gate (Main Storage Tank)	Under Water Tank	1	126280 L	126280 L
	Total Tanks		20		**1,50,780 L**

Table-4 Water storage capacity in college campus

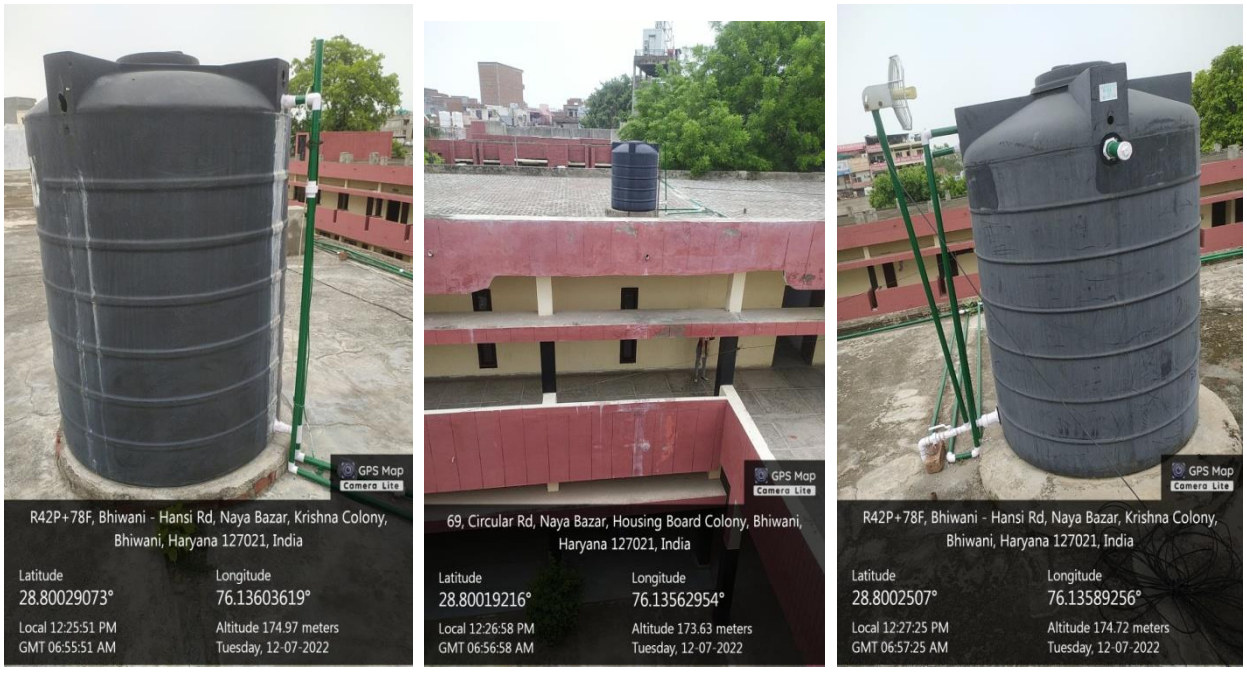


Fig: 6 Water Storage Tanks

5.2 Water Distribution Layout of College

Audit team studies the water sources and prepared water distribution flow system in College campus.

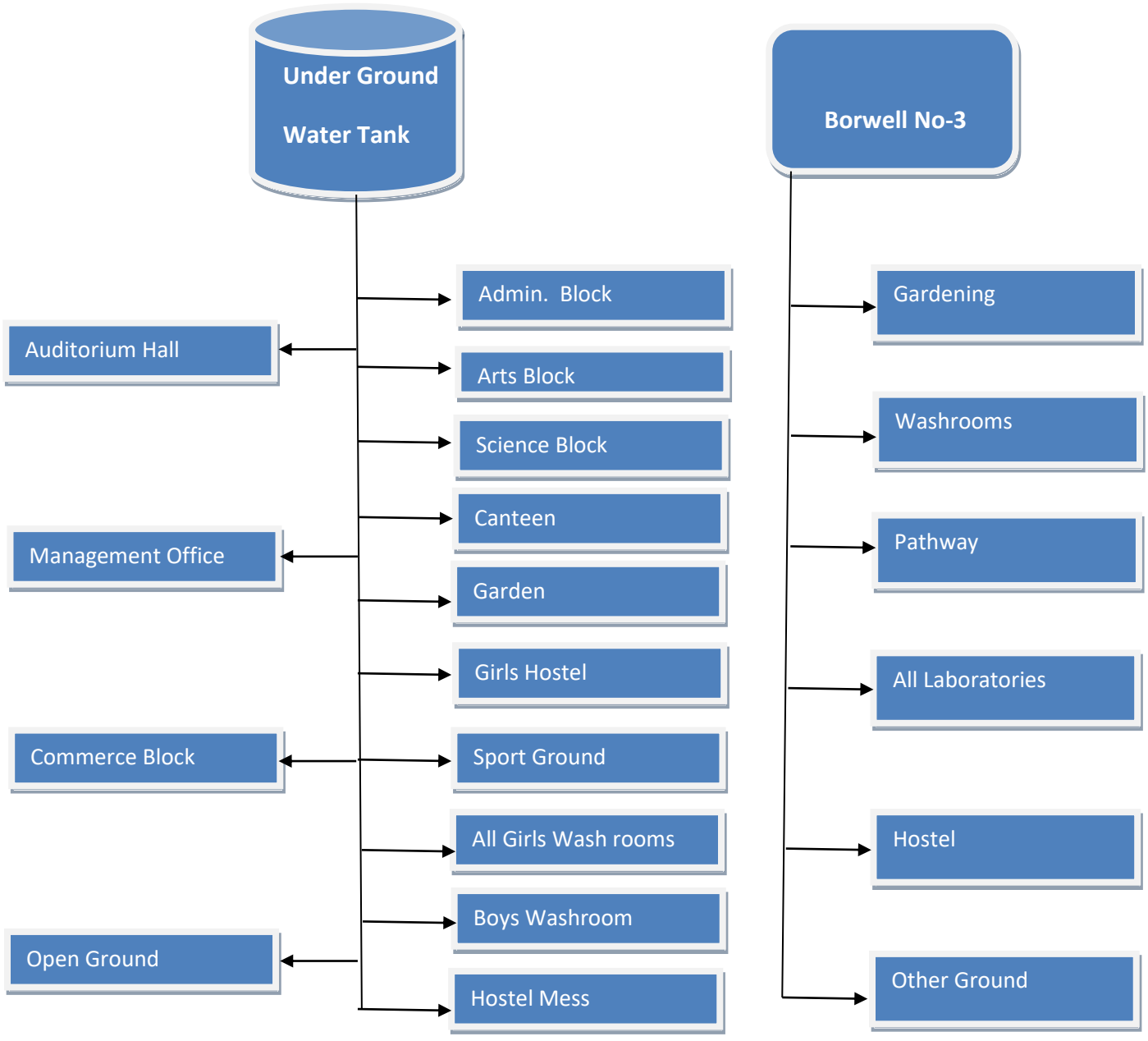


Fig: 7 Water distribution layout photograph

5.3 Water Uses in College Campus

The detailed questionnaire developed to monitor and calculate components of the above water use heads was prepared. This was based on literature review and observations and discussions during the pre audit phase.

Both treated and raw water is used in the college for drinking purpose and non drinking purpose.

Sr. No.	Location of Taps	No. of Raw/Fresh Water Taps in Washroom/Sink/Urinals	RO Water Taps For Drinking
1.	Main Gate	05	04
2.	Management Office	08	
3.	Principal Office	04	
4.	Clerk Office	05	
5.	Staff Rooms	12	02
6.	Commerce Block	12	04
7.	Art Block	47	
8.	Science Block Staff Room	03	
9.	Chemistry Lab	19	
10.	Physics Lab	04	
11.	Botany Lab	02	
12.	Zoology Lab	02	
13.	Home Science Lab	05	
14..	Canteen	03	
15.	Staff Room	06	
16.	Hostel Kasturba Sadan	38	02
17.	Hostel Sarojani Sadan	32	02
18.	Hostel Shanti Sadan	28	02
19.	Hostel Mess	12	
	Total	249	16

Table-5 Water outlet Tap in College Campus

No specific data is available for use of non drinking water. Based on above standard water consumption of Campus residents should be maximum 135 Liters per person and Day time person should be maximum 15 Liters per person.

Sr. No	Particulars	NOS
1.	Nos. of Hostlers Students	81
2.	No of Staff	07
3.	Total Residents Population	**88**

Table-6 details of the residents living in Campus (Day and Night)

Sr. No	Particulars	NOS
1.	Nos. of Non-Hostlers Students	3000
2.	No of Staff Teaching/Non Teaching	136
3.	No of Daily Visitors	50
4.	Total Daytime population	**3186**

Table-7 details of Persons coming in Day time

Thus total maximum permissible water Consumption as per Standards mentioned above is as given in Table-8

Sr. No	Particulars	Nos.	Maximum water consumption per Person per day (Liters)	Total Maximum water consumption per Day(Liters)
1.	Nos. of Campus full time residents	**88**	**110**	**9,680**
2.	Nos. of Day time person	**3186**	**15**	**47,790**
	Total	**3274**		**57,470**

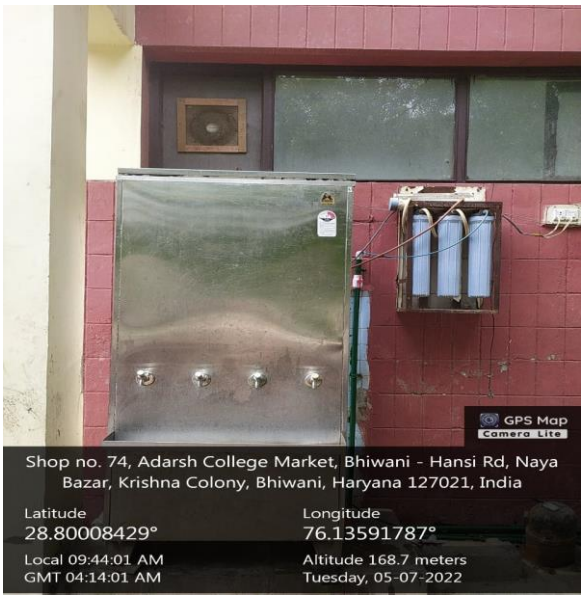


Fig: 8Water Cooler for Drinking Water

Water uses for Gardening:

The one of major contribution from fresh water consumption is watering for plants and garden in college campus. There is good potential for water saving by adopts "Automatic Watering 360 adjustable misting nozzle irrigation Dripper's system" for plants. Adjustable drip irrigation tools to provide different amounts of water depending on the water requirements of different plants. The drip speed can be set as for indoor and outdoor plants.

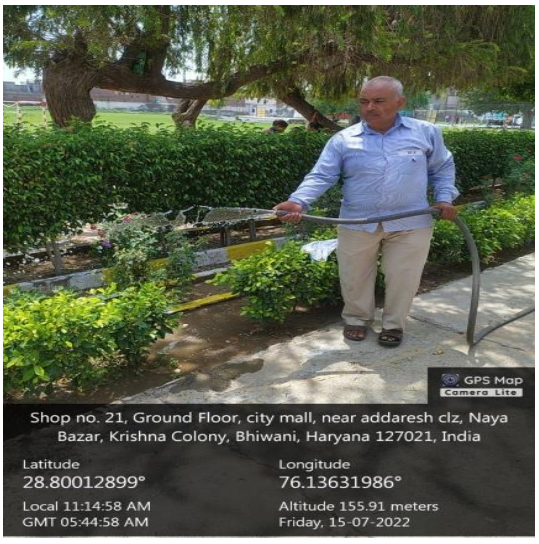


Fig: 9Water uses in College Garden

QUANTITY OF WATER USED IN DIFFERENT SECTIONS OF THE CAMPUS IN LITTER/DAY

Sr. No	Particulars	Percentage Share	Water Use (Litter/day)
1.	Administration Block	05	**4,170**
2.	Academic building	05	**4,170**
3.	Autonomous building	03	**2,502**
4.	Laboratories	10	**8,340**
5.	Drinking	15	**12,510**
6.	Urinals and Toilets	12	**10,008**
7.	Gardening	20	**16,680**
8.	Hostels	10	**8,340**
9.	Canteen	09	**7,506**
10.	Miscellaneous	11	**9,174**
11.	**Grand Total**		**83,400**

Table-9

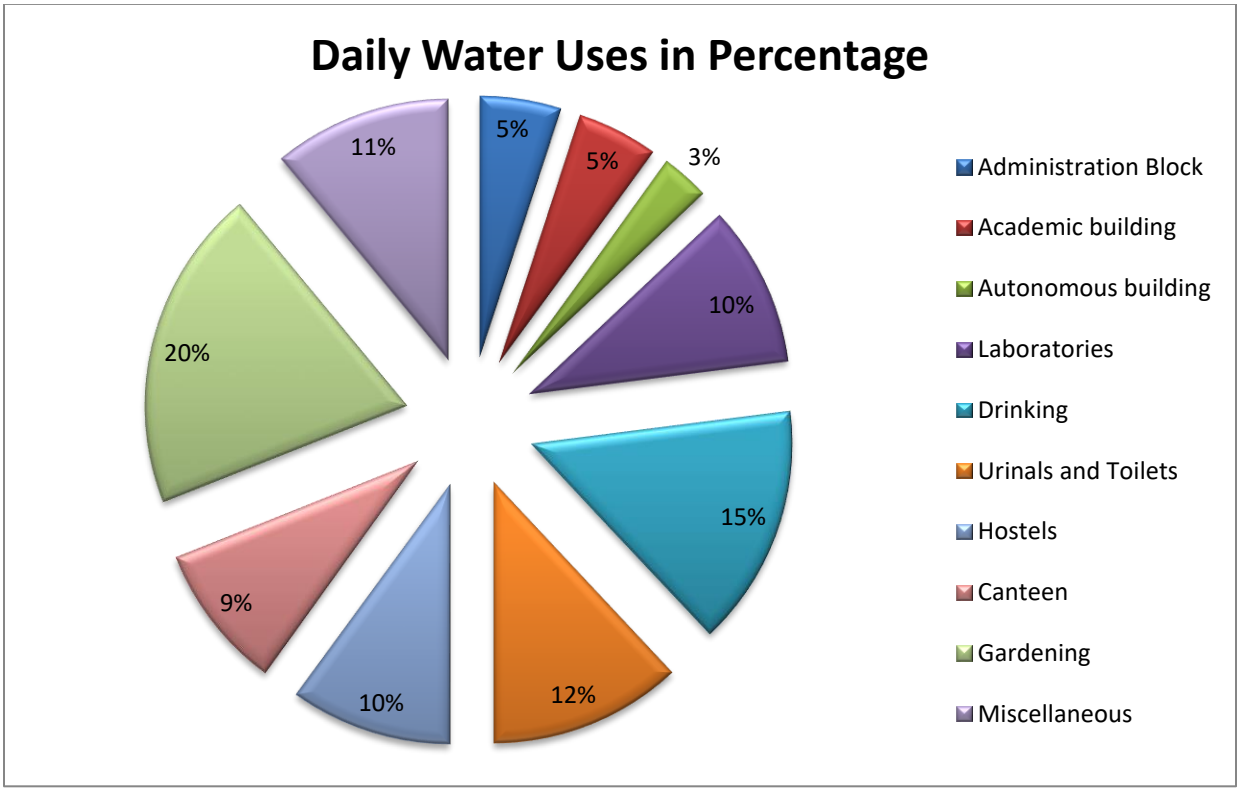


Fig: 10 Pie chart for daily water use in percentage

PUBLIC HEALTH DEPARTMENT WATER BILL

PUBLIC HEALTH ENGINEERING DEPARTMENT TOWN: Bhiwani WARD NO.: 5

BILL FOR WATER/WASTEWATER/SEWERAGE CHARGES (Amt. in Rs.)

CONSUMER NAME, F/H NAME	ADDRESS OF CONSUMER	Locality	BILL No.	BILL DATE
ADARSH MAHILLA COLLEGE, –	HANSI GATE 9896165276	HANSI GATE CIRCULAR ROAD	16586552	27-Dec-21

CONSUMER ID	CONNECTION NO. WATER	SEWER	TYPE OF CONNECTION	BILLING CYCLE	METER READING OLD	NEW	UNITS CONSUMED	RATE/ MONTH	TYPE OF BILLING	DUE DATE
263143	2/1443/527	2/1443/527	Commercial	Disconnection Bill	0	0	0	1000	Flat Rate	26-Jan-22

HEAD	ARREARS	CURRENT	MISC.	AMOUNT PAYABLE BY DUE DATE	AMOUNT PAYABLE AFTER DUE DATE
WATER CHARGES	-750	6000	500	5750	
WASTE W. CHARGES	750	1500	0	2250	8750
GRAND TOTAL	0	7500	500	8000	8750

Terms and Conditions:
1. Payment can be made by cash or DD at cash counter in PHED office on all working days from 09:30 a.m. to 01:30 p.m and 2:30 p.m. to 4:00 p.m.
2. Payment is to be made by due date otherwise surcharge @ 10% shall be charged on current bill. It is the responsibility of the consumer to collect the receipt after payment of bill.
3. In case of non-payment of complete amount of water/waste water /sewerage charges within 6 months from due date of first pending bill, the connection may be disconnected.
4. In case the bill is not delivered to the consumer, he may collect the duplicate copy of the bill by visiting the concerned PHED office.
5. In case of any account/complaint regarding bill, the consumer may contact the concerned office or on the telephone number/e-mail mentioned on the bill.
6. The Department may change the water/wastewater/sewerage charges at any time without notice.
7. Actual water consumption charges or minimum charges, whichever is more will be charged.
8. If any Holiday falls on Due-date of bill then the due date will be treated as previous working day for receipts at cash counters.

Pay Bills Online at https://services.phedharyana.gov.in

*Software Developed with Technical Support of National Informatics Center, Haryana

Bhiwani PHESD No. 2
Vidya Nagar, Maham Road Bhiwani-127021
Tel: 1664241517, sdebhiwani2@gmail.com

SHIKAYAT NIVARAN KENDRA 1800-180-5578 (Toll Free)

PUBLIC HEALTH ENGINEERING DEPARTMENT TOWN: Bhiwani WARD NO.: 5

BILL FOR WATER/WASTEWATER/SEWERAGE CHARGES (Amt. in Rs.)

CONSUMER NAME, F/H NAME	ADDRESS OF CONSUMER	Locality	BILL No.	BILL DATE
ADARSH MAHILLA COLLEGE, —	HANSI GATE 9896165276	HANSI GATE CIRCULAR ROAD	16586555	27-Dec-21

CONSUMER ID	CONNECTION NO. WATER	SEWER	TYPE OF CONNECTION	BILLING CYCLE	METER READING OLD	NEW	UNITS CONSUMED	RATE/ MONTH	TYPE OF BILLING	DUE DATE
263153	2/1444/528	2/1444/528	Commercial	Disconnection Bill	0	0	0	1000	Flat Rate	26-Jan-22

HEAD	ARREARS	CURRENT	MISC.	AMOUNT PAYABLE BY DUE DATE	AMOUNT PAYABLE AFTER DUE DATE
WATER CHARGES	-750	6000	500	5750	
WASTE W. CHARGES	750	1500	0	2250	8750
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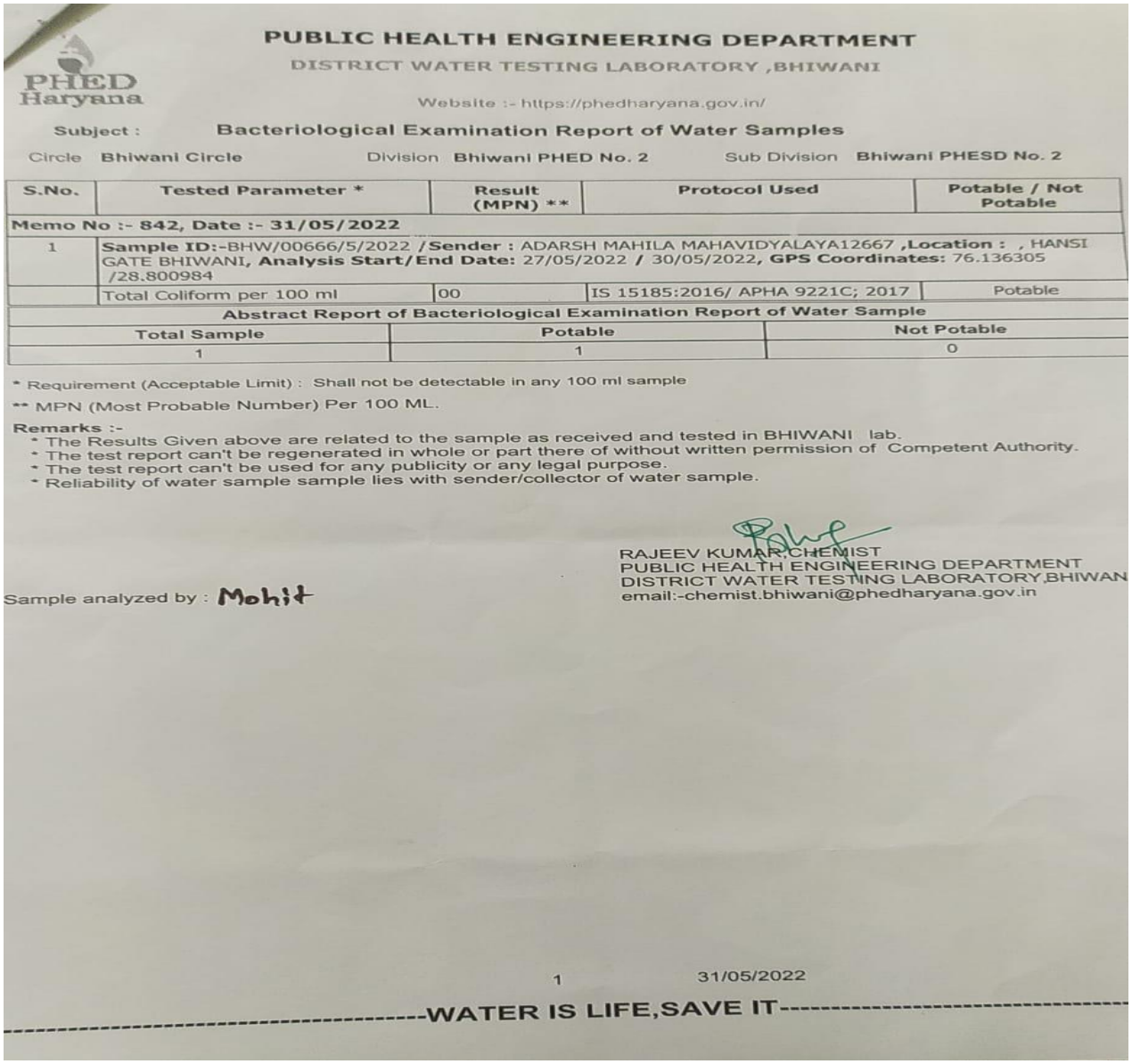
Pay Bills Online at https://services.phedharyana.gov.in

Bhiwani PHESD No. 2
Vidya Nagar, Maham Road Bhiwani-127021
Tel: 1664241517, sdebhiwani2@gmail.com

Fig: 11

5.4 Water Test Parameters for Drinking Water

Quality of drinking water is important to our health and well-being. Monitoring the quality of water and testing is very important to maintain reliable and safe water sources. The analysis of water is aim to determine all water parameters providing quality potential health risks related to water contamination diseases.



PUBLIC HEALTH ENGINEERING DEPARTMENT
DISTRICT WATER TESTING LABORATORY ,BHIWANI

PHED Haryana

Website :- https://phedharyana.gov.in/

Subject : Bacteriological Examination Report of Water Samples

Circle Bhiwani Circle Division Bhiwani PHED No. 2 Sub Division Bhiwani PHESD No. 2

S.No.	Tested Parameter *	Result (MPN) **	Protocol Used	Potable / Not Potable
Memo No :- 842, Date :- 31/05/2022				
1	Sample ID:-BHW/00666/5/2022 /Sender : ADARSH MAHILA MAHAVIDYALAYA12667 ,Location : , HANSI GATE BHIWANI, Analysis Start/End Date: 27/05/2022 / 30/05/2022, GPS Coordinates: 76.136305 /28.800984			
	Total Coliform per 100 ml	00	IS 15185:2016/ APHA 9221C; 2017	Potable

Abstract Report of Bacteriological Examination Report of Water Sample

Total Sample	Potable	Not Potable
1	1	0

* Requirement (Acceptable Limit) : Shall not be detectable in any 100 ml sample
** MPN (Most Probable Number) Per 100 ML.

Remarks :-
* The Results Given above are related to the sample as received and tested in BHIWANI lab.
* The test report can't be regenerated in whole or part there of without written permission of Competent Authority.
* The test report can't be used for any publicity or any legal purpose.
* Reliability of water sample sample lies with sender/collector of water sample.

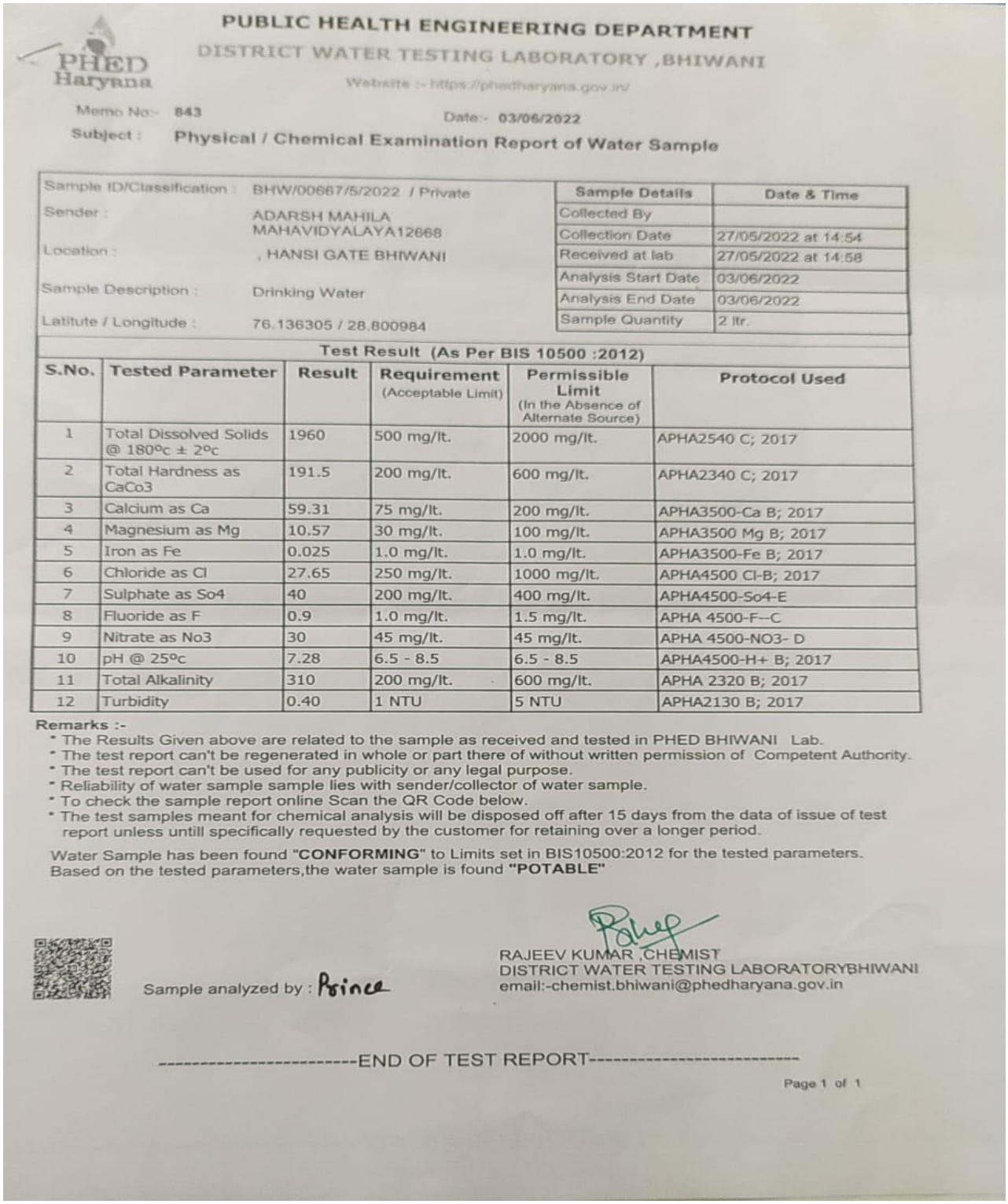
RAJEEV KUMAR,CHEMIST
PUBLIC HEALTH ENGINEERING DEPARTMENT
DISTRICT WATER TESTING LABORATORY,BHIWAN
email:-chemist.bhiwani@phedharyana.gov.in

Sample analyzed by : Mohit

1 31/05/2022

----------WATER IS LIFE,SAVE IT----------

Bacteriological Examination Report of Water Samples



PUBLIC HEALTH ENGINEERING DEPARTMENT

PHED Haryana

DISTRICT WATER TESTING LABORATORY ,BHIWANI

Website :- https://phedharyana.gov.in/

Memo No:- 843 Date:- 03/06/2022

Subject : Physical / Chemical Examination Report of Water Sample

Sample ID/Classification :	BHW/00667/5/2022 / Private
Sender :	ADARSH MAHILA MAHAVIDYALAYA12668
Location :	, HANSI GATE BHIWANI
Sample Description :	Drinking Water
Latitute / Longitude :	76.136305 / 28.800984

Sample Details	Date & Time
Collected By	
Collection Date	27/05/2022 at 14:54
Received at lab	27/05/2022 at 14:58
Analysis Start Date	03/06/2022
Analysis End Date	03/06/2022
Sample Quantity	2 ltr.

Test Result (As Per BIS 10500 :2012)

S.No.	Tested Parameter	Result	Requirement (Acceptable Limit)	Permissible Limit (In the Absence of Alternate Source)	Protocol Used
1	Total Dissolved Solids @ 180°c ± 2°c	1960	500 mg/lt.	2000 mg/lt.	APHA2540 C; 2017
2	Total Hardness as CaCo3	191.5	200 mg/lt.	600 mg/lt.	APHA2340 C; 2017
3	Calcium as Ca	59.31	75 mg/lt.	200 mg/lt.	APHA3500-Ca B; 2017
4	Magnesium as Mg	10.57	30 mg/lt.	100 mg/lt.	APHA3500 Mg B; 2017
5	Iron as Fe	0.025	1.0 mg/lt.	1.0 mg/lt.	APHA3500-Fe B; 2017
6	Chloride as Cl	27.65	250 mg/lt.	1000 mg/lt.	APHA4500 Cl-B; 2017
7	Sulphate as So4	40	200 mg/lt.	400 mg/lt.	APHA4500-So4-E
8	Fluoride as F	0.9	1.0 mg/lt.	1.5 mg/lt.	APHA 4500-F--C
9	Nitrate as No3	30	45 mg/lt.	45 mg/lt.	APHA 4500-NO3- D
10	pH @ 25°c	7.28	6.5 - 8.5	6.5 - 8.5	APHA4500-H+ B; 2017
11	Total Alkalinity	310	200 mg/lt.	600 mg/lt.	APHA 2320 B; 2017
12	Turbidity	0.40	1 NTU	5 NTU	APHA2130 B; 2017

Remarks :-

- The Results Given above are related to the sample as received and tested in PHED BHIWANI Lab.
- The test report can't be regenerated in whole or part there of without written permission of Competent Authority.
- The test report can't be used for any publicity or any legal purpose.
- Reliability of water sample sample lies with sender/collector of water sample.
- To check the sample report online Scan the QR Code below.
- The test samples meant for chemical analysis will be disposed off after 15 days from the data of issue of test report unless untill specifically requested by the customer for retaining over a longer period.

Water Sample has been found **"CONFORMING"** to Limits set in BIS10500:2012 for the tested parameters.
Based on the tested parameters,the water sample is found **"POTABLE"**

Sample analyzed by : Prince

RAJEEV KUMAR ,CHEMIST
DISTRICT WATER TESTING LABORATORYBHIWANI
email:-chemist.bhiwani@phedharyana.gov.in

----------END OF TEST REPORT----------

Page 1 of 1

Physical and Chemical Examination Report of Water Samples

5.5 Waste Water Generation Sources of College Campus

At present waste water generated from various departments, canteen, Mess, washrooms, toilet, hand wash and washing and RO rejected etc is discharge into drain line.

Fig: 12 Various sources of Waste water Generation

5.6 Rain Water Harvesting System

Rainwater harvesting is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to run off. Rainwater can be collected from roofs, and in many places the water collected is redirected to a deep pit (well, shaft, or borehole), a reservoir with percolation. Its uses include water for gardens, livestock, irrigation, domestic use with proper treatment etc. The harvested water can also be used as drinking water, longer-term storage and for other purposes such as groundwater recharge. Rainwater harvesting provides an independent water supply during regional water restrictions and in developed countries is often used to supplement the main supply. It provides water when there is a drought, can help mitigate flooding of low-lying areas, and reduces demand on wells which may enable groundwater levels to be sustained. It also helps in the availability of potable water as rainwater is substantially free of salinity and other salts. Application of rainwater harvesting in urban water system provides a substantial benefit for both water supply and wastewater subsystems by reducing the need for clean water in water distribution system, less generated storm water in sewer system, as well as a reduction in storm water runoff polluting freshwater bodies.

There are typically four components in a rainwater harvesting system:

- Roof Catchment.
- Collection.
- Transport.
- Infiltration or storage tank and use.

If rainwater is not harvested and channelized its runoffs quickly and flow out through stormwater drains. For storm-water management the recharge pits, percolation pits and porous trenches are constructed to allow storm water to infiltrate inside the soil.

Rainwater Harvesting System of the College

The rainwater harvesting system in college was installed in 2021.The entire system was installed at a cost Rs.13,287 only in and is regularly maintained to ensure quality and efficiency. The system recharges water through network of abandoned borewell (25 meters depth), soak ways (9.1 meters depth) raised storm water drainage and recharge troughs etc.

Fig: 13Details of Rain Water Harvesting Borings in the Institute

Sr. No	Particulars	L x B x Pipe Size
1.	Building No -2	25'x 9' x 4"

The college has total build-up area for rain water harvesting is about 950 m^2. The average annual rainfall 535 mm and runoff coefficient 0.88 are considered for commercial building. Accordingly, above figures and consideration, estimated rainwater harvesting potential for the college is about ***447,260*** m^3 /year The following Mathematical Equation is used for the calculation.

RWH Potential = Rainfall (mm) x Area of catchment (m^2) x Runoff coefficient

Rainwater harvesting for ground water recharge Advantages

- Conservation of water for future use
- Biological purity of water is good
- It is environment friendly, controls soil erosion and flood and provides sufficient soil moisture even during summer months.
- It provides a natural distribution system between recharge and discharge points.
- Quality improvement by infiltration through the permeable media.
- Water stored underground is relatively immune to natural and man-made catastrophe

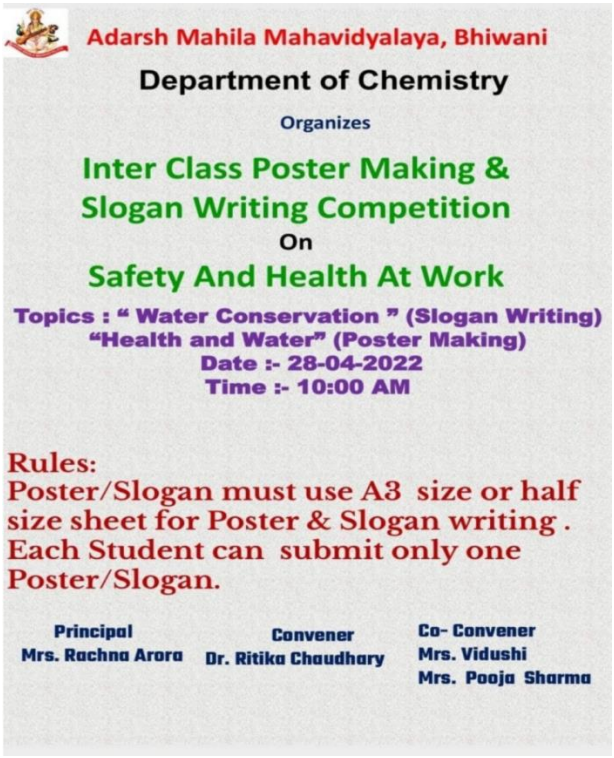
5.7 Awareness Program towards Water Conservation

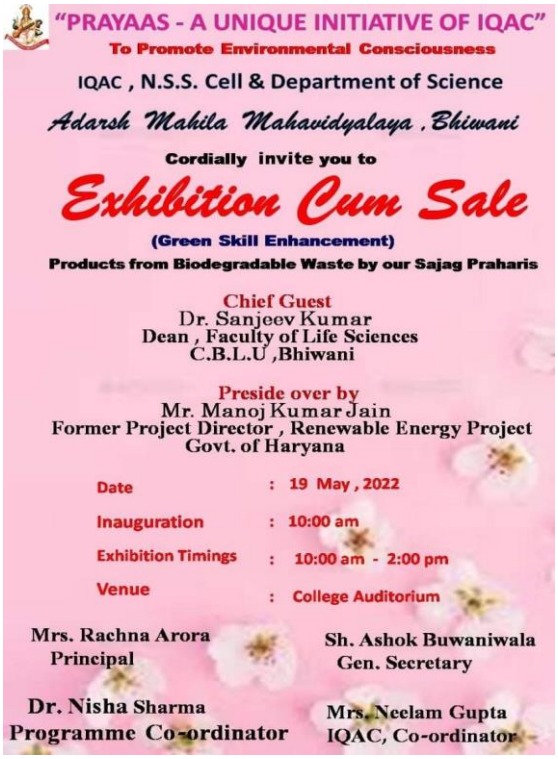
The various activities were organized in college campus time to time about water conservation, water pollution by arranging student awareness programs in which NSS, students from all departments are actively participated.

Sr. No	Activity	Organized BY	Date of Organization
1.	Inter College Online Poster making Competition	Department of Computer Science	14/02/2022
2.	Lecture on Water Conservation	National Cadet Core unit AMM	21/03/2022
3.	Inter Class Poster Making & Slogan Writing Competition	Department of Chemistry AMM	28/04/2022

Table- 13

- Display boards for switching off the taps have been put on at appropriate place.
- The water Conservation Awareness Program (***PARYAAS***) has been started to create awareness towards water conservation among students.


Adarsh Mahila Mahavidyalaya, Bhiwani
Department of Chemistry
Organizes
Inter Class Poster Making &
Slogan Writing Competition
On
Safety And Health At Work
Topics : " Water Conservation " (Slogan Writing)
"Health and Water" (Poster Making)
Date :- 28-04-2022
Time :- 10:00 AM
Rules:
Poster/Slogan must use A3 size or half size sheet for Poster & Slogan writing .
Each Student can submit only one Poster/Slogan.
Principal
Mrs. Rachna Arora
Convener
Dr. Ritika Chaudhary
Co- Convener
Mrs. Vidushi
Mrs. Pooja Sharma


"PRAYAAS - A UNIQUE INITIATIVE OF IQAC"
To Promote Environmental Consciousness
IQAC , N.S.S. Cell & Department of Science
Adarsh Mahila Mahavidyalaya , Bhiwani
Cordially invite you to
Exhibition Cum Sale
(Green Skill Enhancement)
Products from Biodegradable Waste by our Sajag Praharis
Chief Guest
Dr. Sanjeev Kumar
Dean , Faculty of Life Sciences
C.B.L.U ,Bhiwani
Preside over by
Mr. Manoj Kumar Jain
Former Project Director , Renewable Energy Project
Govt. of Haryana
Date : 19 May , 2022
Inauguration : 10:00 am
Exhibition Timings : 10:00 am - 2:00 pm
Venue : College Auditorium
Mrs. Rachna Arora
Principal
Sh. Ashok Buwaniwala
Gen. Secretary
Dr. Nisha Sharma
Programme Co-ordinator
Mrs. Neelam Gupta
IQAC, Co-ordinator


GPS Map Camera
Bhiwani, Haryana, India
R42P+78F, Bhiwani - Hansi Rd, Naya Bazar, Krishna Colony, Bhiwani, Haryana 127021, India
Lat 28.800431°
Long 76.135675°
28/04/22 10:57 AM


GPS Map Camera
Bhiwani, Haryana, India
R42P+78F, Bhiwani - Hansi Rd, Naya Bazar, Krishna Colony, Bhiwani, Haryana 127021, India
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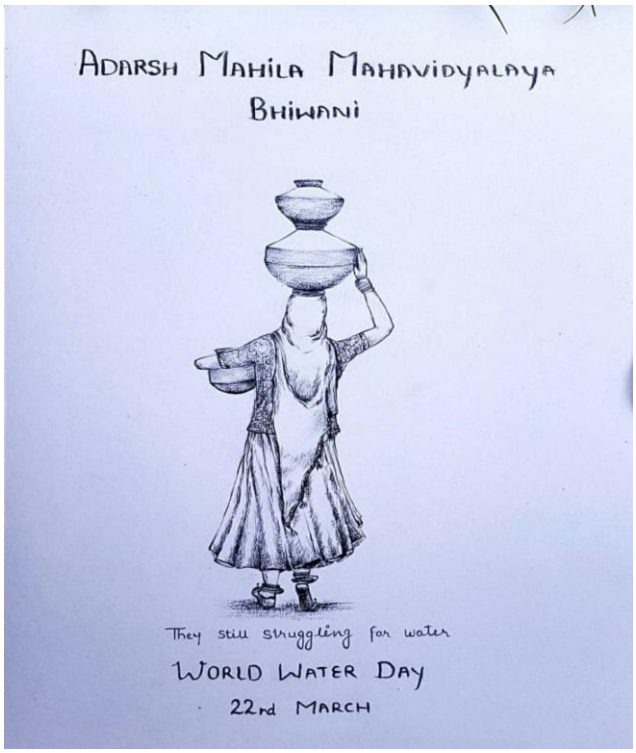
Long 76.135675°
28/04/22 10:59 AM

Fig: 16 Activities for Water Conservation


ADARSH MAHILA MAHAVIDYALAYA
BHIWANI
They still struggling for water
WORLD WATER DAY
22nd MARCH


28/04/2022 12:39 PM

6. Recommendations and Future Plan for Water Conservation

Based on the observations and information collected, the following can be recommended to reduce water use, increase its efficiency and reuse.

College administration may consider theses on top priority:-

- Replacement of single flush cisterns with dual flush cisterns, in both men and women's toilets.
- It is recommended to optimize water requirement for domestic use through water saving measures in urinals, canteens etc.
- Metering arrangements at all water withdrawal points shall be made and calibration certificates of the same shall be available.
- Only recycled water from domestic purpose shall be used for gardening thus reducing overall water requirement.
- It is recommended that flushing should be avoided for disposing toilet paper, uses a rubbish bin and averts unnecessary flushing.
- To eliminate the spillage and over usage of water in washbasins, urinals and toiler push taps are highly recommended.
- Automatic Leak detection systems for conservation of water.

SUGGETIONS FOR WATER CONSERVATION AND GROUND WATER RECHARGING.

Along with the recommendation mentioned above following steps should be taken for water conservation in college campus.

- Suggested to conduct a detailed study on geological and hydro geological mapping of the area to water passing through road, gutter etc.
- At present waste water is not recycled or reused in any form in the college premises. There is upmost requirement of **Wastewater treatment technologies, advanced waste water treatment methods/plant** in college campus.

7. CONCLUSION

Water Audit is the most scientific way to conserve water for the future. Water Audit is a kind of professional care which is the responsibility of each individual and institutions to give attention for the minimal water wastage through its water distribution net work. The water audit reports assist in the process for giving an insight into the college about its water recourses and its water conservation methods. The auditors observed during the campus visit and after the conversation with the staff and students of **ADARSH MAHILA MAHAVIDYALAYA** that they have taken continuous and considerable effort over several years for nurturing and maintaining the various methods adopted in the college for water conservation and increase if ground water level in the premises which is well appreciated by us. There is still opportunity to attain perfection through some of the identified suggestions listed in the executive summary.

SAVE *BLUE* LIVE *GREEN*

Phone No. 01664-242414 & 240422

Adarsh Mahila Mahavidyalaya, BHIWANI-127021

Affiliated to Chaudhary Bansi Lal University, Bhiwani (NAAC Accredited B+)

Best College declared by Govt. of Haryana. A Prestigious multi faculty Institution for quality education for women

Email : principalammb@gmail.com Website : www.ammb.ac.in

Ref. No. AMMB/ Dated 30/06/22

Audit Committee

Adarsh Mahila Mahavidyalaya,Bhiwani

Certificate

This is to certify that this Audit Report of Adarsh Mahila Mahavidyalaya, Bhiwani is based on the original data collected during the period of study. Further, it is certified that the baseline data was prepared by the internal Audit teams of Adarsh Mahila Mahavidyalaya, Bhiwani and submitted to us. The content of the baseline data of the study has been personally verified by the auditing team for validity and reliability. The data used in the study is original in nature and have not been presented or published elsewhere. Photographs used in the report are either taken directly by the audit team or are given by internal audit team.

1) General Secretary 2) Principal 3) Technical officer 4) IQAC Coordinator